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SCPI Command Reference

Agilent Technologies

Notices

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- Basic Digital Operation - No BBG Option Installed
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Programming Guide

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- Basic Function Commands
- LXI System Commands
- System Commands
- Analog Modulation Commands
- Arb Commands
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- N5161A/62A/81A/82A SCPI Command Compatibility
- N5183A SCPI Command Compatibility

Service Guide	• Troubleshooting • Replaceable Parts • Assembly Replacement • Post-Repair Procedures • Safety and Regulatory Information • Instrument History
Key Help[a]	• Key function description • Related SCPI commands

a. Press the **Help** hardkey, and then the key for which you wish help.

1 SCPI Basics

This chapter describes how SCPI information is organized and presented in this guide. An overview of the SCPI language is also provided. This chapter contains the following major sections:

- Command Reference Information on page 1
- SCPI Basics on page 3

Command Reference Information

SCPI Command Listings

The Table of Contents lists the Standard Commands for Programmable Instruments (SCPI) without the parameters. The SCPI subsystem name will generally have the first part of the command in parenthesis that is repeated in all commands within the subsystem. The title(s) beneath the subsystem name is the remaining command syntax. The following example demonstrates this listing:

Communication Subsystem (:SYSTem:COMMunicate)
:LAN:IP
:LAN:SUBNet

The following examples show the complete commands from the above Table of Contents listing:

:SYSTem:COMMunicate:LAN:IP
:SYSTem:COMMunicate:LAN:SUBNet

Key and Data Field Cross Reference

The index is set up so applicable key and data field names can be cross-referenced to the appropriate SCPI command. There are two headings in the index where the key and data field names can be found:

- individual softkey, or data field name (i.e. To look up the communication subsystem topic on Default Gateway softkey refer to Default Gateway softkey.)
- subsystem name (i.e. To look for the Default Gateway softkey (in the Communication Subsystem), refer to the heading labeled: “communication subsystem keys”.)

Supported Field

Within each command section, the “Supported” heading describes which signal generator configurations are supported by the SCPI command. When “All Models” is shown next to this heading, all signal generator configurations are supported by the SCPI command. When “All with Option xxx” is shown next to this heading, only the stated option(s) is supported.

NOTE The internal baseband generator speed upgrade Options 670, 671, and 672 are option upgrades that *require* Option 651 and 652 to have been loaded at the factory (refer to the *Data Sheet* for more information). Any references to 651, 652, or 654 are inclusive of 671, 672, and 674.

SCPI Basics

This section describes the general use of the SCPI language for the Agilent MXG. It is not intended to teach you everything about the SCPI language; the SCPI Consortium or IEEE can provide that level of detailed information. For a list of the specific commands available for the signal generator, refer to the table of contents.

For additional information, refer to the following publications:

- IEEE Standard 488.1-2003, IEEE Standard For Higher Performance Protocol for the Standard Digital Interface for Programmable Instrumentation. New York, NY, 2003.
- IEEE Standard 488.2-1992, IEEE Standard Codes, Formats, Protocols and Command Commands for Use with ANSI/IEEE Standard 488.1-1987. New York, NY, 1998.

Common Terms

The following terms are used throughout the remainder of this section:

Command	A command is an instruction in SCPI consisting of mnemonics (keywords), parameters (arguments), and punctuation. You combine commands to form messages that control instruments.
Controller	A controller is any device used to control the signal generator, for example a computer or another instrument.
Event Command	Some commands are events and cannot be queried. An event has no corresponding setting; it initiates an action at a particular time.
Program Message	A program message is a combination of one or more properly formatted commands. Program messages are sent by the controller to the signal generator.
Query	A query is a special type of command used to instruct the signal generator to make response data available to the controller. A query ends with a question mark. Generally you can query any command value that you set.
Response Message	A response message is a collection of data in specific SCPI formats sent from the signal generator to the controller. Response messages tell the controller about the internal state of the signal generator.

Command Syntax

A typical command is made up of keywords prefixed with colons (:). The keywords are followed by parameters. The following is an example syntax statement:

```
[:SOURce]:PULM:INTernal:FREQuency <frequency>|MAXimum|MINimum|UP|DOWN
```

In the example above, the `:INTernal:FREQuency` portion of the command immediately follows the `:PULM` portion with no separating space. The portion following the `:INTernal`, `<frequency>|MAXimum|MINimum|UP|DOWN`, are the parameters (argument for the command statement). There is a separating space (white space) between the command and its parameter.

Additional conventions in syntax statements are shown in Table 1-1 and Table 1-2.

Table 1-1 Special Characters in Command Syntax

Characters	Meaning	Example
|	A vertical stroke between keywords or parameters indicates alternative choices. For parameters, the effect of the command varies depending on the choice.	[:SOURce]:AM: MOD DEEP|NORMal DEEP or NORMal are the choices.
[ ]	Square brackets indicate that the enclosed keywords or parameters are optional when composing the command. These implied keywords or parameters will be executed even if they are omitted.	[:SOURce]:FREQuency[:CW]? SOURce and CW are optional items.
< >	Angle brackets around a word (or words) indicate they are not to be used literally in the command. They represent the needed item.	[:SOURce]:FREQuency: STARt <value><unit> In this command, the words <value> and <unit> should be replaced by the actual frequency and unit. :FREQuency:STARt 2.5GHz
{ }	Braces indicate that parameters can optionally be used in the command once, several times, or not at all.	[:SOURce]:LIST: POWer <value>{,<value>} a single power listing: LIST:POWer 5 a series of power listings: LIST:POWer 5,10,15,20

Table 1-2 Command Syntax

Characters, Keywords, and Syntax	Example
Upper-case lettering indicates the minimum set of characters required to execute the command. But, each mode of the command must be in either short form or the complete long form (no in between). Example: Correct: :FREQ :FREQuency Incorrect: :FREQuenc	[:SOURce]:FREQuency[:CW]?, FREQ is the minimum requirement.

Table 1-2 Command Syntax

Characters, Keywords, and Syntax	Example
Lower-case lettering indicates the portion of the command that is optional; it can either be included with the upper-case portion of the command or omitted. This is the flexible format principle called forgiving listening. Refer to "Command Parameters and Responses" on page 7 for more information.	`:FREQuency` Either `:FREQ`, `:FREQuency`, or `:FREQUENCY` is correct.
When a colon is placed between two command mnemonics, it moves the current path down one level in the command tree. Refer to "Command Tree" on page 6 more information on command paths.	`:TRIGger:OUTPut:POLarity?` `TRIGger` is the root level keyword for this command.
If a command requires more than one parameter, you must separate adjacent parameters using a comma. Parameters are not part of the command path, so commas do not affect the path level.	`[:SOURce]:LIST:` `DWELl <value>{,<value>}`
A semicolon separates two commands in the same program message without changing the current path.	`:FREQ 2.5GHz;:POW 10dBm`
White space characters, such as `<tab>` and `<space>`, are generally ignored as long as they do not occur within or between keywords. However, you must use white space to separate the command from the parameter, but this does not affect the current path.	`:FREQ uency` or `:POWer :LEVel` are not allowed. A `<space>` between `:LEVel` and `6.2` is mandatory. `:POWer:LEVel 6.2`

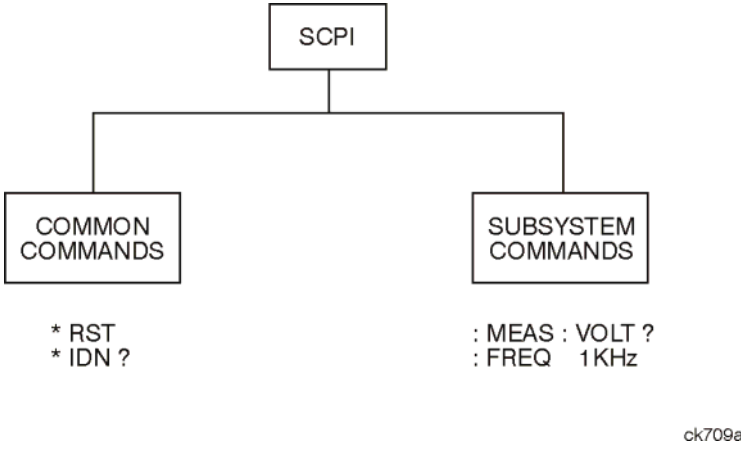
Command Types

Commands can be separated into two groups: common commands and subsystem commands. Figure 1-1, shows the separation of the two command groups.

Common commands are used to manage status registers, synchronization, and data storage and are defined by IEEE 488.2. They are easy to recognize because they all begin with an asterisk. For example `*IDN?`, `*OPC`, and `*RST` are common commands. Common commands are not part of any subsystem and the signal generator interprets them in the same way, regardless of the current path setting.

Subsystem commands are distinguished by the colon (`:`). The colon is used at the beginning of a command statement and between keywords, as in `:FREQuency[:CW?]`. Each command subsystem is a set of commands that roughly correspond to a functional block inside the signal generator. For example, the power subsystem (`:POWer`) contains commands for power generation, while the status subsystem (:STATus) contains commands for controlling status registers.

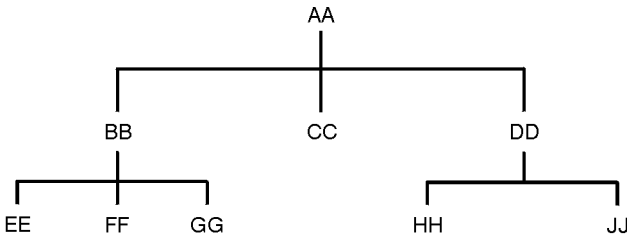
Figure 1-1 Command Types



Command Tree

Most programming tasks involve subsystem commands. SCPI uses a structure for subsystem commands similar to the file systems on most computers. In SCPI, this command structure is called a command tree and is shown in Figure 1-2.

Figure 1-2 Simplified Command Tree



The command closest to the top is the root command, or simply "the root." Notice that you must follow a particular path to reach lower level commands. In the following example, `:POWer` represents AA, `:ALC` represents BB, `:SOURce` represents GG. The complete command path is `:POWer:ALC:SOURce?` (:AA:BB:GG).

Paths Through the Command Tree

To access commands from different paths in the command tree, you must understand how the signal generator interprets commands. The parser, a part of the signal generator firmware, decodes each message sent to the signal generator. The parser breaks up the message into component commands using a set of rules to determine the command tree path used. The parser keeps track of the current path (the level in the command tree) and where it expects to find the next command statement. This is important because the same keyword may appear in different paths. The particular path is determined by the keyword(s) in the command statement.

A message terminator, such as a `<new line>` character, sets the current path to the root. Many programming languages have output statements that automatically send message terminators.

NOTE The current path is set to the root after the line-power is cycled or when `*RST` is sent.

Command Parameters and Responses

SCPI defines different data formats for use in program and response messages. It does this to accommodate the principle of forgiving listening and precise talking. For more information on program data types refer to IEEE 488.2.

Forgiving listening means the command and parameter formats are flexible.

For example, with the `:FREQuency:REFerence:STATe ON|OFF|1|0` command, the signal generator accepts `:FREQuency:REFerence:STATe ON`, `:FREQuency:REFerence:STATe 1`, `:FREQ:REF:STAT ON`, `:FREQ:REF:STAT 1` to turn on the frequency reference mode.

Each parameter type has one or more corresponding response data types. A setting that you program using a numeric parameter returns either real or integer response data when queried. Response data (data returned to the controller) is more concise and restricted, and is called precise talking.

Precise talking means that the response format for a particular query is always the same.

For example, if you query the power state (`:POWer:ALC:STATe?`) when it is on, the response is always 1, regardless of whether you previously sent `:POWer:ALC:STATe 1` or `:POWer:ALC:STATe ON`.

Table 1-3 shows the response for a given parameter type.

Table 1-3 Parameter and Response Types

Parameter Types	Response Data Types
Numeric	Real, Integer
Extended Numeric	Real, Integer
Discrete	Discrete
Boolean	Numeric Boolean
String	String
Definite Block	Arbitrary byte data[a]

a.(i.e. text, binary, discrete, real, integer, etc.-).

Numeric Parameters

Numeric parameters are used in both common and subsystem commands. They accept all commonly used decimal representations of numbers including optional signs, decimal points, and scientific notation.

If a signal generator setting is programmed with a numeric parameter which can only assume a finite value, it automatically rounds any entered parameter which is greater or less than the finite value. For example, if a signal generator has a programmable output impedance of 50 or 75 ohms, and you specified 76.1 for the output impedance, the value is rounded to 75. The following are examples of numeric parameters:

100	no decimal point required
100.	fractional digits optional
–1.23	leading signs allowed
4.56E<space>3	space allowed after the E in exponential
–7.89E–001	use either E or e in exponential
+256	leading + allowed
.5	digits left of decimal point optional

Extended Numeric Parameters

Most subsystems use extended numeric parameters to specify physical quantities. Extended numeric parameters accept all numeric parameter values and other special values as well.

The following are examples of extended numeric parameters:

100	any simple numeric value
1.2GHz	GHz can be used for exponential (E009)
200MHz	MHz can be used for exponential (E006)
–100mV	negative 100 millivolts
10DEG	10 degrees

Extended numeric parameters also include the following special parameters:

DEFault	resets the parameter to its default value
UP	increments the parameter
DOWN	decrements the parameter
MINimum	sets the parameter to the smallest possible value
MAXimum	sets the parameter to the largest possible value

Discrete Parameters

Discrete parameters use mnemonics to represent each valid setting. They have a long and a short form, just like command mnemonics. You can mix upper and lower case letters for discrete parameters.

The following examples of discrete parameters are used with the command `:TRIGger[:SEQuence]:SOURce BUS|IMMediate|EXTernal`.

BUS	GPIB, LAN, or USB triggering
IMMediate	immediate trigger (free run)
EXTernal	external triggering

Although discrete parameters look like command keywords, do not confuse the two. In particular, be sure to use colons and spaces properly. Use a colon to separate command mnemonics from each other and a space to separate parameters from command mnemonics.

The following are examples of discrete parameters in commands:

```
TRIGger:SOURce BUS

TRIGger:SOURce IMMediate

TRIGger:SOURce EXTernal
```

Boolean Parameters

Boolean parameters represent a single binary condition that is either true or false. The two-state boolean parameter has four arguments. The following list shows the arguments for the two-state boolean parameter:

ON	boolean true, upper/lower case allowed
OFF	boolean false, upper/lower case allowed
1	boolean true
0	boolean false

String Parameters

String parameters allow ASCII strings to be sent as parameters. Single or double quotes are used as delimiters.

The following are examples of string parameters:

```
'This is valid'

"This is also valid"

'SO IS THIS'
```

Real Response Data

Real response data represent decimal numbers in either fixed decimal or scientific notation. Most high-level programming languages that support signal generator input/output (I/O) handle either decimal or scientific notation transparently.

The following are examples of real response data:

+4.000000E+010, –9.990000E+002

–9.990000E+002

+4.0000000000000E+010

+1

0

Integer Response Data

Integer response data are decimal representations of integer values including optional signs. Most status register related queries return integer response data.

The following are examples of integer response data:

0	signs are optional
+100	leading + allowed
–100	leading – allowed
256	never any decimal point

Discrete Response Data

Discrete response data are similar to discrete parameters. The main difference is that discrete response data only returns the short form of a particular mnemonic, in all upper case letters.

The following are examples of discrete response data:

IMM

EXT

INT

NEG

Numeric Boolean Response Data

Boolean response data returns a binary numeric value of one or zero.

String Response Data

String response data are similar to string parameters. The main difference is that string response data returns double quotes, rather than single quotes. Embedded double quotes may be present in string response data. Embedded quotes appear as two adjacent double quotes with no characters between them.

The following are examples of string response data:

```
"This is a string"

"one double quote inside brackets: [""]"

"Hello!"
```

Program Messages

The following commands will be used to demonstrate the creation of program messages:

[:SOURce]:FREQuency:STARt	[:SOURce]:FREQuency:STOP
[:SOURce]:FREQuency[:CW]	[:SOURce]:POWer[:LEVel]:OFFSet

Example 1

```
:FREQuency:STARt 500MHz;STOP 1000MHz
```

This program message is correct and will not cause errors; STARt and STOP are at the same path level. It is equivalent to sending the following message:

```
FREQuency:STARt 500MHz;FREQuency:STOP 1000MHz
```

Example 2

```
:POWer 10DBM;:OFFSet 5DB
```

This program message will result in an error. The message makes use of the default POWer[:LEVel] node (root command). When using a default node, there is no change to the current path position. Since there is no command OFFSet at the root level, an error results.

The following example shows the correct syntax for this program message:

```
:POWer 10DBM;:POWer:OFFSet 5DB
```

Example 3

```
:POWer:OFFSet 5DB;POWer 10DBM
```

This program message results in a command error. The path is dropped one level at each colon. The first half of the message drops the command path to the lower level command OFFSet; POWer does not exist at this level.

The POWer 10DBM command is missing the leading colon and when sent, it causes confusion because the signal generator cannot find POWer at the POWer:OFFSet level. By adding the leading colon, the current path is reset to the root. The following shows the correct program message:

```
:POWer:OFFSet 5DB;:POWer 10DBM
```

Example 4

```
FREQ 500MHz;POW 4DBM
```

In this example, the keyword short form is used. The program message is correct because it utilizes the default nodes of :FREQ[:CW] and :POW[:LEVel]. Since default nodes do not affect the current path, it is not necessary to use a leading colon before FREQ or POW.

File Name Variables

File name variables designate a data file and file path. File name variables are used in the SCPI command syntax whenever files are accessed. The name of the file is always required, but the file path can sometimes be optional or be designated using different formats. The following table shows these different file path formats:

Format	File Name Variable	Example
Format 1	"<file name>"	"Test_Data"
Format 2	"<file name@msus>"	"Test_Data@SEQ"[a]
Format 3	"<msus:file name>"	"SEQ:Test_Data"
Format 4	"</user/directory/file name>"	"/USER/SEQ/Test_Data"

a. Included for backwards compatibility. Not a recommended syntax.

Formats 2–4 offer programming flexibility and are equivalent. Format 1 can only be used with SCPI commands that imply the path name as part of the command syntax. Typically, SCPI load commands that access user-data files do not need to have a file path designated.

See Table 1-4 on page 15 for information on file types and directories.

NOTE The maximum length for a file name is 23 characters, excluding the file path.

Example Using Format 1

```
:CORR:FLAT:LOAD "FLAT_DATA"
```

The preceding example loads user-flatness data from a file called FLAT_DATA located in the USERFLAT directory. No file path is needed as the command syntax implies the directory where the file is located.

Example Using Format 2

```
:MEM:COPY "IQ_DATA@SNVWFM","Test_DATA@WFM1"
```

The preceding example copies a file named IQ_DATA located in the WAVEFORM directory to a file named Test_DATA in volatile waveform memory (BBG).

Example Using Format 3

```
:MEM:COPY "SNVWFM:IQ_DATA","WFM1:Test_DATA"
```

The preceding example copies a file named IQ_DATA located in the WAVEFORM directory to a file named Test_DATA in volatile waveform memory (BBG).

Example Using Format 4

```
:MEM:COPY "/USER/WAVEFORM/IQ_DATA","/USER/BBG1/WAVEFORM/IQ_DATA"
```

The preceding example copies a file named IQ_DATA located in the WAVEFORM directory to a file named IQ_DATA in volatile waveform memory (BBG).

The following examples show commands, with different formats, that can be used to download a waveform file named Test_Data into the signal generator's volatile waveform memory (BBG):

Command Syntax Format 3

```
:MEMory:DATA "WFM1:Test_Data",#ABC
```

Command Syntax Format 4

```
:MEMory:DATA "/USER/BBG1/WAVEFORM/Test_Data",#ABC
```

These commands are equivalent. The data block, #ABC, is described as follows:

#	This character indicates the beginning of the data block
A	Number of digits in the byte count B
B	Byte count in C
C	Waveform data

Refer to ":DATA" on page 181 and the Programming Guide for more information on data blocks and downloading waveform data.

File Types and Directory Structure

The signal generator uses a computer directory model structure for file storage. The top level directory is called the USER directory. All other directories are subdirectories located under the USER directory. Each subdirectory is dedicated to the type of data stored. For example, the BIN directory is used to store binary data whereas the MARKERS directory is used to store marker data.

NOTE When the USB media is used, the files on the USB media are stored in a single directory (i.e. USER/). Each file has an extension (i.e. .waveform, .list, .markers, .state, etc.-). The SCPI commands use the paths shown in Table 1-4 on page 15 and the associated examples. But when viewed, the USB media, will not display these directories. Instead the file extensions will be displayed. For more information on the USB media capability refer to the *Programming Guide* and to the *Users Guide*.

The instrument's directory /USER/NONVOLATILE contains either the internal storage and USB media non-volatile files stored with the filename extensions: .waveform, .list, .markers, .state, etc.-. This directory is useful when ftp is used.

The following table lists signal generator the subdirectories and file paths where file types are stored.

Table 1-4 File Types and Directory Structures

File System	File Type	File Path	MSUS Path
BINARY[a]	BIN	/USER/BIN	BINARY:
HDR1 - volatile arbitrary waveform header file[a]	HDR1	/USER/BBG1/HEADER	HDR1:
LIST - sweep list file	LIST	/USER/LIST	LIST:
MKR1 - volatile arbitrary waveform marker file[a]	MKR1	/USER/BBG1/MARKERS	MKR1:
NVHDR - non-volatile arbitrary waveform header file[a]	NVHDR	/USER/HEADER	NVHDR:
NVMKR - non-volatile arbitrary waveform marker file[a]	NVMKR	/USER/MARKERS	NVMKR:
NVWFM - non-volatile arbitrary waveform file[a]	NVWFM	/USER/WAVEFORM	NVWFM:
SEQ - ARB sequence file[a]	SEQ	/USER/SEQ	SEQ:
STATE	STATE	/USER/STATE	STATE:
USERFLAT - user-flatness file	UFLT	/USER/USERFLAT	USERFLAT:
WFM1 - volatile waveform file[a]	WAVEFORM	/USER/BBG1/WAVEFORM	WFM1:

a. This feature does not apply to the N5181A/83A.

MSUS (Mass Storage Unit Specifier) Variable

The variable "<msus>" enables a command to be file type specific when working with user files. Some commands use it as the only command parameter, while others can use it in conjunction with a file name when a command is not file type specific. When used with a file name, it is similar to Format 2 in the File Name Variables section on page 13. The difference is the file type specifier (msus) occupies its own variable and is not part of the file name syntax.

The following examples illustrate the usage of the variable "<msus>" when it is the only command parameter:

Command Syntax with the msus variable

```
:MMEMory:CATalog? "<msus>"
```

Command Syntax with the file system

```
:MMEMory:CATalog? "LIST:"
```

The variable "<msus>" is replaced with "LIST:". When the command is executed, the output displays only the files from the List file system.The following examples illustrate the usage of the variable "<file name>" with the variable "<msus>":

Command Syntax with the file name and msus variables

```
:MMEMory:DELete[:NAME] "<file name>",["<msus>"]
```

Command Syntax with the file name and file system

```
:MMEMory:DELete:NAME "LIST_1","LIST:"
```

The command from the above example cannot discern which file system LIST_1 belongs to without a file system specifier and will not work without it. When the command is properly executed, LIST_1 is deleted from the List file system.

The following example shows the same command, but using Format 2 from the File Name Variables section on page 13:

```
:MMEMory:DELete:NAME "LIST_1@LIST"
```

When a file name is a parameter for a command that is not file system specific, either format ("<file name>","<msus>" or "<file name@msus>") will work.

Refer to Table 1-4 on page 15 for a listing of the file systems and types.

Quote Usage with SCPI Commands

As a general rule, programming languages require that SCPI commands be enclosed in double quotes as shown in the following example:

```
":FM:EXTernal:IMPedance 600"
```

However when a string is the parameter for a SCPI command, additional quotes or other delimiters may be required to identify the string. Your programming language may use two sets of doublequotes, one set of single quotes, or back slashes with quotes to signify the string parameter. The following examples illustrate these different formats:

`"MEMory:LOAD:LIST ""myfile"""` used in BASIC programming languages

`"MEMory:LOAD:LIST \"myfile\""` used in C, C++, Java, and PERL

`"MEMory:LOAD:LIST 'myfile'"` accepted by most programming languages

Consult your programming language reference manual to determine the correct format.

Binary, Decimal, Hexadecimal, and Octal Formats

Command values may be entered using a binary, decimal, hexadecimal, or octal format. When the binary, hexadecimal, or octal format is used, their values must be preceded with the proper identifier. The decimal format (default format) requires no identifier and the signal generator assumes this format when a numeric value is entered without one. The following list shows the identifiers for the formats that require them:

- #B identifies the number as a binary numeric value (base-2).
- #H identifies the number as a hexadecimal alphanumeric value (base-16).

- #Q identifies the number as a octal alphanumeric value (base-8).

The following are examples of SCPI command values and identifiers for the decimal value 45:

#B101101	binary equivalent
#H2D	hexadecimal equivalent
#Q55	octal equivalent

The following example sets the RF output power to 10 dBm (or the equivalent value for the currently selected power unit, such as DBUV or DBUVEMF) using the hexadecimal value 000A:

```
:POW #H000A
```

A unit of measure, such as dBm or mV, will not work with the values when using a format other than decimal.

SCPI Basics

2 Basic Function Commands

This chapter provides SCPI descriptions for subsystems dedicated to signal generator operations common to most Agilent MXG Signal Generators.

NOTE The internal baseband generator speed upgrade Options 670, 671, and 672 are option upgrades that *require* Option 651 and 652 to have been loaded at the factory (refer to the *Data Sheet* for more information). Any references to 651, 652, or 654 are inclusive of 671, 672, and 674.

This chapter contains the following major sections:

- Correction Subsystem ([:SOURce]:CORRection) on page 20
- Digital Modulation Subsystem–N5162A/82A ([:SOURce]) on page 27
- Frequency Subsystem ([:SOURce]) on page 38
- List/Sweep Subsystem ([:SOURce]) on page 48
- Fast Subsystem (:FAST) on page 58
- Marker Subsystem–(N5183A Only)([:SOURce]) on page 59
- Power Subsystem ([:SOURce]:POWer) on page 62

Correction Subsystem ([:SOURce]:CORRection)

:FLATness:FREQuency

Supported All Models

`[:SOURce]:CORRection:FLATness:FREQuency? <point>`

This command returns the frequency value of the <point> queried.

You can load only one user flatness file at a time.

Range 1 to 3,201

Key Entry **# Points**

:FLATness:INITialize:FSTep

Supported All Models

CAUTION The current flatness data will be overwritten once this command is executed. If needed, save the current data. Refer to the :FLATness:STORe command for storing user flatness files.

`[:SOURce]:CORRection:FLATness:INITialize:FSTep`

This command replaces the loaded user flatness data with the settings from the current step array data points.

You can load only one user flatness file at a time.

The maximum number of user flatness points is 3,201. When copying the step array settings over to a user flatness file, ensure that the number of points in the step array do not exceed the maximum user flatness points.

See also ":FLATness:STEP:POINts" on page 22.

Range 2 to 3,201

Key Entry **Load Cal Array From Step Array**

Key Path **AMPTD** > **More 2 of 3** > **User Flatness** > **Configure Cal Array** > **More 2 of 2** > **Load Cal Array From Step Array**

:FLATness:LOAD

Supported All Models

```
[:SOURce]:CORRection:FLATness:LOAD "<file name>"
```

This command loads a user–flatness correction file. The "<file name>" variable is the name of the file located in the Catalog of USERFLAT Files. The directory path is implied in the command and need not be specified in the variable name. For more information on file name syntax, refer to "File Name Variables" on page 13.

Key Entry **Load From Selected File**

Key Path **AMPTD > More 2 of 3 > User Flatness > Configure Cal Array > Load/Store > Load From Selected File**

:FLATness:PAIR

Supported All Models

```
[:SOURce]:CORRection:FLATness:PAIR <freq.>[<freq suffix>],
<corr.>[<corr suffix>]
```

This command sets a frequency and amplitude correction pair.

The maximum number of points that can be entered is 3,201.

<corr.> This variable is the power correction.

Range Frequency range varies and is model dependent. Refer to the instrument's *Data Sheet*.

Key Entry **Configure Cal Array**

Key Path **AMPTD > More 2 of 3 > User Flatness > Configure Cal Array**

:FLATness:POINts

Supported All Models

```
[:SOURce]:CORRection:FLATness:POINts?
```

This query returns the number of points in the user–flatness correction file.

:FLATness:PRESet

Supported All Models

CAUTION The current correction data will be overwritten once this command is executed. Save the current data if needed. Refer to :FLATness:STORe command for storing user–flatness files.

```
[:SOURce]:CORRection:FLATness:PRESet
```

This command presets the user–flatness correction to a factory–defined setting that consists of one point.

Key Entry **Preset List**

Key Path **AMPTD** > **More 2 of 3** > **User Flatness** > **Configure Cal Array** > **More 2 of 2** > **Preset List**

:FLATness:STEP:POINts

Supported All Models

```
[:SOURce]:CORRection:FLATness:STEP:POINts <points> |MAXimum|MINimum|DEFault|
[:SOURce]:CORRection:FLATness:STEP:POINts?[MAXimum|MINimum]
```

This command is used to define the number of points in the user flatness calibration step array.

See also :FLATness:STEP:STARt and :FLATness:STEP:STOP commands.

***RST** 2

Range 2 to 3,201

Key Entry **# Points**

Key Path **AMPTD** > **More 2 of 3** > **User Flatness** > **Configure Cal Array** > **More 2 of 2** > **Configure Step Array** > **# Points**

:FLATness:STEP:STARt

Supported All Models

```
[:SOURce]:CORRection:FLATness:STEP:STARt <freq><unit> |MAXimum|MINimum|DEFault|
[:SOURce]:CORRection:FLATness:STEP:STARt? [MAXimum|MINimum]
```

This command sets the start frequency for the user flatness calibration step array. See also, :FLATness:STEP:POINts and :FLATness:STEP:STOP commands.

***RST** The preset value is model/option dependent. Refer to the instrument's *Data Sheet*.

Range The range is model/option dependent. Refer to the instrument's *Data Sheet*.

Key Entry **Freq Start**

Key Path **AMPTD** > **More 2 of 3** > **User Flatness** > **Configure Cal Array** > **More 2 of 2** > **Configure Step Array** > **Freq Start**

:FLATness:STEP:STOP

Supported All Models

```
[:SOURce]:CORRection:FLATness:STEP:STOP <freq><unit> |MAXimum|MINimum|DEFault|
[:SOURce]:CORRection:FLATness:STEP:STOP? [MAXimum|MINimum]
```

This command sets the stop frequency for the user flatness calibration step array. See also, :FLATness:STEP:POINts and :FLATness:STEP:STARt commands.

***RST** The preset value is model/option dependent. Refer to the instrument's *Data Sheet*.

Range The range is model/option dependent. Refer to the instrument's *Data Sheet*.

Key Entry **Freq Stop**

Key Path **AMPTD** > **More 2 of 3** > **User Flatness** > **Configure Cal Array** > **More 2 of 2** > **Configure Step Array** > **Freq Stop**

:FLATness:STORe

Supported All Models

```
[:SOURce]:CORRection:FLATness:STORe "<file name>"
```

This command stores the current user–flatness correction data to a file named by the :CORRection:FLATness:STORe command. The directory path is implied in the command and need not be specified in the "<file name>" variable.

Key Entry **Store To File**

Remarks For information on file name syntax, refer to "File Name Variables" on page 13.

:PMETer:CHANnel

Supported All Models

```
[:SOURce]:CORRection:PMETer:CHANnel A|B
[:SOURce]:CORRection:PMETer:CHANnel?
```

This command selects the channel setting on the external power meter for user flatness calibration.

Default Channel A

Key Entry **Power Meter Channel A B**

Key Path **AMPTD** > **More 2 of 3** > **User Flatness** > **Configure Power Meter** > **Power Meter Channel A B**

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

:PMETer:COMMunicate:LAN:DEVice

Supported All Models

```
[:SOURce]:CORRection:PMETer:COMMunicate:LAN:DEVice <deviceName>
[:SOURce]:CORRection:PMETer:COMMunicate:LAN:DEVice?
```

This command enters a VXI–11 device name for a power meter that is being controlled by the signal

generator for user flatness calibration. If connecting directly to the power meter, enter the name as specified on your power meter documentation. If connecting through a LAN–GPIB gateway, enter the SICL address of the power meter.

Key Entry **PM VXI–11 Device Name**

Key Path **AMPTD** > **More 2 of 3** > **User Flatness** > **Configure Power Meter** > **Connection Settings** > **Connection Type** > **VXI-11** > **PM VXI–11 Device Name**

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

:PMETer:COMMunicate:LAN:IP

Supported All Models

```
[:SOURce]:CORRection:PMETer:COMMunicate:LAN:IP <ipAddress>
[:SOURce]:CORRection:PMETer:COMMunicate:LAN:IP?
```

This command sets the internet protocol (IP) address for a power meter that is controlled by the signal generator for user flatness calibration. If connecting to a GPIB power meter through a LAN–GPIB gateway, this command sets the IP address of the gateway.

Key Entry **Power Meter IP Address**

Key Path **AMPTD** > **More 2 of 3** > **User Flatness** > **Configure Power Meter** > **Connection Settings** > **Connection Type** > **VXI-11** or **Sockets** > **Power Meter IP Address**

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

Ensure that the power meter IP address is different from the signal generator address.

:PMETer:COMMunicate:LAN:PORT

Supported All Models

```
[:SOURce]:CORRection:PMETer:COMMunicate:LAN:PORT <portNumber>
[:SOURce]:CORRection:PMETer:COMMunicate:LAN:PORT?
```

This command sets the IP port number on the power meter that is controlled by the signal generator for users flatness calibration.

Key Entry **Power Meter IP Port**

Key Path **AMPTD** > **More 2 of 3** > **User Flatness** > **Configure Power Meter** > **Connection Settings** > **Connection Type** > **Sockets** > **Power Meter IP Port**

`5025` Standard mode. The command enables standard mode for simple programming.

`5024` Telnet mode. The command enables the telnet SCPI service for programming.

NOTE For firmware versions <A.01.51, the default telnet mode is 5023. For firmware versions A.01.51 and greater, telnet port 5023 is still available for backwards compatibility.

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

For more information on standard mode and telnet SCPI mode, refer to the *Programming Guide*.

:PMETer:COMMunicate:TYPE

Supported All Models

```
[:SOURce]:CORRection:PMETer:COMMunicate:TYPE SOCKets|SOCKETS|VXI11|USB
[:SOURce]:CORRection:PMETer:COMMunicate:TYPE?
```

This command sets the type of control connection for communication with the external power meter for user flatness calibration.

Default Sockets

Key Entry **Connection Type**

Key Path **AMPTD > More 2 of 3 > User Flatness > Configure Power Meter > Connection Settings > Connection Type**

SOCKets or SOCKETS — The command enables the power meter for sockets LAN control through the signal generator.

VXI11 — The command enables the power meter for VXI-11 control through the signal generator. A power meter with GPIB can be controlled through VXI-11 using a LAN-GPIB gateway.

USB — The command enables the power meter for USB control through the signal generator.

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

:PMETer:COMMunicate:USB:DEVice

Supported All Models

```
[:SOURce]:CORRection:PMETer:COMMunicate:USB:DEVice <device>
[:SOURce]:CORRection:PMETer:COMMunicate:USB:DEVice?
```

This command selects the USB device to be used for user flatness calibration. The query returns the USB device identification.

Key Entry **USB Device**

Key Path **AMPTD > More 2 of 3 > User Flatness > Configure Power Meter > Connection Settings > Connection Type USB > USB Device**

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

:PMETer:COMMunicate:USB:LIST?

Supported All Models

```
[:SOURce]:CORRection:PMETer:COMMunicate:USB:LIST?
```

The query returns a listing of all connected USB devices.

Key Entry **USB Device**

Key Path **AMPTD > More 2 of 3 > User Flatness > Configure Power Meter > Connection Settings > Connection Type USB > USB Device**

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

[:STATe]

Supported All Models

```
[:SOURce]:CORRection[:STATe] ON|OFF|1|0
[:SOURce]:CORRection[:STATe]?
```

This command enables or disables the user–flatness corrections.

***RST** 0

Key Entry **Flatness Off On**

Key Path **AMPTD > More 2 of 3 > User Flatness > Flatness Off On**

Digital Modulation Subsystem—N5162A/82A ([:SOURce])

:BURSt:STATe

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:BURSt:STATe ON|OFF|1|0
[:SOURce]:BURSt:STATe?
```

This command enables or disables the burst envelope function.

***RST** 0

Key Entry **Burst Envelope Off On**

Key Path **I/Q > More 2 of 2 > Burst Envelope Off On**

:DM:CORRection:OPTimization

Supported N5162A/82A

```
[:SOURce]:DM:CORRection:OPTimization RFOut|EXTernal
[:SOURce]:DM:CORRection:OPTimization?
```

This command enables the internal optimized path to accommodate I/Q signals.

EXT This choice applies correction terms to provide a calibrated signal at the IQ output. When the I/Q Output is selected, the RF signals at the RF Output are uncalibrated.

RFO This choice applies correction terms to provide a calibrated signal at the RF output. When the RF Output is selected, the I/Q signals at the I/Q Output are uncalibrated.

***RST** RFO

Key Entry **Correction Optimized Path**

Key Path **I/Q > Correction Optimized Path > RF Output | Ext I/Q Output**

:DM:EXTernal:POLarity

Supported N5162A/82A

```
[:SOURce]:DM:EXTernal:POLarity NORMal|INVert|INVerted
[:SOURce]:DM:EXTernal:POLarity?
```

This command, for backward compatibility with older ESG E44xxB models, selects normal or inverted I/Q signal routing. In the inverted mode, the Q input is routed to the I modulator and the I input is routed to the Q modulator.

Example

```
:DM:EXT:POL INV
```

The preceding example inverts I and Q signal routing.

***RST** NORM

Key Entry **Int Phase Polarity Normal Invert**

Key Path **I/Q > More 2 of 2 > Int Phase Polarity Normal Invert**

:DM:INTernal:CHANnel:CORRection[:STATe]

Supported N5162A/82A with Options 651, 652, or 654

```
[:SOURce]:DM:INTernal:CHANnel:CORRection[:STATe] ON|OFF|1|0
[:SOURce]:DM:INTernal:CHANnel:CORRection[:STATe]?
```

This command enables and disables the RF and baseband magnitude and phase corrections across the 100 MHz baseband bandwidth, at the current frequency. This command can only be executed if there has been an internal channel correction calibration run on the instrument (See also ":BBG:CHANnel" on page 150).

When this feature is on, arbitrary frequency switching while the baseband is on will take up to an additional 72 ms(typical) to 290 ms the first time that frequency is specified. After the first time that a frequency is selected, switching to that frequency again takes an additional 1 ms. Up to 256 unique frequencies can be cached before the oldest cache is forgotten. If a frequency sweep is activated, then the calculation and caching will occur up front for the first 256 unique frequencies and all further unique frequencies will have the characteristics of arbitrary frequency switching.

If the I/Q correction optimized path is set to Ext I/Q Output, then only the baseband corrections are applied and the frequency switching is unaffected.

This correction is convolved with the ACP internal I/Q channel optimization filter and the equalization filter, if they are active. The resulting filter is truncated to 256 taps.

Example

```
:DM:INT:CHAN:CORR ON
```

If an internal channel correction calibration has been executed on the instrument, the preceding example enables the internal channel correction calibration. See also ":BBG:CHANnel" on page 150.

Key Entry **Int Channel Correction Off On**

Key Path **I/Q > More > More > Int Channel Correction Off On**

:DM:INTernal:CHANnel:OPTimization

Supported N5162A/82A

```
[:SOURce]:DM:INTernal:CHANnel:OPTimization EVM|ACP
[:SOURce]:DM:INTernal:CHANnel:OPTimization?
```

This command selects between optimizing the internal I/Q channel for EVM (in channel performance) at the expense of ACP (out of channel performance) or optimizing for ACP at the expense of EVM.

EVM is an 80% Nyquist filter (100 MHz wide) with a wide transition band. When an equalization filter is active, this filter is not active.

ACP is an 80% Nyquist filter (100 MHz wide) with a narrow transition band, thus reducing images for wide-band signals. This filter will be convolved with the active equalization filter, the result of which will be truncated to the center 256 taps.

***RST** EVM

Key Entry **Optimize Int I/Q Channel EVM ACP**

Key Path **I/Q > More 2 of 2 > Optimize Int I/Q Channel EVM ACP**

:DM:INTernal:EQUalization:FILTer:SELect

Supported N5162A/82A

```
[:SOURce]:DM:INTernal:EQUalization:FILTer:SELect "Filter"
[:SOURce]:DM:INTernal:EQUalization:FILTer:SELect?
```

This command selects the FIR file to use as the equalization filter. Equalization filters are typically complex and must have an oversample ratio of 1. The filter must not have more than 256 taps (512 coefficients for a complex filter). The equalization filter operates at 125 MHz, so all equalization filters must be resampled to 125 MHz if they are sampled at some other rate.

***RST** No file selected

Key Entry **Select Filter**

Key Path **I/Q > More 2 of 2 > Int Equalization Filter (Off) > Select Filter**

:DM:INTernal:EQUalization:FILTer:STATe

Supported N5162A/82A

```
[:SOURce]:DM:INTernal:EQUalization:FILTer:STATe ON|OFF|1|0
[:SOURce]:DM:INTernal:EQUalization:FILTer:STATe?
```

This command enables or disables the I/Q internal equalization filter. This filter can be used to correct and/or impair the RF and external I/Q outputs for the internal I/Q source. This filter will be convolved with the ACP internal I/Q Channel Optimization filter if that filter is selected, the result of which will be truncated to the center 256 taps. The equalization filter operates at 125 MHz, so all equalization filters must be resampled to 125 MHz if they are sampled at some other rate.

NOTE Applying I/Q Delay or I/Q Timing Skew will reduce the actual number of coefficients available in the hardware by 2 taps for every integral step of 8 ns of delay or 16 ns of skew.

***RST** Off

Key Entry **Int Equalization Off On**

Key Path **I/Q > More 2 of 2 > Int Equalization Filter (Off) > Int Equalization Filter Off On**

:DM:IQADjustment:DELay

Supported N5162A/82A

```
[:SOURce]:DM:IQADjustment:DELay <value><unit>
[:SOURce]:DM:IQADjustment:DELay?
```

This command enables you to change the absolute phase of both I and Q with respect to triggers and markers. A positive value delays I and Q. This value affects both the external I/Q out signals and the baseband signal modulated on the RF output. This adjustment does not affect external I/Q inputs.

The variable <value> is expressed in seconds.

***RST** +0.00000000E+000

Range –400 to 400 nanoseconds (ns)

Key Entry **I/Q Delay**

Remarks This command is effective only if the state of the I/Q adjustment function is set to ON. Refer to the :DM:IQADjustment[:STATe] command.

:DM:IQADjustment:EXTernal:CMRange

Supported N5162A/82A

```
[:SOURce]:DM:IQADjustment:EXTernal:CMRange COARse|FINE
[:SOURce]:DM:IQADjustment:EXTernal:CMRange?
```

This command sets the common mode offset range voltage (COARse or FINE) for both the in–phase (I) and quadrature–phase (Q) signals going out of the rear panel I and Q output connectors.

The common mode offset range is expressed in units of volts (mV–V). The COARse range corresponds to a pre–existing adjustment range of ±2.5 V. When the FINE range is enabled, the common mode offset is limited to ±100 mV.

***RST** COAR

Range –2.5 to 2.5 V (Coarse), –100 to 100 mV (Fine)

Key Entry **Common Mode I/Q Offset Range**

Remarks This command is effective only if the state of the I/Q adjustment function is set to on. Refer to the :DM:IQADjustment[:STATe] command.

:DM:IQADjustment:EXTernal:COFFset

Supported N5162A/82A

```
[:SOURce]:DM:IQADjustment:EXTernal:COFFset <value>
[:SOURce]:DM:IQADjustment:EXTernal:COFFset?
```

This command sets the common mode offset voltage for both the in–phase (I) and quadrature–phase (Q) signals going to the rear panel I and Q output connectors.

The variable <value> is expressed in units of volts (mV–V).

***RST** +0.00000000E+000

Range –2.5 to 2.5 V

Key Entry **Common Mode I/Q Offset**

Remarks This command is effective only if the state of the I/Q adjustment function is set to ON. Refer to the :DM:IQADjustment[:STATe] command.

:DM:IQADjustment:EXTernal:DIOFfset

Supported N5162A/82A

```
[:SOURce]:DM:IQADjustment:EXTernal:DIOFfset <value>
[:SOURce]:DM:IQADjustment:EXTernal:DIOFfset?
```

This command sets the differential offset voltage for an in–phase (I) signal routed to the I output connectors.

The variable <value> is expressed in units of volts (mV–V).

***RST** +0.00000000E+000

Range –25 to 25 mV

Key Entry **Diff. Mode I Offset**

Remarks This command is effective only if the state of the I/Q adjustment function is set to ON. Refer to the :DM:IQADjustment[:STATe] command.

:DM:IQADjustment:EXTernal:DQOFfset

Supported N5162A/82A

```
[:SOURce]:DM:IQADjustment:EXTernal:DQOFfset <value>
[:SOURce]:DM:IQADjustment:EXTernal:DQOFfset?
```

This command sets the differential offset voltage for a quadrature–phase (Q) signal routed to the Q output connectors.

***RST** +0.00000000E+000

Range –25 to 25 mV

Key Entry **Diff. Mode Q Offset**

Remarks This command is effective only if the state of the I/Q adjustment function is set to ON. Refer to the :DM:IQADjustment[:STATe] command.

:DM:IQADjustment:EXTernal:IOFFset

Supported N5162A/82A

```
[:SOURce]:DM:IQADjustment:EXTernal:IOFFset <value>
[:SOURce]:DM:IQADjustment:EXTernal:IOFFset?
```

This command sets the offset voltage for a signal applied to the 600 ohm I input connector.

The variable <value> is expressed in units of volts (mV–V).

***RST** +0.00000000E+000

Key Entry **External Input I Offset**

Range –100 to 100 mV

Remarks This command is effective only if the state of the I/Q adjustment function is set to ON. Refer to the :DM:IQADjustment[:STATe] command.

:DM:IQADjustment:EXTernal:QOFFset

Supported N5162A/82A

```
[:SOURce]:DM:IQADjustment:EXTernal:QOFFset <value>
[:SOURce]:DM:IQADjustment:EXTernal:QOFFset?
```

This command sets the offset voltage for a signal applied to the 600 ohm Q input connector.

The variable <value> is expressed in units of volts (mV–V).

***RST** +0.00000000E+000

Range –100 to 100 mV

Key Entry **External Input Q Offset**

Remarks This command is effective only if the state of the I/Q adjustment function is set to ON. Refer to the :DM:IQADjustment[:STATe] command.

:DM:IQADjustment:EXTernal:QSKew

Supported N5162A/82A

```
[:SOURce]:DM:IQADjustment:EXTernal:QSKew <value>
[:SOURce]:DM:IQADjustment:EXTernal:QSKew?
```

CAUTION This Q phase angle adjustment is uncalibrated.

This command adjusts the phase angle (quadrature skew) between the I and Q vectors by increasing or decreasing the Q phase angle. This command adjusts the signals externally input to the signal generator's front panel Q input connector. For more information on this connector, refer to the User's Guide.

The <value> variable is expressed in degrees with a minimum resolution of 0.1.

If the signal generator is operating at frequencies greater than 3.3 GHz, quadrature skew settings greater than ±5 degrees will not be within specifications.

Positive skew increases the angle from 90 degrees while negative skew decreases the angle from 90 degrees. When the quadrature skew is zero, the phase angle between the I and Q vectors is 90 degrees.

This command is effective only if the state of the I/Q adjustment function is set to ON. Refer to the :DM:IQADjustment[:STATe] command.

Example

```
:DM:IQAD:EXT:QSK 4.5
```

The preceding example increases the phase angle by 4.5 degrees.

***RST** +0.00000000E+000

Range –200 to +200

Key Entry **Quadrature Angle Adjustment**

:DM:IQADjustment:GAIN

Supported N5162A/82A

```
[:SOURce]:DM:IQADjustment:GAIN <value><unit>
[:SOURce]:DM:IQADjustment:GAIN?
```

This command adjusts the ratio of I to Q while preserving the composite, vector magnitude. Adding gain (+x dB) to the signal increases the I component and decreases the Q component proportionally. Reducing gain (–x dB) decreases the I component and increases the Q component proportionally.

The variable <value> is expressed in units of decibels (dB).

***RST** +0.00000000E+000

Range –1 to 1

Key Entry **I/Q Gain Balance**

Remarks This command is effective only if the state of the I/Q adjustment function is set to ON. Refer to the :DM:IQADjustment[:STATe] command.

:DM:IQADjustment:IOFFset

Supported N5162A/82A

```
[:SOURce]:DM:IQADjustment:IOFFset <value><unit>
[:SOURce]:DM:IQADjustment:IOFFset?
```

This command adjusts the I channel offset value.

When using this command to minimize the LO feedthrough signal, optimum performance is achieved when the command is sent after all other I/Q path commands are executed, such as those that change the internal phase polarity or adjust the modulator attenuator. If other adjustments are made after minimizing is performed, the LO feedthrough signal may increase.

The variable <value> is expressed in units of percent with a minimum resolution of 0.025.

***RST** +0.00000000E+000

Range –20.000 to 20.000

Key Entry **I Offset**

Remarks This command is effective only if the state of the I/Q adjustment function is set to ON. Refer to the :DM:IQADjustment[:STATe] command.

:DM:IQADjustment:PHASe

Supported N5162A/82A

```
[:SOURce]:DM:IQADjustment:PHASe <value><unit>
[:SOURce]:DM:IQADjustment:PHASe?
```

This feature allows adjustment of the absolute phase of the internal I/Q channel by rotating both I and Q, and so adjusting the relative phase of the RF carrier. For MXG's with Option 012, this is the only way to adjust the phase for a unit with an external LO.

NOTE The I/Q signal will be scaled down by 0.7071 for all phase offsets except 0. Use -360 or +360, if it is desirable to maintain a constant power level with the ALC off while adjusting the I/Q phase.

The variable <value> is expressed in units of degrees with a resolution of 0.01 degrees. <unit> can be nothing or DEG for degrees.

***RST** +0.00000000E+000

Range –360.000 to 360.000

Key Entry **I/Q Phase**

:DM:IQADjustment:QOFFset

Supported N5162A/82A

```
[:SOURce]:DM:IQADjustment:QOFFset
[:SOURce]:DM:IQADjustment:QOFFset?
```

This command adjusts the Q channel offset value.

When using this command to minimize the LO feedthrough signal, optimum performance is achieved when the command is sent after all other I/Q path commands are executed, such as those that change the internal phase polarity or adjust the modulator attenuator. If other adjustments are made after minimizing is performed, the LO feedthrough signal may increase.

The variable <value> is expressed in units of percent with a minimum resolution of 0.025.

***RST** +0.00000000E+000

Range –20.000 to 20.000

Key Entry **Q Offset**

Remarks This command is effective only if the state of the I/Q adjustment function is set to on. Refer to the :DM:IQADjustment[:STATe] command.

:DM:IQADjustment:QSKew

Supported N5162A/82A

```
[:SOURce]:DM:IQADjustment:QSKew <value>
[:SOURce]:DM:IQADjustment:QSKew?
```

This command adjusts the phase angle (quadrature skew) between the I and Q vectors by increasing or decreasing the Q phase angle.

The <value> variable is expressed in degrees with a minimum resolution of 0.1.

If the signal generator is operating at frequencies greater than 3.3 GHz, quadrature skew settings greater than ±5 degrees will not be within specifications.

Positive skew increases the angle from 90 degrees while negative skew decreases the angle from 90 degrees. When the quadrature skew is zero, the phase angle between the I and Q vectors is 90 degrees.

This command is effective only if the state of the I/Q adjustment function is set to ON. Refer to the :DM:IQADjustment[:STATe] command.

Example

```
:DM:IQAD:QSK 4.5
```

The preceding example increases the phase angle by 4.5 degrees.

***RST** +0.00000000E+000

Range –1E1 to +1E1

Key Entry **Quadrature Angle Adjustment**

:DM:IQADjustment:SKEW

Supported N5162A/82A

```
[:SOURce]:DM:IQADjustment:SKEW <value>
[:SOURce]:DM:IQADjustment:SKEW?
```

This command changes the I/Q skew which is a time delay difference between the I and Q signals. Equal and opposite skew is applied to both I and Q and affects the RF Output and I/Q output paths simultaneously. A positive value delays the I signal relative to the Q signal, and a negative value delays the Q signal relative to the I signal.

Example

```
:DM:IQAD:SKEW 5E-9
```

The preceding example sets the time delay difference between the I and Q signals to 5 nanoseconds.

***RST** +0.00000000E+000

Range –800 to +800 ns

Key Entry **I/Q Skew**

Key Path **I/Q > I/Q Adjustments (Off) > Internal Baseband Adjustments > More 2 of 2 > I/Q Skew**

:DM:IQADjustment[:STATe]

Supported N5162A/82A

```
[:SOURce]:DM:IQADjustment[:STATe] ON|OFF|1|0
[:SOURce]:DM:IQADjustment[:STATe]?
```

This command enables or disables the I/Q adjustments.

Example

```
:DM:IQAD 1
```

The preceding example enables I/Q adjustments.

***RST** 0

Key Entry **I/Q Adjustments Off On**

Key Path **I/Q > I/Q Adjustments Off On**

:DM:POLarity[:ALL]

Supported N5162A/82A

```
[:SOURce]:DM:POLarity[:ALL] NORMal|INVert
[:SOURce]:DM:POLarity?
```

This command sets the digital phase polarity.

NORMal This choice selects normal phase polarity for the I and Q signals.

INVert This choice inverts the Q channel signal.

***RST** NORM

Key Entry **Int Phase Polarity Normal Invert**

Key Path **I/Q > More 2 of 2 > Int Phase Polarity Normal Invert**

:DM:SOURce

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:DM:SOURce EXTernal|INTernal|SUM
[:SOURce]:DM:SOURce?
```

This command selects the I/Q modulator source.

This softkey is found under the I/Q menu.

EXTernal — This choice selects a 50 ohm impedance for the I and Q input connectors and routes the applied signals to the I/Q modulator.

INTernal — This choice selects the internal baseband generator as the source for the I/Q modulator and requires Option 651, 652, or 654.

Sum — This choice selects the internal baseband generator and combines that signal with an external source and routes the applied signals to the I/Q modulator and requires Option 651, 652, or 654.

***RST** INT

Key Entry **External** **Internal** **Sum**

:DM:STATe

Supported N5162A/82A

```
[:SOURce]:DM:STATe ON|OFF|1|0
[:SOURce]:DM:STATe?
```

This command enables or disables the I/Q modulator.

The I/Q modulator is enabled whenever a digital format is turned on.

The I/Q annunciator will be shown on the signal generator display whenever the I/Q modulator is on.

ON (1) — This choice enables the internal I/Q modulator.

OFF (0) — This choice disables the internal I/Q modulator. You can turn off the I/Q with this choice even though a digital format is enabled. With this configuration, the RF output signal will not be modulated, but the I/Q signals may be present at the rear panel I and Q outputs depending on the rear panel output selection.

***RST** 0

Key Entry **I/Q Off On**

Frequency Subsystem ([:SOURce])

:FREQuency:CENTer

Supported All Models

```
[:SOURce]:FREQuency:CENTer <num>[<freq_suffix>]|UP|DOWN
[:SOURce]:FREQuency:CENTer? [MAXimum|MINimum]
```

This command sets the center frequency for a step sweep. The center frequency symmetrically divides the selected frequency span and is coupled to the start and stop frequency settings. The frequency range and reset values are dependent on the signal generator model and option number.

The query returns the start and stop frequencies if the optional MAXimum or MINimum are used.

***RST** The preset value is model/option dependent. Refer to the instrument's *Data Sheet*.

Range The range is model/option dependent. Refer to the instrument's *Data Sheet*.

Example

```
:FREQ:CENT .5 GHz
```

The preceding example sets the center frequency for a sweep to .5 GHz.

Key Entry **Freq Center**

:FREQuency:CHANnels:BAND

Supported All Models

```
[:SOURce]:FREQuency:CHANnels:BAND NBASe|NMOBile|BPGSm|MPGSm|BEGSm|MEGSm|
BRGSm|MRGSm|BDCS|MDCS|BPCS|MPCS|B450|GM450|B480|B850BDCS|M480|B850|M850|B8|M8|B15|M15
|B390|B420|B460|B915|M380|M410|M450|M870|PHS|DECT
[:SOURce]:FREQuency:CHANnels:BAND?
```

This command sets the frequency of the signal generator by specifying a frequency channel band. The frequency channel state must be enabled for this command to work.

Refer to the :FREQuency:CHANnels[:STATe] command.

Table 2-1 Frequency Channel Bands

SCPI Parameter	Frequency Channel Band Selected	Standard
NBASe	Standard Base	NADC
NMOBile	Standard Mobile	NADC
BPGSm	P-Gsm 900 Base	GSM
MPGSm	P-Gsm 900 Mobile	GSM
BEGSm	E-Gsm 900 Base	GSM
MEGSm	E-Gsm 900 Mobile	GSM
BRGSm	R-Gsm 900 Base	GSM
MRGSm	R-Gsm 900 Mobile	GSM
BDCS	DCS 1800 Base	GSM
MDCS	DCS 1800 Mobile	GSM

Table 2-1 Frequency Channel Bands

SCPI Parameter	Frequency Channel Band Selected	Standard
BPCS	PCS 1900 Base	GSM
MPCS	PCS 1900 Mobile	GSM
B450	Gsm 450 Base	GSM
GM450	Gsm 450 Mobile	GSM
B480	Gsm 480 Base	GSM
M480	Gsm 480 Mobile	GSM
B850	Gsm 850 Base	GSM
M850	Gsm 850 Mobile	GSM
B8	800MHz Base	PDC
M8	800MHz Mobile	PDC
B15	1500MHz Base	PDC
M15	1500MHz Mobile	PDC
B390	Base 390-400	TETRA
B420	Base 420-430	TETRA
B460	Base 460-470	TETRA
B915	Base 915-921	TETRA
M380	Mobile 380-390	TETRA
M410	Mobile 410-420	TETRA
M450	Mobile 450-460	TETRA
M870	Mobile 870-876	TETRA
PHS	Standard PHS	PHS
DECT	Standard DECT	DECT

Example

```
:FREQ:CHAN:BAND DECT
```

The preceding example sets the frequency band to standard DECT.

***RST** BPGS

Key Entry

P-GSM Base	**E-GSM Base**	**R-GSM Base**	**DCS Base**
PCS Base	**GSM 450 Base**	**GSM 480 Base**	**GSM 850 Base**
NADC Base	**800MHz Base**	**1500MHz Base**	
Tetra Base 390/400	**Tetra Base 420/430**	**Tetra Base 460/470**	
Tetra Base 915/921	**PHS Standard**	**DECT Standard**	
P-GSM Mobile	**E-GSM Mobile**	**R-GSM Mobile**	**DCS Mobile**
PCS Mobile	**GSM 450 Mobile**	**GSM 480 Mobile**	**GSM 850 Mobile**
NADC Mobile	**800MHz Mobile**	**1500MHz Mobile**	
Tetra Mobile 380/390	**Tetra Mobile 410/420**	**Tetra Mobile 450/460**	
Tetra Mobile 870/876			

:FREQuency:CHANnels:NUMBer

Supported All Models

```
[:SOURce]:FREQuency:CHANnels:NUMBer <number>
[:SOURce]:FREQuency:CHANnels:NUMBer?
```

This command sets the frequency of the signal generator by specifying a channel number of a given frequency band.

The channel band and channel state must be enabled for this command to work. Refer to the :FREQuency:CHANnels[:STATe] command.

Example

```
:FREQ:CHAN:NUMB 24
```

The preceding example sets the channel number to 24 for the current band.

***RST** +1

Range	P-GSM Base/Mobile:	1–24
	E-GSM and R-GSM Base/Mobile:	1–1023
	DCS Base/Mobile:	512–885
	PCS Base/Mobile:	512–900
	GSM-450 Base/Mobile:	259–293
	GSM-480 Base/Mobile:	306–340
	GSM-850 Base/Mobile:	128–251
	NADC Base/Mobile:	1–1023
	800MHz Base/Mobile:	0–640
	1500MHz Base/Mobile:	0–960
	TETRA 380/390 Mobile:	3600–4000
	TETRA 390/4000 Base:	3600–4000
	TETRA 410/420 Mobile:	800–1200
	TETRA 420/430 Base:	800–1200
	TETRA 460/470: 2400 through 2800	2400–2800
	TETRA 870/876 Mobile:	600–640
	TETRA 915/921 Base:	600–940
	PHS Standard:	1–255
	DECT Standard:	0–9

Key Entry **Channel Number**

:FREQuency:CHANnels[:STATe]

Supported All Models

```
[:SOURce]:FREQuency:CHANnels[:STATe] ON|OFF|1|0
[:SOURce]:FREQuency:CHANnels[:STATe]?
```

This command enables or disables the frequency channel and band selection. The signal generator frequency will be set to the channel frequency when the state is on. To set frequency channel bands refer to the :FREQuency:CHANnels:BAND command.

Example

```
:FREQ:CHAN ON
```

The preceding example turns on the frequency channel.

***RST** 0

Key Entry **Freq Channels Off On**

:FREQuency[:CW]

Supported All Models

```
[:SOURce]:FREQuency[:CW] <value><unit>
[:SOURce]:FREQuency[:CW]?
```

This command sets the signal generator output frequency.

***RST** The preset value is model/option dependent. Refer to the instrument's *Data Sheet*.

Range The range is model/option dependent. Refer to the instrument's *Data Sheet*.

Remarks A frequency change may affect the current output power. Refer to the [:LEVel][:IMMediate][:AMPLitude] command for the correct specified frequency and amplitude settings. To set the frequency mode refer to the :FREQuency:MODE command.

:FREQuency:LSPurs:STATe

Supported All Models

```
[:SOURce]:FREQuency:LSPurs:STATe ON|OFF|1|0
[:SOURce]:FREQuency:LSPurs:STATe?
```

This command enables the mode to improve non-harmonics performance (low spurs mode). Enabling this mode affects switching speed.

1 This choice enables the mode to improve non-harmonics.

0 This choice disables the mode to improve non-harmonics.

***RST** 0

Key Entry **Frequency > More 2 of 2 > Improve non-harmonics**

:FREQuency:MODE

Supported All Models

```
[:SOURce]:FREQuency:MODE CW|FIXed|LIST
[:SOURce]:FREQuency:MODE?
```

This command sets the frequency mode of the signal generator to CW or swept.

CW and FIXed	These choices are synonymous with one another and stops a frequency sweep, allowing the Agilent MXG to operate at a set frequency. Refer to the :FREQuency[:CW] command for setting the frequency in the CW mode and to the :FREQuency[:CW] command for setting the frequency in the FIXed mode.
LIST	This choice selects the swept frequency mode. If sweep triggering is set to immediate along with continuous sweep mode, executing the command starts the LIST or STEP frequency sweep.

NOTE To perform a frequency and amplitude sweep, you must also select LIST as the power mode. See the :MODE command for selecting the list mode for an amplitude sweep.

***RST** CW

Key Entry **Freq** **Freq Off**

:FREQuency:MULTiplier

Supported All Models

```
[:SOURce]:FREQuency:MULTiplier <value>
[:SOURce]:FREQuency:MULTiplier?
```

This command sets the multiplier for the signal generator carrier frequency. This displayed frequency equals the actual frequency times the multiplier.

***RST** +1.00000000E+000

Range Negative values: -1000 to -0.001

Positive values: 0.001 to 1000

Key Entry **Freq Multiplier**

Key Path **FREQ** > **Freq Multiplier**

Remarks For any multiplier other than one, the MULT indicator is shown in the frequency area of the display.

:FREQuency:OFFSet

Supported All Models

```
[:SOURce]:FREQuency:OFFSet <value><unit>
[:SOURce]:FREQuency:OFFSet?
```

This command sets the frequency offset.

The query of this command returns a value equal to the original output frequency times the multiplier value, plus the frequency offset value. This displayed frequency equals the actual frequency times the multiplier.

When an offset has been entered, the OFFS indicator is turned on in the frequency area of the display.

The frequency offset state is turned on when any non–zero value is entered; entering zero will turn it off. Refer to the :FREQuency:OFFSet:STATe command for setting the offset state independent of entering offset values.

***RST** +0.0000000000000E+00

Range –200 to 200 GHz

Key Entry **Freq Offset**

:FREQuency:OFFSet:STATe

Supported All Models

```
[:SOURce]:FREQuency:OFFSet:STATe ON|OFF|1|0
[:SOURce]:FREQuency:OFFSet:STATe?
```

This command enables or disables the offset frequency.

***RST** 0

Key Entry **Freq Offset**

Remarks Entering OFF (0) will set the frequency offset to 0 Hz.

:FREQuency:REFerence

Supported All Models

```
[:SOURce]:FREQuency:REFerence <value><unit>
[:SOURce]:FREQuency:REFerence?
```

This command sets the output reference frequency.

***RST** +0.0000000000000E+00

Range The range is model/option dependent. Refer to the instrument's *Data Sheet*.

Key Entry **Freq Ref Set**

:FREQuency:REFerence:SET

Supported All Models

```
[:SOURce]:FREQuency:REFerence:Set
```

This command sets the current CW output frequency, along with any offset, as a 0 hertz reference value.

***RST** +0.0000000000000E+00

Key Entry **Freq Ref Set**

:FREQuency:REFerence:STATe

Supported All Models

```
[:SOURce]:FREQuency:REFerence:STATe ON|OFF|1|0
[:SOURce]:FREQuency:REFerence:STATe?
```

This command enables or disables the frequency reference mode.

When the frequency reference mode is on, subsequent frequency parameters are set relative to the reference value.

***RST** 0

Key Entry **Freq Ref Off On**

:FREQuency:SPAN

Supported All Models

```
[:SOURce]:FREQuency:SPAN <num>[<freq_suffix>]|UP|DOWN
[:SOURce]:FREQuency:SPAN? [MAXimum|MINimum]
```

This command sets the length of the frequency range for a step sweep. Span setting is symmetrically divided by the selected center frequency and is coupled to the start and stop frequency settings. The span range is dependent on the signal generator model and option number.

Example

```
:FREQ:SPAN 100MHz
```

The preceding example sets the frequency span to 100 megahertz.

***RST** +0.0000000000000E+00

Key Entry **Freq Span**

:FREQuency:STARt

Supported All Models

```
[:SOURce]:FREQuency:STARt <value><unit>
[:SOURce]:FREQuency:STARt?
```

This command sets the first frequency point in a step sweep.

***RST** The preset value is model/option dependent. Refer to the instrument's *Data Sheet*.

Range The range is model/option dependent. Refer to the instrument's *Data Sheet*.

Key Entry **Freq Start**

:FREQuency:STOP

Supported All Models

```
[:SOURce]:FREQuency:STOP <value><unit>
[:SOURce]:FREQuency:STOP?
```

This command sets the last frequency point in a step sweep.

***RST** The preset value is model/option dependent. Refer to the instrument's *Data Sheet*.

Range The range is model/option dependent. Refer to the instrument's *Data Sheet*.

Key Entry **Freq Stop**

:FREQuency[:CW]

Supported All Models

```
[:SOURce]:FREQuency[:CW] <value><unit>
[:SOURce]:FREQuency[:CW]?
```

This command sets the signal generator output frequency for the CW frequency mode.

***RST** The preset value is model/option dependent. Refer to the instrument's *Data Sheet*.

Range The range is model/option dependent. Refer to the instrument's *Data Sheet*.

Key Entry **Freq**

Remarks To set the frequency mode to CW, refer to the :FREQuency:MODE command.

:PHASe:REFerence

Supported All Models

```
[:SOURce]:PHASe:REFerence
```

This command sets the current output phase as a zero reference.

Subsequent phase adjustments are set relative to the new reference.

Key Entry **Phase Ref Set**

:PHASe[:ADJust]

Supported All Models

```
[:SOURce]:PHASe[:ADJust] <value><unit>
[:SOURce]:PHASe[:ADJust]?
```

This command adjusts the phase of the modulating signal.

The query will only return values in radians.

***RST** +0.00000000E+000

Range Radians: –3.14 to 3.14 RAD Degrees: –180 to 179 DEG

Key Entry **Adjust Phase**

:ROSCillator:BANDwidth:EXTernal

Supported N5183A

```
[:SOURce]:ROSCillator:BANDwidth:EXTernal
<value>[<units>]|NARRow|WIDE|MINimum|MAXimum|DEFault
[:SOURce]:ROSCillator:BANDwidth:EXTernal? |MINimum|MAXimum|
```

This command selects the external frequency bandwidth as the source for the measurement.

For values greater than 9.5 Hz, 73 Hz is used.

***RST** +9.50000000E+000

Range .5 or 73 Hz

Key Entry **Ref Oscillator Ext Bandwidth**

:ROSCillator:FREQuency:EXTernal

Supported All Models

```
[:SOURce]:ROSCillator:FREQuency:EXTernal <value>
[:SOURce]:ROSCillator:FREQuency:EXTernal?
```

This command makes External Ref Frequency the active function. The value that you enter sets the frequency of the external reference oscillator.

***RST** +1.0000000000000E+07 Hz

Range +1.0000000000000E+06 to +5.0000000000000E+07 Hz

Key Entry **Ref Oscillator Ext Freq**

Remarks If the entered frequency does not match the frequency of the entered reference, an unlocked condition will occur and an error message will appear.

:ROSCillator:SOURce

Supported All Models

```
[:SOURce]:ROSCillator:SOURce?
```

This command queries the current reference oscillator source: INT (internal) or EXT (external).

:ROSCillator:SOURce:AUTO

Supported All Models

```
[:SOURce]:ROSCillator:SOURce:AUTO ON|OFF|1|0
[:SOURce]:ROSCillator:SOURce:AUTO?
```

This command enables or disables the ability of the signal generator to automatically select between the internal and an external reference oscillator.

ON (1) This choice enables the signal generator to detect when a valid reference signal is present at the 10 MHz IN connector and automatically switches from internal to external frequency reference.

OFF (0) This choice selects the internal reference oscillator and disables the switching capability between the internal and an external frequency reference.

***RST** 1

Key Entry **Ref Oscillator Source Auto Off On**

List/Sweep Subsystem ([:SOURce])

A complete sweep setup requires commands from other subsystems. Table 2-2 shows the function and location of these other commands.

Table 2-2 Location of Commands from the other Subsystems

Sweep Type	Function	Command Location	Key Entry under Sweep/List key
List and Step	Configuring frequency sweep	page 42	**Freq Off On**
	Configuring amplitude sweep	page 71	**Amptd Off On**
	Configuring frequency and amplitude sweep[a]	page 42 page 71	**Freq & Amptd Off On**
	Enables or Disables the waveform sweep	page 328	**Waveform Off On**
	Set up and control sweep triggering[b]	page 238	See the "Trigger Subsystem"
List	Load a list sweep file	page 194	**Load From Selected File**
	Store list sweep data to a file	page 191	**Store To File**
	Selects the waveform for the current waveform sequence	page 42 page 49 page 55	no softkey
Fast	Enables fast SCPI switching for arbitrary frequency and power levels		no softkey
List Sweep Options Flags	This command enables specific options during a list sweep.	page 51	no softkey. Refer to Table 2-3 on page 52
Step	Start frequency sweep	page 45	**Freq Start**
	Store list sweep data to a file	page 191	**Store To File**
	Start amplitude sweep	page 73	**Amptd Start**
	Stop amplitude sweep	page 74	**Amptd Stop**

a. Execute both commands to start or stop a frequency and amplitude sweep.
b. For point to point triggering, see ":LIST:TRIGger:SOURce" on page 53.

:LIST:CPOINt?

Supported All Models

```
[:SOURce]:LIST:CPOint?
```

This query returns the current sweep point.

:LIST:DIRection

Supported All Models

```
[:SOURce]:LIST:DIRection UP|DOWN
[:SOURce]:LIST:DIRection?
```

This command sets the direction of a list or step sweep.

UP — This choice enables a sweep in an ascending order:

- first to last point for a list sweep
- start to stop for a step sweep

DOWN — This choice reverses the direction of the sweep.

***RST** UP

Key Entry **Sweep Direction Down Up**

:LIST:DWELl

Supported All Models

```
[:SOURce]:LIST:DWEL1 <value>{,<value>}
[:SOURce]:LIST:DWEL1?
```

This command sets the dwell time for the current list sweep points.

Dwell time is used when IMMediate is the trigger source. Refer to the :LIST:TRIGger:SOURce command for the trigger setting.

The dwell time is the amount of time the sweep is guaranteed to pause after setting the frequency and/or power for the current point.

The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

The variable <value> is expressed in units of seconds with a 0.000001 (µS).

NOTE The dwell time (<value>) does not begin until the signal generator has settled for the current frequency and/or amplitude change.

Range 100E–6

:LIST:DWELl:POINts

Supported All Models

```
[:SOURce]:LIST:DWELl:POINts?
```

This command queries the signal generator for the number of dwell points in the current list sweep file.

:LIST:DWELl:TYPE

Supported All Models

```
[:SOURce]:LIST:DWEL1:TYPE LIST|STEP
[:SOURce]:LIST:DWEL1:TYPE?
```

This command toggles the dwell time for the list sweep points between the values defined in the list sweep and the value for the step sweep.

LIST — This choice selects the dwell times from the list sweep. Refer to the :LIST:DWELl command for setting the list dwell points.

STEP — This choice selects the dwell time from the step sweep. Refer to the :SWEep:DWELl command for setting the step dwell.

***RST** LIST

Key Entry **Dwell Type List Step**

:LIST:FREQuency

Supported All Models

```
[:SOURce]:LIST:FREQuency <value>{,<value>}
[:SOURce]:LIST:FREQuency?
```

This command sets the frequency values for the current list sweep points.

The maximum number of list sweep points is 3,201.

The variable <value> is expressed in units of hertz (Hz).

The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

Range The range is model/option dependent. Refer to the instrument's *Data Sheet*.

:LIST:FREQuency:POINts

Supported All Models

```
[:SOURce]:LIST:FREQuency:POINts?
```

This command queries the current list sweep file for the number of frequency points.

:LIST:MANual

Supported All Models

```
[:SOURce]:LIST:MANual <value>|UP|DOWN
[:SOURce]:LIST:MANual?
```

This command sets a list or step sweep point as the current sweep point controlling the frequency and power output.

If list or step mode is controlling frequency or power, or both, then the indexed point in the respective list(s) will be used.

Entering a value with this command will have no effect, unless MANual is the selected mode. Refer to the :LIST:MODE command for setting the proper mode.

If the point selected is beyond the length of the longest enabled list, then the point will be set to the maximum possible point, and an error will be generated.

Range List Sweep: 1 to 3,201 Step Sweep: 2 to 65535

Key Entry **Manual Point**

:LIST:MODE

Supported All Models

```
[:SOURce]:LIST:MODE AUTO|MANual
[:SOURce]:LIST:MODE?
```

This command sets the operating mode for the current list or step sweep.

AUTO This choice enables the selected sweep type to perform a sweep of all points.

MANual This choice enables you to select a single sweep point. The selected point controls the frequency and/or amplitude according to the sweep type. Refer to the :LIST:MANual command for selecting a sweep point.

***RST** AUTO

Key Entry **Manual Mode Off On**

:LIST:OPTions

Supported All Models

```
[:SOURce]:LIST:OPTions <val>{,<val>}
```

```
[:SOURce]:LIST:OPTions?
```

```
[:SOURce]:LIST:OPTions:POINts?
```

This command enables specific options during a list sweep. The command adds the capability to suppress FM, ϕM, and AM on any list sweep point. Additionally, frequency, power, and/or a waveform transition can be suppressed resulting in no synthesizer, no output, or no waveform playing interruption during a transition.

This is a SCPI command only feature. There is no signal generator user interface displayed indication that these option flags are in use. The option flag list is preset to empty when list sweep is preset with the defaults. Otherwise, the option flag changes are persistent.

See also ":LIST:TYPE:LIST:INITialize:PRESet" on page 55.

Table 2-3 List Sweep Options Flag.

Bit #	Bit Value	Option if set
0	1	Suppress Frequency Change
1	2	Suppress Power Change
2	4	Suppress Waveform Change
3	8	Suppress FM and ϕM
4	16	Suppress AM

NOTE The table represents the value of a bit flag.

If a bit is not set, then the option is ignored (not applied).

If FM, ϕM is not turned on, the FM, ϕM suppression does nothing.

The FM, ϕM should be typically as in CW mode.

The AM suppressing is accomplished by grounding the input to the AM modulator, no other reconfiguration of HW is performed.

The AM should be set up in CW mode.

Example

```
FM:DEV 1E6
FM:STAT ON
LIST:FREQ 1E9,2E9,3E9,4E9
LIST:OPT 8,0,8,0
```

The preceding example sets up FM then a frequency list of 1, 2, 3, 4 GHz and suppresses FM on every other list sweep point (points 1 and 3 will have FM suppressed, points 2 & 4 will have FM enabled).

:LIST:POWer

Supported All Models

```
[:SOURce]:LIST:POWer <value>{,<value>}
[:SOURce]:LIST:POWer?
```

This command sets the amplitude for the current list sweep points.

The maximum number of list sweep points is 3,201.

Range See also [:LEVel][:IMMediate][:AMPLitude] command for output power ranges.

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

:LIST:POWer:POINts

Supported All Models

```
[:SOURce]:LIST:POWer:POINts?
```

This command queries the number of power points in the current list sweep file.

:LIST:RETRace

Supported All Models

```
[:SOURce]:LIST:RETRace ON|OFF|1|0
[:SOURce]:LIST:RETRace?
```

This command configures the sweep to retrace to the first sweep point, or stop at the last sweep point upon completion of each sweep.

ON (1) The sweep retraces to the first sweep point.

OFF (0) The sweep stays at the last sweep point of the completed sweep and stays there until sweep is initiated and triggered again. When sweep is initiated and triggered again, the sweep point moves to the first point of the sweep.

***RST** 1

Key Entry **Sweep Retrace Off On**

:LIST:TRIGger:SOURce

Supported All Models

```
[:SOURce]:LIST:TRIGger:SOURce BUS|IMMediate|EXTernal|KEY|TIMer|MANual
[:SOURce]:LIST:TRIGger:SOURce?
```

This command sets the point trigger source for a list or step sweep event.

To set the sweep trigger, see the :TRIGger[:SEQuence]:SOURce command.

BUS This choice enables GPIB triggering using the *TRG or GET command, or LAN and USB triggering using the *TRG command.

IMMediate This choice enables immediate triggering of the sweep event.

EXTernal This choice enables the triggering of a sweep event by an externally applied signal at the TRIGGER IN connector.

Trigger KEY This choice enables triggering by pressing the front panel **Trigger** hardkey.

TIMer This choice enables the trigger timer.

Example

```
:LIST:TRIG:SOUR BUS
```

The preceding example sets the trigger source to the instrument BUS.

***RST** IMM

Key Entry **Bus** **Free Run** **Ext** **Trigger Key** **Timer Trigger**

:LIST:TYPE

Supported All Models

```
[:SOURce]:LIST:TYPE LIST|STEP
[:SOURce]:LIST:TYPE?
```

This command toggles between the two types of sweep.

LIST This type of sweep has arbitrary frequencies and amplitudes.

STEP This type of sweep has equally spaced frequencies and amplitudes.

***RST** STEP

Key Entry **Sweep Type List Step**

:LIST:TYPE:LIST:INITialize:FSTep

Supported All Models

CAUTION The current list sweep data will be overwritten once this command is executed. If needed, save the current data. Refer to the :STORe:LIST command for storing list sweep files.

```
[:SOURce]:LIST:TYPE:LIST:INITialize:FSTep
```

This command replaces the loaded list sweep data with the settings from the current step sweep data points.

You can load only one sweep list at a time.

The maximum number of list sweep points is 3,201. When copying the step sweep settings over to a list sweep, ensure that the number of points in the step sweep do not exceed the maximum list sweep points.

Key Entry **Load List From Step Sweep**

:LIST:TYPE:LIST:INITialize:PRESet

Supported All Models

CAUTION The current list sweep data will be overwritten once this command is executed. If needed, save the current data. Refer to the :STORe:LIST command for storing list sweep files.

`[:SOURce]:LIST:TYPE:LIST:INITialize:PRESet`

This command replaces the current list sweep data with a factory–defined file consisting of one point at a frequency, amplitude, and dwell time.

Key Entry **Preset List**

:LIST:WAVeform

Supported N5162A/82A

CAUTION The current list sweep data will be overwritten once this command is executed. If needed, save the current data. Refer to the :STORe:LIST command for storing list sweep files.

`[:SOURce]:LIST:WAVeform <name>{,<name>}`

`[:SOURce]:LISt:WAVeform?`

This command sets the waveform values for the current list waveform sequence.

NOTE Except for the sample clock rate, unspecified fields in the header result in the *default* settings of the dual arb's settings being used (i.e. *not the current arb's settings*). The sample clock rate must be specified for the file header of the waveform file being played. If the sample clock rate is unspecified in the file header, the instrument generates a header error.

Example

`:LIST:WAV "WFM1:RAMP_TEST_WFM","WFM1:SINE_TEST_WFM"`

The preceding example loads the waveforms `RAMP_TEST_WFM` and `SINE_TEST_WFM` into the waveform section of the List Table.

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or `*RST`.

:LIST:WAVeform:POINts

Supported N5162A/82A

`[:SOURce]:LIST:WAVeform:POINts?`

This query returns the number of waveform points in the current list sweep file.

:SWEep:CPOINt?

Supported All Models

```
[:SOURce]:SWEep:CPOINt?
```

This query returns the current sweep point in any mode.

:SWEep:DWELl

Supported All Models

```
[:SOURce]:SWEep:DWELl <value>
[:SOURce]:SWEep:DWELl?
```

This command enables you to set the dwell time for a step sweep.

The variable <value> is expressed in units of seconds with a 0.001 resolution.

The dwell time is the amount of time the sweep is guaranteed to pause after setting the frequency and/or power for the current point.

NOTE The dwell time (<value>) does not begin until the signal generator has settled for the current frequency and/or amplitude change.

***RST** +2.00000000E–003

Range 0.0001 to 100

Key Entry **Step Dwell**

Key Path **SWEEP** > **Configure Step Sweep** > **More 2 of 2** > **Step Dwell**

Remarks Dwell time is used when the trigger source is set to `IMMediate`. Refer to the :LIST:TRIGger:SOURce command for the trigger setting.

:SWEep:GENeration

Supported N5183A

```
[:SOURce]:SWEep:GENeration STEPped
[:SOURce]:SWEep:GENeration?
```

This command sets the sweep type to stepped.

STEPped This choice selects a step sweep.

Example

```
:SWE:GEN STEP
```

The preceding example selects a step sweep.

***RST** STEP

Key Entry **Sweep Type**

:SWEep:POINts

Supported All Models

```
[:SOURce]:SWEep:POINts <value>
[:SOURce]:SWEep:POINts?
```

This command defines the number of step sweep points.

***RST** 101

Range 2 to 65535

Key Entry **# Points**

Key Path **SWEEP** > **Configure Step Sweep** > **# Points**

:SWEep:SPACing

Supported All Models

```
[:SOURce]:SWEep:SPACing LINear|LOGarithmic
[:SOURce]:SWEep:SPACing?
```

This command enables the signal generator linear or logarithmic sweep modes. These commands require the signal generator to be in step mode.

The instrument uses the specified start frequency, stop frequency, and number of points for both linear and log sweeps.

***RST** LIN

Key Entry **Step Spacing LIN LOG**

Key Path **SWEEP** > **Configure Step Sweep** > **More 2 of 2** > **Step Spacing LIN LOG**

Fast Subsystem (:FAST)

This subsystem contains commands to enable fast SCPI switching for arbitrary frequency and or power levels.

Certain caveats apply for this subsystem:

- commands do not accept any explicit suffixes (e.g. Hz, mdB, etc.)
- commands cannot be saved as an instrument state
- no front panel updates
- no couplings exercised between parameters (e.g. The effect of incorrect parameters, would be an incorrect signal generated without any errors reported.)

:FP

Supported All Models

`:FAST:FP <Freq mHz>, <power mdB>`

This command enables a fast SCPI switching for arbitrary frequency and power levels.

Range The range is model/option dependent. Refer to the instrument's *Data Sheet*.

Example FAST:FP 1000000000000,-10000

This example sets the instrument frequency to 1 GHz and the power to -10 dBm.

:FREQ

Supported All Models

`:FAST:FREQuency <Freq mHz>`

This command enables a fast SCPI switching for arbitrary frequencies.

Range The range is model/option dependent. Refer to the instrument's *Data Sheet*.

Example FAST:FREQ 1000000000000

This example sets the instrument frequency to 1 GHz.

:POWer

Supported All Models

`:FAST:POWer <power mdB>`

This command enables a fast SCPI switching for arbitrary power levels.

Range The range is model/option dependent. Refer to the instrument's *Data Sheet*.

Example FAST:FP -10000

This example sets the instrument power to -10 dBm.

Marker Subsystem–(N5183A Only)([:SOURce])

:MARKer:AMPLitude[:STATe]

Supported N5183A

```
[:SOURce]:MARKer:AMPLitude[:STATe] ON|OFF|1|0
[:SOURce]:MARKer:AMPLitude[:STATe]?
```

This command sets the amplitude marker state for the currently activated markers. When the state is switched on, the RF output signal exhibits a spike with a magnitude relative to the power level at each marker's set frequency. (To set the magnitude of the spike, refer to the :MARKer:AMPLitude:VALue command.)

Example

```
:MARK:AMPL ON
```

The preceding example enables amplitude markers.

***RST** 0

Key Entry **Amplitude Markers Off On**

:MARKer:AMPLitude:VALue

Supported N5183A

```
[:SOURce]:MARKer:AMPLitude:VALue <num>[DB]
[:SOURce]:MARKer:AMPLitude:VALue?
```

This command sets the relative power for the amplitude spikes at each marker's set frequency when the amplitude marker mode is activated. (To activate the amplitude markers, refer to the :MARKer:AMPLitude[:STATe] command.)

Example

```
:MARK:AMPL:VAL 4DB
```

The preceding example sets the relative marker power to 4 dB for all markers.

***RST** 2 dB

Range –10 to +10 dB

Key Entry **Marker Value**

:MARKer:AOFF

Supported N5183A

```
[:SOURce]:MARKer:AOFF
```

This command turns off all active markers.

Key Entry **Turn Off Markers**

:MARKer:DELTa

Supported N5183A

```
[:SOURce]:MARKer:DELTa? <num>,<num>
```

This query returns the frequency difference between two amplitude markers. The variables <num> are used to designate the marker numbers.

Example

```
:MARK:DELT? 1,2
```

The preceding example returns the frequency difference between amplitude markers 1 and 2.

Range 0 to 19

:MARKer[0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19]:FREQuency

Supported N5183A

```
[:SOURce]:MARKer[0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19]:FREQuency
<val><unit>
[:SOURce]:MARKer[0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19]:FREQuency?
MAXimum|MINimum
```

This command sets the frequency for a specific marker. If the marker designator [n] is not specified, marker 0 is the default. The frequency value must be within the current start and stop frequency sweep range. Using the MAXimum or MINimum parameters in the query will return the frequency boundary values for the markers.

If the marker frequency mode is set to delta when the query is sent, the returned value is not absolute, but is relative to the reference marker. (See the :MARKer:MODe command for more information.)

Example

```
:MARK2:FREQ 10GHZ
```

The preceding example places marker 2 at 10 GHz.

***RST** +5.25000000E+008

Range Equivalent to current sweep range

Key Entry **Marker Freq**

:MARKer:MODe

Supported N5183A

```
[:SOURce]:MARKer:MODE FREQuency|DELTa
[:SOURce]:MARKer:MODE?
```

This command sets the frequency mode for all markers.

FREQuency The frequency values for the markers are absolute.

DELTa — The frequency values for the markers are relative to the designated reference marker. The reference marker must be designated before this mode is selected. (See the :MARKer:REFerence command to select a reference marker.)

Example

```
:MARK:MODE DELT
```

The preceding example sets the marker mode to delta.

***RST** FREQuency

Key Entry **Marker Delta Off On**

:MARKer:REFerence

Supported N5183A

```
[:SOURce]:MARKer:REFerence <marker>
[:SOURce]:MARKer:REFerence?
```

This command designates the reference marker when using markers in delta mode. The variable <marker> designates the marker number.

Example

```
:MARK:REF 6
```

The preceding example sets marker 6 as the reference marker.

***RST** 0

Range 0 to 19

Key Entry **Delta Ref Set**

:MARKer[0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19][:STATe]

Supported N5183A

```
[:SOURce]:MARKer[0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19][:STATe]
ON|OFF|1|0
[:SOURce]:MARKer[0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19][:STATe]?
```

This command turns a marker on or off. Marker 0 is the default if the marker designator [n] is not specified.

Example

```
:MARK6 ON
```

The preceding example turns marker 6 on.

***RST** 0

Key Entry **Marker On Off**

Power Subsystem ([:SOURce]:POWer)

:ALC:BANDwidth

Supported All Models

```
[:SOURce]:POWer:ALC:BANDwidth|BWIDth <num>{freq suffix]
[:SOURce]:POWer:ALC:BANDwidth|BWIDth?
```

This command overrides the signal generator's automatic ALC bandwidth selection with the users specific selection. For waveforms with varying amplitudes, high crest factors, or both, the recommended ALC loop bandwidth is the low bandwidth setting of the generator. Limiting the loop bandwidth of the ALC circuit will prevent the ALC from sampling the fast rising edges of pulsed waveforms. A limited, or narrow bandwidth will result in a longer ALC sample time and a more accurate representation of the signal's level.

***RST** 1

Key Entry **200 Hz**

Key Path **AMPTD > More 2 of 3 > More 3 of 3 > ALC BW (Auto) > 200 Hz**

Remarks Use this command when the ALC state is set to On. This command will override the automatic ALC bandwidth selection set by the :ALC:BANDwidth|BWIDth:AUTO command.

:ALC:BANDwidth|BWIDth:AUTO

Supported All Models

```
[:SOURce]:POWer:ALC:BANDwidth|BWIDth:AUTO ON|OFF|1|0
[:SOURce]:POWer:ALC:BANDwidth|BWIDth:AUTO?
```

This command turns the bandwidth (BW) auto state on or off.

The bandwidth auto function allows the signal generator to automatically select a bandwidth for the automatic leveling control (ALC) circuit.

ON (1) This choice allows the signal generator to automatically select an ALC BW. The selection of the ALC BW depends on the signal generator modulation type.

OFF (0) This choice disables automatic selection of the ALC BW.

***RST** 1

Key Entry **Auto**

Remarks For more information on ALC bandwidth, refer to the *User's Guide*.

:ALC:LEVel

Supported All Models

```
[:SOURce]:POWer:ALC:LEVel <value><unit>
[:SOURce]:POWer:ALC:LEVel?
```

This command sets the automatic leveling control (ALC) level. Use this command after setting the attenuation auto mode to On. Refer to :ATTenuation:AUTO command for setting the attenuation auto mode.

The ALC is used to maintain the signal generator's output power level by compensating for power fluctuations due to drift, band changes, or load variations. After you set the ALC level, the signal generator's output power is monitored and corrected so that the power level setting is maintained.

Example

```
:POW:ALC:LEV 10DB
```

The preceding example sets the ALC to 10 dB.

***RST** +1.00000000E+000

Range –20 to 20

Key Entry **Set ALC Level**

:ALC:SEARch

Supported All Models

```
[:SOURce]:POWer:ALC:SEARch ON|OFF|1|0|ONCE
[:SOURce]:POWer:ALC:SEARch?
```

NOTE The manual power search mode is only available in instruments with serial number prefix: MY4818xxxx, US4818xxxx, SG48128xxxx, and Option 099.

This command executes a power search routine that temporarily activates the ALC, calibrates the power of the current RF output, and then disconnects the ALC circuitry. The power search mode is active only when the ALC state is Off, and the RF output is On.

ON (1) This choice sets the power search mode to automatic (**Auto**). In automatic mode, the power search calibration routine is executed whenever an instrument setting is modified that affects RF output power. This includes changes to frequency, amplitude and modulation.

OFF (0) This choice sets the power search mode to **Manual** *and* disables the automatic power search calibration routine. The power level must be calibrated by explicitly sending the ONCE command. If there is a change in frequency or amplitude the ONCE command must be sent again.

ONCE This choice executes a single power search calibration at the current RF output frequency and amplitude setting. This command can be used when the power search mode is in automatic or manual.

***RST** 1

Key Entry **AMPTD** **ALC Off** **Power Search**

Auto **Manual** **Do Power Search**

Remarks If power search fails, the output power of the instrument will be set to minimum and must be recovered with an instrument preset.

Refer to the :ALC[:STATe] command for setting the ALC state.

:ALC:SEARch:REFerence

Supported N5161A/62A/81A/82A

```
[:SOURce]:POWer:ALC:SEARch:REFerence RMS|FIXed|MANual|MODulated
[:SOURce]:POWer:ALC:SEARch:REFerence?
```

This command sets the reference source used by the power search calibration routine. The reference source provides a steady state signal during the power search calibration.

RMS — This choice uses the I/Q system as the reference source for the power search calibration. When the power search calibration routine is executing, the I/Q system provides a DC bias on the I/Q modulator equivalent to the rms value of the current I/Q data. The rms value is derived from the waveform file header or calculated using the current I/Q data

FIXed — This choice uses the I/Q system as the reference source for the power search calibration. When `FIXed` is active, the I/Q system uses a fixed level of 1.0 volt to provide a DC bias on the I/Q modulator during the power search calibration.

MANual — This choice uses the I/Q system as the reference source for the power search calibration. When `MANual` is selected, the user can specify the DC bias on the I/Q modulator during the power search calibration. The level is chosen using the :ALC:SEARch:REFerence:LEVel command.

MODulated — This choice disables the power search reference source. During the power search calibration, the current RF output signal is measured to calibrate the output level. If the output signal is amplitude modulated at a slow rate or is bursted, power errors can be introduced at the RF output. For CW signals the power search reference is disabled.

***RST** FIXed (With BBG License only.)

Key Entry **Power Search Reference Fixed Mode**

Remarks MXG without the BBG license are defaulted to MOD mode.

:ALC:SEARch:REFerence:LEVel

Supported N5161A/62A/81A/82A

```
[:SOURce]:POWer:ALC:SEARch:REFerence:LEVel <value>
[:SOURce]:POWer:ALC:SEARch:REFerence:LEVel?
```

This command sets the DC bias voltage value for a manual power search.

***RST** +1.00000000+000

Range 0 to 1.414 V

Key Entry **Power Search Manual Level**

:ALC:SEARch:SPAN:START

Supported All Models

```
[:SOURce]:POWer:ALC:SEARch:SPAN:START <value><units>
[:SOURce]:POWer:ALC:SEARch:SPAN:START?
```

This command sets the start frequency for a span power search over a user specified range.

The start frequency has no default value. The start frequency value will be the last value set before powering off the instrument.

Key Entry **Start Frequency**

:ALC:SEARch:SPAN:STOP

Supported All Models

```
[:SOURce]:POWer:ALC:SEARch:SPAN:STOP <value><units>
[:SOURce]:POWer:ALC:SEARch:SPAN:STOP?
```

This command sets the stop frequency for a span power search over a user specified range.

The stop frequency has no default value. The stop frequency value will be the last value set before powering off the instrument.

Key Entry **Stop Frequency**

:ALC:SEARch:SPAN:TYPE

Supported All Models

```
[:SOURce]:POWer:ALC:SEARch:SPAN:TYPE FULL|USER
[:SOURce]:POWer:ALC:SEARch:SPAN:TYPE?
```

This command enables you to select the frequency range for a span power search. You can specify the range (USER) or you can select the full range (FULL) of the signal generator.

Key Entry **Span Type User Full**

:ALC:SEARch:SPAN[:STATe]

Supported All Models

```
[:SOURce]:POWer:ALC:SEARch:SPAN[:STATe] ON|OFF|1|0
[:SOURce]:POWer:ALC:SEARch:SPAN[:STATe]?
```

This command enables (1) or disables (0) the span mode, allowing you to perform power searches over a selected range of frequencies. The power search corrections are then stored and used whenever the signal generator is tuned within the selected range.

Key Entry **Span**

:ALC:SOURce

Supported N5183A

```
[:SOURce]:POWer:ALC:SOURce INTernal|DIODe
[:SOURce]:POWer:ALC:SOURce?
```

This command enables you to select an automatic level control (ALC) source. You can select the internal ALC source, an external detector source, or a millimeter–wave source module. Refer to the *User's Guide* for more information on ALC leveling, bandwidth, and the power search function.

Example

```
:POW:ALC:SOUR DIOD
```

The preceding example selects an external detector as the source (the unit must be connected to the signal generator).

***RST** INT

Key Entry **Leveling Mode**

:ALC:SOURce:EXTernal:COUPling

Supported N5183A

```
[:SOURce]:POWer:ALC:SOURce:EXTernal:COUPling <value>DB
[:SOURce]:POWer:ALC:SOURce:EXTernal:COUPling?
```

This command sets the external detector coupling factor. Use this command when DIODe is the selected ALC source (Refer to the :ALC:SOURce command.)

Example

```
:POW:ALC:SOUR:EXT:COUP 20DB
```

The preceding example sets the external coupling factor to 20 dB.

***RST** +1.60000000E+001

Range –200 to 200 dB.

Key Entry **Ext Detector Coupling Factor**

:ALC[:STATe]

Supported All Models

```
[:SOURce]:POWer:ALC[:STATe] ON|OFF|1|0
[:SOURce]:POWer:ALC[:STATe]?
```

This command enables or disables the automatic leveling control (ALC) circuit. The query returns the current state of the ALC.

***RST** 1

Key Entry **ALC Off On**

Remarks The purpose of the ALC circuit is to hold output power at a desired level by adjusting the signal generator's power circuits to compensate for power drift. Power drift occurs over time and changes in temperature. Refer to the *User's Guide* for more information on the ALC.

:ALC:TRANsition:REFerence

Supported N5162A and N5182A

```
[:SOURce]:POWer:ALC:TRANsition:REFerence RMS|MODulated|NBModulated
[:SOURce]:POWer:ALC:TRANsition:REFerence?
```

This command determines the ALC settling mode during frequency transitions when the IQ modulator is on.

RMS — This choice is the default behavior. The IQ is set to an idle state and a CW only signal plays during frequency transitions.

Mod — This choice leaves the IQ on during frequency transition and also leaves the ALC in the default wide bandwidth mode for fast switching.

Although this choice results in switching times that are equivalent to RMS mode, there is the possibility of leveling at the wrong power level.

NBMod — This choice leaves the IQ on during frequency transitions but sets the ALC bandwidth to a narrow bandwidth. Doing this increases the switching time but allows for a more accurate amplitude level.

***RST** RMS

Key Entry **ALC Transition Reference RMS Mod NBMod**

Remarks RMS is the default behavior and in most cases is the best choice for this setting. Refer to the *User's Guide* for more information on the ALC.

:ATTenuation

Supported N5161A/62A/81A/82A (All), and N5183A (with Option 1E1)

```
[:SOURce]:POWer:ATTenuation <value><unit>
[:SOURce]:POWer:ATTenuation?
```

This command sets the signal generator's attenuator level. Before setting the attenuator level, set the ":ATTenuation:AUTO" function to Off which will disable ALC control.

In normal operation the attenuator level is selected by the signal generator's automatic loop control (ALC) which maintains the output power by adjusting internal circuits to compensate for any power fluctuations due to drift, band changes, or load variations. In some applications, such as fast pulse, the ALC may not respond quickly enough to compensate for the pulse rise times. In this case you can set the attenuator and override any ALC adjustments.

The output power is the ALC level minus the attenuator setting. The attenuator is set in increments of 5 dB.

Example

```
:POW:ATT 10DB
```

The preceding example sets the attenuator to 10 dB.

***RST** +115

Range 0 to 115 dB

Key Entry **Set Atten**

:ATTenuation:AUTO

Supported N5161A/62A/81A/82A (All), and N5183A (with Option 1E1)

```
[:SOURce]:POWer:ATTenuation:AUTO ON|OFF|1|0
[:SOURce]:POWer:ATTenuation:AUTO?
```

This command sets the state of the attenuator auto mode function.

ON (1) This selection allows the signal generator's automatic level control (ALC) to adjust the attenuator so that a specified RF power level, at the Agilent MXG's RF output connector, is maintained.

OFF (0) This choice allows for a user–selected attenuator setting that is not affected by the signal generator's ALC circuitry.

The OFF (0) selection can be used to eliminate power discontinuity normally associated with attenuator switching during power adjustments.

***RST** 1

Key Entry **Atten Hold Off On**

Remarks Refer to the ":ALC:LEVel" on page 63.

:ATTenuation:BYPass

Supported N5161A/62A/81A/82A

```
[:SOURce]:POWer:ATTenuation:BYPass ON|OFF|1|0
[:SOURce]:POWer:ATTenuation:BYPass?
```

This command enables or disables the attenuator bypass setting. The attenuator hold mode must be enabled to use this command.

ON (1) This selection allows the signal generator's automatic level control (ALC) to adjust the attenuator hold mode. Output power is controlled solely by the ALC setting.

OFF (0) This choice allows for a user–selected attenuator setting combined with the ALC setting.

***RST** 0

Key Entry **Atten Bypass Off On**

:HARMonics

Supported N5161A/62A/81A/82A (Hardward dependent–may not be visible on all instruments. This feature was activated with serial prefix ≥xx4818.)

```
[:SOURce]:POWer:HARMonics[:STATe] ON|OFF|1|0
[:SOURce]:POWer:HARMonics?
```

This command enables or disables the optimize harmonics setting. The optimize harmonics mode modifies the attenuator and automatic level control (ALC) settings to give optimal harmonics performance. Optimize harmonics mode does not change the RF output power. The attenuator hold mode cannot be enabled while this mode is active, and modulations cannot be enabled while this mode is active.

ON (1) This selection allows the signal generator to optimize harmonics by modifying the attenuator and automatic level control settings.

OFF (0) This selection disables the optimize harmonics mode.

***RST** 0

Key Entry **Optimize Harmonics**

Key Path **AMPTD > More 2 of 3 > Power Opt Modes > Optimize Harmonics**

[:LEVel][:IMMediate]:OFFSet

Supported All Models

```
[:SOURce]:POWer[:LEVel][:IMMediate]:OFFSet <value><unit>
[:SOURce]:POWer[:LEVel][:IMMediate]:OFFSet?
```

This command sets the power offset value.

***RST** +0.00000000E+000

Range –200 to 200 dB

Key Entry **Amptd Offset**

Key Path **AMPTD > More 2 of 3 > Amptd Offset**

Remarks This simulates a power level at a test point beyond the RF OUTPUT connector without changing the actual RF output power. The offset value only affects the displayed amplitude setting.

You can enter an amplitude offset any time in either normal operation or amplitude reference mode.

[:LEVel][:IMMediate][:AMPLitude]

Supported All Models

```
[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude] <value><unit>
[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]?
```

This command sets the RF output power.

***RST**	N5161A/62A N5181A/82A	–1.10000000E+002 (Standard) or –1.44000000E+002 (Option 1EQ)
	N5183A	–2.00000000E+001 (Standard) or –1.30000000E+002 (Option 1E1)

Key Entry **AMPTD**

Remarks For information on the ranges for this command and the specified values, refer to the instrument's *Data Sheet*.

:MINimum:LIMit

Supported All Models w/Option HAL

```
[:SOURce]:POWer:MINimum:LIMit LOW|HIGH
[:SOURce]:POWer:MINimum:LIMit?
```

This command selects the RF Off power minimum level to LOW or HIGH. When set to HIGH the RF Output Attenuator is set for maximum attenuation. When set to LOW the internal RF modulators are biased off further reducing the output signal level.

Key Entry **Minimum Power**

Key Path **AMPTD > More 3 of 3 > Minimum Power**

Remarks Option HAL is a special operating mode that does not use the ALC modulator to shut off the RF output when the RF is off. When option HAL is active the pulse and ALC modulators are left on. The RF output attenuator is used to shut off the output level. The result being the output power will not decrease as much when the RF is off. Command reports undefined header error if option is not enabled.

:MODE

Supported All Models

```
[:SOURce]:POWer:MODE FIXed|LIST
[:SOURce]:POWer:MODE?
```

This command sets the signal generator power mode to fixed or swept.

FIXed — This choice stops a power sweep, allowing the signal generator to operate at a fixed power level. Refer to the [:LEVel][:IMMediate][:AMPLitude] command for setting the output power level.

LIST — This choice selects the swept power mode. If sweep triggering is set to immediate along with continuous sweep mode, executing the command starts the LIST or STEP power sweep.

NOTE To perform a frequency and amplitude sweep, you must also select LIST as the frequency mode. See also the :FREQuency:MODE command for selecting the list mode for a frequency sweep.

***RST** FIX

Key Entry **SWEEP Amptd Off On**

NOISe:[STATe]

Supported All Models

```
[:SOURce]:POWer:NOISe:[STATe] ON|OFF|1|0
[:SOURce]:POWer:NOISe:[STATe]?
```

This command enables the optimize signal to noise (S/N) ratio state. The command optimizes the attenuator and ALC setting to give the optimal signal to noise performance. It does not change the RF output power. The query returns an integer.

Default S/N Off

Key Entry **Optimize S/N Off On**

Key Path **AMPTD** > **More 3 of 3** > **Optimize S/N Off On**

Remarks An example of this feature is when the S/N is off, and the output power is set to –10 dBm, the ALC rises to 0 dBm. The resulting attenuation is 10 dB.

When the Optimize S/N is enabled (ON), and the output power is set to –10 dBm, the ALC increases to maximum (i.e. 20 dBm). The attenuator increases to 30 dB, resulting in a 20 dB increased S/N for better dynamic range.

Can not go beyond maximum ALC.

It is limited to CW operation.

This mode is mutually exclusive with **Attenuator Hold**, and any modulation type. A settings conflict error will be generated if Attenuator Hold or any modulation is activated when **Optimize S/N** is enabled.

:PROTection[:STATe]

Supported All models

```
[:SOURce]:POWer:PROTection[:STATe] ON|OFF|1|0
[:SOURce]:POWer:PROTection[:STATe]?
```

This command enables or disables the power search protection function. The power search protection function sets the attenuator to its maximum level whenever a power search is initiated. This can be used to protect devices that are sensitive to high average power or high power changes. The trade off on using the power protection function is decreased attenuator life, as the attenuator will switch to its maximum setting during a power search.

NOTE Continual or excessive use of the power search protection function can decrease attenuator life.

ON (1) Causes the attenuator to switch to and hold its maximum level setting during a power search.

OFF (0) Sets the attenuator to normal mode. The attenuator is not used during power search.

Example

```
:POW:PROT ON
```

The preceding example enables the power inhibit function.

***RST** 0

Key Entry **RF During Power Search Normal Minimum**

Key Path **AMPTD > ALC Off > Power Search (Auto) > RF During Power Search Normal Minimum**

:REFerence

Supported All Models

```
[:SOURce]:POWer:REFerence <value><unit>
[:SOURce]:POWer:REFerence?
```

This command sets the power level for the signal generator RF output reference.

The RF output power is referenced to the value entered in this command.

***RST** +0.00000000E+000

Range –400 to 300 dBm

Key Entry **Amptd Ref Set**

Key Path **AMPTD > More 2 of 3 > Amptd Ref Set**

:REFerence:STATe

Supported All Models

```
[:SOURce]:POWer:REFerence:STATe ON|OFF|1|0
[:SOURce]:POWer:REFerence:STATe?
```

This command enables or disables the RF output reference.

Once the reference state is ON, all subsequent output power settings are set relative to the reference value.

ON (1) This choice will set the power reference state to ON. The unit displayed for commands, :ANNotation:AMPLitude:UNIT and :POWer will be expressed in dB.

OFF (0) This choice will set the power reference state to OFF.

***RST** 0

Key Entry **Amptd Ref Off On**

Key Path **AMPTD > More 2 of 3 > Amptd Ref Off On**

Remarks Amplitude offsets can be used with the amplitude reference mode.

:STARt

Supported All Models

```
[:SOURce]:POWer:STARt <value><unit>
[:SOURce]:POWer:STARt?
```

This command sets the first amplitude point in a step sweep.

***RST** N5161A/62A/81A/82A −1.10000000E+002 (Standard) and −1.44000000E+002 (Option 1EQ)

N5183A −2.00000000E+001 (Standard) and −1.30000000E+002 (Option 1E1)

Range Refer to the [:LEVel][:IMMediate][:AMPLitude] command for the output power ranges.

Key Entry **Amptd Start**

:STOP

Supported All Models

```
[:SOURce]:POWer:STOP <value><unit>
[:SOURce]:POWer:STOP?
```

This command sets the last amplitude point in a step sweep.

***RST** N5161A/62A/81A/82A –1.10000000E+002 (Standard) and –1.44000000E+002 (Option 1EQ)

N5183A –2.00000000E+001 (Standard) and –1.30000000E+002 (Option 1E1)

Range Refer to the [:LEVel][:IMMediate][:AMPLitude] command for the output power ranges.

Key Entry **Amptd Stop**

:USER:MAX

Supported All Models

```
[:SOURce]:POWer:USER:MAX <ampl>
[:SOURce]:POWer:USER:MAX?
```

This command enables the user to specify a maximum output power level that is lower than the instrument's normal maximum output power. This affects all modes of power operation. The query returns the value of the output power level.

Default 30 dBm

Key Entry **User Power Max**

Key Path **AMPTD** > **More 3 of 3** > **User Power Max**

:USER:ENABle

Supported All Models

```
[:SOURce]:POWer:USER:ENABle <0|1>
[:SOURce]:POWer:USER:ENABle?
```

This command enables or disables the user settable maximum output power limit. The query returns an integer.

Key Entry **User Power Max Enable:**

Key Path **AMPTD** > **More 3 of 3** > **User Power Max Enable**

3 LXI System Commands

This chapter provides SCPI command descriptions for LAN eXtensions for Instrumentation (LXI–Class B) subsystems dedicated to signal generator operations common to the N5161A/62A/81A/82A/83A.

NOTE **LXI Class B Compliance Disclaimer**

As of this product firmware release in June 2008, LXI Class B Compliance Tests, using the new IEEE 1588–2008 Precision Time Protocol (PTP), were not available. This product provides the features of an LXI Class B instrument by adding LAN Triggering and Time Synchronization to its LXI Class C compliance. References to LXI Class B in the document, instrument menus and web pages do not insure LXI Class B compliance. This product will apply for LXI Class B Compliance when the LXI Consortium has approved its specification changes and can provide certified testing. Refer to *http://www.lxistandard.org/home*.

LXI–B is only available on instruments with serial prefixes ≥US/MY/SG4818.

This chapter contains the following major sections:

- Primary LXI Commands on page 75
- Clock Subsystem(:LXI:CLOCk:) on page 76
- Events Subsystem (:LXI:EVENt:) on page 109
- Trigger Subsystem (:TRIGger[:SEQuence]:LXI:) on page 133

Primary LXI Commands

The three primary commands are listed in the order of importance to LXI functionality:

1. :LXI:STATe (page 132).
2. :PTP:DOMain (page 79).
3. :EVENt:DOMain (page 109).

Clock Subsystem(:LXI:CLOCk:)

:PTP:ACCuracy

Supported All Models

```
:LXI:CLOCk:PTP:ACCuracy NS25|NS100|NS250|NS1000|NS2500|US10|US25|US100|US250
|US1000|US2500|MS10|MS25|MS100|MS250|S1|S10|GT10S|UNKNown
```

```
:LXI:CLOC:PTP:ACC?
```

This command sets the typical offset from the correct time the user can expect from the instrument PTP clock, when it is acting as the master Precision Time Protocol (PTP) clock. It should be set along with the time if the instrument PTP clock is the master PTP clock.

The query returns a character string with the accuracy of the clock.

Example

```
:LXI:CLOC:PTP:ACC NS250
```

The preceding example sets the accuracy to 250 nanoseconds.

Range 25 ns to > 10 seconds

Default Value GT10S

Remarks

- NS – nanoseconds.
- US – microseconds.
- MS – milliseconds.
- S – seconds.
- GT10S – greater than 10 seconds.
- UNKNOWN – accuracy is not known.

Choose the value based on how precisely the clock can be set to the exact Temps Atomique International (TAI) time, taking into account the accuracy and drift of the clock's oscillator.

The accuracy property helps characterize the quality of the instrument PTP clock and its suitability to be the master PTP clock. This property is used by the best master clock algorithm and is subordinate to the clock class property.

The system can be no more accurate than the grandmaster PTP clock's accuracy. A slave PTP clock's accuracy is superseded by the grandmaster PTP clock's accuracy. This is one of the objectives of PTP; to synchronize all of the clocks to the one with the best accuracy.

:PTP:ANNounce:INTerval

Supported All Models

```
:LXI:CLOCk:PTP:ANNounce:INTerval 1|2|4|8|16
```

```
:LXI:CLOCk:PTP:ANNounce:INTerval?
```

This command sets the time in seconds between PTP announce packets. A shorter interval makes the system more responsive to changes in the master PTP clock at the cost of network bandwidth and packet processing time. The announce interval should be constant across all the instruments in the network.

The query returns an integer with the time, in seconds between announce packets.

Example

```
:LXI:CLOC:PTP:ANN:INT 4
```

The preceding example sets the announce interval to 4 seconds.

Range 0 to 16 seconds

Default Value 4 seconds (2^2)

Remarks The announce interval will be rounded up to the nearest non–negative integer power of two, with a maximum value of 16.

The following table represent the announce intervals:

Value Sent as <intSeconds>	Effective Value
1	1 second (2^0)
2	2 seconds (2^1)
3	4 seconds (2^2)
4	4 seconds (2^2)
5	4 seconds (2^2)
6	8 seconds (2^3)
7	8 seconds (2^3)
8	8 seconds (2^3)
9	8 seconds (2^3)
10	8 seconds (2^3)
11	8 seconds (2^3)

Value Sent as <intSeconds>	Effective Value
12	16 seconds (2^4)
13	16 seconds (2^4)
14	16 seconds (2^4)
15	16 seconds (2^4)
16	16 seconds (2^4)

:PTP:ANNounce:RTOut

Supported All Models

`:LXI:CLOCk:PTP:ANNounce:RTOut <intNumberOfIntervals>`

`:LXI:CLOCk:PTP:ANNounce:RTOut?`

This command sets the time that a PTP clock in the Slave or Listening state waits to receive a PTP announce packet before transitioning to the master state.

The query returns an integer.

Example

```
:LXI:CLOC:PTP:ANN:RTO 5
```

The preceding example sets the transition wait time to 5 seconds.

Range 0 to 255 seconds

Default Value 3 seconds

Remarks *<intNumberOfIntervals>* is expressed as the number of announce intervals.

If the announce interval (:PTP:ANNounce:INTerval) is 4 seconds and ANNounce:RTOut is 3, then the instrument PTP clock will wait 12 seconds before transitioning to the master state.

:PTP:DEViation?

Supported All Models

```
:LXI:CLOCk:PTP:DEViation?
```

This queries the measured standard deviation of the instrument PTP clock time from the master PTP clock time.

The query returns a double.

Example

```
:LXI:CLOC:PTP:DEV?
```

The preceding example queries the standard deviation of the instrument's PTP clock from the master clock.

:PTP:DOMain

Supported All Models

```
:LXI:CLOCk:PTP:DOMain <bytDomainNumber>
```

```
:LXI:CLOCk:PTP:DOMain?
```

This command sets the PTP Domain property for the instrument PTP clock. This property specifies the group of PTP clocks that the instrument PTP clock will recognize for synchronization. This allows measurement systems with different masters to share the same communication medium.

The query returns an integer as the PTP domain.

Example

```
:LXI:CLOC:PTP:DOM 5
```

The preceding example sets the instrument's PTP clock domain to 5.

Range 0 to 127

Key Entry **PTP Domain**

Default Value 0

Remarks Domain numbers above 127 are reserved.

This is the PTP Domain, not the LXI domain.

Each clock in a system can be assigned to only one domain.

:PTP:DRINterval

Supported All Models

```
:LXI:CLOCk:PTP:DRINterval <dblSeconds>
```

```
:LXI:CLOCk:PTP:DRINterval?
```

This command sets the delay request interval property for the instrument PTP clock. This property is used by the master clock to specify the interval between delay request packets sent from the slave to the master clock. Slaves use a randomly chosen interval, with the mean and range equal to this property.

The query returns a double as the delay value for the PTP clock.

Example

```
:LXI:CLOC:PTP:DRIN 5.0
```

The preceding example sets the delay request interval to 5 seconds.

Range 0.0 to 1.7976931348623157 x 10^{308} seconds

:PTP:GMASter:ACCuracy?

Supported All Models

```
:LXI:CLOCk:PTP:GMASter:ACCuracy?
```

This queries for the accuracy of the grandmaster PTP clock.

The query returns a character string, of one of the discrete values listed below, indicating the accuracy of the clock.

- NS25, NS100, NS250, NS1000, NS2500
- US10, US25, US100, US250, US1000, US2500
- MS10, MS25, MS100, MS250
- S1, S10
- GT10S
- UNKNown

Example

```
:LXI:CLOC:PTP:GMAS:ACC?
```

The preceding example queries for the grandmaster clock accuracy property.

Range 25 ns to > 10 seconds

Remarks

- NS – nanoseconds.
- US – microseconds.
- MS – milliseconds.
- S – seconds.

- GT10S – greater than 10 seconds.
- UNKNOWN – accuracy is not known.

See also:

":PTP:GMASter:MADDress?" on page 81.

":PTP:GMASter:TRACeability?" on page 81.

:PTP:GMASter:MADDress?

Supported All Models

`:LXI:CLOCk:PTP:GMASter:MADDress?`

This queries for the grandmaster clock's Media Access Control (MAC) address.

The query returns a string with the MAC address of the grandmaster clock.

Example

`:LXI:CLOC:PTP:GMAS:MADD?`

The preceding example queries the grandmaster clock for its MAC address.

Remarks MAC address is a hardware address that uniquely identifies each node of a network. MAC addresses are assigned by the device manufacturer and cannot be changed.

The standard (IEEE 802) format for displaying MAC addresses is six groups of two hexadecimal digits, separated by hyphens (–), e.g. 00–30–D3–07–54–E8.

See also:

":PTP:GMASter:ACCuracy?" on page 80.

":PTP:GMASter:TRACeability?" on page 81.

:PTP:GMASter:TRACeability?

Supported All Models

`:LXI:CLOCk:PTP:GMASter:TRACeability?`

This queries the source of time for the PTP grandmaster clock in the system.

The query returns a character string with one of the following values:

- `ATOMic`
- `GPS`
- `RADio`
- `PTP`
- `NTP`
- `HANDset`
- `OTHer`

- OSCillator

Example

```
:LXI:CLOC:PTP:GMAS:TRAC?
```

The preceding example queries the grandmaster clock for its traceability.

Remarks See also:

":PTP:GMASter:ACCuracy?" on page 80.

":PTP:MASTer:MADDress?" on page 82.

:PTP:MASTer:MADDress?

Supported All Models

```
:LXI:CLOCk:PTP:MASTer:MADDress?
```

This queries for the master clock MAC address.

The query returns a string with the master clock's MAC address.

Example

```
:LXI:CLOC:PTP:MAST:MADD?
```

The preceding example queries the master clock for its MAC address.

Remarks MAC address (short for Media Access Control address) is a hardware address that uniquely identifies each node of a network. MAC addresses are assigned by the device manufacturer and cannot be changed.

The standard (IEEE 802) format for displaying MAC addresses is six groups of two hexadecimal digits, separated by hyphens (–), e.g. 00–30–D3–07–54–E8.

:PTP:OFFSet?

Supported All Models

```
:LXI:CLOCk:PTP:OFFSet?
```

This queries for the offset in time between the instrument PTP clock time and the master PTP clock time.

The query returns a double.

Example

```
:LXI:CLOC:PTP:OFFS?
```

The preceding example returns the current PTP offset.

:PTP:PRIority:FIRSt

Supported All Models

```
:LXI:CLOCk:PTP:PRIority:FIRSt <intPriority>
```

```
:LXI:CLOCk:PTP:PRIority:FIRSt?
```

This command sets the clock's Priority1 property which helps characterize the quality of the instrument PTP clock and its suitability to be the master PTP clock.

The query returns an integer with the Priority1 value.

Example

```
:LXI:CLOC:PTP:PRI:FIRS 100
```

The preceding example sets the Priority1 value to 100.

Range 0 to 255

Default Value 128

Remarks The values for this property are 0 to 255, with 0 being the best.

This property is used by the best master clock algorithm, and can be used to override the other properties considered by the best master clock algorithm.

See also ":PTP:PRIority:SECond" on page 83.

:PTP:PRIority:SECond

Supported All Models

```
:LXI:CLOCk:PTP:PRIority:SECond <intPriority>
```

```
:LXI:CLOCk:PTP:PRIority:SECond?
```

This command sets the clock's Priority2 property which helps characterize the quality of the instrument PTP clock and its suitability to be the master PTP clock.

The query returns an integer with the Priority2 value.

Example

```
:LXI:CLOC:PTP:PRI:SEC 100
```

The preceding example sets the Priority2 value to 100.

Range 0 to 255

Default Value 128

Remarks The values for this property are 0 to 255, with 0 being the best.

This property is used by the best master clock algorithm. If two PTP clocks are otherwise equal in their suitability to be the master PTP clock, this property is used as the tie breaker.

See also ":PTP:PRIority:FIRSt" on page 83.

:PTP:SINTerval

Supported All Models

```
:LXI:CLOCk:PTP:SINTerval <dblSeconds>
```

```
:LXI:CLOCk:PTP:SINTerval?
```

This command sets the synchronization interval property in seconds. This is the rate at which PTP synchronization packets are transmitted when the instrument PTP clock is acting as a master PTP clock.

The query returns a double representing the synchronization interval.

Example

```
:LXI:CLOC:PTP:SINT 2.0000
```

The preceding example sets the synchronization interval to 2.0000 seconds.

Range 0.0625 to 2 seconds

Default Value 2.0000 seconds (2^1)

Remarks The synchronization interval will be rounded up to the nearest integer power of two, with a minimum value 0.0625 seconds (2^–4) and a maximum value of 2.0000 seconds (2^1).

The following table sets the announce intervals.

Value Sent as <dblSeconds>	Effective Value
0.0000	0.0625 seconds (2^-4)
0.0100	0.0625 seconds (2^-4)
0.0625	0.0625 seconds (2^-4)
0.1250	0.1250 seconds (2^-3)
0.2500	0.2500 seconds (2^-2)
0.5000	0.5000 seconds (2^-1)
1.0000	1.0000 seconds (2^0)
2.0000	2.0000 seconds (2^1)
3.0000	2.0000 seconds (2^1)

:PTP:STATe?

Supported All Models

```
:LXI:CLOCk:PTP:STATe?
```

This queries for the current operational state of the instrument PTP clock.

The query returns a character string with one of the following values:

- INITializing
- FAULty
- DISabled
- LISTening
- PREMaster
- MASTer
- PASSive
- UNCalibrated
- SLAVe

Example

```
:LXI:CLOC:PTP:STAT?
```

The preceding example returns the current operational state of the PTP clock.

:PTP:TRACeability

Supported All Models

```
:LXI:CLOCk:PTP:TRACeability ATOMic|GPS|RADio|PTP|NTP|HANDset|OTHer|OSCillator
:LXI:CLOCk:PTP:TRACeability?
```

This command sets the source of time for the instrument PTP clock when it is the grandmaster PTP clock in the system.

The query returns a character string with one of the following values:

- ATOMic
- GPS
- RADio
- PTP
- NTP
- HANDset
- OTHer
- OSCillator

Example

```
:LXI:CLOC:PTP:TRAC GPS
```

The preceding example sets the traceability to GPS.

:PTP:VARiance?

Supported All Models

`:LXI:CLOCk:PTP:VARiance?`

This queries for the measured variance of the instrument PTP clock time from the master PTP clock time.

The query returns a double which represents the standard deviation seconds squared (S^2).

Example

`:LXI:CLOC:PTP:VAR?`

The preceding example returns the measured variance (Allan Variance) between the instrument and master PTP clocks. It is used as an indication of how well the slave clock is synchronized to the master.

:SALGorithm:LOG:ALL?

Supported All Models

`:LXI:CLOCk:SALGorithm:LOG:ALL?`

This queries for the contents of the servo algorithm offset log. A complete log is a set of entries delimited by a semicolon. The contents of the log are returned as a single quoted string containing all the log entries in the form:

"<chrLogEntry1>\;<chrLogEntry2>\;<chrLogEntry3>\;<chrLogEntry4>\;<chrLogEntryn>"

Each entry is composed of five comma separated fields. Refer to :SALGorithm:LOG:ENTRy? for more information on the fields.

Example

`:LXI:CLOC:SALG:LOG:ALL?`

The preceding example returns all entries of the servo log.

Remarks This is a non–destructive read command. The contents of the log are not erased after read.

:SALGorithm:LOG:CIRCular[:ENABle]

Supported All Models

`:LXI:CLOCk:SALGorithm:LOG:CIRCular[:ENABle] 0|1|OFF|ON`

`:LXI:CLOCk:SALGorithm:LOG:CIRCular[:ENABle]?`

This command sets the behavior for entries occurring while the servo log is full.

The query returns an integer indicating the behavior of the servo log.

Example

`:LXI:CLOC:SALG:LOG:CIRC OFF`

The preceding example turns off the servo log circular recording.

OFF (0) Disables the circular logging. Incoming log entries are discarded.

ON (1) Enables the circular logging. Overwrites oldest log entries.

Remarks See also:

":SALGorithm:LOG:CLEar" on page 88.
":SALGorithm:LOG:ENABle" on page 89.
":SALGorithm:LOG:ENTRy?" on page 89.
":SALGorithm:LOG[:NEXT]?" on page 91.
":SALGorithm:LOG:SIZE" on page 91.
":SALGorithm:LOG:STATistics:CLEar" on page 92.
":SALGorithm:LOG:STATistics[:DATA]?" on page 92.

:SALGorithm:LOG:CIRCular:FBENtry

Supported All Models

`:LXI:CLOCk:SALGorithm:LOG:CIRCular:FBENtry`

This command selects the most recently added event log entry to be used as the reference for the :SALGorithm:LOG:ENTRy? query.

Example

`:LXI:CLOC:SALG:LOG:CIRC:FBEN`

The preceding example sets the beginning entry of the log.

Remarks See also:

":SALGorithm:LOG:CLEar" on page 88.
":SALGorithm:LOG:ENABle" on page 89.
":SALGorithm:LOG[:NEXT]?" on page 91.
":SALGorithm:LOG:SIZE" on page 91.

:SALGorithm:LOG:CLEar

Supported All Models

`:LXI:CLOCk:SALGorithm:LOG:CLEar`

This command removes all existing entries from the servo log.

Example

`:LXI:CLOC:SALG:LOG:CLE`

The preceding example clears the servo log.

Remarks See also:

":SALGorithm:LOG:CIRCular[:ENABle]" on page 87.
":SALGorithm:LOG:COUNt?" on page 88.
":SALGorithm:LOG:ENTRy?" on page 89.
":SALGorithm:LOG:ENABle" on page 89.
":SALGorithm:LOG[:NEXT]?" on page 91.
":SALGorithm:LOG:SIZE" on page 91.
":SALGorithm:LOG:STATistics:CLEar" on page 92.
":SALGorithm:LOG:STATistics[:DATA]?" on page 92.

:SALGorithm:LOG:COUNt?

Supported All Models

`:LXI:CLOCk:SALGorithm:LOG:COUNt?`

This query returns an integer as the total number of entries in the servo log.

Example

`:LXI:CLOC:SALG:LOG:COUN?`

The preceding example returns the current number of entries (not the maximum size) in the servo log.

Remarks See also:

":SALGorithm:LOG:CIRCular[:ENABle]" on page 87.
":SALGorithm:LOG:CLEar" on page 88.
":SALGorithm:LOG:ENTRy?" on page 89.
":SALGorithm:LOG:ENABle" on page 89.
":SALGorithm:LOG[:NEXT]?" on page 91.
":SALGorithm:LOG:SIZE" on page 91.
":SALGorithm:LOG:STATistics:CLEar" on page 92.
":SALGorithm:LOG:STATistics[:DATA]?" on page 92.

:SALGorithm:LOG:ENABle

Supported All Models

`:LXI:CLOCk:SALGorithm:LOG:ENABle 0|1|OFF|ON`

`:LXI:CLOCk:SALGorithm:LOG:ENABle?`

This command enables or disables the servo log.

The query returns the current state of the servo log.

Example

`:LXI:CLOC:SALG:LOG:ENAB ON`

The preceding example enables the servo logging.

OFF (0) Disables the circular servo logging.

ON (1) Enables the circular servo logging.

Remarks See also:

":SALGorithm:LOG:CIRCular[:ENABle]" on page 87.
":SALGorithm:LOG:CLEar" on page 88.
":SALGorithm:LOG:COUNt?" on page 88.
":SALGorithm:LOG:ENTRy?" on page 89.
":SALGorithm:LOG[:NEXT]?" on page 91.
":SALGorithm:LOG:SIZE" on page 91.
":SALGorithm:LOG:STATistics:CLEar" on page 92.
":SALGorithm:LOG:STATistics[:DATA]?" on page 92.

:SALGorithm:LOG:ENTRy?

Supported All Models

`:LXI:CLOCk:SALGorithm:LOG:ENTRy? <intIndex>`

This query retrieves the event log entry referenced by *<intIndex>*. When the log is in circular mode, this index value is relative to the entry selected by the :SALGorithm:LOG:CIRCular:FBENtry command. The log entry is returned as eight comma separated numbers in the form:

"<intSampleIndex>,<dblTimeSeconds>,<dblTimeFraction>, <dblOffsetSeconds>,<dblAverageDelaySeconds>,<dblMasterDelaySeconds>,<dblSlaveDelaySeconds>,<dblVarianceSecondsSquared>"

The eight parameters represent the type of data which is recorded in the servo log:

<intSampleIndex>	Sample index (integer).
<dblTimeSeconds>	PTP time seconds of log entry (double).
<dblTimeFraction>	PTP time fractions of log entry (double).

<dblOffsetSeconds>	Time offset from the domain master clock at time of log entry (double).
<dblAverageDelaySeconds>	Average measured network delay in seconds at time of log entry (double).
<dblMasterDelaySeconds>	Master clock delay – the measured network delay from master to save at time of log entry (double).
<dblSlaveDelaySeconds>	Slave clock – the measured network delay from slave to master at time of log entry (double).
<dblVarianceSecondsSquared>	Variance of offset (units are seconds squared) at time of log entry (double).

Example

`:LXI:CLOC:SALG:LOG:ENTR? <intIndex>`

The preceding example returns the servo performance statistics referenced by *<intIndex>*.

Range 1 to 2,147, 483, 647

Remarks This is a non–destructive read command. The contents of the log are not erased after read.

The servo log entries contain measurements made on the offset between the instrument PTP clock and the master PTP clock, as well as measurements of the packet travel time for master to slave and slave to master for the instrument PTP clock and the master PTP clock.

See also ":SALGorithm:LOG:STATistics[:DATA]?" on page 92.

:SALGorithm:LOG[:NEXT]?

Supported All Models

`:LXI:CLOCk:SALGorithm:LOG[:NEXT]?`

This queries for the next entry in the servo log and then removes this entry from the log. If the log is empty, an empty string is returned. Refer to :SALGorithm:LOG:ENTRy? query for more information on the format of the log string.

Example

`:LXI:CLOC:SALG:LOG?`

The preceding example returns the next entry in the servo log.

Remarks This is a non–destructive read command. The contents of the log are not erased after read.

See also:

":SALGorithm:LOG:CIRCular[:ENABle]" on page 87.

":SALGorithm:LOG:CLEar" on page 88.

":SALGorithm:LOG:COUNt?" on page 88.

":SALGorithm:LOG:ENABle" on page 89.

":SALGorithm:LOG:SIZE" on page 91.

":SALGorithm:LOG:STATistics:CLEar" on page 92.

":SALGorithm:LOG:STATistics[:DATA]?" on page 92.

:SALGorithm:LOG:SIZE

Supported All Models

`:LXI:CLOCk:SALGorithm:LOG:SIZE <intMaxNumberOfLogEntries>`

`:LXI:CLOCk:SALGorithm:LOG:SIZE?`

This command sets the maximum number of servo algorithm log entries.

The query returns an integer with the size of the servo algorithm log (not the current number of entries).

Example

`:LXI:CLOC:SALG:LOG:SIZE 147`

The preceding example sets the servo log to record up to 147 entries.

Range 1 to 500

Remarks See also :SALGorithm:LOG:ENTRy?

:SALGorithm:LOG:STATistics:CLEar

Supported All Models

```
:LXI:CLOCk:SALGorithm:LOG:STATistics:CLEar
```

This command clears the long term statistics of the servo performance.

Example

```
:LXI:CLOC:SALG:LOG:STAT:CLE
```

The preceding example clears the servo performance statistics.

Remarks See also ":SALGorithm:LOG:STATistics[:DATA]?" on page 92.

:SALGorithm:LOG:STATistics[:DATA]?

Supported All Models

```
:LXI:CLOCk:SALGorithm:LOG:STATistics[:DATA]?
```

This queries for the long term statistics of the servo log that characterize the performance of the instrument PTP clock's offset from the master PTP clock.

The query returns five comma separated numbers as follows:

<intSamples>	Number of samples (integer).
<dblMeanOffset>	Mean offset (double).
<dblStdDevOffset>	Standard deviation of the offset (double).
<dblMaxOffset>	The maximum offset (double).
<dblMinOffset>	The minimum offset (double).

Example

```
:LXI:CLOC:SALG:LOG:STAT?
```

The preceding example returns the five statistical values of the servo log entries.

Remarks See also ":SALGorithm:LOG:STATistics:CLEar" on page 92.

:SALGorithm[:SET]:ASYMmetry

Supported All Models

```
:LXI:CLOCk:SALGorithm[:SET]:ASYMmetry <dblSeconds>
```

```
:LXI:CLOCk:SALGorithm[:SET]:ASYMmetry?
```

This command sets the difference in seconds between the master to slave packet travel time and the slave to master packet travel time.

The query returns a double.

Example

```
:LXI:CLOC:SALG:ASYM 0.000065
```

The preceding example sets the asymmetry to 65 microseconds, indicating that the master to slave time is 65 microseconds longer than the slave to master time.

Range 0.0 to 1.7976931348623157 x 10^{308}seconds

Default Value 0 seconds

The travel time is assumed to be symmetrical.

:SALGorithm[:SET]:CFTHreshold

Supported All Models

```
:LXI:CLOCk:SALGorithm[:SET]:CFTHreshold <dblSecondsSquared>
```

```
:LXI:CLOCk:SALGorithm[:SET]:CFTHreshold?
```

This command sets the coarse/fine threshold of the PTP clock servo algorithm. It is used to determine whether the coarse or fine parameters are used for adjusting the instrument PTP clock time.

The query returns a double.

Example

```
:LXI:CLOC:SALG:CFTH 2.25E2
```

The preceding example sets the threshold to 2.25 seconds squared.

Range 0.0 to 1.7976931348623157 x 10^{308}seconds

Default Value 2^{-13} S^2 (where: S^2 = seconds squared).

Remarks The minimum value is 0. The maximum value is limited by the data type (a double).

The servo algorithm constantly calculates a variance over a moving window of the offset data. Refer to :PTP:VARiance? command.

- When that variance is greater than the coarse/fine threshold, the coarse servo parameters are used.
- When that variance is less than or equal to the coarse/file threshold, the fine servo parameters are used.

- Too high a value for the coarse/fine threshold may result in switching to the fine parameters too soon.
- The resulting servo may have too little gain, may wander or fail to follow in the clocks local oscillator, and consequently fall out of synchronization.
- If the coarse/fine threshold value is too low, the servo may not switch to the fine parameters. In that case, the servo may never settle to the highest accuracy.

:SALGorithm[:SET]:CIConstant

Supported All Models

```
:LXI:CLOCk:SALGorithm[:SET]:CIConstant <dblServoConstant>
```

```
:LXI:CLOCk:SALGorithm[:SET]:CIConstant?
```

This command sets the coarse integral constant for the PTP clock servo algorithm. This value is used to converge the PTP clock's time quickly, at the risk of overdriving the servo once it has converged.

The query returns a double.

Example

```
:LXI:CLOC:SALG:CIC 0.15
```

The preceding example sets the coarse integral constant to 0.15 seconds.

Range 0.0 to 1.7976931348623157 x 10^{308}seconds

Default Value 0.20 seconds

Remarks A Proportional–Integral controller (PI controller) is a generic control loop feedback mechanism (servo) commonly used in PTP clocks to synchronize with a master clock.

- The controller attempts to correct the error between a master clock and the slave clock by calculating a corrective action that adjusts the slave clock accordingly.
- The PI controller algorithm involves two separate parameters: the Proportional and the Integral values.
- The proportional value determines the reaction to the current error, the integral determines the reaction based on the sum of recent errors.
- The weighted sum of these two values is used to adjust the slave clock.
- The proportional term makes a change to the output that is proportional to the current error value.
- The integral term is proportional to both the magnitude and the duration of the error. Integrating the error (over time) gives the accumulated offset that should have been corrected previously.

See also:

":SALGorithm[:SET]:CPConstant" on page 97.

":SALGorithm[:SET]:FIConstant" on page 97.

":SALGorithm[:SET]:FPConstant" on page 98.

:SALGorithm[:SET]:CONFigure

Supported All Models

```
LXI:CLOCk:SALGorithm[:SET]:CONFigure <asym>,<cfth>,<cpc>,<cic>,<fpc>,<fic>,
<omax>,<othr>,<sthr>
```

```
LXI:CLOCk:SALGorithm[:SET]:CONFigure? <asym>,<cfth>,<cpc>,<cic>,<fpc>,<fic>,
<omax>,<othr>,<sthr>
```

This command sets the parameters for the servo algorithm. All of the parameters can be set by their respective individual commands.

The query returns nine comma separated values in the form:

<asymmetry> Representing the asymmetry value (double).

<cfthreshold> Representing the coarse/fine threshold value (double).

<cpconstant> Representing the coarse proportional constant value (double).

<ciconstant> Representing the coarse integral constant value (double).

<fpconstant> Representing the fine proportional constant value (double).

<ficonstant> Representing the fine integral constant value (double).

<omaximum> Representing the outlier maximum value (integer).

<othreshold> Representing the outlier threshold value (double).

<sthreshold> Representing the set/steer threshold value (double).

Example

```
:LXI:CLOC:SALG:CONF 1E2, 1E2, 1E2, 1E2, 1E2, 1E2, 500, 3, 1
```

The preceding example configures the servo algorithm to the value within the following ranges:

Range	*<asymmetry>*	0.0 to 1.7976931348623157 x 10^{308}	seconds
	<cfthreshold>	0.0 to 1.7976931348623157 x 10^{308}	seconds
	<cpconstant>	0.0 to 1.7976931348623157 x 10^{308}	seconds
	<ciconstant>	0.0 to 1.7976931348623157 x 10^{308}	seconds

<fpconstant>	0.0 to 1.7976931348623157 x 10^{308}	seconds
<ficonstant>	0.0 to 1.7976931348623157 x 10^{308}	seconds
<omaximum>	1 to 2,147, 483, 647	
<othreshold>	0.25 to 6.0	
<sthreshold>	100 ms to 10 seconds	

Remarks See also:

":SALGorithm[:SET]:ASYMmetry" on page 93.
":SALGorithm[:SET]:CFTHreshold" on page 93.
":SALGorithm[:SET]:CIConstant" on page 94.
":SALGorithm[:SET]:CPConstant" on page 97.
":SALGorithm[:SET]:FIConstant" on page 97.
":SALGorithm[:SET]:FPConstant" on page 98.
":SALGorithm[:SET]:OMAXimum" on page 98.
":SALGorithm[:SET]:OTHReshold" on page 100.
":SALGorithm[:SET]:STHReshold" on page 100.

:SALGorithm[:SET]:CPConstant

Supported All Models

```
:LXI:CLOCk:SALGorithm[:SET]:CPConstant <dblServoConstant>
```

```
:LXI:CLOCk:SALGorithm[:SET]:CPConstant?
```

This command sets the coarse proportional constant for the PTP clock servo algorithm. This value is used to converge the PTP clock's time quickly, at the risk of overdriving the servo once it has converged.

The query returns a double.

Example

```
:LXI:CLOC:SALG:CPC 0.45
```

The preceding example sets the coarse proportional constant to 0.45 seconds.

Range 0.0 to 1.7976931348623157 x 10^{308}seconds

Default Value 0.40 seconds

Remarks See also:

":SALGorithm[:SET]:CIConstant" on page 94.

":SALGorithm[:SET]:FIConstant" on page 97.

":SALGorithm[:SET]:FPConstant" on page 98.

:SALGorithm[:SET]:FIConstant

Supported All Models

```
:LXI:CLOCk:SALGorithm[:SET]:FIConstant <dblServoConstant>
```

```
:LXI:CLOCk:SALGorithm[:SET]:FIConstant?
```

This command sets the fine integral constant for the PTP clock servo algorithm. This value is used to give the servo a narrow bandwidth, making it relatively immune to variations in the master, slave, or network delay, at the risk of converging too slowly.

The query returns a double.

Example

```
:LXI:CLOC:SALG:FIC 0.45
```

The preceding example sets the fine integral constant to 0.45 seconds.

Range 0.0 to 1.7976931348623157 x 10^{308}seconds

Default Value 0.50 seconds

Remarks See also:

":SALGorithm[:SET]:CIConstant" on page 94.

":SALGorithm[:SET]:CPConstant" on page 97.

":SALGorithm[:SET]:FPConstant" on page 98.

:SALGorithm[:SET]:FPConstant

Supported All Models

```
:LXI:CLOCk:SALGorithm[:SET]:FPConstant <dblServoConstant>
```

```
:LXI:CLOCk:SALGorithm[:SET]:FPConstant?
```

This command sets the fine proportional constant for the PTP clock servo algorithm. This value is used to give the servo a narrow bandwidth, making it relatively immune to variations in the master, slave, or network delay, at the risk of converging too slowly.

The query returns a double.

Example

```
:LXI:CLOC:SALG:FPC 0.40
```

The preceding example sets the fine proportional constant to 0.40 seconds.

Range 0.0 to 1.7976931348623157 x 10^{308}seconds

Default Value 0.35 seconds

Remarks See also:

":SALGorithm[:SET]:CIConstant" on page 94.

":SALGorithm[:SET]:CPConstant" on page 97.

":SALGorithm[:SET]:FIConstant" on page 97.

:SALGorithm[:SET]:OMAXimum

Supported All Models

```
:LXI:CLOCk:SALGorithm[:SET]:OMAXimum <intConsecutiveSamples>
```

```
:LXI:CLOCk:SALGorithm[:SET]:OMAXimum?
```

This command sets the maximum outlier number of ignored consecutive outlier PTP synchronization packets. When this threshold is exceeded, the outliers are no longer ignored and are used by the servo algorithm.

The query returns an integer as the maximum number of consecutive outlier PTP packets.

Example

```
:LXI:CLOC:SALG:OMAX 10
```

The preceding example sets the maximum number of consecutive ignored outlier PTP synchronization packets to 10.

Range 1 to 2,147, 483, 647

Default Value 5 outlier packets

Remarks If a PTP synchronization or delay request packet is held up in a switch for a significant amount of time, it appears as a large deviation to the servo algorithm, and perturbs the quality of synchronization.

- The servo algorithm ignores anything outside the outlier threshold.

- Packets whose offset is less than the outlier threshold are considered valid and are retained.
- Packets whose offset is equal to or greater than the outlier threshold are considered invalid and are discarded.
- If the value for the outlier threshold is too low, valid packets may be excluded from the data and, as a result, the servo would have no data. If this occurs, the servo would not run and the Instrument PTP clock would drift.
- If the value for the outlier threshold is too high, invalid packets may be included in the data. If this occurs, the servo may process this bad data and, as a result, poor accuracy.

See also ":SALGorithm[:SET]:OTHReshold" on page 100.

:SALGorithm[:SET]:OMDThreshold

Supported All Models

```
:LXI:CLOCk:SALGorithm[:SET]:OMDThreshold <dblSeconds>
```

```
:LXI:CLOCk:SALGorithm[:SET]:OMDThreshold?
```

This command sets the outlier minimum discard threshold.

The query returns a double integer.

Example

```
:LXI:CLOC:SALG:OMDTH 0.25
```

The preceding example sets the outlier minimum discard threshold to 0.25.

Range 0.25 to 6.0

Default Value 2.0

Remarks Range values may be set to fractional standard deviations.

See also ":SALGorithm[:SET]:OMAXimum" on page 98.

:SALGorithm[:SET]:OTENable

Supported All Models

```
:LXI:CLOCk:SALGorithm[:SET]:OTENable 0|1|ON|OFF
```

```
:LXI:CLOCk:SALGorithm[:SET]:OTENable?
```

This command enables or disables the outlier threshold.

The query returns an integer indicating the state of the outlier threshold.

Example

```
:LXI:CLOC:SALG:OTEN ON
```

The preceding example enables the outlier threshold.

OFF (0) Disables the outlier threshold.

ON (1) Enables the outlier threshold.

:SALGorithm[:SET]:OTHReshold

Supported All Models

```
:LXI:CLOCk:SALGorithm[:SET]:OTHReshold <dblDeviations>
```

```
:LXI:CLOCk:SALGorithm[:SET]:OTHReshold?
```

This command sets the outlier threshold which determines if a PTP synchronization or delay request packet is considered valid or a statistical outlier. The units are in number of standard deviations from currently measured average packet latency or delay.

The query returns a double.

Example

```
:LXI:CLOC:SALG:OTHR 0.25
```

The preceding example sets the outlier threshold to 0.25.

Range 0.25 to 6.0

Default Value 2.0

Remarks Range values may be set to fractional standard deviations.

See also ":SALGorithm[:SET]:OMAXimum" on page 98.

:SALGorithm[:SET]:STHReshold

Supported All Models

```
LXI:CLOCk:SALGorithm[:SET]:STHReshold <dblSeconds>
```

```
LXI:CLOCk:SALGorithm[:SET]:STHReshold?
```

This command sets the set/steer threshold which determines if the instrument PTP clock time is too different from the master PTP clock time and should be set versus being steered or incrementally adjusted to converge with the master PTP clock time.

The query returns a double representing the set/steer threshold.

Example

```
:LXI:CLOC:SALG:STHR 1
```

The preceding example sets the threshold to 1 second.

Range 100 µs to 10 seconds

Default 0.1 seconds

:SYNC:MASTer?

Supported All Models

```
:LXI:CLOCk:SYNC:MASTer?
```

This queries for whether the instrument PTP clock is acting as a master PTP clock.

The query returns an integer.

0	Indicating that the PTP clock is *NOT* acting as the master.
1	Indicating that the PTP clock *IS* acting as the master clock.

Example

```
:LXI:CLOC:SYNC:MAST?
```

The preceding example queries the clock to determine if it is acting as the master in the PTP domain.

[:TIME]:DLSavings

Supported All Models

```
:LXI:CLOCk[:TIME]:DLSavings 0|1|OFF|ON
```

```
:LXI:CLOCk[:TIME]:DLSavings?
```

This command sets the daylight savings property indicating whether the instrument local time takes into account daylight savings time.

The query returns an integer.

OFF (0)	Indicates Daylight Savings time is not enabled.
ON (1)	Indicates Daylight Savings time is enabled.

Example

```
:LXI:CLOC:DLS ON
```

The preceding example enables the Daylight Savings time.

[:TIME]:FRACtion

Supported All Models

`:LXI:CLOCk[:TIME]:FRACtion <dblTimeFraction>`

`:LXI:CLOCk[:TIME]:FRACtion?`

This command sets the fractional seconds part of the current PTP time.

The query returns a double as the fractional part of the current PTP time.

Example

`:LXI:CLOC:FRAC .12345678`

The preceding example sets the fractional seconds on the master clock to .12345678 seconds.

Range 0.0 to 0.999999 seconds

Remarks See also "[:TIME]:SEConds" on page 105.

[:TIME]:LOCal?

Supported All Models

`:LXI:CLOCk[:TIME]:LOCal?`

This queries for the current local time formatted as date time string.

Example

`:LXI:CLOC:LOC?`

The preceding command returns the current local date and time as in `"1970/01/01,00:00:00.000000"`.

Remarks The returned string is in the form: YYYY/MM/DD HH:MM:SS.mmmmmm, where:

YYYY – year

MM – month

DD – day of the month

HH – hour (24 hour format)

MM – minutes

SS – seconds.

mmmmmm – fractions of a second

See also:

"[:TIME]:TAI?" on page 106.

"[:TIME]:TZONe?" on page 107.

"[:TIME]:UTC?" on page 107.

[:TIME]:LSOFfset

Supported All Models

```
:LXI:CLOCk[:TIME]:LSOFfset <intLeapSeconds>
```

```
:LXI:CLOCk[:TIME]:LSOFfset?
```

The command sets the current leap seconds offset between Coordinated Universal Time (UTC) and Temps Atomique International (TAI) time standards.

The query returns an integer with the number of leap seconds offset.

Example

```
:LXI:CLOC:LSOF?
```

The preceding example returns the number of leap seconds offset.

[:TIME]:MARKer[1]|2|3|4|5|6|7|8|9:CLEar

Supported All Models

```
:LXI:CLOCk[:TIME]:MARKer[1]|2|3|4|5|6|7|8|9:CLEar
```

This command clears the specified time marker. Refer to [:TIME]:MARKer[1]|2|3|4|5|6|7|8|9[:SET] command to set the time marker.

Example

```
:LXI:CLOC:MARK4:CLE
```

The preceding example clears Time Marker 4.

Remarks See also:

"[:TIME]:MARKer[1]|2|3|4|5|6|7|8|9:DELTa?" on page 103.

"[:TIME]:MARKer[1]|2|3|4|5|6|7|8|9[:SET]" on page 104.

[:TIME]:MARKer[1]|2|3|4|5|6|7|8|9:DELTa?

Supported All Models

```
:LXI:CLOCk[:TIME]:MARKer[1]|2|3|4|5|6|7|8|9:DELTa?
```

This queries and calculates the delta or elapsed time from the time marker to the current PTP time.

The query returns five comma separated doubles as follows:

<dblDeltaSeconds>	Representing the delta or difference in seconds between the current PTP time and the time originally set in the Marker.
<dblMarkerSeconds>	Representing the PTP seconds originally set in the Marker.

<dblMarkerFraction>	Representing the PTP fractional seconds originally set in the Marker.
<dblCurrentSeconds>	Representing the seconds current time.
<dblCurrentFraction>	Representing the fractional seconds of the current time.

Example

```
:LXI:CLOC:MARK4
:LXI:CLOC:MARK4:DELT?
```

The preceding example sets Time Marker 4 and takes a measurement.

The query reads the time interval.

Remarks See also:

"[:TIME]:MARKer[1]|2|3|4|5|6|7|8|9:CLEar" on page 103.

"[:TIME]:MARKer[1]|2|3|4|5|6|7|8|9[:SET]" on page 104.

[:TIME]:MARKer[1]|2|3|4|5|6|7|8|9[:SET]

Supported All Models

```
LXI:CLOCk[:TIME]:MARKer[1]|2|3|4|5|6|7|8|9[:SET]
```

This command sets a time marker (one through nine) with the current PTP time so that it can later be measured against the PTP time. A typical use is to time the length of a sequence of instrument operations. Use the [:TIME]:MARKer[1]|2|3|4|5|6|7|8|9:DELTa? query to return the time difference.

Example

```
:LXI:CLOC:MARK4
```

The preceding example sets Time Marker 4.

Remarks Up to nine markers can be set.

See also "[:TIME]:MARKer[1]|2|3|4|5|6|7|8|9:CLEar" on page 103.

[:TIME]:MEASure:CLEar

Supported All Models

```
:LXI:CLOCk[:TIME]:MEASure:CLEar
```

This command clears the beginning and ending timestamps for the last measurement.

Example

```
:LXI:CLOC:MEAS:CLE
```

The preceding example clears the timestamps of the last measurement.

Remarks See also "[:TIME]:MEASure[:DELTa]?" on page 105.

[:TIME]:MEASure[:DELTa]?

Supported All Models

```
:LXI:CLOCk[:TIME]:MEASure[:DELTa]?
```

This queries for the elapsed time (delta time) and the beginning and ending time stamps for the last completed instrument measurement.

The query returns five comma separated doubles as follows:

<dblDeltaSeconds>	Representing the seconds since delta or difference between the beginning and ending time stamps.
<dblBeginSeconds>	Representing the PTP seconds at the beginning of the measurement.
<dblBeginFraction>	Representing the fractional portion of seconds at the beginning of the measurement.
<dblEndSeconds>	Representing the seconds at the end of the measurement.
<dblEndFraction>	Representing the fractional portion of seconds at the end of the measurement.

Example

```
:LXI:CLOC:MEAS?
```

The preceding example queries for the delta between the beginning and ending time stamps for the last instrument measurement.

Default Delta

Remarks See also "[:TIME]:MEASure:CLEar" on page 104.

[:TIME]:SEConds

Supported All Models

```
:LXI:CLOCk[:TIME]:SEConds <dblTimeSeconds>
```

```
:LXI:CLOCk[:TIME]:SEConds?
```

This command sets the seconds part of the current PTP time. This represents the number of seconds after January 1, 1970 00:00:00. The device selected must be the domain IEEE1588 master clock.

The query returns a double as the number of seconds since the epoch (January 1, 1970 00:00:00).

Example

```
:LXI:CLOC:SEC 10020304.0
```

The preceding example sets the seconds on the master clock to 10020304 seconds since January 1, 1970 00:00:00.

Range 0.0 to 1.7976931348623157 x 10^{308} seconds

Remarks The *<dblTimeSeconds>* parameter must be a value representing whole seconds.

The value of 123456.0 is valid but 123456.01 is not valid and generates an error.

If the selected device is not the IEEE 1588 Master Clock, this command is ignored.

See also "[:TIME]:FRACtion" on page 102.

[:TIME]:TAI?

Supported All Models

```
:LXI:CLOCk[:TIME]:TAI?
```

This queries for the PTP time formatted as a date time string.

Example

```
:LXI:CLOC:TAI?
```

The preceding example reads the current TAI (PTP) time and returns a string as in `"1970/01/01,00:00:00.000000"`.

Remarks The returned string is in the form: YYYY/MM/DD HH:MM:SS.mmmmmm, where:

YYYY – year

MM – month

DD – day of the month

HH – hour (24 hour format)

MM – minutes

SS – seconds.

mmmmmm – fractions of a second

[:TIME]:TZONe?

Supported All Models

```
:LXI:CLOCk[:TIME]:TZONe <strTimeOffset>
```

```
:LXI:CLOCk[:TIME]:TZONe?
```

The command sets the time zone as an offset in number of hours, minutes, and seconds (in the form: ± 00:00:00) from Greenwich Mean Time (GMT).

The query returns a character string, such as –08:00:00, and +06:30:00.

Example

```
:LXI:CLOC:TZON?
```

The preceding example returns the time zone setting.

Remarks See also:

"[:TIME]:LOCal?" on page 102.

"[:TIME]:TAI?" on page 106.

"[:TIME]:UTC?" on page 107.

[:TIME]:UTC?

Supported All Models

```
:LXI:CLOCk[:TIME]:UTC?
```

This queries for the UTC time formatted as a date time string.

Example

```
:LXI:CLOC:UTC?
```

The preceding example reads the current UTC date time and returns a string as in `"1970/01/01,00:00:00.000000"`.

Remarks The returned string is in the form: YYYY/MM/DD HH:MM:SS.mmmmmm, where:

YYYY – year

MM – month

DD – day of the month

HH – hour (24 hour format)

MM – minutes

SS – seconds.

mmmmmm – fractions of a second

See also:

"[:TIME]:LOCal?" on page 102.

"[:TIME]:TAI?" on page 106.

"[:TIME]:TZONe?" on page 107.

[:TIME][:VALue]

Supported All Models

```
:LXI:CLOCk[:TIME][:VALue] <dblTimeSeconds>,<dblTimeFraction>
```

```
:LXI:CLOCk[:TIME][:VALue]?
```

This command sets the current PTP time expressed in LXI time units of seconds and fractional seconds. The device selected must be the domain IEEE1588 master clock.

The query returns two doubles: one representing the seconds, the other representing the fractional portion.

Example

```
:LXI:CLOC 1234567, 0.6789
```

The preceding example sets the clock time to 1234567 seconds and 0.6789 (fractional) seconds.

Range *<dblTimeSeconds>* 0.0 to 1.7976931348623157 x 10^{308} seconds

<dblTimeFraction> 0.0 to 0.999999 seconds

Remarks The *<dblTimeSeconds>* parameter must be a value representing whole seconds.

The value of 123456.0 is valid but 123456.01 is not valid and generates an error.

The *<dblTimeFraction>* parameter is only valid to the microseconds position.

If the selected device is not the IEEE 1588 Master Clock, this command is ignored.

See also:

"[:TIME]:SEConds" on page 105.

"[:TIME]:FRACtion" on page 102.

Events Subsystem (:LXI:EVENt:)

:DOMain

Supported All Models

`:LXI:EVENt:DOMain <bytDomain>`

`:LXI:EVENt:DOMain?`

This command specifies the LXI LAN domain.

The query returns an integer.

Example

`:LXI:EVEN:DOM 1`

The preceding example sets the active domain for the instrument to 1.

Range 0 to 255

Key Entry **Event Domain**

Remarks For more information on LXI domain, refer to *www.lxistandard.org*.

:INPut:LAN:ADD

Supported All Models

`:LXI:EVENt:INPut:LAN:ADD <strLanEvent>`

This command creates a new input event to receive.

Example

`:LXI:EVEN:INP:LAN:ADD "EVENT2"`

The preceding example demonstrates how to create an input event named "EVENT2".

Range A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.

When a new event is added the default values for the associated attributes are as follows:

Attributes	Default Value
Event Enabled	False
Identifier	Event name
Filter	"ALL:5044"
Detection	Rise

Remarks The maximum length of *<strLanEvent>* is 16 characters.

The string must be a enclosed quotation marks.

Longer strings will be truncated and added to the input event list.

No event is added if the input event already exists.

See also:

“:INPut:LAN:COUNt?” on page 110.

“:INPut:LAN:REMove:ALL” on page 111.

“:INPut:LAN:REMove[:EVENt]” on page 111.

:INPut:LAN:COUNt?

Supported All Models

```
:LXI:EVENt:INPut:LAN:COUNt?
```

This query returns the total number of defined input events (includes both enabled and disabled events). The query returns an integer representing the total number of events.

Remarks See also “:INPut:LAN:ADD” on page 109.

:INPut:LAN:DISable:ALL

Supported All Models

```
:LXI:EVENt:INPut:LAN:DISable:ALL
```

This command disables all input events.

Remarks See also:

“:INPut:LAN[:SET]:CONFigure” on page 112.

“:INPut:LAN[:SET]:ENABle” on page 114.

:INPut:LAN:LIST?

Supported All Models

```
:LXI:EVENt:INPut:LAN:LIST?
```

This query returns a quoted string with the list of defined input event names. (Add events using :INPut:LAN:ADD command.)

Remarks See also:

“:INPut:LAN:COUNt?” on page 110.

“:INPut:LAN:REMove:ALL” on page 111.

“:INPut:LAN:REMove[:EVENt]” on page 111.

:INPut:LAN:REMove:ALL

Supported All Models

`:LXI:EVENt:INPut:LAN:REMove:ALL`

This command removes all of the input events that were added using :INPut:LAN:ADD command.

Remarks Removed events cannot be re–enabled.

Compare to the IVI Events. RemoveAllCustomEvents function.

Only input events added with the `:LXI:EVENt:INPut:LAN:ADD` command are removed.

Default events cannot be removed.

See also ":INPut:LAN:REMove[:EVENt]" on page 111.

:INPut:LAN:REMove[:EVENt]

Supported All Models

`:LXI:EVENt:INPut:LAN:REMove[:EVENt] <strLanEvent>`

This command removes the specified input event from the list of named events.

Example

```
:LXI:EVEN:INP:LAN:REM "testEvent"
```

The preceding example removes the input event named "testEvent".

Range A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.

Remarks The maximum length of *<strLanEvent>* is 16 characters.

The string must be enclosed in quotes.

Longer strings are truncated and the resulting input event will be removed from the input event list.

The command generates an error message if the specified input event does not exist.

Removed LAN events cannot be re–enabled.

See also:

":INPut:LAN:ADD" on page 109.

":INPut:LAN:REMove:ALL" on page 111.

:INPut:LAN[:SET]:CONFigure

Supported All Models

```
:LXI:EVENt:INPut:LAN[:SET]:CONFigure <strLanEvent>, <enable>, <detection>, <filter>,
<identifier>
```

This command configures the most common attributes of LXI LAN output events. The parameters are also available from their corresponding commands.

Parameter	Type	Range of Values
<strLanEvent>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<enable>	Discrete	ON (1) – enables the specified input event. OFF (0) – disables the specified input event.
<detection>	Discrete	RISE – sets the instrument to trigger on the receipt of a signal LOW LAN event followed by a signal HIGH LAN event (rising edge). FALL – sets the instrument to trigger on the receipt of a signal HIGH LAN event followed by a signal LOW LAN event (falling edge). HIGH – sets the instrument to trigger on every signal HIGH LAN event LOW – sets the instrument to trigger on every signal LOW LAN event.
<filter>	Quoted ASCII String	A string of up to 45 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<identifier>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.

Example

```
:LXI:EVEN:INP:LAN:CONF "lanEvent", 1, RISE, “192.168.0.1:23”, "debugstring"
```

The preceding example specifies the input event named "lanEvent", to be enabled, sets the triggering detection to RISE, the filter expression to “192.168.0.1:23”, and the identifier to "debugstring".

Remarks

The string must be enclosed in quotes.

Longer strings are truncated and the resulting event will be removed from the input event list.

The command generates an error message if the specified event does not exist.

Removed events cannot be re–enabled.

See also:

“:INPut:LAN[:SET]:DETection” on page 114.

“:INPut:LAN[:SET]:ENABle” on page 114.

“:INPut:LAN[:SET]:FILter” on page 115.

“:INPut:LAN[:SET]:IDENtifier” on page 116.

:INPut:LAN[:SET]:DETection

Supported All Models

```
:LXI:EVENt:INPut:LAN[:SET]:DETection <strLanEvent>, RISE | FALL | HIGH | LOW
:LXI:EVENt:INPut:LAN[:SET]:DETection? <strLanEvent>
```

This command specifies the trigger detection method and polarity for the input event.

The query returns a character string with the detection setting.

Parameter	Type	Range of Values
<strLanEvent>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<detection>	Discrete	RISE – sets the instrument to trigger on the receipt of a signal LOW LAN event followed by a signal HIGH LAN event (rising edge). FALL – sets the instrument to trigger on the receipt of a signal HIGH LAN event followed by a signal LOW LAN event (falling edge). HIGH – sets the instrument to trigger on every signal HIGH LAN event LOW – sets the instrument to trigger on every signal LOW LAN event.

Example

```
:LXI:EVEN:INP:LAN:DET “lanEvent”,HIGH
```

The preceding command sets the detection mode to `HIGH` for the input event named "lanEvent".

Remarks Command is ignored if the specified input event name does not exist.

See also “:INPut:LAN[:SET]:CONFigure” on page 112.

:INPut:LAN[:SET]:ENABle

Supported All Models

```
:LXI:EVENt:INPut:LAN[:SET]:ENABle <strLanEvent>, 0|1|OFF|ON
:LXI:EVENt:INPut:LAN[:SET]:ENABle? <strLanEvent>
```

This command enables or disables the *<strLanEvent>* input event. The event is ignored if disabled.

The query returns an integer.

Parameter	Type	Range of Values
<strLanEvent>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<enable>	Discrete	OFF (0) – disables the specified input event ON (1) – enables the specified input event

Example

```
:LXI:EVEN:INP:LAN:ENAB “LAN0”,1
```

The preceding command enables the input event named "LAN0".

Remarks The command generates an error message if the specified event does not exist.

See also “:INPut:LAN[:SET]:CONFigure” on page 112.

:INPut:LAN[:SET]:FILter

Supported All Models

```
:LXI:EVENt:INPut:LAN[:SET]:FILter <strLanEvent>, <strFilterExpression>
:LXI:EVENt:INPut:LAN[:SET]:FILter? <strLanEvent>
```

This command creates a filter for incoming input events. Only input events coming from hosts matching the filter string are processed.

The query returns the filter string assigned to the specified input event.

Parameter	Type	Range of Values
<strLanEvent>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<strFilterExpression>	Quoted ASCII String	A string of up to 45 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.

Example

```
:LXI:EVEN:INP:LAN:FILT “LAN0”,“192.168.0.1:23”
```

The preceding example sets the filter string to “192.168.0.1:23” for the input event named "LAN0".

Remarks The syntax for specifying a filter is as follows: `<strFilterExpression> == ([host[:port]] | [ALL[:port]])[,Filter]`

The following are examples of valid filter expressions:

"192.168.0.1:23"

"agilent.com, soco.agilent.com"

"agilent.com:80, 192.168.0.1"

- Specifying an empty string means that LAN trigger packets are accepted as an input from any port on any host on the network through either Transmission Control Protocol (TCP) or User Datagram Protocol (UDP).
- Specifying only the port means that any host communicating over that port can send events.
- Specifying ALL indicates that UDP multicast packets are accepted if they are directed to the IANA assigned multicast address on the IANA assigned default port, or the designated port if specified.
- The command generates an error if the specified event does not exist.

See also ":INPut:LAN[:SET]:CONFigure" on page 112.

:INPut:LAN[:SET]:IDENtifier

Supported All Models

`:LXI:EVENt:INPut:LAN[:SET]:IDENtifier <strLanEvent>, <strCustomId>`

`:LXI:EVENt:INPut:LAN[:SET]:IDENtifier? <strLanEvent>`

This command specifies the string that is expected to arrive over the LAN for a given input event to occur.

The query returns a string with the identifier assigned to the specified input event.

Parameter	Type	Range of Values
<strLanEvent>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<strCustomId>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.

Example

`:LXI:EVEN:INP:LAN:IDEN "LAN0","debugstring"`

The preceding example sets the input event named "LAN0" identifier to "debugstring".

Default Value The identifier is equivalent to *<strLanEvent>* .

Remarks The command is ignored if the specified event name does not exist.

See also ":INPut:LAN[:SET]:CONFigure" on page 112.

:LOG:ALL?

Supported All Models

```
:LXI:EVENt:LOG:ALL?
```

This query returns the contents of the event log. A complete log is a set of entries delimited by a semicolon. The contents of the event log are returned as a single quoted string containing all the event log entries:

"<chrLogEntry1>;<chrLogEntry2>;<chrLogEntry3>;<chrLogEntryn>"

Each entry is composed of nine comma separated fields. For more information on the fields refer to :LOG:ENTRy? command.

Remarks See also ":LOG:CLEar" on page 118.

:LOG:CIRCular[:ENABle]

Supported All Models

```
:LXI:EVENt:LOG:CIRCular[:ENABle] 0|1|OFF|ON
```

```
:LXI:EVENt:LOG:CIRCular[:ENABle]?
```

This command selects how new entries are handled when the LXI event log is full.

The query returns an integer indicating the behavior of the LXI event log.

OFF (0) Incoming events are discarded.

ON (1) Incoming events overwrite the oldest events in the log.

Example

```
:LXI:EVEN:LOG:CIRC 1
```

The preceding example enables circular logging of LXI events.

Remarks Each entry is composed of nine comma separated fields. For more information on the fields refer to :LOG:ENTRy? command.

See also ":LOG:CLEar" on page 118.

:LOG:CIRCular:FBENtry

Supported All Models

`:LXI:EVENt:LOG:CIRCular:FBENtry`

This command selects the most recently added event log entry to be used as the reference for the `:LOG:ENTRy?` query. The log must be in circular mode for the command to function.

Remarks Each entry is composed of nine comma separated fields. For more information on the fields refer to :LOG:ENTRy? command.

See also ":LOG:CIRCular[:ENABle]" on page 117.

:LOG:CLEar

Supported All Models

`:LXI:EVENt:LOG:CLEar`

This command removes all existing entries from the event log.

Example

`:LXI:EVEN:LOG:CLE`

The preceding example clears all LXI log entries.

Remarks Each entry is composed of nine comma separated fields. For more information on the fields refer to :LOG:ENTRy? command.

See also:

":LOG:CIRCular[:ENABle]" on page 117.

":LOG:ENABle" on page 119.

:LOG:COUNt?

Supported All Models

`:LXI:EVENt:LOG:COUNt?`

This query returns the total number of entries in the LXI event log.

Example

`:LXI:EVEN:LOG:COUN?`

The preceding example returns an integer with the current number of entries in the LXI event log.

Remarks Each entry is composed of nine comma separated fields. For more information on the fields refer to :LOG:ENTRy? command.

See also:

":LOG:CIRCular[:ENABle]" on page 117.

":LOG:CLEar" on page 118.

":LOG:ENABle" on page 119.

:LOG:ENABle

Supported All Models

```
:LXI:EVENt:LOG:ENABle 0|1|OFF|ON
```

```
:LXI:EVENt:LOG:ENABle?
```

This command enables or disables LXI event logging.

The query returns an integer indicating the current state of LXI event logging.

OFF (0) Disables the logging.

ON (1) Enables the logging.

Example

```
:LXI:EVEN:LOG:ENAB ON
```

The preceding example enables the LXI event log.

Remarks Each entry is composed of nine comma separated fields. For more information on the fields refer to :LOG:ENTRy? command.

See also ":LOG:CLEar" on page 118.

:LOG:ENTRy?

Supported All Models

```
:LXI:EVENt:LOG:ENTRy? <intIndex>
```

This query retrieves the event log entry referenced by *<intIndex>*. When the log is in circular mode, this index value is relative to the entry selected by the :LOG:CIRCular:FBENtry command. The query returns nine comma separated character strings:

"<chrDate>,<chrTime>,<chrEventType>,<chrEventName>,<chrEventEdge>,<chrSourceEvent>, <chrEventIdentifier>,<chrSrcAddress>,<chrDstAddress>"

Example

```
:LXI:EVEN:LOG:ENTR? 5
```

The preceding example returns the 5^{th} entry in the event log.

Range 0 to 2,147, 483, 647

Remarks The command returns an empty string if the specified index is out of range or the entry no longer exists.

The event log records internal status events as well as all LXI event activity. As LXI LAN events are sent or received, the activity is noted in the event log with an IEEE 1588 timestamp.

The fields recorded in the event log are:

- The date the event occurred (GMT).

- The time the event occurred (GMT).
- The type of event: LAN Input, LAN Output, Status, Alarm, Trigger Alarm, Trigger LAN.
- The name of the event.
- The edge associated with the event.
- The source event is only valid for LAN Output, Trigger LAN, and Trigger Alarm event types.
- The event's identifier appears as an ASCII character on the LAN.
- The source address is only valid for LAN Input event types. It is the address from which the message originated.
- The destination address is only valid for LAN Output event types. It is the address (or addresses) that the message will be sent to. For UDP messages, this field will read "ALL."

See also ":LOG:CLEar" on page 118.

:LOG[:NEXT]?

Supported All Models

:LXI:EVENt:LOG[:NEXT]?

This query returns the oldest entry from the LXI event log and removes it from the log.

Example

```
:LXI:EVEN:LOG?
```

The preceding example queries for the last entry.

Remarks Each entry is composed of nine comma separated fields. For more information on the fields refer to :LOG:ENTRy? command.

See also ":LOG:ALL?" on page 117.

:LOG:SIZE

Supported All Models

```
:LXI:EVENt:LOG:SIZE <intMaxNumberOfLogEntries>
```

```
:LXI:EVENt:LOG:SIZE?
```

This command sets the maximum number of entries the LXI event log can hold.

The query returns the current size (maximum number of entries) of the LXI event log.

Example

```
:LXI:EVEN:LOG:SIZE 256
```

The preceding example sets the maximum size of the LXI event log to 256 entries.

Range 0 to 500

Default Value 64

Remarks Each entry is composed of nine comma separated fields. For more information on the fields refer to :LOG:ENTRy? command.

See also:

":LOG:CIRCular[:ENABle]" on page 117.

":LOG:CLEar" on page 118.

":LOG:COUNt?" on page 118.

":LOG:ENABle" on page 119.

[:OUTPut]:LAN:ADD

Supported All Models

```
:LXI:EVENt[:OUTPut]:LAN:ADD <strLanEvent>
```

This command creates a new output event as specified by *<strLanEvent>*.

Example

```
:LXI:EVEN:LAN:ADD "testEvent"
```

The preceding example creates the event named "testEvent".

Range A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.

Remarks The maximum length of *<strLanEvent>* is 16 characters.

The string must be a enclosed quotation marks.

Longer strings are truncated and the resulting LAN event name is added to the list.

[:OUTPut]:LAN:COUNt?

Supported All Models

```
:LXI:EVENt[:OUTPut]:LAN:COUNt?
```

This query returns the number of configured LXI output LAN events.

[:OUTPut]:LAN:DISable:ALL

Supported All Models

```
:LXI:EVENt[:OUTPut]:LAN:DISable:ALL
```

This command disables all configured LXI output LAN events. Refer to [:OUTPut]:LAN[:SET]:ENABle command.

[:OUTPut]:LAN:LIST?

Supported All Models

`:LXI:EVENt[:OUTPut]:LAN:LIST?`

This query returns a quoted string containing a list of all configured LAN output event names. (Add events using [:OUTPut]:LAN:ADD command.)

[:OUTPut]:LAN:REMove:ALL

Supported All Models

`:LXI:EVENt[:OUTPut]:LAN:REMove:ALL`

This command disables and removes all custom LAN events added with the [:OUTPut]:LAN:ADD command.

Example

`:LXI:EVEN:LAN:REM:ALL`

Remarks Only LAN events added with the `:LXI:EVENt[:OUTPut]:LAN:ADD` command will be removed.

Default events cannot be removed.

Removed events cannot be re–enabled.

See also "[:OUTPut]:LAN:REMove[:EVENt]" on page 123.

[:OUTPut]:LAN:REMove[:EVENt]

Supported All Models

`:LXI:EVENt[:OUTPut]:LAN:REMove[:EVENt] <strLanEvent>`

This command disables and removes the specified custom LAN output event.

Example

`:LXI:EVEN:LAN:REM “testEvent”`

The preceding example removes the LAN event named "testEvent".

Range A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.

Remarks The command generates an error message if the LAN event does not exist.

The command is ignored if the LAN event was not introduced using the [:OUTPut]:LAN:ADD command.

The maximum length of *<strLanEvent>* is 16 characters.

The string must be a enclosed quotation marks.

Longer strings are truncated and the resulting LAN event will be removed from the LXI output LAN event list.

See also “[:OUTPut]:LAN:REMove:ALL” on page 122.

[:OUTPut]:LAN[:SET]:CONFigure

Supported All Models

`:LXI:EVENt[:OUTPut]:LAN[:SET]:CONFigure <strLanEvent>, 0|1|ON|OFF, <source>, <slope>, <drive>, <destination>`

This command configures the most common attributes of LXI LAN output events. The parameters are also available from their corresponding commands.

Parameter	Type	Range of Values
<strLanEvent>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<enable>	Discrete	ON (1) – enables the LXI LAN Output event. Off (0) – disables the LXI LAN Output event.

<source>	Discrete	Typical instrument event strings include: “OperationComplete” “Settling” “Sweeping” “WaitingForTrigger”
<slope>	Discrete	POSitive – positive going transition NEGative – negative going transition
<drive>	Discrete	OFF – disables the LAN event NORMal – designates typical operation where both edges of the instrument event are transmitted. WOR – (Wired–OR) causes only one edge to be transmitted
<destination>	Quoted ASCII String	A string of up to 45 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.

Example

```
:LXI:EVEN:LAN:CONF "lanEvent3", 1, WFT, POS, NORM, "host1, 192.168.0.1:80"
```

The preceding example configures LXI LAN event "lanEvent3" as enabled, the source set to WaitingForTrigger, a positive going slope, a normal drive, and the destination to "host1, 192.168.0.1:80".

Remarks The command generates an error message if the output LAN event does not exist.

See also:

“[:OUTPut]:LAN[:SET]:DESTination” on page 125.
“[:OUTPut]:LAN[:SET]:DRIVe” on page 125.
“[:OUTPut]:LAN[:SET]:ENABle” on page 127.
“[:OUTPut]:LAN[:SET]:SLOPe” on page 129.
“[:OUTPut]:LAN[:SET]:SOURce” on page 130.
“[:OUTPut]:LAN[:SET]:TSDelta” on page 131.

[:OUTPut]:LAN[:SET]:DESTination

Supported All Models

```
:LXI:EVENt[:OUTPut]:LAN[:SET]:DESTination <strLanEvent>, <strDestinationExpression>
:LXI:EVENt[:OUTPut]:LAN[:SET]:DESTination? <strLanEvent>
```

This command sets the destination for the specified outgoing LAN event to the hosts specified by *<strDestinationExpression>.* The expression takes the form of “host1:port1, host2:port2, “. The port numbers are optional and will default to the IANA assigned TCP port (5044).

The query returns a filter expression string.

Parameter	Type	Range of Values
<strLanEvent>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<strDestinationExpression>	Quoted ASCII String	A string of up to 45 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.

Example

```
:LXI:EVEN:LAN:DEST “testEvent”,“host1, 192.168.0.1:80”
```

The preceding example sets the filter string to “host1, 192.168.0.1:80” for the event named "testEvent".

Remarks The following are valid *<strDestinationExpression>*:

“192.168.0.1:23”

“agilent.com, soco.agilent.com”

“agilent.com:80, 192.168.0.1”

To designate a UDP broadcast at the default port, set the destination string to *“”* or *“ALL”*.

To designate a UDP broadcast at a specific port, set the destination string to *“:port”* or *“ALL:port”.*

[:OUTPut]:LAN[:SET]:DRIVe

Supported All Models

```
:LXI:EVENt[:OUTPut]:LAN[:SET]:DRIVe <strLanEvent>, OFF|NORMal|WOR
:LXI:EVENt[:OUTPut]:LAN[:SET]:DRIVe? <strLanEvent>
```

This command specifies the trigger drive behavior for the specified LAN output event.

The query returns a string representing the drive behavior.

Parameter	Type	Range of Values
<strLanEvent>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<drive>	Discrete	OFF – disables the LAN event NORMal – designates typical operation where both edges of the instrument event are transmitted. WOR – (Wired–OR) causes only one edge to be transmitted

Example

```
:LXI:EVEN:LAN:DRIV “testEvent”,WOR
```

The preceding example sets the drive parameter to WOR for the event named "testEvent".

Key Entry **Off Normal Wired–OR**

Remarks The command generates an error message if the LAN event does not exist.

When the drive parameter is set to *NORMal,* a negative slope will cause both edges to be inverted before they are transmitted. A positive slope will transmit the edges unaltered.

When the drive parameter is set to *WOR*, only positive edges are transmitted. When the slope is negative, a falling edge is inverted and sent as a rising edge. When the slope is positive, a rising edge is sent.

See also:

“[:OUTPut]:LAN[:SET]:CONFigure” on page 123.

“[:OUTPut]:LAN[:SET]:SLOPe” on page 129.

The following table illustrates the effects of the Slope and Drive parameters.

Instrument Event Edge	Slope Parameter	Drive Parameter	Action
0	Negative	Off	Not Sent
0	Positive	Off	Not Sent
1	Negative	Off	Not Sent
1	Positive	Off	Not Sent
0	Negative	Normal	1

Instrument Event Edge	Slope Parameter	Drive Parameter	Action
0	Positive	Normal	0
1	Negative	Normal	0
1	Positive	Normal	1
0	Negative	Wired OR	1
0	Positive	Wired OR	Not Sent
1	Negative	Wired OR	Not Sent
1	Positive	Wired OR	0

[:OUTPut]:LAN[:SET]:ENABle

Supported All Models

```
:LXI:EVENt[:OUTPut]:LAN[:SET]:ENABle <strLanEvent>, 0|1|OFF|ON
:LXI:EVENt[:OUTPut]:LAN[:SET]:ENABle? <strLanEvent>
```

This command enables or disables the specified LXI LAN output event.

The query returns the state of the output event.

Parameter	Type	Range of Values
<strLanEvent>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<enable>	Discrete	ON (1) – enables the LXI LAN Output event. Off (0) – disables the LXI LAN Output event.

Example

```
:LXI:EVEN:LAN:ENAB “LAN0”,ON
```

The preceding example enables the LAN event named "LAN0".

Remarks The command generates an error message if the output LAN event does not exist.

[:OUTPut]:LAN[:SET]:IDENtifier

Supported All Models

```
:LXI:EVENt[:OUTPut]:LAN[:SET]:IDENtifier <strLanEvent>, <strCustomId>
:LXI:EVENt[:OUTPut]:LAN[:SET]:IDENtifier? <strLanEvent>
```

This command specifies the custom string that will be transmitted as part of the output event.

The query returns a string with the identifier assigned to the specified LXI LAN output event.

Parameter	Type	Range of Values
<strLanEvent>, <strCustomId>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.

Example

```
:LXI:EVEN:LAN:IDEN “LAN0”,“debugstring”
```

The preceding example sets the LAN event named "LAN0" identifier to "debugstring".

Default Value The identifier is equivalent to *<strLanEvent>* .

Remarks Command ignored if the LAN event does not exist.

[:OUTPut]:LAN[:SET]:SLOPe

Supported All Models

`:LXI:EVENt[:OUTPut]:LAN[:SET]:SLOPe <strLanEvent>, POSitive|NEGative`

`:LXI:EVENt[:OUTPut]:LAN[:SET]:SLOPe? <strLanEvent>`

This command sets the slope of the event transition. It determines which instrument event transition will result in a LAN packet being sent and whether or not that edge is inverted.

The query returns a character string representing the slope attribute of the LXI LAN packet.

Example

`:LXI:EVEN:LAN:SLOP “testEvent”,POS`

The preceding example sets the slope of "testEvent" to positive.

Parameter	Type	Range of Values
<strLanEvent>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<slope>	Discrete	Positive – positive–going transition. Negative – negative–going transition.

Default Value Positive

Remarks The command generates an error message if the LAN event does not exist.

When the drive parameter is set to `NORMal`, a negative slope will cause both edges to be inverted before they are transmitted. A positive slope will transmit the edges unaltered.

When the drive parameter is set to `WOR`, only positive edges are transmitted. When the slope is negative, a falling edge is inverted and sent as a rising edge. When the slope is positive, a rising edge is sent.

See also:

“[:OUTPut]:LAN[:SET]:CONFigure” on page 123.

“[:OUTPut]:LAN[:SET]:DRIVe” on page 125.

The following table illustrates the effects of the Slope and Drive parameters.

Instrument Event Edge	Slope Parameter	Drive Parameter	Action
0	Negative	Off	Not Sent
0	Positive	Off	Not Sent

Instrument Event Edge	Slope Parameter	Drive Parameter	Action
1	Negative	Off	Not Sent
1	Positive	Off	Not Sent
0	Negative	Normal	1
0	Positive	Normal	0
1	Negative	Normal	0
1	Positive	Normal	1
0	Negative	Wired OR	1
0	Positive	Wired OR	Not Sent
1	Negative	Wired OR	Not Sent
1	Positive	Wired OR	0

[:OUTPut]:LAN[:SET]:SOURce

Supported All Models

```
:LXI:EVENt[:OUTPut]:LAN[:SET]:SOURce <strLanEvent>, <strAnyEvent>
:LXI:EVENt[:OUTPut]:LAN[:SET]:SOURce? <strLanEvent>
```

This command designates the instrument that the specified LAN output event is tied to.

The query returns a character string indicating the event type for the specified LAN event name.

Parameter	Type	Range of Values
<strLanEvent>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<strAnyEvent>	Discrete	Typical instrument event strings include: “OperationComplete” “Settling” “Sweeping” “WaitingForTrigger”

Example

```
:LXI:EVEN:LAN:SOUR “testEvent”,“WaitingForTrigger”
```

The preceding example sets the source of "testEvent" to “WaitingForTrigger”.

Key Entry **OperationComplete Settling Sweeping Waiting For Trigger**

Remarks The command generates an error message if the LAN event does not exist.

For specific LXI output LAN events “WaitingForTrigger,” “Sweeping,” and “OperationComplete,” this parameter is set to the corresponding source value and cannot be changed.

“WaitingForTrigger” and “Sweeping” correspond to the standard instrument status events for which they are named.

See also:

“[:OUTPut]:LAN[:SET]:CONFigure” on page 123.

“[:OUTPut]:LAN[:SET]:DESTination” on page 125.

“[:OUTPut]:LAN[:SET]:DRIVe” on page 125.

“[:OUTPut]:LAN[:SET]:ENABle” on page 127.

“[:OUTPut]:LAN[:SET]:SLOPe” on page 129.

[:OUTPut]:LAN[:SET]:TSDelta

Supported All Models

```
:LXI:EVENt[:OUTPut]:LAN[:SET]:TSDelta <strLanEvent>, <dblSeconds>
```

```
:LXI:EVENt[:OUTPut]:LAN[:SET]:TSDelta <strLanEvent>
```

This command specifies that a certain amount of delay occur between the generation of this event and remote instruments action on it. The parameter*<dblSeconds>* represents a time in seconds to add to the timestamp of the output LAN event.

The query returns a double indicating the number of seconds of delay.

Parameter	Type	Range of Values
<strLanEvent>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<dblSeconds>	Double	0.0 to 1.7976931348623157 x 10^{308} seconds

Example

```
:LXI:EVEN:LAN:TSD “testEvent”,10.5
```

The preceding command sets “testEvent” delay to 10.5 seconds.

Remarks The command generates an error message if the output LAN event does not exist.

:STATus:ENABle

Supported All Models

`:LXI:EVENt:STATus:ENABle <eventName>,<On|Off>`

`:LXI:EVENt:STATus:ENABle? <eventName>`

This command enables or disables the reporting of the specified instrument status event to the LXI subsystem.

The query returns the state of the specified instrument status event.

Parameter	Type	Range of Values
`<eventName>`	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
`<onOff>`	Discrete	ON (1) – enables the LXI event. Off (0) – disables the LXI event.

Example

```
:LXI:EVEN:STAT:ENAB “WaitingForTrigger”,0
```

The preceding example disables the reporting of the instrument status event “Waiting For Trigger”.

Remarks The command generates an error message if the LAN event does not exist.

:LXI:STATe

Supported All Models

`:LXI:STATe ON|OFF|1|0`

`:LXI:STATe?`

This command enables or disables the LXI subsystem.

The query returns the current state of the LXI subsystem.

Key Entry **LXI–B Enabled**

Trigger Subsystem (:TRIGger[:SEQuence]:LXI:)

:ALARm:COUNt?

Supported All Models

```
:TRIGger[:SEQuence]:LXI:ALARm:COUNt?
```

The query returns the number of configured trigger alarms.

Example

```
:TRIG:LXI:ALAR:COUN?
```

:ALARm:DISable:ALL

Supported All Models

```
:TRIGger[:SEQuence]:LXI:ALARm:DISable:ALL
```

This command disables all trigger alarms. Use the :ALARm[:SET]:ENABle command to re–enable specific trigger alarms.

Example

```
:TRIG:LXI:ALAR:DIS:ALL
```

The preceding example disables all LXI alarm triggers.

:LXI:ALARm:LIST?

Supported All Models

```
:TRIGger[:SEQuence]:LXI:ALARm:LIST?
```

The query returns a complete list of configured LXI trigger alarms.

Example

```
:TRIG:LXI:ALAR:LIST?
```

The preceding example returns a complete list of LXI trigger alarm names.

Remarks See also:

":ALARm:COUNt?" on page 133.

":ALARm:DISable:ALL" on page 133.

:ALARm[:SET]:CONFigure

Supported All Models

```
:TRIGger[:SEQuence]:LXI:ALARm[:SET]:CONFigure <alarmEvent>,<enable>,
<timeSeconds>,<timeFraction>,<period>,<repeat>
```

This command configures the most commonly used attributes of the specified LXI alarm event. The parameters are also available from their corresponding commands.

<strAlarmEvent>	This parameter requires a quoted string name of the LXI trigger alarm.
<enable>	This parameter enables or disables the LXI trigger alarm.
<timeSeconds>	This parameter sets the seconds portion of the LXI trigger alarm time.
<timeFraction>	This parameter sets the subseconds portion of the LXI trigger alarm time.
<period>	This parameter sets the amount of time that will elapse between alarms in a repeating alarm trigger.
<repeat>	This parameter sets the number of times a repeating alarm will fire once the initial alarm time has occurred.

Example

```
:TRIG:LXI:ALAR:CONF “ALARM0”, ON, 1, 0.123456, 1, 5
```

The preceding example configures the trigger alarm event named “ALARM0” as enabled, sets one second and 0.23456 sub–seconds for the alarm to go off, the elapse time of one second between alarms and five repetitions after the initial trigger.

Range	*<strAlarmEvent>*	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
	<enable>	ON (1) – Enables the LAN trigger alarm. OFF (0) – Disables the LAN trigger alarm.
	<timeSeconds>	0.0 to 1.7976931348623157 x 10^{308} seconds
	<timeFraction>	0.0 to 0.999999 seconds
	<period>	0.0 to 1.7976931348623157 x 10^{308} seconds
	<repeat>	1 – 2, 147, 483, 647

Remarks See also:

":ALARm[:SET]:ENABle" on page 135.
":ALARm[:SET]:PERiod" on page 135.
":ALARm[:SET]:REPeat" on page 136.
":ALARm[:SET]:TIME:FRACtion" on page 137.
":ALARm[:SET]:TIME:SEConds" on page 137.

:ALARm[:SET]:ENABle

Supported All Models

```
:TRIGger[:SEQuence]:LXI:ALARm[:SET]:ENABle <strAlarmEvent>, 0|1|OFF|ON
:TRIGger[:SEQuence]:LXI:ALARm[:SET]:ENABle? <strAlarmEvent>
```

This command enables or disables the LXI trigger alarm.

The query returns a discrete character indicating the specified trigger alarm state.

Example

```
:TRIG:LXI:ALAR:ENAB "ALARM0",ON
```

The preceding example enables trigger event named ALARM0.

Range

<strAlarmEvent>	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<enable>	ON (1) – Enables the trigger alarm. OFF (0) – Disables the trigger alarm.

Remarks The command generates an error message if the trigger alarm event does not exist.

:ALARm[:SET]:PERiod

Supported All Models

```
:TRIGger[:SEQuence]:LXI:ALARm[:SET]:PERiod <strAlarmEvent>, <dblSeconds>
:TRIGger[:SEQuence]:LXI:ALARm[:SET]:PERiod? <strAlarmEvent>
```

This command sets the amount of time that should elapse between alarms in a repeating alarm trigger.

The query returns the period for the specified trigger alarm event.

Example

```
:TRIG:LXI:ALAR:PER "ALARM0",1.2345
```

The preceding example sets the period of trigger event named ALARM0 to 1.2345 seconds.

Parameter	Type	Range of Values
<strAlarmEvent>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<dblSeconds>	Double	0.0 to 1.7976931348623157 x 10^{308} seconds

Default Value 0.0 seconds.

Remarks A period of 0.0 seconds effectively causes the trigger to occur only once, since all repetitions are fired simultaneously.

The command generates an error message if the alarm event does not exist.

:ALARm[:SET]:REPeat

Supported All Models

```
:TRIGger[:SEQuence]:LXI:ALARm[:SET]:REPeat <strAlarmEvent>, <intRepetitions>
```

```
:TRIGger[:SEQuence]:LXI:ALARm[:SET]:REPeat? <strAlarmEvent>
```

This command sets the number of times a repeating alarm should fire once the initial alarm time has occurred.

The query returns the number of repetitions for the specified trigger alarm event.

Example

```
:TRIG:LXI:ALAR:REP “ALARM0”,10
```

The preceding example sets the number of repetitions in trigger event named ALARM0 to 10.

Parameter	Type	Range of Values
<strAlarmEvent>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<intRepetitions>	Integer	1 – 2, 147, 483, 647

Remarks The command generates an error message if the alarm event does not exist.

:ALARm[:SET]:TIME:FRACtion

Supported All Models

```
:TRIGger[:SEQuence]:LXI:ALARm[:SET]:TIME:FRACtion <strAlarmEvent>, <dblTimeFraction>
:TRIGger[:SEQuence]:LXI:ALARm[:SET]:TIME:FRACtion? <strAlarmEvent>
```

This command sets the sub–seconds of the time for the trigger alarm.

The query returns a double representing the fractional portion of the trigger alarm time.

Example

```
:TRIG:LXI:ALAR:TIME:FRAC “ALARM0”,0.123456
```

The preceding example sets ALARM0 to 0.123456 fractional seconds.

Parameter	Type	Range of Values
<strAlarmEvent>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<dblTimeSeconds>	Double	0.0 to 0.999999 seconds

Remarks Values representing a time in the past will result in an error.

The command generates an error message if the alarm event does not exist.

:ALARm[:SET]:TIME:SEConds

Supported All Models

```
:TRIGger[:SEQuence]:LXI:ALARm[:SET]:TIME:SEConds <strAlarmEvent>, <dblTimeSeconds>
:TRIGger[:SEQuence]:LXI:ALARm[:SET]:TIME:SEConds? <strAlarmEvent>
```

This command sets the seconds portion of the LXI trigger alarm time. This represents the number of seconds after January 1, 1970 00:00:00 that the alarm should go off. Values must be in the form of whole seconds; decimal values will result in an error.

The query returns a double with the currently specified seconds for the trigger alarm.

Example

```
:TRIG:LXI:ALAR:TIME:SEC “ALARM0”,123456.0
```

The preceding example sets ALARM0 to 123456.0 seconds.

Parameter	Type	Range of Values
<strAlarmEvent>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<dblTimeSeconds>	Double	Epoch time of current date at 00:00:00 to 1.7976931348623157 x 10^{308} seconds

Default The default time is the number of seconds between January 1, 1970 at 00:00:00 and the current date at initialization at 00:00:00.

Remarks Values representing a time in the past will result in an error.

Values containing a decimal portion will result in an error.

The command generates an error message if the alarm event does not exist.

:ALARm[:SET]:TIME[:VALUE]

Supported All Models

```
:TRIGger[:SEQuence]:LXI:ALARm[:SET]:TIME[:VALUE] <strAlarmEvent>, <dblTimeSeconds>,
<dblTimeFraction>
```

```
:TRIGger[:SEQuence]:LXI:ALARm[:SET]:TIME[:VALUE]? <strAlarmEvent>
```

This command sets both the seconds and the sub–seconds portion of the LXI trigger alarm time.

The query returns two comma separated doubles.

Example

```
:TRIG:LXI:ALAR:TIME ALARM0, 2E9, 0.12345
```

Parameter	Type	Range of Values
<strAlarmEvent>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<dblTimeSeconds>	Double	Epoch time of current date at 00:00:00 – 1.7976931348623157 x 10^{308} seconds
<dblTimeFraction>	Double	0.0 to 0.999999 seconds

Default The default time is the number of seconds between January 1, 1970 at 00:00:00 and the current date at initialization at 00:00:00.

Remarks Values representing a time in the past will result in an error.

Values containing a decimal portion will result in an error.

The command generates an error message if the alarm event does not exist.

:LAN:ADD

Supported All Models

`:TRIGger[:SEQuence]:LXI:LAN:ADD <strLanEvent>`

This command adds a LAN trigger event named*<strLanEvent>*.

Range	*<strLanEvent>*	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.

Example

`:TRIG:LXI:LAN:ADD “testEvent”`

The preceding example adds the LAN trigger event named, "testEvent".

Remarks The *<strLANEvent>* string is limited to 16 characters. Longer strings are truncated.

The command generates an error if an event is added which already exists.

Added events are not enabled.

Enabling the event requires the use of :LAN[:SET]:CONFigure or :LAN[:SET]:ENABle commands.

The command modifies the :LAN:LIST? query.

See also:

“:LAN:COUNt?” on page 140.

“:LAN:DISable:ALL” on page 140.

“:LAN:REMove:ALL” on page 140.

“:LAN:REMove[:EVENt]” on page 141.

:LAN:COUNt?

Supported All Models

`:TRIGger[:SEQuence]:LXI:LAN:COUNt?`

This query returns the number of configured LXI trigger LAN events.

Example

`:TRIG:LXI:LAN:COUN?`

The preceding example returns the number of LXI trigger LAN events.

:LAN:DISable:ALL

Supported All Models

`:TRIGger[:SEQuence]:LXI:LAN:DISable:ALL`

This command disables all LXI LAN trigger events.

Example

`:TRIG:LXI:LAN:DIS:ALL`

The preceding example sets all LXI LAN trigger events to off.

Remarks See also ":LAN[:SET]:ENABle" on page 145.

:LAN:LIST?

Supported All Models

`:TRIGger[:SEQuence]:LXI:LAN:LIST?`

The query returns a complete list of LAN trigger events added using the :LAN:ADD command.

Example

`:TRIG:LXI:LAN:LIST?`

The preceding example returns a string containing the list of trigger events.

Remarks See also:

":LAN:DISable:ALL" on page 140.

":LAN:REMove:ALL" on page 140.

":LAN:REMove[:EVENt]" on page 141.

":LAN[:SET]:ENABle" on page 145.

:LAN:REMove:ALL

Supported All Models

`:TRIGger[:SEQuence]:LXI:LAN:REMove:ALL`

This command clears the list of user added LAN events that can cause the instrument to trigger. The command does not affect events LAN0 through LAN7.

Example

```
:TRIG:LXI:LAN:REM:ALL
```

The preceding example removes all LAN trigger events that have been added.

Remarks It is not possible to remove the "LAN0" through "LAN7" events.

See also:

":LAN:ADD" on page 139.

":LAN:REMove[:EVENt]" on page 141.

:LAN:REMove[:EVENt]

Supported All Models

```
:TRIGger[:SEQuence]:LXI:LAN:REMove[:EVENt] <strLanEvent>
```

This command removes the specified custom trigger event from the list of possible LAN trigger events.

Example

```
:TRIG:LXI:LAN:REM "testEvent"
```

The preceding example removes the trigger event named "testEvent" from the list of added trigger events.

Range	*<strLanEvent>*	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.

Remarks It is not possible to remove the "LAN0" through "LAN7" events.

The *<strLanEvent>* is limited to 16 characters. Longer strings are truncated and the corresponding LAN event is removed.

The command generates an error if the LAN event does not exist.

The command modifies the :LAN:LIST? query.

See also:

":LAN:ADD" on page 139.

":LAN:REMove:ALL" on page 140.

:LAN[:SET]:CONFigure

Supported All Models

```
:TRIGger[:SEQuence]:LXI:LAN[:SET]:CONFigure <strLanEvent>, 0|1|OFF|ON,
RISE|FALL|HIGH|LOW, <filter>, <identifier>, <delay>
```

This command configures the most commonly used attributes of the specified trigger event. The parameters are also available from their corresponding commands.

Example

```
:TRIG:LXI:LAN:CONF "lanEvent5", ON, HIGH,“192.168.0.1:23”, “debugstring”, 5
```

The preceding example configures the trigger event named "lanEvent5" as enabled, triggers in the HIGH state, uses the filter expression “192.168.0.1:23”, sets the identifier to “debugstring”, with a 5 second delay.

Parameter	Type	Range of Values
<strLanEvent>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<enable>	Discrete	ON (1) – Enables the LAN trigger event. OFF (0) – Disables the LAN trigger event.
<detection>	Discrete	RISE – sets the instrument to trigger on the receipt of a signal LOW LAN event followed by a signal HIGH LAN event (rising edge). FALL – sets the instrument to trigger on the receipt of a signal HIGH LAN event followed by a signal LOW LAN event (falling edge). HIGH – sets the instrument to trigger on every signal HIGH LAN event LOW – sets the instrument to trigger on every signal LOW LAN event.
<filter>	Quoted ASCII String	A string of up to 45 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<identifier>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.

<delay>	Double	0.0 to 1.7976931348623157 x 10^{308} seconds

Remarks See also:

":LAN[:SET]:DELay" on page 143.
":LAN[:SET]:DETection" on page 144.
":LAN[:SET]:ENABle" on page 145.
":LAN[:SET]:FILTer" on page 146.
":LAN[:SET]:IDENtifier" on page 147.

:LAN[:SET]:DELay

Supported All Models

```
:TRIGger[:SEQuence]:LXI:LAN[:SET]:DELay <strLanEvent>, <dblSeconds>
:TRIGger[:SEQuence]:LXI:LAN[:SET]:DELay? <strLanEvent>
```

This command sets the amount of delay that should pass between receiving a LXI LAN event trigger and the trigger action. A delay of 0.0 seconds indicates that the instrument will trigger immediately after receiving the specified LXI LAN trigger event.

The query returns a double indicating the delay time.

Example

```
:TRIG:LXI:LAN:DEL "LAN0",5
```

The preceding example sets the delay of "LAN0" to 5 seconds.

Parameter	Type	Range of Values
<strLanEvent>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<dblSeconds>	Double	0.0 to 1.7976931348623157 x 10^{308} seconds

Remarks The command generates an error message if the specified LAN event does not exist.

Negative delay times (delay times < 0.0) are ignored.

See also ":LAN[:SET]:CONFigure" on page 142.

:LAN[:SET]:DETection

Supported All Models

`:TRIGger[:SEQuence]:LXI:LAN[:SET]:DETection <strLanEvent>, RISE|FALL|HIGH|LOW`

`:TRIGger[:SEQuence]:LXI:LAN[:SET]:DETection? <strLanEvent>`

This command specifies the behavior of the trigger signal.

The query returns a character string indicating the behavior of the LAN trigger event.

Example

`:TRIG:LXI:LAN:DET “lanEvent”,HIGH`

The preceding example triggers when `“lanEvent”` is in the `HIGH` state.

Parameter	Type	Range of Values
<strLanEvent>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<detection>	Discrete	RISE – sets the instrument to trigger on the receipt of a signal LOW LAN event followed by a signal HIGH LAN event (rising edge). FALL – sets the instrument to trigger on the receipt of a signal HIGH LAN event followed by a signal LOW LAN event (falling edge). HIGH – sets the instrument to trigger on every signal HIGH LAN event LOW – sets the instrument to trigger on every signal LOW LAN event.

Remarks The command generates an error message if the LAN event does not exist.

The command is ignored if a nonexistent *<strLANEvent>* is passed.

:LAN[:SET]:ENABle

Supported All Models

```
:TRIGger[:SEQuence]:LXI:LAN[:SET]:ENABle <strLanEvent>, 0|1|OFF|ON
:TRIGger[:SEQuence]:LXI:LAN[:SET]:ENABle? <strLanEvent>
```

This command enables or disables the specified LAN trigger. When enabled the instrument will trigger upon receiving any event from the LXI trigger LAN event list. The event is ignored when in the disabled state.

The query returns a character indicating the enabled status of the specified LAN trigger event.

Example

```
:TRIG:LXI:LAN:ENAB “LAN0”,ON
```

The preceding example enables “LAN0” on.

Parameter	Type	Range of Values
<strLanEvent>	Quoted ASCII String	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<enable>	Discrete	ON (1) – Enables the LAN trigger event. OFF (0) – Disables the LAN trigger event.

Remarks The command generates an error message if the LAN event does not exist.

See also “:LAN[:SET]:CONFigure” on page 142.

:LAN[:SET]:FILTer

Supported All Models

```
:TRIGger[:SEQuence]:LXI:LAN[:SET]:FILTer <strLanEvent>, <strFilterExpression>
```

```
:TRIGger[:SEQuence]:LXI:LAN[:SET]:FILTer? <strLanEvent>
```

This command allows user to create a filter expression for the specified LAN trigger event. Only LXI trigger LAN events coming from hosts matching the filter string are processed.

The query returns an ASCII string with the filter expression.

Example

```
:TRIG:LXI:LAN:FILT “LAN0”,“agilent.com”
```

The preceding example sets the filter for trigger event LAN0 to the expression, "agilent.com".

Range

<strLanEvent>	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<strFilterExpression>	A string of up to 45 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.

Remarks

The filter expression must be in the form:

<strFilterExpression> == ([host[:port]]|[ALL[:port]])[,Filter]

The following are examples of valid filter expressions:

“192.168.0.1:23”

“agilent.com, soco.agilent.com”

“agilent.com:80, 192.168.0.1”

- Specifying an empty string means that LXI trigger packets are accepted as a trigger from any port on any host on the network through either TCP or UDP.
- Specifying only the port means that any host communicating over that port can send events.
- Specifying ALL indicates that UDP multicast packets are accepted if they are directed to the Internet Assigned Numbers Authority (IANA) assigned multicast address on the IANA assigned default port, or the designated port if specified.
- The command generates an error message if the filter string is invalid or if the LAN event does not exist.

See also “:LAN[:SET]:CONFigure” on page 142.

:LAN[:SET]:IDENtifier

Supported All Models

`:TRIGger[:SEQuence]:LXI:LAN[:SET]:IDENtifier <strLanEvent>, <strCustomId>`

`:TRIGger[:SEQuence]:LXI:LAN[:SET]:IDENtifier? <strLanEvent>`

This command sets the string that is expected to arrive over the LAN for a given trigger LAN event to occur.

The query returns an ASCII string with the identifier.

Example

`:TRIG:LXI:LAN:IDEN “LAN0”,“debugstring”`

The preceding example associates the word, "debugstring" with the event LAN0.

Range

<strLanEvent>	A string of up to 16 characters enclosed in quotes. You can use letters (A–Z, a–z), numbers (0–9), and special characters like "@", "%", "*", etc.
<strCustomId>	

Default The default value is that the identifier is equivalent to the name of the LAN event.

Remarks The command generates an error message if the specified LAN event does not exist.

4 System Commands

This chapter provides SCPI descriptions for subsystems dedicated to peripheral signal generator operations common to all Agilent MXG models.

NOTE The internal baseband generator speed upgrade Options 670, 671, and 672 are option upgrades that *require* Option 651 and 652 to have been loaded at the factory (refer to the *Data Sheet* for more information). Any references to 651, 652, or 654 are inclusive of 671, 672, and 674.

This chapter contains the following major sections:

- Calibration Subsystem (:CALibration) on page 150
- Communication Subsystem (:SYSTem:COMMunicate) on page 155
- Diagnostic Subsystem (:DIAGnostic[:CPU]:INFOrmation) on page 164
- Display Subsystem (:DISPlay) on page 167
- IEEE 488.2 Common Commands on page 171
- Memory Subsystem (:MEMory) on page 176
- Output Subsystem (:OUTPut) on page 198
- Route Subsystem (:ROUTe) on page 200
- Status Subsystem (:STATus) on page 202
- System Subsystem (:SYSTem) on page 213
- Trigger Subsystem on page 238
- Unit Subsystem (:UNIT) on page 241

Calibration Subsystem (:CALibration)

:ALC:MODulator:BIAS

Supported All Models

```
:CALibration:ALC:MODulator:BIAS
```

This command performs the ALC modulator bias calibration. The adjustment compensates for ALC open loop power drift due to temperature and humidity.

Key Entry **Execute ALC Modulator Bias Adjustment**

Key Path **Utility > Instrument Adjustments**

Remarks Use this calibration when the instrument is being used in the ALC open loop mode.

:BBG:CHANnel

Supported Option U01

```
:CALibration:BBG:CHANnel
```

Initiates the internal calibration of the internal baseband generator RF and baseband magnitude and phase corrections across the 100MHz baseband bandwidth for all RF frequencies. This calibration should be run after a Full I/Q Calibration and the I/Q Mod Skew Cal (if the Mod Skew Cal has never been run before).

This calibration should be run when the ambient temperature has varied by at least ±5 degrees Celsius from the ambient temperature at which the previous calibration was run.

For instruments with firmware release <A.01.60, the Int Channel Correction feature can only be turned on after this calibration has been run once.

See also ":DM:INTernal:CHANnel:CORRection[:STATe]" on page 28.

Key Entry **Execute Cal**

Key Path **I/Q > More > More > Execute Cal**

:BBG:SKEW RFOut|EXTernal

Supported N5162A, N5182A

NOTE For instruments that shipped with firmware release A.01.60 or newer, the RFOut path will already be calibrated. There is a command that allows you to run this calibration internally for RFOut. Refer to ":BBG:SKEW:RFOut" on page 151.

```
:CALibration:BBG:SKEW RFOut|EXTernal, <value in pS>
```

```
:CALibration:BBG:SKEW? RFOut|EXTernal
```

This command enters a calibration value that will correct the inherent I/Q skew due to differences in the I/Q physical paths. If the instrument shipped with A.01.60 or later firmware, then a new RFOut value will modify the factory calibrated value.

:BBG:SKEW:RFOut

Supported N5162A, N5182A

`:CALibration:BBG:SKEW:RFOut`

NOTE This calibration requires use of the front panel. Follow the instructions on the instrument display and make the connections to external instruments when prompted. For the N5162A, view the front panel remotely by using the instructions in the *Programming Guide*.

For instruments that shipped with firmware release A.01.60 or newer, this calibration does not need to be run unless hardware inside of the instrument is repaired or replaced.

For instruments shipped prior to the release of A.01.60 firmware, option "R2C: Core FW enhancements, A.01.60" or newer must be purchased to allow the full Int Channel Correction functionality, which corrects the internal baseband generator RF and baseband magnitude and phase across the 100MHz baseband bandwidth for all RF frequencies.

For instruments that shipped prior to firmware release A.01.60 that have had option "R2C: Core FW enhancements, A.01.60" or newer installed, the Int Channel Correction feature will achieve its full correction only after this calibration has been run once.

This command initiates the external calibration of the I/Q Timing Skew for the I/Q Modulator (RF output path). This calibration requires the RF Output of the instrument to be connected to the RF input of a Spectrum Analyzer. Note that this calibration only needs to be run once for any set of hardware.

Key Entry **Execute I/Q Mod Skew Cal**

:DCFM

Supported All Models

`:CALibration:DCFM`

This command initiates a DCFM or DCΦM calibration depending on the currently active modulation. This calibration eliminates any dc or modulation offset of the carrier signal.

NOTE If the calibration is performed with a dc signal applied, any deviation provided by the dc signal will be removed and the new zero reference point will be at the applied dc level. The calibration will have to be performed again when the dc signal is disconnected to reset the carrier signal to the correct zero reference. *Only internal DC offsets are removed*, any User's external signals containing DC offsets are ignored.

Key Entry **DCFM/DCFM Cal**

Remarks Use this calibration for externally applied signals. While the calibration can also be performed for internally generated signals, dc offset is not a normal characteristic for them.

:IQ:DC

Supported N5162A/82A with Option 651, 652, or 654

```
:CALibration:IQ:DC
```

This command performs a one to two second adjustment that is not traceable to a standard. However, it will minimize errors associated with IQ gain, quadrature, and offset voltages. This adjustment minimizes errors for the current signal generator setting and at a single frequency. The DC adjustment is volatile and must be repeated with each signal generator setting change. This command can be sent while the RF On/Off is set to Off and the adjustment will still be valid when the RF is enabled. IQ must be on to perform this adjustment.

The I/Q DC adjustment is dependent upon a number of instrument settings. If any of the instrument settings change, the adjustment will become invalid. The dependent instrument settings are:

- RF frequency
- I/Q attenuation level
- Baseband generator settings
- I/Q polarity settings
- Baseband filter settings
- I/Q calibration (the I/Q DC calibration will be invalidated if any other I/Q calibration is executed or if the **Revert to Factory Default** key is pressed)
- Temperature (±5 degrees Celsius)
- **I/Q Off On** set to On
- **I/Q Correction Optimized Path** (must be set to **RF Output**). Refer to ":DM:CORRection:OPTimization" on page 27.
- **I/Q Source** (must be set to **Internal**). Refer to ":DM:SOURce" on page 37.

The following instrument states will not invalidate the I/Q DC calibration:

- Power level changes
- I/Q Impairments

Key Entry **Execute Cal** (with **Calibration Type User Full** set to DC)

:IQ:DEFault

Supported N5162A/82A

```
:CALibration:IQ:DEFault
```

This command will restore the original factory calibration data for the internal I/Q modulator.

Key Entry **Revert to Default Cal Settings**

:IQ:FULL

Supported N5162A/82A with Option 651, 652, or 654

```
:CALibration:IQ:FULL
```

This command performs an adjustment to the I/Q offset, gain and quadrature for the full–frequency range (regardless of the start and stop frequency settings) and stores the results in the signal generator's firmware.

This calibration should be run when the ambient temperature has varied by at least ±5 degrees Celsius from the ambient temperature at which the previous calibration was run.

Key Entry **Execute Cal** (with **Calibration Type User Full** set to Full)

Remarks Start and stop frequencies will default to the full frequency range of the signal generator.

:IQ:STARt

Supported N5162A/82A with Option 651, 652, or 654

```
:CALibration:IQ:STARt <value><unit>
:CALibration:IQ:STARt?
```

This command sets the start frequency and automatically sets the calibration type to User for an I/Q calibration.

The start frequency must be less than the current value of the stop frequency.

Range Option 503: 100 kHz to 3 GHz

Option 506: 100 kHz to 6 GHz

Key Entry **Start Frequency**

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or `*RST`.

:IQ:STOP

Supported N5162A/82A with Option 651, 652, or 654

```
:CALibration:IQ:STOP <value><unit>
:CALibration:IQ:STOP?
```

This command sets the stop frequency and automatically sets the calibration type to User for an I/Q calibration.

The stop frequency must be greater than the current value of the start frequency.

Range Option 503: 100 kHz to 3 GHz

Option 506: 100 kHz to 6 GHz

Key Entry **Stop Frequency**

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or `*RST`.

:IQ:TYPE

Supported N5162A/82A with Option 651, 652, or 654

```
:CALibration:IQ:TYPE DC|USER|FULL
:CALibration:IQ:TYPE?
```

This command sets the IQ calibration type.

Key Entry **Calibration Type DC User Full**

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

:IQ:[:USER]

Supported N5162A/82A with Option 651, 652, or 654

```
:CALibration:IQ[:USER]
```

This command performs a IQ calibration according to the IQ calibration type. For information on selecting the type of IQ calibration, refer to ":IQ:TYPE" on page 154.

This calibration should be run when the ambient temperature has varied by at least ±5 degrees Celsius from the ambient temperature at which the previous calibration was run.

Key Entry **Execute Cal**

Communication Subsystem (:SYSTem:COMMunicate)

NOTE The settings enabled by the LAN commands are not affected by signal generator power–on, preset, or *RST.

:CAPability?

Supported All Models

```
:SYSTem:CAPability?
```

This command returns a option–dependent list of the signal generator's system capabilities.

:ERRor:CODe[:NEXT]?

Supported All Models

```
:SYSTem:ERRor:CODe[:NEXT]?
```

This command returns the signal generator's error code numeric value (without the error string).

Key Entry **Error**

Remarks To return the signal generator's error code numeric value with the error string, refer to :ERRor[:NEXT]? query.

:ERRor[:NEXT]?

Supported All Models

```
:SYSTem:ERRor[:NEXT]?
```

This command returns the signal generator's error code numeric value and error string.

Key Entry **Error**

Remarks To return the signal generator's error code numeric value without the error string, refer to :ERRor:CODe[:NEXT]? query.

:GPIB:ADDRess

Supported All Models

```
:SYSTem:COMMunicate:GPIB:ADDRess <number>
:SYSTem:COMMunicate:GPIB:ADDRess?
```

This command sets the signal generator's GPIB address.

Range 0 to 30

Key Entry **GPIB Address**

:GTLocal

Supported All Models

```
:SYSTem:COMMunicate:GTLocal
```

This command sets the signal generator to local mode which enables front panel operation.

Key Entry **Local**

:LAN:CONFig

Supported All Models

```
:SYSTem:COMMunicate:LAN:CONFig DHCP|MANual|AUTO|AIP
:SYSTem:COMMunicate:LAN:CONFig?
```

NOTE The SCPI query for the LAN setup returns the last power on state setting, which may or may not be the currently displayed setting.

This command sets the signal generator's internet protocol (IP) address.

`MANual`	The user assigns an IP address to the signal generator.
`DHCP`	The network assigns an IP address to the signal generator. If DHCP fails, manual configuration will be used.
`AUTO`	The network assigns an IP address to the signal generator with a fallback to Auto–IP if DHCP fails. If both DHCP and Auto–IP fail, manual configuration will be used.
`AIP`	The network assigns an IP address to the signal generator. If Auto–IP fails, the manual configuration will be used.

Example

```
:SYST:COMM:LAN:CONF DHCP
```

The preceding example sets up the signal generator LAN configuration to use a DHCP IP address.

Key Entry **LAN Config**

Remarks The SCPI query returns the current setting, not the saved setting.

:LAN:DEFaults

Supported All Models

```
:SYSTem:COMMunicate:LAN:DEFaults
```

This command restores the instrument's LAN settings to their factory default values.

Key Entry **Restore LAN Settings to Default Values**

Key Path **Utility > I/O Config > Lan Setup > Advanced Settings > More 2 of 2 > Restore LAN Settings to Default Values**

:LAN:DESCription

Supported All Models

```
:SYSTem:COMMunicate:LAN:DESCription <string>
:SYSTem:COMMunicate:LAN:DESCription?
```

This command defines the instrument's web description. The query returns the current saved setting.

Remarks If queried and there is no current LAN description the default web description value is returned.

LAN description is displayed on the homepage for the Agilent MXG.

:LAN:DHCP:TIMeout

Supported All Models

```
:SYSTem:COMMunicate:LAN:DHCP:TIMeout {30}|60|90|120sec
:SYSTem:COMMunicate:LAN:DHCP:TIMeout?
```

This command enables the user to change the maximum length of time that the instrument will spend trying to acquire an IP address using DHCP. If the LAN Config Type is set to Auto, then the Auto–IP protocol will be used as a fall–back when time–out does occur. The DHCP timeout value is stored in the same non–volatile ram as the other LAN configurations. The query returns the current setting, not the saved setting.

Default 30 Seconds

Key Entry **DHCP Timeout**

Key Path **I/O Config** > **LAN Setup** > **Advanced Settings** > **DHCP Timeout**

:LAN:DOMain

Supported All Models

```
:SYSTem:COMMunicate:LAN:DOMain <string>
:SYSTem:COMMunicate:LAN:DOMain?
```

This command defines the domain name of the signal generator's DNS server. This entry defines the DNS server for the signal generator LAN connection. The query returns the current setting, not the saved setting.

Key Entry **Domain Name**

:LAN:DNS:DYNamic

Supported All Models

```
:SYSTem:COMMunicate:LAN:DNS:DYNamic ON|OFF|1|0
:SYSTem:COMMunicate:LAN:DNS:DYNamic?
```

This command turns dynamic Domain Name System (DNS) on/off. The query returns the current setting, not the saved setting.

Default On

Key Entry **Dynamic DNS Off On**

Key Path **Utility > I/O Config > LAN Setup > Advanced Settings > Dynamic Hostname Services > Dynamic DNS Off On**

:LAN:DNS:OVERride

Supported All Models

```
:SYSTem:COMMunicate:LAN:DNS:OVERride ON|OFF|1|0
:SYSTem:COMMunicate:LAN:DNS:OVERride?
```

This command enables you to override the DNS server that is returned by the DHCP server. The LAN configuration type must be set to Auto or DHCP to use this feature. The query returns the current setting, not the saved setting.

Key Entry **DNS Server Override Off On**

Remarks If DNS Service Override is set to On, the DNS server setting defined with the DNS Server softkey is used.

If DNS Service Override is set to Off, the setting returned by the DHCP Server is used.

:LAN:DNS[:SERVer]

Supported All Models

```
:SYSTem:COMMunicate:LAN:DNS[:SERVer] <ipstring>
:SYSTem:COMMunicate:LAN:DNS[:SERVer]?
```

This command defines the IP address of the signal generator DNS server. This entry defines the DNS server for the signal generator LAN connection. The query returns the current setting, not the saved setting.

Key Entry **DNS Server**

:LAN:GATeway

Supported All Models

```
:SYSTem:COMMunicate:LAN:GATeway "<ipstring>"
:SYSTem:COMMunicate:LAN:GATeway?
```

This command sets the gateway for local area network (LAN) access to the signal generator from outside the current sub–network. The query returns the current setting, not the saved setting.

Key Entry **Default Gateway**

Remarks Using an empty string restricts access to the signal generator to local hosts on the LAN.

:LAN:HOSTname

Supported All Models

```
:SYSTem:COMMunicate:LAN:HOSTname "<string>"
:SYSTem:COMMunicate:LAN:HOSTname?
```

This command sets the signal generator's local area network (LAN) connection hostname. The query returns the current setting, not the saved setting.

Key Entry **Hostname**

:LAN:IDENtify

Supported All Models

```
:SYSTem:COMMunicate:LAN:IDENtify ON|OFF|1|0
```

This command controls the LAN identify feature.

ON (1) The command enables device identification by displaying the full–screen message "Identify: <IP Address>" on the signal generator's front panel; the LAN Status indicator will also show "IDENTIFY". For more information, refer to the Programming Guide.

OFF (0) This command disables device identification by clearing the message on the signal generator's front panel and returning the LAN Status indicator to display the current network state. For more information, refer to the Programming Guide.

:LAN:IP

Supported All Models

```
:SYSTem:COMMunicate:LAN:IP "<ipstring>"
:SYSTem:COMMunicate:LAN:IP?
```

This command sets the signal generator's local area network (LAN) internet protocol (IP) address for your IP network connection.

Key Entry **IP Address**

:LAN:KEEP:TIMeout

Supported All Models

```
:SYSTem:COMMunicate:LAN:KEEP:TIMeout <value>
:SYSTem:COMMunicate:LAN:KEEP:TIMeout?
```

This command sets the length of time for the TCP Keep Alive setting.

Range 0 to 3600 seconds

Key Entry **TCP Keep Alive Timeout**

:LAN:KEEP[:STATe]

Supported All Models

```
:SYSTem:COMMunicate:LAN:KEEP[:STATe] ON|OFF|1|0
:SYSTem:COMMunicate:LAN:KEEP[:STATe]?
```

This command enables or disables the TCP Keep Alive feature.

Key Entry **TCP Keep Alive Off On**

:LAN:MDNS

Supported All Models

```
:SYSTem:COMMunicate:LAN:MDNS ON|OFF|1|0
:SYSTem:COMMunicate:LAN:MDNS?
```

This command enables or disables the multicast (mDNS) and DNS service discovery (DNS-SD) services. The query returns the current setting.

Default On

Key Entry **mDNS/DNS-SD Off On**

Key Path **Utility > I/O Config > LAN Setup > Advanced Settings > Dynamic Hostname Services > mDNS/DNS-SD Off On**

:LAN:MONitor

Supported All Models

```
:SYSTem:COMMunicate:LAN:MONitor ON|OFF|1|0
:SYSTem:COMMunicate:LAN:MONitor?
```

This command enables or disables the LAN connection monitoring.

Key Entry **Connection Monitoring Off On**

:LAN:NBIos

Supported All Models

```
:SYSTem:COMMunicate:LAN:NBIos ON|OFF|1|0
:SYSTem:COMMunicate:LAN:NBIos?
```

This command enables or disables the RFC NetBIOS naming feature.

Default On

Key Entry **NetBIOS Naming Off On**

Key Path **Utility > I/O Config > LAN Setup > Advanced Settings > Dynamic Hostname Services > NetBIOS Naming Off On**

:LAN:RESTart

Supported All Models

```
:SYSTem:COMMunicate:LAN:RESTart
```

This command restarts the network to enable changes that have been made to the LAN setup.

Key Entry **Proceed With Reconfiguration**

Key Path **Utility > I/O Config > Lan Setup > Proceed With Reconfiguration**

:LAN:SUBNet

Supported All Models

```
:SYSTem:COMMunicate:LAN:SUBNet "<ipstring>"
:SYSTem:COMMunicate:LAN:SUBNet?
```

This command sets the signal generator's local area network (LAN) subnet mask address for your internet protocol (IP) network connection.

NOTE An error will occur if the IP address, Gateway, and subnet mask have conflicting settings.

Key Entry **Subnet Mask**

Remarks The SCPI query returns the current setting, not the saved setting.

:PMETer:DEVice

Supported All Models

```
:SYSTem:COMMunicate:PMETer:DEVice <deviceName>
:SYSTem:COMMunicate:PMETer:DEVice?
```

This command enters a VXI–11 name for a power meter that is being controlled by the signal generator. If connecting directly to the power meter enter the name as specified on your power meter documentation. If connecting through a LAN–GPIB gateway, enter the SICL address of the power meter.

Key Entry **PM VXI–11 Device Name**

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

The power meter is controlled only through a LAN cable.

This command was replaced. Refer to ":PMETer:DEVice" on page 378.

:PMETer:IP

Supported All Models

```
:SYSTem:COMMunicate:PMETer:IP <ipaddr>
:SYSTem:COMMunicate:PMETer:IP?
```

This command sets the internet protocol (IP) address for a power meter that is controlled by the signal generator. It connecting to a GPIB power meter through a LAN–GPIB gateway, this command sets the IP address of the gateway.

Key Entry **Power Meter IP Address**

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

The power meter is controlled only through a LAN cable.

Ensure that the power meter IP address is different from the signal generator address.

This command was replaced. Refer to ":PMETer:IP" on page 378.

:PMETer:PORT

Supported All Models

```
:SYSTem:COMMunicate:PMETer:PORT <portNum>
:SYSTem:COMMunicate:PMETer:PORT?
```

This command sets the IP port on the power meter that is controlled by the signal generator.

Key Entry	**Power Meter IP Port**
5025	Standard mode. The command enables standard mode for simple programming.
5024	Telnet mode. The command enables the telnet SCPI service for programming.

NOTE For firmware versions <A.01.51, the default telnet mode is 5023. For firmware versions A.01.51 and greater, telnet port 5023 is still available for backwards compatibility.

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

The power meter is controlled only through a LAN cable.

For more information on standard mode and telnet SCPI mode, refer to the *Programming Guide*.

Remarks This command was replaced. Refer to ":PMETer:PORT" on page 379.

:PMETer:TYPE

Supported All Models

```
:SYSTem:COMMunicate:PMETer:TYPE SOCKets|SOCKETS|VXI11|USB
:SYSTem:COMMunicate:PMETer:TYPE?
```

This command sets the type of control connection on the power meter for communication with the signal generator.

Key Entry	Connection Type
SOCK or SOCKETS	The command enables the power meter for sockets LAN control through the signal generator.
VXI11	The command enables the power meter for VXI–11 control through the signal generator. A power meter with GPIB can be controlled through VXI–11 using a LAN–GPIB gateway.
USB	The command enables the power meter for USB control through the signal generator.

Remarks A single–channel power meter uses channel A and selecting channel B will have no effect.

The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

This command was replaced. Refer to ":PMETer:TYPE" on page 380.

Diagnostic Subsystem (:DIAGnostic[:CPU]:INFOrmation)

:CCOunt:ATTenuator

Supported All Models

```
:DIAGnostic[:CPU]:INFormation:CCOunt:ATTenuator?
```

This query returns the cumulative number of times that the attenuator has been switched.

Key Entry **Diagnostic Info**

:CCOunt:PON

Supported All Models

```
:DIAGnostic[:CPU]:INFormation:CCOunt:PON?
```

This query returns the cumulative number of times the signal generator has been powered–on.

Key Entry **Diagnostic Info**

:CCOunt:PROTection

Supported All Models

```
:DIAGnostic[:CPU]:INFormation:CCOunt:PROTection?
```

This query returns the cumulative number of times the reverse power protection has been cycled.

Key Entry **Diagnostic Info**

:DISPlay:OTIMe

Supported All Models

```
:DIAGnostic[:CPU]:INFormation:DISPlay:OTIMe?
```

This query returns the cumulative number of hours the display has been on.

Key Entry **Diagnostic Info**

:LICense:AUXiliary

Supported All Models

```
:DIAGnostic[:CPU]:INFormation:LICense:AUXiliary?
```

This query returns a list of licenses for software applications associated with the signal generator that have the software license file installed on the PC, as opposed to a license key installed on the signal generator. This query includes calibration software licenses but does not return demo licenses for Arb–based applications.

Key Entry **Auxiliary Software Options**

Remarks If you use the signal generator with a PC that has a copy of a software

application for which a license shows with this query, the software automatically accesses and installs the license on the PC.

To access Arb–based demo software licenses, see :LICense:WAVeform. To view option numbers for software applications that use license keys, see “:OPTions” on page 165.

:LICense:WAVeform

Supported N5162A/82A with Option 651, 652, or 654

```
:DIAGnostic[:CPU]:INFormation:LICense:WAVeform?
```

This query returns a list of Arb–based licenses (including demo) for software applications associated with the signal generator that have the software license file installed on the PC, as opposed to a license key installed on the signal generator. These waveform licenses are created by the software application in a license file on the PC. Refer to “:WLICence[:VALue]” on page 166 for more information.

The response format is a series of comma separated entries enclosed in quotation marks. The first field is the waveform type number and the second is a text description of the license.

Key Entry **Waveform Licenses**

Remarks If a license appears in this list, this means that you can transfer waveform files, created with the associated Arb–based software application to another signal generator if the other signal generator has the same license.

For a list of option numbers for software applications that use license keys, see “:OPTions”.

:OPTions

Supported All Models

```
:DIAGnostic[:CPU]:INFormation:OPTions?
```

This query returns a comma separated list of internally installed signal generator options.

Key Entry **Instrument Options**

:OPTions:DETail

Supported All Models

```
:DIAgnostic[:CPU]:INFormation:OPTions:DETail?
```

This query returns the options that are installed along with the option revision and DSP version if applicable.

Key Entry **Options Info**

:OTIMe

Supported All Models

```
:DIAGnostic[:CPU]:INFormation:OTIMe?
```

This query returns the cumulative number of hours that the signal generator has been on.

Key Entry **Diagnostic Info**

:REVision

Supported All Models

```
:DIAGnostic[:CPU]:INFormation:REVision?
```

This query returns the CPU bootstrap read only memory (boot ROM) revision date. In addition, the query returns the revision, creation date, and creation time of the main firmware.

Key Entry **Diagnostic Info**

:SDATe?

Supported All Models

```
:DIAGnostic[:CPU]:INFormation:SDATe?
```

This query returns the date and time of the firmware revision.

Key Entry **Diagnostic Info**

:WLICence[:VALue]

Supported N5162A/82A with Option 651, 652, or 654

```
:DIAGnostic[:CPU]:INFormation:WLIcense[:VALue]? <type_num>
```

This query returns the number of seconds remaining on the waveform license for the type of waveform designated by the <type_num> variable number. The type variable number is obtained using the :LICense:WAVeform command shown on page 165. Zero is returned for non–existent and expired licenses. The value 2^32 –1 (4,294,967,295) is returned for licenses that do not expire.

Display Subsystem (:DISPlay)

:ANNotation:AMPLitude[:STATe]

Supported All Models

```
:DISPlay:ANNotation:AMPLitude[:STATe] ON|OFF|1|0
:DISPlay:ANNotation:AMPLitude[:STATe]?
```

This command enables or disables the amplitude annotation secure display mode. See also, ":ANNotation:FREQuency[:STATe]" on page 167 and ":SECurity:DISPlay:RESTricted" on page 233.

On(1) This selection turns off the displayed amplitude security, and the amplitude annotation is visible.

OFF(0) This selection turns on the displayed amplitude security and the amplitude annotation is blanked on the signal generator's display. Also, the keys that access the amplitude, sweep, and user flatness information are disabled.

For more information about security functions, refer to the *User's Guide*.

:ANNotation:AMPLitude:UNIT

Supported All Models

```
:DISPlay:ANNotation:AMPLitude:UNIT DBM|DBUV|DBUVEMF|V|VEMF|DB
:DISPlay:ANNotation:AMPLitude:UNIT?
```

This command sets the displayed front panel amplitude units.

If the amplitude reference state is set to on, the query returns units expressed in dB. Setting any other unit will cause a setting conflict error stating that the amplitude reference state must be set to off. Refer to, ":REFerence:STATe" on page 73 for more information.

***RST** DBM

:ANNotation:FREQuency[:STATe]

Supported All Models

```
:DISPlay:ANNotation:FREQuency[:STATe] ON|OFF|1|0
:DISPlay:ANNotation:FREQuency[:STATe]?
```

This command enables or disables the frequency annotation secure display mode. See also, ":ANNotation:AMPLitude[:STATe]" on page 167 and ":SECurity:DISPlay:RESTricted" on page 233.

ON (1) This selection turns off the displayed frequency security, and the frequency annotation is visible.

OFF (0) This selection turns on the displayed frequency security and the frequency annotation is blanked on the signal generator's display. Also, the keys that access the frequency, sweep, and user flatness information are disabled.

For more information about security functions, refer to the *User's Guide*.

***RST** **Activate Restricted Display**

:ANNotation:CLOCk:DATE:FORMat

Supported All Models

```
:DISPlay:ANNotation:CLOCk:DATE:FORMat MDY|DMY
:DISPlay:ANNotation:CLOCk:DATE:FORMat?
```

This command enables the selection of the date format. The choices are month–day–year (MDY) or day–month–year (DMY) format.

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

:ANNotation:CLOCk[:STATe]

Supported All Models

```
:DISPlay:ANNotation:CLOCk[:STATe] ON|OFF|1|0
:DISPlay:ANNotation:CLOCk[:STATe]?
```

This command enables or disables the digital clock view in the lower right side of the front panel display.

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

:BRIGhtness

Supported All Models

```
:DISPlay:BRIGhtness <value>
:DISPlay:BRIGhtness?
```

This command sets the display brightness (intensity). The brightness can be set to the minimum level (0.02), maximum level (1), or in between by using fractional numeric values (0.03–0.99).

Range 0.02 to 1

Key Entry **Brightness**

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

:CAPTure

Supported All Models

```
:DISPlay:CAPTure
```

This event command enables the user to capture the current display and store it in the signal generator's memory.

Remarks The display capture is stored as DISPLAY.BMP in the Binary Directory file system. This file is overwritten with each subsequent display capture. The file can be down–loaded in the following manner:

1. Log on to the signal generator using ftp.
2. Change (cd) to the BIN directory.
3. Retrieve the file by using the GET command or by using the :MEM:DATA query on page 181.

:CMAP:DEFaults

Supported All Models

```
:DISPlay:CMAP:DEFault [<palette:{BRIGht}|DARK|MONOchrome>]
```

This command selects the color palette for the instrument display.

Key Entry **Bright Color** **Dark Color** **Monochrome**

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

:CONTrast

Supported All Models

```
:DISPlay:CONTrast <value>
:DISPlay:CONTrast?
```

This command sets the contrast of the LCD display. The contrast can be set to the maximum level (1), minimum level (0), or in between by using fractional numeric values (0.001–0.999).

Range 0 to 1

Key Entry Display contrast hardkeys are located below the display.

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

:REMote

Supported All Models

```
:DISPlay:REMote ON|OFF|1|0
:DISPlay:REMote?
```

This command enables or disables the display updating when the signal generator is remotely controlled.

ON (1) This choice updates the signal generator display (Text Area) so you can see the settings as the commands are executed, however, this will degrade the signal generator speed. Frequency Area, Amplitude Area, and status LEDs continue to update. For more information on the front panel display description, refer to the *User's Guide*.

OFF (0) This choice turns off the display (Text Area) updating while further optimizing the signal generator for speed. No Text Area updates occur but the Frequency Area, Amplitude Area, and status LEDs continue to update. For more information on the front panel display description, refer to the *User's Guide*.

Key Entry **Update in Remote Off On**

Remarks The setting enabled by this command is not affected by signal generator preset or `*RST`. However, cycling the signal generator power will reset it to zero.

[:WINDow][:STATe]

Supported All Models

```
:DISPlay[:WINDow][:STATe] ON|OFF|1|0
:DISPlay[:WINDow][:STATe]?
```

This command is used to either blank out (OFF or 0) the display screen or turn it on (ON or 1).

Remarks *RST and presetting the signal generator or cycling the power will turn the display on.

IEEE 488.2 Common Commands

*CLS

Supported All Models

*CLS

The Clear Status (CLS) command clears the status byte by emptying the error queue and clearing all the event registers including the Data Questionable Event Register, the Standard Event Status Register, the Standard Operation Status Register and any other registers that are summarized in the status byte.

*ESE

Supported All Models

*ESE <data>

The Standard Event Status Enable (ESE) command sets the Standard Event Status Enable Register.

The variable <data> represents the sum of the bits that will be enabled.

Range 0 to 255

Remarks The setting enabled by this command is not affected by signal generator preset or *RST. However, cycling the signal generator power will reset this register to zero.

Refer to the *Programming Guide* for more information.

*ESE?

Supported All Models

*ESE?

The Standard Event Status Enable (ESE) query returns the value of the Standard Event Status Enable Register.

Remarks Refer to the *Programming Guide* for more information.

*ESR?

Supported All Models

CAUTION This is a destructive read. The data in the register is latched until it is queried. Once queried, the data is cleared.

*ESR?

The Standard Event Status Register (ESR) query returns the value of the Standard Event Status Register.

Remarks Refer to the *Programming Guide* for more information.

*IDN?

Supported All Models

*IDN?

The Identification (IDN) query outputs an identifying string. The response will show the following information:

<company name>, <model number>, <serial number>, <firmware revision>

Key Entry **Diagnostic Info**

Remarks The identification information can be modified. Refer to :SYST:IDN on page 216 for more information.

*OPC

Supported All Models

*OPC

The Operation Complete (OPC) command sets bit 0 in the Standard Event Status Register when all pending operations have finished.

*OPC?

Supported All Models

*OPC?

The Operation Complete (OPC) query returns the ASCII character 1 in the Standard Event Status register indicating completion of all pending operations.

This query stops any new commands from being processed until the current processing is complete. This command blocks the controller until *all* operations are complete (i.e. the timeout setting should be longer than the longest sweep).

CAUTION The *OPC? query is not recommended for checking if a previous command has been completed by the SCPI parser. (e.g. If the *OPC? query is waiting for a sweep or arb generation that is pending, it could potentially hang the *OPC? query for an undefined extended or even indefinite period of time.)

*OPT?

Supported All Models

*OPT?

The options (OPT) query returns a comma separated list of all of the instrument options currently installed on the signal generator.

Key Entry **Instrument Options**

*PSC

Supported

*PSC ON|OFF|1|0

The Power–On Status Clear (PSC) command controls the automatic power–on clearing of the Service Request Enable Register, the Standard Event Status Enable Register, and device–specific event enable registers.

ON (1) This choice enables the power–on clearing of the listed registers.

OFF (0) This choice disables the clearing of the listed registers and they retain their status when a power–on condition occurs.

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

*PSC?

Supported All Models

*PSC?

The Power–On Status Clear (PSC) query returns the flag setting as enabled by the *PSC command.

*RCL

Supported All Models

*RCL <reg>,<seq>

The Recall (RCL) command recalls the state from the specified memory register <reg> of the specified sequence <seq>.

Range Registers: 0 to 99 Sequences: 0 to 9

Key Entry **RECALL Reg** **Select Seq:**

*RST

Supported All Models

*RST

The Reset (RST) command resets most signal generator functions to factory–defined conditions.

Remarks Each command shows the *RST value if the setting is affected.

The settings enabled by this command is not affected by a signal generator power–on, preset, or *RST.

*RST uses the factory preset state which is better for automated testing, for example sweep mode is set to single.

For a comparison of the SCPI preset commands, refer to Table 4-1, “Preset SCPI Commands Overview,” on page 227.

*SAV

Supported All Models

```
*SAV <reg>,<seq>
```

The Save (SAV) command saves signal generator settings to the specified memory register <reg> of the specified sequence <seq>.

Range *Registers*: 0 to 99 *Sequences*: 0 to 9

Key Entry **Save Reg** **Save Seq[n] Reg[nn]**

Remarks The save function does not save all signal generator settings. Refer to the *User's Guide* for more information on the save function. Refer to "*RCL" on page 173 for information on recalling saved signal generator settings.

*SRE

Supported All Models

```
*SRE <data>
```

The Service Request Enable (SRE) command sets the value of the Service Request Enable Register.

The variable <data> is the decimal sum of the bits that will be enabled. Bit 6 (value 64) is ignored and cannot be set by this command.

Range 0 to 255

Remarks Refer to the *Programming Guide* for more information.

Entering values from 64 to 127 is equivalent to entering values from 0 to 63.

The setting enabled by this command is not affected by signal generator preset or *RST. However, cycling the signal generator power will reset it to zero.

*SRE?

Supported All Models

```
*SRE?
```

The Service Request Enable (SRE) query returns the value of the Service Request Enable Register.

Range 0 to 63 or 128 to 191

Remarks Refer to the *Programming Guide* for more information.

*STB?

Supported All Models

*STB?

The Read Status Byte (STB) query returns the value of the status byte including the master summary status (MSS) bit.

Range 0 to 255

Remarks Refer to the *Programming Guide* for more information.

*TRG

Supported All Models

*TRG

The Trigger (TRG) command triggers the device if BUS is the selected trigger source, otherwise, *TRG is ignored.

*TST?

Supported All Models

*TST?

The Self–Test (TST) query initiates the internal self–test and returns one of the following results:

0 This shows that all tests passed.

1 This shows that one or more tests failed.

Key Entry **Run Complete Self Test**

*WAI

Supported All Models

*WAI

The Wait–to–Continue (WAI) command causes the signal generator to wait until all pending commands are completed, before executing any other commands.

Memory Subsystem (:MEMory)

:CATalog:BINary?

Supported N5162A/82A with Option 651, 652, or 654

```
:MEMory:CATalog:BINary?
```

This query outputs a list of the binary files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name>,<file type>,<file size>"
```

Example Output

```
1818624,519962624,"GEN_FILE11,BIN,5"
```

Key Entry **Binary**

Remarks Refer to "File Name Variables" on page 13 for information on the file name syntax.

:CATalog:DMOD

Supported N5162A/82A with Option 651, 652, or 654

```
:MEMory:CATalog:DMOD?
```

This command outputs a list of the arbitrary waveform digital modulation files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry **DMOD**

Remarks Refer to "File Name Variables" on page 13 for information on the file name syntax.

:CATalog:FIR

Supported N5162A/82A with Option 651, 652, or 654

```
:MEMory:CATalog:FIR?
```

This command outputs a list of the finite impulse response filter (FIR) files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry **FIR**

Remarks Refer to "File Name Variables" on page 13 for information on the file name syntax.

:CATalog:FSK?

Supported N5162A/82A with Option 651, 652, or 654

```
:MEMory:CATalog:FSK?
```

This command outputs a list of the frequency shift keying (FSK) files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry **FSK**

Remarks Refer to "File Name Variables" on page 13 for information on the file name syntax.

:CATalog:IQ?

Supported N5162A/82A with Option 651, 652, or 654

```
:MEMory:CATalog:IQ?
```

This query outputs a list of the Inphase and Quadrature (I/Q) files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name>,<file type>,<file size>"
```

Key Entry **I/Q**

Remarks Refer to File Name Variables for information on the file name syntax.

:CATalog:LIST?

Supported All Models

`:MEMory:CATalog:LIST?`

This query outputs a list of the list sweep files. The return data will be in the following form:

`<mem used>,<mem free>{,"<file listing>"}`

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

`"<file name>,<file type>,<file size>"`

Example Output

`1818624,519962624,"LAST,LIST,122","LIST10,LIST,69"`

Key Entry **List**

Remarks Refer to "File Name Variables" on page 13 for information on the file name syntax.

:CATalog:MDMod

Supported N5162A/82A with Option 651, 652, or 654

`:MEMory:CATalog:MDMod?`

This command outputs a list of the arbitrary waveform multi carrier digital modulation files. The return data will be in the following form:

`<mem used>,<mem free>{,"<file listing>"}`

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

`"<file name,file type,file size>"`

Key Entry **MDMOD**

Remarks Refer to "File Name Variables" on page 13 for information on the file name syntax.

:CATalog:MTONe

Supported N5162A/82A with Option 651, 652, or 654

```
:MEMory:CATalog:MTONe?
```

This command outputs a list of the arbitrary waveform multitone files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry **MTONE**

Remarks Refer to "File Name Variables" on page 13 for information on the file name syntax.

:CATalog:PTRain?

Supported All with Option 320 and either UNU or UNW

```
:MEMory:CATalog:PTRain?
```

This command lists all files of the pulse train files stored in the non-volatile storage.

:CATalog:SEQ?

Supported N5162A/82A with Option 651, 652, or 654

```
:MEMory:CATalog:SEQ?
```

This query outputs a list of the arbitrary waveform sequence files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name>,<file type>,<file size>"
```

Example Output

```
1818624,519962624,"SEQ1_TEST,SEQ,206","SEQ_TEST,SEQ,169"
```

Key Entry **SEQ**

Remarks Refer to "File Name Variables" on page 13 for information on the file name syntax.

:CATalog:STATe?

Supported All Models

`:MEMory:CATalog:STATe?`

This query outputs a list of the state files. The return data will be in the following form:

`<mem used>,<mem free>{,"<file listing>"}`

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

`"<file name,file type,file size>"`

Example Output

`1818624,519962624,"0_00,STAT,641"`

Key Entry **State**

Remarks Refer to File Name Variables for information on the file name syntax.

The `:MEM:CAT:STAT` command requires the use of registry number and sequence number variables. The ranges are 0 to 99 for <reg_num> and 0 to 9 for <seq_num>.

:CATalog:UFLT?

Supported All Models

`:MEMory:CATalog:UFLT?`

This query outputs a list of the user–flatness correction files. The return data will be in the following form:

`<mem used>,<mem free>{,"<file listing>"}`

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

`"<file name,file type,file size>"`

Example Output

`1818624,519962624,"FLAT_1,UFLT,16","LAST,UFLT,16""`

Key Entry **User Flatness**

Remarks Refer to “File Name Variables” on page 13 for information on the file name syntax.

:CATalog[:ALL]?

Supported All Models

```
:MEMory:CATalog[:ALL]?
```

This query outputs a list of all the files in the memory subsystem. However it does not include files stored on the Option 651, 652, or 654 baseband generator. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the memory subsystem. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Example Output

```
1818624,519962624,0_00@STATE,STAT,641","0_01@STATE,STAT,669","A@NVHDR,NVHDR,132","A@NVMKR,NVMKR,0","A@NVWFM,NVWFM,9","COPY12@STATE,STAT,669","FLAT_1@USERFLAT,UFLT,16","GEN_FILE11@BINARY,BIN,5","LAST@LIST,LIST,122","LAST@USERFLAT,UFLT,16","PERSISTENT@STATE,STAT,1056",SEQ1_TEST@SEQ,SEQ,206
```

Key Entry **All**

Remarks Refer to the Table 1-4 on page 15 for a listing of the file types and the table on page 15 for information on the "<file name>" syntax.

:COPY[:NAME]

Supported All Models

```
:MEMory:COPY[:NAME] "<file name>","<file name>"
```

This command makes a duplicate of the requested file.

Key Entry **Copy File**

Remarks Refer to File Name Variables for information on the file name syntax.

When copying a waveform file from volatile to non–volatile memory, the marker file and file header, associated with the waveform file, will automatically be copied at the same time.

:DATA

Supported All Models

```
:MEMory:DATA "<file_name>",<data_block>
:MEMory:DATA? "<file_name>"
```

This command loads data into signal generator memory using the <data_block> parameter and saves the data to a file designated by the "<file_name>" variable. The query returns the file contents of the file as a datablock.

A waveform file must be located in volatile waveform memory (WFM1) before it can be played by the signal generator's dual ARB player.

For downloads directly into volatile waveform memory (WFM1) use the path "WFM1:<file_name>". For downloads to non–volatile waveform memory, use the path "NVWFM:<file_name>".

`"<file_name>"` This variable names the destination file, including the directory path.

`<data_block>` This parameter represents the data and file length parameters. The data in the file is represented by the <data_block> variable.

Refer to the *Programming Guide* for more information on programming the status registers.

Example

```
:MEM:DATA "NVWFM:IQ_Data",#210Qaz37pY9oL
```

The preceding example downloads 10 bytes of data to a file, IQ_Data, in the signal generator's non–volatile memory. The table shown below describes the command parameters.

• **"NVWFM:IQ_Data"**	**IQ_Data is the file name. The directory path is not needed. The path "/USER/WAVEFORM/" is implied.**
• #210Qaz37pY9oL	Data block
#	This character indicates the beginning of the data block
2	Number of digits in the byte count
10	Byte count
Qaz37pY9oL	10 bytes of data

NOTE The data, `Qaz37pY9oL`, in the above command are not valid and are shown for example purposes only. Typically, ASCII characters representing data are unprintable.

Remarks See File Name Variables for information on the file name syntax.

:DATA:APPend

Supported All Models

```
:APPend "<file_name>",<data_block>
```

This commands appends data to an existing file stored in signal generator memory.

"<file_name>" This variable names the destination file and directory path.

`<data_block>` This parameter represents the data and file length parameters. The data in the file is represented by the <data_block> variable. The file length parameters are used by the signal generator for allocating memory.

Refer to the *Programming Guide* for more information on downloading and using files.

Example

```
:MEM:DATA:APPend "NVWFM:IQ_Data",#14Y9oL
```

The preceding example downloads and appends the data, Y9oL, to an existing file named IQ_Data stored in the signal generator's non–volatile memory (NVWFM).

- **"NVWFM:IQ_Data"** — **IQ_Data the file name. The directory path is not needed. The path "/USER/WAVEFORM/" is implied.**
- #14Y9oL — Data block
  - # — This character indicates the beginning of the data block
  - 1 — Number of digits in the byte count
  - 4 — Byte count
  - Y9oL — 4 bytes of data

Remarks Refer to File Name Variables for information on the file name syntax.

:DATA:FIR

Supported N5162A/82A with Option 651, 652, or 654

```
:MEMory:DATA:FIR "<file_name>",[REAL|COMPlex],osr,coefficient
:MEMory:DATA:FIR?"<file_name>"
```

This command loads user–defined finite impulse response (FIR) coefficient data, with a given oversample ratio (OSR), into a file in the signal generator's non–volatile memory. The query returns the oversample ratio and coefficient data.

"<file_name>" This variable is the file name of the destination file. The directory path, /USER/FIR is not required as it is implied by the command.

REAL Filter with real coefficients which are applied to I and Q equally. These coefficients are in the time domain and are supplied by the user. This type of filter is selectable as either a modulation filter or an equalization filter.

COMPlex Filter with complex I and Q samples (I + jQ) that are applied to the I/Q signal in a complex manner, as in (I + jQ)*(I + jQ). These coefficients are in the time domain and are supplied by the user. This type of filter is only selectable by the equalization filter feature.

osr The OSR is the number of filter taps per symbol. For an equalization filter, the OSR must always be 1 and the filter coefficients must be sampled at 125 MHz. For a modulation filter, the OSR must be ≥2 and the filter rate must be sampled at 2 times the OSR.

coefficient This variable is the FIR coefficient. The maximum number of taps is 1024. For COMPlex filters, the coefficients alternate between the real and imaginary values. There can be 2048 coefficients for COMPlex filters. The equalization filter is limited to 256 taps.

Refer to the *Programming Guide* for more information on downloading and using files.

Example

```
:MEM:DATA:FIR "FIR_1",4,0,0,0,0,0,0.000001,0.000012,0.000132,
0.001101,0.006743,0.030588,0.103676,0.265790,0.523849,0.809508,1,1,
0.809508,0.523849,0.265790,0.103676,0.030588,0.006743,0.001101,0.000132,0.000012,0.00
0001,0,0,0,0,0
```

The preceding example downloads real FIR coefficients with an oversampling ratio of 4 to the signal generator's non–volatile memory in a file named FIR_1. Notice that the signal generator directory path, /USER/FIR, is not needed as it is implied by the command. Refer to File Name Variables for information on the file name syntax.

Example 2

```
:MEM:DATA:FIR "EQ_1",COMP,1,0,0.000001,0.000145,
0.000035,1,0,-0.000256,0.000016,0.000001,0
```

The preceding example downloads complex FIR coefficients with an OSR 1 as file "EQ_1". This file is suitable for use as an equalization filter.

Range *osr:* 1 to 32

coefficient: –1000 to 1000

Key Entry **Oversample Ratio**

Key Path **Mode > Dual Arb > Arb Setup > Real-Time Modulation Filter (Off) > Define User FIR > Oversample Ratio**

:DATA:FSK

Supported N5162A/82A with Option 651, 652, or 654

```
:MEMory:DATA:FSK "<file_name>",<num_states>,<f0>,<f1>,...<f(n)>
[,<diff_state>,<num_diff_states>,<diff1>,...<diff(n)>]
:MEMory:DATA:FSK? "<file_name>"
```

This command loads custom frequency shift keying (FSK) data into a file in the signal generator's non-volatile memory.

The query returns data in the following form:

```
<num_states>,<f0>,<f1>,...<f(n)>,<diff_state>,<num_diff_states>,<diff1>,...<diff(n)>
```

"<file_name>" This variable string identifies the name of the FSK file. The filename must be enclosed with quotation marks.

<num_states> This variable identifies the number of frequency states.

<f0> This variable identifies the value of the first frequency state.

<f1>,...<f(n)> This variable identifies the value of the second and subsequent frequency states with a frequency resolution of 0.1Hz.

<diff_state> This variable enables or disables differential encoding.

<num_diff_states> This variable identifies the number of differential states.

<diff0> This variable identifies the value of the first differential state.

<diff1>,...<diff(n)> This variable identifies the value of the second and subsequent differential states.

Refer to the *Programming Guide* for more information on downloading and using files.

Example

```
:MEM:DATA:FSK "4FSK",4,–2kHZ,–1kHZ,2kHZ,1kHZ,ON,2,1,0
```

The preceding example downloads a four-level FSK data to a file named 4FSK. There are four states (frequencies): –2kHZ, –1kHZ, 2kHZ, 1kHZ; differential encoding is toggled ON, and there are two differential states 1 and 0. The table shown below describes the command parameters.

• **"4FSK"**	**4FSK is the FSK file name. The directory path is not needed. The path "/USER/FSK" is implied.**
• 4	Number of states
-2kHz	First frequency state
-1kHz	Second frequency state
2kHz	Third frequency state
1kHz	Fourth frequency state
ON	Differential encoding is on
2	Number of differential states
1	Value of the first differential state.
0	Value of the second differential state.

Range

num_diff_states: 0–256

num_states: 2–16

f0–f(n): –20MHZ to 20MHZ (*For ARB custom modulation, the range values vary with the symbol rate values.*)

diff0–diff(n): –128 to 127

Remarks Refer to File Name Variables for information on the file name syntax.

:DATA:IQ

Supported N5162A/82A with Option 651, 652, or 654

```
:MEMory:DATA:IQ "<file_name>",<offsetQ>,<num_states>,<i0>,<q0>,<i1>,
<q1>,...<i(n)>,<q(n)>[,<diff_state>,<num_diff_states>,<diff0>,<diff1>,..<diff(n)>]
:MEMory:DATA:IQ? "<file_name>"
```

This command loads custom I/Q data into a file in the signal generator's non-volatile memory.

The query returns data in the following form:

```
<offsetQ>,<num_states>,<i0>,<q0>,<i1>,<q1>,...<i(n)>,<q(n)>,<diff_state>,<num_diff_st
ates>,<diff0>,<diff1>,...<diff(n)>
```

`"<file_name>"` This variable string identifies the name of the I/Q file. The filename must be enclosed with quotation marks.

`<offsetQ>` This variable enables (1) or disables (0) the Q output delay by 1/2 symbol from the I output.

`<num_states>` This is the number of symbols.

`<i0>...<i(n)>` This is the I value of the first and subsequent I symbols.

`<q0>...<q(n)>` This is the Q value of the first and subsequent Q symbols.

`<diff_state>` This variable enables and disables differential encoding.

`<num_diff_states>` This variable identifies the number of differential states.

`<diff0>` This variable identifies the value of the first differential state.

`<diff1,...diff(n)>` This variable identifies the value of the second and subsequent differential states.

Refer to the *Programming Guide* for more information on downloading and using files.

Example

```
:MEM:DATA:IQ "Test_BPSK",1,2,1,0,0,0
```

The preceding example loads and stores a two-symbol I/Q file named `Test_BPSK` that has a Q offset. The table shown below describes the command parameters.

- `"Test_BPSK"` — **`Test_BPSK` is the file name. The directory path is not needed. The path `"/USER/IQ"` is implied.**
- `1` — Q Offset. The Q output delay is enabled.
- `2` — Number of symbols
- `1` — Value of the first I symbol
- `0` — Value of the first Q symbol.
- `0` — Value of the second I symbol
- `0` — Value of the second Q symbol

Range *num_states:* 2–256
i0–i(n): –1 to 1
q0–q(n): –1 to 1
num_diff_states: 0–256
diff0–diff(n): -128 to 127

Remarks Refer to "File Name Variables" on page 13 for information on the file name syntax.

:DELete:ALL

Supported All Models

CAUTION Using this command deletes all non–volatile user files including binary, list, state, and flatness correction files, and any saved setups which use the front panel table editor. However, this does not include files stored on the Option 651, 652, or 654 ARB generator. You cannot recover the files after executing this command.

```
:MEMory:DELete:ALL
```

This command clears the file system of all non–volatile user files.

Key Entry **Delete All Files**

:DELete:BINary

Supported N5162A/82A with Option 651, 652, or 654

```
:MEMory:DELete:BINary
```

This command deletes all binary files.

Key Entry **Delete All Binary Files**

:DELete:DMOD

Supported N5162A/82A with Option 651, 652, or 654

```
:MEMory:DELete:DMOD
```

This command deletes all arbitrary waveform digital modulation files.

Key Entry **Delete All ARB DMOD Files**

:DELete:FIR

Supported N5162A/82A with Option 651, 652, or 654

```
:MEMory:DELete:FIR
```

This command deletes all finite impulse response filter files.

Key Entry **Delete All FIR Files**

:DELete:LIST

Supported All Models

`:MEMory:DELete:LIST`

This command deletes all List files.

Key Entry **Delete All List Files**

:DELete:MDMod

Supported N5162A/82A with Option 651, 652, or 654

`:MEMory:DELete:MDMod`

This command deletes all arbitrary waveform multicarrier digital modulation files.

Key Entry **Delete All ARB MDMOD Files**

:DELete:MTONe

Supported N5162A/82A with Option 651, 652, or 654

`:MEMory:DELete:MTONe`

This command deletes all arbitrary waveform multitone files.

Key Entry **Delete All ARB MTONE Files**

:DELete:PTRain

Supported All with Option 320 and either UNU or UNW

`:MEMory:DELete:PTRain`

This command deletes all pulse train files.

:DELete:SEQ

Supported N5162A/82A with Option 651, 652, or 654

`:MEMory:DELete:SEQ`

This command deletes all sequence files.

Key Entry **Delete All Sequence Files**

:DELete:STATe

Supported All Models

`:MEMory:DELete:STATe`

This command deletes all state files.

Key Entry **Delete All State Files**

:DELete:UFLT

Supported All Models

```
:MEMory:DELete:UFLT
```

This command deletes all user–flatness correction files.

Key Entry **Delete All UFLT Files**

:DELete[:NAME]

Supported All Models

```
:MEMory:DELete[:NAME] "<file name>"
```

This command clears the user file system of "<file name>".

Key Entry **Delete File**

Remarks Refer to File Name Variables for information on the file name syntax.

When deleting a waveform (WFM1) file from memory, the marker file and file header, associated with the waveform file, will also be deleted.

:EXPort[:ASCii]:PTRain

Supported All with Option 320 and either UNU or UNW

```
:MEMory:EXPort[:ASCii]:PTRAin <"filename">
```

This command writes out a CSV/ASCII file to the BINARY directory. User may supply their own extender as part of the filename. Refer to :EXPort[:ASCii]:SEParator:COLumn and :EXPort[:ASCii]:SEParator:DECimal.

Example

```
:MEM:EXP:PTR "myfile.csv"
```

The preceding example saves a power train file to “myfile.csv”.

Key Entry **Export To File**

:EXPort[:ASCii]:SEParator:COLumn

Supported All with Option 320 and either UNU or UNW

```
:MEMory:EXPort[:ASCii]:SEParator:COLumn TAB|SEMicolon|COMMa|SPACe
:MEMory:EXPort[:ASCii]:SEParator:COLumn?
```

This command selects whether the column separator is a tab, ";", "," or a " " during export of CSV/ASCII files.

This value is persistent across preset/recall and power cycles. (At the factory the MXG is set to COMMa (“,”).) Refer to :EXPort[:ASCii]:SEParator:DECimal.

Key Entry **Export Column Separator**

:EXPort[:ASCii]:SEParator:DECimal

Supported All with Option 320 and either UNU or UNW

```
:MEMory:EXPort[:ASCii]:SEParator:DECimal DOT|COMMa
:MEMory:EXPort[:ASCii]:SEParator:DECimal?
```

This command selects whether the decimal point is a "." or a "," during export of CSV/ASCII files.

This value is persistent across preset/recall and power cycles. (At the factory the MXG is set to DOT (“.”).) Refer to :EXPort[:ASCii]:SEParator:COLumn.

Key Entry **Export Decimal Separator**

:FREE[:ALL]

Supported All Models

```
:MEMory:FREE[:ALL]?
```

This command returns the number of bytes left in the non–volatile user file system.

Key Entry **All**

:IMPort[:ASCii]:PTRain

Supported All with Option 320 and either UNU or UNW

:MEMory:IMPort[:ASCii]:PTRain <"filename">

This command reads a CSV/ASCII file from the BINARY directory. The user must specify any extender (such as .csv or .txt) used when placing the file into the instrument. Note that the form of these files must be `On Time<column separator>Off Time<column separator>Repetitions<newline>` or `On Time<column separator>Off Time<newline>` with repetition count assumed to always be 1 in the second case. Refer to :IMPort[:ASCii]:SEParator:DECimal.

Key Entry **Import From Selected File**

:IMPort[:ASCii]:SEParator:DECimal

Supported All with Option 320 and either UNU or UNW

```
:MEMory:IMPort[:ASCii]:SEParator:DECimal DOT|COMMa
:MEMory:IMPort[:ASCii]:SEParator:DECimal?
```

This command selects whether the decimal point is a "." or a "," during import of CSV/ASCII files.

This value is persistent across preset/recall and power cycles. (At the factory the MXG is set to DOT (“.”).) Refer to :IMPort[:ASCii]:PTRain.

Key Entry **Import Decimal Separator**

:LOAD:LIST

Supported All Models

```
:MEMory:LOAD:LIST "<file name>"
```

This command loads a list sweep file.

Key Entry **Load From Selected File**

:MOVE

Supported All Models

```
:MEMory:MOVE "<src_file>","<dest_file>"
```

This command renames the requested file in the memory catalog.

Key Entry **Rename File**

Remarks Refer to File Name Variables for information on the file name syntax.

:SIZE

Supported All Models

```
:MEMory:SIZE? <"filename">
```

This command returns the size of the file named <"filename"> in bytes or a –1, if the file does not exist. If the MSUS or directory is invalid, an "`ERROR: –257, File name error`" will be reported.

:STATe:COMMent

Supported All Models

```
:MEMory:STATe:COMMent <reg_num>,<seq_num>,"<comment>"
:MEMory:STATe:COMMent? <reg_num>,<seq_num>
```

This command lets you to add a descriptive comment to the saved state <reg_num>,<seq_num>. Comments can be up to 55 characters long.

Key Entry **Add Comment To Seq[n] Reg[nn]**

:STORe:LIST

Supported All Models

```
:MEMory:STORe:LIST "<file name>"
```

This command stores the current list sweep data to a file.

Key Entry **Store To File**

:CATalog

Supported All Models

```
:MMEMory:CATalog? "<msus>"
```

This command outputs a list of the files from the specified file system.

The variable "<msus>" (mass storage unit specifier) represents "<file system>". The file systems and types are shown in Table 1-4 on page 15.

The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the specified file system. Each file listing will be in the following format:

```
"<file name,file type,file size>"
```

Key Entry **Binary** **List** **State** **User Flatness**

Seq **BBG Segments** **NVMKR** **NVWFM**

Remarks Refer to MSUS (Mass Storage Unit Specifier) Variable for information on the use of the "<msus>" variable.

:COPY

Supported All Models

```
:MMEMory:COPY "<file name>","<file name>"
```

This command makes a duplicate of the requested file.

Key Entry **Copy File**

Remarks Refer to File Name Variables for information on the file name syntax.

When copying a waveform file from volatile to non–volatile memory, the marker file and file header, associated with the waveform file, will automatically be copied at the same time.

:DATA

Supported All Models

```
:MMEMory:DATA "<file name>",<datablock>
:MMEMory:DATA? "<file name>"
```

This command loads <datablock> into the memory location "<file name>".

The query returns the <datablock> associated with the "<file name>".

Remarks Refer to File Name Variables for information on the file name syntax.

:DELete:NVWFm

Supported N5162A/82A with Option 651, 652, or 654

`:MMEMory:DELete:NVWFm`

This command clears the user file system of all non–volatile arbitrary waveform files.

Key Entry **Delete All NVWFM Files**

:DELete:WFM

Supported N5162A/82A with Option 651, 652, or 654

`:MMEMory:DELete:WFM`

This command clears the user file system of all volatile arbitrary waveform files stored on the WFM1.

Key Entry **Delete All BBG Segments**

:DELete[:NAME]

Supported All Models

On the

`:MMEMory:DELete[:NAME] "<file name>",["<msus>"]`

This command clears the user file system of "<file name>" with the option of specifying the file system separately. For a list of file systems refer to Table 1-4 on page 15.

The variable "<msus>" (mass storage unit specifier) represents the file system.

Key Entry **Delete File**

Remarks If the optional variable "<msus>" is omitted, the file name needs to include the file system extension. Refer to File Name Variables and MSUS (Mass Storage Unit Specifier) Variable for information on the use of the file variables.

When deleting a waveform file from memory, the marker file and file header, associated with the waveform file, will also be deleted.

:HEADer:CLEar

Supported N5162A/82A with Option 651, 652, or 654

`:MMEMory:HEADer:CLEar "<file name>"`

This command sets the file header field settings to unspecified for the "<file name>" variable.

Key Entry **Clear Header**

Remarks In addition to waveforms currently running in the signal generator, it is possible to change or delete file header information on files that are not currently running but are stored in either the internal storage or USB media non–volatile memory (Example: `:MMEMory:HEADer:CLEar "NVWFM:file_name"`).

Refer to File Name Variables for information on the file name syntax.

:HEADer:DESCription

Supported N5162A/82A with Option 651, 652, or 654

```
:MMEMory:HEADer:DESCription "<file name>","<description>"
:MMEMory:HEADer:DESCription? "<file name>"
```

This command inserts a description for the file header.

Key Entry **Edit Description**

Remarks In addition to waveforms currently running in the signal generator, it is possible to change or delete file header information on files that are not currently running but are stored in either the internal storage or USB media non–volatile memory (Example: `:MMEMory:HEADer:DESCription "NVWFM:file_name","example_file_name"`).

The header description is limited to 32 characters. Refer to File Name Variables for information on the file name syntax.

:MMEMory:HEADer:ID?

Supported N5162A/82A with Option 651, 652, or 654

```
:MMEMory:HEADer:ID? "<file name>"
```

This query returns the unique waveform ID of file *"<file name>"*.

The command is ignored if the file name does not exist.

:LOAD:LIST

Supported All Models

```
:MMEMory:LOAD:LIST "<file name>"
```

This command loads a List sweep file.

Key Entry **Load From Selected File**

:LOAD:PTRain

Supported All with Option 320 and either UNU or UNW

```
:MMEMory:LOAD:PTRain <"filename">
```

This command reads the pulse train file specified. Refer to :STORe:PTRain.

Key Entry **Confirm Load from File**

:LOAD:WFM:ALL

Supported N5162A and N5182A

```
:MMEMory:LOAD:WFM:ALL
```

This command loads all of the waveforms in the active media to the internal BBG memory. The active media is either internal non-volatile memory storage media or an external storage media connected to the front panel USB port.

Key Entry **Load All From Int Media**

:MOVE

Supported All Models

```
:MMEMory:MOVE "<src_file>","<dest_file>"
```

This command renames the requested file in the memory catalog.

Key Entry **Rename File**

Remarks Refer to File Name Variables for information on the file name syntax.

:STORe:LIST

Supported All Models

```
:MMEMory:STORe:LIST "<file name>"
```

This command stores the current list sweep data to a file.

Key Entry **Store To File**

:STORe:PTRain

Supported All with Option 320 and either UNU or UNW

```
:MMEMory:STORe:PTRain <"filename">
```

Writes out the current pulse train list to the PTRAIN file specified. This operation will overwrite any existing file of the same name in the PTRAIN directory with a binary file. Refer to :LOAD:PTRain.

Key Entry **Store To File**

:STORe:WFM:ALL

Supported N5162A and N5182A

```
:MMEMory:STORe:WFM:ALL
```

This command stores from the internal BBG memory to the active media. The active media is either internal non-volatile memory storage media or an external storage media connected to the front panel USB port.

Key Entry **Store All To Int Media**

:SANalyzer:COMMunicate:LAN:DEVice

Supported All Models

```
:SYSTem:SANalyzer:COMMunicate:LAN:DEVice <deviceName>
:SYSTem:SANalyzer:COMMunicate:LAN:DEVice?
```

This command enters a VXI–11 name for a signal analyzer that is being controlled by the signal generator for making spectral measurements. If connecting directly to the signal analyzer, enter the name as specified on your signal analyzer documentation. If connecting through a LAN–GPIB gateway, enter the SICL address of the signal analyzer.

Key Entry **SA VXI–11 Device Name**

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

:SANalyzer:COMMunicate:LAN:IP

Supported All Models

```
:SYSTem:SANalyzer:COMMunicate:LAN:IP <ipAddr>
:SYSTem:SANalyzer:COMMunicate:LAN:IP?
```

This command sets the internet protocol (IP) address for the spectrum analyzer that is controlled by the signal generator for making spectral measurements. If connecting to a GPIB signal analyzer through a LAN–GPIB gateway, this command sets the IP address of the gateway.

Key Entry **Signal Analyzer IP Address**

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

Ensure that the signal analyzer IP address is different from the signal generator address.

:SANalyzer:COMMunicate:LAN:PORT

Supported All Models

```
:SYSTem:SANalyzer:COMMunicate:LAN:PORT <portNum>
:SYSTem:SANalyzer:COMMunicate:LAN:PORT?
```

This command...

This command sets the IP port on the signal analyzer that is controlled by the signal generator.

Key Entry	Signal Analyzer IP Port
5025	Standard mode. The command enables standard mode for simple programming.
5024	Telnet mode. The command enables the telnet SCPI service for programming.

NOTE For firmware versions <A.01.51, the default telnet mode is 5023. For firmware versions A.01.51 and greater, telnet port 5023 is still available for backwards compatibility.

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

For more information on standard mode and telnet SCPI mode, refer to the *Programming Guide*.

:SANalyzer:COMMunicate:TYPE

Supported All Models

```
:SYSTem:SANalyzer:COMMunicate:TYPE SOCKets|SOCKETS|VXI11
:SYSTem:SANalyzer:COMMunicate:TYPE?
```

This command sets the type of control connection for communication with the external signal analyzer for spectral measurements. The query returns the connection type.

Key Entry	Connection Type
SOCK or SOCKETS	The command enables the signal analyzer for sockets LAN control through the signal generator.
VXI11	The command enables the signal analyzer for VXI–11 control through the signal generator. A signal analyzer with GPIB can be controlled through VXI–11 using a LAN–GPIB gateway.
USB	The command enables the signal analyzer for USB control through the signal generator.

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

Output Subsystem (:OUTPut)

:BLANking:AUTO

Supported All Models

```
:OUTPut:BLANking:AUTO ON|OFF|1|0
:OUTPut:BLANKing:AUTO?
```

This command turns the RF output on or off during frequency band changes. Frequency band changes can cause the signal generator's RF output to fluctuate. The output blanking function, when active, turns off the RF output until the frequency and power settles.

`ON(1)` The RF output turns off when crossing a frequency band.

`OFF(0)` The RF output stays on, *if possible*, when crossing a frequency band. Refer to the *Data sheet*.

***RST** 1

Key Entry **Output Blanking Off On Auto**

Remarks Refer to the signal generator's data sheet for information on frequency switching speeds, settling times, and frequency band information.

:BLANking:STATe

Supported All Models

```
:OUTPut:BLANking:STATe ON|OFF|1|0
:OUTPut:BLANKing:STATe?
```

This command enables or disables the RF output blanking state.

`ON(1)` The RF output turns off during frequency changes.

`OFF(0)` The RF output stays on, *if possible*, during frequency changes. Refer to the *Data sheet*.

***RST** 0

Remarks Refer to the signal generator's data sheet for information on frequency switching speeds, settling times, and frequency band information.

:MODulation[:STATe]

Supported All Models

```
:OUTPut:MODulation[:STATe] ON|OFF|1|0
:OUTPut:MODulation[:STATe]?
```

This command enables or disables the modulation of the RF output with the currently active modulation type(s).

***RST** 1

Key Entry **Mod On/Off**

Remarks Some modulation types can be simultaneously enabled such as pulse and AM.

An annunciator on the signal generator is always displayed to indicate whether modulation is switched on or off.

:PROTection[:STATe]

Supported All Models

```
:OUTPut:PROTection[:STATe] ON|OFF|1|0
:OUTPut:PROTection[:STATe]?
```

This command enables or disables the reverse power protection (RPP) circuit on the RF output.

CAUTION The RPP is used to protect the output amplifiers in the source by tripping a relay whenever an external high level RF signal is detected on the RF output. When the relay is tripped the output signal of the source is disabled and a warning message is displayed.

***RST** 1

Key Entry **Output Off On Auto**

[:STATe]

Supported All Models

```
:OUTPut[:STATe] ON|OFF|1|0
:OUTPut[:STATe]?
```

This command enables or disables the RF output.

***RST** 0

Key Entry **RF On/Off**

Remarks Although you can configure and engage various modulations, no signal is available at the RF OUTPUT connector until this command is executed.

An annunciator is always displayed on the signal generator to indicate whether the RF output is switched on or off.

Route Subsystem (:ROUTe)

[:CONNector]:EVENt1

Supported N5162A/82A

```
:ROUTe[:CONNectors]:EVENt1 M1|M2|M3|M4
:ROUTe[:CONNectors]:EVENt1?
```

This command selects a marker (M1–M4) signal to be routed to the rear panel Event 1 connector.

***RST** M1

Key Entry **Route to Event 1 BNC**

[:CONNector]:SOUT

Supported *As indicated*

```
:ROUTe[:CONNectors]:SOUT SWEep|SETTled|PVIDeo|SW8757
:ROUTe:CONNectors:SOUT?
```

This command selects a signal to be routed to the rear panel Sweep Out connector.

The SWEep|SETTled|PVIDeo parameters are available on all models. The SW8757 is available *only* on the N5183A.

SWEep	This choice routes the sweep out signal to the Sweep Out connector.
SETTled	This choice routes the source settled signal to the Sweep Out connector.
PVIDeo	This choice routes the pulse video signal to the Sweep Out connector.
SW8757	This choice routes the sweep out signal to the Sweep Out connector for compatibility with the 8757D (*only* available on the N5183A).

***RST** SWE

Key Entry **Route Sweep Out**

[:CONNector]:TOUT

Supported *As indicated*

`:ROUTe[:CONNectors]:TOUT SWEep|SETTled|PVIDeo|PSYNc|M1|M2|M3|M4`

`:ROUTe[:CONNectors]:TOUT?`

This command selects a signal to be routed to the rear panel Trig Out connector.

The `SWEep|SETTled|PVIDeo|PSYNc` parameters are available on all models. The `M1|M2|M3|M4` are available *only* on the N5162A/82A.

`SWEep`	This choice routes the sweep trigger out signal to the Trig Out connector.
`SETTled`	This choice routes the source settled signal to the Trig Out connector.
`PVIDeo`	This choice routes the pulse video signal to the Trig Out connector.
`PSYNc`	This choice routes the pulse sync signal to the Trig Out connector.
`M1|M2|M3|M4`	This choice routes the selected BBG marker (M1, M2, M3, or M4) signal to the Trig Out connector (*only* available on the N5162A/82A with Option 651, 652, or 654).
***RST**	SWE
Key Entry	**Route Trig Out**

Status Subsystem (:STATus)

:OPERation:CONDition

Supported All Models

```
:STATus:OPERation:CONDition?
```

This query returns the decimal sum of the bits for the registers that are set to one and are part of the Standard Operation Status Group. For example, if a sweep is in progress (bit 3), the value 8 is returned.

Range 0 to 32767

Remarks The data in this register is continuously updated and reflects current conditions.

Refer to the *Programming Guide* for more information.

:OPERation:ENABle

Supported All Models

```
:STATus:OPERation:ENABle <value>
:STATus:OPERation:ENABle?
```

This command determines which bits in the Standard Operation Event Register will set the Standard Operation Status Summary bit (bit 7) in the Status Byte Register.

The variable <value> is the sum of the decimal values of the bits that you want to enable.

Range 0 to 32767

Remarks Refer to the *Programming Guide* for more information.

:OPERation:NTRansition

Supported All Models

```
:STATus:OPERation:NTRansition <value>
:STATus:OPERation:NTRansition?
```

This command determines which bits in the Standard Operation Condition Register will set the corresponding bit in the Standard Operation Event Register when that bit has a negative transition (1 to 0).

The variable <value> is the sum of the decimal values of the bits that you want to enable.

Range 0 to 32767

Remarks Refer to the *Programming Guide* for more information.

:OPERation:PTRansition

Supported All Models

```
:STATus:OPERation:PTRansition <value>
:STATus:OPERation:PTRansition?
```

This command determines which bits in the Standard Operation Condition Register will set the corresponding bit in the Standard Operation Event Register when that bit has a positive transition (0 to 1).

The variable <value> is the sum of the decimal values of the bits that you want to enable.

Range 0 to 32767

Remarks Refer to the *Programming Guide* for more information.

:OPERation:SUPPress

Supported All Models

```
:STATus:OPERation:SUPPress 0|1|ON|OFF
:STATus:OPERation:SUPPress?
```

This command disables the instrument's management of the Standard Operation Condition Register and saves 50 us of switching time.

***RST** OFF

Remarks Refer to the *Programming Guide* for more information.

:OPERation[:EVENt]

Supported All Models

CAUTION This is a destructive read. The data in the register is latched until it is queried. Once queried, the data is cleared.

```
:STATus:OPERation[:EVENt]?
```

This query returns the decimal sum of the bits in the Standard Operation Event Register.

Range 0 to 32767

Remarks The equivalent PTR or NTR filters must be set before the condition register can set the corresponding bit in the event register.

Refer to the *Programming Guide* for more information.

:PRESet

Supported All Models

```
:STATus:PRESet
```

This command presets all transition filters, enable registers, and error/event queue enable registers.

Remarks Refer to the *Programming Guide* for more information.

:QUEStionable:CALibration:CONDition

Supported All Models

```
:STATus:QUEStionable:CALibration:CONDition?
```

This query returns the decimal sum of the bits in the Data Questionable Calibration Condition Register. For example, if the DCFM or DCΦM zero calibration fails (bit 0), a value of 1 is returned.

Range 0 to 32767

Remarks The data in this register is continuously updated and reflects the current conditions.

Refer to the *Programming Guide* for more information.

:QUEStionable:CALibration:ENABle

Supported All Models

```
:STATus:QUEStionable:CALibration:ENABle <value>
:STATus:QUEStionable:CALibration:ENABle?
```

This command determines which bits in the Data Questionable Calibration Event Register will set the calibration summary bit (bit 8) in the Data Questionable Condition Register.

The variable <value> is the sum of the decimal values of the bits that you want to enable.

Range 0 to 32767

Remarks Refer to the *Programming Guide* for more information.

:QUEStionable:CALibration:NTRansition

Supported All Models

```
:STATus:QUEStionable:CALibration:NTRansition <value>
:STATus:QUEStionable:CALibration:NTRansition?
```

This command determines which bits in the Data Questionable Calibration Condition Register will set the corresponding bit in the Data Questionable Calibration Event Register when that bit has a negative transition (1 to 0).

The variable <value> is the sum of the decimal values of the bits that you want to enable.

Range 0 to 32767

Remarks Refer to the *Programming Guide* for more information.

:QUEStionable:CALibration:PTRansition

Supported All Models

```
:STATus:QUEStionable:CALibration:PTRansition <value>
:STATus:QUEStionable:CALibration:PTRansition?
```

This command determines which bits in the Data Questionable Calibration Condition Register will set the corresponding bit in the Data Questionable Calibration Event Register when that bit has a positive transition (0 to 1).

The variable <value> is the sum of the decimal values of the bits that you want to enable.

Range 0 to 32767

Remarks Refer to the *Programming Guide* for more information.

:QUEStionable:CALibration[:EVENt]

Supported All Models

CAUTION This is a destructive read. The data in the register is latched until it is queried. Once queried, the data is cleared.

```
:STATus:QUEStionable:CALibration[:EVENt]?
```

This command returns the decimal sum of the bits in the Data Questionable Calibration Event Register.

Range 0 to 32767

Remarks The equivalent PTR or NTR filters must be set before the condition register can set the corresponding bit in the event register.

Refer to the *Programming Guide* for more information.

:QUEStionable:CONDition

Supported All Models

```
:STATus:QUEStionable:CONDition?
```

This query returns the decimal sum of the bits in the Data Questionable Condition Register. For example, if the ALC Heater Detector is cold (bit 4), a value of 16 is returned.

Range 0 to 32767

Remarks The data in this register is continuously updated and reflects current conditions.

Refer to the *Programming Guide* for more information.

:QUEStionable:ENABle

Supported All Models

```
:STATus:QUEStionable:ENABle <value>
:STATus:QUEStionable:ENABle?
```

This command determines which bits in the Data Questionable Event Register will set the Data Questionable Status Group Summary bit (bit 3) in the Status Byte Register.

The variable <value> is the sum of the decimal values of the bits that you want to enable.

Range 0 to 32767

Remarks Refer to the *Programming Guide* for more information.

:QUEStionable:FREQuency:CONDition

Supported All Models

```
:STATus:QUEStionable:FREQuency:CONDition?
```

This query returns the decimal sum of the bits in the Data Questionable Frequency Condition Register. For example, if the 1 GHz internal reference clock is unlocked (bit 2), a value of 4 is returned.

Range 0 to 32767

Remarks The data in this register is continuously updated and reflects current conditions.

Refer to the *Programming Guide* for more information.

:QUEStionable:FREQuency:ENABle

Supported All Models

```
:STATus:QUEStionable:FREQuency:ENABle <value>
:STATus:QUEStionable:FREQuency:ENABle?
```

This command determines which bits in the Data Questionable Frequency Event Register will set the frequency summary bit (bit 5) in the Data Questionable Condition Register.

The variable <value> is the sum of the decimal values of the bits that you want to enable.

Range 0 to 32767

Remarks Refer to the *Programming Guide* for more information.

:QUEStionable:FREQuency:NTRansition

Supported All Models

```
:STATus:QUEStionable:FREQuency:NTRansition <value>
:STATus:QUEStionable:FREQuency:NTRansition?
```

This command determines which bits in the Data Questionable Frequency Condition Register will set the corresponding bit in the Data Questionable Frequency Event Register when that bit has a negative transition (1 to 0).

The variable <value> is the sum of the decimal values of the bits that you want to enable.

Range 0 to 32767

Remarks Refer to the *Programming Guide* for more information.

:QUEStionable:FREQuency:PTRansition

Supported All Models

```
:STATus:QUEStionable:FREQuency:PTRansition <value>
:STATus:QUEStionable:FREQuency:PTRansition?
```

This command determines which bits in the Data Questionable Frequency Condition Register will set the corresponding bit in the Data Questionable Frequency Event Register when that bit has a positive transition (0 to 1).

The variable <value> is the sum of the decimal values of the bits that you want to enable.

Range 0 to 32767

Remarks Refer to the *Programming Guide* for more information.

:QUEStionable:FREQuency[:EVENt]

Supported All Models

CAUTION This is a destructive read. The data in the register is latched until it is queried. Once queried, the data is cleared.

```
:STATus:QUEStionable:FREQuency[:EVENt]?
```

This query returns the decimal sum of the bits in the Data Questionable Frequency Event Register.

Range 0 to 32767

Remarks The equivalent PTR or NTR filters must be set before the condition register can set the corresponding bit in the event register.

Refer to the *Programming Guide* for more information.

:QUEStionable:MODulation:CONDition

Supported All Models

```
:STATus:QUEStionable:MODulation:CONDition?
```

This command returns the decimal sum of the bits in the Data Questionable Modulation Condition Register. For example, if the modulation is uncalibrated (bit 4), a value of 16 is returned.

Range 0 to 32767

Remarks The data in this register is continuously updated and reflects current conditions.

Refer to the *Programming Guide* for more information.

:QUEStionable:MODulation:ENABle

Supported All Models

```
:STATus:QUEStionable:MODulation:ENABle <val>
:STATus:QUEStionable:MODulation:ENABle?
```

This command determines which bits in the Data Questionable Modulation Event Register will set the modulation summary bit (bit 7) in the Data Questionable Condition Register.

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0 to 32767

Remarks Refer to the *Programming Guide* for more information.

:QUEStionable:MODulation:NTRansition

Supported All Models

```
:STATus:QUEStionable:MODulation:NTRansition <val>
:STATus:QUEStionable:MODulation:NTRansition?
```

This command determines which bits in the Data Questionable Modulation Condition Register will set the corresponding bit in the Data Questionable Modulation Event Register when that bit has a negative transition (1 to 0).

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0 to 32767

Remarks Refer to the *Programming Guide* for more information.

:QUEStionable:MODulation:PTRansition

Supported All Models

```
:STATus:QUEStionable:MODulation:PTRansition <val>
:STATus:QUEStionable:MODulation:PTRansition?
```

This command determines which bits in the Data Questionable Modulation Condition Register will set the corresponding bit in the Data Questionable Modulation Event Register when that bit has a positive transition (0 to 1).

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0 to 32767

Remarks Refer to the *Programming Guide* for more information.

:QUEStionable:MODulation[:EVENt]

Supported All Models

CAUTION This is a destructive read. The data in the register is latched until it is queried. Once queried, the data is cleared.

```
:STATus:QUEStionable:MODulation[:EVENt]?
```

This query returns the decimal sum of the bits in the Data Questionable Modulation Event Register.

Range 0 to 32767

Remarks The equivalent PTR or NTR filters must be set before the condition register can set the corresponding bit in the event register.

Refer to the *Programming Guide* for more information.

:QUEStionable:NTRansition

Supported All Models

```
:STATus:QUEStionable:NTRansition <value>
:STATus:QUEStionable:NTRansition?
```

This command determines which bits in the Data Questionable Condition Register will set the corresponding bit in the Data Questionable Event Register when that bit has a negative transition (1 to 0).

The variable <value> is the sum of the decimal values of the bits that you want to enable.

Range 0 to 32767

Remarks Refer to the *Programming Guide* for more information.

:QUEStionable:POWer:CONDition

Supported All Models

```
:STATus:QUEStionable:POWer:CONDition?
```

This query returns the decimal sum of the bits in the Data Questionable Power Condition Register. For example, if the RF output signal is unleveled (bit 1), a value of 2 is returned.

Range 0 to 32767

Remarks The data in this register is continuously updated and reflects current conditions.

Refer to the *Programming Guide* for more information.

:QUEStionable:POWer:ENABle

Supported All Models

```
:STATus:QUEStionable:POWer:ENABle <value>
:STATus:QUEStionable:POWer:ENABle?
```

This command determines which bits in the Data Questionable Power Event Register will set the power summary bit (bit 3) in the Data Questionable Condition Register.

The variable <value> is the sum of the decimal values of the bits that you want to enable.

Range 0 to 32767

Remarks Refer to the *Programming Guide* for more information.

:QUEStionable:POWer:NTRansition

Supported All Models

```
:STATus:QUEStionable:POWer:NTRansition <value>
:STATus:QUEStionable:POWer:NTRansition?
```

This command determines which bits in the Data Questionable Power Condition Register will set the corresponding bit in the Data Questionable Power Event Register when that bit has a negative transition (1 to 0).

The variable <value> is the sum of the decimal values of the bits that you want to enable.

Range 0 to 32767

Remarks Refer to the *Programming Guide* for more information.

:QUEStionable:POWer:PTRansition

Supported All Models

```
:STATus:QUEStionable:POWer:PTRansition <value>
:STATus:QUEStionable:POWer:PTRansition?
```

This command determines which bits in the Data Questionable Power Condition Register will set the corresponding bit in the Data Questionable Power Event Register when that bit has a positive transition (0 to 1).

The variable <value> is the sum of the decimal values of the bits that you want to enable.

Range 0 to 32767

Remarks Refer to the *Programming Guide* for more information.

:QUEStionable:POWer[:EVENt]

Supported All Models

CAUTION This is a destructive read. The data in the register is latched until it is queried. Once queried, the data is cleared.

```
:STATus:QUEStionable:POWer[:EVENt]?
```

This query returns the decimal sum of the bits in the Data Questionable Power Event Register.

Range 0 to 32767

Remarks The equivalent PTR or NTR filters must be set before the condition register can set the corresponding bit in the event register.

Refer to the *Programming Guide* for more information.

:QUEStionable:PTRansition

Supported All Models

```
:STATus:QUEStionable:PTRansition <value>
:STATus:QUEStionable:PTRansition?
```

This command determines which bits in the Data Questionable Condition Register will set the corresponding bit in the Data Questionable Event Register when that bit has a positive transition (0 to 1).

The variable <value> is the sum of the decimal values of the bits that you want to enable.

Range 0 to 32767

Remarks Refer to the *Programming Guide* for more information.

:QUEStionable[:EVENt]

Supported All Models

CAUTION This is a destructive read. The data in the register is latched until it is queried. Once queried, the data is cleared.

```
:STATus:QUEStionable[:EVENt]?
```

This query returns the decimal sum of the bits in the Data Questionable Event Register.

Range 0 to 32767

Remarks The equivalent PTR or NTR filters must be set before the condition register can set the corresponding bit in the event register.

Refer to the *Programming Guide* for more information.

System Subsystem (:SYSTem)

:CAPability

Supported All Models

```
:SYSTem:CAPability?
```

This query returns the signal generator's capabilities and outputs the appropriate specifiers:

```
(RFSOURCE WITH((AM|FM|PULM|PM)&(FSSWEEP|FLIST)&(PSSWEEP|PLIST) &TRIGGER&REFERENCE))
```

This is a list of the SCPI–defined basic functionality of the signal generator and the additional capabilities it has in parallel (a&b) and singularly (a|b).

:DATE

Supported All Models

```
:SYSTem:DATe <year>,<month>,<day>
:SYSTem:DATe?
```

This command sets the date as shown in the lower right area of the signal generator display.

<year> This variable requires a four digit integer.

The query returns the date in the following format:

<+year>, <+month>, <+day>

Range <month>: 1 to 12 <day>: 1 to 31

Key Entry **Time/Date**

:ERRor:CODE[:NEXt]

Supported All Models

```
:SYSTem:ERRor:CODE[:NEXt]?
```

This query returns the next error message number from the signal generator SCPI error queue. If there are no error messages, the query returns the following output:

```
+0
```

When there is more than one error message, the query will need to be sent for each message.

The Agilent MXG deletes the error messages from the front panel error queue after viewing the last message.

Key Entry **Error Info** **View Next Error Message**

:ERRor[:NEXt]

Supported All Models

```
:SYSTem:ERRor[:NEXt]?
```

This query returns the next error message from the signal generator SCPI error queue. If there are no error messages, the query returns the following output:

```
+0,"No error"
```

When there is more than one error message, the query will need to be sent for each message.

The Agilent MXG deletes the error messages from the front panel error queue after viewing the last message.

Key Entry **Error Info** **View Next Error Message**

:ERRor:SCPI[:SYNTax]

Supported All Models

```
:SYSTem:ERRor:SCPI[:SYNTax] ON|OFF|1|0
:SYSTem:ERRor:SCPI[:SYNTax]?
```

This command enables or disables the reporting of SCPI syntax errors to the error queue.

The setting ON/1 is persistent through Preset and *RST. It is cleared to OFF/0 by sending SYST:PRES:ALL or cycling the power of the signal generator.

:FILesystem:STORage:EXTernal

Supported All Models

```
:SYSTem:FILesystem:STORage:EXTernal?
```

This query checks to see if the external USB port is actively being used for data storage and retrieval on the signal generator. A returned value of 1 means the external USB media is being used for data storage and retrieval. For more information on non–volatile storage media settings, refer to :FILesystem:STORage:EXTernal:PATH, :FILesystem:STORage:TYPE and :FILesystem:STORage:TYPE:AUTO commands.

:FILesystem:STORage:EXTernal:PATH

Supported All Models

```
:SYSTem:FILesystem:STORage:EXTernal:PATH <"USB media root path">
:SYSTem:FILesystem:STORage:EXTernal:PATH?
```

This command selects the directory storage path on the USB media. For more information, refer to the signal generator's softkey Help. For more information on non–volatile storage media settings, refer to :FILesystem:STORage:EXTernal, :FILesystem:STORage:TYPE and :FILesystem:STORage:TYPE:AUTO commands.

Remarks When reading and writing files from or to the USB media, different memory subsystem file types are marked by having a particular extender on the filename. Refer to "USB Media Path Options" table on page 215.

Files with unrecognized extenders are treated as binary (.bin) files.

USB Media Path Options

Extender	File Type	Memory Subsystem
.waveform	waveform	NVWFM
.markers	waveform marker	NVMKR
.header	waveform header	NVHDR
.state	instrument state	STATE
.list	list sweep	LIST
.userflat	user flatness	USERFLAT
.seq	waveform sequence	SEQ
All others	*All others*	BIN

:FILesystem:STORage:TYPE

Supported All Models

```
:SYSTem:FILesystem:STORage:TYPE INTernal|EXTernal
:SYSTem:FILesystem:STORage:TYPE?
```

This command selects the non–volatile storage location on the signal generator. For more information on non–volatile storage media settings, refer to :FILesystem:STORage:EXTernal, :FILesystem:STORage:EXTernal:PATH and :FILesystem:STORage:TYPE:AUTO commands.

Key Entry **Storage Type Int Ext Auto**

Example

```
:SYST:FIL:STOR:TYPE EXT
```

The preceding example selects the external USB port as the location for non–volatile file storage on the signal generator.

:FILesystem:STORage:TYPE:AUTO

Supported All Models

```
:SYSTem:FILesystem:STORage:TYPE:AUTO ON|OFF|1|0
:SYSTem:FILesystem:STORage:TYPE:AUTO?
```

This command enables the signal generator to auto–detect when the USB media is connected. When AUTO (ON|1) is selected, the file system uses the USB media, if available. When the USB media is removed, the file system uses the internal media. For more information, refer to the signal generator's softkey Help. For more information on non–volatile storage media settings, refer to :FILesystem:STORage:EXTernal, :FILesystem:STORage:EXTernal:PATH and :FILesystem:STORage:TYPE commands.

***RST** 1

Key Entry **Storage Type Int Ext Auto**

Example

```
:SYST:FIL:STOR:TYPE:AUTO ON
```

The preceding example selects AUTOmatic as the non–volatile storage setting and the signal generator will detect if the external USB port has a memory storage device connected.

Remarks When the USB media is removed, the USB non–volatile user file system effectively does not exist.

:IDN

Supported All Models

```
:SYSTem:IDN "string"
```

This command modifies the identification string that the *IDN? query returns. Sending an empty string sets the query output of *IDN? to its factory shipped setting. The maximum string length is 72 characters.

Remarks Modification of the *IDN? query output enables the signal generator to identify itself as another signal generator when used as a replacement.

The display diagnostic information, shown by pressing the **Diagnostic Info** softkey, is not affected by this command.

:LANGuage (N5161A/62A/81A/82A)

Supported N5161A/62A/81A/82A

```
:SYSTem:LANGuage
"SCPI"|"COMP"|"8648"|"E4428C"|"E4438C"|"E8257D"|"E8267D"|"E8663B"|"E8247C"|
"E8257C"|"E8267C"|"E8241A"|"E8244A"|"E8251A"|"E8254A"|"E8247C"|"E8257C"|"E8267C"|"SMU
200A"|"SMATE200A"|"SMJ100A"|"SMIQ"|"SML"|"SMV"|"3410"
:SYSTem:LANGuage?
```

This command sets the remote language for the signal generator. For the N5183A, refer to :LANGuage (N5183A) section.

SCPI	This choice provides compatibility for SCPI commands.
COMP	This choice provides compatibility for the 8656B, 8657A/B signal generator which is supported only through the GPIB interface.
8648	This choice provides compatibility for the 8648A/B/C/D signal generator which is supported only through a GPIB interface.
E4428C or E4438C	This choice provides compatibility for the E4428C or E4438C signal generators which are supported through a GPIB, LAN, or USB interface.
E8257D, or E8267D, or E8663B	This choice provides compatibility for the E8257D, E8267D, or E8663B signal generators which are supported through a GPIB, LAN, or USB interface.
E8247C, or E8257C, or E8267C	This choice provides compatibility for the E8247C, E8257C, or E8267C signal generators which are supported through a GPIB, LAN, or USB interface.
E442XB or E443XB	This choice provides compatibility for the E442XB or E443XB signal generators which are supported through a GPIB, LAN, or USB interface.
E8241A or E8244A	This choice provides compatibility for the 8648A/B/C/D signal generator which is supported through a GPIB, LAN, or USB interface.
E8251A or E8254A	This choice provides compatibility for the E8251A or E8254A signal generators which are supported through a GPIB, LAN or USB interface.G
SMU200A, or SMATE200A, or SMJ100A, or SMIQ, or SML, or SMV	This choice provides compatibility for the Rohde and Schwarz SMU200A, SMATE200A, SMJ100A, SMIQ, SML, or SMV signal generators which are supported through a GPIB, LAN or USB interface.
3410	This choice provides compatibility for the Aeroflex 3410 series signal generator, which is supported through a GPIB, LAN, or USB interface.
***RST**	"SCPI"

Key Entry				
	SCPI	**SMJ100A**	**8648A/B/C/D**	**E8257D, E8267D, E8663B**
	SML	**3410 Series**	**8656B, 8667A/B**	**E8241A, E8244A, E8251A, E8264A**
	SMV	**E4428C,E4438C**	**SMU200A, SMATE200A**	
	SMIQ	**E442xB, E443xB**	**E8247C, E8257C, E8367C**	

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

For more information on supported SCPI commands and programming codes, refer to the *Programming Compatibility Guide*.

:LANGuage (N5183A)

Supported N5183A

"SCPI"	"8360"	"83712"	"83732"	"83752"	"8340"	"8662"	"8663"	"E4428C"	"E4438C"
"E8257D"	"E8267D"	"E8663B"	"E8247C"	"E8257C"	"E8267C"	"E8241A"	"E8244A"	"E8251A"
"E8254A"	"SMR"	"MG3691B"	"MG3692B"	"MG3693B"	"MG3694B"

:SYSTem:LANGuage?

This command sets the remote language for the signal generator. For the N5161A/62A/81A/82A, refer to :LANGuage (N5161A/62A/81A/82A) section.

SCPI	This choice provides compatibility for SCPI commands.
8360	This choice provides compatibility for the 8360 signal generator, which is supported through a GPIB, LAN, or USB interface.
83712	This choice provides compatibility for the 83711B or 83712B signal generators, which are supported through a GPIB, LAN, or USB interface.
83732	This choice provides compatibility for the 83731B or 83732B signal generators, which are supported through a GPIB, LAN, or USB interface.
83752	This choice provides compatibility for the 83751B or 83752B signal generators, which are supported through a GPIB, LAN, or USB interface.
8340	This choice provides compatibility for the 8340B or 8341B signal generators, which are supported only through a GPIB interface.
8662A or 8663A	This choice provides compatibility for the 8662A or 8663A signal generators, which are supported only through a GPIB interface.
E4428C or E4438C	This choice provides compatibility for the E4428C or E4438C signal generators, which are supported through a GPIB, LAN, or USB interface.
E8241A or E8244A or E8251A or E8254A	This choice provides compatibility for the E8241A, E8244A, E8251A, or E8254A signal generators, which are supported through a GPIB, LAN, or USB interface.
E8247C, or E8257C, or E8267C	This choice provides compatibility for the E8247C, E8257C, or E8267C signal generators, which are supported through a GPIB, LAN, or USB interface.
E8257D or E8267D or E8663B	This choice provides compatibility for the E8257D, E8267D, or E8663B signal generators, which are supported through a GPIB, LAN, or USB interface.
SMR	This choice provides compatibility for the Rohde & Schwartz SMR signal generators, which are supported through a GPIB, LAN, or USB interface.
MG3691B or MG3692B or	

MG3693B or MG3694B — This choice provides compatibility for Anritsu MG369xB series signal generators, which are supported through a GPIB interface.

***RST** **"SCPI"**

Key Entry

SCPI	**MG369xB**	**83711B, 83712B**	**E8247C, E8257C, E8267C**
SMR	**8360 Series**	**83731B, 83732B**	**E8257D, E8267D, E8663B**
8662A	**8340B, 8341B**	**83751B, 83752B**	**E8241A, E8244A, E8251A, E8254A**
8663A	**E4428C,E4438C**		

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

For more information on supported SCPI commands and programming codes, refer to the *Programming Compatibility Guide*.

:LICense:AUS[:DATE]?

Supported All Models

```
:SYSTem:LICense:AUS[:DATE]?
```

This query retrieves the latest expiration date of the Agilent Upgrade Service license.

:LICense:EXTernal:LIST

Supported All Models

```
:SYSTem:LICense:EXTernal:LIST?
```

This query provides a listing of the current licenses for external software installed on the signal generator.

:LICense:[FPACk]:WAVeform:ADD

```
:SYSTem:LICense:[FPACk:]WAVeform:ADD "filename"
```

This command assigns a “filename” to the next available waveform slot. Filename should be just the filename, no path information. The file must reside in a non–volatile waveform memory (NVWFM) before it can be licensed.

Key Entry **Add Waveform**

Key Path **Mode > Dual ARB > More 2 of 2 > Waveform Licensing > Add Waveform To Next Available Slot > Add Waveform**

:LICense:[FPACk]:WAVeform:CLEar

Supported All Models

```
:SYSTem:LICense[:FPACk]:WAVeform:CLEar <slot_number>
```

This command clears the file currently assigned to the license waveform license slot. The specified slot cannot be locked.

Key Entry **Clear Waveform From Slot**

Key Path **Mode > Dual ARB > More 2 of 2 > Waveform Licensing > Clear Waveform From Slot >**

:LICense:[FPACk]:WAVeform:FREE?

Supported All Models

```
:SYSTem:LICense[:FPACk]:WAVeform:FREE?
```

This queries the number of available slots open for waveforms to be licensed.

:LICense:[FPACk]:WAVeform:IDList?

Supported All Models

```
:SYSTem:LICense:[FPACk]:WAVeform:IDList?
```

This query returns a comma separated list of the licensed waveform IDs. The ID of a waveform in the instrument can be compared to this list to see if it is licensed.

:LICense:[FPACk]:WAVeform:LOCK

Supported All Models

```
:SYSTem:LICense[:FPACk]:WAVeform:LOCK slot_number
```

This command locks the file currently assigned to the waveform license slot specified by slot number. Once the slot is locked it can no longer be modified.

Key Entry **Lock Waveform In Slot**

Key Path **Mode > Dual ARB > More 2 of 2 > Waveform Licensing > Lock Waveform In Slot >**

:LICense:[FPACk]:WAVeform:REPLace

Supported All Models

```
:SYSTem:LICense[:FPACk]:WAVeform:REPlace slot_number, "filename"
```

This command will overwrite the contents of the selected slot with the “filename”, providing the slot is in the trial period. If the slot is locked the command returns an error.

Key Entry **Replace Waveform In Slot**

Key Path **Mode > Dual ARB > More 2 of 2 > Waveform Licensing > Replace Waveform In Slot >**

:LICense:[FPACk]:WAVeform:STATus?

Supported All Models

`:SYSTem:LICense[:FPACk]:WAVeform:STATus? slot_number`

This query returns the same values that are indicated in the Status column display.

:LICense:[FPACk]:WAVEform:USED?

Supported All Models

`:SYSTem:LICense:FPACk:WAVEform:USED?`

This query returns the number of slots used by licensed waveforms.

:LICense:INSTall

Supported All Models

`:SYSTem:LICense:INSTall <license_line>|<block_of_license_lines>`

This command installs the licenses into the signal generator.

<license_line>	This choice installs a license line.
<block_of_license_lines>	This choice installs a block of license lines.

Example

```
:SYST:LIC:INST "FEATURE 403 aspk 0 permanent 0 389D66FB107E9B02
HOSTID=N5182A,US00000068"
```

The preceding example installs license "FEATURE 403 aspk 0 permanent 0 389D66FB107E9B02 HOSTID=N5182A,US00000068", into the signal generator.

Example

```
:SYST:LIC:INST #210Qaz37pY9oL
```

The preceding is an example of the syntax for installing a block of licenses into the signal generator. For more on handling block data, refer to the *Programming Guide*.

NOTE The data, `Qaz37pY9oL`, in the above command are not valid and are shown for example purposes only. Typically, ASCII characters representing data are unprintable.

For additional information on downloading and installing licenses for applications, refer to the Agilent License Manager at *http://www.agilent.com/find/LicenseManager*.

:LICense:LIST

Supported All Models

`:SYSTem:LICense:LIST?`

This query provides a listing of the current licenses installed on the signal generator.

:LICense:REMove

Supported All Models

`:SYSTem:LICense:REMove <license_line>`

This command removes a single license line.

Example

To remove a license line:

```
:SYST:LIC:REM "FEATURE 403 aspk 0 permanent 0 389D66FB107E9B02
HOSTID=N5182A,US00000068"
```

The preceding example removes a license "FEATURE 403 aspk 0 permanent 0 389D66FB107E9B02 HOSTID=N5182A,US00000068", from the signal generator.

Remarks To remove multiple license lines: Repeat the process for removing a single license for each license line to be removed.

:OPT

Supported All Models

`:SYSTem:OPT "string"`

This command modifies the option string that the `*OPT?` query returns. Sending an empty string sets the query output of `*OPT?` to its factory shipped setting. The maximum string length is 72 characters.

Remarks Modification of the *OPT? query output enables the signal generator, with a set of options, to *identify* itself as another signal generator when used as a replacement

The display diagnostic information, shown by pressing the **Diagnostic Info** softkey, is not affected by this command.

:PDOWn

Supported All Models

`:SYSTem:PDOWn`

This command turns off the instrument.

:PMETer[1]|2:CHANnel

Supported All Models

```
:SYSTem:PMETer[1]|2:CHANnel A|B
```

```
:SYSTem:PMETer[1]|2:CHANnel?
```

This command selects the external power meter channel that will be used by each channel's power meter measurement. The query returns the selected channel.

Key Entry **External Power Meter Channel A B**

Default Channel A

:PMETer[1]|2:COMMunicate:LAN:DEVice

Supported All Models

```
:SYSTem:PMETer[1]|2:COMMunicate:LAN:DEVice <deviceName>
```

```
:SYSTem:PMETer[1]|2:COMMunicate:LAN:DEVice?
```

This command enters a VXI–11 name for a power meter that is being controlled by the signal generator for power meter measurements. If connecting directly to the power meter enter the name as specified on your power meter documentation. If connecting through a LAN–GPIB gateway, enter the SICL address of the power meter.

Key Entry **PM VXI–11 Device Name**

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or `*RST`.

:PMETer[1]|2:COMMunicate:LAN:IP

Supported All Models

```
:SYSTem:PMETer[1]|2:COMMunicate:LAN:IP <ipAddress>
```

```
:SYSTem:PMETer[1]|2:COMMunicate:LAN:IP?
```

This command sets the internet protocol (IP) address for a power meter that is controlled by the signal generator for power meter measurements. If connecting to a GPIB power meter through a LAN–GPIB gateway, this command sets the IP address of the gateway.

Key Entry **Power Meter IP Address**

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or `*RST`.

Ensure that the power meter IP address is different from the signal generator address.

:PMETer[1]|2:COMMunicate:LAN:PORT

Supported All Models

```
:SYSTem:PMETer[1]|2:COMMunicate:LAN:PORT <portNumber>
```

```
:SYSTem:PMETer[1]|2:COMMunicate:LAN:PORT?
```

This command sets the IP port on the power meter that is controlled by the signal generator.

Key Entry	Power Meter IP Port
5025	Standard mode. The command enables standard mode for simple programming.
5024	Telnet mode. The command enables the telnet SCPI service for programming.

NOTE For firmware versions <A.01.51, the default telnet mode is 5023. For firmware versions A.01.51 and greater, telnet port 5023 is still available for backwards compatibility.

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

For more information on standard mode and telnet SCPI mode, refer to the *Programming Guide*.

:PMETer[1]|2:COMMunicate:TYPE

Supported All Models

```
:SYSTem:PMETer[1]|2:COMMunicate:TYPE SOCKets|SOCKETS|VXI11|USB
```

```
:SYSTem:PMETer[1]|2:COMMunicate:TYPE?
```

This command sets the type of control connection for communication with the external power meter for power meter measurements. The query returns the connection type.

Key Entry	Connection Type
SOCK or SOCKETS	The command enables the power meter for sockets LAN control through the signal generator.
VXI11	The command enables the power meter for VXI–11 control through the signal generator. A power meter with GPIB can be controlled through VXI–11 using a LAN–GPIB gateway.
USB	The command enables the power meter for USB control through the signal generator.

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

:PMETer[1]|2:COMMunicate:USB:DEVice

Supported All Models

```
:SYSTem:PMETer[1]|2:COMMunicate:USB:DEVice <device>
```

```
:SYSTem:PMETer[1]|2:COMMunicate:USB:DEVice?
```

This command selects the USB device to be used for power meter measurements for Channel A or B. The query returns the USB device identification.

Key Entry **Connection Type** > **USB Devise**

:PMETer[1]|2:COMMunicate:USB:LIST?

Supported All Models

```
:SYSTem:PMETer[1]|2:COMMunicate:USB:LIST?
```

This queries for the list of all connected USB devices.

:PMETer[1]|2:MEASure?

Supported All Models

```
:SYSTem:PMETer[1]|2:MEASure?
```

This query starts the measurement and returns the result for Channel A or B.

:PMETer[1]|2:SENSe:AVERage:COUNt

Supported All Models

```
:SYSTEm:PMETer[1]|2:SENSe:AVERage:COUNt <avgCount>
```

```
:SYSTEm:PMETer[1]|2:SENSe:AVERage:COUNt?
```

This command sets the averaging count value for Channel A or B when automatic averaging is disabled (i.e. manual mode.) The query returns an integer.

Range: 1 to 2048

Key Entry **Averaging Count**

Default: 1024

:PMETer[1]|2:SENSe:AVERage:COUNt:AUTO

Supported All Models

```
:SYSTEm:PMETer[1]|2:SENSe:AVERage:COUNt:AUTO ON|OFF|1|0
```

```
:SYSTEm:PMETer[1]|2:SENSe:AVERage:COUNt:AUTO?
```

This command enables or disables the automatic averaging mode for Channel A or B. The query returns the state of the automatic averaging mode.

Key Entry **Averaging Mode**

Default: Auto

:PMETer[1]|2:SENSe:AVERage[:STATe]

Supported All Models

```
:SYSTem:PMETer[1]|2:SENSe:AVERage[:STATe] ON|OFF|1|0
```

```
:SYSTem:PMETer[1]|2:SENSe:AVERage[:STATe]?
```

This command enables or disables averaging for Channel A or B. The query returns the state of averaging.

Key Entry **Averaging Mode**

:PMETer[1]|2:SENSe:FREQuency[:CW|:FIXed]

Supported All Models

```
:SYSTem:PMETer[1]|2:SENSe:FREQuency[:CW|:FIXed] <freq><unit>
```

```
:SYSTem:PMETer[1]|2:SENSe:FREQuency[:CW|:FIXed]?
```

This command sets channel frequency for channel A or B. The query returns the value.

Key Entry **Channel Frequency**

Default 50 MHz

:PMETer[1]|2:UNIT:POWer

Supported All Models

```
:SYSTem:PMETer[1]|2:UNIT:POWer DBM|W
```

```
:SYSTem:PMETer[1]|2:UNIT:POWer?
```

This command selects the power measurement units for Channel A or B. The query returns that value.

Key Entry **Measurement Units dBm W**

:PMETer[1]|2[:STATe]

Supported All Models

```
:SYSTem:PMETer[1]|2[:STATe] ON|OFF|1|0
```

```
:SYSTem:PMETer[1]|2[:STATe]?
```

This command enables or disables the power meter measurements for channel A or B.

Key Entry **Averaging Mode** > **Off**

:PON:TYPE

Supported All

```
:SYSTem:PON:TYPE PRESet|LAST|USER
:SYSTem:PON:TYPE?
```

This command sets the defined conditions for the signal generator at power on.

PRESet — This choice sets the conditions to factory– or user–defined as determined by the choice for the preset type.

LAST — This choice retains the settings at the time the signal generator was last powered down.

USER — This choice sets the power on state to be the user preset value.

Key Entry **Power On Last Preset**

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

For a comparison of the SCPI preset commands, refer to Table 4-1, “Preset SCPI Commands Overview,” on page 227.

:PRESet

NOTE If this SCPI command is not responding as expected, use the E4428C/38C compatibility command: `:SYST:PRESet:TYPE:NORMal` to return the front panel **Preset** key to its factory default functionality.

Supported All

```
SYSTem:PRESet
```

This command returns the signal generator to a set of defined conditions. It is equivalent to pressing the front panel **Preset** hardkey.

Key Entry **Preset**

Remarks The defined conditions are either factory– or user–defined.

For a comparison of the SCPI preset commands, refer to Table 4-1, “Preset SCPI Commands Overview,” on page 227.

Table 4-1 Preset SCPI Commands Overview

Command	Description	Remarks
*RST	This IEEE 488.2 Common Command uses the factory preset settings for the instrument preset.	Optimized for automated testing
:SYSTem:PRESet:PERSistent	Only the instrument’s persistent parameters are returned to factory default value.	

Table 4-1 Preset SCPI Commands Overview (Continued)

Command	Description	Remarks
:SYSTem:PON:TYPE PRESet|LAST|USER :SYSTem:PON:TYPE?	Sets the power on state (PON) to be the same as the front panel green Preset hardkey, or the last state, or to the user state.	
:SYSTem:PRESet	Performs the same preset as currently set for the front panel green Preset hardkey.	
:SYSTem:PRESet[:USER]:SAVE	Saves the current instrument state as the user preset state.	
:SYSTem:PRESet:ALL	Sets the instrument to the same default conditions performed by sequentially inputting: `:SYSTem:PRESet` + `:SYSTem:PERSistent:PRESet`	
:SYSTem:PRESet:USER	Executes a user preset.	

:PRESet:ALL

Supported All

```
:SYSTem:PRESet:ALL
```

This command sets all states of the signal generator back to their factory default settings, including states that are not normally affected by signal generator power–on, preset, or *RST.

For a comparison of the SCPI preset commands, refer to Table 4-1, “Preset SCPI Commands Overview,” on page 227.

:PRESet:LANGuage (N5161A/62A/81A/82A)

Supported N5161A/62A/81A/82A

```
:SYSTem:PRESet:LANGuage
"SCPI"|"COMP"|"8648"|"E4428C"|"E4438C"|"E8257D"|"E8267D"|"E8663B"|"E8247C"|"E8257C"|"
E8267C"|"E442XB"|"E443XB"|"E8241A"|"E8244A"|"E8251A"|"E8254A"|"E8247C"|"E8257C"|
"E8267C"|"SMU200A"|"SMATE200A"|"SMJ100A"|"SMIQ"|"SML"|"SMV"|"3410"
:SYSTem:PRESet:LANGuage?
```

This command sets the remote language that is available when the signal generator is preset.

SCPI This choice provides compatibility for SCPI commands.

COMP This choice provides compatibility for the 8656B, 8657A/B signal generator which is supported only through the GPIB interface.

8648 This choice provides compatibility for the 8648A/B/C/D signal generator which is supported only through a GPIB interface.

E4428C or

E4438C	This choice provides compatibility for the E4428C or E4438C signal generators which are supported through a GPIB, LAN, or USB interface.
E8257D, or E8267D, or E88663B	This choice provides compatibility for the E8257D, or E8267D or E8663B signal generators which are supported through a GPIB, LAN, or USB interface.
E8247C, or E8257C, or E8267C	This choice provides compatibility for the E8247C, E257C, or E8267C signal generators which are supported through a GPIB, LAN, or USB interface.
E442XB or E443XB	This choice provides compatibility for the E442XB or E443XB signal generators which are supported through a GPIB, LAN, or USB interface.
E8241A or E8244A	This choice provides compatibility for the 8648A/B/C/D signal generator which is supported through a GPIB, LAN, or USB interface.
E8251A or E8254A	This choice provides compatibility for the E8251A or E8254A signal generators which are supported through a GPIB, LAN, or USB interface.
SMU200A, or SMATE200A, or SMJ100A, or SMIQ, or SML, or SMV	This choice provides compatibility for the Rohde and Schwartz SMU200A, SMATE200A, SMJ100A, SMIQ, SML, or SMV signal generators which are supported through a GPIB, LAN, or USB interface.
3410	This choice provides compatibility for the Aeroflex 3410 signal generator which are supported through a GPIB, LAN, or USB interface.
***RST**	"SCPI"

Key Entry				
	SCPI	**SMJ100A**	**8648A/B/C/D**	**E8257D, E8267D, E8663B**
	SML	**3410 Series**	**8656B, 8667A/B**	**E8241A, E8244A, E8251A, E8264A**
	SMV	**E4428C,E4438C**	**SMU200A, SMATE200A**	
	SMIQ	**E442xB, E443xB**	**E8247C, E8257C, E8367C**	

:PRESet:LANGuage (N5183A)

Supported N5183A

```
:SYSTem:PRESet:LANGuage
|"SCPI"|"8360"|"83712"|"83732"|"83752"|"8340"|"8662"|"8663"|"E4428C"|"E4438C"|
|"E8257D"|"E8267D"|"E8663B"|"E8247C"|"E8257C"|"E8267C"|"E8241A"|"E8244A"|"E8251A"|
|"E8254A"|"SMR"|"MG3691B"|"MG3692B"|"MG3693B"|"MG3694B"|
:SYSTem:PRESet:LANGuage?
```

This command sets the remote language that is available when the signal generator is preset.

SCPI	This choice provides compatibility for SCPI commands.
8360	This choice provides compatibility for the 8360 signal generator, which is supported through a GPIB, LAN, or USB interface.
83712	This choice provides compatibility for the 83711B or 83712B signal generators, which are supported through a GPIB, LAN, or USB interface.
83732	This choice provides compatibility for the 83731B or 83732B signal generators, which are supported through a GPIB, LAN, or USB interface.
83752	This choice provides compatibility for the 83751B or 83752B signal generators, which are supported through a GPIB, LAN, or USB interface.
8340	This choice provides compatibility for the 8340B or 8341B signal generators, which are supported only through a GPIB interface.
8662 or 8663	This choice provides compatibility for the 8662A or 8663A signal generators, which are supported only through a GPIB interface.
E4428C or E4438C	This choice provides compatibility for the E4428C or E4438C signal generators, which are supported through a GPIB, LAN, or USB interface.
E8241A or E8244A or E8251A or E8254A	This choice provides compatibility for the E8241A, E8244A, E8251A or E8254A signal generators, which are supported through a GPIB, LAN, or USB interface.
E8247C, or E8257C, or E8267C	This choice provides compatibility for the E8247C, E8257C, or E8267C signal generators, which are supported through a GPIB, LAN, or USB interface.
E8257D or E8267D or E8663B	This choice provides compatibility for the E8257D, E8267D, or E8663B signal generators, which are supported through a GPIB, LAN, or USB interface.
SMR	This choice provides compatibility for the Rohde & Schwartz SMR signal generators, which are supported through a GPIB, LAN, or USB interface.

MG3691B or
MG3692B or
MG3693B or
MG3694B — This choice provides compatibility for Anritsu MG369xB series signal generators, which are supported through a GPIB interface.

***RST** **"SCPI"**

Key Entry				
	SCPI	**MG369xB**	**83711B, 83712B**	**E8247C, E8257C, E8267C**
	SMR	**8360 Series**	**83731B, 83732B**	**E8257D, E8267D, E8663B**
	8662A	**8340B, 8341B**	**83751B, 83752B**	**E8241A, E8244A, E8251A, E8254A**
	8663A	**E4428C,E4438C**		

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

For more information on supported SCPI commands and programming codes, refer to the *Programming Compatibility Guide*.

:PRESet:PERSistent

Supported All

```
:SYSTem:PRESet:PERSistent
```

This command sets the states that are not affected by signal generator power–on, preset, or *RST to their factory default settings.

Key Entry **Restore System Settings to Default Values**

Remarks For a list of the persistent instrument factory default values refer to the *Programming Guide*.

For a comparison of the SCPI preset commands, refer to Table 4-1, “Preset SCPI Commands Overview,” on page 227.

:PRESet:PN9

Supported N5162A/82A

```
:SYSTem:PRESet:PN9 NORMal|QUICk
```

```
:SYSTem:PRESet:PN9?
```

This command sets the preset length of the PN9 sequence for personalities that require software PRBS generation.

NORMal — This choice provides a maximal length PN9 sequence.

QUICk — This choice provides a truncated (216 bits) PN9 sequence.

:PRESet:TYPE

Supported All

`:SYSTem:PRESet:TYPE NORMal|USER`

This command defines the Preset hardkey as either factory preset or as the user preset saved in memory.

NORMal This choice uses the factory–defined defaults when **Preset** is pressed.

COMP This choice uses the user–defined preset saved in the instrument when **Preset** is pressed. Refer to :PRESet:USER and :PRESet[:USER]:SAVE commands.

Key Entry **Preset**

Remarks This command will return an error, if the USER parameter is sent without a user preset saved in the instrument.

:PRESet:USER

Supported All

`:SYSTem:PRESet:USER`

This command presets the signal generator to the user's saved state.

Key Entry **Execute User Preset**

Remarks This command presets the signal generator to the saved user–defined state.

For a comparison of the SCPI preset commands, refer to Table 4-1, "Preset SCPI Commands Overview," on page 227.

:PRESet[:USER]:SAVE

Supported All

`:SYSTem:PRESet[:USER]:SAVE`

This command saves your user–defined preset conditions to a state file.

Key Entry **Save User Preset**

Remarks Only one user–defined preset file can be saved. Subsequent saved user–defined preset files will overwrite the previously saved file.

For a comparison of the SCPI preset commands, refer to Table 4-1, "Preset SCPI Commands Overview," on page 227.

:SECurity:DISPlay

Supported All Models

```
:SYSTem:SECurity:DISPlay ON|OFF|1|0
:SYSTem:SECurity:DISPlay?
```

This command enables or disables the secure display mode.

ON (1) This selection turns the signal generator display back on, showing the current settings. Cycling the signal generator power also restores the display. Do note that the current instrument state may be retained across reboots depending on the power-on configuration choice. See :PON:TYPE command for information on the power–on choices available.

OFF (0) This selection blanks the signal generator's display, hiding the settings and disabling the front panel keys. While in this mode, the display shows `*** SECURE DISPLAY ACTIVATED ***`.

For more information about security functions, refer to the *User's Guide*.

Example

```
:SYST:SEC:DISP OFF
```

The preceding example enables the secure display mode.

***RST** 1

Range N/A

Key Entry **Activate Security Display**

:SECurity:DISPlay:RESTricted

Supported All Models

```
:SYSTem:SECurity:DISPlay:RESTricted ON|OFF|1|0
:SYSTem:SECurity:DISPlay:RESTricted?
```

This command enables or disables the secure restricted display mode. See also, :ANNotation:AMPLitude[:STATe] and :ANNotation:FREQuency[:STATe] commands.

ON (1) This selection turns on the secure restricted display, blanking the frequency. Also, the keys that access the frequency, sweep, and user flatness information are disabled.

OFF (0) This selection turns off the secure restricted display mode, allowing the signal generator's display to show the current frequency.

For more information about security functions, refer to the *User's Guide*.

Example

```
:SYST:SEC:DISP:REST ON
```

The preceding example enables the security restricted display mode.

***RST** 0

Key Entry **Activate Restricted Display**

:SECurity:ERASeall

Supported All Models

```
:SYSTem:SECurity:ERASeall
```

This command removes all user files, flatness correction files, and baseband generator files. In addition, all table editor files are returned to their original factory values.

This command differs from the :DELete:ALL command, which does not reset table editors to factory values. For more information about security functions, refer to the *User's Guide*.

Key Entry **Erase All**

:SECurity:LEVel

Supported All Models

```
:SYSTem:SECurity:LEVel NONE|ERASe|OVERwrite|SANitize
:SYSTem:SECurity:LEVel?
```

This command selects the security level operation for the signal generator.

NONE — This selection causes the signal generator to reset to factory default settings.

ERASe — This selection removes all user files, table editor files, flatness correction files, and baseband generator files.

OVERwrite — This selection removes all user files, table editor files, flatness correction files, and baseband generator files. The memory is then overwritten with random data.

SRAM	All addressable locations will be overwritten with random characters.
Hard Disk	All addressable locations will be overwritten with random characters.
Flash Memory	The flash blocks will be erased.

SANitize — This selection removes all user files, table editor files, flatness correction files, and baseband generator files using the same techniques as the OVERwrite selection for SRAM and flash memory. For the hard disk, the signal generator overwrites all addressable locations with a single character, its complement, and then with a random character.

Once you select the security level, you must execute the command from :SECurity:LEVel:STATe to arm the security level. The selected level of security operation will be executed after reboot.

NOTE Once you select a security level and arm it, you cannot change the level.

For other cleaning and security operation descriptions, see :SECurity:ERASeall, :SECurity:OVERwrite, and :SECurity:SANitize commands. For more information about security functions, refer to the *User's Guide*.

Example

```
:SYST:SEC:LEV ERASE
```

The preceding example sets the secure mode so it resets the signal generator to factory settings after

completing the security operation.

Key Entry **None Erase Overwrite Sanitize**

:SECurity:LEVel:STATe

Supported All Models

CAUTION Ensure that you select the security level prior to executing this command with the ON (1) selection. Once you enable the state, you cannot reduce the security level.

```
:SYSTem:SECurity:LEVel:STATe ON|OFF|1|0
:SYSTem:SECurity:LEVel:STATe?
```

This command arms and executes the current security level parameter.

ON (1) This selection arms and prevents any changes to the current security level. Refer to :SECurity:LEVel command for setting the security level.

OFF (0) This selection performs the actions required for the current security level setting. Cycling the signal generator power also performs the same function.

For more information about security functions, refer to the *User's Guide*.

Example

```
:SYST:SEC:LEV:STAT ON
```

The preceding example arms the secure mode selected with the `SYSTem:SECurity:LEVel` command.

Key Entry **Enter Secure Mode**

:SECurity:OVERwrite

Supported All Models

```
:SYSTem:SECurity:OVERwrite
```

This command removes all user files, table editor files values, flatness correction files, and baseband generator files. The memory is then overwritten with random data as described below. For more information about security functions, refer to the *User's Guide*.

SRAM All addressable locations will be overwritten with random characters.

HARD DISK All addressable locations will be overwritten with random characters.

FLASH MEMORY The flash blocks will be erased.

Key Entry **Erase and Overwrite All**

:SECurity:SANitize

Supported All Models

```
:SYSTem:SECurity:SANitize
```

This command removes all user files, table editor files values, flatness correction files, and baseband generator files. The memory is then overwritten with a sequence of data as described below. For

more information about security functions, refer the *User's Guide*.

SRAM	All addressable locations will be overwritten with random characters.
HARD DISK	All addressable locations will be overwritten with a single character and then a random character.
FLASH MEMORY	The flash blocks will be erased.

Key Entry **Erase and Sanitize All**

:SSAVer:DELay

Supported All

```
:SYSTem:SSAVer:DELay <value>
:SYSTem:SSAVer:DELay?
```

This command sets the amount of time before the display light or display light and text is switched off. This will occur if there is no input through the front panel during the delay period.

The variable `<value>` is a whole number measured in hours.

Range 1 to 12

Key Entry **Screen Saver Delay:**

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

Refer to :SSAVer:MODE command for selecting the screen saver mode.

:SSAVer:MODE

Supported All

```
:SYSTem:SSAVer:MODE LIGHt|TEXT
:SYSTem:SSAVer:MODE?
```

This command toggles the screen saver mode between light only or light and text.

LIGHt	This choice enables only the light to turn off during the screen saver operation while leaving the text visible on the darkened screen.
TEXT	This choice enables both the display light and text to turn off during the screen saver operation.

Key Entry **Screen Saver Mode**

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

:SSAVer:STATe

Supported All

```
:SYSTem:SSAVer:STATe ON|OFF|1|0
:SYSTem:SSAVer:STATe?
```

This command enables or disables the display screen saver.

Key Entry **Screen Saver Off On**

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

:TIME

Supported All

```
:SYSTem:TIME <hour>,<minute>,<second>
:SYSTem:TIME?
```

This command sets the time displayed in the lower right area of the signal generator's display.

Range <hour>: 0 to 23 <minute>: 0 to 59 <second>: 0 to 59

Key Entry **Time/Date**

:VERSion

Supported All

```
:SYSTem:VERSion?
```

This command returns the SCPI version number with which the signal generator complies.

Trigger Subsystem

:ABORt

Supported All

```
:ABORt
```

This command causes the List or Step sweep in progress to abort. If `INIT:CONT[:ALL]` is set to on, the sweep will immediately re–initiate. The pending operation flag affecting `*OPC`, `*OPC?`, and `*WAI` will undergo a transition once the sweep has been reset.

:INITiate:CONTinuous[:ALL]

Supported All

```
:INITiate:CONTinuous[:ALL] ON|OFF|1|0
:INITiate:CONTinuous[:ALL]?
```

This command selects either a continuous or single list or step sweep. Execution of this command does not affect a sweep in progress.

ON (1)	This choice selects continuous sweep where, after the completion of the previous sweep, the current sweep will restart automatically or wait until the appropriate trigger source is received.
OFF (0)	This choice selects a single sweep. Refer to :INITiate[:IMMediate][:ALL] command for single sweep triggering information.

***RST** 0

Key Entry **Sweep Repeat Single Cont**

Remarks Execution of this command will not affect a sweep in progress.

:INITiate[:IMMediate][:ALL]

Supported All

```
:INITiate[:IMMediate][:ALL]
```

This command either sets or sets and starts a single List or Step sweep, depending on the trigger type. The command performs the following:

- arms a single sweep when BUS, EXTernal, or KEY is the trigger source selection
- arms and starts a single sweep when IMMediate is the trigger source selection

This command is ignored if a sweep is in progress. See :INITiate:CONTinuous[:ALL] command for setting continuous or single sweep. See :TRIGger[:SEQuence]:SOURce command to select the trigger source.

Key Entry **Single Sweep**

:TRIGger:OUTPut:POLarity

Supported All

```
:TRIGger:OUTPut:POLarity POSitive|NEGative
:TRIGger:OUTPut:POLarity?
```

Sets the TTL signal level present at the TRIGGER OUT connector to either high (5 vdc) or low (0 vdc). The trigger out is asserted after the frequency and/or power is set while the sweep is waiting for its step trigger.

Example

```
:TRIG:OUTP:POL NEG
```

The preceding example sets the trigger out polarity to be low when the trigger is preset.

***RST** POS

Key Entry **Trigger Out Polarity Neg Pos**

:TRIGger[:SEQuence]:SLOPe

Supported All

```
:TRIGger[:SEQuence]:SLOPe POSitive|NEGative
:TRIGger[:SEQuence]:SLOPe?
```

This command sets the polarity of an external signal at the TRIG IN connector that will trigger a list or step sweep.

***RST** POS

Key Entry **Trigger In Polarity Neg Pos**

:TRIGger[:SEQuence]:SOURce

Supported All

```
:TRIGger[:SEQuence]:SOURce BUS|IMMediate|EXTernal|KEY|TIMer
:TRIGger[:SEQuence]:SOURce?
```

This command sets the sweep trigger source for a list or step sweep.

BUS	This choice enables GPIB triggering using the *TRG or GET command. The *TRG SCPI command can be used with any combination of GPIB, LAN, or USB. The GET command requires USB, GPIB, or LAN–VXI–11.
IMMediate	This choice enables immediate triggering of the sweep event.
EXTernal	This choice enables the triggering of a sweep event by an externally applied signal at the TRIG IN connector.
Trigger KEY	This choice enables triggering through front panel interaction by pressing the **Trigger** hardkey.
TIMer Trigger	This choice enables the sweep trigger timer.

***RST** IMM

Remarks The wait for the BUS, EXTernal, or KEY trigger can be bypassed by sending the :TRIGger[:SEQuence][:IMMediate] command.

Example

```
:TRIG:SOUR BUS
```

The preceding example sets the sweep trigger source to BUS.

***RST** IMM

Key Entry **Bus** **Free Run** **Ext** **Trigger Key** **Timer Trigger**

:TRIGger[:SEQuence]:TIMer

Supported All Models

```
:TRIGger[:SEQuence]:TIMer <period>
:TRIGger[:SEQuence]:TIMer?
```

This command sets the period of the timer trigger.

***RST** 1 ms

Range .5 ms to 1000 seconds

Key Entry Trig Timer Period

:TRIGger[:SEQuence][:IMMediate]

Supported All Models

```
:TRIGger[:SEQuence][:IMMediate]
```

This event command causes an armed List or Step sweep to immediately start without the selected trigger occurring.

:TSWeep

Supported All Models

```
[:SOURce]:TSWeep
```

This command aborts the current sweep, then either arms or arms and starts a single list, depending on the trigger type.

The command performs the following:

- arms a single sweep when BUS, EXTernal, or Trigger KEY is the trigger source selection
- arms and starts a single sweep when IMMediate is the trigger source selection

Key Entry **Single Sweep**

Unit Subsystem (:UNIT)

:POWer

Supported All

```
:UNIT:POWer DBM|DBUV|DBUVEMF|V|VEMF|DB
:UNIT:POWer?
```

This command terminates an amplitude value in the selected unit of measure.

If the amplitude reference state is set to on, the query returns units expressed in dB and the dB choice will be displayed. Setting any other unit will cause a setting conflict error stating that the amplitude reference state must be set to off. Refer to, :REFerence:STATe command for more information.

***RST** DBM

Key Entry **dBm** **dBuV** **dBuVemf** **mV** **mVemf**

Key Path **AMPTD > keypad entry > Power Units >**

Remarks All power values in this chapter are shown with dBm as the unit of measure. If a different unit of measure is selected, replace dBm with the newly selected unit whenever it is indicated for the value.

:VOLT:TYPE

Supported All

```
:UNIT:VOLT:TYPE PD|EMF
:UNIT:VOLT:TYPE?
```

This command scales the voltage values to display potential differences or electromagnetic force.

Potential Difference — This choice sets the instrument to PD mode where the output voltage assumes that a 50 ohm load is connected. PD is the default mode of the instrument.

Electro–motive Force — This choice sets the instrument to EMF mode where the output voltage assumes no load is connected. the EMF value is twice the PD value.

***RST** PD

5 Analog Modulation Commands

This chapter provides SCPI descriptions for subsystems dedicated to analog commands common to all Agilent MXG signal generator models. This chapter contains the following major sections:

- Amplitude Modulation Subsystem–Option UNT ([:SOURce]) on page 243
- Frequency Modulation Subsystem–Option UNT ([:SOURce]) on page 247
- Phase Modulation Subsystem–Option UNT ([:SOURce]) on page 250
- Pulse Modulation Subsystem–Option UNU and UNW and Option 320 ([:SOURce]) on page 254

Amplitude Modulation Subsystem–Option UNT ([:SOURce])

:AM:EXTernal:COUPling

Supported All Models with Option UNT

```
[:SOURce]:AM:EXTernal:COUPling AC|DC
[:SOURce]:AM:EXTernal:COUPling?
```

This command sets the coupling for the amplitude modulation source through the selected external input connector.

AC	This choice will only pass ac signal components.
DC	This choice will pass both ac and dc signal components.
***RST**	DC
Key Entry	**Ext Coupling DC AC**
Remarks	The command does not change the currently active source or switch the current modulation on or off. The modulating signal may be the sum of several signals, either internal or external sources.

:AM:INTernal:FREQuency

Supported All Models with Option UNT

```
[:SOURce]:AM:INTernal:FREQuency <value><unit>|UP|DOWN
[:SOURce]:AM:INTernal:FREQuency?
```

This command sets the internal amplitude modulation rate for the following applications:

- the start frequency for a swept-sine waveform
- the frequency rate for all other waveforms

***RST** +4.00000000E+002

Range Swept-Sine & Sine: 0.1 Hz–20 MHz

Key Entry **AM Rate**

:AM:INTernal:FREQuency:STEP[:INCRement]

Supported All Models with Option UNT

```
[:SOURce]:AM:INTernal:FREQuency:STEP[:INCRement] <num>
[:SOURce]:AM:INTernal:FREQuency:STEP[:INCRement]?
```

This command sets the step increment for the amplitude modulation internal frequency.

The variable <num> is expressed in units of Hertz.

Range 0.5–1E6

Key Entry **Incr Set**

Remarks The value set by this command is used with the UP and DOWN choices for the AM frequency setting. Refer to :AM:INTernal:FREQuency command for more information.

The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:AM:INTernal:FUNCtion:SHAPe

Supported All Models with Option UNT

```
[:SOURce]:AM:INTernal:FUNCtion:SHAPe SINE
[:SOURce]:AM:INTernal:FUNCtion:SHAPe?
```

This command sets the AM waveform type.

***RST** SINE

:AM:MODE

Supported All Models

```
[:SOURce]:AM:MODE DEEP|NORMal
[:SOURce]:AM:MODE?
```

This command sets the amplitude modulation mode. DEEP provides an AM depth with greater dynamic range. NORMal sets AM to standard operation.

Default DEEP

Key Entry **AM > More > AM Mode Normal Deep**

Remarks The RF carrier is modulated when you have set the signal generator's modulation state to ON, see :MODulation[:STATe] command for more information.

Whenever amplitude modulation is enabled, the AM annunciator is turned on in the display.

:AM:SOURce

Supported All Models with Option UNT

`[:SOURce]:AM:SOURce INT|EXT`

`[:SOURce]:AM:SOURce?`

This command sets the source to generate the amplitude modulation.

INT This choice selects the internal source to provide an ac-coupled signal.

EXT This choice selects the AM rear panel connector to provide an externally applied signal that can be ac- or dc-coupled.

***RST** INT

Key Entry **Internal** **Ext**

Remarks A 1.0 V_p input is required for calibrated AM depth settings.

The externally applied, ac-coupled input signal is tested for a voltage level and a display annunciator will report a high or low condition if that voltage is > ±3% of 1 V_p.

:AM:STATe

Supported All Models with Option UNT

`[:SOURce]:AM:STATe ON|OFF|1|0`

`[:SOURce]:AM:STATe?`

This command enables or disables the amplitude modulation for the selected path.

***RST** 0

Key Entry **AM Off On**

Remarks The RF carrier is modulated when you have set the signal generator's modulation state to ON, see :MODulation[:STATe] command for more information.

Whenever amplitude modulation is enabled, the AM annunciator is turned on in the display.

:AM:TYPE

Supported All Models with Option UNT

`[:SOURce]:AM:TYPE LINear|EXPonential`

`[:SOURce]:AM:TYPE?`

This command enables LINear or EXPonential amplitude modulation.

The units effected are the AM Depth settings.

LIN This choice selects linear (percent/volt) AM.

EXP This choice selects exponential (db/volt).

***RST** LIN

Key Entry **AM Type LIN EXP**

:AM[:DEPTh]:EXPonential

Supported All Models with Option UNT

```
[:SOURce]:AM[:DEPTh]:EXPonential <value>
```

```
[:SOURce]:AM[:DEPTh]:EXPonential?
```

This commands sets the amplitude modulation depth in dB.

***RST** +4.00000000E+001

Range 0–40 dB

Key Entry **AM Depth**

Remarks Refer to :AM[:DEPTh]:STEP[:INCRement] command for setting the value associated with UP and DOWN choices.

:AM[:DEPTh]:STEP[:INCRement]

Supported All Models with Option UNT

```
[:SOURce]:AM[:DEPTh]:STEP[:INCRement] <value><unit>
[:SOURce]:AM[:DEPTh]:STEP[:INCRement]?
```

This command sets the AM depth step increment.

Range 0.1–100%

Key Entry **Incr Set**

Remarks The value set by this command is used with the UP and DOWN choices for the AM depth setting. Refer to :AM[:DEPTh][:LINear] command for more information.

The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:AM[:DEPTh][:LINear]

Supported All Models with Option UNT

```
[:SOURce]:AM[:DEPTh][:LINear] <value><unit>|UP|DOWN
[:SOURce]:AM[:DEPTh][:LINear]?
```

This commands sets the amplitude modulation depth in percent.

***RST** +1.00000000E–001

Range 0.00–90%

Key Entry **AM Depth**

Remarks Refer to :AM[:DEPTh]:STEP[:INCRement] command for setting the value associated with UP and DOWN choices.

Frequency Modulation Subsystem–Option UNT ([:SOURce])

:FM:EXTernal:COUPling

Supported All Models with Option UNT

```
[:SOURce]:FM:EXTernal:COUPling AC|DC
[:SOURce]:FM:EXTernal:COUPling?
```

This command sets the coupling for the frequency modulation source through the selected external input connector.

Use this command with the :DCFM command to remove the effects of DC and optimize the DCFM calibration.

AC	This choice only passes ac signal components.
DC	This choice passes both ac and dc signal components.
***RST**	DC
Key Entry	**Ext Coupling DC AC**
Remarks	The command does not change the currently active source or switch the current modulation on or off. The modulating signal may be the sum of several signals, either internal or external sources.

:FM:INTernal:FREQuency

Supported All Models with Option UNT

```
[:SOURce]:FM:INTernal:FREQuency <value><unit>|UP|DOWN
[:SOURce]:FM:INTernal:FREQuency?
```

This command sets the internal frequency modulation rate for the following applications:

- the start frequency for a swept-sine waveform
- the frequency rate for all other waveforms

***RST**	+4.00000000E+002
Range	All Waveforms: 0.1 Hz–2 MHz
Key Entry	**FM Rate**

:FM:INTernal:FREQuency:STEP[:INCRement]

Supported All Models with Option UNT

```
[:SOURce]:FM:INTernal:FREQuency:STEP[:INCRement] <num>
[:SOURce]:FM:INTernal:FREQuency:STEP[:INCRement]?
```

This command sets the step increment for the internal frequency modulation.

The variable <num> sets the entered value in units of Hertz.

***RST**	+5.00000000E+002

Range 0.5–1E6

Key Entry **Incr Set**

Remarks The value set by this command is used with the UP and DOWN choices for the FM frequency setting. Refer to :FM:INTernal:FREQuency command for more information.

The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:FM:INTernal:FUNCtion:SHAPe

Supported All Models with Option UNT

```
[:SOURce]:FM:INTernal:FUNCtion:SHAPe SINE
[:SOURce]:FM:INTernal:FUNCtion:SHAPe?
```

This command sets the FM waveform type.

***RST** SINE

Remarks The waveform selection is only valid when INT is the source selection. Refer to :FM:SOURce command for type source selection.

:FM:SOURce

Supported All Models with Option UNT

```
[:SOURce]:FM:SOURce INT|EXT
[:SOURce]:FM:SOURce?
```

This command sets the source to generate the frequency modulation.

INT This choice selects the internal source to provide an ac-coupled signal.

EXT This choice selects the FM rear panel connector to provide an externally applied signal that can be ac- or dc-coupled.

***RST** INT

Key Entry **Internal** **Ext**

Remarks The externally applied, ac-coupled input signal is tested for a voltage level and a display annunciator will report a high or low condition if that voltage is > ±3% of 1 V_p.

:FM:STATe

Supported All Models with Option UNT

```
[:SOURce]:FM:STATe ON|OFF|1|0
[:SOURce]:FM:STATe?
```

This command enables or disables the frequency modulation for the selected path.

***RST** 0

Key Entry **FM Off On**

Remarks The RF carrier is modulated when you set the signal generator's modulation state to ON, see :MODulation[:STATe] command for more information.

Whenever frequency modulation is enabled, the FM annunciator is turned on in the display.

:FM[:DEViation]

Supported All Models with Option UNT

```
[:SOURce]:FM[:DEViation] <value><unit>
[:SOURce]:FM[:DEViation]?
```

This command sets the frequency modulation deviation. Please refer to *Data Sheet* for more information on FM deviation specifications.

***RST** +1.00000000E+003

Key Entry **FM DEV**

:FM[:DEViation]:STEP[:INCRement]

Supported All Models with Option UNT

```
[:SOURce]:FM[:DEViation]:STEP[:INCRement] <value><unit>|GHz|MHz|kHz|Hz
[:SOURce]:FM[:DEViation]:STEP[:INCRement]?
```

This command sets the step increment for the FM deviation of the signal generator.

***RST** +5.00000000E+003

Key Entry **Incr Set**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

Phase Modulation Subsystem–Option UNT ([:SOURce])

:PM:BANDwidth|BWIDth

Supported All Models with Option UNT

```
[:SOURce]:PM:BANDwidth|BWIDth NORMal|HIGH
[:SOURce]:PM:BANDwidth|BWIDth?
```

This command toggles between normal phase modulation and high bandwidth phase modulation mode.

***RST** NORM

Key Entry **FM ΦM Normal High BW**

:PM:EXTernal:COUPling

Supported All Models with Option UNT

```
[:SOURce]:PM:EXTernal:COUPling AC|DC
[:SOURce]:PM:EXTernal:COUPling?
```

This command sets the coupling for the phase modulation source through the selected external input connector.

Use this command with the :DCFM command to remove the effects of DC and optimize the DCFM calibration.

AC This choice will only pass ac signal components.

DC This choice will pass both ac and dc signal components.

***RST** DC

Key Entry **Ext Coupling DC AC**

Remarks This command does not change the currently active source or switch the current modulation on or off. The modulating signal may be the sum of several signals, either internal or external sources.

:PM:INTernal:FREQuency

Supported All Models with Option UNT

```
[:SOURce]:PM:INTernal:FREQuency <value><unit>|UP|DOWN
[:SOURce]:PM:INTernal:FREQuency?
```

This command sets the internal modulation frequency rate for the following applications:

- the start frequency for a swept-sine waveform
- the frequency rate for all other waveforms

***RST** +4.00000000E+002

Range All Waveforms: 0.1 Hz–2 MHz (Wideband)All Waveforms: 0.1 Hz–1 MHz (narrowband)

Key Entry **ΦM Rate**

:PM:INTernal:FREQuency:STEP[:INCRement]

Supported All Models with Option UNT

```
[:SOURce]:PM:INTernal:FREQuency:STEP[:INCRement] <num>
[:SOURce]:PM:INTernal:FREQuency:STEP[:INCRement]?
```

This command sets the step increment of the phase modulation internal frequency.

The variable <num> sets the entered value in units of Hertz.

Range 0.5–1E6

Key Entry **Incr Set**

Remarks The value set by this command is used with the UP and DOWN choices for the FM frequency command. Refer to :PM:INTernal:FREQuency command for more information.

The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:PM:INTernal:FUNCtion:SHAPe

Supported All Models with Option UNT

```
[:SOURce]:PM:INTernal:FUNCtion:SHAPe SINE
[:SOURce]:PM:INTernal:FUNCtion:SHAPe?
```

This command sets the phase modulation waveform type.

***RST** SINE

:PM:SOURce

Supported All Models with Option UNT

```
[:SOURce]:PM:SOURce INT|EXT
[:SOURce]:PM:SOURce?
```

This command sets the source to generate the phase modulation.

INT This choice selects internal source 1 to provide an ac-coupled signal.

EXT This choice selects the FM rear panel connector to provide an externally applied signal that can be ac- or dc-coupled.

***RST** INT

Key Entry **Internal** **Ext**

Remarks The externally applied, ac-coupled input signal is tested for a voltage level and a display annunciator will report a high or low condition if that voltage is > ±3% of 1 V_p.

:PM:STATe

Supported All Models with Option UNT

```
[:SOURce]:PM:STATe ON|OFF|1|0
[:SOURce]:PM:STATe?
```

This command enables or disables the phase modulation for the selected path.

***RST** 0

Key Entry **ΦM Off On**

Remarks The RF carrier is modulated when you set the signal generator's modulation state to ON, see :MODulation[:STATe] command for more information.

Whenever phase modulation is enabled, the ΦM annunciator is turned on in the display

:PM[:DEViation]

Supported All Models with Option UNT

```
[:SOURce]:PM[:DEViation] <value><unit>|UP|DOWN
[:SOURce]:PM[:DEViation]?
```

This command sets the deviation of the phase modulation.

The variable <unit> will accept RAD (radians), PIRAD (pi-radians), and DEG (degrees); however, the query will only return values in radians.

***RST** +0.00000000E+000

Range

Frequency	*Normal Bandwidth*	*High Bandwidth*
<250 MHz[a]	0–5 RAD	0–0.500 RAD
250 MHz – <375 MHz	0–1.25 RAD	0–0.125 RAD
375 MHz – <750 MHz	0–2.5 RAD	0–0.2500 RAD
750 MHz – <1.5 GHz	0–5 RAD	0–0.500 RAD
1.5 GHz – <3.000001 GHz	0–10 RAD	0–1 RAD
> 3 GHz – 6 GHz	0–20 RAD	0–2 RAD

a. Settable, but not specified to 100 kHz. For more information on specifications, refer to the *Data Sheet*.

Key Entry **ΦM Dev**

Remarks Refer to :PM[:DEViation]:STEP[:INCRement] command for setting the value associated with the UP and DOWN choices.

:PM[:DEViation]:STEP[:INCRement]

Supported All Models with Option UNT

```
[:SOURce]:PM[:DEViation]:STEP[:INCRement] <value><unit>
[:SOURce]:PM[:DEViation]:STEP[:INCRement]?
```

This command sets the phase modulation deviation step increment.

Range 0.001–1E3RAD

Key Entry **Incr Set**

Remarks The value set by this command is used with the UP and DOWN choices for the FM deviation command. Refer to :PM[:DEViation] command for more information.

The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

Pulse Modulation Subsystem–Option UNU and UNW and Option 320 ([:SOURce])

:PULM:EXTernal:POLarity

Supported All with Option UNU or UNW

```
[:SOURce]:PULM:EXTernal:POLarity NORMal|INVerted
[:SOURce]:PULM:EXTernal:POLarity?
```

This command selects the polarity of the TTL input signal at the TRIG IN rear panel connector. The signal generator can respond to either a normal (a TTL high) or an inverted (TTL low) signal.

Example

```
:PULM:EXT:POL NORM
```

The preceding example selects normal (TTL high) polarity.

***RST** Normal

Key Entry **Ext Polarity Normal Invert**

Key Path **Pulse > Ext Polarity Normal Invert**

:PULM:INTernal:DELay:STEP

Supported All with Option UNU or UNW

```
[:SOURce]:PULM:INTernal:DELay:STEP <num><time_suffix>
[:SOURce]:PULM:INTernal:DELay:STEP?
```

This command sets the step increment for the pulse delay.

The step value, set by this command, is used with the UP and DOWN choices in the :PULM:INTernal:DELay[1]|2 command.

The step value set with this command is not affected by a signal generator power-on, preset, or *RST command.

Example

```
:PULM:INT:DEL:STEP 10NS
```

The preceding example sets the pulse delay step value to 10 nanoseconds.

Range 10nS to (pulse period – 20 nS)

Key Entry **Incr Set**

:PULM:INTernal:DELay[1]|2

Supported All with Option UNU or UNW

```
[:SOURce]:PULM:INTernal:DELay[1]|[2] <num><time_suffix>|UP|DOWN
[:SOURce]:PULM:INTernal:DELay[1]|[2]
```

This command sets the pulse delay for the internally-generated pulse modulation using the variable <num>[<time_suffix>]. The command, used with the UP|DOWN parameters, will change the delay by a

user-defined step value. Refer to the :PULM:INTernal:DELay:STEP command for setting the value associated with the UP and DOWN choices.

The optional variable <time_suffix> accepts nS (nanoseconds) to S (seconds).

The range value is dependent on the pulse period. Refer to :PULM:INTernal:PERiod command for pulse period settings.

Use Delay1 with the DOUBlet parameter and Delay1 and Delay2 with the ADOublet parameter (refer to :PULM:Source:INTernal command).

Example

```
:PULM:INT:DEL 200E-9
```

The preceding example sets the internal pulse delay to 200 nanoseconds.

***RST** +0.00000000E+000

Range *Internal Free Run*: depends on pulse period and pulse width settings

Internal Triggered, Adjustable Doublet, & Triggered Doublet: 70nS to (42 S - 10 nS - pulse width)

Key Entry **Pulse Delay**

Key Path **Pulse > Pulse Delay**

:PULM:INTernal:FREQuency

Supported All with Option UNU or UNW

```
[:SOURce]:PULM:INTernal:FREQuency <frequency>|MAXimum|MINimum|UP|DOWN
[:SOURce]:PULM:INTernal:FREQuency?
```

This command sets the pulse rate for the internally-generated square wave using the variable *<frequency>*. The command, used with the *UP|DOWN* parameters, will change the frequency by a user-defined step value. Refer to the :PULM:INTernal:FREQuency:STEP command for setting the value associated with the *UP* and *DOWN* choices.

This command is used when SQUare is the pulse modulation type. Refer to :PULM:SOURce command for the pulse modulation type selection.

Example

```
:PULM:INT:FREQ 1MHz
```

The preceding example sets the square wave pulse rate to 1 megahertz.

***RST** +4.00000000E+002

Range 0.1Hz–10MHz

Key Entry **Pulse Rate**

Key Path **Pulse > Pulse Source > Square > Pulse Rate**

:PULM:INTernal:FREQuency:STEP

Supported All with Option UNU or UNW

```
[:SOURce]:PULM:INTernal:FREQuency:STEP[:INCRement] <freq>|MAXimum|MINimum|DEFault
[:SOURce]:PULM:INTernal:FREQuency:STEP[:INCRement]?
```

This command sets the step value for the internally-generated square wave pulse rate.

This command is used when SQUare is the pulse modulation type. Refer to :PULM:SOURce command for the pulse modulation type selection. The step value, set with this command, is used with the *UP* and *DOWN* choices in the :PULM:INTernal:FREQuency command.

The step value set with this command is not affected by a power-on, preset, or *RST command.

Example

```
:PULM:INT:FREQ:STEP MIN
```

The preceding example sets the step value for the square wave pulse rate to 0.1 Hz, the minimum rate.

Range 0.1Hz–10MHz

:PULM:INTernal:PERiod

Supported All with Option UNU or UNW

```
[:SOURce]:PULM:INTernal:PERiod <period>|MAXimum|MINimum|UP|DOWN
[:SOURce]:PULM:INTernal:PERiod?
```

This command sets the pulse period for the internally generated pulse modulation using the variables *<value><units>*. The command, used with the *UP|DOWN* parameters, will change the pulse period by a user–defined step value. Refer to the :PULM:INTernal:PERiod:STEP[:INCRement] command for setting the value associated with the *UP* and *DOWN* choices.

If the entered value for the pulse period is equal to or less than the value for the pulse width, the pulse width changes to a value that is less than the pulse period. Refer to :PULM:INTernal:PWIDth[1]|2 command for setting the pulse width.

Example

```
:PULM:INT:PER .5S
```

The preceding example sets the period of the internally generated pulse to 500 milliseconds.

***RST** +4.00000000E–006

Range 30 nS – 42 S

Key Entry **Pulse Period**

Key Path **Pulse > Pulse Source > Free-Run Gated > Pulse Period**

:PULM:INTernal:PERiod:STEP[:INCRement]

Supported All with Option UNU or UNW

```
[:SOURce]:PULM:INTernal:PERiod:STEP[:INCRement] <step>|UP|DOWN
[:SOURce]:PULM:INTernal:PERiod:STEP[:INCRement]?
```

This command sets the step value for the internal pulse period using the variable <value><units>.

The step value, set with this command, is used with the *UP* and *DOWN* choices available in the :PULM:INTernal:PERiod command.

The step value set with this command is not affected by a power-on, preset, or *RST command.

Example

```
:PULM:INT:PER:STEP .1S
```

The preceding example sets the square wave pulse rate to 100 milliseconds.

Range 30 nS – 42S

:PULM:INTernal:PWIDth:STEP

Supported All with Option UNU or UNW

```
[:SOURce]:PULM:INTernal:PWIDth:STEP <num><time_suffix>|MAXimum|MINimum|DEFault
[:SOURce]:PULM:INTernal:PWIDth:STEP?
```

This command sets the step increment for the pulse width using the variable *<num><time_suffix>*.

The step value, set by this command, is used with the *UP* and *DOWN* choices available in the :PULM:INTernal:PWIDth[1]|2 command.

The step value, set with this command, is not affected by a power-on, preset, or *RST command.

Example

```
:PULM:INT:PWID:STEP 100NS
```

The preceding example sets the pulse width step to 100 nanoseconds.

Range 20nS to (pulse period - 10 nS)

Key Entry **Incr Set**

Key Path **Pulse > Pulse Width > Incr Set**

:PULM:INTernal:PWIDth[1]|2

Supported All with Option UNU or UNW

```
[:SOURce]:PULM:INTernal:PWIDth[1]|2 <num><time_suffix>|UP|DOWN
[:SOURce]:PULM:INTernal:PWIDth[1]|2?
```

This command sets the pulse width for the internally generated pulse signal.

This command sets the pulse width for the internally-generated pulse modulation using the variables *<num><time_suffix>*. The command, used with the *UP|DOWN* parameters, will change the pulse

width by a user-defined step value. Refer to the :PULM:INTernal:PWIDth:STEP command for setting the value associated with the *UP* and *DOWN* choices.

If the entered value for the pulse width is equal to or greater than the value for the pulse period, the pulse width changes to a value that is less than the pulse period. For more information, refer to the :PULM:INTernal:PERiod command.

Use PWIDTH1 with the DOUBlet parameter and PWIDTH1 and PWIDTH2 with the ADOublet parameter (refer to :PULM:Source:INTernal command).

NOTE A power search is recommended for signals with pulse widths less than one microsecond. Refer to ":ALC:SEARch" on page 63.

Example

```
:PULM:INT:PWIDth 100MS
```

The preceding example sets the pulse width to 100 milliseconds.

***RST** +2.00000000E–006

Range 20 nS to (pulse period - 10 nS)

Key Entry **Pulse Width**

Key Path **Pulse > Pulse Width**

:PULM:INTernal:TRAin:LIST:PRESet

Supported All with Option 320 and either UNU or UNW

```
[:SOURce]:PULM:INTernal:TRAin:LIST:PRESet
```

This command sets the list to a single row of 2us of On Time, 2us of Off Time, and a Repetition of 1. Refer to ":PULM:INTernal:TRAin:ONTime" on page 259 and ":PULM:INTernal:TRAin:OFFTime" on page 259.

:PULM:INTernal:TRAin:OFFTime

Supported All with Option 320 and either UNU or UNW

```
[:SOURce]:PULM:INTernal:TRAin:OFFTime <value>{,<value>}
[:SOURce]:PULM:INTernal:TRAin:OFFTime?
```

This command sets the pulse off values for the current list of pulse train off times (where the RF will be off). The minimum will be 120 ns with Option UNU and 20 ns with Option UNW. If this list is shorter than the other lists, then the last element will be repeated as necessary to match the length of the On Time or the Repetition list. The query returns the count of pulse cycle elements in the list of off times. Refer to ":PULM:INTernal:TRAin:ONTime" on page 259 and ":PULM:INTernal:TRAin:REPetition" on page 259.

Example

```
:PULM:INT:TRA:OFFT 100NS,200NS,400E-9
```

The preceding example sets the pulse train off cycles to 100 nanoseconds, 200 nanoseconds, and 400 nanoseconds.

Range 20 nS to 42S (Option UNW)

:PULM:INTernal:TRAin:ONTime

Supported All with Option 320 and either UNU or UNW

```
[:SOURce]:PULM:INTernal:TRAin:ONTime <value>{,<value>}
[:SOURce]:PULM:INTernal:TRAin:ONTime?
```

This command sets the pulse on values for the current list of pulse train on times. The minimum will be 120 ns with Option UNU and 20 ns with Option UNW. If this list is shorter than the other lists, then the last element will be repeated as necessary to match the length of the Off Time or the Repetition list. The query returns the count of pulse cycle elements in the list of on times. Refer to ":PULM:INTernal:TRAin:OFFTime" on page 259 and ":PULM:INTernal:TRAin:REPetition" on page 259.

Example

```
:PULM:INT:TRA:ONT 100NS,200NS,400E-9
```

The preceding example sets the pulse train on cycles to 100 nanoseconds, 200 nanoseconds, and 400 nanoseconds.

Range 20 nS to 42S (Option UNW)

:PULM:INTernal:TRAin:REPetition

Supported All with Option 320 and either UNU or UNW

```
[:SOURce]:PULM:INTernal:TRAin:REPetition <value>{,<value>}
[:SOURce]:PULM:INTernal:TRAin:REPetition?
```

This command generates a user-defined list of the pulse repetitions. The maximum is a total count of 2047, so a list of "2047,1" would be too long. Lists that are too long will generate an error and only the first 2047 pulses will be played. If this list is shorter than the other lists, then the last element will be repeated as necessary to match the length of the On Time or Off Time list, whichever is longer. The query returns the count of the pulse cycle repetitions in the list. Refer to ":PULM:INTernal:TRAin:ONTime" on page 259 and ":PULM:INTernal:TRAin:OFFTime" on page 259.

Example

```
:PULM:INT:TRA:REP 100,20,3
```

The preceding example repeats the first pulse cycle 100 times, the second cycle to be repeated 20 times, and the third cycle 3 times.

Range 1 to 2047 pulse repetitions

:PULM:INTernal:TRAin:TRIGger

Supported All with Option 320 and either UNU or UNW

```
[:SOURce]:PULM:INTernal:TRAin:TRIGger FRUN|{TRIGgered}
[:SOURce]:PULM:INTernal:TRAin:TRIGger?
```

Sets the triggering mode for the Pulse Train feature. FRUN is Free Run, which continuously plays the pulse train. TRIGgered runs the pulse train (after waiting the Pulse Delay) each time an external trigger is supplied (edge triggered) to the PULSE BNC, the “Trigger Immediately” softkey is pressed, or the [:SOURce]:PULM:INTernal:TRAin:TRIGger:IMMediate SCPI command is sent (when the pulse train playback is idle). Triggers received during playback are lost.

Key Entry **Trigger Mode**

Key Path **Pulse > Pulse Source > More > Pulse Train > Trigger Mode**

:PULM:INTernal:TRAin:TRIGger:IMMediate

Supported All with Option 320 and either UNU or UNW

```
[:SOURce]:PULM:INTernal:TRAin:TRIGger:IMMediate
[:SOURce]:PULM:INTernal:TRAin:TRIGger:IMMediate?
```

This command will cause the pulse train to run once. If the pulse train is already running or off, then this SCPI command has no effect.

Key Entry **Trigger Immediately**

Key Path **Pulse > Pulse Source > More > Pulse Train > More > Trigger Immediately**

:PULM:INTernal[1]:VIDeo:POLarity

Supported All with Option UNU or UNW

```
[:SOURce]:PULM:INTernal[1]:VIDeo:POLarity NORMal|INVerted
[:SOURce]:PULM:INTernal[1]:VIDeo:POLarity?
```

This command inverts the polarity on the internally generated pulse video signal.

If the entered value for Trig Out BNC Video Polarity is set to Invert, the pulse video signal at the Trig Out BNC is inverted.

Example

```
:PULM:INT:VID INV
```

The preceding example inverts the video signal polarity at the Trig Out BNC.

***RST** Normal

Key Entry **Trig Out BNC Video Polarity Normal Invert**

Key Path **Pulse > Pulse Source > More > Pulse Train > More > Trig Out BNC Video Polarity Normal Invert**

:PULM:SOURce

Supported All with Option UNU or UNW

```
[:SOURce]:PULM:SOURce INTernal|EXTernal
[:SOURce]:PULM:SOURce?
```

This command sets the source of the pulse modulation.

The INTernal selection accesses one of the six internally generated modulation inputs while EXTernal selects an external pulse (rear panel connector) input. To select an internally generated modulation input, refer to :PULM:Source:INTernal command.

Key Entry **Pulse Source**

Key Path **Pulse > Pulse Source**

:PULM:Source:INTernal

Supported All with Option UNU or UNW

NOTE The PTRain (Pulse Train) parameter requires Option 320.

```
[:SOURce]:PULM:SOURce:INTernal SQUare|FRUN|TRIGgered|ADOublet|DOUBlet|GATEd|PTRain
[:SOURce]:PULM:SOURce:INTernal?
```

This command selects one of the seven internally generated modulation inputs. There is one external source: Ext Pulse selected by :PULM:SOURce command.

SQUare This command sets Square as the pulse modulation source. This is an internal free-run pulse with a 50% duty cycle. The period is determined by the rate.

FRUN This command sets Free Run as the pulse modulation source. You can define the

period, width, and delay.

TRIGgered — This command sets Triggered as the pulse modulation source. This selection produces an RF pulse with a user-defined width and delay at the RF OUTPUT connector when a valid trigger signal occurs at the PULSE connector.

ADOublet — This command sets Adjustable Doublet as the pulse modulation source. This selection produces two pulses at the RF OUTPUT connector for each trigger event at the PULSE connector. The first pulse has a user-defined width and delay (from the rising edge of the Pulse Sync Out signal). The second pulse has a user-defined width and delay (from the rising edge of the first pulse).

DOUBlet — This command sets Trigger Doublet as the pulse modulation source. This produces two pulses at the RF OUTPUT connector for each trigger event at the PULSE connector. The first pulse follows the external trigger signal. The second pulse has user-defined width and delay parameters.

GATed — This command sets Gated as the pulse modulation source. A pulse train with user-defined period and width parameters occurs at the RF OUTPUT connector when a valid gate signal is applied to the PULSE connector.

PTRain — This selection produces an RF pulse train (up to 2047 distinct cycles) with user-defined widths and delays at the RF OUTPUT connector when a valid trigger signal occurs at the PULSE connector. The Pulse Train Trigger mode selection determines when the pulse train is output.

Example

```
:PULM:SOUR:INT SQU
```

The preceding example selects an internal free-run square wave with a 50% duty cycle, as the pulse modulation source.

***RST** — FRUN (Int Free–Run)

Key Entry — **Square** **Free-Run** **Triggered** **Adjustable Doublet** **Trigger Doublet** **Gated** **Pulse Train**

Key Path — **Pulse > Pulse Source > Square Free-Run Triggered Adjustable Doublet Triggered Doublet Gated Pulse Train**

:PULM:STATe

Supported All with Option UNU or UNW

```
[:SOURce]:PULM:STATe ON|OFF|1|0
[:SOURce]:PULM:STATe?
```

This command enables or disables pulse modulation for the selected path.

When pulse modulation is enabled, the PULSE annunciator appears on the signal generator's front-panel display.

Example

```
:PULM:STAT ON
```

The preceding example enables the pulse modulation.

***RST** 0

Key Entry **Pulse Off On**

Key Path **Pulse > Pulse Off On**

6 Arb Commands

This chapter provides arb signal generation SCPI command descriptions for use in either component or receiver test using the N5162A/82A Agilent MXG Vector Signal Generator.

NOTE The internal baseband generator speed upgrade Options 670, 671, and 672 are option upgrades that *require* Option 651 or 652 to have been loaded at the factory (refer to the *Data Sheet* for more information). Any references to 651, 652, or 654 are inclusive of 671, 672, and 674.

This chapter contains the following major sections:

- All Subsystem–Option 651/652/654 ([:SOURce]) on page 265
- Dmodulation Subsystem–Option 651/652/654 ([:SOURce]:RADio:DMODulation:ARB) on page 266
- Dual ARB Subsystem–Option 651/652/654 ([:SOURce]:RADio:ARB) on page 290
- LARB Subsystem–Option 651/652/654 ([:SOURce]:RADio:LARB) on page 328
- Multitone Subsystem–Option 651/652/654 ([:SOURce]:RADio:MTONe:ARB) on page 329
- Two Tone Subsystem–Option 651/652 /654 ([:SOURce]:RADio:TTONe:ARB) on page 348

All Subsystem–Option 651/652/654 ([:SOURce])

:RADio:ALL:OFF

Supported N5162A/82A with Option 651, 652, or 654

`[:SOURce]:RADio:ALL:OFF`

This command turns off all digital modulation formats.

Remarks This command does not affect analog modulation.

Dmodulation Subsystem–Option 651/652/654 ([:SOURce]:RADio:DMODulation:ARB)

:BASeband:FREQuency:OFFSet

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:BASeband:FREQuency:OFFSet <value><unit>
[:SOURce]:RADio:DMODulation:ARB:BASeband:FREQuency:OFFSet?
```

This command offsets the baseband frequency relative to the carrier. The feature is useful for moving the signal such that the carrier feed–through is not in the center.

The Agilent MXG provides automatic DAC over–range protection when the offset value is something other than 0 Hz. It scales down the playing I/Q data by *1/square root of 2*.

***RST** +0.00000000E+000

Range +5.0E7 to –5.0E7 Hz

Key Entry **Baseband Frequency Offset**

Key Path **Mode** > **ARB Custom Modulation** > **ARB Setup** > **More 2 of 2** > **Baseband Frequency Offset**

:BASeband:FREQuency:OFFSet:PHASe:RESet

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:BASeband:FREQuency:OFFSet:PHASe:RESet
```

This command clears the phase accumulation and so zero phase shift.

When the Baseband Frequency Offset is non–zero, the hardware rotator accumulates phase–shift of the baseband signal. This residual phase remains even after the offset value is returned to zero. While there is a non–zero residual phase present in the signal, the DAC Over–Range Protection feature will automatically prevent DAC overrange errors from occurring by scaling the signal down by 1/square root of 2.

Key Entry **Baseband Frequency Offset Phase Reset**

Key Path **Mode** > **ARB Custom Modulation** > **ARB Setup** > **More 2 of 2** > **Baseband Frequency Offset Phase Reset**

:FILTer

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:FILTer RNYQuist|NYQuist|GAUSsian|
RECTangle|IS95|IS95_EQ|IS95_MOD|IS95_MOD_EQ|EDGE|EWIDe|EHSR|WCDMa|AC4Fm|"<user FIR>"
[:SOURce]:RADio:DMODulation:ARB:FILTer?
```

This command specifies the pre–modulation filter type.

RNYQuist This choice selects a Root Nyquist (root raised cosine) filter. This filter is adjusted using Alpha.

NYQuist This choice selects a Nyquist (raised cosine) filter. This filter is adjusted using Alpha.

GAUSsian	This choice selects a Gaussian filter which is adjusted using Bbt values.
RECTangle	This choice selects a one symbol wide rectangular filter.
IS95	This choice selects a filter that meets the criteria of the IS–95 standard.
IS95_EQ	This choice selects a filter which is a combination of the IS–95 filter (above) and the equalizer filter described in the IS–95 standard. This filter is only used for IS–95 baseband filtering.
IS95_MOD	This choice selects a filter that meets the criteria of the IS–95 error function (for improved adjacent channel performance) with lower passband rejection than the filter specified in the IS–95 standard.
IS95_MOD_EQ	This choice selects a filter which is a combination of the equalizer filter described in the IS–95 standard and a filter that meets the criteria of the IS–95 error function (for improved adjacent channel performance), with lower passband rejection.
EDGE	This choice selects a linearized Gaussian filter as defined in GSM 05.04.
EWIDe	This choice selects an EDGE spectrally wide pulse shape filter as per 3GPP TS 45.004.
EDGE EHSR	This choice selects an EDGE high symbol rate spectrally narrow pluse shape filter as per 3GPP TS 45.004.
WCDMa	This choice selects a W-CDMA filter which is the equivalent of a Root Nyquist filter with an alpha of 0.22 optimized for ACP.
AC4Fm	This choice selects a predefined Association of Public Safety Communications Officials (APCO) specified compatible 4–level frequency modulation (C4FM) filter.
"<user FIR>"	This variable is any FIR filter file that you have stored in memory. The variable needs no directory path indicating the location of the file, such as `FIR:` or `/USER/FIR`. The command assumes the FIR directory. For more information on file names, refer to "File Name Variables" on page 13.
***RST**	Root Nyquist

Key Entry			
	Nyquist	**IS–95**	**EDGE**
	Gaussian	**IS–95 Mod**	**WCDMA**
	User FIR	**IS–95 w/EQ**	**Rectangle**
	Root Nyquist	**IS–95 Mod w/EQ**	**EDGE Wide**
		APCO 25 C4FM	**EDGE EHSR**

Key Path **Mode** > **ARB Custom Modulation** > **Digital Mod Setup** > **Filter** > **Select** > *filter type*

:FILTer:ALPHa

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:FILTer:ALPHa <val>
[:SOURce]:RADio:DMODulation:ARB:FILTer:ALPHa?
```

This command changes the Nyquist or Root Nyquist filter alpha value.

The filter alpha value can be set to the minimum level (0), the maximum level (1), or in between by using fractional numeric values (0.001 to 0.999).

***RST** +5.0000000E–001

Range 0.000 to 1.000

Key Entry **Filter Alpha**

Key Path **Mode** > **ARB Custom Modulation** > **Digital Mod Setup** > **Filter** > **Filter Alpha**

Remarks To change the current filter type, refer to ":FILTer" on page 266.

:FILTer:BBT

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:FILTer:BBT <val>
[:SOURce]:RADio:DMODulation:ARB:FILTer:BBT?
```

This command changes the bandwidth–multiplied–by–bit–time (BbT) filter parameter.

The filter BbT value can be set to the minimum level (0.1), the maximum level (1), or in between by using fractional numeric values (0.100 to 0.999).

***RST** +5.00000000E–001

Range 0.100 to 1.000

Key Entry **Filter BbT**

Key Path **Mode** > **ARB Custom Modulation** > **Digital Mod Setup** > **Filter** > **Filter BbT**

Remarks This command is effective only after choosing a Gaussian filter. It does not have an effect on other types of filters.

To change the current filter type, refer to ":FILTer" on page 266.

:FILTer:CHANnel

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:FILTer:CHANnel EVM|ACP
[:SOURce]:RADio:DMODulation:ARB:FILTer:CHANnel?
```

This command optimizes the Nyquist and Root Nyquist filters to minimize error vector magnitude (EVM) or to minimize adjacent channel power (ACP).

EVM This choice provides the most ideal passband.

ACP This choice improves stopband rejection.

***RST** EVM

Key Entry **Optimize FIR For EVM ACP**

Key Path **Mode** > **ARB Custom Modulation** > **Digital Mod Setup** > **Filter** > **Optimize FIR For EVM ACP**

Remarks To change the current filter type, refer to ":FILTer" on page 266.

:HEADer:CLEar

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:HEADer:CLEar
```

This command clears the header information from the file header used by this modulation format.

Key Entry **Clear Header**

Remarks The **Digital Modulation Off On** softkey must be set to On for this command to function.

:HEADer:SAVE

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:HEADer:SAVE
```

This command saves the header information to the file header used by this modulation format.

Key Entry **Save Setup To Header**

Remarks The **Digital Modulation Off On** softkey must be set to On for this command to function.

:IQ:MODulation:ATTen

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:ATTen <val>
[:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:ATTen?
```

This command sets the attenuation level of the I/Q signals being modulated through the signal generator RF path.

The variable <val> is expressed in units of decibels (dB).

***RST** +6.00000000E+000

Range 0 to 50

Key Entry **I/Q Modulator Atten Manual Auto**

Key Path **I/Q > I/Q Adjustments > External Output Adjustments > I/Q Attenuator Manual Auto**

:IQ:MODulation:ATTen:AUTO

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:ATTen:AUTO ON|OFF|1|0
[:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:ATTen:AUTO?
```

This command enables or disables the I/Q attenuation auto mode.

ON (1) This choice enables the attenuation auto mode which optimizes the modulator attenuation for the current conditions.

OFF (0) This choice holds the attenuator at its current setting or at a selected value. Refer to the :IQ:MODulation:ATTen command for setting the attenuation value.

***RST** 1

Key Entry **I/Q Modulator Atten Manual Auto**

Key Path **I/Q > I/Q Adjustments > External Output Adjustments > I/Q Attenuator Manual Auto**

:DMODulation:ASK[:DEPTh]

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:MODulation:ASK[:DEPTh] <0% - {100%}>
[:SOURce]:RADio:DMODulation:ARB:MODulation:ASK[:DEPTh]?
```

This command changes the depth for the amplitude shift keying (ASK) modulation. Depth is set as a percentage of the full power on level.

***RST** +1.00000000E+002

Range 0 to 100

Key Entry **ASK Depth 100%**

Key Path **Mode > ARB Custom Modulation > Digital Mod Setup > Modulation Type > Select (QPSK) > AKS > ASK Depth 100 %**

Remarks The modulation is applied to the I signal, the Q value is always kept at zero.

:MODulation:FSK[:DEViation]

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:MODulation:FSK[:DEViation] <val>
[:SOURce]:RADio:DMODulation:ARB:MODulation:FSK[:DEViation]?
```

This command sets the symmetric FSK frequency deviation value.

The variable <val> is expressed in units of Hertz and the maximum range value equals the current symbol rate value multiplied by ten, limited to 20 MHz.

***RST** +4.00000000E+002

Range 0 to 2E7

Key Entry **Freq Dev**

Remarks To change the modulation type, refer to ":MODulation[:TYPE]" on page 271.

Refer to the :SRATe command for a list of the minimum and maximum symbol rate values.

To set an asymmetric FSK deviation value, refer to the *User's Guide* for more information.

:MODulation[:TYPE]

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:MODulation[:TYPE] BPSK|QPSK|IS95QPSK|
GRAYQPSK|OQPSK|IS95OQPSK|P4DQPSK|PSK8|PSK16|D8PSK|EDGE|MSK|FSK2|FSK4|
FSK8|FSK16|C4FM|QAM4|QAM16|QAM32|QAM64|QAM128|QAM256
[:SOURce]:RADio:DMODulation:ARB:MODulation[:TYPE]?
```

This command sets the modulation type for the digital modulation personality.

***RST** QPSK

Key Entry **BPSK** **QPSK** **IS–95 QPSK** **Gray Coded QPSK** **OQPSK** **IS–95 OQPSK** **π/4 DQPSK** **8PSK** **16PSK** **D8PSK** **EDGE** **MSK** **2–Lvl FSK** **4–Lvl FSK** **8–Lvl FSK** **16–Lvl FSK** **C4FM** **4QAM** **16QAM** **32QAM** **64QAM** **128QAM** **256QAM**

:MPOLarity:MARKer1|2|3|4

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:MPOLarity:MARker1|2|3|4 NEGative|POSitive
[:SOURce]:RADio:DMODulation:ARB:MPOLarity:MARKer1|2|3|4?
```

This command sets the polarity for the selected marker. For a positive marker polarity, the marker signal is high during the marker points. For a negative marker polarity, the marker signal is high during the period of no marker points.

***RST** POS

Key Entry **Marker 1 Polarity Neg Pos** **Marker 2 Polarity Neg Pos** **Marker 3 Polarity Neg Pos** **Marker 4 Polarity Neg Pos**

:NOISe:BANDwidth

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:DMODulation:ARB:NOISe:BANDwidth <value><unit>
[:SOURce]:RADio:DMODulation:ARB:NOISe:BANDwidth?
```

This command selects the flat noise bandwidth value of the real–time noise for an ARB waveform.

Typically, this value is set slightly wider than the carrier bandwidth.

***RST** +1.00000000E+000

Range

Option 651	1 Hz to 24 MHz
Option 652	1 Hz to 48 MHz
Option 654	1 Hz to 100 MHz

Key Entry **Noise Bandwidth**

Key Path **Mode > ARB Custom Modulation > Arb Setup > Real-Time AWGN Setup > More 2 of 2 > Noise Bandwidth**

:NOISe:CBRate

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:DMODulation:ARB:NOISe:CBRate <1bps - 999Mbps>
[:SOURce]:RADio:DMODulation:ARB:NOISe:CBRate?
```

This command sets a value of the carrier bit rate (gross bit rate) for purposes of calculating the E_b/N_0 (energy per bit over noise power density at the receiver). When the carrier to noise ratio format is set to E_b/N_0 (refer to the :NOISe:CNFormat command), the adjustment of the carrier bit rate will have an immediate impact on the carrier to noise ratio as specified by E_b/N_0. For DMODulation (ARB Custom) the carrier bit rate is derived from the symbol rate and bits per symbol of the modulation. The carrier bit rate is a saved instrument state that is recorded in the waveform header.

The query returns the current carrier bit rate setting.

Example

```
:RAD:DMOD:ARB:NOIS:CBR 5
```

The preceding example sets the carrier bit rate to 5 Mbps.

Default 2.000000000 Mbps

Range 1 bps to 999 Mbps

Key Entry **Carrier Bit Rate**

Key Path **Mode > ARB Custom Modulation > Arb Setup > Real-Time AWGN Setup > More 2 of 2 > Carrier to Noise Ratio Format E_b/N_0 > More 2 of 2 > Carrier Bit Rate**

:NOISe:CBWidth

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:DMODulation:ARB:NOISe:CBWidth <1Hz-125MHz>
[:SOURce]:RADio:DMODulation:ARB:NOISe:CBWidth?
```

This command selects the carrier bandwidth over which the AWGN (additive white gaussian noise) is applied. The noise power will be integrated over the selected bandwidth for the purposes of calculating C/N (carrier to noise ratio). The carrier bandwidth is typically the symbol rate. For more information refer to ":NOISe[:STATe]" on page 276.

***RST** 1.000000000 MHz

Range 1 Hz to 125 MHz

Key Entry **Carrier Bandwidth**

Key Path **Mode > ARB Custom Modulation > Arb Setup > Real-Time AWGN Setup > More 2 of 2 > Carrier Bandwidth**

:NOISe:CN

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:DMODulation:ARB:NOISe:CN <-100dB - 100dB>
[:SOURce]:RADio:DMODulation:ARB:NOISe:CN?
```

This command sets the carrier to noise ratio in dB. The carrier power is defined as the total modulated signal power without noise power added. The noise power is applied over the specified bandwidth of the carrier signal. For more information, refer to the ":NOISe:CBWidth" command.

Example

```
:RAD:ARB:NOIS:CN 50DB
```

The preceding example sets the carrier to noise ratio to 50 dB.

***RST** +0.00000000E+000

Key Entry **Carrier to Noise Ratio**

Key Path **Mode > ARB Custom Modulation > Arb Setup > Real-Time AWGN Setup > Carrier to Noise Ratio**

:NOISe:CNFormat

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:DMODulation:ARB:NOISe:CNFormat CN|EBNO
[:SOURce]:RADio:DMODulation:ARB:NOISe:CNFormat?
```

This command selects either the Carrier to Noise Ratio (C/N) or energy per bit over noise power density at the receiver (E_b/N_0) as the variable controlling the ratio of carrier power to noise power in the carrier bandwidth.

Example

```
:RAD:DMOD:ARB:NOIS:CNF EBNO
```

The preceding example sets the carrier to noise ratio format to E_bN_o.

Default Carrier to Noise Ratio Format C/N

Key Entry **Carrier to Noise Ratio Format C/N E_b/N_o**

Key Path **Mode > ARB Custom Modulation > Arb Setup > Real-Time AWGN Setup > Carrier to Noise Ratio Format C/N E_b/N_o**

:NOISe:EBNO

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:DMODulation:ARB:NOISe:EBNO <ebno in dB>
[:SOURce]:RADio:DMODulation:ARB:NOISe:EBNO?
```

This command allows the C/N to be set using the E_b/N_0 (energy per bit over noise power density at the receiver) form. This requires that the carrier bit rate (:NOISe:CBRate) be set properly. The range of E_b/N_0 is limited to the range that is equivalent to –100 to 100 dB of C/N. This value is only effective when E_b/N_0 has been enabled by the :NOISe:CNFormat command.

The query returns the value of E_b/N_0.

Default 0 dB

Range –100 to 100 dB

Key Entry **Carrier to Noise Ratio Format E_b/N_o**

Key Path **Mode > ARB Custom Modulation > Arb Setup > Real-Time AWGN Setup > Carrier to Noise Ratio Format C/N E_b/N_o**

:NOISe:MUX

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio[1]:DMODulation:ARB:NOISe:MUX SUM|CARRier|NOISe
[:SOURce]:RADio[1]:DMODulation:ARB:NOISe:MUX?
```

This command enables diagnostic control of additive noise, such that only the noise, only the carrier, or the sum of both the noise and the carrier are output from the internal baseband generator. With the ALC off, this feature enables direct measurement of just the carrier or the noise contributions to the total power. The system will still behave as if both the noise and the carrier are present on the output when it comes to determining the Auto Modulation Attenuation and the RMS level for RMS Power Search.

Example

```
:RAD:DMOD:ARB:NOIS:MUX CARR
```

The preceding example enables the direct measurement of the carrier contribution to the total power.

Default Carrier+Noise

Key Entry **Carrier+Noise | Carrier | Noise**

Key Path **Mode > ARB Custom Modulation > Real-Time AWGN Setup > More 2 of 2 > Output Mux (Carrier+Noise)**

:NOISe:POWer:CARRier

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:DMODulation:ARB:NOISe:POWer:CARRier <carrierPower>
[:SOURce]:RADio:DMODulation:ARB:NOISe:POWer:CARRier?
```

This command sets the current carrier power level if noise is on.

In the CARRier control mode, the total power will be adjusted to achieve the specified carrier power and the carrier power level will be maintained regardless of changes to the other noise parameters. A change to the total power will change the carrier power setting appropriately to maintain the C/N ratio.

In the TOTal control mode, this will adjust the total power once for the specified carrier power level, after which the carrier power could change if any noise parameters are adjusted or the total power is adjusted.

In the NOISe control mode, this will adjust the total noise power once for the specified carrier power level, after which the carrier power could change if any noise parameters are adjusted or the total noise power is adjusted. See also :NOISe:POWer:CONTrol[:MODE] and :NOISe:POWer:NOISe:TOTal commands.

Range The range varies based on the bounds of the total power that results from the noise settings.

Default The appropriate value given the current total power and the current Carrier to Noise (C/N).

Key Entry **Carrier Power**

Key Path **Mode > ARB Custom Modulation > Arb Setup > Real-Time AWGN Setup > Power Control Mode (Total) > Carrier > Carrier Power**

:NOISe:POWer:CONTrol[:MODE]

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:DMODulation:ARB:NOISe:POWer:CONTrol[:MODE]{TOTal}|CARRier|NOISe
[:SOURce]:RADio:DMODulation:ARB:NOISe:POWer:CONTrol[:MODE]?
```

This command sets the power control to one of the three following modes:

Total This is the default mode where the total power and C/N are independent variables and the carrier power and total noise power are dependent variables set by the total power, C/N and the rest of the noise settings. The carrier power and total noise power will change as any noise parameter is adjusted to keep the total power and the C/N at their last specified values.

Carrier In this mode the carrier power and C/N are independent variables and the total power and total noise power are dependent variables set by the carrier power, C/N and the rest of the noise settings. The total power and total noise power will change as any noise parameter is adjusted to keep the carrier power and the C/N at their last specified values.

Total Noise In this mode the total noise power and C/N are independent variables and the total power and carrier power are dependent variables set by the total noise power, C/N and the rest of the noise settings. The total power and carrier power will change as any noise parameter is adjusted to keep the total noise power and the C/N at their last specified values.

Default Total

Key Entry **Total Carrier Total Noise**

Key Path **Mode > ARB Custom Modulation > Arb Setup > Real-Time AWGN Setup > Power Control Mode (Total) > Total | Carrier | Total Noise**

:NOISe:POWer:NOISe:CHANnel?

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:DMODulation:ARB:NOISe:POWer:NOISe:CHANnel?
```

The query returns the current noise power across the carrier bandwidth in dBm.

:NOISe:POWer:NOISe:TOTal

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:DMODulation:ARB:NOISe:POWer:NOISe:TOTal <totalNoisePowerInDbm>
[:SOURce]:RADio:DMODulation:ARB:NOISe:POWer:NOISe:TOTal?
```

This command sets the current total noise power level if noise is on.

In the NOISe control mode, the total power will be adjusted to achieve the specified total noise power and the total noise power level will be maintained regardless of changes to the other noise parameters. A change to the total power will change the total noise power setting appropriately to maintain the C/N ratio.

In the TOTal control mode, this will adjust the total power once for the specified total noise power level, after which the total noise power could change if any noise parameters are adjusted or the total power is adjusted.

In the CARRier control mode, this will adjust the carrier power once for the specified total noise power level, after which the total noise power could change if any noise parameters are adjusted or the carrier power is adjusted. See also :NOISe:POWer:CONTrol[:MODE] command.

Range The range varies based on the bounds of the total power that results from the noise settings.

Default The appropriate value given the current total power and the current Carrier to Noise (C/N).

Key Entry **Total Noise Power**

Key Path **Mode > ARB Custom Modulation > Arb Setup > Real-Time AWGN Setup > Power Control Mode (Total) > Total Noise > Total Noise Power**

:NOISe[:STATe]

Supported N5162A/82A with Option 403

```
[:SOURce]:RADio:DMODulation:ARB:NOISe[:STATe] ON|OFF|1|0
[:SOURce]:RADio:DMODulation:ARB:NOISe[:STATe]?
```

This command enables or disables adding real–time, non–repeating additive white gaussian noise (AWGN) to the carrier modulated by the waveform being played by the Dual ARB waveform player.

For more information on AWGN, see the *User's Guide*.

Example

```
:RAD:ARB:NOIS ON
```

The preceding example applies real–time AWGN to the carrier.

***RST** 0

Key Entry **Real-Time AWGN Off On**

Key Path **Mode > ARB Custom Modulation > Arb Setup > Real-Time AWGN Setup > Real-Time AWGN Off On**

:PHASe:NOISe:F1

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:DMODulation:ARB:PHASe:NOISe:F1 <value><unit>
[:SOURce]:RADio:DMODulation:ARB:PHASe:NOISe:F1?
```

This command sets the start frequency value of the flat area for the phase noise impairment.

Ensure that this value is less than or equal to the stop frequency value (see :PHASe:NOISe:F2). If the value is set greater than the stop frequency value, the signal generator resets the stop value to equal the start value.

The actual value may vary logarithmically depending on the value of the stop frequency. This behavior is more noticeable at higher frequency values. For more information, see the *User's Guide*.

***RST** +1.00000000E+003

Range 0 Hz to 48.43782781 MHz

Key Entry **Desired Start Freq (f1)**

Key Path **Mode > ARB Custom Modulation > ARB Setup > Real-Time Phase Noise Setup > Desired Start Freq (f1)**

:PHASe:NOISe:F2

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:DMODulation:ARB:PHASe:NOISe:F2 <value><unit>
[:SOURce]:RADio:DMODulation:ARB:PHASe:NOISe:F2?
```

This command sets the stop frequency value of the flat area for the phase noise impairment.

Ensure that this value is less than or equal to the stop frequency value (see :PHASe:NOISe:F1). If the value is set less than the start frequency value, the signal generator resets the start value to equal the stop value.

The actual value may vary logarithmically, which is more noticeable at higher frequency offset values. For more information, see the *User's Guide*.

***RST** +3.00000000E+004

Range 1 Hz to 48.43782781 MHz

Key Entry **Desired Stop Freq (f2)**

Key Path **Mode > ARB Custom Modulation > ARB Setup > Real-Time Phase Noise Setup > Desired Stop Freq (f2)**

:PHASe:NOISe:LMID

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:DMODulation:ARB:PHASe:NOISe:LMID <value>
[:SOURce]:RADio:DMODulation:ARB:PHASe:NOISe:LMID?
```

This command sets the level amplitude of the flat area for the phase noise impairment. This phase noise is added to the base phase noise of the signal generator.

The signal generator has an automatic DAC over-range protection feature that is always on for this subsystem.

For more information on the phase noise impairment option, see the *User's Guide*.

NOTE The amplitude range varies depending on the f2 value (":PHASe:NOISe:F2" on page 277). As f2 increases in value, the range for Lmid decreases. If the current Lmid setting is too high for the new f2 value, the signal generator changes the Lmid value and generates an error.

The range values are expressed in units of dBc/Hz.

***RST** –7.00000000E+001

Range –300 to 100

Key Entry **Desired Flat Amplitude (Lmid)**

Key Path **Mode > ARB Custom Modulation > ARB Setup > Real-Time Phase Noise Setup > Desired Flat Amplitude (Lmid)**

:PHASe:NOISe[:STATe]

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:DMODulation:ARB:PHASe:NOISe[:STATe] ON|OFF|1|0
[:SOURce]:RADio:DMODulation:ARB:PHASe:NOISe[:STATe]?
```

This command turns the phase noise impairment on or off. For more information on the phase noise impairment option, see the *User's Guide*.

***RST** 0

Key Entry **Phase Noise Off On**

Key Path **Mode > ARB Custom Modulation > ARB Setup > Real-Time Phase Noise Setup > Phase Noise Off On**

:REFerence:EXTernal:FREQuency

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:REFerence:EXTernal:FREQuency <val>
[:SOURce]:RADio:DMODulation:ARB:REFerence:EXTernal:FREQuency?
```

This command conveys the expected reference frequency value of an externally applied reference the signal generator.

The variable <val> is expressed in units of Hertz (Hz–MHz).

***RST** +1.00000000E+007

Range 2.5E5 to 1E8

Key Entry **Reference Freq**

Remarks The value specified by this command is effective only when you are using an external ARB reference applied to the BASEBAND GEN REF IN rear panel connector.

To specify external as the ARB reference source type, refer to ":REFerence[:SOURce]" on page 279.

:REFerence[:SOURce]

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:REFerence[:SOURce] INTernal|EXTernal
[:SOURce]:RADio:DMODulation:ARB:REFerence[:SOURce]?
```

This command selects either an internal or external reference for the waveform clock.

***RST** INT

Key Entry **ARB Reference Ext Int**

Remarks If the EXTernal choice is selected, the external frequency value *must* be entered and the signal must be applied to the BASEBAND GEN REF IN rear panel connector.

Refer to the :REFerence:EXTernal:FREQuency command to enter the external reference frequency.

:RETRigger

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:RETRigger ON|OFF|IMMediate
[:SOURce]:RADio:DMODulation:ARB:RETRigger?
```

This command enables or disables the ARB retriggering mode; the retrigger mode controls how the retriggering function performs while a waveform is playing.

ON (1)	This choice specifies that if a trigger occurs while a waveform is playing, the waveform will retrigger at the end of the current waveform sequence and play once more.
OFF (0)	This choice specifies that if a trigger occurs while a waveform is playing, the trigger will be ignored.
IMMediate	This choice specifies that if a trigger occurs while a waveform is playing, the waveform will reset and replay from the start immediately upon receiving a trigger.

***RST** ON

Key Entry **On** **Off** **Immediate**

:SCLock:RATE

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:SCLock:RATE <val>
[:SOURce]:RADio:DMODulation:ARB:SCLock:RATE?
```

This command sets the sample clock rate.

The variable <val> is expressed in units of Hertz (kHz – MHz)

***RST** +1.25000000E+008

Range 1E3 to 1E8

Key Entry **ARB Sample Clock**

Remarks The modulation format should be active before executing this command. If this command is executed before the modulation format is active, the entered value will be overridden by a calculated factory default value. Refer to the command to activate the modulation format.

:SETup

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:SETup GSM|NADC|PDC|PHS|DECT|AC4Fm|
ACQPsk|CDPD|PWT|EDGE|TETRa|BLUetooth|DEFault|MCARrier|"<file name>"
[:SOURce]:RADio:DMODulation:ARB:SETup?
```

This command selects the digital modulation format type or multicarrier, and turns multicarrier off or on (see the MCARrier choice description).

The *MCARrier* choice selects multicarrier and turns it on. Selecting any other setup such as GSM or CDPD turns multicarrrier off. To select the multicarrier setup, see the ":SETup:MCARrier" on page 281.

***RST** NADC

Key Entry **GSM** **NADC** **PDC** **PHS** **DECT** **APCO 25 w/C4FM** **APCO w/CQPSK** **CDPD** **PWT** **EDGE** **TETRA** **BLUetooth** **DEFault** **Multicarrier Off On** **Select File**

Remarks For information on the file name syntax, refer to "File Name Variables" on page 13.

:SETup:MCARrier

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier GSM|NADC|PDC|PHS|DECT|
AC4Fm|ACQPsk|CDPD|PWT|EDGE|TETRa,<num carriers>,<freq spacing>)|
"<file name>"
[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier?
```

This command builds a table with the specified number of carriers and frequency spacing or retrieves the setup stored in the specified user file.

The carrier type, number of carriers, and frequency spacing value are returned when a query is initiated. The output format is as follows:

```
<carrier type>,<num carriers>,<freq spacing>
```

If a specific file is loaded and then queried, only the file name is returned.

The variable <freq spacing> is expressed in units of Hertz (kHz–MHz).

***RST** *Carrier*: NADC <*num carriers*>: 2

<*freq spacing*>: +1.0000000000000E+06

Range <*num carriers*>: 2–100

<*freq spacing*>: 2 ÷ (<num carriers> − 1) × 80 MHz

Key Entry **GSM** **NADC** **PDC** **PHS** **DECT** **APCO 25 w/C4FM** **APCO w/CQPSK** **CDPD** **PWT** **EDGE** **TETRA** **# of Carriers** **Freq Spacing** **Custom Digital Mod State**

Remarks For information on the file name syntax, refer to "File Name Variables" on page 13.

:SETup:MCARrier:PHASe

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:PHASe FIXed|RANDom
[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:PHASe?
```

This command toggles the phase settings for multicarrier digital modulation.

FIXed This choice sets the phase of all carriers to 0.

RANDom This choice sets random phase values for all of the carriers.

***RST** FIX

Key Entry **Carrier Phases Fixed Random**

:SETup:MCARrier:STORe

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:STORe "<file name>"
```

This command stores the current multicarrier setup information.

The stored file contains information that includes the digital modulation format, number of carriers, frequency spacing, and power settings for the multicarrier setup.

Key Entry **Load/Store**

Remarks The setting enabled by this command is not affected by signal generator power–on, preset, or *RST.

For information on the file name syntax, refer to "File Name Variables" on page 13.

:SETup:MCARrier:TABLe

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:TABLe INIT|APPend|
<carrier_num>,GSM|NADC|PDC|PHS|DECT|AC4Fm|ACQPsk|CDPD|PWT|EDGE|TETRa|
"<file name>",<freq_offset>,<power>
[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:TABLe? <carrier_num>
```

This command modifies the parameters of one of the available multicarrier digital modulation formats.

The variable <freq_offset> is expressed in units of Hertz (kHz–MHz).

The variable <power> is expressed in units of decibels (dB).

INIT — This choice clears the current information and creates a new one–row table, allowing for further definition using additional parameters.

APPend — This choice adds rows to an existing table.

<carrier_num> — This variable specifies the number of the carriers in the multicarrier table that will be modified.

The value of the variable <carrier_num> must be specified prior to selecting the digital modulation format.

Carrier type, frequency offset, and power level are returned when a query is initiated. The output format is as follows:

`<carrier type>,<freq_offset>,<power>`

***RST** *carrier type*: NADC <*freq_offset*>: –5.00000000E+004

<*power*>: +0.00000000E+000

Range <*freq_offset*>: –1E5 to 1E6 <*power*>: –40 to 0

Key Entry **Initialize Table** **Insert Row** **GSM** **NADC** **PDC** **PHS** **DECT** **APCO 25 w/C4FM** **APCO w/CQPSK** **CDPD** **PWT** **EDGE** **TETRA** **Custom Digital Mod State**

Remarks For information on the file name syntax, refer to "File Name Variables" on page 13.

To store a multicarrier setup refer to ":SETup:MCARrier:STORe" on page 282.

:SETup:MCARrier:TABLe:NCARriers

Supported N5162A/82A

`[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:TABLe:NCARriers?`

This query returns the number of carriers in the current multicarrier setup.

***RST** +2

Range 1 to 100

Key Entry **# of Carriers**

:SETup:STORe

Supported N5162A/82A

`[:SOURce]:RADio:DMODulation:ARB:SETup:STORe "<file name>"`

This command stores the current custom digital modulation state.

The saved file contains information that includes the modulation type, filter and symbol rate for the custom modulation setup.

Key Entry **Store Custom Dig Mod State**

Remarks For information on the file name syntax, refer to "File Name Variables" on page 13.

:SRATe

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:SRATe <val>
[:SOURce]:RADio:DMODulation:ARB:SRATe?
```

This command sets the transmission symbol rate.

The variable <val> is expressed in units of symbols per second (sps–Msps) and the maximum range value is dependent upon the modulation type and filter.

***RST** +1.00000000E+006

Range

Option 651	50 sps to 15 Msps
Option 652	50 sps to 30 Msps
Option 654	50 sps to 62.5 Msps

Key Entry **Symbol Rate**

:TRIGger:TYPE

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE CONTinuous|SINGle|GATE
[:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE?
```

This command sets the trigger mode (type) that controls the waveform's playback.

Triggers control the playback by telling the Agilent MXG when to play the modulating signal (waveform). Depending on the trigger settings for the Agilent MXG, the waveform playback can occur once, continuously, or the Agilent MXG may start and stop playing the waveform repeatedly (GATE mode).

A trigger signal comprises both positive and negative signal transitions (states), which are also called high and low periods. You can configure the Agilent MXG to trigger on either state of the trigger signal. It is common to have multiple triggers, also referred to as trigger occurrences or events, occur when the signal generator requires only a single trigger. In this situation, the Agilent MXG recognizes the first trigger and ignores the rest.

When you select a trigger mode, you may lose the signal (carrier plus modulating) from the RF output until you trigger the waveform. This is because the Agilent MXG sets the I and Q signals to zero volts prior to the first trigger event, which suppresses the carrier. After the first trigger event, the waveform's final I and Q levels determine whether you will see the carrier signal or not (zero = no carrier, other values = carrier visible). At the end of most files, the final I and Q points are set to a value other than zero.

There are four parts to configuring the trigger:

- Choosing the trigger type, which controls the waveform's transmission.
- Setting the waveform's response to triggers:
  - CONTinuous, see ":TRIGger:TYPE:CONTinuous[:TYPE]" on page 285
  - SINGle, see ":RETRigger" on page 280
  - GATE, selecting the mode also sets the response
- Selecting the trigger source (see ":TRIGger[:SOURce]" on page 286), which determines how the Agilent MXG receives its trigger signal, internally or externally. The GATE choice requires an

external trigger.

- Setting the trigger polarity when using an external source:
  - CONTinuous and SINGle see ":TRIGger[:SOURce]:EXTernal:SLOPe" on page 288
  - GATE, see ":TRIGger:TYPE:GATE" on page 286

For more information on triggering, see the *User's Guide*.

The following list describes the trigger type command choices:

CONTinuous — Upon triggering, the waveform repeats continuously.

SINGle — Upon triggering, the waveform segment or sequence plays once.

GATE — An external trigger signal repeatedly starts and stops the waveform's playback (transmission). The time duration for playback depends on the duty period of the trigger signal and the gate polarity selection (see ":TRIGger:TYPE:GATE" on page 286). The waveform plays during the inactive state and stops during the active polarity selection state. The active state can be set high or low. The gate mode works only with an external trigger source.

NOTE The ARB gating behavior described above is opposite to the gating behavior for real–time custom mode.

***RST** CONT

Key Entry **Continuous** **Single** **Gated**

:TRIGger:TYPE:CONTinuous[:TYPE]

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE:CONTinuous[:TYPE] FREE|
TRIGger|RESet
[:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE:CONTinuous[:TYPE]?
```

This commands selects the waveform's response to a trigger signal while using the continuous trigger mode.

For more information on triggering and to select the continuous trigger mode, see ":TRIGger:TYPE" on page 284.

The following list describes the waveform's response to each of the command choices:

FREE — Turning the ARB format on immediately triggers the waveform. The waveform repeats until you turn the format off, select another trigger, or choose another waveform file.

TRIGger — The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously until you turn the format off, select another trigger, or choose another waveform file.

RESet — The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously. Subsequent triggers reset the waveform to the beginning. For a waveform sequence, this means to the beginning of the first segment in the sequence.

***RST** FREE

Key Entry **Free Run** **Trigger & Run** **Reset & Run**

:TRIGger:TYPE:GATE

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE:GATE LOW|HIGH
[:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE:GATE?
```

This command selects the active state (gate polarity) of the gate while using the gating trigger mode.

The LOW and HIGH selections correspond to the low and high states of an external trigger signal. For example, when you select HIGH, the active state occurs during the high of the trigger signal. When the active state occurs, the Agilent MXG starts the waveform playback at the last played sample point, then stops the playback at the next sample point when the inactive state occurs. For more information on triggering and to select gating as the trigger mode, see ":TRIGger:TYPE" on page 284.

The following list describes the Agilent MXG's gating behavior for the polarity selections:

LOW The waveform playback starts when the trigger signal goes low (active state) and stops when the trigger signal goes high (inactive state).

HIGH The waveform playback starts when the trigger signal goes high (active state) and stops when the trigger signal goes low (inactive state).

***RST** HIGH

Key Entry **Gate Active Low High**

:TRIGger[:SOURce]

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce] KEY|EXT|BUS
[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]?
```

This command sets the trigger source.

For more information on triggering, see ":TRIGger:TYPE" on page 284. The following list describes the command choices:

KEY This choice enables manual triggering by pressing the front panel **Trigger**.

EXT An externally applied signal triggers the waveform. This is the only choice that works with gating. The following conditions affect an external trigger:

- The input connector selected for the trigger signal. You have a choice between the rear panel PATTERN TRIG IN connector or the PATT TRIG IN 2 pin on the rear panel AUXILIARY I/O connector. To make the connector selection, see ":TRIGger[:SOURce]:EXTernal[:SOURce]" on page 288.

  For more information on the connectors and on connecting the cables, see the *User's Guide*.

- The trigger signal polarity:

  — gating mode, see ":TRIGger:TYPE:GATE" on page 286

  - continuous and single modes, see ":TRIGger[:SOURce]:EXTernal:SLOPe" on page 288

- The time delay between when the Agilent MXG receives a trigger and when the waveform responds to the trigger. There are two parts to setting the delay:
  - setting the amount of delay, see ":TRIGger[:SOURce]:EXTernal:DELay" on page 287
  - turning the delay on, see ":TRIGger[:SOURce]:EXTernal:DELay:STATe" on page 288

BUS — This choice enables triggering over the GPIB or LAN using the `*TRG` or `GET` commands or the AUXILIARY INTERFACE (RS–232) using the `*TRG` command.

***RST** EXT

Key Entry **Trigger Key** **Ext** **Bus**

:TRIGger[:SOURce]:EXTernal:DELay

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal:DELay <val>
[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal:DELay?
```

This command sets the amount of time to delay the Agilent MXG's response to an external trigger.

The delay is a path (time) delay between when the Agilent MXG receives the trigger and when it responds to the trigger. For example, configuring a trigger delay of two seconds, causes the Agilent MXG to wait two seconds after receipt of the trigger before the Agilent MXG plays the waveform.

The delay does not occur until you turn it on (see ":TRIGger[:SOURce]:EXTernal:DELay:STATe" on page 288). You can set the delay value either before or after turning it on.

For more information on configuring an external trigger source and to select external as the trigger source, see ":TRIGger[:SOURce]" on page 286.

The unit of measurement for the variable <val> is in seconds (nsec–sec).

***RST** +1.00000000E–003

Range 1E–8 to 4E1

Key Entry **Ext Delay Time**

Key Path **Mode > Dual Arb > Trigger Type > Single > No Trigger > Trigger Source > Ext Delay Time**

:TRIGger[:SOURce]:EXTernal:DELay:STATe

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal:DELay:STATe ON|OFF|1|0
[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal:DELay:STATe?
```

This command enables or disables the external trigger delay function.

For setting the delay time, see ":TRIGger[:SOURce]:EXTernal:DELay" on page 287, and for more information on configuring an external source, see":TRIGger[:SOURce]" on page 286.

***RST** 0

Key Entry **Ext Delay Off On**

Key Path **Mode > Dual Arb > Trigger Type > Single > No Trigger > Trigger Source > Ext Delay Off On**

:TRIGger[:SOURce]:EXTernal:SLOPe

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal:SLOPe POSitive|NEGative
[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal:SLOPe?
```

This command sets the polarity for an external trigger signal while using the continuous, single triggering mode. To set the polarity for gating, see ":TRIGger:TYPE:GATE" on page 286.

The POSitive and NEGative selections correspond to the high (positive) and low (negative) states of the external trigger signal. For example, when you select POSitive, the waveform responds (plays) during the high state of the trigger signal. When the Agilent MXG receives multiple trigger occurrences when only one is required, the signal generator uses the first trigger and ignores the rest.

For more information on configuring an external trigger source and to select external as the trigger source, see ":TRIGger[:SOURce]" on page 286.

***RST** NEG

Key Entry **Ext Polarity Neg Pos**

:TRIGger[:SOURce]:EXTernal[:SOURce]

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal[:SOURce]
EPT1|EPT2|EPTRIGGER1|EPTRIGGER2
[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal[:SOURce]?
```

This command selects which PATTERN TRIG IN connection the Agilent MXG uses to accept an externally applied trigger signal when external is the trigger source selection.

For more information on configuring an external trigger source and to select external as the trigger source, see ":TRIGger[:SOURce]" on page 286. For more information on the rear panel connectors, see the *User's Guide*.

The following list describes the command choices:

EPT1 This choice is synonymous with EPTRIGGER1 and selects the PATTERN TRIG IN

rear panel connector.

EPT2 — This choice is synonymous with EPTRIGGER2 and selects the PATT TRIG IN 2 pin on the rear panel AUXILIARY I/O connector.

EPTRIGGER1 — This choice is synonymous with EPT1 and selects the PATTERN TRIG IN rear panel connector.

EPTRIGGER2 — This choice is synonymous with EPT2 and selects the PATT TRIG IN 2 pin on the rear panel AUXILIARY I/O connector.

***RST** EPT1

Key Entry **Patt Trig In 1** **Patt Trig In 2**

[:STATe]

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB[:STATe] ON|OFF|1|0
[:SOURce]:RADio:DMODulation:ARB[:STATe]?
```

This command enables or disables the digital modulation capability.

ON (1) — This choice sets up the internal hardware to generate the currently selected digital modulation format signal selection.

OFF (0) — This choice disables the digital modulation capability.

***RST** 0

Key Entry **Digital Modulation Off On**

Key Path **Mode > ARB Custom Modulation > Digital Modulation Off On**

Remarks When On is selected, the I/Q state is activated and the I/Q source is set to internal.

Dual ARB Subsystem–Option 651/652/654 ([:SOURce]:RADio:ARB)

:BASeband:FREQuency:OFFSet

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:BASeband:FREQuency:OFFSet <value><unit>
[:SOURce]:RADio:ARB:BASeband:FREQuency:OFFSet?
```

This command offsets the baseband frequency relative to the carrier. The feature is useful for moving the signal such that the carrier feed–through is not in the center.

The Agilent MXG provides an automatic DAC over–range protection feature, which can be turned off (factory default has it set to on). When turned on, the protection is active when the offset value is something other than 0 Hz. It scales down the playing I/Q data by *1/square root of 2*. To turn the protection off, see ":DOPRotection" on page 291.

***RST** 0 Hz

Range –5.0E7 to +5.0E7 Hz

Key Entry **Baseband Frequency Offset**

Key Path **Mode > Dual ARB > ARB Setup > More 2 of 2 > Baseband Frequency Offset**

:BASeband:FREQuency:OFFSet:PHASe:RESet

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:BASeband:FREQuency:OFFSet:PHASe:RESet
```

This command clears the phase accumulation and so zero phase shift.

When the Baseband Frequency Offset is non–zero, the hardware rotator accumulates phase–shift of the baseband signal. This residual phase remains even after the offset value is returned to zero. While there is a non–zero residual phase present in the signal, the DAC Over–Range Protection feature will automatically prevent DAC overrange errors from occurring by scaling the signal down by *1/square root of 2*.

Key Entry **Baseband Frequency Offset Phase Reset**

Key Path **Mode > Dual ARB > ARB Setup > More 2 of 2 > Baseband Frequency Offset Phase Reset**

:CLIPping

Supported N5162A/82A with Option 651, 652, or 654

NOTE Clipping cannot be undone (i.e. restoring clipping value to 100% will have no effect on a previously clipped waveform.)

```
[:SOURce]:RADio:ARB:CLIPping "<file name>",IJQ|IORQ,<value>[,<value>]
```

This command sets the clipping level of the selected waveform segment to a percentage of its highest peak.

The variable <value> is expressed in units of percent.

IJQ — This choice clips the composite I/Q waveform.

IORQ — This choice clips I and Q separately. When this choice is enabled, percentage values for both I and Q must be specified.

***RST** — IJQ <*value*>: +100

Range — <*value*>: 10–100 (0.1% resolution)

Key Entry — **Clipping Type |I+jQ| |I|,|Q|**

Remarks — A value of 100 percent equates to no clipping.

For information on the file name syntax, refer to "File Name Variables" on page 13.

:DOPRotection

Supported — N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:DOPRotection ON|OFF|1|0
[:SOURce]:RADio:ARB:DOPRotection?
```

This commands turns the DAC over–range protection feature off or on.

The over–range protection feature works only with the Baseband Frequency Offset feature and the Option 432 Phase Noise Impairment.

On — Minimizes the occurrence of a DAC over–range condition. In doing so, it can also decrease the dynamic range of the waveform by scaling the data more than what is actually needed. For the Baseband Frequency Offset feature, this protection is active only when the offset parameter is a value other than 0 Hz.

Off — The automatic protection feature is not enabled. To correct a DAC over–range condition, reduce the waveform runtime scaling value (see ":RSCaling" on page 316).

For Option 432 Phase Noise Impairment, there are two additional methods to correct a DAC over–range condition. Refer to the phase noise commands in the desired SCPI Command Subsystem for more information.

***RST** — ON

Key Entry — **DAC Over–range Protection Off On**

:FILTer:ALPHa

Supported N5162A/82A

```
[:SOURce]:RADio[1]:ARB:FILTer:ALPHa <value>
[:SOURce]:RADio[1]:ARB:FILTer:ALPHa?
```

This command changes the Nyquist or Root Nyquist Real-Time Modulation filter alpha value.

The filter alpha value can be set to the minimum level (0), the maximum level (1), or in between by using fractional numeric values (0.001 to 0.999).

***RST** +3.50000000E–001

Range 0.000 to 1.000

Key Entry **Filter Alpha**

Key Path **Mode** > **Dual ARB** > **Arb Setup** > **More 2 of 2** > **Real-Time Modulation Filter** > **Filter Alpha**

Remarks To change the current filter type, refer to :FILTer:TYPE.

:FILTer:BBT

Supported N5162A/82A

```
[:SOURce]:RADio[1]:ARB:FILTer:BBT <value>
[:SOURce]:RADio[1]:ARB:FILTer:BBT?
```

This command changes the bandwidth–multiplied–by–bit–time (BbT) Real-Time Modulation filter parameter.

The filter BbT value can be set to the minimum level (0.1), the maximum level (1), or in between by using fractional numeric values (0.100 to 0.999).

***RST** +5.00000000E–001

Range 0.100 to 1.000

Key Entry **Filter BbT**

Key Path **Mode** > **Dual ARB** > **Arb Setup** > **More 2 of 2** > **Real-Time Modulation Filter** > **Filter BbT**

Remarks This command is effective only after choosing a Gaussian filter. It does not have an effect on other types of filters.

To change the current filter type, refer to :FILTer:TYPE.

:FILTer:CHANnel

Supported N5162A/82A

```
[:SOURce]:RADio[1]:ARB:FILTer:CHANnel EVM|ACP
[:SOURce]:RADio[1]:ARB:FILTer:CHANnel?
```

This command optimizes the Nyquist and Root Nyquist Real-Time Modulation filters to minimize error vector magnitude (EVM) or to minimize adjacent channel power (ACP).

EVM This choice provides the most ideal passband.

ACP This choice improves stopband rejection.

***RST** EVM

Key Entry **Optimize FIR For EVM ACP**

Key Path **Mode** > **Dual ARB** > **Arb Setup** > **More 2 of 2** > **Real-Time Modulation Filter** > **Optimize FIR For EVM ACP**

Remarks To change the current filter type, refer to :FILTer:TYPE.

:FILTer:TYPE

Supported N5162A/82A

```
[:SOURce]:RADio:ARB:FILTer:TYPE RNYQuist|NYQuist|GAUSsian|
RECTangle|IS95|IS95_EQ|IS95_MOD|IS95_MOD_EQ|EDGE|EWIDe|EHSR|WCDMa|AC4Fm|"<user FIR>"
[:SOURce]:RADio:ARB:FILTer:TYPE?
```

This command specifies the Real-Time Modulation filter type.

RNYQuist	This choice selects a Root Nyquist (root raised cosine) filter. This filter is adjusted using Alpha.
NYQuist	This choice selects a Nyquist (raised cosine) filter. This filter is adjusted using Alpha.
GAUSsian	This choice selects a Gaussian filter which is adjusted using Bbt values.
RECTangle	This choice selects a one symbol wide rectangular filter.
IS95	This choice selects a filter that meets the criteria of the IS–95 standard.
IS95_EQ	This choice selects a filter which is a combination of the IS–95 filter (above) and the equalizer filter described in the IS–95 standard. This filter is only used for IS–95 baseband filtering.
IS95_MOD	This choice selects a filter that meets the criteria of the IS–95 error function (for improved adjacent channel performance) with lower passband rejection than the filter specified in the IS–95 standard.
IS95_MOD_EQ	This choice selects a filter which is a combination of the equalizer filter described in the IS–95 standard and a filter that meets the criteria of the IS–95 error function (for improved adjacent channel performance), with lower passband rejection.
EDGE	This choice selects a linearized Gaussian filter as defined in GSM 05.04.
EWIDe	This choice selects an EDGE spectrally wide pulse shape filter as per 3GPP TS 45.004.
EDGE EHSR	This choice selects an EDGE high symbol rate spectrally narrow pluse shape filter as per 3GPP TS 45.004.
WCDMa	This choice selects a W-CDMA filter which is the equivalent of a Root Nyquist filter with an alpha of 0.22 optimized for ACP.
AC4Fm	This choice selects a predefined Association of Public Safety Communications Officials (APCO) specified compatible 4–level frequency modulation (C4FM) filter.
"<user FIR>"	This variable is any FIR filter file that you have stored in memory. The variable needs no directory path indicating the location of the file, such as `FIR:` or

/USER/FIR. The command assumes the FIR directory. For more information on file names, refer to "File Name Variables" on page 13.

***RST** Root Nyquist

Key Entry

Nyquist	**IS–95**	**EDGE**
Gaussian	**IS–95 Mod**	**WCDMA**
User FIR	**IS–95 w/EQ**	**Rectangle**
Root Nyquist	**IS–95 Mod w/EQ**	**EDGE Wide**
	APCO 25 C4FM	**EDGE EHSR**

Key Path **Mode** > **Dual ARB** > **Arb Setup** > **More 2 of 2** > **Real-Time Modulation Filter** > **Select** > *filter type*

:FILTer[:STATe]

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio[1]:ARB:FILTer[:STATe]ON|{OFF}|1|0
[:SOURce]:RADio[1]:ARB:FILTer[:STATe]?
```

This command enables or disables the **Real-Time Modulation Filter**. This filter is typically applied to an Arb waveform containing just the I/Q symbol decision points. The filter then defines the transitions between the symbol decision points. This means that the filter must have an oversample ratio of two or more. When this feature is active, the Sample Clock Rate is actually the Symbol Rate.

Default Off

Key Entry **Modulation Filter Off On**

Key Path **Mode** > **Dual Arb** > **Arb Set up** > **More 2 of 2** > **Real-Time Modulation Filter (Off)** > **Modulation Filter Off On**

:GENerate:SINE

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:GENerate:SINE ["<file_name>"][,<osr>],[<scale>],
[I|Q|IQ][<phasedeg>]
```

This command creates a sine wave waveform file and saves it in the signal generator's volatile waveform memory (WFM1).

"<file_name>" This variable names the file used to save the generated sine wave data.

<osr> This variable sets the oversample ratio, which must be an even number and ≥ 4. The <osr> variable is expressed in samples. If the oversample ratio is < 60 (the minimum number of samples or I/Q points required for a waveform), multiple waveform periods are generated to create a waveform file with ≥ 60 samples. The number of periods created is 60 ÷ <osr> (quotient will round up to an integer value). A waveform with an oversample ratio ≥ 60 has one period.

<scale> This variable sets the scale factor for the waveform. The scale factor is a real number from zero to one.

I|Q|IQ Selects I, Q, or I and Q paths for the waveform data. Sinewave data is generated and applied to the I path if the I path is selected; Q data are set to zeros. Sine data is generated and applied to the Q path if the Q path is selected; I data are

set to zeros. If the I and Q paths are selected, sinewave data are applied to the I and Q paths.

<phasedeg> Selects the phase angle of the waveform data. Sinewave data is generated and the phase angle in degrees is applied to the sine wave.

Example

```
:RAD:ARB:GEN:SINE "Sine_Wave",60,.5,IQ
```

The preceding example generates an I/Q sine wave and saves the data to a file named Sine_Wave. The oversampling ratio is 60, the scaling is set for 50%, and the data is applied to both the I and Q paths.

The signal generator's baseband option and available baseband memory determine the maximum number of samples for the waveform.

Range *OSR Option 651, 652, or 654:* 4E0 to 8E6

OSR Option 019: 4E0 to 64E6

Scale: 0 to 1

:GENerate:TEST:WAVeforms

Supported N5162A/82A with Option 651, 652 or 654

```
[:SOURce]:RADio:ARB:GENerate:TEST:WAVeforms
```

This command recreates the arb waveform test files into BBG (waveform) memory (WFM1). When this command is sent to the instrument, the SINE_TEST_WFM and RAMP_TEST_WFM files are regenerated.

Example

```
:RAD:ARB:GEN:TEST:WAV
```

:HEADer:CLEar

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:HEADer:CLEar
```

This command clears the header information from the file header used by this modulation format (i.e. all file header fields are set to unspecified).

Key Entry **Clear Header**

Remarks A waveform must be selected for this command to function.

:HEADER:NOISe:RMS[:OVERride]

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:HEADER:NOISe:RMS:OVERride "<file_name>",<value>|UNSPecified
[:SOURce]:RADio:ARB:HEADER:NOISe:RMS:OVERride? "<file_name>"
```

This command sets the value of the waveform's I and Q RMS (root mean square) for noise.

The RMS is used strictly for calculating the relative power of the noise in the specified header. The RMS is specified in normalized linear units with |+1| or |–1| as full scale on I or Q, therefore the largest RMS that can be specified is the square root of 2 (1.414213562). If the value is unspecified, then the waveform file header's RMS is used.

This value is useful if you wish to have the noise be relative to only a portion of the waveform, such as a pilot channel, or be relative to only a single carrier that is mixed with other carriers.

For setting the header's RMS value, see ":HEADer:RMS" on page 296.

"<file_name>" This variable names the waveform file to which the RMS value will be applied. The file name variable can designate a file in the WFM1, NVWFM, or SEQ directories. For information on the file name syntax, refer to "File Name Variables" on page 13.

<value> This variable is the user–measured RMS noise value for the specified carrier.

UNSPecified Sets RMS as unspecified, which causes the general RMS value to be used for calculating the relative noise power.

Example

```
:RAD:ARB:HEADER:NOISe:RMS:OVER "WFM1:Sine_Wave",.835
```

The preceding example sets the file header RMS noise override value for a file type WFM1, named Sine_Wave, to .835.

```
:RAD:ARB:HEADER:NOISe:RMS:OVER "WFM1:Sine_Wave",UNSP
```

In the second example, the signal generator calculates the RMS, using the waveform file header's RMS value. For setting the header's RMS value, see ":HEADer:RMS" on page 296.

The RMS value is expressed in volts.

Key Entry **Edit Noise RMS Override Unspecified Enter**

:HEADer:RMS

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:HEADER:RMS "<file_name>",<value>|UNSPecified
[:SOURce]:RADio:ARB:HEADER:RMS? "<file_name>"
```

This command sets the file header RMS value for the selected waveform file. The Agilent MXG uses the RMS value with the dual ARB's real–time noise function and to optimize the modulator drive level.

The signal generator reads the RMS value from the file header when a waveform is selected to play. If the value is unspecified, then it is calculated and stored in the header automatically.

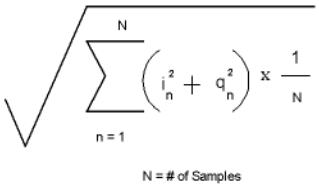
When the waveform file is saved from volatile waveform memory (WFM1) to non–volatile waveform memory (NVWFM), the RMS value, auto–calculated or user–defined, is also saved.

For setting the header noise carrier RMS override value, see ":HEADER:NOISe:RMS[:OVERride]" on page 295.

"<file_name>" This variable names the waveform file to which the RMS value will be applied.

The file name variable can designate a file in the WFM1, NVWFM, or SEQ directories. For information on the file name syntax, refer to "File Name Variables" on page 13.

<value> This variable is the user–measured RMS value for the specified waveform. The following figure shows the RMS calculation.



UNSPecified Using this variable in the command clears the RMS value and sets it to unspecified. An unspecified RMS value causes the signal generator to calculate the value when the ARB personality is turned on. The RMS calculation includes rise/fall times and does not include consecutive zero level samples. DC offsets and noise are also included in the RMS measurement. But, the Marker values are *not* included in these calculations. Because the signal generator calculation uses so many factors, you may achieve better results calculating your own RMS value.

Examples

```
[:SOURce]:RADio:ARB:HEADER:RMS "WFM1:Sine_Wave",.835
```

The first example shows a user–measured RMS value for the Sine_Wave waveform file in the waveform's file header.

```
:RAD:ARB:HEADER:RMS "WFM1:Sine_Wave",UNSP
```

In the second example, the signal generator calculates the RMS value when the ARB is turned on with this file selected or a sequence which contains the file selected.

The RMS value is expressed in volts.

Range 0 to 1.414213562373095

Key Entry **Edit RMS** **Enter** **Unspecified** **Calculate**

:HEADer:SAVE

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:HEADer:SAVE
```

This command saves the Dual ARB state information to the header of the currently selected waveform.

Key Entry **Save Setup To Header**

Remarks A waveform must be selected for this command to function.

:IQ:MODulation:ATTen

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:IQ:MODulation:ATTen <value>
[:SOURce]:RADio:ARB:IQ:MODulation:ATTen?
```

This command sets the attenuation level of the I/Q signals being modulated through the signal generator RF path.

The variable <value> is expressed in units of decibels (dB).

***RST** Varies (instrument dependent)

Range 0 to 50

Key Entry **Modulator Atten Manual Auto**

Key Path **Mode > Dual Arb > Arb Setup > Modulator Atten Manual Auto**

:IQ:MODulation:ATTen:AUTO

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:IQ:MODulation:ATTen:AUTO ON|OFF|1|0
[:SOURce]:RADio:ARB:IQ:MODulation:ATTen:AUTO?
```

This command enables or disables the I/Q attenuation auto mode.

ON (1) This choice enables the attenuation auto mode which optimizes the modulator attenuation for the current conditions.

OFF (0) This choice holds the attenuator at its current setting or at a selected value. Refer to the :IQ:MODulation:ATTen command for setting the attenuation value.

***RST** 1

Key Entry **Modulator Atten Manual Auto**

Key Path **Mode > Dual Arb > Arb Setup > Modulator Atten Manual Auto**

:MARKer:CLEar

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:MARKer:CLEar "<file_name>",<marker>,<first_point>,<last_point>
```

This command clears a single marker point or a range of marker points on a waveform segment for the selected marker (1–4). The dual ARB player and all of the ARB modulation formats use this command.

"<file_name>" This variable specifies the name of the waveform file in volatile waveform memory (WFM1). For information on the file name syntax, see "File Name Variables" on page 13.

<marker> This variable selects the marker number; an integer value from one to four.

<first_point> This variable defines the first point in a range of points. The number must be greater than or equal to one, and less than or equal to the total number of waveform points.

If you enter a value for either the first marker point or the last marker point that would make the first marker point occur after the last, the last marker point automatically adjusts to match the first marker point.

<last_point> This variable defines the last point in a range of points. The number must be greater than or equal to the first point, and less than or equal to the total number of waveform points.

To clear a single marker point, use the same marker point for the first and last point variables. For more information on markers and ARB files, refer to the *User's Guide*.

Example

```
:RAD:ARB:MARK:CLE "Test_Data",1,1,300
```

The preceding example clears marker 1 from the first point through the 300th point in the Test_Data file.

Range <*marker*>: 1–4

<*first_Point*>: 1–number of waveform points

<*last_point*>: <first_Point>–number of waveform points

Key Entry **Set Marker Off Range Of Points** **Marker 1 2 3 4** **First Mkr Point** **Last Mkr Point**

:MARKer:CLEar:ALL

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:MARKer:CLEar:ALL "<file_name>",<marker>
```

This command clears all marker points on a waveform segment for the selected marker (1–4). The dual ARB player and all of the ARB formats use this command. With all marker points cleared, the event output signal level is set low.

"<file_name>" This variable specifies the name of the waveform file in volatile waveform memory (WFM1). For information on the file name syntax, see "File Name Variables" on page 13.

<marker> This variable selects the marker number; an integer value from one to four.

Example

```
:RAD:ARB:MARK:CLE:ALL "Test_Data",1
```

The preceding example clears marker 1 from the all waveform points in the Test_Data file.

Range 1 to 4

Key Entry **Marker 1 2 3 4** **Set Marker Off All Points**

:MARKer:ROTate

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:MARKer:ROTate "<file_name>",<rotate_count>
```

This command shifts the marker points for all markers in a waveform segment earlier or later by the value of the <rotate_count> variable. The dual ARB player and all of the ARB formats use this command.

You can use a positive or negative value. When a marker point is close to the end of the waveform and the <rotate_count> value is greater than the number of remaining marker points, but less than the total number of marker points, the marker points that would move beyond the end of the waveform wrap to the beginning of the waveform. For example, if a marker point resides at sample point 195 out of 200, and the <rotate_count> value is twenty–five, the marker point wraps to the beginning of the waveform and continues out to the twentieth waveform point.

To set the marker points in a waveform, refer to ":MARKer[:SET]" on page 300.

"<file_name>" This variable specifies the name of the waveform file in volatile waveform memory (WFM1). For information on the file name syntax, see "File Name Variables" on page 13.

Example

```
:RAD:ARB:MARK:ROT "Test_Data",100
```

The preceding example shifts all markers set in the Test_Data file 100 points later. If the first set point in the file is at 50, then after sending this command, the first set point will be 150 (assuming the Test_Data file has at least 150 points and no later set points wrapped around to the beginning of the file).

Range – (n – 1) to (n – 1)

n = number of points in the waveform

:MARKer[:SET]

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:MARKer[:SET] "<file_name>",<marker>,<first_point>,<last_point>,
<skip_count>
```

This command sets a single marker point or a range of marker points on a waveform segment for the selected marker (1–4). The dual ARB player and all of the ARB formats use this command.

The Agilent MXG provides four independent markers. Two of the markers route output signals to rear panel event connectors, Marker–1 to Event1 BNC and Marker–2 to Aux I/O. A marker consists of marker points placed at defined sample points in a waveform segment. This means that a marker point cannot be less than one or greater than the last sample point in the waveform. Marker points are cumulative, so multiple command executions with different range values, without first clearing the existing points, places additional marker points on the waveform. Because of this cumulative behavior, it is a good practice to clear existing marker points prior to setting new points. This will eliminate unexpected marker pulses. Refer to ":MARKer:CLEar" on page 298 and ":MARKer:CLEar:ALL" on page 299 for information on clearing marker points.

For waveforms generated on the signal generator (baseband generator), the Agilent MXG automatically places a marker point at the first waveform sample for markers one and two.

NOTE You can set markers for either positive or negative polarity. The following discussions for this command assume positive marker polarity. When using negative marker polarity, the marker pulses occur during the periods of no marker points.

There are three ways to place marker points using this command:

- consecutive marker points over a range that collectively create a single marker pulse that spans

the range

- equally spaced marker points over a range, so that a marker pulse occurs at each sample point that coincides with a marker point (Using this method, you can configure a clock signal by setting the <skip_count> variable to one.)
- a single marker point placed at a specific sample point in the waveform, which outputs a single pulse relative to the marker point location (To configure a single marker point, set the first and last points to the same number.)

For more information on markers, refer to the *User's Guide*.

The following list describes the command variables:

"<file_name>" This variable specifies the name of the waveform file in volatile waveform memory (WFM1). For information on the file name syntax, see "File Name Variables" on page 13.

<marker> This variable selects the marker number; an integer value from one to four.

<first_point> This variable defines the first point in the range over which the marker is placed. This number must be greater than or equal to one, and less than or equal to the total number of waveform points.

If you enter a value for either the first marker point or the last marker point that would make the first marker point occur after the last, the last marker point is automatically adjusted to match the first marker point.

<last_point> This variable defines the last point in the range over which the marker will be placed. This value must be greater than or equal to the first point, and less than or equal to the total number of waveform points.

<skip_count> This variable defines the marker point pattern across the range. A zero value means the marker points occur consecutively across the range. A value greater than zero creates a repeating marker point pattern across the range, where the gap between the marker points is equal to the <skip_count> value. The gaps begin after the first marker point. Each marker point in the pattern, which is only one point wide, produces a marker pulse.

Example

```
:RAD:ARB:MARK "Test_Data",1,40,100,2
```

The preceding example sets marker 1 on the first point, 40, the last point, 100, and every third point (skip 2) between 40 and 100 (assuming the Test_Data file has at least 100 points).

Range <*marker*>: 1–4

<*first_Point*>: 1–number of waveform points

<*last_point*>: <first_Point>–number of waveform points

<*skip_count*>: 0–number of points in the range

Key Entry **Set Marker on Range Of Points** **Marker 1 2 3 4** **First Mkr Point** **Last Mkr Point** **# Skipped Points** **Apply to Waveform**

Key Path **Mode > Dual ARB > More 2 of 2 > Marker Utilities > Set Markers >**

:MBSync

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:MBSync OFF|MASTer|SLAVe
[:SOURce]:RADio:ARB:MBSync?
```

This command disables or enables the multiple BBG synchronization setup for the current signal generator. Ensure that the Dual ARB play is off prior to executing this command.

OFF — Turns off multiple baseband synchronization for the signal generator.

MASTer — Sets the signal generator as the master for the setup. When selected, the following trigger features are unavailable:

Trigger Type

- Free Run, see page 321
- Gated, see page 320

Prior to selecting MASTer, ensure that the trigger type is something other than shown above. If not, the Agilent MXG generates a settings conflict error and changes the trigger type to TRIGger (continuous play once triggered).

SLAVe — Sets the signal generator as a slave in the setup. When selected, the following trigger features are unavailable:

Trigger Type

- Free Run, see page 321
- Gated, see page 320

Trigger Source

- All selections, see page 323

Prior to selecting SLAVe, ensure that the trigger type is something other than shown above and that the trigger source is set according to the following list:

- EXT (external trigger signal–seepage 323)
- EPT1 (PAT TRIG connector– see page 325)
- SLOPe POSitive (see page 325)
- EXT DELay to OFF (see page 324)

If not, the Agilent MXG generates a settings conflict error and changes the trigger type to TRIGger (continuous play once triggered) and the trigger source to the above listed selections.

To set the slave position, see ":MBSync:SREFerence" on page 303.

For more information on the multiple BBG synchronization feature, see the *User's Guide*.

Example

```
:RAD:ARB:MBS MAST
```

The preceding example sets the signal generator as the master in the master/slave setup.

***RST** OFF

Key Entry **Off** **Master** **Slave**

:MBSync:NSLaves

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:MBSync:NSLaves <value>
[:SOURce]:RADio:ARB:MBSync:NSLaves?
```

This command enters the number of signal generators designated as slaves in a multiple BBG synchronization setup. This value is required for both the master and slave signal generators.

This command does *not* designate which slave position a signal generator occupies. To set the slave position, see ":MBSync:SREFerence" on page 303.

The NSLaves value is a persistent settings that survives both preset and power cycling.

Example

```
:RAD:ARB:MBS:NSL 7
```

The preceding example enters seven as the number of slaves the current signal generator master/slave setup.

Range 1 to 15

Key Entry **Number of Slaves**

:MBSync:SLISten

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:MBSync:SLISten
```

For signal generators designated as slaves in the multiple BBG synchronization setup, this command enables them to receive a one–time baseband synchronization event trigger initiated by the master. The signal generator receives the trigger signal through the **PAT TRIG** connector.

Prior to executing this command, ensure that the Dual ARB player and the trigger source for the master is off.

Since this command is for a one–time event, you must send this command each time there is a need to synchronize the master/slave setup and prior to initiating the synchronization trigger from the master signal generator. After executing this command, each signal generator should show a status register weighting of 256 (waiting for sync). To check the status, see ":REGister:[:STATus]" on page 315. To initiate the synchronization signal, see ":MBSync:SSLaves" on page 304.

Example

```
:RAD:ARB:MBS:SLIS
```

The preceding example enables a slave signal generator to receive the synchronization trigger.

Key Entry **Listen for Sync**

:MBSync:SREFerence

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:MBSync:SREFerence <value>
[:SOURce]:RADio:ARB:MBSync:SREFerence?
```

For signal generators designated as slaves in the multiple BBG synchronization setup, this command sets the slave position of the signal generator.

The SREFerence value is a persistent settings that survives both preset and power cycling.

Example

```
:RAD:ARB:MBS:SREF 13
```

The preceding example sets the signal generator to slave number 13.

Range 1 to 15

Key Entry **Slave Position**

:MBSync:SSLaves

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:MBSync:SSLaves
```

For the signal generator designated as the master in the multiple BBG synchronization setup, this command initiates the trigger to synchronize the baseband generators. The trigger signal is output through the **EVENT 1** connector.

As each slave receives the synchronization signal, it automatically sends a synchronization signal to the next slave in the chain. Prior to executing this command, all of the slaves must be set to listen for the trigger. For more information, see ":MBSync:SLISten" on page 303. After executing this command, each signal generator should show a status register weighting of 512 (in sync). To check the status, see ":REGister:[:STATus]" on page 315.

NOTE If any changes are made to the synchronization parameters after executing this command, the master/slave system must be resynchronized. See the *User's Guide* for more information and the process for resynchronizing a system.

Example

```
:RAD:ARB:MBS:SSL
```

The preceding example initiates the synchronization trigger signal.

Key Entry **Sync Slaves**

:MDEStination:ALCHold

Supported N5162A/82A with Option 651, 652, or 654

CAUTION Incorrect automatic level control (ALC) sampling can create a sudden unleveled condition that may create a spike in the RF output potentially damaging a DUT or connected instrument. Ensure that you set markers to let the ALC sample over an amplitude that accounts for the high power levels within the signal.

```
[:SOURce]:RADio:ARB:MDEStination:ALCHold NONE|M1|M2|M3|M4
[:SOURce]:RADio:ARB:MDEStination:ALCHold?
```

This command enables or disables the marker ALC hold function for the selected marker. For setting

markers, see ":MARKer[:SET]" on page 300.

Use the ALC hold function when you have a waveform signal that incorporates idle periods, or when the increased dynamic range encountered with RF blanking is not desired. The ALC leveling circuitry responds to the marker signal during the marker pulse (marker signal high), averaging the modulated signal level during this period.

The ALC hold function operates during the low periods of the marker signal. The marker polarity determines when the marker signal is high. For a positive polarity, this is during the marker points. For a negative polarity, this is when there are no marker points. For setting a marker's polarity, see ":MPOLarity:MARKer1|2|3|4" on page 306.

NOTE Do not use the ALC hold for more than 100 ms, because it can affect the waveform's output amplitude.

The marker signal has a minimum of a two–sample delay in its response relative to the waveform signal response. To compensate for the marker signal delay, offset marker points from the waveform sample point at which you want the ALC sampling to begin.

The ALC hold setting is part of the file header information, so saving the setting to the file header saves the current marker routing for the waveform file.

NOTE A waveform file that has unspecified settings in the file header uses the previous waveform's routing settings.

For more information on the marker ALC hold function, see the *User's Guide*. For setting the marker points, see ":MARKer[:SET]" on page 300.

NONE — This terminates the marker ALC hold function.

M1–M4 — These are the marker choices. The ALC hold feature uses only one marker at a time.

Example

```
:RAD:ARB:MDES:ALCH M1
```

The preceding example routes marker 1 to the ALC Hold function.

***RST** NONE

Key Entry **None** **Marker 1** **Marker 2** **Marker 3** **Marker 4**

:MDEStination:PULSe

Supported N5162A/82A with Option 651, 652, or 654

CAUTION The pulse function incorporates ALC hold. Incorrect automatic level control (ALC) sampling can create a sudden unleveled condition that may create a spike in the RF output potentially damaging a DUT or connected instrument. Ensure that you set markers to let the ALC sample over an amplitude that accounts for the high power levels within the signal.

```
[:SOURce]:RADio:ARB:MDEStination:PULSe NONE|M1|M2|M3|M4
[:SOURce]:RADio:ARB:MDEStination:PULSe?
```

This command enables or disables the marker pulse/RF blanking function for the selected marker.

This function automatically uses the ALC hold function, so there is no need to select both the ALC hold and pulse/RF blanking functions for the same marker.

NOTE Do not use ALC hold for more than 100 ms, because it can affect the waveform's output amplitude.

The signal generator blanks the RF output when the marker signal goes low. The marker polarity determines when the marker signal is low. For a positive polarity, this is during the marker points. For a negative polarity, this is when there are no marker points. For setting a marker's polarity, see ":MPOLarity:MARKer1|2|3|4" on page 306.

NOTE Set marker points prior to using this function. Enabling this function without setting marker points may create a continuous low or high marker signal, depending on the marker polarity. This causes either no RF output or a continuous RF output. For setting the marker points, see ":MARKer[:SET]" on page 300.

The marker signal has a minimum of a two–sample delay in its response relative to the waveform signal response. To compensate for the marker signal delay, offset marker points from the waveform sample point at which you want the RF blanking to begin. The RF blanking setting is part of the file header information, so saving the setting to the file header saves the current marker routing for the waveform file.

NOTE A waveform that has unspecified settings in the file header uses the previous waveform's routing settings. This could create the situation where there is no RF output signal, because the previous waveform used RF blanking.

For more information on the marker RF blanking function, see the *User's Guide*.

NONE — This terminates the marker RF blanking/pulse function.

M1–M4 — These are the marker choices. The RF blanking/pulse feature uses only one marker at a time.

Example

```
:RAD:ARB:MDES:PULS M2
```

The preceding example routes marker 2 to Pulse/RF Blanking.

***RST** NONE

Key Entry **None** **Marker 1** **Marker 2** **Marker 3** **Marker 4**

:MPOLarity:MARKer1|2|3|4

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:MPOLarity:MARKer1|2|3|4 NEGative|POSitive
[:SOURce]:RADio:ARB:MPOLarity:MARKer1|2|3|4?
```

This command sets the polarity for the selected marker. For a positive marker polarity, the marker signal is high during the marker points. For a negative marker polarity, the marker signal is high during the period of no marker points.

Example

```
:RAD:ARB:MPOL:MARK3 NEG
```

The preceding example sets the polarity for marker 3 to negative.

***RST** POS

Key Entry **Marker 1 Polarity Neg Pos** **Marker 2 Polarity Neg Pos** **Marker 3 Polarity Neg Pos** **Marker 4 Polarity Neg Pos**

:NOISe:BANDwidth

Supported N5162A/82A with Option 403

```
[:SOURce]:RADio:ARB:NOISe:BANDwidth <value><unit>
[:SOURce]:RADio:ARB:NOISe:BANDwidth?
```

This command selects the flat noise bandwidth value of the real–time noise for an ARB waveform. Typically, this value is set slightly wider than the signal bandwidth. The minimum increment value is 0.001 Hz.

***RST** +1.00000000E+000

Range

Option 651	1 Hz to 24 MHz
Option 652	1 Hz to 48 MHz
Option 654	1 Hz to 100 MHz

Key Entry **Noise Bandwidth**

Key Path **Mode** > **Dual ARB** > **Arb Setup** > **Real-Time AWGN Setup** > **More 2 of 2** > **Noise Bandwidth**

:NOISe:CBRate

Supported N5162A/82A with Option 403

```
[:SOURce]:RADio:ARB:NOISe:CBRate <1bps - 999Mbps>
[:SOURce]:RADio:ARB:NOISe:CBRate?
```

This command sets a value of the carrier bit rate (gross bit rate) for purposes of calculating the E_b/N_0 (energy per bit over noise power density at the receiver). When the carrier to noise ratio format is set to E_b/N_0 (refer to the :NOISe:CNFormat command), the adjustment of the carrier bit rate will have an immediate impact on the carrier to noise ratio as specified by E_b/N_0. The carrier bit rate is derived from the symbol rate and bits per symbol of the modulation. The carrier bit rate is a saved instrument state that is recorded in the waveform header.

The query returns the current carrier bit rate setting.

Example

```
:RAD:ARB:NOIS:CBR 5
```

The preceding example sets the carrier bit rate to 5 bps.

Default 1.000 bps

Range 1 bps to 999 Mbps

Key Entry **Carrier Bit Rate**

Key Path **Mode > Dual ARB > Arb Setup > Real-Time AWGN Setup > Carrier to Noise Ratio Format Eb/No > More 2 of 2 > Carrier Bit Rate**

:NOISe:CBWidth

Supported N5162A/82A with Option 403

```
[:SOURce]:RADio:ARB:NOISe:CBWidth <value><unit>
[:SOURce]:RADio:ARB:NOISe:CBWidth?
```

This command selects the carrier bandwidth over which the additive white gaussian noise (AWGN) is applied. The carrier RMS power and the noise power will be integrated over the selected carrier–bandwidth for the purposes of calculating carrier to noise ratio (C/N). The minimum increment value is 0.001 Hz. For more information, refer to the ":NOISe[:STATe]" command and the ":NOISe:BANDwidth"command.

***RST** +1.00000000E+000

Range 1 Hz to 125 MHz

Key Entry **Carrier Bandwidth**

Key Path **Mode > Dual ARB > Arb Setup > Real-Time AWGN Setup > More 2 of 2 > Carrier Bandwidth**

:NOISe:CN

Supported N5162A/82A with Option 403

```
[:SOURce]:RADio:ARB:NOISe:CN <value><unit>
[:SOURce]:RADio:ARB:NOISe:CN?
```

This command sets the carrier to noise ratio (C/N) in dB. The carrier power is defined as the total modulated signal power without noise power added. The noise power is applied over the specified bandwidth of the carrier signal. For more information, refer to ":NOISe:CBWidth" on page 308.

Example

```
:RAD:ARB:NOIS:CN 50DB
```

The preceding example sets the carrier to noise ratio to 50 dB.

***RST** +0.00000000E+000

Range –100 to 100 dB

Key Entry **Carrier to Noise Ratio**

Key Path **Mode > Dual ARB > Arb Setup > Real-Time AWGN Setup > Carrier to Noise Ratio**

:NOISe:CNFormat

Supported N5162A/82A with Option 403

```
[:SOURce]:RADio:ARB:NOISe:CNFormat CN|EBNO
[:SOURce]:RADio:ARB:NOISe:CNFormat?
```

This command selects either the Carrier to Noise Ratio (C/N) or energy per bit over noise power density at the receiver (E_b/N_0) as the variable controlling the ratio of carrier power to noise power in the carrier bandwidth.

Example

```
:RAD:ARB:NOIS:CNF EBNO
```

The preceding example sets the carrier to noise ratio format to E_bN_o.

Default Carrier to Noise Ratio Format C/N

Key Entry **Carrier to Noise Ratio Format C/N E_b/N_o**

Key Path **Mode > Dual ARB > Arb Setup > Real-Time AWGN Setup > Carrier to Noise Ratio Format C/N E_b/N_o**

:NOISe:EBNO

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:ARB:NOISe:EBNO <ebno in dB>
[:SOURce]:RADio:ARB:NOISe:EBNO?
```

This command allows the C/N to be set using the E_b/N_0 (energy per bit over noise power density at the receiver) form. This requires that the carrier bit rate (:NOISe:CBRate on page 308) be set properly. The range of E_b/N_0 is limited to the range that is equivalent to –100 to 100 dB of C/N. This

value is only effective when E_b/N_0 has been enabled by the :NOISe:CNFormat command.

The query returns the value of EBNO.

Default 0 dB

Range –100 to 100 dB

Key Entry **Carrier to Noise Ratio Format E_b/N_o**

Key Path **Mode > Dual ARB > Arb Setup > Real-Time AWGN Setup > Carrier to Noise Ratio Format C/N E_b/N_o**

:NOISe:MUX

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio[1]:ARB:NOISe:MUX SUM|CARRier|NOISe
[:SOURce]:RADio[1]:ARB:NOISe:MUX?
```

This command enables diagnostic control of additive noise, such that only the noise, only the carrier, or the sum of both the noise and the carrier are output from the internal baseband generator. With the ALC off, this feature enables direct measurement of just the carrier or the noise contributions to the total power. The system will still behave as if both the noise and the carrier are present on the output when it comes to determining the Auto Modulation Attenuation and the RMS level for RMS Power Search.

Example

```
:RAD:ARB:NOIS:MUX CARR
```

The preceding example enables the direct measurement of the carrier contribution to the total power.

Default Carrier+Noise

Key Entry **Carrier+Noise | Carrier | Noise**

Key Path **Mode > Dual ARB > Arb Setup > Real-Time AWGN Setup > More 2 of 2 > Output Mux (Carrier+Noise)**

:NOISe:POWer:CARRier

Supported N5162A/82A with Option 403

```
[:SOURce]:RADio:ARB:NOISe:POWer:CARRier <carrierPower>
[:SOURce]:RADio:ARB:NOISe:POWer:CARRier?
```

This command sets the current carrier power level if noise is on.

In the CARRier control mode, the total power will be adjusted to achieve the specified carrier power and the carrier power level will be maintained regardless of changes to the other noise parameters. A change to the total power will change the carrier power setting appropriately to maintain the C/N ratio.

In the TOTal control mode, this will adjust the total power once for the specified carrier power level, after which the carrier power could change if any noise parameters are adjusted or the total power is adjusted.

In the NOISe control mode, this will adjust the total noise power once for the specified carrier power

level, after which the carrier power could change if any noise parameters are adjusted or the total noise power is adjusted. See also :NOISe:POWer:CONTrol[:MODE] and :NOISe:POWer:NOISe:TOTal commands.

Range The range varies based on the bounds of the total power that results from the noise settings.

Default The appropriate value given the current total power and the current Carrier to Noise (C/N).

Key Entry **Carrier Power**

Key Path **Mode > Dual ARB > Arb Setup > Real-Time AWGN Setup > Power Control Mode (Total) > Carrier > Carrier Power**

:NOISe:POWer:CONTrol[:MODE]

Supported N5162A/82A with Option 403

```
[:SOURce]:RADio:ARB:NOISe:POWer:CONTrol[:MODE]{TOTal}|CARRier|NOISe
[:SOURce]:RADio:ARB:NOISe:POWer:CONTrol[:MODE]?
```

This command sets the power control to one of the three following modes:

Total This is the default mode where the total power and C/N are independent variables and the carrier power and total noise power are dependent variables set by the total power, C/N and the rest of the noise settings. The carrier power and total noise power will change as any noise parameter is adjusted to keep the total power and the C/N at their last specified values.

Carrier In this mode the carrier power and C/N are independent variables and the total power and total noise power are dependent variables set by the carrier power, C/N and the rest of the noise settings. The total power and total noise power will change as any noise parameter is adjusted to keep the carrier power and the C/N at their last specified values.

Total Noise In this mode the total noise power and C/N are independent variables and the total power and carrier power are dependent variables set by the total noise power, C/N and the rest of the noise settings. The total power and carrier power will change as any noise parameter is adjusted to keep the total noise power and the C/N at their last specified values.

Default Total

Key Entry **Total Carrier Total Noise**

Key Path **Mode > Dual ARB > Arb Setup > Real-Time AWGN Setup > Power Control Mode > Total | Carrier | Total Noise**

:NOISe:POWer:NOISe:CHANnel?

Supported N5162A/82A with Option 403

```
[:SOURce]:RADio:ARB:NOISe:POWer:NOISe:CHANnel?
```

The query returns the current noise power across the carrier bandwidth in dBm.

:NOISe:POWer:NOISe:TOTal

Supported N5162A/82A with Option 403

```
[:SOURce]:RADio:ARB:NOISe:POWer:NOISe:TOTal <totalNoisePowerInDbm>
[:SOURce]:RADio:ARB:NOISe:POWer:NOISe:TOTal?
```

This command sets the current total noise power level if noise is on.

In the NOISe control mode, the total power will be adjusted to achieve the specified total noise power and the total noise power level will be maintained regardless of changes to the other noise parameters. A change to the total power will change the total noise power setting appropriately to maintain the C/N ratio.

In the TOTal control mode, this will adjust the total power once for the specified total noise power level, after which the total noise power could change if any noise parameters are adjusted or the total power is adjusted.

In the CARRier control mode, this will adjust the carrier power once for the specified total noise power level, after which the total noise power could change if any noise parameters are adjusted or the carrier power is adjusted. See also :NOISe:POWer:CONTrol[:MODE] command.

Range The range varies based on the bounds of the total power that results from the noise settings.

Default The appropriate value given the current total power and the current Carrier to Noise (C/N).

Key Entry **Total Noise Power**

Key Path **Mode > Dual ARB > Arb Setup > Real-Time AWGN Setup > Power Control Mode > Total Noise > Total Noise Power**

:NOISe[:STATe]

Supported N5162A/82A with Option 403

```
[:SOURce]:RADio:ARB:NOISe[:STATe] ON|OFF|1|0
[:SOURce]:RADio:ARB:NOISe[:STATe]?
```

This command enables or disables adding real-time additive white gaussian noise (AWGN) to the carrier modulated by the waveform being played by the dual ARB waveform player.

Example

```
:RAD:ARB:NOIS ON
```

The preceding example applies real-time AWGN to the carrier.

***RST** 0

Key Entry **Real-Time AWGN Off On**

Key Path **Mode > Dual ARB > Arb Setup > Real-Time AWGN Setup > Real-Time AWGN Off On**

:PHASe:NOISe:F1

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:ARB:PHASe:NOISe:F1 <value><unit>
[:SOURce]:RADio:ARB:PHASe:NOISe:F1?
```

This command sets the start frequency value of the flat area for the phase noise impairment.

Ensure that this value is less than or equal to the stop frequency value (see the :PHASe:NOISe:F2 command). If the value is set greater than the stop frequency value, the signal generator resets the stop value to equal the start value.

The actual value may vary logarithmically depending on the value of the stop frequency. This behavior is more noticeable at higher frequency values. For more information, see the *User's Guide*.

***RST** +1.00000000E+003

Range 0 Hz to 48.43782781 MHz

Key Entry **Desired Start Freq (f1)**

Key Path **Mode > Dual ARB > Arb Setup > Real-Time Phase Noise Setup > Desired Start Freq (f1)**

:PHASe:NOISe:F2

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:ARB:PHASe:NOISe:F2 <value><unit>
[:SOURce]:RADio:ARB:PHASe:NOISe:F2?
```

This command sets the stop frequency value of the flat area for the phase noise impairment.

Ensure that this value is less than or equal to the stop frequency value (see the :PHASe:NOISe:F1 command). If the value is set less than the start frequency value, the signal generator resets the start value to equal the stop value.

The actual value may vary logarithmically, which is more noticeable at higher frequency offset values. For more information, see the *User's Guide*.

***RST** +3.00000000E+004

Range 1 Hz to 48.43782781 MHz

Key Entry **Desired Stop Freq (f2)**

Key Path **Mode > Dual ARB > Arb Setup > Real -Time Phase Noise Setup > Desired Stop Freq (f2)**

:PHASe:NOISe:LMID

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:ARB:PHASe:NOISe:LMID <value>
[:SOURce]:RADio:ARB:PHASe:NOISe:LMID?
```

This command sets the level amplitude of the flat area for the phase noise impairment. This phase noise is added to the base phase noise of the signal generator.

The signal generator has an automatic DAC over-range protection feature that is always on for this subsystem.

For more information on the phase noise impairment option, see the *User's Guide*.

NOTE The amplitude range varies depending on the f2 value (see the ":PHASe:NOISe:F2" on page 313). As f2 increases in value, the range for Lmid decreases. If the current Lmid setting is too high for the new f2 value, the signal generator changes the Lmid value and generates an error.

The range values are expressed in units of dBc/Hz.

***RST** –7.00000000E+001

Range –300 to 100

Key Entry **Desired Flat Amplitude (Lmid)**

Key Path **Mode > Dual ARB > Arb Setup > Real -Time Phase Noise Setup > Desired Flat Amplitude (Lmid)**

:PHASe:NOISe[:STATe]

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:ARB:PHASe:NOISe[:STATe] ON|OFF|1|0
[:SOURce]:RADio:ARB:PHASe:NOISe[:STATe]?
```

This command turns the phase noise impairment on or off. For more information on the phase noise impairment option, see the *User's Guide*.

***RST** 0

Key Entry **Phase Noise Off On**

Key Path **Mode > Dual ARB > Arb Setup > Real -Time Phase Noise Setup > Phase Noise Off On**

:REGister:[:STATus]

Supported N5162A/82A with Option 651, 652, or 654

`[:SOURce]:RADio:ARB:REGister[:STATus]?`

This query returns a weighted decimal value to indicate the status of the following Dual ARB settings:

- Dual ARB state (ARB)
- Multiple BBG synchronization (MBS1 and MBS2)
- Triggering modes (ARM and Run)

Weighting	0	0	0	0	0	0	512	256	0	0	0	0	0	4	2	1
Bit Position	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Status Item	–	–	–	–	–	–	MBS2	MBS1	–	–	–	–	–	Run	ARM	ARB

When the bit position is set high, the weighted position value equals 2^n where n = bit position. When the bit position is set low, the weighting equals zero. The sum of the weighted values indicates the status of all monitored items.

Table 6-1 Low and High Bit Position Description

ARB	
0	Dual ARB is off
1	Dual ARB is on
ARM[a]	
0	Trigger is not armed
1	Trigger is armed and the Dual ARB is waiting for a trigger to start the play-back of the waveform
RUN[b]	
0	The Dual ARB waveform is not playing
1	The Dual ARB waveform is playing
MBS1	
0	Multiple BBG synchronization is *not* waiting for a sync signal from the master
1	Multiple BBG synchronization is waiting for a sync signal from the master
MBS2	
0	Multiple BBG synchronization is out of sync
1	Multiple BBG synchronization is in sync

a. The ARM bit remains 0 for the following trigger type selections:
- FREE (Free Run) see page 321
- RESet (Reset and Run) see page 321
- IMMediate (Restart on Trigger) see page 316
- GATE see page 320

b. For GATE triggering, the bit remains high for both states of the trigger signal.

***RST** 0

:RETRigger

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:RETRigger ON|OFF|1|0|IMMediate
[:SOURce]:RADio:ARB:RETRigger?
```

This command enables or disables the ARB retriggering mode. The retrigger mode controls how the retriggering function performs while a waveform is playing.

ON (1) This choice (Buffered Trigger) specifies that if a trigger occurs while a waveform is playing, the waveform will retrigger at the end of the current waveform sequence and play once more.

OFF (0) This choice (No Retrigger) specifies that if a trigger occurs while a waveform is playing, the trigger will be ignored.

IMMediate This choice (Restart on Trigger) specifies that if a trigger occurs while a waveform is playing, the waveform will reset and replay from the start immediately upon receiving a trigger.

***RST** ON

Key Entry **No Retrigger** **Buffered Trigger** **Restart on Trigger**

Remarks This command applies to the single trigger type only.

:RSCaling

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:RSCaling <value>
[:SOURce]:RADio:ARB:RSCaling?
```

This command adjusts the scaling value in percent that is applied to a waveform while it is playing. The variable <value> is expressed as a percentage. Runtime scaling does not alter the waveform data file. This feature is used to avoid DAC overflow. The scaling is compensated for at the modulator (i.e. when the modulator is the optimized path). For more information about runtime scaling, refer to the *User's Guide*.

Example

```
:RAD:ARB:RSC 50
```

The preceding example applies a 50% scaling factor to the selected waveform. Runtime scaling does not alter the waveform data file.

***RST** +7.00000000E+001

Range 1 to 100 percent

Key Entry **Runtime Scaling**

Key Path **Mode > Dual ARB > Arb Setup > Runtime Scaling**

Remarks Saving the instrument state saves the currently-set Runtime Scaling in the instrument state file.

:SCALing

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:SCALing "<file_name>",<value>
```

This command scales the designated "<file_name>" waveform file while it is being played by the dual ARB player. The variable <value> is expressed as a percentage, 1–100%. The peak value of the waveform is disconnected and the whole waveform is scaled such that the peak value is at the specified percentage of full scale.

Unlike runtime scaling (:RSCaling), Scaling (:SCALing) has a permanent effect on the waveform data. Scaling up, after scaling down, typically results in a slightly different waveform from the original, as some data is lost in the scale–down process. For more information about waveform file scaling, refer to the *User's Guide*.

Example

```
:RAD:ARB:SCAL "Test_Data", 50
```

The preceding example applies a 50% scaling factor to the Test_Data waveform file.

Range 1 to 100 percent

Key Entry **Scaling** **Scale Waveform Data**

Remarks For information on file name syntax, see "File Name Variables" on page 13.

:SCLock:RATE

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:SCLock:RATE <value>
[:SOURce]:RADio:ARB:SCLock:RATE?
```

This command sets the sample clock rate for the dual ARB format. When the Modulation Filter is active, the Sample Clock Rate is actually the Symbol Rate and is limited from 100 Hz to half of the maximum sample rate as shown in the range table below.

The variable <value> is expressed in units of hertz.

***RST** +30.000000E+006 (with Option 651)

+60.000000E+006 (with Option 652)

+125.000000E+006 (with Option 654)

Range *Option 651*: 100 Hz to 30 MHz

Option 652: 100 Hz to 60 MHz

Option 654: 100 Hz to 125 MHz

Key Entry **ARB Sample Clock**

Key Path **Mode > Dual ARB > Arb Setup > Arb Sample Clock**

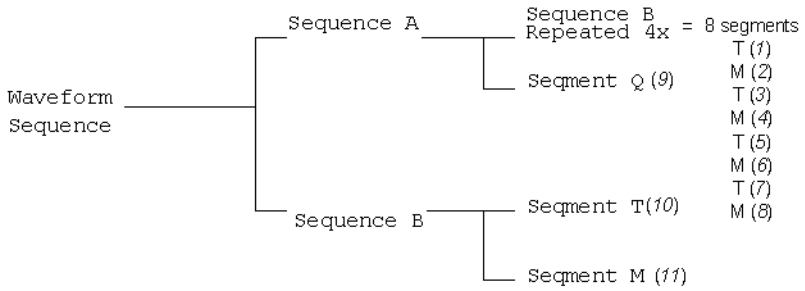
:SEQuence[:MWAVeform]

Supported All with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:SEQuence[:MWAVeform] <filename>,<waveform1>,<reps>,NONE|M1|M2|
M3|M4|M1M2|M1M3|M1M4|M2M3|M2M4|M3M4|M1M2M3|M1M2M4|M1M3M4|M2M3M4|M1M2M3M4|
ALL,{,<waveform2>,<reps>,NONE|M1|M2|M3|M4|M1M2|M1M3|M1M4|M2M3|M2M4|M3M4|M1M2M3|
M1M2M4|M1M3M4|M2M3M4|M1M2M3M4|ALL,}
[:SOURce]:RADio:ARB:SEQuence[:MWAVeform]? <filename>
```

This command creates a waveform sequence. A waveform sequence is made up of segments and other sequences. Any number of segments, up to a segment count limit of 1024, can be used to create a sequence. The count limit is determined by the number of segments in the waveform sequence. Repeated segments are included in the count limit.

For example, using the figure below, suppose a waveform is created using two sequences: Sequence_A and Sequence_B. Sequence_A consists of Sequence_B and Segment_Q with Sequence_B repeated four times. The total segment count for this waveform sequence would be eleven.



The query returns the contents and segment settings of the waveform sequence file

The segments and sequences play in the same order as placed into the waveform sequence by the command. Once you create the file, you cannot edit the segment settings or add further waveform segments unless you use the signal generator's front panel. Using the same waveform sequence name overwrites the existing file with that name. To use a segment's marker settings, you must enable the segment's markers within the segment or within the waveform sequence. A sequence is stored in the catalog of SEQ files USER/SEQ or SEQ: directory.

When you create a waveform sequence, the Agilent MXG also creates a file header for the sequence. This file header takes priority over segment or nested sequence file headers. Refer to the *User's Guide* for more information on file headers. To save the file header, see ":HEADer:SAVE" on page 297.

<file_name>" This variable names the waveform *sequence* file. For information on the file name syntax, see "File Name Variables" on page 13.

"<waveform1>"	This variable specifies the name of an existing waveform *segment* or sequence file. A waveform segment or the waveform segments in a specified sequence must reside in volatile memory, WFM1, before it can be played by the dual ARB player. For information on the file name syntax, see "File Name Variables" on page 13, and for more information on waveform segments, see the *User's Guide*.
"<waveform2>"	This variable specifies the name of a second existing waveform *segment* or sequence file. The same conditions required for waveform1 apply for this segment or sequence. Additional segments and other sequences can be inserted into the file.
<reps>	This variable sets the number of times a segment or sequence plays (repeats) before the next segment or sequence plays.
NONE	This choice disables all four markers for the waveform. Disabling markers means that the waveform sequence ignores the segment's or sequence's marker settings.
M1, M2, M3, M4	These choices, either individually or a combination of them, enable the markers for the waveform segment or sequence. Markers not specified are ignored for that segment or sequence.
ALL	This choice enables all four markers in the waveform segment or sequence.

Example

```
:RAD:ARB:SEQ "SEQ:Test_Data","WFM1:ramp_test_wfm",25,M1M4,
"WFM1:sine_test_wfm",100,ALL
```

NOTE A carriage return or line feed is never included in a SCPI command. The example above contains a carriage return so that the text will fit on the page.

The preceding example creates a waveform sequence file named `Test_Data`. This file consists of the factory–supplied waveform segments, `ramp_test_wfm` and `sine_test_wfm`. The waveform is stored in the signal generator's `SEQ:` directory.

- The first segment, `ramp_test_wfm`, has 25 repetitions with markers 1 and 4 enabled.
- The second segment, `sine_test_wfm`, has 100 repetitions with all four markers enabled.

Range <reps>: 1 to 65535

Key Entry **Build New Waveform Sequence** **Name and Store** **Insert Waveform** **Edit Repetitions** **Toggle Marker 1** **Toggle Marker 2** **Toggle Marker 3** **Toggle Marker 4**

Key Path **Mode** > **Dual ARB** > **More 2 of 2** > **Waveform Sequences** > **Build New Waveform Sequence**

:TRIGger:TYPE

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:TRIGger:TYPE CONTinuous|SINGle|GATE|SADVance
[:SOURce]:RADio:ARB:TRIGger:TYPE?
```

This command sets the trigger mode (type) that controls the waveform's playback.

Triggers control the playback by telling the Agilent MXG when to play the modulating signal (waveform). Depending on the trigger settings for the Agilent MXG, the waveform playback can occur once, continuously, or the Agilent MXG may start and stop playing the waveform repeatedly (GATE mode).

A trigger signal comprises both positive and negative signal transitions (states), which are also called high and low periods. You can configure the Agilent MXG to trigger on either state of the trigger signal. It is common to have multiple triggers, also referred to as trigger occurrences or events, occur when the signal generator requires only a single trigger. In this situation, the Agilent MXG recognizes the first trigger and ignores the rest.

When you select a trigger mode, you may lose the signal (carrier plus modulating) from the RF output until you trigger the waveform. This is because the Agilent MXG sets the I and Q signals to zero volts prior to the first trigger event, which suppresses the carrier. After the first trigger event, the waveform's final I and Q levels determine whether you will see the carrier signal or not (zero = no carrier, other values = carrier visible). At the end of most files, the final I and Q points are set to a value other than zero.

There are four parts to configuring the trigger:

- Choosing the trigger type, which controls the waveform's transmission.
- Setting the waveform's response to triggers:
  - CONTinuous, see ":TRIGger:TYPE:CONTinuous[:TYPE]" on page 321
  - SINGle, see ":RETRigger" on page 316
  - SADVance, see ":TRIGger:TYPE:SADVance[:TYPE]" on page 322
  - GATE, selecting the mode also sets the response
- Selecting the trigger source (see ":TRIGger[:SOURce]" on page 323), which determines how the Agilent MXG receives its trigger signal, internally or externally. The GATE choice requires an external trigger.
- Setting the trigger polarity when using an external source:
  - CONTinuous, SINGle, and SADVance see ":TRIGger[:SOURce]:EXTernal:SLOPe" on page 325
  - GATE, see ":TRIGger:TYPE:GATE" on page 322

To check the trigger status, see ":REGister:[:STATus]" on page 315. For more information on triggering, see the *User's Guide*.

The following list describes the trigger type command choices:

CONTinuous	Upon triggering, the waveform repeats continuously.
SINGle	Upon triggering, the waveform segment or sequence plays once.
SADVance	The trigger controls the segment advance within a waveform sequence. To use this choice, a waveform sequence must be the active waveform. Ensure that all segments in the sequence reside in volatile memory.

GATE — An external trigger signal repeatedly starts and stops the waveform's playback (transmission). The time duration for playback depends on the duty period of the trigger signal and the gate polarity selection (see ":TRIGger:TYPE:GATE" on page 322). The waveform plays during the inactive state and stops during the active polarity selection state. The active state can be set high or low. The gate mode works only with an external trigger source.

With the multiple baseband generator synchronization feature active, GATE is unavailable (see page 302 for more information).

***RST** CONT

Key Entry **Continuous** **Single** **Gate** **Segment Advance**

:TRIGger:TYPE:CONTinuous[:TYPE]

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:TRIGger:TYPE:CONTinuous[:TYPE] FREE|TRIGger|RESet
[:SOURce]:RADio:ARB:TRIGger:TYPE:CONTinuous[:TYPE]?
```

This command selects the waveform's response to a trigger signal while using the continuous trigger mode.

For more information on triggering and to select the continuous trigger mode, see ":TRIGger:TYPE" on page 320.

The following list describes the waveform's response to each of the command choices:

FREE — Turning the ARB format on immediately triggers the waveform. The waveform repeats until you turn the format off, select another trigger, or choose another waveform file.

With the multiple baseband generator synchronization feature active, this selection is unavailable (see page 302 for more information).

TRIGger — The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously until you turn the format off, select another trigger, or choose another waveform file.

RESet — The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously. Subsequent triggers reset the waveform to the beginning. For a waveform sequence, this means to the beginning of the first segment in the sequence.

***RST** FREE

Key Entry **Free Run** **Trigger & Run** **Reset & Run**

:TRIGger:TYPE:GATE

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:TRIGger:TYPE:GATE LOW|HIGH
[:SOURce]:RADio:ARB:TRIGger:TYPE:GATE?
```

This command selects the active state (gate polarity) of the gate while using the gating trigger mode.

The LOW and HIGH selections correspond to the low and high states of an external trigger signal. For example, when you select HIGH, the active state occurs during the high of the trigger signal. When the inactive state occurs, the Agilent MXG stops the waveform playback at the last played sample point, then restarts the playback at the next sample point when the active state occurs. For more information on triggering and to select gating as the trigger mode, see ":TRIGger:TYPE" on page 320.

The following list describes the Agilent MXG's gating behavior for the polarity selections:

LOW — The waveform playback stops when the trigger signal goes high and restarts when the trigger signal goes low.

HIGH — The waveform playback stops when the trigger signal goes low and restarts when the trigger signal goes high.

***RST** HIGH

Key Entry **Active Low** **Active High**

:TRIGger:TYPE:SADVance[:TYPE]

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:TRIGger:TYPE:SADVance[:TYPE] SINGle|CONTinuous
[:SOURce]:RADio:ARB:TRIGger:TYPE:SADVance[:TYPE]?
```

This commands selects the waveform's response to a trigger signal while using the segment advance (SADVance) trigger mode.

When the Agilent MXG receives multiple trigger occurrences when only one is required, the signal generator uses the first trigger and ignores the rest. For more information on triggering and to select segment advance as the trigger mode, see ":TRIGger:TYPE" on page 320.

The following list describes the waveform's response to each of the command choices:

SINGle — Each segment in the sequence requires a trigger to play, and a segment plays only once, ignoring a segment's repetition value (see ":SEQuence[:MWAVeform]" on page 318 for repetition information). The following list describes a sequence's playback behavior with this choice:

- After receiving the first trigger, the first segment plays to completion.
- When the waveform receives a trigger after a segment completes, the sequence advances to the next segment and plays that segment to completion.
- When the waveform receives a trigger during play, the current segment plays to completion. Then the sequence advances to the next segment, and it plays to completion.

- When the waveform receives a trigger either during or after the last segment in a sequence plays, the sequence resets and the first segment plays to completion.

CONTinuous — Each segment in the sequence requires a trigger to play. After receiving a trigger, a segment plays continuously until the waveform receives another trigger. The following list describes a sequence's playback behavior with this choice:

- After receiving the first trigger, the first segment plays continuously.
- A trigger during the current segment play causes the segment to play to the end of the segment file, then the sequence advances to the next segment, which plays continuously.
- When last segment in the sequence receives a trigger, the sequence resets and the first segment plays continuously.

Example

```
:RAD:ARB:TRIG:TYPE:SADV CONT
```

The preceding example selects the continuous segment advance mode.

***RST** CONT

Key Entry **Single** **Continuous**

:TRIGger[:SOURce]

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:TRIGger[:SOURce] KEY|EXT|BUS
[:SOURce]:RADio:ARB:TRIGger[:SOURce]?
```

This command sets the trigger source.With the multi–baseband generator synchronization slave selection, this command is unavailable (see page 302 for more information).

For more information on triggering, see ":TRIGger:TYPE" on page 320. The following list describes the command choices:

KEY — This choice enables manual triggering by pressing the front panel **Trigger** hardkey.

EXT — An externally applied signal triggers the waveform. This is the only choice that works with gating. The following conditions affect an external trigger:

- The input connector selected for the trigger signal. You have a choice between the rear panel PATTERN TRIG IN connector or the PATT TRIG IN 2 pin on the rear panel AUXILIARY I/O connector. To make the connector selection, see ":TRIGger[:SOURce]:EXTernal[:SOURce]" on page 325.

  For more information on the connectors and on connecting the cables, see the *User's Guide*.

- The trigger signal polarity:
  - gating mode, see ":TRIGger:TYPE:GATE" on page 322
  - continuous and single modes, see ":TRIGger[:SOURce]:EXTernal:SLOPe" on page 325

- The time delay between when the Agilent MXG receives a trigger and when the waveform responds to the trigger. There are two parts to setting the delay:
  - setting the amount of delay, see ":TRIGger[SOURce]:EXTernal:DELay" on page 324
  - turning the delay on, see ":TRIGger[:SOURce]:EXTernal:DELay:STATe" on page 324

BUS — This choice enables triggering over the GPIB or LAN using the `*TRG` or `GET` commands or the AUXILIARY INTERFACE (USB) using the `*TRG` command.

***RST** EXT

Key Entry **Trigger Key Ext Bus**

:TRIGger[SOURce]:EXTernal:DELay

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:DELay <value>
[:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:DELay?
```

This command sets the amount of time to delay the Agilent MXG's response to an external trigger.

The delay is a path (time) delay between when the Agilent MXG receives the trigger and when it responds to the trigger. For example, configuring a trigger delay of two seconds, causes the Agilent MXG to wait two seconds after receipt of the trigger before the Agilent MXG plays the waveform.

The delay does not occur until you turn it on (see ":TRIGger[:SOURce]:EXTernal:DELay:STATe" on page 324). You can set the delay value either before or after turning it on.

For more information on configuring an external trigger source and to select external as the trigger source, see ":TRIGger[:SOURce]" on page 323.

The unit of measurement for the variable <value> is in seconds (nsec–sec).

***RST** +1.00000000E–003

Range 1E–8 to 3E1

Key Entry **Ext Delay Time**

:TRIGger[:SOURce]:EXTernal:DELay:STATe

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:DELay:STATe ON|OFF|1|0
[:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:DELay:STATe?
```

This command enables or disables the operating state of the external trigger delay function.

For setting the delay time, see ":TRIGger[SOURce]:EXTernal:DELay" on page 324, and for more information on configuring an external source, see":TRIGger[:SOURce]" on page 323.

***RST** 0

Key Entry **Ext Delay Off On**

:TRIGger[:SOURce]:EXTernal:SLOPe

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:SLOPe POSitive|NEGative
[:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:SLOPe?
```

This command sets the polarity for an external trigger signal while using the continuous, single triggering mode. To set the polarity for gating, see ":TRIGger:TYPE:GATE" on page 322.

The POSitive and NEGative selections correspond to the high (positive) and low (negative) states of the external trigger signal. For example, when you select POSitive, the waveform responds (plays) during the high state of the trigger signal. When the Agilent MXG receives multiple trigger occurrences when only one is required, the signal generator uses the first trigger and ignores the rest.

For more information on configuring an external trigger source and to select external as the trigger source, see ":TRIGger[:SOURce]" on page 323.

***RST** NEG

Key Entry **Ext Polarity Neg Pos**

:TRIGger[:SOURce]:EXTernal[:SOURce]

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal[:SOURce] EPT1|EPT2|
EPTRIGGER1|EPTRIGGER2
[:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal[:SOURce]?
```

This command selects which PATTERN TRIG IN connection the Agilent MXG uses to accept an externally applied trigger signal when external is the trigger source selection.

For more information on configuring an external trigger source and to select external as the trigger source, see ":TRIGger[:SOURce]" on page 323. For more information on the rear panel connectors, see the *User's Guide*.

The following list describes the command choices:

EPT1 This choice is synonymous with EPTRIGGER1 and selects the PAT TRIG rear panel connector.

EPT2 This choice is synonymous with EPTRIGGER2 and selects the PATT TRIG IN 2 pin on the rear panel AUX I/O connector.

EPTRIGGER1 This choice is synonymous with EPT1 and selects the PAT TRIG rear panel connector.

EPTRIGGER2 This choice is synonymous with EPT2 and selects the PATT TRIG IN 2 pin on the rear panel AUXILIARY I/O connector.

***RST** EPT1

Key Entry **Patt Trig In 1** **Patt Trig In 2**

:WAVeform

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:WAVeform "WFM1:file_name"|"SEQ:file_name"
[:SOURce]:RADio:ARB:WAVeform?
```

This command selects a waveform file or sequence, for the dual ARB player to play. The file must be present in volatile memory, WFM1, or in the SEQ directory. If a file is in non–volatile memory (NVWFM), use the command ":COPY[:NAME]" on page 181 to copy the file to WFM1. Any specified values in the header are applied to the ABR upon selection. Unspecified fields in the header cause no change in the ARB state.

"WFM1:file_name" This variable names a waveform file residing in volatile memory (WFM1:). For information on the file name syntax, see "File Name Variables" on page 13.

"SEQ:file_name" This variable names a sequence file residing in the catalog of sequence files. For more information on the file name syntax, see "File Name Variables" on page 13.

Example

```
:RAD:ARB:WAV "WFM1:Test_Data"
```

The preceding example selects the file Test_Data from the list of files in volatile waveform memory, WFM1, and applies its file header settings.

Key Entry **Select Waveform**

:WAVeform:NHEAders

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB:WAVeform:NHEaders "WFM1:file_name"|"SEQ:filename"
[:SOURce]:RADio:ARB:WAVeform:NHEaders?
```

This command, for the dual ARB mode, allows for a fast selection of a segment or sequence waveform file. No header information or settings are applied to the segment or sequence waveform file when this command is used. This will improve the access or loading speed of the waveform file. The file must be in volatile waveform memory (WFM1), or in the SEQ directory. If a file is in non–volatile waveform memory (NVWFM), use the command ":COPY[:NAME]" on page 181 to copy files to WFM1.

"WFM1:file_name" This variable names a waveform file residing in volatile memory:WFM1. For information on the file name syntax, see "File Name Variables" on page 13.

"SEQ:filename" This variable names a sequence file residing in the catalog of sequence files. For more information on the file name syntax, see "File Name Variables" on page 13.

Example

```
:RAD:ARB:WAV:NHE "Test_Data"
```

The preceding example selects the file Test_Data, without applying header settings.

[:STATe]

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:ARB[:STATe] ON|OFF|1|0
[:SOURce]:RADio:ARB[:STATe]?
```

This command enables or disables the arbitrary waveform generator function.

The Dual ARB Player provides a status register to show the status of the following items:

- Dual ARB state (off or on)
- Trigger arming
- Waveform play–back
- Multiple BBG synchronization

To use the register, see ":REGister:[:STATus]" on page 315.

***RST** 0

Key Entry **ARB Off On**

Key Path **Mode > Dual ARB > Arb Off On**

LARB Subsystem–Option 651/652/654 ([:SOURce]:RADio:LARB)

[:STATe]

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:LARB[:STATe] ON|OFF|1|0
[:SOURce]:RADio:LARB[:STATe]?
```

This command enables or disables the waveform sweep function, when the signal generator is in list sweep mode.

NOTE Except for the sample clock rate, unspecified fields in the header result in the *default* settings of the dual arb's settings being used (i.e. *not the current arb's settings*). The sample clock rate must be specified for the file header of the waveform file being played. If the sample clock rate is unspecified in the file header, the instrument generates a header error.

***RST** 0

Key Entry **Waveform Off On**

Remarks The **Sweep Type** softkey must be set to **List** for this command to function.

Multitone Subsystem–Option 651/652/654 ([:SOURce]:RADio:MTONe:ARB)

Creating a Multitone Waveform

Use the following steps to create a multitone waveform:

1. Initialize the phase for the multitone waveform. Refer to ":SETup:TABLe:PHASe:INITialize" on page 345.
2. Assign the frequency spacing between the tones. Refer to ":SETup:TABLe:FSPacing" on page 344.
3. Define the number of tones within the waveform. Refer to ":SETup:TABLe:NTONes" on page 344.
4. Modify the power level, phase, and state of any individual tones. Refer to ":SETup:TABLe:ROW" on page 346.

~~:ALIGnment~~

~~**Supported**~~ ~~N5162A/82A with Option 651, 652, or 654~~

~~[:SOURce]:RADio:MTONe:ARB:ALIGnment LEFT|CENTer|RIGHt~~
~~[:SOURce]:RADio:MTONe:ARB:ALIGnment?~~

~~This command will align the mulitones either left, center or right of the carrier frequency.~~

~~**Example**~~

~~:RAD:TTON:ARB:ALIG CENT~~

~~The preceding example aligns each of the multitones equidistant from the carrier frequency.~~

~~**Key Entry**~~ ~~**Alignment Left Cent Right**~~

~~**Key Path**~~ ~~**Mode > Multitone > Initialize Table > Alignment Left Cent Right**~~

:BASEband:FREQuency:OFFSet

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:MTONe:ARB:BASeband:FREQuency:OFFSet <val><unit>
[:SOURce]:RADio:MTONe:ARB:BASeband:FREQuency:OFFSet?
```

This command offsets the baseband frequency relative to the carrier. The feature is useful for moving the signal such that the carrier feed–through is not in the center.

The Agilent MXG provides automatic DAC over–range protection when the offset value is something other than 0 Hz. It scales down the playing I/Q data by *1/square root of 2*.

***RST** 0.000

Range +5.0E7 to –5.0E7 Hz

Key Entry **Baseband Frequency Offset**

Key Path **Mode** > **Multitone** > **More 2 of 2** > **ARB Setup** > **More 2 of 2** > **Baseband Frequency Offset**

:BASeband:FREQuency:OFFSet:PHASe:RESet

Supported N5162A/82A with Option 651, 652, or 654

`[:SOURce]:RADio:MTONe:ARB:BASeband:FREQuency:OFFSet:PHASe:RESet`

This command clears the phase accumulation and so zero phase shift.

When the Baseband Frequency Offset is non–zero, the hardware rotator accumulates phase–shift of the baseband signal. This residual phase remains even after the offset value is returned to zero. While there is a non–zero residual phase present in the signal, the DAC Over–Range Protection feature will automatically prevent DAC overrange errors from occurring by scaling the signal down by *1/square root of 2*.

Key Entry **Baseband Frequency Offset Phase Reset**

Key Path **Mode** > **Multitone** > **More 2 of 2** > **ARB Setup** > **More 2 of 2** > **Baseband Frequency Offset Phase Reset**

:HEADer:CLEar

Supported N5162A/82A with Option 651, 652, or 654

`[:SOURce]:RADio:MTONe:ARB:HEADer:CLEar`

This command clears the header information from the file header used by this modulation format.

Key Entry **Clear Header**

Key Path **Mode** > **Multitone** > **More 2 of 2** > **Header Utilities** > **Clear Header**

Remarks The **Multitone Off On** softkey must be set to On for this command to function.

:HEADer:SAVE

Supported N5162A/82A with Option 651, 652, or 654

`[:SOURce]:RADio:MTONe:ARB:HEADer:SAVE`

This command saves the header information to the file header used by this modulation format.

Key Entry **Save Setup To Header**

Key Path **Mode** > **Multitone** > **More 2 of 2** > **Header Utilities** > **Save Setup To Header**

Remarks The **Multitone Off On** softkey must be set to On for this command to function.

:IQ:MODulation:ATTen

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:MTONe:ARB:IQ:MODulation:ATTen <val>
[:SOURce]:RADio:MTONe:ARB:IQ:MODulation:ATTen?
```

This command attenuates the I/Q signals being modulated through the signal generator RF path.

The variable <val> is expressed in units of decibels (dB).

***RST** +2.00000000E+000

Range 0 to 50

Key Entry **Modulator Atten Manual Auto**

Key Path **Mode** > **Multitone** > **More 2 of 2** > **ARB Setup** > **Modulator Atten Manual Auto**

:IQ:MODulation:ATTen:AUTO

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:MTONe:ARB:IQ:MODulation:ATTen:AUTO ON|OFF|1|0
[:SOURce]:RADio:MTONe:ARB:IQ:MODulation:ATTen:AUTO?
```

This command enables or disables the I/Q attenuation auto mode.

ON (1) This choice enables the attenuation auto mode which optimizes the modulator attenuation for the current conditions.

OFF (0) This choice holds the attenuator at its current setting or at a selected value. Refer to the :IQ:MODulation:ATTen command for setting the attenuation value.

***RST** 1

Key Entry **Modulator Atten Manual Auto**

Key Path **Mode** > **Multitone** > **More 2 of 2** > **ARB Setup** > **Modulator Atten Manual Auto**

:MDEStination:ALCHold

Supported N5162A/82A with Option 651, 652, or 654

CAUTION Incorrect automatic level control (ALC) sampling can create a sudden unleveled condition that may create a spike in the RF output potentially damaging a DUT or connected instrument. Ensure that you set markers to let the ALC sample over an amplitude that accounts for the high power levels within the signal.

```
[:SOURce]:RADio:MTONe:ARB:MDEStination:ALCHold NONE|M1|M2|M3|M4
[:SOURce]:RADio:MTONe:ARB:MDEStination:ALCHold?
```

This command enables or disables the marker ALC hold function for the selected marker. For setting markers, see ":MARKer[:SET]" on page 300.

Use the ALC hold function when you have a waveform signal that incorporates idle periods, or when the increased dynamic range encountered with RF blanking is not desired. The ALC leveling circuitry responds to the marker signal during the marker pulse (marker signal high), averaging the modulated signal level during this period.

The ALC hold function operates during the low periods of the marker signal. The marker polarity determines when the marker signal is high. For a positive polarity, this is during the marker points. For a negative polarity, this is when there are no marker points. For setting a marker's polarity, see ":MPOLarity:MARKer1|2|3|4" on page 334.

NOTE Do not use the ALC hold for more than 100 ms, because it can affect the waveform's output amplitude.

The marker signal has a minimum of a two–sample delay in its response relative to the waveform signal response. To compensate for the marker signal delay, offset marker points from the waveform sample point at which you want the ALC sampling to begin.

The ALC hold setting is part of the file header information, so saving the setting to the file header saves the current marker routing for the waveform file.

NOTE A waveform file that has unspecified settings in the file header uses the previous waveform's routing settings.

For more information on the marker ALC hold function, see the *User's Guide*. For setting the marker points, see ":MARKer[:SET]" on page 300.

NONE — This terminates the marker ALC hold function.

M1–M4 — These are the marker choices. The ALC hold feature uses only one marker at a time.

***RST** — NONE

Example

```
:RAD:AWGB:ARB:MDES:ALCH M1
```

The preceding example routes marker 1 to the ALC Hold function.

Key Entry — **None** **Marker 1** **Marker 2** **Marker 3** **Marker 4**

Key Path — **Mode** > **Multitone** > **More 2 of 2** > **Marker Utilities** > **Marker Routing** > **ALC Hold** > <**Marker 1**, ... or **Marker 4**

:MDEStination:PULSe

Supported — N5162A/82A with Option 651, 652, or 654

CAUTION The pulse function incorporates ALC hold. Incorrect automatic level control (ALC) sampling can create a sudden unleveled condition that may create a spike in the RF output potentially damaging a DUT or connected instrument. Ensure that you set markers to let the ALC sample over an amplitude that accounts for the high power levels within the signal.

```
[:SOURce]:RADio:MTONe:ARB:MDEStination:PULSe NONE|M1|M2|M3|M4
[:SOURce]:RADio:MTONe:ARB:MDEStination:PULSe?
```

This command enables or disables the marker pulse/RF blanking function for the selected marker.

This function automatically incorporates the ALC hold function, so there is no need to select both the ALC hold and pulse/RF blanking functions for the same marker.

NOTE Do not use ALC hold for more than 100 ms, because it can affect the waveform's output amplitude.

The signal generator blanks the RF output when the marker signal goes low. The marker polarity determines when the marker signal is low. For a positive polarity, this is during the marker points. For a negative polarity, this is when there are no marker points. For setting a marker's polarity, see ":MPOLarity:MARKer1|2|3|4" on page 334.

NOTE Set marker points prior to using this function. Enabling this function without setting marker points may create a continuous low or high marker signal, depending on the marker polarity. This causes either no RF output or a continuous RF output. For setting the marker points, see ":MARKer[:SET]" on page 300.

The marker signal has a minimum of a two–sample delay in its response relative to the waveform signal response. To compensate for the marker signal delay, offset marker points from the waveform sample point at which you want the RF blanking to begin. The RF blanking setting is part of the file header information, so saving the setting to the file header saves the current marker routing for the waveform file.

NOTE A waveform file that has unspecified settings in the file header uses the previous waveform's routing settings. This could create the situation where there is no RF output signal, because the previous waveform used RF blanking.

For more information on the marker RF blanking function, see the *User's Guide*.

NONE — This terminates the marker RF blanking/pulse function.

M1–M4 — These are the marker choices. The RF blanking/pulse feature uses only one marker at a time.

Example

```
:RAD:ARB:MDES:PULS M2
```

The preceding example routes marker 2 to Pulse/RF Blanking.

***RST** NONE

Key Entry **None** **Marker 1** **Marker 2** **Marker 3** **Marker 4**

Key Path **Mode** > **Multitone** > **More 2 of 2** > **Marker Utilities** > **Marker Routing** > **Pulse/RF Blank** > <**Marker 1**, ... or **Marker 4**>

:MPOLarity:MARKer1|2|3|4

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:MTONe:ARB:MPOLarity:MARKer1|2|3|4 NEGative|POSitive
[:SOURce]:RADio:MTONe:ARB:MPOLarity:MARKer1|2|3|4?
```

This command sets the polarity for the selected marker. For a positive marker polarity, the marker signal is high during the marker points. For a negative marker polarity, the marker signal is high during the period of no marker points.

***RST** POS

Key Entry **Marker 1 Polarity Neg Pos** **Marker 2 Polarity Neg Pos** **Marker 3 Polarity Neg Pos** **Marker 4 Polarity Neg Pos**

Key Path **Mode** > **Multitone** > **More 2 of 2** > **Marker Utilities** > **Marker Polarity** > **Pulse/RF Blank** > <**Marker 1 Polarity Neg Pos**, ... or **Marker 4 Polarity Neg Pos**>

:NOISe:BANDwidth

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:MTONe:ARB:NOISe:BANDwidth <val><unit>
[:SOURce]:RADio:MTONe:ARB:NOISe:BANDwidth?
```

This command sets the flat noise bandwidth value for the multitone waveform. This value is typically set wider than the carrier bandwidth.

To configure the AWGN, refer to the following sections located in the multitone subsystem:

- To set the bandwidth over which the noise power is integrated for calculating the carrier to noise ratio, refer to":NOISe:CBWidth" on page 335.
- To set the carrier to noise ratio as the active function, refer to ":NOISe:CN" on page 335.
- To enable the AWGN, refer to ":NOISe[:STATe]" on page 339.

Range

Option 651	1 Hz to 24 MHz
Option 652	1 Hz to 48 MHz
Option 654	1 Hz to 100 MHz

***RST** +1.00000000E+000

Key Entry **Noise Bandwidth**

Key Path **Mode** > **Multitone** > **More 2 of 2** > **ARB Setup** > **Real–Time AWGN Setup** > **More 2 of 2** > **Noise Bandwidth**

:NOISe:CBRate

Supported N5162A/82A with Option 651, 652, 654

```
[:SOURce]:RADio:MTONe:ARB:NOISe:CBRate <1bps - 999Mbps>
[:SOURce]:RADio:MTONe:ARB:NOISe:CBRate?
```

This command sets a value of the carrier bit rate (gross bit rate) for purposes of calculating the E_b/N_0 (energy per bit over noise power density at the receiver). When the carrier to noise ratio

format is set to E_b/N_0 (refer to the :NOISe:CNFormat command), the adjustment of the carrier bit rate will have an immediate impact on the carrier to noise ratio as specified by E_b/N_0. The carrier bit rate is derived from the symbol rate and bits per symbol of the modulation. The carrier bit rate is a saved instrument state that is recorded in the waveform header.

The query returns the current carrier bit rate setting.

Example

```
:RAD:MTON:ARB:NOIS:CBR 5
```

The preceding example sets the carrier bit rate to 5 bps.

Default 1.000 bps

Range 1 bps to 999 Mbps

Key Entry **Carrier Bit Rate**

Key Path **Mode** > **Multitone** > **More 2 of 2** > **ARB Setup** > **Real–Time AWGN Setup** > **Carrier to Noise Ratio Format E_bN_o** > **More 2 of 2** > **Carrier Bit Rate**

:NOISe:CBWidth

Supported N5162A/82A with Option 651, 652, 654

```
[:SOURce]:RADio:MTONe:ARB:NOISe:CBWidth <1Hz-80MHz>
[:SOURce]:RADio:MTONe:ARB:NOISe:CBWidth?
```

This command selects the carrier bandwidth over which the AWGN (additive white gaussian noise) is applied. The noise power will be integrated over the selected bandwidth for the purposes of calculating C/N (carrier to noise ratio). For more information refer to ":NOISe[:STATe]" on page 339.

***RST** +1.00000000E+000

1.0 Hz

Range 1 Hz – 125 MHz (Minimum increment is .001 Hz)

Key Entry **Carrier Bandwidth**

Key Path **Mode** > **Multitone** > **More 2 of 2** > **ARB Setup** > **Real-Time AWGN Setup** > **More 2 of 2** > **Carrier Bandwidth**

:NOISe:CN

Supported N5162A/82A with Option 651, 652, 654

```
[:SOURce]:RADio:MTONe:ARB:NOISe:CN <-100dB - 100dB>
[:SOURce]:RADio:MTONe:ARB:NOISe:CN?
```

This command sets the carrier to noise ratio in dB. The carrier power is defined as the total modulated signal power without noise power added. The noise power is applied over the specified bandwidth of the carrier signal. For more information, refer to :NOISe:CBWidth.

Example

```
:RAD:ARB:NOIS:CN 50DB
```

The preceding example sets the carrier to noise ratio to 50 dB.

***RST** +0.00000000E+000

Key Entry **Carrier to Noise Ratio**

Key Path **Mode > Multitone > More 2 of 2 > ARB Setup > Real-Time AWGN Setup > Carrier to Noise Ratio**

:NOISe:CNFormat

Supported N5162A/82A with Option 651, 652, 654

```
[:SOURce]:RADio:MTONe:ARB:NOISe:CNFormat CN|EBNO
[:SOURce]:RADio:MTONe:ARB:NOISe:CNFormat?
```

This command selects either the Carrier to Noise Ratio (C/N) or energy per bit over noise power density at the receiver (E_b/N_0) as the variable controlling the ratio of carrier power to noise power in the carrier bandwidth.

Example

```
:RAD:MTON:ARB:NOIS:CNF EBNO
```

The preceding example sets the carrier to noise ratio format to E_bN_o.

Default Carrier to Noise Ratio Format C/N

Key Entry **Carrier to Noise Ratio Format C/N E_b/N_o**

Key Path **Mode > Multitone > More 2 of 2 > ARB Setup > Real-Time AWGN Setup > Carrier to Noise Ratio Format C/N E_b/N_o**

:NOISe:EBNO

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:MTONE:ARB:NOISe:EBNO <ebno in dB>
[:SOURce]:RADio:MTONE:ARB:NOISe:EBNO?
```

This command allows the C/N to be set using the E_b/N_0 (energy per bit over noise power density at the receiver) form. This requires that the carrier bit rate (:NOISe:CBRate on page 334) be set properly. The range of E_b/N_0 is limited to the range that is equivalent to –100 to 100 dB of C/N. This value is only effective when E_b/N_0 has been enabled by the :NOISe:CNFormat command.

The query returns the value of E_b/N_0.

Default 0 dB

Range –100 to 100 dB

Key Entry **Carrier to Noise Ratio Format E_b/N_o**

Key Path **Mode > Multitone > More 2 of 2 > Arb Setup > Real-Time AWGN Setup > Carrier to Noise Ratio Format C/N E_b/N_o**

:NOISe:MUX

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio[1]:MTONe:ARB:NOISe:MUX SUM|CARRier|NOISe
[:SOURce]:RADio[1]:MTONe:ARB:NOISe:MUX?
```

This command enables diagnostic control of additive noise, such that only the noise, only the carrier, or the sum of both the noise and the carrier are output from the internal baseband generator. With the ALC off, this feature enables direct measurement of just the carrier or the noise contributions to the total power. The system will still behave as if both the noise and the carrier are present on the output when it comes to determining the Auto Modulation Attenuation and the RMS level for RMS Power Search.

Example

```
:RAD:MTON:ARB:NOIS:MUX CARR
```

The preceding example enables the direct measurement of the carrier contribution to the total power.

Default Carrier+Noise

Key Entry **Carrier+Noise | Carrier | Noise**

Key Path **Mode > Multitone > More 2 of 2 > Arb Setup > Real-Time AWGN Setup > More 2 of 2 > Output Mux (Carrier+Noise)**

:NOISe:POWer:CARRier

Supported N5162A/82A with Option 651, 652, 654

```
[:SOURce]:RADio:MTONe:ARB:NOISe:POWer:CARRier <carrierPower>
[:SOURce]:RADio:MTONe:ARB:NOISe:POWer:CARRier?
```

This command sets the current carrier power level if noise is on.

In the CARRier control mode, the total power will be adjusted to achieve the specified carrier power and the carrier power level will be maintained regardless of changes to the other noise parameters. A change to the total power will change the carrier power setting appropriately to maintain the C/N ratio.

In the TOTal control mode, this will adjust the total power once for the specified carrier power level, after which the carrier power could change if any noise parameters are adjusted or the total power is adjusted.

In the NOISe control mode, this will adjust the total noise power once for the specified carrier power level, after which the carrier power could change if any noise parameters are adjusted or the total noise power is adjusted. See also :NOISe:POWer:CONTrol[:MODE] and :NOISe:POWer:NOISe:TOTal commands.

Range The range varies based on the bounds of the total power that results from the noise settings.

Default The appropriate value given the current total power and the current Carrier to Noise (C/N).

Key Entry **Carrier Power**

Key Path **Mode > Multitone > More 2 of 2 > ARB Setup > Real-Time AWGN Setup > Power Control Mode (Total) > Carrier > Carrier Power**

:NOISe:POWer:CONTrol[:MODE]

Supported N5162A/82A with Option 651, 652, 654

```
[:SOURce]:RADio:MTONe:ARB:NOISe:POWer:CONTrol[:MODE] {TOTal}|CARRier|NOISe
[:SOURce]:RADio:MTONe:ARB:NOISe:POWer:CONTrol[:MODE]?
```

This command sets the power control to one of the three following modes:

Total — This is the default mode where the total power and C/N are independent variables and the carrier power and total noise power are dependent variables set by the total power, C/N and the rest of the noise settings. The carrier power and total noise power will change as any noise parameter is adjusted to keep the total power and the C/N at their last specified values.

Carrier — In this mode the carrier power and C/N are independent variables and the total power and total noise power are dependent variables set by the carrier power, C/N and the rest of the noise settings. The total power and total noise power will change as any noise parameter is adjusted to keep the carrier power and the C/N at their last specified values.

Total Noise — In this mode the total noise power and C/N are independent variables and the total power and carrier power are dependent variables set by the total noise power, C/N and the rest of the noise settings. The total power and carrier power will change as any noise parameter is adjusted to keep the total noise power and the C/N at their last specified values.

Default Total

Key Entry **Total Carrier Total Noise**

Key Path **Mode > Multitone > More 2 of 2 > ARB Setup > Real-Time AWGN Setup > Power Control Mode (Total) > Total | Carrier | Total Noise**

:NOISe:POWer:NOISe:CHANnel?

Supported N5162A/82A with Option 651, 652, 654

```
[:SOURce]:RADio:MTONe:ARB:NOISe:POWer:NOISe:CHANnel?
```

The query returns the current noise power across the carrier bandwidth in dBm.

:NOISe:POWer:NOISe:TOTal

Supported N5162A/82A with Option 651, 652, 654

```
[:SOURce]:RADio:MTONe:ARB:NOISe:POWer:NOISe:TOTal <totalNoisePowerInDbm>
[:SOURce]:RADio:MTONe:ARB:NOISe:POWer:NOISe:TOTal?
```

This command sets the current total noise power level if noise is on.

In the NOISe control mode, the total power will be adjusted to achieve the specified total noise power and the total noise power level will be maintained regardless of changes to the other noise parameters. A change to the total power will change the total noise power setting appropriately to maintain the C/N ratio.

In the TOTal control mode, this will adjust the total power once for the specified total noise power level, after which the total noise power could change if any noise parameters are adjusted or the

total power is adjusted.

In the CARRier control mode, this will adjust the carrier power once for the specified total noise power level, after which the total noise power could change if any noise parameters are adjusted or the carrier power is adjusted. See also :NOISe:POWer:CONTrol[:MODE] command.

Range The range varies based on the bounds of the total power that results from the noise settings.

Default The appropriate value given the current total power and the current Carrier to Noise (C/N).

Key Entry **Total Noise Power**

Key Path **Mode > Multitone > More 2 of 2 > ARB Setup > Real-Time AWGN Setup > Power Control Mode (Total) > Total Noise > Total Noise Power**

:NOISe[:STATe]

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:MTONe:ARB:NOISe[:STATe] ON|OFF|1|0
[:SOURce]:RADio:MTONe:ARB:NOISe[:STATe]?
```

This command enables the Multi-Tone modulation mode.

To configure the AWGN, refer to the following sections located in the multitone subsystem:

- To set the AWGN noise bandwidth, refer to ":NOISe:BANDwidth" on page 334.
- To set the bandwidth over which the noise power is integrated for calculating the carrier to noise ratio, refer to":NOISe:CBWidth" on page 335.
- To set the carrier to noise ratio as the active function, refer to ":NOISe:CN" on page 335.

***RST** Off

Key Entry **Real-Time AWGN Off On**

Key Path **Mode > Multitone > More 2 of 2 > ARB Setup > Real-Time AWGN Setup > Real-Time AWGN Off On**

:PHASe:NOISe:F1

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:MTONe:ARB:PHASe:NOISe:F1 <value><unit>
[:SOURce]:RADio:MTONe:ARB:PHASe:NOISe:F1?
```

This command sets the start frequency value of the flat area for the phase noise impairment.

Ensure that this value is less than or equal to the stop frequency value (see :PHASe:NOISe:F2). If the value is set greater than the stop frequency value, the signal generator resets the stop value to equal the start value.

The actual value may vary logarithmically depending on the value of the stop frequency. This behavior is more noticeable at higher frequency values. For more information, see the *User's Guide*.

***RST** +1.00000000E+003

Range 0 Hz to 48.43782781 MHz

Key Entry **Desired Start Freq (f1)**

Key Path **Mode > Multitone > More 2 of 2 > ARB Setup > Real–Time Phase Noise Setup > Desired Start Freq (f1)**

:PHASe:NOISe:F2

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:MTONe:ARB:PHASe:NOISe:F2 <value><unit>
[:SOURce]:RADio:MTONe:ARB:PHASe:NOISe:F2?
```

This command sets the stop frequency value of the flat area for the phase noise impairment.

Ensure that this value is less than or equal to the stop frequency value (see the :PHASe:NOISe:F1 command). If the value is set less than the start frequency value, the signal generator resets the start value to equal the stop value.

The actual value may vary logarithmically, which is more noticeable at higher frequency offset values. For more information, see the *User's Guide*.

***RST** +3.00000000E+004

Range 1 Hz to 48.43782781 MHz

Key Entry **Desired Stop Freq (f2)**

Key Path **Mode > Multitone > More 2 of 2 > ARB Setup > Real–Time Phase Noise Setup > Desired Start Freq (f2)**

:PHASe:NOISe:LMID

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:MTONe:ARB:PHASe:NOISe:LMID <value>
[:SOURce]:RADio:MTONe:ARB:PHASe:NOISe:LMID?
```

This command sets the level amplitude of the flat area for the phase noise impairment. This phase noise is added to the base phase noise of the signal generator.

The signal generator has an automatic DAC over-range protection feature that is always on for this subsystem.

For more information on the phase noise impairment option, see the *User's Guide*.

NOTE The amplitude range varies depending on the f2 value (":PHASe:NOISe:F2" on page 340). As f2 increases in value, the range for Lmid decreases. If the current Lmid setting is too high for the new f2 value, the signal generator changes the Lmid value and generates an error.

The range values are expressed in units of dBc/Hz.

***RST** –7.00000000E+001

Range –300 to 100

Key Entry **Desired Flat Amplitude (Lmid)**

Key Path **Mode > Multitone > More 2 of 2 > ARB Setup > Real–Time Phase Noise Setup > Desired Flat Amplitude (Lmid)**

:PHASe:NOISe[:STATe]

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:MTONe:ARB:PHASe:NOISe[:STATe] ON|OFF|1|0
[:SOURce]:RADio:MTONe:ARB:PHASe:NOISe[:STATe]?
```

This command turns the phase noise impairment on or off. For more information on the phase noise impairment option, see the *User's Guide*.

***RST** 0

Key Entry **Phase Noise Off On**

Key Path **Mode > Multitone > More 2 of 2 > ARB Setup > Real–Time Phase Noise Setup > Phase Noise Off On**

:REFerence:EXTernal:FREQuency

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:MTONe:ARB:REFerence:EXTernal:FREQuency <val>
[:SOURce]:RADio:MTONe:ARB:REFerence:EXTernal:FREQuency?
```

This command allows you to enter the frequency of the applied external reference.

The variable <val> is expressed in units of Hertz (Hz–MHz).

***RST** +1.00000000E+007

Range 2.5E5 to 1E8

Key Entry **Reference Freq**

Remarks The value specified by this command is effective only when you are using an external ARB reference applied to the BASEBAND GEN REF IN rear panel connector.

To specify external as the ARB reference source type, refer to ":REFerence[:SOURce]" on page 342.

:REFerence[:SOURce]

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:MTONe:ARB:REFerence[:SOURce] INTernal|EXTernal
[:SOURce]:RADio:MTONe:ARB:REFerence[:SOURce]?
```

This command selects either an internal or external reference for the waveform clock.

***RST** INT

Key Entry **ARB Reference Ext Int**

Remarks If the EXTernal choice is selected, the external frequency *value must* be entered and the signal must be applied to the BASEBAND GEN REF IN rear panel connector.

To enter the external reference frequency, refer to ":REFerence:EXTernal:FREQuency" on page 341.

:SCLock:RATE

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:MTONe:ARB:SCLock:RATE <val>
[:SOURce]:RADio:MTONe:ARB:SCLock:RATE?
```

This command sets the sample clock rate for the multitone modulation format.

The variable <val> is expressed in units of hertz.

***RST** +1.25000000E+008

Range 1E3 to 1.25E8

Key Entry **ARB Sample Clock**

Key Path **Mode** > **Multitone** > **More 2 of 2** > **ARB Setup** > **ARB Sample Clock**

Remarks The modulation format should be active before executing this command. If this command is executed before the modulation format is active, the entered value will be overridden by a calculated factory default value. To activate the modulation format, refer to "[:STATe]" on page 347.

:SETup

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:MTONe:ARB:SETup "<file name>"
[:SOURce]:RADio:MTONe:ARB:SETup?
```

This command retrieves a multitone waveform file.

Key Entry **Load From Selected File**

Key Path **Mode** > **Multitone** > **Load/Store** > **Load From Selected File**

Remarks The name of a multitone waveform file is stored in the signal generator file system of MTONE files. This information is held in memory until you send the command that turns the waveform on.

For information on the file name syntax, refer to "File Name Variables" on page 13.

:SETup:STORe

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:MTONe:ARB:SETup:STORe "<file name>"
```

This command stores the current multitone waveform setup in the signal generator file system of MTONE files.

Key Entry **Store To File**

Key Path **Mode** > **Multitone** > **Load/Store** > **Store To File**

:SETup:TABLe

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe <freq_spacing>,
<num_tones>,{<phase>,<state>}
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe?
```

This command creates and configures a multitone waveform.

The frequency offset, power, phase, and state value are returned when a query is initiated. The output format is as follows:

```
<frequency offset>,<power>,<phase>,<state>
```

The variable <freq_spacing> is expressed in units of Hertz (Hz–MHz).

The variable <power> is expressed in units of decibels (dB).

*RST	Tone	<frequency offset>	<power>	<phase>	<state>
	Tone 1	-35000	+0.00000000E+000	+0	+1
	Tone 2	-25000	+0.00000000E+000	+0	+1
	Tone 3	-15000	+0.00000000E+000	+0	+1
	Tone 4	-5000	+0.00000000E+000	+0	+1
	Tone 5	+5000	+0.00000000E+000	+0	+1

*RST	Tone	<frequency offset>	<power>	<phase>	<state>
	Tone 6	+15000	+0.00000000E+000	+0	+1
	Tone 7	+25000	+0.00000000E+000	+0	+1
	Tone 8	+35000	+0.00000000E+000	+0	+1

Range <*freq_spacing*> (2 tones): 1E1–1E8 <*num_tones*>: 2–64

<*freq_spacing*> (>2 tones): 1E1 to (100 MHz ÷ (num_tones – 1))

<*phase*>: 0–359

Key Entry **Freq Spacing** **Number Of Tones** **Toggle State**

Key Path **Mode** > **Multitone** > **Initialize Table** > <**Number of Tones** or **Freq Spacing**>

NOTE The **Toggle State** softkey has a different softkey path but the same SCPI command when *initializing* the Multitone table (For the softkey path, refer to ":SETup:TABLe:ROW" on page 346).

Remarks To set the frequency spacing, refer to ":SETup:TABLe:FSPacing" on page 344.

:SETup:TABLe:FSPacing

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:FSPacing <freq_spacing>
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:FSPacing?
```

This command sets the frequency spacing between the tones.

The variable <freq_spacing> is expressed in units of Hertz (Hz–MHz).

***RST** +1.00000000E+004

Range <*freq_spacing*> (2 tones): 1E1–1E8

<*freq_spacing*> (>2 tones): 1E1 to (100 MHz ÷ (num_tones – 1))

Key Entry **Freq Spacing**

Key Path **Mode** > **Multitone** > **Initialize Table** > **Freq Spacing**

Remarks To set frequency spacing and additional parameters required to create or configure a multitone waveform, refer to ":SETup:TABLe" on page 343.

This command is the second step in creating a multitone waveform. Refer to "Creating a Multitone Waveform" on page 329 for all four steps.

:SETup:TABLe:NTONes

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:NTONes <num_tones>
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:NTONes?
```

This command defines the number of tones in the multitone waveform.

***RST** +8

Range 2 to 64

Key Entry **Number Of Tones**

Key Path **Mode** > **Multitone** > **Initialize Table** > **Number Of Tones**

Remarks To specify the number of tones and additional parameters required to create or configure a multitone waveform, refer to ":SETup:TABLe" on page 343.

This command is the third step in creating a multitone waveform. Refer to "Creating a Multitone Waveform" on page 329 for all four steps.

:SETup:TABLe:PHASe:INITialize

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:PHASe:INITialize FIXed|RANDom
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:PHASe:INITialize?
```

This command initializes the phase in the multitone waveform table.

FIXed This choice sets the phase of all tones to the fixed value of 0 degrees.

RANDom This choice sets the phase of all tones to random values based on the setting on the random seed generator.

***RST** FIX

Key Entry **Initialize Phase Fixed Random**

Key Path **Mode** > **Multitone** > **Initialize Table** > **Initialize Phase Fixed Random**

Remarks To change the random number generator seed value, refer to ":SETup:TABLe:PHASe:INITialize:SEED" on page 345.

This command is the first step in creating a multitone waveform. Refer to "Creating a Multitone Waveform" on page 329 for all four steps.

:SETup:TABLe:PHASe:INITialize:SEED

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:PHASe:INITialize:SEED FIXed|RANDom
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:PHASe:INITialize:SEED?
```

This command initializes the random number generator seed that is used to generate the random phase values for the multitone waveform.

FIXed This choice sets the random number generator seed to a fixed value.

RANDom This choice sets the random number generator seed to a random value. This changes the phase value after each initialization of the phase.

***RST** FIX

Key Entry **Random Seed Fixed Random**

Key Path **Mode** > **Multitone** > **Initialize Table** > **More 2 of 2** > **Random Seed Fixed Random**

:SETup:TABLe:ROW

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:ROW <row_number>,<power>,
<phase>,<state>
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:ROW? <row_number>
```

This command modifies the indicated tone (row) of the multitone waveform.

<row_number> The number of rows for this variable is determined by the :SETup:TABLe command.

<power> The power level of the tone defined in the row number. Power levels for all tones must not exceed the power level of the signal generator. The power variable is expressed in decibels (dB)

<phase> The phase of the tone relative to the carrier. The phase variable is expressed in degrees.

<state> The state of the tone in this row can be enabled or disabled.

Frequency offset, power, phase, and state value are returned when a query is initiated. The output format is as follows:
`<frequency_offset>,<power>,<phase>,<state>`

Refer to ":SETup:TABLe" on page 343 for information on how to change the number of rows. This command is the final step in creating a multitone waveform. Refer to "Creating a Multitone Waveform" on page 329 for all four steps.

Example

```
:RAD:MTON:ARB:SET:TABL:ROW 2,-10,40,0
```

The preceding example modifies row number two in the currently selected multitone table. The power is set to –10 dB, the phase is set to 40 degrees, and the state is off.

***RST** *frequency offset*: –3.50000000E+004 <*power*>: +0.00000000E+000
<*phase*>: +0.00000000E+000 <*state*>: 1

Range *frequency offset*: –4E7 to 4E7 <*power*>: –80 to 0 <*phase*>: 0–359
<*state*>: 1

Key Entry **Goto Row** **Edit Item** **Toggle State**

Key Path **Mode** > **Multitone** > **Edit Table** > <**Goto Row**, **Edit Item**, or **Toggle State**>

[:STATe]

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:MTONe:ARB[:STATe] ON|OFF|1|0
[:SOURce]:RADio:MTONe:ARB[:STATe]?
```

This command enables or disables the multitone waveform generator function.

***RST** 0

Key Entry **Multitone Off On**

Key Path **Mode** > **Multitone**

Two Tone Subsystem–Option 651/652 /654 ([:SOURce]:RADio:TTONe:ARB)

:ALIGnment

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:TTONe:ARB:ALIGnment LEFT|CENTer|RIGHt
[:SOURce]:RADio:TTONe:ARB:ALIGnment?
```

This command will align the two tones either left, center or right of the carrier frequency.

Example

```
:RAD:TTON:ARB:ALIG CENT
```

The preceding example aligns each of the two tones equidistant from the carrier frequency.

Key Entry **Alignment Left Cent Right**

Key Path **Mode** > **Two Tone** > **Alignment Left Cent Right**

:APPly

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:TTONe:ARB:APPLy
```

This command will cause the two–tone waveform to be regenerated using the current settings.

This command has no effect unless the two–tone waveform generator is enabled and a change has been made to the frequency spacing setting.

Key Entry **Apply Settings**

:BASEband:FREQuency:OFFSet

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:TTONe:ARB:BASeband:FREQuency:OFFSet <val><unit>
[:SOURce]:RADio:TTONe:ARB:BASeband:FREQuency:OFFSet?
```

This command offsets the baseband frequency relative to the carrier. The feature is useful for moving the signal such that the carrier feed–through is not in the center.

The Agilent MXG provides automatic DAC over–range protection when the offset value is something other than 0 Hz. It scales down the playing I/Q data by *1/square root of 2*.

***RST** 0 Hz

Range +5.0E7 to –5.0E7 MHz

Key Entry **Baseband Frequency Offset**

Key Path **Mode** > **Two Tone** > **ARB Setup** > **More 2 of 2** > **Baseband Frequency Offset**

:BASeband:FREQuency:OFFSet:PHASe:RESet

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:TTONe:ARB:BASeband:FREQuency:OFFSet:PHASe:RESet
```

This command clears the phase accumulation and so zero phase shift.

When the Baseband Frequency Offset is non–zero, the hardware rotator accumulates phase–shift of the baseband signal. This residual phase remains even after the offset value is returned to zero. While there is a non–zero residual phase present in the signal, the DAC Over–Range Protection feature will automatically prevent DAC overrange errors from occurring by scaling the signal down by *1/square root of 2*.

Key Entry **Baseband Frequency Offset Phase Reset**

Key Path **Mode** > **Two–Tone** > **ARB Setup** > **More 2 of 2** > **Baseband Frequency Offset Phase Reset**

:FSPacing

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:TTONe:ARB:FSPacing <freq_spacing>
[:SOURce]:RADio:TTONe:ARB:FSPacing?
```

This command sets the frequency spacing between the tones.

The variable <freq_spacing> is expressed in hertz (Hz–MHz).

Example

```
:RAD:TTON:ARB:FSP 10MHZ
```

The preceding example sets a 10 megahertz frequency spacing for the two tones.

***RST** +1.00000000E+004

Range 1E1 to 1E8

Key Entry **Freq Separation**

Key Path **Mode** > **Two Tone** > **Freq Separation**

:HEADer:CLEar

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:TTONe:ARB:HEADer:CLEar
```

This command clears the header information from the header file used for the two–tone waveform format. Header information consists of signal generator settings and marker routings associated with the waveform file. Refer to the *User's Guide* for information on file headers.

For this command to function, two tone must be on. To turn two tone on, see "[:STATe]" on page 363.

Key Entry **Clear Header**

Key Path **Mode** > **Two Tone** > **More 2 of 2** > **Header Utilities** > **Clear Header**

:HEADer:SAVE

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:TTONe:ARB:HEADer:SAVE
```

This command saves the header information to the header file used for the two–tone waveform format. Header information consists of signal generator settings and marker routings associated with the waveform file. Refer to the *User's Guide* for information on header files.

For this command to function, two tone must be on. To turn two tone on, see "[:STATe]" on page 363.

Key Entry **Save Setup To Header**

Key Path **Mode** > **Two-Tone** > **More 2 of 2** > **Header Utilities** > **Save Setup To Header**

:IQ:MODulation:ATTen

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:TTONe:ARB:IQ:MODulation:ATTen <val><unit>
[:SOURce]:RADio:TTONe:ARB:IQ:MODulation:ATTen?
```

This command sets the attenuation level of the I/Q signals being modulated through the signal generator RF path. The variable <val> is expressed in decibels (dB).

Example

```
:RAD:TTON:ARB:IQ:MOD:ATT 20
```

The preceding example sets the modulator attenuator to 20 dB.

***RST** +2.00000000E+000

Range 0 to 50 dB

Key Entry **Modulator Atten Manual Auto**

Key Path **Mode** > **Two-Tone** > **ARB Setup** > **Modulator Atten Manual Auto**

:IQ:MODulation:ATTen:AUTO

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:TTONe:ARB:IQ:MODulation:ATTen:AUTO ON|OFF|1|0
[:SOURce]:RADio:TTONe:ARB:IQ:MODulation:ATTen:AUTO?
```

This command enables or disables the modulator attenuator auto mode. The auto mode will be switched to manual if the signal generator receives an AUTO OFF or AUTO ON command.

ON (1) This choice enables the attenuation auto mode which allows the signal generator to select the attenuation level that optimizes performance based on the current conditions.

OFF (0) This choice holds the attenuator at its current setting or at a selected value. For setting the attenuation value, refer to ":IQ:MODulation:ATTen" on page 331.

Example

```
:RAD:TTON:ARB:IQ:MOD:ATT:AUTO ON
```

The preceding example enables the attenuator automatic mode.

***RST** 1

Key Entry **Modulator Atten Manual Auto**

Key Path **Mode > Two-Tone > ARB Setup > Modulator Atten Manual Auto**

:MDEStination:ALCHold

Supported N5162A/82A with Option 651, 652, or 654

CAUTION Incorrect ALC sampling can create a sudden unleveled condition that may create a spike in the RF output potentially damaging a DUT or connected instrument. Ensure that you set markers to let the ALC sample over an amplitude that accounts for the high power levels within the signal.

```
[:SOURce]:RADio:TTONe:ARB:MDEStination:ALCHold NONE|M1|M2|M3|M4
[:SOURce]:RADio:TTONe:ARB:MDEStination:ALCHold?
```

This command disables the marker ALC hold function, or it enables the marker hold function for the selected marker.

Use the ALC hold function when you have a waveform signal that incorporates idle periods, or when the increased dynamic range encountered with RF blanking is not desired. The ALC circuitry responds to the marker signal during the marker pulse (marker signal high), averaging the modulated signal level during this period.

The ALC hold function operates during the low periods of the marker signal. The marker polarity determines when the marker signal is high. For a positive polarity, this is during the marker points. For a negative polarity, this is when there are no marker points. To set a marker's polarity, see ":MPOLarity:MARKer1|2|3|4" on page 353. For more information on markers, see ":MARKer[:SET]" on page 300.

NOTE Do not use the ALC hold for more than 100 ms, because it can affect the waveform's output amplitude.

The marker signal has a minimum of a two–sample delay in its response relative to the waveform signal response. To compensate for the marker signal delay, offset marker points from the waveform sample point at which you want the ALC sampling to begin.

The ALC hold setting is part of the file header information, so saving the setting to the file header saves the current marker routing for the waveform file.

NOTE A waveform file that has unspecified settings in the file header uses the previous waveform's routing settings.

For more information on the marker ALC hold function, see the *User's Guide*. To configure marker points, refer to the following sections located in the Dual ARB subsystem:

- For clearing a single marker point or a range of marker points, see":MARKer:CLEar" on page 298.
- For clearing all marker points, see ":MARKer:CLEar:ALL" on page 299.
- For shifting marker points, see ":MARKer:ROTate" on page 299.
- For setting marker points, see ":MARKer[:SET]" on page 300.

NONE This terminates the marker ALC hold function.

M1–M4 These are the marker choices. The ALC hold feature uses only one marker at a time.

Example

```
:RAD:TTON:ARB:MDES:ALCH M2
```

The preceding example routes marker two to the ALC hold function.

***RST** NONE

Key Entry **None** **Marker 1** **Marker 2** **Marker 3** **Marker 4**

Key Path **Mode** > **Two Tone** > **More 2 of 2** > **Marker Utilities** > **Marker Routing** > **ALC Hold** > <**Marker 1**, ... or **Marker 4**>

:MDEStination:PULSe

Supported N5162A/82A with Option 651, 652, or 654

CAUTION The pulse function incorporates ALC hold. Incorrect ALC sampling can create a sudden unleveled condition that may create a spike in the RF output, potentially damaging a DUT or connected instrument. Ensure that you set markers to let the ALC sample over an amplitude that accounts for the high power levels within the signal.

```
[:SOURce]:RADio:TTONe:ARB:MDEStination:PULSe NONE|M1|M2|M3|M4
[:SOURce]:RADio:TTONe:ARB:MDEStination:PULSe?
```

This command disables the marker RF blanking/pulse function, or it enables the marker RF blanking/pulse function for the selected marker.

This function automatically incorporates the ALC hold function, so there is no need to select both functions for the same marker.

NOTE Do not use ALC hold for more than 100 ms, because it can affect the waveform's output amplitude.

The signal generator blanks the RF output when the marker signal goes low. The marker polarity determines when the marker signal is low. For a positive polarity, this is during the marker points. For a negative polarity, this is when there are no marker points. To set a marker's polarity, see ":MPOLarity:MARKer1|2|3|4" on page 353. For more information on markers, see ":MARKer[:SET]" on page 300.

NOTE Set marker points prior to using this function. Enabling this function without setting marker points may create a continuous low or high marker signal, depending on the marker polarity. This creates the condition where there is either no RF output or a continuous RF output.

To configure marker points, refer to the following sections located in the Dual ARB subsystem:

- For clearing a single marker point or a range of marker points, see":MARKer:CLEar" on page 298.
- For clearing all marker points, see ":MARKer:CLEar:ALL" on page 299.
- For shifting marker points, see ":MARKer:ROTate" on page 299.

- For setting marker points, see ":MARKer[:SET]" on page 300.

The marker signal has a minimum of a two–sample delay in its response relative to the waveform signal response. To compensate for the marker signal delay, offset marker points from the waveform sample point at which you want the RF blanking to begin.

The RF blanking setting is part of the file header information, so saving the setting to the file header saves the current marker routing for the waveform file.

NOTE A waveform file that has unspecified settings in the file header uses the previous waveform's routing settings. This could create the situation where there is no RF output signal, because the previous waveform used RF blanking

For more information on the marker RF blanking function, see the *User's Guide*.

NONE — This terminates the marker RF blanking/pulse function.

M1–M4 — These are the marker choices. The RF blanking/pulse feature uses only one marker at a time.

Example

```
:RAD:TTON:ARB:MDES:ALCH M3
```

The preceding example routes marker three to the Pulse/RF Blanking function.

***RST** NONE

Key Entry **None** **Marker 1** **Marker 2** **Marker 3** **Marker 4**

Key Path **Mode** > **Two Tone** > **More 2 of 2** > **Marker Utilities** > **Marker Routing** > **Pulse/RF Blank** > <**Marker 1**, ... or **Marker 4**>

:MPOLarity:MARKer1|2|3|4

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:TTONe:ARB:MPOLarity:MARKer1|2|3|4 NEGative|POSitive
[:SOURce]:RADio:TTONe:ARB:MPOLarity:MARKer1|2|3|4?
```

This command sets the polarity for the selected marker.

For a positive marker polarity, the marker signal is high during the marker points. For a negative marker polarity, the marker signal is high during the period of no marker points. To configure marker points, refer to the following sections located in the Dual ARB subsystem:

- For clearing a single marker point or a range of marker points, see":MARKer:CLEar" on page 298.
- For clearing all marker points, see ":MARKer:CLEar:ALL" on page 299.
- For shifting marker points, see ":MARKer:ROTate" on page 299.
- For information on markers and setting marker points, see ":MARKer[:SET]" on page 300.

Example

```
:RAD:TTON:ARB:MPOL:MARK1 POS
```

The preceding example sets the polarity for marker one to positive.

***RST** POS

Key Entry **Marker 1 Polarity Neg Pos** **Marker 2 Polarity Neg Pos** **Marker 3 Polarity Neg Pos** **Marker 4 Polarity Neg Pos**

Key Path **Mode** > **Tow-Tone** > **More 2 of 2** > **Marker Utilities** > **Marker Polarity** > **Pulse/RF Blank** > <**Marker 1 Polarity Neg Pos**, ... or **Marker 4 Polarity Neg Pos**>

:NOISe:BANDwidth

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:TTONe:ARB:NOISe:BANDwidth <val><unit>
[:SOURce]:RADio:TTONe:ARB:NOISe:BANDwidth?
```

This command sets the flat noise bandwidth value for the two-tone waveform. This value is typically set wider than the carrier bandwidth.

To configure the AWGN, refer to the following sections located in the Two Tone subsystem:

- To set the bandwidth over which the noise power is integrated for calculating the carrier to noise ratio, refer to":NOISe:CBWidth" on page 355.
- To set the carrier to noise ratio as the active function, refer to ":NOISe:CN" on page 355.
- To enable the AWGN, refer to ":NOISe[:STATe]" on page 359.

Range

Option 651	1 Hz to 24 MHz
Option 652	1 Hz to 48 MHz
Option 654	1 Hz to 100 MHz

***RST** +1.00000000E+000

Key Entry **Noise Bandwidth**

Key Path **Mode** > **Two-Tone** > **ARB Setup** > **Real-Time AWGN Setup** > **More 2 of 2** > **Noise Bandwidth**

:NOISe:CBRate

Supported N5162A/82A with Option 651, 652, 654

```
[:SOURce]:RADio:TTONe:ARB:NOISe:CBRate <1bps - 999Mbps>
[:SOURce]:RADio:TTONe:ARB:NOISe:CBRate?
```

This command sets a value of the carrier bit rate (gross bit rate) for purposes of calculating the E_b/N_0 (energy per bit over noise power density at the receiver). When the carrier to noise ratio format is set to E_b/N_0 (refer to the :NOISe:CNFormat command), the adjustment of the carrier bit rate will have an immediate impact on the carrier to noise ratio as specified by E_b/N_0. The carrier bit rate is derived from the symbol rate and bits per symbol of the modulation. The carrier bit rate is a saved instrument state that is recorded in the waveform header.

The query returns the current carrier bit rate setting.

Example

```
:RAD:TTON:ARB:NOIS:CBR 5
```

The preceding example sets the carrier bit rate to 5 bps.

Default 1.000 bps

Range 1 bps to 999 Mbps

Key Entry **Carrier Bit Rate**

Key Path **Mode** > **Two-Tone** > **ARB Setup** > **Real-Time AWGN Setup** > **Carrier to Noise Ratio Format E_bN_o** > **More 2 of 2** > **Carrier Bit Rate**

:NOISe:CBWidth

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:TTONe:ARB:NOISe:CBWidth <val><unit>
[:SOURce]:RADio:TTONe:ARB:NOISe:CBWidth?
```

This command selects the carrier bandwidth over which the AWGN (additive white gaussian noise) is applied. The noise power will be integrated over the selected bandwidth for the purposes of calculating C/N (carrier to noise ratio). The carrier bandwidth is limited to the ARB sample rate but cannot exceed 125 MHz. For more information refer to ":NOISe[:STATe]" on page 359.

To configure the AWGN, refer to the following sections located in the Two Tone subsystem:

- To set the AWGN noise bandwidth, refer to ":NOISe:BANDwidth" on page 354.
- To set the carrier to noise ratio as the active function, refer to ":NOISe:CN" on page 355.
- To enable the AWGN, refer to ":NOISe[:STATe]" on page 359.

Range 1 Hz to 125 MHz (Minimum increment is .001 MHz)

***RST** +1.00000000E+000

Key Entry **Carrier Bandwidth**

Key Path **Mode** > **Two-Tone** > **ARB Setup** > **Real-Time AWGN Setup** > **More 2 of 2** > **Carrier Bandwidth**

:NOISe:CN

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:TTONe:ARB:NOISe:CN <val><unit>
```

```
[:SOURce]:RADio:TTONe:ARB:NOISe:CN?
```

This command makes Carrier to Noise Ratio the active function. The value you enter sets noise power as a ratio of carrier power to noise power (C/N). Carrier power equals the total modulated signal power before noise is added. When you add noise, the power output from the signal generator does not change; it is the sum of carrier power and the added noise power. You can apply noise in real time while the waveform is playing.

To configure the AWGN, refer to the following sections located in the Two Tone subsystem:

- To set the AWGN noise bandwidth, refer to ":NOISe:BANDwidth" on page 354.
- To set the bandwidth over which the noise power is integrated for calculating the carrier to noise ratio, refer to":NOISe:CBWidth" on page 355.
- To enable the AWGN, refer to ":NOISe[:STATe]" on page 359.

***RST** +0.00000000E+000

Key Entry **Carrier to Noise Ratio**

Key Path **Mode > Two-Tone > ARB Setup > Real-Time AWGN Setup > Carrier to Noise Ratio**

:NOISe:CNFormat

Supported N5162A/82A with Option 651, 652, 654

```
[:SOURce]:RADio:TTONe:ARB:NOISe:CNFormat CN|EBNO
[:SOURce]:RADio:TTONe:ARB:NOISe:CNFormat?
```

This command selects either the Carrier to Noise Ratio (C/N) or energy per bit over noise power density at the receiver (E_b/N_0) as the variable controlling the ratio of carrier power to noise power in the carrier bandwidth.

Example

```
:RAD:TTON:ARB:NOIS:CNF EBNO
```

The preceding example sets the carrier to noise ratio format to E_bN_o.

Default Carrier to Noise Ratio Format C/N

Key Entry **Carrier to Noise Ratio Format C/N E_b/N_o**

Key Path **Mode > Two-Tone > ARB Setup > Real-Time AWGN Setup > Carrier to Noise Ratio Format C/N E_b/N_o**

:NOISe:EBNO

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio:TTONE:ARB:NOISe:EBNO <ebno in dB>
[:SOURce]:RADio:TTONE:ARB:NOISe:EBNO?
```

This command allows the C/N to be set using the E_b/N_0 (energy per bit over noise power density at the receiver) form. This requires that the carrier bit rate (:NOISe:CBRate on page 354) be set properly. The range of E_b/N_0 is limited to the range that is equivalent to –100 to 100 dB of C/N. This value is only effective when E_b/N_0 has been enabled by the :NOISe:CNFormat command.

The query returns the value of EBNO.

Default 0 dB

Range –100 to 100 dB

Key Entry **Carrier to Noise Ratio Format E_b/N_o**

Key Path **Mode > Two-Tone > Arb Setup > Real-Time AWGN Setup > Carrier to Noise Ratio Format C/N E_b/N_o**

:NOISe:MUX

Supported N5162A/82A with Option 432

```
[:SOURce]:RADio[1]:TTONe:ARB:NOISe:MUX SUM|CARRier|NOISe
[:SOURce]:RADio[1]:TTONe:ARB:NOISe:MUX?
```

This command enables diagnostic control of additive noise, such that only the noise, only the carrier, or the sum of both the noise and the carrier are output from the internal baseband generator. With the ALC off, this feature enables direct measurement of just the carrier or the noise contributions to the total power. The system will still behave as if both the noise and the carrier are present on the output when it comes to determining the Auto Modulation Attenuation and the RMS level for RMS Power Search.

Example

```
:RAD:TTON:ARB:NOIS:MUX CARR
```

The preceding example enables the direct measurement of the carrier contribution to the total power.

Default Carrier+Noise

Key Entry **Carrier+Noise | Carrier | Noise**

Key Path **Mode > Two-Tone > Arb Setup > Real-Time AWGN Setup > More 2 of 2 > Output Mux (Carrier+Noise)**

:NOISe:POWer:CARRier

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:TTONe:ARB:NOISe:POWer:CARRier <carrierPower>
[:SOURce]:RADio:TTONe:ARB:NOISe:POWer:CARRier?
```

This command sets the current carrier power level if noise is on.

In the CARRier control mode, the total power will be adjusted to achieve the specified carrier power and the carrier power level will be maintained regardless of changes to the other noise parameters. A change to the total power will change the carrier power setting appropriately to maintain the C/N ratio.

In the TOTal control mode, this will adjust the total power once for the specified carrier power level, after which the carrier power could change if any noise parameters are adjusted or the total power is adjusted.

In the NOISe control mode, this will adjust the total noise power once for the specified carrier power level, after which the carrier power could change if any noise parameters are adjusted or the total noise power is adjusted. See also :NOISe:POWer:CONTrol[:MODE] and :NOISe:POWer:NOISe:TOTal commands.

Range The range varies based on the bounds of the total power that results from the noise settings.

Default The appropriate value given the current total power and the current Carrier to Noise (C/N).

Key Entry **Carrier Power**

Key Path **Mode > Two-Tone > Arb Setup > Real-Time AWGN Setup > Power Control Mode (Total) > Carrier > Carrier Power**

:NOISe:POWer:CONTrol[:MODE]

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:TTONe:ARB:NOISe:POWer:CONTrol[:MODE] {TOTal}|CARRier|NOISe
[:SOURce]:RADio:TTONe:ARB:NOISe:POWer:CONTrol[:MODE]?
```

This command sets the power control to one of the three following modes:

Total This is the default mode where the total power and C/N are independent variables and the carrier power and total noise power are dependent variables set by the total power, C/N and the rest of the noise settings. The carrier power and total noise power will change as any noise parameter is adjusted to keep the total power and the C/N at their last specified values.

Carrier In this mode the carrier power and C/N are independent variables and the total power and total noise power are dependent variables set by the carrier power, C/N and the rest of the noise settings. The total power and total noise power will change as any noise parameter is adjusted to keep the carrier power and the C/N at their last specified values.

Total Noise In this mode the total noise power and C/N are independent variables and the total power and carrier power are dependent variables set by the total noise power, C/N and the rest of the noise settings. The total power and carrier power will change as any noise parameter is adjusted to keep the total noise power and the C/N at their last specified values.

Default Total

Key Entry **Total Carrier Total Noise**

Key Path **Mode > Two-Tone > Arb Setup > Real-Time AWGN Setup > Power Control Mode (Total) > Total | Carrier | Total Noise**

:NOISe:POWer:NOISe:CHANnel?

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:TTONe:ARB:NOISe:POWer:NOISe:CHANnel?
```

The query returns the current noise power across the carrier bandwidth in dBm.

:NOISe:POWer:NOISe:TOTal

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:TTONe:ARB:NOISe:POWer:NOISe:TOTal <totalNoisePowerInDbm>
[:SOURce]:RADio:TTONe:ARB:NOISe:POWer:NOISe:TOTal?
```

This command sets the current total noise power level if noise is on.

In the NOISe control mode, the total power will be adjusted to achieve the specified total noise power and the total noise power level will be maintained regardless of changes to the other noise parameters. A change to the total power will change the total noise power setting appropriately to maintain the C/N ratio.

In the TOTal control mode, this will adjust the total power once for the specified total noise power level, after which the total noise power could change if any noise parameters are adjusted or the total power is adjusted.

In the CARRier control mode, this will adjust the carrier power once for the specified total noise power level, after which the total noise power could change if any noise parameters are adjusted or the carrier power is adjusted. See also :NOISe:POWer:CONTrol[:MODE] command.

Range The range varies based on the bounds of the total power that results from the noise settings.

Default The appropriate value given the current total power and the current Carrier to Noise (C/N).

Key Entry **Total Noise Power**

Key Path **Mode > Two-Tone > Arb Setup > Real-Time AWGN Setup > Power Control Mode (Total) > Total Noise > Total Noise Power**

:NOISe[:STATe]

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:TTONe:ARB:NOISe[:STATe] ON|OFF|1|0
[:SOURce]:RADio:TTONe:ARB:NOISe[:STATe]?
```

This command enables the Two-Tone modulation mode.

To configure the AWGN, refer to the following sections located in the Two Tone subsystem:

- To set the AWGN noise bandwidth, refer to ":NOISe:BANDwidth" on page 354.
- To set the bandwidth over which the noise power is integrated for calculating the carrier to noise ratio, refer to":NOISe:CBWidth" on page 355.
- To set the carrier to noise ratio as the active function, refer to ":NOISe:CN" on page 355.

***RST** Off

Key Entry **Real-Time AWGN Off On**

Key Path **Mode > Two-Tone > Arb Setup > Real-Time AWGN Setup > Real-Time AWGN Off On**

:PHASe:NOISe:F1

Supported N5162A/82A with Option 651, 652, or 654, and 432

```
[:SOURce]:RADio:TTONe:ARB:PHASe:NOISe:F1 <value><unit>
[:SOURce]:RADio:TTONe:ARB:PHASe:NOISe:F1?
```

This command sets the start frequency value of the flat area for the phase noise impairment.

Ensure that this value is less than or equal to the stop frequency value (see the :PHASe:NOISe:F2 command). If the value is set greater than the stop frequency value, the signal generator resets the stop value to equal the start value.

The actual value may vary logarithmically depending on the value of the stop frequency. This behavior is more noticeable at higher frequency values. For more information, see the *User's Guide*.

***RST** +1.00000000E+003

Range 0 Hz to 48.43782781 MHz

Key Entry **Desired Start Freq (f1)**

Key Path **Mode > Two-Tone > Arb Setup > Real-Time Phase Noise Setup > Desired Start Freq (f1)**

:PHASe:NOISe:F2

Supported N5162A/82A with Option 651, 652, or 654, and 432

```
[:SOURce]:RADio:TTONe:ARB:PHASe:NOISe:F2 <value><unit>
[:SOURce]:RADio:TTONe:ARB:PHASe:NOISe:F2?
```

This command sets the stop frequency value of the flat area for the phase noise impairment.

Ensure that this value is less than or equal to the stop frequency value (see the :PHASe:NOISe:F1 command). If the value is set less than the start frequency value, the signal generator resets the start value to equal the stop value.

The actual value may vary logarithmically, which is more noticeable at higher frequency offset values. For more information, see the *User's Guide*.

***RST** +3.00000000E+004

Range 1 Hz to 48.43782781 MHz

Key Entry **Desired Stop Freq (f2)**

Key Path **Mode > Two-Tone > Arb Setup > Real-Time Phase Noise Setup > Desired Stop Freq (f2)**

:PHASe:NOISe:LMID

Supported N5162A/82A with Option 651, 652, or 654, and 432

```
[:SOURce]:RADio:TTONe:ARB:PHASe:NOISe:LMID <value>
[:SOURce]:RADio:TTONe:ARB:PHASe:NOISe:LMID?
```

This command sets the level amplitude of the flat area for the phase noise impairment. This phase noise is added to the base phase noise of the signal generator.

The signal generator has an automatic DAC over-range protection feature that is always on for this subsystem.

For more information on the phase noise impairment option, see the *User's Guide*.

NOTE The amplitude range varies depending on the f2 value (":PHASe:NOISe:F2" on page 360). As f2 increases in value, the range for Lmid decreases. If the current Lmid setting is too high for the new f2 value, the signal generator changes the Lmid value and generates an error.

The range values are expressed in units of dBc/Hz.

***RST** –7.00000000E+001

Range –300 to 100

Key Entry **Desired Flat Amplitude (Lmid)**

Key Path **Mode > Two-Tone > Arb Setup > Real-Time Phase Noise Setup > Desired Flat Amplitude (Lmid)**

:PHASe:NOISe[:STATe]

Supported N5162A/82A with Option 651, 652, or 654, and 432

```
[:SOURce]:RADio:TTONe:ARB:PHASe:NOISe[:STATe] ON|OFF|1|0
[:SOURce]:RADio:TTONe:ARB:PHASe:NOISe[:STATe]?
```

This command turns the phase noise impairment on or off. For more information on the phase noise impairment option, see the *User's Guide*.

***RST** 0

Key Entry **Phase Noise Off On**

Key Path **Mode > Two-Tone > Arb Setup > Real-Time Phase Noise Setup > Phase Noise Off On**

:REFerence:EXTernal:FREQuency

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:TTONe:ARB:REFerence:EXTernal:FREQuency <val>
[:SOURce]:RADio:TTONe:ARB:REFerence:EXTernal:FREQuency?
```

This command allows you to enter the frequency of the external reference.

The variable <val> is expressed in hertz (Hz–MHz).

The value specified by this command is effective only when you are using an external ARB reference applied to the BASEBAND GEN REF IN rear panel connector.

Example

```
:RAD:TTON:ARB:REF:EXT:FREQ 1MHZ
```

The preceding example sets the external reference to 1 megahertz.

***RST** +1.00000000E+007

Range 2.5E5 to 1E8

Key Entry **Reference Freq**

:REFerence[:SOURce]

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:TTONe:ARB:REFerence[:SOURce] INTernal|EXTernal
[:SOURce]:RADio:TTONe:ARB:REFerence[:SOURce]?
```

This command selects either an internal or external reference for the waveform clock. If EXTernal is selected, the external frequency *value must* be entered and the clock signal must be applied to the BASEBAND GEN REF IN rear panel connector. To enter the external reference frequency, see ":REFerence:EXTernal:FREQuency" on page 341.

Example

```
:RAD:TTON:ARB:REF EXT
```

The preceding example sets an external reference as the waveform clock.

***RST** INT

Key Entry **ARB Reference Ext Int**

:SCLock:RATE

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:TTONe:ARB:SCLock:RATE <sample_clock_rate>
[:SOURce]:RADio:TTONE:ARB:SCLock:RATE?
```

This command sets the ARB sample clock rate.

The two tone generator should be on before executing this command. If this command is executed before the two tone generator is active, the entered value will be overridden by a calculated factory default value.

Example

```
:RAD:TTON:ARB:SCL:RATE 1MHZ
```

The preceding example sets the ARB sample clock to 1 MHz.

***RST** +1.00000000E+008

Range 1E3 to 1E8

Key Entry **ARB Sample Clock**

Key Path **Mode** > **Two-Tone** > **Arb Setup** > **Arb Sample Clock**

[:STATe]

Supported N5162A/82A with Option 651, 652, or 654

```
[:SOURce]:RADio:TTONe:ARB[:STATe] ON|OFF|1|0
[:SOURce]:RADio:TTONe:ARB[:STATe]?
```

This command enables or disables the on/off operational state of the two–tone waveform generator function.

Example

```
:RAD:TTON:ARB ON
```

The preceding example turns on the two–tone generator.

***RST** 0

Key Entry **Two Tone Off On**

Key Path **Mode** > **Two-Tone** > **Two Tone Off On**

7 Real–Time Commands

This chapter provides real–time signal generation SCPI command descriptions for use in either component or receiver test using the N5162A/82A Agilent MXG Vector Signal Generator.

NOTE The internal baseband generator speed upgrade Options 670, 671, and 672 are option upgrades that *require* Option 651 and 652 to have been loaded at the factory (refer to the *Data Sheet* for more information). Any references to 651, 652, or 654 are inclusive of 671, 672, and 674.

This chapter contains the following major sections:

- All Subsystem–Option 651/652/654 ([:SOURce]) on page 365
- AWGN Real–Time Subsystem–Option 403 ([:SOURce]:RADio:AWGN:RT) on page 366
- Phase Noise Subsystem–Option 432 ([SOURce:RADio:PHASe:NOISe) on page 369

All Subsystem–Option 651/652/654 ([:SOURce])

:RADio:ALL:OFF

Supported N5162A/82A with Option 651, 652, or 654

`[:SOURce]:RADio:ALL:OFF`

This command turns off all digital modulation formats.

Remarks This command does not affect analog modulation.

AWGN Real–Time Subsystem–Option 403 ([:SOURce]:RADio:AWGN:RT)

:BWIDth

Supported N5162A/82A with 651, 652, or 654, and 403

```
[:SOURce]:RADio:AWGN:RT:BWIDth <value>
[:SOURce]:RADio:AWGN:RT:BWIDth?
```

This command adjusts the flat bandwidth of the real–time AWGN waveform.

The variable <value> is expressed in units of Hertz (Hz–MHz).

***RST** +1.00000000E+006

Range 1 to 1.0E8

Key Entry **Bandwidth**

Key Path **Mode > More 2 of 2 > Real-Time AWGN > Flat Bandwidth**

:CBWidth

Supported N5162A/82A with 651, 652, or 654, and 403

```
[:SOURce]:RADio[1]:AWGN:RT:CBWidth <value>
[:SOURce]:RADio[1]:AWGN:RT:CBWidth?
```

This command sets the portion of the bandwidth specified by the bandwidth ratio.

The variable <value> is expressed in units of Hertz (Hz–MHz).

***RST** +1.00000000E+006

Range 1 to 1.0E8

Key Entry **Bandwidth**

Key Path **Mode > More 2 of 2 > Real-Time AWGN > Channel Bandwidth**

:IQ:MODulation:ATTen

Supported N5162A/82A with Option 651, 652, or 654, and 403

```
[:SOURce]:RADio:AWGN:RT:IQ:MODulation:ATTen <value>
[:SOURce]:RADio:AWGN:RT:IQ:MODulation:ATTen?
```

This command attenuates the I/Q signals being modulated through the signal generator's RF path.

The variable <value> is expressed in units of decibels (dB).

***RST** Varies (instrument dependent)

Range 0 to 50

Key Entry **Modulator Atten Manual Auto**

Key Path **Mode > More 2 of 2 > Real-Time AWGN > Modulator Atten Manual Auto**

:IQ:MODulation:ATTen:AUTO

Supported N5162A/82A with Option 651, 652, or 654, and 403

```
[:SOURce]:RADio:AWGN:RT:IQ:MODulation:ATTen:AUTO ON|OFF|1|0
[:SOURce]:RADio:AWGN:RT:IQ:MODulation:ATTen:AUTO?
```

This command enables or disables the I/Q attenuation auto mode.

ON (1) This choice enables the attenuation auto mode which optimizes the modulator attenuation for the current conditions.

OFF (0) This choice holds the attenuator at its current setting or at a selected value. Refer to ":IQ:MODulation:ATTen" on page 366 for setting the attenuation value.

***RST** 1

Key Entry **Modulator Atten Manual Auto**

Key Path **Mode > More 2 of 2 > Real-Time AWGN > Modulator Atten Manual Auto**

:POWer:CONTrol

Supported N5162A/82A with 651, 652, or 654, and 403

```
[:SOURce]:RADio[1]:AWGN:RT:POWer:CONTrol[:MODE]{TOTal}|NCHannel
[:SOURce]:RADio[1]:AWGN:RT:POWer:CONTrol[:MODE]?
```

This command selects whether the instrument power is set by the displayed instrument power or the channel noise power when the AWGN is turned on.

TOTal This choice selects the displayed instrument power for control.

NCHannel This choice selects the channel noise power for control. The channel noise power is only settable from the front panel when the Power Control mode is set to channel noise power.

***RST** TOTal

Key Entry **Power Control Mode** Total Nchannel

Key Path **Mode > More 2 of 2 > Real-Time AWGN > More 2 of 2 > Power Control Mode**

:POWer:NOISe:CHANnel

Supported N5162A/82A with 651, 652, or 654, and 403

```
[:SOURce]:RADio[1]:AWGN:RT:POWer:NOISe:CHANnel <value>
[:SOURce]:RADio[1]:AWGN:RT:POWer:NOISe:CHANnel?
```

This command sets the power within the channel bandwidth. The instrument power is changed in relation to this setting if AWGN is turned on. The channel noise power is only settable from the front panel when the Power Control mode is set to channel noise power.

The variable <value> is expressed in units of dBm.

***RST**	N5161A/62A N5181A/82A	–1.10000000E+002 (Standard) or –1.44000000E+002 (Option 1EQ)
	N5183A	–2.00000000E+001 (Standard) or –1.30000000E+002 (Option 1E1)

Key Entry **Channel Noise Power**

Key Path **Mode > More 2 of 2 > Real-Time AWGN > Channel Noise Power**

:RATio

Supported N5162A/82A with 651, 652, or 654, and 403

```
[:SOURce]:RADio[1]:AWGN:RT:RATio <value>
[:SOURce]:RADio[1]:AWGN:RT:RATio?
```

This command sets the amount of channel bandwidth compared to the amount of flat bandwidth.

The variable <value> is expressed in units of Hertz (Hz–MHz).

***RST** 1

Key Entry **Bandwidth Ratio**

Key Path **Mode > More 2 of 2 > Real-Time AWGN > Bandwidth Ratio**

[:STATe]

Supported N5162A/82A with Option 651, 652, or 654, and 403

```
[:SOURce]:RADio:AWGN:RT[:STATe] ON|OFF|1|0
[:SOURce]:RADio:AWGN:RT[:STATe]?
```

This command enables or disables the operating state of real–time AWGN.

***RST** 0

Key Entry **Real-Time AWGN Off On**

Key Path **Mode > More 2 of 2 > Real-Time AWGN > Real-Time AWGN Off On**

Phase Noise Subsystem–Option 432 ([SOURce:RADio:PHASe:NOISe)

:F1

Supported N5162A/82A with Option 651, 652, or 654, and 432

```
[:SOURce]:RADio:PHASe:NOISe:F1 <value><unit>
[:SOURce]:RADio:PHASe:NOISe:F1?
```

This command sets the start frequency value of the flat area for the phase noise impairment.

Ensure that this value is less than or equal to the stop frequency value (see :F2). If the value is set greater than the stop frequency value, the signal generator resets the stop value to equal the start value.

The actual value may vary logarithmically depending on the value of the stop frequency. This behavior is more noticeable at higher frequency values. For more information, see the *User's Guide*.

***RST** +1.00000000E+003

Range 0 Hz to 48.3782781 MHz

Key Entry **Desired Start Freq (f1)**

Key Path **Mode > More 2 of 2 > Real-Time Phase Noise Impairment > Desired Start Freq (f1)**

:F2

Supported N5162A/82A with Option 651, 652, or 654, and 432

```
[:SOURce]:RADio:PHASe:NOISe:F2 <value><unit>
[:SOURce]:RADio:PHASe:NOISe:F2?
```

This command sets the stop frequency value of the flat area for the phase noise impairment.

Ensure that this value is less than or equal to the stop frequency value (see :F1). If the value is set less than the start frequency value, the signal generator resets the start value to equal the stop value.

The actual value may vary logarithmically, which is more noticeable at higher frequency offset values. For more information, see the *User's Guide*.

***RST** +3.00000000E+004

Range 1 Hz to 48.3782781 MHz

Key Entry **Desired Stop Freq (f2)**

Key Path **Mode > More 2 of 2 > Real-Time Phase Noise Impairment > Desired Stop Freq (f2)**

:LMID

Supported N5162A/82A with Option 651, 652, or 654, and 432

```
[:SOURce]:RADio:PHASe:NOISe:LMID <value>
[:SOURce]:RADio:PHASe:NOISe:LMID?
```

This command sets the level amplitude of the flat area for the phase noise impairment. This phase noise is added to the base phase noise of the signal generator.

The signal generator has an automatic DAC over-range protection feature that is always on for this subsystem.

For more information on the phase noise impairment option, see the *User's Guide*.

NOTE The amplitude range varies depending on the f2 value (":F2" on page 369). As f2 increases in value, the range for Lmid decreases. If the current Lmid setting is too high for the new f2 value, the signal generator changes the Lmid value and generates an error.

The range values are expressed in units of dBc/Hz.

***RST** –7.00000000E+001

Range –300 to 100

Key Entry **Desired Flat Amplitude (Lmid)**

Key Path **Mode > More 2 of 2 > Real-Time Phase Noise Impairment > Desired Flat Amplitude (Lmid)**

[:STATe]

Supported N5162A/82A with Option 651, 652, or 654, and 432

```
[:SOURce]:RADio:PHASe:NOISe[:STATe] ON|OFF|1|0
[:SOURce]:RADio:PHASe:NOISe[:STATe]?
```

This command turns the phase noise impairment on or off. For more information on the phase noise impairment option, see the *User's Guide*.

***RST** 0

Key Entry **Phase Noise Off On**

Key Path **Mode > More 2 of 2 > Real-Time Phase Noise Impairment > Phase Noise Off On**

8 N5183A SCPI Command Compatibility

This chapter provides a compatibility listing of SCPI commands. Many commands for other Agilent signal generator models are also supported by the N5183A Signal Generator.

This chapter contains the following major sections:

- Overview on page 372
- Changing the Signal Generator Identification String on page 373
- Changing the Signal Generator Option String on page 373
- Functional N5183A SCPI Commands While in a Compatible Language Mode on page 374
- Replaced Backward Compatible SCPI Commands on page 377
- E4428C/38C Compatible SCPI Commands on page 382
- E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Compatible SCPI Commands on page 410
- 8340B/41B Compatible SCPI Commands on page 443
- 836xxB/L Compatible SCPI Commands on page 459
- 8373xB and 8371xB Compatible SCPI Commands on page 479
- 8375xB Compatible SCPI Commands on page 490
- 8662A/63A Compatible SCPI Commands on page 503
- Anritsu MG369xB Compatible SCPI Commands on page 513
- Rohde & Schwartz SMR Compatible SCPI Commands on page 540

Overview

The following list shows the supported models along with the language type for each:

N5183A	SCPI commands
8340B/41B	programming codes
8360 series	SCPI commands
83711B/12B	SCPI commands
83731B/32B	SCPI commands
83751B/52B	SCPI commands
8662A/63A	programming codes
Anritsu MG369xB	programming codes[a]
E4428C/38C	SCPI commands
E8241A/44A/51A/54A	SCPI commands
E8247C/57C/67C	SCPI commands
E8257D/67D/E8663B	SCPI commands
Rohde & Schwartz SMR	SCPI commands

a. Only available on instruments with serial prefixes >US/MY/SG4818.

These commands and programming codes are separated into compatible and non-compatible sections. In many instances, the non-compatible section has the least number of commands/codes, thus providing a more time efficient way of determining whether or not a command/code is supported by the Agilent MXG.

In some cases, SCPI commands are only partially supported. This usually occurs due to a variance in parameters between the Agilent MXG and other signal generator models. When this condition occurs, the remarks column in each compatibility commands table specifies the exception condition.

In addition to providing the compatible command/code listing, this chapter also provides you with Agilent MXG SCPI commands that let you change the signal generator identification output (see :SYSTem:IDN command), select a compatible programming language (see :LANGuage (N5183A)), and query the signal generator for errors (see :SYSTem:ERRor[:NEXT]).

Changing the Signal Generator Identification String

:SYSTem:IDN

Supported All

```
:SYSTem:IDN "<string>"
```

This Agilent MXG signal generator command modifies the identification string that the *IDN? query returns. The maximum string length is 72 characters. Sending an empty string restores the *IDN? query output to its factory defined setting.

Modification of the *IDN? query output enables the Agilent MXG signal generator to identify itself as another signal generator when it is used as a backward compatible replacement. This modification of the identification string does not affect the diagnostic information displayed using the **Diagnostic Info** softkey.

Changing the Signal Generator Option String

:SYSTem:OPT

Supported All

```
:SYSTem:OPT "<string>"
```

This Agilent MXG signal generator command modifies the option string that the *OPT? query returns. The maximum string length is 72 characters. Sending an empty string restores the *OPT? query output to its factory shipped setting.

Modification of the *OPT? query output enables the Agilent MXG signal generator with options to identify itself as another signal generator when it is used as a backward compatible replacement. This modification of the option string does not affect the diagnostic information displayed using the **Diagnostic Info** softkey.

Functional N5183A SCPI Commands While in a Compatible Language Mode

The commands in this section are used for configuring the compatible programming language for the signal generator.

:LANGuage (N5183A)

Supported N5183A

```
:SYSTem:LANGuage
|"SCPI"|"8360"|"83712"|"83732"|"83752"|"8340"|"8662"|"8663"|"E4428C"|"E4438C"|
|"E8257D"|"E8267D"|"E8663B"|"E8247C"|"E8257C"|"E8267C"|"E8241A"|"E8244A"|"E8251A"|
|"E8254A"|"SMR"|"MG3691B"|"MG3692B"|"MG3693B"|"MG3694B"|
:SYSTem:LANGuage?
```

This command sets the remote language for the signal generator.

SCPI	This choice provides compatibility for SCPI commands.
8360	This choice provides compatibility for the 8360 signal generator, which is supported through a GPIB, LAN, or USB interface.
83712	This choice provides compatibility for the 83711B or 83712B signal generators, which are supported through a GPIB, LAN, or USB interface.
83732	This choice provides compatibility for the 83731B or 83732B signal generators, which are supported through a GPIB, LAN, or USB interface.
83752	This choice provides compatibility for the 83751B or 83752B signal generators, which are supported through a GPIB, LAN, or USB interface.
8340	This choice provides compatibility for the 8340B or 8341B signal generators, which are supported only through a GPIB interface.
8662A or 8663A	This choice provides compatibility for the 8662A or 8663A signal generators, which are supported only through a GPIB interface.
E4428C or E4438C	This choice provides compatibility for the E4428C or E4438C signal generators, which are supported through a GPIB, LAN, or USB interface.
E8241A or E8244A or E8251A or E8254A	This choice provides compatibility for the E8241A, E8244A, E8251A, or E8254A signal generators, which are supported through a GPIB, LAN, or USB interface.
E8247C, or E8257C, or E8267C	This choice provides compatibility for the E8247C, E8257C, or E8267C signal generators, which are supported through a GPIB, LAN, or USB interface.

E8257D or
E8267D or
E8663B — This choice provides compatibility for the E8257D, E8267D, or E8663B signal generators, which are supported through a GPIB, LAN, or USB interface.

SMR — This choice provides compatibility for the Rohde & Schwartz SMR signal generators, which are supported through a GPIB, LAN, or USB interface.

MG3691B or
MG3692B or
MG3693B or
MG3694B — This choice provides compatibility for Anritsu MG369xB series signal generators, which are supported through a GPIB interface.

***RST** **"SCPI"**

Key Entry				
	SCPI	**MG369xB**	**83711B, 83712B**	**E8247C, E8257C, E8267C**
	SMR	**8360 Series**	**83731B, 83732B**	**E8257D, E8267D, E8663B**
	8662A	**8340B, 8341B**	**83751B, 83752B**	**E8241A, E8244A, E8251A, E8254A**
	8663A	**E4428C,E4438C**		

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

For more information on supported SCPI commands and programming codes, refer to the *Programming Compatibility Guide*.

:PRESet:LANGuage (N5183A)

Supported N5183A

```
:SYSTem:PRESet:LANGuage
|"SCPI"|"8360"|"83712"|"83732"|"83752"|"8340"|"8662"|"8663"|"E4428C"|"E4438C"|
|"E8257D"|"E8267D"|"E8663B"|"E8247C"|"E8257C"|"E8267C"|"E8241A"|"E8244A"|"E8251A"|
|"E8254A"|"SMR"|"MG3691B"|"MG3692B"|"MG3693B"|"MG3694B"|
:SYSTem:PRESet:LANGuage?
```

This command sets the remote language that is available when the signal generator is preset.

SCPI — This choice provides compatibility for SCPI commands.

8360 — This choice provides compatibility for the 8360 signal generator, which is supported through a GPIB, LAN, or USB interface.

83712 — This choice provides compatibility for the 83711B or 83712B signal generators, which are supported through a GPIB, LAN, or USB interface.

83732 — This choice provides compatibility for the 83731B or 83732B signal generators, which are supported through a GPIB, LAN, or USB interface.

83752 — This choice provides compatibility for the 83751B or 83752B signal generators, which are supported through a GPIB, LAN, or USB interface.

8340 — This choice provides compatibility for the 8340B or 8341B signal generators, which are supported only through a GPIB interface.

8662 or 8663	This choice provides compatibility for the 8662A or 8663A signal generators, which are supported only through a GPIB interface.
E4428C or E4438C	This choice provides compatibility for the E4428C or E4438C signal generators, which are supported through a GPIB, LAN, or USB interface.
E8257D or E8267D or E8663B	This choice provides compatibility for the E8257D, E8267D, or E8663B signal generators, which are supported through a GPIB, LAN, or USB interface.
E8247C, or E8257C, or E8267C	This choice provides compatibility for the E8247C, E8257C, or E8267C signal generators, which are supported through a GPIB, LAN, or USB interface.
E8241A or E8244A or E8251A or E8254A	This choice provides compatibility for the E8241A, E8244A, E8251A or E8254A signal generators, which are supported through a GPIB, LAN, or USB interface.
SMR	This choice provides compatibility for the Rohde & Schwartz SMR signal generators, which are supported through a GPIB, LAN, or USB interface.
MG3691B or MG3692B or MG3693B or MG3694B	This choice provides compatibility for Anritsu MG369xB series signal generators, which are supported through a GPIB interface.

***RST** **"SCPI"**

Key Entry				
	SCPI	**MG369xB**	**83711B, 83712B**	**E8247C, E8257C, E8267C**
	SMR	**8360 Series**	**83731B, 83732B**	**E8257D, E8267D, E8663B**
	8662A	**8340B, 8341B**	**83751B, 83752B**	**E8241A, E8244A, E8251A, E8254A**
	8663A	**E4428C,E4438C**		

:SYSTem:ERRor[:NEXT]

Supported All

```
:SYSTem:ERRor[:NEXT]?
```

This query returns the most recent error message from the signal generator error queue. If there are no error messages, the query returns the following output:

```
+0,"No error"
```

When there is more than one error message, the query must be sent for each message. Each error message is erased after being queried.

Key Entry View Next Error Message

Replaced Backward Compatible SCPI Commands

:ALC:SEARch

Supported All Models

`[:SOURce]:POWer:ALC:SEARch AUTO|SPAN|ON|1|ONCE`

`[:SOURce]:POWer:ALC:SEARch?`

This command sets the internal power search mode. A power search is recommended for pulse modulated signals with pulse widths less than one microsecond.

AUTO ON (1) This choice executes the power search automatically with each change in RF frequency or power.

SPAN This mode pre-computes power search settings for a span of user defined start/stop frequencies. In this mode, the instrument's default automatic (`AUTO`) power search is disabled. The power search is not repeated until manually or remotely directed to do so.

This power search is not valid for a change in power level. If the power level is changed, the power search needs to be repeated. For best results, the power search needs to be repeated at periodic intervals. Refer to the *Data Sheet* and the *User's Guide*.

ONCE This choice executes a single power search of the current RF output signal and the current mode is returned (i.e. 1 = Auto and 0 = Non-Auto). This action requires the RF output to be on. (Refer to [:STATe] command).

***RST** 1

Key Entry **Do Power Search**

Remarks Use this command when the ALC state is set to OFF. Refer to :ALC[:STATe] command for setting the ALC state.

This command was replaced by :ALC:SEARch on page 63.

:FAST:FFast

Supported All Models

`:FAST:FFast <Freq mHz>`

This command enables a fast SCPI switching for arbitrary frequency levels.

Range The range is model/option dependent. Refer to the instrument's *Data Sheet*.

Example FAST:FF 1000000000

This example sets the instrument frequency to 1 GHz.

This command was replaced by ":FREQ" on page 58.

:FAST:FPFast

Supported All Models

`:FAST:FPFast <Freq mHz>, <power mdB>`

This command enables a fast SCPI switching for arbitrary frequency and power levels.

Range The range is model/option dependent. Refer to the instrument's *Data Sheet*.

Example FAST:FPF 1000000000,-10000

This example sets the instrument frequency to 1 GHz and the power to -10 dBm.

This command was replaced by ":FP" on page 58.

:FAST:PFast

Supported All Models

`:FAST:PFast <power mdB>`

This command enables a fast SCPI switching for arbitrary power levels.

Range The range is model/option dependent. Refer to the instrument's *Data Sheet*.

Example FAST:PF -10000

This example sets the instrument power to -10 dBm.

This command was replaced by ":POWer" on page 58.

:PMETer:DEVice

Supported All Models

`:SYSTem:COMMunicate:PMETer:DEVice <deviceName>`

`:SYSTem:COMMunicate:PMETer:DEVice?`

This command enters a VXI-11 name for a power meter that is being controlled by the signal generator. If connecting directly to the power meter enter the name as specified on your power meter documentation. If connecting via a LAN-GPIB gateway, enter the SICL address of the power meter.

Key Entry **PM VXI-11 Device Name**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

The power meter is controlled only through a LAN cable.

This command was replaced by :PMETer:COMMunicate:LAN:DEVice on page 23.

:PMETer:IP

Supported All Models

`:SYSTem:COMMunicate:PMETer:IP <ipaddr>`

`:SYSTem:COMMunicate:PMETer:IP?`

This command sets the internet protocol (IP) address for a power meter that is controlled by the signal generator. It connecting to a GPIB power meter via a LAN-GPIB gateway, this command sets the IP address of the gateway.

Key Entry **Meter IP Address**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

The power meter is controlled only through a LAN cable.

Ensure that the power meter IP address is different from the signal generator address.

This command was replaced by :PMETer:COMMunicate:LAN:IP on page 24.

:PMETer:PORT

Supported All Models

```
:SYSTem:COMMunicate:PMETer:PORT <portNum>
:SYSTem:COMMunicate:PMETer:PORT?
```

This command sets the IP port on the power meter that is controlled by the signal generator.

Key Entry **Power Meter IP Port**

5025 Standard mode. The command enables standard mode for simple programming.

5023 Telnet mode. The command enables the telnet SCPI service for programming.

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

The power meter is controlled only through a LAN cable.

For more information on standard mode and telnet SCPI mode, refer to the *Programming Guide*.

This command was replaced by :PMETer:COMMunicate:LAN:PORT on page 24.

:PMETer:TYPE

Supported All Models

```
:SYSTem:COMMunicate:PMETer:TYPE SOCKets|SOCKETS|VXI11|USB
:SYSTem:COMMunicate:PMETer:TYPE?
```

This command sets the type of control connection on the power meter for communication with the signal generator.

Key Entry	Connection Type
SOCK or SOCKETS	The command enables the power meter for sockets LAN control via the signal generator.
VXI11	The command enables the power meter for VXI-11 control via the signal generator. A power meter with GPIB can be controlled via VXI-11 using a LAN-GPIB gateway.
USB	The command enables the power meter for USB control via the signal generator.

Remarks A single-channel power meter uses channel A and selecting channel B will have no effect.

The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

This command was replaced by :PMETer:COMMunicate:TYPE on page 25.

:LICense:FPACk:WAVeform:ADD

Supported All Models

```
:SYSTem:LICense:FPACk:WAVeform:ADD "filename"
```

This command assigns a new waveform to a 5–Pack license. Filename should be just the filename, no path information. The file must reside in a non–volatile waveform memory (NVWFM) before it can be licensed.

Remarks This command was replaced by :LICense:[FPACk]:WAVeform:ADD on page 219.

:LICense:FPACk:SLOTs:FREE?

Supported All Models

```
:SYSTem:LICense:FPACk:SLOTs:FREE?
```

This queries the number of available 5–Pack slots open for waveforms to be licensed.

Remarks This command was replaced by :LICense:[FPACk]:WAVeform:FREE? on page 220.

:LICense:FPACk:WAVeform:IDList?

Supported All Models

`:SYSTem:LICense:FPACk:WAVeform:IDList?`

This query returns the list of 5–Pack licensed waveform IDs.

Remarks This command was replaced by :LICense:[FPACk]:WAVeform:IDList? on page 220.

:LICense:FPACk:SLOTs:USED?

Supported All Models

`:SYSTem:LICense:FPACk:SLOTs:USED?`

This queries the number of 5–Pack slots used by licensed waveforms.

Remarks This command was replaced by :LICense:[FPACk]:WAVEform:USED? on page 221.

E4428C/38C Compatible SCPI Commands

Table 8-1 is a comprehensive list of E4428C/38C SCPI commands arranged by subsystem. Commands are indicated as supported or not supported by the N5183A. Use the legend within the table to determine command compatibility.

When using the programming codes in this section, you can:

- set the N5183A system language to E4428C/38C for the current session:

  Utility > **I/O Config** > **Remote Language** > **E4428C, E4438C**

  or send the command:

  `:SYST:LANG "E4428C"` or “E4438C”

- set the N5183A system language to E4428C/38C so that it does not reset with either preset, instrument power cycle or `*RST` command:

  Utility > **Power On/Preset** > **Preset Language** > **E4428C, E4438C**

  or send the command:

  `:SYST:PRESet:LANG "E4428C"` or “E4438C”

- set the `*IDN?` response to any E4428C/38C-like response you prefer. Refer to the :SYSTem:IDN command.

NOTE The Agilent MXG has only one AM, FM, and PM path. Using AM2, FM2, or PM2 path commands will result in the following error: “`ERROR: -113, Undefined Header`”.

The Agilent MXG has only one internal source for AM, FM and PM, but the INT2 source selection is accepted by the signal generator and is equivalent to selecting INT[1].

The Agilent MXG has three dedicated external sources, one for AM, one for FM/PM and one for Pulse. The EXT2 source selection is accepted by the signal generator, but is equivalent to selecting EXT[1].

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
System Function Commands		
IEEE Common Commands		
*CLS	✓	
*ESE <data> *ESE?	✓	
*ESR?	✓	
*IDN?	✓	
*OPC *OPC?	✓	
*OPT?	✓	
*PSC ON|OFF|1|0 *PSC?	✓	
*RCL <reg_num>	✓	
*RST	✓	
*SAV <reg_num>[,<seq_num>]	✓	
*SRE <data> *SRE?	✓	
*STB?	✓	
*TRG	✓	
*TST?	✓	
*WAI	✓	
Calibration Subsystem		
:CALibration:DCFM	✓	
:CALibration:IQ	–	
:CALibration:IQ:DC	–	
:CALibration:IQ:DEFault	–	

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:CALibration:IQ:FULL	–	
:CALibration:IQ:STARt <value><units> :CALibration:IQ:STARt?	–	
:CALibration:IQ:STOP <value><units> :CALibration:IQ:STOP?	–	
Communication Subsystem		
:SYSTem:COMMunicate:GPIB:ADDRess <number> :SYSTem:COMMunicate:GPIB:ADDRess?	✓	
:SYSTem:COMMunicate:GTLocal	✓	
:SYSTem:COMMunicate:LAN:CONFig DHCP|MANual :SYSTem:COMMunicate:LAN:CONFig?	✓	
:SYSTem:COMMunicate:LAN:GATeway <ipstring> :SYSTem:COMMunicate:LAN:GATeway?	✓	
:SYSTem:COMMunicate:LAN:HOSTname <string> :SYSTem:COMMunicate:LAN:HOSTname?	✓	
:SYSTem:COMMunicate:LAN:IP <ipstring> :SYSTem:COMMunicate:LAN:IP?	✓	
:SYSTem:COMMunicate:LAN:SUBNet <ipstring> :SYSTem:COMMunicate:LAN:SUBNet?	✓	
:SYSTem:COMMunicate:PMETer:ADDRess <value> :SYSTem:COMMunicate:PMETer:ADDRess?	–	
:SYSTem:COMMunicate:PMETer:CHANnel A|B :SYSTem:COMMunicate:PMETer:CHANnel?	✓	*Command accepted without error but does nothing.*
:SYSTem:COMMunicate:PMETer:IDN E4418B|E4419B|E4416A|E4417A :SYSTem:COMMunicate:PMETer:IDN?	✓	*Command accepted without error but does nothing.*

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:SYSTem:COMMunicate:PMETer:TIMEout <num>[<time suffix>] :SYSTem:COMMunicate:PMETer:TIMEout?	✓	*Command accepted without error but does nothing.*
:SYSTem:COMMunicate:SERial:BAUD <number> :SYSTem:COMMunicate:SERial:BAUD?	–	
:SYSTem:COMMunicate:SERial:ECHO ON|OFF :SYSTem:COMMunicate:SERial:ECHO?	–	
:SYSTem:COMMunicate:SERial:RESet	–	
:SYSTem:COMMunicate:SERial:TOUT <value> :SYSTem:COMMunicate:SERial:TOUT?	–	
Diagnostic Subsystem		
:DIAGnostic[:CPU]:INFOrmation:BOARds?	–	
:DIAGnostic[:CPU]:INFOrmation:CCOunt:ATTenuator?	✓	
:DIAGnostic[:CPU]:INFOrmation:CCOunt:PON?	✓	
:DIAGnostic[:CPU]:INFOrmation:CCOunt:PROTection?	✓	
:DIAGnostic[:CPU]:INFOrmation:DISPlay:OTIMe?	✓	
:DIAGnostic[:CPU]:INFOrmation:LICense:AUXiliary?	✓	
:DIAGnostic[:CPU]:INFOrmation:LICense:WAVeform?	–	
:DIAGnostic[:CPU]:INFOrmation:OPTions?	✓	
:DIAGnostic[:CPU]:INFOrmation:OPTions:DETail?	✓	
:DIAGnostic[:CPU]:INFOrmation:OTIMe?	✓	
:DIAGnostic[:CPU]:INFOrmation:REVision?	✓	
:DIAGnostic[:CPU]:INFOrmation:SDATe?	✓	
:DIAGnostic[:CPU]:INFOrmation:WLICense[:VALue]? <waveformType>	–	
Memory Subsystem		

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:MEMory:CATalog:BINary?	✓	
:MEMory:CATalog:BIT?	–	
:MEMory:CATalog:CDMA?	–	
:MEMory:CATalog:DMOD?	–	
:MEMory:CATalog:DWCDma?	–	
:MEMory:CATalog:FCDMa?	–	
:MEMory:CATalog:FIR?	–	
:MEMory:CATalog:FSK?	–	
:MEMory:CATalog:IQ?	–	
:MEMory:CATalog:LIST?	✓	
:MEMory:CATalog:MCDMa?	–	
:MEMory:CATalog:MDMod?	–	
:MEMory:CATalog:MDWCdma?	–	
:MEMory:CATalog:MFCdma?	–	
:MEMory:CATalog:MTONe?	–	
:MEMory:CATalog:RCDMa?	–	
:MEMory:CATalog:SEQ?	–	
:MEMory:CATalog:SHAPe?	–	
:MEMory:CATalog:STATe?	✓	
:MEMory:CATalog:UFLT?	✓	
:MEMory:CATalog:UWCDma?	–	
:MEMory:CATalog[:ALL]?	✓	
:MEMory:COPY[:NAME] <"filename">,<"filename">	✓	
:MEMory:DATA <"filename">,<datablock>	✓	
:MEMory:DATA? <"filename">	✓	

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:MEMory:DATA:APPend <"filename">,<datablock>	✓	
:MEMory:DATA:BIT <"filename">,<bit_count>,<datablock> :MEMory:DATA:BIT? <"filename">	–	
:MEMory:DATA:FIR <"filename">,osr,coefficient{,coefficient} :MEMory:DATA:FIR? <"filename">	–	
:MEMory:DATA:FSK <"filename">,num_states,f0,f0,...[,diff_state,num_diff_states,diff0,diff1,...] :MEMory:DATA:FSK? <"filename">	–	
:MEMory:DATA:IQ <"filename">,offsetQ,num_states,i0,q0,i1,q1,...[,diff_state,num_diff_states,diff0,diff1,...] :MEMory:DATA:IQ? <"filename">	–	
:MEMory:DATA:PRAM[1]|2|3|4:FILE:BLOCk <"filename">,<datablock>	–	
:MEMory:DATA:PRAM[1]|2|3|4:FILE:LIST <"filename">,<uint8>[,<uint8>,<...>]	–	
:MEMory:DATA:SHAPe <"filename">,num_rise_points,rp0,rp1,...num_fall_points,fp0,fp1,... :MEMory:DATA:SHAPe? <"filename">	–	
:MEMory:DATA:UNPRotected <"filename">,<datablock>	–	
:MEMory:DELete:ALL	✓	
:MEMory:DELete:BINary	✓	
:MEMory:DELete:BIT	–	
:MEMory:DELete:CDMA	–	
:MEMory:DELete:DMOD	–	
:MEMory:DELete:DWCDma	–	

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:MEMory:DELete:FCDMa	–	
:MEMory:DELete:FIR	–	
:MEMory:DELete:FSK	–	
:MEMory:DELete:IQ	–	
:MEMory:DELete:LIST	✓	
:MEMory:DELete:MCDMa	–	
:MEMory:DELete:MDMod	–	
:MEMory:DELete:MDWCdma	–	
:MEMory:DELete:MFCdma	–	
:MEMory:DELete:MTONe	–	
:MEMory:DELete:RCDMa	–	
:MEMory:DELete:SEQ	–	
:MEMory:DELete:SHAPe	–	
:MEMory:DELete:STATe	✓	
:MEMory:DELete:UFLT	✓	
:MEMory:DELete:UWCDma	–	
:MEMory:DELete[:NAME] <"filename">	✓	
:MEMory:FREE[:ALL]?	✓	
:MEMory:LOAD:LIST <"filename">	✓	
:MEMory:MOVE <src_file>,<dest_file>	✓	
:MEMory:STATe:COMMent <reg_num>,<seq_num>,<"comment">	✓	
:MEMory:STATe:COMMent? <reg_num>,<seq_num>	✓	
:MEMory:STORe:LIST <"filename">	✓	
:MMEMory:CATalog? <"msus">	✓	

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:MMEMory:COPY <"filename">,<"filename">	✓	
:MMEMory:DATA <"filename">,<datablock>	✓	
:MMEMory:DATA? <"filename">	✓	
:MMEMory:DELete:NVWFm	–	
:MMEMory:DELete:WFM	–	
:MMEMory:DELete[:NAME] <"filename">,[<"msus">]	–	
:MMEMory:HEADer:CLEar <filename>	–	
:MMEMory:HEADer:DESCription <"filename">, <"description"> :MMEMory:HEADer:DESCription? <"filename">	–	
:MMEMory:LOAD:LIST <"filename">	✓	
:MMEMory:MOVE <src_file>,<dest_file>	✓	
:MMEMory:STORe:LIST <"filename">	✓	
Output Subsystem		
:OUTPut:BLANking:AUTO ON|OFF|1|0 :OUTPut:BLANking:AUTO?	✓	
:OUTPut:BLANking[:STATe] ON|OFF|1|0 :OUTPut:BLANking[:STATe]?	✓	
:OUTPut:MODulation[:STATe] ON|OFF|1|0 :OUTPut:MODulation[:STATe]?	✓	
:OUTPut:PROTection[:STATe] ON|OFF|1|0 :OUTPut:PROTection[:STATe]?	–	
:OUTPut[:STATe] ON|OFF|1|0 :OUTPut[:STATe]?	✓	
Route Subsystem		
:ROUTe:HARDware:DGENerator:...	–	*This subsystem is not supported.*

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
Status Subsystem		
:STATus:OPERation:BASeband:CONDition?	–	
:STATus:OPERation:BASeband:ENABle <value> :STATus:OPERation:BASeband:ENABle?	–	
:STATus:OPERation:BASeband:NTRansition <value> :STATus:OPERation:BASeband:NTRansition?	–	
:STATus:OPERation:BASeband:PTRansition <value> :STATus:OPERation:BASeband:PTRansition?	–	
:STATus:OPERation:BASeband[:EVENt]?	–	
:STATus:OPERation:CONDition?	✓	
:STATus:OPERation:ENABle <value> :STATus:OPERation:ENABle?	✓	
:STATus:OPERation:NTRansition <value> :STATus:OPERation:NTRansition?	✓	
:STATus:OPERation:PTRansition <value> :STATus:OPERation:PTRansition?	✓	
:STATus:OPERation[:EVENt]?	✓	
:STATus:PRESet	✓	
:STATus:QUEStionable:BERT:CONDition?	–	
:STATus:QUEStionable:BERT:ENABle <value> :STATus:QUEStionable:BERT:ENABle?	–	
:STATus:QUEStionable:BERT:NTRansition <value> :STATus:QUEStionable:BERT:NTRansition?	–	
:STATus:QUEStionable:BERT:PTRansition <value> :STATus:QUEStionable:BERT:PTRansition?	–	
:STATus:QUEStionable:BERT[:EVENt]?	–	

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:STATus:QUEStionable:CALibration:CONDition?	✓	
:STATus:QUEStionable:CALibration:ENABle <value> :STATus:QUEStionable:CALibration:ENABle?	✓	
:STATus:QUEStionable:CALibration:NTRansition <value> :STATus:QUEStionable:CALibration:NTRansition?	✓	
:STATus:QUEStionable:CALibration:PTRansition <value> :STATus:QUEStionable:CALibration:PTRansition?	✓	
:STATus:QUEStionable:CALibration[:EVENt]?	✓	
:STATus:QUEStionable:CONDition?	✓	
:STATus:QUEStionable:ENABle <value> :STATus:QUEStionable:ENABle?	✓	
:STATus:QUEStionable:FREQuency:CONDition?	✓	
:STATus:QUEStionable:FREQuency:ENABle <value> :STATus:QUEStionable:FREQuency:ENABle?	✓	
:STATus:QUEStionable:FREQuency:NTRansition <value> :STATus:QUEStionable:FREQuency:NTRansition?	✓	
:STATus:QUEStionable:FREQuency:PTRansition <value> :STATus:QUEStionable:FREQuency:PTRansition?	✓	
:STATus:QUEStionable:FREQuency[:EVENt]?	✓	
:STATus:QUEStionable:MODulation:CONDition?	–	
:STATus:QUEStionable:MODulation:ENABle <value> :STATus:QUEStionable:MODulation:ENABle?	–	
:STATus:QUEStionable:MODulation:NTRansition <value> :STATus:QUEStionable:MODulation:NTRansition?	–	

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:STATus:QUEStionable:MODulation:PTRansition <value> :STATus:QUEStionable:MODulation:PTRansition?	–	
:STATus:QUEStionable:MODulation[:EVENt]?	–	
:STATus:QUEStionable:NTRansition <value> :STATus:QUEStionable:NTRansition?	✓	
:STATus:QUEStionable:POWer:CONDition?	✓	
:STATus:QUEStionable:POWer:ENABle <value> :STATus:QUEStionable:POWer:ENABle?	✓	
:STATus:QUEStionable:POWer:NTRansition <value> :STATus:QUEStionable:POWer:NTRansition?	✓	
:STATus:QUEStionable:POWer:PTRansition <value> :STATus:QUEStionable:POWer:PTRansition?	✓	
:STATus:QUEStionable:POWer[:EVENt]?	✓	
:STATus:QUEStionable:PTRansition <value> :STATus:QUEStionable:PTRansition?	✓	
:STATus:QUEStionable[:EVENt]?	✓	
System Subsystem		
:SYSTem:CAPability?	✓	
:SYSTem:DATE <year>,<month>,<day> :SYSTem:DATE?	✓	
:SYSTem:ERRor:SCPI[:SYNTax] ON|OFF|1|0 :SYSTem:ERRor:SCPI[:SYNTax]?	✓	
:SYSTem:ERRor[:NEXT]?	✓	
:SYSTem:FILEsystem:SAFEmode ON|OFF|1|0 :SYSTem:FILEsystem:SAFEmode?	–	

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:SYSTem:HELP:MODE SINGle|CONTinuous :SYSTem:HELP:MODE?	✓	*Command accepted without error but does nothing.*
:SYSTem:IDN "string"	✓	
:SYSTem:LANGuage "SCPI"|"COMP"|"8648"|"8662"|"8663"|"8340"|"8360"|"83712"|"83732"|"83752"|"8757" :SYSTem:LANGuage?	✓	*See* ":LANGuage (N5183A)" on page 374.
:SYSTem:OEMHead:FREQuency:BAND WR15|WR12|WR10|WR8|WR6|WR5|WR3 :SYSTem:OEMHead:FREQuency:BAND?	–	
:SYSTem:OEMHead:FREQuency:MULTiplier <val> :SYSTem:OEMHead:FREQuency:MULTiplier?	–	
:SYSTem:OEMHead:FREQuency:STARt <val> :SYSTem:OEMHead:FREQuency:STARt?	–	
:SYSTem:OEMHead:FREQuency:STOP <val> :SYSTem:OEMHead:FREQuency:STOP?	–	
:SYSTem:OEMHead:SELect ON|OFF|NONE|REAR|FRONt :SYSTem:OEMHead:SELect?	–	
:SYSTem:OPT "string"	✓	
:SYSTem:PON:TYPE PRESet|LAST :SYSTem:PON:TYPE?	✓	
:SYSTem:PRESet	✓	*Always performs the same action as the* **Preset** *hardkey.* *For related* **Preset** *hardkey information, refer to* ":SYSTem:PRESet:TYPE NORMal|USER :SYSTem:PRESet:TYPE?" on page 394
:SYSTem:PRESet:ALL	✓	

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:SYSTem:PRESet:LANGuage "SCPI"|"COMP"|"8648"|"8340"|"8360"|"83712"|"83732"| "83752"|"8757"|"8662"|"8663"| :SYSTem:PRESet:LANGuage?	✓	*See* ":PRESet:LANGuage (N5183A)" on page 375.
:SYSTem:PRESet:PERSistent	✓	
:SYSTem:PRESet:PN9 NORMal|QUICk :SYSTem:PRESet:PN9?	–	
:SYSTem:PRESet:TYPE NORMal|USER :SYSTem:PRESet:TYPE?	✓	*This command toggles the* **Preset** *hardkey state between factory- and user-defined conditions.* *The setting enabled by this command is not affected by signal generator power-on, preset, or* *RST. **NOTE** If the **Preset** hardkey is not responding correctly, using the SCPI command: :SYSTem:PRESet:TYPE NORMal will return the Preset hardkey to its default factory behavior.
:SYSTem:PRESet[:USER]:SAVE	✓	
:SYSTem:SECurity:DISPlay ON|OFF|{1}|0 :SYSTem:SECurity:DISPlay?	✓	
:SYSTem:SECurity:DISPlay:RESTricted ON|OFF|{1}|0 :SYSTem:SECurity:DISPlay:RESTricted?	✓	
:SYSTem:SECurity:ERASeall	✓	
:SYSTem:SECurity:LEVel {NONE}|ERASe|OVERwrite|SANitize :SYSTem:SECurity:LEVel?	✓	
:SYSTem:SECurity:LEVel:STATe ON|OFF|1|0 :SYSTem:SECurity:LEVel:STATe?	✓	

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:SYSTem:SECurity:OVERwrite	✓	
:SYSTem:SECurity:SANitize	✓	
:SYSTem:SSAVer:DELay <value> :SYSTem:SSAVer:DELay?	✓	
:SYSTem:SSAVer:MODE LIGHt|TEXT :SYSTem:SSAVer:MODE?	✓	
:SYSTem:SSAVer:STATe ON|OFF :SYSTem:SSAVer:STATe?	✓	
:SYSTem:TIME <hour>,<minute>,<second> :SYSTem:TIME?	✓	
:SYSTem:VERSion?	✓	
Trigger Subsystem		
:ABORt	✓	
:INITiate:CONTinuous[:ALL] ON|OFF|1|0 :INITiate:CONTinuous[:ALL]?	✓	
:INITiate[:IMMediate][:ALL]	✓	
:TRIGger:OUTPut:POLarity POSitive|NEGative :TRIGger:OUTPut:POLarity?	✓	
:TRIGger[:SEQuence]:SLOPe POSitive|NEGative :TRIGger[:SEQuence]:SLOPe?	✓	
:TRIGger[:SEQuence]:SOURce BUS|IMMediate|EXTernal|KEY :TRIGger[:SEQuence]:SOURce?	✓	
:TRIGger[:SEQuence][:IMMediate]	✓	
[:SOURce]:TSWeep	✓	
Unit Subsystem		

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:UNIT:POWer DBM|DBUV|DBUVEMF|V|VEMF|DB :UNIT:POWer?	✓	
Amplitude Modulation Subsystem		
[:SOURce]:AM:INTernal:FREQuency:STEP[:INCRement] <num> [:SOURce]:AM:INTernal:FREQuency:STEP[:INCRement]?	–	
[:SOURce]:AM:WIDeband:STATe ON|OFF|1|0 [:SOURce]:AM:WIDeband:STATe?	–	
[:SOURce]:AM[1]|2:EXTernal[1]|2:COUPling AC|DC [:SOURce]:AM[1]|2:EXTernal[1]|2:COUPling?	✓	
[:SOURce]:AM[1]|2:INTernal[1]:FREQuency <val><unit>|UP|DOWN [:SOURce]:AM[1]|2:INTernal[1]:FREQuency?	✓	
[:SOURce]:AM[1]|2:INTernal[1]:FREQuency:ALTernate <value><unit> [:SOURce]:AM[1]|2:INTernal[1]:FREQuency:ALTernate?	–	
[:SOURce]:AM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent <value><unit> [:SOURce]:AM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent?	–	
[:SOURce]:AM[1]|2:INTernal[1]|2:FUNCtion:SHAPe SINE|TRIangle|SQUare|RAMP|NOISe|DUALsine|SWEPtsine [:SOURce]:AM[1]|2:INTernal[1]|2:FUNCtion:SHAPe?	✓	*Supported but the following parameters are not supported:* "TRIangle"|"SQUare"|"RAMP"|"NOISe"|"DUALsine"|"SWEPtsine"
[:SOURce]:AM[1]|2:INTernal[1]:SWEep:TIME <value><unit> [:SOURce]:AM[1]|2:INTernal[1]:SWEep:TIME?	–	
[:SOURce]:AM[1]|2:INTernal[1]:SWEep:TRIGger IMMediate|KEY|EXTernal|BUS [:SOURce]:AM[1]|2:INTernal[1]:SWEep:TRIGger?	–	

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:AM[1]|2:SOURce INT[1]|EXT[1]|EXT2 [:SOURce]:AM[1]|2:SOURce?	✓	
[:SOURce]:AM[1]|2:STATe ON|OFF|1|0 [:SOURce]:AM[1]|2:STATe?	✓	
[:SOURce]:AM[1]|2[:DEPTh] <val><unit>|UP|DOWN [:SOURce]:AM[1]|2[:DEPTh]?	✓	
[:SOURce]:AM[1]|2[:DEPTh]:TRACk ON|OFF|1|0 [:SOURce]:AM[1]|2[:DEPTh]:TRACk?	–	
[:SOURce]:AM[:DEPTh]:STEP[:INCRement] <value><unit> [:SOURce]:AM[:DEPTh]:STEP[:INCRement]?	✓	
Correction Subsystem		
[:SOURce]:CORRection:FLATness:LOAD <"filename">	✓	
[:SOURce]:CORRection:FLATness:PAIR <freq>,<corr>	✓	
[:SOURce]:CORRection:FLATness:POINts?	✓	
[:SOURce]:CORRection:FLATness:PRESet	✓	
[:SOURce]:CORRection:FLATness:STORe <"filename">	✓	
[:SOURce]:CORRection[:STATe] ON|OFF|1|0 [:SOURce]:CORRection[:STATe]?	✓	
Frequency Subsystem		
[:SOURce]:FREQuency:CENTer <num>[<freq suffix>]|MAXimum|MINimum|UP|DOWN [:SOURce]:FREQuency:CENTer? [MAXimum|MINimum]	✓	
[:SOURce]:FREQuency:CHANnels:BAND NBASe|NMOBile|BPGSm|MPGSm|BEGSm|MEGSm|BRGSm|MRGSm|GM450|M480|M850|B450|B480|B850BDCsM380|M410|M450|M870|PHS|DECT [:SOURce]:FREQuency:CHANnels:BAND?	✓	

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:FREQuency:CHANnels:NUMBer <number> [:SOURce]:FREQuency:CHANnels:NUMBer?	✓	
[:SOURce]:FREQuency:CHANnels[:STATe] ON|OFF|1|0 [:SOURce]:FREQuency:CHANnels[:STATe]?	✓	
[:SOURce]:FREQuency:FIXed <value><unit> |UP|DOWN [:SOURce]:FREQuency:FIXed?	✓	
[:SOURce]:FREQuency:MODE FIXed|CW|SWEep|LIST [:SOURce]:FREQuency:MODE?	✓	
[:SOURce]:FREQuency:MULTiplier <value> [:SOURce]:FREQuency:MULTiplier?	✓	
[:SOURce]:FREQuency:OFFSet <value><unit> [:SOURce]:FREQuency:OFFSet?	✓	
[:SOURce]:FREQuency:OFFSet:STATe ON|OFF [:SOURce]:FREQuency:OFFSet:STATe?	✓	
[:SOURce]:FREQuency:REFerence <value><unit> [:SOURce]:FREQuency:REFerence?	✓	
[:SOURce]:FREQuency:REFerence:SET	✓	
[:SOURce]:FREQuency:REFerence:STATe ON|OFF|1|0 [:SOURce]:FREQuency:REFerence:STATe?	✓	
[:SOURce]:FREQuency:SPAN <num>[<freq suffix>]|MAXimum|MINimum|UP|DOWN [:SOURce]:FREQuency:SPAN? [MAXimum|MINimum]	✓	
[:SOURce]:FREQuency:STARt <value><unit> [:SOURce]:FREQuency:STARt?	✓	
[:SOURce]:FREQuency:STOP <value><unit> [:SOURce]:FREQuency:STOP?	✓	

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:FREQuency:SYNThesis <value> [:SOURce]:FREQuency:SYNThesis?	–	
[:SOURce]:FREQuency[:CW] <value><unit> |UP|DOWN [:SOURce]:FREQuency[:CW]?	✓	
[:SOURce]:FREQuency[:CW]:STEP[:INCRement] <value><unit> [:SOURce]:FREQuency[:CW]:STEP[:INCRement]?	✓	
[:SOURce]:FREQuency[:FIXed]:STEP[:INCRement] <value><unit> [:SOURce]:FREQuency[:FIXed]:STEP[:INCRement]?	✓	
[:SOURce]:PHASe:REFerence	✓	
[:SOURce]:PHASe[:ADJust] <value><unit> [:SOURce]:PHASe[:ADJust]?	✓	
[:SOURce]:ROSCillator:SOURce?	✓	
[:SOURce]:ROSCillator:SOURce:AUTO ON|OFF|1|0 [:SOURce]:ROSCillator:SOURce:AUTO?	✓	
Frequency Modulation Subsystem		
[:SOURce]:FM:INTernal:FREQuency:STEP[:INCRement] <num> [:SOURce]:FM:INTernal:FREQuency:STEP[:INCRement]?	✓	
[:SOURce]:FM[1]|2:EXTernal[1]|2:COUPling AC|DC [:SOURce]:FM[1]|2:EXTernal[1]|2:COUPling?	✓	
[:SOURce]:FM[1]|2:INTernal[1]|2:FREQuency <value><unit> [:SOURce]:FM[1]|2:INTernal[1]|2:FREQuency?	✓	
[:SOURce]:FM[1]|2:INTernal[1]:FREQuency:ALTernate <value><unit> [:SOURce]:FM[1]|2:INTernal[1]:FREQuency:ALTernate?	–	

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:FM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent <value><unit> [:SOURce]:FM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent?	–	
[:SOURce]:FM[1]|2:INTernal[1]:FUNCtion:SHAPe SINE|TRIangle|SQUare|RAMP|NOISe|DUALsine|SWEPtsine [:SOURce]:FM[1]|2:INTernal[1]:FUNCtion:SHAPe?	✓	*Supported but the following parameters are not supported:* TRIangle|SQUare|RAMP|NOISe|DUALsine|SWEPtsine
[:SOURce]:FM[1]|2:INTernal[1]:SWEep:TIME <val><unit> [:SOURce]:FM[1]|2:INTernal[1]:SWEep:TIME?	–	
[:SOURce]:FM[1]|2:INTernal[1]:SWEep:TRIGger IMMediate|KEY|EXTernal|BUS [:SOURce]:FM[1]|2:INTernal[1]:SWEep:TRIGger?	–	
[:SOURce]:FM[1]|2:SOURce INT[1]|EXT[1]|EXT2 [:SOURce]:FM[1]|2:SOURce?	✓	
[:SOURce]:FM[1]|2:STATe ON|OFF|1|0 [:SOURce]:FM[1]|2:STATe?	✓	
[:SOURce]:FM[1]|2[:DEViation] <value><unit> [:SOURce]:FM[1]|2[:DEViation]?	✓	
[:SOURce]:FM[1]|2[:DEViation]:TRACk ON|OFF|1|0 [:SOURce]:FM[1]|2[:DEViation]:TRACk?	–	
List/Sweep Subsystem		
[:SOURce]:LIST:CPOint?	✓	
[:SOURce]:LIST:DIRection UP|DOWN [:SOURce]:LIST:DIRection?	✓	
[:SOURce]:LIST:DWELl <value>{,<value>} [:SOURce]:LIST:DWELl?	✓	
[:SOURce]:LIST:DWELl:POINts?	✓	

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:LIST:DWELl:TYPE LIST|STEP [:SOURce]:LIST:DWELl:TYPE?	✓	
[:SOURce]:LIST:FREQuency <value>{,<value>} [:SOURce]:LIST:FREQuency?	✓	
[:SOURce]:LIST:FREQuency:POINts?	✓	
[:SOURce]:LIST:MANual <value>|UP|DOWN [:SOURce]:LIST:MANual?	✓	
[:SOURce]:LIST:MODE AUTO|MANual [:SOURce]:LIST:MODE?	✓	
[:SOURce]:LIST:POWer <value>{,<value>} [:SOURce]:LIST:POWer?	✓	
[:SOURce]:LIST:POWer:POINts?	✓	
[:SOURce]:LIST:RETRace ON|OFF|0|1 [:SOURce]:LIST:RETRace?	✓	
[:SOURce]:LIST:TRIGger:SOURce BUS|IMMediate|EXTernal|KEY [:SOURce]:LIST:TRIGger:SOURce?	✓	
[:SOURce]:LIST:TYPE LIST|STEP [:SOURce]:LIST:TYPE?	✓	
[:SOURce]:LIST:TYPE:LIST:INITialize:FSTep	✓	
[:SOURce]:LIST:TYPE:LIST:INITialize:PRESet	✓	
[:SOURce]:SWEep:CPOint?	✓	
[:SOURce]:SWEep:DWELl <value> [:SOURce]:SWEep:DWELl?	✓	
[:SOURce]:SWEep:POINts <value> [:SOURce]:SWEep:POINts?	✓	

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:SWEep:SPACing LINear|LOGarithmic [:SOURce]:SWEep:SPACing?	✓	
Low Frequency Output Subsystem		
[:SOURce]:LFOutput:...	–	*This subsystem is not supported.*
Phase Modulation Subsystem		
[:SOURce]:PM[1]|2:BANDwidth|BWIDth NORMal|HIGH [:SOURce]:PM[1]|2:BANDwidth|BWIDth?	✓	
[:SOURce]:PM[1]|2:EXTernal[1]:COUPling AC|DC [:SOURce]:PM[1]|2:EXTernal[1]:COUPling?	✓	
[:SOURce]:PM[1]|2:INTernal[1]|2:FREQuency <value><unit> [:SOURce]:PM[1]|2:INTernal[1]|2:FREQuency?	✓	
[:SOURce]:PM:INTernal:FREQuency:STEP[:INCRement] [:SOURce]:PM:INTernal:FREQuency:STEP[:INCRement]?	✓	
[:SOURce]:PM[1]|2:INTernal[1]:FREQuency:ALTernate <val><unit> [:SOURce]:PM[1]|2:INTernal[1]:FREQuency:ALTernate?	–	
[:SOURce]:PM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent <val><unit> [:SOURce]:PM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent?	–	
[:SOURce]:PM[1]|2:INTernal[1]:FUNCtion:SHAPe SINE|TRIangle|SQUare|RAMP|NOISe|DUALsine|SWEPtsine [:SOURce]:PM[1]|2:INTernal[1]:FUNCtion:SHAPe?	✓	*Supported but the following parameters are not supported:* TRIangle|SQUare|RAMP|NOISe|DUALsine|SWEPtsine
[:SOURce]:PM[1]|2:INTernal[1]:SWEep:TIME <value><unit> [:SOURce]:PM[1]|2:INTernal[1]:SWEep:TIME?	–	

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:PM[1]|2:INTernal[1]:SWEep:TRIGger IMMediate|KEY|EXTernal|BUS [:SOURce]:PM[1]|2:INTernal[1]:SWEep:TRIGger?	–	
[:SOURce]:PM[1]|2:SOURce INT[1]|EXT[1]|EXT2 [:SOURce]:PM[1]|2:SOURce?	✓	
[:SOURce]:PM[1]|2:STATe ON|OFF|1|0 [:SOURce]:PM[1]|2:STATe?	✓	
[:SOURce]:PM[1]|2[:DEViation] <value><unit> [:SOURce]:PM[1]|2[:DEViation]?	✓	
[:SOURce]:PM[1]|2[:DEViation]:TRACk ON|OFF|1|0 [:SOURce]:PM[1]|2[:DEViation]:TRACk?	–	
[:SOURce]:PM[:DEViation]:STEP[:INCRement] <value><unit> [:SOURce]:PM[:DEViation]:STEP[:INCRement]?	✓	
Power Subsystem		
[:SOURce]:POWer:ALC:BANDwidth|BWIDth <num>[freq suffix] [:SOURce]:POWer:ALC:BANDwidth|BWIDth?	✓	
[:SOURce]:POWer:ALC:BANDwidth|BWIDth:AUTO ON|OFF|1|0 [:SOURce]:POWer:ALC:BANDwidth|BWIDth:AUTO?	✓	
[:SOURce]:POWer:ALC:SEARch ON|OFF|1|0|ONCE [:SOURce]:POWer:ALC:SEARch?	✓	
[:SOURce]:POWer:ALC:SEARch:REFerence RMS|FIXed|MANual|MODulated [:SOURce]:POWer:ALC:SEARch:REFerence?	–	
[:SOURce]:POWer:ALC:SEARch:REFerence:LEVel <value> [:SOURce]:POWer:ALC:SEARch:REFerence:LEVel?		

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:POWer:ALC:SEARch:SPAN:POINts <value> [:SOURce]:POWer:ALC:SEARch:SPAN:POINts?	–	
[:SOURce]:POWer:ALC:SEARch:SPAN:STARt <value><units> [:SOURce]:POWer:ALC:SEARch:SPAN:STARt?	✓	
[:SOURce]:POWer:ALC:SEARch:SPAN:STOP <value><units> [:SOURce]:POWer:ALC:SEARch:SPAN:STOP?	✓	
[:SOURce]:POWer:ALC:SEARch:SPAN:TYPE FULL|USER [:SOURce]:POWer:ALC:SEARch:SPAN:TYPE?	✓	
[:SOURce]:POWer:ALC:SEARch:SPAN[:STATe] ON|OFF|1|0 [:SOURce]:POWer:ALC:SEARch:SPAN[:STATe]?	✓	
[:SOURce]:POWer:ALCHold:EXTernal[:STATe] ON|OFF|1|0 [:SOURce]:POWer:ALCHold:EXTernal[:STATe]?	–	
[:SOURce]:POWer:ALCHold:INTernal[:STATe] ON|OFF|1|0 [:SOURce]:POWer:ALCHold:INTernal[:STATe]?	–	
[:SOURce]:POWer:ALC[:STATe] ON|OFF|1|0 [:SOURce]:POWer:ALC[:STATe]?	✓	
[:SOURce]:POWer:ALTernate:AMPLitude <value>dB [:SOURce]:POWer:ALTernate:AMPLitude?	–	
[:SOURce]:POWer:ALTernate:MANual MAIN|DELTa [:SOURce]:POWer:ALTernate:MANual?	–	
[:SOURce]:POWer:ALTernate:STATe ON|OFF|1|0 [:SOURce]:POWer:ALTernate:STATe?	–	
[:SOURce]:POWer:ALTernate:TRIGger[:SOURce] INTernal|EXTernal|MANual [:SOURce]:POWer:ALTernate:TRIGger[:SOURce]?	–	
[:SOURce]:POWer:ATTenuation:AUTO ON|OFF|1|0 [:SOURce]:POWer:ATTenuation:AUTO?	✓	

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:POWer:MODE FIXed|LIST|SWEep [:SOURce]:POWer:MODE?	✓	
[:SOURce]:POWer:PROTection[:STATe] ON|OFF|1|0 [:SOURce]:POWer:PROTection[:STATe]?	✓	
[:SOURce]:POWer:REFerence <value><unit> [:SOURce]:POWer:REFerence?	✓	
[:SOURce]:POWer:REFerence:STATe ON|OFF|1|0 [:SOURce]:POWer:REFerence:STATe?	✓	
[:SOURce]:POWer:STARt <value><unit> [:SOURce]:POWer:STARt?	✓	
[:SOURce]:POWer:STOP <value><unit> [:SOURce]:POWer:STOP?	✓	
[:SOURce]:POWer[:LEVel][:IMMediate]:OFFSet <value><unit> [:SOURce]:POWer[:LEVel][:IMMediate]:OFFSet?	✓	
[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude] <value><unit> |UP|DOWN [:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]?	✓	
[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]:STEP[:INCRement] <value> [:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]:STEP[:INCRement]?	✓	
Pulse Modulation Subsystem		
[:SOURce]:PULM:EXTernal:POLarity NORMal|INVerted [:SOURce]:PULM:EXTernal:POLarity?	✓	
[:SOURce]:PULM:INTernal[1]:FREQuency <frequency>|UP|DOWN [:SOURce]:PULM:INTernal[1]:FREQuency?	✓	

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:PULM:INTernal[1]:FREQuency:STEP[:INCRement] <freq> [:SOURce]:PULM:INTernal[1]:FREQuency:STEP[:INCRement]?	✓	
[:SOURce]:PULM:INTernal[1]:FUNCtion:SHAPe SQUare|PULSe [:SOURce]:PULM:INTernal[1]:FUNCtion:SHAPe?	–	
[:SOURce]:PULM:INTernal[1]:PERiod <period>|MAXimum|MINimum|UP|DOWN [:SOURce]:PULM:INTernal[1]:PERiod?	✓	
[:SOURce]:PULM:INTernal[1]:PERiod:STEP[:INCRement] <step>|UP|DOWN [:SOURce]:PULM:INTernal[1]:PERiod:STEP[:INCRement]?	✓	
[:SOURce]:PULM:INTernal[1]:PWIDth <width> [:SOURce]:PULM:INTernal[1]:PWIDth?	✓	
[:SOURce]:PULM:INTernal[1]:PWIDth:STEP <step>|DEFault|MAXimum|MINimum [:SOURce]:PULM:INTernal[1]:PWIDth:STEP?	✓	
[:SOURce]:PULM:SOURce INT|EXT[1]|EXT2 [:SOURce]:PULM:SOURce?	✓	*Supported but the following parameters are not supported:* |SCALar|
[:SOURce]:PULM:STATe ON|OFF|1|0 [:SOURce]:PULM:STATe?	✓	
Digital Function Commands		
All Subsystem		
[:SOURce]:RADio:ALL...	–	*This subsystem is not supported.*
AWGN Subsystem		
[:SOURce]:RADio:AWGN...	–	*This subsystem is not supported.*
Bluetooth Subsystem		
[:SOURce]:RADio[1]:BLUEtooth:ARB:...	–	*This subsystem is not supported.*

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
Calculate Subsystem		
:CALCulate:BERT:BTS:LOOPback:...	–	*This subsystem is not supported.*
CDMA ARB Subsystem		
[:SOURce]:RADio:CDMA:ARB:...	–	*This subsystem is not supported.*
CDMA2000 ARB Subsystem		
[:SOURce]:RADio:CDMA2000:ARB:...	–	*This subsystem is not supported.*
CDMA2000 BBG Subsystem		
[:SOURce]:RADio:CDMA2000[:BBG]:...	–	*This subsystem is not supported.*
CDMAEVDV Subsystem		
[:SOURce]:RADio:CDMAEVDV[:BBG]:...	–	*This subsystem is not supported.*
Custom Subsystem		
[:SOURce]:RADio:CUSTom...	–	*This subsystem is not supported.*
Data Subsystem		
:DATA:BERT:...	–	*This subsystem is not supported.*
DECT Subsystem		
[:SOURce]:RADio:DECT:...	–	*This subsystem is not supported.*
Dmodulation Subsystem		
[:SOURce]:RADio:DMODulation:ARB...	–	*This subsystem is not supported.*
Digital Subsystem		
:DIGital...	–	*This subsystem is not supported.*
Digital Modulation Subsystem		
[:SOURce]:BURSt:... [:SOURce]:DM:	–	*This subsystem is not supported.*
Display Subsystem		

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:DISPlay:ANNotation:AMPLitude:UNIT DBM|DBUV|DBUVEMF|V|VEMF|DB :DISPlay:ANNotation:AMPLitude:UNIT?	✓	
:DISPlay:ANNotation:CLOCk:DATE:FORMat MDY|DMY :DISPlay:ANNotation:CLOCk:DATE:FORMat?	✓	
:DISPlay:ANNotation:CLOCk[:STATe] ON|OFF|1|0 :DISPlay:ANNotation:CLOCk[:STATe]?	✓	
:DISPlay:BRIGhtness <value> :DISPlay:BRIGhtness?	✓	
:DISPlay:CAPTure	✓	
:DISPlay:CONTrast <value> :DISPlay:CONTrast?	✓	
:DISPlay:INVerse ON|OFF|1|0 :DISPlay:INVerse?	✓	
:DISPlay:MENU[:NAME] AM|FMPM|SWEep|UTILity|PULSe|LFOut|FREQuency|AMPLitude|SAVE|RECall|IQ|MUX|MODE|MODesetup|BERT|BGSM|BEDGe	–	
:DISPlay:REMote ON|OFF|1|0 :DISPlay:REMote?	✓	
:DISPlay[:WINDow][:STATe] ON|OFF|1|0 :DISPlay[:WINDow][:STATe]?	✓	
Dual ARB Subsystem		
[:SOURce]:RADio:ARB...	–	*This subsystem is not supported.*
Edge Subsystem		
[:SOURce]:RADio:EDGE:...	–	*This subsystem is not supported.*
GSM Subsystem		
[:SOURce]:RADio[1]:GSM:...	–	*This subsystem is not supported.*

Table 8-1 E4428C/38C Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
Input Subsystem		
:INPut:BERT[:BASeband]:...	–	*This subsystem is not supported.*
Measure Subsystem		
:MEASure:[SCALar]:BERT:BTS:LOOPback:...	–	*This subsystem is not supported.*
Multi-Tone Subsystem		
[:SOURce]:RADio:MTONe:ARB...	–	*This subsystem is not supported.*
GPS Subsystem		
[:SOURce]:RADio:GPS:...	–	*This subsystem is not supported.*
NADC Subsystem		
[:SOURce]:RADio[:NADC]:...	–	*This subsystem is not supported.*
PDC Subsystem		
[:SOURce]:RADio:PDC:...	–	*This subsystem is not supported.*
PHS Subsystem		
[:SOURce]:RADio:PHS:...	–	*This subsystem is not supported.*
Sense Subsystem		
:SENSe:BERT:...	–	*This subsystem is not supported.*
Tetra Subsystem		
[:SOURce]:RADio:TETRa:...	–	*This subsystem is not supported.*
Wideband CDMA ARB Subsystem		
[:SOURce]:RADio:WCDMa:TGPP:ARB:...	–	*This subsystem is not supported.*
Wideband CDMA BBG Subsystem		
[:SOURce]:RADio:WCDMa:HSDPa[:BBG]:... [:SOURce]:RADio:WCDMa:HSPA[:BBG]:... [:SOURce]:RADio:WCDMa:TGPP[:BBG]:...	–	*This subsystem is not supported.*

E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Compatible SCPI Commands

Table 8-2 is a comprehensive list of E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and the E8663B SCPI commands arranged by subsystem. Commands are indicated as supported or not supported by the N5183A. Use the legend within the table to determine command compatibility.

When using the programming codes in this section, you can:

- set the N5183A system language to E8241A/44A, E8251A/54A, E8247C/57C/67C or E8257D/67D/E8663B for the current session:

  Utility > **I/O Config** > **Remote Language** >

  E8241A,E8244A,E8251A,E8254A or **E8247C,E8257C,E8267C** or **E8257D,E8267D,E8663B**

  or send the command:

  `:SYST:LANG "E8241A"` or “E8247C” or “E8257D”

- set the N5183A system language to E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D or E8663B so that it does not reset with either preset, instrument power cycle or `*RST` command:

  Utility > **Power On/Preset** > **Preset Language** >

  E8241A,E8244A,E8251A,E8254A or **E8247C,E8257C,E8267C** or **E8257D,E8267D,E8663B**

  or send the command:

  `:SYST:PRESet:LANG "E8241A"` or “E8247C” or “E8257D”

- set the `*IDN?` response to any E8241A, E8247C or E8257D like response you prefer. Refer to the :SYSTem:IDN command on page 373.

NOTE The Agilent MXG has only one AM, FM, and PM path. Using AM2, FM2, or PM2 path commands will result in the following error: “`ERROR: -113, Undefined Header`”.

The Agilent MXG has only one internal source for AM, FM and PM, but the INT2 source selection is accepted by the signal generator and is equivalent to selecting INT[1].

The Agilent MXG has three dedicated external sources, one for AM, one for FM/PM and one for Pulse. The EXT2 source selection is accepted by the signal generator, but is equivalent to selecting EXT[1].

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
System Function Commands		
IEEE Common Commands		
*CLS	✓	
*ESE <data> *ESE?	✓	
*ESR?	✓	
*IDN?	✓	
*OPC *OPC?	✓	
*OPT?	✓	
*PSC ON|OFF|1|0 *PSC?	✓	
*RCL <reg_num>[,<seq_num>]	✓	
*RST	✓	
*SAV <reg_num>[,<seq_num>]	✓	
*SRE <data> *SRE?	✓	
*STB?	✓	
*TRG	✓	
*TST?	✓	
*WAI	✓	
Calibration Subsystem		
:CALibration:DCFM	✓	
:CALibration:IQ	–	
:CALibration:IQ:DC	–	
:CALibration:IQ:DEFault	–	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:CALibration:IQ:FULL	–	
:CALibration:IQ:STARt <value><units> :CALibration:IQ:STARt?	–	
:CALibration:IQ:STOP <value><units> :CALibration:IQ:STOP?	–	
:CALibration:WBIQ	–	
:CALibration:WBIQ:DC	–	
:CALibration:WBIQ:DEFault	–	
:CALibration:WBIQ:FULL	–	
:CALibration:WBIQ:STARt <value><units> :CALibration:WBIQ:STARt?	–	
:CALibration:WBIQ:STOP <value><units> :CALibration:WBIQ:STOP?	–	
Communication Subsystem		
:SYSTem:COMMunicate:GPIB:ADDRess <number> :SYSTem:COMMunicate:GPIB:ADDRess?	✓	
:SYSTem:COMMunicate:GTLocal	✓	
:SYSTem:COMMunicate:LAN:CONFig DHCP|MANual :SYSTem:COMMunicate:LAN:CONFig?	✓	
:SYSTem:COMMunicate:LAN:GATeway <ipstring> :SYSTem:COMMunicate:LAN:GATeway?	✓	
:SYSTem:COMMunicate:LAN:HOSTname <string> :SYSTem:COMMunicate:LAN:HOSTname?	✓	
:SYSTem:COMMunicate:LAN:IP <ipstring> :SYSTem:COMMunicate:LAN:IP?	✓	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:SYSTem:COMMunicate:LAN:SUBNet <ipstring> :SYSTem:COMMunicate:LAN:SUBNet?	✓	
:SYSTem:COMMunicate:PMETer:ADDRess <value> :SYSTem:COMMunicate:PMETer:ADDRess?	–	
:SYSTem:COMMunicate:PMETer:CHANnel A|B :SYSTem:COMMunicate:PMETer:CHANnel?	✓	*Command accepted without error but does nothing.*
:SYSTem:COMMunicate:PMETer:IDN E4418B|E4419B|E4416A|E4417A :SYSTem:COMMunicate:PMETer:IDN?	✓	*Command accepted without error but does nothing.*
:SYSTem:COMMunicate:PMETer:TIMEout <num>[<time suffix>] :SYSTem:COMMunicate:PMETer:TIMEout?	✓	*Command accepted without error but does nothing.*
:SYSTem:COMMunicate:SERial:BAUD <number> :SYSTem:COMMunicate:SERial:BAUD?	–	
:SYSTem:COMMunicate:SERial:ECHO ON|OFF :SYSTem:COMMunicate:SERial:ECHO?	–	
:SYSTem:COMMunicate:SERial:RESet	–	
:SYSTem:COMMunicate:SERial:TOUT <value> :SYSTem:COMMunicate:SERial:TOUT?	–	
Diagnostic Subsystem		
:DIAGnostic[:CPU]:INFOrmation:BOARds?	–	
:DIAGnostic[:CPU]:INFOrmation:CCOunt:ATTenuator?	✓	
:DIAGnostic[:CPU]:INFOrmation:CCOunt:PON?	✓	
:DIAGnostic[:CPU]:INFOrmation:DISPlay:OTIMe?	✓	
:DIAGnostic[:CPU]:INFOrmation:LICense:AUXiliary?	✓	
:DIAGnostic[:CPU]:INFOrmation:LICense:WAVeform?	✓	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:DIAGnostic[:CPU]:INFOrmation:OPTions?	✓	
:DIAGnostic[:CPU]:INFOrmation:OPTions:DETail?	✓	
:DIAGnostic[:CPU]:INFOrmation:OTIMe?	✓	
:DIAGnostic[:CPU]:INFOrmation:REVision?	✓	
:DIAGnostic[:CPU]:INFOrmation:SDATe?	✓	
:DIAGnostic[:CPU]:INFOrmation:WLICense[:VALue]? <waveformType>	✓	
Memory Subsystem		
:MEMory:CATalog:BINary?	✓	
:MEMory:CATalog:BIT?	–	
:MEMory:CATalog:CDMA?	–	
:MEMory:CATalog:DMOD?	–	
:MEMory:CATalog:DWCDma?	–	
:MEMory:CATalog:FCDMa?	–	
:MEMory:CATalog:FIR?	–	
:MEMory:CATalog:FSK?	–	
:MEMory:CATalog:IQ?	–	
:MEMory:CATalog:LIST?	✓	
:MEMory:CATalog:MCDMa?	–	
:MEMory:CATalog:MDMod?	–	
:MEMory:CATalog:MDWCdma?	–	
:MEMory:CATalog:MFCdma?	–	
:MEMory:CATalog:MTONe?	–	
:MEMory:CATalog:RCDMa?	–	
:MEMory:CATalog:SEQ?	–	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:MEMory:CATalog:SHAPe?	–	
:MEMory:CATalog:STATe?	✓	
:MEMory:CATalog:UFLT?	✓	
:MEMory:CATalog:UPC?	–	
:MEMory:CATalog:UWCDma?	–	
:MEMory:CATalog[:ALL]?	✓	
:MEMory:COPY[:NAME] <"filename">,<"filename">	✓	
:MEMory:DATA <"filename">,<datablock> :MEMory:DATA? <"filename">	✓	
:MEMory:DATA:APPend <"filename">,<datablock>	✓	
:MEMory:DATA:BIT <"filename">,<bit_count>,<datablock> :MEMory:DATA:BIT? <"filename">	–	
:MEMory:DATA:FIR <"filename">,osr,coefficient{,coefficient} :MEMory:DATA:FIR? <"filename">	–	
:MEMory:DATA:FSK <"filename">,num_states,f0,f0,...[,diff_state,num_diff_states,diff0,diff1,...] :MEMory:DATA:FSK? <"filename">	–	
:MEMory:DATA:IQ <"filename">,offsetQ,num_states,i0,q0,i1,q1,...[,diff_state,num_diff_states,diff0,diff1,...] :MEMory:DATA:IQ? <"filename">	–	
:MEMory:DATA:PRAM[1]|2|3|4:FILE:BLOCk <"filename">,<datablock>	–	
:MEMory:DATA:PRAM[1]|2|3|4:FILE:LIST <"filename">,<uint8>[,<uint8>,<...>]	–	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:MEMory:DATA:SHAPe <"filename">,num_rise_points,rp0,rp1,...num_fall_points,fp0,fp1,... :MEMory:DATA:SHAPe? <"filename">	–	
:MEMory:DATA:UNPRotected <"filename">,<datablock>	–	
:MEMory:DELete:ALL	✓	
:MEMory:DELete:BINary	✓	
:MEMory:DELete:BIT	–	
:MEMory:DELete:CDMA	–	
:MEMory:DELete:DMOD	–	
:MEMory:DELete:DWCDma	–	
:MEMory:DELete:FCDMa	–	
:MEMory:DELete:FIR	–	
:MEMory:DELete:FSK	–	
:MEMory:DELete:IQ	–	
:MEMory:DELete:LIST	✓	
:MEMory:DELete:MCDMa	–	
:MEMory:DELete:MDMod	–	
:MEMory:DELete:MDWCdma	–	
:MEMory:DELete:MFCdma	–	
:MEMory:DELete:MTONe	–	
:MEMory:DELete:RCDMa	–	
:MEMory:DELete:SEQ	–	
:MEMory:DELete:SHAPe	–	
:MEMory:DELete:STATe	✓	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:MEMory:DELete:UFLT	✓	
:MEMory:DELete:UPC	–	
:MEMory:DELete:UWCDma	–	
:MEMory:DELete[:NAME] <"filename">	✓	
:MEMory:FREE[:ALL]?	✓	
:MEMory:LOAD:LIST <"filename">	✓	
:MEMory:MOVE <src_file>,<dest_file>	✓	
:MEMory:SIZE? <"filename">	✓	*Returns -1 if the file does not exist in a valid msus or directory*
:MEMory:STATe:COMMent <reg_num>,<seq_num>,<"comment"> :MEMory:STATe:COMMent? <reg_num>,<seq_num>	✓	
:MEMory:STORe:LIST <"filename">	✓	
:MMEMory:CATalog? <"msus">	✓	
:MMEMory:COPY <"filename">,<"filename">	✓	
:MMEMory:DATA <"filename">,<datablock> :MMEMory:DATA? <"filename">	✓	
:MMEMory:DELete:NVWFm	–	
:MMEMory:DELete:WFM	–	
:MMEMory:DELete[:NAME] <"filename">,[<"msus">]	–	
:MMEMory:HEADer:CLEar <"filename">	✓	
:MMEMory:HEADer:DESCription <"filename">, <"description"> :MMEMory:HEADer:DESCription? <"filename">	✓	
:MMEMory:LOAD:LIST <"filename">	✓	
:MMEMory:MOVE <src_file>,<dest_file>	✓	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:MMEMory:STORe:LIST <"filename">	✓	
Output Subsystem		
:OUTPut:BLANking:AUTO ON|OFF|1|0 :OUTPut:BLANking:AUTO?	✓	
:OUTPut:BLANking[:STATe] ON|OFF|1|0 :OUTPut:BLANking[:STATe]?	✓	
:OUTPut:MODulation[:STATe] ON|OFF|1|0 :OUTPut:MODulation[:STATe]?	✓	
:OUTPut:SETTled:POLarity NORMal|INVerted :OUTPut:SETTled:POLarity?	–	
:OUTPut:SETTled:RETRace NORMal|INVerted :OUTPut:SETTled:RETRace?	–	
:OUTPut:SETTled:RFOFf NORMal|INVerted :OUTPut:SETTled:RFOFf?	–	
:OUTPut:SETTled[:STATe]?	–	
:OUTPut[:STATe] ON|OFF|1|0 :OUTPut[:STATe]?	✓	
Route Subsystem		
:ROUTe:HARDware:DGENerator:...	–	*This subsystem is not supported.*
Status Subsystem		
:STATus:OPERation:BASeband:CONDition?	–	
:STATus:OPERation:BASeband:ENABle <value> :STATus:OPERation:BASeband:ENABle?	–	
:STATus:OPERation:BASeband:NTRansition <value> :STATus:OPERation:BASeband:NTRansition?	–	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:STATus:OPERation:BASeband:PTRansition <value> :STATus:OPERation:BASeband:PTRansition?	–	
:STATus:OPERation:BASeband[:EVENt]?	–	
:STATus:OPERation:CONDition?	✓	
:STATus:OPERation:ENABle <value> :STATus:OPERation:ENABle?	✓	
:STATus:OPERation:NTRansition <value> :STATus:OPERation:NTRansition?	✓	
:STATus:OPERation:PTRansition <value> :STATus:OPERation:PTRansition?	✓	
:STATus:OPERation[:EVENt]?	✓	
:STATus:PRESet	✓	
:STATus:QUEStionable:CALibration:CONDition?	✓	
:STATus:QUEStionable:CALibration:ENABle <value> :STATus:QUEStionable:CALibration:ENABle?	✓	
:STATus:QUEStionable:CALibration:NTRansition <value> :STATus:QUEStionable:CALibration:NTRansition?	✓	
:STATus:QUEStionable:CALibration:PTRansition <value> :STATus:QUEStionable:CALibration:PTRansition?	✓	
:STATus:QUEStionable:CALibration[:EVENt]?	✓	
:STATus:QUEStionable:CONDition?	✓	
:STATus:QUEStionable:ENABle <value> :STATus:QUEStionable:ENABle?	✓	
:STATus:QUEStionable:FREQuency:CONDition?	✓	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:STATus:QUEStionable:FREQuency:ENABle <value> :STATus:QUEStionable:FREQuency:ENABle?	✓	
:STATus:QUEStionable:FREQuency:NTRansition <value> :STATus:QUEStionable:FREQuency:NTRansition?	✓	
:STATus:QUEStionable:FREQuency:PTRansition <value> :STATus:QUEStionable:FREQuency:PTRansition?	✓	
:STATus:QUEStionable:FREQuency[:EVENt]?	✓	
:STATus:QUEStionable:MODulation:CONDition?	–	
:STATus:QUEStionable:MODulation:ENABle <value> :STATus:QUEStionable:MODulation:ENABle?	–	
:STATus:QUEStionable:MODulation:NTRansition <value> :STATus:QUEStionable:MODulation:NTRansition?	–	
:STATus:QUEStionable:MODulation:PTRansition <value> :STATus:QUEStionable:MODulation:PTRansition?	–	
:STATus:QUEStionable:MODulation[:EVENt]?	–	
:STATus:QUEStionable:NTRansition <value> :STATus:QUEStionable:NTRansition?	✓	
:STATus:QUEStionable:POWer:CONDition?	✓	
:STATus:QUEStionable:POWer:ENABle <value> :STATus:QUEStionable:POWer:ENABle?	✓	
:STATus:QUEStionable:POWer:NTRansition <value> :STATus:QUEStionable:POWer:NTRansition?	✓	
:STATus:QUEStionable:POWer:PTRansition <value> :STATus:QUEStionable:POWer:PTRansition?	✓	
:STATus:QUEStionable:POWer[:EVENt]?	✓	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:STATus:QUEStionable:PTRansition <value> :STATus:QUEStionable:PTRansition?	✓	
:STATus:QUEStionable[:EVENt]?	✓	
System Subsystem		
:SYSTem:ALTernate <reg num> :SYSTem:ALTernate? [MAXimum|MINimum]	–	
:SYSTem:ALTernate:STATe ON|OFF|1|0 :SYSTem:ALTernate:STATe?	–	
:SYSTem:CAPability?	✓	
:SYSTem:DATE <year>,<month>,<day> :SYSTem:DATE?	✓	
:SYSTem:ERRor:SCPI[:SYNTax] ON|OFF|1|0 :SYSTem:ERRor:SCPI[:SYNTax]?	✓	
:SYSTem:ERRor[:NEXT]?	✓	
:SYSTem:FILEsystem:SAFEmode ON|OFF|1|0 :SYSTem:FILEsystem:SAFEmode?	–	
:SYSTem:HELP:MODE SINGle|CONTinuous :SYSTem:HELP:MODE?	–	
:SYSTem:IDN "string"	✓	
:SYSTem:LANGuage "8340"|"8360"|"83712"|"83732"|"83752"|"8757"| "8662"|"8663" :SYSTem:LANGuage?	✓	*See* ":LANGuage (N5183A)" on page 374.
:SYSTem:OEMHead:FREQuency:BAND WR15|WR12|WR10|WR8|WR6|WR5|WR3 :SYSTem:OEMHead:FREQuency:BAND?	–	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:SYSTem:OEMHead:FREQuency:MULTiplier <val> :SYSTem:OEMHead:FREQuency:MULTiplier?	–	
:SYSTem:OEMHead:FREQuency:STARt <val> :SYSTem:OEMHead:FREQuency:STARt?	–	
:SYSTem:OEMHead:FREQuency:STOP <val> :SYSTem:OEMHead:FREQuency:STOP?	–	
:SYSTem:OEMHead:SELect ON|OFF|NONE|REAR|FRONt :SYSTem:OEMHead:SELect?	–	
:SYSTem:OPT "string"	✓	
:SYSTem:PON:TYPE PRESet|LAST :SYSTem:PON:TYPE?	✓	
:SYSTem:PRESet	✓	*Always performs the same action as the* **Preset** *hardkey.* *For related* **Preset** *hardkey information, refer to* ":SYSTem:PRESet:TYPE NORMal|USER :SYSTem:PRESet:TYPE?" on page 394
:SYSTem:PRESet:ALL	✓	
:SYSTem:PRESet:LANGuage "8340"|"8360"|"83712"|"83732"|"83752"|"8757"|"8662"|"8663" :SYSTem:PRESet:LANGuage?	✓	*See* ":PRESet:LANGuage (N5183A)" on page 375.
:SYSTem:PRESet:PERSistent	✓	
:SYSTem:PRESet:PN9 NORMal|QUICk :SYSTem:PRESet:PN9?	–	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:SYSTem:PRESet:TYPE NORMal|USER :SYSTem:PRESet:TYPE?	✓	*This command toggles the* **Preset** *hardkey state between factory- and user-defined conditions.* *The setting enabled by this command is not affected by signal generator power-on, preset, or* *RST. **NOTE** If the **Preset** hardkey is not responding correctly, using the SCPI command: :SYSTem:PRESet:TYPE NORMal will return the Preset hardkey to its default factory behavior.
:SYSTem:PRESet[:USER]:SAVE	✓	
:SYSTem:SECurity:DISPlay ON|OFF|{1}|0 :SYSTem:SECurity:DISPlay?	✓	
:SYSTem:SECurity:DISPlay:RESTricted ON|OFF|{1}|0 :SYSTem:SECurity:DISPlay:RESTricted?	✓	
:SYSTem:SECurity:ERASeall	✓	
:SYSTem:SECurity:LEVel {NONE}|ERASe|OVERwrite|SANitize :SYSTem:SECurity:LEVel?	✓	
:SYSTem:SECurity:LEVel:STATe ON|OFF|1|0 :SYSTem:SECurity:LEVel:STATe?	✓	
:SYSTem:SECurity:OVERwrite	✓	
:SYSTem:SECurity:SANitize	✓	
:SYSTem:SSAVer:DELay <value> :SYSTem:SSAVer:DELay?	✓	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:SYSTem:SSAVer:MODE LIGHt|TEXT :SYSTem:SSAVer:MODE?	✓	
:SYSTem:SSAVer:STATe ON|OFF :SYSTem:SSAVer:STATe?	✓	
:SYSTem:TIME <hour>,<minute>,<second> :SYSTem:TIME?	✓	
:SYSTem:VERSion?	✓	
Trigger Subsystem		
:ABORt	✓	
:INITiate:CONTinuous[:ALL] ON|OFF|1|0 :INITiate:CONTinuous[:ALL]?	✓	
:INITiate[:IMMediate][:ALL]	✓	
:TRIGger:OUTPut:POLarity POSitive|NEGative :TRIGger:OUTPut:POLarity?	✓	
:TRIGger[:SEQuence]:SLOPe POSitive|NEGative :TRIGger[:SEQuence]:SLOPe?	✓	
:TRIGger[:SEQuence]:SOURce BUS|IMMediate|EXTernal|KEY :TRIGger[:SEQuence]:SOURce?	✓	
:TRIGger[:SEQuence][:IMMediate]	✓	
[:SOURce]:TSWeep	✓	
Unit Subsystem		
:UNIT:POWer DBM|DBUV|DBUVEMF|V|VEMF|DB :UNIT:POWer?	✓	
Amplitude Modulation Subsystem		

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:AM:INTernal:FREQuency:STEP[:INCRement] <num> [:SOURce]:AM:INTernal:FREQuency:STEP[:INCRement]?	✓	
[:SOURce]:AM:MODE DEEP|NORMal [:SOURce]:AM:MODE?	✓	
[:SOURce]:AM:WIDeband:SENSitivity <val> [:SOURce]:AM:WIDeband:SENSitivity?	–	
[:SOURce]:AM:WIDeband:STATe ON|OFF|1|0 [:SOURce]:AM:WIDeband:STATe?	–	
[:SOURce]:AM[1]|2:EXTernal[1]|2:COUPling AC|DC [:SOURce]:AM[1]|2:EXTernal[1]|2:COUPling?	✓	
[:SOURce]:AM[1]|2:EXTernal[1]|2:IMPedance <50|600> [:SOURce]:AM[1]|2:EXTernal[1]|2:IMPedance?	–	*Command accepted without error but does nothing.*
[:SOURce]:AM[1]|2:INTernal2:FUNCtion:SHAPe SINE|TRIangle|SQUare|RAMP|NOISe	✓	*Supported but the following parameters are not supported:* "TRIangle"|"SQUare"|"RAMP"|"NOISe"
[:SOURce]:AM[1]|2:INTernal[1]:FREQuency:ALTernate <value><unit> [:SOURce]:AM[1]|2:INTernal[1]:FREQuency:ALTernate?	–	
[:SOURce]:AM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent <value><unit> [:SOURce]:AM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent?	–	
[:SOURce]:AM[1]|2:INTernal[1]|2:FUNCtion:SHAPe SINE|TRIangle|SQUare|RAMP|NOISe|DUALsine|SWEPtsine| [:SOURce]:AM[1]|2:INTernal[1]|2:FUNCtion:SHAPe?	✓	*Supported but the following parameters are not supported:* "TRIangle"|"SQUare"|"RAMP"|"NOISe"|"DUALsine"|"SWEPtsine"|
[:SOURce]:AM[1]|2:INTernal[1]:SWEep:RATE <val><unit> [:SOURce]:AM[1]|2:INTernal[1]:SWEep:RATE?	–	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:AM[1]|2:INTernal[1]:SWEep:TRIGger IMMediate|KEY|EXTernal|BUS [:SOURce]:AM[1]|2:INTernal[1]:SWEep:TRIGger?	–	
[:SOURce]:AM[1]|2:INTernal[1]|2:FREQuency <val><unit>|UP|DOWN [:SOURce]:AM[1]|2:INTernal[1]|2:FREQuency?	✓	
[:SOURce]:AM[1]|2:INTernal[1]|2:FUNCtion:NOISe GAUSsian|UNIForm [:SOURce]:AM[1]|2:INTernal[1]|2:FUNCtion:NOISe?	–	
[:SOURce]:AM[1]|2:INTernal[1]|2:FUNCtion:RAMP POSitive|NEGative [:SOURce]:AM[1]|2:INTernal[1]|2:FUNCtion:RAMP?	–	
[:SOURce]:AM[1]|2:POLarity NORMal|INVerted [:SOURce]:AM[1]|2:POLarity?	–	
[:SOURce]:AM[1]|2:SOURce INT[1]|INT2|EXT[1]|EXT2 [:SOURce]:AM[1]|2:SOURce?	✓	
[:SOURce]:AM[1]|2:STATe ON|OFF|1|0 [:SOURce]:AM[1]|2:STATe?	✓	
[:SOURce]:AM[1]|2:TYPE LINear|EXPonential [:SOURce]:AM[1]|2:TYPE?	✓	
[:SOURce]:AM[1]|2[:DEPTh]:EXPonential <val> [:SOURce]:AM[1]|2[:DEPTh]:EXPonential?	✓	
[:SOURce]:AM[1]|2[:DEPTh][:LINear] <val><unit>|UP|DOWN [:SOURce]:AM[1]|2[:DEPTh][:LINear]?	✓	
[:SOURce]:AM[1]|2[:DEPTh][:LINear]:TRACk ON|OFF|1|0 [:SOURce]:AM[1]|2[:DEPTh][:LINear]:TRACk?	–	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:AM[:DEPTh]:STEP[:INCRement] <value><unit> [:SOURce]:AM[:DEPTh]:STEP[:INCRement]?	✓	
Correction Subsystem		
[:SOURce]:CORRection:FLATness:LOAD <"filename">	✓	
[:SOURce]:CORRection:FLATness:PAIR <freq>,<corr>	✓	
[:SOURce]:CORRection:FLATness:POINts?	✓	
[:SOURce]:CORRection:FLATness:PRESet	✓	
[:SOURce]:CORRection:FLATness:STORe <"filename">	✓	
[:SOURce]:CORRection:POWer:LOAD <"filename">	–	
[:SOURce]:CORRection:POWer:OFFSet:DEFault	–	
[:SOURce]:CORRection:POWer:OFFSet:HI <value> [:SOURce]:CORRection:POWer:OFFSet:HI?	–	
[:SOURce]:CORRection:POWer:OFFSet:LO <value> [:SOURce]:CORRection:POWer:OFFSet:LO?	–	
[:SOURce]:CORRection:POWer:PAIR <level>,<corr>	–	
[:SOURce]:CORRection:POWer:POINts?	–	
[:SOURce]:CORRection:POWer:PRESet	–	
[:SOURce]:CORRection:POWer:STORe <"filename">	–	
[:SOURce]:CORRection[:STATe] ON|OFF|1|0 [:SOURce]:CORRection[:STATe]?	✓	
Frequency Subsystem		
[:SOURce]:FREQuency:CENTer <num>[<freq suffix>]|MAXimum|MINimum|UP|DOWN [:SOURce]:FREQuency:CENTer? [MAXimum|MINimum]	✓	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:FREQuency:CHANnels:BAND NBASe|NMOBile|BPGSm|MPGSm|... [:SOURce]:FREQuency:CHANnels:BAND?...	✓	
[:SOURce]:FREQuency:CHANnels:NUMBer <number> [:SOURce]:FREQuency:CHANnels:NUMBer?	✓	
[:SOURce]:FREQuency:CHANnels[:STATe] ON|OFF|1|0 [:SOURce]:FREQuency:CHANnels[:STATe]?	✓	
[:SOURce]:FREQuency:FIXed <value><unit> |UP|DOWN [:SOURce]:FREQuency:FIXed?	✓	
[:SOURce]:FREQuency:MANual <value><unit> [:SOURce]:FREQuency:MANual?	–	
[:SOURce]:FREQuency:MODE FIXed|CW|SWEep|LIST [:SOURce]:FREQuency:MODE?	✓	
[:SOURce]:FREQuency:MULTiplier <value> [:SOURce]:FREQuency:MULTiplier?	✓	
[:SOURce]:FREQuency:OFFSet <value><unit> [:SOURce]:FREQuency:OFFSet?	✓	
[:SOURce]:FREQuency:OFFSet:STATe ON|OFF [:SOURce]:FREQuency:OFFSet:STATe?	✓	
[:SOURce]:FREQuency:REFerence <value><unit> [:SOURce]:FREQuency:REFerence?	✓	
[:SOURce]:FREQuency:REFerence:SET	✓	
[:SOURce]:FREQuency:REFerence:STATe ON|OFF|1|0 [:SOURce]:FREQuency:REFerence:STATe?	✓	
[:SOURce]:FREQuency:SPAN <num>[<freq suffix>]|MAXimum|MINimum|UP|DOWN [:SOURce]:FREQuency:SPAN? [MAXimum|MINimum]	✓	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:FREQuency:STARt <value><unit> [:SOURce]:FREQuency:STARt?	✓	
[:SOURce]:FREQuency:STOP <value><unit> [:SOURce]:FREQuency:STOP?	✓	
[:SOURce]:FREQuency[:CW] <value><unit> [:SOURce]:FREQuency[:CW]?	✓	
[:SOURce]:FREQuency[:CW]:STEP[:INCRement] <value><unit> [:SOURce]:FREQuency[:CW]:STEP[:INCRement]?	✓	
[:SOURce]:FREQuency[:FIXed]:STEP[:INCRement] <value><unit> [:SOURce]:FREQuency[:FIXed]:STEP[:INCRement]?	✓	
[:SOURce]:PHASe:REFerence	✓	
[:SOURce]:PHASe[:ADJust] <value><unit> [:SOURce]:PHASe[:ADJust]?	✓	
[:SOURce]:ROSCillator:BANDwidth:DEFaults	–	
[:SOURce]:ROSCillator:BANDwidth:EXTernal <value> [:SOURce]:ROSCillator:BANDwidth:EXTernal?	✓	
[:SOURce]:ROSCillator:BANDwidth:INTernal <value> [:SOURce]:ROSCillator:BANDwidth:INTernal?	–	
[:SOURce]:ROSCillator:SOURce?	✓	
[:SOURce]:ROSCillator:SOURce:AUTO ON|OFF|1|0 [:SOURce]:ROSCillator:SOURce:AUTO?	✓	
Frequency Modulation Subsystem		
[:SOURce]:FM:INTernal:FREQuency:STEP[:INCRement] <num> [:SOURce]:FM:INTernal:FREQuency:STEP[:INCRement]?	✓	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:FM[1]|2:EXTernal[1]|2:COUPling AC|DC [:SOURce]:FM[1]|2:EXTernal[1]|2:COUPling?	✓	
[:SOURce]:FM[1]|2:EXTernal[1]|2:IMPedance <50|600> [:SOURce]:FM[1]|2:EXTernal[1]|2:IMPedance?	–	*Command accepted without error but does nothing.*
[:SOURce]:FM[1]|2:INTernal2:FUNCtion:SHAPe SINE|TRIangle|SQUare|RAMP|NOISe	✓	*Supported but the following parameters are not supported:* TRIangle|SQUare|RAMP|NOISe|
[:SOURce]:FM[1]|2:INTernal[1]:FREQuency:ALTernate <value><unit> [:SOURce]:FM[1]|2:INTernal[1]:FREQuency:ALTernate?	–	
[:SOURce]:FM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent <value><unit> [:SOURce]:FM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent?	–	
[:SOURce]:FM[1]|2:INTernal[1]:FUNCtion:SHAPe SINE|TRIangle|SQUare|RAMP|NOISe|DUALsine|SWEPtsine [:SOURce]:FM[1]|2:INTernal[1]:FUNCtion:SHAPe?	✓	*Supported but the following parameters are not supported:* TRIangle|SQUare|RAMP|NOISe|DUALsine|SWEPtsine
[:SOURce]:FM[1]|2:INTernal[1]:SWEep:RATE <value><unit> [:SOURce]:FM[1]|2:INTernal[1]:SWEep:RATE?	–	
[:SOURce]:FM[1]|2:INTernal[1]:SWEep:TRIGger IMMediate|KEY|EXTernal|BUS [:SOURce]:FM[1]|2:INTernal[1]:SWEep:TRIGger?	–	
[:SOURce]:FM[1]|2:INTernal[1]|2:FREQuency <val><unit> [:SOURce]:FM[1]|2:INTernal[1]|2:FREQuency?	✓	
[:SOURce]:FM[1]|2:INTernal[1]|2:FUNCtion:NOISe GAUSsian|UNIForm [:SOURce]:FM[1]|2:INTernal[1]|2:FUNCtion:NOISe?	–	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:FM[1]|2:INTernal[1]|2:FUNCtion:RAMP POSitive|NEGative [:SOURce]:FM[1]|2:INTernal[1]|2:FUNCtion:RAMP?	–	
[:SOURce]:FM[1]|2:SOURce INT[1]|INT2|EXT[1]|EXT2 [:SOURce]:FM[1]|2:SOURce?	✓	
[:SOURce]:FM[1]|2:STATe ON|OFF|1|0 [:SOURce]:FM[1]|2:STATe?	✓	
[:SOURce]:FM[1]|2[:DEViation] <val><unit> [:SOURce]:FM[1]|2[:DEViation]?	✓	
[:SOURce]:FM[1]|2[:DEViation]:TRACk ON|OFF|1|0 [:SOURce]:FM[1]|2[:DEViation]:TRACk?	–	
List/Sweep Subsystem		
[:SOURce]:LIST:CPOint?	✓	
[:SOURce]:LIST:DIRection UP|DOWN [:SOURce]:LIST:DIRection?	✓	
[:SOURce]:LIST:DWELl <value>{,<value>} [:SOURce]:LIST:DWELl?	✓	
[:SOURce]:LIST:DWELl:POINts?	✓	
[:SOURce]:LIST:DWELl:TYPE LIST|STEP [:SOURce]:LIST:DWELl:TYPE?	✓	
[:SOURce]:LIST:FREQuency <value>{,<value>} [:SOURce]:LIST:FREQuency?	✓	
[:SOURce]:LIST:FREQuency:POINts?	✓	
[:SOURce]:LIST:MANual <value>|UP|DOWN [:SOURce]:LIST:MANual?	✓	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:LIST:MODE AUTO|MANual [:SOURce]:LIST:MODE?	✓	
[:SOURce]:LIST:POWer <value>{,<value>} [:SOURce]:LIST:POWer?	✓	
[:SOURce]:LIST:POWer:POINts?	✓	
[:SOURce]:LIST:RETRace ON|OFF|0|1 [:SOURce]:LIST:RETRace?	✓	
[:SOURce]:LIST:TRIGger:SOURce BUS|IMMediate|EXTernal|KEY [:SOURce]:LIST:TRIGger:SOURce?	✓	
[:SOURce]:LIST:TYPE LIST|STEP [:SOURce]:LIST:TYPE?	✓	
[:SOURce]:LIST:TYPE:LIST:INITialize:FSTep	✓	
[:SOURce]:LIST:TYPE:LIST:INITialize:PRESet	✓	
[:SOURce]:SWEep:CONTrol:STATe ON|OFF|1|0 [:SOURce]:SWEep:CONTrol:STATe?	–	
[:SOURce]:SWEep:CONTrol:TYPE MASTer|SLAVe [:SOURce]:SWEep:CONTrol:TYPE?	–	
[:SOURce]:SWEep:CPOint?	✓	
[:SOURce]:SWEep:DWELl <value> [:SOURce]:SWEep:DWELl?	✓	
[:SOURce]:SWEep:GENeration ANALog|STEPped [:SOURce]:SWEep:GENeration?	✓	*Only the* STEPped *parameter is accepted without error.*
[:SOURce]:SWEep:MODE AUTO|MANual [:SOURce]:SWEep:MODE?	✓	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:SWEep:POINts <value> [:SOURce]:SWEep:POINts?	✓	
[:SOURce]:SWEep:SPACing LINear|LOGarithmic [:SOURce]:SWEep:SPACing?	✓	
[:SOURce]:SWEep:TIME 10mS - 99S [:SOURce]:SWEep:TIME?	–	
[:SOURce]:SWEep:TIME:AUTO ON|OFF|0|1 [:SOURce]:SWEep:TIME:AUTO?	–	
[:SOURce]:SWEep:TIME:COMP:AUTO ON|OFF|0|1 [:SOURce]:SWEep:TIME:COMP:AUTO?	–	
Low Frequency Output Subsystem		
[:SOURce]:LFOutput:...	–	*This subsystem is not supported.*
Phase Modulation Subsystem		
[:SOURce]:PM:INTernal:FREQuency:STEP[:INCRement] [:SOURce]:PM:INTernal:FREQuency:STEP[:INCRement]?	✓	
[:SOURce]:PM[1]|2:BANDwidth|BWIDth NORMal|HIGH [:SOURce]:PM[1]|2:BANDwidth|BWIDth?	✓	
[:SOURce]:PM[1]|2:EXTernal[1]|2:COUPling AC|DC [:SOURce]:PM[1]|2:EXTernal[1]|2:COUPling?	✓	
[:SOURce]:PM[1]|2:EXTernal[1]|2:IMPedance <50|600> [:SOURce]:PM[1]|2:EXTernal[1]|2:IMPedance?	–	*Command accepted without error but does nothing.*
[:SOURce]:PM[1]|2:INTernal2:FUNCtion:SHAPe SINE|TRIangle|SQUare|RAMP|NOISe	✓	*Supported but the following parameters are not supported:* TRIangle|SQUare|RAMP|NOISe|
[:SOURce]:PM[1]|2:INTernal[1]:FREQuency:ALTernate <value><unit> [:SOURce]:PM[1]|2:INTernal[1]:FREQuency:ALTernate?	–	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:PM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent <value><unit> [:SOURce]:PM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent?	–	
[:SOURce]:PM[1]|2:INTernal[1]:FUNCtion:SHAPe SINE|TRIangle|SQUare|RAMP|NOISe|DUALsine|SWEPtsine [:SOURce]:PM[1]|2:INTernal[1]:FUNCtion:SHAPe?	✓	*Supported but the following parameters are not supported:* TRIangle|SQUare|RAMP|NOISe|DUALsine|SWEPtsine
[:SOURce]:PM[1]|2:INTernal[1]:SWEep:RATE <value><unit> [:SOURce]:PM[1]|2:INTernal[1]:SWEep:RATE?	–	
[:SOURce]:PM[1]|2:INTernal[1]:SWEep:TRIGger IMMediate|KEY|EXTernal|BUS [:SOURce]:PM[1]|2:INTernal[1]:SWEep:TRIGger?	–	
[:SOURce]:PM[1]|2:INTernal[1]|2:FREQuency <val><unit> [:SOURce]:PM[1]|2:INTernal[1]|2:FREQuency?	✓	
[:SOURce]:PM[1]|2:INTernal[1]|2:FUNCtion:NOISe GAUSsian|UNIForm [:SOURce]:PM[1]|2:INTernal[1]|2:FUNCtion:NOISe?	–	
[:SOURce]:PM[1]|2:INTernal[1]|2:FUNCtion:RAMP POSitive|NEGative [:SOURce]:PM[1]|2:INTernal[1]|2:FUNCtion:RAMP?	–	
[:SOURce]:PM[1]|2:INTernal[1]|2:FUNCtion:SHAPe?	✓	
[:SOURce]:PM[1]|2:SOURce INT[1]|INT2|EXT[1]|EXT2 [:SOURce]:PM[1]|2:SOURce?	✓	
[:SOURce]:PM[1]|2:STATe ON|OFF|1|0 [:SOURce]:PM[1]|2:STATe?	✓	
[:SOURce]:PM[1]|2[:DEViation] <val><unit> [:SOURce]:PM[1]|2[:DEViation]?	✓	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:PM[1]|2[:DEViation]:TRACk ON|OFF|1|0 [:SOURce]:PM[1]|2[:DEViation]:TRACk?	–	
[:SOURce]:PM[:DEViation]:STEP[:INCRement] <value><unit> [:SOURce]:PM[:DEViation]:STEP[:INCRement]?	✓	
Power Subsystem		
[:SOURce]:POWer:ALC:BANDwidth|BWIDth <num>[freq suffix] [:SOURce]:POWer:ALC:BANDwidth|BWIDth?	✓	
[:SOURce]:POWer:ALC:BANDwidth|BWIDth:AUTO ON|OFF|1|0 [:SOURce]:POWer:ALC:BANDwidth|BWIDth:AUTO?	✓	
[:SOURce]:POWer:ALC:LEVel <value>dB [:SOURce]:POWer:ALC:LEVel?	✓	
[:SOURce]:POWer:ALC:SEARch ON|OFF|1|0|ONCE [:SOURce]:POWer:ALC:SEARch?	✓	
[:SOURce]:POWer:ALC:SEARch:REFerence RMS|FIXed|MANual|MODulated [:SOURce]:POWer:ALC:SEARch:REFerence?	–	
[:SOURce]:POWer:ALC:SEARch:REFerence:LEVel <value> [:SOURce]:POWer:ALC:SEARch:REFerence:LEVel?	–	
[:SOURce]:POWer:ALC:SEARch:SPAN:POINts <value> [:SOURce]:POWer:ALC:SEARch:SPAN:POINts?	✓	
[:SOURce]:POWer:ALC:SEARch:SPAN:STARt <value><units> [:SOURce]:POWer:ALC:SEARch:SPAN:STARt?	✓	
[:SOURce]:POWer:ALC:SEARch:SPAN:STOP <value><units> [:SOURce]:POWer:ALC:SEARch:SPAN:STOP?	✓	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:POWer:ALC:SEARch:SPAN:TYPE FULL|USER [:SOURce]:POWer:ALC:SEARch:SPAN:TYPE?	✓	
[:SOURce]:POWer:ALC:SEARch:SPAN[:STATe] ON|OFF|1|0 [:SOURce]:POWer:ALC:SEARch:SPAN[:STATe]?	✓	
[:SOURce]:POWer:ALC:SOURce INTernal|DIODe|MMHead [:SOURce]:POWer:ALC:SOURce?	✓	*Supported on the N5183A. But the following parameter is not supported:* MMHead.
[:SOURce]:POWer:ALC:SOURce:EXTernal:COUPling (0dB-32dB) [:SOURce]:POWer:ALC:SOURce:EXTernal:COUPling?	✓	
[:SOURce]:POWer:ALCHold:EXTernal[:STATe] ON|OFF|1|0 [:SOURce]:POWer:ALCHold:EXTernal[:STATe]?	–	
[:SOURce]:POWer:ALCHold:INTernal[:STATe] ON|OFF|1|0 [:SOURce]:POWer:ALCHold:INTernal[:STATe]?	–	
[:SOURce]:POWer:ALC[:STATe] ON|OFF|1|0 [:SOURce]:POWer:ALC[:STATe]?	✓	
[:SOURce]:POWer:ATTenuation <value><unit> [:SOURce]:POWer:ATTenuation?	✓	
[:SOURce]:POWer:ATTenuation:AUTO ON|OFF|1|0 [:SOURce]:POWer:ATTenuation:AUTO?	✓	
[:SOURce]:POWer:MODE FIXed|LIST|SWEep [:SOURce]:POWer:MODE?	✓	
[:SOURce]:POWer:PROTection[:STATe] ON|OFF|1|0 [:SOURce]:POWer:PROTection[:STATe]?	✓	
[:SOURce]:POWer:REFerence <value><unit> [:SOURce]:POWer:REFerence?	✓	
[:SOURce]:POWer:REFerence:STATe ON|OFF|1|0 [:SOURce]:POWer:REFerence:STATe?	✓	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:POWer:STARt <value><unit> [:SOURce]:POWer:STARt?	✓	
[:SOURce]:POWer:STOP <value><unit> [:SOURce]:POWer:STOP?	✓	
[:SOURce]:POWer[:LEVel][:IMMediate]:OFFSet <value><unit> [:SOURce]:POWer[:LEVel][:IMMediate]:OFFSet?	✓	
[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude] <value><unit> |UP|DOWN [:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]?	✓	
[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]:STEP[:INCRement] <value> [:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]:STEP[:INCRement]?	✓	
Pulse Modulation Subsystem		
[:SOURce]:PULM:EXTernal:POLarity NORMal|INVerted [:SOURce]:PULM:EXTernal:POLarity?	✓	
[:SOURce]:PULM:INTernal[1]:DELay <delay>|UP|DOWN [:SOURce]:PULM:INTernal[1]:DELay? [UP|DOWN]	✓	
[:SOURce]:PULM:INTernal[1]:DELay:STEP <step> [:SOURce]:PULM:INTernal[1]:DELay:STEP?	✓	
[:SOURce]:PULM:INTernal[1]:FREQuency <frequency>|MAXimum|MINimum|UP|DOWN [:SOURce]:PULM:INTernal[1]:FREQuency?	✓	
[:SOURce]:PULM:INTernal[1]:FREQuency:STEP[:INCRement] <freq>|MAXimum|MINimum|DEFault [:SOURce]:PULM:INTernal[1]:FREQuency:STEP[:INCRement]? [MIN|MAX|DEF]	✓	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:PULM:INTernal[1]:PERiod <period>|MAXimum|MINimum|UP|DOWN [:SOURce]:PULM:INTernal[1]:PERiod?	✓	
[:SOURce]:PULM:INTernal[1]:PERiod:STEP[:INCRement] <step>|UP|DOWN [:SOURce]:PULM:INTernal[1]:PERiod:STEP[:INCRement]?	✓	
[:SOURce]:PULM:INTernal[1]:PWIDth <width> [:SOURce]:PULM:INTernal[1]:PWIDth?	✓	
[:SOURce]:PULM:INTernal[1]:PWIDth:STEP <step>|DEFault|MAXimum|MINimum [:SOURce]:PULM:INTernal[1]:PWIDth:STEP?	✓	
[:SOURce]:PULM:SOURce INTernal|EXTernal [:SOURce]:PULM:SOURce?	✓	
[:SOURce]:PULM:SOURce:INTernal SQUare|FRUN|TRIGgered|DOUBlet|GATEd [:SOURce]:PULM:SOURce:INTernal?	✓	
[:SOURce]:PULM:STATe ON|OFF|1|0 [:SOURce]:PULM:STATe?	✓	
Digital Function Commands		
All Subsystem		
[:SOURce]:RADio[1]:ALL:OFF	–	*This subsystem is not supported.*
AWGN ARB Subsystem		
[:SOURce]:RADio[1]:AWGN...	–	*This subsystem is not supported.*
AWGN Real Time Subsystem		
[:SOURce]:RADio:AWGN:RT:...	–	*This subsystem is not supported.*
Bluetooth Subsystem		
[:SOURce]:RADio[1]:BLUEtooth:ARB:...	–	*This subsystem is not supported.*

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
Calculate Subsystem		
:CALCulate:BERT:BTS:LOOPback:...	–	*This subsystem is not supported.*
CDMA ARB Subsystem		
[:SOURce]:RADio[1]:CDMA:ARB:...	–	*This subsystem is not supported.*
Custom Subsystem		
[:SOURce]:RADio[1]:CUSTom:...	–	*This subsystem is not supported.*
Data Subsystem		
:DATA:BERT:...	–	*This subsystem is not supported.*
DECT Subsystem		
[:SOURce]:RADio[1]:DECT:...	–	*This subsystem is not supported.*
Dmodulation Subsystem		
[:SOURce]:RADio:DMODulation:ARB:...	–	*This subsystem is not supported.*
Digital Subsystem		
:DIGital...	–	*This subsystem is not supported.*
Digital Modulation Subsystem		
[:SOURce]:BURSt:...	–	*This subsystem is not supported.*
[:SOURce]:DM:...	–	*This subsystem is not supported.*
Display subsystem		
:DISPlay:ANNotation:AMPLitude:UNIT DBM|DBUV|DBUVEMF|V|VEMF|DB :DISPlay:ANNotation:AMPLitude:UNIT?	✓	
:DISPlay:ANNotation:CLOCk:DATE:FORMat MDY|DMY :DISPlay:ANNotation:CLOCk:DATE:FORMat?	✓	
:DISPlay:ANNotation:CLOCk[:STATe] ON|OFF|1|0 :DISPlay:ANNotation:CLOCk[:STATe]?	✓	

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:DISPlay:BRIGhtness <value> :DISPlay:BRIGhtness?	✓	
:DISPlay:CAPTure	✓	
:DISPlay:CONTrast <value> :DISPlay:CONTrast?	✓	
:DISPlay:INVerse ON|OFF|1|0 :DISPlay:INVerse?	✓	
:DISPlay:MENU[:NAME] AM|FMPM|SWEep|UTILity|PULSe|LFOut|FREQuency| AMPLitude|SAVE|RECall|IQ|MUX|MODE|MODesetup| BERT|BGSM|BEDGe	–	
:DISPlay:REMote ON|OFF|1|0 :DISPlay:REMote?	✓	
:DISPlay[:WINDow][:STATe] ON|OFF|1|0 :DISPlay[:WINDow][:STATe]?	✓	
Dual ARB Subsystem		
[:SOURce]:RADio[1]:...	–	*This subsystem is not supported.*
Edge Subsystem		
[:SOURce]:RADio[1]:EDGE:...	–	*This subsystem is not supported.*
GSM Subsystem		
[:SOURce]:RADio[1]:GSM:...	–	*This subsystem is not supported.*
Input Subsystem		
:INPut:BERT[:BASeband]:...	–	*This subsystem is not supported.*
Lbfilter Subsystem		
[:SOURce]:LBFilter ON|OFF|1|0 [:SOURce]:LBFilter?	–	
Marker Subsystem		

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:MARKer:AMPLitude:VALue <num>[DB] [:SOURce]:MARKer:AMPLitude:VALue? [MAXimum|MINimum]	✓	
[:SOURce]:MARKer:AMPLitude[:STATe] ON|OFF|1|0 [:SOURce]:MARKer:AMPLitude[:STATe]?	✓	
[:SOURce]:MARKer:AOFF	✓	
[:SOURce]:MARKer:DELTa? <num>,<num>	✓	
[:SOURce]:MARKer:MODE FREQuency|DELTa [:SOURce]:MARKer:MODE?	✓	
[:SOURce]:MARKer:REFerence <marker> [:SOURce]:MARKer:REFerence?	✓	
[:SOURce]:MARKer[0]|1|2|3|4|5|6|7|8|9:FREQuency <frequency> [:SOURce]:MARKer[0]|1|2|3|4|5|6|7|8|9:FREQuency? [MAXimum|MINimum]	✓	
[:SOURce]:MARKer[0]|1|2|3|4|5|6|7|8|9:[STATe] ON|OFF|1|0 [:SOURce]:MARKer[0]|1|2|3|4|5|6|7|8|9:[STATe]?	✓	
Measure Subsystem		
:MEASure:[SCALar]:BERT:BTS:LOOPback:EDGE:MCS5[:SENSitivity]?	–	*This subsystem is not supported.*
Multi-Tone Subsystem		
[:SOURce]:RADio:MTONe:ARB:...	–	*This subsystem is not supported.*
NADC Subsystem		
[:SOURce]:RADio[1][:NADC]:...	–	*This subsystem is not supported.*
PDC Subsystem		
[:SOURce]:RADio[1]:PDC:...	–	*This subsystem is not supported.*
PHS Subsystem		

Table 8-2 E8241A/44A, E8251A/54A, E8247C/57C/67C, E8257D/67D and E8663B Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:RADio[1]:PHS:...	–	*This subsystem is not supported.*
Sense Subsystem		
:SENSe:BERT:...	–	*This subsystem is not supported.*
Tetra Subsystem		
[:SOURce]:RADio[1]:TETRa:...	–	*This subsystem is not supported.*
Two Tone Subsystem		
[:SOURce]:RADio:TTONe:ARB...	–	*This subsystem is not supported.*
Wideband CDMA ARB Subsystem		
[:SOURce]:RADio[1]:WCDMa:TGPP:ARB:...	–	*This subsystem is not supported.*

8340B/41B Compatible SCPI Commands

The tables in this section provide the following:

Table 8-3 is a comprehensive list of 8340B/41B programming codes, listed in alphabetical order. The equivalent SCPI command sequence for each supported code is provided; codes that are *not* supported by the N5183A are indicated as such in the command sequence column.

Table 8-4 is a list of the implemented 8340B/41B programming codes that set the active function. This table also indicates which codes are compatible with the RB command (knob), and lists the operation active (OA) query, the operation prior (OP) query, and the increment (up), and the decrement (down) SCPI commands.

NOTE Compatibility is provided for GPIB only; RS-232 and LAN are *not* supported.

When using the programming codes in this section, you can:

- set the N5183A system language to 8340 for the current session:

  Utility > **I/O Config** > **Remote Language** > **More** > **8340B/8341B**

  or send the command:

  `:SYST:LANG "8340"`

- set the N5183A system language to 8340 so that it does not reset with either preset, instrument power cycle or `*RST` command:

  Utility > **Power On/Preset** > **Preset Language** > **More** > **8340B/8341B**

  or send the command:

  `:SYST:PRESet:LANG "8340"`

- set the `*IDN?` response to any 8340 like response you prefer. Refer to the :SYSTem:IDN command.

NOTE The Agilent MXG has only one AM, FM, and PM path. Using AM2, FM2, or PM2 path commands will result in the following error: "`ERROR: -113, Undefined Header`".

The Agilent MXG has only one internal source for AM, FM and PM, but the INT2 source selection is accepted by the signal generator and is equivalent to selecting INT[1].

The Agilent MXG has three dedicated external sources, one for AM, one for FM/PM and one for Pulse. The EXT2 source selection is accepted by the signal generator, but is equivalent to selecting EXT[1].

Table 8-3 8340B/41B Programming Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

Cmd	Description	8340	Equivalent SCPI Command Sequence
A1	Internal leveling mode	✓	`[:SOURce]:POWer:ALC:SOURce INTernal`
A2	External leveling mode with diode detector	✓	`[:SOURce]:POWer:ALC:SOURce DIODe` `[:SOURce]:POWer:ALC:SOURce:EXTernal:COUPling <val> dB`
A3	External leveling mode with power meter	–	*command is accepted, but has no effect on the Agilent MXG*
AK0	Amplitude markers off	✓	`[:SOURce]:MARKer:AMPLitude OFF|0`
AK1	Amplitude markers on	✓	`[:SOURce]:MARKer:AMPLitude ON|1`
AL0	Alternate sweep mode off	–	
AL1	Alternate sweep mode on	–	
AM0	Amplitude modulation off	✓	`[:SOURce]:AM:STATe OFF|0`

AM1	Amplitude modulation on	✓	`[:SOURce]:AM:SOURce EXT`
			`[:SOURce]:AM:EXTernal:COUPling DC`
			`[:SOURce]:AM:DEPTh 90`
			`[:SOURce]:AM:EXTernal:IMPedance 600`
			`[:SOURce]:AM:STATe ON|1`

AS0	Alternate state selection: select current front panel	–	
AS1	Alternate state selection: select recalled state	–	
AT	Set attenuator	✓	`[:SOURce]:POWer:ATTenuation <val><unit>`
AU	Auto-coupled mode to obtain shortest possible sweep time	–	
BC	Advance to next frequency bandcrossing	–	
C1	1 MHz crystal marker frequency	–	*command is accepted, but has no effect on the Agilent MXG*
C2	10 MHz crystal marker frequency	–	*command is accepted, but has no effect on the Agilent MXG*
C3	50 MHz crystal marker frequency	–	*command is accepted, but has no effect on the Agilent MXG*
C4	External crystal marker frequency	–	*command is accepted, but has no effect on the Agilent MXG*
CA0	Amplitude crystal markers off	–	*command is accepted, but has no effect on the Agilent MXG*
CA1	Amplitude crystal markers on	–	*command is accepted, but has no effect on the Agilent MXG*

Table 8-3 8340B/41B Programming Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

Cmd	Description	8340	Equivalent SCPI Command Sequence

CF	Center frequency (step sweep)	✓	`[:SOURce]:SWEep:MODE AUTO`
			`[:SOURce]:FREQuency:MODE SWEep`
			`[:SOURce]:FREQuency:CENTer <val><unit>`

CL0	Intensity crystal markers off	–	*command is accepted, but has no effect on the Agilent MXG*
CL1	Intensity crystal markers on	–	*command is accepted, but has no effect on the Agilent MXG*
CS	Clear both status bytes	✓	`*CLS`

CW	Set CW frequency	✓	`[:SOURce]:SWEep:MODE AUTO`
			`[:SOURce]:FREQuency:MODE CW`
			`[:SOURce]:FREQuency[:CW] <val><unit>`

DB	dB(m) terminator	✓	`DB`

DF	Delta frequency (step sweep)	✓	`[:SOURce]:SWEep:MODE AUTO`
			`[:SOURce]:FREQuency:MODE SWEep`
			`[:SOURce]:FREQuency:SPAN <val> <unit>`

DM	dB(m) terminator	✓	`DB`
DN	Step down (decrements active function by step value)	✓	*supported, see Table 8-4 on page 456*
DP0	Display blanking off	N	`DISPlay[:WINDow][:STATe] OFF|0`
DP1	Display blanking on	N	`DISPlay[:WINDow][:STATe] ON|1`
DU0	Display update off	✓	`DISPlay[:WINDow][:STATe] OFF|0`
DU1	Display update on	✓	`DISPlay[:WINDow][:STATe] ON|1`
EF	Entry display off	✓	`DISPlay[:WINDow][:STATe] ON|1`
EK	Enable knob	–	
EM0	Extended marker mode off	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
EM1	Extended marker mode on	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
F1	20 MHz/V FM sensitivity	–	
F2	6 MHz/V FM sensitivity	–	

FA	Start frequency (step sweep)	✓	`[:SOURce]:SWEep:MODE AUTO`
			`[:SOURce]:FREQuency:MODE SWEep`
			`[:SOURce]:FREQuency:STARt <val><unit>`

Table 8-3 8340B/41B Programming Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

Cmd	Description	8340	Equivalent SCPI Command Sequence
FB	Stop frequency (step sweep)	✓	[:SOURce]:SWEep:MODE AUTO [:SOURce]:FREQuency:MODE SWEep [:SOURce]:FREQuency:STOP <val><unit>
FL0	CW filter off	–	*command is accepted, but has no effect on the Agilent MXG*
FL1	CW filter on	–	*command is accepted, but has no effect on the Agilent MXG*
FM0	Frequency modulation off	✓	[:SOURce]:FM:STATe OFF|0
FM1	Frequency modulation on	✓	[:SOURce]:FM:SOURce EXT [:SOURce]:FM:EXTernal:COUPling DC [:SOURce]:FM:EXTernal:IMPedance 50 [:SOURce]:FM:STATe ON|1
FM1	Frequency modulation sensitivity	✓	[:SOURce]:FM[:DEViation] <val><unit>
FP	Fast phaselock	–	*command is accepted, but has no effect on the Agilent MXG*
GZ	GHz terminator	✓	GHZ
HZ	Hz terminator	✓	HZ
IF	Increment frequency	✓	TRIGger[:SEQuence][:IMMediate] or [:SOURce]:FREQuency[:CW] UP
IL	Input learn string	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
IP	Instrument preset	✓	SYSTem:PRESet [:SOURce]:FREQuency[:CW]:STEP [:INCRement] 1 GHZ [:SOURce]:FREQuency:MULTiplier <saved multiplier> [:SOURce]:SWEep:MODE AUTO [:SOURce]:FREQuency:MODE SWEep [:SOURce]:FREQuency:STARt 2 GHz or MIN [:SOURce]:FREQuency:STOP MAX [:SOURce]:POWer[:LEVel][:IMMediate] [:AMPLitude] 0 dB OUTput[:STATe] ON|1

Table 8-3 8340B/41B Programming Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

Cmd	Description	8340	Equivalent SCPI Command Sequence

IP	Instrument preset	N	`SYSTem:PRESet`
			`SYSTem:LANGuage "8757"`
			`[:SOURce]:SWEep:MODE AUTO`
			`[:SOURce]:FREQuency:MODE SWEep`
			`[:SOURce]:FREQuency:STARt 2 GHz or MIN`
			`[:SOURce]:FREQuency:STOP MAX`
			`[:SOURce]:POWer[:LEVel][:IMMediate]`
			`[:AMPLitude] 0 dB`
			
			`OUTput[:STATe] ON|1`

IX	Input micro learn string	–	*command is accepted, but has no effect on the Agilent MXG*
KR	Key release	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
KZ	kHz terminator	✓	`KHZ`
M0 MO	Frequency marker off	✓	`[:SOURce]:MARKer[n]:[STATe] OFF|0`
MA	Turn on and set frequency marker 0	✓	`[:SOURce]:MARKer0:[STATe] ON|1` `[:SOURce]:MARKer0:FREQuency <val><unit>`
M1	Turn on and set frequency marker 1	✓	`[:SOURce]:MARKer1:[STATe] ON|1` `[:SOURce]:MARKer1:FREQuency <val><unit>`
M2	Turn on and set frequency marker 2	✓	`[:SOURce]:MARKer2:[STATe] ON|1` `[:SOURce]:MARKer2:FREQuency <val><unit>`
M3	Turn on and set frequency marker 3	✓	`[:SOURce]:MARKer3:[STATe] ON|1` `[:SOURce]:MARKer3:FREQuency <val><unit>`
M4	Turn on and set frequency marker 4	✓	`[:SOURce]:MARKer4:[STATe] ON|1` `[:SOURce]:MARKer4:FREQuency <val><unit>`
M5	Turn on and set frequency marker 5	✓	`[:SOURce]:MARKer5:[STATe] ON|1` `[:SOURce]:MARKer5:FREQuency <val><unit>`
M6	Turn on and set frequency marker 6	✓	`[:SOURce]:MARKer6:[STATe] ON|1` `[:SOURce]:MARKer6:FREQuency <val><unit>`
M7	Turn on and set frequency marker 7	✓	`[:SOURce]:MARKer7:[STATe] ON|1` `[:SOURce]:MARKer7:FREQuency <val><unit>`
M8	Turn on and set frequency marker 8	✓	`[:SOURce]:MARKer8:[STATe] ON|1` `[:SOURce]:MARKer8:FREQuency <val><unit>`
M9	Turn on and set frequency marker 9	✓	`[:SOURce]:MARKer9:[STATe] ON|1` `[:SOURce]:MARKer9:FREQuency <val><unit>`

Table 8-3 8340B/41B Programming Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

Cmd	Description	8340	Equivalent SCPI Command Sequence
MC	Active marker to center frequency	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
MD	Marker delta	–	
MP0	Marker 1-2 sweep off	–	
MP1	Marker 1-2 sweep on	–	
MS	Milliseconds terminator	✓	`MS`
MZ	MHz terminator	✓	`MHZ`
NA	Network analyzer mode	–	
NT	Network analyzer trigger	–	*command is accepted, but has no effect on the Agilent MXG*
OA	Output active parameter	✓	*supported, see Table 8-4 on page 456*
OB	Output next bandcross frequency	–	

OC	Output coupled parameters (start frequency, center frequency, sweep time)	✓
		–
		–
			`[:SOURce]:FREQuency:STARt?`
			`[:SOURce]:FREQuency:CENTer?`
			`[:SOURce]:SWEep:TIME?`

OD	Output diagnostic values	–	
OE	Output when executed	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
OF	Output fault	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
OI	Output identification	✓	`*IDN?`
OK	Output last lock frequency	–	
OL	Output learn string	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
OM	Output mode string	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
OP	Output interrogated parameter	✓	*supported, see Table 8-4 on page 456*
OPA2	Output external detector coupling factor	✓	`[:SOURce]:POWer:ALC:SOURce:EXTernal :COUPling?`
OPAT	Output attenuator	✓	`[:SOURce]:POWer:ATTenuation?`
OPCF	Output center frequency	✓	`[:SOURce]:FREQuency:CENTer?`

Table 8-3 8340B/41B Programming Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

Cmd	Description	8340	Equivalent SCPI Command Sequence
OPCW	Output CW frequency	✓	[:SOURce]:FREQuency:CW?
OPDF	Output delta frequency	✓	[:SOURce]:FREQuency:SPAN?
OPFA	Output start frequency	✓	[:SOURce]:FREQuency:STARt?
OPFB	Output stop frequency	✓	[:SOURce]:FREQuency:STOP?
OPFM1	Output FM sensitivity	✓	[:SOURce]:FM[:DEViation]?
OPMA	Output marker 0 frequency	✓	[:SOURce]:MARKer0:FREQuency?
OPM1	Output marker 1 frequency	✓	[:SOURce]:MARKer1:FREQuency?
OPM2	Output marker 2 frequency	✓	[:SOURce]:MARKer2:FREQuency?
OPM3	Output marker 3 frequency	✓	[:SOURce]:MARKer3:FREQuency?
OPM4	Output marker 4 frequency	✓	[:SOURce]:MARKer4:FREQuency?
OPM5	Output marker 5 frequency	✓	[:SOURce]:MARKer5:FREQuency?
OPM6	Output marker 6 frequency	✓	[:SOURce]:MARKer6:FREQuency?
OPM7	Output marker 7 frequency	✓	[:SOURce]:MARKer7:FREQuency?
OPM8	Output marker 8 frequency	✓	[:SOURce]:MARKer8:FREQuency?
OPM9	Output marker 9 frequency	✓	[:SOURce]:MARKer9:FREQuency?
OPPL	Output power level	✓	[:SOURce]:POWer[:LEVel][:IMMediate] [:AMPLitude]?
OPPS	Output power sweep span	✓	[:SOURce]:POWer:SPAN?
OPSB	Output # of sweep buckets	–	
OPSF	Output frequency step size	✓	[:SOURce]:FREQuency[:CW]:STEP [:INCRement]?
OPSHA1	Output power level	✓	[:SOURce]:POWer[:LEVel][:IMMediate] [:AMPLitude]?
OPSHA2	Output ALC level	–	
OPSHA3	Output ALC level	✓	[:SOURce]:POWer:ALC:LEVel?
OPSHAZ	Output ALC level	–	
OPSHCF	Output frequency step size	✓	[:SOURce]:FREQuency[:CW]:STEP [:INCRement]?

Table 8-3 8340B/41B Programming Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

Cmd	Description	8340	Equivalent SCPI Command Sequence
OPSHCW	Output swept CW frequency	✓	[:SOURce]:FREQuency:STARt? or [:SOURce]:FREQuency:STOP?
OPSHFA	Output frequency multiplier	✓	[:SOURce]:FREQuency:MULTiplier?
OPSHFB	Output frequency offset	✓	[:SOURce]:FREQuency:OFFSet?
OPSHPL	Output power step size	✓	[:SOURce]:POWer[:LEVel][:IMMediate] [:AMPLitude]:STEP[:INCRement]?
OPSHPS	Output ALC level	✓	[:SOURce]:POWer:ALC:LEVel?
OPSHRF	Output power level	✓	[:SOURce]:POWer[:LEVel][:IMMediate] [:AMPLitude]?
OPSHSL	Output attenuator	✓	[:SOURce]:POWer:ATTenuation?
OPSHSN	Output sweep step points	–	[:SOURce]:SWEep:POINts?
OPSL	Output power slope	✓	[:SOURce]:POWer:SLOPe?
OPSM	Output manual frequency	–	
OPSN	Output sweep step points	✓	[:SOURce]:SWEep:POINts?
OPSP	Output power step size	✓	[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]:STEP [:INCRement]?
OPST	Output sweep time	–	
OPTL	Output sweep time limit	–	
OR	Output internally measured power level	–	
OS	Output status bytes	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
OX	Output micro learn string	–	*command is accepted, but has no effect on the Agilent MXG*
PL	Set power level	✓	[:SOURce]:POWer:ATTenuation:AUTO ON|1 [:SOURce]:POWer[:LEVel][:IMMediate] [:AMPLitude] <val><unit>
PM0	Pulse modulation off	✓	[:SOURce]:PULM:STATe OFF|0
PM1	Pulse modulation on	✓	[:SOURce]:PULM:SOURce EXTernal [:SOURce]:PULM:STATe ON|1
PM1	27.8 kHz square wave pulse modulation on	–	

Table 8-3 8340B/41B Programming Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

Cmd	Description	8340	Equivalent SCPI Command Sequence
PS0	Power sweep off	✓	`[:SOURce]:POWer:MODE FIXed`
PS1	Power sweep on	✓	`[:SOURce]:POWer:MODE SWEep` `[:SOURce]:POWer:SPAN <val> dB`
R2	Extended status byte #2 mask	–	*command is accepted, but has no effect on the Agilent MXG*
RB	Control knob remotely	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
RC	Recall state	✓	`*RCL <reg_num>[,<seq_num>]`
RE	Extended status byte mask	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
RF0	RF output off	✓	`OUTPut[:STATe] OFF|0`
RF1	RF output on	✓	`OUTPut[:STATe] ON|1`
RM	Status byte mask	✓	`*SRE <mask>`
RP0	RF peaking off	–	*command is accepted, but has no effect on the Agilent MXG*
RP0	RF blanking off	–	*command is accepted, but has no effect on the Agilent MXG*
RP1	RF peaking on	–	*command is accepted, but has no effect on the Agilent MXG*
RP1	RF blanking on	–	*command is accepted, but has no effect on the Agilent MXG*
RS	Reset sweep	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*

S1	Continuous sweep mode	✓	`[:SOURce]:SWEep:MODE AUTO`
			`:TRIGger[:SEQuence]:SOURce IMMediate`
			`:INITiate:CONTinuous[:ALL] ON`

S2	Single sweep mode	✓	`[:SOURce]:SWEep:MODE AUTO`
			`:TRIGger[:SEQuence]:SOURce IMMediate`
			`:INITiate:CONTinuous[:ALL] OFF`

S3	Manual frequency sweep mode	–	
SB	Number of sweep buckets	–	
SC	Seconds terminator	✓	`S`
SF	Frequency step size	✓	`[:SOURce]:FREQuency[:CW]:STEP[:INCRement] <val><unit>`

Table 8-3 8340B/41B Programming Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

Cmd	Description	8340	Equivalent SCPI Command Sequence

SG	Single sweep mode	✓	`[:SOURce]:SWEep:MODE AUTO`
			`:TRIGger[:SEQuence]:SOURce IMMediate`
			`:INITiate:CONTinuous[:ALL] OFF`

SH	Shift prefix	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
SH01	Blank display	–	`DISPlay[:WINDow][:STATe] OFF|0`

SHA1	Disable ALC and set power level	✓	`[:SOURce]:POWer:ALC[:STATe] OFF|0`
			`[:SOURce]:POWer[:LEVel][:IMMediate]`
			`[:AMPLitude] <val><unit>`

SHA2	External leveling mode with millimeter head module	–	

SHA3	Directly control linear modulator circuit (bypassing ALC)	✓	`[:SOURce]:POWer:ATTenuation:AUTO OFF|0`
			`[:SOURce]:POWer:ALC[:STATe] OFF|0`
			`[:SOURce]:POWer:ALC:LEVel <val>dB`

SHAK	Immediate YTF peak	–	*command is accepted, but has no effect on PSG*
SHAL	Retain multiplication factor on power on/off and preset	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
SHAM	Pulse modulation enhancement	–	*command is accepted, but has no effect on PSG*
SHAZ	External leveling mode with millimeter head module	–	
SHCF	Frequency step size	✓	`[:SOURce]:FREQuency[:CW]:STEP[:INCRement] <val><unit>`
SHCF	Coarse CW resolution	–	*command is accepted, but has no effect on the Agilent MXG*

SHCW	Swept CW	–	`[:SOURce]:SWEep:MODE AUTO`
			`[:SOURce]:FREQuency:MODE SWEep`
			`[:SOURce]:FREQuency:STARt <val><unit>`
			`[:SOURce]:FREQuency:STOP <val><unit>`

SHDF	Fine CW resolution	–	*command is accepted, but has no effect on the Agilent MXG*
SHEF	Restore cal. const. access function	–	
SHFA	Frequency multiplier	✓	`[:SOURce]:FREQuency:MULTiplier <val>`
SHFB	Frequency offset	✓	`[:SOURce]:FREQuency:OFFSet <val><unit>`
SHIP	Reset multiplication factor to 1 and preset instrument	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
SHM0	All frequency markers off	✓	`[:SOURce]:MARKer:AOFF`

Table 8-3 8340B/41B Programming Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

Cmd	Description	8340	Equivalent SCPI Command Sequence
SHM1	Turn on and set marker delta	–	`[:SOURce]:MARKer:MODE DELTa`
SHM2	Enable counter interface	–	*command is accepted, but has no effect on the Agilent MXG*
SHM3	Disable counter interface	–	*command is accepted, but has no effect on the Agilent MXG*
SHM4	Diagnostics: test/display results	–	
SHMO	All frequency markers off	–	`[:SOURce]:MARKer:AOFF`
SHMP	Set start frequency to marker 1 and set stop frequency to marker 2	✓	`[:SOURce]:SWEep:MARKer:XFER`
SHPL	Power step size	✓	`[:SOURce]:POWer[:LEVel][:IMMediate]` `[:AMPLitude]:STEP[:INCRement] <val>`
SHPM	27.8 KHz square wave pulse modulation on	–	

SHPS	Decouple attenuator and ALC (control ALC independently)	✓	`[:SOURce]:POWer:ATTenuation:AUTO OFF|0`
			`[:SOURce]:POWer:ALC[:STATe] ON|1`
			`[:SOURce]:POWer:ALC:LEVel <val>dB`

SHRC	Unlock save/recall	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*

SHRF	Disable ALC and set power level	✓	`[:SOURce]:POWer:ALC[:STATe] OFF|0`
			
			`[:SOURce]:POWer[:LEVel][:IMMediate]`
			`[:AMPLitude] <val><unit>`

SHRP	Auto track	–	*command is accepted, but has no effect on PSG*
SHS10	Disable display update	✓	`DISPlay[:WINDow][:STATe] OFF|0`
SHS11	Re-enable display update	✓	`DISPlay[:WINDow][:STATe] ON|1`
SHS3	Display fault diagnostic	–	
SHSL	Set attenuator from front panel	✓	`[:SOURce]:POWer:ATTenuation <val><unit>`

SHSN	Stepped sweep	–	`[:SOURce]:SWEep:MODE AUTO`
			`[:SOURce]:SWEep:GENeration STEPped`
			`[:SOURce]:LIST:TYPE STEP`
			
			`[:SOURce]:LIST:TRIGger:SOURce IMMediate`
			`:TRIGger[:SEQuence]:SOURce IMMediate`
			`:INITiate:CONTinuous[:ALL] ON`
			
			`[:SOURce]:SWEep:POINts <val>`

SHSS	Reset step sizes to default values	–	*command is accepted, but has no effect on PSG*

Table 8-3 8340B/41B Programming Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

Cmd	Description	8340	Equivalent SCPI Command Sequence
SHST	Zoom function	–	
SHSV	Lock save/recall	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
SHT1	Test displays	–	
SHT2	Bandcrossing penlift	–	
SHT3	Display unlock indicators	–	
SHGZ	IO Channel	–	
SHMZ	IO Subchannel	–	
SHKZ	Write to IO	–	
SHHZ	Read from IO	–	
SHVR	Frequency offset	–	
SL0	Power slope off	✓	`[:SOURce]:POWer:SLOPe:STATe OFF|0`
SL1	Power slope on	✓	`[:SOURce]:POWer:SLOPe:STATe ON|1` `[:SOURce]:POWer:SLOPe <value> [DB/GHz]`
SL1	Power slope on	✓	`[:SOURce]:POWer:SLOPe:STATe ON|1` `[:SOURce]:POWer:SLOPe <value> [DB/Hz]`
SM	Manual frequency sweep mode	–	

SN	Number of points in a stepped sweep	✓	`[:SOURce]:SWEep:MODE AUTO`
			`[:SOURce]:SWEep:GENeration STEPped`
			`[:SOURce]:LIST:TYPE STEP`
			
			`[:SOURce]:LIST:TRIGger:SOURce BUS`
			`:TRIGger[:SEQuence]:SOURce`
			`IMMediate:INITiate:CONTinuous[:ALL] ON`
			`[:SOURce]:SWEep:POINts <val>`

SP	Power step size	✓	`[:SOURce]:POWer[:LEVel][:IMMediate]` `[:AMPLitude]:STEP[:INCRement] <val>`
ST	Sweep time	–	
SV	Save state	✓	`*SAV <reg_num>[,<seq_num>]`
SW0	Swap network analyzer channels	–	
SW1	Swap network analyzer channels	–	

Table 8-3 8340B/41B Programming Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

Cmd	Description	8340	Equivalent SCPI Command Sequence
SX	External sweep type	–	*command is accepted, but has no effect on the Agilent MXG*
T1	Free run sweep trigger mode	✓	`:TRIGger[:SEQuence]:SOURce IMMediate` `:INITiate:CONTinuous[:ALL] ON`
T2	Line sweep trigger mode	–	
T3	External sweep trigger mode	✓	`:TRIGger[:SEQuence]:SOURce EXTernal` `:INITiate:CONTinuous[:ALL] ON`
T4	Single sweep trigger mode	N	`:INITiate[:IMMediate][:ALL]`
TL	Sweep time limit	–	
TS	Take sweep	✓	`:TSWeep`
UP	Step up (increments active function by step value)	✓	*supported, see Table 8-4 on page 456*
US	Microseconds terminator	✓	`US`
VR	CW vernier	–	*command is accepted, but has no effect on the Agilent MXG*

Table 8-4 8340 Code Compatibility

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A					
Code	**Sets Active Function**	**Comp. with OA/OP**	**Comp. with UP/DN**	**Comp. with RB (Knob)**	**Equivalent SCPI Commands for OA/OP query and UP/DN command**
A2	✓	✓	✓		[:SOURce]:POWer:ALC:SOURce:EXTernal:COUPling? [:SOURce]:POWer:ATTenuation UP [:SOURce]:POWer:ATTenuation DOWN
AT	✓	✓	✓		[:SOURce]:POWer:ATTenuation? [:SOURce]:POWer:ATTenuation UP [:SOURce]:POWer:ATTenuation DOWN
CF	✓	✓			[:SOURce]:FREQuency:CENTer?
CW	✓	✓	✓	✓	[:SOURce]:FREQuency[:CW]? [:SOURce]:FREQuency[:CW] UP [:SOURce]:FREQuency[:CW] DOWN
DF	✓	✓			[:SOURce]:FREQuency:SPAN?
FA	✓	✓			[:SOURce]:FREQuency:STARt?
FB	✓	✓			[:SOURce]:FREQuency:STOP?
FM1	✓	✓			[:SOURce]:FM[:DEViation]?
MA	✓	✓			[:SOURce]:MARKer0:FREQuency?
M1	✓	✓			[:SOURce]:MARKer1:FREQuency?
M2	✓	✓			[:SOURce]:MARKer2:FREQuency?
M3	✓	✓			[:SOURce]:MARKer3:FREQuency?
M4	✓	✓			[:SOURce]:MARKer4:FREQuency?
M5	✓	✓			[:SOURce]:MARKer5:FREQuency?
M6	✓	✓			[:SOURce]:MARKer6:FREQuency?
M7	✓	✓			[:SOURce]:MARKer7:FREQuency?
M8	✓	✓			[:SOURce]:MARKer8:FREQuency?
M9	✓	✓			[:SOURce]:MARKer9:FREQuency?
PL	✓	✓	✓	✓	[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]? [:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude] UP [:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude] DOWN
PS	✓	✓			[:SOURce]:POWer:SPAN?
RC	✓				*none*

Table 8-4 8340 Code Compatibility

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

Code	Sets Active Function	Comp. with OA/OP	Comp. with UP/DN	Comp. with RB (Knob)	Equivalent SCPI Commands for OA/OP query and UP/DN command
SB	✓	✓			*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
SF	✓	✓		✓	[:SOURce]:FREQuency[:CW]:STEP[:INCRement]?
SHA1	✓	✓	✓	✓	[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]? [:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude] UP [:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude] DOWN
SHA2	✓	✓		✓	[:SOURce]:POWer:ALC:LEVel?
SHA3	✓	✓	✓	✓	[:SOURce]:POWer:ALC:LEVel? [:SOURce]:POWer:ATTenuation UP [:SOURce]:POWer:ATTenuation DOWN
SHAZ	✓	✓		✓	[:SOURce]:POWer:ALC:LEVel?
SHCF	✓	✓		✓	[:SOURce]:FREQuency[:CW]:STEP[:INCRement]?
SHCW	✓	✓			[:SOURce]:FREQuency:STARt? or [:SOURce]:FREQuency:STOP?
SHFA	✓	✓		✓	[:SOURce]:FREQuency:MULTiplier?
SHFB	✓	✓		✓	[:SOURce]:FREQuency:OFFSet?
SHPL	✓	✓	✓	✓	[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]:STEP[:INCRement]? [:SOURce]:POWer:ATTenuation UP [:SOURce]:POWer:ATTenuation DOWN
SHPS	✓	✓	✓	✓	[:SOURce]:POWer:ALC:LEVel? [:SOURce]:POWer:ATTenuation UP [:SOURce]:POWer:ATTenuation DOWN
SHRF	✓	✓	✓	✓	[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]? [:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude] UP [:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude] DOWN
SHSL	✓	✓			[:SOURce]:POWer:ATTenuation?
SHSN	✓	✓		✓	[:SOURce]:SWEep:POINts?
SL	✓	✓			[:SOURce]:POWer:SLOPe?
SM	✓	✓			*not supported*
SN	✓	✓		✓	[:SOURce]:SWEep:POINts?

Table 8-4 8340 Code Compatibility

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A					
Code	**Sets Active Function**	**Comp. with OA/OP**	**Comp. with UP/DN**	**Comp. with RB (Knob)**	**Equivalent SCPI Commands for OA/OP query and UP/DN command**
SP	✓	✓		✓	`[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]:STEP [:INCRement]?`
ST	✓	✓			*not supported*
SV	✓				*none*
TL	✓	✓			*not supported*

836xxB/L Compatible SCPI Commands

Table 8-5 is a comprehensive list of 836xxB/L SCPI commands arranged by subsystem. Commands are indicated as supported by the N5183A or not supported by the N5183A. Use the legend within the table to determine command compatibility.

The preset state of the N5183A differs from that of the 836xxB/L. The RF output and sweep are turned off in the N5183A, while in the 836xxB/L these parameters are turned on. To optimize the benefit of using 836xxB/L compatible commands with a N5183A, set up a user-defined preset state that emulates the preset state of the 836xxB/L.

To use the commands, select **8360 Series** as the remote language. See :LANGuage (N5183A) section for information about selecting the language type.

When using the programming codes in this section, you can:

- set the N5183A system language to 8360 Series for the current session:

  Utility > **I/O Config** > **Remote Language** > **More** > **8360 Series**

  or send the command:

  `:SYST:LANG "8360"`

- set the N5183A system language to 8360 Series so that it does not reset with a preset, an instrument power cycle, or a `*RST` command:

  Utility > **Power On/Preset** > **Preset Language** > **More** > **8360 Series**

  or send the command:

  `:SYST:PRESet:LANG "8360"`

- set the `*IDN?` response to any 8360-like response you prefer. Refer to the :SYSTem:IDN command.

NOTE Some of the N5183A supported commands are a subset of the 836xxB/L commands. When this occurs, the syntax supported by the N5183A is shown in addition to the syntax that is not supported

NOTE The Agilent MXG has only one AM, FM, and PM path. Using AM2, FM2, or PM2 path commands will result in the following error: “`ERROR: -113, Undefined Header`”.

The Agilent MXG has only one internal source for AM, FM and PM, but the INT2 source selection is accepted by the signal generator and is equivalent to selecting INT[1].

The Agilent MXG has three dedicated external sources, one for AM, one for FM/PM and one for Pulse. The EXT2 source selection is accepted by the signal generator, but is equivalent to selecting EXT[1].

Table 8-5 836xxB/L SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83620B & 83640B	83620L & 83640L	Remarks
IEEE Common Commands			
*CLS	✓	✓	
*ESE <data>	✓	✓	
*ESE?	✓	✓	
*ESR?	✓	✓	
*IDN?[a]	✓	✓	
*LRN?	–	–	
*OPC	✓	✓	
*OPC?	✓	✓	
*OPT?	✓	✓	
*RCL <reg_num>	✓	✓	
*RST	✓	✓	
*SAV <reg_num>	✓	✓	
*SRE <data>	✓	✓	
*SRE?	✓	✓	
*STB?	✓	✓	
*TRG	✓	✓	
*TST?	✓	✓	
*WAI	✓	✓	
Abort Subsystem			
:ABORt	✓	✓	
Amplitude Modulation Subsystem			
:AM[:DEPTh] <num>[PCT]|MAXimum|MINimum|<num>DB	✓	✓	

Table 8-5 836xxB/L SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83620B & 83640B	83620L & 83640L	Remarks
:AM[:DEPTh]? [MAXimum|MINimum]	✓		
:AM:INTernal:FREQuency <num>[<freq suffix>]|MAXimum|MINimum	✓		
:AM:INTernal:FREQuency? [MAXimum|MINimum]	✓		
:AM:INTernal:FUNCtion SINusoid|SQUare|TRIangle|RAMP|NOISe	✓		*Supported but the following parameters are not supported:* TRIangle|SQUare|RAMP|NOISe
:AM:INTernal:FUNCtion?	✓		
:AM:SOURce INTernal|EXTernal	✓		
:AM:SOURce?	✓		
:AM:MODE DEEP|NORMal	–		
:AM:MODE?	–		
:AM:STATe ON|OFF|1|0	✓		
:AM:STATe?	✓		
:AM:TYPE LINear|EXPonential	✓		
:AM:TYPE?	✓		
Calibration Subsystem			
:CALibration:AM:AUTO ON|OFF|1|0	–		
:CALibration:AM:AUTO?	–		
:CALibration:AM[:EXECute]	–		
:CALibration:PEAKing:AUTO ON|OFF|1|0	–	–	
:CALibration:PEAKing:AUTO?	–	–	
:CALibration:PEAKing[:EXECute]	–	–	
:CALibration:PMETer:DETector:INITiate? IDETector|DIODe	–	–	

Table 8-5 836xxB/L SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83620B & 83640B	83620L & 83640L	Remarks
:CALibration:PMETer:DETector:NEXT? <num>[<lvl suffix>]	–	–	
:CALibration:PMETer:FLATness:INITiate? USER|DIODe|PMETER|MMHead	–	–	
:CALibration:PMETer:FLATness:NEXT? <value>[<lvl suffix>]	–	–	
:CALibration:SPAN:AUTO ON|OFF|1|0	–	–	
:CALibration:SPAN:AUTO?	–	–	
:CALibration:SPAN[:EXECute]	–	–	
:CALibration:TRACk	–	–	
Correction Subsystem			
:CORRection:ARRay[i]{<value>[DB]}	–	–	
:CORRection:ARRay[i]?	–	–	
:CORRection:FLATness {<num>[freq suffix],<num>[DB]}2*801	✓	✓	
:CORRection:FLATness?	✓	✓	
:CORRection:SOURce[i] ARRay|FLATness	–	–	
:CORRection:SOURce[i]?	–	–	
:CORRection:FLATness:POINts? [MAXimum|MINimum]	✓	✓	
:CORRection[:STATe] ON|OFF|1|0	✓	✓	
:CORRection[:STATe]?	✓	✓	
Diagnostics Subsystem			
:DIAGnostics:ABUS? <value>	–	–	
:DIAGnostics:ABUS:AVERage <value>	–	–	
:DIAGnostics:ABUS:AVERage?	–	–	
:DIAGnostics:ABUS:STATus?	–	–	

Table 8-5 836xxB/L SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83620B & 83640B	83620L & 83640L	Remarks
:DIAGnostics:INSTrument:PMETer:ADDRess <value>	–	–	
:DIAGnostics:INSTrument:PMETer:ADDRess?	–	–	
:DIAGnostics:INSTrument:PRINter:ADDRess <value>	–	–	
:DIAGnostics:INSTrument:PRINter:ADDRess ?	–	–	
:DIAGnostics:IORW <value>,<value>	–	–	
:DIAGnostics:IORW? <value>	–	–	
:DIAGnostics:OUTPut:FAULt?	–	–	
:DIAGnostics:RESult?	–	–	
:DIAGnostics:TEST:CONTinue	–	–	
:DIAGnostics:TEST:DATA:DESC?	–	–	
:DIAGnostics:TEST:DATA:MAXimum?	–	–	
:DIAGnostics:TEST:DATA:MINimum?	–	–	
:DIAGnostics:TEST:DATA:VALue?	–	–	
:DIAGnostics:TEST:DISable {<num>}1*?|ALL	–	–	
:DIAGnostics:TEST:ENABle {<num>}1*?|ALL	–	–	
:DIAGnostics:TEST[:EXECute] <value>	–	–	
:DIAGnostics:TEST:LOG:SOURce ALL|FAIL	–	–	
:DIAGnostics:TEST:LOG:SOURce?	–	–	
:DIAGnostics:TEST:LOG[:STATe]?	–	–	
:DIAGnostics:TEST:LOG[:STATe] ON|OFF|1|0	–	–	
:DIAGnostics:TEST:LOOP ON|OFF|1|0	–	–	
:DIAGnostics:TEST:LOOP?	–	–	
:DIAGnostics:TEST:NAME? [<value>]	–	–	

Table 8-5 836xxB/L SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83620B & 83640B	83620L & 83640L	Remarks
:DIAGnostics:TEST:POINts?	–	–	
:DIAGnostics:TEST:RESult? [<value>]	–	–	
:DIAGnostics:TINT? <value>	–	–	
Display Subsystem			
:DISPlay[:STATe] ON|OFF|1|0	✓	✓	
:DISPlay[:STATe]?	✓	✓	
Frequency Modulation Subsystem			
:FM:COUPling AC|DC	✓		
:FM:COUPling?	✓		
:FM[:DEViation] <val><unit>|MAXimum|MINimum	✓		
:FM[:DEViation]? [MAXimum|MINimum]	✓		
:FM:FILTer:HPASs <num>[<freq suffix>]|MAXimum|MINimum	–		
:FM:FILTer:HPASs? [MAXimum|MINimum]	–		
:FM:INTernal:FREQuency <num>[<freq suffix>]|MAXimum|MINimum	✓		
:FM:INTernal:FREQuency? [MAXimum|MINimum]	✓		
:FM:INTernal:FUNCtion SINusoid|SQUare|TRIangle|RAMP|NOISe	✓		*Supported but the following parameters are not supported:* TRIangle|SQUare|RAMP|NOISe
:FM:INTernal:FUNCtion?	✓		
:FM:SOURce INTernal|EXTernal	✓		
:FM:SOURce?	✓		
:FM:SENSitivity <val><freq suffix/V>|MAXimum|MINimum	✓		
:FM:SENSitivity? [MAXimum|MINimum]	✓		

Table 8-5 836xxB/L SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83620B & 83640B	83620L & 83640L	Remarks
:FM:STATe ON|OFF|1|0	✓		
:FM:STATe?	✓		
Frequency Subsystem			
:FREQuency:CENTer <num>[<freq suffix>]|MAXimum|MINimum|UP|DOWN	✓	✓	
:FREQuency:CENTer? [MAXimum|MINimum]	✓	✓	
:FREQuency[:CW|:FIXed] <num>[<freq suffix>]|MAXimum|MINimum|UP|DOWN	✓	✓	
:FREQuency[:CW]? [MAXimum|MINimum]	✓	✓	
:FREQuency[:FIXed]? [MAXimum|MINimum]	✓	✓	
:FREQuency[:CW]:AUTO ON|OFF|1|0	–	–	
:FREQuency[:CW]:AUTO?	–	–	
:FREQuency[:FIXed]:AUTO ON|OFF|1|0	–	–	
:FREQuency[:FIXed]:AUTO?	–	–	
:FREQuency:MANual <num>[freq suffix]|MAXimum|MINimum|UP|DOWN	–	–	
:FREQuency:MANual? [MAXimum|MINimum]	–	–	
:FREQuency:MODE FIXed|CW|SWEep|LIST	✓	✓	
:FREQuency:MODE?	✓	✓	
:FREQuency:MULTiplier <num>|MAXimum|MINimum[b]	✓	✓	
:FREQuency:MULTiplier? [MAXimum|MINimum]	✓	✓	
:FREQuency:MULTiplier:STATe ON|OFF|1|0	–	–	
:FREQuency:MULTiplier:STATe?	–	–	
:FREQuency:OFFSet <num>|MAXimum|MINimum	✓	✓	

Table 8-5 836xxB/L SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83620B & 83640B	83620L & 83640L	Remarks
:FREQuency:OFFSet? [MAXimum|MINimum]	✓	✓	
:FREQuency:OFFSet:STATe ON|OFF|1|0	✓	✓	
:FREQuency:OFFSet:STATe?	✓	✓	
:FREQuency:SPAN <num>[<freq suffix>]|MAXimum|MINimum|UP|DOWN	✓	✓	
:FREQuency:SPAN? [MAXimum|MINimum]	✓	✓	
:FREQuency:STARt <num>[<freq suffix>]|MAXimum|MINimum|UP|DOWN	✓	✓	
:FREQuency:STARt? [MAXimum|MINimum]	✓	✓	
:FREQuency:STEP:AUTO ON|OFF|1|0	✓	✓	
:FREQuency:STEP:AUTO?	✓	✓	
:FREQuency:STEP[:INCRement] <num>[<freq suffix>]|MAXimum|MINimum	✓	✓	
:FREQuency:STEP[:INCRement]?	✓	✓	
:FREQuency:STOP <num>[<freq suffix>]|MAXimum|MINimum|UP|DOWN	✓	✓	
:FREQuency:STOP? [MAXimum|MINimum]	✓	✓	
Initiate Subsystem			
:INITiate:CONTinuous ON|OFF|1|0	✓	✓	
:INITiate:CONTinuous?	✓	✓	
:INITiate[:IMMediate]	✓	✓	
List Subsystem			
:LIST:DWELl {<num>[<time suffix>]|MAXimum|MINimum}	✓	✓	
:LIST:DWELl? [MAXimum|MINimum]	✓	✓	
:LIST:DWELl:POINts? [MAXimum|MINimum]	✓	✓	

Table 8-5 836xxB/L SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83620B & 83640B	83620L & 83640L	Remarks
:LIST:FREQuency {<value>[<freq suffix>]|MAXimum|MINimum}	✓	✓	
:LIST:FREQuency?	✓	✓	
:LIST:FREQuency:POINts? [MAXimum|MINimum]	✓	✓	
:LIST:MANual <num>	✓	✓	
:LIST:MANual?	✓	✓	
:LIST:MODE AUTO|MANual	✓	✓	
:LIST:MODE?	✓	✓	
:LIST[:POWer]:CORRection {<value>[DB]|MAXimum|MINimum}	–	–	
:LIST[:POWer]:CORRection?	–	–	
:LIST[:POWer]:CORRection:POINts? [MAXimum|MINimum]	–	–	
:LIST:TRIGger:SOURce IMMediate|BUS|EXTernal	✓	✓	
:LIST:TRIGger:SOURce?	✓	✓	
Marker Subsystem			
:MARKer[n]:AMPLitude[:STATe] ON|OFF|1|0	✓	✓	
:MARKer[n]:AMPLitude[:STATe]?	✓	✓	
:MARKer[n]:AMPLitude:VALue <value>[DB]|MAXimum|MINimum	✓	✓	
:MARKer[n]:AMPLitude:VALue? [MAXimum|MINimum]	✓	✓	
:MARKer[n]:AOFF	✓	✓	
:MARKer[n]:DELTa? <value>,<value>	✓	✓	

Table 8-5 836xxB/L SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83620B & 83640B	83620L & 83640L	Remarks
:MARKer[n]:FREQuency <value>[<freq suffix>]|MAXimum|MINimum	✓	✓	
:MARKer[n]:FREQuency? [MAXimum|MINimum]	✓	✓	
:MARKer[n]:MODE FREQuency|DELTa	✓	✓	
:MARKer[n]:MODE?	✓	✓	
:MARKer[n]:REFerence <n>	✓	✓	
:MARKer[n]:REFerence?	✓	✓	
:MARKer[n][:STATe] ON|OFF|1|0	✓	✓	
:MARKer[n][:STATe]?	✓	✓	
Measure Subsystem			
:MEASure:AM?	–		
:MEASure:FM?	–		
Modulation Subsystem			
:MODulation:OUTPut:SOURce AM|FM	–		
:MODulation:OUTPut:SOURce?	–		
:MODulation:OUTPut:STATe ON|OFF|1|0	–		
:MODulation:OUTPut:STATe?	–		
:MODulation:STATe?	✓		
Power Subsystem			
:POWer:ALC:BANDwidth|:BWIDth <value>[<freq suffix>]|MAXimum|MINimum	–	–	
:POWer:ALC:BANDwidth?|:BWIDth? [MAXimum|MINimum]	–	–	
:POWer:ALC:BANDwidth|:BWIDth:AUTO ON|OFF|1|0	✓	✓	
:POWer:ALC:BANDwidth|:BWIDth:AUTO?	✓	✓	

Table 8-5 836xxB/L SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83620B & 83640B	83620L & 83640L	Remarks
:POWer:ALC:CFACtor <value>[DB]|MAXimum|MINimum|UP|DOWN	–	–	
:POWer:ALC:CFACtor? [MINimum|MAXimum]	–	–	
:POWer:ALC:SOURce PMETer|INTernal|DIODe|MMHead	✓	✓	*Supported but the following parameters are not supported:* PMETer|MMHead
:POWer:ALC:SOURce?	✓	✓	
:POWer:ALC[:STATe] ON|OFF|1|0	✓	✓	
:POWer:ALC[:STATe]?	✓	✓	
:POWer:AMPLifier:STATE ON|OFF|1|0	–	–	
:POWer:AMPLifier:STATE?	–	–	
:POWer:AMPLifier:STATE:AUTO ON|OFF|1|0	–	–	
:POWer:AMPLifier:STATE:AUTO?	–	–	
:POWer:ATTenuation <num>[DB]|MAXimum|MINimum|UP|DOWN	✓	✓	
:POWer:ATTenuation? [MAXimum|MINimum]	✓	✓	
:POWer:ATTenuation:AUTO ON|OFF|1|0	✓	✓	
:POWer:ATTenuation:AUTO?	✓	✓	
:POWer:CENTer <num>[<lvl suffix>]|MAXimum|MINimum|UP|DOWN	✓	✓	
:POWer:CENTer? [MAXimum|MINimum]	✓	✓	
:POWer[:LEVel] <num>[<lvl suffix>]|MAXimum|MINimum|UP|DOWN	✓	✓	
:POWer[:LEVel]? [MAXimum|MINimum]	✓	✓	
:POWer:MODE FIXed|SWEep	✓	✓	
:POWer:MODE?	✓	✓	

Table 8-5 836xxB/L SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83620B & 83640B	83620L & 83640L	Remarks
:POWer:OFFSet <num>[DB]|MAXimum|MINimum|UP|DOWN	✓	✓	
:POWer:OFFSet? [MAXimum|MINimum]	✓	✓	
:POWer:OFFSet:STATe ON|1[c] :POWer:OFFSet:STATe OFF|0[d]	– ✓	– ✓	
:POWer:OFFSet:STATe?	✓	✓	
:POWer:RANGe <value>[<lvl suffix>]|MAXimum|MINimum|UP|DOWN	–	–	
:POWer:RANGe?	–	–	
:POWer:SEARch ON|OFF|1|0|ONCE	✓	✓	
:POWer:SEARch?	✓	✓	
:POWer:SLOPe <value>[DB/<freq suffix>]|MIN|MAX|UP|DOWN	✓	✓	
:POWer:SLOPe? [MAXimum|MINimum]	✓	✓	
:POWer:SLOPe:STATe ON|OFF|1|0	✓	✓	
:POWer:SLOPe:STATe?	✓	✓	
:POWer:SPAN <value>[DB]|MAXimum|MINimum|UP|DOWN	✓	✓	
:POWer:SPAN? [MAXimum|MINimum]	✓	✓	
:POWer:STARt <val><unit>|MAXimum|MINimum|UP|DOWN	✓	✓	
:POWer:STARt? [MAXimum|MINimum]	✓	✓	
:POWer:STATe ON|OFF|1|0	✓	✓	
:POWer:STATe?	✓	✓	
:POWer:STEP:AUTO ON|OFF|1|0	✓	✓	
:POWer:STEP:AUTO?	✓	✓	

Table 8-5 836xxB/L SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83620B & 83640B	83620L & 83640L	Remarks
:POWer:STEP[:INCRement] <num>[DB]|MAXimum|MINimum	✓	✓	
:POWer:STEP[:INCRement]? [MAXimum|MINimum]	✓	✓	
:POWer:STOP <val><unit>|MAXimum|MINimum|UP|DOWN	✓	✓	
:POWer:STOP? [MAXimum|MINimum]	✓	✓	
Pulse Modulation Subsystem			
:PULM:EXTernal:DELay <value>[<time suffix>]|MAXimum|MINimum	–		
:PULM:EXTernal:DELay? [MAXimum|MINimum]	–		
:PULM:EXTernal:POLarity NORMal|INVerted	✓		
:PULM:EXTernal:POLarity?	✓		
:PULM:INTernal:FREQuency <num>[<freq suffix>]|MAXimum|MINimum	✓		
:PULM:INTernal:FREQuency? [MAXimum|MINimum]	✓		
:PULM:INTernal:GATE ON|OFF|1|0	–		
:PULM:INTernal:GATE?	–		
:PULM:INTernal:PERiod <num>[<time suffix>]|MAXimum|MINimum	✓		
:PULM:INTernal:PERiod? [MAXimum|MINimum]	✓		
:PULM:INTernal:TRIGger:SOURce INTernal|EXTernal	✓		
:PULM:INTernal:TRIGger:SOURce? [INTernal|EXTernal]	✓		
:PULM:INTernal:WIDTh <num>[<time suffix>]|MAXimum|MINimum	✓		
:PULM:INTernal:WIDTh? [MAXimum|MINimum]	✓		

Table 8-5 836xxB/L SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83620B & 83640B	83620L & 83640L	Remarks
:PULM:SLEW <value>[<time suffix>]|MAXimum|MINimum	–		
:PULM:SLEW? [MAXimum|MINimum]	–		
:PULM:SLEW:AUTO ON|OFF|1|0	–		
:PULM:SLEW:AUTO?	–		
:PULM:SOURce SCALar :PULM:SOURce INTernal|EXTernal	– ✓		
:PULM:SOURce?	✓		
:PULM:STATe ON|OFF|1|0	✓		
:PULM:STATe?	✓		
Pulse Subsystem			
:PULSe:FREQuency <num>[<freq suffix>]|MAXimum|MINimum	✓		
:PULSe:FREQuency? [MAXimum|MINimum]	✓		
:PULSe[:INTernal]:DELay <delay>|DEFault|MAXimum|MINimum|UP|DOWN	✓		
:PULSe[:INTernal]:DELay? [DEFault|MAXimum|MINimum]	✓		
:PULSe[:INTernal]:DELay:STEP[:INCRement] <step>|DEFault|MINimum|MAXimum	✓		
:PULSe[:INTernal]:DELay:STEP[:INCRement]? [DEFault|MINimum|MAXimum]	✓		
:PULSe[:INTernal]:FREQuency <frequency>|MAXimum|MINimum|UP|DOWN	✓		
:PULSe[:INTernal]:FREQuency? [MAXimum|MINimum]	✓		
:PULSe[:INTernal]:FREQuency:STEP <freq>|MAXimum|MINimum|DEFault	✓		

Table 8-5 836xxB/L SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83620B & 83640B	83620L & 83640L	Remarks
:PULSe[:INTernal]:FREQuency:STEP? [MAXimum|MINimum|DEFault]	✓		
:PULSe[:INTernal]:PERiod <period>|MAXimum|MINimum|UP|DOWN	✓		
:PULSe[:INTernal]:PERiod? [MAXimum|MINimum]	✓		
:PULSe[:INTernal]:PERiod:STEP[:INCRement] <step>|MAXimum|MINimum	✓		
:PULSe[:INTernal]:PERiod:STEP[:INCRement]? [MAXimum|MINimum]	✓		
:PULSe[:INTernal]:WIDTh <width>|MAXimum|MINimum	✓		
:PULSe[:INTernal]:WIDTh? [MAXimum|MINimum]	✓		
:PULSe[:INTernal]:WIDTh:STEP <step>|MAXimum|MINimum|DEFault	✓		
:PULSe[:INTernal]:WIDTh:STEP? [MAXimum|MINimum|DEFault]	✓		
:PULSe:PERiod <num>[<time suffix>]|MAXimum|MINimum	✓		
:PULSe:PERiod? [MAXimum|MINimum]	✓		
:PULSe:SOURce INTernal|EXTernal	✓		
:PULSe:SOURce?	✓		
:PULSe:STATe ON|OFF|1|0	✓		
:PULSe:STATe?	✓		
:PULSe:WIDTh <num>[<time suffix>]|MAXimum|MINimum	✓		
:PULSe:WIDTh? [MAXimum|MINimum]	✓		
Reference Oscillator Subsystem			

Table 8-5 836xxB/L SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83620B & 83640B	83620L & 83640L	Remarks
:ROSCillator:SOURce INTernal|EXTernal|NONE	✓	✓	
:ROSCillator:SOURce?	✓	✓	
:ROSCillator:SOURce:AUTO ON|OFF|1|0	✓	✓	
:ROSCillator:SOURce:AUTO?	✓	✓	
Status Subsystem			
:STATus:OPERation:CONDition?	✓	✓	
:STATus:OPERation:ENABle <value>	✓	✓	
:STATus:OPERation:ENABle?	✓	✓	
:STATus:OPERation[:EVENt]?	✓	✓	
:STATus:OPERation:NTRansition <value>	✓	✓	
:STATus:OPERation:NTRansition?	✓	✓	
:STATus:OPERation:PTRansition <value>	✓	✓	
:STATus:OPERation:PTRansition?	✓	✓	
:STATus:PRESet	✓	✓	
:STATus:QUEStionable:CONDition?	✓	✓	
:STATus:QUEStionable:ENABle <value>	✓	✓	
:STATus:QUEStionable:ENABle?	✓	✓	
:STATus:QUEStionable[:EVENt]?	✓	✓	
:STATus:QUEStionable:NTRansition <value>	✓	✓	
:STATus:QUEStionable:NTRansition?	✓	✓	
:STATus:QUEStionable:PTRansition <value>	✓	✓	
:STATus:QUEStionable:PTRansition?	✓	✓	

Table 8-5 836xxB/L SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83620B & 83640B	83620L & 83640L	Remarks
Sweep Subsystem			
:SWEep:CONTrol:STATe ON|OFF|1|0	–	–	
:SWEep:CONTrol:STATe?	–	–	
:SWEep:CONTrol:TYPE MASTer|SLAVe	–	–	
:SWEep:CONTrol:TYPE?	–	–	
:SWEep:DWELl <num>[<time suffix>]|MAXimum|MINimum	✓	✓	
:SWEep:DWELl? [MAXimum|MINimum]	✓	✓	
:SWEep:DWELl:AUTO ON|OFF|1|0	–	–	
:SWEep:DWELl:AUTO?	–	–	
:SWEep:GENeration STEPped|ANALog	✓	✓	*Supported but the following parameter is not supported:* ANALog
:SWEep:GENeration?	✓	✓	
:SWEep:MANual:POINt <num>|MAXimum|MINimum	✓	✓	
:SWEep:MANual:POINt? [MAXimum|MINimum]	✓	✓	
:SWEep:MANual[:RELative] <value>	–	–	
:SWEep:MANual[:RELative]?	–	–	
:SWEep:MARKer:STATe ON|OFF|1|0	–	–	
:SWEep:MARKer:STATe?	–	–	
:SWEep:MARKer:XFER	✓	✓	
:SWEep:MODE AUTO|MANual	✓	✓	
:SWEep:MODE?	✓	✓	
:SWEep:POINts <num>|MAXimum|MINimum	✓	✓	
:SWEep:POINts? [MAXimum|MINimum]	✓	✓	

Table 8-5 836xxB/L SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83620B & 83640B	83620L & 83640L	Remarks
:SWEep:STEP <value>[<freq suffix>]|MAXimum|MINimum	✓	✓	
:SWEep:STEP? [MAXimum|MINimum]	✓	✓	
:SWEep:TIME <value>[<time suffix>]|MAXimum|MINimum	–	–	
:SWEep:TIME? [MAXimum|MINimum]	–	–	
:SWEep:TIME:AUTO ON|OFF|1|0	–	–	
:SWEep:TIME:AUTO?	–	–	
:SWEep:TIME:LLIMit <value>[<time suffix>]|MAXimum|MINimum	–	–	
:SWEep:TIME:LLIMit? [MAXimum|MINimum]	–	–	
:SWEep:TRIGger:SOURce IMMediate|BUS|EXTernal	✓	✓	
:SWEep:TRIGger:SOURce?	✓	✓	
System Subsystem			
:SYSTem:ALTernate <value>|MAXimum|MINimum	–	–	
:SYSTem:ALTernate? [MAXimum|MINimum]	–	–	
:SYSTem:ALTernate:STATe ON|OFF|1|0	–	–	
:SYSTem:ALTernate:STATe?	–	–	
:SYSTem:COMMunicate:GPIB:ADDRess <number>	✓	✓	
:SYSTem:DUMP:PRINter?	–	–	
:SYSTem:ERRor?	✓	✓	
:SYSTem:LANGuage CIIL|COMPatible :SYSTem:LANGuage SCPI	– ✓	– ✓	
:SYSTem:MMHead:SELect:AUTO ON|OFF|1|0	–	–	
:SYSTem:MMHead:SELect:AUTO?	–	–	

Table 8-5 836xxB/L SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83620B & 83640B	83620L & 83640L	Remarks
:SYSTem:MMHead:SELect FRONt|REAR|NONE[e]	–	–	
:SYSTem:MMHead:SELect?	–	–	
:SYSTem:PRESet[:EXECute]	✓	✓	
:SYSTem:PRESet:SAVE	✓	✓	
:SYSTem:PRESet:TYPE FACTory|USER	✓	✓	
:SYSTem:PRESet:TYPE?	✓	✓	
:SYSTem:SECurity:COUNt <value>[fg]	✓	✓	
:SYSTem:SECurity:COUNt? [MINimum|MAXimum]	✓	✓	
:SYSTem:SECurity[:STATe] ON|OFF|1|0[e]	✓	✓	
:SYSTem:SECurity[:STATe]?	✓	✓	
:SYSTem:VERSion?	✓	✓	
Trigger Subsystem			
:TRIGger[:IMMediate]	✓	✓	
:TRIGger:ODELay <value>[time suffix]|MAXimum|MINimum	–	–	
:TRIGger:ODELay? [MAXimum|MINimum]	–	–	
:TRIGger:SOURce IMMediate|BUS|EXTernal	✓	✓	
:TRIGger:SOURce?	✓	✓	
Tsweep Subsystem			
:TSWeep	✓	✓	
Unit Subsystem			
:UNIT:AM DB|PCT	–		
:UNIT:AM?	–		
:UNIT:POWer {<lvl suffix>}	✓	✓	

Table 8-5 836xxB/L SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83620B & 83640B	83620L & 83640L	Remarks
:UNIT:POWer?	✓	✓	

a. The identification information can be modified for the N5183A to reflect the signal generator that is being replaced. Refer to ":SYSTem:IDN" on page 373 and":SYSTem:OPT" on page 373 for more information.
b. A multiplier of zero is not allowed.
c. The N5183A will accept this command, but it has no effect.
d. This command resets the power offset level to 0dBm. It does not turn off or disable the power offset feature.
e. Since the N5183A does not have a front panel millimeter head (source module) interface connector, the "FRONT" suffix defaults to the rear connector.
f. Flash memory allows only a limited number of "writes and erasures", excessive use of this command will reduce the memory lifetime.
g. This command can take several hours to execute because the N5183A memory size is much larger than the HP 836xx memory.

8373xB and 8371xB Compatible SCPI Commands

Table 8-6 is a comprehensive list of 8373xB and 8371xB SCPI commands arranged by subsystem. Commands are indicated as supported by the N5183A or not supported by the N5183A. Use the legend within the table to determine command compatibility.

To use the commands, select 8371xB or 8373xB as the remote language. See :LANGuage (N5183A) section for information about selecting the language type.

When using the programming codes in this section, you can:

- set the N5183A system language to 8371xB or 8373xB for the current session:

  Utility > **I/O Config** > **Remote Language** > **More** > **83711B,83712B** or **83731B,83732B**

  or send the command:

  `:SYST:LANG "83712" or "83732"`

- set the N5183A system language to 8371xB or 8373xB so that it does not reset with a preset, a instrument power cycle, or a *RST command:

  Utility > **Power On/Preset** > **Preset Language** > **More** > **83711B,83712B** or **83731B,83732B**

  or send the command:

  `:SYST:PRESet:LANG "83712" or "83732"`

- set the `*IDN?` response to any 8371xB or 8373xB response preferred. Refer to the :SYSTem:IDN and :SYSTem:OPT commands.

NOTE Some of the N5183A supported commands are subsets of the 8373xB and 8371xB commands. When this occurs, the syntax supported by the N5183A is shown in addition to the syntax that is not supported.

NOTE The Agilent MXG has only one AM, FM, and PM path. Using AM2, FM2, or PM2 path commands will result in the following error: “`ERROR: -113, Undefined Header`”.

The Agilent MXG has only one internal source for AM, FM and PM, but the INT2 source selection is accepted by the signal generator and is equivalent to selecting INT[1].

The Agilent MXG has three dedicated external sources, one for AM, one for FM/PM and one for Pulse. The EXT2 source selection is accepted by the signal generator, but is equivalent to selecting EXT[1].

Table 8-6 8373xB and 8371xB SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83731B & 83732B	83711B & 83712B	Remarks
IEEE Common Commands			
*CLS	✓	✓	
*DMC	–	–	
*EMC	–	–	
*EMC?	–	–	
*ESE <data>	✓	✓	
*ESE?	✓	✓	
*ESR?	✓	✓	
*GMC?	–	–	
*IDN?[a]	✓	✓	
*LMC?	–	–	
*LRN?	–	–	
*OPC	✓	✓	
*OPC?	✓	✓	
*OPT?[a]	✓	✓	
*PMC	–	–	
*PSC	✓	✓	
*PSC?	✓	✓	
*RCL <reg_num>	✓	✓	
*RMC	–	–	
*RST	✓	✓	
*SAV <reg_num>	✓	✓	
*SRE <data>	✓	✓	
*SRE?	✓	✓	

Table 8-6 8373xB and 8371xB SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83731B & 83732B	83711B & 83712B	Remarks
*STB?	✓	✓	
*TST?	✓	✓	
*WAI	✓	✓	
Abort Subsystem			
:ABORt	✓		
Amplitude Modulation Subsystem			
[:SOURce]:AM[:DEPTh] <val><unit>[b]	✓		
[:SOURce]:AM[:DEPTh] <num>[<PCT>]|<num>DB	✓		
[:SOURce]:AM[:DEPTh]:STEP[:INCRement] incr|MINimum| MAXimum|DEFault	✓		
[:SOURce]:AM:INTernal:FREQuency <num>[<freq suffix>] incr| MINimum|MAXimum|DEFault	✓		
[:SOURce]:AM:INTernal:FREQuency:STEP[:INCRement]	–		
[:SOURce]:AM:INTernal:FUNCtion SINusoid|SQUare|TRIangle|RAMP|NOISe|UNIForm| GAUSsian	✓		*Supported but the following parameters are not supported:* TRIangle|SQUare|RAMP| NOISe|UNIForm|GAUSsian
[:SOURce]:AM:SENSitivity <val>|MIN|MAX|DEF	–		
[:SOURce]:AM:SOURce FEED|INTernal|EXTernal[d]	✓		
[:SOURce]:AM:SOURce?[d]	✓		
[:SOURce]:AM:STATe ON|OFF	✓		
[:SOURce]:AM:STATe?	✓		
[:SOURce]:AM:TYPE LINear|EXPonential	✓		
[:SOURce]:AM:TYPE?	✓		
Display Subsystem			
:DISPlay[:WINDow][:STATe] ON|OFF|1|0	✓	✓	
:DISPlay[:WINDow][:STATe]?	✓	✓	

Table 8-6 8373xB and 8371xB SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83731B & 83732B	83711B & 83712B	Remarks
Initiate Subsystem			
:INITiate:CONTinuous ON|OFF|1|0	✓		
:INITiate:CONTinuous?	✓		
Correction Subsystem			
[:SOURce]:CORRection:FLATness[:DATA] <freq>,<corr.>,... <freq>,<corr.>	✓	✓	
[:SOURce]:CORRection:FLATness:POINts <points>	✓	✓	
[:SOURce]:CORRection[:STATe] ON|OFF	✓	✓	
[:SOURce]:CORRection[:STATe]?	✓	✓	
[:SOURce]:CORRection:CSET[:SELect] tableno	–	–	
[:SOURce]:CORRection:CSET[:SELect]?	–	–	
[:SOURce]:CORRection:CSET:STATe ON|OFF|1|0	–	–	
[:SOURce]:CORRection:CSET:STATe?	–	–	
Frequency Modulation Subsystem			
[:SOURce]:FM:COUPling AC|DC	✓		
[:SOURce]:FM:COUPling?	✓		
[:SOURce]:FM[:DEViation] <val><unit>	✓		
[:SOURce]:FM[:DEViation]:STEP[:INCRement] <val> [<freq suffix>]	–		
[:SOURce]:FM:INTernal:FREQuency <num>[<freq suffix>]	✓		
[:SOURce]:FM:INTernal:FREQuency:STEP[:INCRement] incr|MINimum|MAXimum|DEFault	✓		
[:SOURce]:FM:INTernal:FUNCtion SINusoid|SQUAre|TRIAngle|RAMP|UNIForm|GAUSsian	✓		*Supported but the following parameters are not supported:* TRIangle|SQUare|RAMP| NOISe|UNIForm|GAUSsian
[:SOURce]:FM:SENSitivity?	✓		

Table 8-6 8373xB and 8371xB SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83731B & 83732B	83711B & 83712B	Remarks
[:SOURce]:FM:SOURce FEED|INTernal|External[d]	✓		
[:SOURce]:FM:SOURce?[d]	✓		
[:SOURce]:FM:STATe ON|OFF|1|0	✓		
[:SOURce]:FM:STATe?	✓		
Frequency Subsystem			
[:SOURce]:FREQuency[:CW|:FIXed] <num>[<freq suffix>]|UP|DOWN|DEFault	✓	✓	
[:SOURce]:FREQuency[:CW|:FIXed] [MAXimum|MINimum|DEFault]	✓	✓	
[:SOURce]:FREQuency[:CW|:FIXed]:STEP <val><unit>	✓	✓	
[:SOURce]:FREQuency[:CW|:FIXed]:STEP?	✓	✓	
[:SOURce]:FREQuency:MULTiplier <val>|UP|DOWN|DEFault[c]	✓	✓	
[:SOURce]:FREQuency:MULTiplier?	✓	✓	
[:SOURce]:FREQuency:MULTiplier:STEP[:INCRement] incr|MINimum|MAXimum|DEFault	–	–	
[:SOURce]:FREQuency:MULTiplier:STEP[:INCRement]?	–	–	
Memory Subsystem			
:MEMory:CATalog[:ALL]?	✓	✓	
:MEMory:CATalog:TABLe?	–	–	
:MEMory:CATalog:MACRo	–	–	
:MEMory:RAM:INITialize	–	–	
:MEMory:TABLe:FREQuency freq,...freq|MINimum|MAXimum	–	–	
:MEMory:TABLe:FREQuency? MINimum|MAXimum	–	–	
:MEMory:TABLe:FREQuency:POINts?	–	–	
:MEMory:TABLe:LOSS[:MAGNitude] cf,...cf|MINimum|MAXimum	–	–	

Table 8-6 8373xB and 8371xB SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83731B & 83732B	83711B & 83712B	Remarks
:MEMory:TABLe:LOSS[:MAGNitude]?	–	–	
:MEMory:TABLe:LOSS[:MAGNitude]:POINts?	–	–	
:MEMory:TABLe:SELect tableno	–	–	
:MEMory:TABLe:SELect?	–	–	
Modulation Subsystem			
[:SOURce]:MODulation:AOFF	✓		
[:SOURce]:MODulation:STATe ON|OFF	–		
[:SOURce]:MODulation:STATe?	✓		
Output Subsystem			
:OUTPut:IMPedance?	–	–	
:OUTPut:PROTection[:STATe] ON|OFF	✓	✓	
:OUTPut:PROTection[:STATe]?	✓	✓	
:OUTPut[:STATe] ON|OFF|1|0	✓	✓	
:OUTPut[:STATe]?	✓	✓	
Phase Modulation Subsystem			
[:SOURce]:PM:COUPling AC|DC	✓		
[:SOURce]:PM[:DEViation] <val><unit>	✓		
[:SOURce]:PM[:DEViation]:STEP[:INCRement]	✓		
[:SOURce]:PM:INTernal:FREQuency <val><unit>	✓		
[:SOURce]:PM:INTernal:FREQuency:STEP[:INCRement]	✓		
[:SOURce]:PM:INTernal:FUNCtion SINusoid|SQUare|TRIAngle|RAMP|UNIForm|GAUSsian	✓		*Supported but the following parameters are not supported:* TRIangle|SQUare|RAMP|NOISe|UNIForm|GAUSsian
[:SOURce]:PM:RANGe AUTO|LOW|HIGH	–		
[:SOURce]:PM:SENSitivity sens|MINimum|MAXimum|DEFault	–		

Table 8-6 8373xB and 8371xB SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83731B & 83732B	83711B & 83712B	Remarks
[:SOURce]:PM:SOURce INTernal|FEED|EXTernal[d]	✓		FEED *and* INTernal *are synonymous.*
[:SOURce]:PM:STATe ON|OFF|1|0	✓		
Power Subsystem			
[:SOURce]:POWer:ALC:PMETer pmeter|MINimum|MAXimum|DEFault	–	–	
[:SOURce]:POWer:ALC:PMETer?	–	–	
[:SOURce]:POWer:ALC:PMETer:STEP incr|MINimum|MAXimum| DEFault	–	–	
[:SOURce]:POWer:ALC:PMETer:STEP?	–	–	
[:SOURce]:POWer:ALC:SOURce PMETer [:SOURce]:POWer:ALC:SOURce INTernal|DIODe	– ✓	– ✓	
[:SOURce]:POWer:ALC:SOURce?	✓	✓	
[:SOURce]:POWer:ATTenuation:AUTO ONCE [:SOURce]:POWer:ATTenuation:AUTO ON|OFF	– ✓	– ✓	
[:SOURce]:POWer:ATTenuation:AUTO?	✓	✓	
[:SOURce]:POWer[:LEVel] ampl|MINimum|MAXimum|UP|DOWN|DEFault	✓	✓	
[:SOURce]:POWer[:LEVel]?	✓	✓	
[:SOURce]:POWer[:LEVel]:STEP incr|MINimum|MAXimum|DEFault	✓	✓	
[:SOURce]:POWer[:LEVel]:STEP?	✓	✓	
[:SOURce]:POWer:PROTection:STATe ON|OFF	✓	✓	
[:SOURce]:POWer:PROTection:STATe?	✓	✓	
Pulse Modulation Subsystem			
[:SOURce]:PULM:EXTernal:POLarity NORMal|INVerted	✓		
[:SOURce]:PULM:EXTernal:POLarity?	✓		

Table 8-6 8373xB and 8371xB SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83731B & 83732B	83711B & 83712B	Remarks
[:SOURce]:PULM:SOURce INTernal|EXTernal	✓		
[:SOURce]:PULM:SOURce?	✓		
[:SOURce]:PULM:STATe ON|OFF|1|0	✓		
[:SOURce]:PULM:STATe?	✓		
Pulse Subsystem			
[:SOURce]:PULSe:DELay delay|MINimum|MAXimum|UP|DOWN| DEFault	✓		
[:SOURce]:PULSe:DELay?	✓		
[:SOURce]:PULSe:DELay:STEP <num>[<time suffix>][DEFault]	✓		
[:SOURce]:PULSe:DELay:STEP? [DEFault]	✓		
[:SOURce]:PULSe:DOUBle[:STATE] ON|OFF	✓		
[:SOURce]:PULSe:DOUBle[:STATE]?	✓		
[:SOURce]:PULSe:FREQuency freq|MINimum|MAXimum|UP|DOWN| DEFault	✓		
[:SOURce]:PULSe:FREQuency?	✓		
[:SOURce]:PULSe:FREQuency:STEP freq|DEFault	✓		
[:SOURce]:PULSe:FREQuency:STEP? [MIN|MAX|DEF]	✓		
[:SOURce]:PULSe[:INTernal]:DELay:STEP[:INCRement] <step>|DEFault|MINimum|MAXimum	✓		
[:SOURce]:PULSe[:INTernal]:DELay:STEP[:INCRement]? [DEFault|MINimum|MAXimum]	✓		
[:SOURce]:PULSe[:INTernal]:PERiod <period>|MAXimum|MINimum|UP|DOWN	✓		
[:SOURce]:PULSe[:INTernal]:PERiod? [MAXimum|MINimum]	✓		
[:SOURce]:PULSe[:INTernal]:PERiod:STEP[:INCRement] <step>|MAXimum|MINimum	✓		
[:SOURce]:PULSe[:INTernal]:PERiod:STEP[:INCRement]? [MAXimum|MINimum]	✓		

Table 8-6 8373xB and 8371xB SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83731B & 83732B	83711B & 83712B	Remarks
[:SOURce]:PULSe[:INTernal]:WIDTh <width>|MAXimum|MINimum	✓		
[:SOURce]:PULSe[:INTernal]:WIDTh? [MAXimum|MINimum]	✓		
[:SOURce]:PULSe[:INTernal]:WIDTh:STEP <step>|MAXimum|MINimum|DEFault	✓		
[:SOURce]:PULSe[:INTernal]:WIDTh:STEP? [MAXimum|MINimum|DEFault]	✓		
[:SOURce]:PULSe:PERiod <num>[<time suffix>]|UP|DOWN	✓		
[:SOURce]:PULSe:PERiod?	✓		
[:SOURce]:PULSe:PERiod:STEP <num>[<time suffix>]	✓		
[:SOURce]:PULSe:PERiod:STEP?	✓		
[:SOURce]:PULse:TRANSition[:LEADing] SLOW|MEDium|FAST	–		
[:SOURce]:PULSe:TRANsition[:LEADing]?	–		
[:SOURce]:PULSe:TRANsition:STATe ON|OFF	–		
[:SOURce]:PULSe:TRANsition:STATe?	–		
[:SOURce]:PULSe:WIDTh MAXimum|MINimum|UP|DOWN|DEFault	✓		
[:SOURce]:PULSe:WIDTh? [MAXimum|MINimum|DEFault]	✓		
[:SOURce]:PULSe:WIDTh:STEP <num>[<time suffix>]|DEFault	✓		
[:SOURce]:PULSe:WIDTh:STEP? [MINimum|MAXimum|DEFault]	✓		
Reference Oscillator Subsystem			
[:SOURce]:ROSCillator:SOURce?	✓	✓	
Status Subsystem			
:STATus:OPERation:CONDition?	✓	✓	
:STATus:OPERation:ENABle <value>	✓	✓	

Table 8-6 8373xB and 8371xB SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83731B & 83732B	83711B & 83712B	Remarks
:STATus:OPERation:ENABle?	✓	✓	
:STATus:OPERation[:EVENt]?	✓	✓	
:STATus:OPERation:NTRansition <value>	✓	✓	
:STATus:OPERation:NTRansition?	✓	✓	
:STATus:OPERation:PTRansition <value>	✓	✓	
:STATus:OPERation:PTRansition?	✓	✓	
:STATus:PRESet	✓	✓	
:STATus:QUEStionable:CONDition?	✓	✓	
:STATus:QUEStionable:ENABle <value>	✓	✓	
:STATus:QUEStionable:ENABle?	✓	✓	
:STATus:QUEStionable[:EVENt]?	✓	✓	
:STATus:QUEStionable:NTRansition <value>	✓	✓	
:STATus:QUEStionable:NTRansition?	✓	✓	
:STATus:QUEStionable:PTRansition <value>	✓	✓	
:STATus:QUEStionable:PTRansition?	✓	✓	
System Subsystem			
:SYSTem:COMMunicate:GPIB:ADDRess <number>	✓	✓	
:SYSTem:COMMunicate:GPIB:ADDRess?	✓	✓	
:SYSTem:COMMunicate:PMETer:ADDRess	–	–	
:SYSTem:COMMunicate:PMETer:ADDRess?	–	–	
:SYSTem:ERRor?	✓	✓	
:SYSTem:KEY keycode|MINimum|MAXimum	–	–	
:SYSTem:KEY?	–	–	

Table 8-6 8373xB and 8371xB SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83731B & 83732B	83711B & 83712B	Remarks
:SYSTem:LANGuage "COMP=8673"|"COMPatibility=8673" :SYSTem:LANGuage "SCPI"	– ✓	– ✓	
:SYSTem:LANGuage?	✓	✓	
:SYSTem:PRESet	✓	✓	
:SYSTem:VERSion?	✓	✓	
Trigger Subsystem			
:TRIGger[:SEQuence|:STARt]:SOURce IMMediate|EXTernal	✓		
:TRIGger[:SEQuence|:STARt]:SOURce?	✓		
:TRIGger:SEQuence2:STOP:SOURce IMMediate|EXTernal	–		
:TRIGger:SEQuence2:STOP:SOURce?	–		
:TRIGger:SEQuence2:SLOPe	–		
Unit Subsystem			
:UNIT:FREQuency {<freq suffix>}	✓	✓	
:UNIT:FREQuency?	✓	✓	
:UNIT:POWer {<lvl suffix>}	✓	✓	
:UNIT:POWer?	✓	✓	
:UNIT:TIME	–	–	
:UNIT:TIME?	–	–	
:UNIT:VOLTage {<lvl suffix>}	–	–	
:UNIT:VOLTage?	–	–	

a. The identification information can be modified for the N5183A to reflect the signal generator that is being replaced. Refer to :SYSTem:IDN or :SYSTem:OPT on page 373 for more information.
b. In linear mode,% cannot be used to select percent as the unit. Use PCT to specify percent as the unit.
c. A multiplier of zero is not allowed.
d. If FEED is selected, the query returns INT. FEED and INTernal are synonymous.

8375xB Compatible SCPI Commands

Table 8-7 is a comprehensive list of 83751B and 83752B SCPI commands, arranged by subsystem. Commands are identified as supported by the N5183A or not supported by then N5183A. Use the legend within the table to determine command compatibility.

To use the commands, select 8375xB as the remote language. See :LANGuage (N5183A) section for information about selecting the language type.

When using the programming codes in this section, you can:

- set the PSG system language to 83751B,83752B for the current session:

  Utility > **I/O Config** > **Remote Language** > **More** > **83751B,83752B**

  or send the command:

  `:SYST:LANG "83752"`

- set the N5183A system language to 8375xB so that it does not reset with either preset, instrument power cycle or *RST command:

  Utility > **Power On/Preset** > **Preset Language** > **More** > **83751B,83752B**

  or send the command:

  `:SYST:PRESet:LANG "83752"`

- set the `*IDN?` response to any 8375xB-like response you prefer. Refer to the :SYSTem:IDN and :SYSTem:OPT commands.

NOTE Some supported commands require the installation of hardware or firmware options.

NOTE The Agilent MXG has only one AM, FM, and PM path. Using AM2, FM2, or PM2 path commands will result in the following error: "`ERROR: -113, Undefined Header`".

The Agilent MXG has only one internal source for AM, FM and PM, but the INT2 source selection is accepted by the signal generator and is equivalent to selecting INT[1].

The Agilent MXG has three dedicated external sources, one for AM, one for FM/PM and one for Pulse. The EXT2 source selection is accepted by the signal generator, but is equivalent to selecting EXT[1].

Table 8-7 8375xB SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83751B & 83752B	Remarks
IEEE Common Commands		
*CLS	✓	
*DMC	–	
*EMC	–	
*EMC?	–	
*ESE <value>	✓	
*ESE?	✓	
*ESR?	✓	
*GMC? <label>	–	
*IDN?	✓	
*LMC?	–	
*LRN?	–	
*OPC	✓	
*OPC?	✓	
*OPT?	✓	
*PMC	–	
*PSC ON|OFF|1|0	✓	
*PSC?	✓	
*RCL <reg_num>	✓	
*RMC <label>	–	
*RST	✓	
*SAV <reg_num>	✓	
*SRE <value>	✓	
*SRE?	✓	

Table 8-7 8375xB SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83751B & 83752B	Remarks
*STB?	✓	
*TRG	✓	
*TST?	✓	
*WAI	✓	
Abort Subsystem		
:ABORt	✓	
Amplitude Modulation Subsystem		
:AM:SOURce1 INTernal|EXTernal :AM:SOURce INTernal|EXTernal	✓ ✓	
:AM:SOURce1? :AM:SOURce?	✓ ✓	
:AM:STATe ON|OFF|1|0	✓	
:AM:STATe?	✓	
Calibration Subsystem		
:CALibration:PEAKing[:EXECute]	–	
:CALibration:PEAKing[:EXECute]? <dac_va>	–	
:CALibration:PMETer:FLATness:INITiate? USER	–	
:CALibration:PMETer:FLATness:NEXT? <value>[<lvlsuffix>]	–	
:CALibration:SECurity:CODE <old> <new>	–	
:CALibration:SECurity:PASSword <passwd>	–	
:CALibration:TRACk	–	
Correction Subsystem		
:CORRection:FLATness:AMPL <value>[DB],<value>[DB]...	–	

Table 8-7 8375xB SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83751B & 83752B	Remarks
:CORRection:FLATness:AMPL?	–	
:CORRection:FLATness:FREQ <value>[<freqsuffix>],<value>[<freqsuffix>]...	–	
:CORRection:FLATness:FREQ?	–	
:CORRection:FLATness:POINts? MAXimum|MINimum	✓	
:CORRection:VOLTs:OFFSet	–	
:CORRection:VOLTs:OFFSet?	–	
:CORRection:VOLTs:SCALe	–	
:CORRection:VOLTs:SCALe?	–	
:CORRection[:STATe] ON|OFF|1|0	✓	
:CORRection[:STATe]?	✓	
Diagnostics Subsystem		
:DIAG:LRNS?	–	
:DIAGnostic:TEST:FULLtest:REPort?	–	
:DIAGnostic:TEST:FULLtest?	–	
Display Subsystem		
:DISPlay[:STATe] ON|OFF|1|0	✓	
:DISPlay[:STATe]?	✓	
Frequency Modulation Subsystem		
:FM:COUPling AC|DC	✓	
:FM:COUPling?	✓	
:FM:SENSitivity <value><freqsuffix/V>	✓	
:FM:SENSitivity?	✓	
:FM:SOURce1 EXTernal :FM:SOURce EXTernal	✓	

Table 8-7 8375xB SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83751B & 83752B	Remarks
:FM:SOURce1? :FM:SOURce?	✓	
:FM:STATe ON|OFF|1|0	✓	
:FM:STATe?	✓	
Frequency Subsystem		
:FREQuency:CENTer <value>[<freqsuffix>]|UP|DOWN	✓	
:FREQuency:CENTer?	✓	
:FREQuency:MANual <value><unit>|UP|DOWN	–	
[:SOURce[1]]:FREQuency:MANual? [:SOURce]:FREQuency:MANual?	– –	
:FREQuency:MODE FIXed|CW|SWEep|SWCW	✓	*Supported but the following parameter is not supported:* SWCW
:FREQuency:MODE?	✓	
:FREQuency:MULTiplier <value>	✓	
:FREQuency:MULTiplier?	✓	
:FREQuency:MULTiplier:STATe ON|OFF|1|0	–	
:FREQuency:MULTiplier:STATe?	–	
:FREQuency:OFFSet <value>	✓	
:FREQuency:OFFSet:STATe ON|OFF|1|0	✓	
:FREQuency:OFFSet:STATe?	✓	
:FREQuency:OFFSet?	✓	
:FREQuency:SPAN <value>[<freqsuffix>]|UP|DOWN	✓	
:FREQuency:SPAN?	✓	
:FREQuency:STARt <value>[<freqsuffix>]|UP|DOWN	✓	

Table 8-7 8375xB SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83751B & 83752B	Remarks
:FREQuency:STARt?	✓	
:FREQuency:STEP[:INCRement] <value>[<freqsuffix>]	✓	
:FREQuency:STEP[:INCRement]?	✓	
:FREQuency:STOP <value>[<freqsuffix>]|UP|DOWN	✓	
:FREQuency:STOP?	✓	
:FREQuency[:CW|:FIXed] <value>[<freqsuffix>]|UP|DOWN	✓	
:FREQuency[:CW|:FIXed]:AUTO ON|OFF|1|0	–	
:FREQuency[:CW|:FIXed]:AUTO?	–	
:FREQuency[:CW|:FIXed]?	✓	
Initiate Subsystem		
:INITiate:CONTinuous ON|OFF|1|0	✓	
:INITiate:CONTinuous?	✓	
:INITiate[:IMMediate]	✓	
Marker Subsystem		
[:SOURce[1]]:MARKer[n]:AMPLitude[:STATe] ON|OFF|1|0 [:SOURce]:MARKer[n]:AMPLitude[:STATe] ON|OFF|1|0	✓ ✓	
[:SOURce[1]]:MARKer[n]:AMPLitude[:STATe]? [:SOURce]:MARKer[n]:AMPLitude[:STATe]?	✓ ✓	
:MARKer[n]:AOFF	✓	
:MARKer[n]:FREQuency <value><unit>	✓	
:MARKer[n]:FREQuency?	✓	
:MARKer[n]:MODE FREQuency|DELTa	✓	
:MARKer[n]:MODE?	✓	

Table 8-7 8375xB SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83751B & 83752B	Remarks
:MARKer[n]:REFerence <n>	✓	
:MARKer[n]:REFerence?	✓	
:MARKer[n][:STATe] ON|OFF|1|0	✓	
:MARKer[n][:STATe]?	✓	
Memory Subsystem		
:MEMory:RAM:INITialize[:ALL]	–	
Output Subsystem		
:OUTPut:IMPedance?	–	
:OUTPut[:STATe] ON|OFF|1|0	✓	
:OUTPut[:STATe]?	✓	
Power Subsystem		
:POWer:ALC:CFACtor <value>[DB]|UP|DOWN	–	
:POWer:ALC:CFACtor?	–	
:POWer:ALC:SOURce1 INTernal|DIODe|PMETer|MMHead :POWer:ALC:SOURce INTernal|DIODe|PMETer|MMHead	✓ ✓	*Supported but the following parameters are not supported*: PMETer|MMHead.
:POWer:ALC:SOURce1? :POWer:ALC:SOURce?	✓ ✓	
:POWer:ALC[:STATe] ON|OFF|1|0	✓	
:POWer:ALC[:STATe]?	✓	
:POWer:ATTenuation <value>[DB]|UP|DOWN	✓	
:POWer:ATTenuation:AUTO ON|OFF|1|0	✓	
:POWer:ATTenuation:AUTO?	✓	
:POWer:ATTenuation?	✓	
:POWer:CENTer <value>[<lvlsuffix>]|UP|DOWN	✓	

Table 8-7 8375xB SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83751B & 83752B	Remarks
:POWer:CENTer?	✓	
:POWer:MODE FIXed|SWEep	✓	
:POWer:MODE?	✓	
:POWer:OFFSet <value>[DB]|UP|DOWN	✓	
:POWer:OFFSet?	✓	
:POWer:OFFSet:STATe ON|OFF|1|0	✓	
:POWer:OFFSet:STATe?	✓	
:POWer:SLOPe <value>[DB/freqsuffix]|UP|DOWN	✓	
:POWer:SLOPe:STATe ON|OFF|1|0	✓	
:POWer:SLOPe:STATe?	✓	
:POWer:SLOPe?	✓	
:POWer:SPAN <value>[DB]|UP|DOWN	✓	
:POWer:SPAN?	✓	
:POWer:STARt <value>[<lvlsuffix>]|UP|DOWN	✓	
:POWer:STARt?	✓	
:POWer:STATe ON|OFF|1|0	✓	
:POWer:STATe?	✓	
:POWer:STEP[:INCRement] <value>[DB]	✓	
:POWer:STEP[:INCRement]?	✓	
:POWer:STOP <value>[<lvlsuffix>]|UP|DOWN	✓	
:POWer:STOP?	✓	
:POWer[:LEVel] <value>[<lvlsuffix>]|UP|DOWN	✓	
:POWer[:LEVel]?	✓	

Table 8-7 8375xB SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83751B & 83752B	Remarks
Pulse Modulation Subsystem		
:PULM:SOURce1 INTernal|EXTernal|SCALar|SQ1K :PULM:SOURce INTernal|EXTernal|SCALar|SQ1K	✓ ✓	*Supported but the following parameters are not supported:* SCALer|SQ1K
:PULM:SOURce1? :PULM:SOURce?	✓ ✓	
:PULM:STATe ON|OFF|1|0	✓	
:PULM:STATe?	✓	
Pulse Subsystem		
:PULSe:FREQuency <value>[<freqsuffix>]	✓	
:PULSe:FREQuency?	✓	
:PULSe:PERiod <value>[<timesuffix>]	✓	
:PULSe:PERiod?	✓	
:PULSe:WIDTh <value>[<timesuffix>]	✓	
:PULSe:WIDTh?	✓	
Reference Oscillator Subsystem		
:ROSCillator:SOURce1 INTernal|EXTernal|NONE :ROSCillator:SOURce INTernal|EXTernal|NONE	✓ ✓	
:ROSCillator:SOURce1:AUTO ON|OFF|1|0 :ROSCillator:SOURce:AUTO ON|OFF|1|0	✓ ✓	
:ROSCillator:SOURce1:AUTO? :ROSCillator:SOURce:AUTO?	✓ ✓	
:ROSCillator:SOURce1? :ROSCillator:SOURce?	✓ ✓	
Status Subsystem		

Table 8-7 8375xB SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83751B & 83752B	Remarks
:STATus:OPERation:CONDition?	✓	
:STATus:OPERation:ENABle <value>	✓	
:STATus:OPERation:ENABle?	✓	
:STATus:OPERation:NTRansition <value>	✓	
:STATus:OPERation:NTRansition?	✓	
:STATus:OPERation:PTRansition <value>	✓	
:STATus:OPERation:PTRansition?	✓	
:STATus:OPERation[:EVENt]?	✓	
:STATus:PRESet	✓	
:STATus:QUEStionable:CONDition?	✓	
:STATus:QUEStionable:ENABle <value>	✓	
:STATus:QUEStionable:ENABle?	✓	
:STATus:QUEStionable:NTRansition <value>	✓	
:STATus:QUEStionable:NTRansition?	✓	
:STATus:QUEStionable:PTRansition <value>	✓	
:STATus:QUEStionable:PTRansition?	✓	
:STATus:QUEStionable[:EVENt]?	✓	
Sweep Subsystem		
:SWEep:CONTrol:TYPE MASTer|SLAVe	–	
:SWEep:CONTrol:TYPE?	–	
:SWEep:DWELl <value>[<timesuffix>]	✓	
:SWEep:DWELl?	✓	
:SWEep:DWELl:AUTO ON|OFF|1|0	–	

Table 8-7 8375xB SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83751B & 83752B	Remarks
:SWEep:DWELl:AUTO?	–	
:SWEep:GENeration ANALog|STEPped	✓	*Supported but the following parameter is not supported:* ANALog
:SWEep:GENeration?	✓	
:SWEep:MANual:POINt <value>	✓	
:SWEep:MANual:POINt?	✓	
:SWEep:MANual[:RELative] <value>	–	
:SWEep:MANual[:RELative]?	–	
:SWEep:MARKer:STATe ON|OFF|1|0	–	
:SWEep:MARKer:STATe?	–	
:SWEep:MARKer:XFER	✓	
:SWEep:MODE AUTO|MANual	✓	
:SWEep:MODE?	✓	
:SWEep:POINts <value>	✓	
:SWEep:POINts?	✓	
:SWEep:POWer:STEP <value>[<lvlsuffix>]|UP|DOWN	–	
:SWEep:POWer:STEP?	–	
:SWEep:TIME <value>[<timesuffix>]	–	
:SWEep:TIME?	–	
:SWEep:TIME:AUTO ON|OFF|1|0	–	
:SWEep:TIME:AUTO?	–	
:SWEep:TIME:LLIMit <value>[<timesuffix>]	–	
:SWEep:TIME:LLIMit?	–	
:SWEep[:FREQuency]:STEP <value>[<freqsuffix>]|UP|DOWN	✓	

Table 8-7 8375xB SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83751B & 83752B	Remarks
:SWEep[:FREQuency]:STEP?	✓	
:SWEep[:POINts]:TRIGger:SOURce IMMediate|BUS|EXTernal	✓	
:SWEep[:POINts]:TRIGger:SOURce?	✓	
:SWEep[:POINts]:TRIGger[:IMMediate]	–	
System Subsystem		
:SYSTem:ALTernate <reg num>	–	
:SYSTem:ALTernate:STATe ON|OFF|1|0	–	
:SYSTem:ALTernate:STATe?	–	
:SYSTem:ALTernate?	–	
:SYSTem:COMMunicate:GPIB:ADDRess <value>	✓	
:SYSTem:COMMunicate:PMETer:ADDRess <value>	–	
:SYSTem:COMMunicate:PMETer:ADDRess?	–	
:SYSTem:COMMunicate:PMETer:TYPE	✓	*The following parameters are supported:* SOCKETS|VXI11|USB (See ":PMETer:TYPE" on page 163). *The following parameters are not supported:* SCPI|70100A|437B|438A
:SYSTem:COMMunicate:PMETer:TYPE?	✓	
:SYSTem:ERRor?	✓	
:SYSTem:KEY:DISable SAVE	–	
:SYSTem:KEY:DISable? SAVE	–	
:SYSTem:KEY:ENABle SAVE	–	
:SYSTem:KEY:ENABle? SAVE	–	
:SYSTem:KEY[:CODE] <value>	–	
:SYSTem:KEY[:CODE]?	–	

Table 8-7 8375xB SCPI Commands

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	83751B & 83752B	Remarks
:SYSTem:LANGuage "SCPI"|"TMSL"|"COMP"	✓	*The following parameter is not supported:* "TMSL"
:SYSTem:LANGuage?	✓	
:SYSTem:PRESet:TYPE FACTory|USER	✓	
:SYSTem:PRESet:TYPE?	✓	
:SYSTem:PRESet[:EXECute]	✓	
:SYSTem:PRESet[:USER]:SAVE	✓	
:SYSTem:SECurity:CLEar	–	
:SYSTem:SECurity:COUNt <value>	✓	
:SYSTem:SECurity:KLOCk ON|OFF|0|1	–	
:SYSTem:SECurity:ZERO ON|OFF|0|1	–	
:SYSTem:VERSion?	✓	
Trigger Subsystem		
:TRIGger:SOURce1 IMMediate|BUS|EXTernal|HOLD :TRIGger:SOURce IMMediate|BUS|EXTernal|HOLD	✓ ✓	
:TRIGger:SOURce1? :TRIGger:SOURce?	✓ ✓	
:TRIGger[:IMMediate]	✓	
Tsweep Subsystem		
:TSWeep	✓	

8662A/63A Compatible SCPI Commands

The tables in this section provide the following:

Table 8-8 is a comprehensive list of 8662A/63A programming commands, listed in alphabetical order. The equivalent SCPI command sequence for each supported code is provided. Codes that have no equivalent SCPI command sequence are indicated in the command column, as are codes that are *not* supported by the N5183A.

Table 8-9 is a list of the implemented 8662A/63A programming commands that set the active function. This table also indicates which codes are compatible with the increment (up), and the decrement (down) SCPI commands.

To use the commands, select *866xA* as the remote language. See :LANGuage (N5183A) section for information about selecting the language type.

When using the programming codes in this section, you can:

- set the N5183A system language to 866xA for the current session:

  Utility > **I/O Config** > **Remote Language** > **More** > **More** > **8662A** or **8663A**

  or send the command:

  `:SYST:LANG "8662"` or `"8663"`

- set the N5183A system language to 866xA so that it does not reset on a preset, an instrument power cycle, or a `*RST` command:

  Utility > **Power On/Preset** > **Preset Language** > **More** > **More** > **8662A** or **8663A**

  or send the command:

  `:SYST:PRESet:LANG "8662"` or `"8663"`

- set the `*IDN?` response to any 866xA-like response you prefer. Refer to the :SYSTem:IDN and :SYSTem:OPT commands.

NOTE Compatibility is provided for GPIB only; RS-232 and LAN are *not* supported.

Device Clear does not preset the instrument.

To reproduce the sweep functionality, use the N5183A List Sweep features.

NOTE The Agilent MXG has only one AM, FM, and PM path. Using AM2, FM2, or PM2 path commands will result in the following error: “`ERROR: -113, Undefined Header`”.

The Agilent MXG has only one internal source for AM, FM and PM, but the INT2 source selection is accepted by the signal generator and is equivalent to selecting INT[1].

The Agilent MXG has three dedicated external sources, one for AM, one for FM/PM and one for Pulse. The EXT2 source selection is accepted by the signal generator, but is equivalent to selecting EXT[1].

Table 8-8 8662A/63A Commands and Equivalent SCPI Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	8662	8663	Equivalent SCPI Command Sequence
@1	Write require service mask	✓	✓	`*SRE <mask>` *supported, however, only 4 of the 8 bits of the 8662/8663 status byte will be set. These are*: `Entry Error`, `Hardware Error`, `Power Fail` *and* `Request Service Message (SRQ)`.
@2	Deferred execution mode	–	–	
@3	Immediate execution mode	✓	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
+D	+dBm	✓	✓	`DBM`

AM	AM modulation
	See also: Table 8-9 on page 512
		✓		`AM:DEPTh <val> <units>`
				`AM:TRAC ON`
				`FM:STAT OFF`
				`AM:STAT ON`
				`OUTPut:MOD ON`

			✓	`AM:DEPTh <val> <units>`
				`AM:TRAC ON`
				`AM:STAT O`
				`OUTPut:MOD ON`

AO	Amplitude off	✓	✓	`OUTPut:STATe OFF`

AP	Amplitude	✓	✓	`POW:REF:STATe OFF`
				`POWer:AMPL <val> <units>`
				`OUTPut:STATe ON`
				See also: Table 8-9 on page 512

AS|BLSQ	Auto sequence	–	–	
BP	BPSK modulation		–	
CT	Configure trigger	✓	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
–D	–dBm Negates the power value.	✓	✓	`DBM`
DB	dB	✓	✓	`DB`
DG	Degree	✓		`DEG`
DM	dBm	✓	✓	`DBM`
DN	Decrement Passes `DOWN` as parameter of active function command.	✓	✓	*See* Table 8-9 on page 512
FA	Start frequency	✓	✓	*See W2, W3, W4, and* Table 8-9 on page 512

Table 8-8 8662A/63A Commands and Equivalent SCPI Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	8662	8663	Equivalent SCPI Command Sequence
FB	Stop frequency	✓	✓	*See W2, W3, W4, and* Table 8-9 on page 512

FM	FM modulation
	See also: Table 8-9 on page 512
		✓		`FM:DEV <val> <units>`
				`AM:STAT OFF`
				`FM:STAT ON`
				`OUTPut:MOD ON`

			✓	`FM:DEV <val> <units>`
				`FM:STAT ON`
				`OUTPut:MOD ON`

FR	Center frequency	✓	✓	`FREQuency:CW <val> <units>` *See also*: *W2, W3, and W4, and* Table 8-9 on page 512
FS	Span frequency	✓	✓	*See W2, W3, W4, and* Table 8-9 on page 512
GZ	GHz	✓	✓	`GHZ`
HZ	Hz	✓	✓	`HZ`
IS	Set increment Adds `STEP:INCR` to active function command.	✓	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
KZ	kHz	✓	✓	`KHZ`
L1	Learn front panel	–	–	
L2	Fast learn	–	–	

MO|M0	Modulation off	✓	✓	`AM:STATe OFF`
				`FM:STATe OFF`
				`PULM:STATe OFF`
				`PM:STATe OFF`
				`OUTPut:MOD OFF`

M1	**For 8662A:** <mod> = FM or AM, depending on which is on. Modulation source internal 400 Hz **For 8663A:** Executes `MF` with `<freq>` = 400 Hz	✓		`<mod>:SOURce INT1` `<mod>:INT1:FREQ 400Hz`

			✓	`AM:INT1:FREQ 400 MHz`
				`FM:INT1:FREQ 400 MHz`
				`PM:INT1:FREQ 400 MHz`
				`PULM:INT:FREQ 400 MHz`

M2	**For 8662A:** <mod> = FM or AM, depending on which is on. Modulation source internal 1 kHz **For 8663A:** Executes `MF` with `<freq>` = 1 kHz	✓		`<mod>:SOURce INT1` `<mod>:INT1:FREQ 1kHz`

			✓	`AM:INT1:FREQ 1 kHz`
				`FM:INT1:FREQ 1 kHz`
				`PM:INT1:FREQ 1 kHz`
				`PULM:INT:FREQ 1 kHz`

Table 8-8 8662A/63A Commands and Equivalent SCPI Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	8662	8663	Equivalent SCPI Command Sequence

M3	**For 8662A:** <mod> = FM or AM, depending on which is on.
	Modulation source external AC
		✓		`<mod>:SOURce EXT`
				`<mod>:EXT:COUPling AC`
				`<mod>:EXT:IMP 600`

	For 8663A:
	<mod> = AM, FM, or PM, depending on which is on.
	NOTE: For PM, the impedance value is set using the SP71/SP70 commands
			✓	`<mod>:SOURce EXT`
				`<mod>:EXT:COUPling AC`
				`<mod>:EXT:IMP 600`

M4	**For 8662A:** <mod> = FM or AM, depending on which is on.
	Modulation source external DC
		✓		`<mod>:SOURce EXT`
				`<mod>:EXT:COUPling DC`
				`<mod>:EXT:IMP 600`

	For 8663A:
	<mod> = AM, FM, or PM, depending on which is on.
	NOTE: For PM, the impedance value is set using the SP71/SP70 commands
			✓	`<mod>:SOURce EXT`
				`<mod>:EXT:COUPling DC`
				`<mod>:EXT:IMP 600`

MF	Modulation frequency
	<mod> = FM, or PM, depending on which is on.
	Also see: *M1, M2, and* Table 8-9 on page 512
			✓	**AM:**
				`AM:SOUR INT1`
				`AM:SOUR:INT1:FREQ <freq>`
				FM or PM:
				`<mod>:SOUR INT1`
				`<mod>:SOUR:INT1:FREQ <freq>`
				Pulse:
				`PULM:SOUR INT`
				`PULM:INT:FREQ <freq>`
				`PULM:SOUR:INT SQUARE`

MS	Read status key message Returns status string.	✓	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
MV	mV	✓	✓	`MV`
MZ	MHz	✓	✓	`MHZ`
N1	Linear 100 steps	✓	✓	*See W2, W3, and W4*
N2	Linear 1000 steps	✓	✓	*See W2, W3, and W4*
N3	Step size	✓	✓	*See W2, W3, W4, and* Table 8-9 on page 512
N4	Log 10% steps	✓	✓	*See W2, W3, and W4*
N5	Log 1% steps	✓	✓	*See W2, W3, and W4*
PC	%	✓	✓	`PCT`
PL	Pulse modulation Must have an instrument with pulse capability.		✓	`PULM:STAT ON` `OUTPut:MOD ON`

Table 8-8 8662A/63A Commands and Equivalent SCPI Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	8662	8663	Equivalent SCPI Command Sequence

PM	Phase modulation
	Not compatible with any FM modulation.
			✓	`PM:STAT ON`
				`OUTPut:MOD ON`
				See also: Table 8-9 on page 512

R1	Knob resolution x10	–	–	
R2	Knob resolution /10	–	–	
R3	Knob off	–	–	
R4|BLR1	Knob hold	–	–	
R5|BLR2	Knob increment	–	–	
RC	Recall	✓	✓	`*RCL`
RD	Knob down Only for manual sweep	✓	✓	`LIST:MANual DOWN`
RM	Read require service mask	✓	✓	`*SRE?` *supported, however, only 4 of the 8 bits of the 8662/8663 status byte will be set. These are*: `Entry Error`, `Hardware Error`, `Power Fail` *and* `Request Service Message (SRQ)`.
RU	Knob up Only for manual sweep	✓	✓	`LIST:MANual UP`
SP00	System preset Presets the instrument, including the compatibility language.	✓	✓	`SYSTem:PRESet`
SP10	Frequency offset off	✓	✓	`FREQ:OFFS:STAT OFF`

SP11	Positive frequency offset
	The 8662 modifies the output, but does not change the displayed frequency; the PSG modifies the displayed frequency, but does *not* change the output. Because of this, you must first set the offset, then reapply the frequency to change the output.
		✓	✓	`FREQ:OFFS -<value>`
				`FREQ:OFFS:STAT ON`
				`FREQ:CW <displayed value>`

SP12	Negative frequency offset
	The 8662 modifies the output, but does not change the displayed frequency; the PSG modifies the displayed frequency, but does *not* change the output. Because of this, you must first set the offset, then reapply the frequency to change the output.
		✓	✓	`FREQ:OFFS <value>`
				`FREQ:OFFS:STAT ON`
				`FREQ:CW <displayed value>`

SP20	ALC bandwidth normal		✓	`POWer:ALC:BANDwidth:AUTO ON`

Table 8-8 8662A/63A Commands and Equivalent SCPI Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	8662	8663	Equivalent SCPI Command Sequence
SP21	ALC bandwidth < 1 kHz		✓	POWer:ALC:BANDwidth:AUTO OFFPOWer:ALC:BANDwidth 200 HZ
SP30	Amplitude reference off	✓	✓	POW:REF:STATe OFF
SP31	Amplitude reference	✓	✓	POW:REF <val> <val> = current amplitude setting POW:REF:STATe ON
SP32	Amplitude reference relative to 1 µV		✓	POW:REF 106.99DBM POW:REF:STATe ON POW 1UV
SP40	External AM off	✓	✓	AM:STAT OFF
	Modulation frequency sweep mode off		–	
SP41	Internal FM + external AM (AC)	✓		FM:SOUR INT1 FM:INT1:FREQ 400 HZ FM:STAT ON AM:SOUR EXT1 AM:EXT1:IMP 600 AM:DEPTH 95 PCT AM:EXT1:COUP AC AM:STAT ON
	Modulation frequency sweep mode on		–	
SP42	Internal FM + external AM (DC)	✓		FM:SOUR INT1 FM:INT1:FREQ 400 HZ FM:STAT ON AM:SOUR EXT1 AM:EXT1:IMP 600 AM:DEPTH 95 PCT AM:EXT1:COUP DC AM:STAT ON
SP50	AUX FM off	–	–	
SP51	AUX FM on **RF (MHz) FM Deviation (kHz)** 0.01–120 25 120–160 6.25 160–320 12.5 320–640 25 640–1280 50 1280–2560 100 <dev> is dependant on output frequency, and mimics the 8662 hardware settings. **NOTE**: The deviation for this command cannot be greater than the deviation of the FM1 path.	–	–	
SP60	Parameter shift keying off	–	–	
SP61	Parameter shift keying up/down (two-key)	–	–	

Table 8-8 8662A/63A Commands and Equivalent SCPI Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	8662	8663	Equivalent SCPI Command Sequence
SP62	Parameter shift keying up/down (one-key)	–	–	
SP70	External PM input impedance 50Ω Effects the behavior of M3 and M4.		✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
SP71	External PM input impedance 600Ω Effects the behavior of M3 and M4.		✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
SP80	Special functions 10-62 off	✓	✓	AM:STAT OFF FREQ:OFFS:STAT OFF
SP81	Amplitude conversion (V-dBm)	–	–	
SP82	Display GPIB address	–	–	
SP83	ROM test	–	–	
SP84	RAM test	–	–	
SP85	Amplitude correction off	✓	✓	POWer:ALC:STATe OFF
SP86	Amplitude correction on PSG ALC ON always works with sweep.	✓	✓	POWer:ALC:STATe ON
SP87	Amplitude correction on (includes Sweep)		✓	POWer:ALC:STATe ON
SP87	GPIB operator request response	–		
SP88	Auto sequence	–	–	
SP89	GPIB operator request response		–	
SP90	Set auto sequence step delay		–	
SP91	Enable frequency hopping mode		–	
SP92	Knob (restore normal operation)		–	
SP93	Manual amplitude level control		–	
SP94	Knob, 120 increments per revolution		–	
SP95	Knob, 120 increments per revolution, reconfigure AUX con.		–	
SP96	Modulation oscillator off when modulation is off		–	
SP97	Modulation oscillator on		–	
SP98	Turn display on		✓	DISP ON
SP99	Turn display off		✓	DISP OFF
SP2.0	Power up preset off		–	

Table 8-8 8662A/63A Commands and Equivalent SCPI Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	8662	8663	Equivalent SCPI Command Sequence
SP2.1	Power up preset on		–	
SQ	Sequence	–	–	
SS|BLST	Set sequence	–	–	
ST	Store Saves/recalls register to sequence 0.	✓	✓	`*SAV`
T1	0.5 ms per step	✓	✓	`SWEEP:DWELL 0.5ms` *Beyond PSG range limit; is set to 1ms.*
T2	1 ms per step	✓	✓	`SWEEP:DWELL 1ms`
T3	2 ms per step	✓	✓	`SWEEP:DWELL 2ms`
T4	10 ms per step	✓	✓	`SWEEP:DWELL 10ms`
T5	100 ms per step	✓	✓	`SWEEP:DWELL 100ms`
TR	Trigger Performs command code setup with `CT` command.	✓	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
UP	Increment Passes `UP` as a parameter of the active function command.	✓	✓	*See* Table 8-9 on page 512
UV	mV	✓	✓	`UV`
W1	Sweep off	✓	✓	`FREQ:MODE CW` `LIST:TRIG:SOUR IMM`

W2	Auto sweep mode on
	Generates a sweep list based on stored parameters from FA, FB, FR, FS, N1, N2, N3, N4, and N5
	Default values:
	FR = 100 MHz,
	FS = 10 MHz,
	N1, T2 FA = 1 MHz,
	FB = 1279 MHz
		✓	✓	`INIT:CONT ON`
				`SWEEP:MODE AUTO`
				`LIST:TRIG:SOUR IMM`
				`LIST:DWELl:TYPE STEP`
				`LIST:TYPE LIST`
				`FREQ:MODE LIST`

W3	Manual sweep mode on
	Generates a sweep list based on stored parameters from FA, FB, FR, FS, N1, N2, N3, N4, and N5
	Default values:
	FR = 100 MHz,
	FS = 10 MHz,
	N1, T2 FA = 1 MHz,
	FB = 1279 MHz
		✓	✓	`INIT:CONT ON`
				`SWEEP:MODE MANual`
				`LIST:TRIG:SOUR IMM`
				`LIST:DWELl:TYPE STEP`
				`LIST:TYPE LIST`
				`FREQ:MODE LIST`

Table 8-8 8662A/63A Commands and Equivalent SCPI Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	8662	8663	Equivalent SCPI Command Sequence

W4	Single sweep mode on
	Generates a sweep list based on stored parameters from FA, FB, FR, FS, N1, N2, N3, N4, and N5
	Default values:
	FR = 100 MHz,
	FS = 10 MHz,
	N1, T2 FA = 1 MHz,
	FB = 1279 MHz
		✓	✓	`INIT:CONT OFF`
				`SWEEP:MODE AUTO`
				`LIST:TRIG:SOUR IMM`
				`LIST:DWELl:TYPE STEP`
				`LIST:TYPE LIST`
				`FREQ:MODE LIST`
				`INIT`

X1	Marker 1	–	–	
X2	Marker 2	–	–	
X3	Marker 3	–	–	
X4	Marker 4	–	–	
X5	Marker 5	–	–	
X6	Marker off	✓	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
X7|BLX6	All markers off	–	–	
Y0	Remote stepped sweep off	✓	✓	`FREQ:MODE CW` `LIST:TRIG:SOUR IMM`

Y1|Y2	Remote stepped sweep on	✓	✓	`INIT:CONT ON`
				`SWEEP:MODE AUTO`
				`LIST:DWELl:TYPE STEP`
				`LIST:TYPE LIST`
				`FREQ:MODE LIST`
				`LIST:TRIG:SOUR BUS`

Y3	Execute remote stepped sweep	✓	✓	`*TRG`

Table 8-9 8662/63B Command Compatibility

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	Sets Active Function	Compatible with UP/DN	8662	8663	Equivalent SCPI Commands for UP/DN and Increment
AM	AM modulation	✓	✓	✓	✓	AM:DEPTH UP AM:DEPTH DOWN AM:DEPTH:STEP:INCR
AP	Amplitude	✓	✓	✓	✓	POW:AMPL UP POW:AMPL DOWN POW:AMPL:STEP:INCR
FA	Start frequency	✓	✓	✓	✓	FREQ:CW:STEP:INCR
FB	Stop frequency	✓	✓	✓	✓	FREQ:CW:STEP:INCR
FM	FM modulation	✓	✓	✓	✓	FM:DEV UP FM:DEV DOWN FM:DEV:STEP:INCR
FR	Center frequency	✓	✓	✓	✓	FREQ:CW UP FREQ:CW DOWN FREQ:CW:STEP:INCR
FS	Span frequency	✓	✓	✓	✓	FREQ:CW:STEP:INCR
MF	Modulation frequency	✓	✓	✓	✓	<mod>:INT:FREQ UP <mod>:INT:FREQ DOWN <mod>:INT:FREQ:STEP:INCR <mod> = AM|FM|PM|PULM
N3	Step size	✓	✓	✓	✓	*supported by the Agilent MXG, but there is no equivalent SCPI command sequence*
PM	Phase modulation Not compatible with any FM modulation.	✓	✓	✓	✓	PM:DEV UP PM:DEV DOWN PM:DEV:STEP:INCR

Anritsu MG369xB Compatible SCPI Commands[1]

Table 8-10 is a comprehensive list of MG369xB programming commands, listed in functional command order. The equivalent SCPI command sequence for each supported code is provided. Codes that have no equivalent SCPI command sequence are indicated, as are codes that are *not* supported by the N5183A.

A list of the implemented MG369xB programming commands that set the active function. This table also indicates which codes are compatible with the increment (up), and the decrement (down) SCPI commands.

To use the commands, select *MG369xB* as the remote language. See :LANGuage (N5183A) section for information about selecting the language type.

When using the programming codes in this section, you can:

- set the N5183A system language to MG369xB for the current session:

  Utility > I/O Config > Remote Language > More > More > Anritsu MG369xB

  or send the command:

  `:SYST:LANG "MG3691B" "MG3692B" "MG3693B" "MG3694B"`

- set the N5183A system language to MG369xB so that it does not reset on a preset, an instrument power cycle, or a *RST command:

  Utility > Power On/Preset > Preset Language > More > More > Anritsu MG369xB

  or send the command:

  `:SYST:PRESet:LANG "MG3691B" "MG3692B" "MG3693B" "MG3694B"`

- set the *IDN? response to any MG369xB-like response you prefer. Refer to the :SYSTem:IDN and :SYSTem:OPT commands.

NOTE Compatibility is provided for GPIB only; RS-232 and LAN are *not* supported.

Device Clear does not preset the instrument.

To reproduce the sweep functionality, use the N5183A List Sweep features.

NOTE The Agilent MXG has only one AM, FM, and PM path. Using AM2, FM2, or PM2 path commands will result in the following error: "`ERROR: -113, Undefined Header`".

The Agilent MXG has only one internal source for AM, FM and PM, but the INT2 source selection is accepted by the signal generator and is equivalent to selecting INT[1].

The Agilent MXG has three dedicated external sources, one for AM, one for FM/PM and one for Pulse. The EXT2 source selection is accepted by the signal generator, but is equivalent to selecting EXT[1].

1. Only available on instruments with serial prefixes ≥US/MY/SG4818.

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
Functional Listing			
Configuration Commands			
BPN	Selects -3.3 V for retrace and bandswitch blanking outputs.	–	
BPP	Selects +3.3 V for retrace and bandswitch blanking outputs.	–	
EBW0	Selects the external reference loop bandwidth of 10 Hz.	–	
EBW1	Selects the external reference loop bandwidth of 30 Hz.	–	
EBW2	Selects the external reference loop bandwidth of 100 Hz	–	
EBW3	Selects the external reference loop bandwidth of 300 Hz.	–	
FRS	Opens the frequency scaling reference multiplier parameter.	✓	`:FREQ:MULT`
RC0	Selects RF to be off during frequency switching in CW, step sweep, and list sweep modes.	✓	`:OUTP:BLAN OFF`
RC1	Selects RF to be on during frequency switching in CW, step sweep, and list sweep modes.	✓	`:OUTP:BLAN ON`
RO0	Selects RF to be on at reset.	–	
RO1	Selects RF to be off at reset.	–	
RT0	Selects RF to be off during retrace.	✓	`:OUTP:BLAN OFF`
RT1	Selects RF to be on during retrace.	✓	`:OUTP:BLAN ON`
TR0	Selects RF to be off at reset.	–	
TR1	Sets 40 dB of attenuation when RF is switched off.	–	
CW Frequency Commands			
ACW	Activates the currently open frequency parameter as CW.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
CF0	Sets CW mode at F0 and opens the F0 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
CF1	Sets CW mode at F1 and opens the F1 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
CF2	Sets CW mode at F2 and opens the F2 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
CF3	Sets CW mode at F3 and opens the F3 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
CF4	Sets CW mode at F4 and opens the F4 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
CF5	Sets CW mode at F5 and opens the F5 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
CF6	Sets CW mode at F6 and opens the F6 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
CF7	Sets CW mode at F7 and opens the F7 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
CF8	Sets CW mode at F8 and opens the F8 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
CF9	Sets CW mode at F9 and opens the F9 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
CM0	Sets CW mode at M0 and opens the M0 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
CM1	Sets CW mode at M1 and opens the M1 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
CM2	Sets CW mode at M2 and opens the M2 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
CM3	Sets CW mode at M3 and opens the M3 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
CM4	Sets CW mode at M4 and opens the M4 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
CM5	Sets CW mode at M5 and opens the M5 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
CM6	Sets CW mode at M6 and opens the M6 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
CM7	Sets CW mode at M7 and opens the M7 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
CM8	Sets CW mode at M8 and opens the M8 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
CM9	Sets CW mode at M9 and opens the M9 parameter	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
SQD	Scan down to the next lower preset CW frequency.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
SQF	Scan to the next higher preset CW frequency.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
SQU	Scan up to the next higher preset CW frequency.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
Data/Data Terminator Commands			
ADR	GPIB address terminator.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
CLR	Clears the data entry.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
DB	Decibel (dB) data terminator.	✓	"DB"
DG	Degree data terminator.	✓	"DG"
DM	dBm data terminator.	✓	"DBM"
DV	Decibel per volt (dB/V) data terminator.	✓	"DB/V"
GH	GHz data terminator.	✓	GHZ
GV	GHz per volt (GHz/V) data terminator.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
HZ	Hz data terminator.	✓	HZ
KH	kHz data terminator.	✓	KHZ
KV	kHz per volt (kHz/V) data terminator.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
MH	MHz data terminator.	✓	MHZ
MS	Milliseconds (ms) data terminator.	✓	MSEC
MV	MHz per volt (MHz/V) data terminator.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
NS	Nanoseconds (ns) data terminator.	✓	NSEC
PCT	Percent (%) data terminator.	✓	PCT
PCV	Percent per volt (%/V) data terminator.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
RD	Radians data terminator.	✓	RAD
RV	Radians per volt data terminator.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
SEC	Seconds data terminator.	✓	SEC
SPS	Steps data terminator.	✓	
TMS	Times data terminator.	✓	
US	Microsecond (ms) data terminator.	✓	USEC
VT	Volts data terminator.	✓	V
Fast Frequency Switching Commands			
ZEL	Ends frequency loading.	–	
ZL(x)	Loads a CW frequency into a table at location x.	–	
ZPN(bbbb)	Sets the table pointer to point to location bbbb.	–	
ZS(x)	Sets the table pointer to point to location x.	–	
ZTL (bbbbnnnnD8D8D8...D8)	Loads the frequency table starting at location bbbb.	–	
Group Execute Trigger (GET) Commands			
GTC	Execute a SQF command on receipt of a GET.	–	
GTD	Execute a DN command on receipt of a GET.	–	
GTF	Execute a fast-frequency-switching step on receipt of a GET.	–	
GTL	Execute a TSS command on receipt of a GET.	–	
GTO	Disables the GET functions.	–	
GTS	Execute a TRS command on receipt of a GET.	–	
GTT	Execute a TST command on receipt of a GET.	–	
GTU	Execute a UP command on receipt of a GET.	–	
Y	Equivalent to a Group Execute Trigger (GET).	–	
List Sweep Commands			
CTL	Copy current CW frequency and power level to current list index.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
ELI(xxxx)	Sets list index to xxxx.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
ELN(x)	Sets the list number to x(4 available lists-2000pnts max per list).	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
LDT	Opens the list sweep dwell time parameter.	✓	`:LIST:DWELL`
LEA	Learn list (in list sweep mode).	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
LF	Sets list frequencies starting at the list index.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
LIB(xxxx)	Sets the list start index to xxxx.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
LIE(xxxx)	Sets the list stop index to xxxx.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
LP	Sets list power levels starting at the list index.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
LST	Places the MG369xB in list sweep mode.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
Markers			
IM1	Turns on the intensity marker mode.	–	
ME0	Disables the marker at the active frequency.	–	
ME1	Enables a marker at the active frequency.	–	
MKO	Turns off markers.	–	
MPN	Sets the rear panel marker polarity negative.	–	
MPP	Sets the rear panel marker polarity positive.	–	
VM1	Turns on the video marker mode.	–	
Master-Slave Operation Commands			
S0	Turns off the master-slave mode of operation.	–	
S1	Turns on the master-slave mode of operation.	–	
Measure Function Commands			
AMI	Turns on the AM measurement mode.	–	

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
FMD	Turns on the FM Measurement mode.	–	
MOM	Turns off the AM and FM measurement modes.	–	
PM0	Turns off the Power Meter measurement mode.	–	
PM1	Turns on the Power measurement mode (Option 8).	–	
Miscellaneous Commands			
ADD	Opens the GPIB address parameter	✓	`:SYST:COMM:GPIB:ADDR`
CS0	Turns off the CW ramp.	–	
CS1	Turns on the CW ramp.	–	
DS0	Turns on the secure mode.	✓	`:SYST:SEC:DISP OFF` *(Blanks display and places secure message on front panel)*
DS1	Turns off the secure mode.	✓	`:SYST:SEC:DISP ON`
MR	Performs a master reset of the instrument by setting all of the instrument parameters to factory default.	✓	`:SYST:PRES:PERS (RST` *Resets the MG369XB to its default settings.*)
PS0	Turns off the phase offset.	–	
PS1	Turns on the phase offset.	–	
PSZ	Zeros the phase offset display.	✓	`:PHAS 0`
RL	Returns the instrument to local (front panel) control.	✓	`:SYST:COMM:GTL`
RST	Resets the MG369X to its default settings.	✓	`:SYST:PRES`
SNR	Enter the instrument serial number.	–	
Modulation Commands			
AM0	Turns off the internal or external AM function.	✓	`:AM:STAT OFF`

AM1	Turns on the external AM function in linear mode.	✓	`:AM:SOUR EXT`
			`:AM:TYPE LIN`
			`:AM:STAT ON`
			`:OUTP:MOD ON`

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
AM2	Turns on the external AM function in log mode.	✓	:AM:SOUR EXT :AM:TYPE EXP :AM:STAT ON :OUTP:MOD ON
AM7	Turns on the internal AM function in linear mode.	✓	:AM:SOUR INT :AM:TYPE LIN :AM:STAT ON :OUTP:MOD ON
AM8	Turns on the internal AM function in log mode.	✓	:AM:SOUR INT :AM:TYPE EXP :AM:STAT ON :OUTP:MOD ON
AMO	Turns off the internal AM function generator if it is on.	✓	:AM:STAT OFF
AMW1	Selects the internal sine waveform.	✓	:AM:SOUR:INT *See also* PHV1.
AMW2	Selects the internal square waveform.	–	
AMW3	Selects the internal positive ramp waveform.	–	
AMW4	Selects the internal negative ramp waveform.	–	
AMW5	Selects the internal gaussian noise waveform.	–	
AMW6	Selects the internal uniform noise waveform.	–	
AMW7	Selects the internal triangle waveform.	–	
DPT	Internal triggered pulse with delay.	✓	:PULM:SOUR INT :PULM:SOUR:INT TRIG
EP0	Selects TTL-low to turn RF on during pulse modulation.	✓	:PULM:EXT:POL
EP1	Selects TTL-high to turn RF on during pulse modulation.	✓	:PULM:EXT:POL
FMO	Turns off the internal or external FM function.	✓	:FM:STAT OFF
FM1	Turns on the external FM function in unlocked narrow mode.	–	
FM2	Turns on the external FM function in locked low-noise mode.	✓	:FM:SOUR EXT :FM:STAT ON :OUTP:MOD ON

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
FM7	Turns on the internal FM function in unlocked narrow mode.	–	
FM8	Turns on the internal FM function in unlocked wide mode.	–	
FM9	Turns on the internal FM function in locked mode.	✓	:FM:SOUR INT :FM:STAT ON :OUTP:MOD ON
FML	Turns on the external FM function in locked mode.	✓	:FM:SOUR EXT :FM:STAT ON :OUTP:MOD ON
FMN	Turns on the internal FM function in locked low-noise mode.	✓	:FM:SOUR INT :FM:STAT ON :OUTP:MOD ON
FMU	Turns on the external FM function in unlocked narrow mode (Same as FM1).	–	
FMW	Turns on the external FM function in unlocked wide mode.	–	
FWV1	Selects the 'SINE' internal FM waveform.	✓	
FWV2	Selects the 'SQUARE WAVE' internal FM waveform.	–	
FWV3	Selects the 'RAMP UP' internal FM waveform.	–	
FWV4	Selects the 'RAMP DOWN' internal FM waveform.	–	
FWV5	Selects the 'GAUSSIAN NOISE' internal FM waveform.	–	
FWV6	Selects the 'UNIFORM NOISE' internal FM waveform.	–	
FWV7	Selects the 'TRIANGLE' internal FM waveform.	–	
GP	Sets the internal gated pulse on.	✓	:PULM:SOUR INT :PULM:SOUR:INT GATE :PULM:STAT ON :OUTP:MOD ON
IP	Turns on internal pulse modulation.	✓	:PULM:SOUR INT :PULM:STAT ON :OUTP:MOD ON

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
P0	Turns off the internal or external pulse modulation function (This is the default mode).	✓	:PULM:STAT OFF
PC1	Selects the 10 MHz internal pulse clock rate.	✓	*Command accepted but does nothing.*
PC4	Selects the 40 MHz internal pulse clock rate (Option 24). Selects the 100 MHz internal pulse clock rate (Option 26).	–	
PH0	Turns off the internal or external PM function.	✓	:PM:STAT OFF
PH1	Turns on the external PM function in narrow mode.	✓	:PM:SOUR EXT :PM:STAT ON :OUTP:MOD ON
PH2	Turns on the external PM function in wide mode.	–	
PH7	Turns on the internal PM function in narrow mode.	✓	:PM:SOUR INT :PM:STAT ON :OUTP:MOD ON
PH8	Turns on the internal PM function in wide mode.	–	
PHN	Turns on the external PM function in narrow mode (Same as PH1).	✓	:PM:SOUR INT :PM:STAT ON :OUTP:MOD ON
PHV1	Selects the 'SINE' internal ΦM waveform	✓	*Remark: If the ΦM is not installed this command produces a syntax error.*
PHV2	Selects the 'SQUARE WAVE' internal FM waveform	–	
PHV3	Selects the 'RAMP UP' internal FM waveform	–	
PHV4	Selects the 'RAMP DOWN' internal FM waveform	–	
PHV5	Selects the 'GAUSSIAN NOISE' internal FM waveform	–	
PHV6	Selects the 'UNIFORM NOISE' internal FM waveform	–	
PHV7	Selects the 'TRIANGLE' internal FM waveform	–	
PHW	Turns on the external PM function in wide mode(Same as PH2).	–	
PMD1	Selects the internal 'SINGLE' pulse mode	✓	:PULM:SOUR INT :PULM:SOUR:INT SQU

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
PMD2	Selects the internal 'DOUBLET' pulse mode.	✓	*supported with* PTG3 *only.*
PMD3	Selects the internal 'TRIPLET' pulse mode.	–	
PMD4	Selects the internal 'QUADRUPLET' pulse mode.	–	
PTF	Selects internal pulse triggering on the falling edge of an external input.	–	
	Selects the 'FREE RUN' internal pulse trigger.	✓	:PULM:SOUR INT :PULM:SOUR:INT FRUN
PTG2	Selects the 'GATED' internal pulse trigger.	✓	:PULM:SOUR INT :PULM:SOUR:INT GATEd
PTG3	Selects the 'DELAYED' internal pulse trigger.	✓	:PULM:SOUR INT :PULM:SOUR:INT FRUN
PTG4	Selects the 'TRIGGERED' internal pulse trigger.	✓	:PULM:SOUR INT :PULM:SOUR:INT TRIGgered
PTG5	Selects the 'TRIG WITH DELAY' internal pulse trigger	✓	:PULM:SOUR INT :PULM:SOUR:INT TRIGgered
PTR	Selects internal pulse triggering on the rising edge of an external input.	✓	:PULM:SOUR INT :PULM:SOUR:INT TRIGgered
SC0	Turns SCAN modulation function on.	–	
SC1	Turns SCAN modulation function off.	–	
SD0	Turns off the internal pulse stepped delay mode.	–	
SD1	Turns on the internal pulse stepped delay mode.	–	
SQP	Turns on internal 1 kHz square wave pulse modulation.	✓	:PULM:SOUR INT :PULM:SOUR:INT SQUare :PULM:INT:FREQ 1000 :PULM:STAT ON :OUTP:MOD ON
SW0	Turns off the internal or external pulse modulation function (Same as P0).	✓	:PULM:STAT OFF

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
SW1	Turns on internal 400 Hz square wave pulse modulation.	✓	:PULM:SOUR INT :PULM:SOUR:INT SQUare :PULM:INT:FREQ 400 :PULM:STAT ON :OUTP:MOD ON
SW2	Turns on internal 1 kHz square wave pulse modulation (Same as SQP).	✓	:PULM:SOUR INT :PULM:SOUR:INT SQUare :PULM:INT:FREQ 1000 :PULM:STAT ON :OUTP:MOD ON
SW3	Turns on internal 7.8125 kHz square wave pulse modulation.	✓	:PULM:SOUR INT :PULM:SOUR:INT SQUare :PULM:INT:FREQ 7812.5 :PULM:STAT ON :OUTP:MOD ON
SW4	Turns on internal 27.8 kHz square wave pulse modulation.	✓	:PULM:SOUR INT :PULM:SOUR:INT SQUare :PULM:INT:FREQ 27800 :PULM:STAT ON :OUTP:MOD ON
XP	Turns on the external pulse modulation function. Disables the internal pulse modulation function, if previously programmed.	✓	:PULM:SOUR EXT
Output Commands			
*IDN?	Requests device identification.	✓	*IDN?
OAB	Returns the external AM sensitivity value (in dB/V) to the controller.	✓	:AM:DEPT:EXP?
OAD1	Returns the internal AM depth value (in %) to the controller.	✓	:AM:DEPT:LIN?
OAD2	Returns the internal AM depth value (in dB) to the controller.	✓	:AM:DEPT:EXP?
OAR	Returns the internal AM rate (in Hz) to the controller.	✓	:AM:INT:FREQ?
OAS	Returns the external AM sensitivity value (in %/V) to the controller.	✓	:AM:DEPT:LIN?

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
OAW	Returns the name of the internal AM waveform to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OD1	Returns the internal pulse delay1 value (in µs) to the controller.	✓	`:PULM:INT:DEL?`
OD2	Returns the internal pulse delay2 value (in µs) to the controller.	✓	`:PULM:INT:DEL2?`
OD3	Returns the internal pulse delay3 value (in µs) to the controller.	–	
OD4	Returns the internal pulse delay4 value (in µs) to the controller.	–	
ODD	Returns the internal pulse stepped delay mode step size value (in ms) to the controller.	–	
ODE	Returns the internal pulse stepped delay mode delay 1 stop value (in ms) to the controller.	–	
ODF	Returns the ΔF frequency value (in MHz) to the controller.	✓	`:FREQ:SPAN?`
ODL	Returns the internal pulse stepped delay mode dwell-time-per-step value (in ms) to the controller.	–	
ODP	Returns the internal pulse delay1 value (in ms) to the controller (Same as OD1).	✓	`:PULM:INT:DEL?`
ODS	Returns the internal pulse stepped delay mode delay 1 start value (in ms) to the controller.	–	
OEBW	Returns the external reference loop bandwidth to the controller	–	
OEM	Returns the Extended SRQ Mask bytes (3 binary bytes) to the controller.	–	
OES	Returns the GPIB Status bytes (3 binary bytes) to the controller.	–	
OF0	Returns the F0 frequency value (in MHz) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OF1	Returns the F1 frequency value (in MHz) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OF2	Returns the F2 frequency value (in MHz) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OF3	Returns the F3 frequency value (in MHz) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
OF4	Returns the F4 frequency value (in MHz) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OF5	Returns the F5 frequency value (in MHz) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OF6	Returns the F6 frequency value (in MHz) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OF7	Returns the F7 frequency value (in MHz) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OF8	Returns the F8 frequency value (in MHz) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OF9	Returns the F9 frequency value (in MHz) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OFD	Returns the internal FM deviation value (in Hz) to the controller.	✓	`:FM:DEV?`
OFH	Returns the high-end frequency value (in MHz) to the controller.	✓	`:FREQ? MAX`
OFK	Returns the internal or external FM lock status to the controller. (will always return LOCKED, UNLOCKED not available in MXG)	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OFL	Returns the low-end frequency value (in MHz) to the controller.	✓	`:FREQ? MIN`
OFM	Returns the frequency multiplier parameter.	✓	`:FREQ:MULT?`
OFR	Returns the internal FM rate (in Hz) to the controller.	✓	`:FM:INT:FREQ?`
OFS	Returns the external FM sensitivity value (in MHz/V) to the controller.	✓	`:FM:DEV?`
OFW	Returns the name of the internal FM waveform to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OI	Returns the instrument identification string to the controller.	✓	`*IDN?`
OL0	Returns the L0 power level value to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OL1	Returns the L1 power level value to the controller	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OL2	Returns the L2 power level value to the controller	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
OL3	Returns the L3 power level value to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OL4	Returns the L4 power level value to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OL5	Returns the L5 power level value to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OL6	Returns the L6 power level value to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OL7	Returns the L7 power level value to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OL8	Returns the L8 power level value to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OL9	Returns the L9 power level value to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OLO	Returns the level offset power value to the controller.	✓	`:POW:OFFS?`
OM0	Returns the M0 frequency value (in MHz) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OM1	Returns the M1 frequency value (in MHz) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OM2	Returns the M2 frequency value (in MHz) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OM3	Returns the M3 frequency value (in MHz) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OM4	Returns the M4 frequency value (in MHz) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OM5	Returns the M5 frequency value (in MHz) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OM6	Returns the M6 frequency value (in MHz) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OM7	Returns the M7 frequency value (in MHz) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OM8	Returns the M8 frequency value (in MHz) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OM9	Returns the M9 frequency value (in MHz) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
OMD	Returns the name of the internal pulse mode to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OMM	1. Returns the AM depth measurement value (in %) to the controller. 2. Returns the FM deviation measurement value (in MHz) to the controller.	–	
OO	Returns the instrument option string to the controller.	✓	`*OPT?`
OP5	Returns the internal or external pulse polarity (HIGH, LOW) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OPC	Returns the internal pulse clock rate (in MHz) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OPD	Returns the power sweep dwell time (in ms) to the controller.	✓	`:SWE:DWEL?`
OPHD	Returns the internal FM deviation value (in radians) to the Returns the internal FM deviation value (in radians) to the	✓	`:FM:DEV?`
OPHM	Returns the name of the FM mode (NARROW, WIDE) to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OPHR	Returns the internal FM rate (in Hz) to the controller.	✓	`:FM:INT:FREQ?`
OPHS	Returns the external FM sensitivity value (in radians/V) to the controller.	✓	`:FM:DEV?`
OPHW	Returns the name of the internal FM waveform to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OPM	Returns the internal power meter measurement (in dBm) to the controller.	–	
OPO	Returns the phase offset value (in degrees) to the controller.	✓	`:PHAS?`
OPP	Returns the internal pulse period value (in µs) to the controller.	✓	`:PULM:INT:PER?`
OPR	Returns the internal pulse frequency (in MHz) to the controller.	✓	`:PULM:INT:FREQ?`
OPS	Returns the power sweep number-of-steps to the controller.	✓	`:SWE:POIN?`
OPT	Returns the name of the internal pulse trigger to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OPW	Returns the internal pulse width1 value (in µs) to the controller (Same as OW1).	✓	`:PULM:INT:PWID1?`

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
OSB	Returns the primary GPIB status byte to the controller.	–	
OSD	Returns the step sweep dwell time (in ms) to the controller.	✓	`:SWE:DWEL?`
OSE	Returns the last GPIB syntax error to the controller.	✓	`:SYST:ERR`
OSM	Returns the primary SRQ mask byte to the controller.	–	
OSR	Returns the self-test results (6 binary bytes) to the controller.	–	
OSS	Returns the step sweep number-of-steps to the controller.	✓	`:SWE:POIN?`
OST	Returns the step sweep time value (in ms) to the controller.	✓	`:SWE:DWEL?`
OVN	Returns the ROM version number to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
OW1	Returns the internal pulse width1 value (in µs) to the controller.	✓	`:PULM:INT:PWID1?`
OW2	Returns the internal pulse width2 value (in µs) to the controller.	✓	`:PULM:INT:PWID2?`
OW3	Returns the internal pulse width3 value (in µs) to the controller.	–	
OW4	Returns the internal pulse width4 value (in µs) to the controller.	–	
OWT	Returns the GPIB termination status to the controller.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
Parameter Entry Commands			
ADP1	Opens the internal AM % depth parameter.	✓	`:AM:DEPT:LIN`
ADP2	Opens the internal AM dB depth parameter.	✓	`:AM:DEPT:EXP`
AMR	Opens the internal AM rate parameter.	✓	`:AM:INT:FREQ`
AMS	Opens the external AM %/V sensitivity parameter.	✓	`:AM:DEPT:LIN`
ASD	Opens the external AM dB/V sensitivity parameter.	✓	`:AM:DEPT:LOG`
CLO	Closes the previously opened parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
D1	Opens the internal pulse delay1 parameter.	✓	`:PULM:INT:DEL1`
D2	Opens the internal pulse delay2 parameter.	✓	`:PULM:INT:DEL2`
D3	Opens the internal pulse delay3 parameter.	–	

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
D4	Opens the internal pulse delay4 parameter.	–	
DFF	Opens the delta frequency parameter.	–	
DFM	Opens the delta frequency parameter.	–	
DLF	Opens the delta frequency parameter.	✓	`:FREQ:SPAN`
DN	Decrements the open parameter by the step size.	✓	`DOWN`
EGI	Opens the reference level DAC setting parameter.	–	
F0	Opens the F0 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
F1	Opens the F1 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
F2	Opens the F2 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
F3	Opens the F3 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
F4	Opens the F4 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
F5	Opens the F5 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
F6	Opens the F6 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
F7	Opens the F7 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
F8	Opens the F8 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
F9	Opens the F9 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
FDV	Opens the internal FM deviation parameter	✓	`:FM:DEV`
FMR	Opens the internal FM rate parameter.	✓	`:FM:INT:FREQ`
FMS	Opens the external FM sensitivity parameter.	✓	`:FM:DEV`
LOS	Opens the level offset parameter. Same as amplitude offset.	✓	`:POW:LEV:OFFS`
M0	Opens the M0 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
M1	Opens the M1 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
M2	Opens the M2 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
M3	Opens the M3 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
M4	Opens the M4 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
M5	Opens the M5 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
M6	Opens the M6 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
M7	Opens the M7 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
M8	Opens the M8 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
M9	Opens the M9 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
PDT	Opens the power sweep dwell time parameter.	✓	`:SWE:DWEL`
PDY	Opens the internal pulse delay1 parameter (Same as D1).	✓	`:PULM:INT:DEL`
PER	Opens the internal pulse period parameter.	✓	`:PULM:INT:PWID`
PHD	Opens the internal PM deviation parameter.	✓	`:PM:DEV`
PHR	Opens the internal PM rate parameter.	✓	`:PM:INT1:FREQ`
PHS	Opens the external PM sensitivity parameter.	✓	`:PM:DEV`
PNS	Opens the power sweep number of steps parameter.	✓	`:SWE:POIN`
PR	Opens the internal pulse frequency parameter.	✓	`:PULM:INT:RAT`
PSO	Opens the phase offset parameter.	✓	`:PHAS`
PVT	Opens the ALC power slope pivot point frequency parameter.	–	
PW	Opens the internal pulse width1 parameter (Same as W1).	✓	`:PULM:INT:PWID`
SDD	Opens the internal pulse stepped delay mode step size parameter.	–	

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
SDE	Opens the internal pulse stepped delay mode delay 1 stop parameter.	–	
SDL	Opens the internal pulse stepped delay mode dwell-time-per-step parameter.	–	
SDS	Opens the internal pulse stepped delay mode delay 1 start parameter.	–	
SDT	Opens the step sweep dwell time parameter.	✓	`:SWE:DEWLL`
SLDF	Opens the F parameter of the slave unit.	–	
SLF0	Opens the F0 parameter of the slave unit.	–	
SLF1	Opens the F1 parameter of the slave unit.	–	
SLF2	Opens the F2 parameter of the slave unit.	–	
SLF3	Opens the F3 parameter of the slave unit.	–	
SLF4	Opens the F4 parameter of the slave unit.	–	
SLF5	Opens the F5 parameter of the slave unit.	–	
SLF6	Opens the F6 parameter of the slave unit.	–	
SLF7	Opens the F7 parameter of the slave unit.	–	
SLF8	Opens the F8 parameter of the slave unit.	–	
SLF9	Opens the F9 parameter of the slave unit.	–	
SLL1	Opens the main power level parameter (L1) of the slave unit.	–	
SLL2	Opens the alternate sweep power level parameter (L2) of the slave unit.	–	
SLM0	Opens the M0 parameter of the slave unit.	–	
SLM1	Opens the M1 parameter of the slave unit.	–	
SLM2	Opens the M2 parameter of the slave unit.	–	
SLM3	Opens the M3 parameter of the slave unit.	–	
SLM4	Opens the M4 parameter of the slave unit.	–	
SLM5	Opens the M5 parameter of the slave unit.	–	
SLM6	Opens the M6 parameter of the slave unit.	–	

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
SLM7	Opens the M7 parameter of the slave unit.	–	
SLM8	Opens the M8 parameter of the slave unit.	–	
SLM9	Opens the M9 parameter of the slave unit.	–	
SLV	Opens the power level parameter (L1) of the slave unit.	–	
SNS	Opens the step sweep number of steps parameter.	✓	`:SWE:POIN`
SOF	Opens the frequency offset parameter of the slave unit.	–	
SWT	Opens the step sweep time parameter.	✓	`:SWE:TIME`
SYZ	Opens the increment/decrement step size parameter.	–	
UP	Increments the open parameter by the step size.	✓	`UP`
W1	Opens the internal pulse width 1 parameter.	✓	`:PULM:INT:PWID`
W2	Opens the internal pulse width 2 parameter.	✓	`:PULM:INT:PWID2`
W3	Opens the internal pulse width 3 parameter.	–	
W4	Opens the internal pulse width 4 parameter.	–	
XL0	Opens the L0 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
XL1	Opens the L1 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
XL2	Opens the L2 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
XL3	Opens the L3 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
XL4	Opens the L4 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
XL5	Opens the L5 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
XL6	Opens the L6 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
XL7	Opens the L7 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
XL8	Opens the L8 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = **Supported by Agilent N5183A**
– = **Not supported by Agilent N5183A**

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
XL9	Opens the L9 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
Power Leveling Commands			
AL0	Sets the alternate frequency sweep RF output to L0.	–	
AL1	Sets the alternate frequency sweep RF output to L1.	–	
AL2	Sets the alternate frequency sweep RF output to L2.	–	
AL3	Sets the alternate frequency sweep RF output to L3.	–	
AL4	Sets the alternate frequency sweep RF output to L4.	–	
AL5	Sets the alternate frequency sweep RF output to L5.	–	
AL6	Sets the alternate frequency sweep RF output to L6.	–	
AL7	Sets the alternate frequency sweep RF output to L7.	–	
AL8	Sets the alternate frequency sweep RF output to L8.	–	
AL9	Sets the alternate frequency sweep RF output to L9.	–	
AT0	Deselects ALC step attenuator decoupling.	✓	`:POW:ATT:AUTO ON`
AT1	Selects ALC step attenuator decoupling.	✓	`:POW:ATT:AUTO OFF`
ATT(xx)	Sets the step attenuator value to xx (times 10 dB).	✓	`:POW:ATT`
DL1	Selects external detector leveling of output power.	✓	`:POW:ALC:SOUR DIOD`
EGO	Outputs the value of the reference level DAC setting.	–	
IL1	Selects internal leveling of output power.	✓	`:POW:ALC:SOUR INT`
L0	Sets RF output power level to L0. Opens L0 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence. Note: Power Level Default - 130 dBm.*
L1	Sets RF output power level to L1. Opens L1 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence. Note: Power Level Default - 130 dBm.*
L2	Sets RF output power level to L2. Opens L2 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence. Note: Power Level Default - 130 dBm.*
L3	Sets RF output power level to L3. Opens L3 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence. Note: Power Level Default - 130 dBm.*

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
L4	Sets RF output power level to L4. Opens L4 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence. Note: Power Level Default - 130 dBm.*
L5	Sets RF output power level to L5. Opens L5 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence. Note: Power Level Default - 130 dBm.*
L6	Sets RF output power level to L6. Opens L6 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence. Note: Power Level Default - 130 dBm.*
L7	Sets RF output power level to L7. Opens L7 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence. Note: Power Level Default - 130 dBm.*
L8	Sets RF output power level to L8. Opens L8 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence. Note: Power Level Default - 130 dBm.*
L9	Sets RF output power level to L9. Opens L9 parameter.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence. Note: Power Level Default - 130 dBm.*
LIN	Selects linear power level operation in volts.	✓	`:POW`
LO0	Turns off the level offset function.	–	
LO1	Turns on the level offset function.	–	
LOG	Selects logarithmic power level operation in dBm.	✓	`:POW`
LSP	Selects the power level sweep mode.	✓	`:LIST:TYPE STEP` `:SWE:SPAC LIN`
LV0	Turns off leveling of the output power.	–	
LV1	Turns off leveling of the output power.	–	
LVP	Sets the instrument power level to 1 dB below peak leveled power	–	
PU0	Selects logarithmic power level operation in dBm.	✓	`:POW`
PU1	Selects linear power level operation in mV.	✓	`:POW`
PU2	Selects logarithmic power level operation in dB/V.	✓	`:POW`
RF0	Turns off the RF output.	✓	`:OUTP OFF`
RF1	Turns on the RF output.	✓	`:OUTP ON`

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
SL0	Turns off the ALC power slope function.	–	
SL1	Turns on the ALC power slope function.	–	
SLP	Opens the ALC power slope value parameter.	–	
Power Offset Table Commands			
PT0	Disables the power offset table.	–	
PT1	Enables the power offset table.	–	
PTC	Changes a power offset table entry.	–	
PTL	Loads a power offset table.	–	
Self Test Commands			
TST	Starts an instrument self-test.	✓	*TST?
Status Commands			
CSB	Clears all GPIB status bytes.	–	
EL0	Inhibits updating of the ESB2 bit 4.	–	
EL1	Enables updating of the ESB2 bit 4.	–	
ES0	Inhibits end-of-sweep SRQ generation.	–	
ES1	Enables end-of-sweep SRQ generation.	–	
FB0	Inhibits extended status byte 1 SRQ generation.	–	
FB1	Enables extended status byte 1 SRQ generation.	–	
II0	Inhibits updating of the ESB2 bit 7.	–	
II1	Enables updating of the ESB2 bit 7.	–	
LA0	Inhibits updating of ESB1 bit 7.	–	
LA1	Enables updating of ESB1 bit 7.	–	
LE0	Inhibits lock error SRQ generation.	–	
LE1	Enables lock error SRQ generation.	–	
LS0	Inhibits updating of the ESB1 bit 3.	–	
LS1	Enables updating of the ESB1 bit 3.	–	

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
MB0	Sets the enable mask byte for the primary status byte.	–	
MB1	Sets the enable mask byte for extended status byte 1.	–	
MB2	Sets the enable mask byte for extended status byte 2.	–	
PE0	Inhibits parameter range error SRQ generation.	–	
PE1	Enables parameter range error SRQ generation.	–	
SB0	Inhibits extended status byte 2 SRQ generation.	–	
SB1	Enables extended status byte 2 SRQ generation.	–	
SE0	Inhibits Syntax Error SRQ generation.	–	
SE1	Enables Syntax Error SRQ generation.	–	
SQ0	Disables the SRQ generation function.	–	
SQ1	Enables the SRQ generation function.	–	
UL0	Inhibits RF unleveled SRQ generation.	–	
UL1	Enables RF unleveled SRQ generation.	–	
Stored Setup Commands			
RCF	Prepares the MG369XB to receive a new instrument setup recalled from the controller.	–	
RCM	Prepares the MG369XB to receive a new instrument setup and new stored setups\ recalled from the controller.	–	
RSN(m)	Recalls the instrument setup stored in internal setup memory location m.	✓	*RCL
SAF	Outputs the current instrument setup to the controller.	–	
SAM	Outputs both the current instrument setup and all stored instrument setups to the controller.	–	
SM	Recalls the instrument setup stored in internal setup memory location m.	–	
SSN(m)	Saves the current instrument setup to internal setup memory location m.	✓	*SAV
Sweep Commands			
AD1	Selects F1-ΔF alternate frequency sweep.	–	

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
AD5	Selects F5-ΔF alternate frequency sweep.	–	
AD6	Selects F6-ΔF alternate frequency sweep.	–	
AF1	Selects F1-F2 alternate frequency sweep.	–	
AF3	Selects F3-F4 alternate frequency sweep.	–	
AFU	Selects full range alternate frequency sweep.	–	
AUT	Selects automatic sweep triggering.	✓	:LIST:TRIG:SOUR |MM :INIT:CONT ON :INIT:IMM
DF0	Selects F0-delta frequency sweep mode.	–	
DF1	Selects F1-delta frequency sweep mode.	–	
DF5	Selects F5-delta frequency sweep mode.	–	
DF6	Selects F6-delta frequency sweep mode.	–	
DU0	Deselects dual step sweep mode.	–	
DU1	Selects dual step sweep mode.	–	
EXT	Selects single sweep triggering.	✓	:LIST:TRIG:SOUR BVS
FUL	Selects the full range sweep mode.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
HWT	Selects external sweep trigger.	✓	:LIST:TRIG:SOUR EXT
LGS	Selects logarithmic step sweep.	✓	:LIST:TYPE STEP :SWE:SPAC LOG :FREQ:MOD LIST
LIS	Selects linear step sweep.	✓	:LIST:TYPE STEP :SWE:SPAC LIN :FREQ:MOD LIST
MAN	Selects manual (step) frequency sweep.	✓	:SWE:MODE MAN
MNT	Selects manual trigger.	–	
RSS	Resets a sweep if in progress.	–	

Table 8-10 Anritsu MG369xB Commands & Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A
– = Not supported by Agilent N5183A

CMD	Description	MG369xB	Equivalent SCPI Command Sequence
SF1	Selects the F1-F2 sweep mode.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
SF3	Selects the F3-F4 sweep mode.	✓	*Supported by the Agilent MXG, but there is no equivalent SCPI command sequence.*
SWP	Selects analog sweep.	–	
TEX	Sets sweep trigger to external.	✓	`:LIST:TRIG:SOUR EXT`
TRG	Triggers a single sweep.	✓	`:TRIG`
TRS	Triggers a single sweep.	✓	`:TRIG`
TSS	Advances sweep to the next step in dual step sweep mode.	–	
User Level Calibration Commands			
LU0	Turns off the active user level calibration table.	–	
LU1	Activates user level calibration table #1.	–	
LU2	Activates user level calibration table #2.	–	
LU3	Activates user level calibration table #3.	–	
LU4	Activates user level calibration table #4.	–	
LU5	Activates user level calibration table #5.	–	
LUR	Prepares the MG369xB to receive 5 tables of user level calibration data from the controller.	–	
LUS	Sends all five tables of the user level calibration data to the controller.	–	

Rohde & Schwartz SMR Compatible SCPI Commands

Table 8-11 is a comprehensive list SCPI commands arranged by system/subsystem. Commands are indicated as supported by the N5183A or not supported by the N5183A. Use the legend within the table to determine command compatibility.

To use the commands, select **SMR** as the remote language. See :LANGuage (N5183A) section for information about selecting the language type.

When using the programming codes in this section, you can:

- set the N5183A system language to **SMR** for the current session:

  Utility > **I/O Config** > **Remote Language** > **More** > **More** > **Rohde & Schwartz** > **SMR**

  or send the command:

  `:SYST:LANG "SMR"`

- set the N5183A system language to **SMR** so that it does not reset with a preset, an instrument power cycle, or a *RST command:

  Utility > **Power On/Preset** > **Preset Language** > **More** > **More** > **Rohde & Schwartz** > **SMR**

  or send the command:

  `:SYST:PRESet:LANG "SMR"`

- set the `*IDN?` response to any SMR response you prefer. Refer to the :SYSTem:IDN command.

NOTE The Agilent MXG has only one AM, FM, and PM path. Using AM2, FM2, or PM2 path commands will result in the following error: “`ERROR: -113, Undefined Header`”.

The Agilent MXG has only one internal source for AM, FM and PM, but the INT2 source selection is accepted by the signal generator and is equivalent to selecting INT[1].

The Agilent MXG has three dedicated external sources, one for AM, one for FM/PM and one for Pulse. The EXT2 source selection is accepted by the signal generator, but is equivalent to selecting EXT[1]. 4

Table 8-11 Rohde & Schwartz Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
System Function Commands		
ABORt System		
:ABORt[:SWEep]	✓	*supported (add optional :SWEep node)*
:ABORt:LIST	✓	*(add LIST)*
:ABORt:MSEQuence	✓	*MSEQuence is a new feature*
DIAGnostic System		
:DIAGnostic:INFO:CCOunt:ATTenuator1|2|3|4?	✓	*accepted but always returns total attenuator count, not individual attenuator stages and ignores numeric suffix*
:DIAGnostic:INFO:CCOunt:POWer?	✓	
:DIAGnostic:INFO:MODules?	✓	
:DIAGnostic:INFO:OTIMe?	✓	
:DIAGnostic:INFO:SDATe?	✓	
:DIAGnostic[:MEASure]:POINt?	–	
DISPlay System		
:DISPlay:ANNotation[:ALL] ON | OFF	✓	
:DISPlay:ANNotation:AMPLitude ON | OFF	✓	
:DISPlay:ANNotation:FREQuency ON | OFF	✓	
INPut System		
:INPut:IF:STATe ON | OFF	–	
MEMory System		
:MEMory:NSTates?	✓	*returns number of save/recall states available*
OUTPut Subsystem		
:OUTPut1|3[:STATe] ON | OFF	✓	output 2 *is not supported*

Table 8-11 Rohde & Schwartz Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:OUTPut1|3:AMODe AUTO | FIXed	✓	*FIXed mode not available on* output 3
:OUTPut1:ATTenuation 0 to 110 dB	✓	
:OUTPut1|3:IMPedance?	✓	*always returns 50 ohms*
:OUTPut3:SCALe 0.5 | 1	✓	
:OUTPut1[:STATe]:PON OFF | UNCHanged	✓	
:OUTPut2[:STATe] ON | OFF	–	outputs 2 & 3 *are not supported*
:OUTPut2:AMODe AUTO | FIXed	–	
:OUTPut2:IMPedance?	–	
:OUTPut2:SCALe 0.5 | 1	–	
:OUTPut2[:STATe]:PON OFF | UNCHanged	–	
:OUTPut2:VOLTage 0 V to 4 V	–	
:OUTPut3:POLarity:PULSe NORMal | INVerse	–	
:OUTPut3:SOURce OFF | PULSegen | VIDeo 9	–	
SOURce System		
AM Subsystem		
[:SOURce]:AM[:DEPTh] 0 to 100 PCT	✓	
[:SOURce]:AM:EXTernal1|2:COUPling AC | DC	✓	*source 1, 2 suffix accepted but does nothing*
[:SOURce]:AM:INTernal:FREQuency 0,1 Hz to 10 MHz	✓	
[:SOURce]:AM:STATe OFF | ON	✓	
[:SOURce]:AM:SOURce INTernal | EXT2	✓	
[:SOURce]:AM:EXTernal1|2:Impedance 600 Ohm | 100 kOhm	–	*accepted but does nothing*
[:SOURce]:AM:SCAN:SENSitivity -0,1 to 10 dB/V	–	
[:SOURce]:AM:SCAN[:STATe] OFF | ON	–	
CORRection Subsystem		

Table 8-11 Rohde & Schwartz Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:CORRection[:STATe] ON | OFF	✓	
[:SOURce]:CORRection:CSET:CATalog?	✓	
[:SOURce]:CORRection:CSET:FREE?	✓	
[:SOURce]:CORRection:CSET[:SELect] “Name of table”	✓	
[:SOURce]:CORRection:CSET:DATA:FREQuency 1 GHz to Fmax {1 GHz to Fmax}	✓	
[:SOURce]:CORRection:CSET:DATA:POWer +20 to -20dB {+20 to -20dB}	✓	
[:SOURce]:CORRection:CSET:DATA:POWer:POINts?	✓	
[:SOURce]:CORRection:CSET:DELete “Name of table”	✓	
DM Subsystem		
[:SOURce]:DM:TYPE ASK | FSK	–	
[:SOURce]:DM:STATe ON | OFF	–	
[:SOURce]:DM:EXTernal:IMPedance 600 Ohm | 100 kOhm	–	
[:SOURce]:DM:ASK:DEPTh 0 to 100 PCT	–	
[:SOURce]:DM:ASK:POLarity NORMal | INVerted	–	
[:SOURce]:DM:FM[:DEViation] 0 kHz to 20/40 MHz	–	
[:SOURce]:DM:FSK:DEViation 0 kHz to 20/40 MHz	–	
[:SOURce]:DM:FSK:POLarity NORMal | INVerted	–	
FM Subsystem		
[:SOURce]:FM:EXTernal1|2:COUPling AC | DC	✓	
[:SOURce]:FM:INTernal:FREQuency 0,1 Hz to 10 MHz	✓	
[:SOURce]:FM:SOURce INTernal | EXTernal1	✓	
[:SOURce]:FM:STATe ON | OFF	✓	

Table 8-11 Rohde & Schwartz Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:FM:EXTernal1|2:IMPedance 600 Ohm | 100 kOhm	–	
FREQuency Subsystem		
[:SOURce]:FREQuency:CENTer 10 MHz to Fmax	✓	
[:SOURce]:FREQuency[:CW | :FIXed]	✓	
:SOURce2:FREQuency[:CW | :FIXed] 0.1 Hz to 10 MHz	–	
[:SOURce]:FREQuency:MODE CW | FIXed | SWEep | LIST	✓	
:SOURce2:FREQuency:MODE CW | FIXed | SWEep	–	
[:SOURce]:FREQuency:MULTiplier -1.0 to 10.0	✓	
[:SOURce]:FREQuency:OFFSet -50 to +50 GHz	✓	
[:SOURce]:FREQuency:SPAN Fmax - 1 GHz	✓	*with Option SMR-B11: Fmax - 10 MHz*
[:SOURce]:FREQuency:STARt 1 GHz to Fmax	✓	*with Option SMR-B11: 10 MHz to Fmax*
:SOURce2:FREQuency:STARt 0.1 Hz to 10 MHz	–	
[:SOURce]:FREQuency:STOP 1 GHz to Fmax	✓	*with Option SMR-B11: 10 MHz to Fmax*
:SOURce2:FREQuency:STOP 0.1 Hz to 10 MHz	–	
[:SOURce]:FREQuency:RCL INCLude | EXCLude	✓	
[:SOURce]:FREQuency:MANual 10 MHz to Fmax	–	
:SOURce2:FREQuency:MANual 0.1 Hz to 10 MHz	–	
[:SOURce]:FREQuency:STEP[:INCRement] 0 to 10 GHz	✓	
LIST Subsystem		
[:SOURce]:LIST:CATalog?	✓	
[:SOURce]:LIST:DELete “List name”	✓	
[:SOURce]:LIST:DELete:ALL	✓	
[:SOURce]:LIST:DWELl 1 ms to 1 s	✓	

Table 8-11 Rohde & Schwartz Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:LIST:DWELl:POINts?	✓	
[:SOURce]:LIST:FREE?	✓	
[:SOURce]:LIST:FREQuency 1 GHz to Fmax {1 GHz to Fmax}| Bloc data	✓	*Option SMR-B11: above 10 MHz*
[:SOURce]:LIST:FREQuency:POINts?	✓	
[:SOURce]:LIST:MODE AUTO | STEP	✓	
[:SOURce]:LIST:POWer -130 to +25 dBm {-130 to +25 dBm} | Bloc data	✓	*–20 to +25dBm w/o SMR-B15*
[:SOURce]:LIST:POWer:POINts?	✓	
[:SOURce]:LIST:SELect “List name”	✓	
MARKer Subsystem		
[:SOURce]:MARKer1|2|3|4|5||8|9|10[:FSWeep]:AMPLitude ON | OFF	✓	
[:SOURce]:MARKer1|2|3|4|5||8|9|10[:FSWeep]:AOFF	✓	
[:SOURce]:MARKer1|2|3|4|5||8|9|10[:FSWeep]:FREQuency 1 GHz to Fmax	✓	
[:SOURce]:MARKer1|2|3|4|5||8|9|10[:FSWeep][:STATe] ON | OFF	✓	
[:SOURce]:MARKer1|2|3|4|5||8|9|10:PSWeep:AOFF	✓	
[:SOURce]:MARKer1|2|3|4|5||8|9|10:PSWeep:POWer -130 dBm to +25 dBm	✓	
[:SOURce]:MARKer1|2|3|4|5||8|9|10:PSWeep[:STATe] ON | OFF	✓	
POWer Subsystem		
[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude] -130 dBm to +25 dBm	✓	
[:SOURce]:POWer:ALC[:STATe] ON | OFF	✓	
[:SOURce]:POWer:ALC:SEArch?	✓	

Table 8-11 Rohde & Schwartz Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:POWer:ALC:SOURce INTernal | DIODe | PMETer	✓	*PMETer not supported*
[:SOURce]:POWer:MODE CW | FIXed | SWEep | LIST	✓	
[:SOURce]:POWer:STARt -130 dBm to +25 dBm	✓	
[:SOURce]:POWer:STOP -130 dBm to +25 dBm	✓	
[:SOURce]:POWer:ALC:REFerence 0 to 3 V	–	
[:SOURce]:POWer[:LEVel][:IMMediate][:AMPL]:OFFSet <val><unit> -100 to +100 dB	✓	
[:SOURce]:POWer:LIMit[:AMPLitude] -130 dBm to +25 dBm	–	
[:SOURce]:POWer:MANual –130 dBm to +25 dBm	–	
[:SOURce]:POWer:STEP[:INCRement] 0.1 to 10 dB	✓	
[:SOURce]:POWer:ALC:SOURce:PMETer RS_NRVS | HP43 | HP437 | HP438A	–	
PULM Subsystem		
[:SOURce]:PULM:POLarity NORMal | INVerted	✓	*does not affect the INT source polarity*
[:SOURce]:PULM:SOURce EXTernal | INTernal	✓	
[:SOURce]:PULM:STATe ON | OFF	✓	
[:SOURce]:PULM:EXTernal:IMPedance 50 Ohm to 10 kOhm	–	*Command accepted without error but does nothing.*
PULSe Subsystem		
[:SOURce]:PULSe:DELay 20 ns to 1.3 s	✓	
[:SOURce]:PULSe:PERiod 100 ns to 85 s	✓	
[:SOURce]:PULSe:WIDTh 20 ns to 1.3 s	✓	
[:SOURce]:PULSe:DOUBle:DELay ns to 1.3 s	✓	
[:SOURce]:PULSe:DOUBle[:STATe] ON | OFF	✓	
ROSCillator Subsystem		

Table 8-11 Rohde & Schwartz Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:ROSCillator:SOURce INTernal | EXTernal	✓	
[:SOURce]:ROSCillator[:INTernal]:ADJust[:STATe] ON | OFF	✓	
[:SOURce]:ROSCillator[:INTernal]:ADJust:VALue -2048 to +2047	✓	
SWEep Subsystem		
[:SOURce]:SWEep:BTIMe NORMal | LONG	–	
:SOURce2:SWEep:BTIMe NORMal | LONG	–	
[:SOURce]:SWEep[:FREQuency]:DWELl 10 ms to 5s	✓	
:SOURce2:SWEep[:FREQuency]:DWELl 10 ms to 5 s	–	
[:SOURce]:SWEep[:FREQuency]:MODE AUTO | MANual | STEP	✓	
:SOURce2:SWEep[:FREQuency]:MODE AUTO | MANual | STEP	–	
[:SOURce]:SWEep[:FREQuency]:SPACing LINear | LOGarithmic	✓	
:SOURce2:SWEep[:FREQuency]:SPACing LINear | LOGarithmic	–	
[:SOURce]:SWEep[:FREQuency]:STEP[:LINear] 0 to 10 GHz	✓	
[:SOURce]:SWEep[:FREQuency]:STEP:LOGarithmic 0.01 to 10PCT	✓	
:SOURce2:SWEep[:FREQuency]:STEP:LOGarithmic 0.01 to 100PCT	–	
:SOURce2:SWEep[:FREQuency]:STEP[:LINear] 0 to 10 MHz	–	
[:SOURce]:SWEep:POWer:DWELl 10 ms to 5 s	✓	
[:SOURce]:SWEep:POWer:MODE AUTO | MANual | STEP	✓	
[:SOURce]:SWEep:POWer:SPACing LOGarithmic	–	

Table 8-11 Rohde & Schwartz Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
[:SOURce]:SWEep:POWer:STEP[:LOGarithmic] 0 to 1 dB	–	
SOURce2 System		
FUNCtion Subsystem		
:SOURce2:FUNCtion[:SHAPe] SINusoid | SQUare	–	
MARKer Subsystem		
:SOURce2:MARKer1|2|3[:FSWeep]:AOFF	–	
:SOURce2:MARKer1|2|3[:FSWeep]:FREQuency 0.1 Hz to 10 MHz	–	
:SOURce2:MARKer 1|2|3[:FSWeep][:STATe] ON | OFF	–	
:SOURce2:MARKer 1|2|3:POLarity NORMal | INVerted	–	
STATus System		
:STATus:OPERation[:EVENt]?	✓	
:STATus:OPERation:CONDition?	✓	
:STATus:OPERation:PTRansition 0 to 327	✓	
:STATus:OPERation:NTRansition 0 to 327	✓	
:STATus:OPERation:ENABle 0 to 327	✓	
:STATus:PRESet	✓	
:STATus:QUEStionable[:EVENt]?	✓	
:STATus:QUEStionable:CONDition?	✓	
:STATus:QUEStionable:PTRansition 0 to 327	✓	
:STATus:QUEStionable:NTRansition 0 to 327	✓	
:STATus:QUEStionable:ENABle 0 to 327	✓	
:STATus:QUEue [:NEXT]?	✓	
SYSTem System		
:SYSTem:COMMunicate:GPIB[:SELF]:ADDRess 1 to 30	✓	

Table 8-11 Rohde & Schwartz Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:SYSTem:COMMunicate:SERial:BAUD 1200 | 2400 | 4800 | 9600 | 19200 | 38400 | 57600 | 115200	–	
:SYSTem:COMMunicate:SERial:BITS 7 | 8	–	
:SYSTem:COMMunicate:SERial:SBITs 1 | 2	–	
:SYSTem:COMMunicate:SERial:CONTrol:RTS ON | IBFull | RFR	–	
:SYSTem:COMMunicate:SERial:PACE XON | NONE	–	
:SYSTem:COMMunicate:SERial:PARity ODD | EVEN | NONE	–	
:SYSTem:ERRor?	✓	
:SYSTem:MSEQuence:CATalog?	–	
:SYSTem:MSEQuence:DELete “Sequence name”	–	
:SYSTem:MSEQuence:DELete:ALL	–	
:SYSTem:MSEQuence:DWELl 50 ms to seconds	–	
:SYSTem:MSEQuence:FREE?	–	
:SYSTem:MSEQuence:MODE AUTO | STEP	–	
:SYSTem:MSEQuence[:RCL] 1 to 50	–	
:SYSTem:MSEQuence[:RCL]:POINts?	–	
:SYSTem:MSEQuence:SELect “Sequence name”	–	
:SYSTem:MODE FIXed | MSEQence	–	
:SYSTem:PRESet	✓	
:SYSTem:PROTect[1|2|3][:STATe] ON | OFF, Password	✓	*Command accepted without error but does nothing.*
:SYSTem:SECurity[:STATe] ON | OFF	✓	
:SYSTem:SERRor?	✓	
:SYSTem:VERSion?	✓	
TEST System		

Table 8-11 Rohde & Schwartz Program Codes and Equivalent SCPI Command Sequences

✓ = Supported by Agilent N5183A – = Not supported by Agilent N5183A	N5183A	Remarks
:TEST:DIRect Address, Subaddress, Hex data string	–	
:TEST:ASSy Module, Subaddress, Hex data string	–	
:TEST:RAM?	–	
:TEST:ROM?	–	
:TEST:BATTery?	–	
TRIGger System		
:TRIGger:LIST[:IMMediate]	✓	
:TRIGger:LIST:SOURce AUTO | SINGle | EXTernal	✓	
:TRIGger:MSEQuence[:IMMediate]	–	
:TRIGger:MSEQuence:SOURce SINGle | EXTernal | AUTO	–	
:TRIGger:PULSe:SLOPe POSitive | NEGative	–	
:TRIGger:PULSe:SOURce AUTO_trig | EXT_trig | EXT_GATED	–	
:TRIGger:SLOPe POSitive | NEGative | EITHer	✓	EITHer *not supported*
:TRIGger1|2[:SWEep][:IMMediate]	✓	Trigger 2 *not supported*
:TRIGger1|2[:SWEep]:SOURce AUTO | SINGle | EXTernal	✓	Trigger 2 *not supported*

9 N5161A/62A/81A/82A SCPI Command Compatibility

This chapter provides a comprehensive listing of SCPI commands and programming codes for signal generator models that are supported by the N5161A/62/81A/82A.

- Overview on page 552
- Changing the Signal Generator Identification String on page 553
- Changing the Signal Generator Option String on page 553
- Functional N5161A/62A/81A/82A SCPI Commands While in a Compatible Language Mode on page 554
- Replaced Backward Compatible Commands on page 557
- E44xxB Compatible Commands on page 562
- E4428C/38C Compatible Commands on page 580
- E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Compatible Commands on page 626
- 8648A/B/C/D Compatible Commands on page 672
- 8656B, 8657A/B/D Programming Codes on page 682
- Aeroflex IFR3410 Compatible Commands on page 689
- Rohde & Schwartz SMATE/SMIQ/SML/SMU Compatible Commands on page 694

Overview

This Chapter contains the following major sections:

The following list shows the supported models along with the language type for each one:

N5161A/62/81A/82A	SCPI commands
E44xxB	SCPI commands
E4428C/38C	SCPI commands
E8257D/67D/E8663B	SCPI commands
E8247C/57C/67C	SCPI commands
E8241A/44A/51A/54A	SCPI commands
Aeroflex 3410 series	SCPI commands
Rohde and Schwartz SM series	SCPI commands
8648A/B/C/D	SCPI commands
8656B, 8657A/B	programming codes
8657D	programming codes

These commands and programming codes are separated into compatible and non-compatible sections. In many instances, the non-compatible section has the least number of commands/codes, thus providing a more time-efficient way of determining whether or not a command/code is supported by the N5161A/62A/81A/82A.

In some cases, SCPI commands are only partially supported. This usually occurs due to a variance in parameters between the N5161A/62A/81A/82A and other signal generator models. When this condition occurs, the remarks column in each compatibility commands table specifies the exception condition.

In addition to providing the compatible command/code listing, this chapter also provides you with N5161A/62A/81A/82A SCPI commands that lets you change the signal generator identification output (see :SYSTem:IDN command), select a compatible programming language (see :SYSTem:LANGuage (N5161A/62A/81A/82A) section), and query the signal generator for errors (see :SYSTem:ERRor[:NEXT]).

Included is a section of obsolete/non-supported commands and their replacement if applicable. Refer to Replaced Backward Compatible Commands.

Changing the Signal Generator Identification String

:SYSTem:IDN

Supported All Models

```
:SYSTem:IDN "<string>"
```

This Agilent MXG signal generator command modifies the identification string that the *IDN? query returns. Sending an empty string returns the *IDN? query output to its factory shipped setting. The maximum string length is 72 characters.

Modification of the *IDN? query output enables the Agilent MXG signal generator to identify itself as another signal generator when it is used as a backward compatible replacement. This modification of the identification string does not affect the display diagnostic information, which is shown by pressing the **Diagnostic Info** softkey.

Changing the Signal Generator Option String

:SYSTem:OPT

Supported All Models

```
:SYSTem:OPT "<string>"
```

This Agilent MXG signal generator command modifies the option string that the *OPT? query returns. Sending an empty string returns the *OPT? query output to its factory shipped setting. The maximum string length is 72 characters.

Modification of the *OPT? query output enables the Agilent MXG signal generator with options, to identify itself as another signal generator when it is used as a backward compatible replacement. This modification of the option string does not affect the display diagnostic information, which is shown by pressing the **Diagnostic Info** softkey.

Functional N5161A/62A/81A/82A SCPI Commands While in a Compatible Language Mode

The commands in this section are used for configuring the signal generator compatible programming language and for isolating problems.

:PRESet:LANGuage (N5161A/62A/81A/82A)

Supported All Models

```
:SYSTem:PRESet:LANGuage
"SCPI"|"COMP"|"8648"|"E4428C"|"E4438C"|"E8257D"|"E8267D"|"E8663B"|"E8247C"|"E8257C"|
"E8267C"|"E8241A"|"E8244A"|"E8251A"|"E8254A"|"8657D"|"8667D"|"SMU200A"|
"SMATE200A"|"SMJ100A"|"SMIQ"|"SML"|"SMV"|"3410"
:SYSTem:PRESet:LANGuage?
```

This command sets the remote language that is available when the signal generator is preset.

SCPI	This choice provides compatibility for SCPI commands, using GPIB, LAN, or USB.
COMP	This choice provides compatibility for the 8656B, 8657A/B signal generator, which is supported only through a GPIB interface.
8648	This choice provides compatibility for the 8648A/B/C/D signal generator, which is supported only through a GPIB interface.
E4428C or E4438C	This choice provides compatibility for the E4428C or E4438C signal generators, which are supported through a GPIB, LAN, or USB interface.
E8257D or E8267D or E8663B	This choice provides compatibility for the E8257D, E8267D, or E8663B signal generators, which are supported through a GPIB, LAN, or USB interface.
E8247C, or E8257C, or E8267C	This choice provides compatibility for the E8247C, E8257C or E8267C signal generators, which are supported through a GPIB, LAN, or USB interface.
E442XB or E443XB	This choice provides compatibility for the E442XB or E443XB signal generators, which are supported through a GPIB, LAN, or USB interface.
E8241A or E8244A or E8251A or E8254A	This choice provides compatibility for the E8241A, E8244A, E8251A, or E8254A signal generators, which are supported through a GPIB, LAN, or USB interface.
8657D	This choice provides compatibility for the 8657D signal generator, which is supported only through a GPIB interface.

SMU200A, or
SMATE200A, or
SMJ100A, or
SMIQ, or
SML, or
SMV — This choice provides compatibility for the Rohde and Schwartz SMU200A, SMATE200A, SMJ100A, SMIQ, SML, or SMV signal generators, which are supported through a GPIB, LAN, or USB interface.

3410 — This choice provides compatibility for the Aeroflex 3410 signal generator, which is supported through a GPIB, LAN, or USB interface.

***RST** **"SCPI"**

Key Entry				
	SCPI	**SMJ100A**	**8648A/B/C/D**	**E8257D, E8267D, E8663B**
	SML	**3410 Series**	**8656B, 8667A/B**	**E8241A, E8244A, E8251A, E8264A**
	SMV	**E4428C,E4438C**	**SMU200A, SMATE200A**	
	SMIQ	**E442xB, E443xB**	**E8247C, E8257C, E8367C**	

:SYSTem:LANGuage (N5161A/62A/81A/82A)

Supported All Models

```
:SYSTem:LANGuage
"SCPI"|"COMP"|"8648"|"E4428C"|"E4438C"|"E8257D"|"E8267D"|"E8663B"|"E8247C"|
"E8257C"|"E8267C"|"E442XB"|"E443XB"|"E8241A"|"E8244A"|"E8251A"|"E8254A"|"8657D"|
"SMU200A"|"SMATE200A"|"SMJ100A"|"SMIQ"|"SML"|"SMV"|"3410"
:SYSTem:LANGuage?
```

This command sets the remote language for the signal generator.

SCPI — This choice provides compatibility for SCPI commands.

COMP — This choice provides compatibility for the 8656B, 8657A/B signal generator which is supported only through the GPIB interface.

8648 — This choice provides compatibility for the 8648A/B/C/D signal generator which is supported only through a GPIB interface.

E4428C or
E4438C — This choice provides compatibility for the E4428C or E4438C signal generators, which are supported through a GPIB, LAN, or USB interface.

E8257D or
E8267D or
E8663B — This choice provides compatibility for the E8257D, E8267D, or E8663B signal generators which are supported through a GPIB, LAN, or USB interface.

E8247C, or
E8257C, or
E8267C — This choice provides compatibility for the E8247C, E8257C, or E8267C signal generators, which are supported through a GPIB, LAN, or USB interface.

E442XB or
E443XB — This choice provides compatibility for the E442XB or E443XB signal generators, which are supported through a GPIB, LAN, or USB interface.

E8241A or E8244A or E8251A or E8254A	This choice provides compatibility for the E8241A, E8244A, E8251A, or E8254A signal generator, which is supported through a GPIB, LAN, or USB interface.
8657D	This choice provides compatibility for the 8657D signal generator which is supported only through a GPIB interface.
SMU200A, or SMATE200A, or SMJ100A, or SMIQ, or SML, or SMV	This choice provides compatibility for the Rohde and Schwartz SMU200A, SMATE200A, SMJ100A, SMIQ, SML, or SMV signal generators, which are supported through a GPIB, LAN, or USB interface.
3410	This choice provides compatibility for the Aeroflex 3410 signal generator, which is supported through a GPIB, LAN, or USB interface.

***RST** **"SCPI"**

Key Entry				
	SCPI	**SMJ100A**	**8648A/B/C/D**	**E8257D, E8267D, E8663B**
	SML	**3410 Series**	**8656B, 8667A/B**	**E8241A, E8244A, E8251A, E8264A**
	SMV	**E4428C,E4438C**	**SMU200A, SMATE200A**	
	SMIQ	**E442xB, E443xB**	**E8247C, E8257C, E8367C**	

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

For more information on supported SCPI commands and programming codes, refer to the *Programming Compatibility Guide*.

:SYSTem:ERRor[:NEXT]

Supported All Models

```
:SYSTem:ERRor[:NEXT]?
```

This query returns the most recent error message from the signal generator error queue. If there are no error messages, the query returns the following output:

```
+0,"No error"
```

When there is more than one error message, the query will need to be sent for each message. Each error message is erased after being queried.

Key Entry **View Next Error Message**

Replaced Backward Compatible Commands

:ALC:SEARch

Supported All Models

```
[:SOURce]:POWer:ALC:SEARch AUTO|SPAN|ON|1|ONCE
[:SOURce]:POWer:ALC:SEARch?
```

This command sets the internal power search mode. A power search is recommended for pulse modulated signals with pulse widths less than one microsecond.

AUTO ON (1) This choice executes the power search automatically with each change in RF frequency or power.

SPAN This mode pre-computes power search settings for a span of user defined start/stop frequencies. In this mode, the instrument's default automatic (AUTO) power search is disabled. The power search is not repeated until manually or remotely directed to do so.

This power search is not valid for a change in power level. If the power level is changed, the power search needs to be repeated. For best results, the power search needs to be repeated at periodic intervals. Refer to the *Data Sheet* and the *User's Guide*.

ONCE This choice executes a single power search of the current RF output signal and the current mode is returned (i.e. 1 = AUTO and 0 = NON-AUTO). This action requires the RF output to be on. (Refer to [:STATe] command).

***RST** 1

Key Entry **Do Power Search**

Remarks Use this command when the ALC state is set to OFF. Refer to :ALC[:STATe] command for setting the ALC state.

This command was replaced by :ALC:SEARch on page 63.

:FAST:FFast

Supported All Models

```
:FAST:FFast <Freq mHz>
```

This command enables a fast SCPI switching for arbitrary frequency levels.

Range The range is model/option dependent. Refer to the instrument's *Data Sheet*.

Example FAST:FF 1000000000

This example sets the instrument frequency to 1 GHz.

This command was replaced by ":FREQ" on page 58.

:FAST:FPFast

Supported All Models

```
:FAST:FPFast <Freq mHz>, <power mdB>
```

This command enables a fast SCPI switching for arbitrary frequency and power levels.

Range The range is model/option dependent. Refer to the instrument's *Data Sheet*.

Example FAST:FPF 1000000000,-10000

This example sets the instrument frequency to 1 GHz and the power to -10 dBm.

This command was replaced by ":FP" on page 58.

:FAST:PFast

Supported All Models

```
:FAST:PFast <power mdB>
```

This command enables a fast SCPI switching for arbitrary power levels.

Range The range is model/option dependent. Refer to the instrument's *Data Sheet*.

Example FAST:PF -10000

This example sets the instrument power to -10 dBm.

This command was replaced by ":POWer" on page 58.

:FILTer

Supported N5162A/82A

```
[:SOURce]:RADio:DMODulation:ARB:FILTer RNYQuist|NYQuist|GAUSsian|
RECTangle|IS95|IS95_EQ|IS95_MOD|IS95_MOD_EQ|WCDMa|AC4Fm|IS2000SR3DS|
UGGaussian|"<user FIR>"
[:SOURce]:RADio:DMODulation:ARB:FILTer?
```

This command specifies the pre–modulation filter type.

RNYQuist	This choice selects a Root Nyquist (root raised cosine) filter. This filter is adjusted using Alpha.
NYQuist	This choice selects a Nyquist (raised cosine) filter. This filter is adjusted using Alpha.
GAUSsian	This choice selects a Gaussian Filter which is adjusted using Bbt values.
RECTangle	This choice selects a one symbol wide rectangular filter.
IS95	This choice selects a filter that meets the criteria of the IS–95 standard.
IS95_EQ	This choice selects a filter which is a combination of the IS–95 filter (above) and the equalizer filter described in the IS–95 standard. This filter is only used for IS–95 baseband filtering.
IS95_MOD	This choice selects a filter that meets the criteria of the IS–95 error function (for improved adjacent channel performance) with lower passband rejection than the filter specified in the IS–95 standard.
IS95_MOD_EQ	This choice selects a filter which is a combination of the equalizer filter described in the IS–95 standard and a filter that meets the criteria of the IS–95 error

function (for improved adjacent channel performance), with lower passband rejection.

WCDMa — This choice selects a 0.22 Nyquist filter optimized for ACP.

AC4Fm — This choice selects a predefined Association of Public Safety Communications Officials (APCO) specified compatible 4–level frequency modulation (C4FM) filter.

IS2000SR3DS — This choice selects an IS–2000 standard, spread rate 3 direct spread filter.

UGGaussian — This choice selects a backwards compatible GSM Gaussian filter (Gaussian filter with a fixed BbT value of 0.300) for the ESG E44xxB Option UN3 or UN4.

"<user FIR>" — This variable is any FIR filter file that you have stored in memory. The variable needs no directory path indicating the location of the file, such as `FIR:` or `/USER/FIR`. The command assumes the FIR directory. For more information on file names, refer to "File Name Variables" on page 13.

***RST** GAUS

Key Entry **Root Nyquist** **Nyquist** **Gaussian** **Rectangle** **IS–95** **IS–95 w/EQ** **IS–95 Mod** **IS–95 Mod w/EQ** **WCDMA** **IS–2000 SR3 DS** **APCO 25 C4FM** **UN3/4 GSM Gaussian** **User FIR**

Key Path **Mode** > **ARB Custom Modulation** > **Digital Mod Setup** > **Filter** > **Select** > *filter type*

Remarks This command, although functional has changed the filter type options, refer to ":FILTer" on page 266.

:LICense:FPACk:WAVeform:ADD

Supported All Models

```
:SYSTem:LICense:FPACk:WAVeform:ADD "filename"
```

This command assigns a new waveform to a 5–Pack license. Filename should be just the filename, no path information. The file must reside in a non–volatile waveform memory (NVWFM) before it can be licensed.

Remarks This command was replaced by :LICense:[FPACk]:WAVeform:ADD on page 219.

:LICense:FPACk:SLOTs:FREE?

Supported All Models

```
:SYSTem:LICense:FPACk:SLOTs:FREE?
```

This queries the number of available 5–Pack slots open for waveforms to be licensed.

Remarks This command was replaced by :LICense:[FPACk]:WAVeform:FREE? on page 220.

:LICense:FPACk:WAVeform:IDList?

Supported All Models

```
:SYSTem:LICense:FPACk:WAVeform:IDList?
```

This query returns the list of 5–Pack licensed waveform IDs.

Remarks This command was replaced by :LICense:[FPACk]:WAVeform:IDList? on page 220.

:LICense:FPACk:SLOTs:USED?

Supported All Models

```
:SYSTem:LICense:FPACk:SLOTs:USED?
```

This queries the number of 5–Pack slots used by licensed waveforms.

Remarks This command was replaced by :LICense:[FPACk]:WAVEform:USED? on page 221.

:PMETer:DEVice

Supported All Models

```
:SYSTem:COMMunicate:PMETer:DEVice <deviceName>
:SYSTem:COMMunicate:PMETer:DEVice?
```

This command enters a VXI-11 name for a power meter that is being controlled by the signal generator. If connecting directly to the power meter enter the name as specified on your power meter documentation. If connecting through a LAN-GPIB gateway, enter the SICL address of the power meter.

Key Entry **PM VXI-11 Device Name**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

The power meter is controlled only through a LAN cable.

This command was replaced by :PMETer:COMMunicate:LAN:DEVice on page 23.

:PMETer:IP

Supported All Models

```
:SYSTem:COMMunicate:PMETer:IP <ipaddr>
:SYSTem:COMMunicate:PMETer:IP?
```

This command sets the internet protocol (IP) address for a power meter that is controlled by the signal generator. It connecting to a GPIB power meter through a LAN-GPIB gateway, this command sets the IP address of the gateway.

Key Entry **Meter IP Address**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

The power meter is controlled only through a LAN cable.

Ensure that the power meter IP address is different from the signal generator address.

This command was replaced by :PMETer:COMMunicate:LAN:IP on page 24.

:PMETer:PORT

Supported All Models

```
:SYSTem:COMMunicate:PMETer:PORT <portNum>
:SYSTem:COMMunicate:PMETer:PORT?
```

This command sets the IP port on the power meter that is controlled by the signal generator.

Key Entry	Power Meter IP Port
5025	Standard mode. The command enables standard mode for simple programming.
5023	Telnet mode. The command enables the telnet SCPI service for programming.

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

The power meter is controlled only through a LAN cable.

For more information on standard mode and telnet SCPI mode, refer to the *Programming Guide*.

This command was replaced by :PMETer:COMMunicate:LAN:PORT on page 24.

:PMETer:TYPE

Supported All Models

```
:SYSTem:COMMunicate:PMETer:TYPE SOCKets|SOCKETS|VXI11|USB
:SYSTem:COMMunicate:PMETer:TYPE?
```

This command sets the type of control connection on the power meter for communication with the signal generator.

Key Entry	Connection Type
SOCK or SOCKETS	The command enables the power meter for sockets LAN control through the signal generator.
VXI11	The command enables the power meter for VXI-11 control through the signal generator. A power meter with GPIB can be controlled through VXI-11 using a LAN-GPIB gateway.
USB	The command enables the power meter for USB control through the signal generator.

Remarks A single-channel power meter uses channel A and selecting channel B will have no effect.

The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

This command was replaced by :PMETer:COMMunicate:TYPE on page 25.

E44xxB Compatible Commands

NOTE The Agilent MXG has only one AM, FM, and PM path. Using AM2, FM2, or PM2 path commands will result in the following error: "ERROR: -113, Undefined Header".

The Agilent MXG has only one internal source for AM, FM and PM, but the INT2 source selection is accepted by the signal generator and is equivalent to selecting INT[1].

The Agilent MXG has three dedicated external sources, one for AM, one for FM/PM and one for Pulse. The EXT2 source selection is accepted by the signal generator, but is equivalent to selecting EXT[1].

Table 9-1 E44xxB Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	E44xxB	Remarks
IEEE Common Commands		
*CLS	✓	
*ESE <data> *ESE?	✓	
*ESR?	✓	
*IDN?	✓	
*OPC *OPC?	✓	
*RCL <reg_num>	✓	
*RST	✓	
*SAV <reg_num>	✓	
*SRE <data> *SRE?	✓	
*STB?	✓	
*TRG	✓	
*TST?	✓	
*WAI	✓	
Calibration Subsystem		
:CALibration:DCFM	✓	
:CALibration:IQ	✓	

Table 9-1 E44xxB Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	E44xxB	Remarks
:CALibration:IQ:DEFault	✓	
:CALibration:IQ:FULL	✓	
:CALibration:IQ:STARt <value> :CALibration:IQ:STARt?	✓	
:CALibration:IQ:STOP <value> :CALibration:IQ:STOP?	✓	
Communication Subsystem		
:SYSTem:COMMunicate:GPIB:ADDRess <number> :SYSTem:COMMunicate:GPIB:ADDRess?	✓	
:SYSTem:COMMunicate:SERial:BAUD <number> :SYSTem:COMMunicate:SERial:BAUD?	–	
:SYSTem:COMMunicate:SERial:CONTrol:RTS ON|OFF|IBFull|RFR :SYSTem:COMMunicate:SERial:CONTrol:RTS?	–	
:SYSTem:COMMunicate:SERial:ECHO ON|OFF :SYSTem:COMMunicate:SERial:ECHO?	–	
:SYSTem:COMMunicate:SERial:RESet	–	
:SYSTem:COMMunicate:SERial:TOUT <value> :SYSTem:COMMunicate:SERial:TOUT?	–	
:SYSTem:COMMunicate:SERial:CONTrol:RTS ON|OFF|IBFull|RFR :SYSTem:COMMunicate:SERial:CONTrol:RTS?	–	
Diagnostic Subsystem		
:DIAGnostic[:CPU]:INFOrmation:BOARds?	–	
:DIAGnostic[:CPU]:INFOrmation:CCOunt:ATTenuator?	✓	
:DIAGnostic[:CPU]:INFOrmation:CCOunt:PON?	✓	
:DIAGnostic[:CPU]:INFOrmation:CCOunt:PROTection?	✓	
:DIAGnostic[:CPU]:INFOrmation:DISPlay:OTIMe?	✓	

Table 9-1 E44xxB Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	E44xxB	Remarks
:DIAGnostic[:CPU]:INFOrmation:LIDN?	✓	
:DIAGnostic[:CPU]:INFOrmation:OPTions?	✓	
:DIAGnostic[:CPU]:INFOrmation:OPTions:DETail?	✓	
:DIAGnostic[:CPU]:INFOrmation:OTIMe?	✓	
:DIAGnostic[:CPU]:INFOrmation:SDATe?	✓	
Display Subsystem		
:DISPlay:BRIGhtness <value> :DISPlay:BRIGhtness?	✓	
:DISPlay:CONTrast <value> :DISPlay:CONTrast?	✓	
:DISPlay:INVerse ON|OFF|1|0	✓	*Supported but the following query is not supported:* :DISPlay:INVerse?
:DISPlay:REMote ON|OFF|1|0 :DISPlay:REMote?	✓	
Memory Subsystem		
:MEMory:CATalog:BINary?	✓	
:MEMory:CATalog:BIT?	–	
:MEMory:CATalog:CDMa?	–	
:MEMory:CATalog:DMOD?	✓	
:MEMory:CATalog:DWCDma?	–	
:MEMory:CATalog:FCDMa?	–	
:MEMory:CATalog:FIR?	✓	
:MEMory:CATalog:FSK?	✓	
:MEMory:CATalog:FWCDma?	–	
:MEMory:CATalog:IQ?	–	
:MEMory:CATalog:LIST?	✓	
:MEMory:CATalog:MCDMa?	–	

Table 9-1 E44xxB Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	E44xxB	Remarks
:MEMory:CATalog:MDMod?	–	
:MEMory:CATalog:MDWCdma?	–	
:MEMory:CATalog:MFCdma?	–	
:MEMory:CATalog:MFWCdma?	–	
:MEMory:CATalog:MTONe?	✓	
:MEMory:CATalog:RCDMa?	–	
:MEMory:CATalog:RWCDma?	–	
:MEMory:CATalog:SEQ?	✓	
:MEMory:CATalog:SHAPe?	–	
:MEMory:CATalog:STATe?	✓	
:MEMory:CATalog:UWCDma?	–	
:MEMory:CATalog:WCDMa?	–	
:MEMory:CATalog[:ALL]?	✓	
:MEMory:COPY[:NAME] "<file name>","<file name>"	✓	
:MEMory:DATA "<file name>",<datablock>	✓	
:MEMory:DATA? "<file name>"	✓	
:MEMory:DATA:BIT "<file name>",<bit_count>,<datablock>	–	
:DATA:BIT? "<file name>"	–	
:MEMory:DATA:FIR "<file name>",osr,coefficient{,coefficient}	✓	
:MEMory:DATA:FIR? "<file name>"	✓	
:MEMory:DATA:FSK "<file name>",<num_states>,<f0>,<f1>,...<f(n)>[,<diff_state>,<num_diff_states>,<diff0>,<diff1>,...<diff(n)>]	✓	

Table 9-1 E44xxB Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	E44xxB	Remarks
:MEMory:DATA:FSK? "<file name>"	✓	
:MEMory:DATA:IQ "<file name>",<offsetQ>,<num_states>,<i0>,<q0>,<i1>,<q1>,...<i(n),q(n)>[,<diff_state>,<num_diff_states>,<diff0>,<diff1>,...<diff(n)>]	✓	
:MEMory:DATA:IQ? "<file name>"	✓	
:MEMory:DATA:PRAM?	–	
:MEMory:DATA:PRAM:BLOCk <datablock>	–	
:MEMory:DATA:PRAM:LIST <uint8>{,<uint8>,<...>}	–	
:MEMory:DATA:SHAPe "<file name>",<num_rise_points>,<rp0>,<rp1>,...<rp(n)>,<num_fall_points>,<fp0>,<fp1>,...<fp(n)>	–	
:MEMory:DATA:SHAPe? "<file name>"	–	
:MEMory:DELete:ALL	✓	
:MEMory:DELete:BINary	✓	
:MEMory:DELete:BIT	–	
:MEMory:DELete:CDMa	–	
:MEMory:DELete:DMOD	–	
:MEMory:DELete:DWCDma	–	
:MEMory:DELete:FCDMa	–	
:MEMory:DELete:FIR	–	
:MEMory:DELete:FSK	–	
:MEMory:DELete:FWCDma	–	
:MEMory:DELete:IQ	–	
:MEMory:DELete:LIST	–	
:MEMory:DELete:MCDMa	–	

Table 9-1 E44xxB Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	E44xxB	Remarks
:MEMory:DELete:MDMod	✓	
:MEMory:DELete:MDWCdma	–	
:MEMory:DELete:MFCdma	–	
:MEMory:DELete:MFWCdma	–	
:MEMory:DELete:MTONe	–	
:MEMory:DELete:RCDMa	–	
:MEMory:DELete:RWCDma	–	
:MEMory:DELete:SEQ	✓	
:MEMory:DELete:SHAPe	–	
:MEMory:DELete:STATe	✓	
:MEMory:DELete:UWCDma	–	
:MEMory:DELete:WCDMa	–	
:MEMory:DELete[:NAME] "<file name>"	✓	
:MEMory:FREE[:ALL]?	✓	
:MEMory:LOAD:LIST "<file name>"	✓	
:MEMory:MOVE <src_file>,<dest_file>	✓	
:MEMory:STATe:COMMent <reg_num>,<seq_num>,"<comment>"	✓	
:MEMory:STATe:COMMent? <reg_num>,<seq_num>	✓	
:MMEMory:CATalog? "<msus>"	✓	
:MMEMory:COPY "<file name>","<file name>"	✓	
:MMEMory:DATA "<file name>",<datablock>	✓	
:MMEMory:DATA? "<file name>"	✓	
:MMEMory:DELete[:NAME] "<file name>",["<msus>"]	✓	
:MMEMory:LOAD:ARB:ALL	✓	

Table 9-1 E44xxB Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	E44xxB	Remarks
:MMEMory:LOAD:LIST "<file name>"	✓	
:MMEMory:MOVE <src_file>,<dest_file>	✓	
:MMEMory:STORe:ARB:ALL	✓	
:MMEMory:STORe:LIST "<file name>"	✓	
:MEMory:STORe:LIST "<file name>"	✓	
Output Subsystem		
:OUTPut:BLANking:AUTO ON|OFF|1|0 :OUTPut:BLANking:AUTO?	✓	
:OUTPut:BLANking[:STATe] ON|OFF|1|0 :OUTPut:BLANking[:STATe]?	✓	
:OUTPut:MODulation[:STATe] ON|OFF|1|0 :OUTPut:MODulation[:STATe]?	✓	*Requires Option UNT (AM/FM/PM Modulation)*
:OUTPut:PROTection:CLEar	✓	
:OUTPut:PROTection:MODE "NORMAL"|"8648" :OUTPut:PROTection:MODE?	–	
:OUTPut:PROTection[:STATe] ON|OFF|1|0 :OUTPut:PROTection[:STATe]?	✓	
:OUTPut:PROTection:TRIPped?	✓	
:OUTPut:SETTled:POLarity NORMal|INVerted :OUTPut:SETTled:POLarity?	–	
:OUTPut:SETTled:RFOFf NORMal|INVerted :OUTPut:SETTled:RFOFf?	–	
:OUTPut:SETTled[:STATe]?	–	
:OUTPut[:STATe] ON|OFF|1|0 :OUTPut[:STATe]?	✓	
Route Subsystem		

Table 9-1 E44xxB Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	E44xxB	Remarks
:ROUTe:HARDware:DGENerator:...	–	*This subsystem is not supported.*
Status Subsystem		
:STATus:OPERation:CONDition?	✓	
:STATus:OPERation:ENABle <value> :STATus:OPERation:ENABle?	✓	
:STATus:OPERation:NTRansition <value> :STATus:OPERation:NTRansition?	✓	
:STATus:OPERation:PTRansition <value> :STATus:OPERation:PTRansition?	✓	
:STATus:OPERation[:EVENt]?	✓	
:STATus:PRESet	✓	
:STATus:QUEStionable:BERT:CONDition?	–	
:STATus:QUEStionable:BERT:ENABle <value> :STATus:QUEStionable:BERT:ENABle?	–	
:STATus:QUEStionable:BERT:NTRansition <value> :STATus:QUEStionable:BERT:NTRansition?	–	
:STATus:QUEStionable:BERT:PTRansition <value> :STATus:QUEStionable:BERT:PTRansition?	–	
:STATus:QUEStionable:BERT[:EVENt]?	–	
:STATus:QUEStionable:CALibration:CONDition?	✓	
:STATus:QUEStionable:CALibration:ENABle <value> :STATus:QUEStionable:CALibration:ENABle?	✓	
:STATus:QUEStionable:CALibration:NTRansition <value> :STATus:QUEStionable:CALibration:NTRansition?	✓	
:STATus:QUEStionable:CALibration:PTRansition <value> :STATus:QUEStionable:CALibration:PTRansition?	✓	
:STATus:QUEStionable:CALibration[:EVENt]?	✓	

Table 9-1 E44xxB Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	E44xxB	Remarks
:STATus:QUEStionable:CONDition?	✓	
:STATus:QUEStionable:ENABle <value> :STATus:QUEStionable:ENABle?	✓	
:STATus:QUEStionable:FREQuency:CONDition?	✓	
:STATus:QUEStionable:FREQuency:ENABle <value> :STATus:QUEStionable:FREQuency:ENABle?	✓	
:STATus:QUEStionable:FREQuency:NTRansition <value> :STATus:QUEStionable:FREQuency:NTRansition?	✓	
:STATus:QUEStionable:FREQuency:PTRansition <value> :STATus:QUEStionable:FREQuency:PTRansition?	✓	
:STATus:QUEStionable:FREQuency[:EVENt]?	✓	
:STATus:QUEStionable:MODulation:CONDition?	–	
:STATus:QUEStionable:MODulation:ENABle <value> :STATus:QUEStionable:MODulation:ENABle?	–	
:STATus:QUEStionable:MODulation:NTRansition <value> :STATus:QUEStionable:MODulation:NTRansition?	–	
:STATus:QUEStionable:MODulation:PTRansition <value> :STATus:QUEStionable:MODulation:PTRansition?	–	
:STATus:QUEStionable:MODulation[:EVENt]?	–	
:STATus:QUEStionable:NTRansition <value> :STATus:QUEStionable:NTRansition?	✓	
:STATus:QUEStionable:POWer:CONDition?	✓	
:STATus:QUEStionable:POWer:ENABle <value> :STATus:QUEStionable:POWer:ENABle?	✓	
:STATus:QUEStionable:POWer:NTRansition <value> :STATus:QUEStionable:POWer:NTRansition?	✓	

Table 9-1 E44xxB Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	E44xxB	Remarks
:STATus:QUEStionable:POWer:PTRansition <value> :STATus:QUEStionable:POWer:PTRansition?	✓	
:STATus:QUEStionable:POWer[:EVENt]?	✓	
:STATus:QUEStionable:PTRansition <value> :STATus:QUEStionable:PTRansition?	✓	
:STATus:QUEStionable[:EVENt]?	✓	
System Subsystem		
:SYSTem:CAPability?	✓	
:SYSTem:ERRor[:NEXT]?	✓	
:SYSTem:HELP:MODE SINGle	✓	*Supported but the following parameter is not supported:* CONTinuous *Supported but the following query is not supported:* :SYSTem:HELP:MODE?
:SYSTem:LANGuage "SCPI"|"COMP"|"8648" :SYSTem:LANGuage?	✓	*Supported but the following parameters are not supported:* "NADC"|"PDC"|"PHS"
:SYSTem:PON:TYPE PRESet|LAST :SYSTem:PON:TYPE?	✓	
:SYSTem:PRESet	✓	
:SYSTem:PRESet:ALL	✓	
:SYSTem:PRESet:LANGuage "SCPI"|"COMP"|"8648" :SYSTem:PRESet:LANGuage?	✓	*Supported but the following parameters are not supported:* "NADC"|"PDC"|"PHS"
:SYSTem:PRESet:PERSistent	✓	
:SYSTem:PRESet:TYPE NORMal|USER :SYSTem:PRESet:TYPE?	✓	
:SYSTem:PRESet:PN9 NORMal|QUICk :SYSTem:PRESet:PN9?	✓	
:SYSTem:PRESet[:USER]:SAVE	✓	
:SYSTem:SSAVer:DELay <value> :SYSTem:SSAVer:DELay?	✓	

Table 9-1 E44xxB Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	E44xxB	Remarks
:SYSTem:SSAVer:MODE LIGHt|TEXT :SYSTem:SSAVer:MODE?	✓	
:SYSTem:SSAVer:STATe ON|OFF :SYSTem:SSAVer:STATe?	✓	
:SYSTem:VERSion?	✓	
Trigger Subsystem		
:ABORt	✓	
:INITiate:CONTinuous[:ALL] ON|OFF|1|0 :INITiate:CONTinuous[:ALL]?	✓	
:INITiate[:IMMediate][:ALL]	✓	
:TRIGger:OUTPut:POLarity POSitive|NEGative :TRIGger:OUTPut:POLarity?	✓	
:TRIGger[:SEQuence]:SLOPe POSitive|NEGative :TRIGger[:SEQuence]:SLOPe?	✓	
:TRIGger[:SEQuence]:SOURce BUS|IMMediate|EXTernal|KEY :TRIGger[:SEQuence]:SOURce?	✓	
:TRIGger[:SEQuence][:IMMediate]	✓	
[:SOURce]:TSWeep	✓	
Unit Subsystem		
:UNIT:POWer DBM|DBUV|DBUVEMF|V|VEMF :UNIT:POWer?	✓	
Amplitude Modulation Subsystem		
[:SOURce]:AM:WIDeband:STATe ON|OFF|1|0 [:SOURce]:AM:WIDeband:STATe?	–	
[:SOURce]:AM[1]|2:EXTernal[1]|2:COUPling AC|DC [:SOURce]:AM[1]|2:EXTernal[1]|2:COUPling?	✓	
[:SOURce]:AM[1]|2:INTernal[1]:FREQuency <value><unit> [:SOURce]:AM[1]|2:INTernal[1]:FREQuency?	✓	

Table 9-1 E44xxB Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	E44xxB	Remarks
[:SOURce]:AM[1]|2:INTernal[1]:FREQuency:ALTernate <value><unit> [:SOURce]:AM[1]|2:INTernal[1]:FREQuency:ALTernate?	–	
[:SOURce]:AM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude: PERCent <value><unit> [:SOURce]:AM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent?	–	
[:SOURce]:AM[1]|2:INTernal[1]:FUNCtion:SHAPe <enum> [:SOURce]:AM[1]|2:INTernal[1]:FUNCtion:SHAPe?	✓	
[:SOURce]:AM[1]|2:INTernal[1]:SWEep:TIME <value><unit> [:SOURce]:AM[1]|2:INTernal[1]:SWEep:TIME?	✓	
[:SOURce]:AM[1]|2:INTernal[1]:SWEep:TRIGger <enum> [:SOURce]:AM[1]|2:INTernal[1]:SWEep:TRIGger?	✓	
[:SOURce]:AM[1]|2:SOURce INT[1]|EXT1|EXT2 [:SOURce]:AM[1]|2:SOURce?	✓	
[:SOURce]:AM[1]|2:STATe ON|OFF|1|0 [:SOURce]:AM[1]|2:STATe?	✓	
[:SOURce]:AM[1]|2[:DEPTh] <value><unit> [:SOURce]:AM[1]|2[:DEPTh]?	✓	
[:SOURce]:AM[1]|2[:DEPTh][:LINear]:TRACk ON|OFF|1|0 [:SOURce]:AM[1]|2[:DEPTh]:TRACk?	✓	
AWGN ARB Subsystem		
[:SOURce]:RADio:AWGN:ARB...	–	*This subsystem is not supported.*
Bluetooth Subsystem		
[:SOURce]:RADio:BLUEtooth:ARB:...	–	*This subsystem is not supported.*
Calculate Subsystem		
:CALCulate:BERT:...	–	*This subsystem is not supported.*

Table 9-1 E44xxB Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	E44xxB	Remarks
CDMA ARB Subsystem		
[:SOURce]:RADio:CDMA:ARB:...	–	*This subsystem is not supported.*
CDMA2000 ARB Subsystem		
[:SOURce]:RADio:CDMA2000:ARB:...	–	*This subsystem is not supported.*
CDMA2000 BBG Subsystem		
[:SOURce]:RADio:CDMA2000[:BBG]:...	–	*This subsystem is not supported.*
Custom Subsystem		
[:SOURce]:RADio:CUSTom:...	–	*This subsystem is not supported.*
Data Subsystem		
:DATA:...	–	*This subsystem is not supported.*
Digital Modulation Subsystem		
[:SOURce]:BURSt:SOURce INTernal[1]	✓	*Supported but the following parameter is not supported:* EXTernal[1] *Supported but the following query is not supported:* [:SOURce]:BURSt:SOURce?
[:SOURce]:DM:BBFilter <value>|THRough [:SOURce]:DM:BBFilter?	✓	*Command accepted without error but does nothing.*
[:SOURce]:DM:EXTernal:POLarity NORMal|INVerted [:SOURce]:DM:EXTernal:POLarity?	✓	
[:SOURce]:BURSt:STATe ON|OFF|1|0 [:SOURce]:BURSt:STATe?	✓	
[:SOURce]:DM:EXTernal:ALC:BANDwidth|BWIDth NORMal|NARRow [:SOURce]:DM:EXTernal:ALC:BANDwidth|BWIDth?	✓	
[:SOURce]:DM:EXTernal:HICRest[:STATe] ON|OFF|1|0	✓	*Supported but the following query is not supported:* [:SOURce]:DM:EXTernal:HICRest[:STATe]?

Table 9-1 E44xxB Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	E44xxB	Remarks
[:SOURce]:DM:IQADjustment:Gain <value><unit> [:SOURce]:DM:IQADjustment:Gain?	✓	
[:SOURce]:DM:IQADjustment:IOFFset <value><unit> [:SOURce]:DM:IQADjustment:IOFFset?	✓	
[:SOURce]:DM:IQADjustment:QOFFset <value><unit> [:SOURce]:DM:IQADjustment:QOFFset?	✓	
[:SOURce]:DM:IQADjustment:QSKew <value><unit> [:SOURce]:DM:IQADjustment:QSKew?	✓	
[:SOURce]:DM:IQADjustment[:STATe] ON|OFF|1|0 [:SOURce]:DM:IQADjustment[:STATe]?	✓	
[:SOURce]:DM:SOURce EXTernal|INTernal[1] [:SOURce]:DM:SOURce?	✓	
[:SOURce]:DM:STATe ON|OFF|1|0 [:SOURce]:DM:STATe?	✓	
Dmodulalion Subsystem		
[:SOURce]:RADio:DMODulation:...	–	*This subsystem is not supported.*
Dect Subsystem		
[:SOURce]:RADio:DECT:ALPHa...	–	*This subsystem is not supported.*
Dual ARB Subsystem		
[:SOURce]:RADio:ARB:CLIPping "<file name>",IJQ|IORQ,<10-100%>	✓	
[:SOURce]:RADio:ARB:CLOCk:REFerence:EXTernal:FREQuency <value> [:SOURce]:RADio:ARB:CLOCk:REFerence:EXTernal:FREQuency?	–	
[:SOURce]:RADio:ARB:CLOCk:REFerence[:SOURce] INTernal|EXTernal [:SOURce]:RADio:ARB:CLOCk:REFerence[:SOURce]?	–	

Table 9-1 E44xxB Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	E44xxB	Remarks
[:SOURce]:RADio:ARB:CLOCk:SRATe <value> [:SOURce]:RADio:ARB:CLOCk:SRATe?	✓	
[:SOURce]:RADio:ARB:MARKer:CLEar "<file name>",<mkr(1|2)>,<first_point>,<last_point>	✓	
[:SOURce]:RADio:ARB:MARKer:CLEar:ALL "<file name>",<mkr(1|2)>	✓	
[:SOURce]:RADio:ARB:MARKer:POLarity NEGative|POSitive [:SOURce]:RADio:ARB:MARKer:POLarity?	✓	
[:SOURce]:RADio:ARB:MARKer:RFBLank ON|OFF|1|0 [:SOURce]:RADio:ARB:MARKer:RFBLank?	✓	
[:SOURce]:RADio:ARB:MARKer[:SET] "<file name>",<mkr(1|2)>,<first_Point>,<last_point>,<skip_count>	✓	
[:SOURce]:RADio:ARB:RETRigger 1|0	✓	*This command is not recommended; the following command is the preferred syntax for the ESG E44xxB.*
[:SOURce]:RADio:ARB:RETRigger ON|OFF [:SOURce]:RADio:ARB:RETRigger?	✓	*This query for the Agilent MXG Vector Signal Generator (N5182A) only returns the string ON or OFF. This is different from the ESG E44xxB query which returns a 1 or 0.*
[:SOURce]:RADio:ARB:RFILter <value>|THRough	✓	*Command accepted without error but does nothing.* *The query form of the command is not compatible.*
[:SOURce]:RADio:ARB:RFILter?	–	
[:SOURce]:RADio:ARB:SCALing "<file name>",<1%–100%>	✓	
[:SOURce]:RADio:ARB:SEQuence "<file name>","<waveform>",<reps>,<mkr1(1|0)>,<mkr2(1|0)>{,"<waveform>",<rep>,<mkr1(1|0)>,<mkr2(1|0)>} [:SOURce]:RADio:ARB:SEQuence? "<file name>"	✓	

Table 9-1 E44xxB Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	E44xxB	Remarks
[:SOURce]:RADio:ARB:TRIGger:TYPE CONTinuous|SINGle|GATE|SADVance [:SOURce]:RADio:ARB:TRIGger:TYPE?	✓	
[:SOURce]:RADio:ARB:TRIGger:TYPE:GATE:ACTive LOW|HIGH [:SOURce]:RADio:ARB:TRIGger:TYPE:GATE:ACTive?	✓	
[:SOURce]:RADio:ARB:TRIGger[:SOURce] KEY|EXT|BUS [:SOURce]:RADio:ARB:TRIGger[:SOURce]?	✓	
[:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:DELay <value> [:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:DELay?	✓	
[:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:DELay:STATe ON|OFF|1|0 [:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:DELay:STATe?	✓	
[:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:SLOPe POSitive|NEGative [:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:SLOPe?	✓	
[:SOURce]:RADio:ARB:WAVeform "<file name>" [:SOURce]:RADio:ARB:WAVeform?	✓	
[:SOURce]:RADio:ARB[:STATe] ON|OFF|1|0 [:SOURce]:RADio:ARB[:STATe]?	✓	
Edge Subsystem		
[:SOURce]:RADio:EDGE:...	–	*This subsystem is not supported.*
GSM Subsystem		
[:SOURce]:RADio:GSM:...	–	*This subsystem is not supported.*
Input Subsystem		
:INPut:BERT[:BASeband]:...	–	*This subsystem is not supported.*
Measure Subsystem		

Table 9-1 E44xxB Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	E44xxB	Remarks
:MEASure...	–	*This subsystem is not supported.*
Multi-Tone Subsystem		
[:SOURce]:RADio:MTONe:ARB:SETup "<file name>" [:SOURce]:RADio:MTONe:ARB:SETup?	✓	
[:SOURce]:RADio:MTONe:ARB:SETup:STORe "<file name>"	✓	
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe <freq_spacing>,<num_tones>{,<phase>, <state>} [:SOURce]:RADio:MTONe:ARB:SETup:TABLe?	✓	
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:FSPacing <freq_spacing> [:SOURce]:RADio:MTONe:ARB:SETup:TABLe:FSPacing?	✓	
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:NTONes <num_tones> [:SOURce]:RADio:MTONe:ARB:SETup:TABLe:NTONes?	✓	
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:PHASe:INITialize FIXed|RANDom [:SOURce]:RADio:MTONe:ARB:SETup:TABLe:PHASe:INITialize?	✓	
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:PHASe:INITialize:SEED FIXed|RANDom [:SOURce]:RADio:MTONe:ARB:SETup:TABLe:PHASe:INITialize:SEED?	✓	
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:ROW <row_number>,<power>,<phase>, <state> [:SOURce]:RADio:MTONe:ARB:SETup:TABLe:ROW? <row_number>	✓	
[:SOURce]:RADio:MTONe:ARB[:STATe] ON|OFF|1|0 [:SOURce]:RADio:MTONe:ARB[:STATe]?	✓	
NADC Subsystem		
[:SOURce]:RADio:NADC:...	–	*This subsystem is not supported.*

Table 9-1 E44xxB Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	E44xxB	Remarks
PDC Subsystem		
[:SOURce]:RADio:PDC:...	–	*This subsystem is not supported.*
PHS Subsystem		
[:SOURce]:RADio:PHS:...	–	*This subsystem is not supported.*
Sense Subsystem		
:SENSe:BERT:...	–	*This subsystem is not supported.*
Tetra Subsystem		
[:SOURce]:RADio:TETRa:...	–	*This subsystem is not supported.*
Wideband CDMA ARB Subsystem		
[:SOURce]:RADio:WCDMa:TGPP:ARB:...	–	*This subsystem is not supported.*
Wideband CDMA BBG Subsystem		
[:SOURce]:RADio:WCDMa:TGPP[:BBG]:...	–	*This subsystem is not supported.*

E4428C/38C Compatible Commands

NOTE The Agilent MXG has only one AM, FM, and PM path. Using AM2, FM2, or PM2 path commands will result in the following error: "ERROR: -113, Undefined Header".

The Agilent MXG has only one internal source for AM, FM and PM, but the INT2 source selection is accepted by the signal generator and is equivalent to selecting INT[1].

The Agilent MXG has three dedicated external sources, one for AM, one for FM/PM and one for Pulse. The EXT2 source selection is accepted by the signal generator, but is equivalent to selecting EXT[1].

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
System Function Commands		
IEEE Common Commands		
*CLS	✓	
*ESE <data> *ESE?	✓	
*ESR?	✓	
*IDN?	✓	
*OPC *OPC?	✓	
*RCL <reg_num>	✓	
*RST	✓	
*SAV <reg_num>	✓	
*SRE <data> *SRE?	✓	
*STB?	✓	
*TRG	✓	
*TST?	✓	
*WAI	✓	
Calibration Subsystem		
:CALibration:DCFM	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:CALibration:IQ	✓	
:CALibration:IQ:DC	✓	
:CALibration:IQ:DEFault	✓	
:CALibration:IQ:FULL	✓	
:CALibration:IQ:STARt <value><units>	✓	
:CALibration:IQ:STARt?	✓	
:CALibration:IQ:STOP <value><units>	✓	
:CALibration:IQ:STOP?	✓	
:CALibration:WBIQ	–	
:CALibration:WBIQ:DC	–	
:CALibration:WBIQ:DEFault	–	
:CALibration:WBIQ:FULL	–	
:CALibration:WBIQ:STARt <value><units>	–	
:CALibration:WBIQ:STARt?	–	
:CALibration:WBIQ:STOP <value><units>	–	
:CALibration:WBIQ:STOP?	–	
Communication Subsystem		
:SYSTem:COMMunicate:GPIB:ADDRess <number>	✓	
:SYSTem:COMMunicate:GPIB:ADDRess?	✓	
:SYSTem:COMMunicate:GTLocal	✓	
:SYSTem:COMMunicate:LAN:CONFig DHCP|MANual	✓	
:SYSTem:COMMunicate:LAN:CONFig?	✓	
:SYSTem:COMMunicate:LAN:GATeway <ipstring>	✓	
:SYSTem:COMMunicate:LAN:GATeway?	✓	
:SYSTem:COMMunicate:LAN:HOSTname <string>	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:SYSTem:COMMunicate:LAN:HOSTname?	✓	
:SYSTem:COMMunicate:LAN:IP <ipstring>	✓	
:SYSTem:COMMunicate:LAN:IP?	✓	
:SYSTem:COMMunicate:LAN:SUBNet <ipstring>	✓	
:SYSTem:COMMunicate:LAN:SUBNet?	✓	
:SYSTem:COMMunicate:PMETer:ADDRess <value>	✓	*Command accepted without error but does nothing.*
:SYSTem:COMMunicate:PMETer:ADDRess?	✓	*Command accepted without error but does nothing.*
:SYSTem:COMMunicate:PMETer:CHANnel A|B	✓	*Command accepted without error but does nothing.*
:SYSTem:COMMunicate:PMETer:CHANnel?	✓	*Command accepted without error but does nothing.*
:SYSTem:COMMunicate:PMETer:IDN E4418B|E4419B|E4416A|E4417A	✓	*Command accepted without error but does nothing.*
:SYSTem:COMMunicate:PMETer:IDN?	✓	*Command accepted without error but does nothing.*
:SYSTem:COMMunicate:PMETer:TIMEout <num>[<time suffix>]	✓	*Command accepted without error but does nothing.*
:SYSTem:COMMunicate:PMETer:TIMEout?	✓	*Command accepted without error but does nothing.*
:SYSTem:COMMunicate:SERial:BAUD <number>	–	
:SYSTem:COMMunicate:SERial:BAUD?	–	
:SYSTem:COMMunicate:SERial:ECHO ON|OFF	–	
:SYSTem:COMMunicate:SERial:ECHO?	–	
:SYSTem:COMMunicate:SERial:RESet	–	
:SYSTem:COMMunicate:SERial:TOUT <value>	–	
:SYSTem:COMMunicate:SERial:TOUT?	–	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
Diagnostic Subsystem		
:DIAGnostic[:CPU]:INFOrmation:BOARds?	–	
:DIAGnostic[:CPU]:INFOrmation:CCOunt:ATTenuator?	✓	
:DIAGnostic[:CPU]:INFOrmation:CCOunt:PON?	✓	
:DIAGnostic[:CPU]:INFOrmation:CCOunt:PROTection?	✓	
:DIAGnostic[:CPU]:INFOrmation:DISPlay:OTIMe?	✓	
:DIAGnostic[:CPU]:INFOrmation:LICense:AUXiliary?	✓	
:DIAGnostic[:CPU]:INFOrmation:LICense:WAVeform?	✓	
:DIAGnostic[:CPU]:INFOrmation:OPTions?	✓	
:DIAGnostic[:CPU]:INFOrmation:OPTions:DETail?	✓	
:DIAGnostic[:CPU]:INFOrmation:OTIMe?	✓	
:DIAGnostic[:CPU]:INFOrmation:REVision?	✓	
:DIAGnostic[:CPU]:INFOrmation:SDATe?	✓	
:DIAGnostic[:CPU]:INFOrmation:WLICense[:VALue]? <waveformType>	✓	
Memory Subsystem		
:MEMory:CATalog:BINary?	✓	
:MEMory:CATalog:BIT?	–	
:MEMory:CATalog:CDMa?	–	
:MEMory:CATalog:DMOD?	✓	
:MEMory:CATalog:DWCDma?	–	
:MEMory:CATalog:FCDMa?	–	
:MEMory:CATalog:FSK?	–	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:MEMory:CATalog:IQ?	–	
:MEMory:CATalog:LIST?	–	
:MEMory:CATalog:MCDMa?	–	
:MEMory:CATalog:MDMod?	✓	
:MEMory:CATalog:MDWCdma?	–	
:MEMory:CATalog:MFCdma?	–	
:MEMory:CATalog:MTONe?	✓	
:MEMory:CATalog:FIR?	✓	
:MEMory:CATalog:RCDMa?	–	
:MEMory:CATalog:SEQ?	✓	
:MEMory:CATalog:SHAPe?	–	
:MEMory:CATalog:STATe?	✓	
:MEMory:CATalog:UFLT?	✓	
:MEMory:CATalog:UPC?	–	
:MEMory:CATalog:UWCDma?	–	
:MEMory:CATalog[:ALL]?	✓	
:MEMory:COPY[:NAME] <"filename">,<"filename">	✓	
:MEMory:DATA <"filename">,<datablock>	✓	
:MEMory:DATA? <"filename">	✓	
:MEMory:DATA:APPend <"filename">,<datablock>	✓	
:MEMory:DATA:BIT <"filename">,<bit_count>,<datablock> :MEMory:DATA:BIT? <"filename">	–	
:MEMory:DATA:FIR <"filename">,osr,coefficient{,coefficient} :MEMory:DATA:FIR? <"filename">	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:MEMory:DATA:FSK <"filename">,num_states,f0,f0,...[,diff_state,num_diff_states,diff0,diff1,...] :MEMory:DATA:FSK? <"filename">	✓	
:MEMory:DATA:PRAM[1]|2|3|4:FILE:BLOCk <"filename">,<datablock>	–	
:MEMory:DATA:PRAM[1]|2|3|4:FILE:LIST <"filename">,<uint8>[,<uint8>,<...>]	–	
:MEMory:DATA:IQ <"filename">,offsetQ,num_states,i0,q0,i1,q1,...[,diff_state,num_diff_states,diff0,diff1,...]	✓	
:MEMory:DATA:IQ? <"filename">	✓	
:MEMory:DATA:SHAPe <"filename">,num_rise_points,rp0,rp1,...num_fall_points,fp0,fp1,... :MEMory:DATA:SHAPe? <"filename">	–	
:MEMory:DATA:UNPRotected <"filename">,<datablock>	✓	
:MEMory:DELete:ALL	✓	
:MEMory:DELete:BINary	✓	
:MEMory:DELete:BIT	–	
:MEMory:DELete:CDMa	–	
:MEMory:DELete:DMOD	✓	
:MEMory:DELete:DWCDma	–	
:MEMory:DELete:FCDMa	–	
:MEMory:DELete:FIR	✓	
:MEMory:DELete:FSK	✓	
:MEMory:DELete:IQ	–	
:MEMory:DELete:LIST	–	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:MEMory:DELete:MCDMa	–	
:MEMory:DELete:MDMod	✓	
:MEMory:DELete:MDWCdma	–	
:MEMory:DELete:MFCdma	–	
:MEMory:DELete:MTONe	✓	
:MEMory:DELete:RCDMa	–	
:MEMory:DELete:SEQ	✓	
:MEMory:DELete:SHAPe	–	
:MEMory:DELete:STATe	–	
:MEMory:DELete:UFLT	✓	
:MEMory:DELete:UPC	–	
:MEMory:DELete:UWCDma	–	
:MEMory:DELete[:NAME] <"filename">	✓	
:MEMory:FREE[:ALL]?	✓	
:MEMory:LOAD:LIST <"filename">	✓	
:MEMory:MOVE <src_file>,<dest_file>	✓	
:MEMory:STATe:COMMent <reg_num>,<seq_num>,<"comment">	✓	
:MEMory:STATe:COMMent? <reg_num>,<seq_num>	✓	
:MEMory:STORe:LIST <"filename">	✓	
:MMEMory:CATalog? <"msus">	✓	
:MMEMory:COPY <"filename">,<"filename">	✓	
:MMEMory:DATA <"filename">,<datablock>	✓	
:MMEMory:DATA? <"filename">	✓	
:MMEMory:DELete:NVWFm	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:MMEMory:DELete:WFM	✓	
:MMEMory:DELete:WFM1	✓	
:MMEMory:DELete[:NAME] <"filename">,[<"msus">]	✓	
:MMEMory:HEADer:CLEar <filename>	✓	
:MMEMory:HEADer:DESCription <"filename">, <"description">	✓	
:MMEMory:HEADer:DESCription? <"filename">	✓	
:MMEMory:LOAD:LIST <"filename">	✓	
:MMEMory:MOVE <src_file>,<dest_file>	✓	
:MMEMory:STORe:LIST <"filename">	✓	
Output Subsystem		
:OUTPut:BLANking:AUTO ON|OFF|1|0 :OUTPut:BLANking:AUTO?	✓	
:OUTPut:BLANking[:STATe] ON|OFF|1|0 :OUTPut:BLANking[:STATe]?	✓	
:OUTPut:MODulation[:STATe] ON|OFF|1|0 :OUTPut:MODulation[:STATe]?	✓	
:OUTPut:PROTection[:STATe] ON|OFF|1|0 :OUTPut:PROTection[:STATe]?	✓	
:OUTPut:SETTled:POLarity NORMal|INVerted :OUTPut:SETTled:POLarity?	–	
:OUTPut:SETTled:RFOFf NORMal|INVerted :OUTPut:SETTled:RFOFf?	–	
:OUTPut:SETTled[:STATe]?	–	
:OUTPut[:STATe] ON|OFF|1|0 :OUTPut[:STATe]?	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
Route Subsystem		
:ROUTe:HARDware:DGENerator:...	–	*This subsystem is not supported.*
Status Subsystem		
:STATus:OPERation:BASeband:CONDition?	✓	
:STATus:OPERation:BASeband:ENABle <value> :STATus:OPERation:BASeband:ENABle?	✓	
:STATus:OPERation:BASeband:NTRansition <value> :STATus:OPERation:BASeband:NTRansition?	✓	
:STATus:OPERation:BASeband:PTRansition <value> :STATus:OPERation:BASeband:PTRansition?	✓	
:STATus:OPERation:BASeband[:EVENt]?	✓	
:STATus:OPERation:CONDition?	✓	
:STATus:OPERation:ENABle <value> :STATus:OPERation:ENABle?	✓	
:STATus:OPERation:NTRansition <value> :STATus:OPERation:NTRansition?	✓	
:STATus:OPERation:PTRansition <value> :STATus:OPERation:PTRansition?	✓	
:STATus:OPERation[:EVENt]?	✓	
:STATus:PRESet:STATus:QUEStionable:CALibration:ENABle <value> :STATus:QUEStionable:CALibration:ENABle?	✓	
:STATus:QUEStionable:BERT:CONDition? :STATus:QUEStionable:BERT:ENABle <value> :STATus:QUEStionable:BERT:ENABle?	–	
:STATus:QUEStionable:BERT:NTRansition <value> :STATus:QUEStionable:BERT:NTRansition?	–	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:STATus:QUEStionable:BERT:PTRansition <value> :STATus:QUEStionable:BERT:PTRansition?	–	
:STATus:QUEStionable:BERT[:EVENt]?	–	
:STATus:QUEStionable:CALibration:CONDition?	–	
:STATus:QUEStionable:CALibration:NTRansition <value> :STATus:QUEStionable:CALibration:NTRansition?	✓	
:STATus:QUEStionable:CALibration:PTRansition <value> :STATus:QUEStionable:CALibration:PTRansition?	✓	
:STATus:QUEStionable:CALibration[:EVENt]? :STATus:QUEStionable:CONDition?	✓	
:STATus:QUEStionable:ENABle <value> :STATus:QUEStionable:ENABle?	✓	
:STATus:QUEStionable:FREQuency:CONDition?	✓	
:STATus:QUEStionable:FREQuency:ENABle <value> :STATus:QUEStionable:FREQuency:ENABle?	✓	
:STATus:QUEStionable:FREQuency:NTRansition <value> :STATus:QUEStionable:FREQuency:NTRansition?	✓	
:STATus:QUEStionable:FREQuency:PTRansition <value> :STATus:QUEStionable:FREQuency:PTRansition?	✓	
:STATus:QUEStionable:FREQuency[:EVENt]?	✓	
:STATus:QUEStionable:MODulation:CONDition?	–	
:STATus:QUEStionable:MODulation:ENABle <value> :STATus:QUEStionable:MODulation:ENABle?	–	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:STATus:QUEStionable:MODulation:NTRansition <value> :STATus:QUEStionable:MODulation:NTRansition?	–	
:STATus:QUEStionable:MODulation:PTRansition <value> :STATus:QUEStionable:MODulation:PTRansition?	–	
:STATus:QUEStionable:MODulation[:EVENt]?	–	
:STATus:QUEStionable:NTRansition <value> :STATus:QUEStionable:NTRansition?	✓	
:STATus:QUEStionable:POWer:CONDition?	✓	
:STATus:QUEStionable:POWer:ENABle <value> :STATus:QUEStionable:POWer:ENABle?	✓	
:STATus:QUEStionable:POWer:NTRansition <value> :STATus:QUEStionable:POWer:NTRansition?	✓	
:STATus:QUEStionable:POWer:PTRansition <value> :STATus:QUEStionable:POWer:PTRansition?	✓	
:STATus:QUEStionable:POWer[:EVENt]?	✓	
:STATus:QUEStionable:PTRansition <value> :STATus:QUEStionable:PTRansition?	✓	
:STATus:QUEStionable[:EVENt]?	✓	
System Subsystem		
:SYSTem:CAPability?	✓	
:SYSTem:DATE <year>,<month>,<day> :SYSTem:DATE?	✓	
:SYSTem:ERRor:SCPI[:SYNTax] ON|OFF|1|0 :SYSTem:ERRor:SCPI[:SYNTax]?	✓	
:SYSTem:ERRor[:NEXT]?	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:SYSTem:FILEsystem:SAFEmode ON|OFF|1|0 :SYSTem:FILEsystem:SAFEmode	–	
:SYSTem:HELP:MODE SINGle	✓	*Supported but the following parameter is not supported:* CONTinuous *Supported but the following query is not supported:* :SYSTem:HELP:MODE?
:SYSTem:IDN "string"	✓	
:SYSTem:LANGuage "SCPI"|"COMP"|"8648" :SYSTem:LANGuage?	✓	*Supported but the following parameters are not supported:* "8340"|"8360"|"83712"|"83732"|"83752"|"8757"|"8662"|"8663"|"NADC"|"PDC"|"PHS"
:SYSTem:PON:TYPE PRESet|LAST :SYSTem:PON:TYPE?	✓	
:SYSTem:PRESet	✓	*Always performs the same action as the* **Preset** *hardkey.* *For related* **Preset** *hardkey information, refer to* ":SYSTem:PRESet:TYPE NORMal|USER :SYSTem:PRESet:TYPE?" on page 592
:SYSTem:PRESet:ALL	✓	
:SYSTem:PRESet:LANGuage "SCPI"|"COMP"|"8648" :SYSTem:PRESet:LANGuage?	✓	*Supported but the following parameters are not supported:* "8340"|"8360"|"83712"|"83732"|"83752"|"8757"|"8662"|"8663"|"NADC"|"PDC"|"PHS"
:SYSTem:PRESet:PERSistent	✓	
:SYSTem:PRESet:PN9 NORMal|QUICk :SYSTem:PRESet:PN9?	–	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:SYSTem:PRESet:TYPE NORMal|USER :SYSTem:PRESet:TYPE?	✓	*This command toggles the* **Preset** *hardkey state between factory- and user-defined conditions.* *The setting enabled by this command is not affected by signal generator power-on, preset, or* *RST. **NOTE** *If the* **Preset** *hardkey is not responding correctly, using the SCPI command:* :SYSTem:PRESet:TYPE NORMal *will return the* **Preset** *hardkey to its default factory behavior.*
:SYSTem:PRESet[:USER]:SAVE	✓	
:SYSTem:SECurity:DISPlay ON|OFF|{1}|0 :SYSTem:SECurity:DISPlay?	✓	
:SYSTem:SECurity:ERASeall	✓	
:SYSTem:SECurity:LEVel {NONE}|ERASe|OVERwrite|SANitize :SYSTem:SECurity:LEVel?	✓	
:SYSTem:SECurity:LEVel:STATe ON|OFF|1|0 :SYSTem:SECurity:LEVel:STATe?	✓	
:SYSTem:SECurity:OVERwrite	✓	
:SYSTem:SECurity:SANitize	✓	
:SYSTem:SSAVer:DELay <value> :SYSTem:SSAVer:DELay?	✓	
:SYSTem:SSAVer:MODE LIGHt|TEXT :SYSTem:SSAVer:MODE?	✓	
:SYSTem:SSAVer:STATe ON|OFF :SYSTem:SSAVer:STATe?	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:SYSTem:TIME <hour>,<minute>,<second> :SYSTem:TIME?	✓	
:SYSTem:VERSion?	✓	
Trigger Subsystem		
:ABORt	✓	
:INITiate:CONTinuous[:ALL] ON|OFF|1|0 :INITiate:CONTinuous[:ALL]?	✓	
:INITiate[:IMMediate][:ALL]	✓	
:TRIGger:OUTPut:POLarity POSitive|NEGative :TRIGger:OUTPut:POLarity?	✓	
:TRIGger[:SEQuence]:SLOPe POSitive|NEGative :TRIGger[:SEQuence]:SLOPe?	✓	
:TRIGger[:SEQuence]:SOURce BUS|IMMediate|EXTernal|KEY :TRIGger[:SEQuence]:SOURce?	✓	
:TRIGger[:SEQuence][:IMMediate]	✓	
Unit Subsystem		
:UNIT:POWer DBM|DBUV|DBUVEMF|V|VEMF|DB :UNIT:POWer?	✓	
Amplitude Modulation Subsystem		
[:SOURce]:AM:INTernal:FREQuency:STEP[:INCRement] <num> [:SOURce]:AM:INTernal:FREQuency:STEP[:INCRement]?	✓	
[:SOURce]:AM:MODE DEEP	✓	
[:SOURce]:AM:MODE NORMal [:SOURce]:AM:MODE?	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:AM:WIDeband:STATe OFF|0 [:SOURce]:AM:WIDeband:STATe?	✓	
[:SOURce]:AM[1]|2:EXTernal[1]|2:COUPling AC|DC [:SOURce]:AM[1]|2:EXTernal[1]|2:COUPling?	✓	
[:SOURce]:AM[1]|2:EXTernal[1]|2:IMPedance <50|600> [:SOURce]:AM[1]|2:EXTernal[1]|2:IMPedance?	✓	*Command accepted without error but does nothing.*
[:SOURce]:AM[1]|2:INTernal[1]:FREQuency:ALTernate <value><unit> [:SOURce]:AM[1]|2:INTernal[1]:FREQuency:ALTernate?	–	
[:SOURce]:AM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent <value><unit> [:SOURce]:AM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent?	–	
[:SOURce]:AM[1]|2:INTernal[1]|2:FUNCtion:SHAPe SINE [:SOURce]:AM[1]|2:INTernal[1]|2:FUNCtion:SHAPe?	✓	*Supported but the following parameters are not supported:* "TRIangle"|"SQUare"|"RAMP"|"NOISe"|"DUALsine"|"SWEPtsine"
[:SOURce]:AM[1]|2:INTernal[1]|2:FUNCtion:NOISe GAUSsian|UNIForm [:SOURce]:AM[1]|2:INTernal[1]|2:FUNCtion:NOISe?	–	
[:SOURce]:AM[1]|2:INTernal[1]|2:FUNCtion:RAMP POSitive|NEGative [:SOURce]:AM[1]|2:INTernal[1]|2:FUNCtion:RAMP?	–	
[:SOURce]:AM[1]|2:INTernal[1]:SWEep:RATE <value><unit> [:SOURce]:AM[1]|2:INTernal[1]:SWEep:RATE?	–	
[:SOURce]:AM[1]|2:INTernal[1]:SWEep:TIME <value><unit> [:SOURce]:AM[1]|2:INTernal[1]:SWEep:TIME?	–	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:AM[1]|2:INTernal[1]:SWEep:TRIGger IMMediate|KEY|EXTernal|BUS [:SOURce]:AM[1]|2:INTernal[1]:SWEep:TRIGger?	–	
[:SOURce]:AM[1]|2[:DEPTh]:EXPonential <value> [:SOURce]:AM[1]|2[:DEPTh]:EXPonential?	–	
[:SOURce]:AM[1]|2[:DEPTh][:LINear]:TRACk ON|OFF|1|0 [:SOURce]:AM[1]|2[:DEPTh][:LINear]:TRACk?	–	
[:SOURce]:AM[1]|2:INTernal[1]|2:FREQuency <value><unit>|UP|DOWN [:SOURce]:AM[1]|2:INTernal[1]|2:FREQuency?	✓	
[:SOURce]:AM[1]|2:POLarity NORMal|INVerted [:SOURce]:AM[1]|2:POLarity?	✓	
[:SOURce]:AM[1]|2:SOURce INT[1]|INT2|EXT[1]|EXT2 [:SOURce]:AM[1]|2:SOURce?	✓	*The Agilent MXG accepts the* EXT2 *parameter but only has a single external output and selects* EXT *on the signal generator if* EXT2 *is used.*
[:SOURce]:AM[1]|2:STATe ON|OFF|1|0 [:SOURce]:AM[1]|2:STATe?	✓	
[:SOURce]:AM[1]|2:TYPE LINear|EXPonential [:SOURce]:AM[1]|2:TYPE?	✓	
[:SOURce]:AM:WIDeband:SENSitivity <value> [:SOURce]:AM:WIDeband:SENSitivity?	–	
[:SOURce]:AM:WIDeband:STATe ON|1	–	
[:SOURce]:AM[1]|2[:DEPTh][:LINear] <value><unit>|UP|DOWN [:SOURce]:AM[1]|2[:DEPTh][:LINear]?	✓	
[:SOURce]:AM[:DEPTh]:STEP[:INCRement] <value><unit> [:SOURce]:AM[:DEPTh]:STEP[:INCRement]?	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
Frequency Subsystem		
[:SOURce]:FREQuency:CENTer <num>[<freq suffix>]|MAXimum|MINimum|UP|DOWN [:SOURce]:FREQuency:CENTer? [MAXimum|MINimum]	✓	
[:SOURce]:FREQuency:CHANnels:BAND NBASe|NMOBile|BPGSm|MPGSm|BEGSm|MEGSm|BRGSm|MRGSm|GM450|M480|M850|B450|B480|B850BDCS|MDCS|BPCS|MPCS|B8|M8|B15|M15|B390|B420|B460|B915|M380|M410|M450|M870|PHS|DECT [:SOURce]:FREQuency:CHANnels:BAND?	✓	
[:SOURce]:FREQuency:CHANnels:NUMBer <number> [:SOURce]:FREQuency:CHANnels:NUMBer?	✓	
[:SOURce]:FREQuency:CHANnels[:STATe] ON|OFF|1|0 [:SOURce]:FREQuency:CHANnels[:STATe]?	✓	
[:SOURce]:FREQuency:FIXed <value><unit>|UP|DOWN [:SOURce]:FREQuency:FIXed?	✓	
[:SOURce]:FREQuency:MANual <value><unit> [:SOURce]:FREQuency:MANual?	–	
[:SOURce]:FREQuency:MODE FIXed|CW|SWEep|LIST [:SOURce]:FREQuency:MODE?	✓	
[:SOURce]:FREQuency:MULTiplier <value> [:SOURce]:FREQuency:MULTiplier?	✓	
[:SOURce]:FREQuency:OFFSet <value><unit> [:SOURce]:FREQuency:OFFSet?	✓	
[:SOURce]:FREQuency:OFFSet:STATe ON|OFF [:SOURce]:FREQuency:OFFSet:STATe?	✓	
[:SOURce]:FREQuency:REFerence <value><unit> [:SOURce]:FREQuency:REFerence?	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:FREQuency:REFerence:SET	✓	
[:SOURce]:FREQuency:REFerence:STATe ON|OFF|1|0 [:SOURce]:FREQuency:REFerence:STATe?	✓	
[:SOURce]:FREQuency:SPAN <num>[<freq suffix>]|MAXimum|MINimum|UP|DOWN [:SOURce]:FREQuency:SPAN? [MAXimum|MINimum]	✓	
[:SOURce]:FREQuency:STARt <value><unit> [:SOURce]:FREQuency:STARt?	✓	
[:SOURce]:FREQuency:STOP <value><unit> [:SOURce]:FREQuency:STOP?	✓	
[:SOURce]:FREQuency:SYNThesis <value> [:SOURce]:FREQuency:SYNThesis?	–	
[:SOURce]:FREQuency[:CW] <value><unit> |UP|DOWN [:SOURce]:FREQuency[:CW]?	✓	
[:SOURce]:FREQuency[:CW]:STEP[:INCRement] <value><unit> [:SOURce]:FREQuency[:CW]:STEP[:INCRement]?	✓	
[:SOURce]:FREQuency[:FIXed]:STEP[:INCRement] <value><unit> [:SOURce]:FREQuency[:FIXed]:STEP[:INCRement]?	✓	
[:SOURce]:PHASe:REFerence	✓	
[:SOURce]:PHASe[:ADJust] <value><unit> [:SOURce]:PHASe[:ADJust]?	✓	
[:SOURce]:ROSCillator:BANDwidth:DEFaults	–	
[:SOURce]:ROSCillator:BANDwidth:EXTernal <value> [:SOURce]:ROSCillator:BANDwidth:EXTernal?	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:ROSCillator:BANDwidth:INTernal <value> [:SOURce]:ROSCillator:BANDwidth:INTernal?	–	
[:SOURce]:ROSCillator:SOURce?	✓	
[:SOURce]:ROSCillator:SOURce:AUTO ON|OFF|1|0 [:SOURce]:ROSCillator:SOURce:AUTO?	✓	
Frequency Modulation Subsystem		
[:SOURce]:FM[1]|2:EXTernal[1]|2:COUPling AC|DC [:SOURce]:FM[1]|2:EXTernal[1]|2:COUPling?	✓	
[:SOURce]:FM[1]|2:EXTernal[1]|2:IMPedance <50|600> [:SOURce]:FM[1]|2:EXTernal[1]|2:IMPedance?	✓	*Command accepted without error but does nothing.*
[:SOURce]:FM:INTernal:FREQuency:STEP[:INCRement] <num> [:SOURce]:FM:INTernal:FREQuency:STEP[:INCRement]?	✓	
[:SOURce]:FM[1]|2:INTernal[1]:FUNCtion:SHAPe SINE [:SOURce]:FM[1]|2:INTernal[1]:FUNCtion:SHAPe?	✓	*Supported but the following parameters are not supported:* TRIangle|SQUare|RAMP|NOISe|DUALsine|SWEPtsine
[:SOURce]:FM[1]|2:INTernal[1]|2:FREQuency <value><unit> [:SOURce]:FM[1]|2:INTernal[1]|2:FREQuency?	✓	
[:SOURce]:FM[1]|2:INTernal[1]:FREQuency:ALTernate <value><unit> [:SOURce]:FM[1]|2:INTernal[1]:FREQuency:ALTernate?	–	
[:SOURce]:FM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent <value><unit> [:SOURce]:FM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent?	–	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:FM[1]|2:INTernal[1]|2:FUNCtion:NOISe GAUSsian|UNIForm [:SOURce]:FM[1]|2:INTernal[1]|2:FUNCtion:NOISe?	–	
[:SOURce]:FM[1]|2:INTernal[1]|2:FUNCtion:RAMP POSitive|NEGative [:SOURce]:FM[1]|2:INTernal[1]|2:FUNCtion:RAMP?	–	
[:SOURce]:FM[1]|2:INTernal[1]:SWEep:RATE <value><unit> [:SOURce]:FM[1]|2:INTernal[1]:SWEep:RATE?	–	
[:SOURce]:FM[1]|2:SOURce INT[1]|INT2|EXT[1]|EXT2 [:SOURce]:FM[1]|2:SOURce?	✓	*The Agilent MXG accepts the* EXT2 *parameter but only has a single external output and selects* EXT *on the signal generator if* EXT2 *is used.*
[:SOURce]:FM[1]|2:STATe ON|OFF|1|0 [:SOURce]:FM[1]|2:STATe?	✓	
[:SOURce]:FM[1]|2[:DEViation] <value><unit> [:SOURce]:FM[1]|2[:DEViation]?	✓	
[:SOURce]:FM[1]|2:INTernal[1]:SWEep:TIME <value><unit> [:SOURce]:FM[1]|2:INTernal[1]:SWEep:TIME?	–	
[:SOURce]:FM[1]|2:INTernal[1]:SWEep:TRIGger IMMediate|KEY|EXTernal|BUS [:SOURce]:FM[1]|2:INTernal[1]:SWEep:TRIGger?	–	
[:SOURce]:FM[1]|2[:DEViation]:TRACk ON|OFF|1|0 [:SOURce]:FM[1]|2[:DEViation]:TRACk?	–	
List/Sweep Subsystem		
[:SOURce]:LIST:DIRection UP|DOWN [:SOURce]:LIST:DIRection?	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:LIST:DWELl <value>{,<value>} [:SOURce]:LIST:DWELl?	✓	
[:SOURce]:LIST:DWELl:POINts?	✓	
[:SOURce]:LIST:DWELl:TYPE LIST|STEP [:SOURce]:LIST:DWELl:TYPE?	✓	
[:SOURce]:LIST:FREQuency <value>{,<value>} [:SOURce]:LIST:FREQuency?	✓	
[:SOURce]:LIST:FREQuency:POINts?	✓	
[:SOURce]:LIST:MANual <value>|UP|DOWN [:SOURce]:LIST:MANual?	✓	
[:SOURce]:LIST:MODE AUTO|MANual [:SOURce]:LIST:MODE?	✓	
[:SOURce]:LIST:POWer <value>{,<value>} [:SOURce]:LIST:POWer?	✓	
[:SOURce]:LIST:POWer:POINts?	✓	
[:SOURce]:LIST:RETRace ON|OFF|0|1 [:SOURce]:LIST:RETRace?	✓	
[:SOURce]:LIST:TRIGger:SOURce BUS|IMMediate|EXTernal|KEY [:SOURce]:LIST:TRIGger:SOURce?	✓	
[:SOURce]:LIST:TYPE LIST|STEP [:SOURce]:LIST:TYPE?	✓	
[:SOURce]:LIST:TYPE:LIST:INITialize:FSTep	✓	
[:SOURce]:LIST:TYPE:LIST:INITialize:PRESet	✓	
[:SOURce]:SWEep:CONTrol:STATe ON|OFF|1|0 [:SOURce]:SWEep:CONTrol:STATe?	–	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:SWEep:CONTrol:TYPE MASTer|SLAVe [:SOURce]:SWEep:CONTrol:TYPE?	–	
[:SOURce]:SWEep:DWELl <value> [:SOURce]:SWEep:DWELl?	✓	
[:SOURce]:SWEep:GENeration ANALog|STEPped [:SOURce]:SWEep:GENeration?	✓	*Command accepted without error but does nothing.*
[:SOURce]:SWEep:MODE AUTO|MANual [:SOURce]:SWEep:MODE?	✓	
[:SOURce]:SWEep:POINts <value> [:SOURce]:SWEep:POINts?	✓	
[:SOURce]:SWEep:TIME 10mS - 99S [:SOURce]:SWEep:TIME?	–	
[:SOURce]:SWEep:TIME:AUTO ON|OFF|0|1 [:SOURce]:SWEep:TIME:AUTO?	–	
Low Frequency Output Subsystem		
[:SOURce]:LFOutput:...	–	*This subsystem is not supported.*
Phase Modulation Subsystem		
[:SOURce]:PM[1]|2:INTernal[1]:FREQuency:ALTernate <value><unit> [:SOURce]:PM[1]|2:INTernal[1]:FREQuency:ALTernate?	–	
[:SOURce]:PM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent <value><unit> [:SOURce]:PM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent?	–	
[:SOURce]:PM:INTernal:FREQuency:STEP[:INCRement] [:SOURce]:PM:INTernal:FREQuency:STEP[:INCRement]?	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:PM[1]|2:BANDwidth|BWIDth NORMal|HIGH [:SOURce]:PM[1]|2:BANDwidth|BWIDth?	✓	
[:SOURce]:PM[1]|2:EXTernal[1]:COUPling AC|DC [:SOURce]:PM[1]|2:EXTernal[1]:COUPling?	✓	
[:SOURce]:PM[1]|2:EXTernal[1]|2:IMPedance <50|600> [:SOURce]:PM[1]|2:EXTernal[1]|2:IMPedance?	✓	
[:SOURce]:PM[1]|2:INTernal[1]|2:FREQuency <value><unit> [:SOURce]:PM[1]|2:INTernal[1]|2:FREQuency?	✓	
[:SOURce]:PM[1]|2:INTernal[1]|2:FUNCtion:NOISe GAUSsian|UNIForm [:SOURce]:PM[1]|2:INTernal[1]|2:FUNCtion:NOISe?	–	
[:SOURce]:PM[1]|2:INTernal[1]|2:FUNCtion:RAMP POSitive|NEGative [:SOURce]:PM[1]|2:INTernal[1]|2:FUNCtion:RAMP?	–	
[:SOURce]:PM[1]|2:INTernal[1]:FUNCtion:SHAPe SINE [:SOURce]:PM[1]|2:INTernal[1]:FUNCtion:SHAPe?	✓	*Supported but the following parameters are not supported:* TRIangle|SQUare|RAMP|NOISe|DUALsine|SWEPtsine
[:SOURce]:PM[1]|2:INTernal[1]:SWEep:RATE <value><unit> [:SOURce]:PM[1]|2:INTernal[1]:SWEep:RATE?	–	
[:SOURce]:PM[1]|2:INTernal[1]:SWEep:TIME <value><unit> [:SOURce]:PM[1]|2:INTernal[1]:SWEep:TIME?	–	
[:SOURce]:PM[1]|2:INTernal[1]:SWEep:TRIGger IMMediate|KEY|EXTernal|BUS [:SOURce]:PM[1]|2:INTernal[1]:SWEep:TRIGger?	–	
[:SOURce]:PM[1]|2[:DEViation]:TRACk ON|OFF|1|0 [:SOURce]:PM[1]|2[:DEViation]:TRACk?	–	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:PM[1]|2:SOURce INT[1]|INT2|EXT[1]|EXT2 [:SOURce]:PM[1]|2:SOURce?	✓	*The Agilent MXG accepts the* EXT2 *parameter but only has a single external output and selects* EXT *on the signal generator if* EXT2 *is used.*
[:SOURce]:PM[1]|2:STATe ON|OFF|1|0 [:SOURce]:PM[1]|2:STATe?	✓	
[:SOURce]:PM[1]|2[:DEViation] <value><unit> [:SOURce]:PM[1]|2[:DEViation]?	✓	
[:SOURce]:PM[:DEViation]:STEP[:INCRement] <value><unit> [:SOURce]:PM[:DEViation]:STEP[:INCRement]?	✓	
Power Subsystem		
[:SOURce]:POWer:ALC:BANDwidth|BWIDth <num>[freq suffix] [:SOURce]:POWer:ALC:BANDwidth|BWIDth?	✓	
[:SOURce]:POWer:ALC:BANDwidth|BWIDth:AUTO ON|OFF|1|0 [:SOURce]:POWer:ALC:BANDwidth|BWIDth:AUTO?	✓	
[:SOURce]:POWer:ALC:LEVel <value>dB [:SOURce]:POWer:ALC:LEVel?	✓	
[:SOURce]:POWer:ALC:SEARch ON|OFF|1|0|ONCE [:SOURce]:POWer:ALC:SEARch?	✓	
[:SOURce]:POWer:ALC:SEARch:REFerence FIXed|MODulated [:SOURce]:POWer:ALC:SEARch:REFerence?	✓	
[:SOURce]:POWer:ALC:SEARch:SPAN:POINts <value> [:SOURce]:POWer:ALC:SEARch:SPAN:POINts?	✓	
[:SOURce]:POWer:ALC:SEARch:SPAN:STARt <value><units> [:SOURce]:POWer:ALC:SEARch:SPAN:STARt?	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:POWer:ALC:SEARch:SPAN:STOP <value><units> [:SOURce]:POWer:ALC:SEARch:SPAN:STOP?	✓	
[:SOURce]:POWer:ALC:SEARch:SPAN:TYPE FULL|USER [:SOURce]:POWer:ALC:SEARch:SPAN:TYPE?	✓	
[:SOURce]:POWer:ALC:SEARch:SPAN[:STATe] ON|OFF|1|0 [:SOURce]:POWer:ALC:SEARch:SPAN[:STATe]?	✓	
[:SOURce]:POWer:ALC:SOURce INTernal|DIODe|MMHead [:SOURce]:POWer:ALC:SOURce?	✓	*Supported on the N5183A only. But the following parameter is not supported:* MMHead.
[:SOURce]:POWer:ALC:SOURce:EXTernal:COUPling (0dB-32dB) [:SOURce]:POWer:ALC:SOURce:EXTernal:COUPling?	–	
[:SOURce]:POWer:ALC[:STATe] ON|OFF|1|0 [:SOURce]:POWer:ALC[:STATe]?	✓	
[:SOURce]:POWer:ALTernate:AMPLitude <value>dB [:SOURce]:POWer:ALTernate:AMPLitude?	–	
[:SOURce]:POWer:ALTernate:MANual MAIN|DELTa [:SOURce]:POWer:ALTernate:MANual?	–	
[:SOURce]:POWer:ALTernate:STATe ON|OFF|1|0 [:SOURce]:POWer:ALTernate:STATe?	–	
[:SOURce]:POWer:ALTernate:TRIGger[:SOURce] INTernal|EXTernal|MANual [:SOURce]:POWer:ALTernate:TRIGger[:SOURce]?	–	
[:SOURce]:POWer:ATTenuation <value><unit> [:SOURce]:POWer:ATTenuation?	✓	
[:SOURce]:POWer:ATTenuation:AUTO ON|OFF|1|0 [:SOURce]:POWer:ATTenuation:AUTO?	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:POWer:MODE FIXed|LIST|SWEep [:SOURce]:POWer:MODE?	✓	
[:SOURce]:POWer:PROTection[:STATe] ON|OFF|1|0 [:SOURce]:POWer:PROTection[:STATe]?	✓	
[:SOURce]:POWer:REFerence <value><unit> [:SOURce]:POWer:REFerence?	✓	
[:SOURce]:POWer:REFerence:STATe ON|OFF|1|0 [:SOURce]:POWer:REFerence:STATe?	✓	
[:SOURce]:POWer:STARt <value><unit> [:SOURce]:POWer:STARt?	✓	
[:SOURce]:POWer:STOP <value><unit> [:SOURce]:POWer:STOP?	✓	
[:SOURce]:POWer[:LEVel][:IMMediate]:OFFSet <value><unit> [:SOURce]:POWer[:LEVel][:IMMediate]:OFFSet?	✓	
[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude] <value><unit> |UP|DOWN [:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]?	✓	
[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]:STEP[:INCRement] <value> [:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]:STEP[:INCRement]?	✓	
Pulse Modulation Subsystem		
[:SOURce]:PULM:EXTernal:POLarity NORMal|INVerted [:SOURce]:PULM:EXTernal:POLarity?	✓	
[:SOURce]:PULM:INTernal[1]:DELay <delay>|UP|DOWN [:SOURce]:PULM:INTernal[1]:DELay? [UP|DOWN]	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:PULM:INTernal[1]:DELay:STEP <step> [:SOURce]:PULM:INTernal[1]:DELay:STEP?	✓	
[:SOURce]:PULM:INTernal[1]:FREQuency <frequency>|MAXimum|MINimum|UP|DOWN [:SOURce]:PULM:INTernal[1]:FREQuency?	✓	
[:SOURce]:PULM:INTernal[1]:FREQuency:STEP[:INCRement] <freq>|MAXimum|MINimum|DEFault [:SOURce]:PULM:INTernal[1]:FREQuency:STEP[:INCRement]? [MIN|MAX|DEF]	✓	
[:SOURce]:PULM:INTernal[1]:FUNCtion:SHAPe SQUare|PULSe [:SOURce]:PULM:INTernal[1]:FUNCtion:SHAPe?	✓	
[:SOURce]:PULM:INTernal[1]:PERiod <period>|MAXimum|MINimum|UP|DOWN [:SOURce]:PULM:INTernal[1]:PERiod?	✓	
[:SOURce]:PULM:INTernal[1]:PERiod:STEP[:INCRement] <step>|UP|DOWN [:SOURce]:PULM:INTernal[1]:PERiod:STEP[:INCRement]?	✓	
[:SOURce]:PULM:INTernal[1]:PWIDth <width> [:SOURce]:PULM:INTernal[1]:PWIDth?	✓	
[:SOURce]:PULM:INTernal[1]:PWIDth:STEP <step>|DEFault|MAXimum|MINimum [:SOURce]:PULM:INTernal[1]:PWIDth:STEP?	✓	
[:SOURce]:PULM:SOURce INT|EXT[1]|EXT2 [:SOURce]:PULM:SOURce?	✓	*Supported but the following parameters are not supported:* |SCALar| *Also, the Agilent MXG accepts the* EXT2 *parameter but only has a single external output and selects* EXT *on the signal generator if* EXT2 *is used.*

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:PULM:SOURce:INTernal SQUare|FRUN|TRIGgered|DOUBlet|GATEd [:SOURce]:PULM:SOURce:INTernal?	✓	
[:SOURce]:PULM:STATe ON|OFF|1|0 [:SOURce]:PULM:STATe?	✓	
Digital Function Commands		
All Modulation Subsystem		
[:SOURce]:RADio[1]:ALL:OFF	✓	
AWGN ARB Subsystem		
[:SOURce]:RADio[1]:AWGN...	–	*This subsystem is not supported.*
AWGN Real Time Subsystem		
[:SOURce]:RADio:AWGN:RT:BWIDth <val> [:SOURce]:RADio:AWGN:RT:BWIDth?	✓	
[:SOURce]:RADio:AWGN:RT[:STATe] ON|OFF|1|0 [:SOURce]:RADio:AWGN:RT[:STATe]?	✓	
Bluetooth Subsystem		
[:SOURce]:RADio[1]:BLUEtooth:ARB:...	–	*This subsystem is not supported.*
Calculate Subsystem		
:CALCulate:BERT:BTS:LOOPback:...	–	*This subsystem is not supported.*
CDMA ARB Subsystem		
[:SOURce]:RADio[1]:CDMA:ARB:...	–	*This subsystem is not supported.*
Custom Subsystem		
[:SOURce]:RADio[1]:CUSTom:...	–	*This subsystem is not supported.*
Data Subsystem		
:DATA:BERT:...	–	*This subsystem is not supported.*
DECT Subsystem		

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio[1]:DECT:...	–	*This subsystem is not supported.*
Dmodulation Subsystem		
[:SOURce]:RADio:DMODulation:ARB:FILTer RNYQuist|NYQuist|GAUSsian|RECTangle|IS95|IS95_EQ|IS95_MOD|IS95_MOD_EQ|WCDMa|AC4Fm|IS2000SR3DS|UGGaussian|"user FIR" [:SOURce]:RADio:DMODulation:ARB:FILTer?	✓	
[:SOURce]:RADio:DMODulation:ARB:FILTer:ALPHa <value> [:SOURce]:RADio:DMODulation:ARB:FILTer:ALPHa?	✓	
[:SOURce]:RADio:DMODulation:ARB:FILTer:BBT <value> [:SOURce]:RADio:DMODulation:ARB:FILTer:BBT?	✓	
[:SOURce]:RADio:DMODulation:ARB:FILTer:CHANnel EVM|ACP [:SOURce]:RADio:DMODulation:ARB:FILTer:CHANnel?	✓	
[:SOURce]:RADio:DMODulation:ARB:HEADer:CLEar	✓	
[:SOURce]:RADio:DMODulation:ARB:HEADer:SAVE	✓	
[:SOURce]:RADio:DMODulation:ARB:IQ:EXTernal:FILTer 40e6|THRough [:SOURce]:RADio:DMODulation:ARB:IQ:EXTernal:FILTer?	✓	*Command accepted without error but does nothing.* *Queries return a fixed valid answer.*
[:SOURce]:RADio:DMODulation:ARB:IQ:EXTernal:FILTer:AUTO ON|OFF|1|0 [:SOURce]:RADio:DMODulation:ARB:IQ:EXTernal:FILTer:AUTO?	✓	*Command accepted without error but does nothing.* *Queries return a fixed valid answer.*
[:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:ATTen <val><unit> [:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:ATTen?	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:ATTen:AUTO ON|OFF|1|0 [:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:ATTen:AUTO?	✓	
[:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:FILTer 2.1e6|40e6|THRough [:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:FILTer?	✓	*Command accepted without error but does nothing.* *Queries return a fixed valid answer.*
[:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:FILTer:AUTO ON|OFF|1|0 [:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:FILTer:AUTO?	✓	*Command accepted without error but does nothing.* *Queries return a fixed valid answer.*
[:SOURce]:RADio:DMODulation:ARB:MDEStination:AAMPlitude {NONE}|M1|M2|M3|M4 [:SOURce]:RADio:DMODulation:ARB:MDEStination:AAMPlitude?	–	
[:SOURce]:RADio:DMODulation:ARB:MDEStination:ALCHold {NONE}|M1|M2|M3|M4 [:SOURce]:RADio:DMODulation:ARB:MDEStination:ALCHold?	✓	
[:SOURce]:RADio:DMODulation:ARB:MDEStination:PULSe {NONE}|M1|M2|M3|M4 [:SOURce]:RADio:DMODulation:ARB:MDEStination:PULSe?	✓	
[:SOURce]:RADio:DMODulation:ARB:MODulation:ASK[:DEPTh] <0% - {100%}> [:SOURce]:RADio:DMODulation:ARB:MODulation:ASK[:DEPTh]?	✓	
[:SOURce]:RADio:DMODulation:ARB:MODulation:FSK[:DEViation] <val><unit> [:SOURce]:RADio:DMODulation:ARB:MODulation:FSK[:DEViation]?	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio:DMODulation:ARB:MODulation[:TYPE] ASK|BPSK|QPSK|IS95QPSK|GRAYQPSK|OQPSK|IS95OQPSK|P4DQPSK|PSK8|PSK16|D8PSK|EDGE|MSK|FSK2|FSK4|FSK8|FSK16|C4FM|QAM4|QAM16|QAM32|QAM64|QAM128|QAM256 [:SOURce]:RADio:DMODulation:ARB:MODulation[:TYPE]?	✓	
[:SOURce]:RADio:DMODulation:ARB:MPOLarity:MARKer1|2|3|4 NEGative|{POSitive} [:SOURce]:RADio:DMODulation:ARB:MPOLarity:MARKer1|2|3|4?	✓	
[:SOURce]:RADio:DMODulation:ARB:REFerence:EXTernal:FREQuency <value> [:SOURce]:RADio:DMODulation:ARB:REFerence:EXTernal:FREQuency?	✓	
[:SOURce]:RADio:DMODulation:ARB:REFerence[:SOURce] INTernal|EXTernal [:SOURce]:RADio:DMODulation:ARB:REFerence[:SOURce]?	✓	
[:SOURce]:RADio:DMODulation:ARB:RETRigger ON|OFF|IMMediate [:SOURce]:RADio:DMODulation:ARB:RETRigger?	✓	
[:SOURce]:RADio:DMODulation:ARB:SCLock:RATE <1Hz - 1.0e8 kHz {1.0e8 kHz}> [:SOURce]:RADio:DMODulation:ARB:SCLock:RATE?	✓	
[:SOURce]:RADio:DMODulation:ARB:SETup GSM|NADC|PDC|PHS|DECT|AC4Fm|ACQPsk|CDPD|PWT|EDGE|TETRa|MCARrier|"file name" [:SOURce]:RADio:DMODulation:ARB:SETup?	✓	
[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier (GSM|NADC|PDC|PHS|DECT|AC4Fm|ACQPsk|CDPD|PWT|EDGE|TETRa,<num carriers>,<freq spacing>) | "file name" [:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier?	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:PHASe {FIXed}|RANDom [:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:PHASe?	✓	
[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:STORe "file name"	✓	
[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:TABLe INIT|APPend|<carrier_num>,GSM|NADC|PDC|PHS|DECT|AC4Fm|ACQPsk|CDPD|PWT|EDGE|TETRa|"file name",<freq_offset>,<power> [:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:TABLe? <carrier_num>	✓	
[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:TABLe:NCARriers?	✓	
[:SOURce]:RADio:DMODulation:ARB:SETup:STORe "file name" [:SOURce]:RADio:DMODulation:ARB:SRATe <value> [:SOURce]:RADio:DMODulation:ARB:SRATe?	–	
[:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE :CONTinuous[:TYPE] FREE|TRIGger|RESet [:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE :CONTinuous[:TYPE]?	✓	
[:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE CONTinuous|SINGle|GATE [:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE?	✓	
[:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE:GATE LOW|HIGH [:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE:GATE?	✓	
[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce] KEY|BUS|EXT [:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]?	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal:DELay <value> [:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal:DELay?	✓	
[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal:DELay:STATe ON|OFF|1|0 [:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal:DELay:STATe?	✓	
[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal:SLOPe POSitive|NEGative [:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal:SLOPe?	✓	
[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal[:SOURce] EPT1|EPT2|EPTRIGGER1|EPTRIGGER2 [:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal[:SOURce]?	✓	
[:SOURce]:RADio:DMODulation:ARB[:STATe] ON|OFF|1|0 [:SOURce]:RADio:DMODulation:ARB[:STATe]?	✓	
Digital Subsystem		
:DIGital...	–	*This subsystem is not supported.*
Digital Modulation Subsystem		
[:SOURce]:BURSt:SOURce INTernal[1]	✓	*Supported but the following parameter is not supported:* EXTernal[1] *Supported but the following query is not supported:* [:SOURce]:BURSt:SOURce?
[:SOURce]:BURSt:STATe ON|OFF|1|0 [:SOURce]:BURSt:STATe?	✓	
[:SOURce]:BURSt:TYPE:EXT LOG|LIN [:SOURce]:BURSt:TYPE:EXT?	–	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:BURSt:TYPE:INT LOG|LIN [:SOURce]:BURSt:TYPE:INT?	–	
[:SOURce]:BURSt:TYPE[:ALL] LOG|LIN	–	
[:SOURce]:DM:EXTernal:FILTer 40e6|THRough	✓	*Commands are accepted without error by the signal generator, but no action occurs. But the following query is not supported:* [:SOURce]:DM:EXTernal:FILTer? *If the query is used, the following error is generated:* –113, Undefined header
[:SOURce]:DM:EXTernal:FILTer:AUTO ON|OFF|1|0	✓	*Supported but the following query is not supported:* [:SOURce]:DM:EXTernal:FILTer:AUTO? *If the query is used, the following error is generated:* –113, Undefined header
[:SOURce]:DM:EXTernal:HCRest[:STATe] ON|OFF|1|0 [:SOURce]:DM:EXTernal:HCRest[:STATe]?	✓	
[:SOURce]:DM:EXTernal:POLarity NORMal|INVert|INVerted [:SOURce]:DM:EXTernal:POLarity?	✓	
[:SOURce]:DM:EXTernal:SOURce EXTernal|INTernal|BBG1|OFF|SUM [:SOURce]:DM:EXTernal:SOURce?	✓	*Supported but the following parameters are not supported:* |BBG2|BBG3|BBG4|EXT600|
[:SOURce]:DM:IQADjustment:BBG[1]|2:DELay <value><unit> [:SOURce]:DM:IQADjustment:BBG[1]|2:DELay?	✓	
[:SOURce]:DM:IQADjustment:BBG[1]|2:DELay:EVENts ON|OFF|1|0 [:SOURce]:DM:IQADjustment:BBG[1]|2:DELay:EVENts?	✓	
[:SOURce]:DM:IQADjustment:BBG[1]|2:SKEW:PATH {RF}|BB [:SOURce]:DM:IQADjustment:BBG[1]|2:SKEW:PATH?	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:DM:IQADjustment:BBG[1]|2:SKEW[:DELay] <value><unit> [:SOURce]:DM:IQADjustment:BBG[1]|2:SKEW[:DELay]?	✓	
[:SOURce]:DM:IQADjustment:EXTernal:COFFset <value><unit> [:SOURce]:DM:IQADjustment:EXTernal:COFFset?	✓	
[:SOURce]:DM:IQADjustment:EXTernal:DIOFfset <value><unit> [:SOURce]:DM:IQADjustment:EXTernal:DIOFfset?	✓	
[:SOURce]:DM:IQADjustment:EXTernal:DQOFfset <value><unit> [:SOURce]:DM:IQADjustment:EXTernal:DQOFfset?	✓	
[:SOURce]:DM:IQADjustment:EXTernal:IOFFset <value><unit> [:SOURce]:DM:IQADjustment:EXTernal:IOFFset?	✓	
[:SOURce]:DM:IQADjustment:EXTernal:IQATten <value><unit> [:SOURce]:DM:IQADjustment:EXTernal:IQATten?	–	
[:SOURce]:DM:IQADjustment:EXTernal:QOFFset <value><unit> [:SOURce]:DM:IQADjustment:EXTernal:QOFFset?	✓	
[:SOURce]:DM:IQADjustment:GAIN? [:SOURce]:DM:IQADjustment:GAIN[1|2] <value><unit>	✓	
[:SOURce]:DM:IQADjustment:IOFFset <value><unit> [:SOURce]:DM:IQADjustment:IOFFset?	✓	
[:SOURce]:DM:IQADjustment:QOFFset <value><unit> [:SOURce]:DM:IQADjustment:QOFFset?	✓	
[:SOURce]:DM:IQADjustment:QSKew <value><unit> [:SOURce]:DM:IQADjustment:QSKew?	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:DM:IQADjustment[:STATe] ON|OFF|1|0 [:SOURce]:DM:IQADjustment[:STATe]?	✓	
[:SOURce]:DM:MODulation:ATTen <value><unit> [:SOURce]:DM:MODulation:ATTen?	✓	
[:SOURce]:DM:MODulation:ATTen:AUTO ON|OFF|1|0 [:SOURce]:DM:MODulation:ATTen:AUTO?	✓	
[:SOURce]:DM:MODulation:ATTen:EXTernal DEFault|MANual|MEASure [:SOURce]:DM:MODulation:ATTen:EXTernal?	✓	
[:SOURce]:DM:MODulation:ATTen:EXTernal:LEVel <value> <volt_units> [:SOURce]:DM:MODulation:ATTen:EXTernal:LEVel?	✓	
[:SOURce]:DM:MODulation:ATTen:EXTernal:LEVel:MEASurement	✓	
[:SOURce]:DM:MODulation:ATTen:OPTimize:BANDwidth <value> <bw_rate_units> [:SOURce]:DM:MODulation:ATTen:OPTimize:BANDwidth?	✓	
[:SOURce]:DM:MODulation:FILTer THRough	✓	*Supported but the following query generates an* Error: –113, Undefined header: [:SOURce]:DM:MODulation:FILTer?
[:SOURce]:DM:MODulation:FILTer:AUTO ON|OFF|1|0|2.1e6|40e6|	✓	*Commands are accepted by the signal generator, but no action is taken. The following query is not supported:* [:SOURce]:DM:MODulation:FILTer:AUTO? *(If the query is used, an* Error –113, Undefined header *will be displayed on the signal generator.)*
[:SOURce]:DM:POLarity[:ALL] NORMal|INVert|INVerted [:SOURce]:DM:POLarity?	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:DM:SKEW:PATH RF|BB [:SOURce]:DM:SKEW:PATH?	–	
[:SOURce]:DM:SKEW[:STATe] ON|OFF|1|0| [:SOURce]:DM:SKEW[:STATe]?	✓	
[:SOURce]:DM:SOURce[1]|2 EXTernal|INTernal|BBG1|OFF [:SOURce]:DM:SOURce?	✓	*Supported but the following parameters are not supported:* |BBG2|BBG3|BBG4|EXT600|
[:SOURce]:DM:SRATio <value><unit> [:SOURce]:DM:SRATio?	✓	
[:SOURce]:DM:STATe ON|OFF|1|0 [:SOURce]:DM:STATe?	✓	
Display Subsystem		
:DISPlay:ANNotation:AMPLitude:UNIT DBM|DBUV|DBUVEMF|V|VEMF|DB :DISPlay:ANNotation:AMPLitude:UNIT?	✓	
:DISPlay:ANNotation:CLOCk:DATE:FORMat MDY|DMY :DISPlay:ANNotation:CLOCk:DATE:FORMat?	✓	
:DISPlay:ANNotation:CLOCk[:STATe] ON|OFF|1|0 :DISPlay:ANNotation:CLOCk[:STATe]?	✓	
:DISPlay:BRIGhtness <value> :DISPlay:BRIGhtness?	✓	
:DISPlay:CAPTure	✓	
:DISPlay:CONTrast <value> :DISPlay:CONTrast?	✓	
:DISPlay:INVerse ON|OFF|1|0	✓	*Supported but the following query is not supported:* :DISPlay:INVerse?
:DISPlay:REMote ON|OFF|1|0 :DISPlay:REMote?	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:DISPlay[:WINDow][:STATe] ON|OFF|1|0 :DISPlay[:WINDow][:STATe]?	✓	
Dual ARB Subsystem		
[:SOURce]:RADio2:ARB:VCO:INTernal:SOURce:BBG1 ON|OFF|1|0 [:SOURce]:RADio2:ARB:VCO:INTernal:SOURce:BBG1?	–	
[:SOURce]:RADio:ARB:BASEband:FREQuency:OFFSet <value> [:SOURce]:RADio:ARB:BASEband:FREQuency:OFFSet?	✓	
[:SOURce]:RADio[1]:ARB:CLIPping "filename",IJQ|IORQ,<10-100%>[,<10-100%>]	✓	
[:SOURce]:RADio[1]:ARB:DACS:ALIGn	✓	
[:SOURce]:RADio[1]:ARB:GENerate:SINE ["filename"],[<osr>],[<scale>],[I|Q|{IQ}]	✓	
[:SOURce]:RADio[1]:ARB:HEADer:CLEar	✓	
[:SOURce]:RADio[1]:ARB:HEADer:RMS <"filename">, <rms:0 - 1.414213562373095>|UNSPecified [:SOURce]:RADio[1]:ARB:HEADer:RMS? <"filename">	✓	
[:SOURce]:RADio[1]:ARB:HEADer:SAVE	✓	
[:SOURce]:RADio[1]:ARB:HCRest[:STATe] ON|OFF|1|0 [:SOURce]:RADio[1]:ARB:HCRest[:STATe]?	✓	*Command accepted without error but does nothing.*
[:SOURce]:RADio[1]:ARB:IQ:EXTernal:FILTer 40e6|THRough	✓	*Commands are accepted by the signal generator, but no action is taken. But the following query is not supported and generates an* Error: –113, Undefined header: [:SOURce]:RADio[1]:ARB:IQ:EXTernal:FILTer?

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio[1]:ARB:IQ:EXTernal:FILTer:AUTO ON|OFF|1|0	✓	*Commands are accepted by the signal generator, but no action is taken. But the following query is not supported and generates an* Error: –113, Undefined header: [:SOURce]:RADio[1]:ARB:IQ:EXTernal:FILTer:AUTO?
[:SOURce]:RADio[1]:ARB:IQ:MODulation:ATTen <value><unit> [:SOURce]:RADio[1]:ARB:IQ:MODulation:ATTen?	✓	
[:SOURce]:RADio[1]:ARB:IQ:MODulation:ATTen:AUTO ON|OFF|1|0 [:SOURce]:RADio[1]:ARB:IQ:MODulation:ATTen:AUTO?	✓	
[:SOURce]:RADio[1]:ARB:IQ:MODulation:FILTer 2.1e6|40e6|THRough	✓	*Commands are accepted by the signal generator, but no action is taken. But the following query is not supported and generates an* Error: –113, Undefined header: [:SOURce]:RADio[1]:ARB:IQ:MODulation:FILTer?
[:SOURce]:RADio[1]:ARB:IQ:MODulation:FILTer:AUTO ON|OFF|1|0	✓	*Commands are accepted by the signal generator, but no action is taken. But the following query is not supported and generates an* Error: –113, Undefined header: [:SOURce]:RADio[1]:ARB:IQ:MODulation:FILTer:AUTO?
[:SOURce]:RADio[1]:ARB:MARKer:CLEar "filename",<mkr(1|2|3|4)>,<first_Point>,<last_point>	✓	
[:SOURce]:RADio[1]:ARB:MARKer:CLEar:ALL "filename",<mkr(1|2|3|4)>	✓	
[:SOURce]:RADio[1]:ARB:MARKer:ROTate "filename",<rotate_count>	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio[1]:ARB:MARKer:[SET] "filename",<mkr(1|2|3|4)>,<first_Point>,<last_point>,<skip_count>	✓	
[:SOURce]:RADio[1]:ARB:MDEStination:AAMPlitude {NONE}|M1|M2|M3|M4 [:SOURce]:RADio[1]:ARB:MDEStination:AAMPlitude?	–	
[:SOURce]:RADio[1]:ARB:MDEStination:ALCHold {NONE}|M1|M2|M3|M4 [:SOURce]:RADio[1]:ARB:MDEStination:ALCHold?	✓	
[:SOURce]:RADio[1]:ARB:MDEStination:PULSe {NONE}|M1|M2|M3|M4 [:SOURce]:RADio[1]:ARB:MDEStination:PULSe?	✓	
[:SOURce]:RADio[1]:ARB:MPOLarity:MARKer1 NEGative|{POSitive} [:SOURce]:RADio[1]:ARB:MPOLarity:MARKer1?	✓	
[:SOURce]:RADio[1]:ARB:MPOLarity:MARKer2 NEGative|{POSitive} [:SOURce]:RADio[1]:ARB:MPOLarity:MARKer2?	✓	
[:SOURce]:RADio[1]:ARB:MPOLarity:MARKer3 NEGative|{POSitive} [:SOURce]:RADio[1]:ARB:MPOLarity:MARKer3?	✓	
[:SOURce]:RADio[1]:ARB:MPOLarity:MARKer4 NEGative|{POSitive} [:SOURce]:RADio[1]:ARB:MPOLarity:MARKer4?	✓	
[:SOURce]:RADio[1]:ARB:NOISe:BFACtor <1 - 2 {1}> [:SOURce]:RADio[1]:ARB:NOISe:BFACtor?	✓	
[:SOURce]:RADio[1]:ARB:NOISe:CBWidth <1Hz-80Mhz {1Hz}> [:SOURce]:RADio[1]:ARB:NOISe:CBWidth?	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio[1]:ARB:NOISe:CN <-100dB - 100dB {0dB}> [:SOURce]:RADio[1]:ARB:NOISe:CN?	✓	
[:SOURce]:RADio[1]:ARB:NOISe[:STATe] ON|{OFF}|1|0 [:SOURce]:RADio[1]:ARB:NOISe[:STATe]?	✓	
[:SOURce]:RADio[1]:ARB:REFerence:EXTernal:FREQuency <value> [:SOURce]:RADio[1]:ARB:REFerence:EXTernal:FREQuency?	–	
[:SOURce]:RADio[1]:ARB:REFerence[:SOURce] INTernal|EXTernal [:SOURce]:RADio[1]:ARB:REFerence[:SOURce]?	✓	
[:SOURce]:RADio[1]:ARB:RETRigger ON|OFF|IMMediate [:SOURce]:RADio[1]:ARB:RETRigger?	✓	
[:SOURce]:RADio[1]:ARB:RSCaling <1%-100%> [:SOURce]:RADio[1]:ARB:RSCaling?	✓	
[:SOURce]:RADio[1]:ARB:SCALing "filename",<1%-100%>	✓	
[:SOURce]:RADio[1]:ARB:SCLock:RATE <1Hz - 100MHz {100MHz}> [:SOURce]:RADio[1]:ARB:SCLock:RATE?	✓	*Agilent MXG range is 1 kHz – 125 MHz with a default of 125 MHz.*
[:SOURce]:RADio[1]:ARB:SEQuence[:MWAVeform] <filename>,<waveform>,<reps>,NONE|M1|M2|M3|M4|M1M2|M1M3|M1M4|M2M3|M2M4|M3M4|M1M2M3|M1M2M4|M1M3M4|M2M3M4|M1M2M3M4|ALL,{,<waveform>,<reps>,NONE|M1|M2|M3|M4|M1M2|M1M3|M1M4|M2M3|M2M4|M3M4|M1M2M3|M1M2M4|M1M3M4|M2M3M4|M1M2M3M4|ALL,} [:SOURce]:RADio[1]:ARB:SEQuence[:MWAVeform]? <filename>	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio[1]:ARB:TRIGger:TYPE CONTinuous|SINGle|GATE|SADVance [:SOURce]:RADio[1]:ARB:TRIGger:TYPE?	✓	
[:SOURce]:RADio[1]:ARB:TRIGger:TYPE:CONTinuous[:TYPE] FREE|TRIGger|RESet [:SOURce]:RADio[1]:ARB:TRIGger:TYPE:CONTinuous[:TYPE]?	✓	
[:SOURce]:RADio[1]:ARB:TRIGger:TYPE:GATE LOW|HIGH [:SOURce]:RADio[1]:ARB:TRIGger:TYPE:GATE?	✓	
[:SOURce]:RADio[1]:ARB:TRIGger:TYPE:SADVance:SORDer LINear|DYNamic [:SOURce]:RADio[1]:ARB:TRIGger:TYPE:SADVance:SORDer?	–	
[:SOURce]:RADio[1]:ARB:TRIGger:TYPE:SADVance:THOFf ON|OFF|1|0 [:SOURce]:RADio[1]:ARB:TRIGger:TYPE:SADVance:THOFf?	–	
[:SOURce]:RADio[1]:ARB:TRIGger:TYPE:SADVance[:TYPE] SINGle|CONTinuous [:SOURce]:RADio[1]:ARB:TRIGger:TYPE:SADVance[:TYPE]?	✓	
[:SOURce]:RADio[1]:ARB:TRIGger[:SOURce] KEY|BUS|EXT [:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]?	✓	
[:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]:EXTernal:DELay <value> [:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]:EXTernal:DELay?	✓	
[:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]:EXTernal:DELay:STATe ON|OFF|1|0 [:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]:EXTernal:DELay:STATe?	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]:EXTernal:SLOPe POSitive|NEGative [:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]:EXTernal:SLOPe?	✓	
[:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]:EXTernal[:SOURce] EPT1|EPT2|EPTRIGGER1|EPTRIGGER2 [:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]:EXTernal[:SOURce]?	✓	
[:SOURce]:RADio[1]:ARB:VCO:CLOCk:RATE?	–	
[:SOURce]:RADio[1]:ARB:VCO:CLOCk[:SOURce] INTernal|EXTernal [:SOURce]:RADio[1]:ARB:VCO:CLOCk[:SOURce]?	✓	
[:SOURce]:RADio[1]:ARB:WAVeform "WFM1:filename"|"SEQ:filename" [:SOURce]:RADio[1]:ARB:WAVeform?	✓	
[:SOURce]:RADio[1]:ARB:WAVeform:NHEaders "WFM1:filename"|"SEQ:filename" [:SOURce]:RADio[1]:ARB:WAVeform:NHEaders?	✓	
[:SOURce]:RADio[1]:ARB[:STATe] ON|OFF|1|0 [:SOURce]:RADio[1]:ARB[:STATe]?	✓	
Edge Subsystem		
[:SOURce]:RADio[1]:EDGE:...	–	*This subsystem is not supported.*
GSM Subsystem		
[:SOURce]:RADio[1]:GSM:...	–	*This subsystem is not supported.*
Input Subsystem		
:INPut:BERT[:BASeband]:...	–	*This subsystem is not supported.*
Measure Subsystem		
:MEASure:[SCALar]:BERT:BTS:LOOPback:EDGE:MCS5[:SENSitivity]?	–	*This subsystem is not supported.*

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
Multi-Tone Subsystem		
[:SOURce]:RADio:MTONe:ARB:HEADer:CLEar	✓	
[:SOURce]:RADio:MTONe:ARB:HEADer:SAVE	✓	
[:SOURce]:RADio:MTONe:ARB:IQ:EXTernal:FILTer 40e6|THRough [:SOURce]:RADio:MTONe:ARB:IQ:EXTernal:FILTer?	✓	*Command accepted without error but does nothing.*
[:SOURce]:RADio:MTONe:ARB:IQ:EXTernal:FILTer:AUTO ON|OFF|1|0 [:SOURce]:RADio:MTONe:ARB:IQ:EXTernal:FILTer:AUTO?	–	
[:SOURce]:RADio:MTONe:ARB:IQ:MODulation:ATTen <val><unit> [:SOURce]:RADio:MTONe:ARB:IQ:MODulation:ATTen?	✓	
:SOURce]:RADio:MTONe:ARB:IQ:MODulation:ATTen:AUTO ON|OFF|1|0 [:SOURce]:RADio:MTONe:ARB:IQ:MODulation:ATTen:AUTO?	✓	
:SOURce]:RADio:MTONe:ARB:IQ:MODulation:FILTer 2.1e6|40e6|THRough [:SOURce]:RADio:MTONe:ARB:IQ:MODulation:FILTer?	✓	*Command accepted without error but does nothing.*
[:SOURce]:RADio:MTONe:ARB:IQ:MODulation:FILTer:AUTO ON|OFF|1|0 [:SOURce]:RADio:MTONe:ARB:IQ:MODulation:FILTer:AUTO?	✓	*Command accepted without error but does nothing.*
[:SOURce]:RADio:MTONe:ARB:MDEStination:AAMPlitude {NONE}|M1|M2|M3|M4 [:SOURce]:RADio:MTONe:ARB:MDEStination:AAMPlitude?	–	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio:MTONe:ARB:MDEStination:ALCHold {NONE}|M1|M2|M3|M4 [:SOURce]:RADio:MTONe:ARB:MDEStination:ALCHold?	✓	
[:SOURce]:RADio:MTONe:ARB:MDEStination:PULSe {NONE}|M1|M2|M3|M4 [:SOURce]:RADio:MTONe:ARB:MDEStination:PULSe?	✓	
[:SOURce]:RADio:MTONe:ARB:MPOLarity:MARKer1|2|3|4 NEGative|{POSitive} [:SOURce]:RADio:MTONe:ARB:MPOLarity:MARKer1|2|3|4?	✓	
[:SOURce]:RADio:MTONe:ARB:REFerence:EXTernal:FREQuency <value> [:SOURce]:RADio:MTONe:ARB:REFerence:EXTernal:FREQuency?	✓	
[:SOURce]:RADio:MTONe:ARB:REFerence[:SOURce] INTernal|EXTernal [:SOURce]:RADio:MTONe:ARB:REFerence[:SOURce]?	✓	
[:SOURce]:RADio:MTONe:ARB:SCLock:RATE <1Hz - 100MHz {100MHz}> [:SOURce]:RADio:MTONe:ARB:SCLock:RATE?	✓	
[:SOURce]:RADio:MTONe:ARB:SETup <filename> [:SOURce]:RADio:MTONe:ARB:SETup?	✓	
[:SOURce]:RADio:MTONe:ARB:SETup:STORe "file name" [:SOURce]:RADio:MTONe:ARB:SETup:TABLe <freq_spacing>,<num_tones>{,<phase>,<state>} [:SOURce]:RADio:MTONe:ARB:SETup:TABLe?	✓	
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:FSPacing <freq_spacing> [:SOURce]:RADio:MTONe:ARB:SETup:TABLe:FSPacing?	✓	

Table 9-2 E4428C/38C Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:NTONes <num_tones> [:SOURce]:RADio:MTONe:ARB:SETup:TABLe:NTONes?	✓	
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:PHASe:INITialize FIXed|RANDom [:SOURce]:RADio:MTONe:ARB:SETup:TABLe:PHASe:INITialize?	✓	
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:PHASe:INITialize:SEED FIXed|RANDom [:SOURce]:RADio:MTONe:ARB:SETup:TABLe:PHASe:INITialize:SEED?	✓	
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:ROW <row_number>,<power>,<phase>,<state> [:SOURce]:RADio:MTONe:ARB:SETup:TABLe:ROW? <row_number>	✓	
[:SOURce]:RADio:MTONe:ARB[:STATe] ON|OFF|1|0 [:SOURce]:RADio:MTONe:ARB[:STATe]?	✓	
NADC Subsystem		
[:SOURce]:RADio[1][:NADC]:...	–	*This subsystem is not supported.*
PDC Subsystem		
[:SOURce]:RADio[1]:PDC:...	–	*This subsystem is not supported.*
PHS Subsystem		
[:SOURce]:RADio[1]:PHS:...	–	*This subsystem is not supported.*
Sense Subsystem		
:SENSe:BERT:...	–	*This subsystem is not supported.*
Tetra Subsystem		
[:SOURce]:RADio[1]:TETRa:...	–	*This subsystem is not supported.*
Wideband CDMA ARB Subsystem		
[:SOURce]:RADio[1]:WCDMa:TGPP:ARB:...	–	*This subsystem is not supported.*

E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Compatible Commands

NOTE The Agilent MXG has only one AM, FM, and PM path. Using AM2, FM2, or PM2 path commands will result in the following error: "ERROR: -113, Undefined Header".

The Agilent MXG has only one internal source for AM, FM and PM, but the INT2 source selection is accepted by the signal generator and is equivalent to selecting INT[1].

The Agilent MXG has three dedicated external sources, one for AM, one for FM/PM and one for Pulse. The EXT2 source selection is accepted by the signal generator, but is equivalent to selecting EXT[1].

Some subsystems may *only* be supported by the *Agilent N5162A/82A Vector Signal Generator*. These subsystem exceptions are indicated in the subsystem headings.

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
System Function Commands		
IEEE Common Commands		
*CLS	✓	
*ESE <data> *ESE?	✓	
*ESR?	✓	
*IDN?	✓	
*OPC *OPC?	✓	
*RCL <reg_num>	✓	
*RST	✓	
*SAV <reg_num>	✓	
*SRE <data> *SRE?	✓	
*STB?	✓	
*TRG	✓	
*TST?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
*WAI	✓	
Calibration Subsystem		
:CALibration:DCFM	✓	
:CALibration:IQ	–	
:CALibration:IQ:DC	–	
:CALibration:IQ:DEFault	–	
:CALibration:IQ:FULL	–	
:CALibration:IQ:STARt <value><units>	–	
:CALibration:IQ:STARt?	–	
:CALibration:IQ:STOP <value><units>	–	
:CALibration:IQ:STOP?	–	
:CALibration:WBIQ	–	
:CALibration:WBIQ:DC	–	
:CALibration:WBIQ:DEFault	–	
:CALibration:WBIQ:FULL	–	
:CALibration:WBIQ:STARt <value><units>	–	
:CALibration:WBIQ:STARt?	–	
:CALibration:WBIQ:STOP <value><units>	–	
:CALibration:WBIQ:STOP?	–	
Communication Subsystem		
:SYSTem:COMMunicate:GPIB:ADDRess <number>	✓	
:SYSTem:COMMunicate:GPIB:ADDRess?	✓	
:SYSTem:COMMunicate:GTLocal	✓	
:SYSTem:COMMunicate:LAN:CONFig DHCP|MANual	✓	
:SYSTem:COMMunicate:LAN:CONFig?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:SYSTem:COMMunicate:LAN:GATeway <ipstring>	✓	
:SYSTem:COMMunicate:LAN:GATeway?	✓	
:SYSTem:COMMunicate:LAN:HOSTname <string>	✓	
:SYSTem:COMMunicate:LAN:HOSTname?	✓	
:SYSTem:COMMunicate:LAN:IP <ipstring>	✓	
:SYSTem:COMMunicate:LAN:IP?	✓	
:SYSTem:COMMunicate:LAN:SUBNet <ipstring>	✓	
:SYSTem:COMMunicate:LAN:SUBNet?	✓	
:SYSTem:COMMunicate:PMETer:ADDRess <value>	–	
:SYSTem:COMMunicate:PMETer:ADDRess?	–	
:SYSTem:COMMunicate:PMETer:CHANnel A|B	✓	*Command accepted without error but does nothing.*
:SYSTem:COMMunicate:PMETer:CHANnel?	✓	*Command accepted without error but does nothing.*
:SYSTem:COMMunicate:PMETer:IDN E4418B|E4419B|E4416A|E4417A	✓	*Command accepted without error but does nothing.*
:SYSTem:COMMunicate:PMETer:IDN?	✓	*Command accepted without error but does nothing.*
:SYSTem:COMMunicate:PMETer:TIMEout <num>[<time suffix>]	✓	*Command accepted without error but does nothing.*
:SYSTem:COMMunicate:PMETer:TIMEout?	✓	*Command accepted without error but does nothing.*
:SYSTem:COMMunicate:SERial:BAUD <number>	–	
:SYSTem:COMMunicate:SERial:BAUD?	–	
:SYSTem:COMMunicate:SERial:ECHO ON|OFF	–	
:SYSTem:COMMunicate:SERial:ECHO?	–	
:SYSTem:COMMunicate:SERial:RESet	–	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:SYSTem:COMMunicate:SERial:TOUT <value>	–	
:SYSTem:COMMunicate:SERial:TOUT?	–	
Diagnostic Subsystem		
:DIAGnostic[:CPU]:INFOrmation:BOARds?	–	
:DIAGnostic[:CPU]:INFOrmation:CCOunt:ATTenuator?	✓	
:DIAGnostic[:CPU]:INFOrmation:CCOunt:PON?	✓	
:DIAGnostic[:CPU]:INFOrmation:DISPlay:OTIMe?	✓	
:DIAGnostic[:CPU]:INFOrmation:LICense:AUXiliary?	✓	
:DIAGnostic[:CPU]:INFOrmation:LICense:WAVeform?	✓	
:DIAGnostic[:CPU]:INFOrmation:OPTions?	✓	
:DIAGnostic[:CPU]:INFOrmation:OPTions:DETail?	✓	
:DIAGnostic[:CPU]:INFOrmation:OTIMe?	✓	
:DIAGnostic[:CPU]:INFOrmation:REVision?	✓	
:DIAGnostic[:CPU]:INFOrmation:SDATe?	✓	
:DIAGnostic[:CPU]:INFOrmation:WLICense[:VALue]? <waveformType>	✓	
Memory Subsystem		
:MEMory:CATalog:BINary?	✓	
:MEMory:CATalog:BIT?	–	
:MEMory:CATalog:CDMa?	–	
:MEMory:CATalog:DMOD?	–	
:MEMory:CATalog:DWCDma?	–	
:MEMory:CATalog:FCDMa?	–	
:MEMory:CATalog:FIR?	–	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:MEMory:CATalog:FSK?	–	
:MEMory:CATalog:IQ?	–	
:MEMory:CATalog:LIST?	–	
:MEMory:CATalog:MCDMa?	–	
:MEMory:CATalog:MDMod?	–	
:MEMory:CATalog:MDWCdma?	–	
:MEMory:CATalog:MFCdma?	–	
:MEMory:CATalog:MTONe?	–	
:MEMory:CATalog:FIR?	–	
:MEMory:CATalog:RCDMa?	–	
:MEMory:CATalog:SEQ?	–	
:MEMory:CATalog:SHAPe?	–	
:MEMory:CATalog:STATe?	✓	
:MEMory:CATalog:UFLT?	✓	
:MEMory:CATalog:UPC?	–	
:MEMory:CATalog:UWCDma?	–	
:MEMory:CATalog[:ALL]?	✓	
:MEMory:COPY[:NAME] <"filename">,<"filename">	✓	
:MEMory:DATA <"filename">,<datablock>	✓	
:MEMory:DATA? <"filename">	✓	
:MEMory:DATA:APPend <"filename">,<datablock>	✓	
:MEMory:DATA:BIT <"filename">,<bit_count>,<datablock> :MEMory:DATA:BIT? <"filename">	–	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:MEMory:DATA:FIR <"filename">,osr,coefficient{,coefficient} :MEMory:DATA:FIR? <"filename">	–	
:MEMory:DATA:FSK <"filename">,num_states,f0,f0,...[,diff_state, num_diff_states,diff0,diff1,...] :MEMory:DATA:FSK? <"filename">	–	
:MEMory:DATA:PRAM[1]|2|3|4:FILE:BLOCk <"filename">,<datablock>	–	
:MEMory:DATA:PRAM[1]|2|3|4:FILE:LIST <"filename">,<uint8>[,<uint8>,<...>]	–	
:MEMory:DATA:IQ <"filename">,offsetQ,num_states,i0,q0,i1,q1,...[,diff_state,num_diff_states,diff0,diff1,...]	–	
:MEMory:DATA:IQ? <"filename">	–	
:MEMory:DATA:SHAPe <"filename">,num_rise_points,rp0,rp1,...num_fall_points,fp0,fp1,... :MEMory:DATA:SHAPe? <"filename">	–	
:MEMory:DATA:UNPRotected <"filename">,<datablock>	–	
:MEMory:DELete:ALL	✓	
:MEMory:DELete:BINary	✓	
:MEMory:DELete:BIT	–	
:MEMory:DELete:CDMa	–	
:MEMory:DELete:DMOD	–	
:MEMory:DELete:DWCDma	–	
:MEMory:DELete:FCDMa	–	
:MEMory:DELete:FIR	–	
:MEMory:DELete:FSK	–	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:MEMory:DELete:IQ	–	
:MEMory:DELete:LIST	–	
:MEMory:DELete:MCDMa	–	
:MEMory:DELete:MDMod	–	
:MEMory:DELete:MDWCdma	–	
:MEMory:DELete:MFCdma	–	
:MEMory:DELete:MTONe	–	
:MEMory:DELete:RCDMa	–	
:MEMory:DELete:SEQ	–	
:MEMory:DELete:SHAPe	–	
:MEMory:DELete:STATe	✓	
:MEMory:DELete:UFLT	✓	
:MEMory:DELete:UPC	–	
:MEMory:DELete:UWCDma	–	
:MEMory:DELete[:NAME] <"filename">	✓	
:MEMory:FREE[:ALL]?	✓	
:MEMory:LOAD:LIST <"filename">	✓	
:MEMory:MOVE <src_file>,<dest_file>	✓	
:MEMory:SIZE? <“filename”>	✓	
:MEMory:STATe:COMMent <reg_num>,<seq_num>,<"comment">	✓	
:MEMory:STATe:COMMent? <reg_num>,<seq_num>	✓	
:MEMory:STORe:LIST <"filename">	✓	
:MMEMory:CATalog? <"msus">	✓	
:MMEMory:COPY <"filename">,<"filename">	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:MMEMory:DATA <"filename">,<datablock>	✓	
:MMEMory:DATA? <"filename">	✓	
:MMEMory:DELete:NVWFm	✓	
:MMEMory:DELete:WFM	–	
:MMEMory:DELete:WFM1	–	
:MMEMory:DELete[:NAME] <"filename">,[<"msus">]	✓	
:MMEMory:HEADer:CLEar <filename>	✓	
:MMEMory:HEADer:DESCription <"filename">, <"description">	✓	
:MMEMory:HEADer:DESCription? <"filename">	✓	
:MMEMory:LOAD:LIST <"filename">	✓	
:MMEMory:MOVE <src_file>,<dest_file>	✓	
:MMEMory:STORe:LIST <"filename">	✓	
Output Subsystem		
:OUTPut:BLANking:AUTO ON|OFF|1|0 :OUTPut:BLANking:AUTO?	✓	
:OUTPut:BLANking[:STATe] ON|OFF|1|0 :OUTPut:BLANking[:STATe]?	✓	
:OUTPut:MODulation[:STATe] ON|OFF|1|0 :OUTPut:MODulation[:STATe]?	✓	
:OUTPut:SETTled:POLarity NORMal|INVerted :OUTPut:SETTled:POLarity?	–	
:OUTPut:SETTled:RFOFf NORMal|INVerted :OUTPut:SETTled:RFOFf?	–	
:OUTPut:SETTled[:STATe]?	–	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:OUTPut[:STATe] ON|OFF|1|0 :OUTPut[:STATe]?	✓	
Route Subsystem		
:ROUTe:HARDware:DGENerator:...	–	*This subsystem is not supported.*
Status Subsystem		
:STATus:OPERation:BASeband:CONDition?	✓	
:STATus:OPERation:BASeband:ENABle <value> :STATus:OPERation:BASeband:ENABle?	✓	
:STATus:OPERation:BASeband:NTRansition <value> :STATus:OPERation:BASeband:NTRansition?	✓	
:STATus:OPERation:BASeband:PTRansition <value> :STATus:OPERation:BASeband:PTRansition?	✓	
:STATus:OPERation:BASeband[:EVENt]?	✓	
:STATus:OPERation:CONDition?	✓	
:STATus:OPERation:ENABle <value> :STATus:OPERation:ENABle?	✓	
:STATus:OPERation:NTRansition <value> :STATus:OPERation:NTRansition?	✓	
:STATus:OPERation:PTRansition <value> :STATus:OPERation:PTRansition?	✓	
:STATus:OPERation[:EVENt]?	✓	
:STATus:PRESet	✓	
:STATus:QUEStionable:CALibration:CONDition?	–	
:STATus:QUEStionable:CALibration:ENABle <value> :STATus:QUEStionable:CALibration:ENABle?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:STATus:QUEStionable:CALibration:NTRansition <value> :STATus:QUEStionable:CALibration:NTRansition?	✓	
:STATus:QUEStionable:CALibration:PTRansition <value> :STATus:QUEStionable:CALibration:PTRansition?	✓	
:STATus:QUEStionable:CALibration[:EVENt]?	✓	
:STATus:QUEStionable:CONDition?		
:STATus:QUEStionable:ENABle <value> :STATus:QUEStionable:ENABle?	✓	
:STATus:QUEStionable:FREQuency:CONDition?	✓	
:STATus:QUEStionable:FREQuency:ENABle <value> :STATus:QUEStionable:FREQuency:ENABle?	✓	
:STATus:QUEStionable:FREQuency:NTRansition <value> :STATus:QUEStionable:FREQuency:NTRansition?	✓	
:STATus:QUEStionable:FREQuency:PTRansition <value> :STATus:QUEStionable:FREQuency:PTRansition?	✓	
:STATus:QUEStionable:FREQuency[:EVENt]?	✓	
:STATus:QUEStionable:MODulation:CONDition?	–	
:STATus:QUEStionable:MODulation:ENABle <value> :STATus:QUEStionable:MODulation:ENABle?	–	
:STATus:QUEStionable:MODulation:NTRansition <value> :STATus:QUEStionable:MODulation:NTRansition?	–	
:STATus:QUEStionable:MODulation:PTRansition <value> :STATus:QUEStionable:MODulation:PTRansition?	–	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:STATus:QUEStionable:MODulation[:EVENt]?	–	
:STATus:QUEStionable:NTRansition <value> :STATus:QUEStionable:NTRansition?	✓	
:STATus:QUEStionable:POWer:CONDition?	✓	
:STATus:QUEStionable:POWer:ENABle <value> :STATus:QUEStionable:POWer:ENABle?	✓	
:STATus:QUEStionable:POWer:NTRansition <value> :STATus:QUEStionable:POWer:NTRansition?	✓	
:STATus:QUEStionable:POWer:PTRansition <value> :STATus:QUEStionable:POWer:PTRansition?	✓	
:STATus:QUEStionable:POWer[:EVENt]?	✓	
:STATus:QUEStionable:PTRansition <value> :STATus:QUEStionable:PTRansition?	✓	
:STATus:QUEStionable[:EVENt]?	✓	
System Subsystem		
:SYSTem:ALTernate <reg num> :SYSTem:ALTernate? [MAXimum|MINimum]	✓	
:SYSTem:ALTernate:STATe ON|OFF|1|0 :SYSTem:ALTernate:STATe?	✓	
:SYSTem:CAPability?	✓	
:SYSTem:DATE <year>,<month>,<day> :SYSTem:DATE?	✓	
:SYSTem:ERRor:SCPI[:SYNTax] ON|OFF|1|0 :SYSTem:ERRor:SCPI[:SYNTax]?	✓	
:SYSTem:ERRor[:NEXT]?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:SYSTem:FILEsystem:SAFEmode ON|OFF|1|0 :SYSTem:FILEsystem:SAFEmode	–	
:SYSTem:HELP:MODE SINGle	✓	*Supported but the following parameter is not supported:* CONTinuous *Supported but the following query is not supported:* :SYSTem:HELP:MODE?
:SYSTem:IDN "string"	✓	
:SYSTem:LANGuage "SCPI"|"COMP"|"8648"|"8662"|"8663"|"GT9000S"|"GT900" :SYSTem:LANGuage?	✓	*Supported but the following parameters are not supported:* "8340"|"8360"|"83712"|"83732"|"83752"|"8757"
:SYSTem:OEMHead:FREQuency:BAND WR15|WR12|WR10|WR8|WR6|WR5|WR3 :SYSTem:OEMHead:FREQuency:BAND?	–	
:SYSTem:OEMHead:FREQuency:MULTiplier <val> :SYSTem:OEMHead:FREQuency:MULTiplier?	–	
:SYSTem:OEMHead:FREQuency:STARt <val> :SYSTem:OEMHead:FREQuency:STARt?	–	
:SYSTem:OEMHead:FREQuency:STOP <val> :SYSTem:OEMHead:FREQuency:STOP?	–	
:SYSTem:OEMHead:SELect ON|OFF|NONE|REAR|FRONt :SYSTem:OEMHead:SELect?	–	
:SYSTem:OPT "string"	✓	
:SYSTem:PON:TYPE PRESet|LAST :SYSTem:PON:TYPE?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:SYSTem:PRESet	✓	*Always performs the same action as the* **Preset** *hardkey.* *For related* **Preset** *hardkey information, refer to* “:SYSTem:PRESet:TYPE NORMal|USER :SYSTem:PRESet:TYPE?” on page 592
:SYSTem:PRESet:ALL	✓	
:SYSTem:PRESet:LANGuage "SCPI"|"COMP"|"8662"|"8663"|”GT9000S”|”GT900” :SYSTem:PRESet:LANGuage?	✓	*Supported but the following parameters are not supported:* "8340"|"8360"|"83712"|"83732"|"83752"|"8757"
:SYSTem:PRESet:PERSistent	✓	
:SYSTem:PRESet:PN9 NORMal|QUICk :SYSTem:PRESet:PN9?	–	
:SYSTem:PRESet:TYPE NORMal|USER :SYSTem:PRESet:TYPE?	✓	*This command toggles the* **Preset** *hardkey state between factory- and user-defined conditions.* *The setting enabled by this command is not affected by signal generator power-on, preset, or* *RST. **NOTE** *If the* **Preset** *hardkey is not responding correctly, using the SCPI command:* :SYSTem:PRESet:TYPE NORMal *will return the* **Preset** *hardkey to its default factory behavior.*
:SYSTem:PRESet[:USER]:SAVE	✓	
:SYSTem:SECurity:DISPlay ON|OFF|{1}|0 :SYSTem:SECurity:DISPlay?	✓	
:SYSTem:SECurity:DISPlay:RESTricted ON|OFF|{1}|0 :SYSTem:SECurity:DISPlay:RESTricted?	✓	
:SYSTem:SECurity:ERASeall	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:SYSTem:SECurity:LEVel {NONE}|ERASe|OVERwrite|SANitize :SYSTem:SECurity:LEVel?	✓	
:SYSTem:SECurity:LEVel:STATe ON|OFF|1|0 :SYSTem:SECurity:LEVel:STATe?	✓	
:SYSTem:SECurity:OVERwrite	✓	
:SYSTem:SECurity:SANitize	✓	
:SYSTem:SSAVer:DELay <value> :SYSTem:SSAVer:DELay?	✓	
:SYSTem:SSAVer:MODE LIGHt|TEXT :SYSTem:SSAVer:MODE?	✓	
:SYSTem:SSAVer:STATe ON|OFF :SYSTem:SSAVer:STATe?	✓	
:SYSTem:TIME <hour>,<minute>,<second> :SYSTem:TIME?	✓	
:SYSTem:VERSion?	✓	
Trigger Subsystem		
:ABORt	✓	
:INITiate:CONTinuous[:ALL] ON|OFF|1|0 :INITiate:CONTinuous[:ALL]?	✓	
:INITiate[:IMMediate][:ALL]	✓	
:TRIGger:OUTPut:POLarity POSitive|NEGative :TRIGger:OUTPut:POLarity?	✓	
:TRIGger[:SEQuence]:SLOPe POSitive|NEGative :TRIGger[:SEQuence]:SLOPe?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
:TRIGger[:SEQuence]:SOURce BUS|IMMediate|EXTernal|KEY :TRIGger[:SEQuence]:SOURce?	✓	
:TRIGger[:SEQuence][:IMMediate]	✓	
[:SOURce]:TSWeep	✓	
Unit Subsystem		
:UNIT:POWer DBM|DBUV|DBUVEMF|V|VEMF|DB :UNIT:POWer?	✓	
Amplitude Modulation Subsystem		
[:SOURce]:AM:INTernal:FREQuency:STEP[:INCRement] <num> [:SOURce]:AM:INTernal:FREQuency:STEP[:INCRement]?	✓	
[:SOURce]:AM:MODE DEEP	✓	
[:SOURce]:AM:MODE NORMal [:SOURce]:AM:MODE?	✓	
[:SOURce]:AM:WIDeband:STATe ON|OFF|1|0 [:SOURce]:AM:WIDeband:STATe?	–	
[:SOURce]:AM[1]|2:EXTernal[1]|2:COUPling AC|DC [:SOURce]:AM[1]|2:EXTernal[1]|2:COUPling?	✓	
[:SOURce]:AM[1]|2:EXTernal[1]|2:IMPedance <50|600> [:SOURce]:AM[1]|2:EXTernal[1]|2:IMPedance?	✓	*Command accepted without error but does nothing.*
[:SOURce]:AM[1]|2:INTernal[1]:FREQuency:ALTernate <value><unit> [:SOURce]:AM[1]|2:INTernal[1]:FREQuency:ALTernate?	–	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:AM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent <value><unit> [:SOURce]:AM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent?	–	
[:SOURce]:AM[1]|2:INTernal[1]|2:FUNCtion:SHAPe SINE [:SOURce]:AM[1]|2:INTernal[1]|2:FUNCtion:SHAPe?	✓	*Supported but the following parameters are not supported:* "TRIangle"|"SQUare"|"RAMP"|"NOISe"|"DUALsine"|"SWEPtsine"
[:SOURce]:AM[1]|2:INTernal[1]|2:FUNCtion:NOISe GAUSsian|UNIForm [:SOURce]:AM[1]|2:INTernal[1]|2:FUNCtion:NOISe?	–	
[:SOURce]:AM[1]|2:INTernal[1]|2:FUNCtion:RAMP POSitive|NEGative [:SOURce]:AM[1]|2:INTernal[1]|2:FUNCtion:RAMP?	–	
[:SOURce]:AM[1]|2:INTernal[1]:SWEep:RATE <value><unit> [:SOURce]:AM[1]|2:INTernal[1]:SWEep:RATE?	–	
[:SOURce]:AM[1]|2:INTernal[1]:SWEep:TRIGger IMMediate|KEY|EXTernal|BUS [:SOURce]:AM[1]|2:INTernal[1]:SWEep:TRIGger?	–	
[:SOURce]:AM[1]|2:INTernal[1]|2:FREQuency <value><unit>|UP|DOWN [:SOURce]:AM[1]|2:INTernal[1]|2:FREQuency?	✓	
[:SOURce]:AM[1]|2:POLarity NORMal|INVerted [:SOURce]:AM[1]|2:POLarity?	✓	
[:SOURce]:AM[1]|2:SOURce INT[1]|INT2|EXT[1]|EXT2 [:SOURce]:AM[1]|2:SOURce?	✓	*The Agilent MXG accepts the* EXT2 *parameter but only has a single external output and selects* EXT *on the signal generator if* EXT2 *is used.*
[:SOURce]:AM[1]|2:STATe ON|OFF|1|0 [:SOURce]:AM[1]|2:STATe?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5181xA	Remarks
[:SOURce]:AM[1]|2:TYPE LINear|EXPonential [:SOURce]:AM[1]|2:TYPE?	✓	
[:SOURce]:AM:WIDeband:SENSitivity <value> [:SOURce]:AM:WIDeband:SENSitivity?	–	
[:SOURce]:AM[1]|2[:DEPTh]:EXPonential <val> [:SOURce]:AM[1]|2[:DEPTh]:EXPonential?	–	
[:SOURce]:AM[1]|2[:DEPTh][:LINear] <value><unit>|UP|DOWN [:SOURce]:AM[1]|2[:DEPTh][:LINear]?	✓	
[:SOURce]:AM[1]|2[:DEPTh][:LINear]:TRACk ON|OFF|1|0 [:SOURce]:AM[1]|2[:DEPTh][:LINear]:TRACk?	–	
[:SOURce]:AM[:DEPTh]:STEP[:INCRement] <value><unit> [:SOURce]:AM[:DEPTh]:STEP[:INCRement]?	✓	
Frequency Subsystem		
[:SOURce]:FREQuency:CENTer <num>[<freq suffix>]|MAXimum|MINimum|UP|DOWN [:SOURce]:FREQuency:CENTer? [MAXimum|MINimum]	✓	
[:SOURce]:FREQuency:CHANnels:BAND NBASe|NMOBile|BPGSm|MPGSm|BEGSm|MEGSm|BRGSm|MRGSm|GM450|M480|M850|B450|B480|B850BDCS|MDCS|BPCS|MPCS|B8|M8|B15|M15|B390|B420|B460|B915|M380|M410|M450|M870|PHS|DECT [:SOURce]:FREQuency:CHANnels:BAND?	–	
[:SOURce]:FREQuency:CHANnels:NUMBer <number> [:SOURce]:FREQuency:CHANnels:NUMBer?	–	
[:SOURce]:FREQuency:CHANnels[:STATe] ON|OFF|1|0 [:SOURce]:FREQuency:CHANnels[:STATe]?	–	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:FREQuency:FIXed <value><unit>|UP|DOWN [:SOURce]:FREQuency:FIXed?	✓	
[:SOURce]:FREQuency:MANual <value><unit> [:SOURce]:FREQuency:MANual?	–	
[:SOURce]:FREQuency:MODE FIXed|CW|SWEep|LIST [:SOURce]:FREQuency:MODE?	✓	
[:SOURce]:FREQuency:MULTiplier <value> [:SOURce]:FREQuency:MULTiplier?	✓	
[:SOURce]:FREQuency:OFFSet <value><unit> [:SOURce]:FREQuency:OFFSet?	✓	
[:SOURce]:FREQuency:OFFSet:STATe ON|OFF [:SOURce]:FREQuency:OFFSet:STATe?	✓	
[:SOURce]:FREQuency:REFerence <value><unit> [:SOURce]:FREQuency:REFerence?	✓	
[:SOURce]:FREQuency:REFerence:SET	✓	
[:SOURce]:FREQuency:REFerence:STATe ON|OFF|1|0 [:SOURce]:FREQuency:REFerence:STATe?	✓	
[:SOURce]:FREQuency:SPAN <num>[<freq suffix>]|MAXimum|MINimum|UP|DOWN [:SOURce]:FREQuency:SPAN? [MAXimum|MINimum]	✓	
[:SOURce]:FREQuency:STARt <value><unit> [:SOURce]:FREQuency:STARt?	✓	
[:SOURce]:FREQuency:STOP <value><unit> [:SOURce]:FREQuency:STOP?	✓	
[:SOURce]:FREQuency[:CW] <value><unit>|UP|DOWN [:SOURce]:FREQuency[:CW]?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:FREQuency[:CW]:STEP[:INCRement] <value><unit> [:SOURce]:FREQuency[:CW]:STEP[:INCRement]?	✓	
[:SOURce]:FREQuency[:FIXed]:STEP[:INCRement] <value><unit> [:SOURce]:FREQuency[:FIXed]:STEP[:INCRement]?	✓	
[:SOURce]:PHASe:REFerence	✓	
[:SOURce]:PHASe[:ADJust] <value><unit> [:SOURce]:PHASe[:ADJust]?	✓	
[:SOURce]:ROSCillator:BANDwidth:DEFaults	–	
[:SOURce]:ROSCillator:BANDwidth:EXTernal <value> [:SOURce]:ROSCillator:BANDwidth:EXTernal?	✓	
[:SOURce]:ROSCillator:BANDwidth:INTernal <value> [:SOURce]:ROSCillator:BANDwidth:INTernal?	–	
[:SOURce]:ROSCillator:SOURce?	✓	
[:SOURce]:ROSCillator:SOURce:AUTO ON|OFF|1|0 [:SOURce]:ROSCillator:SOURce:AUTO?	✓	
Frequency Modulation Subsystem		
[:SOURce]:FM[1]|2:EXTernal[1]|2:COUPling AC|DC [:SOURce]:FM[1]|2:EXTernal[1]|2:COUPling?	✓	
[:SOURce]:FM[1]|2:EXTernal[1]|2:IMPedance <50|600> [:SOURce]:FM[1]|2:EXTernal[1]|2:IMPedance?	✓	*Command accepted without error but does nothing.*
[:SOURce]:FM:INTernal:FREQuency:STEP[:INCRement] <num> [:SOURce]:FM:INTernal:FREQuency:STEP[:INCRement]?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:FM[1]|2:INTernal[1]:FUNCtion:SHAPe SINE [:SOURce]:FM[1]|2:INTernal[1]:FUNCtion:SHAPe?	✓	*Supported but the following parameters are not supported:* TRIangle|SQUare|RAMP|NOISe|DUALsine|SWEPtsine
[:SOURce]:FM[1]|2:INTernal[1]|2:FREQuency <value><unit> [:SOURce]:FM[1]|2:INTernal[1]|2:FREQuency?	✓	
[:SOURce]:FM[1]|2:INTernal[1]:FREQuency:ALTernate <value><unit> [:SOURce]:FM[1]|2:INTernal[1]:FREQuency:ALTernate?	–	
[:SOURce]:FM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent <value><unit> [:SOURce]:FM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent?	–	
[:SOURce]:FM[1]|2:INTernal[1]|2:FUNCtion:NOISe GAUSsian|UNIForm [:SOURce]:FM[1]|2:INTernal[1]|2:FUNCtion:NOISe?	–	
[:SOURce]:FM[1]|2:INTernal[1]|2:FUNCtion:RAMP POSitive|NEGative [:SOURce]:FM[1]|2:INTernal[1]|2:FUNCtion:RAMP?	–	
[:SOURce]:FM[1]|2:INTernal[1]:SWEep:RATE <value><unit> [:SOURce]:FM[1]|2:INTernal[1]:SWEep:RATE?	–	
[:SOURce]:FM[1]|2:INTernal[1]:SWEep:TRIGger IMMediate|KEY|EXTernal|BUS [:SOURce]:FM[1]|2:INTernal[1]:SWEep:TRIGger?	–	
[:SOURce]:FM[1]|2:SOURce INT[1]|INT2|EXT[1]|EXT2 [:SOURce]:FM[1]|2:SOURce?	✓	*The Agilent MXG accepts the* EXT2 *parameter but only has a single external output and selects* EXT *on the signal generator if* EXT2 *is used.*
[:SOURce]:FM[1]|2:STATe ON|OFF|1|0 [:SOURce]:FM[1]|2:STATe?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:FM[1]|2[:DEViation] <value><unit> [:SOURce]:FM[1]|2[:DEViation]?	✓	
[:SOURce]:FM[1]|2:INTernal[1]:SWEep:TRIGger IMMediate|KEY|EXTernal|BUS [:SOURce]:FM[1]|2:INTernal[1]:SWEep:TRIGger?	–	
[:SOURce]:FM[1]|2[:DEViation]:TRACk ON|OFF|1|0 [:SOURce]:FM[1]|2[:DEViation]:TRACk?	–	
List/Sweep Subsystem		
[:SOURce]:LIST:CPOint?	✓	
[:SOURce]:LIST:DIRection UP|DOWN [:SOURce]:LIST:DIRection?	✓	
[:SOURce]:LIST:DWELl <value>{,<value>} [:SOURce]:LIST:DWELl?	✓	
[:SOURce]:LIST:DWELl:POINts?	✓	
[:SOURce]:LIST:DWELl:TYPE LIST|STEP [:SOURce]:LIST:DWELl:TYPE?	✓	
[:SOURce]:LIST:FREQuency <value>{,<value>} [:SOURce]:LIST:FREQuency?	✓	
[:SOURce]:LIST:FREQuency:POINts?	✓	
[:SOURce]:LIST:MANual <value>|UP|DOWN [:SOURce]:LIST:MANual?	✓	
[:SOURce]:LIST:MODE AUTO|MANual [:SOURce]:LIST:MODE?	✓	
[:SOURce]:LIST:POWer <value>{,<value>} [:SOURce]:LIST:POWer?	✓	
[:SOURce]:LIST:POWer:POINts?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:LIST:RETRace ON|OFF|0|1 [:SOURce]:LIST:RETRace?	✓	
[:SOURce]:LIST:TRIGger:SOURce BUS|IMMediate|EXTernal|KEY [:SOURce]:LIST:TRIGger:SOURce?	✓	
[:SOURce]:LIST:TYPE LIST|STEP [:SOURce]:LIST:TYPE?	✓	
[:SOURce]:LIST:TYPE:LIST:INITialize:FSTep	✓	
[:SOURce]:LIST:TYPE:LIST:INITialize:PRESet	✓	
[:SOURce]:SWEep:CONTrol:STATe ON|OFF|1|0 [:SOURce]:SWEep:CONTrol:STATe?	–	
[:SOURce]:SWEep:CONTrol:TYPE MASTer|SLAVe [:SOURce]:SWEep:CONTrol:TYPE?	–	
[:SOURce]:SWEep:CPOint?	✓	
[:SOURce]:SWEep:DWELl <value> [:SOURce]:SWEep:DWELl?	✓	
[:SOURce]:SWEep:GENeration ANALog|STEPped [:SOURce]:SWEep:GENeration?	✓	*Command accepted without error but does nothing.*
[:SOURce]:SWEep:MODE AUTO|MANual [:SOURce]:SWEep:MODE?	✓	
[:SOURce]:SWEep:POINts <value> [:SOURce]:SWEep:POINts?	✓	
[:SOURce]:SWEep:SPACing LINear|LOGarithmic [:SOURce]:SWEep:SPACing?	✓	
[:SOURce]:SWEep:TIME 10mS - 99S [:SOURce]:SWEep:TIME?	–	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:SWEep:TIME:AUTO ON|OFF|0|1 [:SOURce]:SWEep:TIME:AUTO?	–	
[:SOURce]:SWEep:TIME:COMP:AUTO ON|OFF|0|1 [:SOURce]:SWEep:TIME:COMP:AUTO?	–	
Phase Modulation Subsystem		
[:SOURce]:PM[1]|2:INTernal[1]:FREQuency:ALTernate <value><unit> [:SOURce]:PM[1]|2:INTernal[1]:FREQuency:ALTernate?	–	
[:SOURce]:PM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent <value><unit> [:SOURce]:PM[1]|2:INTernal[1]:FREQuency:ALTernate:AMPLitude:PERCent?	–	
[:SOURce]:PM:INTernal:FREQuency:STEP[:INCRement] [:SOURce]:PM:INTernal:FREQuency:STEP[:INCRement]?	✓	
[:SOURce]:PM[1]|2:BANDwidth|BWIDth NORMal|HIGH [:SOURce]:PM[1]|2:BANDwidth|BWIDth?	✓	
[:SOURce]:PM[1]|2:EXTernal[1]:COUPling AC|DC [:SOURce]:PM[1]|2:EXTernal[1]:COUPling?	✓	
[:SOURce]:PM[1]|2:EXTernal[1]|2:IMPedance <50|600> [:SOURce]:PM[1]|2:EXTernal[1]|2:IMPedance?	✓	
[:SOURce]:PM[1]|2:INTernal[1]|2:FREQuency <value><unit> [:SOURce]:PM[1]|2:INTernal[1]|2:FREQuency?	✓	
[:SOURce]:PM[1]|2:INTernal[1]|2:FUNCtion:NOISe GAUSsian|UNIForm [:SOURce]:PM[1]|2:INTernal[1]|2:FUNCtion:NOISe?	–	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:PM[1]|2:INTernal[1]|2:FUNCtion:RAMP POSitive|NEGative [:SOURce]:PM[1]|2:INTernal[1]|2:FUNCtion:RAMP?	–	
[:SOURce]:PM[1]|2:INTernal[1]:FUNCtion:SHAPe SINE [:SOURce]:PM[1]|2:INTernal[1]:FUNCtion:SHAPe?	✓	*Supported but the following parameters are not supported:* TRIangle|SQUare|RAMP|NOISe|DUALsine|SWEPtsine
[:SOURce]:PM[1]|2:INTernal[1]:SWEep:RATE <value><unit> [:SOURce]:PM[1]|2:INTernal[1]:SWEep:RATE?	–	
[:SOURce]:PM[1]|2:INTernal[1]:SWEep:TRIGger IMMediate|KEY|EXTernal|BUS [:SOURce]:PM[1]|2:INTernal[1]:SWEep:TRIGger?	–	
[:SOURce]:PM[1]|2:SOURce INT[1]|INT2|EXT[1]|EXT2 [:SOURce]:PM[1]|2:SOURce?	✓	*The Agilent MXG accepts the* EXT2 *parameter but only has a single external output and selects* EXT *on the signal generator if* EXT2 *is used.*
[:SOURce]:PM[1]|2:STATe ON|OFF|1|0 [:SOURce]:PM[1]|2:STATe?	✓	
[:SOURce]:PM[1]|2[:DEViation] <value><unit> [:SOURce]:PM[1]|2[:DEViation]?	✓	
[:SOURce]:PM[1]|2[:DEViation]:TRACk ON|OFF|1|0 [:SOURce]:PM[1]|2[:DEViation]:TRACk?	–	
[:SOURce]:PM[:DEViation]:STEP[:INCRement] <value><unit> [:SOURce]:PM[:DEViation]:STEP[:INCRement]?	✓	
Power Subsystem		
[:SOURce]:POWer:ALC:BANDwidth|BWIDth <num>[freq suffix] [:SOURce]:POWer:ALC:BANDwidth|BWIDth?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:POWer:ALC:BANDwidth|BWIDth:AUTO ON|OFF|1|0 [:SOURce]:POWer:ALC:BANDwidth|BWIDth:AUTO?	✓	
[:SOURce]:POWer:ALC:LEVel <value>dB [:SOURce]:POWer:ALC:LEVel?	✓	
[:SOURce]:POWer:ALC:SEARch ON|OFF|1|0|ONCE [:SOURce]:POWer:ALC:SEARch?	–	
[:SOURce]:POWer:ALC:SEARch:REFerence FIXed|MODulated|MANual|MODulated [:SOURce]:POWer:ALC:SEARch:REFerence?	✓	*Supported on the N5162/82A only.*
[:SOURce]:POWer:ALC:SEARch:REFerence:LEVel <value> [:SOURce]:POWer:ALC:SEARch:REFerence:LEVel?	✓	*Supported on the N5162A/82A Only.*
[:SOURce]:POWer:ALC:SEARch:SPAN:POINts <value> [:SOURce]:POWer:ALC:SEARch:SPAN:POINts?	✓	
[:SOURce]:POWer:ALC:SEARch:SPAN:STARt <value><units> [:SOURce]:POWer:ALC:SEARch:SPAN:STARt?	✓	
[:SOURce]:POWer:ALC:SEARch:SPAN:STOP <value><units> [:SOURce]:POWer:ALC:SEARch:SPAN:STOP?	✓	
[:SOURce]:POWer:ALC:SEARch:SPAN:TYPE FULL|USER [:SOURce]:POWer:ALC:SEARch:SPAN:TYPE?	✓	
[:SOURce]:POWer:ALC:SEARch:SPAN[:STATe] ON|OFF|1|0 [:SOURce]:POWer:ALC:SEARch:SPAN[:STATe]?	✓	
[:SOURce]:POWer:ALC:SOURce INTernal|DIODe [:SOURce]:POWer:ALC:SOURce?	✓	*Supported on the N5183A only. But the following parameter is not supported:* MMHead.

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:POWer:ALC:SOURce:EXTernal:COUPling (0dB-32dB) [:SOURce]:POWer:ALC:SOURce:EXTernal:COUPling?	–	
[:SOURce]:POWer:ALC[:STATe] ON|OFF|1|0 [:SOURce]:POWer:ALC[:STATe]?	✓	
[:SOURce]:POWer:ATTenuation <value><unit> [:SOURce]:POWer:ATTenuation?	✓	
[:SOURce]:POWer:ATTenuation:AUTO ON|OFF|1|0 [:SOURce]:POWer:ATTenuation:AUTO?	✓	
[:SOURce]:POWer:MODE FIXed|LIST|SWEep [:SOURce]:POWer:MODE?	✓	
[:SOURce]:POWer:PROTection[:STATe] ON|OFF|1|0 [:SOURce]:POWer:PROTection[:STATe]?	✓	
[:SOURce]:POWer:REFerence <value><unit> [:SOURce]:POWer:REFerence?	✓	
[:SOURce]:POWer:REFerence:STATe ON|OFF|1|0 [:SOURce]:POWer:REFerence:STATe?	✓	
[:SOURce]:POWer:STARt <value><unit> [:SOURce]:POWer:STARt?	✓	
[:SOURce]:POWer:STOP <value><unit> [:SOURce]:POWer:STOP?	✓	
[:SOURce]:POWer[:LEVel][:IMMediate]:OFFSet <value><unit> [:SOURce]:POWer[:LEVel][:IMMediate]:OFFSet?	✓	
[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude] <value><unit> |UP|DOWN [:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]:STEP[:INCRement] <value> [:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]:STEP[:INCRement]?	✓	
Pulse Modulation Subsystem		
[:SOURce]:PULM:EXTernal:POLarity NORMal|INVerted [:SOURce]:PULM:EXTernal:POLarity?	✓	
[:SOURce]:PULM:INTernal[1]:DELay <delay>|UP|DOWN [:SOURce]:PULM:INTernal[1]:DELay? [UP|DOWN]	✓	
[:SOURce]:PULM:INTernal[1]:DELay:STEP <step> [:SOURce]:PULM:INTernal[1]:DELay:STEP?	✓	
[:SOURce]:PULM:INTernal[1]:FREQuency <frequency>|MAXimum|MINimum|UP|DOWN [:SOURce]:PULM:INTernal[1]:FREQuency?	✓	
[:SOURce]:PULM:INTernal[1]:FREQuency:STEP[:INCRement] <freq>|MAXimum|MINimum|DEFault [:SOURce]:PULM:INTernal[1]:FREQuency:STEP[:INCRement]? [MIN|MAX|DEF]	✓	
[:SOURce]:PULM:INTernal[1]:PERiod <period>|MAXimum|MINimum|UP|DOWN [:SOURce]:PULM:INTernal[1]:PERiod?	✓	
[:SOURce]:PULM:INTernal[1]:PERiod:STEP[:INCRement] <step>|UP|DOWN [:SOURce]:PULM:INTernal[1]:PERiod:STEP[:INCRement]?	✓	
[:SOURce]:PULM:INTernal[1]:PWIDth <width> [:SOURce]:PULM:INTernal[1]:PWIDth?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:PULM:INTernal[1]:PWIDth:STEP <step>|DEFault|MAXimum|MINimum [:SOURce]:PULM:INTernal[1]:PWIDth:STEP?	✓	
[:SOURce]:PULM:SOURce INT|EXT [:SOURce]:PULM:SOURce?	✓	*Supported but the following parameters are not supported:* SCALar
[:SOURce]:PULM:SOURce:INTernal SQUare|FRUN|TRIGgered|DOUBlet|GATEd [:SOURce]:PULM:SOURce:INTernal?	✓	
[:SOURce]:PULM:STATe ON|OFF|1|0 [:SOURce]:PULM:STATe?	✓	
Digital Function Commands		
All Subsystem		
[:SOURce]:RADio[1]:ALL:OFF	✓	
AWGN ARB Subsystem		
[:SOURce]:RADio[1]:AWGN...	–	*This subsystem is not supported.*
AWGN Real Time Subsystem (This subsystem is aupported on the N5162A/82A only.)		
[:SOURce]:RADio:AWGN:RT:BWIDth <val> [:SOURce]:RADio:AWGN:RT:BWIDth?	✓	
[:SOURce]:RADio:AWGN:RT[:STATe] ON|OFF|1|0 [:SOURce]:RADio:AWGN:RT[:STATe]?	✓	
Custom Subsystem		
[:SOURce]:RADio[1]:CUSTom:...	–	*This subsystem is not supported.*
Dmodulation Subsystem (This subsystem supported on the N5162A/82A only.)		
[:SOURce]:RADio:DMODulation:ARB:FILTer RNYQuist|NYQuist|GAUSsian|RECTangle|IS95|IS95_EQ|IS95_MOD|IS95_MOD_EQ|WCDMa|AC4Fm|IS2000SR3DS|UGGaussian|"user FIR" [:SOURce]:RADio:DMODulation:ARB:FILTer?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio:DMODulation:ARB:FILTer:ALPHa <value> [:SOURce]:RADio:DMODulation:ARB:FILTer:ALPHa?	✓	
[:SOURce]:RADio:DMODulation:ARB:FILTer:BBT <value> [:SOURce]:RADio:DMODulation:ARB:FILTer:BBT?	✓	
[:SOURce]:RADio:DMODulation:ARB:FILTer:CHANnel EVM|ACP [:SOURce]:RADio:DMODulation:ARB:FILTer:CHANnel?	✓	
[:SOURce]:RADio:DMODulation:ARB:HEADer:CLEar	✓	
[:SOURce]:RADio:DMODulation:ARB:HEADer:SAVE	✓	
[:SOURce]:RADio:DMODulation:ARB:IQ:EXTernal:FILTer 40e6|THRough [:SOURce]:RADio:DMODulation:ARB:IQ:EXTernal:FILTer?	✓	*Command accepted on the N5162A/82A without error but does nothing.*
[:SOURce]:RADio:DMODulation:ARB:IQ:EXTernal:FILTer:AUTO ON|OFF|1|0 [:SOURce]:RADio:DMODulation:ARB:IQ:EXTernal:FILTer:AUTO?	✓	
[:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:ATTen <val><unit> [:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:ATTen?	✓	
[:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:ATTen:AUTO ON|OFF|1|0 [:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:ATTen:AUTO?	✓	
[:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:FILTer 2.1e6|40e6|THRough [:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:FILTer?	✓	*Command accepted on the N5162A/82A without error but does nothing.*

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:FILTer:AUTO ON|OFF|1|0 [:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:FILTer:AUTO?	✓	
[:SOURce]:RADio:DMODulation:ARB:MDEStination:AAMPlitude {NONE}|M1|M2|M3|M4 [:SOURce]:RADio:DMODulation:ARB:MDEStination:AAMPlitude?	–	
[:SOURce]:RADio:DMODulation:ARB:MDEStination:ALCHold {NONE}|M1|M2|M3|M4 [:SOURce]:RADio:DMODulation:ARB:MDEStination:ALCHold?	✓	
[:SOURce]:RADio:DMODulation:ARB:MDEStination:PULSe {NONE}|M1|M2|M3|M4 [:SOURce]:RADio:DMODulation:ARB:MDEStination:PULSe?	✓	
[:SOURce]:RADio:DMODulation:ARB:MODulation:ASK[:DEPTh] <0% - {100%}> [:SOURce]:RADio:DMODulation:ARB:MODulation:ASK[:DEPTh]?	✓	
[:SOURce]:RADio:DMODulation:ARB:MODulation:FSK[:DEViation] <val><unit> [:SOURce]:RADio:DMODulation:ARB:MODulation:FSK[:DEViation]?	✓	
[:SOURce]:RADio:DMODulation:ARB:MODulation[:TYPE] ASK|BPSK|QPSK|IS95QPSK|GRAYQPSK|OQPSK|IS95OQPSK|P4DQPSK|PSK8|PSK16|D8PSK|EDGE|MSK|FSK2|FSK4|FSK8|FSK16|C4FM|QAM4|QAM16|QAM32|QAM64|QAM128|QAM256 [:SOURce]:RADio:DMODulation:ARB:MODulation[:TYPE]?	✓	
[:SOURce]:RADio:DMODulation:ARB:MPOLarity:MARKer1|2|3|4 NEGative|{POSitive} [:SOURce]:RADio:DMODulation:ARB:MPOLarity:MARKer1|2|3|4?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio:DMODulation:ARB:REFerence:EXTernal:FREQuency <value> [:SOURce]:RADio:DMODulation:ARB:REFerence:EXTernal:FREQuency?	✓	
[:SOURce]:RADio:DMODulation:ARB:REFerence[:SOURce] INTernal|EXTernal [:SOURce]:RADio:DMODulation:ARB:REFerence[:SOURce]?	✓	
[:SOURce]:RADio:DMODulation:ARB:RETRigger ON|OFF|IMMediate [:SOURce]:RADio:DMODulation:ARB:RETRigger?	✓	
[:SOURce]:RADio:DMODulation:ARB:SCLock:RATE <1Hz - 1.0e8 kHz {1.0e8 kHz}> [:SOURce]:RADio:DMODulation:ARB:SCLock:RATE?	✓	
[:SOURce]:RADio:DMODulation:ARB:SETup GSM|NADC|PDC|PHS|DECT|AC4Fm|ACQPsk|CDPD|PWT|EDGE|TETRa|MCARrier|"file name" [:SOURce]:RADio:DMODulation:ARB:SETup?	✓	
[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier (GSM|NADC|PDC|PHS|DECT|AC4Fm|ACQPsk|CDPD|PWT|EDGE|TETRa,<num carriers>,<freq spacing>) | "file name" [:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier?	✓	
[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:PHASe {FIXed}|RANDom [:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:PHASe?	✓	
[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:STORe "file name"	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:TABLe INIT|APPend|<carrier_num>,GSM|NADC|PDC|PHS|DECT|AC4Fm|ACQPsk|CDPD|PWT|EDGE|TETRa|"file name",<freq_offset>,<power> [:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:TABLe? <carrier_num>	✓	
[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:TABLe:NCARriers?	✓	
[:SOURce]:RADio:DMODulation:ARB:SETup:STORe "file name"	–	
[:SOURce]:RADio:DMODulation:ARB:SRATe <value> [:SOURce]:RADio:DMODulation:ARB:SRATe?	–	
[:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE:CONTinuous[:TYPE] FREE|TRIGger|RESet [:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE:CONTinuous[:TYPE]?	✓	
[:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE CONTinuous|SINGle|GATE [:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE?	✓	
[:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE:GATE LOW|HIGH [:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE:GATE?	✓	
[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce] KEY|BUS|EXT [:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]?	✓	
[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal:DELay <value> [:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal:DELay?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal:DELay:STATe ON|OFF|1|0 [:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal:DELay:STATe?	✓	
[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal:SLOPe POSitive|NEGative [:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal:SLOPe?	✓	
[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal[:SOURce] EPT1|EPT2|EPTRIGGER1|EPTRIGGER2 [:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal[:SOURce]?	✓	
[:SOURce]:RADio:DMODulation:ARB[:STATe] ON|OFF|1|0 [:SOURce]:RADio:DMODulation:ARB[:STATe]?	✓	
Digital Subsystem		
:DIGital...	–	*This subsystem is not supported.*
Digital Modulation Subsystem (This subsystem supported on the N5162A/82A only.)		
[:SOURce]:DM:EXTernal:FILTer 40e6|THRough	✓	*Commands are accepted without error by the signal generator, but no action occurs. But the following query is not supported:* [:SOURce]:DM:EXTernal:FILTer?
[:SOURce]:DM:EXTernal:FILTer:AUTO ON|OFF|1|0	✓	*Supported but the following query is not supported:* [:SOURce]:DM:EXTernal:FILTer:AUTO?
[:SOURce]:DM:EXTernal:POLarity NORMal|INVert|INVerted [:SOURce]:DM:EXTernal:POLarity?	✓	
[:SOURce]:DM:EXTernal:SOURce EXTernal|INTernal|BBG1|OFF|SUM [:SOURce]:DM:EXTernal:SOURce?	✓	*Supported but the following parameters are not supported:* |BBG2|BBG3|BBG4|EXT600|

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:DM:IQADjustment:BBG[1]|2:DELay <value><unit> [:SOURce]:DM:IQADjustment:BBG[1]|2:DELay?	✓	
[:SOURce]:DM:IQADjustment:BBG[1]|2:DELay:EVENts ON|OFF|1|0 [:SOURce]:DM:IQADjustment:BBG[1]|2:DELay:EVENts?	✓	
[:SOURce]:DM:IQADjustment:BBG[1]|2:SKEW:PATH {RF}|BB [:SOURce]:DM:IQADjustment:BBG[1]|2:SKEW:PATH?	✓	
[:SOURce]:DM:IQADjustment:BBG[1]|2:SKEW[:DELay] <value><unit> [:SOURce]:DM:IQADjustment:BBG[1]|2:SKEW[:DELay]?	✓	
[:SOURce]:DM:IQADjustment:EXTernal:COFFset <value><unit> [:SOURce]:DM:IQADjustment:EXTernal:COFFset?	✓	
[:SOURce]:DM:IQADjustment:EXTernal:DIOFfset <value><unit> [:SOURce]:DM:IQADjustment:EXTernal:DIOFfset?	✓	
[:SOURce]:DM:IQADjustment:EXTernal:DQOFfset <value><unit> [:SOURce]:DM:IQADjustment:EXTernal:DQOFfset?	✓	
[:SOURce]:DM:IQADjustment:EXTernal:IOFFset <value><unit> [:SOURce]:DM:IQADjustment:EXTernal:IOFFset?	✓	
[:SOURce]:DM:IQADjustment:EXTernal:IQATten <value><unit> [:SOURce]:DM:IQADjustment:EXTernal:IQATten?	–	
[:SOURce]:DM:IQADjustment:EXTernal:QOFFset <value><unit> [:SOURce]:DM:IQADjustment:EXTernal:QOFFset?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:DM:IQADjustment:GAIN? [:SOURce]:DM:IQADjustment:GAIN[1|2] <value><unit>	✓	
[:SOURce]:DM:IQADjustment:IOFFset <value><unit> [:SOURce]:DM:IQADjustment:IOFFset?	✓	
[:SOURce]:DM:IQADjustment:QOFFset <value><unit> [:SOURce]:DM:IQADjustment:QOFFset?	✓	
[:SOURce]:DM:IQADjustment:QSKew <value><unit> [:SOURce]:DM:IQADjustment:QSKew?	✓	
[:SOURce]:DM:IQADjustment[:STATe] ON|OFF|1|0 [:SOURce]:DM:IQADjustment[:STATe]?	✓	
[:SOURce]:DM:MODulation:ATTen <value><unit> [:SOURce]:DM:MODulation:ATTen?	✓	
[:SOURce]:DM:MODulation:ATTen:AUTO ON|OFF|1|0 [:SOURce]:DM:MODulation:ATTen:AUTO?	✓	
[:SOURce]:DM:MODulation:ATTen:EXTernal DEFault|MANual|MEASure [:SOURce]:DM:MODulation:ATTen:EXTernal?	✓	
[:SOURce]:DM:MODulation:ATTen:EXTernal:LEVel <value> <volt_units> [:SOURce]:DM:MODulation:ATTen:EXTernal:LEVel?	✓	
[:SOURce]:DM:MODulation:ATTen:EXTernal:LEVel:MEASurement	✓	
[:SOURce]:DM:MODulation:ATTen:OPTimize:BANDwidth <value> <bw_rate_units> [:SOURce]:DM:MODulation:ATTen:OPTimize:BANDwidth?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:DM:MODulation:FILTer THRough	✓	*Supported but the following query generates an* error: –113, Undefined header: [:SOURce]:DM:MODulation:FILTer?
[:SOURce]:DM:MODulation:FILTer:AUTO ON|OFF|1|0|2.1e6|40e6| [:SOURce]:DM:MODulation:FILTer:AUTO?	✓	*Commands are accepted by the signal generator, but no action is taken.* (An error –113, Undefined header *will be displayed on the signal generator.*)
[:SOURce]:DM:POLarity[:ALL] NORMal|INVert|INVerted [:SOURce]:DM:POLarity?	✓	
[:SOURce]:DM:SKEW:PATH RF|BB [:SOURce]:DM:SKEW:PATH?	–	
[:SOURce]:DM:SKEW[:STATe] ON|OFF|1|0| [:SOURce]:DM:SKEW[:STATe]?	✓	
[:SOURce]:DM:SOURce[1]|2 EXTernal|INTernal|BBG1|OFF [:SOURce]:DM:SOURce?	✓	*Supported but the following parameters are not supported:* |BBG2|BBG3|BBG4|EXT600|
[:SOURce]:DM:SRATio <value><unit> [:SOURce]:DM:SRATio?	✓	
[:SOURce]:DM:STATe ON|OFF|1|0 [:SOURce]:DM:STATe?	✓	
[:SOURce]:WDM:IQADjustment:IOFFset <val><unit> [:SOURce]:WDM:IQADjustment:IOFFset?	–	
[:SOURce]:WDM:IQADjustment:QOFFset <val><unit> [:SOURce]:WDM:IQADjustment:QOFFset?	–	
[:SOURce]:WDM:IQADjustment:QSKew <val><unit> [:SOURce]:WDM:IQADjustment:QSKew?	–	
[:SOURce]:WDM:IQADjustment[:STATe] ON|OFF|1|0 [:SOURce]:WDM:IQADjustment[:STATe]?	–	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:WDM:STATe ON|OFF|1|0 [:SOURce]:WDM:STATe?	–	
Display Subsystem		
:DISPlay:ANNotation:AMPLitude:UNIT DBM|DBUV|DBUVEMF|V|VEMF|DB :DISPlay:ANNotation:AMPLitude:UNIT?	✓	
:DISPlay:ANNotation:CLOCk:DATE:FORMat MDY|DMY :DISPlay:ANNotation:CLOCk:DATE:FORMat?	✓	
:DISPlay:ANNotation:CLOCk[:STATe] ON|OFF|1|0 :DISPlay:ANNotation:CLOCk[:STATe]?	✓	
:DISPlay:BRIGhtness <value> :DISPlay:BRIGhtness?	✓	
:DISPlay:CAPTure	✓	
:DISPlay:CONTrast <value> :DISPlay:CONTrast?	✓	
:DISPlay:INVerse ON|OFF|1|0	✓	*Supported but the following query is not supported:* :DISPlay:INVerse?
:DISPlay:REMote ON|OFF|1|0 :DISPlay:REMote?	✓	
:DISPlay:MENU[:NAME] AM|FMPM|SWEep|UTILity|PULSe|LFOut|FREQuency|AMPLitude|SAVE|RECall|IQ|MUX|MODE|MODesetup|BERT|BGSM|BEDGe	–	
:DISPlay[:WINDow][:STATe] ON|OFF|1|0 :DISPlay[:WINDow][:STATe]?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
Dual ARB Subsystem (This subsystem supported on the N5162A/82A only.)		
[:SOURce]:RADio2:ARB:VCO:INTernal:SOURce:BBG1 ON|OFF|1|0 [:SOURce]:RADio2:ARB:VCO:INTernal:SOURce:BBG1?	–	
[:SOURce]:RADio:ARB:BASEband:FREQuency:OFFSet <value> [:SOURce]:RADio:ARB:BASEband:FREQuency:OFFSet?	✓	
[:SOURce]:RADio[1]:ARB:CLIPping "filename",IJQ|IORQ,<10-100%>[,<10-100%>]	✓	
[:SOURce]:RADio[1]:ARB:DACS:ALIGn	✓	
[:SOURce]:RADio[1]:ARB:GENerate:SINE ["filename"],[<osr>],[<scale>],[I|Q|{IQ}]	✓	
[:SOURce]:RADio[1]:ARB:HEADer:CLEar	✓	
[:SOURce]:RADio:ARB:HEADer:NOISe:RMS:OVERride <"filename">, <rms:0 - 1.414213562373095>|UNSPecified [:SOURce]:RADio:ARB:HEADer:NOISe:RMS:OVERride? <"filename">	–	
[:SOURce]:RADio[1]:ARB:HEADer:RMS <"filename">, <rms:0 - 1.414213562373095>|UNSPecified [:SOURce]:RADio[1]:ARB:HEADer:RMS? <"filename">	✓	
[:SOURce]:RADio[1]:ARB:HEADer:SAVE	✓	
[:SOURce]:RADio[1]:ARB:IQ:EXTernal:FILTer 40e6|THRough	✓	*Commands are accepted by the signal generator, but no action is taken. But the following query is not supported and generates an* Error: –113, Undefined header: [:SOURce]:RADio[1]:ARB:IQ:EXTernal:FILTer?

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio[1]:ARB:IQ:EXTernal:FILTer:AUTO ON|OFF|1|0	✓	*Commands are accepted by the signal generator, but no action is taken. But the following query is not supported and generates an* Error: –113, Undefined header: [:SOURce]:RADio[1]:ARB:IQ:EXTernal:FILTer:AUTO?
[:SOURce]:RADio[1]:ARB:IQ:MODulation:ATTen <value><unit> [:SOURce]:RADio[1]:ARB:IQ:MODulation:ATTen?	✓	
[:SOURce]:RADio[1]:ARB:IQ:MODulation:ATTen:AUTO ON|OFF|1|0 [:SOURce]:RADio[1]:ARB:IQ:MODulation:ATTen:AUTO?	✓	
[:SOURce]:RADio[1]:ARB:IQ:MODulation:FILTer 2.1e6|40e6|THRough	✓	*Commands are accepted by the signal generator, but no action is taken. But the following query is not supported and generates an* Error: –113, Undefined header: [:SOURce]:RADio[1]:ARB:IQ:MODulation:FILTer?
[:SOURce]:RADio[1]:ARB:IQ:MODulation:FILTer:AUTO ON|OFF|1|0	✓	*Commands are accepted by the signal generator, but no action is taken. But the following query is not supported and generates an* Error: –113, Undefined header: [:SOURce]:RADio[1]:ARB:IQ:MODulation:FILTer:AUTO?
[:SOURce]:RADio[1]:ARB:MARKer:CLEar "filename",<mkr(1|2|3|4)>,<first_Point>,<last_point>	✓	
[:SOURce]:RADio[1]:ARB:MARKer:CLEar:ALL "filename",<mkr(1|2|3|4)>	✓	
[:SOURce]:RADio[1]:ARB:MARKer:ROTate "filename",<rotate_count>	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio[1]:ARB:MARKer:[SET] "filename",<mkr(1|2|3|4)>,<first_Point>,<last_point>,<skip_count>	✓	
[:SOURce]:RADio[1]:ARB:MDEStination:ALCHold {NONE}|M1|M2|M3|M4 [:SOURce]:RADio[1]:ARB:MDEStination:ALCHold?	✓	
[:SOURce]:RADio[1]:ARB:MDEStination:PULSe {NONE}|M1|M2|M3|M4 [:SOURce]:RADio[1]:ARB:MDEStination:PULSe?	✓	
[:SOURce]:RADio[1]:ARB:MPOLarity:MARKer1 NEGative|{POSitive} [:SOURce]:RADio[1]:ARB:MPOLarity:MARKer1?	✓	
[:SOURce]:RADio[1]:ARB:MPOLarity:MARKer2 NEGative|{POSitive} [:SOURce]:RADio[1]:ARB:MPOLarity:MARKer2?	✓	
[:SOURce]:RADio[1]:ARB:MPOLarity:MARKer3 NEGative|{POSitive} [:SOURce]:RADio[1]:ARB:MPOLarity:MARKer3?	✓	
[:SOURce]:RADio[1]:ARB:MPOLarity:MARKer4 NEGative|{POSitive} [:SOURce]:RADio[1]:ARB:MPOLarity:MARKer4?	✓	
[:SOURce]:RADio[1]:ARB:NOISe:BFACtor <1 - 2 {1}> [:SOURce]:RADio[1]:ARB:NOISe:BFACtor?	✓	
[:SOURce]:RADio[1]:ARB:NOISe:CBWidth <1Hz-80Mhz {1Hz}> [:SOURce]:RADio[1]:ARB:NOISe:CBWidth?	✓	
[:SOURce]:RADio[1]:ARB:NOISe:CN <-100dB - 100dB {0dB}> [:SOURce]:RADio[1]:ARB:NOISe:CN?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio[1]:ARB:NOISe[:STATe] ON|{OFF}|1|0 [:SOURce]:RADio[1]:ARB:NOISe[:STATe]?	✓	
[:SOURce]:RADio[1]:ARB:REFerence:EXTernal:FREQuency <value> [:SOURce]:RADio[1]:ARB:REFerence:EXTernal:FREQuency?	–	
[:SOURce]:RADio[1]:ARB:REFerence[:SOURce] INTernal|EXTernal [:SOURce]:RADio[1]:ARB:REFerence[:SOURce]?	✓	
[:SOURce]:RADio[1]:ARB:RETRigger ON|OFF|IMMediate [:SOURce]:RADio[1]:ARB:RETRigger?	✓	
[:SOURce]:RADio[1]:ARB:RSCaling <1%-100%> [:SOURce]:RADio[1]:ARB:RSCaling?	✓	
[:SOURce]:RADio[1]:ARB:SCALing "filename",<1%-100%>	✓	
[:SOURce]:RADio[1]:ARB:SCLock:RATE <1Hz - 100MHz {100MHz}> [:SOURce]:RADio[1]:ARB:SCLock:RATE?	✓	*Agilent MXG range is 1 kHz – 125 MHz with a default of 125 MHz.*
[:SOURce]:RADio[1]:ARB:SEQuence[:MWAVeform] <filename>,<waveform>,<reps>,NONE|M1|M2|M3|M4|M1M2|M1M3|M1M4|M2M3|M2M4|M3M4|M1M2M3|M1M2M4|M1M3M4|M2M3M4|M1M2M3M4|ALL,{,<waveform>,<reps>,NONE|M1|M2|M3|M4|M1M2|M1M3|M1M4|M2M3|M2M4|M3M4|M1M2M3|M1M2M4|M1M3M4|M2M3M4|M1M2M3M4|ALL,} [:SOURce]:RADio[1]:ARB:SEQuence[:MWAVeform]? <filename>	✓	
[:SOURce]:RADio[1]:ARB:TRIGger:TYPE CONTinuous|SINGle|GATE|SADVance [:SOURce]:RADio[1]:ARB:TRIGger:TYPE?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio[1]:ARB:TRIGger:TYPE:CONTinuous [:TYPE] FREE|TRIGger|RESet [:SOURce]:RADio[1]:ARB:TRIGger:TYPE:CONTinuous [:TYPE]?	✓	
[:SOURce]:RADio[1]:ARB:TRIGger:TYPE:GATE LOW|HIGH [:SOURce]:RADio[1]:ARB:TRIGger:TYPE:GATE?	✓	
[:SOURce]:RADio[1]:ARB:TRIGger:TYPE:SADVance:SORDer LINear|DYNamic [:SOURce]:RADio[1]:ARB:TRIGger:TYPE:SADVance:SORDer?	–	
[:SOURce]:RADio[1]:ARB:TRIGger:TYPE:SADVance:THOFf ON|OFF|1|0 [:SOURce]:RADio[1]:ARB:TRIGger:TYPE:SADVance:THOFf?	–	
[:SOURce]:RADio[1]:ARB:TRIGger:TYPE:SADVance[:TYPE] SINGle|CONTinuous [:SOURce]:RADio[1]:ARB:TRIGger:TYPE:SADVance[:TYPE]?	✓	
[:SOURce]:RADio[1]:ARB:TRIGger[:SOURce] KEY|BUS|EXT [:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]?	✓	
[:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:DELay:SAMPles <value> [:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:DELay:SAMPles?	–	
[:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]:EXTernal:DELay:STATe ON|OFF|1|0 [:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]:EXTernal:DELay:STATe?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:DELay[:TIME] <value> [:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:DELay[:TIME]?	–	
[:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]:EXTernal:SLOPe POSitive|NEGative [:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]:EXTernal:SLOPe?	✓	
[:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]:EXTernal[:SOURce] EPT1|EPT2|EPTRIGGER1|EPTRIGGER2 [:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]:EXTernal[:SOURce]?	✓	
[:SOURce]:RADio[1]:ARB:VCO:CLOCk:RATE?	–	
[:SOURce]:RADio[1]:ARB:VCO:CLOCk[:SOURce] INTernal|EXTernal [:SOURce]:RADio[1]:ARB:VCO:CLOCk[:SOURce]?	✓	
[:SOURce]:RADio[1]:ARB:WAVeform "WFM1:filename"|"SEQ:filename" [:SOURce]:RADio[1]:ARB:WAVeform?	–	
[:SOURce]:RADio[1]:ARB:WAVeform:NHEaders "WFM1:filename"|"SEQ:filename" [:SOURce]:RADio[1]:ARB:WAVeform:NHEaders?	✓	
[:SOURce]:RADio[1]:ARB[:STATe] ON|OFF|1|0 [:SOURce]:RADio[1]:ARB[:STATe]?	✓	
Multi-Tone Subsystem (This subsystem supported on the N5162A/82A only.)		
[:SOURce]:RADio:MTONe:ARB:HEADer:CLEar	✓	
[:SOURce]:RADio:MTONe:ARB:HEADer:SAVE	✓	
[:SOURce]:RADio:MTONe:ARB:IQ:EXTernal:FILTer 40e6|THRough [:SOURce]:RADio:MTONe:ARB:IQ:EXTernal:FILTer?	✓	*Command accepted without error but does nothing.*

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio:MTONe:ARB:IQ:EXTernal:FILTer:AUTO ON|OFF|1|0 [:SOURce]:RADio:MTONe:ARB:IQ:EXTernal:FILTer:AUTO?	–	
[:SOURce]:RADio:MTONe:ARB:IQ:MODulation:ATTen <val><unit> [:SOURce]:RADio:MTONe:ARB:IQ:MODulation:ATTen?	✓	
:SOURce]:RADio:MTONe:ARB:IQ:MODulation:ATTen:AUTO ON|OFF|1|0 [:SOURce]:RADio:MTONe:ARB:IQ:MODulation:ATTen:AUTO?	✓	
:SOURce]:RADio:MTONe:ARB:IQ:MODulation:FILTer 2.1e6|40e6|THRough [:SOURce]:RADio:MTONe:ARB:IQ:MODulation:FILTer?	✓	*Command accepted without error but does nothing.*
[:SOURce]:RADio:MTONe:ARB:IQ:MODulation:FILTer:AUTO ON|OFF|1|0 [:SOURce]:RADio:MTONe:ARB:IQ:MODulation:FILTer:AUTO?	✓	*Command accepted without error but does nothing.*
[:SOURce]:RADio:MTONe:ARB:MDEStination:ALCHold {NONE}|M1|M2|M3|M4 [:SOURce]:RADio:MTONe:ARB:MDEStination:ALCHold?	✓	
[:SOURce]:RADio:MTONe:ARB:MDEStination:PULSe {NONE}|M1|M2|M3|M4 [:SOURce]:RADio:MTONe:ARB:MDEStination:PULSe?	✓	
[:SOURce]:RADio:MTONe:ARB:MPOLarity:MARKer1|2|3|4 NEGative|{POSitive} [:SOURce]:RADio:MTONe:ARB:MPOLarity:MARKer1|2|3|4?	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio:MTONe:ARB:REFerence:EXTernal:FREQuency <value> [:SOURce]:RADio:MTONe:ARB:REFerence:EXTernal:FREQuency?	✓	
[:SOURce]:RADio:MTONe:ARB:REFerence[:SOURce] INTernal|EXTernal [:SOURce]:RADio:MTONe:ARB:REFerence[:SOURce]?	✓	
[:SOURce]:RADio:MTONe:ARB:SCLock:RATE <1Hz - 100MHz {100MHz}> [:SOURce]:RADio:MTONe:ARB:SCLock:RATE?	✓	
[:SOURce]:RADio:MTONe:ARB:SETup <filename> [:SOURce]:RADio:MTONe:ARB:SETup?	✓	
[:SOURce]:RADio:MTONe:ARB:SETup:STORe "file name" [:SOURce]:RADio:MTONe:ARB:SETup:TABLe <freq_spacing>,<num_tones>{,<phase>,<state>} [:SOURce]:RADio:MTONe:ARB:SETup:TABLe?	✓	
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:FSPacing <freq_spacing> [:SOURce]:RADio:MTONe:ARB:SETup:TABLe:FSPacing?	✓	
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:NTONes <num_tones> [:SOURce]:RADio:MTONe:ARB:SETup:TABLe:NTONes?	✓	
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:PHASe:INITialize FIXed|RANDom [:SOURce]:RADio:MTONe:ARB:SETup:TABLe:PHASe:INITialize?	✓	
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:PHASe:INITialize:SEED FIXed|RANDom [:SOURce]:RADio:MTONe:ARB:SETup:TABLe:PHASe:INITialize:SEED?	✓	
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:ROW <row_number>,<power>,<phase>,<state> [:SOURce]:RADio:MTONe:ARB:SETup:TABLe:ROW? <row_number>	✓	

Table 9-3 E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:RADio:MTONe:ARB[:STATe] ON|OFF|1|0 [:SOURce]:RADio:MTONe:ARB[:STATe]?	✓	

8648A/B/C/D Compatible Commands

Selecting the Programming Language

NOTE Compatibility is provided for GPIB only; USB and LAN are *not* supported.

The Agilent MXG has only one AM path, one internal source, and one dedicated external source for AM. AM2 path commands will result in the following error: "ERROR: -113, Undefined Header".

INT2 and EXT2 source selections are accepted by the signal generator, but are equivalent to selecting INT[1] and EXT[1], respectively.

When using the programming codes in this section, you must set the remote programming language to the correct language format.

- On the front-panel, press the following keys:

  Utility > **I/O Config** > **GPIB Setup** > **Remote Language** > **8648A/B/C/D**

  or

- Execute the SCPI command :SYSTem:LANGuage (N5161A/62A/81A/82A) found on page 555.

To keep the remote language choice so that it does not reset with either preset, instrument power cycle, or *RST, perform the following.

- On the front-panel, press the following keys:

  Utility > **Power On/Preset** > **Preset Language** > **8648A/B/C/D**

  or

- Execute the SCPI command :PRESet:LANGuage (N5161A/62A/81A/82A) found on page 554.

To set the *IDN? response to match the remote language setting, use the command :SYSTem:IDN located in "Changing the Signal Generator Identification String" on page 553.

Table 9-4 8648A/B/C/D Program Codes and Equivalent SCPI Sequences

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
System Function Commands		
IEEE Common Commands		
*CLS?	✓	
*ESE <dec. num. data> *ESE?	✓	
*IDN?	✓	
*OPC *OPC?	✓	
*RCL <reg_num>[,<seq_num>]	✓	
*RST?	✓	
*SAV <reg_num>[,<seq_num>]	✓	
*SRE <dec. num. data> *SRE?	✓	
*STB?	✓	
*TST?	✓	
*WAI?	✓	
Status Subsystem		
[:SOURce]:STATus:QUEStionable:PAGing:CONDition?	–	
[:SOURce]:STATus:QUEStionable:PAGing:ENABle <NR1> [:SOURce]:STATus:QUEStionable:PAGing:ENABle?	–	
[:SOURce]:STATus:QUEStionable:PAGing:EVENt?	–	
[:SOURce]:STATus:QUEStionable:POWer:CONDition?	✓	
[:SOURce]:STATus:QUEStionable:POWer:ENABle <NR1> [:SOURce]:STATus:QUEStionable:POWer:ENABle?	✓	
[:SOURce]:STATus:QUEStionable:POWer:EVENt?	✓	

Table 9-4 8648A/B/C/D Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:STATus:QUEStionable:MODulation:CONDition?	–	
[:SOURce]:STATus:QUEStionable:MODulation:ENABle <NR1> [:SOURce]:STATus:QUEStionable:MODulation:ENABle?	–	
[:SOURce]:STATus:QUEStionable:MODulation:EVENt?	–	
[:SOURce]:STATus:QUEStionable:CALibration:FEXTension[:EVENt]?	✓	
[:SOURce]:STATus:QUEStionable:CALibration:FEXTension:CONDition?	✓	
[:SOURce]:STATus:QUEStionable:CALibration:ENABle <NR1> [:SOURce]:STATus:QUEStionable:CALibration:ENABle?	✓	
System Subsystem		
[:SOURce]:SYSTem:LANGuage "COMP"|"SCPI" [:SOURce]:SYSTem:LANGuage?	✓	
[:SOURce]:SYSTem:ERRor?	✓	
[:SOURce]:SYSTem:VERSion?	✓	
Analog Function Commands		
Amplitude Subsystem		
[:SOURce]:OUTPut:STATe ON|OFF [:SOURce]:OUTPut:STATe?	✓	
[:SOURce]:POWer:AMPLitude <value><units> [:SOURce]:POWer:AMPLitude?	✓	
[:SOURce]:POWer:ATTenuation:AUTO ON|OFF [:SOURce]:POWer:ATTenuation:AUTO?	✓	
[:SOURce]:POWer:REFerence <value><units> [:SOURce]:POWer:REFerence?	✓	

Table 9-4 8648A/B/C/D Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:POWer:REFerence:STATe ON|OFF [:SOURce]:POWer:REFerence:STATe?	✓	
Frequency Subsystem		
[:SOURce]:FREQuency:CW <value><units> [:SOURce]:FREQuency:CW?	✓	
[:SOURce]:FREQuency:REFerence <value><units> [:SOURce]:FREQuency:REFerence?	✓	
[:SOURce]:FREQuency:REFerence:STATe ON|OFF [:SOURce]:FREQuency:REFerence:STATe?	✓	
Amplitude Modulation Subsystem		
[:SOURce]:AM:DEPTh <value>PCT [:SOURce]:AM:DEPTh?	✓	
[:SOURce]:AM:INTernal2:FREQuency <value><units> [:SOURce]:AM:INTernal2:FREQuency?	–	
[:SOURce]:AM:INTernal2:FUNCtion:SHAPe SINe|TRIangle|SQUare|SAW [:SOURce]:AM:INTernal2:FUNCtion:SHAPe?	–	
[:SOURce]:AM:STATe ON|OFF [:SOURce]:AM:STATe?	✓	
[:SOURce]:AM:SOURce INTernal[l]	✓	*Supported but the following parameters are not supported:* INTernal2
[:SOURce]:AM:SOURce INTernal|EXTernal [:SOURce]:AM:SOURce?	✓	
[:SOURce]:AM:INTernal:FREQuency 1kHz [:SOURce]:AM:INTernal:FREQuency 400Hz [:SOURce]:AM:INTernal:FREQuency?	✓	
[:SOURce]:AM:EXTernal:COUPling AC|DC [:SOURce]:AM:EXTernal:COUPling?	✓	
Frequency Modulation Subsystem		
[:SOURce]:CALibration:DCFM	✓	

Table 9-4 8648A/B/C/D Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:FM:DEViation <value>kHz [:SOURce]:FM:DEViation?	✓	
[:SOURce]:FM:STATe ON|OFF [:SOURce]:FM:STATe?	✓	
[:SOURce]:FM:SOURce INTernal[1]	✓	*Supported but the following parameters are not supported:* |2|
[:SOURce]:FM:SOURce INTernal|EXTernal [:SOURce]:FM:SOURce?	✓	
[:SOURce]:FM:INTernal:FREQuency 1kHz [:SOURce]:FM:INTernal:FREQuency 400Hz [:SOURce]:FM:INTernal:FREQuency?	✓	
[:SOURce]:FM:INTernal2:FREQuency <value><units> [:SOURce]:FM:INTernal2:FREQuency?	–	
[:SOURce]:FM:INTernal2:FUNCtion:SHAPe SINe [:SOURce]:FM:INTernal2:FUNCtion:SHAPe?	–	
[:SOURce]:FM:EXTernal:COUPling AC|DC [:SOURce]:FM:EXTernal:COUPling?	✓	
[:SOURce]:FM:INTernal2:FUNCtion:SHAPe TRIangle|SQUare|SAW [:SOURce]:FM:INTernal2:FUNCtion:SHAPe?	–	
Phase Modulation Subsystem		
[:SOURce]:PM:DEViation <value>RAD [:SOURce]:PM:DEViation?	✓	
[:SOURce]:PM:STATe ON|OFF [:SOURce]:PM:STATe?	✓	
[:SOURce]:PM:SOURce INTernal[1]	✓	*Supported but the following parameters are not supported:* |2|
[:SOURce]:PM:SOURce INTernal|EXTernal	✓	
[:SOURce]:PM:SOURce?	✓	

Table 9-4 8648A/B/C/D Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:PM:INTernal:FREQuency 1kHz [:SOURce]:PM:INTernal:FREQuency 400Hz [:SOURce]:PM:INTernal:FREQuency?	✓	
[:SOURce]:PM:INTernal2:FREQuency <value><units> [:SOURce]:PM:INTernal2:FREQuency?	–	
[:SOURce]:PM:INTernal2:FUNCtion:SHAPe SINe|TRIangle|SQUare|SAW [:SOURce]:PM:INTernal2:FUNCtion:SHAPe?	–	
[:SOURce]:PM:EXTernal:COUPling AC|DC [:SOURce]:PM:EXTernal:COUPling?	✓	
Pulse Modulation Subsystem		
[:SOURce]:PULM:STATe ON|OFF [:SOURce]:PULM:STATe?	✓	
[:SOURce]:INITiate:IMMediate	✓	*Supported but without the* [:SOURce] *command. Including* :SOUR *will generate an* "Error –113: Undefined header" *on the Agilent MXG.*
[:SOURce]:ABORt	✓	*Supported but without the* [:SOURce] *command. Including* :SOUR *will generate an* "Error –113: Undefined header" *on the Agilent MXG.*
[:SOURce]:TRIGger:COUNt <value> [:SOURce]:TRIGger:COUNt?	–	
[:SOURce]:DM:FORMat FSK2|FSK4 [:SOURce]:DM:FORMat?	–	
[:SOURce]:DM:STATe ON|OFF [:SOURce]:DM:STATe?	–	
[:SOURce]:DM:DEViation <value> [:SOURce]:DM:DEViation?	–	
[:SOURce]:DM:POLarity NORMal|INVert [:SOURce]:DM:POLarity?	–	

Table 9-4 8648A/B/C/D Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:DM:FILTer:STATe ON|OFF [:SOURce]:DM:FILTer:STATe?	–	
[:SOURce]:PAGing:SELect POCS|FLEX|FTD|RESY|PN15 [:SOURce]:PAGing:SELect?	–	
[:SOURce]:PAGing:{POCS|FLEX|FTD|PN15}:RATE <value> [:SOURce]:PAGing:{POCS|FLEX|FTD|PN15}:RATE?	–	
[:SOURce]:PAGing:{POCS|FLEX|FTD}:MESSage:SELect <value> [:SOURce]:PAGing:{POCS|FLEX|FTD}:MESSage:SELect?	–	
[:SOURce]:PAGing:{POCS|FLEX|FTD}:MESSage:DEFine "string" [:SOURce]:PAGing:{POCS|FLEX|FTD}:MESSage:DEFine?	–	
[:SOURce]:PAGing:{POCS|FLEX|FTD}:MESSage:LENGth <value> [:SOURce]:PAGing:{POCS|FLEX|FTD}:MESSage:LENGth?	–	
[:SOURce]:PAGing:{POCS|FLEX|FTD}:ARBitrary:DEFine <value>,...<val(n)>	–	
[:SOURce]:PAGing:{POCS|FLEX|FTD}:ARBitrary:STARt <value> [:SOURce]:PAGing:{POCS|FLEX|FTD}:ARBitrary:STARt?	–	
[:SOURce]:PAGing:{POCS|FLEX|FTD}:ARBitrary:STOP <value> [:SOURce]:PAGing:{POCS|FLEX|FTD}:ARBitrary:STOP?	–	
[:SOURce]:PAGing:{FLEX|FTD}:TYPE TONE|NUMeric|ALPHanumeric|HBINary [:SOURce]:PAGing:{FLEX|FTD}:TYPE?	–	
[:SOURce]:PAGing:{FLEX|FTD}:VECTor STANdard|SPECial|NUMBered [:SOURce]:PAGing:{FLEX|FTD}:VECTor?	–	

Table 9-4 8648A/B/C/D Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:PAGing:{FLEX|FTD}:NUMBered <value> [:SOURce]:PAGing:{FLEX|FTD}:NUMBered?	–	
[:SOURce]:PAGing:{FLEX|FTD}:CYCLe <value> [:SOURce]:PAGing:{FLEX|FTD}:CYCLe?	–	
[:SOURce]:PAGing:{FLEX|FTD}:FRAMe <value> [:SOURce]:PAGing:{FLEX|FTD}:FRAMe?	–	
[:SOURce]:PAGing:{FLEX|FTD}:CCOunt?	–	
[:SOURce]:PAGing:{FLEX|FTD}:FCOunt?	–	
[:SOURce]:PAGing:{FLEX|FTD}:PHASe A|B|C|D [:SOURce]:PAGing:{FLEX|FTD}:PHASe?	–	
[:SOURce]:PAGing:{FLEX|FTD}:COLLapse <value> [:SOURce]:PAGing:{FLEX|FTD}:COLLapse?	–	
[:SOURce]:PAGing:{FLEX|FTD}:CODE <value> [:SOURce]:PAGing:{FLEX|FTD}:CODE?	–	
[:SOURce]:PAGing:{FLEX|FTD}:ATYPe SHORt|LONG [:SOURce]:PAGing:{FLEX|FTD}:ATYPe?	–	
[:SOURce]:PAGing:{FLEX|FTD}:ADDRess{1|2} <value> [:SOURce]:PAGing:{FLEX|FTD}:ADDRess{1|2}?	–	
[:SOURce]:PAGing:{FLEX|FTD}:ISTop:STATe ON|OFF [:SOURce]:PAGing:{FLEX|FTD}:ISTop:STATe?	–	
[:SOURce]:PAGing:{FLEX|FTD}:HEADer:STATe ON|OFF [:SOURce]:PAGing:{FLEX|FTD}:HEADer:STATe?	–	
[:SOURce]:PAGing:{FLEX|FTD}:TERMinator:STATe ON|OFF [:SOURce]:PAGing:{FLEX|FTD}:TERMinator:STATe?	–	
[:SOURce]:PAGing:{FLEX|FTD}:VECTor STANdard|SPECial|NUMBered [:SOURce]:PAGing:{FLEX|FTD}:VECTor?	–	
[:SOURce]:PAGing:{FLEX|FTD}:HBINary BIT1|BIT7|BIT8|BIT14|BIT16 [:SOURce]:PAGing:{FLEX|FTD}:HBINary?	–	

Table 9-4 8648A/B/C/D Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:PAGing:{FLEX|FTD}:DCAL:STATe ON|OFF [:SOURce]:PAGing:{FLEX|FTD}:DCAL:STATe?	–	
[:SOURce]:PAGing:{FLEX|FTD}:DCAL:ADDress{1|2} <value> [:SOURce]:PAGing:{FLEX|FTD}:DCAL:ADDress{1|2}?	–	
[:SOURce]:PAGing:{FLEX|FTD}:ROAMing:SELect NONE|SSID|NID [:SOURce]:PAGing:{FLEX|FTD}:ROAMing:SELect?	–	
[:SOURce]:PAGing:{FLEX|FTD}:ROAMing:SSID:LID <value> [:SOURce]:PAGing:{FLEX|FTD}:ROAMing:SSID:LID?	–	
[:SOURce]:PAGing:{FLEX|FTD}:ROAMing:SSID:CZONe <value> [:SOURce]:PAGing:{FLEX|FTD}:ROAMing:SSID:CZONe?	–	
[:SOURce]:PAGing:{FLEX|FTD}:ROAMing:SSID:CCODe <value> [:SOURce]:PAGing:{FLEX|FTD}:ROAMing:SSID:CCODe?	–	
[:SOURce]:PAGing:{FLEX|FTD}:ROAMing:SSID:TMF <value> [:SOURce]:PAGing:{FLEX|FTD}:ROAMing:SSID:TMF?	–	
[:SOURce]:PAGing:{FLEX|FTD}:ROAMing:SSID:FOFF <value> [:SOURce]:PAGing:{FLEX|FTD}:ROAMing:SSID:FOFF?	–	
[:SOURce]:PAGing:{FLEX|FTD}:ROAMing:NID:ADDRess <value> [:SOURce]:PAGing:{FLEX|FTD}:ROAMing:NID:ADDRess?	–	
[:SOURce]:PAGing:{FLEX|FTD}:ROAMing:NID:AREA <value> [:SOURce]:PAGing:{FLEX|FTD}:ROAMing:NID:AREA?	–	
[:SOURce]:PAGing:{FLEX|FTD}:ROAMing:NID:MULTiplier <value> [:SOURce]:PAGing:{FLEX|FTD}:ROAMing:NID:MULTiplier?	–	

Table 9-4 8648A/B/C/D Program Codes and Equivalent SCPI Sequences (Continued)

✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N51xxA	Remarks
[:SOURce]:PAGing:{FLEX|FTD}:ROAMing:NID:TMF <value> [:SOURce]:PAGing:{FLEX|FTD}:ROAMing:NID:TMF?	–	
[:SOURce]:PAGing:{FLEX|FTD}:ROAMing:NID:FOFF <value> [:SOURce]:PAGing:{FLEX|FTD}:ROAMing:NID:FOFF?	–	
[:SOURce]:PAGing:FTD:REFerence <value> [:SOURce]:PAGing:FTD:REFerence?	–	
[:SOURce]:PAGing:FTD:RCO?	–	
[:SOURce]:PAGing:POCS:TYPE TONE|NUMeric|ALPHanumeric|ALPH7|ALPH8 [:SOURce]:PAGing:POCS:TYPE?	–	
[:SOURce]:PAGing:POCS:CODE <value> [:SOURce]:PAGing:POCS:CODE?	–	
[:SOURce]:PAGing:POCS:FUNCtion 0|1|2|3 [:SOURce]:PAGing:POCS:FUNCtion?	–	

8656B, 8657A/B/D Programming Codes

Programming Codes

NOTE Compatibility is provided for GPIB only; USB and LAN are *not* supported.

When using the programming codes in this section, you must set the remote programming language to the correct language format.

- On the front-panel, press the following keys:

  Utility > **I/O Config** > **Remote Language** > **More** > **8656B, 8657A/B**

  or

- Execute the SCPI command :SYSTem:LANGuage (N5161A/62A/81A/82A) found on page 555.

To keep the remote language choice so that it does not reset with either preset, instrument power cycle, or *RST, perform the following.

- On the front-panel, press the following keys:

  Utility > **Power On/Preset** > **Preset Language** > **More** > **8656B, 8657A/B**

  or

- Execute the SCPI command :PRESet:LANGuage (N5161A/62A/81A/82A) found on page 554.

To set the *IDN? response to match the remote language setting, use the command :SYSTem:IDN located in "Changing the Signal Generator Identification String" on page 553.

Compatible Codes

8656B, 8657A/B/D/J Codes[a]	Description	Equivalent SCPI Command Syntax
AM	Amplitude Modulation	`[:SOURce]:AM[1][:DEPTh][:LINear] <value><unit>|UP|DOWN` *For additional commands, refer to,* "S1, S2, or S3 used with AM" on page 686
AO	Amplitude Offset	`[:SOURce]:POWer[:LEVel][IMMediate]: OFFSet <value><unit>`
AP	Amplitude (carrier)	`[:SOURce]:POWer[:LEVel][:IMMediate] [:AMPLitude] <value><unit>`
DB	Unit used with the power command	`DB`
DF	Unit used with the power command	`DB`
DM	Unit used with the power command	`DBM`
DN	Step Down	*No equivalent SCPI command*
EM	Unit used with the power command	`EMF`
FM	Frequency Modulation	`[:SOURce]:FM[1][:DEViation] <value><unit>` *For additional commands, refer to,* "S1, S2, or S3 used with FM" on page 687.
FR	Frequency (carrier)	`[:SOURce]:FREQuency[:CW] <value><unit>`
GT	Flexible Sequence	*No equivalent SCPI command*
Hz	Unit used with the frequency command	`Hz`
IS[b]	Increment Set	*No equivalent SCPI command*
KZ	Unit used with the frequency command	`kHz`
MV	Unit used with the power command	`mV`

8656B, 8657A/B/D/J Codes[a]	Description	Equivalent SCPI Command Syntax
MZ	Unit used with the frequency command	MHz
P0[c]	Digital Modulation Off	*The Agilent MXG does not support this feature.*
P4[c]	Digital Modulation On	*The Agilent MXG does not support this feature.*
PC[d]	Unit used with the modulation command	PCT
PD	Phase Decrement	[:SOURce]:PHASE[:ADJust] <value><RAD>
PF	Pulse Modulation (Fast Mode)	*Refer to,* "PF (Pulse Modulation-Fast Mode) or PM (Pulse Modulation)" on page 686.
PI	Phase Increment	[:SOURce]:PHASE[:ADJust] <value><RAD>
PM	Pulse Modulation	[:SOURce]:PULM:SOURce EXT2 [:SOURce]:PULM:STATe ON
QS	Reverse Sequence	*RCL <reg>
RC	Recall (0–9)	*RCL <reg>
RL	Recall (0–99)	*RCL <reg>
RP[e]	Reverse Power Protection Reset	*No equivalent SCPI command*
R2	RF Off	OUTPut[:STATe] OFF
R3	RF On	OUTPut[:STATe] ON
R5	RF Dead (Full Attenuator)	OUTPut[:STATe] OFF
SQ	Sequence	*RCL <reg>
ST	Save (0–9)	*SAV <reg>
SV	Save (0–99)	*RCL <reg>
S1	External Modulation Source	*Refer to,* "S1, S2, or S3 used with AM" on page 686 or "S1, S2, or S3 used with FM" on page 687.
S2	Internal 400 Hz Modulation Source	*Refer to,* "S1, S2, or S3 used with AM" on page 686 or "S1, S2, or S3 used with FM" on page 687.
S3	Internal 1 kHz Modulation Source	*Refer to,* "S1, S2, or S3 used with AM" on page 686 or "S1, S2, or S3 used with FM" on page 687.

8656B, 8657A/B/D/J Codes[a]	Description	Equivalent SCPI Command Syntax
S4	Modulation Source Off	Refer to, "S4 (Modulation Source Off)" on page 688.
S5	DC FM	Refer to, "S5 (DC FM)" on page 688.
UP	Step Up	*No equivalent SCPI command*
UV	Unit used with the power command	UV
VL	Unit used with the power command	V
0-9	Numerals 0–9	0–9
–	Minus Sign	–
.	Decimal Point	.
%[d]	Unit used with the modulation command	PCT

a. Program codes are either upper or lower case.
b. Increment Set is implemented for frequency (FR) and amplitude (AP) only.
c. This code is used with the NADC, PDC, and PHS digital modulation.
d. Either PC or % can be used.
e. The source of reverse power must be removed.

Non-Compatible Codes

8656B, 8657A/B/D/J Codes	Description
HI	HI ALC
LO	LO ALC
R0	Standby
R1	On

Command Mapping

When using the 8656B, 8657A/B/D/J-compatible programming codes, the N5161A/62A/81A/82A internally maps these codes to an equivalent SCPI response. In addition, the modulation source selections for the 8656B, 8657A/B/D/J differ from those available in the N5161A/62A/81A/82A and therefore, are mapped to a valid selection. (Refer to Table 9-5.)

Table 9-5

Modulation Sources	
8656B, 8657A/B/D/J	**Agilent MXG Signal Generators**
AM, Internal	AM1, Internal 1
AM, External	AM1, External 1
FM, Internal	FM1, Internal 1
FM, External	FM1, External 1
AM, Internal and External	AM1, Internal 1, External 1
FM, Internal and External	FM1, Internal 1, External 1

NOTE The 8656, 8657A/B/D/J signal generators allow multiple modulations to use the same input; the N5161A/62A/81A/82A does not. If you configure multiple modulations on the same input, the N5161A/62A/81A/82A automatically disables the modulations.

The mapping between the 8656B, 8657A/B/D/J-compatible programming codes and the SCPI commands changes depending on the programming codes being executed. Refer to the following sections for explanations of the codes that are affected.

PF (Pulse Modulation-Fast Mode) or PM (Pulse Modulation)

The N5161A/62A/81A/82A supports only one input selection for pulse which is EXTernal 1 (PULSE connector). This is a DC-coupled input. Internal pulse modulation, therefore, is not supported in the 8656B, 8657A/B/D/J-compatible language modes. The PF or PM code is mapped to the following SCPI commands:

- `[:SOURce]:PULM:SOURce EXTernal1`
- `[:SOURce]:PULM:STATe ON`

S1, S2, or S3 used with AM

When the AM code is executed, the following occurs:

- AM becomes the active function.

NOTE The N5182A has only one AM channel: [1]. If AM2 is used in a SCPI command, it will be ignored and AM1 will be selected.

If AM is on, or there is no active modulation, a sequence of SCPI commands are implemented when an AM code is executed with a modulation source code. Table 9-6 shows the sequence of SCPI commands that are implemented.

Table 9-6

	AM On	No Active Modulation
S1	[:SOURce]:AM[1]:EXTernal[1]: COUPling AC [:SOURce]:AM[1]:SOURce EXTernal1	[:SOURce]:AM[1]:EXTernal[1]: COUPling AC [:SOURce]:AM[1]:SOURce EXTernal1 [:SOURce]:AM[1]:STATe ON
S2	[:SOURce]:AM[1]:SOURce INT[1] [:SOURce]:AM[1]:INTernal[1]: FREQuency 400 Hz	[:SOURce]:AM[1]:SOURce INT[1] [:SOURce]:AM[1]:INTernal[1]: FREQuency 400 Hz [:SOURce]:AM[1]:STATe ON
S3	[:SOURce]:AM[1]:SOURce INT[1] [:SOURce]:AM[1]:INTernal[1]: FREQuency 1 kHz	[:SOURce]:AM[1]:SOURce INT[1] [:SOURce]:AM[1]:INTernal[1]: FREQuency 1 kHz [:SOURce]:AM[1]:STATe ON

- If FM or pulse modulation is on, the signal generator attempts to set up AM with the same settings and turns off the other modulation.

S1, S2, or S3 used with FM

When the FM code is executed, the following occurs:

- FM becomes the active function.

If FM is on, or there is no active modulation, a sequence of SCPI commands are implemented when an FM code is executed with a modulation source code. Table 9-7 shows the sequence of SCPI commands that are implemented.

Table 9-7

	FM On	No Active Modulation
S1	[:SOURce]:FM[1]:EXTernal[1]: COUPling AC [:SOURce]:FM[1]:SOURce EXTernal1	[:SOURce]:FM[1]:EXTernal[1]: COUPling AC [:SOURce]:FM[1]:SOURce EXTernal1 [:SOURce]:FM[1]:STATe ON
S2	[:SOURce]:FM[1]:SOURce INT[1] [:SOURce]:FM[1]:INTernal[1]: FREQuency 400 Hz	[:SOURce]:FM[1]:SOURce INT[1] [:SOURce]:FM[1]:INTernal[1]: FREQuency 400 Hz [:SOURce]:FM[1]:STATe ON
S3	[:SOURce]:FM[1]:SOURce INT[1] [:SOURce]:FM[1]:INTernal[1]: FREQuency 1 kHz	[:SOURce]:FM[1]:SOURce INT[1] [:SOURce]:FM[1]:INTernal[1]: FREQuency 1 kHz [:SOURce]:FM[1]:STATe ON

- If AM or pulse modulation is on, the signal generator attempts to set up FM with the same settings and turns off the other modulation.

S4 (Modulation Source Off)

- If PM is the current active function, pulse modulation is disabled by mapping to the following command:

  ```
  [:SOURce]:PULM:STATe OFF
  ```

- If the last code executed is S2 or S3, internal modulation is turned off for the AM and FM:

  ```
  [:SOURce]:AM[1]:STATe OFF
  [:SOURce]:FM[1]:STATe OFF
  ```

- If the last code executed is S1, external modulation is turned off for the AM and FM:

  ```
  [:SOURce]:AM[1]:STATe OFF
  [:SOURce]:FM[1]:STATe OFF
  ```

- If the current active function is AM or FM, the appropriate modulation is turned off:

  ```
  [:SOURce]:AM[1]:STATe OFF
  [:SOURce]:FM[1]:STATe OFF
  ```

- If S4 is executed with S1, S2, or S3, it will turn off the current modulation.

S5 (DC FM)

- FM becomes the active function.
- In addition, the following commands are mapped:

  ```
  [:SOURce]:FM[1]:SOURce EXTernal1
  [:SOURce]:PULM:STATe OFF
  [:SOURce]:AM[1]:STATe OFF
  [:SOURce]:FM[1]:EXTernal[1]:COUPling DC
  [:SOURce]:FM[1]:STATe ON
  ```

Aeroflex IFR3410 Compatible Commands

The Aeroflex IFR3410 has dual RF outputs.

NOTE The Agilent MXG has only one AM, FM, and PM path. Using AM2, FM2, or PM2 path commands will result in the following error: "ERROR: -113, Undefined Header".

The Agilent MXG has only one internal source for AM, FM and PM, but the INT2 source selection is accepted by the signal generator and is equivalent to selecting INT[1].

The Agilent MXG has three dedicated external sources, one for AM, one for FM/PM and one for Pulse. The EXT2 source selection is accepted by the signal generator, but is equivalent to selecting EXT[1].

Table 9-8 MXG to IFR3410 SCPI Command Comparison

IFR3410 Command **✓ = Supported by Agilent MXG** **– = Not supported by Agilent MXG**	**N5161A/81A**	**N5162A/82A**	**REMARKS**
:CALibration:IQUSer:ADJust	✓	✓	
:CALibration:IQUSer:MODE SPOT|SPAN :CALibration:IQUSer:MODE?	✓	✓	*Supported but the frequency unit suffix is not supported.*
:CALibration:IQUSer:SPAN SPAN20|SPAN40|SPAN80|SPAN120 :CALibration:IQUSer:SPAN?	✓	✓	
:OUTPut[:POWer][:STATe] OFF|ON|0|1 :OUTPut[:POWer][:STATe]?	✓	✓	
[:SOURce]:FREQuency[:CW|:FIXed] <NRf>(Hz) | MAXimum | MINimum | UP | DOWN |	✓	✓	*Supported but the following parameters are not supported:* RETurn | REFerence
[:SOURce]:FREQuency[:CW|:FIXed]:STEP[:INCRement] <NRf>(Hz) | MAXimum | MINimum	✓	✓	
[:SOURce][:MODulation]:AM[1][:DEPTh] <NRf>(PCT) | MAXimum | MINimum | UP | DOWN |	✓	✓	*Supported but the following parameters are not supported:* RETurn | REFerence
[:SOURce][:MODulation]:AM[1]:EXTernal:COUPling AC | DC	✓	✓	
[:SOURce][:MODulation]:AM[1]:INTernal:FREQuency[:FIXed] <NRf>(Hz) | MAXimum | MINimum | UP | DOWN |	✓	✓	*Supported but the following parameters are not supported:* RETurn | REFerence
[:SOURce][:MODulation]:AM[1]:INTernal:SHAPe SINE |	✓	✓	*Supported but the following parameters are not supported:* SQUare | TRIangle | RAMP

Table 9-8 MXG to IFR3410 SCPI Command Comparison (Continued)

IFR3410 Command **✓ = Supported by Agilent MXG** **– = Not supported by Agilent MXG**	**N5161A/81A**	**N5162A/82A**	**REMARKS**
[:SOURce][:MODulation]:AM[1]:SOURce INTernal | EXTernal	✓	✓	
[:SOURce][:MODulation]:AM[1]:STATe OFF|ON|0|1	✓	✓	
[:SOURce][:MODulation]:FM[1][:DEViation] <value>(Hz) | MAXimum | MINimum | UP | DOWN |	✓	✓	*Supported but the following parameter is not supported:* RETurn | REFerence
[:SOURce][:MODulation]:FM[1]:EXTernal:COUPling AC | DC	✓	✓	
[:SOURce][:MODulation]:FM[1]:INTernal:FREQuency[:FIXed] <value>(Hz) | MAXimum | MINimum | UP | DOWN |	✓	✓	*Supported but the following parameter is not supported:* RETurn | REFerence
[:SOURce][:MODulation]:FM[1]:INTernal:SHAPe SINE	✓	✓	*Supported but the following parameters are not supported:* SQUare | TRIangle | RAMP
[:SOURce][:MODulation]:FM[1]:SOURce INTernal | EXTernal	✓	✓	
[:SOURce][:MODulation]:FM[1]:STATe OFF | ON | 0 | 1	✓	✓	
[:SOURce][:MODulation]:IQ:ARB:ABORt	–	✓	
[:SOURce][:MODulation]:IQ:ARB:INITiate	–	✓	
[:SOURce][:MODulation]:IQ:ARB[:MEMory]:FORMat <wide_sectors> [:SOURce][:MODulation]:IQ:ARB[:MEMory]:FORMat?	–	✓	*Command accepted without error but does nothing.*
[:SOURce][:MODulation]:IQ:ARB:MODE SINGle|CONTinuous [:SOURce][:MODulation]:IQ:ARB:MODE?	–	✓	
[:SOURce][:MODulation]:IQ:ARB:RESTart ENABle|DISable		✓	
[:SOURce][:MODulation]:IQ:ARB:RMSoffset <rms_offset> [:SOURce][:MODulation]:IQ:ARB:RMSoffset?	–	✓	*Command accepted without error but does nothing.* *Query always returns a 0.*
[:SOURce][:MODulation]:IQ:ARB:TOFFset <sample_rate_offset_in_parts_per_million> [:SOURce][:MODulation]:IQ:ARB:TOFFset?	–	✓	

Table 9-8 MXG to IFR3410 SCPI Command Comparison (Continued)

IFR3410 Command **✓ = Supported by Agilent MXG** **– = Not supported by Agilent MXG**	**N5161A/81A**	**N5162A/82A**	**REMARKS**
[:SOURce][:MODulation]:IQ:ARB:TRIGger IMMediate|STARt SOURce][:MODulation]:IQ:ARB:TRIGger?	–	✓	*Supported but the following parameter is not supported:* SSTOP *Supported but the polarity is only positive.*
[:SOURce][:MODulation]:IQ:ARB:WAVeform:BURSt:PRESet	–	–	
[:SOURce][:MODulation]:IQ:ARB:WAVeform:CATalog?	–	✓	
[:SOURce][:MODulation]:IQ:ARB:WAVeform:CHECksum? <”filename.aiq”>	–	✓	*Command accepted without error but does nothing.* *Query always returns a 1.*
[:SOURce][:MODulation]:IQ:ARB:WAVeform:DATA <”filename.aiq”>,#blockdata	–	✓	
[:SOURce][:MODulation]:IQ:ARB:WAVeform:DELete:ALL	–	✓	
[:SOURce][:MODulation]:IQ:ARB:WAVeform:DELete[:FILE] <"filename.aiq">	–	✓	
[:SOURce][:MODulation]:IQ:ARB:WAVeform:DLOad <”filename.aiq”>,#blockdata	–	✓	
[:SOURce][:MODulation]:IQ:ARB:WAVeform:FORMat <wide_sectors> -- ignored [:SOURce][:MODulation]:IQ:ARB:WAVeform:FORMat?	–	✓	*Command accepted without error but does nothing.*
[:SOURce][:MODulation]:IQ:ARB:WAVeform:HEADer?	–	–	
[:SOURce][:MODulation]:IQ:ARB:WAVeform:SELect <"filename.aiq"> [SOURce][:MODulation]:IQ:ARB:WAVeform:SELect?	–	✓	*Supported but the path is not returned, only the basename. Auto enables ARB On when waveform is downloaded.*
[:SOURce][:MODulation]:IQ:ARB:WAVeform:SUMMary? <"filename.aiq">	–	✓	
[:SOURce][:MODulation]:IQ:DIFFerential:ICHannel:OFFSe t <value>	–	✓	
[:SOURce][:MODulation]:IQ:DIFFerential:QCHannel:OFFSe t <value>	–	✓	
[:SOURce][:MODulation]:IQ:STATe OFF|ON|0|1 [:SOURce][:MODulation]:IQ:STATe?	–	✓	
[:SOURce][:MODulation]:IQ:SOURce ARB|EANalog [:SOURce][:MODulation]:IQ:SOURce?	–	✓	*Supported but the following parameters are not supported:* DIFFerential|DM|EDIGital

Table 9-8 MXG to IFR3410 SCPI Command Comparison (Continued)

IFR3410 Command **✓ = Supported by Agilent MXG** **– = Not supported by Agilent MXG**	**N5161A/81A**	**N5162A/82A**	**REMARKS**
[:SOURce][:MODulation]:PM[1][:DEViation] <value>(rad) | MAXimum | MINimum | UP | DOWN |	✓	✓	*Supported but the following parameters are not supported:* RETurn | REFerence
[:SOURce][:MODulation]:PM[1]:INTernal:FREQuency[:FIXed] <NRf>(Hz) | MAXimum | MINimum | UP | DOWN |	✓	✓	*Supported but the following parameters are not supported:* RETurn | REFerence
[:SOURce][:MODulation]:PM[1]:INTernal:SHAPe SINE	✓	✓	*Supported but the following parameters are not supported:* SQUare | TRIangle | RAMP
[:SOURce][:MODulation]:PM[1]:SOURce INTernal | EXTernal	✓	✓	
[:SOURce][:MODulation]:PM[1]:STATe OFF | ON | 0 | 1	✓	✓	
[:SOURce][:MODulation]:PULM:STATe OFF | ON | 0 | 1	✓	✓	
[:SOURce][:MODulation]:PULM:SOURce EXTernal	✓	✓	*Supported but the following parameters are not supported:* INTernal
[:SOURce]:POWer:ALC:BW AUTO|MODerate|NARRow|BROad [:SOURce]:POWer:ALC:BW?	✓	✓	*Command accepted without error but does nothing.*
[:SOURce]:POWer:ALC[:STATe] | AUTO | NORMal | AM | FROZen | SCALed |	✓	✓	*Supported but if queried, the Agilent MXG only returns a 1 or a 0.*
[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude] <numeric_value>	✓	✓	
:STATus:OPERation:TRIGger	✓	✓	
:STATus:QUEStionable:MODulation:AM	✓	✓	
:STATus:QUEStionable:MODulation:ARB	✓	✓	
:STATus:QUEStionable:MODulation:DM	✓	✓	
:STATus:QUEStionable:MODulation:FM	✓	✓	
:STATus:QUEStionable:MODulation:IQ	✓	✓	
:STATus:QUEStionable:MODulation:PM	✓	✓	
:STATus:QUEStionable:MODulation:PULM	✓	✓	
:STATus:QUEStionable:ROSC	✓	✓	

Table 9-8 MXG to IFR3410 SCPI Command Comparison (Continued)

IFR3410 Command **✓ = Supported by Agilent MXG** **– = Not supported by Agilent MXG**	**N5161A/81A**	**N5162A/82A**	**REMARKS**
:SYSTem:COMMunicate:GPIB[:SELF]:ADDRess <number>	✓	✓	
:SYSTem:ERRor:ALL?	✓	✓	*Supported but the error codes will be Agilent MXG specific (i.e. Aeroflex error codes do not apply).*
:SYSTem:ERRor:CODe:ALL?	✓	✓	*Supported but the error codes will be Agilent MXG specific (i.e. Aeroflex error codes do not apply).*
:SYSTem:ERRor:CODe[:NEXT]?	✓	✓	*Supported but the error codes will be Agilent MXG specific (i.e. Aeroflex error codes do not apply).*
:SYSTem:ERRor[:NEXT]?	✓	✓	*Supported but the error codes will be Agilent MXG specific (i.e. Aeroflex error codes do not apply).*
:SYSTem:PRESet	✓	✓	
:SYSTem:SETTings:FULL:SAVE <0…99>	✓	✓	
:SYSTem:SETTings:FULL:RECall <0…99>	✓	✓	
:UNIT:VoltTYPe PD|EMF :UNIT:VoltTYPe?	✓	✓	

Rohde & Schwartz SMATE/SMIQ/SML/SMU Compatible Commands

MXG and R&S Signal Generator Compatibility

The R&S SMIQ, SMATE, SMU, and SMU200A have dual RF outputs.

NOTE The Agilent MXG has only one AM, FM, and PM path. Using AM2, FM2, or PM2 path commands will result in the following error: "ERROR: -113, Undefined Header".

The Agilent MXG has only one internal source for AM, FM and PM, but the INT2 source selection is accepted by the signal generator and is equivalent to selecting INT[1].

The Agilent MXG has three dedicated external sources, one for AM, one for FM/PM and one for Pulse. The EXT2 source selection is accepted by the signal generator, but is equivalent to selecting EXT[1].

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
:ABORt	✓	✓	✓	✓	
:ABORt:LIST	✓	✓	✓	✓	
:ABORt:MSEQuence	–	–	–	–	
:ABORt[:SWEep]	✓	✓	✓	✓	
:ARB:ASET:BERT:TYPE ON|OFF	–	–	–	–	
:ARB:ASET:DM:IQFilter ON|OFF	–	–	–	–	
:ARB:ASET:DM:IQSWap ON|OFF	–	–	–	–	
:ARB:ASET:STATe ON|OFF	–	–	–	–	
:ARB:ASET:TRIGger:MODE ON|OFF	–	–	–	–	
:ARB:CLOCk	–	✓	–	✓	
:ARB:CLOCk:DELay	–	–	–	–	
:ARB:CLOCk:SOURce INTernal|EXTernal	–	–	–	–	
:ARB:IQ:LEVel	–	–	–	–	
:ARB:IQ:LEVel:MODE MANuell|AUTO	–	–	–	–	
:ARB:IQ:SKEW	–	–	–	–	
:ARB:SEQuence AUTO|RETRigger|AAUTo|ARETrigger	–	✓	–	✓	
:ARB:STATe ON|OFF	–	✓	–	✓	

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
:ARB:TRIGger:DELay	–	–	–	–	
:ARB:TRIGger[:EXTernal<[1]|2>]:DELay	–	✓	–	✓	
:ARB:TRIGger:INHibit:POLarity POSitive|NEGative	–	–	–	–	
:ARB:TRIGger:OUTPut[1]|2:DELay	–	–	–	–	
:ARB:TRIGger:OUTPut[1]|2:MODE:CATalog?	–	–	–	–	
:ARB:TRIGger:OUTPut[1]|2:MODE USER|'mode_string'	–	–	–	–	
:ARB:TRIGger:OUTPut[1]|2:OFFTime	–	–	–	–	
:ARB:TRIGger:OUTPut[1]|2:ONTime	–	–	–	–	
:ARB:TRIGger:OUTPut[1]|2:POLarity POSitive| NEGative	–	–	–	–	
:ARB:TRIGger:SOURce INTernal|EXTernal	–	✓	–	✓	
:ARB:WAVeform:CATalog?	–	✓	–	✓	
:ARB:WAVeform:CATalog:LENGth?	–	–	–	–	
:ARB:WAVeform:DATA "name",<binary block data>	–	✓	–	✓	
:ARB:WAVeform:DELete "<name>"	–	✓	–	✓	
:ARB:WAVeform:FREE?	–	–	–	–	
:ARB:WAVeform:POINts?	–	–	–	–	
:ARB:WAVeform:SELect "<name>"	–	✓	–	✓	
:ARB:WAVeform:TAG? "<tagname>"	–	–	–	–	
:BERT...	–	–	–	–	*This subsystem is not supported.*
:BLER...	–	–	–	–	*This subsystem is not supported.*
:CALibration[:ALL]?	✓	✓	✓	✓	
:CALibration:ALL[:MEASure]?	✓	✓	✓	✓	
:CALibration[1]:FMOFfset[:MEASure]?	✓	✓	✓	✓	*Returns a 0 value when calibration is completed.*
:CALibration[1]:FREQuency[:MEASure]?	✓	✓	✓	✓	*Command is accepted, returns a 0, but no other action is taken in the Agilent MXG.*
:CALibration:FSIM[:MEASure]?	–	–	–	–	

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
:CALibration[1]|2:IQModulator:FULL?	–	✓	–	✓	
:CALibration:LATTenuation[:MEASure]?	–	–	–	–	
:CALibration:LEVel:DATA?	–	–	–	–	
:CALibration:LEVel:STATe ON|OFF :CALibration:LEVel:STATe	–	–	–	–	
:CALibration:LFGenerator[:MEASure]?	✓	✓	✓	✓	*Command is accepted but no action is taken in the Agilent MXG.*
:CALibration:LFGenLevel[:MEASure]?	–	–	–	–	
:CALibration[1]:LFOutput[:MEASure]?	✓	✓	✓	✓	*Command is accepted, returns a 0, but no other action is taken in the Agilent MXG.*
:CALibration:LPReset[:MEASure]?	–	–	–	–	
:CALibration:LPReset:DATA?	–	–	–	–	
:CALibration:MAINloop[:MEASure]?	–	–	–	–	
:CALibration:NDSim[:MEASure]?	–	–	–	–	
:CALibration:ROSCillator[:DATA]	–	–	–	–	
:CALibration:VMODulation[:MEASure]?	✓	✓	✓	✓	
:CALibration:VSUMmation[:MEASure]?	–	–	–	–	
:CALibration:VSUMmation:DAC?	–	–	–	–	
:CALibration:VSUMmation:KOS?	–	–	–	–	
:CALibration:VSUMmation:OFFS?	–	–	–	–	
:DIAGnostic[:MEASure]:POINt?	–	–	–	–	
:DIAGnostic:CLISt:CHECksum:CALculate	–	–	–	–	
:DIAGnostic:CLISt:CHECksum:DATA?	–	–	–	–	
:DIAGnostic:CNMeasure:MODE CN|CARRier|NOISe	–	–	–	–	
:DIAGnostic:DLISt:CHECksum:CALculate	–	–	–	–	
:DIAGnostic:DLISt:CHECksum:DATA?	–	–	–	–	

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
:DIAGnostic:INFO:CCOunt:ATTenuator1|2|3|4?	–	–	–	–	*Supported but the numeric suffixes, 1|2|3|4 and 1|2|3|4|5|6, are ignored .* *Regardless of the numeric suffix used, the command alway returns the total attenuator count.*
:DIAGnostic:INFO:CCOunt:ATTenuator1|2|3|4|5|6?	✓	✓	✓	✓	
:DIAGnostic:INFO:CCOunt:POWer?	–	–	–	–	
:DIAGnostic:INFO:MODules?	–	–	–	–	
:DIAGnostic:INFO:OTIMe?	✓	✓	✓	✓	
DIAGnostic:INFO:POCounter?	✓	✓	✓	✓	
:DIAGnostic:INFO:SDATe?	–	–	–	–	
:DISPlay:ANNotation[:ALL] ON|OFF	–	–	–	–	
:DISPlay:ANNotation:AMPLitude ON|OFF	–	–	–	–	
:DISPlay:ANNotation:FREQuency ON|OFF	–	–	–	–	
:FORMat[:DATA] ASCii|PACKed	–	–	–	–	
:FORMat:BORDer NORMal|SWAPped	–	–	–	–	
:MEMory:NSTates?	–	–	–	–	
:OUTPut[:STATe] ON|OFF	–	–	–	–	
:OUTPut2[:STATe] ON|OFF	–	–	–	–	
:OUTPut1|3[:STATe] ON|OFF	–	–	–	–	*Output 1–Blank output unsupported*
:OUTPut[:STATe]:PON OFF|UNCHanged	–	–	–	–	
:OUTPut1[:STATe]:PON OFF|UNCHanged	–	–	–	–	
:OUTPut:AFIXed RANGe LOWer?	–	–	–	–	
:OUTPut:AFIXed RANGe UPPer?	–	–	–	–	
:OUTPut:AMODe AUTO|FIXed|ELECtronic	–	–	–	–	
:OUTPut2:AMODe AUTO|FIXed	–	–	–	–	
:OUTPut1|3:AMODe AUTO|FIXed	–	–	–	–	*FIXed mode not available on Output 3.*

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
:OUTPut1:ATTenuation 0–110dB	–	–	–	–	*Output 2 and 3 unsupported.*
:OUTPut:BLANk:POLarity NORMal|INVerted	–	–	–	–	
:OUTPut:IMPedance?	–	–	–	–	
:OUTPut1|3:IMPedance?	–	–	–	–	*Always returns 50 ohms. Output 2 is not supported.*
:OUTPut:PROTection:CLEar	–	–	–	–	
:OUTPut:PROTection:TRIPped?	–	–	–	–	
:OUTPut3:SCALe 0.5|1	–	–	–	–	*Output 1 and 2 unsupported.*
:OUTPut2:VOLTage	–	–	–	–	
*RCL	✓	✓	✓	✓	
[:SOURce]:AM:BBANd[:STATe] ON|OFF	–	–	–	–	
[:SOURce]:AM:EXTernal:COUPling AC|DC	✓	✓	✓	✓	
[:SOURce]:AM[:DEPTh]	✓	✓	✓	✓	
[:SOURce]:AM:EXTernal:COUPling AC|DC	✓	✓	✓	✓	
[:SOURce]:AM:EXTernal1|2:COUPling AC|DC	–	–	–	–	*The Agilent MXG accepts either suffix, 1|2, to change the coupling on its single external input.*
[:SOURce]:AM:EXTernal1|2:IMPedance 600 Ohm|100 kOhm	–	–	–	–	
[:SOURce]:AM:INTernal:FREQuency	✓	✓	✓	✓	*Preset value is 1KHz.*
[:SOURce]:AM:SOURce EXTernal|INTernal	✓	✓	✓	✓	*Supported but the following parameter is not supported:* TTONE| EXT, INT
[:SOURce]:AM:SOURce INTernal|EXT2	–	–	–	–	
[:SOURce]:AM:STATe ON|OFF	✓	✓	✓	✓	*In the N5162A/82A, AM On does not turn off digital modulation formats.* *May need to turn on the LF Source in conjunction with this command.*

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
*SAV	✓	✓	✓	✓	*SMATE200A & SMIQ: The Agilent MXG supports the parameters [1-1000].* *SMJ100A: The Agilent MXG supports the parameters [0-10], where 0 is the instrument preset state.* *SMV: The Agilent MXG supports the parameters [1-100].* *SML: The Agilent MXG supports the parameters [0-50].*
[:SOURce[1]]:AWGN...	–	–	–	–	
[:SOURce[1]]:BB:CFACtor?	–	–	–	–	
[:SOURce][1]:BB:ARB:CLOCk <value> [:SOURce][1]:BB:ARB:CLOCk?	–	✓	–	✓	
[:SOURce:][1]:BB:ARB:SEQuence AUTO|RETRigger|AAUTo|ARETrigger|SINGle [:SOURce:][1]:BB:ARB:SEQuence	–	✓	–	✓	*AUTO: CONTinuous + Free Run* *RETRigger: CONTinuous + Reset & Run + implicit trigger* *AAUTo: CONTinuous + Trigger & Run* *ARETrigger: CONTinuous + Reset & Run* *SINGle: SINGle + Restart on Trig*
[:SOURce][1]:BB:ARB:STATe ON|OFF [:SOURce][1]:BB:ARB:STATe?	–	✓	–	✓	
[:SOURce[1]]BB:ARB:TRIGger:OUTPut[1]|2|3|4:MODE UNCHanged|RESTart|PULSe|PATTern|RATio	–	✓	–	✓	
[:SOURce[1]]:BB:ARB:TRIGger[:EXTernal[1]|2]:DELay [:SOURce[1]]:BB:ARB:TRIGger[:EXTernal[1]|2]:DELay?	–	✓	–	✓	*Supported but applied at the current sample rate when the command is sent.*
[:SOURce[1]|2]:BB:ARB:TRIGger:SOURce INTernal|EXTernal|BEXTernal [:SOURce[1]|2]:BB:ARB:TRIGger:SOURce?	–	✓	–	✓	*Supported but the following parameters are not supported:* OBASeband *If parameters are used, they will generate a parameter error.*
[:SOURce][1]:BB:ARB:WAVeform:CATalog? [<path>]	–	✓	–	✓	
[:SOURce][1]:BB:ARB:WAVeform:DATA <"filename.wv">	–	✓	–	✓	
[:SOURce][1]:BB:ARB:WAVeform:DELete <"filename.wv">	–	✓	–	✓	

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
[:SOURce][1]:BB:ARB:WAVeform:SELect <"filename.wv"> [:SOURce][1]:BB:ARB:WAVeform:SELect?	–	✓	–	✓	
[:SOURce[1]]:BB:IQOutput:SOURce A [:SOURce[1]]:BB:IQOutput:SOURce?	–	✓	–	✓	*Supported but the following parameters are not supported:* |B| *Supported, but query always returns A.*
[:SOURce[1]]:BB:PATH:COUNt?	–	✓	–	✓	*Supported, but query always returns 1.*
[:SOURce[1]]:BB:PGAin <value> -- does nothing [:SOURce[1]]:BB:PGAin?	–	✓	–	✓	*Command is accepted but no action is taken in the Agilent MXG.* *Supported, but query always returns 0.*
[:SOURce[1]]:BB:ROUTe A [:SOURce[1]]:BB:ROUTe?	–	✓	–	✓	*Supported but the following parameters are not supported:* |B|AB| *Supported, but query always returns A.*
[:SOURce[1]][:BB]:ARB:ASET:BERT:TYPE ON|OFF [:SOURce[1]][:BB]:ARB:ASET:BERT:TYPE?	–	–	–	–	
[:SOURce[1]][:BB]:ARB:ASET:DM:IQFilter ON|OFF|1|0 – does nothing [:SOURce[1]][:BB]:ARB:ASET:DM:IQFilter? – returns OFF	–	–	–	–	
[:SOURce[1]][:BB]:ARB:ASET:DM:IQSWap ON|OFF|1|0 – does nothing [:SOURce[1]][:BB]:ARB:ASET:DM:IQSWap? – returns OFF	–	–	–	–	
[:SOURce[1]][:BB]:ARB:ASET:STATe ON|{OFF} [:SOURce[1]][:BB]:ARB:ASET:STATe?	–	–	–	–	
[:SOURce[1]][:BB]:ARB:ASET:TRIGger:MODE ON|OFF [:SOURce[1]][:BB]:ARB:ASET:TRIGger:MODE?	–	–	–	–	
[:SOURce[1]][:BB]:ARB:CLOCk:DELay 0.0 - 0.8 (sample) [:SOURce[1]][:BB]:ARB:CLOCk:DELay?	–	✓	–	✓	*Supported but applied at the current sample rate when the command is sent.*
[:SOURce[1]][:BB]:ARB:CLOCk:MODE SAMPle|MSAMple [:SOURce[1]][:BB]:ARB:CLOCk:MODE?	–	–	–	–	

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
[:SOURce[1]][:BB]:ARB:CLOCk:MULTiplier 1...64 [:SOURce[1]][:BB]:ARB:CLOCk:MULTiplier?	–	–	–	–	
[:SOURce[1]][:BB]:ARB:CLOCk:SOURce INTernal [:SOURce[1]][:BB]:ARB:CLOCk:SOURce?	–	✓	–	✓	*Supported but the following parameter is not supported:* EXTernal.
[:SOURce[1]][:BB]:ARB:IQ:LEVel -3dB to 6dB [:SOURce[1]][:BB]:ARB:IQ:LEVel?	–	–	–	–	
[:SOURce[1]][:BB]:ARB:IQ:LEVel:MODE MANuell|AUTO [:SOURce[1]][:BB]:ARB:IQ:LEVel:MODE?	–	–	–	–	
[:SOURce[1]][:BB]:ARB:IQ:SKEW <valueInSeconds> [:SOURce[1]][:BB]:ARB:IQ:SKEW?	–	✓	–	✓	
[:SOURce[1]][:BB]:ARB:MCARrier...	–	–	–	–	
[:SOURce[1]][:BB]:ARB:PRESet	–	✓	–	✓	
[:SOURce[1]][:BB]:ARB:TRIGger:ARM:EXECute	–	✓	–	✓	
[:SOURce[1]][:BB]:ARB:TRIGger:EXECute	–	✓	–	✓	
[:SOURce[1]][:BB]:ARB:TRIGger[:EXTernal[1]|2]:INHibit 0 - 2^32-1 samples [:SOURce[1]][:BB]:ARB:TRIGger[:EXTernal[1]|2]:INHibit?	–	–	–	–	
[:SOURce[1]][:BB]:ARB:TRIGger:OBASeband:DELay 0... 2^32-1 samples [:SOURce[1]][:BB]:ARB:TRIGger:OBASeband:DELay?	–	–	–	–	
[:SOURce[1]][:BB]:ARB:TRIGger:OBASeband:INHibit 0... 2^32-1 samples [:SOURce[1]][:BB]:ARB:TRIGger:OBASeband:INHibit?	–	–	–	–	
[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2|3|4:DELay 0 - 2^20-1 Samples [:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2|3|4:DELay?	–	✓	–	✓	
[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut:DELay:FIXed ON|OFF [:SOURce[1]][:BB]:ARB:TRIGger:OUTPut:DELay:FIXed?	–	–	–	–	
[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2|3|4:DELay:MAX?	–	–	–	–	

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2|3|4:DELay:MIN?		–		–	
[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2:MODE USER|'mode_string' [:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2:MODE?	–	✓	–	✓	
[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2:MODE:CATalog?	–	✓	–	✓	
[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2|3|4:OFFTime 0-waveform_len-1 samples [:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2|3|4:OFFTime?	–	✓	–	✓	
[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2|3|4:ONTime 0-waveform_len-1 samples [:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2|3|4:ONTime?	–	✓	–	✓	
[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2|3|4:PATTern #B0,1 ... #B111...1,32 [:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2|3|4:PATTern?	–	✓	–	✓	
[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2|3|4:PULSe:DIVider 2 - 2^10 [:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2|3|4:PULSe:DIVider?	–	✓	–	✓	
[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2|3|4:POLarity POSitive|NEGative [:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2|3|4:POLarity?	–	✓	–	✓	
[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2|3|4:PULSe:FREQuency?	–	✓	–	✓	
[:SOURce[1]][:BB]:ARB:TRIGger:RMODe?	–	–	–	–	
[:SOURce[1]][:BB]:ARB:TRIGger:SLENgth 1 [:SOURce[1]][:BB]:ARB:TRIGger:SLENgth?	–	–	–	–	
[:SOURce[1]][:BB]:ARB:TRIGger:SLUNit SEQuence [:SOURce[1]][:BB]:ARB:TRIGger:SLUNit?	–	✓	–	✓	*Supported but the following parameter is not supported: SAMPle.*
[:SOURce[1]][:BB]:ARB:TRIGger:SMODe SAME|NEXT|NSEam [:SOURce[1]][:BB]:ARB:TRIGger:SMODe?	–	–	–	–	

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
[:SOURce[1]][:BB]:ARB:TSIGnal:SINE:FREQuency 100 Hz ... 25 MHz [:SOURce[1]][:BB]:ARB:TSIGnal:SINE:FREQuency?	–	–	–	–	
[:SOURce[1]][:BB]:ARB:TSIGnal:SINE:PHASe -180.00 Deg - + 180.00 Deg [:SOURce[1]][:BB]:ARB:TSIGnal:SINE:PHASe?	–	–	–	–	
[:SOURce[1]][:BB]:ARB:TSIGnal:SINE:SAMPles 3 - 1000 samples per period [:SOURce[1]][:BB]:ARB:TSIGnal:SINE:SAMPles?	–	–	–	–	
[:SOURce[1]][:BB]:ARB:WAVeform:CATalog:LENGth? [<”path”>]	–	✓	–	✓	
[:SOURce[1]][:BB]:ARB:WAVeform:FREE?	–	✓	–	✓	
[:SOURce[1]][:BB]:ARB:WAVeform:POINts? [<”filename.wv”>]	–	✓	–	✓	
[:SOURce[1]][:BB]:ARB:WAVeform:DATA? <”filename.wv”>,<tag>	–	–	–	–	
[:SOURce[1]][:BB]:ARB:WAVeform:FREE?	–	✓	–	✓	
[:SOURce[1]][:BB]:ARB:WAVeform:TAG? “comment”|”marker name”|”poweroffset”	–	–	–	–	
[:SOURce[1]][:BB]:ARB:WSEGment...	–	–	–	–	
[:SOURce[1]]:BB:FOFFset -50Mhz - +50Mhz [:SOURce[1]]:BB:FOFFset?	–	✓	–	✓	
[:SOURce[1]][:BB]:IQGain AUTO|DBM3|DB0|DB3|DB6 [:SOURce[1]][:BB]:IQGain?	–	–	–	–	
[:SOURce]:CORRection[:STATe] ON|OFF|1|0	✓	✓	✓	✓	
[:SOURce]:CORRection:CSET[:SELect] <'table_name'>	✓	✓	✓	✓	
[:SOURce]:CORRection:CSET:CATalog?	✓	✓	✓	✓	
[:SOURce]:CORRection:CSET:DATA:FREQuency 300 Khz to RFmax {,300 kHz to RFmax}	✓	✓	✓	✓	
[:SOURce]:CORRection:CSET:DATA:POWer -40dB to 6dB {,-40dB to 6dB}	✓	✓	✓	✓	
[:SOURce]:CORRection:CSET:DATA:POWer:POINts?	✓	✓	✓	✓	

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
[:SOURce]:CORRection:CSET:DELete <'table_name'>	✓	✓	✓	✓	
[:SOURce]:CORRection:CSET:FREE?	✓	✓	✓	✓	
[:SOURce]:DECT:CLOCk:DELay	–	–	–	–	
[:SOURce]:DECT:CLOCk:SOURce INTernal|EXTernal	–	–	–	–	
[:SOURce]:DECT:DLISt:CATalog?	–	–	–	–	
[:SOURce]:DECT:FILTer:PARameter	–	–	–	–	
[:SOURce]:DECT:FILTer:SELect	–	–	–	–	
[:SOURce]:DECT:FILTer:TYPE GAUSSs|SCOSine|COSine|USER	–	–	–	–	
[:SOURce]:DECT:FLISt:CATalog?	–	–	–	–	
[:SOURce]:DECT:FLISt:DELete <'name'>	–	–	–	–	
[:SOURce]:DECT:FLISt:LOAD <'name'>	–	–	–	–	
[:SOURce]:DECT:FLISt:PREDefined:CATalog?	–	–	–	–	
[:SOURce]:DECT:FLIST:PREDefined:LOAD 'Framelisten-Name'	–	–	–	–	
[:SOURce]:DECT:FLISt:STORe <'Framelisten-Name'>	–	–	–	–	
[:SOURce]:DECT:FORMat GFSK|P4DQpsk	–	–	–	–	
[:SOURce]:DECT:FSK:DEViation	–	–	–	–	
[:SOURce]:DECT:PRAMp:FOFFset	–	–	–	–	
[:SOURce]:DECT:PRAMp:PRESet	–	–	–	–	
[:SOURce]:DECT:PRAMp:ROFFset	–	–	–	–	
[:SOURce]:DECT:PRAMp:SHAPe LINear|COSine	–	–	–	–	
[:SOURce]:DECT:PRAMp:TIME	–	–	–	–	
[:SOURce]:DECT:PREamble:TYPE NORMal | PROLonged	–	–	–	–	
[:SOURce]:DECT:SEQuence AUTO | RETRigger | AAUTo | ARETrigger	–	–	–	–	
[:SOURce]:DECT:SIMulation:TADJustment	–	–	–	–	
[:SOURce]:DECT:SIMulation:JITTer	–	–	–	–	

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
[:SOURce]:DECT:SLOT:ATTenuation	–	–	–	–	
[:SOURce]:DECT:SLOT<i>[:SOURce]:AFIeld PN9 | PN11 | PN15 | PN16 | PN20 | PN21 | PN23 | DLISt | SDATa	–	–	–	–	
[:SOURce]:DECT:SLOT<i>[:SOURce]:AFIeld:DLISt 'name'	–	–	–	–	
[:SOURce]:DECT:SLOT<i>[:SOURce]:BFIeld PN9 | PN11 | PN15 | PN16 | PN20 | PN21 | PN23 | DLISt | SDATa	–	–	–	–	
[:SOURce]:DECT:SLOT<i>[:SOURce]:BFIeld:DLISt 'name'	–	–	–	–	
[:SOURce]:DECT:SLOT<i>[:SOURce]:ZFIeld ON | OFF	–	–	–	–	
[:SOURce]:DECT:SLOT<i>:LEVel OFF | ATT | FULL	–	–	–	–	
[:SOURce]:DECT:SLOT<i>:PREamble:DATA	–	–	–	–	
[:SOURce]:DECT:SLOT<i>:PREamble:PROLonged:DATA	–	–	–	–	
[:SOURce]:DECT:SLOT<i>:PRESet	–	–	–	–	
[:SOURce]:DECT:SLOT<i>:RAMP:CW ON | OFF	–	–	–	–	
[:SOURce]:DECT:SLOT<i>:RAMP:DATA	–	–	–	–	
[:SOURce]:DECT:SLOT<i>:STSHift	–	–	–	–	
[:SOURce]:DECT:SLOT<i>:SYNC	–	–	–	–	
[:SOURce]:DECT:SLOT<i>:TYPE FULL | DOUBle | ADATa	–	–	–	–	
[:SOURce]:DECT:SRATe	–	–	–	–	
[:SOURce]:DECT:STANdard	–	–	–	–	
[:SOURce]:DECT:STATe ON | OFF	–	–	–	–	
[:SOURce]:DECT:TRIGger:DELay	–	–	–	–	
[:SOURce]:DECT:TRIGger:INHibit	–	–	–	–	
[:SOURce]:DECT:TRIGger:OUTPut[1]|2:DELay	–	–	–	–	
[:SOURce]:DECT:TRIGger:OUTPut[2]:PERiod	–	–	–	–	
[:SOURce]:DECT:TRIGger:SOURce EXTernal | INTernal	–	–	–	–	
[:SOURce]:DISTortion[:STATe] ON | OFF	–	–	–	–	
[:SOURce]:DISTortion:DATA:AM	–	–	–	–	

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
[:SOURce]:DISTortion:DATA:AMBase	–	–	–	–	
[:SOURce]:DISTortion:DATA:AM:FREE?	–	–	–	–	
[:SOURce]:DISTortion:DATA:AM:POINTs?	–	–	–	–	
[:SOURce]:DISTortion:DATA:CATalog?	–	–	–	–	
[:SOURce]:DISTortion:DATA:DELete 'Name der Kennlinie'	–	–	–	–	
[:SOURce]:DISTortion:DATA:DELete:ALL	–	–	–	–	
[:SOURce]:DISTortion:DATA:LEVel:CORRection	–	–	–	–	
[:SOURce]:DISTortion:DATA:PM	–	–	–	–	
[:SOURce]:DISTortion:DATA:PMBase	–	–	–	–	
[:SOURce]:DISTortion:DATA:PMBase:POINTs?	–	–	–	–	
[:SOURce]:DISTortion:DATA:PM:FREE?	–	–	–	–	
[:SOURce]:DISTortion:DATA:PM:POINTs?	–	–	–	–	
[:SOURce]:DISTortion:DATA:SELect “Name der Kennlinie”	–	–	–	–	
[:SOURce]:DISTortion:MODE POLYnomial | DATA	–	–	–	–	
[:SOURce]:DISTortion:POLYnomial:AMAM:K<i>	–	–	–	–	
[:SOURce]:DISTortion:POLYnomial:AMPM:K<i>	–	–	–	–	
[:SOURce]:DISTortion:POLYnomial:IFUNction ON | OFF	–	–	–	–	
[:SOURce]:DISTortion:POLYnomial:LEVel:CORRection	–	–	–	–	
[:SOURce]:DISTortion:RECalculate	–	–	–	–	
[:SOURce]:DM:ASK:DEPTh	–	–	–	–	
[:SOURce]:DM:CLISt:CATalog?	–	–	–	–	
[:SOURce]:DM:CLISt:CONTrol[:STATe] ON | OFF	–	–	–	–	
[:SOURce]:DM:CLISt:COPY “<Datenlisten-Name>”	–	–	–	–	
[:SOURce]:DM:CLISt:DATA <struc>{,<struc>}	–	–	–	–	
[:SOURce]:DM:CLISt:DELete “<name>”	–	–	–	–	

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
[:SOURce]:DM:CLISt:POINts?	–	–	–	–	
[:SOURce]:DM:CLISt:SELect “<name>”	–	–	–	–	
[:SOURce]:DM:CLOCk:DELay	–	–	–	–	
[:SOURce]:DM:CLOCk:MODE BIT|SYMBol	–	–	–	–	
[:SOURce]:DM:CLOCk:POLarity NORMal|INVerted	–	–	–	–	
[:SOURce]:DM:CLOCk:SOURce INTernal|EXTernal|COUPled	–	–	–	–	
[:SOURce]:DM:CODing OFF|DIFF|DPHS|DGRay|GSM|NADC|PDC|PHS|TETRa|TFTS|INMarsat|APCO25|VDL	–	–	–	–	
[:SOURce]:DM:DLISt:CATalog?	–	–	–	–	
[:SOURce]:DM:DLISt:COPY “<Datenlisten-Name>”	–	–	–	–	
[:SOURce]:DM:DLISt:DATA 0|1{,0 | 1 }..	–	–	–	–	
[:SOURce]:DM:DLISt:DATA? [<Start>[,<Länge>]]	–	–	–	–	
[:SOURce]:DM:DLISt:DATA:APPend 0|1{,0 | 1 }..	–	–	–	–	
[:SOURce]:DM:DLISt:DELete “<Datenlisten-Name>”	–	–	–	–	
[:SOURce]:DM:DLISt:FREE?	–	–	–	–	
[:SOURce]:DM:DLISt:POINts <n>	–	–	–	–	
[:SOURce]:DM:DLISt:SELect “<Datenlisten-Name>”	–	–	–	–	
[:SOURce]:DM:EXTernal:IMPedance 600 Ohm|100 kOhm	–	–	–	–	
[:SOURce]:DM:FILTer:MODE LACP|LEVM	–	–	–	–	
[:SOURce]:DM:FILTer:PARameter	–	–	–	–	
[:SOURce]:DM:FILTer:TYPE SCOSine|COSine|GAUSs|BESS1|BESS2|IS95|EIS95|APCO|TETRa|WCDMa|SPHase|USER	–	–	–	–	
[:SOURce]:DM:FLIST:CATalog?	–	–	–	–	
[:SOURce]:DM:FLIST:DATA A,B,C,D,I1,Q1,I2,Q2.	–	–	–	–	
[:SOURce]:DM:FLIST:DELete “<name>”	–	–	–	–	
[:SOURce]:DM:FLIST:FREE?	–	–	–	–	
[:SOURce]:DM:FLIST:POINts?	–	–	–	–	

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
[:SOURce]:DM:FLISt:SELect “<name>”	–	–	–	–	
[:SOURce]:DM:FORMat BPSK | QPSK|QIS95|QINMarsat|QICO| QWCDma|OQPSk|OIS95|P4QPsk|P4DQpsk|PSK8|PSKE8|GFSK | GMSK|ASK|FSK2|FSK4|AFSK4|QAM16|QAM32|QAM64|QAM256| USER	–	–	–	–	
[:SOURce]:DM:FSK:DEViation	–	–	–	–	
[:SOURce]:DM:FSK[:DEViation]	–	–	–	–	
[:SOURce]:DM:FSK:POLarity NORMal|INVerted	–	–	–	–	
[:SOURce]:DM:INPut:IMPedance G1K|G50|ECL	–	–	–	–	
[:SOURce]:DM:IQ:CREStfactor	–	✓	–	✓	
[:SOURce]:DM:IQ:FILTer:FREQuency	–	–	–	–	
[:SOURce]:DM:IQ:FILTer:STATe ON|OFF	–	–	–	–	
[:SOURce]:DM:IQ:IMPairment[:STATe] ON|OFF [:SOURce]:DM:IQ:IMPairment[:STATe]?	–	✓	–	✓	
[:SOURce]:DM:IQ:LEAKage[:MAGNitude] [:SOURce]:DM:IQ:LEAKage[:MAGNitude]?	–	✓	–	✓	
[:SOURce]:DM:IQ:PRAMp OFF|AEXTernal	–	–	–	–	
[:SOURce]:DM:IQ:QUADrature:ANGLe [:SOURce]:DM:IQ:QUADrature:ANGLe?	–	✓	–	✓	
[:SOURce]:DM:IQRatio[:MAGNitude] [:SOURce]:DM:IQRatio[:MAGNitude]?	–	✓	–	✓	
[:SOURce]:DM:IQ:STATe ON|OFF [:SOURce]:DM:IQ:STATe?	–	✓	–	✓	
[:SOURce]:DM:IQSWap[:STATe] ON|OFF	–	✓	–	✓	
[:SOURce]:DM:IQ:TRANsition ON|OFF	–	–	–	–	
[:SOURce]:DM:LEAKage[:MAGnitude]	–	✓	–	✓	
[:SOURce]:DM:LDIStortion[:STATe] ON|OFF	–	–	–	–	
[:SOURce]:DM:MDELay?	–	–	–	–	
[:SOURce]:DM:MLISt:CATalog?	–	–	–	–	
[:SOURce]:DM:MLISt:DATA A,B,C,D,E,F,I1,Q1,I2,Q2..	–	–	–	–	
[:SOURce]:DM:MLISt:DELete “<name>”	–	–	–	–	

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
[:SOURce]:DM:MLISt:FREE?	–	–	–	–	
[:SOURce]:DM:MLIST:POINts?	–	–	–	–	
[:SOURce]:DM:MLIST:SELect "<name>"	–	–	–	–	
[:SOURce]:DM:PATTern ZERO|ONE|ALTernate	–	–	–	–	
[:SOURce]:DM:PRAMp[:STATe] ON|OFF	–	–	–	–	
[:SOURce]:DM:PRAMp:SOURce CLISt|AEXTernal| DEXTernal	–	–	–	–	
[:SOURce]:DM:PRAMp:TIME	–	–	–	–	
[:SOURce]:DM:PRAMp:DELay	–	–	–	–	
[:SOURce]:DM:PRAMp:SHAPe LINear|COSine	–	–	–	–	
[:SOURce]:DM:PRAMp:ATTenuation	–	–	–	–	
[:SOURce]:DM:PRBS[:LENGth] 9|15|16|20|21|23	–	–	–	–	
[:SOURce]:DM:SEQuence AUTO|RETRigger|AAUTo| ARETrigger|SINGle	–	–	–	–	
[:SOURce]:DM:SOURce PRBS|PATTern|DLIST|SERial| PARallel|SDATa	–	–	–	–	
[:SOURce]:DM:SRATe	–	–	–	–	
[:SOURce]:DM:STANDard APCFm|APCQpsk|ASK|BLUetooth| CDPD|CT2|DECT|GSM|GSMEdge|IRIDium|FIS95|RIS95|NADC| PDC|PHS|TETRa|TFTS|PWT|ICOBpsk|ICOGmsk|ICOQpsk| WORLdspace|QWCDma|AT55	–	–	–	–	
[:SOURce]:DM:STATe ON|OFF	–	✓	–	✓	
[:SOURce]:DM:THReshold[:ALL]	–	✓	–	✓	
[:SOURce]:DM:TRIGger:DELay	–	✓	–	✓	
[:SOURce]:DM:TRIGger:INHibit	–	✓	–	✓	
[:SOURce]:DM:TRIGger:SLOPe POSitive|NEGative	–	✓	–	✓	
[:SOURce]:DM:TRIGger:SOURce EXTernal|INTernal	–	✓	–	✓	
[:SOURce]:DM:TYPE ASK|FSK	–	–	–	–	
[:SOURce]:FM:EXTernal1|2:COUPling AC|DC	✓	✓	✓	✓	

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
[:SOURce]:DM:EXTernal1|2:IMPedance 600 Ohm|100 kOhm	–	–	–	–	
[:SOURce]:FM:INTernal:FREQuency	✓	✓	✓	✓	
[:SOURce]:FM:SOURce INTernal|EXTernal1	✓	✓	✓	✓	
[:SOURce]:FM:STATe ON|OFF	✓	✓	✓	✓	
[:SOURce]:FM1[:DEViation]	✓	✓	✓	✓	*On SMATE200A and SMIQ the preset value is 10 kHz..*
[:SOURce]:FM1:EXTernal1:COUPling AC|DC	✓	✓	✓	✓	
[:SOURce]:FM1:INTernal:FREQuency	✓	✓	✓	✓	
[:SOURce]:FM1:PREemphasis 0|50us|75us	–	–	–	–	
[:SOURce]:FM1:SOURce INTernal|EXTernal1|EXTernal2	✓	✓	✓	✓	
[:SOURce]:FM1:STATe ON|OFF	✓	✓	✓	✓	
[:SOURce]:FREQuency:CENTer <num>[<freq suffix>]	✓	✓	✓	✓	
[:SOURce]:FREQuency[:CW|:FIXed]	✓	✓	✓	✓	
[:SOURce]:FREQuency:RCL INCLude|EXCLude	✓	✓	✓	✓	
[:SOURce]:FREQuency[:CW|:FIXed]:RCL INCLude|EXCLude	✓	✓	✓	✓	
[:SOURce]:FREQuency:MANual	–	–	–	–	
[:SOURce]:FREQuency:MODE CW|FIXed|SWEep|LIST	✓	✓	✓	✓	*Supported but the following parameter is not supported: SWEep.*
[:SOURce]:FREQuency:MULTiplier	✓	✓	✓	✓	
[:SOURce]:FREQuency:OFFSet	✓	✓	✓	✓	
[:SOURce]:FREQuency:SPAN <num>[<freq suffix>]	✓	✓	✓	✓	
[:SOURce]:FREQuency:STARt	✓	✓	✓	✓	
[:SOURce]:FREQuency:STEP[:INCRement]	✓	✓	✓	✓	
[:SOURce]:FREQuency:STOP	✓	✓	✓	✓	
[:SOURce]:FSIMulator...	–	–	–	–	*This subsystem is not supported.*
[:SOURce]:GPS...	–	–	–	–	*This subsystem is not supported.*

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
[:SOURce]:GSM...	–	–	–	–	*This subsystem is not supported.*
[:SOURce]:IQ:CREStfactor <val>dB	–	✓	–	✓	
[:SOURCE]:IQ:IMPairment:IQRatio[:MAGNitude] <value><unit> [:SOURCE]:IQ:IMPairment:IQRatio[:MAGNitude]?	–	✓	–	✓	
[:SOURCE]:IQ:IMPairment:LEAKage:I <value><unit> [:SOURCE]:IQ:IMPairment:LEAKage:I?	–	✓	–	✓	
[:SOURCE]:IQ:IMPairment:LEAKage:Q <value><unit> [:SOURCE]:IQ:IMPairment:LEAKage:Q?	–	✓	–	✓	
[:SOURCE]:IQ:IMPairment:QUADrature[:ANGLe] <value><unit> [:SOURCE]:IQ:IMPairment:QUADrature[:ANGLe]?	–	✓	–	✓	
[:SOURCE]:IQ:IMPairment[:STATe] ON|OFF [:SOURCE]:IQ:IMPairment[:STATe]?	–	✓	–	✓	
[SOURce]:IQ:OUTPut:OFFSet:I	–	✓	–	✓	
[SOURce]:IQ:OUTPut:OFFSet:Q	–	✓	–	✓	
[:SOURce]:IQ:SOURce ANALog|BASeband	–	✓	–	✓	
[:SOURce]:IQ:STATe ON|OFF	–	✓	–	✓	
[:SOURce]:IQ:SWAP[:STATe] ON|OFF	–	✓	–	✓	
[:SOURce]:IS95...	–	–	–	–	*This subsystem is not supported.*
[:SOURce]:LFOutput:FREQuency	✓	✓	✓	✓	
[:SOURce]:LIST:CATalog?	✓	✓	✓	✓	
[:SOURce]:LIST:DELete <'List_name'>	✓	✓	✓	✓	
[:SOURce]:LIST:DELete:ALL	✓	✓	✓	✓	
[:SOURce]:LIST:DWELl <value>{,<value>}	✓	✓	✓	✓	
[:SOURce]:LIST:DWELl:POINts?	✓	✓	✓	✓	
[:SOURce]:LIST:FREE?	✓	✓	✓	✓	
[:SOURce]:LIST:FREQuency <value>{,<value>}	✓	✓	✓	✓	
[:SOURce]:LIST:FREQuency:POINts?	✓	✓	✓	✓	
[:SOURce]:LIST:LEARn	✓	✓	✓	✓	

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
[:SOURce]:LIST:MODE AUTO|STEP	✓	✓	✓	✓	
[:SOURce]:LIST:POWer <val>dBm|block_data	✓	✓	✓	✓	
[:SOURce]:LIST:POWer:POINts?	✓	✓	✓	✓	
[:SOURce]:LIST:SELect <“list_name”>	✓	✓	✓	✓	
[:SOURce][1]|2:LIST:TRIGger:EXECute	✓	✓	✓	✓	
[:SOURce][1]|2:LIST:RESET	✓	✓	✓	✓	
[:SOURce]:LIST:TRIGger:SOURce AUTO|IMM|SINGle|BUS| EXTernal	✓	✓	✓	✓	
[:SOURce]:MARKer1|2|3|4[:FSWeep][:STATe] ON|OFF	–	–	–	–	
[:SOURce]:MARKer1|2|3|4[:FSWeep]:AMPLitude ON|OFF	–	–	–	–	
[:SOURce]:MARKer1|2|3|4|5||8|9|10[:FSWeep]:AMPLit ude ON | OFF	–	–	–	–	
[:SOURce]:MARKer1|2|3|4[:FSWeep]:AOFF	–	–	–	–	
[:SOURce]:MARKer1|2|3|4|5||8|9|10[:FSWeep]:AOFF					
[:SOURce]:MARKer1|2|3|4[:FSWeep]:FREQuency	–	–	–	–	
[:SOURce]:MARKer1|2|3|4|5||8|9|10[:FSWeep]: FREQuency 1 GHz to Fmax	–	–	–	–	
[:SOURce]:MARKer1|2|3|4:PSWeep[:STATe] ON|OFF	–	–	–	–	
[:SOURce]:MARKer1|2|3|4|5||8|9| 10[:FSWeep][:STATe] ON|OFF	–	–	–	–	
[:SOURce]:MARKer1|2|3|4:PSWeep:AOFF	–	–	–	–	
[:SOURce]:MARKer1|2|3|4|5||8|9|10:PSWeep:AOFF	–	–	–	–	
[:SOURce]:MARKer1|2|3|4:PSWeep:POWer	–	–	–	–	
[:SOURce]:MARKer1|2|3|4|5||8|9|10:PSWeep:POWer	–	–	–	–	
[:SOURce]:MARKer1|2|3|4|5||8|9|10: PSWeep[:STATe] ON|OFF	–	–	–	–	
[:SOURce]:MARKer:POLarity NORMal|INVerted	–	–	–	–	
[:SOURce]:MODulation[ALL]:STATe ON|OFF	✓	✓	✓	✓	
[:SOURce]:NADC...	–	–	–	–	*This subsystem is not supported.*

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
[:SOURce]:NOISe:SNRatio	–	–	–	–	
[:SOURce]:NOISe[:STATe] ON|OFF	–	–	–	–	
[:SOURce]:PDC...	–	–	–	–	*This subsystem is not supported.*
[:SOURce]:PHASe[:ADJust]	–	–	–	–	
[:SOURce]:PHASe:REFerence	–	–	–	–	
[:SOURce]:PHS...	–	–	–	–	*This subsystem is not supported.*
[:SOURce]:PM1[:DEViation]	✓	✓	✓	✓	*On the SMATE200A, SMJ100A, and SMIQ the preset value is 1 radian.*
[:SOURce]:PM1:EXTernal1:COUPling AC|DC	✓	✓	✓	✓	
[:SOURce]:PM1:INTernal:FREQuency	✓	✓	✓	✓	
[:SOURce]:PM1:SOURce INTernal|EXTernal1|EXTernal	✓	✓	✓	✓	*Supported but the following parameters are not supported:* TTONE | EXT, INT |EXTernal2
[:SOURce]:PM1:STATe ON|OFF	✓	✓	✓	✓	
[:SOURce]:POWer:ALC OFF	✓	✓	✓	✓	*When ALC is OFF a power search will be triggered when the level changes.*
[:SOURce]:POWer:ALC:OMODe SHOLd	✓	✓	✓	✓	
[:SOURce]:POWer:ALC:REFerence	–	–	–	–	*Power meter leveling mode is unsupported.*
[:SOURce]:POWer:ALC:SEARch ON|OFF|ONCE	✓	✓	✓	✓	
[:SOURce]:POWer:ALC:SEARch?	–	–	–	–	
[:SOURce]:POWer:ALC:SONCe	✓	✓	✓	✓	
[:SOURce]:POWer:ALC:SOURce INTernal|DIODe	✓	✓	✓	✓	PMETer *not supported.*
[:SOURce]:POWer:ALC[:STATe] ON|OFF	✓	✓	✓	✓	*Supported but the following parameter is not supported:* AUTO.
[:SOURce]:POWer:ALC:TABLe[:MEASure]?	–	–	–	–	
[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]	✓	✓	✓	✓	

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
[:SOURce]:POWer[:LEVel][:IMMediate]:OFFSet	✓	✓	✓	✓	
[:SOURce]:POWer[:LEVel][:IMMediate][:AMPL]:OFFSet	✓	✓	✓	✓	
[:SOURce]:POWer:LIMit[:AMPLitude]	–	–	–	–	
[:SOURce]:POWer:MANual	–	–	–	–	
[:SOURce]:POWer:MODE FIXed|SWEep|LIST	✓	✓	✓	✓	
[:SOURce]:POWer:PEP?	–	–	–	–	
[:SOURce]:POWer:STARt	✓	✓	✓	✓	
[:SOURce]:POWer:STEP[:INCRement]	✓	✓	✓	✓	
[:SOURce]:POWer:STOP	✓	✓	✓	✓	
[:SOURce]:PULM:EXTernal:IMPedance 50 Ohm|10 kOhm	–	–	–	–	
[:SOURce]:PULM:POLarity NORMal|INVerted	–	–	–	–	*Does not affect the polarity of the* INTernal *source selection.*
[:SOURce]:PULM:SOURce EXTernal|INTernal	✓	✓	✓	✓	
[:SOURce][1]|2:PULM:SOURce INT|EXT	✓	✓	✓	✓	
[:SOURce]:PULM:STATe ON|OFF	✓	✓	✓	✓	
[:SOURce]:PULSe:DELay <delay>	✓	✓	✓	✓	
[:SOURce]:PULSe:DOUBle:DELay 50 ns to 1.3 s	✓	✓	✓	✓	
[:SOURce]:PULSe:DOUBle[:STATe] ON|OFF	✓	✓	✓	✓	
[:SOURce]:PULSe:PERiod <period>	✓	✓	✓	✓	*SMV & SML preset value is 10 micro-seconds.*
[:SOURce]:PULSe:WIDTh <width>	✓	✓	✓	✓	*SMV & SML preset value is 1 micro-second.*
[:SOURce]:ROSCillator:EXTernal:FREQuency	–	–	–	–	
[:SOURce]:ROSCillator[:INTernal]: ADJust[:STATe] ON|OFF	✓	✓	✓	✓	
[:SOURce]:ROSCillator[:INTernal]:ADJust[:VALue]	✓	✓	✓	✓	
[:SOURce]:ROSCillator:SOURce INTernal|EXTernal	✓	✓	✓	✓	

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
[:SOURce]:SWEep:BTIMe NORMal|LONG	–	–	–	–	
[:SOURce]:SWEep[:FREQuency]:DWELl	✓	✓	✓	✓	
[:SOURce]:SWEep[:FREQuency]:EXECute	✓	✓	✓	✓	
[:SOURce]:SWEep[:FREQuency]:MODE AUTO|MANual|STEP	✓	✓	✓	✓	
[:SOURce]:SWEep[:FREQuency]:POINts	✓	✓	✓	✓	
[:SOURce]:SWEep[:FREQuency]:SPACing LINear|LOGarithmic	✓	✓	✓	✓	
[:SOURce]:SWEep[:FREQuency]:STEP[:LINear]	✓	✓	✓	✓	
[:SOURce]:SWEep[:FREQuency]:STEP:LOGarithmic	–	–	–	–	
[:SOURce]:SWEep:POWer:DWELl	–	–	–	–	
[:SOURce]:SWEep:POWer:MODE AUTO|MANual|STEP	–	–	–	–	
[:SOURce]:SWEep:POWer:POINts	–	–	–	–	
[:SOURce]:SWEep:POWer:SPACing LOGarithmic	–	–	–	–	
[:SOURce]:SWEep:POWer:STEP[:LOGarithmic]	–	–	–	–	
[:SOURce][1]|2:SWEep:RESet[:ALL]	✓	✓	✓	✓	
[:SOURce]:WCDMa...	–	–	–	–	*This subsystem is not supported.*
[:SOURce]:W3GPp...	–	–	–	–	*This subsystem is not supported.*
:SOURce2:FREQuency[:CW|:FIXed]	–	–	–	–	
:SOURce2:FREQuency:MANual	–	–	–	–	
:SOURce2:FREQuency:MODE CW|FIXed|SWEep	–	–	–	–	
:SOURce2:FREQuency:STARt	–	–	–	–	
:SOURce2:FREQuency:STOP	–	–	–	–	
:SOURce2:MARKer1|2|3[:FSWeep]:AOFF	–	–	–	–	
:SOURce2:MARKer1|2|3[:FSWeep]:FREQuency	–	–	–	–	
:SOURce2:MARKer1|2|3[:FSWeep][:STATe] ON|OFF	–	–	–	–	
:SOURce2:MARKer1|2|3:POLarity NORMal|INVerted	–	–	–	–	
:SOURce2:SWEep:BTIMe NORMal|LONG	–	–	–	–	

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
:SOURce2:SWEep[:FREQuency]:DWELl	–	–	–	–	
:SOURce2:SWEep[:FREQuency]:MODE AUTO|MANual|STEP	–	–	–	–	
:SOURce2:SWEep[:FREQuency]:POINts	–	–	–	–	
:SOURce2:SWEep[:FREQuency]:SPACing LINear|LOGarithmic	–	–	–	–	
:SOURce2:SWEep[:FREQuency]:STEP[:LINear]	–	–	–	–	
:SOURce2:SWEep[:FREQuency]:STEP:LOGarithmic	–	–	–	–	
:STATus:OPERation[:EVENt]?	✓	✓	✓	✓	*On the N5183A, the SMR values of the status bytes are accepted but the bits are not mapped, so they perform no function.*
:STATus:OPERation:CONDition?	✓	✓	✓	✓	
:STATus:OPERation:ENABle <value> :STATus:OPERation:ENABle?	✓	✓	✓	✓	
:STATus:OPERation:NTRansition <value> :STATus:OPERation:NTRansition?	✓	✓	✓	✓	
:STATus:OPERation:PTRansition <value> :STATus:OPERation:PTRansition?	✓	✓	✓	✓	
:STATus:PRESet	✓	✓	✓	✓	
:STATus:QUEStionable:CONDition?	–	–	–	–	
:STATus:QUEStionable:ENABle <value> :STATus:QUEStionable:ENABle?	✓	✓	✓	✓	
:STATus:QUEStionable[:EVENt]?	✓	✓	✓	✓	
:STATus:QUEStionable:NTRansition <value> :STATus:QUEStionable:NTRansition?	✓	✓	✓	✓	
:STATus:QUEStionable:PTRansition <value> :STATus:QUEStionable:PTRansition?	✓	✓	✓	✓	
STATus:QUE?	✓	✓	✓	✓	
:STATus:QUEue[:NEXT]?	✓	✓	✓	✓	*Returns all errors and clears the error queue.*
:SYSTem:BEEPer:STATe ON|OFF	–	–	–	–	
:SYSTem:COMMunicate:GPIB:LTERminator EOI|STANdard	–	–	–	–	
:SYSTem:COMMunicate:GPIB[:SELF]:ADDRess	✓	✓	✓	✓	
:SYSTem:COMMunicate:SDATa:BAUD 1200|2400|4800| 9600|19200|38400|57600|115200	–	–	–	–	

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
:SYSTem:COMMunicate:SERial:BAUD 1200|2400|4800|9600|19200|38400|57600|115200	–	–	–	–	
:SYSTem:COMMunicate:SERial:CONTrol:RTS ON|IBFull|RFR	–	–	–	–	
:SYSTem:COMMunicate:SERial:PACE XON|NONE	–	–	–	–	
:SYSTem:DISPlay:UPDate ON|OFF	✓	✓	✓	✓	
:SYSTem:DISPlay:UPDate[:STATe] ON|OFF	✓	✓	✓	✓	
:SYSTem:ERRor?	✓	✓	✓	✓	*Supported but error codes will not match with R&S codes.*
:SYSTem:ERRor:ALL?	✓	✓	✓	✓	
:SYSTem:ERRor:CODE:ALL?	✓	✓	✓	✓	
:SYSTem:ERRor:CODe[:NEXT]?	✓	✓	✓	✓	*Supported but error codes will not match with R&S codes.*
:SYSTem:ERRor:COUNt?	✓	✓	✓	✓	
:SYSTem:ERRor[:NEXT]?	✓	✓	✓	✓	
:SYSTem:KLOCk ON | OFF	✓	✓	✓	✓	
:SYSTem:MODE FIXed | MSEQuence	–	–	–	–	
:SYSTem:MSEQuence:CATalog?	–	–	–	–	
:SYSTem:MSEQuence:DELete 'sequence_name'	–	–	–	–	
:SYSTem:MSEQuence:DELete:ALL	–	–	–	–	
:SYSTem:MSEQuence:DWELl	–	–	–	–	
:SYSTem:MSEQuence:FREE?	–	–	–	–	
:SYSTem:MSEQuence:MODE AUTO|STEP	–	–	–	–	
:SYSTem:MSEQuence[:RCL]	–	–	–	–	
:SYSTem:MSEQuence[:RCL]:POINts?	–	–	–	–	
:SYSTem:MSEQuence:SELect	–	–	–	–	
:SYSTem:PRESet	✓	✓	✓	✓	*MXG's RST state is different.*
:SYSTem:PROTect[1|2|3][:STATE] ON|OFF,<passwd>	–	–	–	–	*Command is accepted but no action is taken in the N5183A.*

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
:SYSTem:PROTect[1]|2|3|4|5[:STATE] ON|OFF|1|0,<passwd>	✓	✓	✓	✓	*Command is accepted but no action is taken in the MXG.*
:SYSTem:PROTect[:STATe] ON|OFF "123456"	✓	✓	✓	✓	*Command is accepted but no action is taken in the MXG.*
:SYSTem:SECurity[:STATe] ON|OFF	–	–	–	–	
:SYSTem:SERRor?	✓	✓	✓	✓	*Supported but error codes will not match with R&S codes.*
:SYSTem:SREStore	✓	✓	✓	✓	
:SYSTem:SSAVe	✓	✓	✓	✓	
:SYSTem:VERSion?	–	–	–	–	
:TEST...	–	–	–	–	*This subsystem is not supported.*
:TEST:RAM?	–	–	–	–	
:TEST:ROM?	–	–	–	–	
:TRIGger:BERT[:IMMediate]	–	–	–	–	
:TRIGger:DM[:IMMediate]	–	–	–	–	
:TRIGger:DM:SOURce AUTO|SINGle|EXTernal	–	–	–	–	
:TRIGger:FSWeep[:IMMediate]	✓	✓	✓	✓	
:TRIGger:FSWeep:SOURce AUTO|IMM|SINGle/BUS|EXTernal	✓	✓	✓	✓	
:TRIGger:FSWeep:SOURce SINGle|BUS	✓	✓	✓	✓	
:TRIGger:LIST[:IMMediate]	✓	✓	✓	✓	
:TRIGger:LIST:SOURce AUTO|SINGle|EXTernal	✓	✓	✓	✓	
:TRIGger:MSEQuence[:IMMediate]	–	–	–	–	
:TRIGger:MSEQuence:SOURce SINGle|EXTernal|AUTO	–	–	–	–	
:TRIGger:SLOPe POSitive|NEGative|EITHer	–	–	–	–	
:TRIGger[:SWEep][:IMMediate]	✓	✓	✓	✓	
:TRIGger[:SWEep]:SOURce AUTO|SINGle|EXTernal	✓	✓	✓	✓	
:TRIGger1[:SWEep][:IMMediate]	–	–	–	–	*Trigger 2 is unsupported.*
:TRIGger1[:SWEep]:SOURce AUTO|SINGle|EXTernal	–	–	–	–	*Trigger 2 is unsupported.*

Table 9-9 MXG to R&S SMATE/SMIQ/SML/SMU Product Command Comparison (Continued)

R&S Commands ✓ = Supported by Agilent MXG – = Not supported by Agilent MXG	N5161A	N5162A	N5181A	N5182A	Remarks
:TRIGger1|2:PULSe:SOURce AUTO|EXTernal|EGATed	✓	✓	✓	✓	
:UNIT:ANGLe DEGRee|DEGree|RADian	–	–	–	–	
:UNIT:POWer DBM|DBW|DBMW|DBUW|DBV|DBMV|DBUV|V	–	–	–	–	

Symbols

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*ESE
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*ESE?
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*OPC?
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*OPT?
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*PSC
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*PSC?
  power-on status clear, 173
*RST
  reset command, 173
*SRE
  service request enable, 174
*SRE?
  service request enable, 174
*STB?
  read status byte, 175
*TRG
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Points softkey, 57, 58, 377, 378, 557, 558
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Numerics

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  See Dmodulation subsystem keys
16PSK softkey
  See Dmodulation subsystem keys
16QAM softkey
  See Dmodulation subsystem keys
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