Errata

Agilent Technologies
PSA Series Spectrum Analyzers

This document contains supplemental information for instruments with firmware A.11.21

The latest revision of the firmware can be found at http://www.agilent.com/find/psa_firmware

Part Number: E4440-90621
Supersedes: January 2012

Printed in USA July 2012

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Product Information

TIP You can get automatic E-mail notification of new firmware releases and other product updates/information by subscribing to the *Agilent Technologies Test & Measurement E-Mail Notification Service* for the PSA Series at

http://dialog.tm.agilent.com/en_US/emailupdates/landingpage.jsp

Using the Knob To Enter Sweep Points

If you have a marker turned on and decide to set the number of sweep points using the knob, you can occasionally cause the analyzer to stop sweeping. Sweeping will resume when you turn the knob by at least one sweep point. This can happen occasionally if you spin the knob quickly to change the sweep points. To avoid the situation completely use the up/down arrow keys or enter a value with the numeric keys.

Using Small Number of Sweep Points and Long Sweep Times

If you have set up your sweep to have a small number of sweep points and a long sweep time, it is possible to choose settings where the analyzer will stop sweeping. Specifically, with zero span and Average detector selected, sweep times (in seconds) that are greater than (Sweep points -1)*143.166 will stop the sweep. Decrease the sweep time or increase the sweep points so that:

Sweep Points > (Sweep Time in seconds / 143.166) + 1

For sweep times greater than 286 seconds, the number of sweep points must be greater than (sweep time in seconds / 143.166 + 1). The maximum trace bucket length is 143.166 seconds. The number of trace buckets is the number of sweep points - 1.

PSA Specifications

PSA Core Spectrum Analyzer (page 26)

Description	Specifications	Supplemental Information
Sweep Time		
Range		
Span = 0 Hz	1 µs to 6000 s[a]	
Span ≥10 Hz	1 ms to 2000 s	
Accuracy		
Span ≥ 10 Hz, swept		±0.01% (nominal)
Span ≥ 10 Hz, FFT		±40% (nominal)
Span = 0 Hz		±0.01% (nominal)
Sweep Trigger	Free Run, Line, Video, External Front, External Rear, RF Burst	
Delayed Trigger [b]		
Range		
Span ≥ 10 Hz, swept	1 µs to 500 ms	
Span = 0 Hz or FFT	–150 ms to +500 ms	
Resolution	0.1 µs	

a. For sweep times greater than 286 seconds, the number of sweep points must be greater than (sweep time in seconds / 143.166 + 1). The maximum trace bucket length is 143.166 seconds. The number of trace buckets is the number of sweep points - 1.

b. Delayed trigger is available with line, video, external, and RF Burst triggers.

PSA Core Spectrum Analyzer (page 35)

Description	Specifications		Supplemental Information	
Stability				
Noise Sidebands Center Frequency = 1 GHz[a] Best-case Optimization[b]	20 to 30 °C	0 to 55 °C	Typical	Nominal
Newest Instruments[c] Offset				
100 Hz	–91 dBc/Hz	–90 dBc/Hz	–96 dBc/Hz	
1 kHz	–103 dBc/Hz	–100 dBc/Hz	–108 dBc/Hz	
10 kHz	–116 dBc/Hz	–115 dBc/Hz	–118 dBc/Hz	
30 kHz	–116 dBc/Hz	–115 dBc/Hz	–118 dBc/Hz	
100 kHz	–122 dBc/Hz	–121 dBc/Hz	–124 dBc/Hz	
1 MHz	–145 dBc/Hz[d]	–144 dBc/Hz[d]	–147 dBc/Hz[e]	–148 dBc/Hz[e]
6 MHz	–153 dBc/Hz[d]	–153 dBc/Hz[d]	–156 dBc/Hz[e]	–156.5 dBc/Hz[e]
10 MHz	–155 dBc/Hz[d]	–155 dBc/Hz[d]	–157.5 dBc/Hz[e]	–158 dBc/Hz[e]
Oldest Instruments Offset				
100 Hz	–91 dBc/Hz	–90 dBc/Hz	–97 dBc/Hz	
1 kHz	–103 dBc/Hz	–100 dBc/Hz	–107 dBc/Hz	
10 kHz	–114 dBc/Hz	–113 dBc/Hz	–117 dBc/Hz	
30 kHz	–114 dBc/Hz	–113 dBc/Hz	–117 dBc/Hz	
100 kHz	–120 dBc/Hz	–119 dBc/Hz	–123 dBc/Hz	
1 MHz	–144 dBc/Hz[d]	–142 dBc/Hz[d]	–146 dBc/Hz[e]	–148 dBc/Hz[e]
6 MHz	–151 dBc/Hz[d]	–150 dBc/Hz[d]	–152 dBc/Hz[e]	–156 dBc/Hz[e]
10 MHz	–151 dBc/Hz[d]	–150 dBc/Hz[d]	–152 dBc/Hz[e]	–157.5 dBc/Hz[e]
Residual FM			<(1 Hz × N[f]) p–p in 1 s	

a. Nominal changes of phase noise sidebands with other center frequencies are shown by some examples in the graphs that follow. To predict the phase noise for other center frequencies, note that phase noise at offsets above approximately 1 kHz increases nominally as 20 × log N, where N is the harmonic mixer mode. For offsets below 1 kHz, and center frequencies above 1 GHz, the phase noise increases nominally as 20 × log CF, where CF is the center frequency in GHz.

b. Noise sidebands for offsets of 30 kHz and below are shown for phase noise optimization set to optimize ≤(f) for f < 50 kHz; for offsets of 100 kHz and above, the optimization is set for f > 50 kHz.

c. Instruments with serial numbers of MY44020000 or higher, or US44020000 or higher, or SG44020000 or higher are the newest instruments. Instruments with lower serial numbers are the older instruments. The transition between these occurred around January 2004. Press System, Show System to read out the serial number.

d. Analyzer-contributed phase noise at the low levels of this offset requires advanced verification techniques because broadband noise would otherwise cause excessive measurement error. Agilent uses a high level low phase noise CW test signal and sets the input attenuator so that the mixer level will be well above the normal top-of-screen level (-10 dBm) but still well below the 1 dB compression level. This improves dynamic range (carrier to broadband noise ratio) at the expense of amplitude uncertainty due to compression of the phase noise sidebands of the analyzer. (If the mixer level were increased to the "1 dB Gain Compression Point," the compression of a single sideband is specified to be 1 dB or lower. At lower levels, the compression falls off rapidly. The compression of phase noise sidebands is substantially less than the compression of a single-sideband test signal, further reducing the uncertainty of this technique.) Agilent also measures the broadband noise of the analyzer without the CW signal and subtracts its power from the measured phase noise power. The same techniques of overdrive and noise subtraction can be used in measuring a DUT, of course.

e. "Typical" results include the effect of the signal generator used in verifying performance; nominal results show performance observed during development with specialized signal sources.

f. N is the harmonic mixing mode.

PSA Core Spectrum Analyzer (page 80)

Description	Specifications		Supplemental Information
Other Input Related Spurious	**Mixer Level**[a]	**Distortion**	
Image Responses			
10 MHz to 26.8 GHz	–10 dBm	–80 dBc	
26.8 to 50 GHz	–30 dBm	–60 dBc	
Multiples and Out-of-band Responses			
10 MHz to 26.8 GHz	–10 dBm	–80 dBc	
26.8 to 50 GHz	–30 dBm	–50 dBc	
Residual Responses[b]			
200 kHz to 6.6 GHz		–100 dBm	
6.6 to 26.8 GHz			–100 dBm (nominal)
26.8 GHz to 50 GHz			–90 dBm (nominal)

a. Mixer Level = Input Level – Input Attenuation.
b. Input terminated, 0 dB input attenuation.

PSA Core Spectrum Analyzer (page105)

Description	Specifications	Supplemental Information
Trigger In		Trigger source may be selected from front or rear.
Connector	BNC female	
External Trigger Input		
Impedance		10 kΩ (nominal)
Trigger Level Range	–5 to +5 V	1.5 V (TTL) factory preset

Option 226, Phase Noise Specifications (page 116)

Description	Specifications	Supplemental Information			
Amplitude Repeatability					
		Standard Deviation [a] [b]			
		No Filtering[c]	Little Filtering	Medium Filtering	Maximum Filtering
No Smoothing					
Offset					
100 Hz		5.4 dB	3.4 dB	3.9 dB	3.4 dB
1 kHz		5.2 dB	3.7 dB	2.3 dB	2.1 dB
10 kHz		5.1 dB	3.5 dB	2.0 dB	1.2 dB
100 kHz		4.5 dB	2.9 dB	1.9 dB	1.0 dB
1 MHz		4.1 dB	2.7 dB	1.7 dB	0.95 dB
4% Smoothing [d]					
Offset					
100 Hz		1.7 dB	1.1 dB	1.1 dB	0.88 dB
1 kHz		1.3 dB	0.78 dB	0.53 dB	0.37 dB
10 kHz		1.1 dB	0.78 dB	0.34 dB	0.29 dB
100 kHz		0.86 dB	0.40 dB	0.40 dB	0.23 dB
1 MHz		0.34 dB	0.32 dB	0.16 dB	0.11 dB

a. Amplitude repeatability is the nominal standard deviation of the measured phase noise. This table comes from an observation of 30 log plot measurements using a 1 GHz, 0 dBm signal with the filtering and smoothing settings shown. All other analyzer and measurement settings are set to their factory defaults.

b. The standard deviation can be further reduced by applying averaging. The standard deviation will improve by a factor of the square root of the number of averages. For example, 10 averages will improve the standard deviation by a factor of 3.2.

c. When, using the filtering setting of “None”, it is important to increase the number of averages to acquire sufficient data to give accurate results. When not using any averaging and setting the filtering to “None”, an under response of –2.5 dB will occur. As long as use enough averaging is used, either by increasing the number of averages or using the default filtering setting of “Medium”, the effect of the choice of filtering becomes irrelevant.

d. Smoothing can cause additional amplitude errors near rapid transitions of the data, such as with discrete spurious signals and impulsive noise. The effect is more pronounced as the number of points smoothed increases.

User’s and Programmer’s Reference, Volume 1
Core Spectrum Analyzer Functions (page 302)

Using ftp for File Transfers via Web Browser

One of the most common ways to get files stored on your instrument's C: drive onto an external PC is by using the built-in ftp capabilities in your PC's web browser. Microsoft Internet Explorer, Mozilla Firefox, Google Chrome, Apple Safari and Netscape all support File Transfer Protocol (FTP).

To get files off your instrument, such as screen captures and state files, it is necessary to connect your instrument to the same local network that your PC is connected to or to use a cross-over cable between your instrument and PC.

A simple network connection example is to connect the PSA via LAN cable to a small eight-port hub that is also connected to your PC via LAN cable. The following network configuration can be used for your instrument and PC:

Instrument Settings		**PC Settings**
IP Address	192.168.100.2	192.168.100.3
Subnet Mask	255.255.0.0	255.255.0.0
Default Gateway	0.0.0.0	

The address that you use to connect to your PSA depends on whether or not it has the 512 MB memory board (Option 115 or 117).

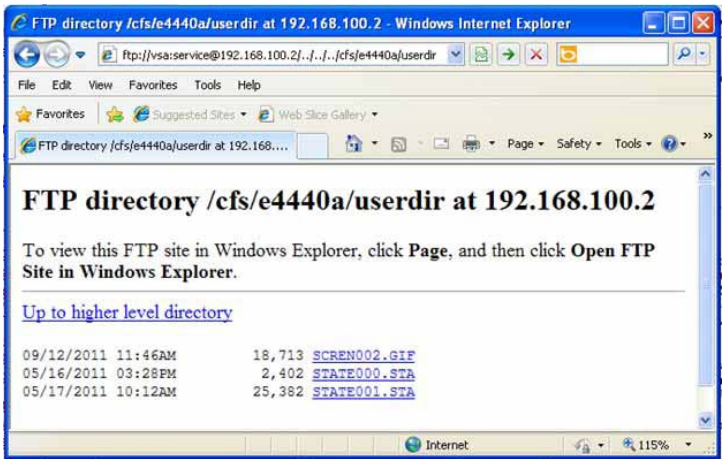
For instruments with option 115 or 117, enter the following URL into your PC's web browser to catalog the files in the instrument's user directory (its C: drive):

ftp://vsa:service@192.168.100.2/../../../cfs/e4440a/userdir

For instruments without Option 115 or 117, enter the following URL into your PC’s web browser to catalog the files in the instrument’s user directory (its C: drive):

ftp://vsa:service@192.168.100.2/users/e4440a/userrdir

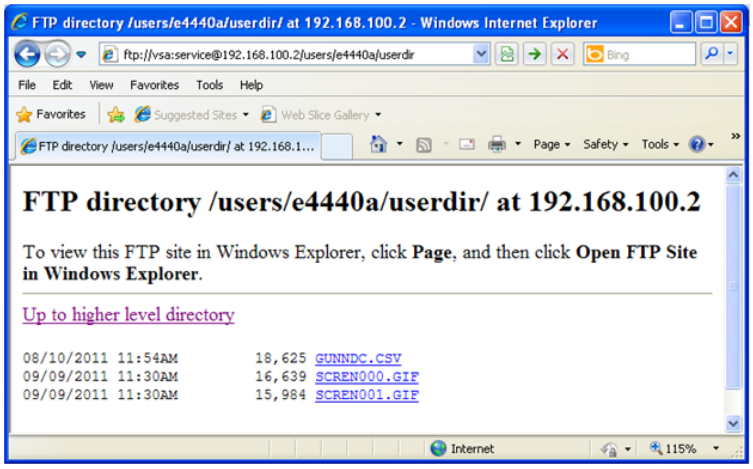
NOTE To save a file to your PC's hard drive, right click on the file name and chose to ”Save Target As"



For instruments without option 115 or 117, enter the following URL into your PC's web browser to catalog the files in the instrument's user directory (C: drive):

ftp://vsa:service@192.168.100.2/users/e4440a/userdir

NOTE To save a file to your PC's hard drive, right click on the file name and chose to "Save Target As"



Using ftp for File Transfers via MSDOS Command Window

You can use the instrument LAN connection to transfer files. For example, you can use the ftp functionality to download instrument screen dumps to an external server.

The following is an example of an ftp session from an MSDOS window on a PC:

1. ftp 192.168.100.2 (enter the instrument IP address, found/set from the front panel by pressing **System, Config I/O**)
2. At the user name prompt, enter: `vsa`
3. At the password prompt, enter: `service`

For instruments with Option 115 or 117:

To change directory to the user directory type the following command at the ftp prompt:
`cd ../../../cfs/e4440a/userdir`
You are now in the instrument's user directory which is also the root "C:" directory accessible via the instruments' firmware. You can get files from the instrument. The ftp commands in the following steps may not all be available from your controller.

For instruments without Option 115 or 117:

You must enter the following command to get to the active user directory:
`cd users/e4440a/userdir`
To show the ftp commands available on your system, type `help` at the prompt.
To end the ftp session, type `quit`

4. `ls` (list all available files, `ls -la` shows file permissions)
5. `bin` (change to the binary file transfer mode)
6. `get myfilename` (enter the file name; the name *is* case sensitive)
   This "gets" (copies) your file. The file is copied to the location you were pointing to when you *started* the ftp process. To query the current location, enter `lcd .` (include the period). To change the current location, enter the desired path/directory location as follows:
   `lcd C:\my path\mydir`

TD-SCDMA, Option 211 (page 76)

Maximum Total Power

Unit	dBm
Mode	TDSCDMA
Remote Command	`[:SENSe]:POWer[:RF]:RANGe[:UPPer] <ampl>` `[:SENSe]:POWer[:RF]:RANGe[:UPPer]?`
Example	:SENSe:POWer:RF:RANGe:UPPer –20
Restriction and Notes	Sets the maximum expected total power level at the device under test output. If RF Input Range is set to Auto, then Max Total Pwr value will be automatically measured and updated each time a measurement is entered or is restarted with the Restart front-panel key. (see RF Input Range for more details) If RF Input Range is set to Man, then the user defined Max Total Pwr value will be used to calculate the required Input Atten value, in order to protect appropriate measurement max mixer level.
Dependencies/Couplings	Manually updating Max Total Pwr value, causes: RF Input Range to be set to Man Input Atten to be re-calculated in order to protect appropriate measurement max mixer level per equation: Input Atten = Max Total Pwr + Ext Amp Gain – Ref Level Offset + Internal Preamp Gain – Max Mixer Level
Preset	–15 dBm
State Saved	Saved in instrument state.
Min	–200 dBm
Max	100 dBm
Key Path	Mode Setup, Input

External Source Control, Option 215 (page 30)

Power Ramps with Mechanical Attenuators

When continually using Option 215 with power ramps, either positive or negative, there is a risk of premature wear of the mechanical attenuators. To prevent this, the application sets the attenuator hold to on, and allows the automatic leveling control (ALC) of the signal generator to adjust the power without the use of the mechanical attenuator. This is only for power ramps in the range of the ALC. Higher power ramps require the use of the mechanical attenuator.

The following table describes the ALC limits for each signal generator with the mechanical attenuator fitted:

Signal Generator Model Number	ALC Range (dB)
E4428C	20
E4438C	20
E8247C/57C/67C	20
E8257D/67D	20
N5181A	25
N5182A	25
N5183A	25

If the ALC range is exceeded by selecting a power ramp greater than the signal generator's ALC range, the application sets the attenuation hold to off and an advisory message appears, "Warning possible atten wear - Power Ramp greater than ALC range". If this occurs, you will hear the mechanical attenuator changing state.

Noise Figure, Option 219 (page 57)

Power Detection and Ranging on PSA Series Analyzers[a]

Frequency	Attenuation Setting	Maximum Input Power for High Accuracy	Approximate DUT Characteristics
200 kHz to 3 GHz[b]	0 dB	–35 dBm	Over the full bandwidth, a DUT with NF = 5 dB and Gain = 36 dB, or a DUT with NF = 15 dB and Gain = 29 dB
200 kHz to 3 GHz[b]	4 dB	–31 dBm	Over the full bandwidth, a DUT with NF = 5 dB and Gain = 40 dB, or a DUT with NF = 15 dB and Gain = 33 dB
200 kHz to 3 GHz[b]	8 dB	–27 dBm	Over the full bandwidth, a DUT with NF = 5 dB and Gain = 44 dB, or a DUT with NF = 15 dB and Gain = 37 dB
200 kHz to 3 GHz[b]	12 dB	–23 dBm	Over the full bandwidth, a DUT with NF = 5 dB and Gain = 48 dB, or a DUT with NF = 15 dB and Gain = 41 dB
3 GHz to 50.0 GHz[c]	0 dB	–12 dBm	

a. The figures given in the table (above) for 200 kHz to 3 GHz assume a 5 dB ENR noise source and that the preamp is On. The figures for 3 GHz to 50.0 GHz assume a 15 dB ENR noise source.

b. If the DUT has a narrower bandwidth than the 200 kHz to 3 GHz specified here, the DUT characteristics can be increased accordingly. For example, if the DUT has a bandwidth of 100 MHz, the DUT characteristics can be increased by a factor of $10 \times \log(3 \times 10^9 / 100 \times 10^6)$, that is, by 15 dB. In this example with an attenuation setting of 0 dB, the Gain of a DUT with a 15 dB Noise Figure can be increased from 29 dB to 44 dB.

c. In the 3 – 50.0 GHz frequency range, Option 110 High Band Preamp is highly recommended. If you do not have Option 110 installed, then an external preamp is recommended. For this reason, attenuation levels greater than 0 dB have been omitted from the table (above). Any external preamp you are using and the DUT will be the limiting factors for compression. The analyzer attenuators are after the external preamp and the DUT, and would therefore not improve the compression. The preselector has a bandwidth of between 30 MHz and 70 MHz, depending on frequency (higher frequencies have higher bandwidths).

Noise Figure, Option 219 (page 234)

Noise Figure—Marker Search Continuous

:CALCulate[:NFIGure]:MARKer[1]|2|3|4:SEARch:CONTinuous OFF|ON|0|1

:CALCulate[:NFIGure]:MARKer[1]|2|3|4:SEARch:CONTinuous?

Specify whether to search continuously for maximum, minimum, or peak-to-peak points for the current marker. When set to On, a peak search is performed after every measurement sweep.

Factory Preset: OFF

Remarks: You must be in the Noise Figure mode to use this command. Use INSTrument:SELect to set the mode.

Front Panel Access: **Peak Search**

Noise Figure—Marker Search Type

:CALCulate[:NFIGure]:MARKer[1]|2|3|4:SEARch:TYPE MAXimum|MINimum|PEAK

:CALCulate[:NFIGure]:MARKer[1]|2|3|4:SEARch:TYPE?

Specify the type of search performed by the specified marker. The three valid types of search are:

MAXimum — Searches for and finds the highest peak on the trace. This is not valid when the marker mode is set to Band Pair.

MINimum — Searches for and finds the lowest trough on the trace. This is not valid when the marker mode is Band Pair

PEAK — When a peak search is performed, the Band Pair markers are placed on the highest and the lowest points of the trace. The reference marker is placed on the highest point of the trace, and the delta marker on the lowest.

Factory Preset: MAXimum

Remarks: You must be in the Noise Figure mode to use this command. Use INSTrument:SELect to set the mode.

All of these searches can be made continuous by switching Continuous to ON (See “Noise Figure—Marker Search Continuous” on page 15.), or by repeatedly pressing the ‘Find...’ softkey.

Front Panel Access: **Peak Search**

Phase Noise Guide, Option 226

Phase Noise, Option 226 (page 134)

Log Plot Diagnostic of Y-axis Scale

`[:SENSe]:LPLot:DIAG:GRAPh:Y:SCALe:<value>`

`[:SENSe]:LPLot:DIAG:GRAPh:Y:SCALe?`

Sets and queries the Y-Axis scale per division.

NOTE Diagnostic commands may be changed suddenly, without notification.

Default Unit: dB

Example LPL:DIAG:GRAP:Y:SCAL 5

Front Panel Access: **AMPLITUDE Y Scale**, **Scale/Div**

Phase Noise, Option 226 (page 159)

NOTE The following features are NOT available on the PSA spectrum analyzer:

Advanced Features - AM Rejection and Overdrive

W-CDMA Guide with HSDPA/HSUPA, Option 210 (page 167)

Demod Key Menu

Key Path: **Mode Setup, Demod**

NOTE The **Demod** key allows you to enable or disable HSDPA/HSUPA and HS-PDSCH measurements. These keys are only available if Option 210 is installed and licensed.

- **HSDPA/HSUPA Enable** - Enables and disables detection of HSDPA format signals, including QPSK or 16QAM-encoded signals.

Demodulation Default Settings	
HSDPA/HSUPA Enable	On (Requires Option 210)

- **HS-PDSCH 64QAM Enable** - Enables and disables auto detection and the pre-defined Test Model (Test Model 6).

Demodulation Default Settings	
HS-PDSCH 64QAM Enable	On (Requires Option 210)

Programming Commands (page 833)

HS-PDSCH 64QAM Enable

`[:SENSe]:RADio:CONFigure:EHSPa[:STATe] OFF|ON|0|1`

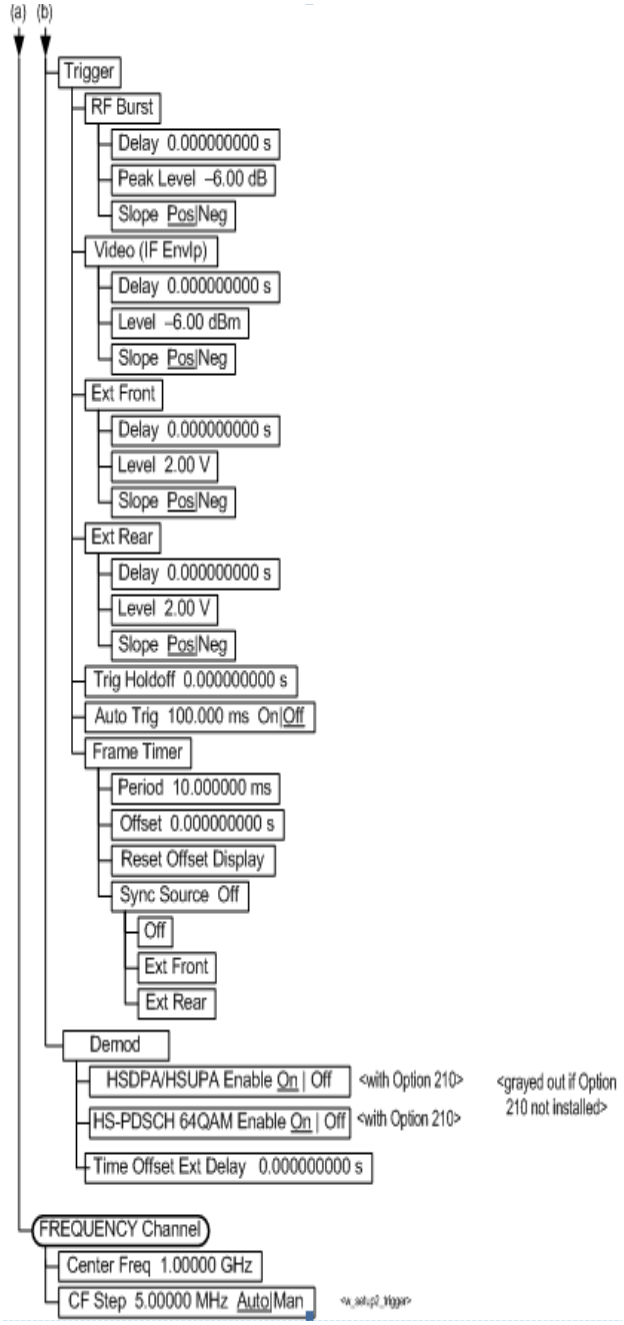
`[:SENSe]:RADio:CONFigure:EHSPa[:STATe]?`

Example	RAD:CONF:EHSP OFF
Notes	This softkey is active if W-CDMA HSDPA/HSUPA option (Option 210) license is installed. This softkey is inactive (grayed-out) if W-CDMA HSDPA/HSUPA option (Option 210) license is not installed.
Couplings	This softkey is inactive (grayed out) if HSDPA/HSUPA Enable is OFF. Test Model 6 softkey in Pre-defined Test Model is inactive (grayed out) if this state is set to OFF.
Remote Command Notes	The SCPI command is available if W-CDMA HSDPA/HSUPA option (Option 210) license is installed.

Preset	ON
State Saved	Saved in instrument state.
Range	Off|On
Key Path	**Mode Setup, Demod**

Menu Maps (page 447)

Mode Setup/FREQUENCY Channel Key Flow (2 of 2



Code Compatibility Suite, Option 266

Remote Language Error Handling Menu Setting (page 44)

[System] <Config I/O> <Configure Remote Language> <Error Handling>

NOTE All of these settings survive a preset and survive power cycles.

Command Err On/Off With Command Err On, if an unknown command is sent to the instrument, an error message will be generated at the bottom of the screen and will place an error in the error queue. In addition, the analyzer will raise bit five of the status register (illegal command bit). With Command Err off, the instrument will swallow unknown commands without raising an error or the illegal command bit. The default setting is “Off”. Added in A.08.09 firmware.

Cmd Error Log On/Off When Cmd Error Log is On, all of the unknown commands are stored in a file on the C: drive of the instrument called LOGFILE.TXT. This log file can be copied to a floppy disk via the instrument’s front panel or can be transferred to a remote computer via SCPI command. The default setting is off. Added in A.08.09 firmware.

Clear Command Error Log Clears the LOGFILE.TXT file from the C: directory on the instrument’s flash memory drive. Added in A.08.09 firmware.

Remote Language Preference Menu Settings

[System] <Config I/O> <Configure Remote Language> <Preferences>

NOTE All of these settings survive a preset and survive power cycles.

Limit RBW/VBW Limits the RBW and VBW settings to the 1,3,5 sequence used on legacy spectrum analyzers. If it is desired to access all of the RBW/VBW settings on the PSA, this setting can be turned off. The default setting is On. Added in A.11.13 firmware.

LIMITBW ON - Turns on functionality

LIMITBW OFF - Turns on functionality

Limit Swp Time Limits the sweep time of the spectrum analyzer to >=20 ms, which is the fastest sweep time available on an 8566A/B. The default setting is Off. Added in A.11.04 firmware.

LIMITBW ON - Turns on functionality

LIMITBW OFF - Turns on functionality

Atten Offset

Adds 12 dB of input attenuation to any attenuation calculated by the instrument or input by the operator. The additional 12 dB of attenuation is not reflected in the attenuation level seen; however, the analyzer does account for the additional attenuation when displaying amplitude levels. The purpose of this function is to provide a displayed average noise level similar to that of the 8566B and to prevent "Final IF Overload" in the PSA. The default setting is Off. Added in A.10.04 firmware

ATOFFSET ON - Turns on Functionality

ATOFFSET OFF – Turns off Functionality

Save Reg 7

When turned on, this setting allow the user to be able to undo the last state change by sending the "RCLS 7" command. For example if the analyzer previously had a span of 1.5 GHz and then the span is set to 2 GHz, sending "RCLS 7" command will revert the span back to 1.5 GHz. Turning Save Reg 7 off improves instrument speed, because the instrument does not have to continually save the last state, whenever a setting is changed. The default setting is Off. Added in A.11.13 firmware.

Lock Reg

Locks the storage registers normally used to store states, so that no new state changes can be saved to memory. Turning Lock Reg on is equivalent to sending the "KS(" command to secures the contents of registers 1 through 6. Turning Lock Reg off is equivalent to sending the "KS)" command unlocks the contents of registers 1 through 6 where instrument states are stored. The default setting is Off. Added in A.11.13 firmware.

Measuring Receiver Personality, Option 233 (page 378)

The Option 23B CCITT Filtering became of standard feature in the Measuring Receiver personality for PSAs shipped with firmware A.11.08 and later (June 2009). However, due to a firmware defect, a license key is still needed to enable this functionality for firmware revisions prior to A.11.21. Instruments shipped May 2010 and later with Option 233 automatically have a license key for Option 23B installed. For instruments originally shipped with firmware A.11.08 and later, please upgrade to firmware revision A.11.21 for the Option 23B functionality to be turned on without the need for a license key. You can also contact your Agilent representative or call center to request an Option 23B license key if you need the analyzer to show Option 23B in the option string and under the instrument's Show System menu.