



# Agilent 89650S Wideband Vector Signal Analyzer System with High Performance Spectrum Analysis

## Configuration Guide



This configuration guide describes standard configurations, options and compatible accessories. For full specifications, see *Agilent 89650S Technical Overview* (literature number 5989-0871EN), and the *Agilent PSA Series Data Sheet* (literature number 5980-1284E). Contact your Agilent representative for additional information.

### 89650S Vector Signal Analyzer

The standard 89650S bundle includes:

- E4440A 3 Hz to 26.5 GHz PSA Series spectrum analyzer
- Option E4440A-122 80 MHz bandwidth digitizer
- 89601A vector signal analysis software
- Option 89601A-200 basic vector analysis software
- Option 89601A-300 hardware connectivity
- LAN cable (cross-over)
- One-year warranty
- One-year software update subscription service
- Operating and programming manuals, installation guide



**Agilent Technologies**

## Hardware Options<sup>1</sup>

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### Preselector bypass, E4440A-123

Bypasses the YIG tuned preselector in the RF path for frequencies > 3 GHz. **This option is highly recommended when performing modulation analysis at frequencies above 3 GHz**, because it guarantees 80 MHz analysis bandwidth and provides enhanced amplitude and phase performance > 3 GHz.

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### Digital demod hardware, E4440A-B7J<sup>2</sup>

Provides high reliability electronic attenuators.

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## Measurement Personality Options<sup>1, 2</sup>

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### Noise figure personality, E4440A-219

The noise figure measurement personality provides a suite of noise figure and gain measurements including system calibration.

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### Phase noise personality, E4440A-226

The phase noise personality provides a comprehensive measurement solution to characterize the phase noise behavior of your systems and components easily, quickly, and accurately.

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### cdma2000 personality, E4440A- B78

### 1xEV-DV personality, E4440A-214

The cdma2000 and 1xEV-DV measurement personalities include a suite of standards-based one-button measurements, with analysis, to provide comprehensive and easy-to-use measurements.

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### W-CDMA personality, E4440A- BAF

### HSDPA personality, E4440A-210

The W-CDMA and HSDPA measurement personalities provide one-button measurements to help you evaluate margins and trade-offs in your design performance, efficiency, and cost.

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<sup>1</sup>. Installed in PSA Series spectrum analyzers.

<sup>2</sup>. Not used by 89601A VSA software.

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**1xEV-DO personality, E4440A-204**

The 1xEV-DO measurement personality offers one-button power measurements and modulation analysis to help you quickly and easily test your 1xEV-DO base stations and user equipment.

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**TD-SCDMA personality, E4440A-211**

The TD-SCDMA measurement personality provides a suite of standards-based measurements, including one-button power measurements, to help you evaluate margins and trade-offs in your design performance, efficiency, and cost.

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**GSM with EDGE personality, E4440A-202**

A GSM with EDGE measurement personality to help you measure radio systems quickly, easily, and accurately in the lab or on the manufacturing line.

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**cdmaOne personality, E4440A-BAC**

The cdmaOne measurement personality provides a suite of standards-based one-button measurements, with analysis, to provide comprehensive and easy-to-use measurements.

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**NADC, PDC personality, E4440A-BAE**

The NADC and PDC measurement personality includes a suite of standards-based one-button measurements, with analysis, to provide comprehensive and easy-to-use measurements.

## Software Options<sup>1</sup>

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### Flexible modulation analysis, 89601A-AYA

Whether you are designing to an open standard or a company proprietary specification, the flexible modulation analysis option has the tools you need to evaluate and characterize signal performance and dig down to the root of your modulation problems.

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### 3G modulation analysis, 89601A-B7N

Evaluate and troubleshoot your 3GPP modulation signals with Option B7N 3G modulation analysis. Whether your signal is cdma2000 or W-CDMA, TD-SCDMA or 1xEV-DO, HSDPA or 1xEV-DV, the tools and analysis flexibility in Option B7N help you test your signal to its standard and troubleshoot the problem if the signal fails to meet its standard.

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### WLAN modulation analysis, 89601A-B7R

Agilent is an industry leader in WLAN signal analysis. The WLAN analysis option offers: 802.11a OFDM modulation analysis, 802.11b DSSS/CCK/PBCC modulation analysis, 802.11g modulation analysis, and 802.11a/b/g standards-based one button testing.

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### 802.16 OFDM modulation analysis, 89601A-B7S

Analyze WiMAX signals with a comprehensive set of modulation error analysis tools. All bandwidths, modulation formats, guard intervals and sampling factors are supported. Use the time and frequency selective capability to decompose your signal and uncover anomalies.

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### Connectivity to Advanced Design System software, 89601A-105

Link real world signals recorded with the 89650S to Agilent's Advanced Design system (ADS) circuit design and simulation software to provide an actual signal environment for your design stimulus. Or analyze your simulation results using the same measurement tools and displays you use on prototype hardware.

## Software Update Subscription Service

Software update subscription service provides automatic notification and shipment of software upgrades as soon as they become available. Twelve-month coverage is included standard with the 89650S. An additional 12 months of coverage may be ordered.

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### Software subscription service, 89601AS

Option 0RU provides an additional twelve months of coverage beyond the standard twelve months of coverage included (order quantity is 12).

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<sup>1</sup>. Installed with 89601A vector signal analysis software in user PC or optional laptop PC.

## Warranties

A one-year service warranty providing parts and labor coverage is included in the price of the 89650S. You can extend the warranty to 3 or 5 years and get continued repair coverage. Both warranties require the equipment to be returned to Agilent for repair.

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**3-year, R-51B-001-3C**

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**5-year, R-51B-001-5C**

## Additional Software (order separately)

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**89604A distortion test suite**

This application software measures AM/AM and AM/PM distortion and is particularly well suited for working with pre-distortion linearized multi-channel power amplifiers (MCPAs). The stimulus signal can be narrowband CW or wideband complex modulation.

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**89607A WLAN test suite**

This standards-based test suite provides the convenience of automatic one-button test set-up and execution with the confidence of knowing your design is being tested based on the techniques, parameters, and specifications set down in the IEEE802.11a/b/g standards. This product is included in the 89601A-B7R WLAN modulation analysis option.

## Productivity Assistance

Agilent provides both product-specific and application training, as well as specialized consulting services. Of particular interest are the following:

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One day of start-up assistance (recommended), PS-S20-01

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Remote scheduled productivity assistance, PS-S10 (recommended 6 hours)

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One day of performance spectrum analyzers training, PS-T10-89650

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89600 users' course, PS-T11-89650

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Digital radio troubleshooting, PS-T12-89650

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Wireless LAN technology fundamentals, PS-T13-89650

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VSA wireless LAN measurements consulting, PS-X10-89650

The 89600 users' course and W-LAN technology fundamentals are classes available on-site at your location. The VSA wireless LAN measurements and productivity assistance products are consulting services tailored to your needs.

## PC Requirements

The 89650S VSA requires a PC to control the spectrum analyzer and calculate/display results. You can use your PC for this task.

The following are the minimum requirements for a user-supplied PC. For best immunity to electrostatic discharge (ESD), use a desktop PC.

	<b>Desktop</b>	<b>Laptop</b>
CPU	180 MHz Pentium or AMD-K6 (> 300MHz recommended)	> 300 MHz Pentium or AMD-K6
RAM	192 MB (256 MB recommended)	192 MB (256 MB recommended)
Video RAM	4 MB (8 MB recommended)	4 MB (8 MB recommended)
Hard disk space	200 MB available	200 MB available
Operating system	Microsoft® Windows 2000 SP2 or XP Professional	Microsoft Windows 2000 SP2 or XP Professional
Additional drives	CD-ROM (if no network access available)	CD-ROM (if no network access available)

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### Laptop PC, LTPC1

Supplies a laptop PC configured to operate with the Agilent PSA Series spectrum analyzers. It comes pre-loaded with the 89601A VSA software.

## General Accessories

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Rack mount kit, E4440A-1CM

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Handle kit, E4440A-1CN

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Rack mount & handle kit, E4440A-1CP

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Rack slide kit, E4440A-1CR

## Excluded Options

The following options cannot be used in the 89650S VSA.

- 70 MHz IF output, E4440A-H70
- External mixing, E4440A-AZX

## **Related Literature**

*89650S Wideband Vector Signal Analyzer System with High Performance Spectrum Analysis, Technical Overview,*  
Literature number 5989-0871EN

*89600 Demonstration Software, CD,*  
Literature number 5980-1989E

*PSA Series Spectrum Analyzers, Brochure,*  
Literature number 5980-1283E

*PSA Series Spectrum Analyzers, Data Sheet,*  
Literature number 5980-1284E

*89600 Series Vector Signal Analysis Software 89601A/89601AN/  
89601N12 Technical Overview,* Literature number 5989-1679 EN

*89600 Series Vector Signal Analysis Software 89601A/89601AN/  
89601N12 Data Sheet,* Literature number 5989-1786EN

*89600 Series Vector Signal Analysis Software Measurement Platform  
Data Sheet,* Literature number 5989-1753EN

*Spectrum Analysis Basics, Application Note 150,*  
Literature number 5952-0292

*Vector Signal Analysis Basics, Application Note 150-15,*  
Literature number 5989-1121EN

*89600 Series Vector Signal Analyzers, Configuration Guide,*  
Literature number 5968-9350E

## **Web Resources**

[www.agilent.com/find/psa](http://www.agilent.com/find/psa)

[www.agilent.com/find/89600](http://www.agilent.com/find/89600)

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