N9040B UXA X-Series Signal Analyzer, Multi-touch

Introduction

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

KEYSIGHT

Table of Contents

Included In Base Product 3

Configure your Keysight UXA Signal Analyzer 4

- Step 1. Select Maximum Frequency Range (Required Option) 4
- Step 2. Add a Preamplifier 4
- Step 3. Choose An Attenuator 4
- Step 4. Choose Analysis Bandwidth 5
- Step 5. Choose Performance Options 5
- Step 6. Add Real-Time Spectrum Analysis 6
- Step 7. Add Optional Instrument Features Including Security 7
- Step 8. Add Rear Panel Output Utilities 8
- Step 9. Choose Measurement Application Or Software And License Type 8
- Step 10. Choose 89600 VSA Software Licenses 11
- Step 11. Choose Accessories 12
- Step 12. Add a Calibration Plan 15

Instrument Upgrades 16

Included In 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:

- Spectrum analyzer software application
- Getting Started Guide
- UXA start-up assistance
- Enhanced phase noise
- Fast sweep capability
- 25 MHz IF analysis bandwidth
- 1 GHz bandwidth auxiliary IF output
- Enhanced display package
- External mixing for frequency coverage extension up to 1.1 THz
- Microwave preselector bypass for frequencies above 3.6 GHz
- Low noise path for improved sensitivity above 3.6 GHz
- Low frequency enabled
- Fine step mechanical attenuator
- Digital processor with 2 GB capture memory
- LO/IM nulling
- Noise Floor Extension; instrument alignment
- Precision frequency reference
- Real-time data link for real-time IQ data streaming up to 40 MHz
- Hex-core, high-performance processor, 32 GB RAM, with flash calibration file memory
- Removable M.2 NVMe solid-state drive
- Microsoft Windows 11 operating system
- Multi-language user interface
- Country-specific power cord
- Front and rear panel covers for protection during transit

Get more information

For a summary of specifications, refer to the N9040B data sheet (literature number 5992-0090EN).

A full set of specifications is available in the N9040B UXA Signal Analyzer Specification Guide at www.keysight.com/find/uxa_specifications.

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.

Step 1. Select maximum frequency range (required option)

Description	Option number	Additional information
Frequency range, 2 Hz to 8.4 GHz	N9040B-508	
Frequency range, 2 Hz to 13.6 GHz	N9040B-513	
Frequency range, 2 Hz to 26.5 GHz	N9040B-526	
Frequency range, 2 Hz to 44 GHz	N9040B-544	
Frequency range, 2 Hz to 50 GHz	N9040B-550	

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, N9040B-544 and N9040B-550
Preamplifier, 100 kHz to 13.6 GHz	N9040B-P13	Compatible with frequency range options: N9040B-513, N9040B-526, N9040B-544 and N9040B-550
Preamplifier, 100 kHz to 26.5 GHz	N9040B-P26	Compatible with frequency range options: N9040B-526, N9040B-544 and N9040B-550
Preamplifier, 100 kHz to 44 GHz	N9040B-P44	Compatible with frequency range option: N9040B-544
Preamplifier, 100 kHz to 50 GHz	N9040B-P50	Compatible with frequency range option: N9040B-550

Step 3. Choose an attenuator

Description	Option number	Additional information
Mechanical attenuator	Standard	2 dB steps, 0 to 70 dB; licensed 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
25 MHz analysis bandwidth	Standard	Licensed as N9040B-B25
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
1 GHz analysis bandwidth	N9040B-H1G	Extends the analysis bandwidth to 1 GHz: compatible with frequency range option N9040B-550
Microwave preselector bypass	Standard	Bypass the microwave preselector for wider bandwidth IF; licensed as N9040B-MPB

Step 5. Choose performance options

Description	Option number	Additional information
Digital processor with 2 GB capture memory	Standard	Licensed as N9040B-DP2
Digital processor with 4 GB capture memory	Standard	Standard in instruments with serial number prefixes > MY/SG/US5608, when Option B2X, B5X, or H1G is installed. Licensed as N9040B-DP4.
Enhanced phase noise performance	Standard	DDS-based LO assembly; licensed as N9040B-EP0
External mixing	Standard	Provides external mixing with Keysight and third-party mixers; single port[1] for LO out and IF in (SMA female); licensed as N9040B-EXM
Fast sweep capability	Standard	Improves sweep speed in swept-tune mode; licensed as N9040B-FS1 and N9040B-FS2
LO/IM nulling	Standard	Minimizes the LO feed-thru and the intermodulation distortion; licensed as N9040B-NUL
Low noise path	Standard	Improves sensitivity (DANL) in frequency bands above 3.6 GHz without degrading dynamic range; licensed as N9040B-LNP
Full bypass path	Standard	Bypass the microwave preselector and enable the low noise path for improved sensitivity above 3.6 GHz; standard in instruments when Option B2X, B5X or H1G is installed; licensed as N9040B-FBP
Noise floor extension	Standard	Improves displayed average noise level (DANL), instrument alignment-based implementation; licensed as N9040B-NF2
Precision frequency reference	Standard	Aging rate: ± 1 x 10^{-7}/year; licensed as N9040B-PFR

APC 3.5 mm connector	N9040B-C35	3.5 mm RF input connector on 26.5 GHz UXA (Compatible with Option 526 only)
Frequency range extension to 52 GHz	N9040B-H52	Extends factory-adjusted characterized performance to 52 GHz; requires Option 550 and B2X, B5X or H1G

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, basic detection	N9040RT1B	Includes frequency mask trigger (FMT), time qualified trigger (TQT); minimum 17.3 µs signal duration for 100% probability of intercept (POI) with full amplitude accuracy; requires N9040B-B2X or N9040B-H1G (255 MHz max real-time BW), or N9040B-B5X (510 MHz max real-time BW)
Real-time analysis, optimum detection	N9040RT2B	Includes FMT, TQT triggers; minimum 3.517 µs signal duration for 100% probability of intercept (POI) with full amplitude accuracy; requires N9040B-B2X or N9040B-H1G (255 MHz max real-time BW), or N9040B-B5X (510 MHz max real-time BW); node-locked license only
Frequency mask trigger, basic detection	N90EMFT1B	Enables frequency mask triggering with N9067EM0E pulse application and 89600 VSA software to detect signals as short as 15 µs duration; included in N9040RT1B (Option RT1); requires N9040B-B2X, N9040B-B5X, or N9040B-H1G.
Frequency mask trigger, optimum detection	N90EMFT2B	Enables frequency mask triggering with N9067EM0E pulse application and 89600 VSA software to detect signals as short as 3.6 µs duration; included in N9040RT2B (Option RT2); requires N9040B-B2X, N9040B-B5X, or N9040B-H1G; node-locked license only
Duplex IF RTSA	N90EMDUAB	Enables control of 2x255 MHz DIF for optimized frequency and time domain analysis in RTSA mode; Requires option B5X and N9040RT1B or N9040RT2B
Real-time I/Q data streaming	N9040B-RTS	Stream gap-free 16 bit I/Q data up to 255 MHz bandwidth for offline analysis. High speed LVDS connector allows connection to third-party X-COM Systems data

Step 7. Add optional instrument features including security

Description	Option number	Additional information
Enhanced display package	Standard	Includes spectrogram, trace zoom, and zone span in SA mode; Licensed as N90E1EDPB
Basic EMI precompliance	N90EMEMCB	Perform basic EMI precompliance measurements with CISPR 16-1-1 detectors and bandwidths; tune and listen, and measure at marker are also available
Time domain scan	N90EMTDSB	Improves scan speed for EMC pre-compliance tests; requires N6141EM0E EMC pre-compliance measurement application
External source control	N90EMESCB	External source control for selected Keysight EXG, MXG, and PSG signal generators; supports external mixing
Fast power up to 510 MHz bandwidth	N90EMFP2B	Accelerates power measurements such as ACPR; requires Option B40, B2X, B5X, or H1G (up to 255 MHz bandwidth)
Resolution bandwidth extended	N90EMRBEB	Extends the maximum RBW in Zero Span; requires option B2X, B5X, or H1G
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 instrument application from saving/recall of measurement results or user configurations to/from instrument's data storage
Security features, secure RAM disk boot	N9040B-SF3	Allows the instrument to boot the Windows OS into volatile memory, which ensures that, after a power cycle, all information from the previous boot is lost
Additional removable M.2 NVMe solid-state drive (SSD), for PCA processor	N9040B-SS7	Provides a fully imaged, removable SSD in addition to the one installed in instruments, with Windows 11 operating system

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; licensed 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; licensed as N9040B-RTL

Step 9. 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. 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

Description	Option number	Additional information
General purpose		
Spectrum analyzer and IQ analyzer	Standard	Traditional spectrum analysis plus many new and enhanced functions
Power Suite	N90EMPSMB	Power measurements based on industry specifications
Analog demodulation	N9063EM0E	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	N9068EM0E	Adds one-button measurements for analyzing phase noise in frequency domain (log plot) and time domain (spot frequency), supports external mixing
Noise figure	N9069EM0E (requires preamplifier)	Adds one-button measurements for noise figure, gain, and related metrics; requires preamplifier to meet specifications; works with Keysight U1831C USB noise source, N400xA Series smart noise sources and 346 Series noise sources; supports U7227 USB external preamplifiers Includes the advanced NF measurement features including external LO control over GPIB/LAN/USB, multi-stage converter tests with system LO, and manual mode to simulate the legacy NF meter
Vector modulation analysis Digital Demodulation	N9054EM0E	Performs one-button flexible modulation analysis measurements with FSK, PSK, QAM, MSK, ASK, APSK, VSB etc. and poprular format preset
Vector modulation analysis Custom OFDM	N9054EM1E	Performs one-button custom OFDM modulation analysis measurement with user-defined settings or recalling 89600 VSA or Signal Studio output files
Power Amplifier	N9055EM0E	Characterizes power amplifier (PA) with pre-distortion applied in RF and millimeter wave, with simple and integrated multi-touch user interface; Also supports ET (Envelop Tracking) with dual-channel VXG
Channel quality	N9056EM0E	Performs repeatable channel response measurements as group delay and other characteristics with multi-tone signals for wideband component testing
Pulse analysis	N9067EM0E	Characterize pulsed RF signals in the time domain, with phase, frequency and statistical analysis of large pulse sets; enables fixed and variable length gated acquisition for capturing pulses of varying pulse width and PRI (requires 4 GB capture memory Option DP4)
EMI	N6141EM0E	Performs pre-compliance conducted and radiated emission measurements
Remote language compatibility	N9061EM0E	Adds capability to emulate HP/Agilent 8566/68 and 856xE/EC spectrum analyzers

Description	Option number	Additional information
SCPI command language compatibility	N9062EM0E	Adds capability to emulate the R&S FSP/FSU/FSL/FSV/FSW spectrum analyzers or ESU EMI receiver
MATLAB software	N6171A	
Cellular communications		
GSM/EDGE/Evo	N9071EM0E	Standard-based, one-button GSM/EDGE/EDGE Evolution measurements
W-CDMA/HSPA+	N9073EM0E	Standard-based, one-button W-CDMA, HSPA and HSPA+ measurements
LTE/LTE-Advanced FDD	N9080EM0E	Standard-based, one-button LTE/LTE-Advanced FDD measurements
NB-IoT & eMTC FDD	N9080EM3E	Standard-based, one-button NB-IoT/eMTC measurements
LTE V2X	N9080EM4E	Standard-based, one-button LTE-V2X transmitter measurements
LTE/LTE-Advanced TDD	N9082EM0E	Standard-based, one-button LTE/LTE-Advanced TDD measurements
Multi-standard radio	N9083EM0E	Standard -based, one-button MSR measurements on any combination of LTE-FDD, W-CDMA/ HSPA/HSPA+, and GSM/EDGE/EDGE Evo signals
5G NR (New Radio)	N9085EM0E (requires Option B2X, B5X or H1G)	Standard-based, one-button 5G NR (New Radio) downlink and uplink measurements
Wireless connectivity		
WLAN 802.11a/b/g/j/p/n/af/ah	N9077EM0E	Standard-based, one-button 802.11a/b/g/j/p/n/af/ah measurement
WLAN 802.11ac/ax	N9077EM1E	Standard-based, one-button 802.11ac/ax measurement
WLAN 802.11be	N9077EM2E	Standard-based, one-button 802.11be measurement
Bluetooth®	N9081EM0E	Standard-based, one-button *Bluetooth*® (BR/EDR, Low Energy 4.0/4.2 and *Bluetooth*® 5/5.1) measurements; supports Qualcomm Bluetooth High Speed Link as QBHSL
Short Range Comm and IoT	N9084EM0E	Standard-based, one-button LoRa CSS measurement, 802.15.4 for ZigBee measurement and G.9959 for Z-Wave measurement

Step 10. Choose 89600 VSA software licenses

Description	Model number	Additional information
Basic vector signal analysis and hardware connectivity	89601200C (required core option)	Provides the tools and user interface that make up the 89600 VSA software including time and frequency domain measurement, hardware connectivity, recordings and playback
		Channel quality modulation analysis
General purpose		
Digital demodulation analysis	89601AYAC	Analysis of >40 modulation formats, including custom APSK and presets for communication formats like GSM/EDGE, ZigBee FSK, *Bluetooth*® BR, APCO25 and SOQPSK
		Proprietary and pre-standard, customized IQ constellation signals
		TEDS modulation analysis
		Channel response measurements such as phase/magnitude response and multi-tone group delay
Custom OFDM modulation analysis	89601BHFC	Proprietary and pre-standard OFDM formats
Direct data connectivity	89601101C	Push IQ data into the 89600 VSA software through API programming
PowerSuite measurement	89601PSMC	PowerSuite measurement for ACP and EVM
Cellular communication		
5G NR modulation analysis	89601BHNC	5G NR modulation analysis
		Pre-5G modulation analysis
LTE/LTE-A FDD modulation analysis	89601BHGC	LTE FDD modulation analysis
		LTE-Advanced FDD modulation analysis
LTE/LTE-A TDD modulation analysis	89601BHHC	LTE TDD modulation analysis
		LTE-Advanced TDD modulation analysis
3G modulation analysis bundle	89601B7NC	W-CDMA/HSPA+ modulation analysis
		TD-SCDMA/HSPA modulation analysis
		cdma2000 modulation analysis
		1xEV-DO and 1xEV-DV modulation analysis
Channel sounding signal analysis	89601CSDC	Performs channel sounding measurement

Description	Model number	Additional information
Wireless connectivity		
Wireless connectivity modulation analysis	89601B7RC	WLAN 802.11a/b/g/j/p modulation analysis
		WiMax modulation analysis
High throughput WLAN modulation analysis	89601BHXC	WLAN 802.11n/ac modulation analysis
		WLAN 802.11ax modulation analysis
IoT modulation analysis	89601BHTC	NB-IoT modulation analysis
		RFID modulation analysis
Radar analysis		
Pulse analysis	89601BHQC	Pulsed modulated radar signal analysis
FMCW radar analysis	89601BHPC	For multi-chirp linear FM modulated signals or automotive radar
Other standard formats		
DOCSIS modulation analysis	89601BHMC	DOCSIS3.1 downstream and upstream modulation analysis
Multi-vendor hardware connectivity	89601301C	Connect multi-vendor hardware for modulation analysis

Step 11. Choose accessories

Description	Model number	Additional information
User guide	Standard	US - English localization
		All user documentation is included in the embedded help system inside the UXA
		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
Adapter, 2.4 mm (F) to 2.9 mm (F)	Standard	Ship standard only for Option 544 and 550
Adapter, 2.4 mm (F) to 2.4 mm (F)	Standard	Ship standard only for Option 544 and 550
Mouse, USB interface	N9040B-MSE	Enhances usability of the VSA software
USB DVD-ROM/CD-R/RW drive	N9040B-DVR	Enhances the usability of the Windows operating system
Rack mount kit	N9040B-1CM/2CM	Adds rack mount flanges and rails to the UXA (light gray/dark gray)

Description	Model number	Additional information
Rack mount kit with handles	N9040B-1CP /2CP	Adds rack mount flanges, rails, and handles to the UXA (light gray/dark gray)
Minimum loss pad, 50 to 75 Ω (type-N to BNC)	N9040B-MLP	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	Requires Option EXM; USB mixer with smart features
Extended V-band waveguide harmonic mixer, 50 to 80 GHz	M1970V-002	Requires Option EXM; USB mixer with smart features
E-band waveguide harmonic mixer, 60 to 90 GHz	M1970E	Requires Option EXM; USB mixer with smart features
W-band waveguide harmonic mixer, 75 to 110 GHz	M1970W	Requires Option EXM; USB mixer with smart features
Wide IF bandwidth waveguide harmonic mixer		Capable of analyzing wide bandwidth (> 2 GHz) signals
E-band waveguide harmonic mixer, 60 to 90 GHz	M1971E-001	Requires Option EXM; USB mixer with smart features and 3 signal paths
E-band waveguide harmonic mixer, 55 to 90 GHz	M1971E-003	Requires Option EXM; USB mixer with smart features and 3 signal paths
V-band waveguide harmonic mixer, 50 to 75 GHz	M1971V	Requires Option EXM; USB mixer with smart features and 3 signal paths
W-band waveguide harmonic mixer, 75 to 110 GHz	M1971W	Requires Option EXM; USB mixer with smart features and 3 signal paths
26 to 40 GHz waveguide harmonic mixer	11970A	Requires Option EXM and N9029BE13 diplexer
33 to 50 GHz waveguide harmonic mixer	11970Q	Requires Option EXM and N9029BE13 diplexer
40 to 60 GHz waveguide harmonic mixer	11970U	Requires Option EXM and N9029BE13 diplexer
50 to 75 GHz waveguide harmonic mixer	11970V	Requires Option EXM and N9029BE13 diplexer
75 to 110 GHz waveguide harmonic mixer	11970W	Requires Option EXM and N9029BE13 diplexer
LO/IF diplexer	N9029BE13	Ordering convenience; required for 11970 Series external mixers
50 to 75 GHz frequency extension module	N9029BV-W15	VDI signal analyzer frequency extension module; requires Option EXM

Description	Model number	Additional information
60 to 90 GHz frequency extension module	N9029BV-W12	VDI signal analyzer frequency extension module; requires Option EXM
75 to 110 GHz frequency extension module	N9029BV-W10	VDI signal analyzer frequency extension module; requires Option EXM
90 to 140 GHz frequency extension module	N9029BV-W08	VDI signal analyzer frequency extension module; requires Option EXM
110 to 170 GHz frequency extension module	N9029BV-W06	VDI signal analyzer frequency extension module; requires Option EXM
140 to 220 GHz frequency extension module	N9029BV-W05	VDI signal analyzer frequency extension module; requires Option EXM
170-260 GHz frequency extension module	N9029BV-W04	VDI signal analyzer frequency extension module; requires Option EXM
220 to 330 GHz frequency extension module	N9029BV-W03	VDI signal analyzer frequency extension module; requires Option EXM
260 to 400 GHz frequency extension module	N9029BV-W2B	VDI signal analyzer frequency extension module; requires Option EXM
330 to 500 GHz frequency extension module	N9029BV-W02	VDI signal analyzer frequency extension module; requires Option EXM
550 to 750 GHz frequency extension module	N9029BV-W1B	VDI signal analyzer frequency extension module; requires Option EXM
750 to 1100 GHz frequency extension module	N9029BV-W01	VDI signal analyzer frequency extension module; requires Option EXM
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
RCal receiver calibrator 10 MHz - 50 GHz	U9361F	See U9361F/M configuration guide (3120-1408EN) for details
RCal receiver calibrator 10 MHz - 110 GHz	U9361M	See U9361F/M configuration guide (3120-1408EN) for details

Step 12. Add a calibration plan

Description	Model 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)

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

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

You Can Upgrade!

Options can be added after your initial purchase. Most X-Series options are license-key upgradeable.

[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.

Description	Upgrade number	Requirements (UXA must already include the following)	Additional information
Increase frequency from 8.4 to 13.6 GHz	N9040BU-F06	508	
Increase frequency from 8.4 to 26.5 GHz	N9040BU-F07	508	
Increase frequency from 8.4 to 44 GHz	N9040BU-F08	508	
Increase frequency from 8.4 to 50 GHz	N9040BU-F09	508	
Increase frequency from 13.6 to 26.5 GHz	N9040BU-F10	513	
Increase frequency from 13.6 to 44 GHz	N9040BU-F11	513	
Increase frequency from 13.6 to 50 GHz	N9040BU-F12	513	
Increase frequency from 26.5 to 44 GHz	N9040BU-F13	526	
Increase frequency from 26.5 to 50 GHz	N9040BU-F14	526	
Increase frequency from 44 to 50 GHz	N9040BU-F15	544	Includes 50 GHz preamp
Increase frequency from 8.4 to 44 GHz	N9040BU-F16	508, B5X	
Increase frequency from 8.4 to 50 GHz	N9040BU-F17	508, B5X	
Increase frequency from 13.6 to 44 GHz	N9040BU-F18	513, B5X	
Increase frequency from 13.6 to 50 GHz	N9040BU-F19	513, B5X	
Increase frequency from 26.5 to 44 GHz	N9040BU-F20	526, B5X	
Increase frequency from 26.5 to 50 GHz	N9040BU-F21	526, B5X	
Increase analysis bandwidth from 10 to 25 MHz	N9040BU-B25	None	License key only
Increase analysis bandwidth from 10 or 25 MHz to 40 MHz	N9040BU-B40	None	License key only

Description	Upgrade number	Requirements (UXA must already include the following)	Additional information
Increase analysis bandwidth from 10, 25 or 40 MHz to 255 MHz on microwave and millimeterwave instruments	N9040BU-B2X	None	Includes additional hardware; return to Keysight service center
Increase analysis bandwidth from 10, 25 or 40 MHz to 510 MHz on microwave instruments	N9040BU-B5X	508, 513, or 526	Includes additional hardware; return to Keysight service center; for instruments with frequency range < 26.5 GHz
Increase analysis bandwidth from 10, 25 or 40 MHz to 510 MHz on millimeterwave instruments	N9040BU-BUG	544 or 550	Includes additional hardware; return to Keysight service center; for instruments with frequency range > 44 GHz
Increase analysis bandwidth from 10, 25 or 40 MHz to 1 GHz on millimeterwave instruments with serial number prefixes > MY/SG/US5616	N9040BU-H1G	550	Includes additional hardware; return to Keysight service center; full bypass path (FBP) is included; not compatible with Option B2X, B5X, or 508, 513, 526, 544, or DUA.
Increase analysis bandwidth from 255 MHz to 510 MHz on microwave instruments	N9040BU-BUF	B2X and 508, 513, or 526	Includes additional hardware; return to Keysight service center; for instruments with frequency range < 26.5 GHz
Increase analysis bandwidth from 255 MHz to 510 MHz on millimeterwave instruments	N9040BU-BUM	B2X and 544 or 550	Includes additional hardware; return to Keysight service center; for instruments with frequency range > 44 GHz
Digital processor with 4 GB capture memory for instruments with serial number prefixes < MY/SG/US5608	N9040BU-DP4	B2X or H1G	Includes hardware and license key; not compatible with Option B5X
Digital processor with 4 GB capture memory for instruments with serial number prefixes < MY/SG/US5608	N9040BU-DP5	B5X	Includes hardware and license key
Add full bypass path	N9040BU-FBP	B2X, B5X or H1G	Return to Keysight service center
Real-time I/Q data streaming	N9040BU-RTS	N9040RT1B or N9040RT2B	Includes additional hardware, return to Keysight service center
Add electronic attenuator to 3.6 GHz	N9040BU-EA3	None	License key only; 1-dB steps, 0 to 24 dB range
Add preamplifier, 8.4 GHz	N9040BU-P08	508, 513, 526, 544 or 550	License key only
Add preamplifier, 13.6 GHz	N9040BU-P13	513, 526, 544 or 550	License key only
Add preamplifier, 26.5 GHz	N9040BU-P26	526, 544 or 550	License key only

Description	Upgrade number	Requirements (UXA must already include the following)	Additional information
Add preamplifier, 44 GHz	N9040BU-P44	544	License key only
Add preamplifier, 50 GHz	N9040BU-P50	550	License key only
Add auxiliary log video out	N9040BU-ALV	None	License key only
Add arbitrary IF output	N9040BU-CRP	None	License key only
Add Y-axis video output	N9040BU-YAV	None	License key only
Add fast power up to 510 MHz bandwidth	N9040BU-FP2	B40 or wider BW	License key only; for fast power measurements such as ACPR. Also orderable at N90EMFP2B (requires F/W revision A.21.04 onward)
Add security features, exclude launch programs	N9040BU-SF1	None	License key only; prevents the launching of Windows programs from the instrument application
Add security features, prohibit saving results	N9040BU-SF2	None	License key only; prevents instrument application from saving/recall of measurement results or user configurations to/from instrument's data storage
Add security features, secure RAM disk boot	N9040BU-SF3	PC8, or PCA	License key only; allows the instrument to boot the Windows OS into volatile memory, which ensures that, after a power cycle, all information from the previous boot is lost
USB DVD-ROM/CD-R/RW drive	N9040BU-DVR	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)	N9094BU-SS1 (under N9040BU)	PC6, or PC6S	Provides additional removable solid-state drive, with Windows 10 operating system
Add removable solid-state drive (SSD)	N9094BU-SS2 (under N9040BU)	PC8	Provides additional removable solid-state drive, with Windows 10 operating system
Add removable solid-state drive (SSD)	N9094BU-SS3 (under N9040BU)	PCA	Provides additional removable M.2 NVMe solid-state drive, with Windows 10 operating system

Description	Upgrade number	Requirements (UXA must already include the following)	Additional information
Add removable solid-state drive (SSD)	N9094BU-SS6 (under N9040BU)	PC8	Provides additional removable solid-state drive, with Windows 11 operating system
Add removable solid-state drive (SSD)	N9094BU-SS7 (under N9040BU)	PCA	Provides additional removable M.2 NVMe solid-state drive, with Windows 11 operating system
Upgrade operating system to Windows 10	N9094BU-SS1/W10 (under N9040BU)	PC6, W7X	Provides a removable solid-state drive with Windows 10 operating system
Upgrade operating system to Windows 11	N9094BU-SS6/W11 (under N9040BU)	PC8, W10	Provides additional removable solid-state drive, with Windows 11 operating system
Upgrade operating system to Windows 11	N9094BU-SS7/W11 (under N9040BU)	PCA, W10	Provides additional removable M.2 NVMe solid-state drive, with Windows 11 operating system
Upgrade operating system to Windows 11	N9094BU-PC8/W11 (under N9040BU)	PC6, W7X or W10	Upgrade to PC8, hex-core, high performance processor, 32 GB RAM, with flash calibration file memory and removable solid-state drive
Upgrade operating system to Windows 11	N9094BU-PCA/W11 (under N9040BU)	PC6, W7X or W10	Upgrade to PCA, hex-core, high performance processor, 32 GB RAM, with flash calibration file memory and removable M.2 NVMe solid-state drive
Upgrade to PC6S, quad-core, high- performance processor, 16 GB RAM, with flash calibration file memory	N9094BU-PCS (under N9040BU)	PC6	Upgrade to quad-core, high-performance processor, 16 GB RAM, with flash calibration file memory and removable solid- state drive
Upgrade to PC8, hex-core, high- performance processor, 32 GB RAM, with flash calibration file memory	N9094BU-PC8 (under N9040BU)	PC6, or PC6S	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	N9094BU-PCA (under N9040BU)	PC6, PC6S, or PC8	Upgrade to PCA, hex-core, high performance processor, 32 GB RAM, with flash calibration file memory and removable M.2 NVMe solid-state drive