

N9020B MXA X-Series Signal Analyzer, Multi-touch

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



Configure Your MXA Signal Analyzer

This step-by-step process will help you configure your new Keysight Technologies, Inc. MXA X-Series signal analyzer. Tailor the performance to meet your requirements.

Included in base product

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

- Spectrum analyzer measurement application
- Quad-core, high-performance processor, 16 GB RAM, removable solid-state drive
- Frequency reference
- Mechanical attenuator
- 25 MHz analysis bandwidth
- Microsoft Windows 10 operating system
- Real-time link for real-time IQ data streaming up to 40 MHz
- Benchtop configuration
- Multi-language user interface
- User guide
- Power cord

Get More Information

For a summary of specifications, refer to the N9020B MXA data sheet (literature number 5992-1255EN).

A full set of specifications are available in the N9020B MXA Signal Analyzer Specification Guide at www.keysight.com/find/mxa_specifications.

Description	Option number	Additional information
Step 1. Select maximum frequency range (required option)		
Frequency range, 10 Hz to 3.6 GHz	N9020B-503	
Frequency range, 10 Hz to 8.4 GHz	N9020B-508	
Frequency range, 10 Hz to 13.6 GHz	N9020B-513	
Frequency range, 10 Hz to 26.5 GHz	N9020B-526	
Frequency range, 10 Hz to 32 GHz	N9020B-532	
Frequency range, 10 Hz to 44 GHz	N9020B-544	
Frequency range, 10 Hz to 50 GHz	N9020B-550	
Step 2. Add a preamplifier		
		Preamplifiers improve the noise floor for low-level signal detection
Preamplifier, 100 kHz to 3.6 GHz	N9020B-P03	Compatible with frequency range options: N9020B-503, N9020B-508, N9020B-513, N9020B-526, N9020B-532, N9020B-544 and N9020B-550
Preamplifier, 100 kHz to 8.4 GHz	N9020B-P08	Compatible with frequency range options: N9020B-508, N9020B-513, N9020B-526, N9020B-532, N9020B-544 and N9020B-550
Preamplifier, 100 kHz to 13.6 GHz	N9020B-P13	Compatible with frequency range options: N9020B-513, N9020B-526, N9020B-532, N9020B-544 and N9020B-550
Preamplifier, 100 kHz to 26.5 GHz	N9020B-P26	Compatible with frequency range options: N9020B-526, N9020B-532, N9020B-544 and N9020B-550
Preamplifier, 100 kHz to 32 GHz	N9020B-P32	Compatible with frequency range options: N9020B-532
Preamplifier, 100 kHz to 44 GHz	N9020B-P44	Compatible with frequency range options: N9020B-544
Preamplifier, 100 kHz to 50 GHz	N9020B-P50	Compatible with frequency range option: N9020B-550
Step 3. Choose frequency reference		
Frequency reference	Standard	Aging rate: $\pm 1 \times 10^{-6}$ /year
Precision frequency reference	N9020B-PFR	Reduces frequency drift for more accurate measurements Aging rate: $\pm 1 \times 10^{-7}$ /year
Step 4. Choose an attenuator		
Mechanical attenuator	Standard	2 dB steps, 0 to 70 dB
Electronic attenuator up to 3.6 GHz	N9020B-EA3	In addition to the mechanical attenuator; 1 dB steps, 0 to 24 dB

Description	Option number	Additional information
Step 5. Choose analysis bandwidth		
25 MHz analysis bandwidth	Standard	Useful for most cellular communications, wireless connectivity, and audio/video broadcasting measurement applications; licensed as N9020B-B25
40 MHz analysis bandwidth	N9020B-B40	Extends the analysis bandwidth to 40 MHz (Option MPB required for measurements at frequency > 3.6 GHz); included in B85, B1A, or B1X; also enables fast sweep capability licensed as N9020B-FS1 and N9020B-FS2; if Option BBA is installed, provides 40 MHz per channel baseband bandwidth
85 MHz analysis bandwidth	N9020B-B85	Extends the analysis bandwidth to 85 MHz (Option MPB required for measurements > 3.6 GHz); also enables fast sweep capability licensed as N9020B-FS1 and N9020B-FS2; not compatible with Option BBA
125 MHz analysis bandwidth	N9020B-B1A	Extends the analysis bandwidth to 125 MHz (Option MPB required for measurements > 3.6 GHz); also enables fast sweep capability licensed as N9020B-FS1 and N9020B-FS2; not compatible with Option BBA
160 MHz analysis bandwidth	N9020B-B1X	Extends the analysis bandwidth to 160 MHz (Option MPB required for measurements > 3.6 GHz); also enables fast sweep capability licensed as N9020B-FS1 and N9020B-FS2; not compatible with Option BBA
Microwave preselector bypass	N9020B-MPB	Required for wide analysis bandwidth measurements with Option B40, B85, B1A, or B1X at frequency > 3.6 GHz; also enables fast sweep capability licensed as N9020B-FS1 and N9020B-FS2

Step 6. Choose performance options		
Digital processor with 2 GB capture memory	N9020B-DP2	Comes standard with Option B40, B85, B1A, or B1X; also enables fast sweep capability licensed as N9020B-FS1 and N9020B-FS2
Digital processor with 4 GB capture memory	N9020B-DP4	Comes standard with Option B85, B1A, or B1X in instrument models with serial number prefix \geq MY/SG/US5608; also enables fast sweep capability licensed as N9020B-FS1 and N9020B-FS2
I/Q baseband inputs, analog	N9020B-BBA	Single-ended/differential, 50 Ω /1 M Ω impedance; not compatible with Option B85, B1A, B1X, 532, 544, or 550
External mixing	N9020B-EXM	Connects with Keysight and third party mixers ¹ to extend frequency coverage up to 1.1 THz; single port for LO out and IF in (SMA female)
Noise floor extension	N9020B-NF2	Improves analyzer's DANL performance (instrument alignment based processes)

Step 7. Add real-time spectrum analysis

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

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
- **Time-based:** License is time limited to a defined period, such as 12-months. A valid support contract is included in the pricing for time-based licenses.

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

Real-time analysis up to 160 MHz BW, basic detection	N9020RT1B	Includes frequency mask trigger (FMT) and time qualified trigger (TQT); minimum 17.3 μ s signal duration for 100% probability of intercept (POI); requires Option B85, B1A, or B1X, which determines maximum real-time bandwidth; also supports Option EXM
Real-time analysis up to 160 MHz BW, optimum detection	N9020RT2B	Includes frequency mask trigger (FMT) and time qualified trigger (TQT); minimum 3.6 μ s signal duration for 100% probability of intercept (POI); requires Option B85, B1A, or B1X, which determines maximum real-time bandwidth; also supports Option EXM
Frequency mask trigger, basic detection	N90EMFT1B	Enables frequency mask triggering with N9067C pulse application and 89600 VSA software to detect signals as short as 17.3 μ s duration; included in N9020B-RT1; requires bandwidth options B85, B1A, or B1X

1. When used with the 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.

Description	Option number	Additional information
Step 7. Add real-time spectrum analysis (Continued)		
Frequency mask trigger, optimum detection	N90EMFT2B	Enables frequency mask triggering with N9067C pulse application and 89600 VSA software to detect signals as short as 3.6 μ s duration; included in N9020B-RT2; requires bandwidth options B85, B1A, or B1X
Real-time spectrum recorder and analyzer application	N9020B-RTR	Enables recording, analyzing and playback of spectrum density data over time for detecting and analyzing signal anomalies; requires Option RT1(N9020RT1B) or RT2 (N9020RT2B)
Step 8. Add optional features		
Enhanced display package	N90EMEDPB	Includes spectrogram, trace zoom, and zone span
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 and Option DP2, or B40 (or wider bandwidth option)
External source control	N90EMESCB	External source control for Keysight EXG, MXG, and PSG signal generators; supports external mixing; includes 3 BNC cables and 1 cross-over LAN cable
Fast power	N90EMFP2B	Accelerates power measurements such as ACPR; requires Option B40, B85, B1A, or B1X
Resolution bandwidth extended	N90EMRBEB	Extends the maximum RBW in Zero Span; requires option B85, B1A, or B1X
Step 9. Choose operating system		
Windows 10 operating system	Standard	Licensed as N9020B-W10
Step 10. Add security features		
Additional removable solid-state drive	N9020B-SS1	Provides a fully-imaged, removable solid-state drive in addition to the one installed in the instrument, with Windows 10 operating system
Exclude launch program	N9020B-SF1	Prevents the launching of Windows programs from the instrument application
Prohibit saving results	N9020B-SF2	Prevents the saving/recall of measurement results or user configurations to/from instrument's data storage
Step 11. Add rear panel output utilities		
Second IF output	N9020B-CR3	Wideband IF out; center frequency depends on IF path; output on Aux IF connector at rear panel
Arbitrary IF output	N9020B-CRP	IF out 10 to 75 MHz (in 500 kHz steps); output on Aux IF connector at rear panel
Y-axis screen video output	N9020B-YAS	Screen video (0-1 volt open circuit) on rear panel analog out
Real-time link	Standard	The LVDS connector allows MXA to connect to X-COM data recorder for data streaming (up to 40 MHz BW), and to the N5106A PXB baseband generator and channel emulator; requires Option B40 or DP2; licensed as N9020B-RTL
Step 12. 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 Time-based.		
License types:		
<ul style="list-style-type: none"> - 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:		
<ul style="list-style-type: none"> - 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 - Time-based: License is time limited to a defined period, such as 12-months. A valid support contract is included in the pricing for time-based licenses. 		
For detailed information, we strongly recommend you visit the X-Series measurement application collection page: www.keysight.com/find/xseriesapps		
General purpose		
Spectrum analyzer	Standard	Traditional spectrum analysis plus many new and enhanced functions; power measurements based on industry specifications; licensed as N9060EM1E
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

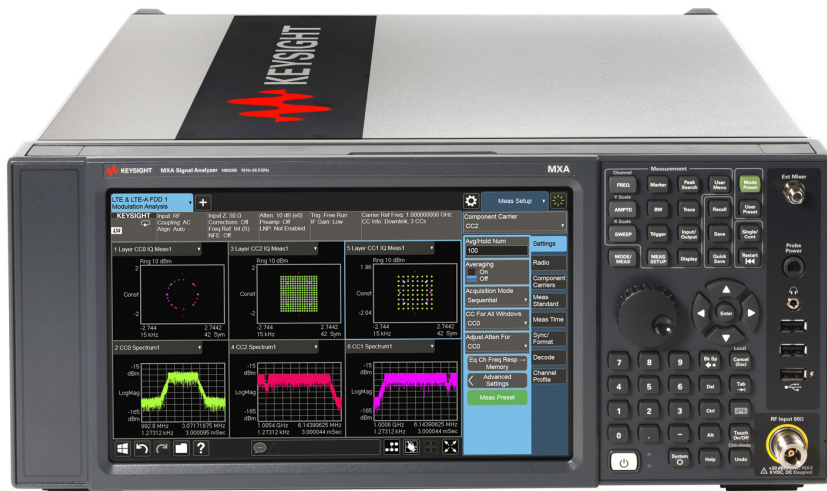
Description	Fixed license	Additional information
Step 12. Choose measurement application or software and license type (Continued)		
General purpose (Continued)		
Phase noise	N9068EM0E	Adds one-button measurements for analyzing phase noise in frequency domain (log plot) and time domain (spot frequency), 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 popular 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
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
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	
89600 vector signal analysis (VSA) software	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 MIMO analysis; www.keysight.com/find/89600_VSA
Cellular communications		
GSM/EDGE/Evo	N9071EM0E	Standard-based, one-button GSM/EDGE/EDGE Evolution measurements
	N9071EMXE	Adds single acquisition combined measurement, a SCPI-commandbased measurement optimized for high-volume, high-throughput manufacturing; requires N9071EM0E; not compatible with Options DP2, B40, B85, B1A, B1X, or MPB
W-CDMA/HSPA+	N9073EM0E	Standard-based, one-button W-CDMA, HSPA and HSPA+ measurements; supports analog baseband analysis with Option BBA (BBIQ inputs)
	N9073EMXE	Adds single acquisition combined measurement, a SCPI-commandbased measurement optimized for high-volume, high-throughput manufacturing; requires N9073EM0E; not compatible with Options DP2, B40, B85, B1A, B1X, or MPB
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/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, LTE-TDD, W-CDMA/HSPA/HSPA+, GSM/EDGE/EDGE Evo, cdma2000, 1xEV-DO and TD-SCDMA signals
5G NR (New Radio)	N9085EM0E	Standard-based, one-button 5G NR (New Radio) downlink and uplink measurements; Firmware above A.20.25; Requires option B1A or B1X
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
Bluetooth®	N9081EM0E	Standard-based, one-button Bluetooth (BR/EDR, Low Energy 4.0/4.2 and Bluetooth 5) measurements
Short Range Comm	N9084EM0E	Standard-based, one-button 802.15.4 for ZigBee measurement and G.9959 for Z-Wave measurement
Step 13. Choose physical instrument configuration		
Bench top configuration	Standard	Provides two side carrying straps, four rear feet, and four bottom feet with a tilt stand; a front panel protective cover is included
Portable configuration	N9020B-PRC	Provides a convenient, pivoting carrying handle as well as rubber protective corners and end guards; this configuration is intended for applications requiring more rugged packaging, such as in the field

Description	Option number	Additional information
Step 14. Choose accessories		
User guide	Standard	US – English localization All user documentation is included in the MXA's embedded, context-sensitive help system and on a DVD that is shipped with the instrument User documentation can be downloaded from: www.keysight.com/find/mxa_manuals
Power cord	Standard	Dependent upon the region of use
Rack mount	1CM113A	Adds rack mount flanges to the MXA
Front handles	1CN103A	Adds front handles to the MXA
Rack mount with handles	1CP105A	Adds rack mount flanges and handles to the MXA
Rack slide	1CR013A	Adds a non-tilting rack slide to the MXA
USB DVD-ROM/CD-R/RW drive	1DVR001A	Enhances the usability of the Windows operating system
US 65-key USB keyboard	1KBD001A	Smaller keyboard
Mouse, USB interface	1MSE001A	
Minimum loss pad, 50 to 75 Ω (type-N to BNC)	MLP001A	50 Ω type-N male to 75 Ω BNC female adapter Frequency range: 9 MHz to 2 GHz Input/output return loss: 20 and 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
E-band waveguide harmonic mixer, 60 to 90 GHz	M1971E-001	Requires Option EXM; USB mixer with smart features and 3 signal paths
Extended 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, 55 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 N9029AE13 diplexer
33 to 50 GHz waveguide harmonic mixer	11970Q	Requires Option EXM and N9029AE13 diplexer
40 to 60 GHz waveguide harmonic mixer	11970U	Requires Option EXM and N9029AE13 diplexer
50 to 75 GHz waveguide harmonic mixer	11970V	Requires Option EXM and N9029AE13 diplexer
75 to 110 GHz waveguide harmonic mixer	11970W	Requires Option EXM and N9029AE13 diplexer
LO/IF diplexer	N9029AE13	Ordering convenience; required for 11970 Series external mixers
90 to 140 GHz OML harmonic mixer	N9029AE08	Ordering convenience; requires Option EXM
110 to 170 GHz OML harmonic mixer	N9029AE06	Ordering convenience; requires Option EXM
140 to 220 GHz OML harmonic mixer	N9029AE05	Ordering convenience; requires Option EXM
220 to 325 GHz OML harmonic mixer	N9029AE03	Ordering convenience; requires Option EXM
50 to 75 GHz frequency extension module	N9029AV15	VDI signal analyzer frequency extension module; requires Option EXM
60 to 90 GHz frequency extension module	N9029AV12	VDI signal analyzer frequency extension module; requires Option EXM
75 to 110 GHz frequency extension module	N9029AV10	VDI signal analyzer frequency extension module; requires Option EXM
90 to 140 GHz frequency extension module	N9029AV08	VDI signal analyzer frequency extension module; requires Option EXM
110 to 170 GHz frequency extension module	N9029AV06	VDI signal analyzer frequency extension module; requires Option EXM
140 to 220 GHz frequency extension module	N9029AV05	VDI signal analyzer frequency extension module; requires Option EXM
220 to 330 GHz frequency extension module	N9029AV03	VDI signal analyzer frequency extension module; requires Option EXM
325 to 500 GHz frequency extension module	N9029AV02	VDI signal analyzer frequency extension module; requires Option EXM
550 to 750 GHz frequency extension module	N9029AV1B	VDI signal analyzer frequency extension module; requires Option EXM
750 to 1100 GHz frequency extension module	N9029AV01	VDI signal analyzer frequency extension module; requires Option EXM
Power supply for VDI module	N5262VDI-175	Required for the N9029AVxx VDI module
USB external preamplifier, 10 MHz to 4 GHz	U7227A	
USB external preamplifier, 0.1 to 26.5 GHz	U7227C	
USB external preamplifier, 2 to 50 GHz	U7227F	

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

Description	Option number	Additional information
Step 15. Add calibration, technical training, support, and upgrade services		
Commercial calibration certificate with test data	N9020B-UK6	Calibration certificate only available at time of instrument purchase; only provides measurement results
Keysight Calibration + Uncertainties + Guardbanding (accredited cal)	N9020B-AMG	Provides ISO 17025A accredited calibration from factory
ANSI Z540-1-1994 Calibration	N9020B-A6J	Provides ANSI Z540 compliant calibration from factory
Calibration Assurance Plan, Return-to-Keysight, 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, 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	
Service: Remote scheduled productivity assistance	PS-S10-100	Hourly phone-in technical support service designed to help you understand and operate your equipment through convenient phone and Web access
Service: 1-day start-up assistance	PS-S20-01	Training on how to operate your instrument effectively (recommended)
Service: Productivity assistance	PS-S20-100	Daily instrument and application consulting using your equipment and device under test
Service: custom engineering service	PS-X10-100	Application-specific technical assistance

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



MXA bench top configuration

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 MXA
4. Begin using the new capability ^{1, 2}


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

Upgrades for analysis bandwidth depend on the vintage of the instrument and the options already installed. More than one option may be required to achieve desired wider analysis bandwidth. Use our web-based calculator to find the upgrade options you may need:
www.keysight.com/find/BW-selector

You can upgrade!

Options can be added after your initial purchase.

All of our X-Series application options are license-key upgradeable.



Description	Upgrade number	Requirements (MXA must already include the following)	Additional information
Increase frequency from 3.6 to 8.4 GHz	N9020BU-F01	503	
Increase frequency from 3.6 to 13.6 GHz	N9020BU-F02	503	
Increase frequency from 3.6 to 26.5 GHz	N9020BU-F03	503	
Increase frequency from 8.4 to 13.6 GHz	N9020BU-F06	508	
Increase frequency from 8.4 to 26.5 GHz	N9020BU-F07	508	
Increase frequency from 13.6 to 26.5 GHz	N9020BU-F10	513	
Increase analysis bandwidth to 40 MHz	N9020BU-B40	None	Includes hardware and license key; adds microwave preselector bypass; also enables 40 MHz per channel baseband bandwidth if Option BBA is installed
Increase analysis bandwidth from 25 MHz to 85 MHz	N9020BU-B85	508, 513, 526	Includes hardware and license key; also add microwave preselector bypass; not compatible with Option BBA
Increase analysis bandwidth from 40 MHz to 85 MHz	N9020BU-BU1	B40	Includes hardware and license key; not compatible with Option BBA

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 two years 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 two years, or if the analyzer is more than two years 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 (MXA must already include the following)	Additional information
Increase analysis bandwidth from 25 to 125 MHz	N9020BU-B1A	None	Includes hardware and license key; also add microwave preselector bypass, not compatible with Option BBA
Increase analysis bandwidth from 40 to 125 MHz	N9020BU-BU2	B40	Includes hardware and license key; not compatible with Option BBA
Increase analysis bandwidth from 85 to 125 MHz	N9020BU-BU6	B85	Includes hardware and license key
Increase analysis bandwidth from 25 to 160 MHz	N9020BU-B1X	None	Includes hardware and license key; also add microwave preselector bypass, not compatible with Option BBA
Increase analysis bandwidth from 40 to 160 MHz	N9020BU-BU3	B40	Includes hardware and license key; not compatible with Option BBA
Increase analysis bandwidth from 85 to 160 MHz	N9020BU-BU7	B85	License key only
Increase analysis bandwidth from 125 to 160 MHz	N9020BU-BUA	B1A	License key only
Digital processor with 4 GB capture memory for instruments with serial number prefixes < MY/SG/US5608	N9020BU-DP4	B85, B1A, or B1X	Includes hardware and license key
Real-time analysis up to maximum available BW, basic detection	N9020BU-RT1	B85, B1A, or B1X (Analysis BW option determines maximum real-time BW)	Includes frequency mask trigger (FMT) and time qualified trigger (TQT); minimum 17.3 μ s signal duration for 100% POI; supports external mixing Option EXM; license key upgrade Also orderable at N9020RT1B (requires F/W revision A.21.04 onward)
Real-time analysis up to maximum available BW, optimum detection	N9020BU-RT2	B1X, B1A, or B85 (Analysis BW option determines maximum real-time BW)	Includes frequency mask trigger (FMT) and time qualified trigger (TQT); minimum 3.57 μ s signal duration for 100% POI; supports external mixing Option EXM; license key upgrade Also orderable at N9020RT2B (requires F/W revision A.21.04 onward)
Real-time spectrum recorder and analyzer application	N9020BU-RTR	RT1 or RT2	Enables recording, analyzing, and playback of spectrum density data over time for detecting and analyzing signal anomalies
Frequency mask trigger, basic detection	N9020BU-FT1	B85, B1A, or B1X	License key only Also orderable at N90EMFT1B (requires F/W revision A.21.04 onward)
Frequency mask trigger, optimum detection	N9020BU-FT2	B85, B1A, or B1X	License key only Also orderable at N90EMFT2B (requires F/W revision A.21.04 onward)
Upgrade to the precision frequency reference	N9020BU-PFR	None	
Resolution bandwidth extended	N9020BU-RBE	B85, B1A, or B1X	Also orderable at N90EMFT2B (requires F/W revision A.21.04 onward)
Add time domain scan capability	N9020BU-TDS	N6141C and DP2, or B40 (or wider BW)	For EMC pre-compliance tests only Also orderable at N90EMTDSB (requires F/W revision A.21.04 onward)
Add an electronic attenuator, 3.6 GHz	N9020BU-EA3	None	
Add enhanced fast sweep speed	N9020BU-FS2	DP2	
Add preamplifier, 3.6 GHz	N9020BU-PO3	None	
Add preamplifier, 8.4 GHz	N9020BU-PO8	None	Not compatible with Option 503
Add preamplifier, 13.6 GHz	N9020BU-P13	None	Not compatible with Options 503, 508
Add preamplifier, 26.5 GHz	N9020BU-P26	None	Not compatible with Options 503, 508, 513
Add analog baseband IQ inputs	N9020BU-BBA	None	Not compatible with Options B85, B1A, B1X, 532, 544, 550
Add basic precompliance EMI features	N9020BU-EMC	None	Also orderable at N90EMEMCB (requires F/W revision A.21.04 onward)
Add external source control	N9020BU-ESC	None	Adds feature to control the Keysight EXG, MXG, and PSG signal generators; includes 3 BNC cables and 1 cross-over LAN cable Also orderable at N90EMESCB (requires F/W revision A.21.04 onward)
Add external mixing	N9020BU-EXM	None	Includes hardware and license key

Description	Upgrade number	Requirements (MXA must already include the following)	Additional information
Add fast power	N9020BU-FP2	B40, or B85, B1A, B1X	For fast power measurements such as ACPR Also orderable at N90EMFP2B (requires F/W revision A.21.04 onward)
Add noise floor extension	N9020BU-NF2	None	Instrument alignment based
Add security features, exclude launch program	N9020BU-SF1	None	Prevents the launching of Windows programs from the instrument application
Add security features, prohibit saving results	N9020BU-SF2	None	Prevents the saving/recall of measurement results or user configurations to/from instrument's data storage
Add removable solid-state drive (SSD)	N9020BU-SS1	None	Provides additional, removable solid-state drive, with Windows 10 operating system
Add second IF output	N9020BU-CR3	B40, B85, B1A, B1X, DP2, MPB, or CRP	
Add arbitrary IF output	N9020BU-CRP	Front end controller with hardware ID 41 or 75	Press System, Show, Hardware to determine hardware ID
Add second IF output and arbitrary IF output	N9020BU-HL3	None	Includes hardware and license key
Add Y-axis screen video output	N9020BU-YAS	None	
Add enhanced display package	N9020BU-EDP	None	Also orderable at N90EMEDPB (requires F/W revision A.21.04 onward)
Upgrade operating system to Windows 10	N9020BU-SS1	PC6, W7X	Provides a removable solid-state drive with Windows 10 operating system
US 65-Key USB keyboard	1KBD001A	None	Smaller keyboard
Rack mount and handle kit	1CP105A	None	Not compatible with Option PRC, 1CN103A, 1CM113A
Front handle kit	1CN103A	None	Not compatible with Option PRC, 1CP105A, 1CM113A
Rack mount kit	1CM113A	None	Not compatible with Option PRC, 1CP105A, 1CM113A
Rack slide kit	1CR013A	None	Not compatible with Option PRC
Portable configuration	N9020BU-PRC	None	Not compatible with Options 1CM, 1CP, 1CN, 1CR
Minimum loss pad, 50 to 75 Ω (type-N to BNC)	MLP001A	None	1CP105A, 1CM113A, 1CN103A, 1CR013A
Korean version of Getting Started Guide	N9020BU-AB1	None	
Chinese version of Getting Started Guide	N9020BU-AB2	None	
Spanish version of Getting Started Guide	N9020BU-ABE	None	
French version of Getting Started Guide	N9020BU-ABF	None	
Japanese version of Getting Started Guide	N9020BU-ABJ	None	
Russian version of Getting Started Guide	N9020BU-AKT	None	

Description	Fixed license	Transportable license	Additional information
Note: It is recommended to order measurement applications with the model numbers listed at Step 12. Alternatively, you can use the ordering numbers in this table to add the measurement applications. 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.			
Cellular communications			
LTE/LTE-Advanced FDD	N9080C-1FP	N9080C-1TP	Standard-based, one-button LTE-FDD measurements
	N9080C-2FP	N9080C-2TP	Standard-based, one-button LTE-Advanced FDD measurements; requires N9080C-1FP/1TP
NB-IoT/eMTC	N9080C-3FP	N9080C-3TP	Standard-based, one-button NB-IoT/eMTC measurements
LTE/LTE-Advanced TDD	N9082C-1FP	N9082C-1TP	Standard-based, one-button LTE-TDD measurements
	N9082C-2FP	N9082C-2TP	Standard-based, one-button LTE-Advanced TDD measurements; requires N9082C-1FP/1TP
GSM/EDGE/EVO	N9071C-1FP	N9071C-1TP	Licensed as N9071C-2FP or -2TP and N9071C-3FP or -3TP. Standard-based, one-button GSM/EDGE/EDGE Evolution measurements
	N9071C-XFP	N9071C-XTP	Adds single acquisition combined measurement, a SCPI-command-based measurement optimized for high-volume, high-throughput manufacturing; requires N9071C-1FP/1TP (licensed as N9071C-2FP/2TP and 3FP/3TP); not compatible with Options DP2, B40, B85, B1A, B1X, or MPB
W-CDMA/HSPA+	N9073C-1FP	N9073C-1TP	Standard-based, one-button W-CDMA measurements; supports analog baseband analysis with Option BBA (BBIQ inputs)
	N9073C-2FP	N9073C-2TP	Adds HSPA measurements; requires 1FP/1TP
	N9073C-3FP	N9073C-3TP	Adds HSPA+ measurements; requires 1FP/1TP, 2FP/2TP
	N9073C-XFP	N9073C-XTP	Adds single acquisition combined measurement, a SCPI-command-based measurement optimized for high-volume, high-throughput manufacturing; requires 1FP/1TP; not compatible with Options DP2, B40, B85, B1A, B1X, or MPB
General purpose			
Analog demodulation	N9063C-1FP	N9063C-1TP	Licensed as N9063C-2FP or -2TP and N9063C-3FP or -3TP. 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	N9068C-2FP	N9068C-2TP	Adds one-button measurements for analyzing phase noise in frequency domain (log plot) and time domain (spot frequency)
Noise figure	N9069C-3FP (requires preamplifier to meet specifications)	N9069C-3TP (requires preamplifier to meet specifications)	Licensed as N9069C-1FP or -1TP and N9069C-2FP or -2TP. 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; 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	N9054C-1FP	N9054C-1TP	One-button vector modulation analysis measurements
EMI	N6141C-2FP	N6141C-2TP	Pre-compliance conducted and radiated emission measurements
Remote language analyzers	N9061C-1FP	Not available	Add capability to emulate HP/Agilent 8566/68 and 856xE/EC spectrum analyzers; licensed as N9061C-1FP and N9061C-2FP
SCPI command language compatibility	N9062C-2FP	Not available	Adds capability to emulate the R&S FSP/FSU/FSE spectrum analyzers or ESU EMI receiver
Pulse	N9067C-1FP	N9067C-1TP	Characterize pulsed RF signals in the time domain, with phase, frequency and statistical analysis of large pulse sets
	N9067C-2FP	N9067C-2TP	Enables fixed and variable length gated acquisition for capturing pulses of varying pulse width and PRI; requires 4 GB capture memory Option DP4

Description	Fixed license	Transportable license	Additional information
Wireless connectivity			
WLAN 802.11a/b/g/j/p/n/ac/af/ah/ax	N9077C-1FP	N9077C-1TP	Licensed as N9077C-2FP or -2TP and N9077C-3FP or -3TP; standard-based, one-button 802.11a/b/g/j/p/n measurement
	N9077C-4FP	N9077C-4TP	Adds 802.11ac; requires N9077C-1FP/1TP (licensed as N9077C-2FP/2TP and 3FP/3TP)
	N9077C-6FP	N9077C-6TP	Standard-based, one-button 802.11ah measurement
	N9077C-7FP	N9077C-7TP	Standard-based, one-button 802.11af measurement
	N9077C-8FP	N9077C-8TP	Standard-based, one-button 802.11ax single user PPDU measurement
	N9077C-MFP	N9077C-MTP	Standard-based, one-button 802.11ax multi-user PPDU measurement
Bluetooth®	N9081C-2FP	N9081C-2TP	Standard-based, one-button Bluetooth® version 2.1+ EDR and Low Energy (BR/EDR/LE 4.0/4.2) measurements
	N9081C-3FP	N9081C-3TP	Standard-based, one-button Bluetooth® 5 measurement; requires N9081C-2FP/2TP
Short range communications	N9084C-1FP	N9084C-1TP	Standard-based, one-button 802.15.4 for ZigBee measurement
	N9084C-2FP	N9084C-2TP	Standard-based, one-button G.9959 for Z-Wave measurement
MATLAB software	N6171A-M01	Not available	Instrument Control Toolbox
			Communications System Toolbox
			DSP System Toolbox
	N6171A-M03	Not available	Signal Processing Toolbox
			Instrument Control Toolbox
			Communications System Toolbox
89600 vector signal analysis (VSA) software	Not available	89601B (transportable license is standard)	DSP System Toolbox
			Signal Processing Toolbox
			RF Toolbox
Industry-leading measurement software for evaluating and troubleshooting signals in R&D; PC-based software supporting more than 40 measurement platforms, plus more than 75 signal standards and modulation types including MIMO analysis; www.keysight.com/find/89600_VSA			

Related Literature

Keysight MXA signal analyzers

Publication title	Publication number
<i>X-Series Signal Analyzers</i> - Brochure	5992-1316EN
<i>N9020B MXA X-Series Signal Analyzer, Multi-touch</i> - Data Sheet	5992-1255EN
<i>X-Series Measurement Applications</i> - Brochure	5989-8019EN

Learn more at: www.keysight.com

For more information on Keysight Technologies' products, applications or services, please contact your local Keysight office. The complete list is available at: www.keysight.com/find/contactus

