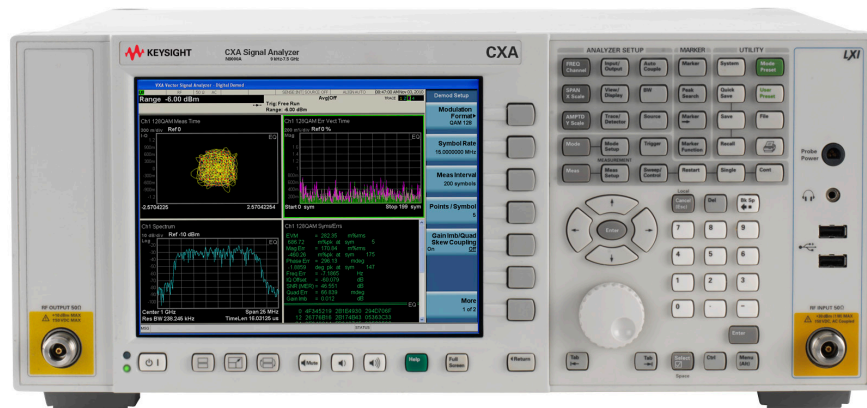


Keysight Technologies

CXA X-Series Signal Analyzer

N9000A

Configuration Guide



Configure Your Keysight CXA Signal Analyzer

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

This step-by-step process will help you custom-configure your CXA signal analyzer. Capabilities that are listed as standard come with the instrument at no additional charge. Tailor the performance, exterior, and service packages to meet your requirements. Ordering optional capabilities at time of purchase provides the lowest overall cost.

For detailed specifications, refer to the CXA Signal Analyzer Specification Guide (N9000-90016). For a summary of specifications, refer to the CXA Signal Analyzer Data Sheet (5990-4327EN).

Step 1. Select maximum frequency range (required option; frequency range not upgradeable)

Description	Option number	Additional information
Frequency range, 9 kHz to 3.0 GHz	N9000A-503	
Frequency range, 9 kHz to 7.5 GHz	N9000A-507	
Frequency range, 9 kHz to 13.6 GHz	N9000A-513	
Frequency range, 9 kHz to 26.5 GHz	N9000A-526	

Step 2. Add a preamplifier

Description	Option number	Additional information: Preamplifiers improve the noise floor for low-level signal detection; +20 dB: 100 kHz to 26.5 GHz
Preamplifier, 100 kHz to 3.0 GHz	N9000A-P03	Compatible with N9000A-503, N9000A-507, N9000A-513, and N9000A-526
Preamplifier, 100 kHz to 7.5 GHz	N9000A-P07	Compatible with N9000A-507, N9000A-513, and N9000A-526
Preamplifier, 100 kHz to 13.6 GHz	N9000A-P13	Compatible with N9000A-513 and N9000A-526
Preamplifier, 100 kHz to 26.5 GHz	N9000A-P26	Compatible with N9000A-526

Step 3. Choose frequency reference

Description	Option number	Additional information
Frequency reference	Standard	Aging rate: $\pm 1 \times 10^{-6}$ /year
Precision frequency reference	N9000A-PFR	Reduces frequency drift for more accurate measurements; aging rate: $\pm 1 \times 10^{-7}$ /year

Step 4. Choose an attenuator

Description	Option number	Additional information
Mechanical attenuator	Standard	10 dB steps, 0 to 50 dB, for N9000A-503 and N9000A-507 10 dB steps, 0 to 70 dB, for N9000A-513 and N9000A-526
Fine resolution step attenuator	N9000A-FSA	Allows 2 dB steps for the full range of the attenuator

Step 5. Choose analysis bandwidth

Description	Option number	Additional information
10 MHz analysis bandwidth	Standard	Useful for most 2G and 3G measurement applications
25 MHz analysis bandwidth	N9000A-B25	Extends the analysis (demod) bandwidth from 10 to 25 MHz

Step 6. Add a tracking generator

Description	Option number	Additional information
Tracking generator, 9 kHz to 3.0 GHz	N9000A-T03	Compatible with N9000A-503, N9000A-507 only
Tracking generator, 9 kHz to 6.0 GHz	N9000A-T06	Compatible with N9000A-507 only

Step 7. Add a 75 Ω input connector

Description	Option number	Additional information
Connector, 75 Ω additional RF input, 1.5 GHz	N9000A-C75	Not compatible with Options T03 or T06; compatible with N9000A-503 and N9000A-507 only

Configure Your Keysight CXA Signal Analyzer (Continued)

Step 8. Choose performance		
Description	Option number	Additional information
Enhanced phase noise	Standard ¹	Installed as N9000A-EP4

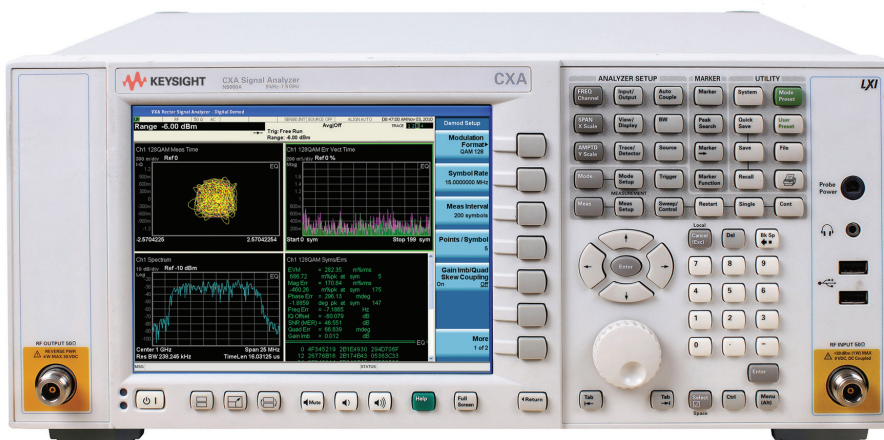
Step 9. Add optional features		
Description	Option number	Additional information
Enhanced display package	N9000A-EDP	Includes spectrogram, trace zoom, and zone span
Basic precompliance EMI	N9000A-EMC	Perform EMI precompliance measurements with CISPR 16-1-1 detectors and bandwidths; tune and listen, and measure at marker are also available
External source control	N9000A-ESC	External source control for Keysight Technologies, Inc. EXG and MXG signal generators; compatible with N9000A-503 and N9000A-507 only

Step 10. Choose operating system		
Description	Option number	Additional information
Windows Embedded Standard 7	Standard	Installed as N9000A-W7X

Step 11. Add security features		
Description	Option number	Additional information
Additional, removable solid-state drive	N9000A-SSD	Provides a fully-imaged, removable solid-state drive in addition to the one installed in the instrument
Exclude launch program	N9000A-SF1	Prevents the launching of Windows programs from the instrument application
Prohibit saving results	N9000A-SF2	Prevents the saving/recall of measurement results or user configurations to/from instrument's data storage

Step 12. Add rear panel output utilities		
Description	Option number	Additional information
Second IF output	N9000A-CR3	Wideband IF out; output on Aux IF connector at rear panel; compatible with N9000A-503 and N9000A-507 only

1. RF CXA (option 503 or 507) with serial number prefix break of MY/SG/US5423 (shipped after June 2014) are installed with the N9000A-EP4 for the enhanced phase noise performance. All microwave CXA (option 513 or 526) are installed with the N9000A-EP4. The N9000A-EP4 is not upgradable.



Configure Your Keysight CXA Signal Analyzer (Continued)

Step 13. Choose measurement application or software

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

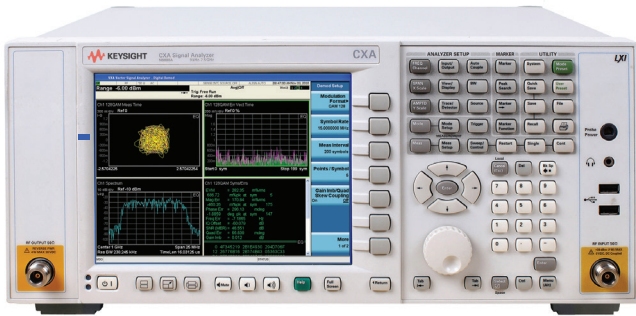
Description	Fixed license	Transportable license	Additional information
Cellular communications			
LTE/LTE-Advanced	W9080B-1FP	W9080B-1TP	Standard-based, one-button LTE-FDD measurements; requires W7X - Windows 7 OS
FDD	W9080B-2FP	W9080B-2TP	Standard-based, one-button LTE-Advanced FDD measurements; requires W7X, and W9080B-1FP/1TP
NB-IoT/eMTC	W9080B-3FP	W9080B-3TP	Standard-based, one-button NB-IoT/eMTC measurements; requires W9080B-2FP/2TP
LTE/LTE-Advanced	W9082B-1FP	W9082B-1TP	Standard-based, one-button LTE-TDD measurements; requires W7X - Windows 7 OS
TDD	W9082B-2FP	W9082B-2TP	Standard-based, one-button LTE-Advanced TDD measurements; requires W7X, and W9082B-1FP/1TP
Multi-Standard Radio (MSR)	W9083A-1FP	W9083A-1TP	Standard-based, one-button MSR measurements on any combination of LTE-FDD, W-CDMA/HSPA/HSPA+, GSM/EDGE/EDGE Evo signals
W-CDMA/HSPA+	W9073A-1FP	W9073A-1TP	Standard-based, one-button W-CDMA measurements
	W9073A-2FP	W9073A-2TP	Adds HSPA measurements; requires 1FP/1TP
	W9073A-3FP	W9073A-3TP	Adds HSPA+ measurements; requires 1FP/1TP, 2FP/2TP
GSM/EDGE/EVO	W9071A-2FP	W9071A-2TP	Standard-based, one-button GSM/EDGE measurements
	W9071A-3FP	W9071A-3TP	Adds EDGE Evolution (EGPRS2) measurements; requires 2FP/2TP
TD-SCDMA/HSPA	W9079A-1FP	W9079A-1TP	Standard-based, one-button TD-SCDMA measurements
	W9079A-2FP	W9079A-2TP	Adds HSPA/8PSK measurements, requires 1FP/1TP
1xEV-DO	W9076A-1FP	W9076A-1TP	Standard-based, one-button 1xEV-DO Rel 0, Rev A, and Rev B measurements
cdma2000®/ cdmaOne	W9072A-2FP	W9072A-2TP	Standard-based, one-button cdma2000 and cdmaOne measurements
Wireless connectivity			
Mobile WiMAX™	W9075A-2FP	W9075A-2TP	Standard-based, one-button Mobile WiMAX measurements
WLAN 802.11a/b/g/n	W9077A-2FP	W9077A-2TP	Standard-based, one-button 802.11a/b/g measurement
	W9077A-3FP	W9077A-3TP	Adds 802.11n; requires 2FP/2TP, supports 11n measurements up to 20 MHz (requires Option B25)
	W9077A-6FP	W9077A-6TP	Adds 802.11ah measurements
	W9077A-7FP	W9077A-7TP	Adds WLAN 802.11af measurements
Bluetooth®	W9081A-2FP	W9081A-2TP	Standard-based, one-button Bluetooth version 2.1+ EDR and Low Energy (LE) measurements
	W9081A-3FP	W9081A-3TP	Standard-based, one-button Bluetooth version 5.0 measurement; requires W9081A-2FP/2TP
Digital video			
CMMB	W6158A-2FP	W6158A-2TP	Standard-based, one-button CMMB measurements
Digital cable TV	W6152A-2FP	W6152A-2TP	Standard-based, one-button DVB-C (J.83 Annex A/C) measurements
	W6152A-3FP	W6152A-3TP	Standard-based, one-button J.83 Annex B measurements
DTMB (CTTB)	W6156A-2FP	W6156A-2TP	Standard-based, one-button DTMB (CTTB) measurements
DVB-T/H/T2	W6153A-2FP	W6153A-2TP	Standard-based, one-button DVB-T/H measurements
	W6153A-3FP	W6153A-3TP	Adds DVB-T2 measurements; requires 2FP/2TP
ISDB-T/Tmm	W6155A-2FP	W6155A-2TP	Standard-based, one-button ISDB-T, ISDB-T _B , and ISDB-T _{SB} measurements
	W6155A-3FP	W6155A-3TP	Adds ISDB-Tmm measurements; requires 2FP/2TP

Configure Your Keysight CXA Signal Analyzer (Continued)

Step 13. Choose measurement application or software, continued			
Description	Fixed license	Transportable license	Additional information
General purpose			
Spectrum analyzer	Standard	Not available	Traditional spectrum analysis plus many new and enhanced functions; power measurements based on industry specifications
Analog demodulation	W9063A-2FP	W9063A-2TP	One-button AM/FM/PM demodulation with metrics, tune and listen, and AF spectrum
	W9063A-3FP	W9063A-3TP	Adds FM Stereo and RDS; requires 2FP/2TP
Phase noise	W9068A-2FP	W9068A-2TP	One-button phase noise measurements in frequency domain (log plot) and time domain (spot frequency)
Noise figure	W9069A-1FP (requires preamplifier)	W9069A-1TP (requires preamplifier)	One-button noise figure, gain, and related measurements; requires preamplifier to meet specifications; works with Keysight N400xA Series smart noise sources and 346 Series noise sources; supports U7227 USB external preamplifiers
	W9069A-2FP	W9069A-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	W9064A-1FP	W9064A-1TP	Vector signal analysis; high-resolution, FFT-based spectrum and time-domain measurements, time gating, AM/FM/PM demodulation, statistical measurements
	W9064A-2FP	W9064A-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	W6141A-2FP	W6141A-2TP	Pre-compliance conducted and radiated emission measurements
MATLAB software	N6171A-M01	Not available	Instrument Control Toolbox
	N6171A-M02	Not available	Instrument Control Toolbox Communications System Toolbox DSP System Toolbox Signal Processing Toolbox
	N6171A-M03	Not available	Instrument Control Toolbox Communications System Toolbox DSP System Toolbox Signal Processing Toolbox RF Toolbox
Pulse	N9051B-2FP	Not available	Automates pulse measurements; combines signal analysis and amplitude-vs-time measurements
	N9051B-3FP	Not available	Adds phase and frequency measurements; requires 2FP
	N9051B-4FP	Not available	Adds extended analysis and statistics; requires 2FP
SCPI command language compatibility	W9062A-2FP	Not available	Adds capability to emulate the R&S FSP/FSU/FSE spectrum analyzers
89600 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; transportable between instruments and PCs; www.keysight.com/find/89600vsa

Configure Your Keysight CXA Signal Analyzer (Continued)

Step 14. Choose physical instrument configuration		
Description	Option number	Additional information
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	N9000A-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



CXA bench top configuration



Portable configuration includes pivoting carrying handle and protective corner rubber guards (front protective cover comes standard) – N9000A-PRC

Configure Your Keysight CXA Signal Analyzer (Continued)

Step 15. Choose accessories

Description	Option number	Additional information
Mouse, USB interface	Standard	Every CXA is shipped with a USB mouse which enhances the usability of the Windows XP Professional operating system
User guide	Standard	<ul style="list-style-type: none"> - US - English localization - All user documentation is included in the CXA's embedded, context-sensitive help system and on a CD that is shipped with the instrument - User documentation can be downloaded from: www.keysight.com/find/cxa_manuals
Front-panel protective cover	Standard	
Power cord	Standard	Dependent upon region of use
Rack mount	N9000A-1CM	Adds rack mount flanges to the CXA
Front handles	N9000A-1CN	Adds front handles to the CXA
Rack mount with handles	N9000A-1CP	Adds rack mount flanges and handles to the CXA
Rack slide	N9000A-1CR	Adds a non-tilting rack slide to the CXA
Accessory pouch	N9000A-BAG	Easily store and carry the N9000A-KB2 keyboard and USB mouse in this attachable pouch
USB DVD-ROM/CD-R/RW drive	N9000A-DVR	Enhances the usability of the Windows XP Professional operating system
Hard transit case	N9000A-HTC	Ultra-durable, wheeled carrying case offers maximum protection and portability
Minimum loss pad, 50 to 75 Ω (type-N to BNC)	N9000A-MLP	<ul style="list-style-type: none"> - 50 Ω type-N male to 75 Ω BNC female adapter - Frequency range: 9 MHz to 2 GHz - Input/output return loss: 20 and 11 dB - Insertion loss: 5.7 dB
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 16. Choose localized Getting Started guides

Description	Option number
Getting started guide CXA Korean localization	N9000A-AB1
Getting started guide CXA Chinese localization	N9000A-AB2
Getting started guide CXA German localization	N9000A-ABD
Getting started guide CXA French localization	N9000A-ABF
Getting started guide CXA Japanese localization	N9000A-ABJ
Getting started guide CXA Russian localization	N9000A-AKT

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

Configure Your Keysight CXA Signal Analyzer (Continued)

Step 17. Choose warranty length

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

Step 18. Add calibration, technical training, support, and upgrade services

Description	Option number	Additional information
Commercial calibration certificate with test data	N9000A-UK6	Calibration certificate only available at time of instrument purchase; only provides measurement results
Keysight Cal + uncertainties + guardbanding (accredited cal)	N9000A-AMG	Provides ISO 17025A accredited calibration from factory
ANSI Z540-1-1994 calibration	N9000A-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
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

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

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

Description	Upgrade number	Requirements CXA must already include the following)	Additional information
Increase analysis bandwidth from 10 to 25 MHz	N9000AK-B25	None	
Add preamplifier, 3 GHz	N9000AK-P03	None	
Add preamplifier, 7.5 GHz	N9000AK-P07	507, 513 or 526	Not compatible with Option 503
Add preamplifier, 13.6 GHz	N9000AK-P13	513 or 526	Not compatible with Option 503 or 507
Add preamplifier, 26.5 GHz	N9000AK-P26	526	Not compatible with Option 503, 507, or 513
Add fine resolution step attenuator	N9000AK-FSA	None	
Upgrade to the precision frequency reference	N9000AK-PFR	None	For instruments with serial number greater than MY/SG/US 51080000 only
Upgrade to the precision frequency reference	N9000AK-HL5	None	Requires hardware and license key; for instruments with serial number less than MY/SG/US 51080000 only
Add tracking generator, 3 GHz	N9000AK-T03	None	Requires hardware and license key; not compatible with Options 513 or 526
Add tracking generator, 6 GHz	N9000AK-T06	None	Requires hardware and license key; not compatible with Options 503, 513, or 526
Add connector, 75 Ω additional RF input, 1.5 GHz	N9000AK-C75	None	Requires hardware and license key; not compatible with Options 513 or 526
Add basic EMI precompliance features	N9000AK-EMC	None	
Add external source control	N9000AK-ESC	None	Adds feature to control the Keysight EXG and MXG (N5171B/N5181B/N5181A/N5182A) for scalar stimulus/response measurements; not compatible with Options 513 or 526
Add second IF output	N9000AK-CR3	None	Requires hardware and license key; not compatible with Options 513 or 526
Add enhanced display package	N9000AK-EDP	None	
Add security features, exclude launch program	N9000AK-SF1	None	Prevents the launching of Windows programs from the instrument application
Add security features, prohibit saving results	N9000AK-SF2	None	Prevents the saving/recall of measurement results or user configurations to/from instrument's data storage

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.

Instrument Upgrades (Continued)

Description	Upgrade number	Requirements (CXA must already include the following)	Additional information
Upgrade operating system to Windows Embedded Standard 7			
From 32-bit processor	N9094AK-W7X ¹ N9094AK-PC7 ¹	PC1 or PC3	Upgrade the existing 32-bit processor with Windows XP to a dual core 64-bit performance processor, 8 GB RAM, with removable solid state drive and Windows 7
From 64-bit processor	N9094AK-W7X ¹ N9094AK-SSD ¹	PC5	For existing 64-bit processors provides operating system and removable solid state drive
Upgrade to dual core 64-bit performance processor, 8 GB RAM, removable solid state drive			
With Windows 7 operating system	N9094AK-W7X ¹ N9094AK-PC7 ¹	PC1, PC3 or PC5	
Add removable solid state drive			
With Windows 7 operating system	N9094AK-W7X ¹ N9094AK-SSD ¹	PC5	For Windows 7 operating system provides additional data storage
Upgrade to multi-touch user interface			
From PC5 processor	N9000AK-MTU	PC7	Allows signal analyzer to run multi-touch applications
From other processor	N9000AK-MTP	None	Allows signal analyzer to run multi-touch applications and upgrades to a dual-core 64-bit performance processor, 8 GB RAM
Portable configuration	N9000AK-PRC	None	Not compatible with Options 1CM, 1CP, 1CN, 1CR
Front panel protective cover	N9000AK-CVR	None	
USB DVD-ROM/CD-R/RW drive	N9000AK-DVR	None	
Hard transit case	N9000AK-HTC	None	
Keyboard, USB interface	N9000AK-KYB	None	Enhances the usability of the Windows XP Professional operation system (Note: Does not fit N9000AK-BAG accessory pouch)
US 65-key USB keyboard	N9000AK-KB2	None	Compact design fits in N9000A-BAG accessory pouch for convenient storage
Mouse, USB interface	N9000AK-MSE	None	
Accessory pouch	N9000AK-BAG	None	Easily store and carry the N9000AK-KB2 keyboard and USB mouse in this attachable pouch
Minimum loss pad, 50 to 75 Ω (type-N to BNC)	N9000AK-MLP	None	
Rack mount kit	N9000AK-1CM	None	Not compatible with Options PRC, 1CP, 1CN
Front handle kit	N9000AK-1CN	None	Not compatible with Options PRC, 1CP, 1CM
Rack mount and handle kit	N9000AK-1CP	None	Not compatible with Options PRC, 1CM, 1CN
Rack slide kit	N9000AK-1CR	None	Not compatible with Option PRC

1. Must be ordered under N9000AK.

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

Instrument Upgrades (Continued)

Description	Upgrade number
Getting started guide CXA Korean	N9000AK-AB1
Getting started guide CXA Chinese	N9000AK-AB2
Getting started guide CXA German	N9000AK-ABD
Getting started guide CXA French	N9000AK-ABF
Getting started guide CXA Japanese	N9000AK-ABJ
Getting started guide CXA Russian	N9000AK-AKT

For more information visit: www.keysight.com/find/accessories

Related Literature

Keysight CXA signal analyzers

Publication title	Publication number
X-Series Measurement Applications - Brochure	5989-8019EN
N9000A CXA X-Series Signal Analyzer – Brochure	5990-3927EN
N9000A CXA X-Series Signal Analyzer - Data Sheet	5990-4327EN
X-Series Signal Analysis - Brochure	5990-7998EN

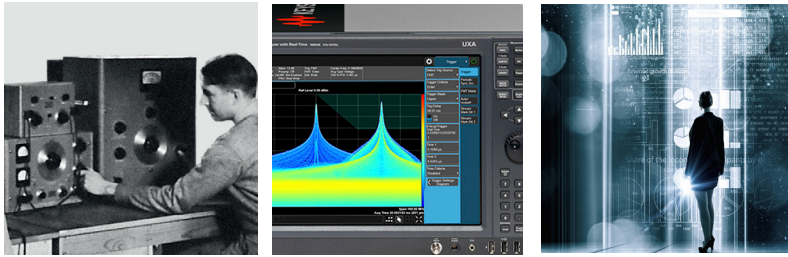
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India	1 800 11 2626
Japan	0120 (421) 345
Korea	080 769 0800
Malaysia	1 800 888 848
Singapore	1 800 375 8100
Taiwan	0800 047 866
Other AP Countries	(65) 6375 8100

Europe & Middle East

Austria	0800 001122
Belgium	0800 58580
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France	0805 980333
Germany	0800 6270999
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Switzerland	0800 805353
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	Opt. 2 (FR)
	Opt. 3 (IT)
United Kingdom	0800 0260637

For other unlisted countries:
www.keysight.com/find/contactus
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Our deep offering in design, test, and measurement services deploys an industry-leading array of people, processes, and tools. The result? We help you implement new technologies and engineer improved processes that lower costs.

Three-Year Warranty

www.keysight.com/find/ThreeYearWarranty

Keysight's committed to superior product quality and lower total cost of ownership. Keysight is the only test and measurement company with three-year warranty standard on all instruments, worldwide. And, we provide a one-year warranty on many accessories, calibration devices, systems and custom products.



Keysight Assurance Plans

www.keysight.com/find/AssurancePlans

Up to ten years of protection and no budgetary surprises to ensure your instruments are operating to specification, so you can rely on accurate measurements.



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www.keysight.com/find/n9000a



Unlocking Measurement Insights

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