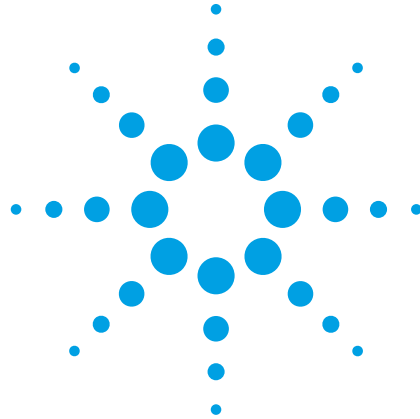


Agilent ESA Series Spectrum Analyzer



Express analyzers
available for faster delivery
and best value



Do you love your ESA-L, but need
a more modern, faster analyzer?

**The N9000A CXA is the perfect
low cost replacement for the
ESA-L basic analyzer.**

www.agilent.com/find/CXA

Flexibility to select the right level of functionality for your needs

- 0.4 dB amplitude accuracy
- -101 dBc/Hz phase noise at 10 kHz offset
- 5 minute warm up to guaranteed performance
- Wide set of built-in power measurements
- Built-in help
- Worldwide customer support



Agilent Technologies

ESA Series: Simple to Order, Fast Delivery, Best Value

The ESA spectrum analyzer, which can be used for a wide range of applications from aerospace and defense to the manufacturing line, is a general purpose spectrum analyzer defined by its simplicity and flexibility. With express analyzer configurations, it offers both faster delivery and a price advantage.

- **Flexible performance**
- **Flexible price**
- **Flexible platform**

Express analyzers

The ESA is available in three express analyzers.

ESA-L basic analyzer

For basic, quality, spectrum analysis on RF or microwave signals at an affordable price. Includes many built in measurement functions.

ESA-E standard analyzer

For general spectrum analysis of RF or microwave signals. Includes an advanced set of firmware features and functions in an upgradable platform. Optional measurement features available such as noise figure and phase noise.

ESA-E communication test analyzer

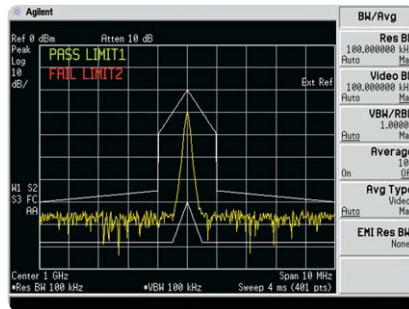
For spectrum analysis focused specifically in demodulation of wireless signals. Customers looking to use the 89601A VSA software should consider the EXA signal analyzer.

If you wish to take advantage of the ESA's flexibility, but need a faster analyzer for the manufacturing line, connectivity to LAN/USB in addition to GPIB, or in depth signal analysis capabilities with 89601A VSA software, will benefit from the new X-Series signal analyzers. The N9000A CXA is the perfect low cost replacement for the ESA-L basic analyzer, while the N9010A EXA offers a wider range of measurement applications and better specifications to replace the ESA-E spectrum analyzers.



Three Express Analyzers

Receive faster delivery and a favorable price when you order one of the three ESA express analyzers. The express analyzer options are based on the most frequently ordered ESA configurations and most popular options. The express analyzer options simplify the ordering process while maintaining the flexibility of the ESA platform. Just select the ESA express analyzer that meets your needs and budget.

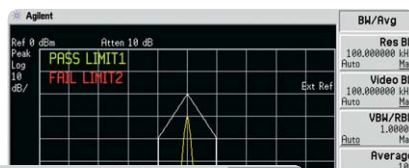


ESA-L Basic analyzer (Option BAS/BTG)

For a low cost, fast solution, consider the N9000A CXA signal analyzer.

For basic RF/ μ W measurements

- 1.1 dB overall amplitude accuracy
- +7.5 dBm TOI
- 1 kHz or 100 Hz minimum RBW
- Standard firmware features

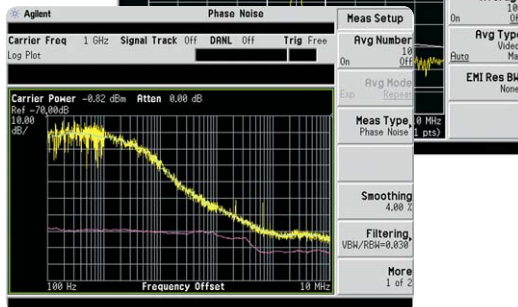


ESA-E Standard analyzer (Option STD/STG)

For a code-compatible, fast solution, consider the N9010A EXA signal analyzer.

For general RF/ μ W measurements and extended measurement capability

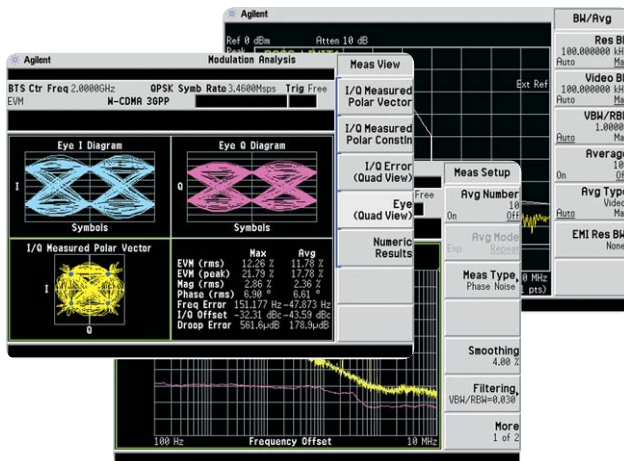
- 0.4 overall amplitude accuracy
- +16 dBm TOI
- 1 kHz, 10 Hz, or 1 Hz minimum RBW
- Upgradable
- Advanced firmware features and optional measurement personalities



ESA-E Communication test analyzer (Option COM)

For RF/ μ W measurements and extended measurement capability and digital demodulation options

- 0.4 dB overall amplitude accuracy
- +16 dBm TOI
- 1 Hz minimum RBW
- Upgradable
- Advanced firmware features and optional demodulation personalities



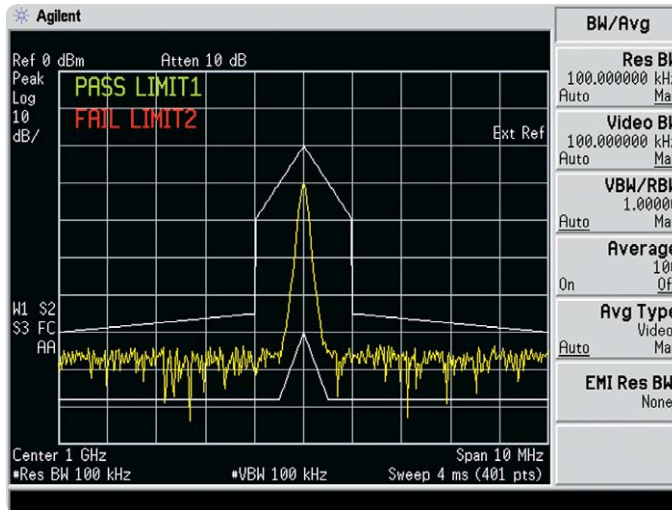
If you are looking for an economical communications test analyzer, consider the new EXA signal analyzer for enhanced signal analysis and faster speed.

ESA-L Basic Analyzer

(Option BAS/BTG)

The basic analyzer provides general spectrum analysis with the speed, accuracy, and dynamic range to give you confidence in your measurement results.

- 1.5 GHz, 3.0 GHz, and 26.5 GHz frequency range
- 1.1 dB overall amplitude accuracy
- 100 Hz RBW (optional)
- +7.5 dBm TOI
- 5 minute warm up to guaranteed measurement accuracy
- Rugged design, weather resistant, snap on battery pack



Basic analyzer

- ESA-L Series spectrum analyzer
- IF/sweep port (A4J)
- GPIB connection (A4H)

Available frequencies

- 1.5 GHz (E4411B)
- 3.0 GHz (E4403B)
- 26.5 GHz (E4408B)

Available options

- Narrow resolution bandwidth (1DR)
- Tracking generator (BTG)
- GPIB (A4H)/Serial port (1AX)
- All accessories

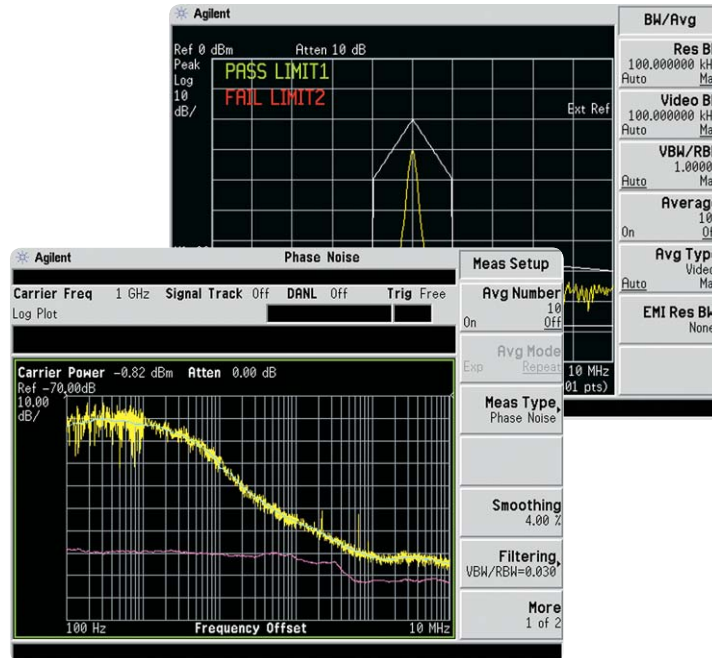
Looking for a low cost, fast solution? Consider the N9000A CXA signal analyzer! It offers 2 frequency ranges, pre-amplification up to 7.5 GHz, and enhanced speed compared to the ESA-L. For more information on side-by-side specifications, please refer to the ESA-L data sheet, literature number 5989-9556EN.

ESA-E Standard Analyzer

(Option STD/STG)

The standard analyzer includes a wide set of built-in functions and features while maintaining the flexibility to add the most popular ESA options. The standard analyzer provides the best value in spectrum analysis with performance tied to traceable specifications, worldwide support, and the most comprehensive set of instrument features for an economy spectrum analyzer.

- 0.4 dB overall amplitude accuracy
- 10 Hz RBW (1 Hz with option)
- +16 dBm TOI
- FM demodulation
- Optional measurement applications including phase noise and noise figure



Standard analyzer

- ESA-E Series spectrum analyzer
- Faster sweep, IF sweep ports (AYX)
- FM demodulation (BAA)
- GPIB connection (A4H)

Available frequencies

- 3.0 GHz (E4402B)
- 6.7 GHz (E4404B)
- 13.2 GHz (E4405B)
- 26.5 GHz (E4407B)

Available options

- Performance option bundle (Includes 1D5, 1DR, 1DS)
- High stability frequency reference (1D5)
- Timegating (1D6)
- Tracking generator (STG)
- Narrow resolution bandwidth (1DR)
- Pre-amplifier (1DS)
- Replace GPIB with serial port (1AX)
- Noise figure measurement (219)
- Cable fault location (225)
- Phase noise measurement (226)
- CATV applications (227)
- Code compatibility software
- All accessories

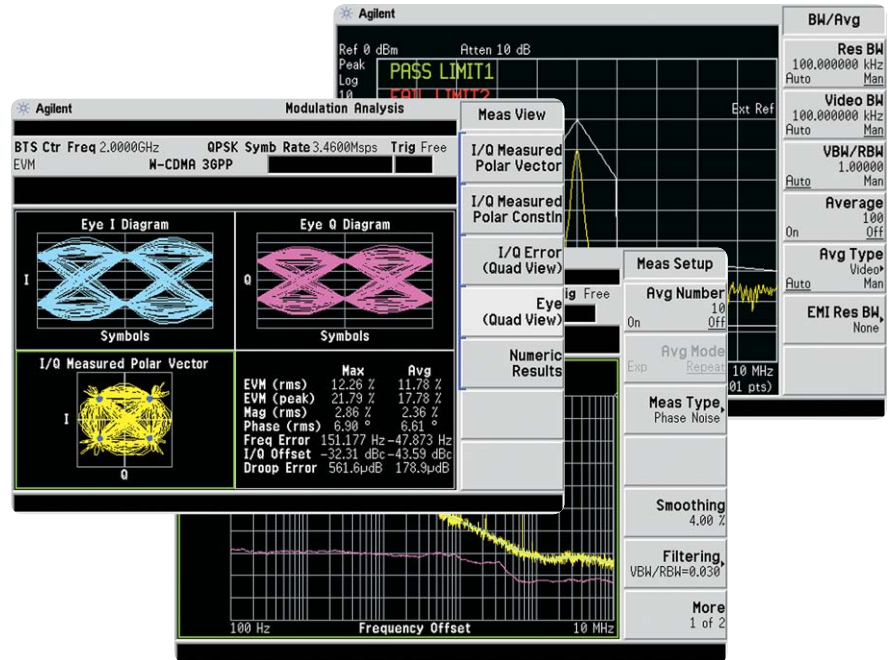
If you are looking for a modern replacement for the ESA-E, consider the N9010A EXA signal analyzer. It offers the same frequency ranges and many of the same options. For more information on side-by-side specifications, please refer to the ESA-E data sheet, literature number 5989-9815EN.

ESA-E Communication Test Analyzer

(Option COM)

Expand on the leading performance and functionality of the standard analyzer by adding built-in demodulation hardware.

- 0.4 dB overall amplitude accuracy
- 1 Hz RBW
- Precision frequency reference
- 10 MHz demodulation bandwidth
- Optional communications-focused applications such as flexible modulation analysis, GSM/EDGE, and cdmaOne
- Link to the popular Agilent 89601A vector signal analysis software for fully flexible demodulation analysis and in depth troubleshooting tools



Communication test analyzer

- ESA-E Series spectrum analyzer
- High stability frequency reference (1D5)
- Narrow resolution bandwidth (1DR)
- 89601A VSA software link (231)
- DSP and fast ADC (B7D)
- RF communication hardware (B7E)
- FM demodulation (BAA)
- GPIB connection (A4H)

Available frequencies

- 3.0 GHz (E4402B)
- 6.7 GHz (E4404B)
- 13.2 GHz (E4405B)
- 26.5 GHz (E4407B)

Available options

- Time-gating (1D6)¹
- Pre-amplifier (1DS)¹
- Replace GPIB with serial port (1AX)
- Noise figure measurement (219)
- Phase noise measurement (226)
- CATV applications (227)
- Modulation analysis (229)
- cdmaOne measurement (BAC)
- GSM/GPRS/EDGE measurement (BAH/252)
- Code compatibility software
- All accessories

¹. Recommended options.

Are you looking for an economic solution for communication testing? Consider the N9010A EXA signal analyzer! It offers the same frequency ranges and many of the same options as the ESA-E. For more information on side-by-side specifications, please refer to the ESA-E data sheet, literature number 5989-9815EN.

Proven Performance

Amplitude accuracy

The ESA offers proven performance in accuracy with a guaranteed overall amplitude accuracy of less than 1.0 dB error (< 3 GHz) based on traceable and warranted specifications. Other economy analyzers may specify only typical performance levels. For comparison, the ESA's typical level of performance based on a 2 sigma value (95%) is 0.4 dB. The ESA excels in overall amplitude accuracy whether comparing guaranteed specifications or expected levels of performance.

5 minute warm up time

Most spectrum analyzers take 15 minutes to 1 hour to warm up before the specifications in the data sheet are valid. Not with the ESA. The ESA Series takes only 5 minutes to warm up so technicians and engineers spend little time waiting for instrument stabilization.

Automatic background alignment

The automatic, internal background alignment feature gives consistently accurate results over varying temperatures. This is especially beneficial when operating the ESA outdoors or in varying temperature conditions. Furthermore, the ESA provides guaranteed performance specifications over a wide temperature range of 0 to 55 degrees centigrade.

Wide selection of detectors

The ESA has a wide selection of detectors to meet all of your test needs; including averaging (RMS), peak, negative peak, sample, and quasi-peak (optional). Notably, the ESA's RMS averaging detector improves your measurement repeatability and efficiency when testing noise-like signals such as today's 2G and 3G formats. In addition, the RMS detector provides RMS results as required by several standards.

The ESA's optional quasi-peak detector enables you to verify the EMI performance of your DUT, making the ESA a flexible tool for all types of design and verification testing.

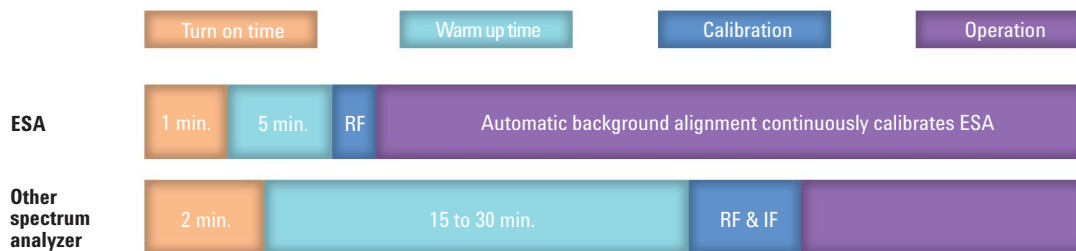
For a dedicated EMI instrument with established measurement routines and EMI software, the E7400A Series EMC precompliance analyzer may be more appropriate.

Narrow resolution bandwidth filters

Achieve the maximum frequency resolution with the ESA spectrum analyzer's optional narrow resolution bandwidths. The flexibility of the ESA allows you to select the resolution that you need. The base performance of the ESA includes a 1 kHz RBW. Add the narrow resolution bandwidth option (1DR) to get 10 Hz minimum RBW's (100 Hz on the basic analyzer). Or, for the maximum performance, order the high stability timebase option (1D5) in addition to the narrow resolution bandwidth option to get 1 Hz RBW's.

The Agilent X-Series signal analyzers offer narrow resolution bandwidths standard.

Also available is the new Option EMC for the X-Series signal analyzers. This option utilizes the speed of the X-Series for pre-compliance measurements.



Five minute warm up time with advanced background alignment

The Agilent ESA Spectrum Analyzer

Rugged case with rubber encased front and rear frames resists transportation stresses.

Built-in one-button measurement routines.

Built-in counter precisely identifies signals using the 1 Hz resolution marker-based counter.

Flexible hardware/software environment allows focused applications like phase noise and modulation analysis.



Built-in tracking generator provides an RF source for scalar network analysis (optional).

Full measurement accuracy after just a 5 minute warm up.

Built-in help function eliminates the need for reference manuals.

Zoom windows provide split screen display with both wide and narrow spans.

External mixing extends frequency range to 325 GHz (optional on E4407B only).

Weather resistant front panel allows operation in rain and high humidity.

Durable, rugged design

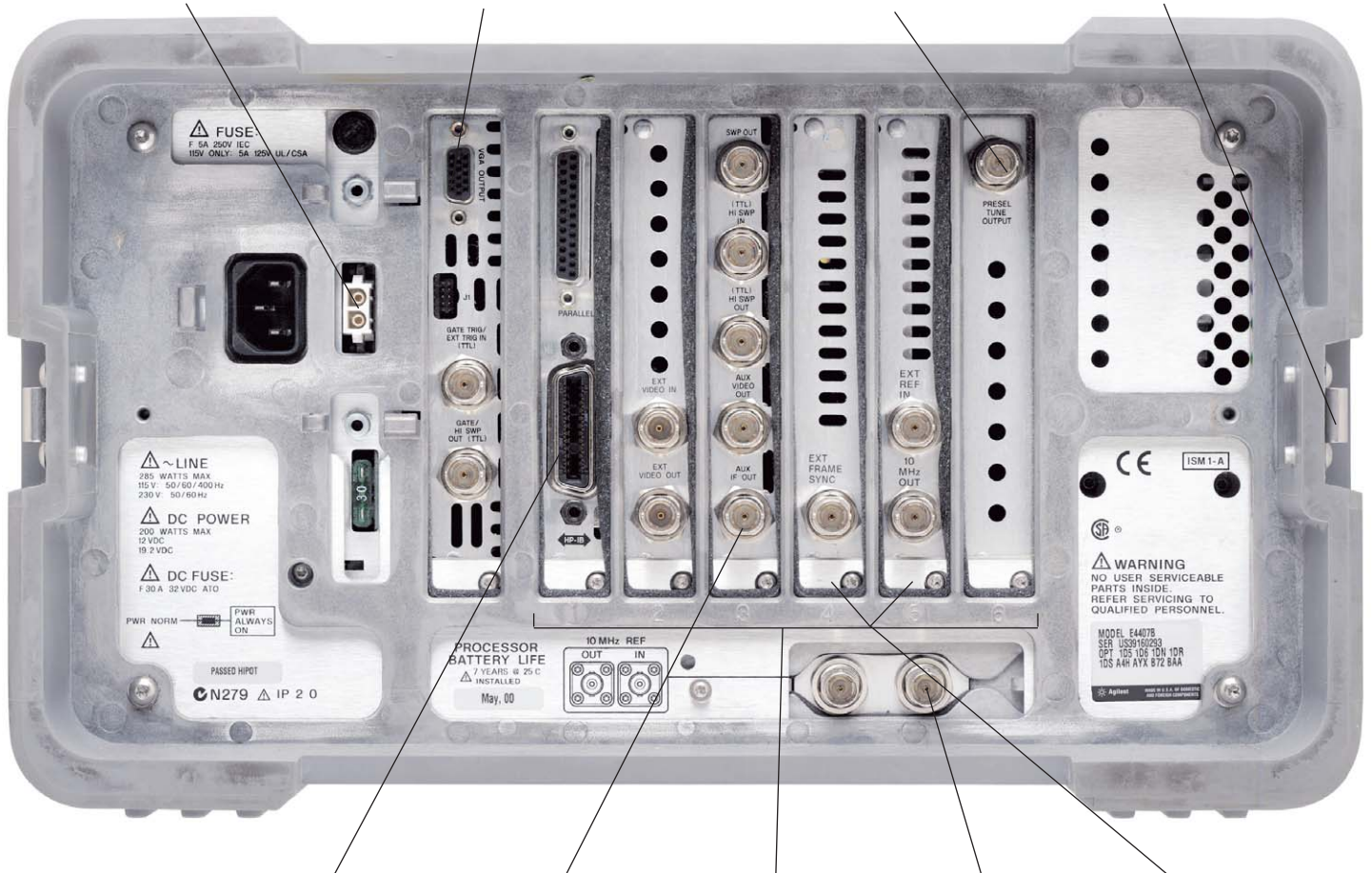
The Agilent ESA Spectrum Analyzer (continued)

12 Vdc operation from automotive batteries.

Add an external VGA color monitor.

Supports Agilent preselected external mixers (optional).

Snap-on battery pack for portability (optional).



GPIB interface (standard). RS-232 (optional) can replace GPIB.

Input signal down converted to 21.4 MHz (optional).

Flexible card cage allows you to customize the ESA and add future upgrade enhancements.

Use an external frequency reference for even more accuracy.

Digital demodulation hardware for current and future communications systems (optional).

Flexibility to select the right functionality and performance for your need

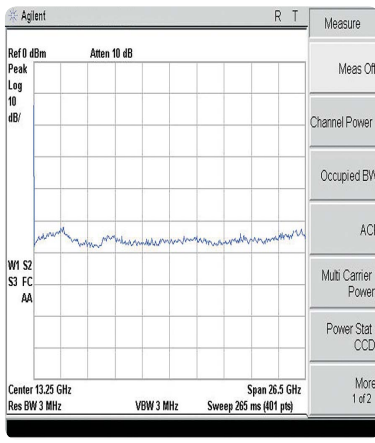
Measurements Made Easy

PowerSuite - Absolute confidence in making power measurements



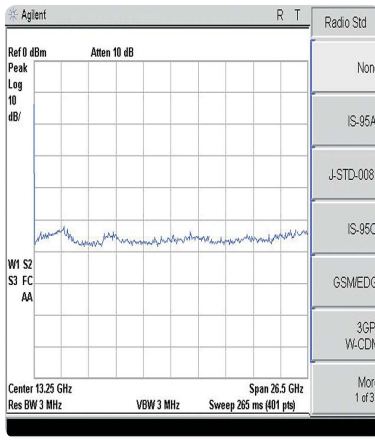
Step 1

- Press the measurement button on the front panel.



Step 2

- Select the desired measurement functions.



Step 3

- Select your desired standard-based format or customize your test setup.

The ESA offers the a wide selection of built-in power measurements via Agilent's PowerSuite:

- Channel power
- Occupied bandwidth
- Adjacent channel power (ACP)
- Multi-carrier ACP
- Power statistics (CCDF) (not available on the basic analyzer)
- Harmonic distortion
- Burst power
- Intermodulation distortion (TOI)
- Spurious emissions
- Spectrum emissions mask

The ESA also offers additional features such as:

- Amplitude corrections
- Segmented sweep (STD/STG and COM express analyzers only)
- Log sweep (STD/STG and COM express analyzers only)

The ESA includes a wide selection of standards-based test setups including the following formats:

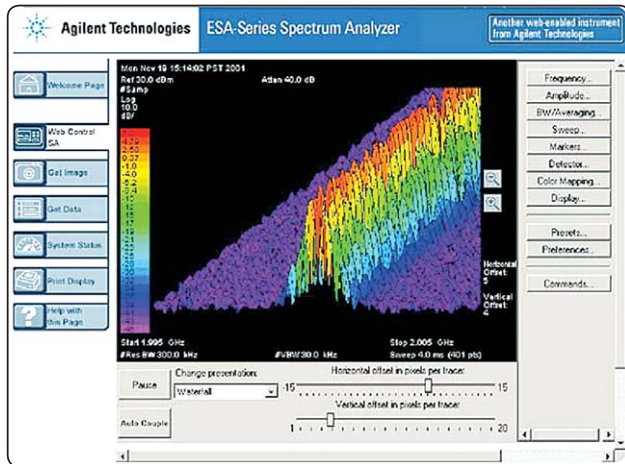
- cdmaOne (IS-95A/C)
- cdmaOne (J-STD-008)
- NADC
- GSM/EDGE
- W-CDMA 3GPP
- cdma2000® SR1
- cmda2000 SR3-MC
- cdma2000 SR3-DS
- PDC
- Bluetooth®
- TETRA
- WLAN 802.11a,b,g
- HiperLAN/2
- DVB-T

Choose the desired standard-based test setup by pressing Mode, Radio Std, and then selecting the desired radio standard. Or, if desired, the measurement may be customized to meet your need.

If you are looking to measure more formats, such as DTMB, LTE, or Edge Evolution, consider the CXA or EXA signal analyzers with the VXA measurement application, optional measurement applications or software running inside the instrument.

Measurements Made Easy (continued)

ESA measurement features

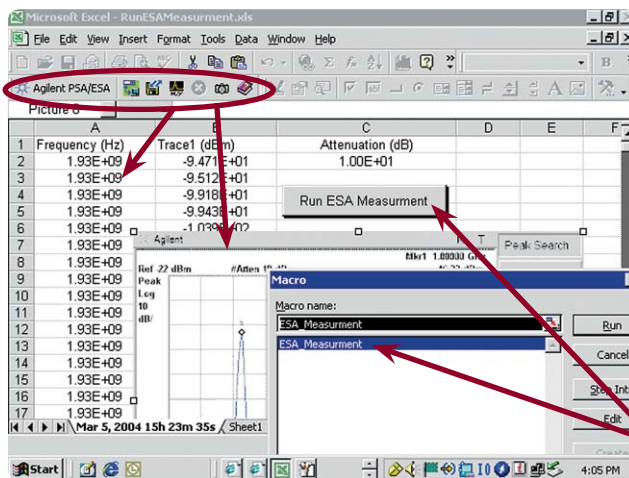


3GPP W-CDMA TS 21.141 spurious emissions test

Remotely control and monitor the ESA over the Internet

BenchLink Web remote control (Option 230) enables you to remotely control your instrument over the Internet or intranet. The software operates on a locally-networked computer connected to the ESA by GPIB. The ESA can then be controlled remotely from any client computer on the Internet or intranet with a standard Web browser.

For remote control environments, consider the X-Series signal analyzers. The CXA and EXA come standard with GPIB, LAN, and seven USB ports. In addition, this PC-based analyzer offers remote desktop as a standard feature for remote access. The speed of the X-Series is up to 80 times faster than the ESA for remote applications. Visit www.agilent.com/find/x-series for more information.

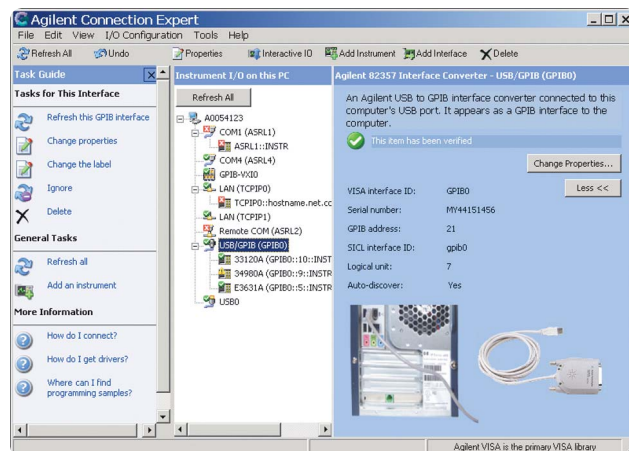


IntuiLink

With IntuiLink software, you can conveniently save and document your results by linking the ESA to MS Word or Excel applications. In addition, the IntuiLink software provides a simple programming interface to the ESA spectrum analyzer, allowing you to easily write macros or functions within Windows® applications to control the ESA spectrum analyzer. IntuiLink is included free of charge with every ESA.

Write macros or programs to automate the ESA's measurement using IntuiLinks Active X/COM object

Easily record trace data, or screen shots in Microsoft® Word or Excel with IntuiLink toolbar

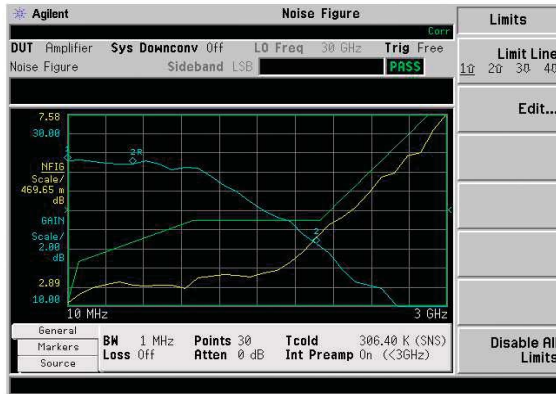


Connectivity made simple with Agilent's IO Libraries Suite

Agilent's IO Libraries Suite

Agilent's IO Libraries Suite ships with the ESA Series spectrum analyzers to help you quickly establish an error-free connection between your PC and instruments — regardless of the vendor. It provides robust instrument control and works with the software development environment you choose. For additional description of Agilent's IO Libraries Suite features and installation requirements, please go to www.agilent.com/find/iosuite/data-sheet.

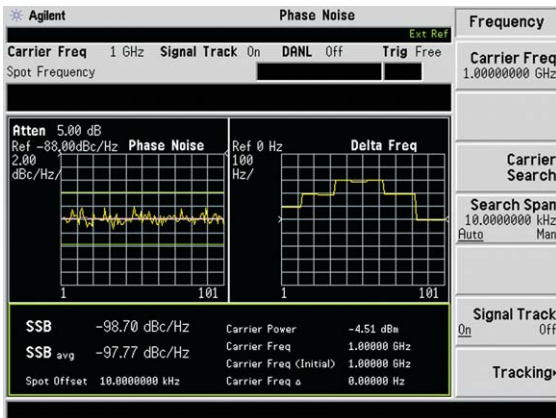
Application Focused Solutions



Noise figure and gain measurement with limit line testing

Noise figure

Option 219, provides one-button noise figure and gain measurements. Features include: smart noise source (SNS) support, DUT setup menus, limit lines with pass/fail functionality, and context-sensitive help. W9069A and N9069A are the comparable noise figure applications for CXA and EXA signal analyzers.

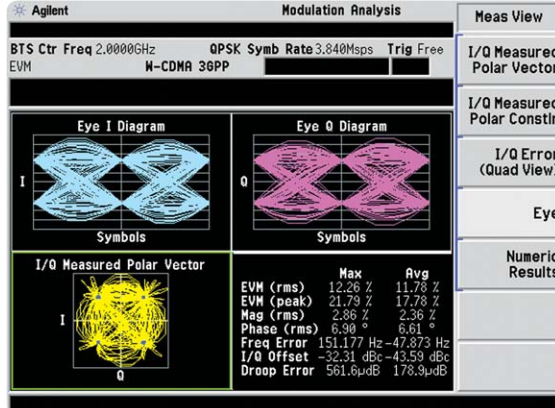


Phase noise and carrier drift

Phase noise

Option 226 provides a log plot of phase noise in dBc/Hz versus offset frequency. Examine phase noise at a single offset frequency, or make phase jitter measurements utilizing an intuitive user interface.

W9068A and N9068A are the comparable phase noise applications for the CXA and EXA signal analyzers.

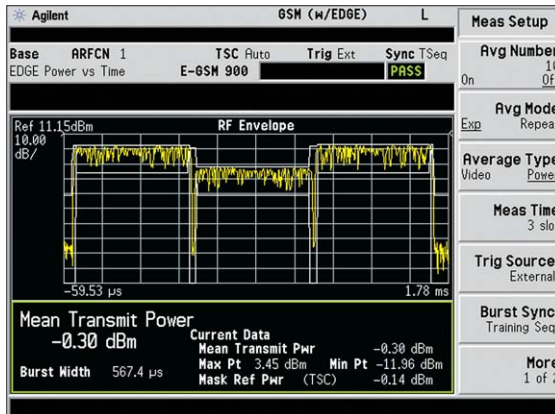


EVM measurement and eye diagram of QPSK signal

Modulation analysis

Option 229 and COM combine to enable you to make measurements of EVM and related metrics for all major 2G/3G formats.

89601X-AYA offers X-Series signal analyzers access to over 50 demodulation formats with SCPI programmability and front panel testing.



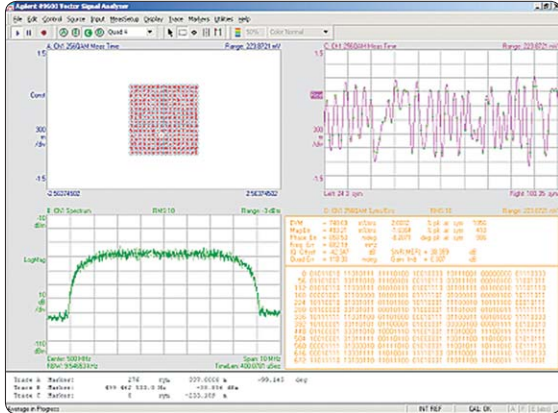
Power versus time of amplitude varying EDGE signal

GSM/GPRS/EDGE

Options BAH and 252 (measurement personalities) and COM (communication test analyzer) combine to provide all the GSM 450/900, DCS1800, and PCS1900 tests required to verify the performance of GSM/GPRS/EDGE mobile and BTS transmitters.

N9071A is the comparable GSM/EDGE application for the EXA signal analyzer.

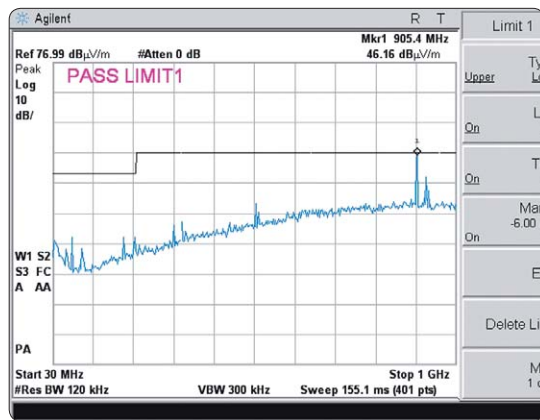
Application Focused Solutions (continued)



Flexible demodulation up to 256 QAM

89601A VSA link

Option 231 (ESA to 89601A VSA software link utility) adds the vector signal analysis capabilities of the 89601A software to the ESA communication test analyzer (Option COM). The 89601A software provides vector signal analysis features such as displaying phase information, time selective frequency domain measurements, time-data displays, spectrogram displays, and more. Waveforms can be recorded and stored on your PC for further signal processing and future comparisons. Additional 89601A options enable you to perform complex modulation analysis on WLAN, 3G cellular, and custom signals.



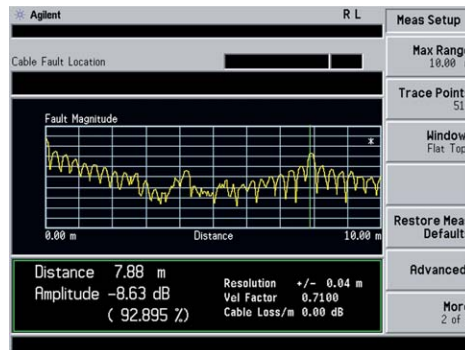
EMI measurement with limit lines enabled

Basic EMI capability

Avoid costly redesign by measuring the radiated and conducted emissions of your design early in the development process. Perform basic¹ EMI measurements by using the ESA's EMI detectors.

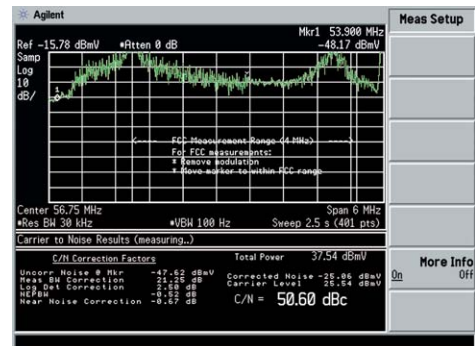
1. For a complete EMI precompliance solution, use the Agilent E7402A or E7405A EMC spectrum analyzers (EMI receivers). The PSA Series analyzer also offers EMI measurement capability.

If you are looking to use the 89601A VSA software for in-depth signal analysis, consider the X-Series signal analyzers, which run the software inside the instrument. The X-Series offers significant speed improvements that will greatly benefit anyone looking to use the 89601A VSA software for troubleshooting, capture, and playback.



Distance to fault calculation

Carrier to noise measurement



Option EMC for the X-Series signal analyzers performs precompliance EMI measurements. Option EMC offers full CISPR 16-1-1 (2007) compliant detector and bandwidths. Use the tune and listen feature to discriminate between ambient environment and DUT signals. The measure at marker feature allows measurements using up to three detectors.

A Whole Product Solution

The performance of the ESA Series spectrum analyzer is only a small part of what you get from Agilent Technologies. Agilent strives to provide complete solutions that go beyond our customers' expectations. Only Agilent offers the depth and breadth of enhancements, software, services, connectivity, accessibility, and support to help our customers reach their measurements objectives.

For more information, go to www.agilent.com/find/esa.

The Agilent ESA Series is manufactured in an ISO 9001 registered facility to Agilent's exacting standards.

PC connectivity & software

- Floppy disk drive
- GPIB or RS232 interfaces
- VXIplug&play drivers
- IVI-COM drivers
- MS Word and Excel connectivity with IntuiLink software
- Agilent's IO Libraries Suite
- EEsof Advanced Design System driver (instrument link)
- Programming examples on CD-ROM
- SCPI (Standard Commands for Programmable Instruments)
- Custom software service
- BenchLink web remote control software
- HP 8566/68 programming code compatibility
- 8590 Series programming code compatibility
- 8590 Series/ESA programming conversion guide

Product peripherals and accessories

- Battery packs and 12 Vdc cables
- Rack mounts
- Operating/carrying, backpack and transit cases
- External mixers to 325 GHz
- Pre-amplifiers to 26.5 GHz
- High-impedance active probes
- RF/MW limiters, adapters & cables



Post-sales support

- 1-, 3-, or 5-year global warranty
- Worldwide call center and calibration service center support network
- One-year calibration intervals
- FREE firmware upgrades and service notes available from Agilent's Web site
- PC-based calibration software
- Computer-based service training on CD-ROM
- Flexible support options to meet your needs

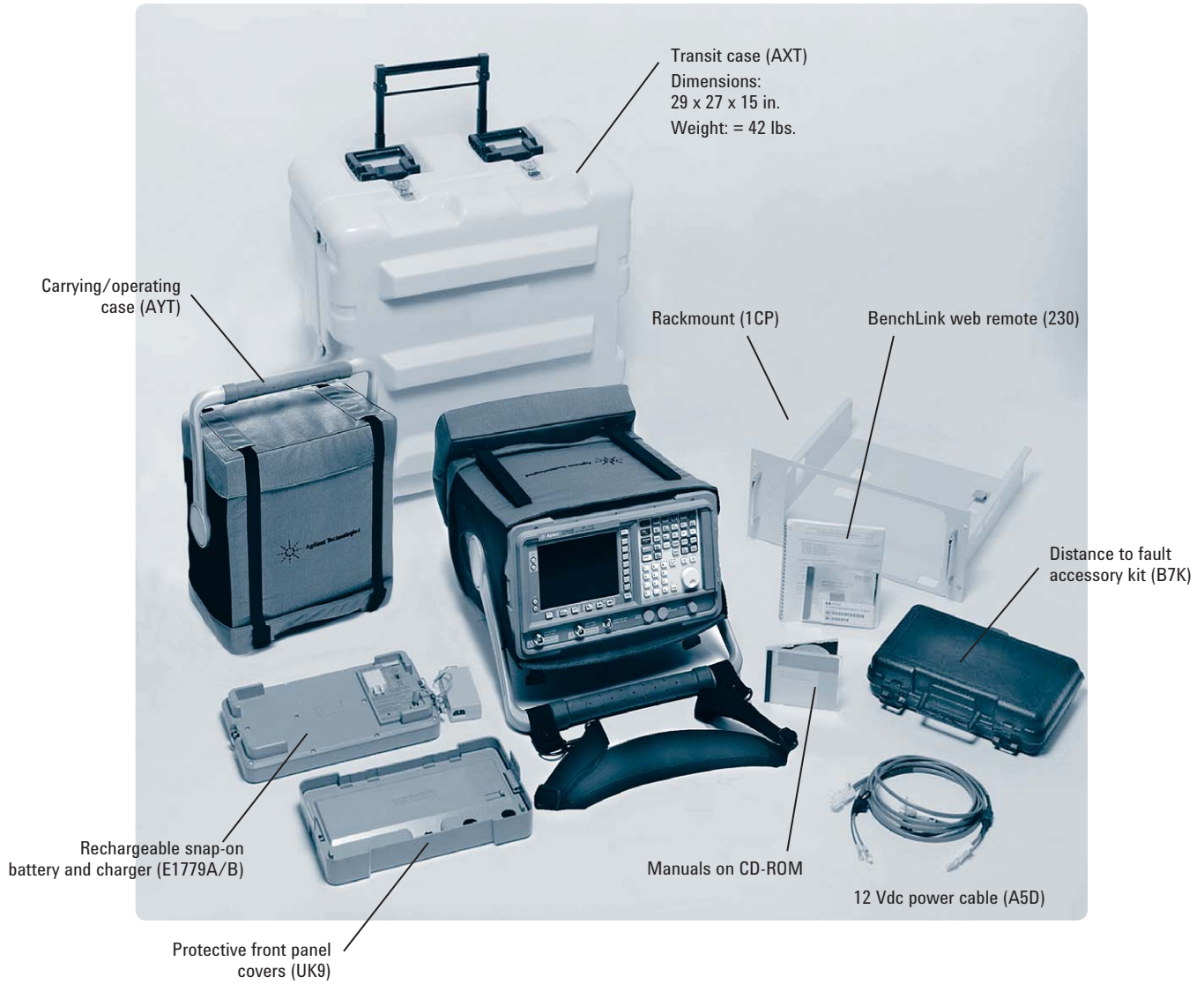
Pre-sales services

- Rentals, leasing, and financing
- Application engineering and consulting services
- Application notes
- Custom product modifications
- Custom downloadable programs
- Product literature available from Agilent's Web site
- Demonstration units available for evaluation
- Trade-up programs
- Support at least 5 years beyond production life of product

Training and access to information

- Download firmware, manuals, application notes, and other documentation from Web
- Web-based support and FAQ's
- Built-in context sensitive help
- Factory service training
- Technical seminars
- Localized operating manuals
- On-site or remote consultation services

ESA Accessories



www.agilent.com

For more information on Agilent Technologies' products, applications or services, please contact your local Agilent office. The complete list is available at:

www.agilent.com/find/contactus

Americas

Canada	(877) 894-4414
Latin America	305 269 7500
United States	(800) 829-4444

Asia Pacific

Australia	1 800 629 485
China	800 810 0189
Hong Kong	800 938 693
India	1 800 112 929
Japan	0120 (421) 345
Korea	080 769 0800
Malaysia	1 800 888 848
Singapore	1 800 375 8100
Taiwan	0800 047 866
Thailand	1 800 226 008

Europe & Middle East

Austria	43 (0) 1 360 277 1571
Belgium	32 (0) 2 404 93 40
Denmark	45 70 13 15 15
Finland	358 (0) 10 855 2100
France	0825 010 700*
	*0.125 €/minute
Germany	49 (0) 7031 464 6333
Ireland	1890 924 204
Israel	972-3-9288-504/544
Italy	39 02 92 60 8484
Netherlands	31 (0) 20 547 2111
Spain	34 (91) 631 3300
Sweden	0200-88 22 55
Switzerland	0800 80 53 53
United Kingdom	44 (0) 118 9276201

Other European Countries:

www.agilent.com/find/contactus

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For more information on specifications or configurations please visit us on the web:

www.agilent.com/find/esa

www.agilent.com/find/cxa

www.agilent.com/find/exa

For information on upgrading from the ESA-L to the CXA visit us on the web at:

www.agilent.com/find/esa2cxa

For information on upgrading from from the ESA-E to the EXA visit us on the web at:

www.agilent.com/find/esa2exa



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