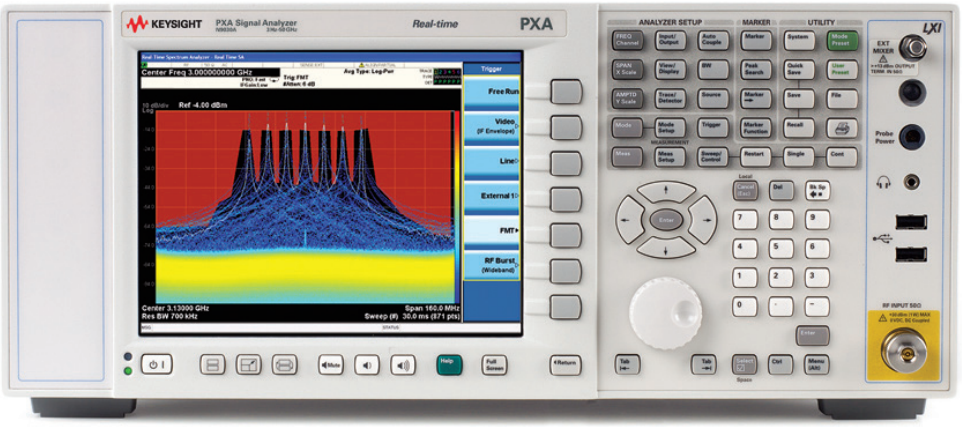
CONFIGURATION GUIDE

Keysight PXA X-Series Signal Analyzer N9030A

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



KEYSIGHT TECHNOLOGIES

Configure Your Keysight N9030A PXA Signal Analyzer

This step-by-step process will help you configure your new PXA X-Series signal analyzer. Tailor the performance to meet your requirements. For detailed specifications, refer to the specifications guide (N9030-90017). For a summary of detailed specifications, refer to the data sheet (5990-3952EN).

Included in base product

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

- Spectrum analyzer measurement application
- Dual-core, high-performance processor, 8 GB RAM, removable solid-state drive
- Mechanical attenuator
- 10 MHz/25 MHz analysis bandwidth
- Digital processor with 2 GB capture memory
- Enhanced phase noise
- Fast sweep capability
- LO/IM nulling
- Low frequency extension
- Noise floor extension
- Precision frequency reference
- Microsoft Windows 10 operating system
- Real-time link
- Mouse and keyboard
- User guides
- Front-panel protective cover
- Power cord

Step 1. Select maximum frequency range (required option)

Description	Option number	Additional information
Frequency range, 3 Hz to 3.6 GHz	N9030A-503	
Frequency range, 3 Hz to 8.4 GHz	N9030A-508	
Frequency range, 3 Hz to 13.6 GHz	N9030A-513	
Frequency range, 3 Hz to 26.5 GHz	N9030A-526	
Frequency range, 3 Hz to 43 GHz	N9030A-543	
Frequency range, 3 Hz to 44 GHz	N9030A-544	
Frequency range, 3 Hz to 50 GHz	N9030A-550	

Step 2. Add a preamplifier

Description	Option number	Additional information
Preamplifier, 100 kHz to 3.0 GHz	N9030A-P03	Compatible with frequency range options: N9030A-503, N9030A-508, N9030A-513, N9030A-526, N9030A-543, N9030A-544, and N9030A-550
Preamplifier, 100 kHz to 8.4 GHz	N9030A-P08	Compatible with frequency range options: N9030A-508, N9030A-513, N9030A-526, N9030A-543, N9030A-544, and N9030A-550
Preamplifier, 100 kHz to 13.6 GHz	N9030A-P13	Compatible with frequency range options: N9030A-513, N9030A-526, N9030A-543, N9030A-544, and N9030A-550
Preamplifier, 100 kHz to 26.5 GHz	N9030A-P26	Compatible with frequency range options: N9030A-526, N9030A-543, N9030A-544, and N9030A-550
Preamplifier, 100 kHz to 43 GHz	N9030A-P43	Compatible with frequency range option: N9030A-543
Preamplifier, 100 kHz to 44 GHz	N9030A-P44	Compatible with frequency range option: N9030A-544
Preamplifier, 100 kHz to 50 GHz	N9030A-P50	Compatible with frequency range option: N9030A-550

Step 3. Choose an attenuator

Description	Option number	Additional information
Mechanical attenuator	Standard	2 dB steps, 0 to 70 dB; installed as N9030A-FSA
Electronic attenuator up to 3.6 GHz	N9030A-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/25 MHz analysis bandwidth	Standard	Useful for most cellular communications, wireless connectivity, and audio/video broadcasting measurement applications; installed as N9030A-B25
40 MHz analysis bandwidth	N9030A-B40	Extends the analysis bandwidth to 40 MHz (Option MPB required for measurements > 3.6 GHz)
85 MHz analysis bandwidth	N9030A-B85	Extends the analysis bandwidth to 85 MHz (Option MPB required for measurements > 3.6 GHz)
160 MHz analysis bandwidth	N9030A-B1X	Extends analysis bandwidth to 160 MHz (Option MPB required for measurements > 3.6 GHz)
Microwave preselector bypass	N9030A-MPB	Bypass the microwave preselector for wider bandwidth IF

Step 5. Choose performance options		
Description	**Option number**	**Additional information**
Digital processor with 2 GB capture memory	Standard	Installed as N9030A-DP2
Enhanced phase noise	Standard	Installed as N9030A-EP1
Fast sweep capability	Standard	Improves sweep speed at swept-tune mode; installed as N9030A-FS1 and N9030A-FS2
LO/IM nulling	Standard	Minimizes the LO feed-thru and intermodulation distortion; installed as N9030A-NUL
Noise floor extension	Standard	Improves displayed average noise level (DANL), second-generation algorithm (instrument alignment process); installed as N9030A-NF2
Precision frequency reference	Standard	Aging rate: ± 1 x 10-7/year; installed as N9030A-PFR
Low noise path	N9030A-LNP	Improves sensitivity (DANL) in frequency bands above 3.6 GHz
External mixing	N9030A-EXM	Provides external mixing with Keysight and third party mixers; single port[1] for LO out and IF in (SMA female)
APC 3.5 mm connector	N9030A-C35	3.5 mm connector on 26.5 GHz PXA (Compatible with Option 526 only)
I/Q baseband inputs, analog	N9030A-BBA	Single-ended/differential, 50 Ω/1 MΩ impedance (Compatible with Options 503, 508, 513, and 526)

Step 6. 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**

Description	**Model number**	**Additional information**
Real-time analysis up to 160 MHz BW, basic detection	N9030RT1A	Includes Frequency mask trigger; minimum 17.3 µs signal duration for 100% probability of intercept (POI); requires N9030A-B85 or N9030A-B1X which determines the maximum real-time BW
Real-time analysis up to 160 MHz BW, optimum detection	N9030RT2A	Includes Frequency mask trigger; minimum 3.57 µs signal duration for 100% probability of intercept (POI); requires N9030A-B1X or N9030A-B85 which determines the maximum real-time BW
Real-time spectrum recorder and analyzer application	N9030A-RTR	Enables recording, analyzing and playback of spectrum density data over time for detecting and analyzing signal anomalies; requires Option RT1 (N9030RT1A) or RT2 (N9030RT2A)

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.

Step 7. Add optional features		
Description	**Model number**	**Additional information**
Basic EMI precompliance	N90EMRBEA	Perform EMI precompliance measurements with CISPR 16-1-1 detectors and bandwidths: tune and listen, and measure at marker are also available
Enhanced display package	N90EMEMCA	Includes spectrogram, trace zoom, and zone span
External source control	N90EMESCA	External source control for Keysight EXG, MXG, and PSG signal generators; supports external mixing; includes 3 BNC cables and 1 crossover LAN cable
Fast power	N90EMFP2A	Accelerates the power measurements such as ACPR; requires Option B40 (or B85, B1X)
Time domain scan	N90EMTDSA	Improves scan speed for EMC pre-compliance tests; requires N6141EM0D EMI measurement application
Resolution bandwidth extended	N90EMRBEA	Extends the maximum RBW in Zero Span; requires option B85 or B1X

Step 8. Choose operating system		
Description	**Option number**	**Additional information**
Windows 10 operating system	Standard	Installed as N9030A-W10

Step 9. Add security features		
Description	**Option number**	**Additional information**
Additional removable solid-state drive (SSD)	N9030A-SS1	Provides a fully-imaged, removable solid-state drive in addition to the one installed in instruments, with Windows 10 operating system
Exclude launch program	N9030A-SF1	Prevents the launching of Windows programs from the instrument application
Prohibit saving results	N9030A-SF2	Prevents the saving/recall of measurement results or user configurations to/from instrument's data storage

Step 10. Add rear panel output utilities		
Description	**Option number**	**Additional information**
Second IF output	N9030A-CR3	Wideband IF out; center frequency depends on IF path; output on Aux IF connector at rear panel
Arbitrary IF out	N9030A-CRP	IF out 10 to 75 MHz (in 500 kHz steps); output on Aux IF connector at rear panel
Y-axis video out	N9030A-YAV	Screen video (0-1 volt open circuit); log video and linear video
Aux log video out	N9030A-ALV	Fast rise time video out; output on Aux IF connector
Real-time link	Standard	The LVDS connector allows PXA to connect to the X-COM data recorder for data streaming (up to 40 MHz BW) and N5106A PXB baseband generator and channel emulator; installed as N9030A-RTL

Step 11. 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:
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**

Step 11. Choose measurement application or software and license type		
Description	**Model number**	**Additional information**
General purpose		
Spectrum analyzer	Standard	Traditional spectrum analysis plus many new and enhanced functions; power measurements based on industry specifications; licensed as N9060EM1D
Analog demodulation	N9063EM0D	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	N9068EM0D	Adds one-button measurements for analyzing phase noise in frequency domain (log plot) and time domain (spot frequency), supports external mixing
Noise figure	N9069EM0D (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
VXA Vector Signal Analysis	N9064EM0D	Vector signal analysis; high-resolution, FFT-based spectrum and time-domain measurements, time gating, AM/FM/PM demodulation, statistical measurements; flexible digital modulation analysis; general purpose digital modulation for 2-16FSK, 2-8PSK, and 16-1024QAM, as well as more than 15 additional formats
EMI	N6141EM0D	Performs pre-compliance conducted and radiated emission measurements
Remote language compatibility	N9061EM0D	Adds capability to emulate HP/Agilent 8566/68 and 856xE/EC spectrum analyzers
SCPI command language compatibility	N9062EM0D	Adds capability to emulate the R&S FSP/FSU/FSE/FSL/FSV 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	N9071EM0D	Standard-based, one-button GSM/EDGE/EDGE Evolution measurements
cdma2000	N9072EM0D	Standard-based, one-button cdma2000 and cdmaOne measurements
W-CDMA/HSPA+	N9073EM0D	Standard-based, one-button W-CDMA, HSPA and HSPA+ measurements; supports analog baseband analysis with Option BBA (BBIQ inputs)
1xEV-DO	N9076EM0D	Standard-based, one-button 1xEV-DO Rel 0, Rev A, and Rev B measurements
TD-SCDMA/HSPA	N9079EM0D	Standard-based, one-button TD-SCDMA/HSPA/8PSK measurements
LTE/LTE-Advanced FDD	N9080EM0D	Standard-based, one-button LTE/LTE-Advanced FDD measurements
LTE/LTE-Advanced TDD	N9082EM0D	Standard-based, one-button LTE/LTE-Advanced TDD measurements
Multi-Standard Radio (MSR)	N9083EM0D	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
Wireless connectivity		
Mobile WiMAX™	N9075EM0D	Standard-based, one-button Mobile WiMAX measurements
WLAN 802.11 a/b/g/j/p/n/af/ah	N9077EM0D	Standard-based, one-button 802.11a/b/g/j/p/n/af/ah measurement
WLAN 802.11ac/ax	N9077EM1D	Standard-based, one-button 802.11ac/ax measurement
Bluetooth®	N9081EM0D	Standard-based, one-button *Bluetooth* (BR/EDR, Low Energy 4.0/4.2 and *Bluetooth* 5) measurements
Digital video		
Digital Cable TV	N6152EM0D	Standard-based, one-button DVB-C (J.83 Annex A/C) and J.83 Annex B measurements
DVB-T/H/T2/T2-Lite	N6153EM0D	Standard-based, one-button DVB-T/H, DVB-T2/T2-Lite measurements
ISDB-T/Tmm	N6155EM0D	Standard-based, one-button ISDB-T, ISDB-T_B, ISDB-T_{SB}, and ISDB-Tmm measurements
DTMB(CTTB)	N6156EM0D	Standard-based, one-button DTMB (CTTB) measurements

Step 12. Choose accessories

Description	Option number	Additional information
Mouse, USB interface	Standard	Enhances usability of the Windows operating system
Keyboard, USB interface	Standard	Enhances the usability of the Windows operating system
User guides	Standard	US – English localization All user documentation is included in the embedded context-sensitive help system inside the PXA and on a DVD that is shipped with the instrument User documentation can be downloaded from: www.keysight.com/find/pxa_manuals
Front-panel protective cover	Standard	
Power cord	Standard	Depends on the region of use
Adapter, 2.4 mm (f) to 2.4 mm (f)	Standard	Only for PXA with Option 543, 544, or 550
Adapter, 2.4 mm (f) to 2.92 mm (f)	Standard	Only for PXA with Option 543, 544, or 550
Rack mount	N9030A-1CM	Adds rack mount flanges to the PXA
Front handles	N9030A-1CN	Adds front handles to the PXA
Rack mount with handles	N9030A-1CP	Adds rack mount flanges and handles to the PXA
Rack slide	N9030A-1CR	Adds a non-tilting rack slide to the PXA
USB DVD-ROM/CD-R/RW drive	N9030A-DVR	Enhances the usability of the Windows operating system
US 65-key USB keyboard	N9030A-KB2	Smaller keyboard
Minimum loss pad, 50 to 75 Ω (type-N to BNC)	N9030A-MLP	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	Requires firmware A.14.00 or higher
USB external preamplifier, 0.1 to 26.5 GHz	U7227C	Requires firmware A.14.00 or higher
USB external preamplifier, 2 to 50 GHz	U7227F	Requires firmware A.14.00 or higher

Step 13. Choose localized Getting Started guides	
Description	**Option number**
Getting started guide PXA Korean localization	N9030A-AB1
Getting started guide PXA Chinese localization	N9030A-AB2
Getting started guide PXA German localization	N9030A-ABD
Getting started guide PXA French localization	N9030A-ABF
Getting started guide PXA Japanese localization	N9030A-ABJ
Getting started guide PXA Russian localization	N9030A-AKT

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

Step 14. Add calibration, technical training, support, and upgrade services		
Description	**Option number**	**Additional information**
Commercial calibration certificate with test data	N9030A-UK6	Calibration certificate only available at time of instrument purchase; only provides measurement results
Keysight Calibration + Uncertainties + Guardbanding (accredited cal)	N9030A-AMG	Provides ISO 17025A accredited calibration from factory
ANSI Z540-1-1994 Calibration	N9030A-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

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

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 PXA
4. Begin using the new capability 1, 2 Installation and testing information is available at: **www.keysight.com/find/pxa_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 (PXA must already include the following)	Additional Information
Increase frequency from 3.6 to 8.4 GHz	N9030AK-F01	503	
Increase frequency from 3.6 to 13.6 GHz	N9030AK-F02	503	
Increase frequency from 3.6 to 26.5 GHz	N9030AK-F03	503	
Increase frequency from 3.6 to 44 GHz	N9030AK-F04	503	Not compatible with Option BBA
Increase frequency from 3.6 to 50 GHz	N9030AK-F05	503	Not compatible with Option BBA
Increase frequency from 8.4 to 13.6 GHz	N9030AK-F06	508	
Increase frequency from 8.4 to 26.5 GHz	N9030AK-F07	508	
Increase frequency from 8.4 to 44 GHz	N9030AK-F08	508	Not compatible with Option BBA
Increase frequency from 8.4 to 50 GHz	N9030AK-F09	508	Not compatible with Option BBA
Increase frequency from 13.6 to 26.5 GHz	N9030AK-F10	513	
Increase frequency from 13.6 to 44 GHz	N9030AK-F11	513	Not compatible with Option BBA
Increase frequency from 13.6 to 50 GHz	N9030AK-F12	513	Not compatible with Option BBA
Increase frequency from 26.5 to 44 GHz	N9030AK-F13	526	Not compatible with Option BBA
Increase frequency from 26.5 to 50 GHz	N9030AK-F14	526	Not compatible with Option BBA
Increase frequency from 43/44 to 50 GHz	N9030AK-F15	543/544	Includes 50 GHz preamp

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 (PXA must already include the following)	Additional Information
Increase analysis bandwidth from 10 to 25 MHz	N9030AK-B25	None	Also enables 25 MHz per channel baseband bandwidth if Option BBA is installed
Increase analysis bandwidth from 10 to 40 MHz	N9030AK-B40	MPB (for measurements > 3.6 GHz)	Also enables 40 MHz per channel baseband bandwidth if Option BBA is installed
Increase analysis bandwidth from 25 to 40 MHz	N9030AK-BU1	MPB (for measurements > 3.6 GHz)	Also enables 40 MHz per channel baseband bandwidth if Option BBA is installed
Increase analysis bandwidth from 40 to 85 MHz	N9030AK-HLB	MPB (for measurements > 3.6 GHz)	Includes additional hardware
Increase analysis bandwidth from 40 to 160 MHz	N9030AK-BU2	MPB (for measurements > 3.6 GHz)	Includes additional hardware
Increase analysis bandwidth from 10/25 to 85 MHz	N9030AK-B85	MPB (for measurements > 3.6 GHz)	Includes additional hardware
Increase analysis bandwidth from 10/25 to 160 MHz	N9030AK-B1X	MPB (for measurements > 3.6 GHz)	Includes additional hardware
Increase analysis bandwidth from 85 to 160 MHz	N9030AK-BU5	MPB (for measurements > 3.6 GHz)	
Increase analysis bandwidth from 140 to 160 MHz	N9030AK-BU3	MPB (for measurements > 3.6 GHz)	
Real-time analysis up to 160 MHz BW, basic detection	N9030AK-RT1	B85 or B1X (Analysis BW option determines maximum real-time BW)	Includes frequency mask trigger; minimum 17.3 µs signal duration for 100% POI. Combination of Win7/PC4 or WinXP/PC2 required for optimal display performance. Also orderable at N9030RT1A (requires F/W revision A.21.04 onward)
Real-time analysis up to 160 MHz BW, optimum detection	N9030AK-RT2	B1X or B85 (Analysis BW option determines maximum real-time BW)	Includes frequency mask trigger; minimum 3.57 µs signal duration for 100% POI. Combination of Win7/PC4 or WinXP/PC2 required for optimal display performance. Also orderable at N9030RT1A (requires F/W revision A.21.04 onward)
Real-time spectrum recorder and analyzer application	N9030AK-RTR	RT1 (N9030RT1A) or RT2 (N9030RT2A)	Enables recording, analyzing and playback of spectrum density data for detecting and analyzing signal anomalies over time
Add an electronic attenuator, 3.6 GHz	N9030AK-EA3	None	
Add preamplifier, 3.6 GHz	N9030AK-P03	550, 544, 543, 526, 513, 508, or 503	
Add preamplifier, 8.4 GHz	N9030AK-P08	550, 544, 543, 526, 513, or 508	
Add preamplifier, 13.6 GHz	N9030AK-P13	550, 544, 543, 526, or 513	
Add preamplifier, 26.5 GHz	N9030AK-P26	550, 544, 543, or 526	
Add preamplifier, 43 GHz	N9030AK-P43	543	
Add preamplifier, 44 GHz	N9030AK-P44	544	
Add preamplifier, 50 GHz	N9030AK-P50	550	
Add APC 3.5 mm connector	N9030AK-C35	526	Includes additional hardware
Add I/Q baseband inputs, analog	N9030AK-BBA	526, 513, 508, or 503	Includes additional hardware

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 (PXA must already include the following)	Additional Information
Upgrade operating system to Windows 10			
From old processors	N9094AK-W10 N9094AK-PC6 (Under the N9030AK)	PC2 or PC4	Upgrade to a quad-core 64-bit performance processor, 16 GB RAM, with removable solid-state drive and Windows 10 operating system
From the latest processors	N9094AK-W10 N9094AK-SSD (Under the N9030AK)	PC6	Provides a removable solid-state drive with Windows 10 operating system
Upgrade to dual core 64-bit performance processor, 16 GB RAM, removable solid-state drive			
With Windows 10 operating system	N9094AK-W10 N9094AK-PC6 (Under the N9030AK)	PC2 or PC4	Upgrade to a quad-core 64-bit performance processor, 16 GB RAM, with removable solid-state drive and Windows 10 operating system
Add additional removable solid-state drive			
With Windows 10 operating system	N9094AK-W10 N9094AK-SSD (Under the N9030AK)	PC6	For Windows 10 operating system provides additional removable solid-state drive
Upgrade to multi-touch user interface			
From PC6 processor	N9030AK-MTU	PC6	Allows signal analyzer to run multi-touch applications. Request N9030A PXA signal analyzers with S/N prefix ≥ MY/SG/US5605 [1]
From other processor	N9030AK-MTP	None	Allows signal analyzer to run multi-touch applications and upgrades to a quad-core 64-bit performance processor, 16 GB RAM. Request N9030A PXA signal analyzers with S/N prefix ≥ MY/SG/US5605 [1]
Add external mixing	N9030AK-EXM	550, 544, or 543; 526, 513, 508, or 503 with serial prefix ≥ MY/SG/US5138	Includes additional hardware
Add external mixing	N9030AK-HL6	526, 513, 508, or 503 with serial prefix < MY/SG/US5138	Includes additional hardware
Add second IF output	N9030AK-CR3	None	Provides wideband IF out, output center frequency depends on IF path
Add time domain scan capability	N9030AK-TDS	N6141A	For EMC pre-compliance tests only. Also orderable at N90EMTDSA (requires F/W revision A.21.04 onward)
Add resolution bandwidth extended	N9030AK-RBE	B85 or B1X	Also orderable at N90EMRBEA (requires F/W revision A.21.04 onward)
Add microwave preselector bypass	N9030AK-MPB	LNP or B1X	
Add low noise path	N9030AK-LNP	MPB or B1X	
Hardware and license preselector bypass and low noise path	N9030AK-HL1 N9030AK-HL2	526, 513, 508 550, 544, 543	Includes additional hardware; installs both Options MPB and LNP when neither are previously installed
Add Y-axis video output	N9030AK-YAV	None	
Arbitrary IF output	N9030AK-CRP	None	Provides user-programmable IF out (10 to 75 MHz, at 500 kHz step)
Add auxiliary log video out	N9030AK-ALV	None	
Add fast power	N9030AK-FP2	B40, B85, or B1X	Accelerates power measurements such as ACPR. Also orderable at N90EMFP2A (requires F/W revision A.21.04 onward)

1. Not all applications supported by the N9030A with standard user interface (UI) are supported with the multi-touch UI. Consult your nearest Keysight sales representative for detailed information.

Description	Upgrade Number	Requirements	Additional Information
Add precompliance EMI features	N9030AK-EMC	None	Compliant with CISPR 16-1-1 2007 detectors and BWs. Also orderable at N90EMEMCA (requires F/W revision A.21.04 onward)
Add enhanced display package	N9030AK-EDP	None	Also orderable at N90EMEDPA (requires F/W revision A.21.04 onward)
Add external source control	N9030AK-ESC	None	Adds feature to control the Keysight EXG, MXG, and PSG signal generators for scalar stimulus/response measurements. Ships with 3 BNC cables and 1 cross-over LAN cable. Also orderable at N90EMESCA (requires F/W revision A.21.04 onward)
Add security features, exclude launch program	N9030AK-SF1	None	Prevents the launching of Windows programs from the instrument application
Add security features, prohibit saving results	N9030AK-SF2	None	Prevents the saving /recall of measurement results or user configurations to/from instrument's data storage
USB DVD-ROM/CD-R/RW drive	N9030AK-DVR	None	Includes additional hardware
Keyboard, USB interface	N9030AK-KYB	None	Full-sized USB keyboard; includes additional hardware
65-key USB keyboard	N9030AK-KB2	None	Smaller keyboard than Option KYB; includes additional hardware
Rack mount and handle kit	N9030AK-1CP	None	Includes additional hardware
Rack slide kit	N9030AK-1CR	None	Includes additional hardware
Front handle kit	N9030AK-1CN	None	Includes additional hardware
Rack mount kit	N9030AK-1CM	None	Rack mount flanges; not compatible with Options 1CP, 1CN; includes additional hardware
Minimum loss pad, 50 to 75 Ω (type-N to BNC)	N9030AK-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 and 11 dB; insertion loss: 5.7 dB; includes additional hardware
Front panel protective cover, additional	N9030AK-CVR	None	Includes additional hardware
Getting started guide PXA Korean	N9030AK-AB1	None	
Getting started guide PXA Chinese	N9030AK-AB2	None	
Getting started guide PXA German	N9030AK-ABD	None	
Getting started guide PXA French	N9030AK-ABF	None	
Getting started guide PXA Japanese	N9030AK-ABJ	None	
Getting started guide PXA Russian	N9030AK-AKT	None	

Note: It is recommended to order measurement applications with the model numbers listed at Step 11. 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.

Description	Model number	Transportable license	Additional information
Cellular communications			
LTE/LTE-Advanced FDD	N9080B-1FP	N9080B-1TP	Standard-based, one-button LTE-FDD measurements; requires W7X or W10. N9080A-1FP/1TP available for Windows XP
	N9080B-2FP	N9080B-2TP	Standard-based, one-button LTE-Advanced FDD measurements; requires W7X or W10, and N9080A or N9080B-1FP/1TP
LTE/LTE-Advanced TDD	N9082B-1FP	N9082B-1TP	Standard-based, one-button LTE-TDD measurements; requires W7X or W10. N9082A-1FP/1TP available for Windows XP
	N9082B-2FP	N9082B-2TP	Standard-based, one-button LTE-Advanced TDD measurements; requires W7X or W10, and N9082A or N9082B-1FP/1TP
Multi-standard radio (MSR)	N9083A-1FP	N9083A-1TP	Standard-based, one-button MSR measurements on any combination of LTE-FDD, W-CDMA/HSPA/HSPA+, GSM/EDGE/EDGE Evo, cdma2000 and 1xEV-DO signals

Description	Model number	Transportable license	Additional information
Cellular communications			
W-CDMA/HSPA+	N9073A-1FP	N9073A-1TP	Standard-based, one-button W-CDMA measurements; supports analog baseband analysis with Option BBA (BBIQ inputs)
	N9073A-2FP	N9073A-2TP	Adds HSPA measurements; requires 1FP/1TP
	N9073A-3FP	N9073A-3TP	Adds HSPA+ measurements; requires 1FP/1TP, 2FP/2TP
GSM/EDGE/EVO	N9071A-2FP	N9071A-2TP	Standard-based, one-button GSM/EDGE measurements; supports analog baseband analysis with Option BBA (BBIQ inputs)
	N9071A-3FP	N9071A-3TP	Adds EDGE Evolution and VAMOS measurements; requires 2FP/2TP
TD-SCDMA/HSPA	N9079A-1FP	N9079A-1TP	Standard-based, one-button TD-SCDMA measurements; supports analog baseband analysis with Option BBA (BBIQ inputs)
	N9079A-2FP	N9079A-2TP	Adds HSPA/8PSK measurements, requires 1FP/1TP
1xEV-DO	N9076A-1FP	N9076A-1TP	Standard-base, one-button 1xEV-DO measurements; supports analog baseband analysis with Option BBA (BBIQ inputs)
cdma2000®/cdmaOne	N9072A-2FP	N9072A-2TP	Standard-based, one-button cdma2000 and cdmaOne; supports analog baseband analysis with Option BBA (BBIQ inputs)
Wireless connectivity			
Mobile WiMAX™	N9075A-2FP	N9075A-2TP	Standard-based, one-button Mobile WiMAX measurements; supports analog baseband analysis with Option BBA (BBIQ inputs)
WLAN 802.11a/b/g/n/ac	N9077A-2FP	N9077A-2TP	Standard-based, one-button 802.11a/b/g measurement
	N9077A-3FP	N9077A-3TP	Adds 802.11n; requires 2FP/2TP
	N9077A-4FP	N9077A-4TP	Adds 802.11ac; requires 2FP/2TP, 3FP/3TP
	N9077A-6FP	N9077A-6TP	Standard-based, one button 802.11ah measurement; Firmware above A.16.05
	N9077A-7FP	N9077A-7TP	Standard-based, one button 802.11af measurement; Firmware above A.18.01
	N9077A-8FP	N9077A-8TP	Standard-based, one button 802.11ax measurement; Firmware above A.19..05
	N9077A-MFP	N9077A-MTP	Add 802.11ax OFDMA measurement (requires 8FP/8TP)
Bluetooth®	N9081A-2FP	N9081A-2TP	Standard-based, one-button *Bluetooth* version 2.1+ EDR and Low Energy (LE) measurements
	N9081A-3FP	N9081A-3TP	Standard-based, one-button *Bluetooth*® 5 measurement; requires N9081A-2FP/2TP
Digital video			
CMMB	N6158A-2FP	N6158A-2TP	Standard-based, one-button CMMB measurement; supports analog baseband analysis with Option BBA (BBIQ inputs)
Digital cable TV	N6152A-2FP	N6152A-2TP	Standard-based, one-button DVB-C (J.83 Annex A/C) measurements; supports analog baseband analysis with Option BBA (BBIQ inputs)
	N6152A-3FP	N6152A-3TP	Standard-based, one-button J.83 Annex B measurements; supports analog baseband analysis with Option BBA (BBIQ inputs)
DTMB (CTTB)	N6156A-2FP	N6156A-2TP	Standard-based, one-button DTMB (CTTB) measurements; supports analog baseband analysis with Option BBA (BBIQ inputs)
DVB-T/H/T2	N6153A-2FP	N6153A-2TP	Standard-based, one-button DVB-T/H measurements; supports analog baseband analysis with Option BBA (BBIQ inputs)
	N6153A-3FP	N6153A-3TP	Adds DVB-T2 measurements; requires 2FP/2TP
ISDB-T/Tmm	N6155A-2FP	N6155A-2TP	Standard-based, one-button ISDB-T, ISDB-TB, and ISDB-TSB; supports analog baseband analysis with Option BBA (BBIQ inputs)
	N6155A-3FP	N6155A-3TP	Adds ISDB-Tmm measurements; requires 2FP/2TP
General purpose			
Analog demodulation	N9063A-2FP	N9063A-2TP	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)
	N9063A-3FP	N9063A-3TP	Adds FM Stereo and RDS; requires 2FP/2TP
Phase noise	N9068A-2FP	N9068A-2TP	Adds one-button measurements for analyzing phase noise in frequency domain (log plot) and time domain (spot frequency), supports external mixing

Description	Fixed license	Transportable license	Additional information
General purpose, continued			
Noise figure	N9069A-1FP (requires preamplifier)	N9069A-1TP (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; supports U7227 USB external preamplifiers
	N9069A-2FP	N9069A-2TP	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; requires 1FP/1TP
VXA vector signal analysis	N9064A-1FP	N9064A-1TP	Vector signal analysis; high-resolution, FFT-based spectrum and time-domain measurements, time gating, AM/FM/PM demodulation, statistical measurements
	N9064A-2FP	N9064A-2TP	Adds flexible digital modulation analysis; general purpose digital modulation for 2-16FSK, 2-8PSK, and 16-1024QAM, as well as more than 15 additional formats; requires 1FP/1TP
EMC	N6141A-2FP	N6141A-2TP	Pre-compliance conducted and radiated emission measurements
MATLAB software	N6171A-M01	Not available	Basic signal analysis package; adds MATLAB software environment and the Instrument Control Toolbox (not upgradeable)
	N6171A-M02	Not available	Standard signal analysis package; includes basic package and adds Communications Toolbox and Signal Processing Toolbox (not upgradeable)
	N6171A-M03	Not available	Advanced signal analysis package; includes standard package and adds Filter Design Toolbox, RF Toolbox, and System Test (not upgradeable)
SCPI command language compatibility	N9062A-2FP	Not available	Adds capability to emulate the R&S FSP/FSU/FSE spectrum analyzers
Remote language compatibility	N9061A-1FP	Not available	Adds capability to emulate the HP/Agilent 8566/68 spectrum analyzers
	N9061A-2FP	Not available	Adds capability to emulate the HP/Agilent 856xE/EC spectrum analyzers
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 MIMO analysis; www.keysight.com/find/89600_VSA

Related Literature

Keysight PXA signal analyzers

Publication Title	Publication Number
Brochure	5990-3951EN
Data Sheet	5990-3952EN
X-Series Measurement Applications Brochure	5990-8019EN

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