Spectrum and Signal Analyzer

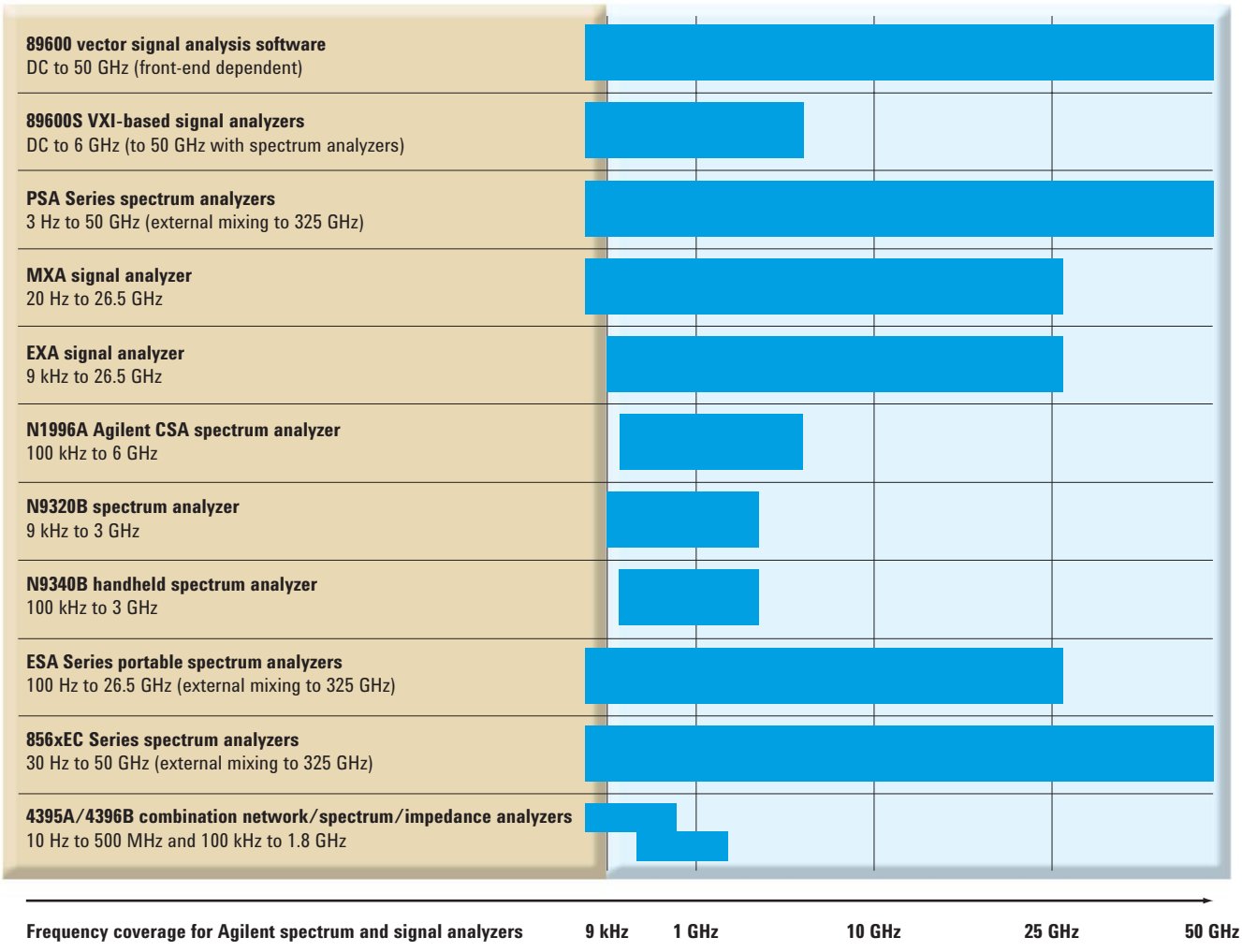
Selection Guide

Four decades of leadership in spectrum analysis

Agilent Technologies

Agilent Spectrum and Signal Analyzers

Purchasing an instrument for signal analysis is an investment. You are buying not only for today's tasks but the requirements of tomorrow. Selecting the ideal instrument for your business can be complex and time consuming—every project and user is unique—and time is money. As the premier measurement company, Agilent Technologies offers a wide selection of analyzers and applications that fit within a variety of budgets. This selection guide will help you more easily identify the right spectrum or signal analyzer to meet your needs.



For an interactive selection and comparison table please see our web site:
www.agilent.com/find/sa

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Application Comparison Table

Measurement applications	Agilent PSA	Agilent MXA	Agilent 856xEC	Agilent EXA	Agilent ESA	Agilent CSA	Agilent N9320B	Agilent N9340B	89600 VSA software
Analog demodulation		●		●	●[4]	●	●[1]	●[1]	●
Bluetooth™					●				●
Cable fault location					●	●			
Cable TV					●				●
cdma2000®	●	●		●					●
DTMB		●		●					
DVB-T/H		●		●					
EMI pre-compliance/compliance (see page 18)	●	●		●					
External source control	●								
Flexible digital modulation analysis	●	●		●	●		●[1, 5]	●[1, 5]	●
GSM/EDGE	●	●		●	●				●
EDGE Evolution		●		●					
LTE		●		●					●
MATLAB® software package	●	●		●					
Noise figure	●	●		●	●				
Phase noise	●	●	●	●	●				
Pulse measurement	●	●		●					
TD-SCDMA with HSDPA/8PSK	●	●		●					●
W-CDMA HSDPA/HSUPA	●	●		●					●
Fixed WiMAX		●		●					●
Mobile WiMAX™		●		●					●
AM/FM tune and listen		●	●	●	●	●	●	●	
WLAN	●	●		●					●
1xEV-DO	●	●		●					●
Remote language compatibility for 856xE/EC application	●	●		●					
Stimulus/response						●			●
89600 VSA SW link	●	●		●	●				
Connectivity									
Remote interface									
RS-232					●[1]				
GPIB	●	●	●	●	●		●[1]		
LAN	10	1,000		100; 1,000[1]		100	100	100	
USB	2.0[3]	2 .0		2 .0		1.1	1.1	1.1	
Removable storage	3.5" floppy	USB removable hard drive solid state hard drive	Memory card	USB removable hard drive solid state hard drive	3.5" floppy	USB	USB	USB	
LXI		B[2], C		B[2], C					

1. Optional
2. LXI-B capabilities – LAN triggering and time synchronization
3. Device side (type B) for data transfer only; not for use with USB flash drive
4. FM demodulation only
5. ASK/FSK demodulation analysis only

Key Specification Comparison Table

	Agilent PSA	Agilent MXA	Agilent 856xEC	Agilent EXA	Agilent ESA	Agilent CSA	Agilent Low-cost	Agilent Handheld
Overview	**E444xA**	**N9020A**	**856xEC**	**N9010A**	**E44xxB**	**N1996A**	**N9320B**	**N9340B**
Performance	♦♦♦♦♦	♦♦♦♦	♦♦♦♦	♦♦♦	♦♦♦	♦♦	♦	♦
Frequency range	3 Hz - 50 GHz	20 Hz - 26.5 GHz	30 Hz - 50 GHz	9 kHz - 26.5 GHz	100 Hz[1] - 26.5 GHz	100 kHz - 6 GHz	9 kHz- 3 GHz	100 kHz- 3 GHz
Warm-up time	30 min	30 min	5 min	30 min	5 min	5 min	30 min	30 min
Phase noise at 1 GHz (10 kHz offset)	–116 dBc/Hz	–103 dBc/Hz	–113 dBc/Hz	–99 dBc/Hz	–98 dBc/Hz	–85 dBc/Hz	–88 dBc/Hz	–87 dBc/Hz (30 kHz offset)
Maximum third order dynamic range, 1 GHz	113 dB	110 dB	108 dB	108 dB	108 dB	96 dB	93 dB	89 dB
Displayed average noise at 1 GHz	–168 dBm[2]	–163 dBm[2]	–151 dBm	–161 dBm[2]	–153 dBm [2, 3]	–146 dBm[2, 3]	–145 dBm[2]	–144 dBm[2]
Standard attenuator range/step	70 dB 2 dB	70 dB 2 dB	70 dB 10 dB	60 dB 10 dB	75 dB 5 dB	40 dB 1 dB	70 dB 1 dB	51 dB 1 dB
Overall amplitude accuracy	±.62 dB	±.78 dB	±1.9 dB	±1.0 dB	±1.0 dB	±0.5 dB	±1.5 dB	±1.5 dB
Resolution bandwidth	1 Hz - 8 MHz	1 Hz - 8 MHz	1 Hz - 2 MHz	1 Hz - 8 MHz	1 Hz - 5 MHz	10 Hz - 5 MHz	10 Hz - 1 MHz	30 Hz - 1 MHz
Standard analysis bandwidth	10 MHz	10 MHz		10 MHz		5 MHz	1 MHz	1 MHz
Optional RF analysis bandwidth	40 MHz 80 MHz	25 MHz		25 MHz	10 MHz[4]		EMI bandwidth[1, 5]	
Optional baseband analysis bandwidth		25 MHz 40 MHz						
Battery					●[1]	●[1]		●

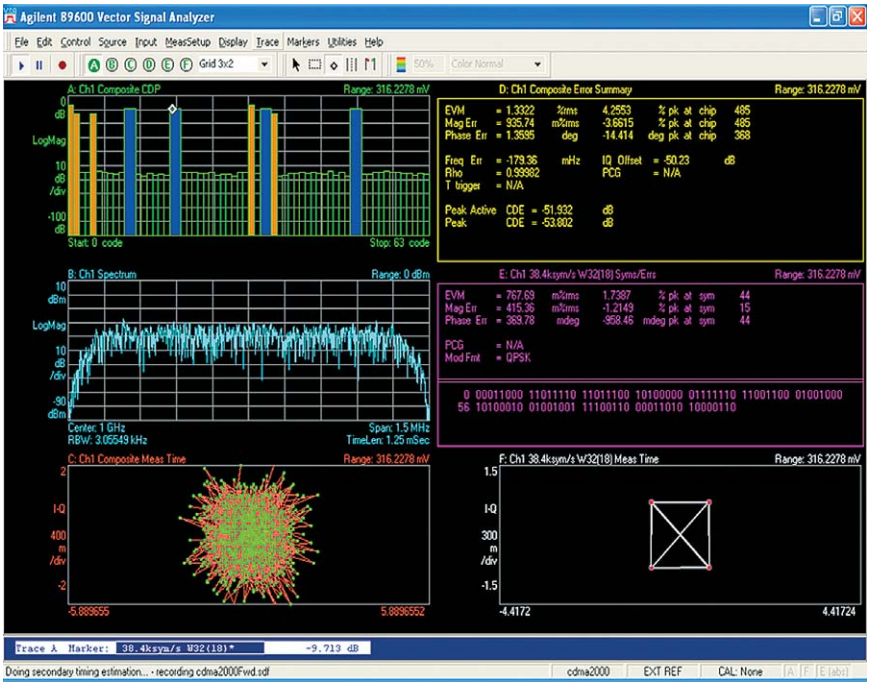
1. Optional
2. With optional built-in preamp
3. Typical
4. With optional B7D/B7E
5. Optional EMI bandwidth (-6 dB): 200 Hz, 9 kHz, 120 kHz, 1 MHz

PowerSuite one-button measurements	Agilent PSA	Agilent MXA	Agilent 856xEC	Agilent EXA	Agilent ESA	Agilent CSA	Agilent N9320B	Agilent N9340B
Channel power	●	●	●	●	●	●	●	●
Occupied bandwidth	●	●	●	●	●	●	●	●
Multicarrier, multi-offset ACP	●	●		●	●	●	●	●
Multicarrier power	●	●		●	●			
CCDF	●	●		●	●			
Harmonic distortion	●		●[1]		●			
Burst power	●	●		●	●			
Intermodulation (TOI)	●		●[1]		●		●	
Intermodulation emissions	●	●		●	●		●	
Spectrum emission mask	●	●		●	●		●	●

1. Optional

Leading signal analysis software

Dig into your signal, gather more data on signal problems, and gain more of the insight that is the key to effective signal troubleshooting. The 89600 vector signal analysis software is a Windows®-based, multi-measurement, platform-compatible software package that offers superior general purpose and standard-specific signal evaluation and troubleshooting tools. Whether you are working at RF or microwave, baseband (analog or digital), simulation or real signals, the 89600 VSA software is compatible with your measurement platform. Offering analysis of many demodulation formats, this tool is invaluable to engineers.



Choose from a wide range of demodulation formats

General purpose: FSK: 2, 4, 8, 16 level (including GFSK), MSK (including GMSK), BPSK, QPSK, OQPSK, DQPSK, D8PSK, π/4-DQPSK, π /8 D8PSK, 8PSK, QAM: 16/32/64/128/256/512/1024

Cellular: LTE, cdma2000, W-CDMA, enhanced HSPA, GSM, EDGE, CDMA (base), CDMA (mobile), CDPD, NADC, PDC, PHP (PHS), TD-SCDMA, 1xEV-DO, 1xEV-DV

Wireless networking: WLAN IEEE 802.11a/b/g/j/p/n (MIMO), *Bluetooth*, WiMAX IEEE 802.16 OFDM/OFDMA, ZigBee™

Digital Video: 16APSK, 32APSK, DVB: 16, 32, 64, 128, 256; 8VSB, 16VSB, DTV8/16,

Private Mobile Radio: APCO 25, DECT, TETRA 1, TETRA 2 (TEDS), VDL mode 3

Other: RFID, UWB

Features

- Advanced modulation analysis—analog, digital, SISO, MIMO
- Flexible FFT-based high-resolution spectrum analysis
- High-performance time domain analysis with spectrogram

www.agilent.com/find/89600

Measurements include:

- EVM
- Time
- Spectrum
- CCDF
- Auto-correlation
- Standard-specific modulation analysis parameters
- Gated time
- Power spectral density
- CDF
- And more

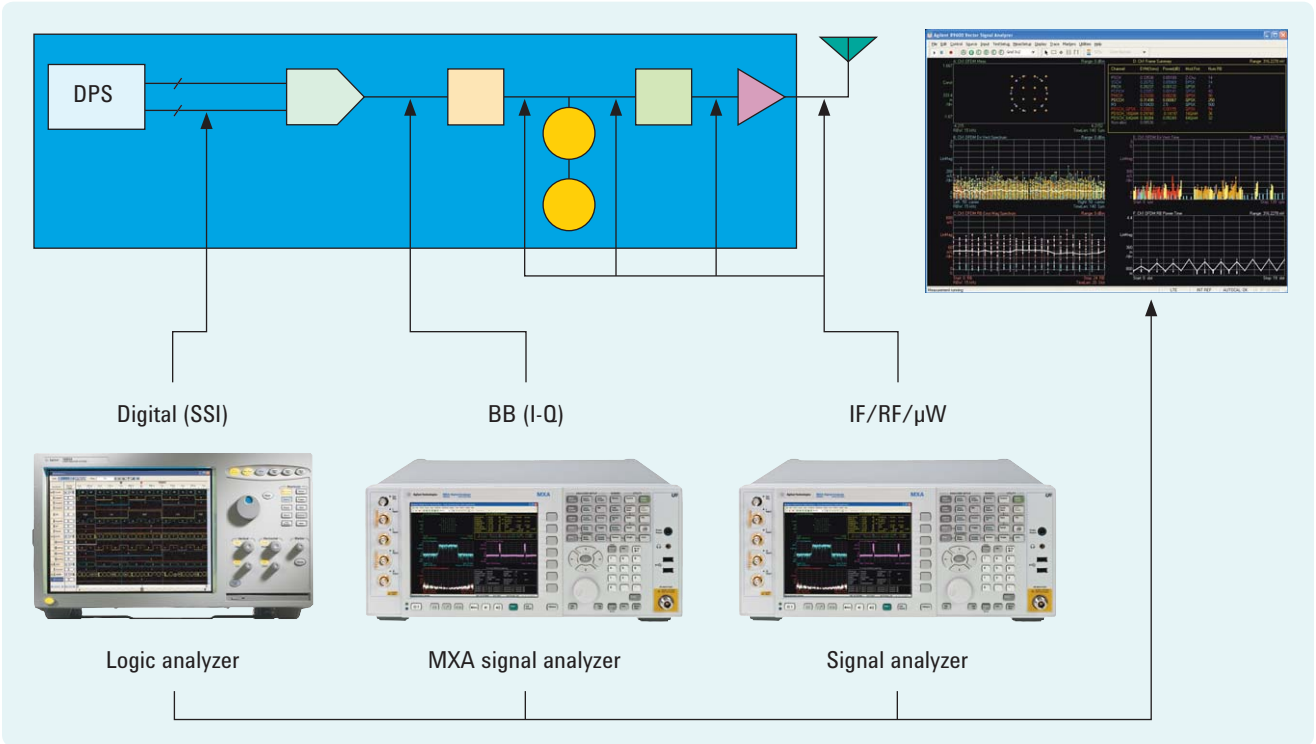
These measurements help you easily troubleshoot pulsed and hopping signals.

Make measurements from simulation to antenna with one tool

The 89600 VSA software is compatible with many Agilent products from spectrum analyzers to logic analyzers. Engineers need only one analysis software to use on a variety of receivers to test their product from design through to production. The 89600 VSA software can be locked to a specific computer or remain as a floating license on a network. In addition, the software can also make measurements or source data into Agilent EEsof Advanced Design System software or The MathWorks Simulink simulation and model-based design software.

The 89600 VSA software can link to any of the following instruments:

- PSA Series spectrum analyzers
- X-Series signal analyzers (MXA/EXA)
- ESA Series spectrum analyzers
- 89600S VXI-based vector signal analyzers
- N4010A test sets
- 8000 Series oscilloscopes
- Infiniium oscilloscopes
- 80000 Series oscilloscopes
- 6000 Series oscilloscopes
- 9000 Series oscilloscopes
- 1680/1690 Series logic analyzers
- 16800/16900 Series logic analyzers
- Signal generators
- And more...



89600S

The 89600S VXI-based vector signal analyzer is a modular, pre-configured system based on modular VXI hardware and controlled by your PC via an IEEE-1394 FireWire® interface.

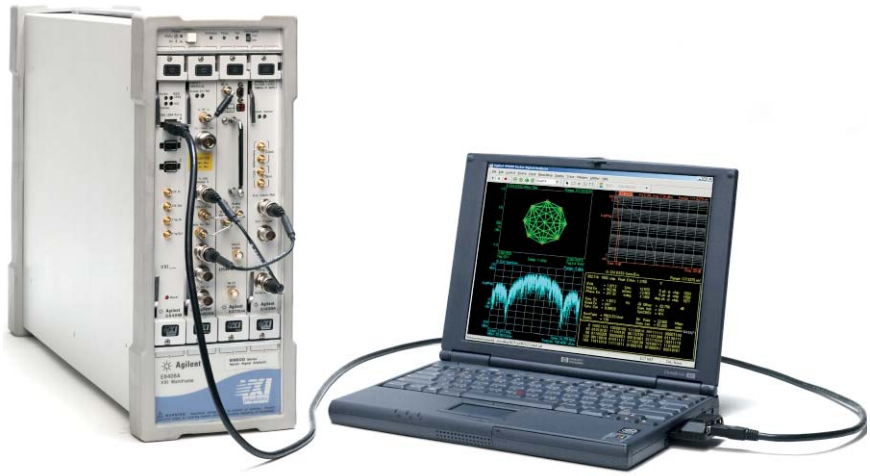
This analyzer offers DC to 6 GHz frequency ranges, 1 or 2 baseband IF, or RF channels, and up to 39 MHz analysis bandwidth for measuring 3G cellular, WiMAX, RFID, digital satellite video and other satellite signals, LMDS, 802.11a/b/g/n WLAN, including MIMO, *Bluetooth* systems, LTE, and more.

Use the 89600S to measure the RF and modulation quality of digitally modulated signals. Its flexible demodulation features work equally well on wideband and narrowband signals, proprietary signals, and standards-based signals.

Controlled by the 89600 VSA software, the 89600S VXI-based VSA features unique error analysis tools that are designed to help you identify physical layer problems and investigate their cause. These problems include symbol timing errors, filtering errors, DAC overflow, and incorrect sinX/X compensation as well as RF problems such as IQ imbalance, quadrature skew, IQ offset, and much more.

The 89600 VSA software includes a special spectrum analyzer application which allows the 89600S VXI-based VSA to make wideband spectrum measurements.

Two-channel analysis for MIMO measurements



Features

- Two-channel baseband, IF or RF analysis
- Up to 39 MHz analysis bandwidth
- Up to 1.2 GB of signal capture and playback memory

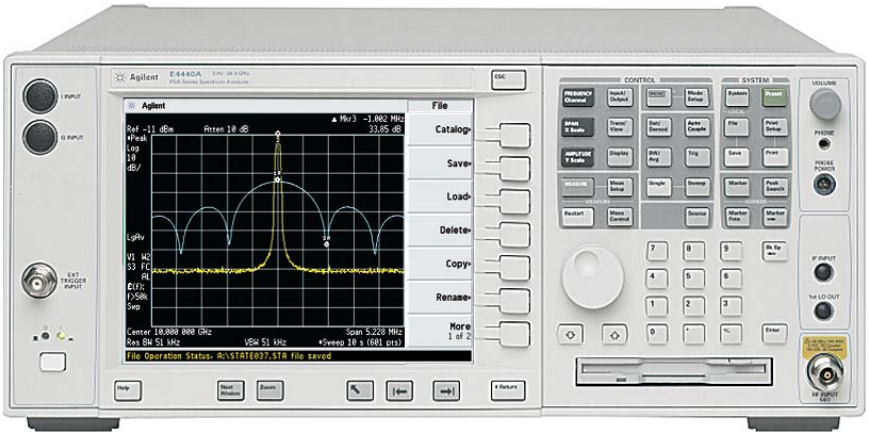
www.agilent.com/find/89600

The Agilent PSA Series offers the highest-performance spectrum analysis up to 50 GHz and beyond with powerful one-button measurements, a versatile feature set, and a leading-edge combination of flexibility, accuracy, and dynamic range. The PSA Series' instrument architecture features an all digital IF section, a highly accurate internal reference signal, and automatic internal alignment processes to achieve unsurpassed industry-leading accuracy.

From millimeter wave and phase noise measurements to spur searches and modulation analysis, the PSA Series offers unique and comprehensive high-performance solutions to R&D and manufacturing engineers in cellular and emerging wireless communications, aerospace, and defense. Capture and measure complex vector time/frequency domain signals with up to 40 or 80 MHz of analysis bandwidth, 78 dB (typical) dynamic range, and excellent phase and amplitude flatness using Agilent's advanced interleave technology.

Combination of PSA, Agilent Infiniium oscilloscope, and 89601 VSA software further extends the analysis bandwidth to 300 MHz for frequency up to 50 GHz.

Maximize your signal analysis capability with bandwidth, accuracy, and dynamic range



Features

- 50 GHz internal preamplifier
- Over 16 optional built-in measurement personalities
- 80 MHz analysis bandwidth available for center frequencyy up to 50 GHz

www.agilent.com/find/psa

Key specifications

Phase noise, 1 GHz (10 kHz offset)	–116 dBc/Hz
Maximum third order dynamic range, 1 GHz	113 dB
Displayed average noise, 1 GHz	–168 dBm
Standard attenuator range/step	70 dB, 2 dB
Overall amplitude accuracy	±0.62 dB

Did you know?
The PSA Series has a 2-year standard calibration cycle based on low fail rates.

The Agilent MXA signal analyzer drives signal and spectrum analysis to the next level by offering the highest performance in a midrange analyzer. Empowered by the dual core processor as a standard feature, the MXA gains even more advantages in measurement speed, further reducing test time and increasing throughput. The standard removable hard drive simplifies the data sanitization process for users working in secure environments.

Analyze low level signals on the only midrange analyzer to offer a choice of four fully calibrated internal preamplifiers up to 26.5 GHz. The optional 25 MHz analysis bandwidth allows wideband measurements for LTE, Mobile WiMax, or multicarrier W-CDMA.

Use the MXA to test your designs, for design verification, and in manufacturing. Enable reuse of test code from the development team into manufacturing, and assure trusted measurement algorithms are used for the product's entire development cycle. Parallel development in manufacturing and R&D enables fast time-to-market. Move seamlessly from development into manufacturing with the same advanced measurement applications on MXA and EXA X-Series signal analyzers.

The MXA signal analyzer can also be used for baseband analysis. Option BBA comes standard with 500 MSa baseband capture memory which allows up to 200 seconds of capture with a 1 MHz bandwidth for signals such as GSM/EDGE and EDGE Evolution.

Eliminate the compromise between speed and performance

Features

- Available 89600 vector signal analysis software running embedded in the instrument
- Internal preamplifier up to 26.5 GHz
- Optional 25 MHz analysis bandwidth

www.agilent.com/find/mxa

Key specifications

Phase noise, 1 GHz (10 kHz offset)	–103 dBc/Hz
Maximum third order dynamic range, 1 GHz	110 dB
Displayed average noise, 1 GHz	–163 dBm
Standard attenuator available range/step	70 dB, 2 dB
Overall amplitude accuracy	±0.78 dB

Did you know?
The MXA signal analyzer's standard features now include Amplitude Correction, Limit Lines, and 40,001 maximum trace points.

Eliminate the compromise between speed and price

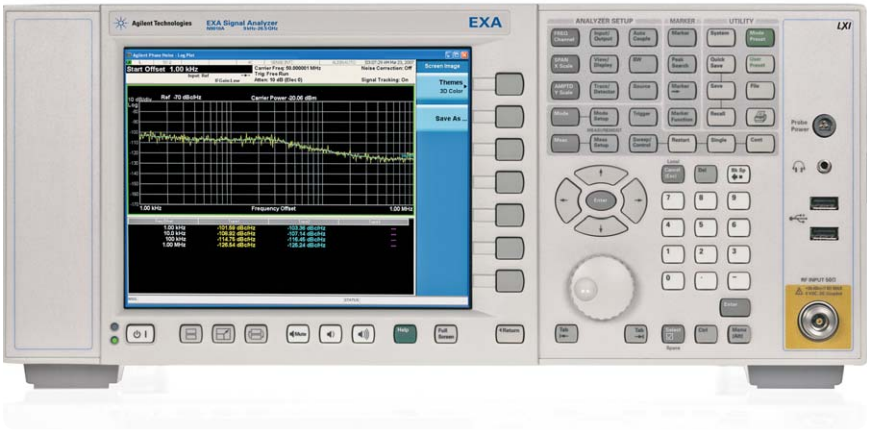
Part of the Agilent X-Series signal analyzers (MXA/EXA), the Agilent EXA leverages many of the advantages of the higher-performance MXA signal analyzer, while eliminating the compromise between speed and price.

The Agilent EXA is the industry's fastest economy-class signal analyzer. The optional dual core processor makes the EXA even faster. Its speed and accuracy, coupled with its unprecedented performance and application coverage, provides development and manufacturing engineers with the capabilities to cost-effectively troubleshoot new designs, increase manufacturing throughput, or analyze complex and time-varying signals. In addition, the X-Series measurement applications allow you to move seamlessly from manufacturing to development.

The optional 25 MHz analysis bandwidth allows wideband measurements for LTE, Mobile WiMax, or multicarrier W-CDMA.

The EXA's remote measurement and LAN transfer speed is up to four times faster than the ESA and other analyzers that claim to be "the standard in the medium class." Built on the familiarity of the ESA Series—the world's most popular economy spectrum analyzer—the EXA also offers ESA and MXA code compatibility.

The removable hard drive, available with the optional dual core processor, simplifies the data sanitization process for users working in secure environments.



Features

- Make highly accurate general-purpose measurements—affordably
- Available 89600 vector signal analysis software running embedded in the instrument
- Optional 25 MHz analysis bandwidth

www.agilent.com/find/exa

Key specifications

Phase noise, 1 GHz (10 kHz offset)	–99 dBc/Hz
Maximum third order dynamic range, 1 GHz	108 dB
Displayed average noise, 1 GHz	–161 dBm
Standard attenuator available range/step	60 dB, 5 dB
Overall amplitude accuracy	±1.0 dB

Did you know?
The EXA signal analyzer's standard features now include Amplitude Correction, Limit Lines, and 40,001 maximum trace points.

MXA (N9020A) and EXA (N9010A)

A growing list of measurement applications available for the X-Series signal analyzers helps speed your time to insight. These software applications provide essential measurements for specific modulation formats. For example, use the W-CDMA measurement application to perform 3GPP standard-based demodulation, spectrum, and power tests with confidence.

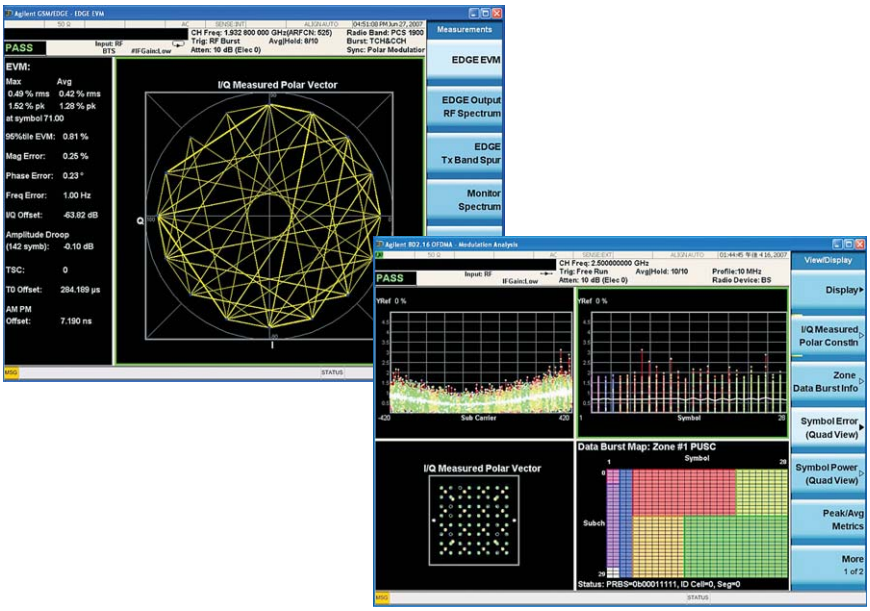
The same measurement applications will run on both the MXA and EXA signal analyzers. They will deliver the same speed, functionality, measurements, and user interface, decreasing the amount of transition time needed from development to manufacturing. The only difference is the level of performance achieved by choosing between the midrange MXA or economy class EXA hardware.

MATLAB software is now available for purchase directly from Agilent when you buy PSA, MXA, or EXA analyzers. Three MATLAB configurations are available and range from basic MATLAB capabilities to acquire and analyze data, to full support for signal processing, communications, filter design, and automated testing. To learn more about using MATLAB with Agilent signal or spectrum analyzers, or to download free applications for use with MATLAB and these instruments, visit www.agilent.com/find/N6171A.

Free trial license
Try the X-Series measurement applications **FREE** for 14 days. Trial license provides unrestricted use of each application's features and functionality. Redeem a trial license for your X-Series signal analyzer online today at **www.agilent.com/find/xseries_trial**.

X-Series advanced measurement applications available today

- N6149A-2FP iDEN/WiDEN/MotoTalk measurement application
- N6153A DVB-T/H measurement application
- N6156A DTMB measurement application
- N6171A MATLAB software application
- N9051A Pulse measurement software
- N9061A Remote language compatibility for 856xE/EC application
- N9063A Analog demodulation measurement application
- N9068A Phase noise measurement application
- N9069A Noise figure measurement application
- N9071A-2FP GSM/EDGE measurement application
- N9071A-3FP EDGE Evolution measurement application
- N9071A-XFP Single acquisition combined GSM/EDGE measurement application
- N9072A cdma2000 measurement application
- N9073A-1FP W-CDMA measurement application
- N9073A-2FP HSDPA/HSUPA measurement application
- N9073A-XFP Single acquisition combined W-CDMA measurement application
- N9074A-XFP Single acquisition combined Fixed WiMAX measurement application
- N9075A 802.16 OFDMA measurement application
- N9076A 1xEV-DO measurement application
- N9077A-XFP Single acquisition combined WLAN measurement application
- N9079A-1FP TD-SCDMA measurement application
- N9079A-2FP HSPA/8PSK measurement application
- N9080A LTE measurement application
- 89601A/AN 89600 VSA software
- 89601X VXA vector signal analyzer measurement application
- 89601XFP-AYA Flexible digital demodulation option
- 89601XFP-B7R WLAN modulation analysis option



www.agilent.com/find/xseries_apps

Comparing 89601A VSA to 89601X VXA

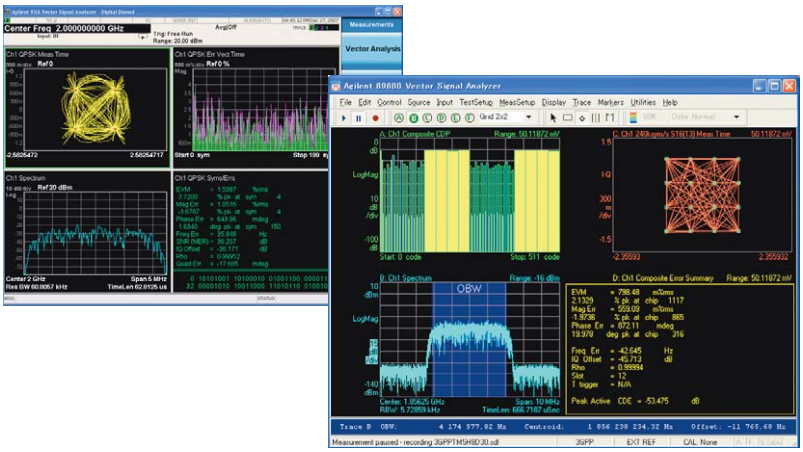
The 89601A VSA software provides superior general-purpose and standards-specific signal evaluation tools for the R&D engineer. Use these tools to dig into your signal and gather the data you need to successfully troubleshoot PHY layer signal problems. The baseline capabilities of the VSA software are provided by Option 200. Tools such as analog and digital modulation analysis, multiple trace displays, signal capture and playback, and multi-channel readiness, allow R&D engineers to gain greater insight into signals used in a wide range of wireless communication formats.

The VXA vector signal analyzer measurement application helps engineers in design verification and manufacturing to verify product designs and ensure product quality. Analyze the frequency, time, and amplitude domain behavior of your signal with the vector and scalar analysis tools provided by the Basic VSA-Lite Option 205. This economic selection of advanced measurement tools includes FFT-based spectrum analysis; time-gating for selective spectrum analysis of preambles and other signal sub-sections; power-versus-time analysis; multiple displays with flexible formatting; and powerful band power, occupied bandwidth, and ACP markers.

The 89601A VSA vector signal analysis software works with many different hardware platforms (see full listing on page 7). In contrast, the 89601X VXA vector signal analyzer measurement application is only offered on the X-Series signal analyzers (MXA/EXA).

The following table shows some of the differences between 89601A Option 200, and 89601X Option 205 Basic VSA-Lite.

Feature	89601A-200	89601X-205
AM/FM/PM demod	Yes	Yes
Band power	Yes	Yes
Time gating	Yes	Yes
ACP/OBW marker	Yes	Yes
Frequency counter	Yes	Yes
Time averaging	Yes	Yes
Data registers	Yes	Yes
Signal track	Yes	Yes
Marker coupling	Yes	Yes
Save trace (sdf, csv, txt)	Yes	Yes
Overlaid traces	Yes	Yes
Limit lines in traces	Yes	No
Spectrogram	Yes	No
Save recording	Yes	No
Playback	Yes	No
Trace math	Yes	No
User calibration	Yes	No
>4 grids	Yes	No
Source control	Yes	No
Macros	Yes	No
Save/Recall .MAT	Yes	No
Link to simulation	Yes with 105 or 106	No



www.agilent.com/find/89601A
www.agilent.com/find/89601X

The Agilent CSA spectrum analyzer offers overall amplitude accuracy of ±0.5 dB with excellent reliability and low service and support costs. The instrument was designed for fast sweep speeds in narrow resolution bandwidths, and fast in-channel measurements, as well as the highest achievable dynamic range in its price class.

Remote control via 100 Base T LAN and SCPI reduce the complexity and time to develop automation software, enhance compatibility with existing systems, and reduce training time for manufacturing staff. All of these attributes are designed to reduce cost-of-test, while the excellent reliability assures the lowest overall cost-of-ownership.

The built-in VSWR bridge, optional internal signal source, and stimulus/response measurement suite confirm the Agilent CSA spectrum analyzer as a great option for installation and maintenance. A general purpose spectrum analyzer is the engineer's most flexible test tool. The Agilent CSA spectrum analyzer extends that flexibility with its performance, ease-of-use, and a battery option that allows easy transport for reliable measurements.

Performance and quality you expect at a price you can afford

Features

- Brightest, highest resolution display in its class
- Weight: 7.5 kg with available built-in signal source, preamplifier, and VSWR bridge
- 2+ hours battery life

www.agilent.com/find/csa

Key specifications

Phase noise, 1 GHz (10 kHz offset)	–85 dBc/Hz
Maximum third order dynamic range, 1 GHz	96 dB
Displayed average noise, 1 GHz	–146 dBm, with preamp on
Standard attenuator range/step	40 dB, 1 dB
Overall amplitude accuracy	±0.5 dB

N9320B

The N9320B enables you to reduce manufacturing test overhead without compromising quality.

Whatever type of consumer or general-purpose RF electronic devices or components you are manufacturing, you know that spectrum analysis provides essential information on their performance, characteristics, and interaction. And in today's competitive world, you need this analysis to be fast, accurate, and reliable, but, most importantly, affordable.

The Agilent N9320B is a reliable entry-level spectrum analyzer that allows you to identify and eliminate sources of unwanted interference or check the stability of circuit components or sub-assemblies. It provides fast sweep speed in narrow resolution bandwidth, -145 dBm (@1 GHz, w/preamp) displayed average noise level, and ±1.5 dB overall amplitude accuracy.

The N9320B supports Agilent U2000 Series USB power sensors and offers power meter mode, helping you to achieve more accurate power measurements.

The N9320B offers flexible interface choices for automated test: USB, LAN or GPIB (optional). The N9320B also offers SCPI code compatibility for Agilent ESA-L Series spectrum analyzers.

Built to perform, priced to compete

Features

- One-button Auto Tune key and PowerSuite
- Optional built-in preamplifier and tracking generator
- Optional AM/FM, ASK/FSK demodulation analysis and EMI filter

www.agilent.com/find/N9320B

Key specifications

Phase noise, 1 GHz (10 kHz offset)	–88 dBc/Hz
Maximum third order dynamic range, 1 GHz	93 dB
Displayed average noise, 1 GHz	–145 dBm
Standard attenuator range/step	70 dB, 1 dB
Overall amplitude accuracy	±2.0 dB

N9340B

The Agilent N9340B handheld RF spectrum analyzer, covering from 100 kHz (tunable to 9 kHz) to 3 GHz, provides powerful features, exceptional performance and optimized usability for installation and maintenance tasks in the field, such as interference test, spectrum monitoring, and on-site repair. The N9340B meets the requirements from the wireless service provider, aerospace and defense, spectrum management, and television and broadcasting industries.

The new IBC option supports mask measurement for IBOC AM and IBOC FM. The new INM option extends the spectrogram data saving time and supports data saving to a PC. The N9340B supports spectrum emission mask to measure out-of-channel emissions. N9340B also supports high accuracy power measurements with U2000 Series USB power sensors, and AM/FM demodulation analysis with Option AMA and ASK/FSK demodulation analysis with Option DMA.

With the best sensitivity in its class, the N9340B helps users gain a more complete understanding of the spectrum. The N9340B's fast sweep speed–10 ms minimum at non-zero span–helps improve the field test productivity. The bright 6.5" TFT display provides a clear and bright spectrum view for both indoor and outdoor use. The N9340B also offers USB and LAN connectivity for PC control and easy data transfer to a USB storage device.

Agilent spectrum analysis at your finger tips

Features

- Powerful features including IBOC measurement, spectrogram, and power measurement
- Modern USB and LAN connectivity for remote control and data transfer
- Impressive field-replaceable battery with 4 hours operating time

www.agilent.com/find/N9340B

Key specifications

Phase noise, 1 GHz (10 kHz offset)	–87 dBc/Hz
Maximum third order dynamic range, 1 GHz	89 dB
Displayed average noise, 1 GHz	–144 dBm
Standard attenuator range/step	51 dB, 1 dB
Overall amplitude accuracy	±1.5 dB

E4411B, E4402/3/4/5/7/8B

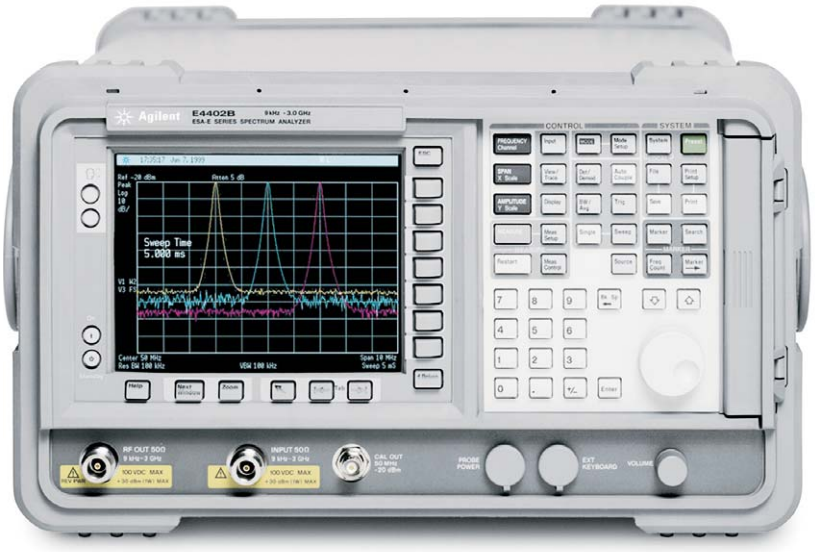
Receive faster delivery and a favorable price when you order one of the three ESA Series express analyzers ideal for manufacturing, rugged outdoor use, and general spectrum analysis. The express analyzer options are based on the most frequently ordered ESA configurations and most popular options.

ESA basic analyzer
Basic spectrum analysis with the ESA-L series is perfect for cost conscious bench top, manufacturing, or service environment applications.

ESA standard analyzer
Receive quality spectrum analysis with our most popular express configuration on the ESA-E series. The ESA-E series includes PowerSuite and one-button RF power measurements. All standard express analyzers include fast time-domain sweep, AM/FM demodulation, and GPIB connection for your manufacturing needs.

Agilent also offers the X-Series EXA N9010A signal analyzer for customers looking for a fast, economic spectrum analyzer solution. The EXA is an excellent choice for high-speed manufacturing and wireless communication demodulation needs as 89601A runs inside the instrument. See page 11 for more information on the EXA signal analyzer or visit the web www.agilent.com/find/esa2exa.

Flexibility to select the right level of functionality for your needs



Features

- Five-minute warm up time
- Rubber-encased front and rear frames
- Optional built-in tracking generator and battery options

www.agilent.com/find/esa

Key specifications

Phase noise, 1 GHz (10 kHz offset)	–98 dBc/Hz
Maximum third order dynamic range, 1 GHz	108 dB
Displayed average noise, 1 GHz	–166 dBm
Standard attenuator range/step	75 dB, 2 dB
Overall amplitude accuracy	±1.0 dB

Did you know?
For general-purpose spectrum analysis most ESA customers will benefit by upgrading to the faster EXA signal analyzer, as it provides many ESA optional features as standard in addition to USB and LAN ports.

*8560/62/63/64/65EC**

The 856xEC series spectrum analyzers offer power measurements for both continuous and burst signals that are accurate and easy to make. Measurement capabilities includes adjacent channel power (ACP), carrier power, channel power, and occupied bandwidth. These analyzers provide great measurement flexibility and RF performance, making them powerful spectrum analysis tools for R&D engineers and field technicians working with signals up to 50 GHz and beyond.

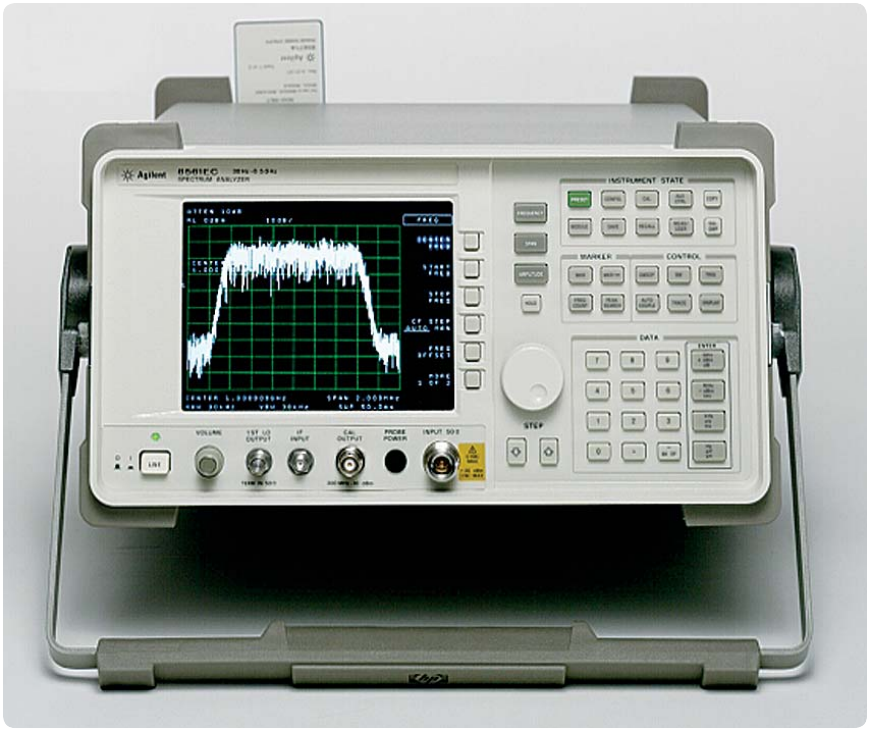
These spectrum analyzers combine outstanding phase noise, sensitivity, 1 Hz resolution bandwidths, and wide dynamic range in a Class 3 MIL-rugged package built to withstand harsh environmental conditions.

Agilent also offers the X-Series MXA N9020A signal analyzer for customers looking for a fast midrange RF/MW spectrum analyzer solution. The MXA is the perfect choice for research and development and emerging communication demodulation needs as 89601A runs inside the instrument. See page 10 for more information on the MXA signal analyzer.

Agilent also offers the N9061A remote language compatibility application on the X-Series signal analyzers which eases the migration from 856xE/EC spectrum analyzers to the X-Series in automated test environments.

** The RF and microwave models in the 856xEC family (8560/2/3EC) will be discontinued September 2009. The recommended replacements are X-Series signal analyzers or the PSA spectrum analyzer. Refer to **www.agilent.com/find/8560** for "856xE/EC migration assistance".*

Best-in-class performance in phase noise



Features

- Class 3 MIL-rugged, portable
- Resolution bandwidths of 1 Hz to 100 Hz digitally implemented
- Best-in-class performance in phase noise

www.agilent.com/find/8560

Key specifications

Phase noise, 1 GHz (10 kHz offset)	–113 dBc/Hz
Maximum third order dynamic range, 1 GHz	108 dB
Displayed average noise, 1 GHz	–151 dBm
Standard attenuator range/step	70 dB, 10 dB

EMI Measurement Receiver (N9039A)

Combine the world-class performance of the E444xA PSA Series spectrum analyzer and the new N9039A RF preselector and the result is an accurate, fast EMI measurement receiver to 50 GHz. This receiver gives you the confidence that the measurements you make are precise and repeatable.

Features

- Synchronized zoom trace for easy troubleshooting
- 8192 data points for broad band sweeps
- Mix and match preselectors and PSAs

Agilent EMI receiver– fully CISPR 16-1-1 compliant

www.agilent.com/find/emc

Pre-Compliance Solutions

Option EMC on the MXA (N9020A) and EXA (N9010A) signal analyzers allows you to perform pre-compliance measurements for both commercial and military standards. The bandwidths and detectors meet CISPR 16-1-1 requirements. Limit lines and margins can be displayed for a wide range of international regulatory agency requirements. You can also correct for antenna factors, cable losses and amplifier gains. Use the "measure at marker" feature to quickly obtain the peak, quasi-peak and average values of a signal.

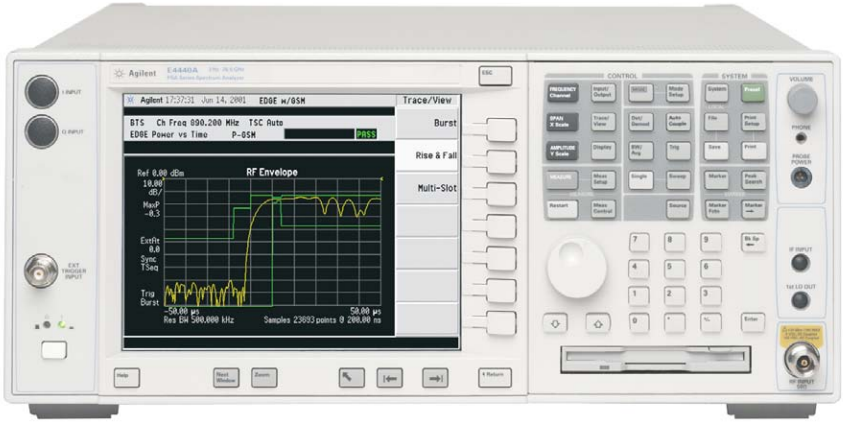
X-Series signal analyzers (MXA/EXA)

www.agilent.com/find/exa_emc
www.agilent.com/find/mxa_emc

E444xA Series PSA spectrum analyzers

Use this high performance spectrum analyzer to evaluate the EMI performance of your product or device. The PSA has the frequency range, sensitivity, detectors, and bandwidths to meet the needs of both commercial and MIL-STD requirements to 50 GHz. Add options to evaluate other parameters of your products such as phase noise or noise figure.

With the addition of Option 239, you can easily evaluate individual signals while viewing the active broadband trace. Move to full compliance testing by adding the N9039A RF preselector to meet CISPR 16-1-1 requirements.



www.agilent.com/find/psa

Agilent E7402A/5A EMC analyzers

Early evaluation of your design's EMI performance is essential for a successful product. The E7402A (3 GHz) and E7405A (26.5 GHz) EMC analyzers provide the capability you need to make in-house EMI precompliance testing a reality.

When combined with a broadband antenna and a line impedance stabilization network (LISN), the E7402A/5A provides the capabilities to check the radiated emissions up to 26.5 GHz and the conducted emissions to 30 MHz. The EMC analyzers include both CISPR detectors and band-widths. A disk with limit lines and correction factors is supplied.

www.agilent.com/find/emc

Electronic warfare and radar design and maintenance engineers can now quickly identify desired pulse parameters with the N9051A pulse measurement software. The combination of the N9051A and an Agilent signal analyzer or oscilloscope performs calibrated pulse analysis for signals up to 50 GHz in carrier frequency and analysis bandwidths up to 13 GHz. Quickly characterize pulse performance using a wide range of parameters including pulse width, rise/fall time, PRI, PRF, duty cycle, peak to average ratio, and much more in accordance IEEE 181 standards. Use the pulse analyzer software to gain statistical information such as PDF, CDF and CCDF.

N9051A pulse measurement software

www.agilent.com/find/N9051A
www.agilent.com/find/pulse_software

N5531S

Comprised of a PSA high-performance spectrum analyzer, a P-Series power meter, and an N5532A sensor module, the Agilent N5531S measuring receiver sets the new standard for metrology-grade signal measurements up to 50 GHz.

The N5531S offers superior accuracy and repeatability, a very wide measurement range, and traceability mandated by metrology and calibration labs for the signal source and step attenuator calibrations. The N5531S sensor modules, with single input connections, cover up to 50 GHz, providing the user with the highest confidence in the accuracy of their power measurements. When adding the measuring receiver to the PSA, optional high-impedance audio input allows accurate audio signal analysis. The N5531S offers an intuitive user interface that helps customers shorten the learning curve and eliminate operator errors. Finally, the remote control using SCPI commands simplifies the remote programming for automated tests.

Metrology-grade measurement accuracy

Features

- Fast-tuned RF level (TRFL) measurements with sensitivity down to –140 dBm
- Highly accurate analog modulation analysis and audio analysis
- Four sensor modules covering 4 GHz, 18 GHz, 26.5 GHz, and 50 GHz

www.agilent.com/find/N5531S

Key measurements

Frequency counter
Absolute RF power
TRFL
AM/FM/PM: modulation depth/deviation, rate, distortion, SINAD
Audio analysis: frequency, AC level, distortion, SINAD

The Agilent combination analyzer series merges three analyzer functions into one powerful instrument: A vector network analyzer, spectrum analyzer, and an optional impedance analyzer. The combination analyzer makes no compromise between vector network, spectrum, and impedance performance. Use one analyzer for multiple testing needs when you want high speed and accuracy. Save on equipment cost and bench space, while avoiding time-consuming, awkward cable hook-ups to multiple instruments. You can also reduce test time with precise measurements and improved efficiency.

The Agilent 4395A/96B provides excellent LF/RF measurements for lab and production applications. In the lab, you can evaluate your designs completely and accurately with one instrument. On the production line, you can increase your throughput with the 4395A/96B by quickly and easily switching between different measurement types or tests. The combination analyzer series is a breakthrough in test instruments, delivering outstanding performance at an attractive price.

Network, spectrum, and impedance analyzers in one box

Features

- Network, spectrum, and optional impedance analysis
- Fast narrowband spectrum measurement
- Time-gated spectrum analysis option

www.agilent.com/find/combo

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LXI

www.lxistandard.org
LXI is the LAN-based successor to GPIB, providing faster, more efficient connectivity. Agilent is a founding member of the LXI consortium.

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