M8050A High-Performance BERT, 120 GBaud

1.6T, USB and PCIe Compliance Testing V2.0

Overview

This M8050A configuration guide will help you to determine the correct product options, measurement applications, accessories, related software, and services to get the optimal configuration for your high-performance BERT.



KEYSIGHT

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M8050A System Structure

This step-by-step process will lead you through the configuration of your new M8050A high performance BERT, depending on the baud rate and other application requirements. The table below provides an overview of the currently available modules and chassis configurations along with the software packages that come with the M8050A.

Product	Description	Comment
M8050A	High Performance BERT System	System level ordering
BERT Modules		
M8042A	Pattern Generator Module 32/64/120 GBd, 2 or 3-slot AXIe	Pattern generator for all baud rates, number of slots occupied depends on number of channels
M8043A	Error Analyzer 32/64 GBd for NRZ and PAM4 with internal Clock Recovery	
M8009A	Clock Generator Module with Jitter Modulation, 60 GHz, 1 slot AXIe	Clock module up to 60 GHz, required with Pattern Generator
M8054A	Interference Source Module, 1-slot AXIe	Interference source up to 32 GHz
M8050A Chassis Options		
M8050A-BU2	Bundle consisting of one M9505A 5-slot AXIe Chassis with USB	Select for most compact 1 channel complete BERT setup
M8050A-BU3	Bundle consisting of one M9505A 5-slot AXIe Chassis and one M9537A AXIe Embedded PC Controller with 16GB RAM and Windows 10	Select when AXIe based PC is required and BERT System with pattern generation or error analysis is required
M8050A-BU4	Bundle consisting of two M9505A 5-slot AXIe Chassis with USB	Recommended for multi-channel and PCIe applications that require additional interference source
M8050A-BU5	Bundle consisting of two M9505A 5-slot AXIe Chassis with USB and one M9537A AXIe Embedded PC Controller with 16GB RAM and Windows 10	Recommended for multi-channel and PCIe applications that require additional interference source and an integrated AXIe PC is required
M8070B System Software		
M8070B	M8070B System Software	Base software package required to operate the BERT. Free download: M8070B
M8070ADVB	M8070ADVB Advanced Measurement Package for M8000 Series of BERT Test Solutions	Advanced features like automated jitter tolerance test and parameter sweeps, eye diagram measurement
M8070EDAB	M8070EDAB Error Distribution Analysis Package for M8000 Series BER Test Solutions	Provides burst mechanism detection and analysis, frame loss ratio estimation and error mapping
M8070ISIB	Adjustable ISI Channel Emulation Package for M8000 Series of BER Test Solutions	Provides adjustable ISI emulation.

M8050A Accessories and Replacement Items

The table below lists all accessories to operate the M8050A that are included with the product, unless indicated “not included” marked in comments below. The listed accessories can be ordered independent from module in case a replacement is required.

Option Number	Description	Comment
M8199A-810	Blue Clock Cable for connecting the clock input with clock output of M8009A.	Part of M8050A-KIT-101 (one channel) and M8050A-KIT-102 (two channel). Replacement cable for M8042A-801/802 semi rigid cable
M8042A-803	Synchronization Cable, Semi-rigid to sync Pattern Generator M8042A with M8009A	Part of M8050A-KIT-101 (one channel) and M8050A-KIT-102 (two channel).
M8042A-810	Cable Kit for synchronizing second Pattern Generator M8042A	Use when using two M8042A-0G1 with one clock module
M8045A-802	Matched Directional Coupler Pair for external Interference Source, 50 GHz, 13 dB, 2.4 mm	Coupler to feed interference source signal to pattern generator output signal, **not included.**
M8045A-803	Matched Coupler Pair for external Interference Source, 40 GHz, 12 dB, 2.4 mm	Coupler to feed interference source signal to pattern generator output signal, **not included.**
M8050A-801	Cable Kit for synchronizing for additional Clock Module M8009A in second Chassis	Use when two clock modules need to be synchronized beyond AXIe chassis[1], **not included.**
M8058A-801	Matched Cable Pair, 1.85 mm (m) to 1.85 mm (m), 2 ps, 0.15 m	Replacement cable for M8058A out to DUT, for G32 or G64 option selection. Part of M8050A-KIT-105.
M8059A-801	Matched Cable Pair, 1.0 mm (m) to 1.0 mm (m), 1.0 ps, 0.15 m	Replacement cable from M8059A output to DUT, for -G12 option selection. Part of M8050A-KIT-106.
M8009A-801	Clock module extension cable (required with more than one clock module)	Use this to synchronize two clock modules between two AXIe chassis[1]. **Not included.**
M8058A-802	Termination 50 Ohm, 1.85 mm (m)	Replacement termination. Part of M8050A-KIT-105.
M8059A-802	Termination 50 Ohm, 1.0 mm (m)	Replacement termination. Part of M8050A-KIT-106.
M9505A-801	Additional Filler Blade	Additional filler blade, required typ in 2 chassis setups
54964-03801	Wrench – 2 mm thick, dual-ended, fits 6 mm and 7 mm	Part of M8050A-KIT
54964-03802	Wrench – 1.5 mm thick, dual-ended, fits 8 mm	Part of M8050A-KIT
8710-1765	Wrench – Torque 8lb-in, 5/16 Inch	Part of M8050A-KIT
8710-2812	Wrench – Torque 4-in-lb 6 mm – open end Gold-Handle	Part of M8050A-KIT
9300-2665	ESD Mat w/ground Cord-Keysight branded	Part of M8050A-KIT
M8000-91B20	M8050A Start Here	Part of M8050A-KIT
M8000-91B21	M8050A Getting Started Guide	Part of M8050A-KIT
M8070-10102	M8070B Software Media Kit	Part of M8050A-KIT
M8100-91B30	Tips for Preventing Damage	Part of M8050A-KIT
8121-1243	Cable-Assembly USB Type-A Plug to Mini-B Plug 28-AWG 5-Conductor 5VDC 0.5A 2m-LG PVC	Part of M8050A-KIT
M8042-03801	Wrench – 9 mm Dual Ended	Part of M8050A-KIT
M8041-61601	External Clock Cable	Local Bus extension cable

M8053A-801	Matched Cable Pair, 1.85 mm (m) to 1.85 mm (m), 1 ps, 850 mm (Interferernce)	
M8053A-803	Matched Coupler Pair, 64 GHz, 14 dB Coupling Loss	
M8053A-804	Adapter 1.00 mm (m) to 1.85 mm (f)	
M8053A-805	Attenuator 10 dB 1.85 mm (comment KPN: 8490G)	
M8053A-806	Termination 50 Ohm, 3.5 mm	
M8199A-802	Termination 50 Ohm, 2.4 mm	
8490G-ATO-73050	Coaxial Fixed Attenuator, DC- 67 GHz	

1. Two clock module synchronization is currently not supported.

ISI Channel Boards

ISI channel boards can optionally be added to an M8050A order but must be ordered as a separate line item. It is not available under the M8050A product.

Option Number	Description	Comment
M8049A-001	ISI Channel Board, Five Traces from 1.4 to 5.5 inches	
M8049A-002	ISI Channel Board, Nine Traces from 0.8 to 8.0 inches	
M8049A-003	ISI Channel Board, Seven Traces from 9.1 to 22.3 inches	
M8067A-001	ISI Channel Board Three Traces 6.2, 11.7, and 17.1 inches, 1.85 mm Connectors	
M8067A-002	ISI Channel Board Three Traces 3.8, 8.9, and 14.4 inches, 1.85 mm Connectors	
M8067A-003	ISI Channel Board Two Traces 1.4 and 4.3 inches, 1.0 mm Connectors	
M8067A-004	ISI Channel Board Two Traces 2.9 and 5.8 inches, 1.0 mm Connectors	
M8067A-005	ISI Channel Board Two Traces 7.3 and 8.8 inches, 1.0 mm Connectors	

Step 1: M8042A Pattern Generator Configuration

The pattern generator AXIe module requires one remote head per Pattern Generator channel.

The correct type and the correct number of remote heads is automatically added to the order depending on the selection of the number of channels. Manual modifications are possible.

The pattern generator has no internal clock and always requires an M8009A clock module.



M8042A-0G1



M8042A-0G2

Step 1a: Select Number of Pattern Generator Channels

The pattern generator is offered either as a one channel (2-slot AXIe) or as a two channel (3-slot AXIe) module. These are different hardware modules; therefore, a license-based upgrade is not possible from one to two channels. Upgrading from one to two channels requires a second one channel pattern generator that can be supplied by the same clock module. The more compact alternative is the two channel -0G2 option within new M8042A.

Option Number	Description	Comment
M8042A-0G1	Pattern Generator NRZ and PAM4, 1 Channel, 2-slot AXIe Module	Standard selection. Adds one remote heads M8058A or M8059A.
M8042A-0G2	Pattern Generator NRZ and PAM4, 2 Channel, 3-slot AXIe Module	2nd channel is typically used when crosstalk test is required. Adds two remote heads M8058A or M8059A.

Step 1b: Select Maximum Baud Rate

The M8042A Pattern Generator is offered with baud rates of 32, 64 or 120 GBd and can be upgraded with software license to the next baud rate. Depending upon the selection the correct remote head will be added to the system and cannot be removed.

Option Number	Description	Comment
M8042A-G32	Pattern Generator, 32 GBd for NRZ and PAM4, module-wide License	Up to 32 GBd NRZ and PAM4. One or two M8058A added, dependent on option 0G1 or 0G2 selection.
M8042A-G64	Pattern Generator, 64 GBd for NRZ and PAM4, module-wide License	Up to 64 GBd NRZ and PAM4. One or two M8058A added, dependent on option 0G1 or 0G2 selection.
M8042A-G12	Pattern Generator, 120 GBd for NRZ and PAM4, module-wide License	Up to 120 GBd NRZ and PAM4. One M8059A added.

Step 1c: Select Optional Features

Options to extend the functionality of the pattern generator.

Option Number	Description	Comment
M8042A-0G4	De-emphasis, module-wide License	Optional selection
M8042A-0P6	PAM6 Encoding, Module-wide License	Enable generating PAM6 line coding.
M8042A-0P8	PAM8 Encoding, Module-wide License	Enable generating PAM8 line coding.
M8042A-0P3	PAM3 Encoding, module-wide License	Enable generating PAM3 line coding.
M8042A-0G9	Forward Error Correction (FEC) Encoding, Module-wide License	Enables FEC

M8042A Accessories

The table lists all accessories to operate the M8042A that are included with the product, unless indicated “not included” marked in the comments below. The listed accessories can be ordered independently from the module in case a replacement is required.

Keysight Order Number	Options	Comment
9230-0333	Calibration certificate	
M8199A-810	Blue Clock Cable for connecting the clock input with clock output of M8009A.	Part of M8050A-KIT-101 (one channel) and M8050A-KIT-102 (two channel). Replacement cable for M8042A-801/802 semi rigid cable
M8042A-803	Synchronization Cable, Semi-rigid to sync Pattern Generator M8042A with M8009A	Part of M8050A-KIT-101 (one channel) and M8050A-KIT-102 (two channel).

M8058A and M8059A Remote Heads for M8042A

The M8058A (64 GBd) and the M8059A (120 GBd) remote heads can be ordered as individual products. The configuration system adds the correct type and quantity of remote heads based on the M8042A baud rate selection and the number of channels that are selected.



M8058A Remote head for M8042A



M8059A Remote head for M8042A

Option Number	Description	Comment
M8058A	Remote Head, 32/64 GBd for M8042A Pattern Generator	Operates up to 64 GBd
M8059A	Remote Head, 120 GBd for M8042A Pattern Generator	Required for operation up to 120 GBd

M8058A Accessories

The table lists all accessories to operate the M8058A that are included with the product, unless indicated “not included” marked in comments below. The listed accessories can be ordered independent from module in case a replacement is required.

Option Number	Description	Comment
M8058A-801	Matched Cable Pair, 1.85 mm (m) to 1.85 mm (m), 2 ps, 0.15 m	Cable to DUT for M8058A. Part of M8050A-KIT-105.
M8058A-802	Termination 50 Ohm, 1.85 mm (m)	Required for single ended operation for open output of M8058A. Part of M8050A-KIT-105.

M8059A Accessories

The table lists all accessories to operate the M8059A that are included with the product, unless indicated “not included” marked in comments below. The listed accessories can be ordered independent from module in case a replacement is required.

Keysight Order Number	Options	Comment
M8059A-801	Matched Cable Pair, 1.0 mm (m) to 1.0 mm (m), 1.0 ps, 0.15 m	Cable to DUT for M8059A. Part of M8050A-KIT-106.
M8059A-802	Termination 50 Ω, 1.0 mm (m)	Required for single ended operation for open output of M8059A. Part of M8050A-KIT-106.

M8068A/69A High Voltage Remote Heads for M8042A

The M8068A (64 GBd) and the M8069A (120 GBd) remote heads can be ordered as individual products. The configuration system adds the correct type and quantity of remote heads based on the M8042A baud rate selection and the number of channels that are selected.



M8068A Remote head for M8042A



M8069A Remote head for M8042A

Option Number	Description	Comment
M8068A	High Voltage Remote Head, 64 GBd for M8042A Pattern Generator	Operates up to 64 GBd, up to 5 Vpp differential @ 64 GBd
M8069A	High Voltage Remote Head, 120 GBd for M8042A Pattern Generator	Operates up to 120 GBd, up to 3.6 Vpp differential @ 113.5 GBd

M8068A Accessories

The table lists all accessories to operate the M8068A that are included with the product, unless indicated “not included” marked in comments below. The listed accessories can be ordered independent from module in case a replacement is required.

Option Number	Description	Comment
M8058A-801	Matched Cable Pair, 1.85 mm (m) to 1.85 mm (m), 2 ps, 0.15 m	Cable to DUT for M8068A. Part of M8050A-KIT-109.
M8058A-802	Termination 50 Ohm, 1.85 mm (m)	Required for single ended operation for open output of M8068A. Part of M8050A-KIT-109.

M8069A Accessories

The table lists all accessories to operate the M8069A that are included with the product, unless indicated “not included” marked in comments below. The listed accessories can be ordered independent from module in case a replacement is required.

Keysight Order Number	Options	Comment
M8059A-801	Matched Cable Pair, 1.0 mm (m) to 1.0 mm (m), 1.0 ps, 0.15 m	Cable to DUT for M8069A. Part of M8050A-KIT-110.
M8059A-802	Termination 50 Ω, 1.0 mm (m)	Required for single ended operation for open output of M8069A. Part of M8050A-KIT-110.

Step 2: M8009A Clock Module Configuration

A clock module is always required for a pattern generator. The clock module has 2 synchronized clock outputs for clocks up 32 GHz, two channels can operate as clock outputs up to 60 GHz to support 120 GBd pattern generation.



M8009A

Option Number	Description	Comment
M8009A-062	Clock Generator two channel 60 GHz, 1 slot AXIe	Supports 2 to 32 GHz clock on two channels, and 2 to 60 GHz clock on two channels
M8009A-0G3	Advanced Jitter Modulation for up to two Channels, License	Add jitter capabilities
M8009A-0G6	Reference Clock Multiplier, License	Adds reference clock multiplication
M8009A-UR1	Upgrade of M8009A from one to two channel 60 GHz clock	Upgrade from M8009-061 to M8009-062

M8009A Accessories

The table lists all accessories to operate the M8009A that are included with the product, unless indicated “not included” marked in comments below. The listed accessories can be ordered independent from module in case a replacement is required.

Keysight Order Number	Options	Comment
M8009A-801	Clock module extension cable	Required with more than one clock module. **Not included.**

Step 3: Error Analyzer Configuration

M8043A Error Analyzer Configuration

The error analyzer module occupies 2 AXIe slots and requires a M8052A remote head.



Step 3a: Select Number of Error Analyzer Channels

The error analyzer is offered in only one channel (2-slot AXIe) but must still be selected.

Option Number	Description	Comment
M8043A-0A1	Error Analyzer NRZ and PAM4, 1 channel, 2-slot AXIe Module	Select this entry option to enable an error analyzer

Step 3b: Select Maximum Baud Rate

The M8043A error analyzer is offered with baud rates of 32 or 64 GBd and can be upgraded with software license to the next baud rate.

Option Number	Description	Comment
M8043A-A32	Error Analyzer 32 GBd for NRZ and PAM4 with internal Clock Recovery, 1 Channel, module-wide License	Up to 32 GBd NRZ and PAM4. One M8052A will be added.
M8043A-A64	Error Analyzer 64 GBd for NRZ and PAM4 with internal Clock Recovery, 1 Channel, module-wide License	Up to 64 GBd NRZ and PAM4. One M8052A will be added.

Step 3c: Select Optional Features

Options to extend the functionality of the error analyzer.

Option Number	Description	Comment
M8043A-0A3	Equalizer and De-embedding, License	Optional selection
M8043A-0S2	SKP OS Filtering for PCIe 128GT/s, module-wide License	Optional selection

M8052A Remote Head M8043A

The M8052A remote head M8052A is required to operate the M8043A error analyzer module. The two cables on the back side of the remote head are used to connect with the M8043A error analyzer module. Using the remote head input of the M8043A module directly without the M8052A is prohibited.



M8052A Remote head for M8043A

Option Number	Description	Comment
M8052A	Remote Head, 32/64 Gbaud for M8043A Error Analyzer	Operates up to 64 GBd

M8046A Error Analyzer Configuration



The M8046A Error Analyzer must be ordered as a separate line item.

Step 3a: Select Maximum Baud Rate

The M8046A Error Analyzer is recommended for real-time error analysis for data rates up 58 GBd, such as PCIe6 and USB receiver testing.

Option Number	Description	Comment
M8046A-A32	Error Analyzer 32 GBd for NRZ and PAM4 with internal Clock Recovery, 1 Channel, module-wide License	Up to 32 GBd NRZ and PAM4. One M8052A will be added.
M8046A-A64	Error Analyzer 64 GBd for NRZ and 58GBd for PAM4 with internal Clock Recovery, 1 Channel, module-wide License	Up to 64 GBd NRZ and 58GBd PAM4. One M8052A will be added.

Step 3b: Select Optional Features

Options to extend the functionality of the error analyzer.

Option Number	Description	Comment
M8046A-0A3	Equalizer License	Optional selection
M8046A-0A4	Clock recovery up to 32 Gbaud	Optional selection
M8046A-0A5	Clock recovery up to 64Gbaud	Optional selection
M8046A-0P3	PAM3/4 decoding up to 32 Gbaud	Optional selection
M8046A-0P6	PAM3/4 decoding up to 58 Gbaud	Optional selection
M8046A-0S1	Interactive Link Training for PCIe 8/16/32 GT/s, License	Optional selection
M8046A-0S2	SKP OS Filtering for PCIe 8/16/32 GT/s and CCIX 20/25 Gb/s, License	Optional selection
M8046A-0S3	Interactive Link Training for USB 3.0, 3.1. 3.2, License	Optional selection
M8046A-0S4	SKP OS Filtering for USB 3.0, 3.1, 3.2, License	Optional selection
M8046A-0S6	ALIGN Filtering for SATA 3G/6G and SAS 3G/6G/12G, License	Optional selection
M8046A-0N1	PCIe Filtering of SKP OS Extension for 64 GT/s, requires M8046A-0S2 or M8046A-US2	Optional selection
M8046A-0N2	PCIe LTSSM for 64 GT/s, requires M8046A-0S1/US1	Optional selection

Step 4: Interference Source

M8053A Interference Source

The Keysight M8053A interference source generates repeatable and accurate level impairments for testing of high-speed digital receivers that support symbol rates above 64 GBd



M8053A

No options are available for the interference source.

M8054A Interference Source

The Keysight M8054A interference source generates repeatable and accurate level impairments for testing of high-speed digital receivers that support symbol rates of up to 64 GBd.



M8054A

No options are available for the interference source.

Step 5: Chassis Selection

The M8050A High Performance BERT is based on AXIe modules. Depending on the selections in previous steps the number of occupied slots might exceed the maximum of 5 slots per chassis. In case the selection requires more than one 5-slot chassis please selected a bundle option that contains two 5-slot AXIe chassis.

In case an external PC is not planned to be used, a bundle containing an embedded controller is required for the operation of the M8050A. The external PC must be furnished by the customer.

Option Number	Description	Comment
M8050A-BU2	Bundle consisting of **one** M9505A 5-slot AXIe Chassis with USB	Standard selection for a complete 1ch channel BERT with pattern generation, clock generation and error analysis

M8050A-BU3	Bundle consisting of **one** M9505A 5-slot AXIe Chassis and one M9537A AXIe Embedded PC Controller with 16GB RAM and Windows 10	Including an embedded controller may eventually require a 2nd 5-slot chassis
M8050A-BU4	Bundle consisting of **two** M9505A 5-slot AXIe Chassis with USB	Configuration typically required when a two-channel pattern generator or an additional interference source is selected
M8050A-BU5	Bundle consisting of **two** M9505A 5-slot AXIe Chassis with USB and one M9537A AXIe Embedded PC Controller with 16GB RAM and Windows 10	Adds embedded controller to advanced system configuration

Step 6: M8070B Software Selection

M8070B software is the base version that provides all features to use the M8050A as a BERT.

This base version is downloadable at no charge from M8070B system software.

These basic functions can be extended with additional measurement packages that can be ordered in the standard ordering process.

Option Number	Description	Comment
M8070ADVB	M8070ADVB Advanced Measurement Package for M8000 Series of BERT Test Solutions	Advanced features like automated jitter tolerance test and parameter sweeps, eye diagram measurement
M8070EDAB	M8070EDAB Error Distribution Analysis Package for M8000 Series BER Test Solutions	Provides burst mechanism detection and analysis, frame loss ratio estimation and error mapping
M8070ISIB	Adjustable ISI Channel Emulation Package for M8000 Series of BER Test Solutions	Provides adjustable ISI emulation for M8070B V9.1 and higher.

Upgrade Options

Upgrade options can be found under M8050AU. This structure covers all upgrades for all modules available under the M8050A. Each is license key enabled.

Option Number	Description	Comment
M8050AU	Upgrades to High-Performance BERT,120 GBd	Upgrade structure for M8050A module upgrade
M8042A Pattern Generator Module 32/64/120 GBd, 2 or 3-Slot AXIe		
M8042A-U64	Upgrade from 32 to 64 GBd for M8042A Pattern Generator including NRZ and PAM4 module-wide license	Includes NRZ and PAM4, M8058A remote head from M8042A-G32 can be used
M8042A-U12	Upgrade from 64 to 120 GBd for M8042A Pattern Generator including NRZ and PAM4 module-wide license	Will also need to purchase M8059A remote heads.
M8042A-UG4	Upgrade to de-emphasis, module-wide license	Add de-emphasis to existing owned M8050A
M8042A-UG9	Upgrade to FEC Encoding, Module-wide License	Enable FEC
M8042A-UP3	Upgrade with PAM3 Encoding, module-wide license	Enable generating PAM3 signals
M8042A-UP6	Upgrade with PAM6 Encoding, module-wide license	Enable generating PAM6 signals
M8042A-UP8	Upgrade with PAM8 Encoding, module-wide license	Enable generating PAM8 signals
M8043A Error Analyzer Module 32/64 Gbaud, NRZ and PAM4 2-Slot AXIe		
M8043A-U64	Upgrade from 32 to 64 GBd for M8043A Error Analyzer including NRZ and PAM4 module-wide license	Includes NRZ and PAM4
M8043A-UA3	Upgrade to Equalization, License	Adds equalization capabilities
M8043A-US2	Upgrade to SKP OS Filtering for PCIe 128 GT/s, module-wide License	Adds SKP OS capabilities
M8009A Clock Generator Module with Jitter Modulation, 60 GHz, 1 Slot AXIe		
M8009A-UG3	Upgrade to Advanced Jitter Modulation for up to two Channels, license	Adds jitter capabilities
M8009A-UG6	Upgrade to Reference Clock Multiplier, license	Adds reference clock multiplication capability

TX and RX 1.6T Test Solution



The 1.6T Receiver and Transmitter Test Solution supports both receiver test, based on the M8050A high Performance BERT and transmitter test with the UXR Oscilloscope. In addition to the TX test capabilities, the UXR can be used as an Error Analyzer up to 120 GBd.

Product	Description	Comment
M8050A + UXR	1.6 RX and TX Test Solution	1.6T Transmitter and Receiver Test Solution
M8050A Configurator		
M8050A	BERT System Module Selection	Options preselected that cannot be removed: M8042A-0G1 preselected can be changed to -0G2 M8042A-0G4 M8042A-G12 M8059A (1EA for -0G1, 2 EA for -0G2) M8009A-0G3 M8050A-PA1 negative price adjuster Any other option can be added or modified
M8070ADVB	M8070ADVB Advanced Measurement Package for M8000 Series of BERT Test Solutions	M8070ADVB package required for operation, need to be selected, if not already available.
M8070EDAB	M8070EDAB Error Distribution Analysis Package for M8000 Series BER Test Solutions	M8070EDAB optional software package.
UXR Configurator		
UXR0802B + N2129BU-111	Infiniium UXR Real-Time Oscilloscope, 90 GHz, 256 GSa/s, 2Ch + Bandwidth upgrade to 90GHz	Select this configuration if 2-channel 90 GHz UXR is required. Required software options that must be added if not already available. • D9020ASIA Advanced Signal Integrity Software. • D9020PAMA Pulse Amplitude Modulation PAM-N Analysis Software.
UXR0804B + N2129BU-117	Infiniium UXR Real-Time Oscilloscope, 80 GHz, 256 GSa/s, 4Ch + Bandwidth upgrade to 90GHz	Select this configuration if 4-channel 90 GHz UXR is required. Required software options that must be added if not already available. • D9020ASIA Advanced Signal Integrity Software. • D9020PAMA Pulse Amplitude Modulation PAM-N Analysis Software.

Related Literature

Description	Publication Number
M8050A Data Sheet	3122-1338EN
M8054A Interference Source 32 GHz, Data Sheet	5992-3971EN
M8053A Interference Source 64 GHz, Data Sheet	3124-1184.EN
M8049A ISI Channel Boards, Data Sheet	5992-3617EN
M8067A ISI Channel Boards, Data Sheet	3122-2261.EN

Keysight Support Services

Accelerate your learning curve, enhance your test uptime, and confidently guarantee your instrument accuracy with Keysight Support Services. Keysight Services are here to support your test needs with expert technical support, instrument repair and calibration, training, alternative acquisition program options, and more.

A KeysightCare agreement provides dedicated, proactive support through a single point of contact for an extensive group of instruments, software, and solutions to ensure optimal uptime, with fast response times and resolution. Explore the services that are right for you.

Keysight Services

Offering	Benefits
KeysightCare 	KeysightCare provides elevated support for Keysight instruments and software, with access to technical support experts who respond within a specified time and ensure committed repair and calibration turnaround times (TAT). KeysightCare offers multiple service agreement tiers, including KeysightCare Assured, Enhanced, and Application Software Support. See the KeysightCare data sheet for details.
KeysightCare Assured	KeysightCare Assured provides a commitment to respond to your engineer's technical needs quickly. When unexpected repairs are necessary, you can count on a committed repair service turnaround time to get you back up and running.
KeysightCare Enhanced	KeysightCare Enhanced includes all the benefits of KeysightCare Assured plus Keysight's accurate and reliable Calibration Services, accelerated and committed TAT, and technical response.
Keysight Support Portal & Knowledge Center	All KeysightCare tiers include access to the Keysight Support Portal, where you can manage support and service resources related to your assets, such as service requests and status, or browse the Knowledge Center.
Education Services	Build confidence and gain new skills to make accurate measurements, with flexible Education Services developed by Keysight experts. Including Start-up Assistance.
Alternative Acquisition Options	
KeysightAccess	Reduce budget challenges with a lease-based subscription service that offers low monthly payments, enabling you to get the instruments, software, and technical support you want for your test needs.

Recommended Services

Maximize your instrument uptime and confidently make accurate measurements by securing technical support, repair, and calibration services with committed response and turnaround times. High-performance instruments include 1 year of KeysightCare Assured or KeysightCare Warranty Plus. Obtain multi-year KeysightCare upfront to eliminate the need for lengthy and tedious paperwork and yearly requests for maintenance budget. Plus, you benefit from secured service for 2, 3, or 5 years.

Service	Function
KeysightCare Enhanced*	**Includes Tech Support, Warranty and Calibration**
R-55B-001-1	KeysightCare Enhanced – Upgrade 1 year
R-55B-001-2	KeysightCare Enhanced – Extend to 2 years
R-55B-001-3	KeysightCare Enhanced – Extend to 3 years (Recommended)
R-55B-001-5	KeysightCare Enhanced – Extend to 5 years (Recommended)
KeysightCare Assured*	**Includes Tech Support and Warranty**
R-55A-001-2	KeysightCare Assured – Extend to 2 years
R-55A-001-3	KeysightCare Assured – Extend to 3 years
R-55A-001-5	KeysightCare Assured – Extend to 5 years
Start-Up Assistance	
PS-S40-01	Included – instrument fundamentals and operations starter
PS-S40-04	Recommended – instrument fundamentals and operations starter
PS-S40-02	Optional, technology & measurement science standard learning

* Limited availability might apply. Please review the service definition tool for model number availability and the datasheet for country availability. Coverage might be limited to KeysightCare Warranty Plus (R-55F-001). If KeysightCare Enhanced is available. R-55B-001-2/3/5 must be ordered with R-55B-001-1.M805

Keysight enables innovators to push the boundaries of engineering by quickly solving design, emulation, and test challenges to create the best product experiences. Start your innovation journey at www.keysight.com.

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