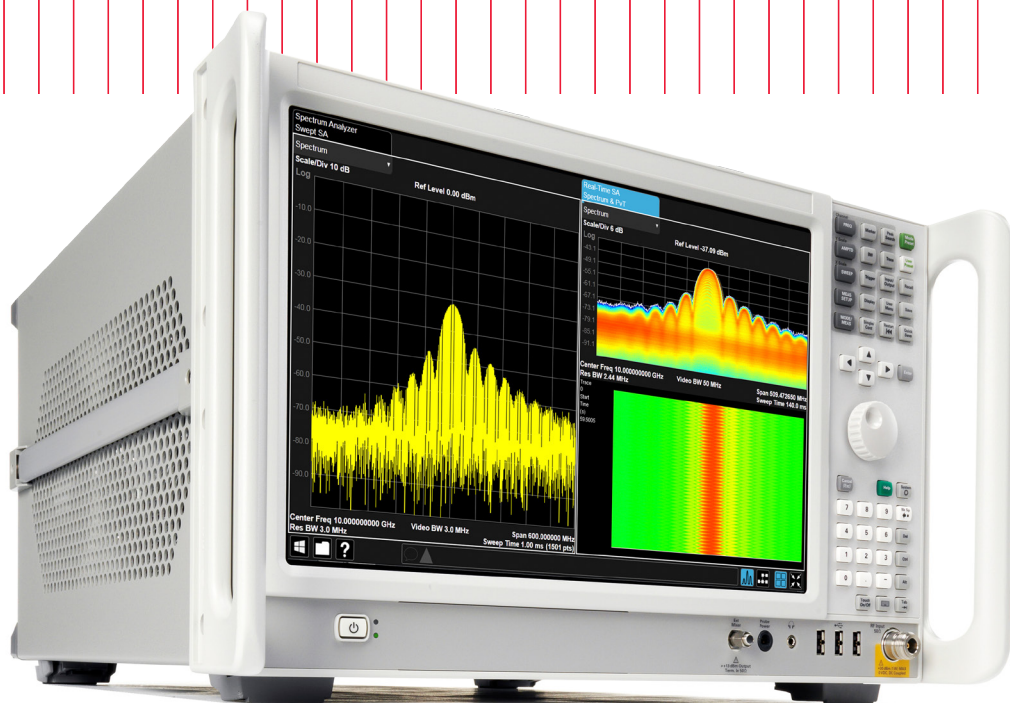


Keysight N9040B UXA X-Series Signal Analyzer

Configuration Guide

This UXA configuration guide will help you determine which performance options, measurement applications, accessories, and services to include with your new UXA or to add as upgrades to an existing UXA.



What Is Included In the Base Product

The “standard” options and accessories come with the UXA base instrument at no additional charge and do not need to be ordered. They include:

- Wideband IF output
- Enhanced display package
- External mixing
- Microwave preselector bypass
- Low noise path
- Low frequency enabled
- Fine step mechanical attenuator
- Digital processor with 2 GB capture memory
- Enhanced phase noise
- Fast sweep capability
- LO/IM nulling
- Noise floor extension; instrument alignment
- Precision frequency reference
- Real-time data link
- Intel Core i7 CPU module, 16 GB RAM
- Microsoft Windows Embedded Standard (WES) operating system
- Spectrum analyzer application
- Country-specific power cord
- Getting Started Guide
- Front and rear panel covers
- UXA start-up assistance

Configure Your Keysight UXA Signal Analyzer

This step-by-step process will help you configure your UXA signal analyzer. Tailor the performance to meet your requirements.

For a summary of specifications, refer to the UXA signal analyzer data sheet (5992-0090EN).

Step 1. Select maximum frequency range (required option)

Description	Option number	Additional information
Frequency range, 3 Hz to 8.4 GHz	N9040B-508	
Frequency range, 3 Hz to 13.6 GHz	N9040B-513	
Frequency range, 3 Hz to 26.5 GHz	N9040B-526	

Step 2. Add a preamplifier

Description	Option number	Additional information
Preamplifier, 100 kHz to 8.4 GHz	N9040B-P08	Compatible with frequency range options: N9040B-508, N9040B-513, and N9040B-526
Preamplifier, 100 kHz to 13.6 GHz	N9040B-P13	Compatible with frequency range options: N9040B-513 and N9040B-526
Preamplifier, 100 kHz to 26.5 GHz	N9040B-P26	Compatible with frequency range option: N9040B-526

Step 3. Choose an attenuator

Description	Option number	Additional information
Mechanical attenuator	Standard	2 dB steps, 0 to 70 dB; installed as N9040B-FSA
Electronic attenuator up to 3.6 GHz	N9040B-EA3	Add in addition to the mechanical attenuator; 1 dB steps, 0 to 24 dB

Step 4. Choose analysis bandwidth

Description	Option number	Additional information
10 MHz analysis bandwidth	Standard	
25 MHz analysis bandwidth	N9040B-B25	Extends the analysis bandwidth to 25 MHz
40 MHz analysis bandwidth	N9040B-B40	Extends the analysis bandwidth to 40 MHz
255 MHz analysis bandwidth	N9040B-B2X	Extends the analysis bandwidth to 255 MHz
510 MHz analysis bandwidth	N9040B-B5X	Extends the analysis bandwidth to 510 MHz
Microwave preselector bypass	Standard	Bypass the microwave preselector for wider bandwidth IF; installed as N9040B-MPB

Step 5. Choose performance options

Description	Option number	Additional information
Digital processor with 2 GB capture memory	Standard	Installed as N9040B-DP2
Enhanced phase noise performance	Standard	DDS-based LO assembly; installed as N9040B-EPO
External mixing	Standard	Provides external mixing with Keysight and third party mixers; single port ¹ for LO out and IF in (SMA female); installed as N9040B-EXM
Fast sweep capability	Standard	Improves sweep speed in swept-tune mode; installed as N9040B-FS1
LO/IM nulling	Standard	Minimizes the LO feed-thru and the intermodulation distortion; installed as N9040B-NUL
Low noise path	Standard	Improves sensitivity (DANL) in frequency bands above 3.6 GHz without degrading dynamic range; installed as N9040B-LNP
Noise floor extension	Standard	Improves displayed average noise level (DANL), instrument alignment based implementation; installed as N9040B-NF2
Precision frequency reference	Standard	Aging rate: $\pm 1 \times 10^{-7}$ /year; installed as N9040B-PFR
Atomic frequency reference	J7203A	Aging rate: $\pm 1 \times 10^{-9}$ /year; ordered as an accessory and attached to the rear panel
APC 3.5 mm connector	N9040B-C35	3.5 mm RF input connector on 26.5 GHz UXA (Compatible with Option 526 only)
Fast power	N9040B-FP2	Accelerates the power measurements such as ACPR; requires Option B40 (or wider BW)

1. When used with Keysight 11970 Series external mixers, an external diplexer is required. Recommended diplexer can be purchased from Keysight as N9029AE13, or from OML Inc. as DPL313B.

Step 6. Add real-time spectrum analysis

Description	Option number	Additional information
Real-time analysis up to maximum available BW, basic detection	N9040B-RT1	Includes frequency mask trigger (FMT), time qualified trigger (TQT); minimum 17.3 μ s signal duration for 100% probability of intercept (POI) with full amplitude accuracy; requires N9040B-B2X or N9040B-B5X which determines the maximum real-time BW
Real-time analysis up to maximum available BW, optimum detection	N9040B-RT2	Includes FMT, TQT triggers; minimum 3.517 μ s signal duration for 100% probability of intercept (POI) with full amplitude accuracy; requires N9040B-B2X or N9040B-B5X which determines the maximum real-time BW

Step 7. Add optional features including security

Description	Option number	Additional information
Enhanced display package	Standard	Includes spectrogram, trace zoom, and zone span in SA mode; installed as N9040B-EDP
Basic EMI precompliance	N9040B-EMC	Perform EMI precompliance measurements with CISPR 16-1-1 detectors and bandwidths: tune and listen, and measure at marker are also available
Additional removable solid-state drive (SSD)	N9040B-SSD	Provides a fully-imaged, removable SSD in addition to the one installed in instruments
Security features, exclude launch programs	N9040B-SF1	Prevents the launching of Windows programs from the instrument application
Security features, prohibit saving results	N9040B-SF2	Prevents the saving/recall of measurement results or user configurations to/from instrument's data storage

Step 8. Add rear panel output utilities

Description	Option number	Additional information
Second IF output	Standard	Wideband IF out; center frequency depends on IF path; output on Aux IF connector at rear panel; installed as N9040B-CR3
Arbitrary IF out	N9040B-CRP	IF out 10 to 75 MHz (in 500 kHz steps); output on Aux IF connector at rear panel
Aux log video out	N9040B-ALV	Fast rise time video out; output on Aux IF connector
Y-axis video out	N9040B-YAV	Screen video (0-1 volt open circuit); log video and linear video
Real time data link	Standard	The LVDS connector allows UXA connect to X-COM data recorder for data streaming (up to 40 MHz BW), and to the N5106A PXB baseband generator and channel emulator; installed as N9040B-RTL

Step 9. Choose measurement application or software and license type

Note: The last two letters of the ordering numbers indicate the license type—FP stands for fixed perpetual, TP for transportable perpetual; it is recommended that you configure each application with the same license type; Visit www.keysight.com/find/X-Series_transportable for more information about transportable licenses

Description	Fixed license	Transportable license	Additional information
General purpose			
Spectrum analyzer	Standard	Not applicable	Traditional spectrum analysis plus many new and enhanced functions, PowerSuite (power measurements based on industry specifications), and basic IQ analyzer; installed as N9060C
Phase noise	N9068C-2FP	N9068C-2TP	Adds one-button measurements for analyzing phase noise in frequency domain (log plot) and time domain (spot frequency); supports external mixing
89600 vector signal analysis (VSA) software	Not available	89601B (transportable license is standard)	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 pulse analysis; www.keysight.com/find/89600_VSA

10. Choose accessories

Description	Option number	Additional information
User guide	Standard	<ul style="list-style-type: none"> – US – English localization – All user documentation is included in the embedded context-sensitive help system inside the UXA and on a DVD that is shipped with the instrument – User documentation can be downloaded from: www.keysight.com/find/uxa_manuals
Front-panel protective cover	Standard	
Rear-panel protective cover	Standard	
Power cord	Standard	Country specific
Mouse, USB interface	N9040B-MSE	Enhances usability of the VSA software
Compact keyboard, USB interface	N9040B-KB2	US 65 keys; Enhances the usability of the VSA software
USB DVD-ROM/CD-R/RW drive	N9040B-DVR	Enhances the usability of the Windows operating system
Rack mount	1CM025A	Adds rack mount flanges to the UXA
Rack mount with handles	1CP035A	Adds rack mount flanges and handles to the UXA
Minimum loss pad, 50 to 75 Ω (type-N to BNC)	N9030A-MLP	<ul style="list-style-type: none"> – 50 Ω type-N male to 75 Ω BNC female adapter – Frequency range: 9 MHz to 2 GHz – Input/output return loss: 20/11 dB – Insertion loss: 5.7 dB
V-band waveguide harmonic mixer, 50 to 75 GHz	M1970V-001	USB mixer with smart “plug-and-play” features
Extended V-band waveguide harmonic mixer, 50 to 80 GHz	M1970V-002	USB mixer with smart “plug-and-play” features
E-band waveguide harmonic mixer, 60 to 90 GHz	M1970E	USB mixer with smart “plug-and-play” features
W-band waveguide harmonic mixer, 75 to 110 GHz	M1970W	USB mixer with smart “plug-and-play” features
26 to 40 GHz (A-band) waveguide harmonic mixer	11970A	Requires N9029AE13 diplexer
33 to 50 GHz (Q-band) waveguide harmonic mixer	11970Q	Requires N9029AE13 diplexer
40 to 60 GHz (U-band) waveguide harmonic mixer	11970U	Requires N9029AE13 diplexer
50 to 75 GHz (V-band) waveguide harmonic mixer	11970V	Requires N9029AE13 diplexer
75 to 110 GHz (W-band) waveguide harmonic mixer	11970W	Requires N9029AE13 diplexer
LO/IF diplexer	N9029AE13	Ordering convenience; required for 11970 Series external mixers
90 to 140 GHz OML harmonic mixer	N9029AE08	Ordering convenience for OML mixer
110 to 170 GHz OML harmonic mixer	N9029AE06	Ordering convenience for OML mixer
140 to 220 GHz OML harmonic mixer	N9029AE05	Ordering convenience for OML mixer
220 to 350 GHz OML harmonic mixer	N9029AE03	Ordering convenience for OML mixer
50 to 75 GHz VDI frequency extender	N9029AV15	Signal analyzer frequency extension module from VDI
60 to 90 GHz VDI frequency extender	N9029AV12	Signal analyzer frequency extension module from VDI
75 to 110 GHz VDI frequency extender	N9029AV10	Signal analyzer frequency extension module from VDI
90 to 140 GHz VDI frequency extender	N9029AV08	Signal analyzer frequency extension module from VDI
110 to 170 GHz VDI frequency extender	N9029AV06	Signal analyzer frequency extension module from VDI
140 to 220 GHz VDI frequency extender	N9029AV05	Signal analyzer frequency extension module from VDI
220 to 330 GHz VDI frequency extender	N9029AV03	Signal analyzer frequency extension module from VDI
325 to 500 GHz VDI frequency extender	N9029AV02	Signal analyzer frequency extension module from VDI
500 to 750 GHz VDI frequency extender	N9029AV1B	Signal analyzer frequency extension module from VDI
750 to 1100 GHz VDI frequency extender	N9029AV01	Signal analyzer frequency extension module from VDI
Power supply for VDI module	N5262VDI-175	Required for each of the N9029AVxx VDI module
Atomic frequency reference	J7203A	Improves long-term frequency accuracy: aging rate at $\pm 1 \times 10^{-9}$ /year
USB external preamplifier, 10 MHz to 4 GHz	U7227A	External preamplifier with smart “plug-and-play” features
USB external preamplifier, 0.1 to 26.5 GHz	U7227C	External preamplifier with smart “plug-and-play” features
USB external preamplifier, 2 to 50 GHz	U7227F	External preamplifier with smart “plug-and-play” features

For more information on the USB smart harmonic external mixers, go to www.keysight.com/find/smartmixer
 For more information on the USB external preamplifiers, go to www.keysight.com/find/usb-preamp

Step 11. Choose warranty length

Description	Option number	Additional information
Return-to-Keysight warranty, 3 years	Standard	3-year warranty is included at no additional charge
Warranty Assurance Plan, 5 years	R-51B-001-5Z	

Step 12. Add a calibration plan

Description	Option number	Additional information
Commercial calibration certificate with test data	N9040B-UK6	Calibration certificate only available at time of instrument purchase; only provides measurement results
Keysight Calibration + Uncertainties + Guardbanding (accredited cal)	N9040B-AMG	Provides ISO 17025A accredited calibration from factory (excessive delivery lead-time allowed)
ANSI Z540-1-1994 Calibration	N9040B-A6J	Provides ANSI Z540 compliant calibration from factory (excessive delivery lead-time allowed)
Calibration Assurance Plan, Return-to-Keysight service center, 3 years	R-50C-011-3	Keysight tests your instrument against its original specifications and automatically makes adjustments if outside of specified parameters; pre- and post-adjustment measurement data reports also provided
Calibration Assurance Plan, Return-to-Keysight service center, 5 years	R-50C-011-5	Keysight tests your instrument against its original specifications and automatically makes adjustments if outside of specified parameters; pre- and post-adjustment measurement data reports also provided

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

Instrument Upgrades

Fast license-key upgrades for 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 UXA
4. Begin using the new capability ^{1,2}

Installation, calibration, and verification information is available at:
www.keysight.com/find/uxa_upgrades

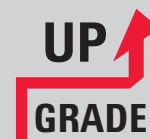
Upgrades to wider analysis bandwidths (> 40 MHz) require hardware and license key. Instruments are required to ship back to Keysight regional service center for upgrade and calibrations.

A web-based calculator at the following URL assists you in finding what upgrade options for analysis bandwidth you need: www.keysight.com/find/BW-selector

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.

You Can Upgrade!

Options can be added after your initial purchase.



Most X-Series options are license-key upgradeable.

Description	Upgrade number	Requirements (UXA must already include the following)	Additional information
Increase analysis bandwidth from 10 to 25 MHz	N9040BU-B25	None	License only
Increase analysis bandwidth from 10 to 40 MHz	N9040BU-B40	None	License only
Increase analysis bandwidth from 25 to 40 MHz	N9040BU-BU1	B25	License only
Increase analysis bandwidth from 40 MHz to 255 MHz	N9040BU-B2X	B40	Includes additional hardware; return to Keysight service center
Increase analysis bandwidth from 40 MHz to 510 MHz	N9040BU-B5X	B40	Includes additional hardware; return to Keysight service center
Increase analysis bandwidth from 255 MHz to 510 MHz	N9040BU-BU2	B2X	Includes additional hardware; return to Keysight service center
Increase analysis bandwidth from 10 to 255 MHz	N9040BU-B40 & N9040BU-B2X	None	Includes additional hardware; return to Keysight service center
Increase analysis bandwidth from 10 to 510 MHz	N9040BU-B40 & N9040BU-B5X	None	Includes additional hardware; return to Keysight service center
Increase analysis bandwidth from 25 to 255 MHz	N9040BU-BU1 & N9040BU-B2X	B25	Includes additional hardware; return to Keysight service center
Increase analysis bandwidth from 25 to 510 MHz	N9040BU-BU1 & N9040BU-B5X	B25	Includes additional hardware; return to Keysight service center

Description	Upgrade number	Requirements (UXA must already include the following)	Additional information
Real-time analysis up to maximum BW, basic detection	N9040BU-RT1	B2X or B5X (Analysis BW option determines maximum real-time BW)	License only; includes FMT, TQT; minimum 17.3 μ s signal duration for 100% POI with full amplitude accuracy
Real-time analysis up to maximum BW, optimum detection	N9040BU-RT2	B2X or B5X (Analysis BW option determines maximum real-time BW)	License only; includes FMT, TQT; minimum 3.517 μ s signal duration for 100% POI with full amplitude accuracy
Add electronic attenuator to 3.6 GHz	N9040BU-EA3	None	License only; 1-dB steps, 0 to 24 dB range
Add preamplifier, 8.4 GHz	N9040BU-P08	508, 513, or 526	License only
Add preamplifier, 13.6 GHz	N9040BU-P13	513 or 526	License only
Add preamplifier, 26.5 GHz	N9040BU-P26	526	License only
Add auxiliary log video out	N9040BU-ALV	None	License only
Add arbitrary IF output	N9040BU-CRP	None	License only
Add Y-axis video output	N9040BU-YAV	None	License only
Add fast power	N9040BU-FP2	B40 or wider BW	License only; for fast power measurements such as ACPR
Add precompliance EMI features	N9040BU-EMC	None	License only
Add security features, exclude launch programs	N9040BU-SF1	None	License only; prevents the launching of Windows programs from the instrument application
Add security features, prohibit saving results	N9040BU-SF2	None	License only; prevents the saving/recall of measurement results or user configurations to/from instrument's data storage
USB DVD-ROM/CD-R/RW drive	N9040BU-DVR	None	
65-key USB keyboard	N9040BU-KB2	None	
USB mouse	N9040BU-MSE	None	
Minimum loss pad, 50 to 75 Ω (type-N to BNC)	N9040BU-MLP	None	50 Ω type-N male to 75 Ω BNC female adapter; frequency range: 9 MHz to 2 GHz; input/output return loss: 20/11 dB; insertion loss: 5.7 dB; includes additional hardware
Additional removable solid-state drive (SSD)	N9040BU-SSD	None	Spare SSD for security environment or for a backup
Rackmount kit	1CM025A	None	
Rackmount kit with handles	1CP035A	None	

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