N9038B MXE EMI Receiver

Introduction

This configuration guide contains information to help you configure your N9038B MXE EMI receiver to meet your requirements. Ordering optional capabilities at time of purchase provides the lowest overall cost.

KEYSIGHT

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Included in Base Product

Standard options and accessories come with the MXE base model at no additional charge and do not need to be ordered.

They include:

- Spectrum analyzer measurement application
- EMI receiver measurement application
- Hex-core, high-performance processor, 32 GB RAM, with flash calibration file memory
- High-performance digital signal processing with 2 GB capture memory
- 10 MHz analysis bandwidth
- Noise floor extension
- Front panel control for automatic external line impedance stabilization networks (LISN)
- Enhanced display package with spectrogram, trace zoom, and zone span
- Microsoft Windows 10 operating system
- Multi-touch user interface
- User guides
- Power cord

Configure Your Keysight MXE EMI Receiver

This step-by-step process will help you configure your MXE EMI Receiver.
Tailor the performance to meet your requirements.

Step 1. Select maximum frequency range (required option)

Description	Option number	Additional information
Frequency range, 3 Hz to 3.6 GHz	N9038B-503	
Frequency range, 3 Hz to 8.4 GHz	N9038B-508	
Frequency range, 3 Hz to 26.5 GHz	N9038B-526	
Frequency range, 3 Hz to 44 GHz	N9038B-544	

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Step 2. Add a preamplifier

Description	Option number	Additional information
Preamplifier, 100 kHz to 3.6 GHz	N9038B-P03	Compatible with frequency range option N9038B-503
Preamplifier, 100 kHz to 8.4 GHz	N9038B-P08	Compatible with frequency range option N9038B-508
Preamplifier, 100 kHz to 26.5 GHz	N9038B-P26	Compatible with frequency range option N9038B-526
Preamplifier, 100 kHz to 44 GHz	N9038B-P44	Compatible with frequency range option N9038B-544

Step 3. Choose frequency reference

Description	Option number	Additional information
Frequency reference	Standard	Aging rate: ± 1 x 10^{-6}/year
Precision frequency reference	N9038B-PFR	Reduces frequency drift for more accurate measurements
		Aging rate: ± 1 x 10^{-7}/year

Step 4. Choose analysis bandwidth

Description	Option number	Additional information
10 MHz analysis bandwidth	Standard	
25 MHz analysis bandwidth	N9038B-B25	Extends the analysis bandwidth to 25 MHz
85 MHz analysis bandwidth	N9038B-B85	Extends the analysis bandwidth to 85 MHz, below 3.6 GHz
160 MHz analysis bandwidth	N9038B-B1X	Extends the analysis bandwidth to 160 MHz, below 3.6 GHz

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Step 5. Choose performance options

Description	Option number	Additional information
Digital processor with 2 GB capture memory	Standard	Licensed as N9038B-DP2
Noise floor extension	Standard	Improves displayed average noise level (instrument alignment-based processes); licensed as N9038B-NFE
Enhance display package	Standard	Includes spectrogram, trace zoom, and zone span; licensed as N90E1EDPB
Type-N RF connector, female	N9038B-CNF	Choose Type-N RF connector for Input 1
APC 3.5 mm connector, male	N9038B-C35	Choose 3.5 mm connector for Input 1 (Input 2 remains type N); compatible with Option 526 only; eliminates amplitude response errors due to modes otherwise seen with Type-N connector above 18 GHz; refer to N9038B specifications guide for details
External mixing	N9038B-EXM	Provides external mixing with Keysight and third-party mixers; single port for LO out and IF in (SMA female)
External source control	N9038B-ESC	Controls EXG, MXG and PSG sources from the front panel of the MXE

Step 6. Add rear panel output utilities

Description	Option number	Additional information
Wideband IF output	N9038B-CR3	Wideband IF out; center frequency depends on IF path; output on Aux IF connector at rear panel
Y-axis screen video output	N9038B-YAS	Screen video (0–1-volt open circuit) on rear panel analog out

Step 7. Add security features

Description	Option number	Additional information
Additional removable M.2 NVMe solid-state drive (SSD)	N9038B-SS3	Provides a fully imaged, removable M.2 NVMe SSD in addition to the one installed in instruments, with Windows 10 operating system
Exclude launch program	N9038B-SF1	Prevents the launching of Windows programs from the instrument application
Prohibit saving results	N9038B-SF2	Prevents the saving/recall of measurement results or user configurations to/from instrument's data storage

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Step 8. Choose measurement application or software and license type

Note: Keysight offers 4 license types for the measurement applications and instrument features, in 2 license terms: Perpetual or Subscription.

License types:

- **Node-locked:** Allows you to use the license on one instrument/computer at a time
- **Transportable:** Allows you to use the license on one instrument/computer at a time. This license may be transferred to another instrument/computer using Keysight's online tool
- **Floating:** Allows you to access the license on the networked instruments/computers from a server, one at a time. For concurrent access, multiple licenses may be purchased
- **USB Portable:** Allows you to access the license from one instrument/computer to another by end-user only with certified USB dongle, purchased separately

License terms:

- **Perpetual:** License can be used in perpetuity. For perpetual license holders, a separate support contract is required to access Keysight technical support and software updates
- **Subscription:** License is time limited to a defined period, such as 12-months. A valid support contract is included in the pricing for subscription licenses.

For detailed information, we strongly recommend you visit the X-Series measurement application collection page: www.keysight.com/find/xseriesapps

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Description	Option number	Additional information
Spectrum analyzer and IQ analyzer	Standard	Traditional spectrum analysis plus many new and enhanced functions
Power Suite	N90EMPSMB	Power measurements based on industry specifications
EMI receiver	Standard	Performs EMI conducted and radiated emission measurements; licensed as N6141EM1E
Analog demodulation	E9063EM0E	Adds one-button measurement for AM/FM/PM demodulation with metrics, tune and listen, and AF spectrum; supports audio output (output voltage proportional to frequency deviation). FM Stereo and RDS are included
Phase noise	E9068EM0E	Adds one-button measurements for analyzing phase noise in frequency domain (log plot) and time domain (spot frequency)
Noise figure	E9069EM0E (requires preamplifier)	Adds one-button measurements for noise figure, gain, and related metrics; requires preamplifier to meet specifications; works with Keysight N400xA Series smart noise sources and 346 Series noise sources
SCPI command language compatibility	E9062EM0E	Adds capability to emulate the R&S ESU, ESR, and ESL EMI receivers
Time domain scan	N90EMTDSB	Provides high-overlap FFT scanning for fast signal capture and measurement
Real-time analysis, up to maximum available BW, basic detection	N9038RT1B	Includes frequency mask trigger (FMT) and time qualified trigger (TQT); minimum 3.7 µs signal duration for 100% probability of intercept (POI); requires Option B85 or B1X
89600 vector signal analysis (VSA) software		Industry-leading measurement software for evaluating and troubleshooting signals in R&D; PC-based software supporting more than 30 measurement platforms, plus more than 75 signal standards and modulation types including MIMO analysis; www.keysight.com/find/89600_VSA

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Step 9. Choose accessories

Description	Option number	Additional information
User guide	Standard	US – English localization All user documentation is included in the MXE's embedded, context-sensitive help system. User documentation can be downloaded from: https://www.keysight.com/us/en/support/N9038B/mxe-emi-test-receiver-3-hz-to-44-ghz.html
Power cord	Standard	Dependent upon the region of use
Adapter, 2.4 mm (F) to 2.9 mm (F)	Standard	Ship standard only for Option 544
Adapter, 2.4 mm (F) to 2.4 mm (F)	Standard	Ship standard only for Option 544
Front panel cover	CV1117A	Protective cover for front panel
Rack mount	1CM113A	Adds rack mount flanges to the MXE
Front handles	1CN103A	Adds front handles to the MXE
Rack mount with handles	1CP105A	Adds rack mount flanges and handles to the MXE
Rack slide	1CR014A	Adds a non-tilting rack slide to the MXE
USB DVD-ROM/CD-R/RW drive	1DVR001A	Enhances the usability of the Windows operating system
Mouse, USB interface	1MSE001A	

Step 10. Add calibration, technical training, support, and upgrade services

Description	Option number	Additional information
Commercial calibration certificate with test data	N9038B-UK6	Calibration certificate only available at time of purchase; only provides measurement results
Keysight Calibration + Uncertainties + Guardbanding (accredited calibration)	N9038B-AMG	Provides ISO 17025A accredited calibration from factory
ANSI Z540-1-1994 calibration	N9038B-A6J	Provides ANSI Z540 compliant calibration from factory
Service: 1-day start-up assistance	PS-S20-01	Training on how to operate your instrument effectively
Calibration Assurance Plan, Return-to-Keysight, 3 years	R-50C-011-3	
Calibration Assurance Plan, Return-to-Keysight, 5 years	R-50C-011-5	
Calibration Assurance Plan, Return-to-Keysight, 7 years	R-50C-011-7	
Calibration Assurance Plan, Return-to-Keysight, 10 years	R-50C-011-10	

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Instrument Upgrades

Fast license-key upgrades for performance options that do not require additional hardware:

1. Place an order for the upgrade with Keysight and request to receive the option upgrade entitlement certificate and a one-time software upgrade license through email
2. Redeem the certificate through the Web by following the instructions on the certificate
3. Install the license file and latest software in the MXE
4. Begin using the new capability [1, 2]

Installation and testing information is available at: http://www.keysight.com/find/mxe_upgrades

Description	Upgrade number	Additional information
Upgrade to the precision frequency reference	N9038BU-PFR	
Add preamplifier, 3.6 GHz	N9038BU-P03	Not compatible with Option 508, 526 or 544
Add preamplifier, 8.4 GHz	N9038BU-P08	Not compatible with Option 503, 526 or 544
Add preamplifier, 26.5 GHz	N9038BU-P26	Not compatible with Option 503, 508 or 544
Add preamplifier, 44 GHz	N9038BU-P44	Not compatible with Option 503, 508 or 526
Increase analysis bandwidth to 25 MHz	N9038BU-B25	
Increase analysis bandwidth to 85 MHz	N9038BU-B85	Includes hardware and license key
Increase analysis bandwidth to 160 MHz	N9038BU-B1X	Includes hardware and license key
Add external mixing	N9038BU-EXM	Includes hardware and license key
Add external source control	N9038BU-ESC	
Add wideband IF output	N9038BU-CR3	
Add Y-axis screen video output	N9038BU-YAS	
Add security features, exclude launch program	N9038BU-SF1	Prevents the launching of Windows programs from the instrument application

1. At the time of manufacture, the hardware related to many of these options was fully adjusted and the option performance was verified to be within its warranted specifications. Within one year of the initial calibration date of the analyzer, this option is fully calibrated with no further adjustment or verification testing.
2. If this analyzer has been adjusted as part of a repair or calibration during its first year, or if the analyzer is more than one year old, additional adjustment and performance verification tests are required to ensure that some newly installed options are functioning properly. However, the completion of these tests does not guarantee that the analyzer meets all warranted specifications.

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Description	Upgrade number	Additional information
Add security features, prohibit saving results	N9038BU-SF2	Prevents the saving/recall of measurement results or user configurations to/from instrument's data storage
Add removable solid-state drive (SSD)	N9038BU-SS1	Provides additional, removable solid-state drive, with Windows 10 operating system, for PC6/PC6S processor
Add removable solid-state drive (SSD)	N9038BU-SS2	Provides additional, removable solid-state drive, with Windows 10 operating system, for PC8 processor
Add removable solid-state drive (SSD)	N9038BU-SS3	Provides additional, removable M.2 NVMe solid-state drive, with Windows 10 operating system, for PCA processor
Upgrade to PC8, hex-core, high-performance processor, 32 GB RAM, with flash calibration file memory	N9038BU-PC8	Upgrade to PC8, hex-core, high-performance processor, 32 GB RAM, with flash calibration file memory and removable solid-state drive
Upgrade to PCA, hex-core, high-performance processor, 32 GB RAM, with flash calibration file memory	N9038BU-PCA	Upgrade to PCA, hex-core, high performance processor, 32 GB RAM, with flash calibration file memory and removable M.2 NVMe solid-state drive
Increase frequency from 3.6 to 8.4 GHz	N9038BU-F01	
Increase frequency from 3.6 to 26.5 GHz	N9038BU-F02	
Increase frequency from 8.4 to 26.5 GHz	N9038BU-F03	
Increase frequency from 3.6 to 44 GHz	N9038BU-F04	
Increase frequency from 8.4 to 44 GHz	N9038BU-F05	
Increase frequency from 26.5 to 44 GHz	N9038BU-F06	

For more information on accessories go to: www.keysight.com/find/accessories

Other calibration options may be available; for more information on calibration go to: www.keysight.com/find/calibration

For more information on training and application support services go to: www.keysight.com/find/training

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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