



## Keysight Technologies EXA X-Series Signal Analyzer N9010A

- 10 Hz to 3.6, 7.0, 13.6, 26.5, 32, or 44 GHz
- +0.27 dB absolute amplitude accuracy
- Up to +19 dBm TOI, -163 dBm
- Up to 40 MHz analysis bandwidth

## What is X-Series Signal Analysis?

### Future-ready

Optimize your investment and extend instrument longevity with upgradeable processor, memory, connectivity, and more to keep your test assets current today and tomorrow.

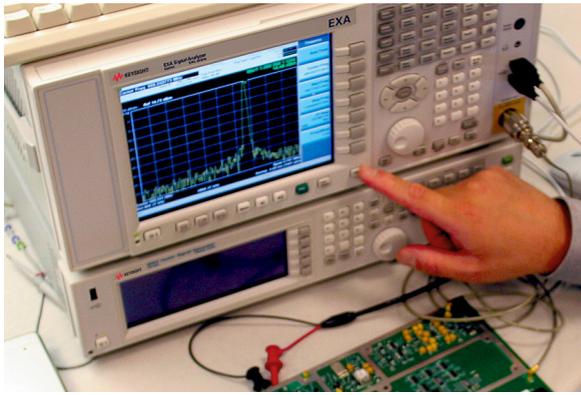
### Consistent measurement framework

Achieve measurement integrity across your organization and drive more productivity in less time by leveraging a proven foundation for signal analysis and identical operation across the X-Series analyzers.

### Broadest set of applications

Address the changing demands of technology with more than 25 measurement applications, the ability to run software inside the open Windows operating system, and a first-to-market track record in emerging standards.

Stay ready, stay in sync, and **arrive ahead**—with the Keysight X-Series.



## Summary of Key Specifications

	RF/microwave	Millimeter-wave
Frequency ranges	Minimum: 10 Hz	Minimum: 10 Hz
	Maximum: 3.6, 7.0, 13.6, or 26.5 GHz	Maximum: 32 or 44 GHz
Analysis bandwidth	25 MHz (standard), 40 MHz (optional)	25 MHz (standard), 40 MHz (optional)
Displayed average noise level (DANL)	-163 dBm at 1 GHz, -156 dBm at 26.5 GHz, preamplifier on	-165 dBm at 1 GHz, -153 dBm at 44 GHz, preamplifier on
Third-order intermodulation (TOI) distortion	+18 dBm at 1 GHz	+19 dBm at 1 GHz, +13 (nominal) at 44 GHz
W-CDMA ACLR dynamic range	68 dBc (73 dBc with noise correction on)	68 dBc (73 dBc with noise correction on)
Phase noise	-105 dBc/Hz (10 kHz offset, 1 GHz carrier)	-106 dBc/Hz (10 kHz offset, 1 GHz carrier)
Amplitude accuracy	± 0.27 dB (95th percentile to 3.6 GHz)	± 0.27 dB (95th percentile to 3.6 GHz)

[www.keysight.com/find/X-Series](http://www.keysight.com/find/X-Series)

# Balance the Challenges



Whether you're enhancing a product or improving test throughput, your general-purpose signal analyzer should be ready for a wide range of challenging requirements. That's what drives the Keysight EXA signal analyzer—the fast, flexible way to cover diverse needs with a single tool. It provides a solid mix of speed and performance, and offers the versatility of X-Series measurement applications. Get the EXA and be ready to balance the challenges.

## Maximize speed, efficiency and throughput

On the bench or the production line, the EXA includes a list-sweep mode that lets you quickly perform power measurements at discrete frequency points. The fast sweep capability (1.5 seconds for a 26.5-GHz full-span sweep with 20 kHz RBW), available on the EXA with select option, saves significant amount of test time in your spurious response measurements. For devices that require multiple measurement applications, 30-ms mode switching helps you reduce overall test time. To further accelerate complex measurements and demodulation, you can upgrade the EXA with the available higher-performance processor. And when your measurements are complete, the 1000Base-T LAN connection lets you move more data or results in less time.

## Enhance test margins and reduce error budgets

The EXA provides premium capabilities at a cost-effective price. For example, it delivers power meter-class level accuracy with  $\pm 0.27$  dB absolute amplitude accuracy. The EXA also makes it easy to characterize spurious response with typical displayed average noise level (DANL) of  $-163$  dBm at 2 GHz and  $-153$  dBm at 44 GHz. Excellent third-order intercept (TOI) performance ( $+19$  dBm for the millimeter-wave models or  $+18$  dBm for the RF/microwave models) helps to achieve the dynamic range demanded for accurately measuring the smallest signals in presence of the larger signal. To ensure accurate verification of, for example, oscillator performance, get typical phase noise specifications of  $-106$  dBc/Hz with the millimeter-wave models or  $-105$  dBc/Hz with the RF/microwave models (10-kHz offset from a 1-GHz carrier).

## Express EXA

If you do not require specialized functionality, such as measurement applications or wider bandwidth, then a preconfigured EXA signal analyzer may be appropriate for you. Available through Keysight's distribution partners, these express configurations offer excellent value and the fastest delivery. For more information on the N9010AEP, see the EXA signal analyzer configuration guide (5989-6531EN).

[www.keysight.com/find/express\\_exa](http://www.keysight.com/find/express_exa)

## Get the measurements you need

With the EXA, you can address multiple needs with a single analyzer. A variety of general-purpose measurement applications and frequency coverage up to 44 GHz spans fundamentals and harmonics. You can extend the measurement range of the millimeter-wave EXA models with optional external mixing (Option EXM) to cover frequencies up to 110 GHz with Keysight USB-based smart mixers, or even reach into the terahertz range with the third-party vendor's external mixers.

# Configure the EXA for R&D and stay within your budget

## 89600 VSA software

On the leading edge of wireless design, signal interactions can cause the unexpected. Recognizing there is a problem is relatively easy—achieving the clarity to find the root cause is the real challenge.

Keysight 89600 VSA software is your window into what's happening inside complex wireless devices.

[www.keysight.com/find/89600\\_VSA](http://www.keysight.com/find/89600_VSA)

### Measure RF to millimeter-wave in wireless

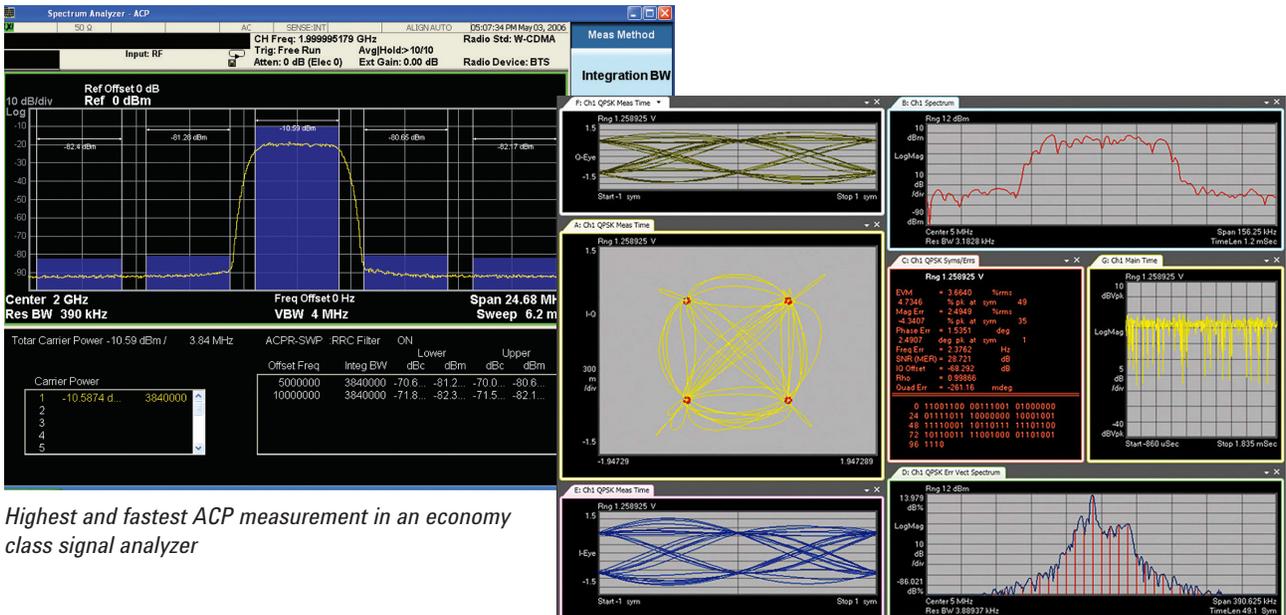
The EXA is the fast, flexible way to cover multiple needs in R&D. Front-panel capabilities such as auto-tune help you quickly find signals-under-test and optimize the characterization process. When you're working with multiple signals, analyze and compare them with powerful and intuitive capabilities such as six independent traces and 12 independent markers (24 delta pairs). At any point in your measurement process, the EXA helps you stay productive by providing comprehensive context-sensitive online help.

When you need to analyze complex, modulated signals, get up to 40 MHz analysis bandwidth using the VXA measurement application (N9064A). This application provides the basic analysis functions of Keysight's industry-leading 89600 VSA software at a fraction of the cost.

### Meet millimeter-wave requirements in aerospace and defense

In aerospace and defense applications, the EXA's measurement capabilities extend to meet millimeter-wave requirements in satellite communications, electronic warfare, radar, and missile control. The performance of the EXA lets you address tighter specifications and tougher test requirements with fast, accurate measurements of spurs and harmonics plus precise measurements of smaller signals.

The EXA also helps you reduce capital expenditures with flexible hardware and software options and updates: an upgradable CPU, a broad set of more than 25 measurement applications, and support for 89600 VSA software.



Highest and fastest ACP measurement in an economy class signal analyzer

89600 VSA 802.11a analysis and 20:20 trace/marker features

# Optimize the EXA for Manufacturing

## Maximize throughput and yield

To deliver test results faster, the available high-performance CPU module enables speed improvements such as 1.5-ms marker peak searches and 5-ms remote-measurement and LAN transfers. Built-in capabilities such as list-sweep mode save time by performing power measurements only at specific frequency points. The fast sweep capability, associated with select option, speeds up swept tune measurements such as spurious responses (1.5 second for a 26.5-GHz full span with 20 kHz RBW). To help increase system uptime, the EXA has a standard two-year calibration cycle.

## Faster measurements with PowerSuite

The included PowerSuite delivers a variety of one-button measurements: adjacent-channel power (ACP), channel power, occupied bandwidth (OBW), spectrum emission mask, complementary cumulative density function (CCDF), burst power, spurious emissions, intermodulation (TOI), and harmonic distortion. To simplify testing, you can access these standards-based power measurements remotely or through a single front-panel button.



40 MHz bandwidth CCDF measurement (Option B40 required)

## Extend measurement dynamic range

The 2-dB mechanical attenuator lets you optimize mixer levels and enhance achievable dynamic range across all frequency bands. You can fine-tune mixer levels and maximize dynamic range up to 3.6 GHz with the optional 1-dB electronic attenuator. This option also helps increase the instrument's lifespan when used for high-volume repetitive procedures such as device tuning.

Like all X-Series signal analyzers, the EXA includes finely adjustable resolution bandwidths with a 10-percent step size. This capability lets you optimize DANL performance to achieve the best possible dynamic range in highly demanding applications.

## Accelerate throughput with single-acquisition combined measurements

This breakthrough solution lets you trade accuracy for speed—and the result is an increase in manufacturing throughput of up to 20 times when compared to traditional approaches. The “single-acquisition combined measurement” concept refers to the execution of multiple and simultaneous RF measurements at a single frequency, or measurements repeated over a series of rapidly stepped frequencies. The SCPI-based implementation includes parameter setup, data acquisition and calculation, and a simple user-interface view.

These capabilities are available as Option XFP for measurement applications including GSM/EDGE (N9071A) and W-CDMA (N9073A), and Option 5FP for WLAN (N9077A).

# Protect Your Investment

## Easily migrate to EXA

If you need to replace an ESA, 859x, or 856x, the EXA provides the same measurement science along with improved RF performance, higher frequency coverage, and more. It also simplifies migration with backward code-compatibility, making it easier to streamline the design-to-manufacturing transition or update an existing test system. The EXA also includes SCPI programmability and versatile connectivity choices.

## Leverage existing test software

The EXA is code-compatible with the ESA spectrum analyzers, so software written for the ESA will work with the EXA—usually without modification. To further protect your system-software investment, instrument drivers are the same across all Keysight X-Series signal analyzers.

When you need to create new software, the embedded help capability lets you migrate from manual keystrokes to automated procedures because the EXA displays the equivalent SCPI command for every key press.

## Address multiple needs—today and tomorrow

The EXA has the flexibility to meet present and future test needs with upgradable capabilities, including optional 40-MHz analysis bandwidth up to 44 GHz. To help keep your test assets current—and extend instrument longevity—we offer hardware upgrades such as CPU, memory, I/O ports, and removable solid-state drives. After your initial purchase, you can easily add instrument features and functions with simple license-key upgrades.

## You Can Upgrade!

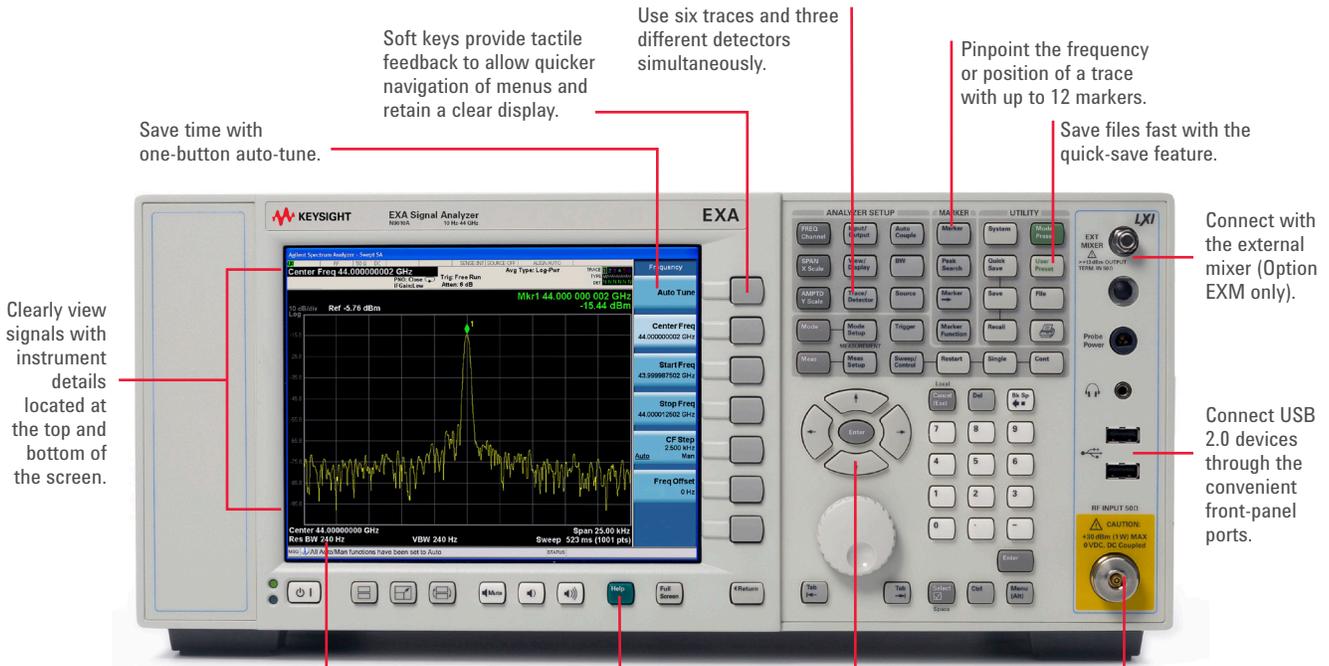
Options can be added after your initial purchase.



Most X-Series options are license-key upgradeable.



# EXA Front and Rear Panels



Soft keys provide tactile feedback to allow quicker navigation of menus and retain a clear display.

Use six traces and three different detectors simultaneously.

Pinpoint the frequency or position of a trace with up to 12 markers.

Save files fast with the quick-save feature.

Save time with one-button auto-tune.

Clearly view signals with instrument details located at the top and bottom of the screen.

Connect with the external mixer (Option EXM only).

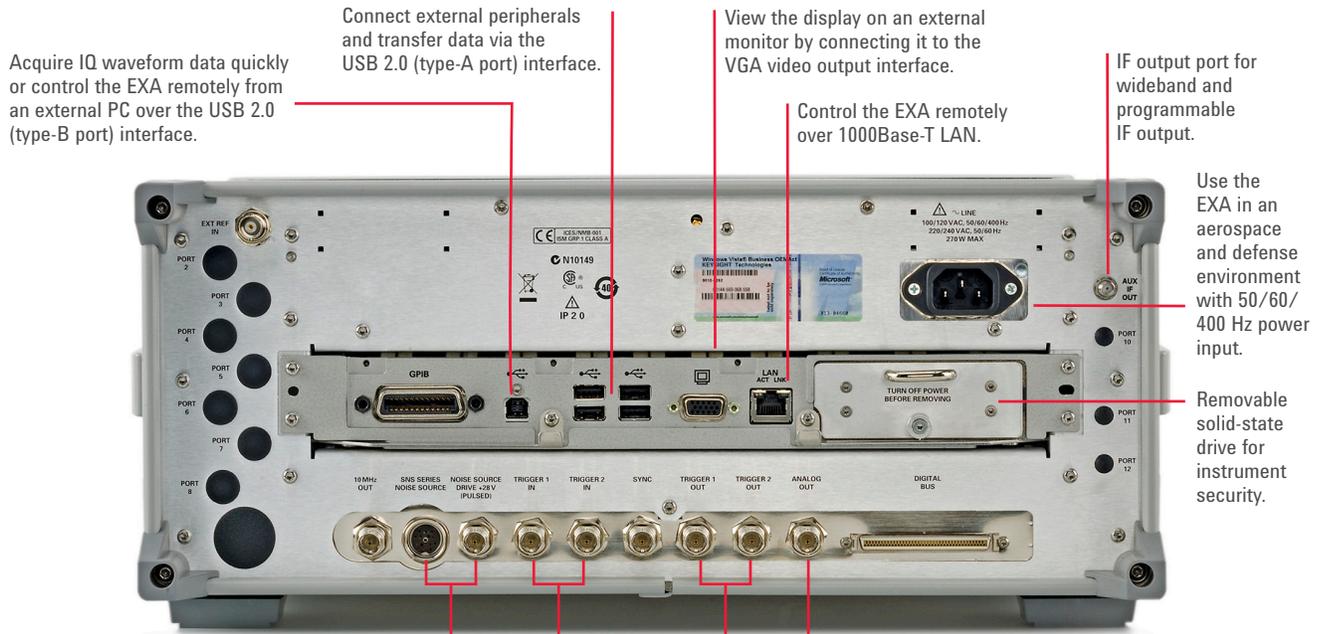
Connect USB 2.0 devices through the convenient front-panel ports.

View traces, results, and status easily on the 21.4-cm, high-resolution XGA display.

Get answers quickly with the comprehensive, context-sensitive help system.

Navigate the interface and help system using the front-panel keys, or a mouse and keyboard.

Connect to the DUT with 2.4 mm male connector (millimeter-wave); type-N female connector (RF/microwave).



Acquire IQ waveform data quickly or control the EXA remotely from an external PC over the USB 2.0 (type-B port) interface.

Connect external peripherals and transfer data via the USB 2.0 (type-A port) interface.

View the display on an external monitor by connecting it to the VGA video output interface.

Control the EXA remotely over 1000Base-T LAN.

IF output port for wideband and programmable IF output.

Use the EXA in an aerospace and defense environment with 50/60/400 Hz power input.

Removable solid-state drive for instrument security.

Evaluate noise figure using SNS or 346 Series noise sources and the N9069A measurement application.

Start measurements based on a specific incident using an external trigger input signal.

Synchronize with other test equipment using the external trigger output signals.

Y-axis screen video output via the analog output port.

## Keysight EXA Signal Generators

<i>Data Sheet</i>	5989-6529EN
<i>Configuration Guide</i>	5989-6531EN
<i>X-Series Measurement Applications Brochure</i>	5989-8019EN
<i>X-Series Signal Analysis Brochure</i>	5990-7998EN

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A personalized view into the information most relevant to you.

### [www.axistandard.org](http://www.axistandard.org)

AdvancedTCA® Extensions for Instrumentation and Test (AXIe) is an open standard that extends the AdvancedTCA for general purpose and semiconductor test. Keysight is a founding member of the AXIe consortium.



### [www.lxistandard.org](http://www.lxistandard.org)

LAN eXtensions for Instruments puts the power of Ethernet and the Web inside your test systems. Keysight is a founding member of the LXI consortium.



### [www.pxisa.org](http://www.pxisa.org)

PCI eXtensions for Instrumentation (PXI) modular instrumentation delivers a rugged, PC-based high-performance measurement and automation system.



### Three-Year Warranty

[www.keysight.com/find/ThreeYearWarranty](http://www.keysight.com/find/ThreeYearWarranty)

Beyond product specification, changing the ownership experience. Keysight is the only test and measurement company that offers three-year warranty on all instruments, worldwide.



### Keysight Assurance Plans

[www.keysight.com/find/AssurancePlans](http://www.keysight.com/find/AssurancePlans)

Five years of protection and no budgetary surprises to ensure your instruments are operating to specifications and you can continually rely on accurate measurements.



### [www.keysight.com/quality](http://www.keysight.com/quality)

Keysight Electronic Measurement Group  
DEKRA Certified ISO 9001:2008  
Quality Management System



### Keysight Channel Partners

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Get the best of both worlds: Keysight's measurement expertise and product breadth, combined with channel partner convenience.

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