Release Notes

Keysight X-Series Signal Source
CXG, EXG, & MXG

N5166B
N5171B, N5172B, N5173B
N5181B, N5182B, N5182N, N5183B

KEYSIGHT TECHNOLOGIES

Table of Contents

B.01.96 Version Information

Released Date:	April 14, 2022
Requirements category:	None
File Name:	MXG_FwUpgrade_B.01.96_Release_202204141844.exe

Enhancements

All Models

- Added support for 12 bit ADC on all models

Issues Resolved

All Models

- Fixed possible issue of corrupt "Hours On/ Display On" in Diagnostic Info

Self-Test

Tests

- None

B.01.95 Version Information

Released Date:	January 27, 2021
Requirements category:	None
File Name:	MXG_FwUpgrade_B.01.95_Release_202101271739.exe

Enhancements

All Models

- Increased the number of telnet connections on port 5023 to 5
- Added remote compatibility for the Aeroflex /IFR/Marconi 2020 and 2030 Series signal generators
- Added further compatibility for 8644A signal generator
- Adopted socially responsible technical nomenclature

Issues Resolved

All Models

- Resolved initialization issues for certain USB power sensor
- Installers will now be signed executables

N5166B, N5172B, N5182B

- Fixed issue causing error 652 when Designed Signal Freq in waveform header does not match due to Freq Offset for 5GNR Waveform
- Fixed issue with Display Waveform And Markers feature with very large waveform files
- Fixed issue causing the BERT clock resolution setting to be added to the overall delay

Self-Test

Tests

- None

B.01.90 Version Information

Released Date:	March 04, 2020
Requirements category:	None
File Name:	MXG_FwUpgrade_B.01.90_Release_202003041328.exe

Enhancements

All Models

- Added support for ADRET7100D Signal Generator remote language compatibility

N5166B, N5172B, N5182B

- Added Slave Trigger Delay feature for use with Multi-BBG Sync

N5172B, N5182B with Option FRQ

- Added support for Internal Channel Corrections for the N5182BX07 Frequency Extender – Added support for User Flatness amplitude corrections for the N5182BX07 Frequency Extender
- Added support for additional power sensors for use with the N5182BX07 Frequency Extender

Issues Resolved

All Models

- Fixed connectivity issue with some USB power sensors

N5172B, N5182B

- Fixed amplitude display issue when internal channel corrections are turned on

Self-Test

Tests

- Removed Self-Tests #707 and #708

B.01.86 Version Information

Released Date:	October 18, 2019
Requirements category:	None
File Name:	MXG_FwUpgrade_B.01.86_Release_201910181348.exe

Enhancements

None

Issues Resolved

None

Self-Test

Tests

- Fixed issue with intermittent false failures with test # 708

Known Issues

N5172B, N5182B

- Some sequences do not work properly with Option SD0

B.01.85 Version Information

Released Date:	September 20, 2019
Requirements category:	None
File Name:	Not released for download

Enhancements

All Models

- Added the ability to limit the 5025 socket to a single connection
- Added the ability to change the TCP keep alive timeout
- Added support for the new model N5182N
- Added LXI 1.5 Conformance

N5172B, N5182B

- Added support for the new N5182BX07 Frequency Extender for 802.11ax – Option FRQ

Issues Resolved

All Models

- Fixed issue with closing socket connections during instrument shutdown

N5172B, N5182B

- Fixed issue with marker output with Real-Time applications

Self-Test

Limits

- Updated limits for test # 103

Known Issues

N5172B, N5182B

- Some sequences do not work properly with Option SD0
- Intermittent false failures with self-test 708

B.01.80 Version Information

Released Date:	July 16, 2019
Requirements category:	None
File Name:	MXG_FwUpgrade_B.01.80_Release_201907162036.exe

Enhancements

All Models

- Added support for the new N5166B CXG vector signal source model
- Added the ability to set the pulse width of the Pulse Sync signal – Option UNW – Added support for the new option SD0 – No SSD and no user non-volatile memory

N5172B, N5182B

- Added support for PN7 sequence to Custom Digital Modulation – Option 431

Issues Resolved

All Models

- Fixed issue with performing pulse measurements with U2043XA USB power sensor – Fixed issue with incorrect error messages after successful sanitization – Option 006

N5172B, N5182B

- Fixed issue causing I/Q Calibration taking too long to complete
- Fixed issue causing intermittent BBG waveform memory failures at boot up
- Fixed issue with changing the RMS value in the waveform header of a sequence
- Fixed issue with external Burst mode in Custom Digital Modulation – Option 431
- Fixed issue with generating pulse signals based in monolithic sequence created by N7607C software

Self-Test

None

Known Issues

N5172B, N5182B

- Some sequences do not work properly with Option SD0

B.01.75 Version Information

Released Date:	January 25, 2019
Requirements category:	None
File Name:	MXG_FwUpgrade_B.01.75_Release_201901251013.exe

Enhancements

All Models

- Added additional 8644 code compatibility remote commands
- Added R&S SMB100 and SMV100 Pulse Train code compatibility remote commands
- Added support for new A5 CPU assembly (0960-3295)
- Added support for new software/support licensing

Issues Resolved

All Models

- Fixed communication issue when using USB power sensor

N5172B, N5182B

- Added missing pi/2 DBPSK, pi/8 D8PSK, and HDQPSK formats to Custom Digital Modulation
- Fixed issue with instrument hanging while calculating RMS value while another waveform is playing
- Fixed file extension issue when loading waveforms
- Fixed issue causing “Copy & Play Waveform” from USB device to not work

Self-Test

Limits

- Updated limits for test # 319
- Updated limits for test # 401

B.01.70 Version Information

Released Date:	June 12, 2018
Requirements category:	None
File Name:	MXG_FwUpgrade_B.01.70_Release_201806121133.exe

Enhancements

N5172B, N5182B

- Added support for latest N76xxC Real-Time Signal Studio Applications
- Added ability to check the designed RF frequency of latest 5GNR Signal Studio waveforms
- Added the Baseband Operating Mode selection on the Aux Function menu, which must be selected before using either BERT or N5102A Interface modes

All Models

- Added ability to turn off warning when no LAN connection is detected
- Added ability to ignore unrecognized commands in R&S SMA100A compatibility mode – Added ability to select how the instrument responds to a line power restoration (Utility, Power On / Preset, Line Power Restoration State)
- Added ability to remotely reboot the instrument (:SYSTem:REBoot)

Issues Resolved

N5173B, N5183B

- Fixed issue causing mechanical attenuator switching when turning modulation on and off when frequency is less than 5 MHz

N5172B, N5182B

- Fixed issue with grayed-out keys for Multi-Carrier Setup

All Models

- Fixed issue with polarity of "Fly" parameter - Option 302
- Fixed issue with using "dB" units in Panasonic VP compatibility mode

Self-Test

Limits

- Updated limits for test # 307

B.01.65 Version Information

Released Date:	May 2017
Requirements category:	None
File Name:	MXG_FwUpgrade_B.01.65_Release_201704281416.exe

Enhancements

N5172B, N5182B

- Added ability to use external data clock in Custom Digital Modulation – Option 431
- Added ability to drive external I-Input in Wideband AM without DC voltage offset in ESG-C compatibility mode – Option UNT
- Added ability to run power search with external IQ inputs – Option UNT – Added support for new A2 Baseband Generator assembly (N5180-60280)

N5171B, N5172B

- Added support for new A3 RF assembly (N5180-60279)

N5181B, N5182B

- Added support for new A3 RF assembly (N5180-60278)

All Models

- Added uA and DDM termination units to the VOR/ILS Amplitude softkey menu. – Option 302
- Added uV and uVemf termination units to the Amplitude softkey menu
- Added support for special Output ON/OFF and frequency tuning SCPI command when running in Anritsu compatibility mode
- Added ability to ignore “PGEN:STAT OFF” SCPI command when running in R&S SMB100A compatibility mode
- Added support for new software model numbers

Issues Resolved

N5172B, N5182B

- Fixed issue with customized burst shape curves in Real-Time Custom Modulation. – Option 431
- Fixed a trigger issue that caused pulses to get dropped when playing W-LAN waveforms

Self-Test

Limits

- Updated limits for test # 1201

B.01.60 Version Information

Released Date:	January 2017
Requirements category:	None
File Name:	MXG_FwUpgrade_B.01.60_Release_201612221548.exe

Enhancements

N5173B, N5183B

- Added ability to set pulse width as narrow as 1 µsec with ALC on – Option UNW

Issues Resolved

N5172B, N5182B

- Fixed issue where Pass/Fail conditions were not updated with BERT Resync – Option UN7 – Fixed issue with BERT clock offset and delay adjustments not working properly – Option UN7
- Fixed issue with the default I/Q map for SOQPSK in Real-Time Custom Modulation – Option 431
- Fixed issue with commands not reporting the same errors between volatile and non-volatile waveforms N5173B, N5183B
- Fixed issue with triggering not working with pulse train option – Option 320

All Models

- Fixed issue with missing SCPI commands for 8644A/B compatibility mode
- Fixed issue with Auto Recall function not working properly with USB keyboard

Self-Test

Limits

- Updated limits for test # 104
- Updated limits for test # 204
- Updated limits for test # 317
- Updated limits for test # 407
- Updated limits for test # 413
- Updated limits for test # 602

B.01.58 Version Information

Released Date:	June 2016
Requirements category:	None
File Name:	MXG_FwUpgrade_B.01.58_Release_201606241211.exe

Enhancements

None

Issues Resolved

N5172B, N5182B

- Fixed issue with Pass/Failed status not properly updating during BERT Resync – Option UN7

All Models

- Fixed issue with external trigger advancing when a DC signal is present in the Trig1 port

Self-Test

Limits

- Updated limits for test # 104

B.01.57 Version Information

Released Date:	December 2015
Requirements category:	None
File Name:	MXG_FwUpgrade_B.01.57_Release_201512171404.exe

Enhancements

None

Issues Resolved

N5172B, N5182B

- Fixed issue with PXB Input connectivity not functioning properly

Self-Test

Tests

- Fixed issue with intermittent failures for test # 708

B.01.56 Version Information

Released Date:	August 2015
Requirements category:	None
File Name:	MXG_FwUpgrade_B.01.56_Release_2015.exe

Enhancements

N5172B, N5182B

- Added support for SOQPSK formats in Real-Time Custom Modulation – Option 431
- Added support for frequency offsets in channel correction data
- Added ability to modify current user FSK definition and apply it to hardware from the FSK table editor
- Added SCPI command to give ability to input Hex data in addition to binary values when editing bit pattern data All Models
- Added limited support for 2040 Marconi Signal Generator language compatibility
- Added support for 2 additional power meter channels for a total of up to 4 channels
- Added SCPI commands to zero and calibrate USB power sensors for both power meter measurements and user flatness calibration

Issues Resolved

N5172B, N5182B

- Fixed ALC hold and burst alignment issues affecting the output of PRAM files - Option 431 – Fixed burst issue with PRAM files for Bursted D8PSK in Custom Digital Modulation - Option 431
- Fixed issue with PN output for 64-QAM in Custom Digital Modulation - Option 431
- Fixed issue with External DATA input failing in Custom Digital Modulation - Option 431
- Fixed issue with Event1 markers not working in Custom Digital Modulation - Option 431
- Fixed issue with Multi Baseband Synchronization not working with continuous trigger
- Fixed issue with waveform name remaining in Waveform License menu/list even after the waveform was deleted
- Fixed issue with Event1 Trigger not working correctly in ESG-C language compatibility mode

All Models

- Fixed issue with Secure Erase (Sanitization) operation not reinitializing persistent states – Option 006
- Fixed issue with ALC bandwidth default value in Auto mode in MXG-A language compatibility mode
- Fixed issue with frequency steps in SMG-U language compatibility mode
- Fixed issue with Function Generator Pulse width and period limits – Fixed issue with corrupted relay switch and RPP trip counts
- Fixed issue with SCPI logging while using a compatibility language

Self-Test

Limits

- Updated limits for test # 1105
- Updated limits for test # 1304

B.01.55 Version Information

Released Date:	October 2014
Requirements category:	None
File Name:	MXG_FwUpgrade_B.01.55_Release_201410271348.exe

Enhancements

N5172B, N5182B

- Enabled up to 512 tones in Multi-Tone – Option 430

N5173B, N5183B

- Enhanced amplitude range lower limit from -130 to -135 dBm (no specifications)

All Models

- Added support for 8341B language compatibility
- Introduced Keysight Technologies

Issues Resolved

N5172B, N5182B

- Fixed the PN generator which was outputting LSB first instead of MSB first for both PN9 and PN15 in Custom Digital Modulation – Option 431
- Fixed a Multi-BBG Synchronization issue where the sequencer starts playing without the trigger signal when in external with negative polarity
- Fixed a User IQ calibration failure for instruments without BBG option

N5171B, N5172B, N5173B

- Added support for selecting narrow vs wide bandwidth for external reference

All Models

- Enhanced the instrument's ability of reconnecting to the network and keeping the same Static IP address

Self-Test

Limits

- Updated limits for test # 312

B.01.51 Version Information

Released Date:	June 2014
Requirements category:	None

File Name: MXG_FwUpgrade_B.01.51_Release_201406091118.exe

Enhancements

N5172B, N5182B

- Enable multi-baseband synchronization for Real-Time application – Option UN7
- Enhanced waveform error reporting
- Added SCPI query command to determine when a waveform file is licensed

All Models

- Added support for language compatibility with Rohde & Schwarz SMGU and SMA100A signal generators
- Added support for language compatibility with Gigatronics GT900 and GT9000S signal generators
- Added support for language compatibility with Agilent MXG-A signal generators (N5181A, N5182A, and N5183A)

Issues Resolved

N5172B, N5182B

- Fixed alignment issue with ALC Hold and Burst Pulse in Custom Digital Modulation – Option 431
- Fixed issue with polarity of external IQ Output Calibration
- Fixed issue with extra pulses in time domain when amplitude and waveform switching in List Mode Sweep

N5173B, N5183B

- Fixed issue with sweep progress bar not properly updating

Self-Test

Limits

- Updated limits for test # 312
- Updated limits for test # 602

B.01.50 Version Information

Released Date:	January 2014
Requirements category:	None

File Name:	X-Series_SG_B.01.50_Rel_201401061607.exe

Enhancements

N5173B, N5183B

- Added support for new microwave sources

N5172B, N5182B

- Added support for Bit Error Rate (BER) option – Option UN7
- Added APSK modulation to Custom Digital Modulation – Option 431
- Enhanced the performance of reading/writing waveforms
- Added support for PXB loopback fading

All Models

- Added support for Power Search automatically turning ON with “RF During power Search” parameter set to “Minimum” instead of "Normal" – Option HTM
- Added SCPI commands to run User Flatness Calibration
- Enhanced performance when retrieving a listing of non-volatile files from internal storage

Issues Resolved

N5172B, N5182B

- Fixed issue in Custom digital modulation using single trigger with MSK, FSK, and 2FSK modulations – Option 431
- Fixed issue in Custom digital modulation with segments greater than 294 kbits – Option 431
- Fixed trigger latency issue in Custom digital modulation and single data file playback – Option 431
- Fixed issue with half sine filter function in Custom Digital Modulation – Option 431
- Fixed power spike issue when turning modulation ON
- Fixed power error when recalling pulse builder waveform with saved instrument state

All Models

- Fixed issue with FTP access when using Internet Explorer 8

Self-Test

None

B.01.41 Version Information

Released Date:	November 2013
Requirements category:	None
File Name:	X-Series_SG_B.01.41_Rel_201310311713.exe

Enhancements

None

Issues Resolved

All Models

- Fixed issue with instrument's performance caused by unleveled conditions

Self-Test

Limits

- Updated limits for test # 401

B.01.40 Version Information

Released Date:	August 2013
Requirements category:	None
File Name:	X-Series_SG_B.01.40_201308121516.exe

Enhancements

N5172B, N5182B

- Updated waveform error checking to be backwards compatible with MXG-A

All Models

- Added support for frequency resolution down to 1 mHz
- Added capability to set maximum power limit and overshoot protection to Power Meter Servo feature
- Added support for language compatibility with Rohde & Schwarz SMB100B, SMF100A, and SMJ100A signal generators
- Added support for language compatibility with HP/Agilent 8664A and 8665B signal generators
- Enhanced LAN latency performance & DHCP event messaging

Issues Resolved

N5172B, N5182B

- Fixed issue with waveform not switching correctly when triggering in list/sweep mode.
- Fixed issue with timing alignment during multi baseband synchronization.
- Fixed issue with Bit files getting corrupted when copied through USB

Self-Test

Limits

- Updated limits for test # 401

B.01.33 Version Information

Released Date:	June 2013
Requirements category:	None
File Name:	X-Series_SG_B.01.33_Rel_201306171729.exe

Enhancements

None

Issues Resolved

N5172B, N5182B

- Fixed memory corruption when switching connectivity modes (PXB/N5102A-DSIM) – Option 003 and 004
- Adjusted phase of LVDS input clock for external loopback test

Self-Test

Limits

- Updated limits for test # 204
- Updated limits for test # 803 for option HEL

B.01.32 Version Information

Released Date:	June 2013
Requirements category:	None
File Name:	X-Series_SG_B.01.32_Rel_201306051045.exe

Enhancements

None

Issues Resolved

All Models

- Updated installer to prevent running against MXG-A instruments

Self-Test

None

B.01.31 Version Information

Released Date:	May 2013
Requirements category:	None
File Name:	X-Series_SG_B.01.31_Rel_201305061735.exe

Enhancements

N5172B, N5182B

- Enhanced IQ Cal to improve DC feedthrough performance on differential I/Q outputs
- Enhanced differential I/Q Output range – Option HEL

Issues Resolved

N5172B, N5182B

- Fixed issue that required running the firmware installer twice
- Removed “FPGA reprogramming” message at the end of each reboot

Self-Test

None

B.01.30 Version Information

Released Date:	April 2013
Requirements category:	None
File Name:	X-Series_SG_B.01.30_Rel_201303271712.exe

Enhancements

N5172B, N5182B

- Added digital output (option 003) & input (option 004) connectivity with the N5102A Baseband Studio digital signal interface module – Option 003 and 004
- Added capability to allow user to specify repeat count for single triggered waveforms
- Added ":RADio:ARB:PLAY:WCOMpleted?" SCPI command which waits for and reports when a waveform has completed playing. Also, ":RADio:ARB:PLAY:COMPleted?" SCPI command which returns whether a waveform has completed playing since the last query

All Models

- Added limited support for language compatibility with Panasonic VP Signal Generator
- Added support for SCPI pass-through commands with any USB device
- Improve LAN Latency Performance

Issues Resolved

N5172B, N5182B

- Fixed issue with spurs with Multicarrier ON in ARB Custom Digital Modulation – Option 431
- Fixed spurs issue with 16x oversampling ratio filter on 4-level FSK signal in Custom Digital Modulation – Option 431
- Fixed issue with no decryption when copying waveform from SNVWFM to WFM1
- Fixed issue with marker routing not working without baseband options
- Fixed issue with trigger timer accuracy

All Models

- Fixed issue with Display backlight ON/OFF
- Fixed issue with Front Panel USB Hub timeout

Self-Test

Limits

- Updated limits for test # 502

B.01.21 Version Information

Released Date:	December 2012
Requirements category:	None
File Name:	X-Series_SG_B.01.21_Rel_201212181110.exe

Enhancements

None

Issues Resolved

N5172B, N5182B

- Fixed issue with factory calibration of I/Q Channel Corrections

Self-Test

None

B.01.20 Version Information

Released Date:	October 2012
Requirements category:	None
File Name:	X-Series_SG_B.01.20_Rel_20121024.exe

Enhancements

N5172B, N5182B

- Added APCO-25 Phase2 to Custom Digital Modulation – Option 431
- Improved sanitization feature to eliminate the need to re-install firmware – Option 006 – Improved Internal Channel Corrections by adding:
- User defined calibrations
- Support for multiple user calibrations
- Enable factory calibrations for I/Q Channel Corrections
- Enable support for 4M segments for Pulse Builder sequences

Issues Resolved

N5172B, N5182B

- Fixed issue with handling mal-formatted SCPI command – Option 660
- Fixed issue causing reboot when playing large Pulse Builder sequences – Fixed issue with slow playing, and selecting, of large Pulse Builder sequences

All Models

- Fixed LF Output issues with:
- Sweep time coupling
- Triangle shape function
- Fixed issue with external sweep trigger
- Fixed various small defects

Self-Test

Limits

- Updated limits for test # 317
- Updated limits for test # 401

- Updated limits for test # 404
- Updated limits for test # 502

B.01.10 Version Information

Released Date:	July 2012
Requirements category:	None
File Name:	X-Series_SG_B.01.10_Rel_201207031401.exe

Enhancements

N5172B, N5182B

- Enhanced Internal Channel Corrections by adding:
- Asymmetric baseband corrections
- Correction data for multiple attenuation levels

All Models

- Added support for option HAL
- Added timestamp when Reverse Power Protection (RPP) gets tripped
- Added capability to verify output power using USB sensor
- Added SCPI pass-through mode for power meter
- Added Pulse to AM/FM/PM Function Generator 1 and 2 waveform selections

Issues Resolved

N5172B, N5182B

- Fixed single trigger for Custom Digital Modulation personality – Option 431 – Improved waveform download performance to 8+MB/s for standard waveforms and 2.5MB/s for encrypted waveforms

All Models

- Fixed issue with setting of the Wideband AM input offset
- Improved webpage loading speed
- Fixed various small defects

Self-Test

Limits

- Updated limits for test # 506
- Updated limits for test # 704
- Updated limits for test # 708

B.01.01 Version Information

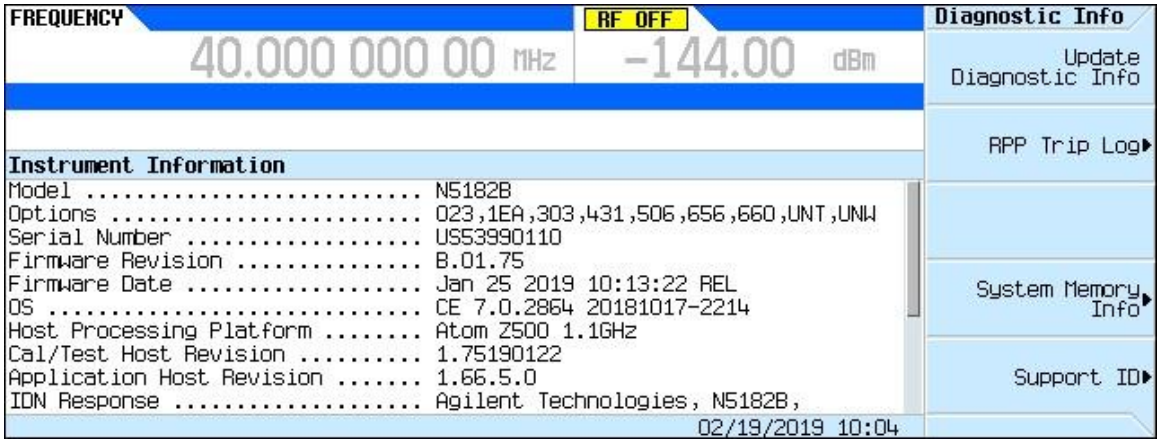
Released Date:	April 2012
Requirements category:	None
File Name:	X-Series_SG_B.01.01_Rel_20120423.exe

Initial Release

Instrument Firmware Overview

The instrument firmware contains all the software required to operate all the instrument functionality. This includes the basic instrument functionality and all the optional functionality and modes. To see what version of the instrument firmware is currently being used press Utility, Instrument Info, Diagnostic Info on the instrument front panel. The Firmware Revision and Firmware Date will be listed on the display as shown in Figure 1.

Figure 1 – Diagnostic Info Display



Hardware Versus Firmware

While it is always advised to use the latest version of the instrument firmware that is available, there are times that an older version is required for one reason or another. However, there are certain hardware versus firmware dependencies that exist that need to be considered before using a version of the firmware other than the latest. The dependencies that currently exist are shown in Table 1.

NOTE The Part Numbers and Hardware IDs (HWID) listed in Table 1 and in the footnotes are those found on the Utility, Instrument Info, Installed Board Info screen.

Table 1 – Hardware Versus Firmware Dependencies

Assembly	Part Number	Minimum Firmware
A2 Vector BBG Assembly	N5180-60280 N5180-69280	B.01.65

A3 RF Assembly	N5180-60151 N5180-69151	B.01.50[1]
	N5180-60173 N5180-69173	B.01.50[2]
	N5180-60278 N5180-69278	B.01.65
	N5180-60279 N5180-69279	B.01.65[2]
	N5180-60296 N5180-69296	B.01.65[3]
	N5180-60297 N5180-69297	B.01.65
A5 CPU Assembly	0960-3295	B.01.75
A7A1 Microwave ALC Control Board	N5180-60172	B.01.50[4]

NOTE All N5166B CXG instruments must have firmware version B.01.80 or newer.

If there is an assembly in an instrument with a part number listed in Table 1, a firmware version older than that listed in the Minimum Firmware column should not be used, as it will either generate errors or not perform as intended.

There are also options and certain features that are dependent on the firmware version. For information on these, see the contents of the firmware revision history.

[1] If the hardware ID (HWID) is 000A firmware version B.01.96 or newer is required [2] If the hardware ID (HWID) is 000B firmware version B.01.96 or newer is required

[2] If the hardware ID (HWID) is 0009 firmware version B.01.96 or newer is required

[3] If the hardware ID (HWID) is 0008 firmware version B.01.96 or newer is required

[4] If the hardware ID (HWID) is 0002 firmware version B.01.96 or newer is required

Self-Test Limits

Individual Self-Test limits change over time due to changes made to the circuits that they are testing the functionality of. The Self-Test limits in an instrument are updated when a new firmware version is installed. In order to have the latest Self-Test limits in the instrument it is always recommended to have the latest available instrument firmware installed.

Operating System Overview

The operating system used in the X-Series signal generators is Windows Compact Embedded (WinCE), which is a closed embedded operating system. Characteristics of this type of operating system are:

- Operating system and instrument SW are compiled together into a single code image
- The user has only a limited amount of operating system functionality available to them
- The user does not have the ability to add additional applications
- The operating system cannot be updated separately

The version of the operating system in an instrument can be seen as the OS entry on the Utility, Instrument Info, Diagnostic Info display as seen in Figure 1.

Operating System Updates

The operating system is not updatable on its own. Any updates to the operating system are included in the instrument firmware installation. However, not all firmware updates include an operating system update. The operating system is only updated when there are updates that are deemed necessary for the product.

Instrument Calibration

The state of the instrument calibration is not affected by the installation of the instrument firmware.