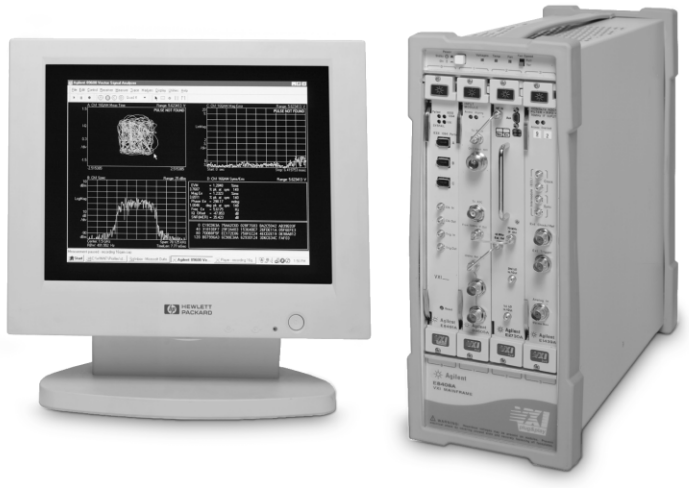
Agilent 89600 Series Vector Signal Analyzers

VXI Configuration Guide

For engineers working with today's emerging broadband communication systems, the Agilent 89600 series vector signal analyzers (VSAs) are the indispensable tool for basic research, product development, manufacturing, and even field testing.



The 89600 Series vector signal analyzers are VXI-based modular instruments that are integrated at the factory before shipping to you. There are four basic configurations:

- 89610 baseband vector signal analyzer (DC - 40 MHz)
- 89611 IF vector signal analyzer (DC - 36 MHz, 52 - 88 MHz)
- 89640 RF vector signal analyzer (DC - 2.7 GHz)
- 89641 RF vector signal analyzer (DC - 6.0 GHz)

This configuration guide will help you through the process of configuring a system to meet your vector signal measurement and analysis needs.

Contents

Agilent Technologies

Configuring Your 89600 VSA

Answer the basic information questions, and then choose the desired configuration.

Basic information is general information that applies to all configurations. Answer the basic information questions by filling in this form.

Basic information

Item[1]	Allowed	Your configuration
Warranty	*3 year, 5 year*	
Calibration term	*3 year, 5 year, none*	
Calibration type	*Commercial, standards compliant, none*	

Fill out this form to configure an *89610 baseband VSA*.

89610 baseband vector signal analyzer

Item[1]	Allowed	Your configuration
Number of baseband channels	*2*	
Memory (will be added to all channels)		
144 MB (48 MSa, complex)	*Standard*	
288 MB (96 MSa, complex)	*Optional*	
1.2 GB (384 MSa, complex)	*Optional*	
VXI mainframes		
4 slot	*All configurations*	
PC	*Desktop, laptop*	
Software		
Flexible modulation analysis	*Optional*	
3G modulation analysis	*Optional*	
WLAN modulation analysis	*Optional*	
Dynamic link to EESof/ADS	*Optional*	
Licensing	*Node locked, floating, limited term*	
Factory cal type/data	*ANSI cal & data, factory cal data*	
Additional software and related products		
Software update subscription service	*Recommended (specify in months)*	
89604A distortion test suite	--	
89600 training[2]	--	
Laptop PC	--	

1. See Appendix A for explanation of an item.
2. Several courses available – see Appendix A.

Fill out this form to configure an *89611 IF VSA*.

89611 IF vector signal analyzer

Items[1]	Allowed	Your configuration
Number of baseband/IF channels	*2*	
Memory (will be added to all channels)		
144 MB (48 MSa, complex)	*Standard*	
288 MB (96 MSa, complex)	*Optional*	
1.2 GB (384 MSa, complex)	*Optional*	
VXI mainframes		
4 slot	*Single channel IF/BB configuration only*	
13 slot	*All configurations*	
PC	*Desktop, laptop*	
Software		
Flexible modulation analysis	*Optional*	
3G modulation analysis	*Optional*	
WLAN modulation analysis	*Optional*	
Dynamic link to EESof/ADS	*Optional*	
Licensing	*Node locked, floating, limited term*	
Factory cal type/data	*ANSI cal & data, factory cal data*	
Additional software and related products		
Software update subscription service	*Recommended (specify in months)*	
89604A distortion test suite	--	
89600 training[2]	--	
Laptop PC	--	

1. See Appendix A for explanation of an item.
2. Several courses available – see Appendix A.

Fill out this form to configure an *89640 RF VSA*.

89640 2.7 GHz RF vector signal analyzer

Items[1]	Allowed	Your configuration
Number of RF channels	*2*	
Number of baseband/IF channels	*2* *(1 included in each RF channel)*	
Memory (will be added to all channels)		
144 MB (48 MSa, complex)	*Standard*	
288 MB (96 MSa, complex)	*Optional*	
1.2 GB (384 MSa, complex)	*Optional*	
VXI mainframes		
4 slot	*Single RF channel configuration only*	
13 slot	*All configurations*	
PC	*Desktop, laptop*	
Software		
Flexible modulation analysis	*Optional*	
3G modulation analysis	*Optional*	
WLAN modulation analysis	*Optional*	
Dynamic link to EESof/ADS	*Optional*	
Licensing	*Node locked, floating, limited term*	
Factory cal type/data	*ANSI cal & data, factory cal data*	
Additional software and related products		
Software update subscription service	*Recommended* *(specify in months)*	
89604A distortion test suite	--	
89600 training[2]	--	
Laptop PC	--	

1. See Appendix A for explanation of an item.
2. Several courses available – see Appendix A.

Fill out this form to configure an *89641 RF VSA*.

89641 6.0 GHz RF vector signal analyzer

Items[1]	Allowed	Your configuration
Number of RF channels	*2*	
Number of baseband/IF channels	*2* *(1 included in each RF channel)*	
Memory (will be added to all channels)		
144 MB (48 MSa, complex)	*Standard*	
288 MB (96 MSa, complex)	*Optional*	
1.2 GB (384 MSa, complex)	*Optional*	
VXI mainframes		
4 slot	*Single RF channel configuration only*	
13 slot	*All configurations*	
PC	*Desktop, laptop*	
Software		
Flexible modulation analysis	*Optional*	
3G modulation analysis	*Optional*	
WLAN modulation analysis	*Optional*	
Dynamic link to EESof/ADS	*Optional*	
Licensing	*Node locked, floating, limited term*	
Factory cal type/data	*ANSI cal & data, factory cal data*	
Additional software and related products		
Software update subscription service	*Recommended* *(specify in months)*	
89604A distortion test suite	--	
89600 training[2]	--	
Laptop PC	--	

1. See Appendix A for explanation of an item.
2. Several courses available – see Appendix A.

Configuration Examples

Example 1

This example shows a form filled out to order the following: an 89610 baseband VSA with two baseband channels, 1.2 GB of memory in each channel, in a 4-slot VXI mainframe, to be used with a laptop PC (customer supplied, must have a IEEE-1394 Firewire interface). The customer will load the software on the PC with the help of an easy to follow installation wizard. The software will include the WLAN modulation analysis software only. The license will be node (PC) locked. Twelve months of software update service (added on to the 12 months included with every 89600 VSA) are also included. The basic information is: a 3-year warranty, no calibration term or calibration type.

Basic information

Items[1]	Allowed	Your configuration
Warranty	*3 year, 5 year*	**3 year**
Calibration term	*3 year, 5 year, none*	**None**
Calibration type	*Commercial, standards compliant, none*	**None**

89610 baseband vector signal analyzer

Items[1]	Allowed	Your configuration
Number of baseband channels	*2*	**2**
Memory (will be added to all channels)		
144 MB (48 MSa, complex)	*Standard*	
288 MB (96 MSa, complex)	*Optional*	
1.2 GB (384 MSa, complex)	*Optional*	**X**
VXI mainframes		
4 slot	*All configurations*	**X**
PC	*Desktop, laptop*	**Laptop**
Software		
Flexible modulation analysis	*Optional*	
3G modulation analysis	*Optional*	
WLAN modulation analysis	*Optional*	**X**
Dynamic link to EESof/ADS	*Optional*	
Licensing	*Node locked, floating, limited term*	**Node**
Factory cal type/data	*ANSI cal & data, factory cal data*	
Additional software and related products		
Software update subscription service	*Recommended (specify in months)*	**12 months**
89604A distortion test suite	--	
89600 training[2]	--	
Laptop PC	--	

1. See Appendix A for explanation of an item.
2. Several courses available – see Appendix A.

Example 2

This example shows a form filled out to order the following: a two channel, 6.0 GHz 89641 RF VSA with 288 MB of memory in each channel, in a 13 slot mainframe (the only mainframe a two RF channel 89641 will fit in), to be used with a laptop PC (to be purchased from Agilent). The software includes flexible modulation analysis, 3G modulation analysis, WLAN modulation analysis software, and the link to the ADS design system. A floating license has been specified so the software can be shared with other users. Eighteen months of software support (to be added to the 12 months included standard with every 89600 VSA), and distortion test suite software complete the configuration. The basic information is: a 5-year warranty with a 3-year term ANSI standard compliant calibration contract type.

All software will be installed and tested in the laptop before the system is shipped. The customer will install the license server, using the installation instructions provided, prior to operating the VSA software.

Basic information

Items[1]	Allowed	Your configuration
Warranty	*3 year, 5 year*	**5 year**
Calibration term	*3 year, 5 year, none*	**3 year**
Calibration type	*Commercial, standards compliant, none*	**Standards compliant**

89641 6.0 GHz RF vector signal analyzer

Items[1]	Allowed	Your configuration
Number of RF channels	*2*	**2**
Number of baseband/IF channels	*2* (1 included in each RF channel)	
Memory (will be added to all channels)		
144 MB (48 MSa, complex)	*Standard*	
288 MB (96 MSa, complex)	*Optional*	**X**
1.2 GB (384 MSa, complex)	*Optional*	
VXI mainframes		
4 slot	*Single RF channel configuration only*	
13 slot	*All configurations*	**X**
PC	*Desktop, laptop*	**Laptop**
Software		
Flexible modulation analysis	*Optional*	**X**
3G modulation analysis	*Optional*	**X**
WLAN modulation analysis	*Optional*	**X**
Dynamic link to EESof/ADS	*Optional*	**X**
Licensing	*Node locked, floating, limited term*	**Floating**
Factory cal type/data	*ANSI cal & data, factory cal data*	
Additional software and related products		
Software update subscription service	*Recommended (specify in months)*	**18 months**
89604A distortion test suite	--	**X**
89600 training[2]	--	
Laptop PC	--	**X**

1. See Appendix A for explanation of an item.
2. Several courses available – see Appendix A.

Example 3

This example shows a form filled out to order the following: a two channel 89611 IF VSA with 144 MB of memory in each channel (this comes standard in all 89600 VSA systems), a 13-slot mainframe (the only mainframe a two channel 89611 will fit in), to be used with a user supplied desktop PC. The software is 3G modulation analysis. A floating license has been specified so the software can be shared with other users. The customer will load the software on several PCs with the help of an easy to follow installation wizard. Twelve months of software support (to be added to the 12 months included standard with every 89600 VSA) complete the configuration. The basic information is: 3-year warranty (included standard with every 89600 VSA system) with no calibration contract, no calibration type.

Prior to operation the customer will install the PCI IEEE1394 Firewire interface supplied with this system in the PC designated to control the VXI hardware. The customer will also install the license server, using the installation instructions provided.

Basic information

Items[1]	Allowed	Your configuration
Warranty	*3 year, 5 year*	**3 year**
Calibration term	*3 year, 5 year, none*	**None**
Calibration type	*Commercial, standards compliant, none*	**None**

89611 IF vector signal analyzer

Items[1]	Allowed	Your configuration
Number of baseband/IF channels	*2*	**2**
Memory (will be added to all channels)		
144 MB (48 MSa, complex)	*Standard*	**X**
288 MB (96 MSa, complex)	*Optional*	
1.2 GB (384 MSa, complex)	*Optional*	
VXI mainframes		
4 slot	*Single channel IF/ BB configuration only*	
13 slot	*All configurations*	**X**
PC	*Desktop, laptop*	**Desktop**
Software		
Flexible modulation analysis	*Optional*	
3G modulation analysis	*Optional*	**X**
WLAN modulation analysis	*Optional*	
Dynamic link to EESof/ADS	*Optional*	
Licensing	*Node locked, floating, limited term*	**Floating**
Factory cal type/data	*ANSI cal & data, factory cal data*	
Additional software and related products		
Software update subscription service	*Recommended (specify in months)*	**12 months**
89604A distortion test suite	--	
89600 training[2]	--	
Laptop PC	--	

1. See Appendix A for explanation of an item.
2. Several courses available – see Appendix A.

Example 4

This example shows a form filled out to order the following: a 2.7 GHz 89640 RF VSA with 1 RF channel and 2 baseband/IF channels, 1.2 GB of memory in each channel, in a 13 slot mainframe (the only mainframe this system will fit in), to be used with a laptop PC (customer supplied, must have a IEEE-1394 Firewire interface). The software includes flexible modulation analysis, 3G modulation analysis, WLAN modulation analysis software, and the link to the ADS design system. The customer will load the software on the PC with the help of the easy to follow installation wizard. The license will be node (PC) locked. A factory calibration certificate and data are also ordered for the system. Fifteen months of software support (to be added to the 12 months included standard with every 89600 VSA) complete the configuration. The basic information is: a 3-year warranty (standard for all 89600 VSA systems), with a 5-year term commercial calibration contract type.

Basic information

Items[1]	Allowed	Your configuration
Warranty	*3 year, 5 year*	**3 year**
Calibration term	*3 year, 5 year, none*	**5 year**
Calibration type	*Commercial, standards compliant, none*	**Commercial**

89640 2.7 GHz RF vector signal analyzer

Items[1]	Allowed	Your configuration
Number of RF channels	*2*	**1**
Number of baseband/IF channels	*2 (1 included in each RF channel)*	**2**
Memory (will be added to all channels)		
144 MB (48 MSa, complex)	*Standard*	
288 MB (96 MSa, complex)	*Optional*	
1.2 GB (384 MSa, complex)	*Optional*	**X**
VXI mainframes		
4 slot	*Single RF channel configuration only*	
13 slot	*All configurations*	**X**
PC	*Desktop, laptop*	**Laptop**
Software		
Flexible modulation analysis	*Optional*	**X**
3G modulation analysis	*Optional*	**X**
WLAN modulation analysis	*Optional*	**X**
Dynamic link to EESof/ADS	*Optional*	**X**
Licensing	*Node locked, floating, limited term*	**Node**
Factory cal type/data	*ANSI cal & data, factory cal data*	**Factory**
Additional software and related products		
Software update subscription service	*Recommended (specify in months)*	**15 months**
89604A distortion test suite	--	
89600 training[2]	--	
Laptop PC	--	

1. See Appendix A for explanation of an item.
2. Several courses available – see Appendix A.

Additional Ways to Order VXI Systems or Modules

The 89600 VXI based VSA's can be configured in a number of ways not covered in this configuration guide. If the configurations provided here do not meet your needs, or if you want to upgrade your 89600 system, contact your local Agilent representative.

User Supplied PC Requirements

The 89600 VSAs require a PC to control the hardware and display results. You can use your PC for this task. The table contains the minimum requirements for a user-supplied PC. For best immunity to electrostatic discharge (ESD), use a desktop PC.

PC Requirements	Desktop	Laptop
CPU	180 MHz Pentium® or AMD-K6 (> 300 MHz recommended)	> 300 MHz Pentium or AMD-K6
Empty slots	1 PCI-bus slot (two recommended)	1 CardBus type II slot (two recommended)
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	100 MB available	100 MB available
Operating system	Microsoft Windows 2000® or XP Professional	Microsoft Windows 2000 or XP Professional
Additional drives	CDROM or 3.5 inch floppy (if no network access available)	CDROM or 3.5 inch floppy (if no network access available)
Interface support		IEEE-1394-1995[1]

1. For a list of supported interfaces, see **www.agilent.com/find/iolib** or contact your local Agilent call center or sales office.

Software License Choices

The 89600 Series vector signal analyzers offer a variety of software licenses. Depending on your need you can select a permanent floating license, a permanent node-locked license, or a 12-month limited term floating license.

The floating permanent license version of the 89600 software puts the "license-to-use" on your network rather than in a PC. Start by loading the software on as many networked PC's as you like. To use the software you simply start the application. If a floating license is available, your application will acquire the license and then begin running. When you exit the application the floating license will be returned to the license server and become available for use by a colleague. This license is valid permanently.

The 12 month limited term license offers the benefits of the permanent floating license, at a significant price savings, with a license that expires in 12 months.

If a network is not available, or sharing is not needed, the 89600 software offers permanent node locked licensing that locks the software to a specific piece of hardware, typically a PC and is valid permanently. Whether in the office or away, your software will always be licensed to run.

Software Update Subscription Service

Agilent's software update service helps you get the most out of your investment by keeping your 89600 Series VSA current with new enhancements. This product provides automatic notification and shipment of new software upgrades as soon as they become available. A detailed installation procedure is included with each shipment to speed the software loading process. Purchase the length of coverage that best meets your needs. Coverage is available for as short as 12 months or as long as 24 months, in monthly increments. Twelve months of coverage is provided as a standard part of every 89600 VSA system ordered with a node locked or limited term license.

Warranty

Agilent warrants hardware, accessories and supplies to be free from defects in materials and workmanship. Agilent will, at its option, either repair or replace products that prove to be defective. In general, products must be returned to Agilent for repair. On-site service contracts are available. Please contact your Agilent representative for more information.

Agilent also warrants that software will not fail to execute its programming instructions due to defects in material and workmanship. Agilent will replace software media that does not execute its programming instructions due to such defects.

The warranty periods for the products contained in an 89600 VSA system vary.

Appendix A:
Descriptions of Configuration Items

3G modulation analysis
Supports evaluation and troubleshooting of 3G modulation formats including: W-CDMA, cdma2000, TD-SCDMA and 1x-EVD0, forward and reverse links. Contact your local Agilent sales representative for more information or search the Agilent website (**www.agilent.com/find/89600**) and click on 3G modulation analysis.

89600 training
Agilent provides both product-specific and application training, as well as specialized consulting services. Of particular interest are the following:

H7216B-325:	89600 Users' Course
H7216B-337:	Wireless LAN Technology Fundamentals
R1362A-250:	VSA Wireless LAN Measurements
R1380A-101:	Hourly Productivity Assistance (recommended)

The 89600 Users' Course and W-LAN Technology Fundamentals are classes available on-site at your location. VSA Wireless LAN Measurements and Productivity Assistance training are consulting services tailored to your needs.

89601AS software update subscription service
A service that provides automatic notification and shipment of new software upgrades as soon as they become available. Coverage ranges from 12 to 24 months in one-month increments. Twelve months coverage is included standard with any configuration of the 89610/11/40/41 if you order the node-locked or limited term licenses. This service is not available for the 89604A distortion test software or the 89607A WLAN test suite. Contact your local Agilent sales representative for more information or search the Agilent Web site (**www.agilent.com**)and search on 89601AS or 89601ASN.

89604A distortion test suite
This application software measures AM/AM and AM/PM distortion of MCPAs with up to 36 MHz of RF measurement bandwidth using complex modulated signals. Contact your local Agilent sales representative for more information or search the Agilent website (**www.agilent.com**) and search on 89604A.

Calibration term
The length of time you want a calibration contract to cover. See calibration type.

Calibration type
All 89600 VSA's are calibrated at the factory before they are shipped. Their calibration interval is 2 years. We offer calibration contracts for our customers who want Agilent to help them maintain the calibration in the future. The "calibration type" choices let you specify whether you want a calibration contract and what type of calibration you would like us to provide: commercial level calibration with data or ANSI Z540 standard compliant calibration.

Dynamic link to EESof/ADS
Links the 89600 VSA software directly to Agilent's Advanced Design System (ADS) software to measure simulation results (no measurement hardware is required). The 89600 software can be dynamically linked to any point in the digital model to analyze data by simply dragging the VSA icon to the designed spot in the schematic. Contact your local Agilent sales representative for more information or search the Agilent Web site (**www.agilent.com**) and search on ADS.

Factory cal type/data (ANSI cal & data, factory cal data)
This item is different from the calibration items contained in the basic information form. These items concern the calibration in the factory before the system ships to you. "Factory calibration data" supplies you with a calibration certificate and the data from the calibration of your system in the factory. "ANSI calibration and data" causes your system to be calibrated using ANSI Z540 procedures.

Flexible modulation analysis
Supports evaluation and troubleshooting of standards based and proprietary signals. Provides 24 digital demodulators with programmable center frequency, symbol rate, filter type and α/BT. Contact your local Agilent sales representative for more information or search the Agilent website (**www.agilent.com/find/89600**) and click on 89600 overview.

Laptop PC
The Agilent supplied laptop PC supports the Agilent 89600 Series PC-based vector signal analyzers. Agilent loads the 89600 software on this PC for you and tests its functionality with the system before shipment. Contact your local Agilent sales representative for more information or search the Agilent Web site (**www.agilent.com**) and search on LTPC1.

Licensing (node locked, floating, limited term)

The 89600 VSA's offer three types of software licenses: permanent node locked (node locked), permanent network locked (floating), and limited term network locked (limited term).

A permanent node locked license attaches the software license to a specific piece of hardware, typically the PC it is running on and the license is permanently valid. This type of locking is the simplest to install. It is recommended for applications where the software must be operated away from the network or where it will be shared only by moving the PC and VXI hardware with it.

A permanent network locked (floating) license resides on a secure network server. It is permanently valid. The software may be loaded on any number of PCs. To use the software the user merely starts the application. As long as a floating license is available, the application will run. Only one PC may use a license at a time. This type of licensing is more complex to install. It is recommended when the software will be shared among several users, perhaps for analyzing signal capture files where no hardware is needed, or with several of the hardware front-ends supported by the software or with the Agilent Advanced Design system simulators.

Limited term network locked package software (limited term) offers networked locked software at a lower price than the permanent network locked software but with restrictions:

1. The term of the license is limited to 12 months, after that the software is disabled. License renewals are available.
2. The software's configuration is fixed; all options are included in the package as is software update subscription service for the duration of the term.

Memory (will be added to all channels)

144 MB (48 MSa, complex)
288 MB (96 MSa, complex)
1.2 GB (384 MSa, complex)

The 89600 VSAs offer three sizes of signal capture memory: 144 MB (48 MSa,complex), 288 MB (96 MSa, complex), 1.2 GB (384 Msa, complex). 144 MB of memory is the standard memory, the other sizes are optional. The memory resides in the input channels, each channel must have memory and the memory size in each channel must match.

A channel sampling at maximum analysis bandwidth (approximately 36 MHz) will take about 8 seconds to fill the 1.2 GB (384 MSa) memory, about 2 seconds to fill the 288 MB memory, and about 1 second to fill the 144 MB memory.

Because each channel uses decimating filters each factor of two reduction of the analysis bandwidth will double the storage time available for signal capture.

Number of baseband/IF channels

All 89600 vector signal analyzers can have 1 or 2 baseband input channels. There are two types of these channels: baseband only (BB), baseband/intermediate frequency (IF).

The baseband only channels have a DC - 40 MHz frequency range with a 39 MHz maximum analysis bandwidth and are designed to work with baseband I/Q signals. Two channels are required to measure I/Q signaling. These channels are available in the 89610 configuration only.

The baseband/IF channels operate over DC-36 MHz and 52 - 88 MHz frequency ranges. They are designed to work with baseband I/Q signals and with tuners that have 70 MHz center frequency IFs. Their maximum analysis bandwidth is 36 MHz. They are used in the 89611 configuration and in the RF channels of the 89640 and 89641 configuration. Each IF channel requires 2 slots in a VXI mainframe. See "Configuration Examples" section for examples of how to order a two baseband channel system and a system with one RF channel plus two baseband/IF channels.

Number of RF channels

The 89640 and 89641 vector signal analyzers can have 1 or 2 RF channels. The system must include at least one RF channel, and the RF frequency range of two channel systems must be the same. Two channel RF systems require a 13-slot VXI mainframe. A single RF channel system fits in a 4-slot mainframe.

PC (desktop, laptop)

Fill in either desktop or laptop based on the type of PC on which you will load the 89600 vector signal analysis software. The application and control software for the 89600 Series vector signal analyzers runs on a PC and is connected to the VXI system via an IEEE1394 (Firewire) interface. Selecting desktop will provide a PCI based Firewire interface card and cable to go in the desktop. See **www.agilent.com/find/iolib** for approved laptop Firewire I/O cards.

The PC can be any desktop or laptop as long as it meets the requirements outlined in the "User Supplied PC Requirements" section of this guide. Agilent offers a laptop PC configured to operate with a VXI system and pre-loaded with the 89600 VSA software and a Firewire interface. Contact your local Agilent sales representative for more information or search the Agilent website (**www.agilent.com**) for LTPC1 laptop PC.

Select warranty

Two warranty periods are available. The 3-year warranty covers parts and labor and is included in the price of the system. A 5-year warranty is available at additional charge. Both warranties require the equipment to be returned to Agilent for the repair.

VXI mainframes

4-slot
13-slot

The 89600 VSA will work in two different VXI mainframes, but most of the multi-channel configurations will not fit in the four-slot mainframe. The table will guide you in your choice.

Configuration	Channels	VXI slots needed	VXI M/F needed
89610	1BB	3	4
	2BB	4	4
89611	1BB/IF	3	4/13
	2BB/IF	5	13
89640	1RF	4	4/13
	1RF, 2BB/IF	6	13
	2RF	7	13
89641	1RF	4	4/13
	1RF, 2BB/IF	6	13
	2RF	7	13

WLAN modulation analysis

Supports evaluation and troubleshooting, and standards based pass/fail testing, of WLAN signals including: 802.11a, 802.11b, and 802.11g. Contact your local Agilent sales representative for more information or search the Agilent website (**www.agilent.com/find/89600**) and click on WLAN modulation analysis.

Appendix B:
Controlling an Agilent Signal Generator from an 89600 VSA

Any VSA system, with version 3.00[1] software or above, can control certain Agilent Series signal generators. This control expands the usefulness of the VSA for stimulus/response measurements. The VSA controls the signal type, frequency, and level features of the signal generator and downloads files to the signal generator modulation source to simulate a wide range of digitally modulated signals. The files can be 89600 signal captures or even simulated waveforms from ADS design software.

Playback requires that the arbitrary waveform generator be installed in the signal generator. Signal playback bandwidth is limited by the bandwidth of the arbitrary waveform generator.

The signal generator can be controlled via GPIB or LAN.

See the figures on the next page for typical connections.

Compatible signal generators

Type	Models	Notes
ESG Series digital RF signal generators	E4431B, E4432B, E4433B, E4434B, E4435B, E4436B, E4437B, E4438C[1]	Requires firmware version B.03.50 or later and must include the arbitrary waveform generator Option E44xx-UND with firmware version 1.2.92 or later.
PSG Series microwave signal generators	E8267C	Requires Option E8267C-002 internal baseband generator.

PC interface and cables (GPIB and LAN)

Component	Model number	Notes
PCI high performance GPIB interface card for Windows 95/98/NT/2000/XP	82350A	Use when controller is a desktop PC. Requires one PCI slot in PC. Must also order GPIB cable (10833A).
GPIB Cardbus interface	NI778034-2	Use when controller is a laptop PC. Requires one empty PCMCIA slot and Windows 2000 or XP Professional OS. Includes a two-meter cable. Order from National Instruments Company.
GPIB cable	10833A	One meter GPIB cable for connecting the analyzer to the PC. Not needed if PC GPIB card comes with a cable. Not needed with USB/GPIB interface.
USB/GPIB interface	82357A	Requires USB port and Windows 2000 or XP Professional.
LAN cross-over cable	8121-0545	
LAN/GPIB gateway I/O libraries for MS Windows	E5810A	LAN/GPIB gateway.

1. E4438C requires version 4.00 89600 software.

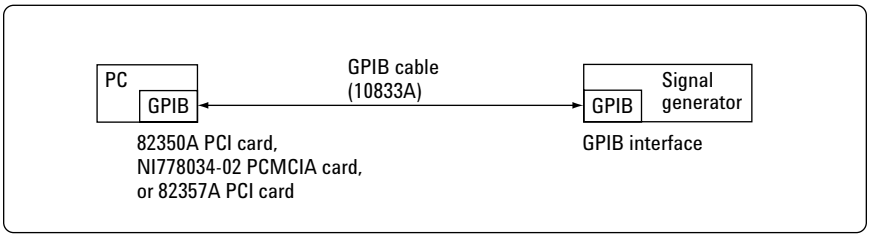


Figure 1. Typical GPIB connection (see 89600 user manual for detailed installation instructions)

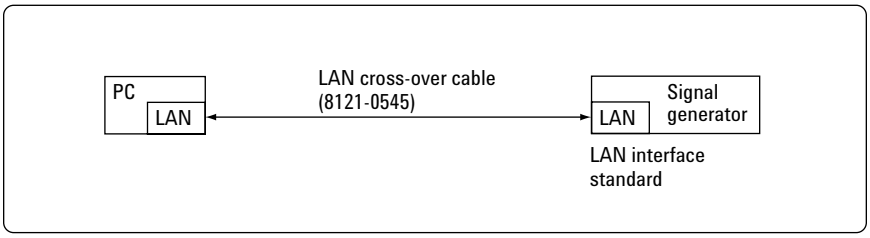


Figure 2. Typical LAN connection (see 89600 user manual for detailed installation instructions)

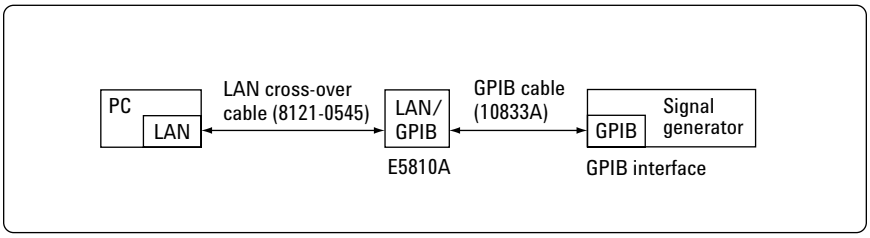


Figure 3. Typical GPIB to LAN connection (see 89600 user manual for detailed installation instructions)

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