Keysight M8070B System Software for M8000 Series of BER Test Solutions

The M8070B system software for the M8000 Series of BER Test Solutions is required to control M8008A, M8009A, M8041A, M8042A, M8043A, M8045A, M8046A, M8051A, M8054A, M8061A, M8062A, M8194A, M8195A, M8196A, M8199A and M8199B.

For controlling M8008A, M8009A, M8042A, M8043A, M8199A and M8199B, an additional Module Driver Package is required to be installed using the 'Manage Instrument Drivers' utility available in the M8070B user interface. For details, refer to the M8000 Series User Guide or Online Help.

Recommendations for Installing M8070B

Verify your account permissions. Ensure that you have full administrator privileges (Run as Administrator/Elevated) before you install or upgrade the M8070B system software on a PC running Windows 10. Not doing so may result in the installation failure. Please contact your system administrator to provide you the administrator rights.

Software licensing

The M8070B essential software is free-of-charge and doesn't require any license. The M8070B supports the basic functionalities of the M8000 Series of BER test solutions. Additional measurement functionalities are available in the following measurement packages:

- Advanced Measurement Package (requires a M8070ADVB license)

- Error Distribution Analysis Package (requires a M8070EDAB license)

KEYSIGHT

For further important information see

- M8000Series InstallationGuide.pdf

- M8020AGettingStartedGuide.pdf

- M8000SeriesPluginsGettingStartedGuide.pdf

- M8000SeriesUserGuide.pdf

- M8000SeriesProgrammingGuide.pdf

- M8020AStartHere.pdf

- M8030AStartHere.pdf

- M8020AandM8030AGettingStartedGuide.pdf

- M8040AStartHere.pdf

- M8040AGettingStartedGuide.pdf

- M8050AStartHere.pdf

- M8050AGettingStartedGuide.pdf

- M8000SeriesTipsForPreventingDamage.pdf

located on this DVD or after installation in the start menu under All Programs ⇨ Keysight M8070B.

Updating "Factory" folder

If you have previously installed the M8070B software on your PC, upgrading to a newer version will not automatically update the predefined settings and pattern in the "Factory" folder. This is to ensure that user created settings containing references to a predefined pattern are not deleted from the "Factory" folder which could cause the settings to become corrupted.

M8070B is detecting that the factory folder being used is not matching the installed software version on the first startup-up after installation. In this is the case, it offers to update the factory folder to match the installed software version. If this automatic update is rejected, the software will keep using the existing outdated factory folder.

To update the factory folder after having rejected the automatic update, follow the following steps.

To ensure that the latest "Factory" folder is created, you must delete the current "Factory" folder before starting the latest version of the M8070B software.

The path to this folder is:

C:\Users\<login_name>\Documents\Keysight\ M8070B\Workspaces\Default\Factory

After deleting the "Factory" folder, starting the latest version of the M8070B software will automatically create a new "Factory" folder containing the latest settings and pattern.

Fixing pattern-synchronization issues

If the analyzer fails to sync on a memory-based pattern make sure, that the first 48bits of the pattern are unique by rotating the pattern in the pattern editor.

Working with an embedded controller

– With an embedded controller (e.g. M9537A) installed, do not connect an external host PC to the AXIe System Module (ASM) or Embedded System Module (ESM) front panel PCIe or USB connector.

– Do not leave empty slots between the embedded controller M9537A and instrument modules. Modules may be inaccessible with some ESM firmware revisions.

– Ensure that the ESM firmware version matches the embedded controller's minimum requirements. Consult the ESM and embedded controller's documentation for further details.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 11.0.60.4

Released Date	15 April 2024
Operating System:	Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.3.29517.2
	AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.46 or 2.1.6 (depending on ESM).
	Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 10, 8 or 16 GB RAM, USB
	External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN
	Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_11.0.60.4.exe
License	

New Features and Enhancements

- Add new SCPI to return Complete measurement data in BER measurement.
- Support for recalling selected modules only from already saved instruments settings.
- Added support for M8047A PCIe re-driver in offline mode.
- Added support for M8047B (v1.0.322.9) PCIe re-driver in offline mode.
- Added support for new DCI scripts for Aardvark, A400 and G800 DUT's.
- Allow user to use M8199A/B and M8046A independently if M8199A/B and M8046A are present in the setup.
- M8195A and USB4

  - Renaming of USB4 clock switch profiles as per specifications.

Fixed Issues

M8K-5710   M8054A: Common mode interference and differential mode interference are not getting generated as expected.

M8K-5701   M8195A: User can not set clock multiplier in user defined or custom mode under modulated clock configuration.

M8K-5700   M8040A: Not able to launch FEC 100G in online mode through GUI.

M8K- 5680   M8041A, M8051A: M8051A channel analyzer are not available in setup view.

M8K-5545   M8040A: High frequency jitter limits are not correct.

M8K-5542:   Data rate should be 13.50Gbps when selecting the Display Port UHBR13.5 clock shape.

M8K-5410   Code names are wrong for USBv4 clock switch profiles.

Known Issues

M8K-5818   Plugin license expiry date in Support Subscription info is incorrect.

M8K-5405   Set to Default button for Loopback through is not working properly in (PCIe6) PHY Protocol in the Sequence Editor.

M8K-3881   Warning messages are displayed in logger window on startup when IEEE Tx EQ or T10 SAS Link Training plugins are installed.

M8K-1954   Real-time oscilloscope as error detector: M8070B is not getting optimized delay value after Auto-Align for higher data rate (> 36 GHz) for RED with N7005A.

                     Workaround: After changing data rate manually set the delay to 0ps, restart the FFE optimization manually and disable "FFE Auto-align optimizes EQ" and run the Auto-Align.

M8K-461   M8195A: Amplitude not linear in dependency of frequency
               Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494   M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
               Workaround: Manually increase amplitude value

560971   After UXR0334A has been powered-up or Infinium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infinium version that is showing this behavior is 10.00.03804 and 10.00.3902.
This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 10.5.230.14

Released Date	12 March 2024
Operating System:	Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.3.29517.2 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.46 or 2.1.6 (depending on ESM). Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 10, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_10.5.230.14.exe
License	

Fixed Issues

M8K-5710   M8054A: Common mode interference and differential mode interference signals are not getting generated as expected.

Known Issues

M8K-5700   M8040A: Not able to launch FEC 100G in online mode through GUI.

                Workaround: Need to launch FEC through command line option e.g. "c:\Program Files\Keysight\M8070B\bin\Keysight.M8070B.exe /set:M8045A-100G-KP4".

M8K-5410   Code names are wrong for USBv4 clock switch profiles.

M8K-5405   Set to Default button for Loopback through is not working properly in (PCIe6) PHY Protocol in the Sequence Editor.

M8K-4544   Resulting Vswing changes with the level of PAM3 symbol 1.

M8K-5351 M8046A will go into stopped state when symbol rate is above 55.3 GBd for PAM3 PRTS patterns.

M8K-3881 Warning messages are displayed in logger window on startup when IEEE Tx EQ or T10 SAS Link Training plugins are installed.

M8K-1954 Real-time oscilloscope as error detector: M8070B is not getting optimized delay value after Auto-Align for higher data rate (> 36 GHz) for RED with N7005A.

Workaround: After changing data rate manually set the delay to 0ps, restart the FFE optimization manually and disable "FFE Auto-align optimizes EQ" and run the Auto-Align.

M8K-507 M8195A/M8196A/M8054A: Channel coupling is not turned on if more than one interference sources are enabled.
Workaround: Enable channel coupling before enabling multiple interference source. Or when channel coupling breaks, change any of the RI or SI amplitude, everything will work fine.

M8K-461 M8195A: Amplitude not linear in dependency of frequency
Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494 M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
Workaround: Manually increase amplitude value

560971 After UXR0334A has been powered-up or Infinium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infinium version that is showing this behavior is 10.00.03804 and 10.00.3902. This error message can be ignored.

561731 No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390 Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 10.5.220.12

Released Date	22 February 2024
Operating System:	Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.3.29517.2 or above
	AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.46 or 2.1.6 (depending on ESM).
	Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 10, 8 or 16 GB RAM, USB
	External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN
	Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_10.5.220.12.exe
License	

New Features and Enhancements

– M8042A

- Added LTSSM support for PCIe Gen6

Fixed Issues

M8K-4668   M8040A: In Trigger Menu, Loopback. Exit state is missing.

M8K-5409   M8040A: Gen6 SKPOS interval is wrong.

M8K-5411   M8040A: EIEOS are not stopped when EIEOS interval count reset is asserted.

M8K-5413   M8040A: BERT is not applying gen6 initial preset requested by DUT in EQ TS2 on previous data rate.

M8K-5428   M8040A: PHY payload is not correct for gen6 CTRL SKP.

M8K-5438   M8040A: EQ Gen6 Phase2 timeout value getting overwritten.

M8K-5439   M8040A: Gen6 (BERT as EP) In phase3, should send TS0 with EC11 till it receives 2 TS1 with EC11.

M8K-5440   M8040A: Gen6 (BERT as RC) In phase2, should send TS0 with EC10 till it receives 2 TS0 with EC10.

M8K-5475   M8040A: Trigger is set to 'Idle' unless you change the parameter from sequence editor.

M8K-5495   M8040A: Some flags generated from different TS events are not getting reset after stop event.

M8K-5505   M8040A: Latency of gen6 SKP OS insertion module is very high.

M8K-5512   M8040A: Excessive latency in state change, due to waiting for acknowledgement coming from ED.

M8K-5547   M8040A: Some order sets in Gen6 were going wrong.

M8K-5561   Modulated Clock Switch: Sequence Break Issue.

M8K-5563   SCPI ":DATA:SEQ:DALL" throws to an exception on the BERT.

M8K-5597   M8042A/LTSSM: Instrument settings file for 'M8009A, M8042A, M8046A' configuration are not present in Factory folder.

Known Issues

M8K-5700   M8040A: Not able to launch FEC 100G in online mode through GUI.

Workaround: Need to launch FEC through command line option e.g. "c:\Program Files\Keysight\M8070B\bin\Keysight.M8070B.exe /set:M8045A-100G-KP4".

M8K-5410   Code names are wrong for USBv4 clock switch profiles.

M8K-5405   Set to Default button for Loopback through is not working properly in (PCIe6) PHY Protocol in the Sequence Editor.

M8K-4544   Resulting Vswing changes with the level of PAM3 symbol 1.

M8K-5351   M8046A will go into stopped state when symbol rate is above 55.3 GBd for PAM3 PRTS patterns.

M8K-3881   Warning messages are displayed in logger window on startup when IEEE Tx EQ or T10 SAS Link Training plugins are installed.

M8K-1954   Real-time oscilloscope as error detector: M8070B is not getting optimized delay value after Auto-Align for higher data rate (> 36 GHz) for RED with N7005A.

Workaround: After changing data rate manually set the delay to 0ps, restart the FFE optimization manually and disable "FFE Auto-align optimizes EQ" and run the Auto-Align.

M8K-507   M8195A/M8196A/M8054A: Channel coupling is not turned on if more than one interference sources are enabled.
Workaround: Enable channel coupling before enabling multiple interference source. Or when channel coupling breaks, change any of the RI or SI amplitude, everything will work fine.

M8K-461   M8195A: Amplitude not linear in dependency of frequency
Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494   M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
Workaround: Manually increase amplitude value

560971   After UXR0334A has been powered-up or Infinium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infinium version that is showing this behavior is 10.00.03804 and 10.00.3902.
This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 10.5.200.8

Released Date	24 January 2024
Operating System:	Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.3.29517.2 or above
	AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.46 or 2.1.6 (depending on ESM).
	Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 10, 8 or 16 GB RAM, USB
	External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN
	Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_10.5.200.8.exe
License	

Fixed Issues

M8K-5530   Module drivers are not getting installed.

Known Issues

M8K-5410   Code names are wrong for USBv4 clock switch profiles.

M8K-5405   Set to Default button for Loopback through is not working properly in (PCIe6) PHY Protocol in the Sequence Editor.

M8K-4544   Resulting Vswing changes with the level of PAM3 symbol 1.

M8K-5351   M8046A will go into stopped state when symbol rate is above 55.3 GBd for PAM3 PRTS patterns.

M8K-3881   Warning messages are displayed in logger window on startup when IEEE Tx EQ or T10 SAS Link Training plugins are installed.

M8K-1954   Real-time oscilloscope as error detector: M8070B is not getting optimized delay value after Auto-Align for higher data rate (> 36 GHz) for RED with N7005A.

Workaround: After changing data rate manually set the delay to 0ps, restart the FFE optimization manually and disable "FFE Auto-align optimizes EQ" and run the Auto-Align.

M8K-507   M8195A/M8196A/M8054A: Channel coupling is not turned on if more than one interference sources are enabled.
Workaround: Enable channel coupling before enabling multiple interference source. Or when channel coupling breaks, change any of the RI or SI amplitude, everything will work fine.

M8K-461   M8195A: Amplitude not linear in dependency of frequency
Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494   M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
Workaround: Manually increase amplitude value

560971   After UXR0334A has been powered-up or Infinium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infinium version that is showing this behavior is 10.00.03804 and 10.00.3902.
This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 10.5.180.6

Released Date	04 December 2023
Operating System:	Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.3.29517.2 or above
	AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.46 or 2.1.6 (depending on ESM).
	Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 10, 8 or 16 GB RAM, USB
	External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN
	Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_10.5.180.6.exe
License	

New Features and Enhancements

- M8046A

  - PAM3 algorithmic patterns support.

- M8045A

  - Improve accuracy of the Tx FFE taps.
  - Enable RJ LPF 500 MHz to be set below 3.75 Gbps.

- M8195A and M8045A

  - USB4v2 Clock Switch Refinements
    - Disable the M8045A SSC, when using the Modulated Reference Clock (USB/DP) clock shapes.
    - Added initial delay parameter for USB4v2.
    - Updated graphical representation of SSC modulation for initial delay.

New Factory Patterns

The new patterns are introduced for Display Port.

- DisplayPort Compliance Eye Pattern (CP2520)
  - Pattern1: SR-CP-CP-SR-248 of 00hs (after data symbol scrambling and 8b/10b coding) where SR = K28.0, CP = K28.1; starts with K28.0-
    - DP_CP2520_Pattern1_BIT.ptrn
  - Pattern 2- : SR-BF-BF-SR-248 00hs (after data symbol scrambling and 8b/10b coding) where SR = K28.0, BF = K28.3; May starts with K28.0-
    - DP_CP2520_Pattern2minus_BIT.ptrn
  - Pattern 2+: SR-BF-BF-SR-248 00hs (after data symbol scrambling and 8b/10b coding) where SR = K28.0, BF = K28.3; May start with K28.0+
    - DP_CP2520_Pattern2plus_BIT.ptrn
- DisplayPort Idle Pattern
  - BS (Blanking Start) link symbol pattern.
    - DP_IDLE_BIT.ptrn
- DisplayPort Link Training Pattern
  - Sequence1: Repetition of D10.2 characters without scrambling
    - DP_TPS1_BIT.ptrn
  - Sequence2: K28.5-, D11.6, K28.5+, D11.6, D10.2, D10.2, D10.2, D10.2, D10.2, D10.2 without scrambling
    - DP_TPS2_BIT.ptrn
  - Sequence3: K28.5-, K28.5+, K28.5-, K28.5+, D10.2-, D10.2-, D10.2-, D10.2-, D10.2-, D10.2-, D10.2-, D10.2-, K28.5-, K28.5+, D30.3-, D30.3+, D30.3-, D30.3+, D30.3-, D30.3+, D30.3-,D30.3+, D30.3-, D30.3+, D30.3-, D30.3+, D30.3-, D30.3+, D30.3-, D30.3+, D30.3-, D30.3+, D30.3-, D30.3+ without scrambling
    - DP_TPS3_BIT.ptrn
  - Sequence4: K28.0-, K28.5-, K28.5+, K28.0-, 248 00hs after data symbol scrambling and 8b/10b coding
    - DP_TPS4_BIT.ptrn
- DisplayPort Link Square Pattern
  - (64 1s, 64 0s): 64 1s followed by 64 0s.
    - SQ128_BIT.ptrn
  - (32 1s, 32 0s): 32 1s followed by 32 0s.
    - SQ64_BIT.ptrn
- DisplayPort UHBR Link Training Sequence 1
  - Nyquist Clock Pattern (1010)
    - UHBR_TPS1_BIT.ptrn

Fixed Issues

M8K-2664   M8046A Manual Equalizer Coefficients are not saved.

M8K-4720   M8045A no sequence is shown in System view when M8195A is included in setup.

M8K-4728   M8045A single SER error insertion in case of PAM3 line coding.

M8K-4846   M8070B cannot be installed using update menu.

M8K-4892   M8040A measurements crash with M9505A/M9506A with new gen PCs.

M8K-5289   Software update UI improvements.

M8K-5368   M8070B "DUT Start Preset Choice Gen6" sequence property is coupled to "DUT Start Preset Choice Gen5".

Known Issues

M8K-5410   Code names are wrong for USBv4 clock switch profiles.

M8K-5405   Set to Default button for Loopback through is not working properly in (PCIe6) PHY Protocol in the Sequence Editor.

M8K-4544   Resulting Vswing changes with the level of PAM3 symbol 1.

M8K-5351   M8046A will go into stopped state when symbol rate is above 55.3 GBd for PAM3 PRTS patterns.

M8K-3881   Warning messages are displayed in logger window on startup when IEEE Tx EQ or T10 SAS Link Training plugins are installed.

M8K-1954   Real-time oscilloscope as error detector: M8070B is not getting optimized delay value after Auto-Align for higher data rate (> 36 GHz) for RED with N7005A.

             Workaround: After changing data rate manually set the delay to 0ps, restart the FFE optimization manually and disable "FFE Auto-align optimizes EQ" and run the Auto-Align.

M8K-507   M8195A/M8196A/M8054A: Channel coupling is not turned on if more than one interference sources are enabled.
Workaround: Enable channel coupling before enabling multiple interference source. Or when channel coupling breaks, change any of the RI or SI amplitude, everything will work fine.

M8K-461   M8195A: Amplitude not linear in dependency of frequency
Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494   M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
Workaround: Manually increase amplitude value

560971   After UXR0334A has been powered-up or Infinium got re-started, the oscilloscope
is reporting an "Data out of range" error on the first startup of M8070B.
The Infinium version that is showing this behavior is 10.00.03804 and 10.00.3902.
This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard
and Channel FPGA failed to lock. Component: Data channels cannot be initialized
and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the
internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not
starting reliably. In this case the output of a M8045A remains static 0 and a
M8046A is comparing the received data against a static 0 pattern, even though the
status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 10.0.160.6

Released Date	01 September 2023
Operating System:	Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above
	AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42
	Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 10, 8 or 16 GB RAM, USB
	External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN
	Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_10.0.160.6.exe
License	

New Features and Enhancements

– M8041A and M8045A

- Capability to adjust Duty Cycle Distortion on Trigger-Out.

Fixed Issues

M8K-4410   SCPI error on Synchronization when using DUT Control Interface.

M8K-4666   M8070B reporting incorrect HiSLIP number.

M8K-4702   Inverse Precoding in M8070B GUI does not get updated when setting it remotely.

M8K-4721   Enabling PHY protocol mode for PCIe4 does not work with M8042A in the instrument.

M8K-4875   Setting up the PJ1 for one channel, the % of LF jitter applied on other channel changes.

Known Issues

M8K-4846   M8070B cannot be installed using update menu.

                   Workaround: User must manually install newer version of M8070B.

M8K-4544   Resulting Vswing changes with the level of PAM3 symbol 1.

M8K-3881   Warning messages are displayed in logger window on startup when IEEE Tx EQ or T10 SAS Link Training plugins are installed.

M8K-1954   Real-time oscilloscope as error detector: M8070B is not getting optimized delay value after Auto-Align for higher data rate (> 36 GHz) for RED with N7005A.

                   Workaround: After changing data rate manually set the delay to 0ps, restart the FFE optimization manually and disable "FFE Auto-align optimizes EQ" and run the Auto-Align.

M8K-507   M8195A/M8196A/M8054A: Channel coupling is not turned on if more than one interference sources are enabled.
                   Workaround: Enable channel coupling before enabling multiple interference source. Or when channel coupling breaks, change any of the RI or SI amplitude, everything will work fine.

M8K-461   M8195A: Amplitude not linear in dependency of frequency
                   Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494   M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
                   Workaround: Manually increase amplitude value

560971   After UXR0334A has been powered-up or Infinium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
                   The Infinium version that is showing this behavior is 10.00.03804 and 10.00.3902. This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
                   M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
                   Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a

M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.

This failure occurs independently on M8045A and M8046A.

Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 10.0.110.4

Released Date	19 July 2023
Operating System:	Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above
	AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42
	Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 10, 8 or 16 GB RAM, USB
	External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN
	Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_10.0.110.4.exe
License	

Fixed Issues

M8K-4730   Signal disturbance in long test run.

M8K-4847   AWG modulation segment and SW indicator are out of sync.

M8K-4543   Modulated ref clk: sinusoidal modulation on top of SSC modulation.

Known Issues

M8K-4666   M8070B reporting incorrect hislip number.

M8K-4846   M8070B cannot be installed using update menu.

     Workaround: User must manually install newer version of M8070B.

M8K-4544   Resulting Vswing changes with the level of PAM3 symbol 1.

M8K-3881   Warning messages are displayed in logger window on startup when IEEE Tx EQ or T10 SAS Link Training plugins are installed.

M8K-1954   Real-time oscilloscope as error detector: M8070B is not getting optimized delay value after Auto-Align for higher data rate (> 36 GHz) for RED with N7005A.

Workaround: After changing data rate manually set the delay to 0ps, restart the FFE optimization manually and disable "FFE Auto-align optimizes EQ" and run the Auto-Align.

M8K-507   M8195A/M8196A/M8054A: Channel coupling is not turned on if more than one interference sources are enabled.
Workaround: Enable channel coupling before enabling multiple interference source. Or when channel coupling breaks, change any of the RI or SI amplitude, everything will work fine.

M8K-461   M8195A: Amplitude not linear in dependency of frequency
Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494   M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
Workaround: Manually increase amplitude value

560971   After UXR0334A has been powered-up or Infinium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infinium version that is showing this behavior is 10.00.03804 and 10.00.3902. This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 10.0.70.2

Released Date	16 June 2023
Operating System:	Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above
	AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42
	Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 10, 8 or 16 GB RAM, USB
	External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN
	Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_10.0.70.2.exe
License	

New Features and Enhancements

- – M8045A

  - PAM level adjustment in 0.1% steps.

- - M8046A
  - Added support for PAM3 line coding.

  - Added support to allow shorter error-accumulation-interval of 20 ms.

- - M8042A
  - PAM level adjustment in 0.1% steps.

Fixed Issues

M8K-4289   Equalization auto set does not work when starting from Pre-set (with cable compensation).

Known Issues

M8K-4666   M8070B reporting incorrect hislip number.

M8K-4544   Resulting Vswing changes with the level of PAM3 symbol 1.

M8K-4543   Modulated ref clk: sinusoidal modulation on top of SSC modulation.

M8K-3881   Warning messages are displayed in logger window on startup when IEEE Tx EQ or T10 SAS Link Training plugins are installed.

M8K-1954   Real-time oscilloscope as error detector: M8070B is not getting optimized delay value after Auto-Align for higher data rate (> 36 GHz) for RED with N7005A.

                  Workaround: After changing data rate manually set the delay to 0ps, restart the FFE optimization manually and disable "FFE Auto-align optimizes EQ" and run the Auto-Align.

M8K-507   M8195A/M8196A/M8054A: Channel coupling is not turned on if more than one interference sources are enabled.
Workaround: Enable channel coupling before enabling multiple interference source. Or when channel coupling breaks, change any of the RI or SI amplitude, everything will work fine.

M8K-461   M8195A: Amplitude not linear in dependency of frequency
Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494   M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
Workaround: Manually increase amplitude value

560971   After UXR0334A has been powered-up or Infinium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infinium version that is showing this behavior is 10.00.03804 and 10.00.3902.
This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.

This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 9.5.560.12

Released Date	17 April 2023
Operating System:	Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above
	AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42
	Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 10, 8 or 16 GB RAM, USB
	External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN
	Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_9.5.560.12.exe
License	

New Features and Enhancements

- Updated Keysight License Manager and Keysight License Service to version 5.5.1.

Fixed Issues

M8K-4500   Updated factory settings files for deemphasis.

M8K-4405   M8070B crashing on multi days run of FEC analysis.

Known Issues

M8K-3881   Warning messages are displayed in logger window on startup when IEEE Tx EQ or T10 SAS Link Training plugins are installed.

M8K-1954   Real-time oscilloscope as error detector: M8070B is not getting optimized delay value after Auto-Align for higher data rate (> 36 GHz) for RED with N7005A.

Workaround: After changing data rate manually set the delay to 0ps, restart the FFE optimization manually and disable "FFE Auto-align optimizes EQ" and run the Auto-Align.

M8K-507   M8195A/M8196A/M8054A: Channel coupling is not turned on if more than one interference sources are enabled.
Workaround: Enable channel coupling before enabling multiple interference source. Or when channel coupling breaks, change any of the RI or SI amplitude, everything will work fine.

M8K-461   M8195A: Amplitude not linear in dependency of frequency
Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494   M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
Workaround: Manually increase amplitude value

560971   After UXR0334A has been powered-up or Infinium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infinium version that is showing this behavior is 10.00.03804 and 10.00.3902.
This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 9.5.510.10

Released Date	14 February 2023
Operating System:	Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above
	AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42
	Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 10, 8 or 16 GB RAM, USB
	External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN
	Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_9.5.510.10.exe
License	

New Features and Enhancements

- Added New factory S-parameter profile files for ISI trace board, Cables and Couplers.

Fixed Issues

M8K-3660   M8045A: DataOut dynamic limits changed as per datasheet.

M8K-3811   M8045A: Incorrect PRTS19 pattern getting generated.

M8K-4167   M8195A: Re-ordering of Modulated clock parameters.

M8K-4224   M8195A: Modulated Clock SSC deviation limits changes for USB4v2 Rx Test.

M8K-4392   M8045A: Add support for M8045A-0G8 licensing option for PON.

Known Issues

M8K-3881   Warning messages are displayed in logger window on startup when IEEE Tx EQ or T10 SAS Link Training plugins are installed.

M8K-1954   Real-time oscilloscope as error detector: M8070B is not getting optimized delay value after Auto-Align for higher data rate (> 36 GHz) for RED with N7005A.

Workaround: After changing data rate manually set the delay to 0ps, restart the FFE optimization manually and disable "FFE Auto-align optimizes EQ" and run the Auto-Align.

M8K-507   M8195A/M8196A/M8054A: Channel coupling is not turned on if more than one interference sources are enabled.
Workaround: Enable channel coupling before enabling multiple interference source. Or when channel coupling breaks, change any of the RI or SI amplitude, everything will work fine.

M8K-461   M8195A: Amplitude not linear in dependency of frequency
Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494   M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
Workaround: Manually increase amplitude value

560971   After UXR0334A has been powered-up or Infinium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infinium version that is showing this behavior is 10.00.03804 and 10.00.3902.
This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 9.5.350.6

Released Date	16 December 2022
Operating System:	Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above
	AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42
	Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 10, 8 or 16 GB RAM, USB
	External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN
	Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_9.5.350.6.exe
License	

New Features and Enhancements

- – M8042A

  - Added support for ISIB plugin.

- - Added New factory S-parameter profile files for ISI trace board and Cables.

Fixed Issues

M8K-4188   De-emphasis main cursor value is not updated properly for Factory/USB4 and Factory/USB4_80G.

M8K-3987   M8040A LTSSM gets stuck when there is a clock loss an unused error detector.

M8K-3867   Adjustable ISI: :SOURce:INTerference:ISYMbol:EXTernal SCPI query return incomplete string for Custom ISI board option.

Known Issues

M8K-3881   Warning messages are displayed in logger window on startup when IEEE Tx EQ or T10 SAS Link Training plugins are installed.

M8K-1954   Real-time oscilloscope as error detector: M8070B is not getting optimized delay value after Auto-Align for higher data rate (> 36 GHz) for RED with N7005A.

Workaround: After changing data rate manually set the delay to 0ps, restart the FFE optimization manually and disable "FFE Auto-align optimizes EQ" and run the Auto-Align.

M8K-507   M8195A/M8196A/M8054A: Channel coupling is not turned on if more than one interference sources are enabled.
Workaround: Enable channel coupling before enabling multiple interference source. Or when channel coupling breaks, change any of the RI or SI amplitude, everything will work fine.

M8K-461   M8195A: Amplitude not linear in dependency of frequency
Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494   M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
Workaround: Manually increase amplitude value

560971   After UXR0334A has been powered-up or Infinium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infinium version that is showing this behavior is 10.00.03804 and 10.00.3902. This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 9.5.250.2

Released Date	18 November 2022
Operating System:	Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above
	AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42
	Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 10, 8 or 16 GB RAM, USB
	External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN
	Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_9.5.250.2.exe
License	

New Features and Enhancements

- M8195A

  - Modulated clock – Add support for USB4, Display Port Clock switch user profiles.

- M8045A

  - Added support for 2X400GE FEC

  - Added support for adjustable ISI

  - Improved TX FFE table handling

- M8042A, Real Time Scope as Error Detector

  - Added support for PAM6/PAM8

- M8020A, M8040A

  - Added support for Squelch

  - Added support for 5-bit 2-symbol custom mapping in pattern editor

New Factory Patterns

The new patterns are introduced for PAM6/8 Line coding support.

- PAM6
  - Pseudo Random Symbol Distribution: PRBS-like pattern with pseudo random symbol sequence, n symbols. To be used with respective line coding.
    - PseudoRandomSymbolDistribution_1024_Symbols_PAM6
    - PseudoRandomSymbolDistribution_4096_Symbols_PAM6
    - PseudoRandomSymbolDistribution_8192_Symbols_PAM6
    - PseudoRandomSymbolDistribution_32768_Symbols_PAM6
    - PseudoRandomSymbolDistribution_65536_Symbols_PAM6

  - STAIRS: 32 symbols per step, 32 * 6 symbols total for PAM6. To be used with respective line coding.
    - STAIRS_32SymbolsPerStep_192Symbols_PAM6

- PAM8
  - Pseudo Random Symbol Distribution: PRBS-like pattern with pseudo random symbol sequence, n symbols. To be used with respective line coding.
    - PseudoRandomSymbolDistribution_1024_Symbols_PAM8
    - PseudoRandomSymbolDistribution_4096_Symbols_PAM8
    - PseudoRandomSymbolDistribution_8192_Symbols_PAM8
    - PseudoRandomSymbolDistribution_32768_Symbols_PAM8
    - PseudoRandomSymbolDistribution_65536_Symbols_PAM8

  - STAIRS: 32 symbols per step, 32 * 8 symbols total for PAM8. To be used with respective line coding.
    - STAIRS_32SymbolsPerStep_256Symbols_PAM8

Fixed Issues

M8K-2130   M8020A/M8040A: PCIe Gen 5 LTSSM not passing beyond 2.5G for a loopback through L0-Recovery (full mode) for certain DUT's.

M8K-2146   M8020A: PCIe Gen 4 LTSSM DUT's sometimes required reboot to train.

M8K-3190   M8070B LTSSM not going into loopback through L0-Recovery path at 16G with M8020A

M8K-3290   User-friendly dialog for setting Modulated clock switch parameter settings.

M8K-3556   M8020A: 20 Gb/s PRBS-7 pattern is twice the expected length.

M8K-3564   M8040A Not able to recall instrument state with FlexDCA.

M8K-3728   In Real time scope as error detector when switching to PAM4 mode, triggers error message /auto correction dialog.

Known Issues

M8K-3881   Warning messages are displayed in logger window on startup when IEEE Tx EQ or T10 SAS Link Training plugins are installed.

M8K-1954   Real-time oscilloscope as error detector: M8070B is not getting optimized delay value after Auto-Align for higher data rate (> 36 GHz) for RED with N7005A.

                  Workaround: After changing data rate manually set the delay to 0ps, restart the FFE optimization manually and disable "FFE Auto-align optimizes EQ" and run the Auto-Align.

M8K-507   M8195A/M8196A/M8054A: Channel coupling is not turned on if more than one interference sources are enabled.
Workaround: Enable channel coupling before enabling multiple interference source. Or when channel coupling breaks, change any of the RI or SI amplitude, everything will work fine.

M8K-461   M8195A: Amplitude not linear in dependency of frequency
Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494   M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
Workaround: Manually increase amplitude value

560971   After UXR0334A has been powered-up or Infinium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infinium version that is showing this behavior is 10.00.03804 and 10.00.3902. This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.

This failure occurs independently on M8045A and M8046A.

Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 9.1.50.2

Released Date:	29 July 2022
Operating System:	Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above
	AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42
	Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 10, 8 or 16 GB RAM, USB
	External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN
	Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_9.1.50.2.exe
License	

New Features and Enhancements

– M8042A

- Added support for M8042A (version - 1.5) pattern generator module.

– M8009A

- Added support for M8009A (Version - 1.5) clock module.

– M8199A

- Added support for M8199A native PAM4 and NRZ patterns.

– M8195A

- Modulated clock - Support to provide modulated clock segment information in module view.

Fixed Issues

M8K-2237   M8199A: Module driver update creates an incorrect installation folder and causes an error message in M8070B.

M8K-2905   M8195A: Modulated clock - extend the accepted range of parameters.

M8K-3190   M8020A: LTSSM not going into loopback through L0-Recovery path at 16G.

M8K-3406   M8045A, M8046A: Boot up issue using new ESM.

Known Issues

M8K-2130   M8020A/M8040A: PCIe Gen 5 LTSSM not passing beyond 2.5G for a loopback through L0-Recovery (full mode) for certain DUT's.

M8K-2146   M8020A: PCIe Gen 4 LTSSM DUT's sometimes required reboot to train.

M8K-2800   User can't select the pattern using "All Location" when setup contains a M8042A and M8046A.

Workaround: User must apply pattern on individual locations from "Select Location" tab on pattern select dialog.

M8K-1954   Real-time oscilloscope as error detector: M8070B is not getting optimized delay value after Auto-Align for higher data rate (> 36 GHz) for RED with N7005A.

Workaround: After changing data rate manually set the delay to 0ps, restart the FFE optimization manually and disable "FFE Auto-align optimizes EQ" and run the Auto-Align.

M8K-507   M8195A/M8196A/M8054A: Channel coupling is not turned on if more than one interference sources are enabled.
Workaround: Enable channel coupling before enabling multiple interference source. Or when channel coupling breaks, change any of the RI or SI amplitude, everything will work fine.

M8K-461   M8195A: Amplitude not linear in dependency of frequency
Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494   M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
Workaround: Manually increase amplitude value

560971   After UXR0334A has been powered-up or Infiniium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.

The Infiniium version that is showing this behavior is 10.00.03804 and 10.00.3902. This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 9.0.350.2

Released Date:	24 May 2022
Operating System:	Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above
	AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42
	Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 10, 8 or 16 GB RAM, USB
	External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN
	Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_9.0.350.2.exe
License	

New Features and Enhancements

- – M8042A

  - • Added support for M8042A pattern generator module.

- – M8009A

  - • Added support for M8009A clock module.

- – M8046A

  - • Added Precoder support for PCIe5.

  - • Added support for PCIe6 LTSSM.

- – M8009A, M8042, M8199A

  - • Renamed the "Driver Package Manager" utility to "Manage Instrument Drivers".

- M8045A

  - Provide an option to select static zero pattern on sequence download.

  - Display 3 decimal digits on de-emphasis registers.

- Support of Windows 7.0, 8.0 and 8.1 is discontinued from this release onwards.

New Factory Patterns

- PAM3
  - TS2_CLKSW_bit
    Pattern transmitted during the link training clock switch event.

- PCIe5
  - PCIe5_modified_compliance_lane_0_CC_BIT_32G_precoding_off_V2
    PCIe 32 GT/s Modified Compliance pattern without precoding for lane 0 for common reference clock, version for pattern generator; precoding deactivated.

  - PCIe5_modified_compliance_lane_0_CC_BIT_32G_precoding_on_V2
    PCIe 32 GT/s Modified Compliance pattern without precoding for lane 0 for common reference clock, version for pattern generator; precoding activated.

  - PCIe5_modified_compliance_lane_0_IR_BIT_32G_precoding_off_V2
    PCIe 32 GT/s Modified Compliance pattern without precoding for lane 0 for independent reference clock, version for pattern Generator, precoding deactivated.

  - PCIe5_modified_compliance_lane_0_IR_BIT_32G_precoding_on_V2
    PCIe 32 GT/s Modified Compliance pattern without precoding for lane 0 for independent reference clock, version for pattern Generator, precoding activated.

  - PCIe5_modified_compliance_lane_0_SKPOS_filtering_M8046A_BIT_32G_V2
    PCIe 32 GT/s Modified Compliance pattern without precoding for lane 0 for common reference as well as an independent reference clock, version for error detector operating with SKP OS filtering, for PG v2 patterns.

Fixed Issues

M8K-3122 M8040A: Issue in selecting De-emphasis preset file.

M8K-2888 M8195A: Modulated clock - USB4 parameters not aligned with the spec.

M8K-2856   M8195A: Differential mode FFT spectrum increases on Enabling Sinusoidal Interference

M8K-2789   M8045A, M8195A: Getting errors on measure the frequency at REF CLK IN after recalling the states.

M8K-2700   M8062A: SW crash when using M8062A with a M8041A without second (analyzer) channel licensed.

Known Issues

M8K-2130   M8020A/M8040A: PCIe Gen 5 LTSSM not passing beyond 2.5G for a loopback through L0-Recovery (full mode) for certain DUT's.

M8K-2146   M8020A: PCIe Gen 4 LTSSM DUT's sometimes required reboot to train.

M8K-2800   User can't select the pattern using "All Location" when setup contains a M8042A and M8046A.

Workaround: User must apply pattern on individual locations from "Select Location" tab on pattern select dialog.

M8K-1954   Real-time oscilloscope as error detector: M8070B is not getting optimized delay value after Auto-Align for higher data rate (> 36 GHz) for RED with N7005A.

Workaround: After changing data rate manually set the delay to 0ps, restart the FFE optimization manually and disable "FFE Auto-align optimizes EQ" and run the Auto-Align.

M8K-507   M8195A/M8196A/M8054A: Channel coupling is not turned on if more than one interference sources are enabled.
Workaround: Enable channel coupling before enabling multiple interference source. Or when channel coupling breaks, change any of the RI or SI amplitude, everything will work fine.

M8K-461   M8195A: Amplitude not linear in dependency of frequency
Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494   M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
Workaround: Manually increase amplitude value

560971   After UXR0334A has been powered-up or Infiniium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infiniium version that is showing this behavior is 10.00.03804 and 10.00.3902.
This error message can be ignored.

561731 No modules found on startup when using M8045A or M8046A modules.
     M8070B will report the error message "High Speed Transceiver between Mainboard
     and Channel FPGA failed to lock. Component: Data channels cannot be initialized and
     will not function correctly."
     Workaround: Close M8070B. And after giving the modules some time to decay the
     internal power supply voltages, restart M8070B again.

562390 Under rare circumstances, the pattern sequencer of M8045A and M8046A is not
     starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is
     comparing the received data against a static 0 pattern, even though the status
     indicator is reporting the correct pattern.
     This failure occurs independently on M8045A and M8046A.
     Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 8.5.500.16

Released Date:	25 March 2022
Operating System:	**Microsoft Windows 7 (64 bit) SP1,** **Microsoft Windows 8 (64 bit)** **Microsoft Windows 8.1 (64 bit)** **Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer**
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 10, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_8.5.500.16.exe
License	

New Features and Enhancements

- – M8199A/M8008A

  - • Support for System View/Setup View.

Known Limitations

- – This version of M8070B is not qualified with M8041A, M8051A, M8045A, M8046A, M8061A, M8062A, 8054A, M8194A, M8195A, M8196A module.
- – This version of M8070B is only supporting M8199A version 1.4 or higher and M8008A version 1.1 or higher.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 8.5.380.14

Released Date:	06 December 2021
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 10, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_8.5.380.14.exe
License	

Fixed Issues

M8K-2346 M8054A: DMSI value not set correctly after setting recall.

M8K-2146 M8045A: Generating wrong signal while using SyncAndLoop block in sequencing.

Known Issues

M8K-1954 Real-time oscilloscope as error detector: M8070B is not getting optimized delay value after Auto-Align for higher data rate (> 36 GHz) for RED with N7005A.

Workaround: After changing data rate manually set the delay to 0ps, restart the FFE optimization manually and disable "FFE Auto-align optimizes EQ" and run the Auto-Align.

M8K-507   M8195A/M8196A/M8054A: Channel coupling is not turned on if more than one interference sources are enabled.
Workaround: Enable channel coupling before enabling multiple interference source. Or when channel coupling breaks, change any of the RI or SI amplitude, everything will work fine.

M8K-461   M8195A: Amplitude not linear in dependency of frequency
Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494   M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
Workaround: Manually increase amplitude value

560971   After UXR0334A has been powered-up or Infiniium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infiniium version that is showing this behavior is 10.00.03804 and 10.00.3902.
This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 8.5.350.12

Released Date:	23 November 2021
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 10, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_8.5.350.12.exe
License	

Fixed Issues

M8K-2130 M8020A/M8040A: PCIe Gen 5 LTSSM not passing beyond 2.5G for a loopback through L0-Recovery (full mode) for certain DUT's.

M8K-2146 M8020A: PCIe Gen 4 LTSSM DUT's sometimes required reboot to train.

M8K-2305 M8045A: Fixed issue in setting Line coding on single channel with independent sequence.

M8K-2342 M8041A/62A + M8195A: Fixed setting problem that was generating error messages while deleting the analyzer sequence.

M8K-2294 M8194A/M8195A/M8196A: Amplitude correction Factor is not visible after enabling channel coupling.

Known Issues

M8K-1954   Real-time oscilloscope as error detector: M8070B is not getting optimized delay value after Auto-Align for higher data rate (> 36 GHz) for RED with N7005A.

Workaround: After changing data rate manually set the delay to 0ps, restart the FFE optimization manually and disable "FFE Auto-align optimizes EQ" and run the Auto-Align.

M8K-507   M8195A/M8196A/M8054A: Channel coupling is not turned on if more than one interference sources are enabled.
Workaround: Enable channel coupling before enabling multiple interference source. Or when channel coupling breaks, change any of the RI or SI amplitude, everything will work fine.

M8K-461   M8195A: Amplitude not linear in dependency of frequency
Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494   M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
Workaround: Manually increase amplitude value

560971   After UXR0334A has been powered-up or Infiniium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infiniium version that is showing this behavior is 10.00.03804 and 10.00.3902.
This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 8.5.250.6

Released Date:	2 November 2021
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 10, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_8.5.250.6.exe
License	

New Features and Enhancements

- M8195A
  - AWG Clock switch: **Enable AWGs to generate modulated 100 MHz ref clock from M8070B so that it can provide reference clock to the BERT.**

- M8040A
  - SKPOS handling for PCIe6 specification version 0.71.
  - Added new DisplayPort factory memory patterns.
  - Added new PAM3 factory memory patterns.
  - Added support for PAM3 scrambler and pre-coder configurable per sequence data block.

- M8046A
  - SCPI commands to get histogram data of M8046A ED sampling point setup.

- Added new start up command line option to launch M8070B without splash screen and/or in minimized mode.
- Deprecated the auto check-out of floating licenses: Now auto check-out of floating license is deprecated instead user must use borrow license feature of KLM6.

Fixed Issues

M8K-2004 M8046A: Amplitude does not change after switching from comparison mode single ended to differential.

Known Issues

M8K-2294 M8194A/M8195A/M8196A: Amplitude correction Factor is not visible after enabling channel coupling.

M8K-1954 Real-time oscilloscope as error detector: M8070B is not getting optimized delay value after Auto-Align for higher data rate (> 36 GHz) for RED with N7005A.

Workaround: After changing data rate manually set the delay to 0ps, restart the FFE optimization manually and disable "FFE Auto-align optimizes EQ" and run the Auto-Align.

M8K-507 M8195A/M8196A/M8054A: Channel coupling is not turned on if more than one interference sources are enabled.
Workaround: Enable channel coupling before enabling multiple interference source. Or when channel coupling breaks, change any of the RI or SI amplitude, everything will work fine.

M8K-461 M8195A: Amplitude not linear in dependency of frequency
Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494 M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
Workaround: Manually increase amplitude value

560971 After UXR0334A has been powered-up or Infiniium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infiniium version that is showing this behavior is 10.00.03804 and 10.00.3902.
This error message can be ignored.

561731 No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 8.0.390.34

Released Date:	23 July 2021
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 10, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_8.0.390.34.exe
License	

Fixed Issues

M8K-2049 M8045A: Issue in recalling old setting file.

Known Issues

M8K-1954   Real-time oscilloscope as error detector: M8070B is not getting optimized delay value after Auto-Align for higher data rate (> 36 GHz) for RED with N7005A.

Workaround: After changing data rate manually set the delay to 0ps, restart the FFE optimization manually and disable "FFE Auto-align optimizes EQ" and run the Auto-Align.

M8K-507   M8195A/M8196A/M8054A: Channel coupling is not turned on if more than one interference sources are enabled.
Workaround: Enable channel coupling before enabling multiple interference source.

Or when channel coupling breaks, change any of the RI or SI amplitude, everything will work fine.

M8K-461   M8195A: Amplitude not linear in dependency of frequency
Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494   M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
Workaround: Manually increase amplitude value

M8K-498   M8054A: Slight deviation between observed Crest Factor and the configured value.
Workaround: Measure crest factor using a scope and adjust accordingly.

M8K-200   M8045A does not accept N599xA sequence for CCIX testing. This will be fixed in the next N599xA release.

560971   After UXR0334A has been powered-up or Infiniium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infiniium version that is showing this behavior is 10.00.03804 and 10.00.3902.
This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 8.0.280.26

Released Date:	21 June 2021
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 10, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_8.0.280.26.exe
License	

Fixed Issues

M8K-1879 M8020A/M8040A: PCIe LTSSM - Reset EIEOS Interval Count. User not able to train at any speed.

M8K-1897 M8020A/M8040A: PCIe LTSSM - Link up not happening for Gen3/4 via Configuration.

M8K-1937 M8040A: USB LTSSM - DUT is out of loopback when certain voltage levels are changed.

M8K-1962 M8040A: Unable to set last (p47) De-emphasis Preset Register value.

Known Issues

M8K-1954   Real-time oscilloscope as error detector: M8070B is not getting optimized delay value after Auto-Align for higher data rate (> 36 GHz) for RED with N7005A.

Workaround: After changing data rate manually set the delay to 0ps, restart the FFE optimization manually and disable "FFE Auto-align optimizes EQ" and run the Auto-Align.

M8K-507   M8195A/M8196A/M8054A: Channel coupling is not turned on if more than one interference sources are enabled.
Workaround: Enable channel coupling before enabling multiple interference source. Or when channel coupling breaks, change any of the RI or SI amplitude, everything will work fine.

M8K-461   M8195A: Amplitude not linear in dependency of frequency
Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494   M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
Workaround: Manually increase amplitude value

M8K-498   M8054A: Slight deviation between observed Crest Factor and the configured value.
Workaround: Measure crest factor using a scope and adjust accordingly.

M8K-200   M8045A does not accept N599xA sequence for CCIX testing. This will be fixed in the next N599xA release.

560971   After UXR0334A has been powered-up or Infiniium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infiniium version that is showing this behavior is 10.00.03804 and 10.00.3902.
This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 8.0.200.18

Released Date:	13 May 2021
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 10, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_8.0.200.18.exe
License	

New Features and Enhancements

- M8194A, M8195A, M8196A, M8054A
  - Fast Amplitude Change: New option added for amplitude change without recalculating/downloading the waveform to AWG.
    - This is applicable only when amplifier amplitude is above 80 mV and only one interference source (RI or SI Single Tone) is enabled.

- M8040A
  - PRTS-17/23 Support: Added new algorithmic PRTS patterns (PRTS-17 and PRTS-23) support for PAM3 line coding.
  - Ref clock multiplier support with SSC transfer from 100MHz ref clock to 32Gbaud.
  - SKPOS handling for PCIe6.
  - Adding speed bypass mode for PCIe LTSSM Gen5.
  - Added 48 Tx FFE preset registers.
  - PAM3/4 Error insertion improvements.

- M8020A/M8040A
  - State timeouts configurability added in PCIe LTSSM.
- Software update
  - To get the list of new release of M8070B, download and install any new version of M8070B, plugins and module drivers.

Fixed Issues

M8K-1092 M8020A/M8040A: PCIe LTSSM - MSI mainboard with AMD CPU doesn't train with M8020A and trains unreliably with M8040A.

M8K-1247 M8041A: Status indicators are not getting updated on changing the pattern via all locations for M8041A single channel module.

M8K-1407 M8020A scrambler for PCIe only works on channel 1.

M8K-1757 M8040A: GUI shows incorrect (swapped) termination values.

M8K-1786 M8020A: Unable to get triggers from several of the states (L0 and Recovery Speed triggers) that are available.

M8K-1800 M8041A: M8070B gets crash on loading "PCIe4_SRIS_LTSSM" factory instrument settings.

M8K-1841 M8196A: M8196A module is not allowed to operate above 60 Gbit/baud.

M8K-1856 M8040A: Start Preset Gen4/5 GUI parameter of PCIe LTSSM is not enabled under "User defined" mode of Start Preset Choice.

Known Issues

M8K-1954 Real-time oscilloscope as error detector: M8070B is not getting optimized delay value after Auto-Align for higher data rate (> 36 GHz) for RED with N7005A.

Workaround: After changing data rate manually set the delay to 0ps, restart the FFE optimization manually and disable "FFE Auto-align optimizes EQ" and run the Auto-Align.

M8K-507 M8195A/M8196A/M8054A: Channel coupling is not turned on if more than one interference sources are enabled.
Workaround: Enable channel coupling before enabling multiple interference source. Or when channel coupling breaks, change any of the RI or SI amplitude, everything will work fine.

M8K-461   M8195A: Amplitude not linear in dependency of frequency
           Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494   M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
           Workaround: Manually increase amplitude value

M8K-498   M8054A: Slight deviation between observed Crest Factor and the configured value.
           Workaround: Measure crest factor using a scope and adjust accordingly.

M8K-200   M8045A does not accept N599xA sequence for CCIX testing. This will be fixed in the
           next N599xA release.

560971   After UXR0334A has been powered-up or Infiniium got re-started, the oscilloscope is
           reporting an "Data out of range" error on the first startup of M8070B.
           The Infiniium version that is showing this behavior is 10.00.03804 and 10.00.3902.
           This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
           M8070B will report the error message "High Speed Transceiver between Mainboard
           and Channel FPGA failed to lock. Component: Data channels cannot be initialized and
           will not function correctly."
           Workaround: Close M8070B. And after giving the modules some time to decay the
           internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not
           starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is
           comparing the received data against a static 0 pattern, even though the status
           indicator is reporting the correct pattern.
           This failure occurs independently on M8045A and M8046A.
           Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 7.5.700.8

Released Date:	10 February 2021
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 10, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_7.5.700.8.exe
License	

New Features and Enhancements

- M8040A
  - LTSSM support for USB 3.2 Gen1x2 and Gen2x2.

- M8045A
  - M-Phy Drive into open.
  - Introduce a dedicated Data Center variant of M8070B to generate FEC according to 100G KP4 and 200G KP4.
  - FEC generation is enabled by using the factory patterns
    - IEEE_802_3cd_RS_544_514_Scrambled_Idle
    - IEEE_802_3cd_RS_544_514_Remote_Fault

- M8020A, M8040A
  - PCIe LTSSM enhancements
    - LTSSM - Allowed training of Lanes other than Lane 0.

- LTSSM - "LTSSM EQTS2 Defined" mode introduced for "Add in card" DUT for Gen 4 and Gen 5.
- LTSSM - Provided a start preset overwrite for root complex testing of "System board" DUT for Gen 4 and Gen 5.
- LTSSM - Provided a DUT Target preset support including P10.

- M8046A
  - Added new "Error event mode", how error events are reported to the pattern sequencer, pattern capture and CTRL OUT.
  - Optimization in auto alignment for performance improvement.

- Added a Driver Package Manger
  - The hardware capabilities of M8070B can now be extended with separately installable driver packages to be released soon.

- Added Documentation Wizard
  - To save the following data to a compressed (.zip) folder
    - Screen Capture
    - Instrument State
    - System Information
    - Logs

- User interface updated with new color scheme.

Fixed Issues

M8K-1297 AWG: Problem in recalling Saved Instrument State when multiple interference source states are ON in setting.

M8K-963   Load settings and Auto align times increase with repeated operations.

M8K-518   M8020A: PCIe LTSSM – EIOS, failing scenario of not exiting the loopback.

M8K-1249 M8020A/M8040A: Synchronization problem in SATA protocol when pattern used with mask and squelch on ED.

M8K-1228 M8020A: USB 3.2 LTSSM - link up not happening with re-timer DUT.

M8K-1129 PAM3 number of inserted errors does not match number of detected errors, while using manual error insertion.

M8K-1112 M8045A: High voltage glitches on range switching.

M8K-1093 M8045A/M8057B output sometimes does not generate signal which is programmed in pattern sequencer - squelch sometimes not executed.

M8K-1074 M8020A/M8040A: pattern sequencer not backward compatible - does not accept xmlns=http://www.agilent.com/schemas/M80....

M8K-1061 M8047A is not reported in the *opt? query unlike other modules. Creates a problem for test automation.

M8K-901 M8020A: PCIe LTSSM ignores re-timer extend bit.

M8K-797 PCIe TxEQ Coefficient Triangular Matrix Editor - Conversion into dB is incorrect.

M8K-791 M8045: Sometime TxEQ is corrupt.

M8K-409 M8040: PCIe Gen4 LTSSM is stuck in block 3.

Known Issues

M8K-507 M8195A/M8196A/M8054A: Channel coupling is not turned on if more than one interference sources are enabled.
Workaround: Enable channel coupling before enabling multiple interference source. Or when channel coupling breaks, change any of the RI or SI amplitude, everything will work fine.

M8K-1092 M8020A/M8040A: PCIe LTSSM - MSI mainboard with AMD CPU doesn't train with M8020A and trains unreliably with M8040A.

M8K-461 M8195A: Amplitude not linear in dependency of frequency
Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494 M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
Workaround: Manually increase amplitude value

M8K-498 M8054A: Slight deviation between observed Crest Factor and the configured value.
Workaround: Measure crest factor using a scope and adjust accordingly.

M8K-200 M8045A does not accept N599xA sequence for CCIX testing. This will be fixed in the next N599xA release.

560971 After UXR0334A has been powered-up or Infiniium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infiniium version that is showing this behavior is 10.00.03804 and 10.00.3902.
This error message can be ignored.

561731 No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."

Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 7.2.140.2

Released Date:	01 October 2020
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 10, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_7.2.140.2.exe
License	

New Features and Enhancements

- Maintenance release for internal setting related to deemphasis calibration for IEEE 802.3ck.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 7.2.40.2

Released Date:	09 July 2020
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 10, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_7.2.40.2.exe
License	

New Features and Enhancements

- M8045A
  - Ability to select the de-emphasis main-cursor position.

- M8062A
  - Allow all RJ low pass filter settings at all data rates.
    This may result in operating the high frequency jitter sources outside the specified and calibrated operation range. See M8020A and M8062A data sheet for details.

- M8054A, M8195A, M8196A, M8194A
  - Ability to de-embed the test setup in interference mode

- Support for M8047A Re-driver
- SCPI Recorder now part of M8070B and no longer requires a M8070ADVB license.

Fixed Issues

M8K-398   M8040A: PG stops transmitting any data while running PCIe LTSSM.

M8K-401   M8040A: PCIe-LTSSM sometimes gets stuck in link down block (block 1).

M8K-484   M8020A/M8040A: TX sequencer gets stuck in Link Training Down block while performing link up.

M8K-503   M8020A: LTSSM doesn't detect 16 TS2's and doesn't go to Recovery.Idle state from Recovery.Rcvrcfg state after performing equalization.

M8K-516   M8020A: PCIe-LTSSM - CRB assertion/de-assertion setting in GUI does not affect LTSSM.

M8K-517   M8020A: PCIe-LTSSM training completes, but pattern synchronization on looped pattern fails.

M8K-544   M8020A/M8040A: Unexpected LTSSM state transitions while performing link up with erroneous physical channel.

M8K-565   M8020A: Some DUTs always get timed out in Recovery.Equalization phase1 while trying link up at Gen4 speed.

M8K-599   Effective crest factor of M8054A reduces with increased amplitude.

M8K-600   M8054A spectrum noise flatness requirements are not met.

M8K-604   M8020A/M8040A: DUT TX equalization log doesn't get printed.

M8K-616   M8020A/M8040A: Link up is not working with System board DUTs in equalization bypass mode.

M8K-675   M8020A: LTSSM gets timed out in Recovery.Equalization phase2 at Gen3 speed.

M8K-680   M8040A: When doing Gen4 link up, the PCIe LTSSM spends 37ms in Recovery.Speed state while transitioning from Gen1 to Gen3.

M8K-689   M8020A/M8040A: CDR clock loss soft LED keeps glowing when PCIe LTSSM is in Loopback.Active state.

M8K-693   M8020A/M8040A: Sequence editor offering Gen3 BERT Start Preset instead of Gen4 BERT Start Preset when configuring PCIe Gen4 link up via configuration.

M8K-744   M8040A: PCIe LTSSM log doesn't get printed reliably while performing the link up.

M8K-769   M8040A: PCIe LTSSM freezing when re-arming is initiated while LTSSM is in the Loopback.Active state.

M8K-771   M8040A: PCIe LTSSM getting timed out in Configuration.Idle state.

M8K-829   M8054A is not accepting any parameter changes.

M8K-886   Crash at start-up, if stored user options file is empty.

M8K-1001   M8046A: Under rare circumstances, the pattern sequencer is misbehaving after unexpected clock changes at CLK-IN.

Known Issues

M8K-461   M8195A amplitude not linear in dependency of frequency
           Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494   M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
           Workaround: Manually increase amplitude value

M8K-498   M8054A: Slight deviation between observed Crest Factor and the configured value.
           Workaround: Measure crest factor using a scope and adjust accordingly.

M8K-200   M8045A does not accept N599xA sequence for CCIX testing. This will be fixed in the next N599xA release.

560971   After UXR0334A has been powered-up or Infiniium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
           The Infiniium version that is showing this behavior is 10.00.03804 and 10.00.3902.
           This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
           M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
           Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
           This failure occurs independently on M8045A and M8046A.
           Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 7.0.640.6

Released Date:	30 April 2020
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 10, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_7.0.640.6.exe
License	

Fixed Issues

M8K-802   Interference source SI2 is not turning on when using the SCPI commands as available in V 6.7

Known Issues

M8K-461   M8195A amplitude not linear in dependency of frequency
Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494   M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
Workaround: Manually increase amplitude value

M8K-498   M8054A: Slight deviation between observed Crest Factor and the configured value.
Workaround: Measure crest factor using a scope and adjust accordingly.

M8K-200   M8045A does not accept N599xA sequence for CCIX testing. This will be fixed in the next N599xA release.

560971   After UXR0334A has been powered-up or Infiniium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infiniium version that is showing this behavior is 10.00.03804 and 10.00.3902.
This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 7.0.600.4

Released Date:	09 April 2020
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU3 or M8040A-BU3 for a pre-installed embedded controller M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 10, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_7.0.600.4.exe
License	

New Features and Enhancements

- M8041A, M8051A
    - LTSSM support for USB 3.2 Gen1x2 and Gen2x2.

- M8041A
    - Center-spread SSC generation can be enabled/disabled without disrupting signal generation.

- M8045A
    - New algorithmic pattern PRTS 3^19-1.
    - PAM3 pre-coder.
    - Center-spread SSC generation can be enabled/disabled without disrupting signal generation.

- M8046A
  - Real-time symbol error counting per expected symbol level.
  - Minimum symbol rate lowered to 2.5 GBd.
  - SKP-OS filtering for PCIe 2.5Gb/s.
  - ALIGN filtering for SATA 3G and SAS 3G (8b/10b based).

- M8054A, M8195A, M8196A
  - Combined Random Interference and Sinusoidal Interference use models.
  - RI and SI sources can be used simultaneously on every channel.
  - Generation of common mode and differential mode interference for all interference types.
  - Some default values of interference parameters have been changed to accommodate best possible backwards compatibility to previous versions of M8070B.
    Please check against the requirements of existing remote programs and configure values accordingly if parameters are not set after applying the default setting.

- Support of M8194A as digital data and interference source.

Fixed Issues

M8K-130   Warning and error message reset GUI layout to the default view

M8K-150   M8070B crashes while establishing INST0 connection using Connection Expert on Windows 10

M8K-460   Sinusoidal Interference has skew between coupled channels

M8K-463   Random interference: Crest Factor parameter is not kept constant between coupled channels

M8K-476   M8195A: Error on recalling a setting on a 2-channel M8195A, that was stored using a 4-channel M8195A

M8K-505   M8196A: Missing update of transition time when data rate is changed

M8K-519   Slow setup recalls

M8K-574   M8045A: Branch on CTRL-IN A/B not working on Data-Out2

M8K-588   System View: Data Generation block is greyed out

M8K-594   JTOL measurement time increases

M8K-597   M8070B software unresponsive

M8K-695   M8062A ED gets stuck in high BER state after running JTOL measurement

M8K-751   FIFO underflow errors when using arbitrary SSC profile.

Known Issues

M8K-461   M8195A amplitude not linear in dependency of frequency
           Workaround: Manually adjust amplitude after adjusting the frequency

M8K-494   M8195A/M8196/M8054A: Output amplitude reduces on higher SI frequencies
           Workaround: Manually increase amplitude value

M8K-498   M8054A: Slight deviation between observed Crest Factor and the configured value.
           Workaround: Measure crest factor using a scope and adjust accordingly.

M8K-200   M8045A does not accept N599xA sequence for CCIX testing. This will be fixed in the
           next N599xA release.

560971   After UXR0334A has been powered-up or Infiniium got re-started, the oscilloscope is
           reporting an "Data out of range" error on the first startup of M8070B.
           The Infiniium version that is showing this behavior is 10.00.03804 and 10.00.3902.
           This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
           M8070B will report the error message "High Speed Transceiver between Mainboard
           and Channel FPGA failed to lock. Component: Data channels cannot be initialized and
           will not function correctly."
           Workaround: Close M8070B. And after giving the modules some time to decay the
           internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not
           starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is
           comparing the received data against a static 0 pattern, even though the status
           indicator is reporting the correct pattern.
           This failure occurs independently on M8045A and M8046A.
           Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 6.7.500.6

Released Date:	21 November 2019
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A/M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9536A/M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_6.7.500.6.exe
License	

New Features and Enhancements

- M8045A
    - Introduce a dedicated Data Center variant of M8070B to generate FEC according to 50G KP4 and 400G KP4 (pcs lanes 0 and 1).
    - FEC generation is enabled by using the factory patterns
        - IEEE_802_3cd_RS_544_514_Scrambled_Idle
        - IEEE_802_3cd_RS_544_514_Remote_Fault

Fixed Issues

M8K-410 M8046A reporting 'Acquiring Data' after executing the Equalizer Auto-Set

M8K-417 M8195A and M8196A with 2 channels (option 002) cannot be used, because M8070B tries to control the non-available channels 2 and 3.

M8K-418   M8195A and M8196A with 2 channels (option 002) cannot be used to generate sinusoidal interference. Fixed by M8K-417.

Known Issues

M8K-104 M8041A, M8062A, M8196A: M8070B freezes on manually updating AWG setting

M8K-130 Warning and error message reset GUI layout to the default view

M8K-150 M8070B crashes while establishing INST0 connection using Connection Expert on Windows 10
Workaround: Start 32-bit instrument software (e.g. M8195A SFP or M8196A SFP) after M8070B.

M8K-200 M8045A does not accept N599xA sequence for CCIX testing. This will be fixed in the next N599xA release.

560971   After UXR0334A has been powered-up or Infiniium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infiniium version that is showing this behavior is 10.00.03804 and 10.00.3902.
This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 6.7.330.4

Released Date:	18 October 2019
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A/M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9536A/M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_6.7.330.4.exe
License	

Fixed Issues

M8K-221 When upgrading from V6.0 or V6.5, M8070A user data is re-imported and overwrites user data created with the previous M8070B version.
Workaround: Select No when M8070B asks if it shall proceed to import the M8070A user data, if this has already been done with previous versions of M8070B

M8K-222 M8070B crashes on first time use or with a fresh workspace, when clicking into numeric parameters.

Known Issues

M8K-104 M8041A, M8062A, M8196A: M8070B freezes on manually updating AWG setting

M8K-130 Warning and error message reset GUI layout to the default view

M8K-150 M8070B crashes while establishing INST0 connection using Connection Expert on Windows 10
Workaround: Start 32-bit instrument software (e.g. M8195A SFP or M8196A SFP) after M8070B.

M8K-200 M8045A does not accept N599xA sequence for CCIX testing. This will be fixed in the next N599xA release.

560971 After UXR0334A has been powered-up or Infiniium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infiniium version that is showing this behavior is 10.00.03804 and 10.00.3902.
This error message can be ignored.

561731 No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390 Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 6.7.300.2

Released Date:	14 October 2019
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A/M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9536A/M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_6.7.300.2.exe
License	

New Features and Enhancements

- M8046A
  - SKP OS Filtering for PCI Express ® 5/8/16/32 GT/s and CCIX 20/25 Gb/s
  - SKP OS Filtering for USB 3 Gen 1 and Gen 2
  - ALIGN Filtering for SATA 6G and SAS 6G/12G
  - Support of PAM4 above 30 GBd

- M8045A
  - Automated optimization of de-emphasis setting

- Optimized start-up and setting recall duration for setups containing M8195A, M8196A, M8054A.

New Factory Patterns

The new patterns are introduced for the SKP OS and ALIGN filtering on M8045A/M8046A setups.

- PCIExpress2
  - PCI_Express_8b10B_modified_compliance_pattern_CC_M8045A_BIT
  - PCI_Express_8b10B_modified_compliance_pattern_CC_M8046A_BIT

- SAS
  - SAS_CJTPAT_M8045A_BIT
  - SAS_CJTPAT_M8046A_BIT

- SATA
  - Framed_COMP_20070905_new_LBP_M8045A_BIT
  - Framed_COMP_20070905_new_LBP_M8046A_BIT

- USB_3.0
  - CP0_M8045A_BIT
  - CP0_M8046A_BIT

- USB31_LTSSM
  - CP9_BLOCK_M8045A_BIT
  - CP9_BLOCK_M8046A_BIT

Fixed Issues

M8040A: JTOL Measurement Time increases when executing the measurement multiple times

M8K-76   M8196A and M8054A: Sinusoidal Interference waveforms are not always recalculated in case sample rate changes

M8K-157   AWG Random Interference: Waveforms are not always recalculated in case sample rate changes.

M8K-171   M8196A: Frequency inaccuracy for sinusoidal interference between 14GHz to 18GHz

M8K-172   M8196A: Not generating perfect sinusoidal signal for certain frequencies

M8K-175   M8054A: Getting higher frequency on channel 1, when user sets a certain frequency on channel 1 & max frequency on channel 2, 3, 4

M8K-182   Pattern Editor and Pattern Capture ignore PAM4 symbol mapping

571394   M8040 PCIe LTSSM: Scrambler/Descrambler RAM overflow issue when Logical Idles are exchanged (NO EIEOS is transmitted between LIs)

571395   M8040 PCIe LTSSM: Clock loss indicator glows for few seconds on every link down

572807   M8045A: PAM4 precoder not working correctly at all symbol rates

573368   M8020A USB LTSSM: Interval between SKP OS too large while sending TS1/TS2

573663   M8020A USB/PCIe LTSSM: Branch source cannot be set to LTSSM events in sequence editor

573924   M8020A: PCIe3 LTSSM cannot be used although options 0S4/US4 are installed

Known Issues

M8K-104 M8041A, M8062A, M8196A: M8070B freezes on manually updating AWG setting

M8K-130 Warning and error message reset GUI layout to the default view

M8K-150 M8070B crashes while establishing INST0 connection using Connection Expert on Windows 10
Workaround: Start 32-bit instrument software (e.g. M8195A SFP or M8196A SFP) after M8070B.

M8K-200 M8045A does not accept N599xA sequence for CCIX testing. This will be fixed in the next N599xA release.

560971   After UXR0334A has been powered-up or Infiniium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infiniium version that is showing this behavior is 10.00.03804 and 10.00.3902.
This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 6.5.550.2

Released Date:	18 July 2019
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 18.0.22209.2 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A/M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9536A/M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_6.5.550.2.exe
License	

New Features and Enhancements

- M8041A / M8051A
    - Second LF PJ source

- M8045A
    - Interactive link training for 8/16/32 GT/s PCI Express ® in combination with M8046A
    - Option 0G6: Reference Clock Multiplier
    - Second LF PJ source
    - Support for M8057B
    - PAM3 line coding with adjustable center level

        - Using 2 bits for 1 PAM3 symbol

        - For memory-based patterns

        - Does not support algorithmic PRBS patterns

- M8046A
  - Interactive link training for 8/16/32 GT/s PCI Express **®** in combination with M8045A (requires option M8046A-0S1)

- M8054A Interference Source Module

- M8062A
  - Second LF PJ source

- Real-time oscilloscopes as error detector (requires M8070ADVB license)
  - Support for the following models of the UXR-Series

    - UXR1102A and UXR1104A

    - UXR1002A and UXR1004A

    - UXR0802A and UXR0804A

    - UXR0702A and UXR0704A

    - UXR0702AP and UXR0704AP

    - UXR0592A and UXR0594A

    - UXR0592AP and UXR0594AP

    - UXR0502A and UXR0504A

    - UXR0402A and UXR0404A

  - Support DSAZ334A with hardware upgrade to 63 GHz bandwidth
  - Full parametric control of the Constant Time Linear Equalization (CTLE)

- Common Mode Interference generation for
  - M8195A
  - M8196A
  - M8054A

- Pattern Capture
  Symbol level aware error counting on the captured data
  - Report how often each incorrect symbol level has been received per expected symbol level
  - Report symbol error ratio per symbol level and total

- Deferred waveform calculation and download for AWG modules to reduce setup times
- Save measurement graph with user specified size and color scheme
- Keysight License Managers directly accessible from M8070B
- License dialog allows filtering of installed licenses

New Factory Patterns

- PAM3

- PRBS11-1_PAM3_2-bits-per-symbol_bit
  PRBS 2^11-1 encoded as PAM3 pattern, containing only the symbol levels 0 and 2.
- PRTS7-1_PAM3_2-bits-per-symbol_bit
  PRTS7 sequence without pre-coding for PAM3 testing.
- PRTS7-1_precoded_PAM3_2-bits-per-symbol_bit
  PRTS7 sequence with pre-coding for PAM3 testing.

Fixed Issues

569928   M8070ADVB license does not enable DUT Control Interface

567331   M8046A: Delay alignment does not work reliably if SKPOS filtering is active

571109   M8046A: Output Timing measurement does not work if SKPOS filtering is active

566757   M8046A: After recalling a setting that is using the built-in CDR, the error detector does not start reliably.

571077   All Z-Series and Q-Series scopes except DSAZ634A cause startup errors

569142   Incomplete PCIe Link Training Logs when performing LTSSM with M8070B running on embedded controller

Known Issues

M8070B 6.5.550.2 is incompatible with M8030A setups that contain a M8192A clock distribution module. Please use M8070A 5.1, or M8070B 6.0 for such systems.

571394   M8040 PCIe LTSSM: Scrambler/Descrambler RAM overflow issue when Logical Idles are exchanged (NO EIEOS is transmitted between LIs)

571395   M8040 PCIe LTSSM: Clock loss indicator glows for few seconds on every link down

572807   M8045A: PAM4 precoder not working correctly at all symbol rates

573368   M8020A USB LTSSM: Interval between SKP OS too large while sending TS1/TS2
           Workaround: Contact M8070B support for a fixed version based on M8070A 5.1.100.6

573663   M8020A USB/PCIe LTSSM: Branch source cannot be set to LTSSM events in sequence editor
           Workaround: Switch to sequence editor to XML representation and edit the branch event source in the XML editor.

573924   M8020A: PCIe3 LTSSM cannot be used although options 0S4/US4 are installed
           Workaround: TS1 or 0S1 or US1 on the M8041A

560971   After UXR0334A has been powered-up or Infiniium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infiniium version that is showing this behavior is 10.00.03804 and 10.00.3902.
This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 6.0.210.6

Released Date:	11 April 2019
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.0.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A/M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9536A/M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_6.0.210.6.exe
License	

New Features and Enhancements

- M8046A
  - Auto detect input range
  - Auto set EQ coefficients
  - Manual EQ coefficient control
  - Reduce execution time of auto alignment
  - Histogram in Sample Point View with logarithmic scale for the hit counts

- M8045A
  - Stand-alone tool to optimize de-emphasis setting
    Execute AutoDE.exe under
    C:\Program Files\Keysight\M8070B\Tools\Auto-De-emphasis

Fixed Issues

1541953	Device Clear can cause crash when using multithreaded remote programs
566762	AWG: Using a non-zero delay causes a delay dependent disturbance of the output signal.
566761	M8195A: Small internal memory channels limit large memory channel pattern lengths
565433	M8195A: Unable to recall setting file with two channel AWG
1545799	M8041A/M8051A: Introduce control over squelch threshold setting for USB link training.

Known Issues

560971	After UXR0334A has been powered-up or Infiniium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B. The Infiniium version that is showing this behavior is 10.00.03804 and 10.00.3902. This error message can be ignored.
561731	No modules found on startup when using M8045A or M8046A modules. M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly." Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.
562390	Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern. This failure occurs independently on M8045A and M8046A. Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 6.0.120.4

Released Date:	07 March 2019
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A/M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9536A/M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_6.0.120.4.exe
License	

New Features and Enhancements

- M8041A / M8051A
  - USB 3.1: Adoption of TSEQ training sequence according to ECN (Engineering Change Notice to the USB standard).
    Increased the number of times the TSEQ training sequence is being transmitted to 0x80000 times. This allows testing of many coefficient settings.

- M8046A
  - Support for calibration of sampling point when using CDR.

Fixed Issues

564528   LFPS test error for USB3 RX

565459   M8046A: Selecting PHY Protocol as PCIe4 or PCIe5 results in an error message that this is not supported.

Known Issues

560971   After UXR0334A has been powered-up or Infiniium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infiniium version that is showing this behavior is 10.00.03804 and 10.00.3902.
This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 6.0.100.2

Released Date:	17 December 2018
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A/M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9536A/M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_6.0.100.2.exe
License	

New Features and Enhancements

- Transition to the new Keysight license model
- Supports Advanced Measurement Package (M8070ADVB)
  - Measurements
    - Output timing measurement
    - Output level measurement
    - Eye diagram measurement
    - Jitter tolerance measurement
    - Parameter sweep measurement
  - SCPI Utilities
    - SCPI Editor

- - SCPI Recorder
- Scripting
  - DUT Control Interface
  - Script Editor
- External clock recovery for M8046A
  - Support of N1076B and N1078A as external clock recovery
- Real-time oscilloscope as error detector

  - Support for UXR0334A
  - Pattern capture
  - New parameters
    - NRZ and PAM4 thresholds
    - Global bandwidth limit
    - Channel bandwidth limit and filter type

- Supports Error Distribution Analysis Package (M8070EDAB)
  - Symbol-errors per frame distribution
  - Consecutive bit-error distance distribution
  - Error map
  - Frame Loss Ratio counting and estimation

- M8041A / M8051A
  - Allow all RJ low pass filter settings at all data rates.
    This may result in operating the high frequency jitter sources outside the specified and calibrated operation range. See M8020A data sheet for details.

- M8045A
  - Add sRJ jitter source
  - Support of high-speed communication path for modules with a serial number of XXXXX01000 or higher
  - Modules with a serial number of XXXXX01000 or higher do have a higher power consumption. Please refer the M8040A data sheet for details.

- M8046A
  - Support of built-in clock recovery for modules with a serial number of XXXXX01000 or higher
  - Support of high-speed communication path for modules with a serial number of XXXXX01000 or higher
  - SKPOS Filtering for PCIe 8/16/32 GT/s and 20/25 Gb/s CCIX
  - Modules with a serial number of XXXXX01000 or higher do have a higher power consumption. Please refer the M8040A data sheet for details.

Breaking Changes

- Existing M8070A licenses need to be transformed into the corresponding M8070B licenses. Additionally, the installation of the Advanced Measurement Package is required to provide the same measurements that are available in M8070A

Fixed Issues

561147   Real-time oscilloscopes as error detector: Equalizer auto-set produces bad results

560222   FEC license check against pattern usage is not working correctly

559892   Error detector is not synchronizing reliably on SSPRQ pattern

Known Issues

560971   After UXR0334A has been powered-up or Infiniium got re-started, the oscilloscope is reporting an "Data out of range" error on the first startup of M8070B.
The Infiniium version that is showing this behavior is 10.00.03804 and 10.00.3902.
This error message can be ignored.

561731   No modules found on startup when using M8045A or M8046A modules.
M8070B will report the error message "High Speed Transceiver between Mainboard and Channel FPGA failed to lock. Component: Data channels cannot be initialized and will not function correctly."
Workaround: Close M8070B. And after giving the modules some time to decay the internal power supply voltages, restart M8070B again.

562390   Under rare circumstances, the pattern sequencer of M8045A and M8046A is not starting reliably. In this case the output of a M8045A remains static 0 and a M8046A is comparing the received data against a static 0 pattern, even though the status indicator is reporting the correct pattern.
This failure occurs independently on M8045A and M8046A.
Workaround: Manually download the pattern sequence in the sequence editor.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 5.1.50.2

Released Date:	07 September 2018
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A/M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9536A/M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_5.1.50.2.exe
License	

New Features and Enhancements

- M8045A
  - The FEC error insertion feature is enabled by selecting one of the FEC factory patterns:

    - IEEE_802_3cd_RS_544_514_Scrambled_Idle

    - IEEE_802_3cd_RS_544_514_Remote_Fault

- M8195A Rev2
  - Support for extended sequences containing multiple looped and one-time blocks.

Breaking Changes

- M819XA

- In previous versions periodic and random jitter in signal generation mode was not limited in a way to always result in consistent waveforms when using extreme jitter amplitude / frequency settings. Such limits were now introduced. In case a setting was stored using settings which are outside the allowed range it cannot be recalled in the new version. A workaround is to set jitter amplitude and frequency for all jitter sources to 0 in a previous version and use this modified setting with the new M8070A version.
- Previously pulse patterns were line coding independent. Now for consistency with extended sequencing pulse pattern properties adhere to the currently selected symbol mapping. This means that in case PAM4 line coding is selected for the specific channel that e.g. a pulse width of 32 bit will correspond to 16 PAM4 coded symbols.

Fixed Issues

553893   PCIe Gen 4 speed 2.5 - 8G change timed – out

554119   Fixed error in calculation of Estimated Total Jitter in Output Timing Measurement results.

549352   While using Relative sweep mode in Parameter Sweep measurement, limits of 'Sweep From' and 'Sweep To' parameters were being calculated incorrectly.

553895   LTSSM does not generate Error signal to the sequencer.

555633   In case of Percentage (%) parameter(s) M8070A is not accepting the negative values.

555504   Enable Impairments button does not control CMI or DMI on M8062A.

554968   In Parameter Sweep Measurement 'Sweep To' and 'Sweep From' field is not accepting the negative values when sweep mode is relative.

553813   In case of AWG Sinusoidal Jitter causing severe glitches in some settings.

553814   In case of AWG Random Jitter causing severe glitches in some settings.

Known Issues

554078   M8196A with single or dual channel option:
When sharing the AWG between IQTools and M8070A the Mode setting in the SFP Output tab needs to be switched to Single/Dual Channel (without Markers). This need to be performed whenever the specific SFP was utilized from IQTools before continuing to work with M8070A.

553811   M8196A:
Using an IQTools phase/frequency response calibration for high baud rates (e.g. 56 GBd or 60 GBd) suffers a PAM4 eye height decrease of about 25 % compared to IQTools or previous M8070A versions.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 5.0.228.4

Released Date:	13 July 2018
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A/M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9536A/M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_5.0.228.4.exe
License	

Fixed Issues

- 554295M8046A: 0A3 license cannot be installed

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 5.0.222.2

Released Date:	25 June 2018
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit) Version 1607 (Anniversary Update) or newer
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A/M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9536A/M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_5.0.222.2.exe
License	

New Features and Enhancements

- M8041A/M8051A
  - Increased relax time for output protection to avoid problems in MIPI testing
  - PCIe4: Support for Compliance Receive bit
  - Asymmetric SSC profile

- M8045A
  - Asymmetric SSC profile
  - Second de-emphasis post cursor
  - rSSC generation
  - PAM4 modulo 4 pre-coder

- M8046A
  - Support of option A64, NRZ error detector up to 64 Gb/s

- Support of option 0A3: Adjustable equalization above 32 GBd
- Support M8046A together with M8041A and M8062A

- M8195A
  - Generation of DM-SI and CM-SI
  - Generation of de-emphasis and DCD

- M8196A
  - Generation of DM-SI and CM-SI
  - Generation of de-emphasis and DCD

- SCPI command recorder

- Error ratio measurement
  - Display a combined BER for a group of analyzers on which the error ratio measurement is done

- Sampling Point View
  - Adjustable persistence of histogram data for more precise manual tuning of threshold and equalization settings

- Parameter Sweep
  - Additional methods to specify BER measurement depth
  - Selectable auto-alignment before the BER measurement
  - Hooks for DUT Control Interface scripts

- Query system configuration information via SCPI command

- Workspace folder migration from Agilent to Keysight

- Prevent laptops from automatically entering sleep mode

New Factory Patterns

- PCIe3

  Calibration

  - DMSI_CMSI_cal_BIT
  - PCIe3_Compliance_lane0_BIT_8G
  - RJ_SJ_cal_BIT
  - Step_BIT
  - TxEQ_cal_BIT

Test

- PCIe3_modified_compliance_lane_0_CC_BIT_8G
- PCIe3_modified_compliance_lane_0_IR_BIT_8G
- PCIe3_modified_compliance_lane_0_SKPOS_filtering_M8046A_BIT_8G

- PCIe4

Calibration

- DMSI_CMSI_cal_BIT
- PCIe4_Compliance_lane0_BIT_16G
- RJ_SJ_cal_BIT
- Step_BIT
- TxEQ_cal_BIT

- PCIe5

Calibration

- DMSI_CMSI_cal_BIT
- RJ_SJ_cal_BIT
- Step_BIT
- TxEQ_cal_BIT

Test

- PCIe4_modified_compliance_lane_0_CC_BIT_16G
- PCIe4_modified_compliance_lane_0_IR_BIT_16G
- PCIe4_modified_compliance_lane_0_SKPOS_filtering_M8046A_BIT_16G

- CCIX

Calibration

- DMSI_CMSI_cal_BIT
- RJ_SJ_cal_BIT
- Step_BIT
- TxEQ_cal_BIT

Test

- CCIX_modified_compliance_lane_0_CC_BIT_20G_25G
- CCIX_modified_compliance_lane_0_IR_BIT_20G_25G
- CCIX_modified_compliance_lane_0_SKPOS_filtering_M8046A_BIT_20G_25G

New Factory Settings

- CCIX_25G_M8062A_M8046A

Fixed Issues

526180   Cannot load SSPRQ pattern from factory library into M8045A/M8046A when AWG is in RI/SI mode

532090   Real-time scope integration may report VISA timeout errors when using HiSLIP protocol.
Use the Infiniium 06.20.00801 on the real-time oscilloscope. This version is available on Keysight.com.

539881   M8195A SFP version 3.5.17.1 needs to be started manually before starting M8070A.
Use M8195A SFP 3.6.00, available on Keysight.com

543151   Simple pattern selection SCPI query is returning an internal enum representation that is not even accepted by the command to set the pattern

546122   Incorrect PRBS sent by the M8062A as soon as SSC is enabled

548336   M8196A: S-Parameter de-embedding produces bad signal when activating jitter

Known Issues

539881   M8196A SFP version 2.0.215.0 needs to be started manually before starting M8070A

359903   M8070A may become unresponsive when controlling multiple N1076A/N1077A.
This problem can occur when M8070A is configured to the default setting and the bandpass filter is present at the CLK IN connector of M8046A.
Disconnecting the signal from the M8046A CLK IN connector will allow M8070A to settle and become responsive again.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 4.5.70.2

Released Date:	23 March 2018
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A/M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9536A/M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_4.5.70.2.exe
License	

New Features and Enhancements

- M8045A
  - Alignment of data channels and control outputs.
    For availability of this feature on your unit, refer to the data sheet.

- PCIe4 enhancements
  - Separate Ref Clk. Independent SSC Architecture (SRIS)
  - Entry into loopback through configuration state
  - Visualize transfer rate used for different phases in LTSSM log
  - Indicate incorrect de-emphasis coefficients requests of the DUT in the LTSSM log

- Added support for the following real-time oscilloscopes as error detector channels
  - DSA594A
  - DSO594A

- Simplified selection of patterns on individual channels
  - Ability to select different patterns for individual channels in the pattern selection dialog
  - Download the pattern in the pattern editor directly to the data channels.
  - SCPI command to set a single pattern on a data channel without the need of a full sequence definition.

- Auto-alignment status query SCPI command

- Added description of the factory patterns in the user guide

New Factory Patterns

- IEEE 802.3bs SSPRQ Pattern
  - Replaced outdated IEEE/SSPRQ_bit_SelectGrayCoded pattern file with the version as defined in 802.3bs-2017.
    The outdated version is still available under IEEE/SSPRQ_bit_SelectGrayCoded_D1p5.

Fixed Issues

531990   M8041A: Interactive LTSSM for USB 3.1 (Gen1 and Gen2) does not link with DUT on some units

539493   SSPRQ factory pattern inconsistent with IEEE 802.3bs standard release definition

537963   M8046A: Auto-align for PAM-4 signals with high intrinsic error rate fails

530911   M8046A: LED at CLK in not working as documented

Known Issues

546122   Incorrect PRBS sent by the M8062A as soon as SSC is enabled
Use SW 3.7 to avoid this problem

539881   M8195A SFP version 3.5.17.1 needs to be started manually before starting M8070A
M8196A SFP version 2.0.215.0 needs to be started manually before starting M8070A

532090   Real-time scope integration may report VISA timeout errors when using HiSLIP protocol.
Use a USB connection to control the oscilloscope to avoid this problem.

359903   M8070A may become unresponsive when controlling multiple N1076A/N1077A.
This problem can occur when M8070A is configured to the default setting and the bandpass filter is present at the CLK IN connector of M8046A.
Disconnecting the signal from the M8046A CLK IN connector will allow M8070A to settle and become responsive again.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 4.0.101.4

Released Date:	05 February 2018
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A/M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9536A/M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_4.0.101.4.exe
License	

New Features and Enhancements

- Maintenance release to support latest hardware revisions.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 4.1.100.2

Released Date:	20 November 2017
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A/M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9536A/M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_4.1.100.2.exe
License	

New Features and Enhancements

- Integration of real-time oscilloscopes as error detector channel
  - Supported models

    - DSOZ634A

    - DSAZ634A

    - DSOX96204Q

    - DSAX96204Q

  - Requires Infiniium 06.10.00616 or newer with the following licenses

    - N5384A Serial Data Analysis (SDA)

- N8827A PAM-4 Measurement (PM4)

- N5461A Equalization (DEQ)

- System setup view

- Sampling point view

- M8046A
  - Improved input equalization
  - Report histogram of received signal in sampling point view
  - Error counter results in offline mode

- M8062A
  - Sequencer based squelch signal generation for SAS applications

- Jitter Tolerance measurement
  - New search algorithm 'Adaptive Binary' to reduce measurement times
  - Show only maximum passed points connected by a line
  - User defined search algorithms
  - Remote programming API enhancements

    - Query the list of maximum passed amplitudes

    - Query minimum fail and maximum pass information for each measured jitter frequency

    - Define and select a J-Tol template via SCPI

    - Create a J-Tol template from the last measurement result

- Pattern Capture
  - Capture received data without error information
  - Speed optimized data upload mode

- Measurement history
  - Rename history entries
  - User defined comments for history entries
  - Delete single history entry

Breaking Changes

The improved input equalization of M8046A does result in a different equalization for the same equalization level setting compared to 3.7.64.6
Existing setups need to be re-tuned in terms of equalization on the M8046A or de-emphasis on the transmitting side to achieve the same electrical performance than with 3.7.64.6 or earlier.

Fixed Issues

531990   M8041A: Interactive LTSSM for USB 3.1 (Gen1 and Gen2) does not link with DUT on some units

493938   M8041A: AWG FPGA bring-up fails sporadically with test register access failure

532614   M8046A: Remote program must set clock out divider correctly before it can set new frequency even if clock out is disabled

526115   M8046A: PRBS sync issues with minimum block size of 1024 bits

526116   M8046A: PRBS generator sync-timing not aligned with sequence block

532179   M8046A: :INPut:EQUalization:[PRESet]:LEVel command does not work

532617   M8046A: Eye height information of auto-alignment cannot be queried from a remote program when line coding is PAM-4

532616   M8046A: Eye height result of auto-alignment always reported as 0 when line coding is NRZ

526180   Cannot load SSPRQ pattern from factory library into to M8045A or M8046A when AWG is in RI/SI mode

531508   M8062A: Calculated results of output timing measurement are incorrect, if the measurement runs before the data rate has been set to a non-default value

527179   M8062A: Mapping of errors is confusing or incorrect in the 'Sequence Control' of the sequence editor

530912   N1076A Integration: Selection of clock recovery not working correctly in configurations with two M8046A and two N1076A/N1077A

523144   M8195A/M8196A: Random Interference generated by M8195A and M8196A does not have Gaussian distribution

527794   Pattern editor: Squelch bits get modified when saving the pattern with CTRL+S

531978   Pattern editor: Paste option unavailable when the first bit of a row is selected in a pattern

532082	Jitter tolerance measurement: Inconsistent results when measurement runs without view
531999	Eye diagram measurement: Eye contour leaving eye diagram when turning ON/OFF the 'Contour Legend' and the measurement is running for 'Fixed Time' persistence
532001	Eye diagram measurement: 'Calculated results' disappear when stopping the measurement after turning off the contour legend and the measurement is running for 'Fixed Time' persistence
532541	Output timing measurement: Analyzer location doesn't show grouped analyzer location
532252	Pattern capture does not capture the correct amount of data when 'Capture In Memory' is enabled
531609	Access denied error while renaming any saved instrument state
527701	User Guide: Add scrambler polynomials for PCIe, USB, SATA
527555	Side by side installation of MIPI C-PHY Editor 2.1.0.0 and any newer versions of the MIPI C-PHY Editor causes a crash of M8070A
532186	M8070A crashes on un-installing any DCI script when a parameter sweep measurement is opened
532501	Rebranding: Directory log-file located in a folder named 'Agilent'
533420	Min/max is unsupported for F2-Jitter SCPI command and query

Known Issues

530911	M8046A: LED at CLK IN not working as documented
530910	M8045A: Can get stuck after frequency change to exactly 32.414 GHz

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 3.7.64.6

Released Date:	21 September 2017
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A/M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9536A/M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070B_Setup_3.7.64.6.exe
License	

New Features and Enhancements

- M8046A
  Maintenance release to support latest hardware revisions and factory calibration.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 3.7.40.2

Released Date:	23 August 2017
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A/M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9536A/M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_3.7.40.2.exe
License	

New Features and Enhancements

- M8046A
  - Built-in and adjustable equalization to re-open closed eyes

- M8045A and M8046A
  - User definable memory   NRZ: 2 Gbit/channel   PAM-4: 1 Gsymbol/channel

- Fan control improved

Fixed Issues

523408   M8045A/M8046A PAM-4 mode status bar shows no SER

522469   Error message during installation of M8070A system software

521692   PAM-4 line coding query throws stack error

523891   RI crest factor entered does not change signal

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 3.6.1.4

Released Date:	06 July 2017
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A/M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9536A/M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_3.6.1.4.exe
License	

New Features and Enhancements

- M8041A and M8051A
    - LTSSM for PCIe Gen4 (requires license)
    - Allow output impedances between 70-130 Ohm balanced without triggering output protection

- Integration of external Clock Recovery N1076A

- Parameter Sweep Measurement

- M8196A
    - support up to 60GBd. Requires tool-supported calibration.

- M8195A, M8196A
  - PAM4 custom coding

- M8062A
  - De-emphasis presets, like M8041/51A
  - Pattern Capture
    - Immediate Trigger Mode
    - For Data Rate > 4G
    - Up to 137280000 Bit
    - When working with expected memory patterns, limitations apply:
      - o Minimum expected pattern length > 512 bit
      - o No capture possible after a failed synchronization

Fixed Issues

509757   M8062A: High F/2 jitter at 6 Gb/s

506296   M8041A, M8051A: PCIe 16G LTSSM doesn't update data output

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 3.5.110.8

Released Date:	19 June 2017
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A/M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9536A/M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_3.5.110.8.exe
License	

New Features and Enhancements

- M8046A
  - Settling times in the channel power up sequence improved

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 3.5.108.6

Released Date:	03 March7 2017
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A/M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9536A/M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_3.5.108.6.exe
License	

New Features and Enhancements

- M8045A
  - Improved internal temperature regulation.

Known Issues

- Ignore following self-test message:
  "Before performing a system self-test terminate every DATA OUT pin with 50 Ohms. Take care to remove any devices from the tested M8000 system as any connected device under test might be damaged."

- 493938   Hardware bring-up sporadically fails with error message
  'AWG FPGA test register access failed' on M8041A, M8051A and M8045A.
  Work around: Power-cycle AXIe chassis and restart the software.

492740   Instantaneous BER value is not always completely readable in the status
              display.

494050   Auto-alignment button not completely visible in the status display.

Known Limitations

-   M8196A
    -   The maximum system data rate is limited to 46 GBd.

-   M8045A
    -   Pattern and Sequence:

        -   Pattern memory limited to 4 Mbit per channel.

        -   SYS IN A, SYS IN B cannot be used to control sequence

    -   Direct clock mode is limited to 8.1GHz to 16.2GHz
    -   Timing relation between channel 1 and 2 is non-deterministic and can vary with each
        timing parameter change.
    -   Timing relation between channel 1 and TRIG OUT/CLK OUT is non-deterministic and
        can vary with each timing parameter change.
    -   Jitter profiles of channel 1, channel 2 and TRIG OUT/CLK OUT are not phase aligned.
-   M8046A
    -   Pattern and Sequence:

        -   Pattern must have a mark density of 50% because of AC coupled data input.
            Non-balanced patterns will lead to pattern-sync and alignment failures caused by
            the average voltage mismatch before and after the AC coupling.

        -   Pattern memory limited to 4Mbit.

        -   Pattern capture

            o   limited to 2 Mbit
    -   PAM-4 threshold parameters and SCPI commands are now using the unit Volt instead
        of %.
        Instrument settings created with 3.4.x.x may not recall completely with version 3.5.x.x
        and the PAM-4 threshold values will remain at the default settings.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 3.5.104.4

Released Date:	09 February 2017
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A/M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9536A/M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_3.5.104.4.exe
License	

Breaking Changes

- M8046A: Minimum Symbol Rate increased to 5.0 GBd
  Please refer to updated data sheet for updated specification.

- M8046A: Minimum CLK IN frequency increased to 2.5 GHz
  Please refer to updated data sheet for updated specification.

Fixed Issues

494139   M8046A: When being operated with an embedded PC or via PCIe cable, the following self-test error message is reported in the power on self-test result
Error: M1.MBd.DataIn.Memory reports Setting up HMC for BIST failed.

495292   GUI crops Analyzer Status window

Known Issues

- Ignore following self-test message:
  "Before performing a system self-test terminate every DATA OUT pin with 50 Ohms. Take care to remove any devices from the tested M8000 system as any connected device under test might be damaged."

493938   Hardware bring-up sporadically fails with error message
              'AWG FPGA test register access failed' on M8041A, M8051A and M8045A.
              Work around: Power-cycle AXIe chassis and restart the software.

492740   Instantaneous BER value is not always completely readable in the status display.

494050   Auto-alignment button not completely visible in the status display.

Known Limitations

- M8196A
  - The maximum system data rate is limited to 46 GBd.

- M8045A
  - Pattern and Sequence:

    - Pattern memory limited to 4 Mbit per channel.

    - SYS IN A, SYS IN B cannot be used to control sequence

  - Direct clock mode is limited to 8.1GHz to 16.2GHz
  - Timing relation between channel 1 and 2 is non-deterministic and can vary with each timing parameter change.
  - Timing relation between channel 1 and TRIG OUT/CLK OUT is non-deterministic and can vary with each timing parameter change.
  - Jitter profiles of channel 1, channel 2 and TRIG OUT/CLK OUT are not phase aligned.

- M8046A
  - Pattern and Sequence:

    - Pattern must have a mark density of 50% because of AC coupled data input. Non-balanced patterns will lead to pattern-sync and alignment failures caused by the average voltage mismatch before and after the AC coupling.

- Pattern memory limited to 4Mbit.

- Pattern capture

  o limited to 2 Mbit

- PAM-4 threshold parameters and SCPI commands are now using the unit Volt instead of %.
Instrument settings created with 3.4.x.x may not recall completely with version 3.5.x.x and the PAM-4 threshold values will remain at the default settings.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 3.5.100.2

Released Date:	22 December 2016
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A/M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9536A/M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_3.5.100.2.exe
License	

New Features and Enhancements

- M8040A High-performance BERT 64 GBaud
  - Support for M8045A
  - Support for M8046A
  - Support for M8057A

New Factory Patterns

- IEEE\PRBS13Q_Lane0_bit
- IEEE\PRBS13Q_Lane1_bit
- IEEE\PRBS13Q_Lane2_bit
- IEEE\PRBS13Q_Lane3_bit
- IEEE\SSPRQ_bit_SelectGrayCoded
- IEEE\QPRBS13_Lane0_bit_SelectGrayCoded

Breaking Changes

The factory pattern IEEE\PRBS13Q_bit was renamed to IEEE\PRBS13Q_Lane0_bit.

Effect:

Existing settings that are using the previous factory pattern PRBS13Q_bit cannot be recalled. This problem occurs after updating the Factory folder as described above.

Workaround:

1. Before upgrading to M8070A 3.5.100.2
   Temporarily change all settings that use PRBS13Q_bit

   - Recall the setting

   - Change all sequences that use PRBS13Q_bit to use another factory pattern

   - Save the setting

2. After upgrading to M8070A 3.5.100.2

   - Update the Factory folder as described above

   - Start M8070A 3.5.100.2

   - Load each setting that has been modified in the previous step and select PRBS13Q_Lane0_bit in the sequences that have been using PRBS13Q_bit.

   - Save the setting

Fixed Issues

494233   M8062A: Output Timing measurement sporadically shows wrong bathtub curve and calculated results

Known Issues

- Ignore following self-test message:
  "Before performing a system self-test terminate every DATA OUT pin with 50 Ohms. Take care to remove any devices from the tested M8000 system as any connected device under test might be damaged."

493938   Hardware bring-up sporadically fails with error message
'AWG FPGA test register access failed' on M8041A, M8051A and M8045A.
Work around: Power-cycle AXIe chassis and restart the software.

494139   M8046A: When being operated with an embedded PC or via PCIe cable, the following self-test error message is reported in the power on self-test result
Error: M1.MBd.DataIn.Memory reports Setting up HMC for BIST failed.
Workaround: Ignore the error message after verifying that the problem is not being reported using a USB connection.
Note: All M8046A have passed the memory self-test during manufacturing.

492740   Instantaneous BER value is not always completely readable in the status display.

494050   Auto-alignment button not completely visible in the status display.

Known Limitations

- M8196A
  - The maximum system data rate is limited to 46 GBd.

- M8045A
  - Pattern and Sequence:

    - Pattern memory limited to 4 Mbit per channel.

    - SYS IN A, SYS IN B cannot be used to control sequence

  - Direct clock mode is limited to 8.1GHz to 16.2GHz
  - Timing relation between channel 1 and 2 is non-deterministic and can vary with each timing parameter change.
  - Timing relation between channel 1 and TRIG OUT/CLK OUT is non-deterministic and can vary with each timing parameter change.
  - Jitter profiles of channel 1, channel 2 and TRIG OUT/CLK OUT are not phase aligned.
- M8046A
  - Pattern and Sequence:

    - Pattern must have a mark density of 50% because of AC coupled data input. Non-balanced patterns will lead to pattern-sync and alignment failures caused by the average voltage mismatch before and after the AC coupling.

    - Pattern memory limited to 4Mbit.

    - Pattern capture

      o limited to 2 Mbit
  - PAM-4 threshold parameters and SCPI commands are now using the unit Volt instead of %.
    Instrument settings created with 3.4.x.x may not recall completely with version 3.5.x.x and the PAM-4 threshold values will remain at the default settings.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 3.5.0.2

Released Date:	01 December 2016
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit) Microsoft Windows 10 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.42 Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A/M9537A including pre-installation of M8070B software and module licenses. Otherwise: M9536A/M9537A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_3.5.0.2.exe
License	

New Features and Enhancements

- M8041A and M8051A
  - LTSSM for USB 3.1 (requires license)
  - Allow user to select the LTSSM phase that will send a trigger
  - Increased maximum rSSC amplitude to 600ps
  - TX EQ negotiation for 10GBASE-KR (requires plug-in installation and corresponding license)

- Support of M8195A as a
  - digital data source
  - level interference source for M8045A

- Support of M8196A as a
  - digital data source

- • level interference source for M8045A
- Import and export of sequences and referenced patterns from within the sequence editor

- Impairment Setup View

- Pattern Editor
  - • Go To functionality
  - • Find in pattern
  - • Create new patterns from imported ASCII file
  - • Improved selection of pattern for copy and find functionality
  - • Import pattern from external ASCII files into pattern editor with code conversion

- Eye diagram measurement
  - • Improved measurement duration for M8041A, M8051A and M8062A

- Script Editor
  - • Improved auto-completion

- Switch between BER and SER display

- Individual stop indicators for Generator and Analyzer channels

- Support of embedded controller M9537A

- Windows 10 support

- Restart pattern sequence at a certain block via SCPI command.
  See remote programming guide for details.

- Limited support of M8045A 64 GBd Generator-Clock Module for early shipments and demos

- Limited support of M8046A 32 GBd Analyzer Module for early shipments and demos

- Documentation and context sensitive help is already prepared for M8045A and M8046A, but not yet completed.

New Factory Patterns

- IEEE\PRBS13Q_bit
  the generator polynomial is $G(x) = 1 + x + x^2 + x^{12} + x^{13}$ and the seed used for the stored pattern is 0000010101011.

- IEEE\JP03A
  - IEEE\JP03B
  - IEEE\PAM-4_Linearity_Test_bit

Fixed Issues

478584	SSC on DATA Out if no jitter option present
479497	M8041A, M8051A: Wrong data rate when SSC is being used at 8.1 Gb/s
477522	M8041A/51A: Sequencer controlled trigger out toggles although not defined in sequence
473797	Error when opening factory DisplayPort settings on PG only M8041A
469990	M8062A: Error message generated when no CDR board present
470196	Auto correction dialog causes the instrument to change system frequency without executing the mandatory hardware re-initialization.
489683	M8070A / M8195A: With a two or one channel licensed AWG module it is not possible to select data rates going below 50 ps minimum transition time.
489784	File-save naming error pop-up
489931	M8070A SW pulling network license of M8085A plugin.
489978	Auto align doesn't work properly in M8062A
489875	M8070A Software Crashes within BER measurements
481565	SSC indicator disappears from status section in 32G mode
480306	SCPI command returns undefined signs
469746	Capture Measurement crash

Known Issues

- Ignore following self-test message:
  "Before performing a system self-test terminate every DATA OUT pin with 50 Ohms. Take care to remove any devices from the tested M8000 system as any connected device under test might be damaged."
- Pattern editor does not support editing mask information in PAM-4 mode

Known Limitations

- M8045A

  - Pattern and Sequence:

    - Pattern memory limited to 4 Mbit per channel.

    - SYS IN A, SYS IN B cannot be used to control sequence

  - Symbol rates below 5 GBd are non-functional on LSR units
  - Direct clock mode is limited to 8.1GHz to 16.2GHz
  - Clock/2 jitter is non-functional on LSR units
  - Timing relation between channel 1 and 2 is non-deterministic and can vary with each timing parameter change.
  - Timing relation between channel 1 and TRIG OUT/CLK OUT is non-deterministic and can vary with each timing parameter change.
  - Jitter profiles of channel 1, channel 2 and TRIG OUT/CLK OUT are not phase aligned.
  - De-emphasis parameters and SCPI commands are subject to change.
    Instrument settings created with 3.4.x.x may not recall completely with version 3.5.x.x
  - Parameter limits may differ from the specified values in the data sheet.

- M8046A

  - Pattern and Sequence:

    - Pattern memory limited to 2Mb.

    - Pattern capture

      - limited to 2 Mbit
      - error information not correctly aligned with captured data

  - PAM-4 threshold parameters and SCPI commands are now using the unit Volt instead of %.
    Instrument settings created with 3.4.x.x may not recall completely with version 3.5.x.x
  - Maximum symbol rate in PAM-4 mode is 29 GBd
  - Parameter limits may differ from the specified values in the data sheet.
  - Embedded controller M9536/7A works if controller is in highest slot of chassis and nnstrument is connected with USB
  - The amount of jitter at the CLK IN connector is limited.
  - In rare cases the auto alignment needs retry.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 3.4.20200.4

Released Date:	10 August 2016
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41 Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_3.4.20200.4.exe
License	

New Features and Enhancements

- Limited support of M8046A 32 GBd Analyzer Module for early shipments and demos

Fixed Issues

- M8045A
  - PRBS polynomials 2^{13}-1, 2^{23}-1p, 2^{45}-1 and 2^{51}-1 are now functional
  - De-emphasis setting is inaccurate after a symbol rate change and the output signal may remain at static levels after starting up the software.
    Workaround: Toggle Data Out polarity

Known Issues

- Ignore following self-test message:
  "Before performing a system self-test terminate every DATA OUT pin with 50 Ohms. Take

care to remove any devices from the tested M8000 system as any connected device under test might be damaged."

Known Limitations

- M8045A
  - Pattern and Sequence:
    - Limited to one sequencer block with infinite loop.
    - Limited to hardware generated PRBS.
      Use the 'Select Pattern' dialog to configure the PRBS to be used.
    - TRIG OUT, SYS OUT A, SYS OUT B, CTRL OUT A and CTRL OUT B cannot be controlled from within sequence
    - SYS IN A, SYS IN B, CTRL IN A and CTRL IN B cannot be used to control sequence
  - Symbol rates below 5 GBd are non-functional
  - SSC is non-functional
  - Jitter sweep is non-functional
  - Error insertion is non-functional
  - Direct clock mode is limited to 8.1GHz to 16.2GHz
  - Clock/2 jitter is non-functional
  - Timing relation between channel 1 and 2 is non-deterministic and can vary with each timing
  - arameter change.
  - Timing relation between channel 1 and TRIG OUT/CLK OUT is non-deterministic and can
  - ary with each timing parameter change.
  - Jitter profiles of channel 1, channel 2 and TRIG OUT/CLK OUT are not phase aligned.
  - De-emphasis parameters and SCPI commands are subject to change.
  - Instrument settings created with 3.4.x.x may not recall completely with version 3.5.x.x
  - Parameter limits may differ from the specified values in the data sheet.

- M8046A
  - Pattern and Sequence:
    - Limited to one sequencer block with infinite loop.
    - Limited to hardware generated PRBS.
      Use the 'Select Pattern' dialog to configure the PRBS to be used.
    - CTRL OUT A cannot be controlled from within sequence
    - CTRL IN A cannot be used to control sequence
    - Pattern capture not enabled
  - PAM-4 threshold parameters and SCPI commands are now using the unit Volt instead of %.
    Instrument settings created with 3.4.x.x may not recall completely with version 3.5.x.x
  - Data Loss indicator not functional

- Maximum symbol rate in PAM-4 mode is 29 GBd
- Parameter limits may differ from the specified values in the data sheet.
- Embedded controller M9536/7A works if controller is in highest slot of chassis and nnstrument is connected with USB
- The amount of jitter at the CLK IN connector is limited.
- Unstable or missing clock can cause system hang-up and requires power cycle of the AXIe chassis.
- In rare cases the auto alignment needs retry.

- No context sensitive help for new features

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 3.4.10100.2

Released Date:	10 August 2016
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above

AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41

Embedded PC: Choose M8020A-BU1 or M8040A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB

External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN

Minimum Display resolution requirement 1024 x 768 |
| File Name | M8070A_Setup_3.4.10100.2.exe |
| License | |

New Features and Enhancements

- Limited support of M8045A 64 GBd Generator-Clock Module for early shipments and demos
- Support of M8196A as digital data source
- Import and export of sequences and referenced patterns from within the sequence editor
- M8041A, M8051A
  - Increased maximum rSSC amplitude to 600ps
- Pattern Editor
  - Go To functionality
  - Find in pattern
  - Create new patterns from imported ASCII file
  - Improved selection of pattern for copy and find functionality
- Restart pattern sequence at a certain block via SCPI command.
  See remote programming guide for details.
- Individual stop indicators for Generator and Analyzer channels

New Factory Patterns

- IEEE\PRBS13Q_bit
  the generator polynomial is $G(x) = 1 + x + x^2 + x^{12} + x^{13}$ and the seed used for the stored pattern is 0000010101011.
- IEEE\JP03A
- IEEE\JP03B
- IEEE\PAM-4_Linearity_Test_bit

Fixed Issues

478584   SSC on DATA Out if no jitter option present

479497   M8041A, M8051A: Wrong data rate when SSC is being used at 8.1 Gb/s

477522   M8041A/51A: Sequencer controlled trigger out toggles although not defined in sequence

473797   Error when opening factory DisplayPort settings on PG only M8041A

469990   M8062A: Error message generated when no CDR board present

470196   Auto correction dialog causes the instrument to change system frequency without executing the mandatory hardware re-initialization.

Known Issues

- Ignore following self-test message:
  "Before performing a system self-test terminate every DATA OUT pin with 50 Ohms. Take care to remove any devices from the tested M8000 system as any connected device under test might be damaged." a

Known Limitations

- M8045A
  - Pattern and Sequence:
    - Limited to one sequencer block with infinite loop.
    - Limited to hardware generated PRBS.
      Use the 'Select Pattern' dialog to configure the PRBS to be used.
    - PRBS polynomials 2^{13}-1, 2^{23}-1p, 2^{45}-1 and 2^{51}-1 are non-functional
    - TRIG OUT, SYS OUT A, SYS OUT B, CTRL OUT A and CTRL OUT B cannot be controlled from within sequence

- SYS IN A, SYS IN B, CTRL IN A and CTRL IN B cannot be used to control sequence

- Symbol rates below 5 GBd are non-functional
- SSC is non-functional
- Jitter sweep is non-functional
- Error insertion is non-functional
- Direct clock mode is limited to 8.1GHz to 16.2GHz
- Clock/2 jitter is non-functional
- De-emphasis setting is inaccurate after a symbol rate change and the output signal may remain at static levels after starting up the software.
  Workaround: Toggle Data Out polarity
- Timing relation between channel 1 and 2 is non-deterministic and can vary with each timing parameter change.
- Timing relation between channel 1 and TRIG OUT/CLK OUT is non-deterministic and can vary with each timing parameter change.
- Jitter profiles of channel 1, channel 2 and TRIG OUT/CLK OUT are not phase aligned.
- De-emphasis parameters and SCPI commands are subject to change.
  Instrument settings created with 3.4.x.x may not recall completely with version 3.5.x.x
- Parameter limits may differ from the specified values in the data sheet.

- No context sensitive help for new features

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 3.1.55.14

Released Date:	08 June 2016
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41 Embedded PC: Choose M8020A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_3.1.55.14.exe
License	

New Features and Enhancements

- Incompatibility with the C-PHY CTS plug-in

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 3.1.52.10

Released Date:	23 May 2016
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41 Embedded PC: Choose M8020A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_3.1.52.10.exe
License	

New Features and Enhancements

- Limits for termination resistance increased (valid for M8041A, M8051A, M8061A, M8062A)
  - from 120Ohm to 130 Ohm for balanced dc coupling
  - from 60 Ohm to 65 Ohm for unbalanced dc coupling

Fixed Issues

462169	Eye diagram enhancements and stability improvements
465168	:OUTP:DEEM:CONF:SIGN accepts now 3 or 7 arguments for supporting M8061A; Programming guide was updated correspondingly
465434	Global SSC switch turns off SSC on Clock Out in common with the DataOuts now
463963	M8195A Increased lower limits of transition time in 2 or 4 channel deep memory configurations. Using very low transition times does not increase signal performance but instead causes jitter.

460958	Several enhancements to run measurements for a long time
464842	M8062A Clean Clock Out is now part of the global outputs switch on/off mechanism
471451	PCIe3 link training is possible on every lane now

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 3.1.15.6

Released Date:	14 April 2016
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41 Embedded PC: Choose M8020A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_3.1.15.6.exe
License	

Fixed Issues

464485   CMI/DMI frequency change on single channel module failed

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 3.1.14.4

Released Date:	24 March 2016
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41 Embedded PC: Choose M8020A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_3.1.14.4.exe
License	

New Features and Enhancements

- Support for the M8062A CDR option (-OA4).

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 3.0.40.20

Released Date:	14 March 2016
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41 Embedded PC: Choose M8020A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_3.0.40.20.exe
License	

New Features and Enhancements

- Support for next generation HH–ASIC

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 3.0.34.10

Released Date:	27 February 2016
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.2.20605 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41 Embedded PC: Choose M8020A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_3.0.34.10.exe
License	

New Features and Enhancements

- M8030A Multi-Channel BERT

- Eye diagram measurement

- Support M8192A Multi-Channel Synchronization Module

- Support of M8195A rev2

- M8195A

  - S-parameter based embedding
  - RJ and PJ generation
  - SSC generation
  - Increase channel delay from $\pm$100ps to $\pm$1ns
  - Support for extended memory configuration of M8195A rev2
  - Additional PRBS polynomial
    $X^{13} + X^{12} + X^2 + X^1 + 1$

- M8041A and M8051A

  - Bit recovery mode with CDR
  - Additional PRBS polynomials
    $X^{13} + X^{12} + X^{2} + X^{1} + 1$
    $X^{33} + X^{20} + 1$
    $X^{35} + X^{33} + 1$
    $X^{39} + X^{35} + 1$
    $X^{41} + X^{38} + 1$
    $X^{45} + X^{44} + X^{42} + X^{41} + 1$
    $X^{47} + X^{42} + 1$
    $X^{49} + X^{40} + 1$
    $X^{51} + X^{50} + X^{48} + X^{45} + 1$
  - Changed default value of SSC Deviation to 0.5%

- Measurement enhancements

  - Accumulated BER stop after a user defined number bits
  - JTOL templates for SATA2, SAS2, CEI, 10G Ethernet, XFP, FibreChannel
  - JTOL measurement can re-train DUT into loopback during a measurement using the DUT Control Interface.

- System View enhancements

  - Support for M8195A
  - In place editing of parameters.

- Pattern Editor enhancements

  - Bit order selection can be changed
  - Display and edit PAM-4 0,1,2,3 symbols
  - Copy/paste from pattern editor to clipboard and vice versa
  - Display pattern length

- Sequence Editor enhancements

  - Show pattern length in sequence editor

- ISI Editor improvement in 2-point mode

- Rebranding related changes

  - New response to *IDN? Query

    - New: *Keysight Technologies,M8070A,DE5250000002,3.x.x.x*

    - To date: *Agilent Technologies,M8070A,DE5250000002,3.x.x.x*

- Installation folder changed to C:\Program Files\Keysight

Known Limitations

- Plug-ins that have been installed for the 2.x.x.x version are not compatible with 3.x.x.x. Please download a compatible version and re-install.

- A downgrade of the M8070A system software from version 3.x.x.x to 2.x.x.x requires a manual uninstall. Please follow the downgrade procedure below.
  - Click on: Start → Control Panel → Uninstall a program (Scroll down to Keysight)
  - Right-click on … and select Uninstall

    1. Keysight M8070A

    2. Keysight License Manger

    3. Keysight License Service

    4. Keysight InstrumentIOConfig

    5. Keysight Host Processor Platform

  - Initiate a reboot
  - Install the M8070A_Setup_2.x.x.x.exe
- Defect **458831**
  Using the Pattern Select dialog to configure the patterns is not working and preventing the sequence editor to download a sequence.
  Workaround:
    Open the Sequence Editor before using the Pattern Select dialog for the first time.
- Defect 458628
  Corrupt graph in Error Ratio measurement when the error detector is stopping and re-starting during a measurement, e.g. when the CDR is losing lock.

Fixed Issues

437384	Immediately after sending the query ':plugin:eratio:fetch:pfr?', SCPI commands to set or query de-emphasis values return an error.
448957	JTOL measurement shows wrong maximum allowed jitter frequency.
449518	Opening measurement windows causes remote programming delays

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 2.6.4.6

Released Date:	16 October 2015
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.1 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41 Embedded PC: Choose M8020A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_2.6.4.6.exe
License	

New Features and Enhancements

- Variable transition times for Data Out of M8195A.

Fixed Issues

435205   Wrong jitter generated for BUJ and RJ if a shared jitter source is being turned off at one place while still being used at another place.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 2.5.6.10

Released Date:	26 August 2015
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.1 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41 Embedded PC: Choose M8020A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_2.5.6.10.exe
License	

New Features and Enhancements

- Support for M8062A 32Gb/s Front-end for J-BERT M8020A High-Performance BERT

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 2.5.2.4

Released Date:	06 August 2015
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.1 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41 Embedded PC: Choose M8020A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_2.5.2.4.exe
License	

New Features and Enhancements

- PAM-4 signal generation with M8195A Rev. 1.
  Required M8195A firmware 1.3.1.1 or above.

- M8020A generic features
  - LTSSM enhancement
    Test dynamic EQ according to 2.4 and 2.7.
  - Generator and Analyzer sequences can be downloaded independently
  - CTLE presets for USB 3.1 and PCIe 4
  - New MIPI ISI presets

- DUT Control Interface (requires the M8070A option 1TP or 1NP)

Fixed Issues

427311   MUX mode setup recall from SCPI is incomplete

421276	Jitter not aligned between Data Out 1, Data Out 2 and Clock/Trigger Out.
415324	Sequencing: Wrong data generated with patterns that do not fit in Sequence Granularity and are unrolled.
407010	Application crashes when reading error ratio results via SCPI.
403630	System freezes when stopping due to instable reference clock.
402269	Single channel M8041A or M8051A hangs in arming loop when changing data rate by factors of 2.
400552	System freezes when a pattern sync or sequence break overlaps with re-arming events.
397109	M8195A module in frame causes M8070A software and M8195A software to crash.
396357	Documentation on pattern/settings sharing between systems is not clear.
395181	USB connection to M9505A chassis becomes unresponsive, M8070A software hangs.
394686	Exception message when storing setting while a measurement is running.
394685	Jump to Sync in pattern sequence has no effect ton SYS OUT A/B and TRIG OUT.
394683	128b/13xb coding expected data generation: bypass byte0 and reset dc balancing not generating correct expected data.
396348	Pattern export does export wrong data for patterns > 32kbyte.
394342	Pattern Capture remains in stopped state after parameter conflicts occurred.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 2.1.50.2

Released Date:	21 May 2015
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.1 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41 Embedded PC: Choose M8020A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_2.1.50.2.exe
License	

New Features and Enhancements

- Selectable transition times for Data Out of M8041A and M8051A.

Fixed Issues

386921	Factory settings cannot be loaded when a M8051A is present.
387505	Sequence trigger pulse width could only be set in block 1.
387506	Sequencing: PON sequence sends incorrect bits depending on payload length.
387746	8b10b pattern: can't achieve SER 0 for expected pattern that is not unique at offset 0.
385829	Output Timing Measurement: Graph not matching the numeric results.
383549	Output Level Measurement: Produces wrong result when ED cannot set the requested threshold.

383555   Output Level Measurement: Threshold sweep range not as entered by the user.

383548   Output Level Measurement: Threshold range not checked against ED capabilities.

Known Issues

383575   Output Timing Measurement: Incomplete results for jitter separation when measuring on a group of Error Detectors.
Work around: Measure the channels individually.

394342   Pattern Capture remains in stopped state after parameter conflicts occurred.
Symptom: Pattern capture reports stopped state without presenting data even in immediate mode.
Workaround:
– Either toggle SSC state or change the system frequency.
– Start Pattern Capture again.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 2.0.0.0

Released Date:	27 March 2015
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 17.1 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41 Embedded PC: Choose M8020A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_2.0.0.0.exe
License	

New Features and Enhancements

- Built-in ISI (Inter Symbol Interference)
- Compare and Capture
- Output level measurement (Q-factor)
- ISI S Parameter View
- Pattern Editor: Copy/Paste, Export, Coding Conversion
- Auto alignment accessible from status indicator panel.
- Changed the content of the tooltips in the parameter editor.
  The displayed Value, Minimum and Maximum are the current setting dependent valid values and neither datasheet nor absolute value ranges.

New Factory Settings

- PCIe3/PCIe3_modified_compliance_pattern_lane0_SRIS
- PCIe3/PCIe3_RX_Cal

- SAS/SAS_12G_Cal
- SAS/SAS_12G_JTOL
- USB3.0/USB_3_0_Cal
- USB3.1/USB_3_1_Cal

Updated Factory Settings

- USB3.0/GenericPowerUp
- USB3.1/USB_3_1_power_on_loopback_training

Fixed Issues

358545	Save/recall settings not working when user name does have a space.
377940	SER = 0 without input signal connected.
376282	Programming guide error for :PLUG:OTIM:FETC:DATA?
376292	Clk/2 jitter is not documented and location is not intuitive.
376248	CDR sequence control graphic is not intuitive and does not update when the change is made.
376056	System view graphics do not updated when the change is made.
376286	Jitter Tolerance Measurement: Need wider max setting on binary search exit criteria.
382342	M8000 test result of PCIe Gen2 RX Jitter Tolerance (by N5990) is abnormal.
376240	'replicate' option in the pattern generator is not clear enough.
376287	Jitter Tolerance Measurement: RJ amplitude included in HF jitter total even when disabled.
376222	Documentation for :data:seq:bre command wrong.
376201	HF jitter range falsely stated (in GUI). Jitter budget calculation for SSC and rSSC fixed.

Known Issues

383549	Output Level Measurement produces wrong results when the measurement range conflicts with capabilities of the error detector. Work around: Ensure that the entered threshold sweep range does not conflict with the error detector capabilities.

383555   Output Level Measurement: Threshold sweep range is not behaving as expected. The measurement is running from "Optimum Sample Threshold" + "Sample Threshold Low Level" to "Sample Threshold High Level".
Work around: Enter "Sample Threshold Low Level" as ("Desired Measurement Low Level" – "Optimum Sample Threshold").

383575   Output Timing Measurement: Incomplete results for jitter separation when measuring on a group of Error Detectors.
Work around: Measure the channels individually.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 1.5.9.6

Released Date:	24 February 2015
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 16.3 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41 Embedded PC: Choose M8020A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_1.5.9.6.exe
License	

New Features and Enhancements

- Maintenance release to support latest hardware revisions.
- Support for M8085A options DT1, DN1 and DD1.

Fixed Issues

358952	USB driver(s) removed when installing V1.5.x.x M8070A SW.
360333	Tool-tip on some GUI element is giving wrong information.
359951	User is unable to run symbol rate's SCPI with suffix, need to provide complete digit of input value for SCPI.
360074	User is unable to run sample sate's SCPI with suffix, need to provide complete digit of input value for SCPI.
369627	Factory Default Settings: Sync Loss Threshold not sensible. Fixed the following settings:

- PCIe3/PCIe3_mod_compliance_lane0_ASIC
- USB3.0/GenericPowerUp

Known Issues

354552   When using the M8061A a low transition density of the pattern can lead
to an alignment failure between the M8041A and M8061A modules.
("Error ID: 16123057 Description: Failed to align the connection from M1.DataOut1
to M2.DataIn1. Check there is a cable connected and that the complement output
of M1.DataOut1 is properly terminated.").

Workaround:

o   Select a PRBS pattern and force an input alignment by changing the data rate.

o   Change the pattern back after the alignment succeeded.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 1.5.7.4

Released Date:	15 December 2015
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 16.3 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41 Embedded PC: Choose M8020A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_1.5.7.4.exe
License	

Fixed Issues

356986   M8061A integration - null reference exception when query BER via SCPI.

356775   Sync loss with a pattern having 4e+9 symbols in bit mode with block length as 90910300.

359630   User is unable to enter "+" and "\" symbols by keyboard in SCPI editor's input field.

355337   Error is thrown when rename and new folder operation is done in a sequence.

343272   Output timing issue when injecting PJ1 to the M8061A.

355749   Pattern may get corrupted, when user closes the Save Pattern while GUI is performing the save pattern operation.

358328   M8061A: N4877A loop bandwidth out of sync. with loop bandwidth displayed in M8070A.

338421 Behavior of Documents/Agilent/M8070A directory in M8070A installation is not clearly documented.

353468 M8070A software hangs in start-up, HF jitter source FIFO problems in log file

354976 No sync with 10101 pattern and other patterns that have length 5 bits. This happens for data-rates above 8.1Gb/s.

356319 :INP:ALIG:EYE:RES:DEL? doesn't return enough digits of resolution.

358069 Unexpected auto-correction of jitter amplitude when changing data rate.

355348 Bit rate not visible in status bar for option G08.

360417 M8061A: exception when issuing a SCPI command while auto-sync is executing.

360420 HF jitter spectrum and therefore jitter amplitudes incorrect on M8051A when controlling via PCIe.

357921 Can't change bit rate if jitter injection amplitude is too high.

361634 Jitter Tolerance Measurement: Not reaching 1ui when SSC is present.

361787 HF jitter amplitudes too small for data rates below 1Gb/s.

Known Issues

354552 When using the M8061A a low transition density of the pattern can lead to an alignment failure between the M8041A and M8061A modules.
("Error ID: 16123057 Description: Failed to align the connection from M1.DataOut1 to M2.DataIn1. Check there is a cable connected and that the complement output of M1.DataOut1 is properly terminated.").

Workaround:

- o Select a PRBS pattern and force an input alignment by changing the data rate.

- o Change the pattern back after the alignment succeeded.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 1.5.2.2

Released Date:	30 October 2015
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 16.3 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41 Embedded PC: Choose M8020A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_1.5.2.2.exe
License	

New Features and Enhancements

- Support for the M8061A module.
- Compliant interactive link training including de-emphasis negotiation for PCIe3 on channel one.
- Pattern Memory extended to 2G/bit per channel.
- 128b/132b coding and SKPOS handling for USB 3.1.

Known Issues

- After changing to mux mode on the M8061A remotely wait for an additional 5 seconds after the system reports 'running state' before executing further commands.

- Defect 354552
  When using the M8061A a low transition density of the pattern can lead to an alignment failure between the M8041A and M8061A modules.
  ("Error ID: 16123057 Description: Failed to align the connection from M1.DataOut1 to M2.DataIn1. Check there is a cable connected and that the complement output of

M1.DataOut1 is properly terminated.").

Workaround:

- o Select a PRBS pattern and force an input alignment by changing the data rate.

- o Change the pattern back after the alignment succeeded.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 1.0.12.12

Released Date:	25 September 2015
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 16.3 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41 Embedded PC: Choose M8020A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_1.0.12.12.exe
License	

Fixed Issues

350887   Data Output Glitches when generating squelch signal.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 1.0.10.10

Released Date:	20 August 2015
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 16.3 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41 Embedded PC: Choose M8020A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_1.0.10.10.exe
License	

New Features and Enhancements

- The M8070A software supports jitter profile alignment capability on M8051 Data Module.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 1.0.9.8

Released Date:	11 August 2015
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 16.3 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41 Embedded PC: Choose M8020A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_1.0.9.8.exe
License	

New Features and Enhancements

- The M8070A software supports an add-on plug-in that generates C-PHY signals so as to test the DUTs that are compatible to this new standard.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 1.0.8.6

Released Date:	31 July 2015
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 16.3 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41 Embedded PC: Choose M8020A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_1.0.8.6.exe
License	

Fixed Issues

- License handling for C-Phy.
- USB factory setting improved and verified with real device.
- M8051A HF Jitter sources supported.
- DMI amplitude change adjust amplitude range correctly.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 1.0.6.4

Released Date:	23 July 2015
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 16.3 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41 Embedded PC: Choose M8020A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_1.0.6.4.exe
License	

Fixed Issues

336454   Fixed issue supporting 1 channel configuration and option UED.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 1.0.4.2

Released Date:	10 July 2015
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 16.3 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41 Embedded PC: Choose M8020A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_1.0.4.2.exe
License	

Fixed Issues

331013   SCPI commands …:TCEN and …:ACEN lock up.
Plug-in loading failes if version does not match.
Overload Indicator does not work.

330359   Arbitrary SSC causes exception error message.

330573   Factory Patterns & Settings updated.

Keysight M8070B System Software for M8000 Series of BER Test Solutions Version 1.0.0.0

Released Date:	27 June 2015
Operating System:	Microsoft Windows 7 (64 bit) SP1, Microsoft Windows 8 (64 bit) Microsoft Windows 8.1 (64 bit)
Software pre-requisites and Controller requirements:	Keysight IO Library rev. 16.3 or above AXIe Chassis Firmware (Embedded System Module (ESM) from Keysight Technologies) greater than or equal to version 1.3.41 Embedded PC: Choose M8020A-BU1 for a pre-installed embedded controller M9536A including pre-installation of M8070A software and module licenses. Otherwise: M9536A 1-slot AXIe embedded controller, choose options for Windows 7 or 8, 8 or 16 GB RAM, USB External PC: USB connection recommended between external PC and AXIe chassis. Minimum of 8 GB RAM recommended. For PCIe connectivity please refer to list of tested PCs for AXIe Technical Note, pub no. 5990-7632EN Minimum Display resolution requirement 1024 x 768
File Name	M8070A_Setup_1.0.0.0.exe
License	

Initial Release