

ShockLine VNA Software

If there is a software/firmware update question, please contact Anritsu service support at <https://www.anritsu.com/test-measurement/contact-us> for further information.

What will the customer see in this release?

Products	: MS46121A/B, MS46122A/B, MS46131A, MS46322A/B, MS4652xB		
Software Version	: V2025.4.3		
	Product	:	Nios FPGA
Firmware Version	: MS46121A_rev1	:	, V2.1.09
	: MS46121A_rev2	:	, V2.2.23
	: MS46121B_rev1	:	, V2.2.23
	: MS46322A_122A	:	V2.1.88, V2.0.29
	: MS46322B_122B	:	V2.3.20, V2.0.69
	: MS4652xB	:	V3.4.05, V3.2.22
	: MS46131A	:	V2.4.51, V2.1.59
IVI-C Version	: V2022.3.2 (Deprecated)		
Release Date	: Release September. 2025		

*** IMPROVEMENTS ***

-> Software

None for this release.

*** BUG FIXES ***

-> Software

[SLD-12310] - Resolved an issue in which Secondary Match Correction was not working after performing an LRL Waveguide Cal on MS4652XB.

[SLD-12321] - Resolved an issue in which Type G multi-std with one line: outer plane reflections get mis-assigned.

[SLD-12332] - Resolved an issue in which SOLR calibration is not working appropriately with MS46122B.

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46131A, MS46322A/B, MS4652xB
Software Version : V2025.4.2

	Product	:	Nios	FPGA
Firmware Version	: MS46121A_rev1	:		, V2.1.09
	: MS46121A_rev2	:		, V2.2.23
	: MS46121B_rev1	:		, V2.2.23
	: MS46322A_122A	:	V2.1.88, V2.0.29	
	: MS46322B_122B	:	V2.3.20, V2.0.69	
	: MS4652xB	:	V3.4.05, V3.2.22	
	: MS46131A	:	V2.4.51, V2.1.59	

IVI-C Version : V2022.3.2 (Deprecated)
Release Date : Release June. 2025

*** IMPROVEMENTS ***

-> Software
None for this release.

*** BUG FIXES ***

-> Software
[SLD-12277] Resolved an issue in which MN25408A SmartCal does not work appropriately with the ShockLine™ application.

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46131A, MS46322A/B, MS4652xB
 Software Version : V2025.4.1
 Product : Nios FPGA
 Firmware Version : MS46121A_rev1 : , V2.1.09
 : MS46121A_rev2 : , V2.2.23
 : MS46121B_rev1 : , V2.2.23
 : MS46322A_122A : V2.1.88, V2.0.29
 : MS46322B_122B : V2.3.20, V2.0.69
 : MS4652xB : V3.4.05, V3.2.22
 : MS46131A : V2.4.51, V2.1.59
 IVI-C Version : V2022.3.2 (Deprecated)
 Release Date : Release Apr. 2025

*** IMPROVEMENTS ***

-> Software

- [SLD-11599] Added ability to launch up to a maximum of 4 independent MS46131A.
- [SLD-11600] Serial Number indicator added to trace annotation on MS46131A systems.
- [SLD-11947] Added RF Connection Check when using Autocal.
- [SLD-11949] Added on MS4652xs the ability to disable IF ranging.
- [SLD-11974] Added a flag to add additional headers to snp file.
- [SLD-12077] Improvements made to ME7869A for transmission measurement for caltypes using reciprocal thru.

*** BUG FIXES ***

-> Software

- [SLD-11239] Resolved an issue in which Reciprocal choices were allowed on one path 2 port cal selection.
- [SLD-11737] Resolved an issue with autocal external thrus in which the default external thrus were added regardless of whether they were selected.
- [SLD-11798] Resolved an issue in which the copyright date was incorrect.

- [SLD-11870] Resolved an issue with recalling .chc file in which, in some cases, the cutoff frequency was not updated correctly.
- [SLD-11883] Resolved an issue in which, after an autocal calibration there is a 100us delay per point setting added.
- [SLD-11900] Resolved an issue where phase compensation was not working as expected when Calibration is not applied on ME7869A.
- [SLD-11932] Resolved an issue in which Connect ports 1 (left) & ports 3 (left) show up intermittently when performing a 4-port cal autocal.
- [SLD-11933] Resolved an issue in which the required thru selections for a 4-port calibration shown are incorrect.
- [SLD-11942] Resolved an issue in which, after recalling a saved autocal setup and navigating to the autocal menu, it shows the port selection as 1,2 for a full four-port calibration.
- [SLD-11943] Resolved an issue with autocal in which the non-dominant thru path result after the calibration shows some variations.
- [SLD-11948] Resolved an issue in which the calibration menu can appear to be confused after one tries to save the channel setup at the perform cal menu.
- [SLD-12039] Resolved an issue in which on some PC the ShockLine application does not launch.
- [SLD-12056] Resolved an issue with Reciprocal Calibrations on the ME7869A system.
- [SLD-12057] Resolved an issue with thru update on MS4613A systems.
- [SLD-12160] Reciprocal selection now blocked on thru update for 1 path 2 port on a 2-port system.

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46131A, ME786xA, MS46322A/B, MS4652xB

Software Version : V2023.7.5
Product : Nios FPGA
Firmware Version : MS46121A_rev1 : , V2.1.09
: MS46121A_rev2 : , V2.2.23
: MS46121B_rev1 : , V2.2.23
: MS46322A_122A : V2.1.88, V2.0.29
: MS46322B_122B : V2.3.20, V2.0.69
: MS4652xB : V3.4.05, V3.2.22
: MS46131A : V2.4.48, V2.1.29
IVI-C Version : V2022.3.2 (Deprecated)
Release Date : Release May. 2024

*** NEW FEATURES ***

-> Software
None for this release.

*** IMPROVEMENTS ***

-> Software
None for this release.

*** BUG FIXES ***

-> Software
[SLD-11739] Resolved an issue in which the RF calibration when using autocal with additional internal through does not appear to be corrected properly.
[SLD-11761] Resolved an issue in which multiple channels do not work on MS46524x with version V2023.7.4.
[SLD-11762] Resolved an issue in which using a loaded S2P file for thru measurement the last loaded S2p files show up for all other THRU ports.

[SLD-11760] Resolved an issue in which when using the recall cal coefficients over SCPI there is a sweep occurring even though the current hold state is hold.

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46131A, ME786xA, MS46322A/B, MS4652xB

Software Version : V2023.7.4

	Product		Nios	FPGA
Firmware Version	: MS46121A_rev1	:		, V2.1.09
	: MS46121A_rev2	:		, V2.2.23
	: MS46121B_rev1	:		, V2.2.23
	: MS46322A_122A	:	V2.1.88,	V2.0.29
	: MS46322B_122B	:	V2.3.16,	V2.0.69
	: MS4652xB	:	V3.4.05,	V3.2.22
	: MS46131A	:	V2.4.48,	V2.1.29

IVI-C Version : V2022.3.2 (Deprecated)

Release Date : Release February. 2024

*** NEW FEATURES ***

-> Software

None for this release.

*** IMPROVEMENTS ***

-> Software

[SLD-11699] Improvements made to speed up 'trig:sing;*opc?' command for MS4652x systems.

*** BUG FIXES ***

-> Software

[SLD-7946] Resolved an issue in which the orientation remote commands for Smartcal/autocal were not working correctly.

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46131A, ME786xA, MS46322A/B, MS4652xB

Software Version : V2023.7.1

	Product	:	Nios	FPGA
Firmware Version	: MS46121A_rev1	:		, V2.1.09
	: MS46121A_rev2	:		, V2.2.23
	: MS46121B_rev1	:		, V2.2.23
	: MS46322A_122A	:	V2.1.88,	V2.0.29
	: MS46322B_122B	:	V2.3.16,	V2.0.69
	: MS4652xB	:	V3.4.05,	V3.2.22
	: MS46131A	:	V2.4.36,	V2.1.27

IVI-C Version : V2022.3.2 (Deprecated)

Release Date : Release Aug. 2023

*** NEW FEATURES ***

-> Software

[SLD-11091] Expanded support for CW time axis in banded search range, limit lines, and multiple channels.

[SLD-11176] IVI is now deprecated. The older version is still included with the installation.

[SLD-9595] Added the ability to connect up to 4 MS46131A to make reflection s-params.

[SLD-11194] Added the ability to include smoothing with snp files.

*** IMPROVEMENTS ***

-> Software

[SLD-10608] Added SCPI command to return back auto-sense port orientation.
[SLD-11027] Improve cal coefficient recall time.
[SLD-11122] Dynamic IF gain mode added for ME7868A, ME7869A, and MS46131A.
[SLD-11187] Added ability to save marker table values into file.
[SLD-11252] Factory Cal for ME7868A & ME7869A is exposed in the Utility menu.

*** BUG FIXES ***

-> Software

[SLD-10763] Resolved an issue where the default connector for the MS46121 system is not correct.
[SLD-10898] Resolved an issue with the search range marker when in CW time axis.
[SLD-10990] Resolved an issue in which the minimum port power does not work correctly on MS46122B, and MS46322B systems.
[SLD-11073] Resolved an issue when using 4p SmartCal to perform a 1p2p cal on a 524 and the port selection is not Port1 and Port2.
[SLD-11075] Resolved an issue in which the power level is not put back correctly when using an autocal to perform rf cal on MS46322B and MS46122 which could possibly results in some step being shown at low frequencies.
[SLD-11080] Resolved an issue in which the markers and limits do not update when CW time axis is on and there is a change in IFBW although the time axis is updated.
[SLD-11083] Resolved an issue in which the port to measure for a 1 path 2 port cal is shown incorrectly on an MS46524B system.
[SLD-11105] Resolved an issue in which auto-sense with a 4 port smartcal on a two-port VNA resulted in the wrong port mapping.
[SLD-11113] Resolved an issue in which the displayed ports for 1 path 2 port are not updated appropriately when the Edit Cal Params is entered for full two-port cals, the very first time the application launched on a 4 port instrument.
[SLD-11114] Resolved an issue in which the incorrect reflective measurements are shown in the user interface when CalB is used for 1 Path 2 port on MS46524B system.
[SLD-11206] Resolved an issue in which the time domain dialog box does not behave properly when changing the window type.
[SLD-11238] Resolved an issue in which the .m4p data save has some incorrect computation depending on the port pair selected for two differential pairs.
[SLD-11272] Resolved an issue in which recalling unformatted trace data into a trace memory does not recognize that there is something in memory.
[SLD-11361] Resolved an issue with the equation editor when using max/min hold with raw/corrected buffers above 500 points and resolved an issue with equation editor maxhold/minhold in which accumulation not resetting when inter-trace math is turned off/on.
[SLD-11422] Resolved an issue with one port cal for more than one MS46131s without sync upon application launched and the user does not enter the modify cal setup dialog.
[SLD-11423] In the Time domain Measurement dialog disabled transmission terms and mixed mode when phase lync options are not present.
[SLD-11449] Resolved an issue in which the front panel behaves differently from the remote when the regional setting is modified from US-eng.
[SLD-11450] Resolved an issue in which saving and recalling data such as .txt, .snr result in errors when performed via the remote versus front panel when the regional setting is modified from US-eng.

[SLD-11465] Resolved an issue in which existing RF gain corrections are not cleared when a new setup is recalled.
[SLD-11469] Resolved a flickering issue that occurred when running MS46122, MS46121, or MS464131 on a PC that has the Intel Iris(R) XE graphics enabled.
[SLD-11528] Resolved an issue in which M1-lock ErrorB is observed when setting Multiple Source Control.
[SLD-11532] Resolved an issue with MS46121A/B when performing SSS or SSL RF cal method.
[SLD-11568] Resolved an issue when using segmented sweep with per port IFBW in Channel 16.
[SLD-11595] Corrected equation editor MU equation.

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46131A, MS46322A/B, MS4652xB

Software Version : V2022.3.2

Product : Nios FPGA

Firmware Version : MS46121A_rev1 : , V2.1.09

: MS46121A_rev2 : , V2.2.23

: MS46121B_rev1 : , V2.2.23

: MS46322A_122A : V2.1.88, V2.0.29

: MS46322B_122B : V2.3.10, V2.0.69

: MS4652xB : V3.4.02, V3.2.22

: MS46131A : V2.4.05, V2.1.13

IVI-C Version : V2022.3.2

Release Date : Release May 2022

*** NEW FEATURES ***

-> Software

None for this release.

*** IMPROVEMENTS ***

-> Software

None for this release.

*** BUG FIXES ***

-> Software

[SLD-10835] Resolved an issue with two MS46121B where the result of the scalar cal shows a gradual drop in response level.

[SLD-10933] Resolved a triggering issue on MS46322B and MS46122B systems where occasional external triggers could be missed given certain setup configurations.

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46131A, MS46322A/B, MS4652xB

Software Version : V2022.3.1

Product : Nios FPGA

Firmware Version : MS46121A_rev1 : , V2.1.09

: MS46121A_rev2 : , V2.2.23

: MS46121B_rev1 : , V2.2.23

: MS46322A_122A : V2.1.88, V2.0.29

: MS46322B_122B : V2.3.08, V2.0.69

: MS4652xB : V3.4.02, V3.2.22

: MS46131A : V2.4.05, V2.1.13

IVI-C Version : V2022.3.1

Release Date : Release Mar. 2022

*** NEW FEATURES ***

-> Software

[SLD-9503] Added ability to input a discrete fill frequency list for Indexed base segmented sweep.

[SLD-9898] Added function to allow users to customize location of limit and ripple limit displays.

[SLD-10049] Added ability to select trigger edge on MS46131A and ME7868A.

- [SLD-10050] Added ability to set trigger delay on MS46131A and ME7868A.
- [SLD-10108] Phase compensation also applied to non-ratio parameter for ME7868E.
- [SLD-10109] Added ability to select the point position (first or last) for phase compensation on ME8368A systems.
- [SLD-9882] Added ability to enable time units on x-axis when in cw mode.
- [SLD-9892] Added a command to recall only the cal setup from the .chx file to speed up recalling the calibration coefficient.

*** IMPROVEMENTS ***

-> Software

- [SLD-9377] Added ability to allow subset cal usage for reflect versions of Phase Localized D and G with option 24(UFX). 1 Port cal can now be used for D and 2 port cal can now be used for G.
- [SLD-9770] Limit line display changed to draw lines to programmed frequency rather than to nearest measured frequency point.
- [SLD-9960] Updated text in the UFX Type G Multi-Standard dialog to clarify the port assignments used for the 2nd file and also added orientation selections in Phase Localized G.
- [SLD-10045] When multiple MS46122B's are connected to the same PC functionality was added to enable unique TCP Ports for each instrument.
- [SLD-10408] High Isolation mode on ME7868A is automatically switched off when source power is set to off.
- [SLD-10409] Improved IF gain ranging implemented on ME7868A.
- [SLD-10422] Phase compensation optimized for better sweep speed.
- [SLD-10426] Some improvement in labeling made to Equation Editor Dialog.
- [SLD-10427] Minor cosmetic UI improvements to the Optical Measurement Dialog.
- [SLD-10478] Improvements to high insertion loss transmission measurements on ME7868A.
- [SLD-10603] Added integration period (running average control) for phase compensation on ME6878A.

*** BUG FIXES ***

-> Software

- [SLD-5143] Resolved an issue in which the displayed marker units were not shown correctly when the time domain measurement setup menu was used to setup the trace display.
- [SLD-9276] Resolved the issue where one of the channels displayed bad data post thru calibrations on two channels on MS546524B systems.
- [SLD-9591] Resolved a plotting issue with the Log Mag graph type when recalling a .snp file containing 0 values into the system for displaying. Instead of plotting the NaN values at 0 results will be plotted at -200 dB instead.
- [SLD-9593] Resolved an issue in which the cal measurement can be wrong and errors are present in the event log if one starts another Smartcal on another channel when the cal

complete message is displayed.

[SLD-9630] Resolved an issue in which the port mapping for SmartCal was not correct when the user selected 2 port cal on SmartCal 4 port.

[SLD-9732] Resolved an issue in which MN25208A with autosense enabled did not work properly with MS46131A.

[SLD-9830] Resolved an issue in which couple marker did not work appropriately when the marker mode was set to Continuous and CW mode was on.

[SLD-9906] Resolved an issue where the shorthand form of the remote command ':SENSe{1-16}:RECEiver: CONFIguration?' was not working.

[SLD-9951] Resolved an issue in which the remote command 'source1:pow:port1' did not return 'invalid command' when issued on invalid models. The command is valid only on MS4652xB.

[SLD-9969] Resolved an issue where the Serial number of standards was not populated when loading .lst or .ccf file.

[SLD-10039] Resolved an issue with active limit lines containing a slope where interacting on the GUI with anything above the line (like dragging markers) would affect the position of the limit line.

[SLD-10103] Resolved an issue when dB .snp format was selected for multistandard D or F or G UFX de-embedding when 'Neglect fixture match' was not selected.

[SLD-10170] Resolved an issue where the channel title appears blurry when saving data image files.

[SLD-10172] Fixed an issue where phase compensation was being not turned on after a preset.

[SLD-10178] Resolved an issue in the AutoCal/SmartCal dialog when setting up a 4 port cal with the additional thru.

[SLD-10183] Resolved an issue where the user could not overwrite an existing calKit.

[SLD-10192] Resolved an issue in which the marker readout could get inadvertently moved too much when the readout was close to the display area edge.

[SLD-10194] Resolved an issue where the channel name color was not properly serialized with .cha file.

[SLD-10243] Resolved an issue when recalling a .cha setup on a MS46322B where where some channels are on hold and some channels are sweeping.

[SLD-10317] Resolved an issue with averaging phase on user parameters with port power off on ME7868A

[SLD-10320] Resolved an issue in the ShockLine simulator where option 22 incorrectly requires enabling option 2 to run.

[SLD-10352] Verification software for MS4652xB VNAs improved.

[SLD-10356] Resolved an issue in which the power sensors drivers were not associated properly after installing the ShockLine application.

[SLD-10357] Resolved an issue in which the marker menu did not update appropriately when measuring an indexed-based segmented sweep.

[SLD-10358] Resolved an issue with SOLR/LRX cals when the cal setup include frequencies below 8GHz.

[SLD-10364] Resolved an issue in which performing 2port or 4port LRL cals on a MS46524B system could hang when measuring the line steps.

[SLD-10367] Resolved an issue in which AutoCal Assurance would fail occasionally on the MS4652xB system.

[SLD-10418] Resolved an issue in which the thru direction could not be selected for TFR SSST calibration when the line type was Waveguide through the user interface.

[SLD-10476] Resolved an issue in which the display mode (maximize) is not preserved when changing the active channel via remote.

[SLD-10538] Resolved an issue in which the self-test reporting in the event log was not correct for MS46131A or ME7868A or MS46121B.

[SLD-10607] Resolved an issue in which turning Embedding/De-embedding on/off did not restore the original cal in some cases.

[SLD-10678] Resolved an issue in which the RF 'power off' button was incorrectly available after calibration on MS46131A and ME7868A.
 [SLD-10684] Resolved an issue on MS46121B in which the overall self-test did not report a failure when the Self Test temperature Failed.
 [SLD-10696] Resolved an issue when using a 2port SmartCal (MN25208A or MN25218A) where a user could not select the port with auto-sense set to off.
 [SLD-10748] Resolved an issue where the mixed-mode labeling of port pair (3:1) was incorrectly displayed as (1:2) instead of (3:1).
 [SLD-10836] Resolved an issue in which the RF Manual Cal steps can be taken out of remote prematurely when the measurement has not been completed.
 [SLD-10849] Resolved an issue on MS46524B system when the cal method selected is SSST or SSLT.
 [SLD-10859] Resolved an issue where the external reference on ME7868A was not saved and recall appropriately.

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46131A, MS46322A/B, MS4652xB

Software Version : V2021.5.2

Product	:	Nios	FPGA
Firmware Version	:	MS46121A_rev1	: , V2.1.09
	:	MS46121A_rev2	: , V2.2.23
	:	MS46121B_rev1	: , V2.2.23
	:	MS46322A_122A	: V2.1.88, V2.0.29
	:	MS46322B_122B	: V2.3.01, V2.0.69
	:	MS4652xB	: V3.4.02, V3.2.22
	:	MS46131A	: V2.3.25, V2.0.92

IVI-C Version : V2021.5.2

Release Date : Release December 2021

*** NEW FEATURES ***

-> Software

[None] Manufacturing Release.

*** IMPROVEMENTS ***

-> Software

[SLD-10410] VCXO 100MHz result reported in selftest for MS46122B and MS46322B model.

*** BUG FIXES ***

-> Software

[None]

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46131A, MS46322A/B, MS4652xB

Software Version : V2021.5.1

Product : Nios FPGA

Firmware Version : MS46121A_rev1 : , V2.1.09

: MS46121A_rev2 : , V2.2.23

: MS46121B_rev1 : , V2.2.23

: MS46322A_122A : V2.1.88, V2.0.29

: MS46322B_122B : V2.2.97, V2.0.68

: MS4652xB : V3.4.02, V3.2.22

: MS46131A : V2.3.25, V2.0.92

IVI-C Version : V2021.5.1

Release Date : Release Jun. 2021

*** NEW FEATURES ***

-> Software

[SLD-9631] Spur dodging improved on MS46131A / ME7868A.
[SLD-9701] Added ability to turn off port power on MS46131A or ME7868A.
[SLD-9709] Added ripple limit flatness feature.
[SLD-9775] Isolation steps available when using AutoCal to perform the RF Calibration.

*** IMPROVEMENTS ***

-> Software

[SLD-9408] Improvement made to UFX extrapolation process.
[SLD-9456] Support for .chc and .stc extensions are now added to ShockLine easyTest.
[SLD-9460] Font display corrected for any Windows display scaling.
[SLD-9706] Phase compensation is turned on by default in the ME7868A.
[SLD-9776] Processor loading reduced when ShockLine SCPI remote control not in use.
[SLD-9797] Model number displayed reflects ME7868A configuration when there are two MS46131As configured with option 12 and there's a PhaseLync cable assembly hooked up between the two units.
[SLD-9867] Update text labeling in UFX dialog controls.
[SLD-9952] Added note in Options menu that not all hardware options are shown.

*** BUG FIXES ***

-> Software

[SLD-5833] Resolved an issue in which an RF calibration performed after recalling a setup with an RF Calibration and performing a new cal with a subset of the frequency list resulted in a bad calibration.
[SLD-9451] Resolved an IF cal issue with the ME7868A.
[SLD-9452] Resolved an issue where recalling a setup with interpolation on and the cw frequency is not set to default results in only a partial frequency sweep.
[SLD-9453] Resolved an issue with setups recalled with interpolation off and limit lines enabled that do not update the limit lines appropriately when the frequency range changes.
[SLD-9457] Resolved various issues with UFX (Option 21) Multi-standard D, F, and G.

- [SLD-9496] Resolved an issue with measurement RF ranging when using SmartCal for calibration on MS46524B.
- [SLD-9497] Resolved an issue with MS4652xB in which 'Data Calc. Error' could be observed after calibrating with MN25418A SmartCal if there are multiple channels displayed.
- [SLD-9498] Resolved an issue on MS4652xB system in which a .cha setup that contains multiple channels recalled could result in the system not sweeping after a preset.
- [SLD-9515] Resolved an issue in which the sweep frequency range changes when an RF calibration is performed with less points than the existing RF Cal.
- [SLD-9567] Addressed an issue seen if performing UFX phase localized D with quick extraction and reflect only was used with Port 2 selected.
- [SLD-9571] Resolved an issue on the ME7868A system in which lock errors are observed when using external trigger per sweep with phase compensation enabled.
- [SLD-9621] Resolved an issue where on MN25418A SmartCal not recognized on some systems but recognized on others.
- [SLD-9626] A warning dialog is issue when loading an unsupported .lst file.
- [SLD-9632] Resolved an issue in which the cal starts when using the AutoCal or SmartCal module even though the user selected the 'X' to abort the cal.
- [SLD-9633] Resolved an issue in which 'Channel Next' - 'Channel Previous' does not work when there are multiple channels displayed but the channel is maximized.
- [SLD-9637] Resolved an issue in which 'System Out Of Memory' can be observed when recalling a multiple channel setup over remote.
- [SLD-9656] Resolved an issue with numeric text box entry with group delay graph type when the values are smaller than 1 picoseconds in limit line and scale resolution.
- [SLD-9695] Resolved an issue in which only the odd ripple limits tests are displayed on the readout.
- [SLD-9696] Resolved an issue in which ripple Limit can be marked as failed even though it is not failing.
- [SLD-9697] Resolved an issue in which the ripple readout is not shown on the display when the first ripple selection is turned off.
- [SLD-9712] Resolved an issue with UFX(Option 24) when using quick extract and there is a preexisting EDE setup in place.
- [SLD-9720] Resolved an issue with ME7868A in which the sweeps are slower when in low power and phase compensation is on.
- [SLD-9778] Resolved an issue in which the menu flashes when clicking on Channel Tool Strip multiple times.
- [SLD-9783] Resolved an issue with UFX(option 21) multistandard G where the order of measurement can have an effect on the final result.
- [SLD-9887] Active source port indicator in the ShockLine GUI corrected to match the state of the port active LED on the hardware.
- [SLD-9915] Resolved an issue with equation editor XASISARRAY functions where it does not return correctly when in time domain or power sweep and cw-mode.
- [SLD-9956] Resolved a SCPI issue where setting up the calMethod is not working as expected when the calMethod set is AutoCal.

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46131A, MS46322A/B, MS4652xB

Software Version : V2020.10.1

Product	:Nios	FPGA
Firmware Version	: MS46121A_rev1	: , V2.1.09
	: MS46121A_rev2	: , V2.2.23
	: MS46121B_rev1	: , V2.2.23

: MS46322A_122A :V2.1.88, V2.0.29
: MS46322B_122B :V2.2.97, V2.0.68
: MS4652xB :V3.4.02, V3.2.22
: MS46131A :V2.3.20, V2.0.92

IVI-C Version : V2020.10.1

Release Date : Release Dec. 2020

*** NEW FEATURES ***

-> Software

[SLD-9141] Resolved an issue where a dialog becomes hidden on the ShockLine application and prevents other dialogs or the application from being selected.

[SLD-9184] Zero coupling feature added to UFX option type G network extraction.

[SLD-9053] Per Point trigger available for MS46131A.

*** IMPROVEMENTS ***

-> Software

[SLD-5844] Simulation mode updated to display reasonable measurement data.

[SLD-6986] Pop up window no longer appears when 'System:Exit' remote command is sent.

[SLD-8388] Phase localized G with coupling feature added to the UFX option on ShockLine VNAs.

[SLD-8711] Added ability to zero out near end term in Type G network extraction for differential probes.

[SLD-9022] Passivity and causality enforcement added to SNP data file save setup.

[SLD-9212] Resolved an issue with OSLR cal on MS46131A system.

[SLD-9281] High Isolation mode on the ME7868A is made on by default.

*** BUG FIXES ***

-> Software

[SLD-1942] Resolved an issue in which a Microstrip kit label doesn't get updated in the dropdown menu upon loading the cal kit.

[SLD-8052] Resolved an issue where Autosense is incorrectly set to 'ON' when the calibration method is changed remotely on the AutoCal module.

[SLD-8504] Resolved an issue where the zero match checkbox is not functioning on multi-standard type D-F-G extractions with the UFX option.

[SLD-8600] Resolved an issue where the RFCalState is not reporting in channel status bar.

[SLD-8739] Resolved an issue where the marker menus displayed the incorrect terminator for the phase graph type.

[SLD-9067] Resolved an issue in which the x-axis frequency display becomes incorrect after changing the number of sweep points.

[SLD-9073] Resolved an issue where interpolation does not work correctly for ME7868A VNAs.

[SLD-9074] Sweep cursor is hidden when in segmented sweep on MS4652xB VNAs.

[SLD-9079] Resolved an issue with network extraction type G (non-UFx) where zero match did not replace 0s with -100s when the output format was set to LogMag&Phase.

[SLD-9118] Resolved an issue with AutoCal calibration on MS46122B and MS46322B VNAs at high power at frequencies below 100 MHz.

[SLD-9226] Resolved an issue when hitting the 'Done' button on RF calibration menu. The user could encounter 'Exception Occurred' error message. This can occur when a reciprocal measurement has been measured and the user navigates away from the calibration menu without completing the calibration and then completing the calibration at a later state.

[SLD-9275] Resolved an issue with the AutoCal assurance when performing a 4-port calibration on the MS46524B VNA.

[SLD-9292] Corrected URL and copyright year in 'Contact Us' dialog box.

[SLD-9317] Resolved an issue with recalling .cha file for MS46131A when the port configuration in the recalled file differs from the current port configuration.

[SLD-9368] Resolved an issue with TRX cals on MS46122B and MS46322B.

[SLD-9390] Corrected an issue in which RF Ranging is not properly applied when cal is done with smartcal or autocal and multiple channels are displayed.

[SLD-9397] Corrected an issue in which RF Ranging state does not reset after a preset.

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46131A, MS46322A/B, MS4652xB

Software Version : V2020.7.3

Product : Nios FPGA

Firmware Version : MS46121A_rev1 : , V2.1.09

: MS46121A_rev2 : , V2.2.23

: MS46121B_rev1 : , V2.2.23

: MS46322A_122A : V2.1.88, V2.0.29

: MS46322B_122B : V2.2.90, V2.0.67

: MS4652xB : V3.4.02, V3.2.22

: MS46131A : V2.2.87, V2.0.90

IVI-C Version : V2020.7.3

Release Date : Release October 2020

*** NEW FEATURES ***

-> Software

[None] Manufacturing Release.

*** IMPROVEMENTS ***

-> Software

[None]

*** BUG FIXES ***

-> Software

[None]

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46131A, MS46322A/B, MS4652xB

Software Version : V2020.7.2

	Product		Nios	FPGA
Firmware Version	: MS46121A_rev1	:		, V2.1.09
	: MS46121A_rev2	:		, V2.2.23
	: MS46121B_rev1	:		, V2.2.23
	: MS46322A_122A	:	V2.1.88,	V2.0.29
	: MS46322B_122B	:	V2.2.90,	V2.0.67
	: MS4652xB	:	V3.4.02,	V3.2.22
	: MS46131A	:	V2.2.87,	V2.0.90

IVI-C Version : V2020.7.2
Release Date : Release September 2020

*** NEW FEATURES ***

-> Software

*** IMPROVEMENTS ***

-> Software

[SLD-6986] When the command 'System:Exit' is sent, the pop up windows asking user whether they wanted to save the setup before exiting is no longer displayed. This window is not needed since the command is issue via remote.

*** BUG FIXES ***

-> Software

[SLD-9075] Resolved an issue where the sweep time on MS4652xB system is taking longer than that of the previous release.

[SLD-9091] Resolved an issue on MS4652xB where the data beyond 8000 points could be sweeping at the previous IFBW.

[SLD-9130] Resolved an issue where .sgs (segmented sweep setup file) cannot be recalled on non MS4652xB systems.

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46131A, MS46322A/B, MS4652xB

Software Version : V2020.7.1

Product : Nios FPGA
Firmware Version : MS46121A_rev1 : , V2.1.09
: MS46121A_rev2 : , V2.2.23
: MS46121B_rev1 : , V2.2.23
: MS46322A_122A : V2.1.88, V2.0.29
: MS46322B_122B : V2.2.90, V2.0.67
: MS4652xB : V3.4.01, V3.2.22
: MS46131A : V2.2.87, V2.0.87
IVI-C Version : V2020.7.1
Release Date : Release Aug. 2020

*** NEW FEATURES ***

-> Software

[SLD-7846] TRL/TRM cal method supported.

[SLD-8283] IFBW by port added for MS46522B and MS46524B for segmented sweep type.

*** IMPROVEMENTS ***

-> Software

[SLD-6711] Add ability to do calibrations with one standard across multiple channels for MS46122A/B MS46322A/B MS46522B MS46524B MS46131A.

[SLD-7690] Added time stamp information to user RF cal and expanded 'Existing Cal' information in both GUI and SCPI.

[SLD-7732] Speed improvements made to MS46131A 1 port.

[SLD-7985] Added .chc and .stc file type for saving. .chx, .stx no longer override calkit information on recall.

[SLD-7995] Enhancement made such that the Autocal com port selection is now automatically detected.

[SLD-8007] Recalling .stx/.sta now preserves existing rf calibrations.

[SLD-8181] Serialnumber is now added to .csv and text file.

[SLD-8489] Added new remote data transfer commands for formatted data.

[SLD-8591] Allow smartcal characterization outside of diagnostic menu.

[SLD-8700] Power level for MS46122A/B MS46322A/B and MS46131A is now saved as part of the rf calibration setup and recalled when the cal is turned on. Info is also displayed in the existing calibration information dialog. Recalling setup saved before this release will not have the power level saved.

[SLD-8974] Hardware Acceleration is off warning dialog is removed from showing in application.

*** BUG FIXES ***

-> Software

[SLD-3620] Resolved an issue with preset not clearing the files selected and also the Through/Reciprocal Selection when performing a hybrid calibration.

[SLD-4835] Resolved an issue in which the ShockLine SFP will not launch if a USB camera is plugged into the host PC.

[SLD-5908] Resolved an issue where the marker displayed frequency value is shown incorrectly in indexed based segmented sweep when the sweep is sweeping from a high frequency value to lower frequency value.

[SLD-6754] Resolved an issue where the RF calibration was not applied correctly on the second application launches when two MS46121A/B are connected with an RF calibration is applied.

[SLD-7196] Resolved an issue in which the time domain setup is not completely recalled correctly after an RF calibration.

[SLD-7199] Resolved an issue on the MS46522B and MS46524B in which the x-axis labeled does not show power value when the sweeptype is set to power sweep.

[SLD-7200] Modified logic for graph x-axis annotation to use start and stop values to calculate value per division instead of using number of points.

[SLD-7411] Resolved an issue in which the SCPI commands :SENS:CORR:COLL:REF:Z0? & :SENS:CORR:COLL:REF:Z0 50 returning back as an error.

[SLD-7615] Resolved a kQ measurement issue on MS4652xB system.

[SLD-7695] Resolved an issue with using 4 port smartcal over remote to perform RF calibration where all 4 ports are involved.

[SLD-7735] Resolved an issue in which the history dialog in the equation editor was not working properly.

[SLD-7899] Resolved an issue in which performing LRX RF calibration on MS46122B with more than 1 channels displayed resulted in bad RF calibration.

[SLD-7904] Resolve an issue in which 'lost connection' was observed when performing an RF calibration in segmented sweep using autocal 36585K.

[SLD-7960] Improved RF calibration on MS46524B when using an autocal for low frequency bands.

[SLD-7962] 2.4 mm cal kit definition updated to match that from Maury.

[SLD-7982] Resolved an issue in which saved .chx file that has an .s1p as a calkit parameter does not recall successfully.

[SLD-7993] Fixed the command ':SENSe{1-16}:CORRection:COLLect:ECAL:MSGs:LIST?' to list the error message.

[SLD-8033] Resolve an issue where recalling .sta file causes .s2p .txt .csv files to not saved correctly.

[SLD-8056] Handled clearing of calibration coefficients after Preset 0.

[SLD-8069] Resolved an issue with autocal assurance not functioning appropriately on MS4652xB.

- [SLD-8095] Resolved problem with marker display on memory trace when number of data points was greater than 201.
- [SLD-8185] Resolved an issue on MS46122A/B MS46322A/B where performing RF calibration with more than 1 channels displayed resulted in the RF calibration being bad.
- [SLD-8186] Resolved an issue where autocal with true thru and adaptor removal does not complete the cal with MS46122B model.
- [SLD-8200] Resolved an issue when multiple channels are being used on MS46122A/B & MS46322A/B and they have different IFBW or number of points.
- [SLD-8205] Addressed an issue with LRL\m calibration on MS46122B and MS46322B when the calibrations are performed when multiple channels are displayed.
- [SLD-8206] Resolved an issue in which the RF Calibration results are incorrect when performing Switch-correction based cals[LRx, SOLR] at low power with lossy setups for MS46122B and MS46322B.
- [SLD-8212] Resolved an issue in which the RF calibration when using autocal with additional internal through does not appear to be corrected properly.
- [SLD-8215] Addressed an issue with LRL\m cal method with high loss configurations on MS46122B and MS46322B.
- [SLD-8369] Resolved an issue in which an error dialog is observed when loading .ccf file after loading .lst calkit file.
- [SLD-8487] Resolved an issue in when using the MS46122B or MS46322B with only the factory calibration applied.
- [SLD-8498] Corrected saving of snp files for non-option 21 when zero matched is selected and the format is dB.
- [SLD-8527] Resolved an issue in which the port selection gets reset back when users navigate to Calibrate menu.
- [SLD-8543] Resolved an issue with recalling a saved setup that included distance units.
- [SLD-8601] Allow 'mmem:load:ckit' command to also load .lst and .lcf files.
- [SLD-8602] Resolved an issue where discrete fill segmented sweep setup is not recalled appropriately when application launch.
- [SLD-8615] Resolved an issue in which the marker search range is not drawn on application launched if statistic display is on.
- [SLD-8816] Resolved an issue in which type D multi-standard with UFX (option 24) is not working correctly on MS46524B system.
- [SLD-8819] Modify power leveling display entry for segmented sweep on MS46131A.
- [SLD-8890] Resolved an issue in which easyTest does not save .jpg and .png correctly.
- [SLD-8984] Fixed problem where E/O characterization can generate a bad sNp file in which spacing is missing between column entries.

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46131A, MS46322A/B, MS4652xB

Software Version : V2019.12.3

Product	:	Nios	FPGA
Firmware Version	:	MS46121A_rev1	: , V2.1.09
	:	MS46121A_rev2	: , V2.2.23
	:	MS46121B_rev1	: , V2.2.23
	:	MS46322A_122A	: V2.1.88, V2.0.29
	:	MS46322B_122B	: V2.2.90, V2.0.67

: MS4652xB : V3.3.12, V3.2.22
: MS46131A : V2.1.90, V2.0.69

IVI-C Version : V2019.12.3

Release Date : Intermediate Update Release beginning December 2019

*** NEW FEATURES ***

-> Software

*** IMPROVEMENTS ***

-> Software

*** BUG FIXES ***

-> Software

[SLD-8107] Resolved an issue with the factory RF cal.

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46131A, MS46322A/B, MS4652xB

Software Version : V2019.12.1

Product : Nios FPGA

Firmware Version : MS46121A_rev1 : , V2.1.09

: MS46121A_rev2 : , V2.2.23

: MS46121B_rev1 : , V2.2.23

: MS46322A_122A : V2.1.88, V2.0.29

: MS46322B_122B : V2.2.90, V2.0.67

: MS4652xB : V3.3.12, V3.2.22

: MS46131A : V2.1.90, V2.0.69

IVI-C Version : V2019.12.1

Release Date : Release Dec. 2019

*** NEW FEATURES ***

-> Software

- [SLD-6315] ShockLine handles .ett files that contain 'Repeat' appropriately.
- [SLD-6988] Added ability to generate custom icons.
- [SLD-7018] Existing Cal info GUI updated to display models, timestamps, version info, and additional items.
- [SLD-7041] Simultaneous sweep remove from MS4652xB.
- [SLD-7106] Right click contextual menu added to provide quick access to additional functions.
- [SLD-6987] Added ability to customize toolbar icons.
- [SLD-7298] Added adjustable marker display decimal place resolution for frequency ready for stakeholder testing.
- [SLD-7720] Initial software support for MS46131A.

*** IMPROVEMENTS ***

-> Software

- [SLD-6882] Marker style modified to improve readability
- [SLD-7206] Adjustments made to Marker Table so that more markers can be shown horizontally.
- [SLD-7305] Marker number indicator color now matches that of the trace color.
- [SLD-7438] Added ability to read loaded S1P file in UI.
- [SLD-7557] S1P file loading is now available on user define offset short.

*** BUG FIXES ***

-> Software

- [SLD-5014] Addressed issue where the query 'CALCULATE:PARAMETER{i}:DEFINE?' is not returning correctly for Port3.
- [SLD-5626] Improved error checking for number of bands used in LRL Line/Match measurement SCPI commands.
- [SLD-5631] Added SCPI commands to set and get physical length and delay for LRL CALB lines.
- [SLD-6316] Updated the calibration method for MS46121A/B VNAs to show SOL instead of SOLT/R.
- [SLD-6565] Fixed font settings in detached trace windows.

[SLD-6694] Fixed an issue with calibrated measurements if the number of sweep points is changed after calibration.
[SLD-6700] Addressed an issue where equation editor validations allows entry of inappropriate channels.
[SLD-6730] Corrected issue with changing marker readout size after preset.
[SLD-6757] Corrected an issue with Microstrip where the dialog only show 1 port selection.
[SLD-6761] Improved MS46122B HLN with expanded list of spur dodging frequencies.
[SLD-6824] Modified Autocal\SmartCal menus to only enable relevant selections.
[SLD-7008] Addressed an issue where reference plane extension does not work appropriately on MS46121B.
[SLD-7016] Corrected RF ranging on MS4652xB models when multiple channels used.
[SLD-7094] Addressed an issue where using the Mean function in the equation editor can cause an incorrect data display.
[SLD-7095] Addressed an issue with adapter removal when using the true thru with autocal.
[SLD-7105] Addressed an issue where S21/S12 traces do not stay at zero dB after a cal when IFBW is >100 Hz.
[SLD-7185] Corrected Get Marker Frequency.vi and Set Marker Frequency.vi in IVI driver.
[SLD-7292] Fixed RF on/off control in hold function on MS46122B, MS46322B.
[SLD-7307] Addressed an issue where changing frequency plan after cal causes source dropouts if Interpolation is off.
[SLD-7399] Addressed an issue where RF hold condition state off doesn't seem to work correctly after application launches until one toggles it.
[SLD-7406] Addressed an issue where the marker search could return a value that is close to but not within the search range specified.
[SLD-7463] Addressed RF ranging bug when two channels open with one channel TRF calibration.
[SLD-7476] Addressed an issue where the Serial number is not populated when loading .lst file.
[SLD-7590] Corrected an issue where via remote or IVI the model return shows 'S820E'.
[SLD-7666] Addressed an issue with SCPI behavior of "Load S1P" in User defined Match dialog.
[SLD-7697] Addressed an issue with RF Hold values where SCPI and UI don't match for MS46121 when changing the value via SCPI.
[SLD-7718] Improvement made to dispersive media handling in UFX (option 24).

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46322A/B, MS4652xB

Software Version : V2019.7.1

Product : Nios FPGA

Firmware Version : MS46121A_rev1 : , V2.1.09

: MS46121A_rev2 : , V2.2.23
: MS46121B_rev1 : , V2.2.23
: MS46322A_122A : V2.1.88, V2.0.29
: MS46322B_122B : V2.2.90, V2.0.67
: MS4652XB : V3.3.04, V3.2.22

IVI-C Version : V2019.7.1

Release Date : Quarterly Release Jul. 2019

***** NEW FEATURES *****

-> Software

[SLD-5838] Adding UFX option 24 to ShockLine.

***** IMPROVEMENTS *****

-> Software

[SLD-5849] MS46522B Simulator with option 82 (E-band) now shows spur reduction selection in measurement menu.

[SLD-6047] Calibration method for E band system defaults to SSST.

[SLD-6519] Default start/stop frequencies set to min/max functional frequencies.

***** BUG FIXES *****

-> Software

[SLD-5255] Fixed an issue where LRL/LRM edit cal param dialog is missing the cal method in the title.

[SLD-5927] Improvement to output power level control.

[SLD-6025] Fixed the Power-on with Last-setup enabled so that it serializes all setups.

[SLD-6451] Corrected an issue where certain combinations of unratiod parameters cause data to stop updating.

[SLD-6460] Fixed an issue with the autosense function on SmartCal when time domain option is not present.

[SLD-6470] Fixed text in SmartCal pop up windows. Adjust menus/dialogs to show SmartCal or Autocal appropriately.

[SLD-6490] Fixed an issue where the center color on the polar chart is not updated when the background color is changed.
[SLD-6492] Fixed an issue where Limit line color change is not reflected in circular graph types.
[SLD-6552] Issue with SSST 1-port cal method showing only port 1 on 2-port models corrected.
[SLD-6554] Fixed recall state of Use All Traces as Time Domain Data" check box in 4-port Equation Editor."
[SLD-6577] Fixed an issue where storing to data didn't work correctly the first time one stores to memory on application launch if the trace currently has data memory math applied.
[SLD-6581] Corrected LRL 2-port dialog for 4-port system to show the 'Eff length' label.
[SLD-6589] Issue with recalling MS46121B setup with 16001 points fixed.
[SLD-6591] Fixed an issue where the thru info dialog does not show up when performing Waveguide TFR cal.
[SLD-6710] Fixed IVI-C 1-port SOL calibration when used with 3 MS46121 VNAs.
[SLD-6826] Thru update command added.

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46322A/B, MS4652xB

Software Version : V2019.3.2

Product : Nios FPGA

Firmware Version : MS46121A_rev1 : , V2.1.09

: MS46121A_rev2 : , V2.2.23

: MS46121B_rev1 : , V2.2.23

: MS46322A_122A : V2.1.88, V2.0.29

: MS46322B_122B : V2.2.90, V2.0.67

: MS4652XB : V3.2.61, V3.2.22

IVI-C Version : V2019.3.2

Release Date : Quarterly Release Mar. 2019

*** NEW FEATURES ***

-> Software

[SLD-564] Add support for multiple search range. Allow up to 20 marker search ranges per channel in addition to the existing trace range.
[SLD-2700] Added SCPI command to enabled\disabled ShockLine GUI from being viewed, although the application is still running.

[SLD-4380] Adjustable range feature for marker statistics has been added.
[SLD-5597] Adjustable limit line colors by trace feature added.
[SLD-5598] Equation editor capability expanded to support inter-channel trace math.
[SLD-5599] Easytest be able to import list of ShockLine SCPI.
[SLD-5713] Added ability to save gated snp or snp with trace math applied.
[SLD-5834] Added terminator selections for reference plane extensions.

*** IMPROVEMENTS ***

-> Software

[SLD-2294] Bandwidth and Notch loss value defaults to 3dB instead of 0dB.
[SLD-3629] Added serialization support for SmartCal orientation.
[SLD-3970] Added actual X1 and X2 points to indicate actual x values use for limit lines.

[SLD-4229] Support for marker statistics with IVI-C.
[SLD-5721] Fixed menu displays when Windows display zoom not set to 100%.
[SLD-6021] Allow overwriting of default calkit file when recalling a calkit file.

*** BUG FIXES ***

-> Software

[SLD-3492] Fixed an issue where self test results via SCPI returns incorrect results.
[SLD-3867] Fixed SmartCal functional issue when using auto sense and multiple channels.
[SLD-3987] Fixed issue with reference plane extension where frequency dependent loss was not available for 121 model.
[SLD-4197] Ripple limit functionality restored for Group Delay.
[SLD-4350] Corrected an issue where GUI becomes non-responsive when switching between reflection to transmission measurements with MS46121Bs.
[SLD-4370] Fixed an issue where incorrect labels are displayed for LRL - Waveguide devices.

[SLD-5244] Add SCPI support for user define calkit 9-32.
[SLD-5278] Fixed an issue where ShockLine application takes more time to launched than previous release.

[SLD-5374] Fixed a low power calibration issue on MS46122B affecting transmission measurements with steep transitions.
[SLD-5474] Fixed an issue with IVI function GetAttributeViUInt32 not working correctly with multiple channels.
[SLD-5489] Fixed an issue where storing data to memory does not work correctly for SWR graph type.
[SLD-5498] Fixed an issue where FPGA upgrade process for a 121A R02 from V2018.2.1 SW to V2018.9.1 SW does not work.
[SLD-5594] Fixed an issue where use all traces as time domain" was not functional in the Equation Editor."
[SLD-5640] Fixed an issue where Limit line stays flat even though endpoints differ by >4dB.
[SLD-5657] Fixed an issue where reflection scalar thru doesn't work on MS46121A/B - with calibration kits other than default one.
[SLD-5757] Fixed an issue where the reflection response cal for waveguide and microstrip linetype only show port 1 parameters.
[SLD-5866] Addressed an issue where auto sensing module orientation using smart cal didn't work for two channels.
[SLD-5875] Fixed an issue where the marker table color is not updated base on trace color selection.
[SLD-5881] Fixed an issue with the equation editor where the equations contains 2 arguments within parenthesis.
[SLD-5925] Fixed an incorrect step response s-parameter measurement following a narrow band 4-port calibration on MS46524B
[SLD-5963] Fixed an equation editor issue such that linear mag formatted data does not include phase data.
[SLD-6046] Fixed an issue where memory is shown as not available when number of points is change and then reverted back.
[SLD-6065] Fixed an issue where store to memory did not work correctly for freq based segmented sweeps.
[SLD-6142] When in remote mode, UI selections (ie active channel, trace) are now also disabled.
[SLD-6163] Addressed an issue with view trace selection showing incorrect value when switching between indexed base segmented sweep to freq based segmented sweep.
[SLD-6168] Addressed some issues relating to view trace memory selection showing incorrect selection.

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46322A/B, MS4652xB

Software Version : V2018.9.4

Product : Nios FPGA

Firmware Version : MS46121A_rev1 : , V2.1.09

: MS46121A_rev2 : , V2.2.23

: MS46121B_rev1 : , V2.2.23

: MS46322A_122A : V2.1.88, V2.0.29

: MS46322A_122B : V2.2.90, V2.0.67

: MS4652XB : V3.2.60, V3.2.22

IVI-C Version : V2018.9.4

Release Date : Intermediate Update Release beginning February 2018

*** NEW FEATURES ***

-> Software

*** IMPROVEMENTS ***

-> Software

*** BUG FIXES ***

-> Software

[SLD-5640] Fixed an issue where Limit line stays flat even though endpoints differ by >4dB.

[SLD-5657] Fixed an issue where reflection scalar thru doesn't work on MS46121A/B - with calibration kits other than default one.

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46322A/B, MS4652xB

Software Version : V2018.9.2

Product : Nios FPGA

Firmware Version : MS46121A_rev1 : , V2.1.09

: MS46121A_rev2 : , V2.2.23

: MS46121B_rev1 : , V2.2.23

: MS46322A_122A : V2.1.88, V2.0.29

: MS46322A_122B : V2.2.90, V2.0.67

: MS4652XB : V3.2.60, V3.2.22

IVI-C Version : V2018.9.2

Release Date : Intermediate Update Release beginning December 2018

*** NEW FEATURES ***

-> Software

*** IMPROVEMENTS ***

-> Software

*** BUG FIXES ***

-> Software

[SLD-3987] Fixed issue where frequency dependent loss for reference plane is not available for 121 model.

[SLD-5278] Fixed an issue where ShockLine application takes more time to launch than previous release.

[SLD-5489] Fixed an issue where storing data to memory does not work correctly for SWR graph type.

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46322A/B, MS4652xB

Software Version : V2018.9.1

Product : Nios FPGA

Firmware Version : MS46121A_rev1 : , V2.1.09

: MS46121A_rev2 : , V2.2.23

: MS46121B_rev1 : , V2.2.23

: MS46322A_122A : V2.1.88, V2.0.29

: MS46322A_122B : V2.2.90, V2.0.67

: MS4652XB : V3.2.60, V3.2.22

IVI-C Version : V2018.9.1

Release Date : Quarterly Release beginning Sep. 2018

*** NEW FEATURES ***

-> Software

[SLD-3623] Added ability to make transmission measurement using two MS46121's via IVI-C.

[SLD-4654] Remote commands for fonts sizing added.

[SLD-532] User without admin privileges can now launch the ShockLine application for 121/122 VNAs.

[SLD-534] Differential impedance transformation control added to the ShockLine software.

[SLD-1485] Secondary match correction now available on 2 and 4 port ShockLine VNAs.

[SLD-3112] Added equation editor for inter-trace math.

[SLD-5239] Added O/O Measurement capabilities.

[SLD-5241] Added ability for users to toggle On/Off optical measurements.

*** IMPROVEMENTS ***

-> Software

[SLD-3622] Reflect appropriate length for reciprocal in edit cal param dialog.

[SLD-3878] Added ability to do IVI-C based scalar transmission calibration and response on MS46121Bs with option 21.

[SLD-3939] ShockLine dialogs that are larger are now scaled correctly on certain monitors and projectors.

[SLD-4146] VSWR graph type does not display negative values by default.

[SLD-4453] Resolved issue with turning off unused source when using MS46121B in scalar transmission configuration.

[SLD-4849] Port orientation specified for autocal additional thrus.

*** BUG FIXES ***

-> Software

- [SLD-3128] Fixed an issue where via remote, sending the command [Sens1:Corr:Coll:save], turns on correction even though no calibration exists.
- [SLD-3444] Fixed an issue where incorrect value for Differential time domain Return Loss impedance is observed.
- [SLD-3584] Fixed an issue where via SCPI Dev1 can be set to Match for LRL\LRM cal method.
- [SLD-3598] Fixed an issue where attempting 2 port hybrid cal with no files locks the application.
- [SLD-3894] Fixed an issue where a thru update after a 3 port cal results in data calculations errors.
- [SLD-4073] Fixed an issue where hardware was not detected by ShockLine software after running the simulator on the control PC.
- [SLD-4142] Fixed an issue with 3-port waveguide reciprocal calibration.
- [SLD-4144] Fixed the ShockLine installer so that it does not need to run twice to complete the installation on Windows 10.
- [SLD-4150] Fixed Statistics display readout for mean value when using Smith Chart display type.
- [SLD-4162] Fixed an issue where time marker value displaying 0 seconds when moved.
- [SLD-4217] Fixed issue with trace display not returning to pre-calibration state after cal.
- [SLD-4452] Issue with using a 2-port SmartCal to calibrate the MS46524B VNA fixed.
- [SLD-4463] Fixed an issue where log display is not shown when display SDD(1:2) in log sweep sweeptype.
- [SLD-4546] Fixed Impedance Transformation function.
- [SLD-4566] Auto populating thru length for 4-port cals with TOSLKF50A cal kit corrected.
- [SLD-4567] Fixed an issue where changing impedance while impedance transformation is on doesn't respond correctly.
- [SLD-4569] Fixed an issue with impedance transformation when measuring SDD, SCC.
- [SLD-4628] Fixed stop sweep issue that occurs with certain calibrations.
- [SLD-4648] Fixed an issue with remote programming ripple measurements that may cause the application to disappear.
- [SLD-4659] Fixed an issue with interpolation of s1p and s2p data seen when file points were sparse.
- [SLD-4661] Fixed an issue with recalling a setup with trace memory and data displayed.
- [SLD-4662] Fixed an issue where Memory trace colors 17 to 20 were not saved and recalled correctly.
- [SLD-4754] Fixed an issue where factory rf cal was applied only to displayed traces sometimes affecting differential mode trace measurements.
- [SLD-4850] Fixed issue when calibrating multiple 1-port VNAs with 2 or 4 port Smartcals.
- [SLD-4857] Fixed an issue where trace tabular data prints with overhead although 'Include Header' is not selected.
- [SLD-4955] Fixed maker value display font clipping issue.
- [SLD-4957] Fixed LRL CalB reflection type SCPI command functionality.
- [SLD-5019] Fixed several issues with hybrid cal on 522B systems.
- [SLD-5034] Fixed an issue where autocal\smartcal does not complete cal following an error dialog.
- [SLD-5089] Reference impedance corrected for pair 2 in mixed-mode impedance transformation with common driving port.

[SLD-5091] Fixed an issue with recalling setup with impedance transformation on.

[SLD-5131] Fixed issue where invalid additional thrus can be selected for autocal thrus. Allow only valid additional thrus for autocal based on port orientation.

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46322A/B, MS4652xB

Software Version : V2018.2.1

Firmware Version : MS46121A rev1 : V2.1.09

: MS46121A rev2 : V2.2.20

: MS46121B : V2.2.20

: MS46322A/122A : V2.0.29, V2.1.88

: MS46322B/122B : V2.0.67, V2.2.90

: MS4652XB : V3.2.60, V3.2.22

IVI-C Version : V2018.2.1

Release Date : Quarterly Release beginning February 2018

*** NEW FEATURES ***

-> Software

[SLD-2997] Minimized trace measurement display lag

[SLD-3684] Added support for multiple memory traces - up to 20 traces per channel.

[SLD-606] Added up to 20 memory traces per channel. Each trace can displayed up to 20 memory traces.

[SLD-2577] Added functionality to set limit line thickness

[SLD-3190] Added reference plane extension improvements

*** IMPROVEMENTS ***

-> Software

[SLD-3278] Added line type to measurement menu

*** BUG FIXES ***

-> Software

[SLD-2236] Addressed issue where if one is attempting to do two 1P cals and manually map the Autobot: using Port B on the Autobot cannot be used on both VNA ports (1 and 2).

[SLD-2692] Issue with GUI trace lag in continuous sweep mode fixed

[SLD-2914] Addressed issue where "Data Calculation Error" message is displayed when performing an rf calibration with group delay graph type displayed."

[SLD-3088] Corrected failure in Anritsu ShockLine VNA-SOLT Calibration.vi LabView example.

[SLD-3305] Fixed the MnP Port Setup Dialog so it will cycle back to Port 1 after Port 4 instead of showing N/A.

[SLD-3307] Corrected issue with loading .sNp file data into the 52xB simulator

[SLD-3448] Corrected an issue where font size was not saved as part of saved setup.

[SLD-3645] Corrected an issue where the up/down increment for the number of points is not working when interpolation is on.

[SLD-3646] Address issue where recalling data is not working appropriately for 121X models.

[SLD-3666] Support for .s4p viewing in Simulation mode fixed

[SLD-3671] Addressed a remote SCPI command issue where .s1p database cals were not functioning correctly.

[SLD-3682] Fixed recall of power up setup on MS46121A/B

[SLD-3724] Restored ability for user to save data to a network location

[SLD-3823] Fix for system stall when using IFBW > 30 kHz during calibration

[SLD-3828] Reinstated Bandwidth Statistic functionality

[SLD-3864] X axis display issue resolved when using greater than 1300 points

[SLD-3866] Fixed issue where cal kit name changes during editing cal params

[SLD-3873] Address an issue where trace thickness and font is not recalled correctly when using 'Saved Setup' Preset.

[SLD-3891] Fixed marker display information

[SLD-3892] Restored ability to use Alt+S to save files to memory without replacing currently existing file

[SLD-3895] Corrected an issue where the sweep slows down in mid band for E-band MS46522B.

[SLD-3940] Fixed a large step in transmission measurement when using MS46122B with AutoCal in low power mode

[SLD-3977] Fixed O/E Device Measurement functionality for MS46500B VNAs

[SLD-3983] Corrected an issue with the fetch formatted command with 121 units.

[SLD-4039] Corrected an issue where when sending commands rapidly over remote can intermittently causes system to stop sweeping.

[SLD-4041] Restored .s1p data recall functionality on MS46121B

[SLD-4047] Corrected an issue where the Software does not use the S1P files during the SOLT, SSLT, SSST, cal.

[SLD-4143] Fix 2 port E/O measurement with a 4 port cal

[SLD-4215] Addressed issue where autoscale for group delay can cause application to crash.

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46322A/B, MS4652xB

Software Version : V2017.9.2

Firmware Version : MS46121A rev1 : V2.1.09

: MS46121A rev2 : V2.2.20

: MS46121B : V2.2.20

: MS46322A/122A : V2.1.88, V2.0.29

: MS46322B/122B : V2.2.87, V2.0.64

: MS4652XB : V3.2.60, V3.2.22

IVI-C Version : V2017.9.1

Release Date : Intermediate Update Release beginning November 2017

*** NEW FEATURES ***

-> Software

[SLD-2814] Added control to set SmartCal state to load after calibration.

*** IMPROVEMENTS ***

-> Software

[SLD-3278] Added line type to measurement menu

*** BUG FIXES ***

-> Software

[SLD-542] Addressed issue where sweep gets corrupted when German language is enabled.

[SLD-3426] Resolved a factory calibration issue when making transmission measurements on DUTs with attenuation greater than 30 dB on MS46524B.

[SLD-3556] Addressed a connection issue with swapping 1-port ShockLine VNAs while the IVI_server was active.

[SLD-3604] Corrected an interpolation issue observed when making high attenuation (>30 dB) transmission measurements on MS46524B.

[SLD-3619] Fixed trace lags due to limit lines being displayed.

[SLD-3644] Corrected an issue where .ccf extensions files are not shown when trying to load cal kits.

[SLD-3820] Fixed an issue where after loading a cal kit is not available for editing.

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46322A/B, MS4652xB

Software Version : V2017.9.1

Firmware Version : MS46121A rev1 : V2.1.09

: MS46121A rev2 : V2.2.20

: MS46121B : V2.2.20

: MS46322A/122A : V2.1.88, V2.0.29

: MS46322B/122B : V2.2.87, V2.0.64

: MS4652XB : V3.2.60, V3.2.22

IVI-C Version : V2017.9.1

Release Date : Quarterly Release beginning September 2017

*** NEW FEATURES ***

-> Software

[SLD-3169] Removed port restrictions on LRL and SOLR calibrations on MS46524B 4-port VNA.

[SLD-484] Added 5 band LRL calibration support.

[SLD-2814] Added control to set SmartCal state to load after calibration.

[SLD-3028] Added ability to set a 'Thru' standard length and loss for all paths on MS46524B when identical.

[SLD-3125] Added trace thickness control for clearer printouts.

*** IMPROVEMENTS ***

-> Software

[SLD-2352] Added 'Use S2P for Thru' check box in the Edit Cal Params table.

[SLD-2976] Capability to associate file path for .s1p calibration kit files added to SCPI.

[SLD-2995] Exposed SCPI command to define cal kit label and serial number.

[SLD-3197] Improved firmware update logic in ShockLine application.

*** BUG FIXES ***

-> Software

[SLD-518] Removed port restrictions on LRL and SOLR calibrations on MS46524B 4-port VNA.

[SLD-1964] Fixed E/O, O/E, and O/O remote command issue in 1-path 2-port calibration setups.

[SLD-2274] Fixed loading s1p file data on MS46122B for LRL/LRM database calibration.

[SLD-2288] IFBW scroll wheel, up down arrow adjustment fixed.

[SLD-2776] Corrected T/F Boolean issue with Set CW Mode IVI command.

[SLD-2839] ANVNA_GetTimeDomainGateProperties error corrected in IVI-C.

[SLD-2841] IVI-C ANVNA_GetPowerControlDielectric command fixed.

[SLD-2880] Fixed issue with some s1p, s2p cal kit files.

[SLD-2954] Corrected mixed mode memory trace display using loaded s4p file data.

[SLD-3018] Recall of AutoCal/SmartCal port mapping and thru setup with .chx file fixed.

[SLD-3029] File save path is recalled when saving multiple data files to disk.

[SLD-3036] Fixed remote scpi command used to create a 4-port hybrid cal from four 1-port cal.

[SLD-3051] Fixed port mapping on SCPI source level control commands.

[SLD-3052] Active source indicator in software status bar fixed when sources are inactive in multiple source mode.

[SLD-3053] Fixed receiver calibration SCPI commands.

[SLD-3055] Multiple source control scpi command min/max frequencies fixed.
[SLD-3068] Corrected issue with changing the number of points in CW mode.
[SLD-3077] Resolved calibration issue on MS46322B when using high versus low output level.
[SLD-3083] Corrected port orientation display for SmartCal.
[SLD-3085] Fixed calibration issue with port mapped 2-port SmartCal calibration.
[SLD-3089] Improved IVI-C examples for various client/server OS setups.
[SLD-3106] Corrected :CALC1:EOOE:TYPE? response after preset to 'None'.
[SLD-3115] IVI C ChannelSaveState fails to save calibration file directly on C drive.
[SLD-3121] Improved ripple limit functionality in IVI-C.
[SLD-3123] ChannelMeasurementSetMixedModeOneDiffPairResponse IVI-C function now works in MATLAB.
[SLD-3124] Fixed ANVNA.GetAttributeViString IVI-C function in C#.
[SLD-3131] Fixed .s1p calibration recall on MS46122A/B after shutdown.
[SLD-3159] Corrected issues with bandpass time domain in microstrip and waveguide line types on MS4652XB systems.
[SLD-3167] Remote commands for linear power cal added.
[SLD-3168] Added remote commands for storing and recalling linear and flat power calcs.
[SLD-3180] Corrected issue with completing power cal with incorrect port connection.
[SLD-3183] Corrected SmartCal TrueThru reciprocal measurement.
[SLD-3242] Font size now reset by default 0 preset.
[SLD-3295] Corrected issue with reference plane extension interacting between ports.
[SLD-3301] 122As had power calcs reversed for ports 1,2. In other words, Port1 was using cal for port 2 and vice versa. This is now fixed.
[SLD-3580] Address an issue where reference impedance is not preset correctly.
[SLD-3583] Corrected issue where the port selection shown on menu doesn't match that selected when using SmartCal.

What will the customer see in this release?

Products : MS46121A/B, MS46122A/B, MS46322A/B, MS4652xB

Software Version : V2017.6.1

Firmware Version : MS46121A rev1 : V2.1.09

: MS46121A rev2 : V2.2.20

: MS46121B : V2.2.20

: MS46322A/122A : V2.1.88, V2.0.29

: MS46322B/122B : V2.2.80, V2.0.64

: MS4652XB : V3.2.53, V3.2.19
IVI-C Version : V2017.6.1
Release Date : Quarterly Release beginning June 2017

*** NEW FEATURES ***

-> Software

[SLD-2653] Change Version of ShockLine to match new scheme: V2017.6.1 where:

2017 = Year

6 = Month

1 = Incremental build (for a given month, i.e., June)

[SLD-633] For models MS4652XB, MS46322A/B, and MS46122A/B added the HybridCAL functionality. Added SCPI commands and IVI-C commands to support this.

[SLD-2737] Added the ability to click-drag-drop Marker Data Display on the trace. Also added SCPI commands to support this functionality.

*** IMPROVEMENTS ***

-> Software

[SLD-2673] New SCPI commands to define cal kit using s1p files

[SLD-2674] Define cal kits using SCPI commands not working

[SLD-2689] Fixed the defect: Marker color change affects only the number inside and not the surrounding square parameter

[SLD-2690] Fixed the defect: Marker color change works only with rectilinear traces and not with polar traces

[SLD-2748] IVI-C API Add: string ANVNA_GetSoftwareVersion()

[SLD-2763] Simulator selection dialog improved to support all instrument models, all frequency options, and all feature options

*** BUG FIXES ***

-> Software

[SLD-2432] Fixed the defect: Incorrect +3.3D supply value in self test for MS46122B

[SLD-2475] :DISP:RECONF:CLEAR for MS46121A/B units will clear the dialog selection to its defaults regardless of the current configuration

[SLD-2482] Fixed the GUI defect: Port Mapping gets incorrectly set upon switching between 2 Port Smart Cal and 4 Port Smart Cal in AutoCal Setup dialog.
Fixed the defect: Auto-Sense doesn't work correctly for 2 port cal using Smart Cal.

[SLD-2541] 122B/322B: IF Gain Cal has about 0.05 dB inaccuracy for the Gain Ranging ratio data.

[SLD-2552] Fixed an error in the MatLab API for 'ChannelMeasurementSetMixedModeOneDiffPairResponse()'

[SLD-2553] Fixed an error in Get/SetMaxEfficiencyResponse() which could result in incorrect data.

[SLD-2555] Updated parameter types to ANVNA_SetupCalibration() for clarity.

[SLD-2586] Fixed the defect: System stops sweeping on changing the post-processing order to Group Delay before Trace Math

[SLD-2595] After TRIG:SING is sent, if user queries SENS:HOLD:FUNC?, SING is returned. But if SENS1:HOLD:FUNC? (or CH 2 or 3) is sent, HOLD is returned.

[SLD-2627] changing the number of channels messes up sweep data

[SLD-2644] Fixed the defect: SSST default thru length entered as 16.07 mm instead of 0 mm

[SLD-2751] Reduced sweep delay in S11 traces with low point count.

[SLD-2800] Calibration with Autocal improved

[SLD-2810] Calibration will not complete when using MN25208A with Smith Chart graph type

[SLD-2873] Fixed the defect: Marker data display is not right aligned when marker position is set to Upper/Lower right

[SLD-2877] MS4652XB cannot set per point averaging above a calculated value based upon the current IFBW

[SLD-2881] CW SCPI command not working

[SLD-2910] IVI-C: Continuous mode sweeps produce the same values

[SLD-2936] Enhanced data point interpolation over short frequency spans.

[SLD-2949] SENS1:CORR:COLL:HYBR:PORT12:THR results in error

[SLD-2958] Fixed the issue seen switching to a frequency sweep from a segmented sweep mode. Fix available in V2017.6.1

[SLD-2959] Corrected the handling of the RF gain ranging in the host application. Fix available in V2017.6.1

[SLD-2963] Switching off interpolation after changing the cal start and stop frequencies with interpolation on, was causing this issue. Fixed in V2017.6.1

[SLD-2964] Corrected the handling of the RF gain ranging in the host application. Fix available in V2017.6.1

[SLD-2980] Doing a preset on a factory calibrated 522/4B system, would cause the system to not correct for the 25dB gain applied at low power. Fixed in V2017.6.1

[SLD-3059] SCPI commands for index based segmented sweeps is limited to 50 and will not work past 50

[SLD-3064] Index based sweep does not work correctly after 50 segments are added

[SLD-3066] SCPI command :CALC1:EOOE:EO4M:CALF" is missing."

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