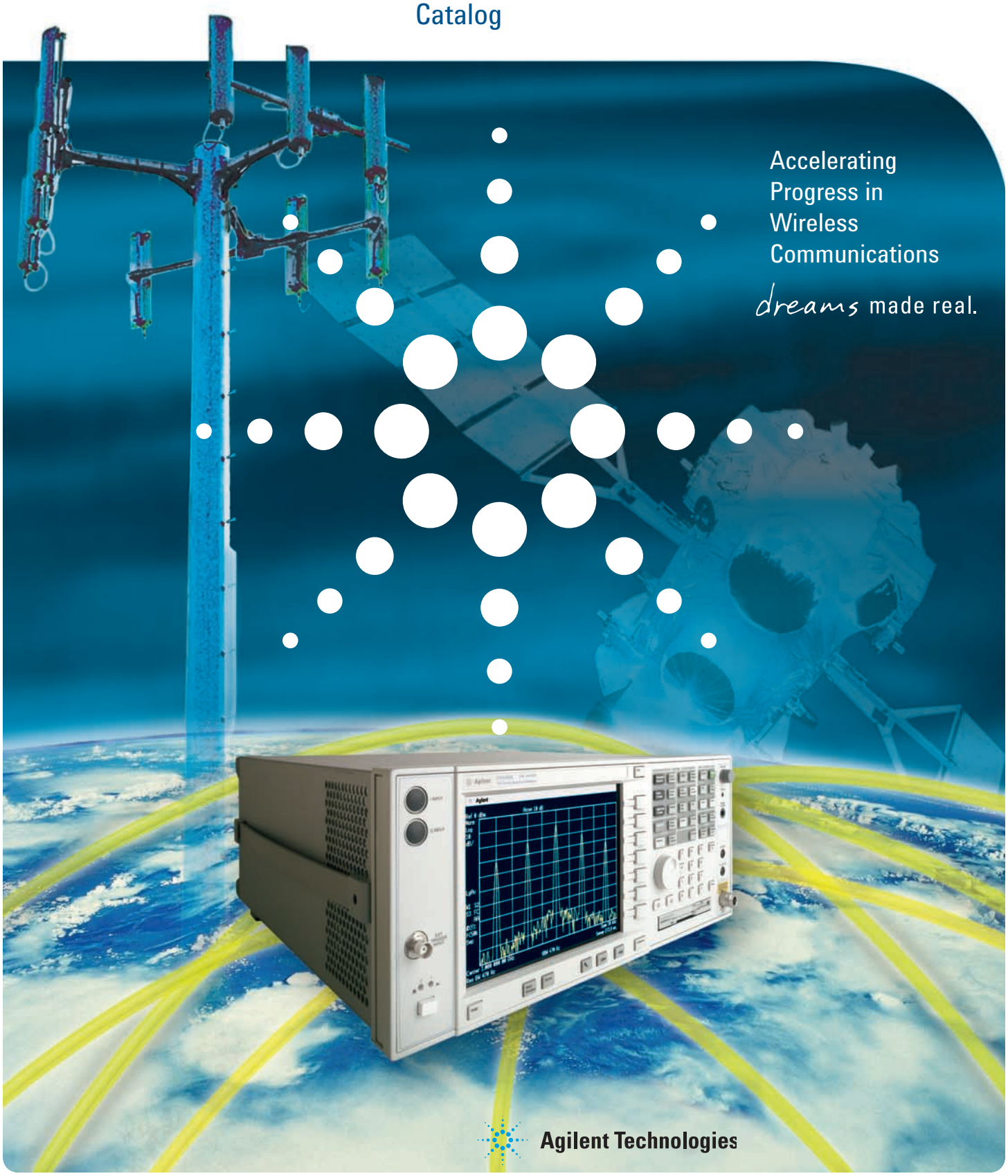
Agilent
Wireless Communications
Products, Services and Solutions
Catalog



Agilent Wireless Communications Products, Services and Solutions Catalog

At Agilent Technologies, we know that the pace of the wireless industry can sometimes feel faster than the speed of light. Even faced with economic challenges, we all feel the need to keep moving, researching, and producing in order to develop the products that will bring new wireless appliances, systems, and services to the marketplace when our customers require them- and ahead of the competition.

Our goal is to provide you with the test solutions and services that you need in order to accelerate your progress toward developing new wireless appliances and networks, creating new wireless technologies, and meeting your customers' needs.

This catalog has been developed to provide you with an easy reference tool that details Agilent's offerings according to the wireless product development lifecycle. No matter where you are in product or service development, we've got test instruments and systems, as well as consultation and training, that can help you get to where you want to be.

In this updated catalog, we highlight 2G/3G test solutions and services for base station and mobile appliance design and development, and focus on helping you deal with emerging issues related to the transition from R&D to manufacturing and from in-house production to outsourcing. We have also outlined solutions for network operators preparing their networks to deliver new services.

We're introducing many exciting new products and services this year. The next couple of pages contain an overview of some of our newest products, with more detailed information throughout the rest of the catalog.

We know that your time is valuable and we thank you for taking the time to look through this catalog. We hope that you'll find it interesting and that it will help you and make your job easier. You can find more in-depth information about our products and services at: **www.agilent.com/find/wireless** or you can contact us if you have any questions by calling your local call center.

We can help you make your wireless dreams real.

Sincerely,
George Sparks
Vice President
Wireless Solutions

Accelerate your product lifecycle

Accelerating progress in

wireless communications

At Agilent we're working to enable you to compress your product life-cycle so that you can meet ever-shrinking market windows. It's a tough task to keep up with the latest generation of wireless appliances while preparing for what is on the horizon. Agilent can help you keep pace with 2G, 2.5G, 3G, and future technologies, by helping you meet aggressive time-to-market, time-to-volume, and time-to-profitability goals.

By focusing on constant innovation and technology leadership, Agilent works to provide you what you need to succeed in the wireless industry and maximize your profit potential.

- Our engineers participate on standards bodies for current and next generation technologies and we incorporate our learnings from that involvement into our products so that we can offer you format-specific measurements early in your product lifecycle.
- We offer products and services across the entire product lifecycle. Whether you design components for appliances, manufacture power amplifiers for basestations, or plan network layouts, we can help you do your job faster and better.

Agilent Technologies is introducing many exciting new products and services. The next section contains an overview of our newest products, followed by more detailed information on Agilent 's test solutions and services for all phases of your wireless appliance and base station design, development, ramp up, and deployment processes.

New Design Tools

Faster time to market

Agilent offers a comprehensive portfolio of test innovations that keeps design engineers well ahead of the curve. In order to satisfy the need for more capacity and higher data rates, Agilent is introducing products that test the emerging wireless communications technologies, including cdma2000, GPRS, WLAN, W-CDMA and *Bluetooth*™. We are also expanding our current product portfolio to include more breadth in the widely accepted GSM and CDMA technologies.

54800 Series Oscilloscopes

Combining the high performance of digital technology with the simple look and feel of analog oscilloscopes, now with higher bandwidth probes and accessories. Please refer to page 21

ESG Signal Generator

The signal source you can't live without, now with wider RF bandwidth, higher frequency coverage, and more memory. Please refer to page 19

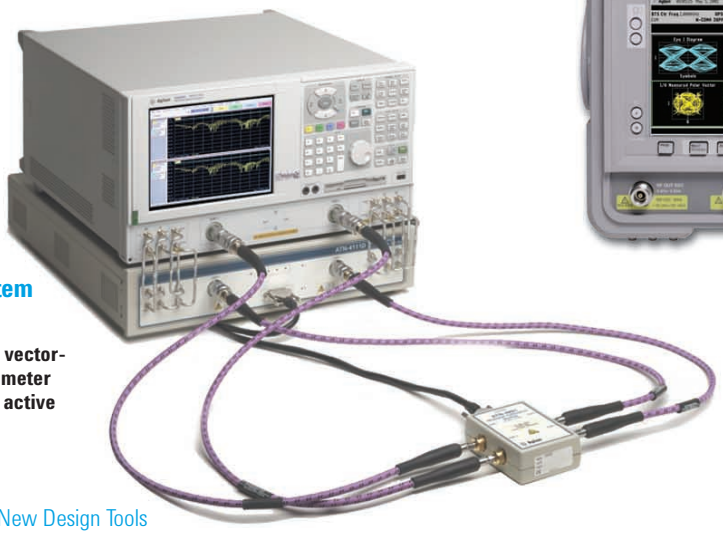
E4991A RF Impedance/ Material Analyzer

Ultimate impedance measurement performance and powerful built-in analysis. Please refer to page 22

ESA-E Portable Spectrum Analyzer

Can be expanded to include application-specific measurement personalities including GSM/GPRS, cdmaOne, modulation analysis, *Bluetooth*, and phase noise. Please refer to page 38

N4441/2/3/4/6 A Balanced Measurement System



Achieve true multiport vector-error corrected S-parameter measurements of both active and passive circuits.
Please refer to page 26

E4440A PSA High-performance Spectrum Analyzer

Analyze all of the most popular RF, 2G and 3G signals in one easy to use instrument, now with advanced power measurement and one-button digital demodulation.
Please refer to page 20

N4256A Amplifier Distortion Test Set

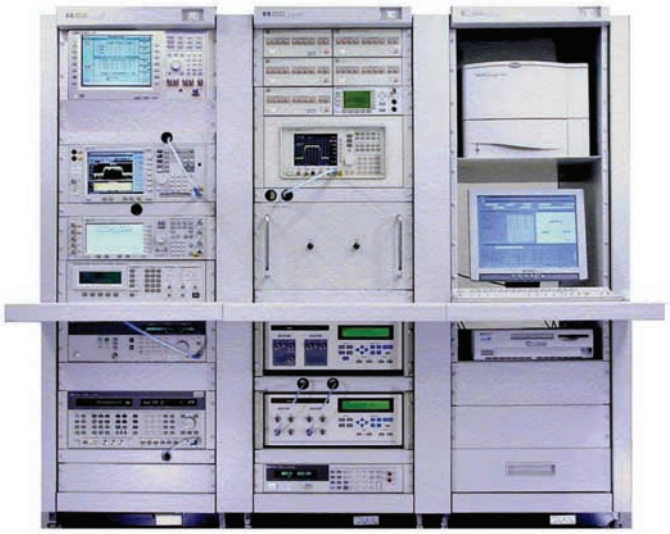
Boost the dynamic range of your Agilent spectrum analyzers' measurement of 3G base station MCPAs. Please refer to page 28

Faster time to market

As test and measurement experts, we want to help you focus more time on product design and less on test design. Our cutting-edge products, with enhanced usability and improved accuracy, reduce the need for costly prototype iterations. We can help you squeeze those tight margins to extract maximum performance from your design.

- Component solutions enable miniaturization and reduced power consumption.
- Receiver test and signal simulation expedite new technologies.
- Standards-based test solutions help engineers ensure their products meet new technology specifications.
- Integrated hardware and software solutions reduce time spent on inter-operability and verification testing.

N1901A cdma2000/1X Mobile RF Performance Test System

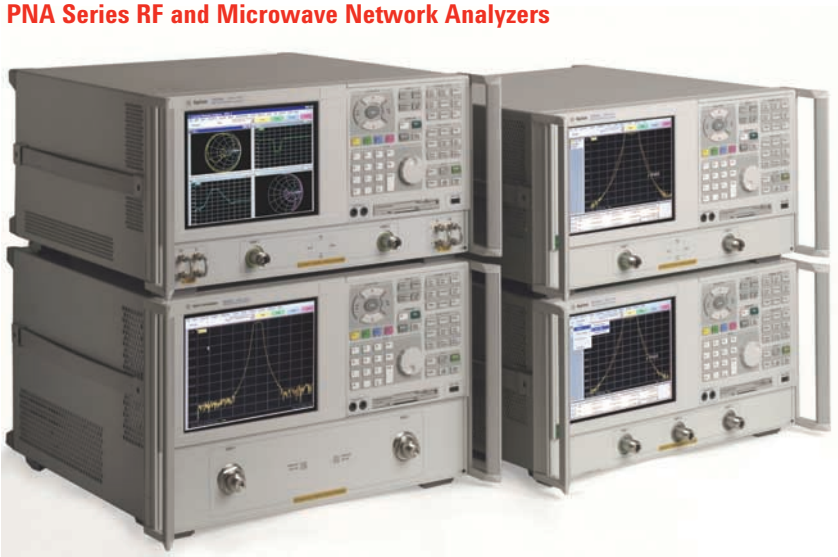


Complies with the TIA IS-98D measurement standards. Now available with fading and interference.
Please refer to page 29

E5700A Handset PA ValiFire Design Verification System

Provides pre-configured power amplifier simulation and testing for compliance with EDGE and 3GPP standards, along with on-screen correlation between simulated and measured results.
Please refer to page 20

PNA Series RF and Microwave Network Analyzers

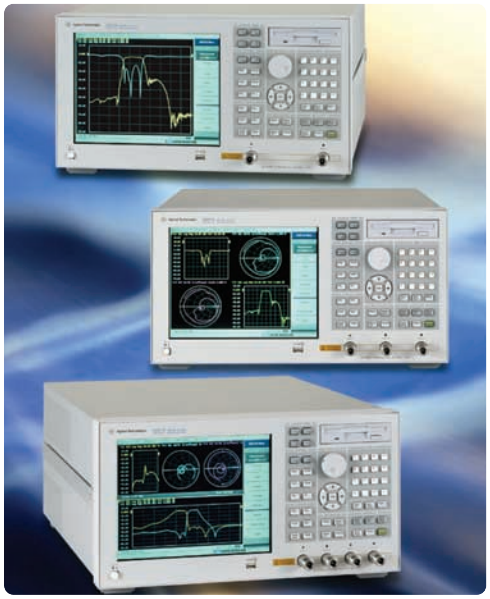


Platform designed to meet high-performance component test challenges from 300 kHz to 50 GHz. Please refer to page 24

Shorter time to volume

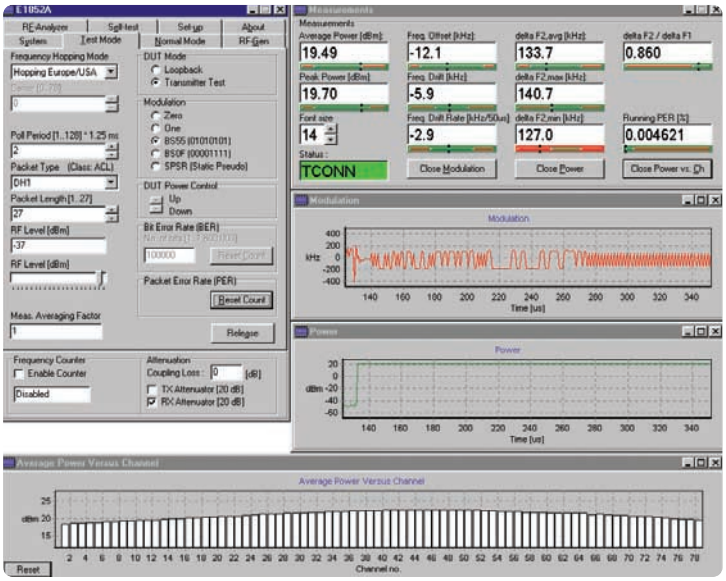
Agilent helps component and system manufacturers reduce the total cost of test by offering choices and flexibility. Our new products have a wider range of preset wireless format capabilities than any other measurement company in the world. By providing you flexible tools to build a test platform that can adapt to today's evolving standards, we enable you to ramp up and meet your demanding production goals, enjoy efficient asset utilization, and take advantage of market window opportunities.

E5070/1A ENA RF 2, 3, and 4-port Network Analyzers



Up to four built-in ports for high speed testing of advanced wireless appliance components at low cost. Please refer to page 25

E1852A Bluetooth Test Set



Low-cost standalone solution, which establishes a link with standard *Bluetooth* protocol to perform functional test at the RF interface and measures key transmitter and receiver specifications. Please refer to page 31

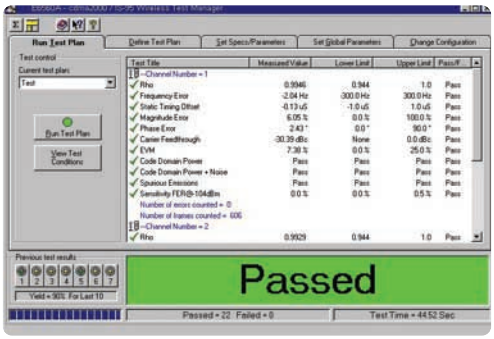
Shorter time to volume

Our product offerings include hardware, software, fixturing, and integration services. One-box testers for appliances and test set solutions for base station modules improve the efficiency of next generation manufacturing test processes. From board test to final test, we have the products and the expertise to meet your needs.

93000 SOC Series Test System

Complete testing of circuits for wireless applications Please refer to page 35

E6560A cdma2000/IS-95 Wireless Test Manager



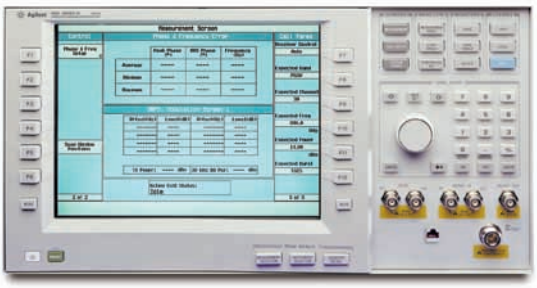
E6560A wireless test manager showing cdma2000 test results Please refer to page 52

Base Station Power Supplies

Up to 6.6 kwatts of low-noise dc power with built-in measurement capabilities and extensive protection for DUT.

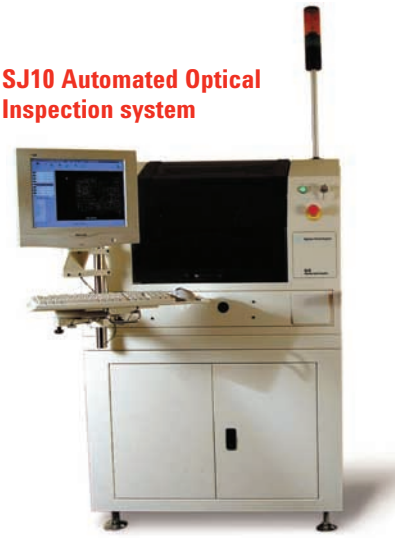
Flexibility minimizes rack space necessary to meet a wide range of module and subassembly power requirements. Please refer to page 43

8960 Series 10 Wireless Communications Test Set



Now provides GPRS signaling analysis as well as transmitter and receiver testing and call processing capability. Please refer to page 30

SJ10 Automated Optical Inspection system



Locate placement defects and solder joint defects at in-line speeds. Please refer to page 40

New Network Operations Tools

Faster time to profit

As a wireless network operator, you are under a lot of pressure: Pressure to lower operating costs; pressure to improve bandwidth efficiency; pressure to increase revenue. We offer products and services to help you design, install, operate, maintain, and manage next-generation communication networks and services – while making the best use of existing resources. Our new solutions and services help wireless network operators quickly roll out new services, improve network performance, and troubleshoot customer problems.

E6392B and E6393B Mobile Station Test Sets for Service with New Test Capabilities for GPRS and cdma2000

Reduces mobile phone test and repair costs and increases the repair capability of entire service networks including GPRS and cdma2000.
Please refer to page 70

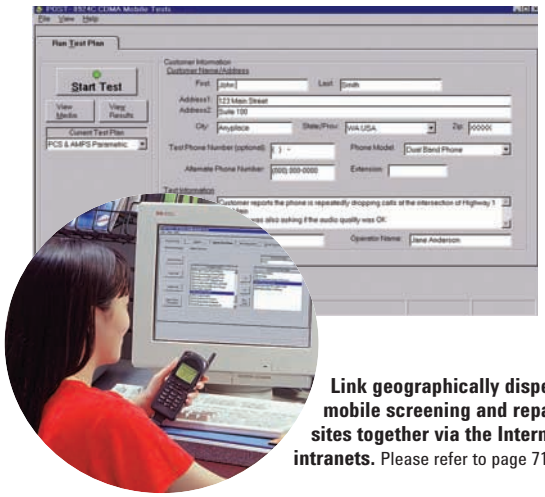
E6474A Wireless Network Optimization Platform

Troubleshoot your complex networks faster and more efficiently. Please refer to page 66

E6474A Base Station Over-air Maintenance Tool

Enabling fast, easy, proactive base station testing.
Please refer to page 62

E8298A Point of Service Test (PoST) Server Software

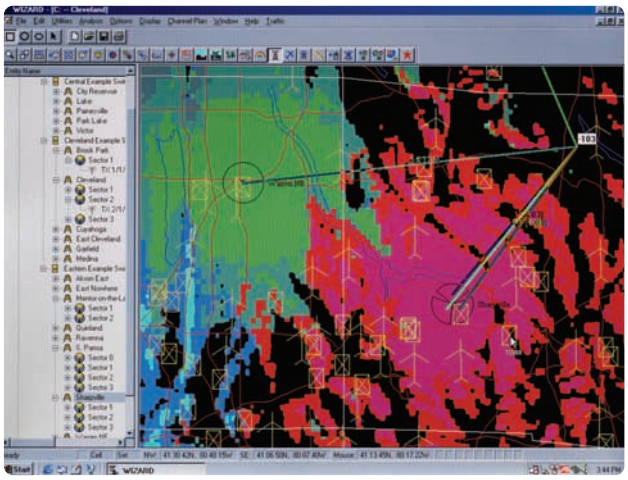


Link geographically dispersed mobile screening and repair sites together via the Internet or intranets. Please refer to page 71

53140 Series Microwave Counter/ Power Meter/DVMs

Combines a microwave counter, a true power meter and a dc DVM into one portable package.
Please refer to page 76

E6482A Wizard



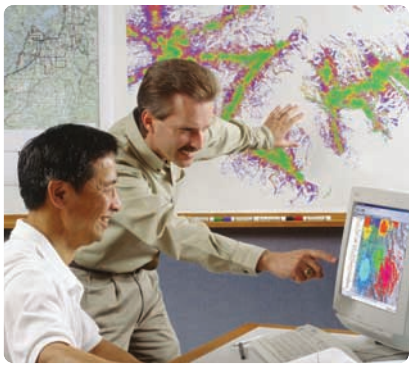
Delivering detailed network planning – anytime, anywhere
Please refer to page 60

Faster time to profit

We offer market-leading solutions for interconnect, process automation, operations support, and roaming management as well as comprehensive engineering consulting services. Our software packages can be integrated together or with other vendors' solutions under one unified architecture.

We provide end-to-end solutions to help wireless service providers accelerate the deployment and performance of next generation wireless networks – so you can make the dream of increased revenues from new services real.

RF Consulting Services



RF Engineering Consulting, Fixed Network Engineering, Automatic Frequency Planning Services, RF Network Optimization
Please refer to page 72

RECON Wireless Market Reports

Let Agilent help you keep the competitive edge in today's evolving wireless industry with benchmarking services.
Please refer to page 67

Wireless Communications Instruments & Systems

Table of Products versus Systems and Measurements

Legend

1 Supports FLEX, FLEX-TD, and POCSAG
2 8920 does LTR, MPT 1327, and EDACS formats
3 RF source only, analog only
4 Available with TDMA only
5 Applicable to these design areas

Products	Digital Systems																			Analog Systems								
	3GPP W-CDMA	*Bluetooth*	CDMA	CDMA (PCS)	cdma2000 (IS-2000)	CDPD	CT2-CA1	CT3	DCS 1800	DECT	EDGE	GSM 900	PCS 1900	PDC	PHS	TDMA (NADC)	TDMA (NADC) PCS	TETRA	GPRS	AM	AMPS	FM/PM	JTACS	NAMPS	NMT 450/900	NTACS	TACS/ETACS	TRUNKING
16700 Series Logic Analysis System																												
3272 Powered In-Circuit Test System	•		•	•	•	•	•	•	•	•		•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	
4287A RF LCR Meter																												
4352S VCO/PLL Signal Test System																												
4396B Network/Spectrum/Impedance Analyzer																												
53140, 53150 Series Microwave Counters																												
53310A Option 031 Modulation Domain Analyzer						•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	
54800 Series Oscilloscopes																												
5DX Automated X-Ray Inspection System																												
6032A, 6600 and 66000 Series dc Power Supplies	•		•	•	•						•	•	•			•	•			•	•		•		•	•	•	
66319B/D and 66321B/D Mobile Communications dc Sources	•	•	•	•	•																				•			•
71910A Wideband Receiver																				•		•						
83236B PCS Interface				•																								
84000 RFIC Series Test System	•		•	•	•				•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	
8560 EC-Series High-Performance Spectrum Analyzer																				•	•	•						
85672A Spurious Response Measurements Utility for 8560E-Series Spectrum Analyzers																												
8648 and ESG-A/AP Series Analog Signal Generators																				•		•						
8648A Option 1EP Signal Generator with Built In Pager Encoder																				•		•						
8712/ES and 8714ET/ES RF Network Analyzers with Option 100 and Option 101																												
8643/44/62/63/64/65 Signal Generators																				•	•	•	•	•	•	•	•	•
8753ET/ES and 8719ET/ES RF/MW Vector Network Analyzers																												
8920B RF Communications Test Set														•	•	•	•			•	•	•	•	•	•	•	•	2
8922M/P GSM Mobile Test Set									•			•	•															
8924E CDMA Manufacturing Test Set			•	•																	•		•	•		•	•	
8935 Series Base Station Testers			•	•		4						•	•			•	•				•	•	•	•		•	•	
89400 Series Vector Signal Analyzers	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•
89600 Series Vector Signal Analyzers	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•
8960 Series 10 Wireless Communications Test Set	•		•	•	•				•			•	•			•	•		•		•							
8960 Series 10 Wireless Communications Test Set – E1963A W-CDMA Mobile Test	•																											
93000 SOC Series Test System	•	•	•	•	•				•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	
Agilent Internet Advisor																												
E1852A Bluetooth Test Set		•																										
E2011E TestExec SL 4.1																												
8960 Series 10 Wireless Test Set – E6701 GPRS Lab Application																			•									

Table of Products versus Systems and Measurements (cont.)

Measurements																					Mobile R&D	Mobile Manufacturing	Basestations	Installation	Service & Repair	
Battery Simulators	Call Processing	Current Draw	Design & Simulation	Device Trans./Reflec.	Device Complex Imp.	Device Group Delay	Fading Simulation	Functional Test	In-Circuit Test	T1/E1 Circuit Test	Receiver Out-of-Chan.	Receiver In-Channel	Signaling/Protocol	Spectrum Analysis	Spectrum Monitoring	Transmitter Power	Transmitter Frequency	TX Modulation	TX Amplitude						
																				•	•	•			**16700** Series Logic Analysis System
									•	•											•				**3272** Powered In-Circuit Test System
					•																•				**4287A** RF LCR Meter
																				•					**4352S** VCO/PLL Signal Test System
				•	•	•								•		•			•	•	•				**4396B** Network/Spectrum/Impedance Analyzer
																•	•			•	•		•	•	**53140, 53150** Series Microwave Counters
				•		•		•			•	•					•			•	•				**53310A** Option 031 Modulation Domain Analyzer
																				•	•	•			**54800** Series Oscilloscopes
								•													•				**5DX** Automated X-Ray Inspection System
		•																				•			**6032A, 6600 and 66000** Series dc Power Supplies
		•	•					•												•	•			•	**66319B/D and 66321B/D** Mobile Communications dc Sources
											•	•		•						•	•	•			**71910A** Wideband Receiver
																					•			•	**83236B** PCS Interface
		•		•	•	•		•			•	•		•		•	•	•	•	•	•				**84000** RFIC Series Test System
			•	•					•					•	•	•	•		•	•	•		•		**8560** EC-Series High-Performance Spectrum Analyzer
														•						•	•		•		**85672A** Spurious Response Measurements Utility for 8560E-Series Spectrum Analyzers
																				•	•		•		**8648 and ESG-A/AP** Series Analog Signal Generators
								•												•	•				**8648A Option 1EP** Signal Generator with Built In Pager Encoder
				•	•	•																	•	•	**8712/ES and 8714ET/ES** RF Network Analyzers with Option 100 and Option 101
																									8643/44/62/63/64/65 Signal Generators
				•	•	•														•	•				**8753ET/ES and 8719ET/ES** RF/MW Vector Network Analyzers
	•							•			•	•		•		•	•	•	•	•	•		•		**8920B** RF Communications Test Set
•						•			•	•		•		•	•	•	•	•	•		•				**8922M/P** GSM Mobile Test Set
	•							•			•	•		•		•	•	•	•				•		**8924E** CDMA Manufacturing Test Set
								•			•	•		•		•	•	•	•			•	•	•	**8935** Series Base Station Testers
														•		•	•	•	•	•	•				**89400** Series Vector Signal Analyzers
														•		•	•	•	•	•	•				**89600** Series Vector Signal Analyzers
•					•				•	•			•	•	•	•	•	•			•				**8960** Series 10 Wireless Communications Test Set
																				•	•				**8960** Series 10 Wireless Communications Test Set – E1963A W-CDMA Mobile Test
•	•	•	•		•			•	•		•		•	•	•	•	•	•							**93000** SOC Series Test System
				•	•	•														•		•			**Agilent Internet Advisor**
								•				•				•	•	•	•	•	•			•	**E1852A** Bluetooth Test Set
								•													•				**E2011E** TestExec SL 4.1
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E4406A VSA-Series Transmitter Tester	•	•	•	•	•				•		•	•	•	•		•	•								•			
E4440A, E4443A and E4445A PSA Series High-Performance Spectrum Analyzers	•	•	•	•	•						•	•			•	•				•								
E4991A RF Impedance/Material Analyzer																												
E5070A and E5071A RF Network Analyzers																												
E5500 Phase Noise Measurement Solution																												
E5700A Handset PA ValiFire Design Validation System	•										•																	
E5904B Trace Port Analyzer																												
E6392B and E6393A/B Mobile Station Test Sets			•	•	•				•			•	•								•							
E6474A Base Station Over-Air Maintenance Tool			•	•	•																							
E6474A Wireless Network Optimization Platform	•		•	•	•							•	•			•	•											
E6482A Wizard	•		•	•	•				•			•	•	•	•	•	•				•		•	•		•	•	•
E6560A cdma2000/IS-95 Wireless Test Manager			•	•	•																•							
E7400 Series of Drive Test Solutions	•		•	•	•				•			•	•			•	•											
E7580A ProBER 2, 2 Mb/s Handheld Test Set																												
E8285A CDMA Mobile Station Test Set			•																		•	•	•	•		•	•	
E8900 Advanced Design System	•	•	•	•	**5**	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	
ENA Series RF Vector Network Analyzers																												
EPM, EPM-P Series Power Meters	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•
ESA-E Series Portable Spectrum Analyzers	•	•	•	•	•				•		•	•	•	•		•	•	•		•		•						
ESG Family RF Digital and Analog Signal Generators	•	•	•	•	•				•	•	•	•	•	•	•	•	•	•	•	•		•						
GS-8000 Functional Test Solution	•		•									•							•									
E8421A Wireless Test Fixture	•		•	•	•	•	•	•	•	•		•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•
N1610A/B, N1660A Dual Line DS1/0 Service Advisor Test Tablet	•		•	•	•	•	•	•	•	•		•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•
N1725A auroraDuet /N1726A ITU auroraDuet – Complete Primary and Basic Rate ISDN Testers	•		•	•		•	•	•	•	•		•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•
N1735A auroraTempo Frame Relay/BER Tester	•		•	•		•	•	•	•	•		•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•
N1901A cdma2000/1x Mobile RF Performance Test System			•	•	•																							
N4256A Amplifier Distortion Test Set																												
N4441/42/43/44/46A Balanced Measurement Systems																												
PNA Series – RF and Microwave Vector Network Analyzer Family																												
Semiconductor Component Solutions	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
SJ10 Automated Optical Inspection System																												
TS-50 Fixturing for Automated Test of Wireless Products																												
VEE Pro Programming Language																												
VXI General Purpose Functional Test																												
Test Fixtures	•		•	•	•	•	•	•	•	•		•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•

Table of Products versus Systems and Measurements (cont.)

Measurements																							
Battery Simulators	Call Processing	Current Draw	Design & Simulation	Device Trans./Reflec.	Device Complex Imp.	Device Group Delay	Fading Simulation	Functional Test	In-Circuit Test	T1/E1 Circuit Test	Receiver Out-of-Chan.	Receiver In-Channel	Signaling/Protocol	Spectrum Analysis	Spectrum Monitoring	Transmitter Power	Transmitter Frequency	TX Modulation	TX Amplitude	Mobile R&D	Mobile Manufacturing	Basestations	Installation	Service & Repair	
														•		•	•	•	•	•	•				**E4406A** VSA-Series Transmitter Tester
														•	•	•	•	•	•	•		•		•	**E4440A, E4443A and E4445A** PSA Series High-Performance Spectrum Analyzers
			•		•															•					**E4991A** RF Impedance/Material Analyzer
																				•	•				**E5070A and E5071A** RF Network Analyzers
																				•		•			**E5500** Phase Noise Measurement Solution
			•																	•					**E5700A** Handset PA ValiFire Design Validation System
																				•	•	•			**E5904B** Trace Port Analyzer
	•	•						•			•				•	•	•	•	•					•	**E6392B and E6393A/B** Mobile Station Test Sets
	•												•	•	•	•	•	•	•			•	•	•	**E6474A** Base Station Over-Air Maintenance Tool
	•												•	•	•	•	•	•	•			•	•		**E6474A** Wireless Network Optimization Platform
																									E6482A Wizard
	•							•				•								•	•			•	**E6560A** cdma2000/IS-95 Wireless Test Manager
	•												•	•	•	•	•	•	•			•	•		**E7400** Series of Drive Test Solutions
										•													•	•	**E7580A** ProBER 2, 2 Mb/s Handheld Test Set
	•		•				•				•	•		•		•	•	•	•	•	•		•		**E8285A** CDMA Mobile Station Test Set
		•	•	•	•	•	•				•	•		•		•	•	•	•	•					**E8900** Advanced Design System
				•	•	•														•	•				**ENA Series** RF Vector Network Analyzers
																•				•	•	•	•	•	**EPM, EPM-P Series** Power Meters
			•	•				•	•		•	•		•	•	•	•	•	•	•	•		•	•	**ESA-E Series** Portable Spectrum Analyzers
											•	•								•	•	•	•		**ESG Family** RF Digital and Analog Signal Generators
	•												•							•	•				**GS-8000** Functional Test Solution
																					•				**E8421A** Wireless Test Fixture
	•									•													•		**N1610A/B, N1660A** Dual Line DS1/0 Service Advisor Test Tablet
	•								•														•		**N1725A auroraDuet /N1726A** ITU auroraDuet – Complete Primary and Basic Rate ISDN Testers
									•														•		**N1735A** auroraTempo Frame Relay/BER Tester
•						•				•	•		•		•	•	•	•	•						**N1901A** cdma2000/1x Mobile RF Performance Test System
																						•			**N4256A** Amplifier Distortion Test Set
				•	•	•														•					**N4441/42/43/44/46A** Balanced Measurement Systems
				•	•	•														•		•			**PNA Series** – RF and Microwave Vector Network Analyzer Family
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																					•				**SJ10** Automated Optical Inspection System
																				•	•				**TS-50** Fixturing for Automated Test of Wireless Products
																									VEE Pro Programming Language
								•												•	•	•		•	**VXI** General Purpose Functional Test
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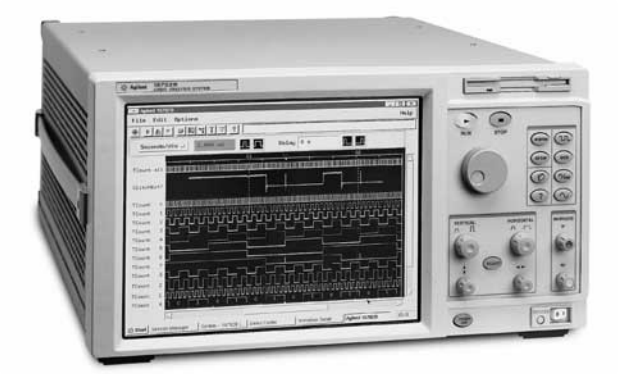
16700 Series Logic Analysis Systems

Features

- integrated debugging and analysis tools cover multiple measurement domains – from signals to source code
- available state, timing, oscilloscope, pattern generation and emulation modules correlate measurements to discover cause/effect relationships
- multiple time-correlated views of data for viewing signal integrity and source code execution
- cross domain displays minimize the mysteries of hardware-software interaction, which helps the design team track symptoms back to root causes quickly and confidently



Product Information

The 16700 Series logic analysis systems offer the power of combined logic analysis, emulation, pattern generation, and oscilloscope measurements in a simple, cost-effective package. With a large color display, on-screen setup assistant, and intuitive user interface, your design team can finally work together to find and solve the toughest problems.

Connection to Debugger Tools

Connections are available to the industry's leading debugger tools for high-level language support.

Processors Supported with Emulation Probe

Agilent provides support for over 200 microprocessors, micro-controllers and embedded-core processors.

Ordering/Contact Information

For more information about the 16700 Series analysis systems please visit our Web site at:

www.agilent.com/find/las-data

System/Circuit Design and Validation

E5904B Trace Port Analyzer

Features

- passively collects trace information at clock speeds up to 200 MHz
- 2 M trace depth
- supports data port widths of 4, 8, and 16-bit
- double or single edge clocking
- supports automatic tracking of target system voltages for 1.8 - 3.3 V logic families
- 1.5 ns/1 ns setup/hold
- hot plugging
- 400 kbps download speed
- 10/100BaseT host interface
- ARM ADS version 1.1 and Greenhills MULTI 2000 debugger support

The E5904B supports ARM's Real Time Trace (RTT) and Real Time Monitor (RTM) for full speed, real-time system debug of ASICs with ARM7 or ARM9 cores and the ARM Embedded Trace Macrocell (ETM). This analyzer offers an integrated JTAG emulator and Trace Port Analyzer (TPA). The JTAG emulator can support raw TCK rates up to 37 MHz and includes support for synchronized RTCK based target systems. The E5904B also supports a variety of ETM implementations including single and dual ETM connector pin out definitions and half-rate clocking.

This single box, network based product, provides a powerful development tool for the embedded system developer and can be integrated together with the Agilent 16700 Series logic analyzer systems for coordinated system analysis.

System/Circuit Design and Validation

E4406A VSA-Series Transmitter Tester

Features

- one-button accurate W-CDMA, cdma2000, GSM/EDGE, NADC and PDC based measurements
- fast in-band modulation analysis
- exceptional accuracy and amplitude flatness
- simple, measurement-based user interface
- new baseband I/Q input option
- new 89601A software support for increased flexibility and enhanced demodulation capability

The E4406A VSA-series transmitter tester offers an excellent combination of speed and accuracy for making standards based measurements. The E4406A is designed to increase manufacturers' throughput while providing higher confidence in test results, the potential for increased profitability and the ability to provide tighter specifications to their customers.

One-button measurements make it easy to obtain test results, and a large, high-resolution color display makes results easy to view and interpret. With built-in, standards-based tests and state-of-the-art digital IF technology, engineers can be confident their test results are accurate. When combined with the Agilent ESG-D series of digital signal generators, the E4406A VSA transmitter tester provides a powerful, transmit-receive solution for wireless equipment manufacturers.

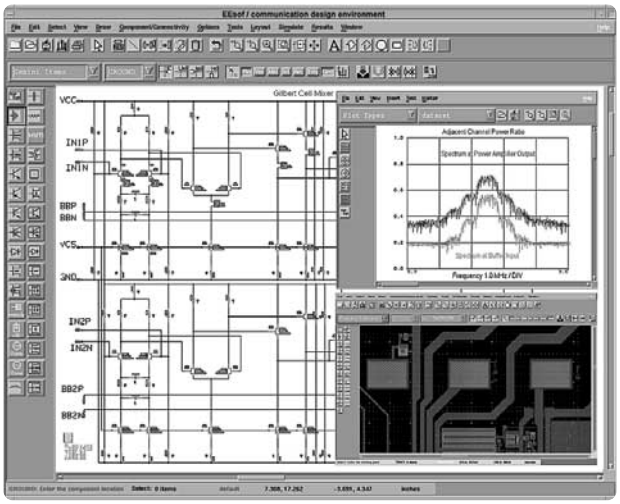
Please visit our Web site at:
www.agilent.com/find/vsa

System/Circuit Design and Validation

E8900 Advanced Design System

Features

- provides superior simulation technology and performance
- supported by the major foundries
- integrates with your design flow
- provides the most accurate and comprehensive set of wireless design libraries
- easy to use, on PC or UNIX platforms
- provides expert help for ease of design with application-specific DesignGuides
- integrates with Agilent instrumentation to provide design and verification solutions



Advanced Design System (ADS) is a complete, integrated EDA software solution for communications product design. ADS allows designers of wireless and wireline communications components, systems, and products to accurately simulate designs under complex, real-world conditions.

Advanced Design System offers the following application specific suites, wireless design libraries, and DesignGuides:

RFIC Designer (E8889)
Communication Systems Designer (E8852)
Microwave Circuit Designer (E8912)
RF Board Designer (E8943)
DSP Designer (E8821)
3GPP W-CDMA Design Library (E8875)
EDGE Design Library (E8879)
cdma2000-Compliant Design Library (E8877)
5 GHz WLAN Design Library (E8874A)
1xEV-DO Design Library (E8878A)
***Bluetooth* DesignGuide (E5616A)**

For more information please visit our Web site at:
www.agilent.com/eesof-eda

System/Circuit Design and Validation

ESG Signal Generator

Features

- supports wireless communications standards including 3GPP W-CDMA, cdma2000, cdmaOne, EDGE, GSM, NADC, PDC, DECT, TETRA, *Bluetooth*, 1xEV-DO, 802.11a, and 802.11b
- expandable architecture with broad frequency coverage – 250 kHz to 1, 2, 3, 4 and 6 GHz
- 160 MHz of RF bandwidth with external I/Q inputs
- .32 Ms memory
- 32 Msamples (160 megabytes) waveform playback
- differential I/Q outputs
- internal I/Q calibration
- 16-bit
- superior absolute level accuracy

The ESG signal generator is ideally suited to meet today's receiver test, component test, and local oscillator applications. It is built to adapt to changing test requirements in the dynamic environment of wireless communications test. The expandable card cage architecture and flash ROM firmware make it easier to install new capabilities in your existing instrument. PC connectivity is provided through 10 baseT LAN, GP-IB, or RS-232. This connectivity enables Signal Studio (Windows® utility) to be used to create and store waveforms into 6 gigabytes of baseband memory. The internal baseband generator has 80 MHz RF bandwidth, 100 MHz sample rate, and a 32 Msamples memory. This is ideal for generating the higher data and symbol rates of 3G and broadband wireless communications systems.

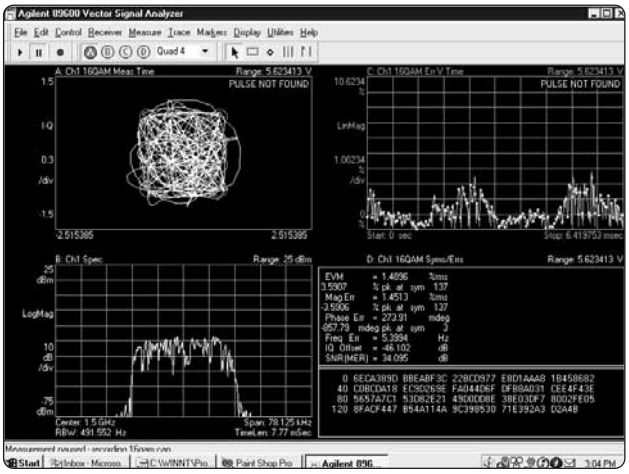
Please visit our Web site at:
www.agilent.com/find/esg

System/Circuit Design and Validation

89600 Series Vector Signal Analyzers

Features

- vector signal analyzers DC to 40 MHz and DC to 2.7 GHz
- 36 MHz bandwidth (89640A), 39 MHz bandwidth (89610A)
- PC based software in Windows NT®
- vector modulation analysis (optional)
- 192 Msamples memory (optional)
- VXI based hardware
- 100 Msamples/sec, 12 bit digitizer
- PC-based software in Windows NT, Windows 2000®
- 78 MHz bandwidth in I + jQ mode with 2nd channel (optional)



- 192 Msamples signal capture memory (optional)
- built-in math functions
- 2.5G/3G, wireless LAN, *Bluetooth* formats

Agilent 89600 Series Vector Signal Analyzers

The new 89600 Series VSA combines frequency domain, time domain, and modulation domain analysis to provide you with the set of measurement tools you need in today's fast moving digital communications market, especially wideband formats such as those found in LMDS, wireless LAN, *Bluetooth*, and other broadband systems.

Agilent offers two systems, 89610A, DC to 40 MHz, and 89640A,DC to 2.7 GHz, each in a compact 4-slot mainframe.

Measurements are made on baseband, IF, or RF signals, with a wide selection of modulation formats (BPSK,QPSK,OQPSK,DQPSK,Pi/4DQPSK,2FSK,4FSK,8PSK,16QAM, 32QAM,64QAM,256QAM and much more),variable symbol rates, and variety of filters. Display your measurement results using constellation, eye, trellis, spectrum or time.

Please visit our Web site at:
www.agilent.com/find/vsa

System/Circuit Design and Validation

E4440A, E4443A, E4445A PSA Series Performance Spectrum Analyzers

Features

- in-depth 2G/3G digital modulation measurement personalities
- phase noise measurement personality
- power measurement suite (channel power, OB, ACP, multi-carrier, CCDF, HD, burst power, TOI, SEM and spurious)
- three frequency ranges 3Hz to 6.7 GHz, 13.2 GHz and 26.5 GHz
- industry's fastest low level spur search
- industry's most accurate spectrum analyzer
- complete set of detectors including rms
- 2 dB step attenuator
- 160 resolution bandwidth settings

Agilent expands the PSA platform to include new measurements and frequency ranges.

Easily analyze all your RF, 2G and 3G signals in one instrument. The PSA series makes fast, accurate spectrum measurements and the most in-depth 2G/3G power and digital demodulation measurements easily—helping you evaluate the critical margins and tradeoffs in base station performance, efficiency, and cost.

Use the one-button setups to make standard-based W-CDMA, cdma2000, cdmaOne, GSM with EDGE and NADC/PDC measurements. Analyze parameters such as code domain power, composite EVM, QPSK EVM, power versus time, EDGE EVM, ORFS, composite rho, band spurs and more.

The new phase noise measurement personality makes phase noise evaluation easy. Display the phase noise in log plot format over selected offset frequency ranges. Measure the phase noise at a spot frequency or integrate the noise over a range of frequencies and evaluate rms phase jitter and residual FM.

The PSA series gives you the features you have every right to expect: speed (49 measurements/sec), accuracy (±0.67dB), sensitivity (–153dBm), raw range (1Hz to 8MHz), third order dynamic range (113 dB) and a wide range of digital modulation analysis in three frequency ranges 3 Hz to 6.7 GHz, 13.2 GHz and 26.5 GHz.
Please visit our Web site at: **www.agilent.com/find/psa**

System/Circuit Design and Validation

Handset PA ValiFire

Features

- EDGE and 3GPP handset power amplifier design verification
- Pre-configured EDGE and 3GPP simulation and test in one environment
- Correlation between simulation and measurement results
- Test automation to sequence through multiple measurements or devices

A complete, integrated system for handset PA design and test

Handset PA ValiFire system is a unique combination of hardware, software, and test expertise that comes pre-configured to perform EDGE and 3GPP simulations and tests - thus integrating the virtual design and physical prototype worlds. Only Agilent Technologies has the necessary design software and test and measurement expertise to develop this design validation system.

Handset PA ValiFire focuses on these specs for EDGE and 3GPP:

EDGE

- power out versus time
- power out versus slope control
- error vector magnitude (EVM)
- power-added efficiency (PAE)

3GPP

- adjacent channel leakage ration (ACLR)
- power out
- PAE
- EVM

For more information, please visit our Web site at: **www.agilent.com/find/valifire**

54800 Series Oscilloscopes

Agilent Infiniium 54800 series oscilloscopes combine the high performance of digital technology with the simple look and feel of analog oscilloscopes– including dedicated, color-coded knobs for each channel.

The familiar Windows-based interface simplifies even the toughest measurements. To check rise time and other key parameters, just drag and drop an icon with the mouse. To zoom, simply draw a box around the area of interest and click inside.

Share, store and document your work with built-in LAN connectivity and extensive file storage. Optional VoiceControl lets you keep both hands on your work while you operate the scope. Plus, new web-enabled operation provides remote control and display.

- simple tasks are simple again; advanced features are easy to access and control
- extensive connectivity makes it easy to document and share your work
- VoiceControl option enables hands-free operation
- communications mask test kit option simplifies ANSI, ITU-T and IEEE conformance testing
- web-enabled operation lets you run measurements remotely from any (Java enabled) browser
- new USB test option with embedded MatLab scripts
- new high performance model 54846A available
- new family of high bandwidth active probes and accessories simplify probing to 4 GHz

Please visit our Web site at:
www.agilent.com/find/infiniium

Infiniium Oscilloscopes

Model numbers	**54810A**	**54815A**	**54820A**	**54825A**	**54835A**	**54845A**	**54846A**
Bandwidth	500 MHz	500 MHz	500 MHz	500 MHz	1 GHz	1.5 GHz	2.25 GHz
Channels	2	4	2	4	4	4	4
Sample rates	1 GSa/s	1 GSa/s	2 GSa/s	2 GSa/s	2 or 4 GSa/s	8 or 4 GSa/s	8 or 4 GSa/s
Update rate	Up to 2,100 waveforms per second						
Trigger modes	Edge, glitch, pattern, delay by time/events, setup/hold violation, pulse width, rise/fall time violation, video, line						
Storage	5.0 GB hard drive, 3.5" 1.44 MB/120 MB Super Disk						
Interfaces	GPIB, RS-232, Centronics, 10/100 BaseT LAN, USB, VGA, PS/2, keyboard						

Component/Circuit Verification

ESA-E Series Portable Spectrum Analyzers

Features

- third order intercept: +12.5 dB
- ACPR 1st offset dynamic range: –67 dBc
- average displayed noise level: –153 dBm
- EVM modulation analysis
- 2G/3G multi-format RF power measurements
- flexible platform
- frequency coverage to 26.5 GHz
- seven measurement personalities

The Agilent ESA-E series spectrum analyzers with the modulation analysis measurement personality provide the flexibility of general-purpose spectrum analysis combined with the numerical and visual tools to help you quickly identify and quantify impairments to digitally modulated signals for all major cellular standards. Essentially, the ESA-E now provides you with spectrum and vector measurements in one tool, thus reducing your need for additional equipment, preserving measurement accuracy, and minimizing system development time.

The Agilent ESA-E series also offer quick and easy-to-use RF power measurements for all major 2G and 3G standards. The primary applications for the RF power measurements include handset power-amplifier research and development and base-station power-amplifier manufacturing in the 2G and 3G cellular communications industry. The ESA offers one-button, format-specific setups including, channel power, occupied bandwidth, multi-offset ACPR, CCDF, harmonic distortion and burst power measurements.

The ESA-E offers the most expandable, most rugged platform available, and can tailor a spectrum analyzer to customers' specific needs – with the market's most scalable price and performance. The ESA-E series spectrum analyzer with seven measurement personalities (GSM/GPRS, cdmaOne, *Bluetooth*, modulation analysis, phase noise, cable fault location and CATV) represents an excellent-value, mid-performance spectrum analyzer with enough vector analysis to provide the configuration flexibility to ensure customers' products are brought to market quickly, at the lowest price.

Please visit our Web site at: **www.agilent.com/find/esa**

Component/Circuit Verification

E4991A RF Impedance/Material Analyzer

Features

- basic accuracy ±0.8%
- 3GHz impedance direct read-out
- Windows-styled user interface
- sweep parameters (frequency, ac level, dc bias)
- built-in VBA programming function
- various test fixture for components
- data transfer through the LAN interface
- direct read-out permittivity, permeability [option]
- reliable on-wafer measurement [option]

The new Agilent E4991A RF impedance/material analyzer offers ultimate impedance measurement performance and powerful built-in analysis function. It will provide innovations in R&D of components and circuit designers who evaluate components in the range of 3 GHz. The E4991A uses an RF-IV technique, as opposed to the reflection measurement technique, for more accurate impedance measurement over wide impedance range. Basic impedance accuracy is ±0.8%. High Q accuracy enables low-loss component analysis. The internal synthesizer sweeps frequency from 1 MHz to 3 GHz with 1 MHz resolution.

Component/Circuit Verification

4396B Network/Spectrum/Impedance Analyzer

Features

- frequency range: 100 kHz to 1.8 GHz
- full vector network and spectrum measurement and analysis
- wide dynamic range network measurement with fast sweep speeds
- ±0.05 dB/±0.3º dynamic magnitude/phase accuracy
- fast narrow band spectrum measurement
- impedance analysis option and test kit available
- ±1.0 dB overall level accuracy for spectrum analysis
- –150 dBm/Hz sensitivity for spectrum analysis
- time-gated spectrum analysis option

The 4396B provides excellent RF vector network, spectrum, and optional impedance measurements for lab and production applications. In the lab, evaluate your designs completely and accurately with one instrument. The 4396B reduces learning and testing time so you get precision measurements with improved efficiency. On the production line, increase your throughput with the 4396B, which makes it faster and easier to switch between different measurement types or tests. You can optimize production testing with many other capabilities. The 4396B is a breakthrough in test instruments, giving you outstanding performance at an attractive price.

Please visit our Web site at:
www.agilent.com/find/impedance

Component/Circuit Verification

53310A Option 031 Modulation Domain Analyzer

Features

- 100 Hz to 2.5 GHz
- optimized for mobile communications product tests including DECT, CT2, TDMA and CT3
- advance triggering on frequency or time interval measurement eliminates complexity
- single-button operation for settling time analysis
- fast histograms facilitate statistical characterization

Automatic analysis of mean frequency and peak-to-peak deviations

This analyzer provides an automatic analysis of mean frequency and peak-to-peak deviation of complex modulation signals, such as the DECT and the CT2, which are commonly used in the digital cordless phones. The parameters are automatically calculated from high-speed histograms that indicate frequency deviation results derived from several thousand time measurements. Conventional measurement devices cannot measure the TDMA burst of carriers, but the high-resolution RF input of the 53310A allows you to measure modulations on the TDMA carriers directly.

Automatic measurement of settling times

The 53310A performs simple and automatic measurements of synthesizer settling times. Jitter analysis is simplified with automated mean, standard deviation and probability functions. Without dead time between measurements (traditionally found in frequency counters), analyzer signals are quickly measured and information is not lost.

Component/Circuit Verification

71910A Wideband Receiver

Features

- high-performance microwave spectrum analyzer plus super-wideband IF receiver
- input frequency range: 100 Hz to 26.5 GHz
- receiver IF/video bandwidth: 10 MHz to 100 MHz (in 10% increments)
- receiver demodulation outputs: IQ, pulse, AM, FM
- receiver IF outputs: 70 MHz, 140 MHz, 321.4 MHz
- up to 78 MHz wideband analysis (with 89610A vector signal analyzer)

Wideband Radio System

A wider bandwidth testing capability is in great demand by the current radio communication market. For example, systems use a digital, time-based signal, such as bursted and time division multiplex signals.

In Combination with the 89410A or 89610A VSA

Combine the 71910A wideband receiver with a 2-channel 89410A or 89610A vector signal analyzer to double the analyzer bandwidth. When used in the "Ch1 + jCh2" input mode, the 89610A can display a 78 MHz-wide spectrum (20 MHz, 89410A). This mode supports all basic single-channel measurements, including time, frequency, and analog or digital modulation analysis. Similarly, the 89610A (40MHz bandwidth) can measure up to 78 MHz bandwidth by combining it with a 71910A.

For information on 89410A see "Product Note 89400-13 Extending Vector Signal Analysis to 26.5 GHz with 20 MHz Information Bandwidth" literature number **5964-3586** and for 89610A, see "Extending Vector Signal Analysis to 26.5 GHz with 78 MHz Information Bandwidth Product Note", literature number **5988-0257EN**.

Component/Circuit Verification

PNA Series - RF and Microwave Vector Network Analyzer Family

Features

- two-port, four receiver RF analyzers

  (E8356A—300 kHz to 3 GHz, E8357A—300 kHz to 6 GHz, E8358A—300 kHz to 9 GHz)
- two-port, three receiver RF analyzers

  (E8801A—300 kHz to 3 GHz, E8802A—300 kHz to 6 GHz, E8803A—300 kHz to 9 GHz)
- three-port, four-receiver RF analyzers

  (N3381A—300 kHz to 3 GHz, N3382A—300 kHz to 6 GHz, N3383A—300 kHz to 9 GHz)
- two port, four receiver microwave analyzer

  (E8364A—45 MHz to 50 GHz)
- ideal for characterizing and testing wireless devices such as filters, duplexers, and amplifiers
- up to 143 dB dynamic range with direct receiver access on RF models
- up to 134 dB dynamic range with direct receiver access on the microwave model
- 35 µs/point sweep speed
- new user interface with Windows 2000 operating system
- advanced programming capabilities using COM/DCOM
- built-in-help system and integrated documentation
- USB, LAN, GPIB, parallel, serial and VGA connectivity
- internal electronic calibration (ECal)

PNA Series' RF and microwave vector network analyzers provide the combination of speed and accuracy for the demanding needs of today's component test requirements. PNA Series' network analyzers are designed to expedite the overall testing process. The PNA Series' analyzers common distinctions include: high performance, a fully integrated Windows 2000 user interface, COM automation model, and embedded context-sensitive help, 16 independent measurement channels, built-in hard drive and supplied mouse. The automation and self-help tools make the instrument well-suited for both R&D and manufacturing. Sliding load, multiple line lengths for TRL, and adapter removal calibration techniques are included in all PNA models.

For more information, please visit our Web site at: **www.agilent.com/find/pna**

ENA Series RF Vector Network Analyzers

E5070A—300 kHz to 3 GHz
E5071A—300 kHz to 8.5 GHz

Features

- built-in two to four test ports
- fast multiport measurement
- max 12.8 µs/point
- full two- to four-port calibration
- balanced conversion
- high accuracy
- 122 dB dynamic range
- 0.001dB rms trace noise
- matching circuit simulation
- port characteristic impedance conversion
- nine measurement channels
- nine traces per channel

The ENA Series offers accurate measurements on multiport passive components such as duplexers and couplers. Built-in test ports (up to four ports) are available for both the E5070A (300 kHz to 3 GHz) and the E5071A (300 kHz to 8.5 GHz) models. High dynamic range of up to 125 dB[1] and trace noise of 0.001 dB rms (at 4 GHz with 3 kHz IF bandwidth), satisfies the needs of testing pass band ripple of today's low insertion loss filters.

The ENA Series offers built-in balanced measurements which makes it the ideal instrument for making accurate measurements on advanced handset components such as balanced SAW filters. To respond to needs of testing balanced components today and into the future, the ENA Series delivers mixed mode S-parameter measurements with matching circuit embedding/de-embedding and impedance conversion capabilities. The nine measurement channels and nine traces per channel give users more flexibility to view all pertinent test parameters.

The ENA Series provides a Windows-based user interface and large 10.4-inch LCD that eases monitoring of multiple traces. Along with navigation keys and touch-screen operation, the ENA Series is easy to operate on a test bench. The instrument has built-in interfaces for GPIB and 10/100Base-T Ethernet, as well as two USB ports, VGA and parallel-printer interfaces.

Additionally, programmers can develop programs quickly by accessing the VNA measurement and analysis objects either via COM or SCPI interfaces. Microsoft® Visual Basic for Application (VBA) is bundled in the instrument for rapid development of test routines, and allows the operator interface to be custom tailored to the user's interfaces.

For more information, please visit our Web site at:
www.agilent.com/find/ena

1 Typical

Component/Circuit Verification

N4441/42/43/44/46A Balanced Measurement Systems

Features

- source attenuators and bias networks
- display conventional (single-ended) and mixed mode S-parameters
- re-normalize test data for non-50-ohm devices
- achieve high measurement accuracy with full four-port vector error correction
- perform fast, accurate, automatic calibrations with easy to use N4430A four-port electronic calibration (ECal) module
- calculate important parameters with powerful user-defined displays
- gain additional insight with time domain analysis option

Agilent's balanced measurement systems make complex characterization of fully balanced or balanced-to-single-ended RF and microwave components a lot easier. Devices such as differential filters or amplifiers, baluns, and balanced transmission lines that were once difficult to measure using a conventional two-port measuring system, can now be completely and accurately tested with Agilent's balanced measurement solutions. These test solutions combine an Agilent vector network analyzer with an S-parameter test set and Windows-based software for differential measurements covering frequencies from 30 kHz up to 20 GHz. An external PC equipped with an IEEE-488 GPIB card is also required. You can now achieve true multiport vector-error corrected S-parameter measurements of both active and passive circuits.

Component/Circuit Verification

E5500 Phase Noise Measurement Solution

Features

- automated phase noise test
- results in seconds
- easily programmable

Agilent's completely automated phase noise system can achieve test times of less than three seconds over a 1 kHz to 100 kHz offset range and less than 15 seconds over a 10 Hz to 1 MHz offset range, making it particularly suitable for high-throughput manufacturing applications.

The E5500 A-series phase noise measurement system is designed to minimize automated test equipment (ATE) costs and production-test times for device manufacturers. The benchtop E5500 B-series systems offers flexible test configuration and extended measurement capability for R&D engineers.

The client-server software architecture and industry-standard SCPI interface provide easy integration with existing production-test systems and allow customers to use their existing sources, computers, and signal analyzers to save space and lower their investment risk.

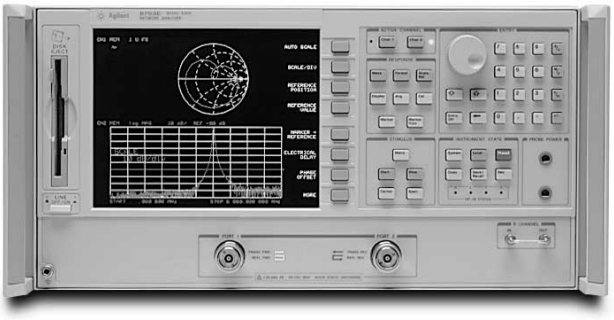
Please visit our Web site at:
www.agilent.com/find/phasenoise

Component/Circuit Verification

8753ET/ES and 8719ET/ES RF/MW Vector Network Analyzers

Features

- 8753ET/ES frequency range: 30 kHz to 3 or 6 GHz
- 8719ET/ES frequency range: 50 MHz to 13.5 GHz
- ideal for testing many devices such as filters, amplifiers, mixers, and transistors
- superb accuracy with comprehensive calibration
- wide dynamic range
- options including time-domain, harmonic, and high-power measurements
- easy-to-use and automate



The 8719ET/ES MW vector network analyzers and the 8753ET/ES RF vector network analyzers all combine a fast synthesized source, tuned receiver, and a transmission/reflection (ET models) or an S-parameter (ES models) test set in a single instrument. These instrumentsquickly and accurately measure magnitude, phase, and group delay of all four S-parameters, plus the absolute output power of microwave and RF components. The 8719ET/ES and 8753ET/ES analyzers have the performance and flexibility to solve difficult measurement problems and reduce test times, all at a very competitive price.

Please visit our Web site at:
www.agilent.com/find/8753

Component/Circuit Verification

89400 Series Vector Signal Analyzers

Features

- 3GPP W-CDMA forward-link code domain power analysis available (Option 080)
- analysis of EDGE signals with standard measurement filter and ISI compensation (Option B7A)
- high-performance I/Q baseband and RF digital modulation analysis, dc to 2.65 GHz
- optional built-in RF source
- easy setup for common standards (EDGE, CDMA, W-CDMA, *Bluetooth*, GSM, PDC, DECT, TETRA, PHS, etc.)
- built-in adaptive equalizer function (Option AYA)

The 89400 series vector signal analyzers (VSAs) with vector modulation analysis (Option AYA) provide the numerical and visual tools to help quickly identify and quantify impairments to digitally modulated signals, whether using standard or proprietary modulation formats. Option 080 adds code domain power measurements for W-CDMA. Measurements can be made on continuous, hopped or bursted signals at baseband (I/Q), IF, and RF locations throughout a system's block diagram.

Formats Supported (partial listing)

W-CDMA, EDGE, *Bluetooth*, DOCSIS, DTV, QPSK, OQPSK, DQPSK, π/4DPQSK, BPSK, 8PSK; 16, 32,64,256 QAM; 4-8-16 FSK (including GFSK); MSK (including GMSK).

Please visit our Web site at:
www.agilent.com/find/vsa

Component/Circuit Verification

8560 EC-Series High Performance Spectrum Analyzer

Features

- high sensitivity, wide dynamic range
- phase noise: <–113 dBc/Hz at 10 kHz, 1 GHz
- average displayed noise level: –151 dBm
- 1 Hz resolution bandwidth (RBW)
- OBW/ACP measurement functions
- time-gated function

Capabilities for RF communications

The 8560 E-series spectrum analyzers offer a complete solution for adjacent channel power (ACP) testing of bursted carrier signals using digital modulation, such as time-division multiple access (TDMA) and time division duplex (TDD).

Systems using TDMA or TDD include the wireless formats for NADC-TDMA, GSM, DECT, CT2-CAI, PDC, and PHS. Many of the implementation difficulties of the established standards have been addressed, providing fast, accurate, and easy-to-use ACP measurement capability.

The 8560 E-series also allows measurements from 0.10 to 99.99% occupied bandwidth.

Time-gated signal analysis allows easy measurement of time-varying signals such as pulsed RF, time-division multiple access, interleaved, and burst-modulated. The 85902A burst carrier trigger can be used to supply a TTL trigger signal.

Please visit our Web site at:
www.agilent.com/find/8560

Component/Circuit Verification

N4256A Amplifier Distortion Test Set

Features

- 500 MHz to 4 GHz
- reduces source distortion products
- reduces dynamic range required from the spectrum analyzer
- extends dynamic range of ACPR and IMD measurements by up to 25 dB
- compatible with all Agilent signal sources and spectrum analyzers
- cancellation at 900 MHz: 26 dB over 25 MHz, 17 dB over 100 MHz
- cancellation at 1800 MHz: 25 dB over 25 MHz, 22 dB over 100 MHz
- GPIB control

The Agilent N4256A amplifier distortion test set allows measurement of the distortion of ultralinear MCPAs used in 3G wireless base stations by boosting the dynamic range of spectrum analyzer-based test systems by as much as 25 dB. Designed to work with the Agilent PSA, ESA and VSA Series of spectrum/signal analyzers and the Agilent ESG-DP series of signal generators, the N4256A provides the optimal solution for “3G equipping” your existing test systems.

Please visit our Web site at:
www.agilent.com/find/mcpa

System Verification

85672A Spurious Response Measurements Utility for 8560 E-Series Spectrum Analyzers

Features

- third-order intermodulation product and third-order intercept (TOI/IP3)
- harmonics and total-harmonic distortion (THD)
- discrete sideband spurs
- general spur search
- mixing products

The 85672A provides automated test

The five most commonly made spectrum analyzer measurements are now automated with the 85672A. Setup and execution of each measurement is reduced to a few keystrokes –saving time, eliminating errors, and optimizing the instrument to produce the best possible measurement results.

Please visit our Web site at:
www.agilent.com/find/8560

System Verification

N1901A cdma2000/1X Mobile RF Performance Test System

Features

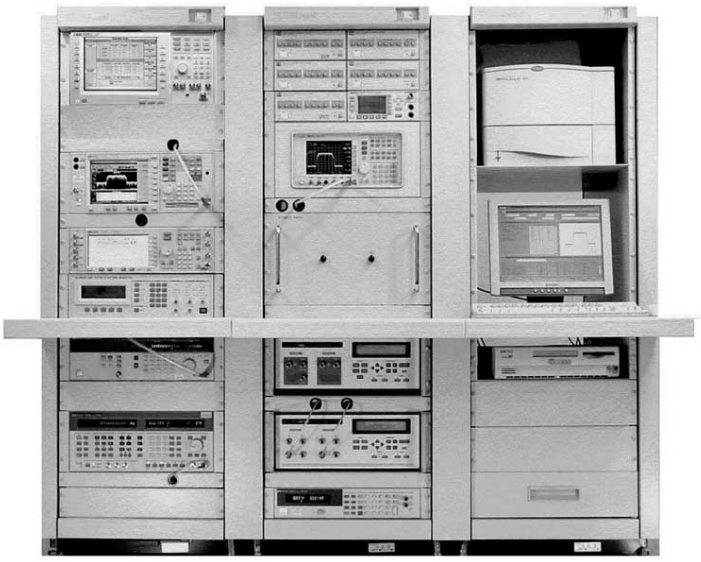
- user interface designed on Windows operating system
- based on the U.S. IS-98D standard
- supports cdmaOne and cdma2000/1X format
- supports measurement with fading and interference

The cdma2000/1X Mobile RF performance test system is a dual-mode cdmaOne/1X cellular phone test system that complies with the TIA IS-98D standards.

The test system is based on the E5515C Wireless Comms Test Set, which acts as a base station simulator for IS-98D.

It's available for test with fading and with interference, too. And E4440A, spectrum analyzer enables spurious measurement with wide band to 12.5GHz.

The user interface is designed on Windows system and allows you to set some measurement parameters and procedure easily. Agilent also provides custom system solutions for W-CDMA, GSM and other formats based on customer requirements.



8960 Series 10 Wireless Communications Test Set - E6701A GPRS Lab Application

Features

- the parametric capability of our manufacturing solution
- accuracy and repeatability give confidence in mobile quality
- protocol logging
- more user-settable BS parameters
- data channels
- simplified programming for easy automation
- flexible architecture designed to grow with 3G technologies

Originally developed for high-volume, automated mobile phone manufacturing test, the proven 8960 Series 10 test set adds signaling functionality to solve the difficult problems of wireless device integration. The 8960 can now analyze parametric, signaling and timing integration, as well as provide transmitter and receiver testing and call processing capability used in manufacturing. For the R&D integration engineer, this translates into faster development time and fewer schedule delays. The built-in accuracy and repeatability of the 8960, necessary signaling functionality, ease-of-use, and affordability help increase R&D engineers productivity and improve confidence in their device quality.

The 8960 can be configured for GPRS today with the E6701A GPRS lab application. Future multi-format test capability will allow developers to test multi-format phones with a single test set, and move from one format to another in a single lab. Designed for automated and manual test, the 8960 remote user interface provides high-level commands specific to wireless device formats, the manual user interface provides for quick access to information with minimum of key presses, and the new web user interface provides for ease-of-use and flexibility.

The test set's format-flexible architecture is designed to grow with 3G wireless device technologies. As wireless technology advances, the 8960 will evolve to meet the needs of wireless device developers.

The 8960 Series 10, the standard for mobile phone test in manufacturing, becomes a standard tool for wireless device integration engineers in R&D.

For more information, please visit our Web site at:
www.agilent.com/find/8960support/

System Verification

8960 Series 10 Wireless Communications Test Set – E1963A W-CDMA Mobile Test Application

Meet your aggressive time-to-market goals with this flexible test set used to speed wireless appliance product development and verification as well as high-volume manufacturing.

This one-box UMTS system simulator and fast parametric tester covers all UMTS/3GPP formats: GSM, GPRS, and W-CDMA, which operate concurrently on the same hardware. Other formats include IS-136/AMPS, IS-95, and cdma2000.

Transmitter measurements are retrieved in a fraction of a second with high-performance CDMA architecture.

With the Agilent W-CDMA mobile test application for the 8960 Series 10 wireless communications test set, you now can have a single design and manufacturing test solution. As prototypes move into product, the test solution's fast measurements, accuracy, flexibility, and ease of programming will help you quickly reach high-volume production goals.

E1963A provides the following test capabilities:

- thermal power
- channel power
- adjacent channel leakage ratio
- waveform quality
  - error vector magnitude
  - frequency error
  - phase error
  - magnitude error
  - origin offset
  - loopback BER

All E1963A W-CDMA measurements conform to UMTS/3GPP UTRA FDD TS 34.121 specifications for user equipment.

For additional information, please visit our Web site at:
www.agilent.com/find/8960support

E1852A Bluetooth Test Set

Features

- establishes link using standard *Bluetooth* protocol
- performs functional test at the RF-interface
- measures key transmitter and receiver parameters
- RF generator and RF analyzer capabilities
- PC-based user interface, with numerical and graphical results

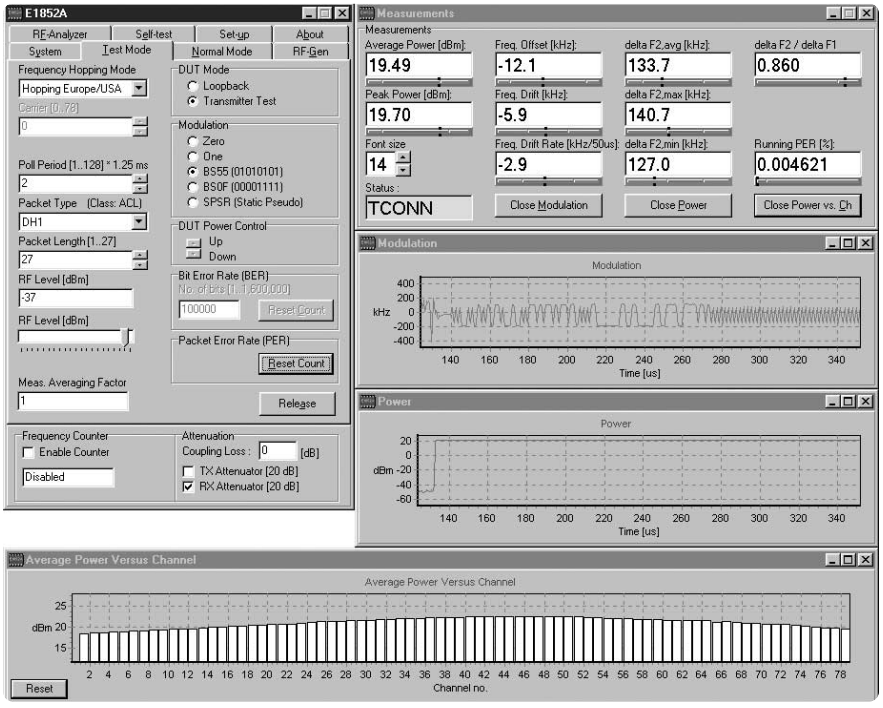
The E1852A is a dedicated *Bluetooth* test set capable of measuring key *Bluetooth* RF parameters. The test set establishes a link over the air interface using standard *Bluetooth* protocol that supports both *Bluetooth normal* and *test* modes. These are used to verify transmitter and receiver performance under different test conditions as defined in the *Bluetooth* specification.

Additional features make the E1852A an invaluable development tool. RF generator and RF analyzer functions can be used to characterize elements of the transceiver design; received data and clock outputs are provided for connection to other test equipment; a frequency counter is included for checking and tuning reference oscillators.

The test set is supplied with PC software providing straightforward measurement set-up. Results are presented numerically and graphically and may also be saved to a log file, making it easy to create measurement reports or to capture results for further analysis. Test sequences can be automated for those repetitive or time-consuming measurements, speeding you through the integration and pre-qualification phases.

Regular firmware updates are easily downloaded from the web to assure interoperability to the latest *Bluetooth* standards and to provide the latest features for the E1852A. Agilent provides worldwide application support to quickly get you up and running.

Please visit our Web site at:
www.agilent.com/find/bluetooth



Semiconductor Solutions

In-house expertise and experience have enabled Agilent to become a leading supplier of semiconductor components for wireless applications including cellular/PCS handsets, PDAs, laptops, printers, digital cameras and other devices. Wireless technologies from Agilent deliver an enriched combination of voice, data and images.

RF and Microwave Semiconductors

Agilent supplies advanced semiconductors for cellular, PCS, and 3G technologies including W-CDMA. With technology breakthroughs that improve performance, extend precious battery life, and size, Agilent defines and implements semiconductor components vital to the success of wireless communications.

- FBAR (film bulk acoustic resonator) filters for CDMA that drastically reduce the size of mobile handsets.
- power modules based on Agilent's E-pHEMT (enhancement mode PHEMT) that extend battery life by up to 15% in mobile handsets
- RFICs for a wide variety of wireless applications, available in multiple packaging options
- millimeter wave chips used in digital radio and point-to-point applications
- discrete diodes and transistors for all RF applications

Infrared Components

Agilent offers the smallest and fastest IR transceivers on the market, enabling cellular/PCS handsets, PDAs, laptops, printers, digital cameras, and other devices to join the connected world via a wireless link. Agilent is the world's leading provider of IR transceivers.

- SIR, FIR, MIR, FMIR, and VFIR transceivers compatible with IrDA specifications.

Mobile Imaging Sensors and Modules

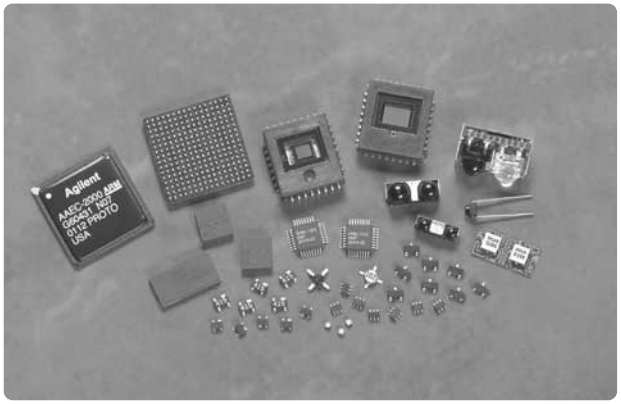
Agilent offers cost-effective CMOS image sensors for digital still and video cameras, as well as embedded camera modules for hand-held devices.

System-on-Chip Devices for Mobile Information Appliances

Agilent leverages its long history as a leading ASIC supplier to offer highly integrated solutions for PDAs and other mobile information appliances. Agilent's devices offer industry-leading performance, multiple operating system support, a wide range of functions, and development systems for rapid design cycles.

For more information about Agilent's semiconductor solutions for wireless communications, visit our Web site at:

www.agilent.com/view/wireless



4287A RF LCR Meter

Features

- frequency range: 1 MHz to 3 GHz, with 100 kHz step
- high-speed measurement (9 ms/point)
- accurate impedance measurement using the RF I-V measurement method
- basic accuracy: 1%
- calibration functions enable accurate automated testing
- very stable measurements at low signal levels
- multi-function comparator
- 1m error-less cable with 3.5 mm test head

High-Speed RF LCR Meter Anticipating Next Generation Test Needs

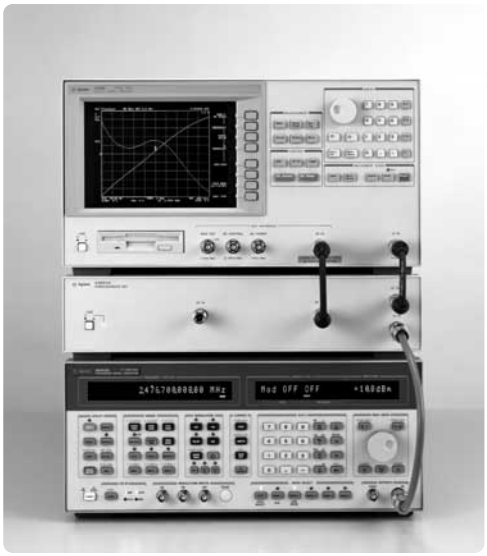
The Agilent 4287A is a high performance RF LCR meter best fit to production line testing of SMD inductors and EMI filters, where impedance testing at high frequencies (1 MHz to 3 GHz) is required. The Agilent 4287A greatly increases manufacturing testing efficiency with a fast measurement speed (9 msec/point) and among other powerful functions, the built-in comparator function. In addition, the Agilent 4287A improves upon the measurement accuracy and impedance measurement range of previous RF LCR meters. Moreover, the Agilent 4287A achieves better measurement repeatability and stability, even at the test signal levels, as low as 100 micro amps, required for SMD inductor testing.

Component/IC Test

4352S VCO/PLL Signal Test System

Features

- frequency range: 10 MHz to 3 GHz (with the 8664A), up to 12.6 GHz (with the 43521A down converter, and the 8665B)
- automatic measurement with built-in IBASIC programming
- graphical analysis of basic VCO/PLL characteristics
- fast and excellent phase noise measurements
- ultra-low-noise internal dc power supply
- frequency transient measurement
- high-speed test throughput



Evaluation of VCOs and PLLs is essential when designing an oscillation circuit for wireless communication. However, conventional evaluation methods for such devices are inconvenient due to a wide range of parameters, many different configurations of equipment, lots of configuration procedures, and slow measurement speeds. The 4352S is a complete system that offers a frequency range from 10 MHz to 12.6 GHz and is capable of measuring phase noise, RF power, frequency settling time, and more parameters required for VCO/PLL evaluations.

Component/IC Test

84000 RFIC Series Test System

Features

- complete testing for radio frequency (RF) integrated circuits (ICs) – including power amplifiers, LNAs, up/down converters, I/Q modulators and demodulators, integrated receivers and transmitters, complete transceivers
- covers many wireless communications applications, such as cellular/PCS, WLAN, GPS, cordless
- several compatible models are available in the Agilent 84000 RFIC Series, providing many price/performance points
- per-pin architecture for up to 8 RF ports, multiplexing provides up to 12 RF ports
- up to 3 GHz or 18 GHz frequency coverage
- simplified graphical user interface (GUI) for fast test-plan development
- complete device-under-test (DUT) fixturing, including the Agilent YieldPro Contactor, is available
- quick and simple RF calibration

The Agilent 84000 RFIC Series test system drives down cost-of-test for wireless IC manufacturers by providing a production optimized test solution. With per-device test times as low as 500 milliseconds and a system uptime achievable to better than 98%, the 84000 meets the low cost-of-test demanded by today's competitive environment. By utilizing Agilent's time-proven measurement algorithms and RF design, the 84000 provides renowned RF measurement accuracy and repeatability, maximizing device yield. With a simple GUI, the 84000 also offers fast test plan development, reducing time-to-market for new devices.

Component/IC Test

93000 SOC Series Test System

Features

- complete testing for SOCs (system-on-a-chip) including devices with RF, analog, complex digital logic and embedded memory functional elements
- offers a wide application coverage, including computation, wired communications, consumer electronics and wireless communications
- SmarTest software enables fast device cycle times with its highly interactive graphical environment, as well, as its powerful command line and programmatic interfaces
- supports cellular/PCS, *Bluetooth* and WLAN devices
- several compatible models are available in the Agilent 93000 SOC Series, providing many price/performance points
- offers a robust set of capabilities:
  - up to 1024 digital pins, each with a test processor-per-pin architecture and data rate up to 2.5 Gbps
  - wide range of analog modules, including AWGs, digitizers, samplers and time interval analyzers
  - RF Measurement Suite provides up to 12 RF ports with 3 GHz modulated stimulus and 8 GHz measurement capability
  - scan and embedded memory test capabilities are also available

The Agilent 93000 SOC Series is the single scalable platform for high-volume manufacturing of SOCs. With a robust set of test capabilities, the 93000 provides the flexibility needed to test a broad range of applications. This results in high system utilization, reducing cost-of-test. In addition, the number of test platforms required on the manufacturing floor is minimized, reducing support costs and maximizing workforce flexibility. The Agilent 93000 also offers multiple price/performance points, providing the scalability to purchase just enough test to meet specific application needs.

For more information, please visit our Web site at:
www.agilent.com/find/ste

Component/IC Test

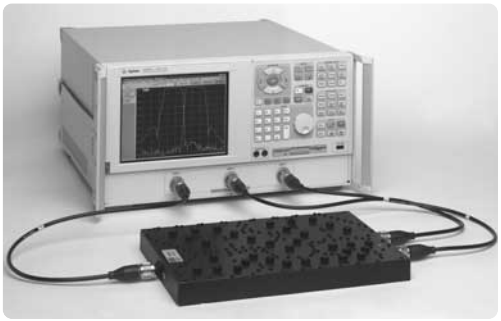
PNA Series - RF and Microwave Vector Network Analyzer Family

Features

- two-port, four receiver RF analyzers (E8356A—300 kHz to 3 GHz, E8357A—300 kHz to 6 GHz, E8358A—300 kHz to 9 GHz)
- two-port, three receiver RF analyzers (E8801A—300 kHz to 3 GHz, E8802A—300 kHz to 6 GHz, E8803A—300 kHz to 9 GHz)
- three-port, four receiver RF analyzers (N3381A—300 kHz to 3 GHz, N3382A—300 kHz to 6 GHz, N3383A—300 kHz to 9 GHz)
- two port, four receiver microwave analyzer (E8364A—45 MHz to 50 GHz)
- ideal for characterizing and testing wireless devices such as filters, duplexers, and amplifiers
- up to 143 dB dynamic range with direct receiver access on RF models
- up to 134 dB dynamic range with direct receiver access on the microwave model
- 35 µs/point sweep speed
- new user interface with Windows 2000 operating system
- advanced programming capabilities using COM/DCOM
- built-in-help system and integrated documentation
- USB, LAN, GPIB, parallel, serial and VGA connectivity
- internal electronic calibration (ECal)

PNA Series' RF and microwave vector network analyzers provide the combination of speed and accuracy for the demanding needs of today's component test requirements. PNA Series' network analyzers are designed to expedite the overall testing process. The PNA Series' analyzers common distinctions include high performance, a fully integrated Windows 2000 user interface, COM automation model, and embedded context-sensitive help, 16 independent measurement channels, built-in hard drive and supplied mouse. The automation and self-help tools make the instrument well-suited for both R&D and manufacturing. Sliding load, multiple line lengths for TRL, and adapter removal calibration techniques are included in all PNA models.

For more information, visit our Web site at:
www.agilent.com/find/pna



ENA Series RF Vector Network Analyzers

E5070A—300 kHz to 3 GHz
E5071A—300 kHz to 8.5 GHz

Features

- built-in two to four test ports
- fast multiport measurement
- max 12.8 µs/point
- full two to four port calibration
- balanced conversion
- high accuracy
- 122 dB dynamic range
- 0.001dB rms trace noise
- matching circuit simulation
- port characteristic impedance conversion
- nine measurement channels
- nine traces per channel

The ENA Series offers fast and accurate measurements on multiport components such as duplexers and couplers. Built-in test ports (up to four ports) are available for both the E5070A (300 kHz to 3 GHz) and the E5071A (300 kHz to 8.5 GHz) models. The ENA Series also offers built-in balanced measurements which makes it the ideal instrument for making accurate measurements on advanced handset components such as balanced SAW filters. Comprehensive test capabilities in the ENA enable fast, accurate measurements and contribute to the reduction of the overall cost of test. These operational features are complemented by measurement speed, which make the ENA series more than three times faster than other products.

Exceptional speed and dynamic range of up to 125 dB[1] and trace noise of 0.001 dB rms (at 4 GHz with 3 kHz IF bandwidth), satisfies the need for testing pass band ripple of today's low insertion loss filters.

The ENA Series employs advanced architecture of dual receivers per each test port so that the analyzer is able to minimize the number of sweeps to complete a multiport S-parameter measurement. For more accurate multiport measurement, all measurement channels support full 2-, 3- and 4-port calibration. The advanced architecture allows the ENA Series analyzers to dramatically improve test throughput, without sacrificing accuracy.

The fast processor inside the instrument enables lightning-fast post-processing speeds. The parts handler interface allows for ease of system integration. Additionally, programmers can develop programs quickly by accessing the VNA measurement and analysis objects either via COM or SCPI interfaces. Microsoft® Visual Basic for Application (VBA) is bundled in the instrument for rapid development of test routines and instrument configuration to fit seamlessly into the ATE system, and allow the operator interface to be custom tailored to the user's interfaces.

These integrated measurement capabilities provide the lowest test cost per component and dramatically improve test throughput of multiport and balanced components such as RF SAW filters.

For more information, please visit our Web site at:
www.agilent.com/find/ena

1 Typical

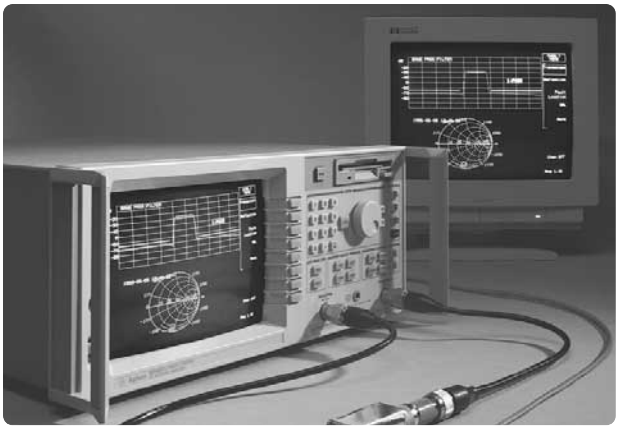
8712ET/ES and 8714ET/ES RF Network Analyzers

Features

- S-parameter measurements (ES models)
- fast sweep speeds improve alignment times and test throughput
- IBASIC programming language automates complicated measurements
- built-in LAN interface simplifies distribution of test programs, states, limits, and data files

Fast, economical RF network analyzers for manufacturing test

The 8712ET/ES and 8714ET/ES RF vector network analyzers provide either transmission/reflection (ET models) or S-parameter (ES models) capabilities to meet the test demands of today's higher-performance components, at an affordable price. S-parameter network analyzers let you measure the forward and reverse characteristics of your components with a single connection to the test ports. They also provide full two-port calibration to give you the highest possible measurement accuracy. If your application does not require this level of accuracy, you can choose a lower-cost analyzer with an integrated transmission/reflection test set (ET versions). All four models (with coverage from 300 kHz to 1.3 or 3.0 GHz) have narrow-band and broadband receivers with up to 100 dB of dynamic range, and a fast, synthesized source for vector measurements of high-rejection, narrow-band devices. Productivity features like automated pass/fail testing, save/recall states, data markers, fast trace update, IBASIC programming, and a LAN interface increase throughput and reduce operator errors.

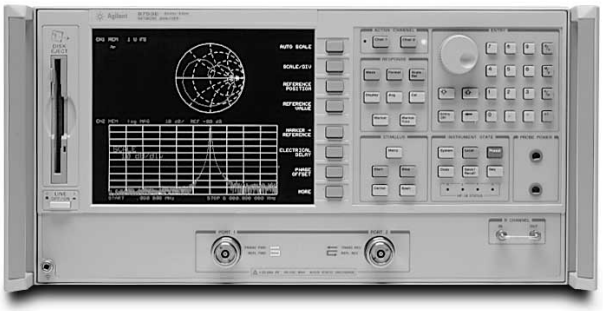


Component/IC Test

8753ET/ES and 8719ET/ES RF/MW Vector Network Analyzers

Features

- 8753ET/ES frequency range: 30 kHz to 3 or 6 GHz
- 8719ET/ES frequency range: 50 MHz to 13.5 GHz
- ideal for measuring many devices such as filters, amplifiers, mixers, and transistors
- superb accuracy with comprehensive calibration
- wide dynamic range
- options including time-domain, harmonic, and high-power measurements
- easy-to-use and automate



The 8719ET/ES MW vector network analyzers and the 8753ET/ES RF vector network analyzers combine a fast synthesized source, tuned receiver, and an S-parameter test set (ES models only) in a single instrument. These instruments quickly and accurately measure magnitude, phase, and group delay of all four S-parameters, plus the absolute output power of microwave and RF components. The 8719ET/ES and 8753ET/ES analyzers have the performance and flexibility to solve difficult measurement problems and reduce test times, all at a very competitive price.

8648A Option 1EP Signal Generator with Built-in Pager Encoder

Features

- POCSAG, FLEX, and FLEX-TD in a single unit
- DCFM characteristics: ±100 Hz (typical value ±40 Hz)
- frequency accuracy when used with the 58503A: <±1 x 10–12/day
- low price
- optimum for production lines or service applications

Economical Pager Test Solution

The 8648A 1EP option includes three pager-encoding standards: POCSAG, FLEX and FLEX-TD. It offers very high accuracy for frequency, deviation, and DCFM measurement in pagers. In addition, it includes rubidium frequency measurement accuracy when it is used with the 58503A GPS receiver.

Supported formats

POCSAG:

FSK-512/1200/2400 bps

FLEX/FLEX-TD:

2 level FSK-1600/3200 bps
4 level FSK-3200/6400 bps

Component/IC Test

ESA-E Series Portable RF/MW Spectrum Analyzers

Features

- 4 ms sweep (401 points)
- 45 local measurements/second
- 45 remote measurements over GPIB/second
- VXIplug&play drivers
- 120 dB log display range (with digital RBWs)
- continuous background alignment
- built-in limit lines, pass/fail messages
- flexible platform
- frequency coverage to 26.5 GHz
- seven measurement personalities

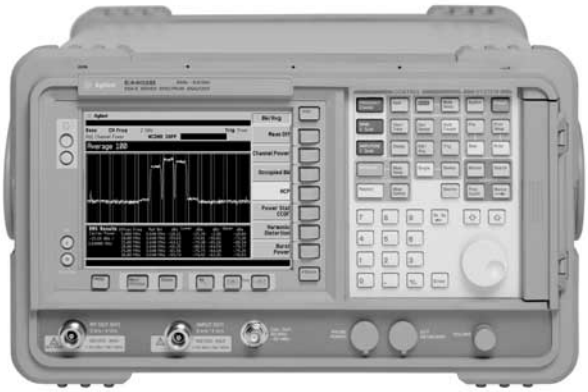
The ESA-E series can help reduce manufacturing test time, time to market and costs. The spectrum analyzers provide 4-millisecond full-span RF sweep time, up to 45 measurements per second and up to 45 when transferred over GPIB (GPIB interface bus). As a result, manufacturing engineers can obtain virtually real-time responses when performing tests, a valuable capability in an automated environment in which literally every millisecond counts.

The analyzers operate with a continuously phase-locked synthesizer that can produce a span accuracy of +0.5% and frequency accuracy of +101 Hz, and the continuous background alignment provides continuous calibration.

The overall amplitude accuracy of +1 dB provides measurement confidence, improved yield and reduced test margins. Additionally, the ESA-E series built-in limit lines and pass/fail messages help test engineers get results quickly and easily.

The ESA-E series analyzer's flexible platform allows manufacturing engineers to enhance performance as their requirements change. Each analyzer comes with 6 card cage slots for adding future capabilities which can be expanded to include application-specific measurement personalities including GSM/GPRS, cdmaOne, modulation analysis, *Bluetooth*, cable fault location, phase noise and cable TV.

For more information, please visit our Web site at:
www.agilent.com/find/esa



Component/IC Test

ESG Signal Generator

Features

- supports wireless communications standards including 3GPP W-CDMA,cdma2000, cdmaOne, EDGE, GSM, NADC, PDC, DECT, TETRA, *Bluetooth*, 1xEV-DO, 802.11a, and 802.11b
- expandable architecture with broad frequency coverage – 250 kHz to 1,2, 3, 4 and 6 GHz
- 160 MHz of RF bandwidth with external I/Q inputs
- 32 Msamples (160 megabytes) memory
- differential I/Q outputs
- internal I/Q calibration

The ESG signal generator provides precise frequency and level control, and versatile modulation capabilities as an affordable price. They are ideally suited to meet the demanding requirements of today's receiver test, component test, and local oscillator applications.

To maximize uptime and minimize maintenance costs, the ESG signal generators use highly reliable components such as the 4 GHz electronic attenuator.

The expandable card cage architecture and flash ROM firmware make it easier to install new capabilities and adapt to new test requirements.

Using the high-speed processor, 32 Msamples waveform playback memory and a 6-gigabyte hard drive reduces measurement time. You can build waveforms fast, switch between them in playback and storage memory instead of continually having to rebuild them.

Perform repetitive measurements quickly and consistently by using the save/recall and sequencing features through the front panel or PC with 10 baseT LAN, GP-IB, or RS-232 interfaces.

For more information, please visit our Web site at:
www.agilent.com/find/esg

Structural/Electrical Process Test

5DX Automated X-Ray Inspection System

Features

Best coverage
- best solder joint inspection, particularly for fine-pitch devices
- inspects invisible solder joints ball-grid arrays (BGAs), chip scale packages (CSPs), etc.
- detects marginal solder joints
- enables statistical process control (SPC) monitoring and process improvement

Fast time-to-market
- comprehensive coverage with actionable diagnostics
- no fixturing time or cost
- simpler design for test (DFT) and test development than electrical methods

Flexible in-line (100 percent inspection) solution
- tests both sides in one pass, flexibility for one and two-sided boards
- fastest 3D X-ray solution

Global platform
- world-wide Agilent AXI support and experience
- more than 450 installations throughout the world

High process-defect detection ratio

Employing cross-section (laminography) technology, this system accurately inspects solder joints on PC boards. Without needing physical tools such as probes or fixturing, the system is able to catch up to 90% of all defects, even if they are hidden J-leads or hidden by shields.

Marginal joint inspection

Using cross-section (laminography) technology, this system can detect poor solder joints, which may break apart easily. Such joints may pass an electrical test before shipment, but can easily cause problems due to rough handling in actual use. The 5DX can be used to prevent such problems, or to identify the bad points in defective products already on the market.

Structural/Electrical Process Test

3272 Powered In-Circuit Test System

Features

- fully automatic program generator
- in-line programming capability for flash RAM
- open solder defect detection for ICs
- reverse polarity capacitor detection
- boundary scanning option
- affordably priced
- Windows-based system now available

Fully Automatic Program Generator

The 3272 board test system uses advanced computer modeling and CAD data input to maximize the quality of the test program while minimizing the amount of time spent in developing and debugging tests. The system develops tests for analog components using up to six signal/sense wires automatically and uses an extensive digital library of tests for best possible fault coverage.

In-Line Writing Capability for Flash RAM

By using a digital in-circuit function, this tester can write data almost at databook speeds, so board data can be written on the production line.

Detects Open Solder/Reverse Polarity Capacitor Defects

Agilent's patented Test-Jet 2 technology has revolutionized digital detection. Incorporating this technology, this board tester easily finds IC open solder joints and reverse polarity capacitor defects with a high level of accuracy and with little programming.

Structural/Electrical Process Test

SJ10 Automated Optical Inspection System

Features

- fully flexible pre and post reflow measurement using Monocolour technology
- full solder joint analysis
- high accuracy component placement measurement
- in-line 3D paste analysis
- delivers lowest false fail rates, provides accurate data and repeatable results

Automated versus Automatic

Historically, a combination of manual visual inspection and end-of-line test (in-circuit, functional or both) has been the primary test method for PCB assemblies. A variety of factors, including product complexity and component miniaturization, have driven the need for more consistent automated inspection processes before end-of-line test. Automated optical inspection (AOI) is one of the most widely used technologies for inspecting placement and soldering defects on today's PCB assemblies.

AOI provides the following benefits:

- excellent for finding placement defects – missing, skew, incorrect polarity, part marking, etc
- excellent for measuring accuracy of component placement (pre-reflow)
- capable of finding many visible solder joint defects
- capable of in-line speeds for the majority of lines
- can be placed post paste, post placement or post solder)
- very fast ROI

The new Agilent automatic optical inspection portfolio includes:

- SP2 high-speed in-line solder paste inspection system
- SJ10 flexible in-line component and solder joint inspection
- VIA10 microvia and through-hole inspection
- FX10 solder flux process control tool

Systems Solutions for BTS Manufacturers

Agilent provides comprehensive, flexible test solutions to accelerate your products through the design and production test processes. Our systems can easily be tailored to fit power amplifier and transmitter/receiver testing, modules or BTS systems testing. By making Agilent your resource, you will get exactly the support you need to build a winning test strategy – one that increases your productivity and frees your engineering resources to focus on core capabilities and other strategic areas. Our test solutions include test fixtures, RF switch matrices, and tailored systems.

Fixtures

Agilent provides manual-loaded or automated test fixture solutions for optimizing product output, while taking individual customer needs into account. Home-made fixtures take significant time to design and may not be verified for RF isolation. Without thorough testing, reliability issues are likely to surface in production. That's why Agilent offers a head-start for BTS manufacturers with proven technologies and capabilities to create tailored fixture solutions. These complete, high-quality test fixture solutions fit your needs for production test, quality assurance or design verification.

RF Switch Matrix

Agilent's custom switch matrices provide a high quality solution for high frequency signal routing and conditioning requirements in base station test systems. The switch matrices use standard elements (attenuators, splitters, RF switches) and processes. These high repeatability and high reliability switching solutions are designed and optimized for a specific application. Plus, you get path characterization and test data fully specified to the ports.

Tailored Systems

Whether you want to design and support your own system, team with Agilent to design, build and support your system, or purchase a complete system and support package, Agilent has flexible system services to meet your business needs. Our tailored systems are designed to test exactly meet your test requirements using the telecommunications industry's broadest range of test instruments. Agilent's system solutions can maximize test throughput, reduce the cost of test and increase your productivity throughout your test system life cycle.

66319B/D and 66321B/D
Mobile Communications dc Sources

Features

- emulates the battery, simulates multiple battery types Li-Ion, Ni-MH, Ni-Cad
- excellent output stability with long load leads, requires no special cables
- transient free voltage response, fast output response technology
- accurate digitizing measurement system, 3 current ranges, measure uA to Amp pulsed currents
- flexible measurement system for measuring challenging battery current drains
- device Characterization Software for no-programming, easy to use, complete test solution

Agilent's mobile communications dc sources are designed for the unique challenges of simulating batteries and power adapters/chargers in wireless handsets and other battery-powered devices that draw current in short, pulsed bursts.

By combining both high-level sourcing (up to 5A peak) and fast, accurate low-level current measurements, these one-box solutions provide vital tools for R&D, production testing, and repair of wireless handsets and products. Single and dual output models include GPIB interface, accurate high performance dc sourcing, current sinking, and programmable output resistance, that is used to replace the main battery and the power adapter power source.

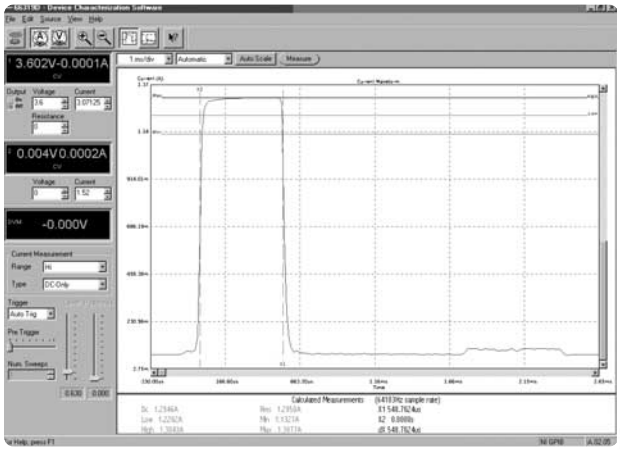
Excellent output stability and regulation regardless of how long the load leads are. This allows the dc source to be placed at a convenient distance from the DUT. Fast output response technology and output compensation control optimizes the dc power source in your test setup. Increase test throughput, measurement speed, and measurement accuracy, by eliminating fixture capacitors and their charge/discharge times.

In order to simplify the use of the dc source on the R&D and repair bench, Agilent offers an accessory software package.

The 14565A device characterization software is a graphical utility that requires no programming. Easily control the dc source output and measurement system from your computer screen. View the digitized pulsed current waveform and measurements automatically on your computer screen for fast and accurate battery current drain analysis.

For more information, please visit our Web site at:

www.agilent.com/find/pscare



6032A, 6600, and 66000 Series dc Power Supplies

Features

- flexibility –minimizes rack space to meet the wide variety of modules and subassemblies
- reliability –trouble-free dc power
- ease-of-use –reduce system development time with a standardized family of power supplies
- worldwide support network

Agilent offers an extensive selection of dc power supplies, to meet the dc power requirements for the test needs at all stages in the manufacturing process. All have the exceptional reliability that Agilent power products are known for, which is key for keeping your production facility running smoothly. Protection features, within each power supply, provide for smooth limiting and/or shutdown of the dc power if a problem in the module under test occurs. These Agilent products, together with the worldwide network that supports them, gives you the trouble-free dc power you need.

Modular Power System (MPS)

A base station test system needs dc power for more than the DUT itself. Test fixtures often contain circuitry which need dc power. Small custom system control and monitoring modules also require bias supplies.

The 66000A MPS is a compact and flexible solution for all your miscellaneous system dc power needs. Up to eight isolated 150-watt dc power supplies will fit into each mainframe. Isolation and polarity reversal relays further enhance the flexibility and ease of use of the MPS. Each power supply displays its output voltage and current, giving the system operator a quick confirmation that biases have been applied to the test fixture.

The 66000A MPS is also an efficient source of dc bias power for most digital control and transceiver modules. The easy reconfigurabilty allows your test platform to support a wide variety of assemblies and modules.

MPS Module	Max Volts	Max Amps
66101A	8 V	16 A
66102A	20 V	7.5 A
66103A	35 V	4.5 A
66104A	60 V	2.5 A
66105A	120 V	1.25 A
66106A	200 V	0.75 A

DC Power Supplies for Power Amplifier Module Test

6032A 1000 Watt Autoranging dc Power Supply

The Agilent 6032A dc power supply provides at least 1000 watts of clean reliable dc power at any output voltage between 20V and 60V.

Extensive protection features shut the dc power down if an error occurs, allowing the amplifier module to be recovered for repair before the PC board is damaged.

6600 Series dc Power Supplies

The 6600 Series of dc power supplies provides a low noise solution for testing power amplifier and MCPA modules. Some examples of the series are listed below. For more current, like units can be operated in parallel. These dc power supplies have a wide range of protection features, to ensure the safety of the valuable amplifier assemblies during test. They also have built-in voltage and current measurement systems.

For more information, visit our Web site at:
www.agilent.com/find/power

Model	6653A	6654A	6673A	6674A	6683A	6684A	6684A-V60	6691A	6692A
Max Volts	35 V	60 V	35 V	60 V	32 V	40 V	60 V	30 V	60 V
Max Amps	15 A	9 A	60 A	35 A	160 A	128 A	80 A	220 A	110 A

EPM Series of Power Meters and E-Series Sensors

Features

- average power measurements with the 8480 and E-series power sensors (excluding the E9320 sensor family)
- code compatible with the 436A and 437B (E4418B) and 438A (E4419B)
- fast measurement speed over the GPIB (up to 200 readings per second)
- stored sensor calibration factors for best accuracy and ease-of-use (E-series power sensors)

The EPM series has been designed with the user in mind. Agilent designed the E4418B power meter to be code compatible with the 436A and 437B, and the E4419B to be code-compatible with the 438A, so your existing investment in automatic test procedures is protected.

The EPM series power meters are replacements for the 435B, 436A, 437B and 438A power meters. They are the same height and width as the 437B and 438A, making them easy to substitute in rackmount systems.

The E-series is a new family of power sensors and is complementary to the 8480 series of sensors. The E-series sensor's calibration factors, linearity and temperature correction data are all stored in EEPROM. At power-on, or when the sensor is connected to the meter, the EEPROM data is automatically downloaded into the EPM series power meter. This eliminates measurement errors caused by wrongly keyed-in cal factor data and ensures maximum accuracy.

Compatibility with the 8480 series sensors means your investment in power sensors is protected and you get all the benefits of the EPM series power meters with your 8480 series sensors.

The E-series, excluding the new E9320 peak and average sensors, comprises the E441XA continuous wave (CW) sensors and E9300 average power sensors. The E441XA sensors are for CW applications and cover the frequency range 10 MHz to 26.5 GHz and power range –70 to +20 dBm, while the E9300 sensors measure the average power of RF and microwave signals, regardless of the modulation format, over a wide 80 dB dynamic range (sensor dependent). The E9300 average power sensors cover the frequency range 9 kHz to 18 GHz, and power range –60 to +44 dBm (sensor dependent).

For more information, please visit our Web site at:
www.agilent.com/find/powermeters

8648A Option 1EP Signal Generator with Built-in Pager Encoder

Features

- POCSAG, FLEX, and FLEX-TD in a single unit
- DCFM characteristics: ±100 Hz (typical value ±40 Hz)
- frequency accuracy when used with the 58503A: <±1 x 10–12/day
- low price
- optimum for production lines or service applications

Economical Pager Test Solution

The 8648A 1EP option includes three pager-encoding standards: POCSAG, FLEX and FLEX-TD. It offers very high accuracy for frequency, deviation, and DCFM measurement in pagers. In addition, it includes rubidium frequency measurement accuracy when it is used with the 58503A GPS receiver.

Supported formats

POCSAG:

FSK-512/1200/2400 bps

FLEX/FLEX-TD:

2 level FSK-1600/3200 bps
4 level FSK-3200/6400 bps

E1852A Bluetooth Test Set

Features

- low-cost standalone solution
- establishes link using standard *Bluetooth* protocol
- fast functional and performance test over the RF-interface
- world-wide application and service support
- additional features aid module calibration and diagnostics

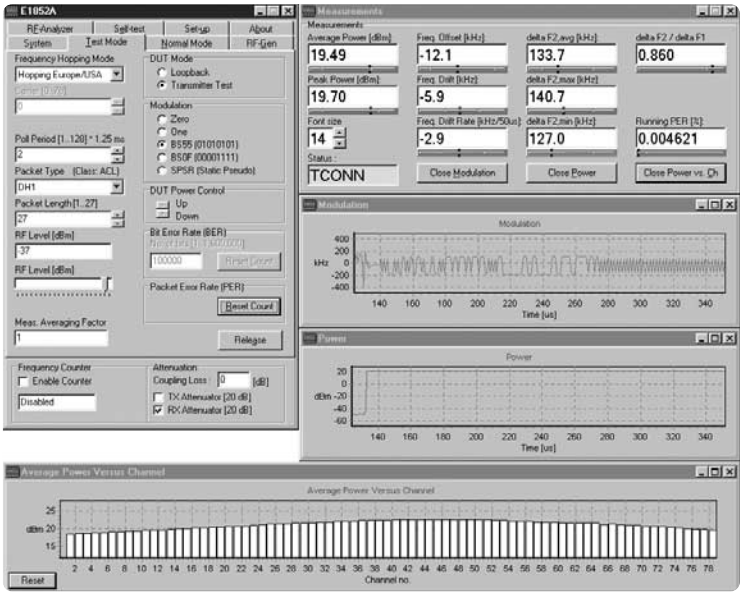
The E1852A Bluetooth test set quickly performs functional test and simultaneously measures key *Bluetooth* RF parameters. Automated test sequences are easily created and programming examples are provided.

The test set establishes a link over the air interface using standard *Bluetooth* protocol that supports both *Bluetooth* normal and test modes. These are used to verify transmitter and receiver performance under different test conditions as defined in the *Bluetooth* specification. With simply a normal mode connection it is possible to measure transmit power, frequency, modulation parameters and receiver sensitivity. These parameters can be captured within the time taken to perform a functional test.

Regular firmware updates are easily downloaded from the web to assure interoperability to the latest *Bluetooth* standards and to provide the latest features for the E1852A. Agilent provides worldwide application support to quickly get you up and running, and worldwide service support to help you maintain your manufacturing processes.

Additional features make the E1852A a flexible tool for module calibration and diagnostics. RF generator and RF analyzer functions may be used for testing or calibrating input and output power; received data and clock outputs are available for connection to other test equipment; a frequency counter is provided for checking and tuning reference oscillators. Included with the test set is software for a PC-based graphical user interface, providing straightforward measurement set-up. Results are presented numerically and graphically and may also be saved to a log file, making it easy to create defect reports or to capture results for further analysis.

Please visit our Web site at:
www.agilent.com/find/bluetooth



Module/Assembly Test

ESA-E Series Portable RF/MW Spectrum Analyzers

Features

- 4 ms sweep (401 points)
- 45 local measurements/second
- 45 remote measurements over GPIB/second
- VXIplug&play drivers
- 120 dB log display range (with digital RBWs)
- continuous background alignment
- built-in limit lines, pass/fail messages
- flexible platform
- frequency coverage to 26.5 GHz
- seven measurement personalities

The ESA-E series can help reduce manufacturing test time, time-to-market and costs. The spectrum analyzers provide 4-millisecond full-span RF sweep time, up to 45 measurements per second and up to 45 when transferred over GPIB (GPIB interface bus). As a result, manufacturing engineers can obtain virtually real-time responses when performing tests, a valuable capability in an automated environment in which literally every millisecond counts.

The analyzers operate with a continuously phase-locked synthesizer that can produce a span accuracy of +0.5% and frequency accuracy of +101 Hz, and the continuous background alignment provides continuous calibration.

The overall amplitude accuracy of +1 dB provides measurement confidence, improved yield and reduced test margins. Additionally, the ESA-E series built-in limit lines and pass/fail messages help test engineers get results quickly and easily.

The ESA-E series analyzer's flexible platform allows manufacturing engineers to enhance performance as their requirements change. Each analyzer comes with 6 card cage slots for adding future capabilities which can be expanded to include application-specific measurement personalities including GSM/GPRS, cdmaOne, modulation analysis, *Bluetooth*, cable fault location, phase noise and cable TV.

For more information, visit our Web site at:
www.agilent.com/find/esa

Module/Assembly Test

ESG Family RF Digital and Analog Signal Generators

Features

- supports wireless communications standards including 3GPP, W-CDMA, cdma2000, cdmaOne, EDGE, GSM, NADC, PDC, DECT, TETRA, *Bluetooth*, 1xEV-DO, 802.11a, and 802.11b
- expandable architecture with broad frequency coverage (250 kHz to 6 GHz)
- 80 MHz of RF bandwidth
- differential I/Q outputs
- internal I/Q calibration

The ESG family signal generators provide precise frequency and level control, and versatile modulation capabilities as an affordable price. They are ideally suited to meet the demanding requirements of today's receiver test, component test, and local oscillator applications.

To maximize uptime and minimize maintenance costs, the ESG family uses highly reliable components such as the 4 GHz electronic attenuator.

The expandable card cage architecture, flash ROM firmware, and 6 Gbyte hard drive make it easier to install new capabilities in your existing instrument and adapt to new or changing test requirements

Improve measurement performance by selecting the appropriate phase noise mode that is optimized for either in-channel or out-of-channel tests.

Perform repetitive measurements quickly and consistently by using the save/recall and sequencing features. Access these features through the front panel or with a PC through the 10 baseT LAN, GP-IB, or RS-232 interfaces.

For more information, visit our Web site at:
www.agilent.com/find/esg

8920B RF Communications Test Set

Features

- simplified programming
- firmware updates via the front panel
- PCMCIA memory card format
- intuitive call processing interface with AMPS authentication

Designed for the manufacturing of land mobile and trunked radios, pager, analog cellular and cordless phones, the 8920B takes you another step forward in manufacturing productivity. Processing speed improvements more than double the computing speed over the 8920A for initial transceiver measurement and GPIB commands. This means lower cost per test and higher throughput from your production line. With accuracy as good as stand-alone instruments, you will pass good radios and consistently find those that are out of specification.

66319B/D and 66321B/D
Mobile Communications dc Sources

Features

- emulates the battery, simulates multiple battery types Li-Ion, Ni-MH, Ni-Cad
- excellent output stability with long load leads, requires no special cables
- transient free voltage response, fast output response technology
- accurate digitizing measurement system, 3 current ranges, measure uA to Amp pulsed currents
- flexible measurement system for measuring challenging battery current drains
- device characterization software for no-programming, easy to use, complete test solution

Agilent's mobile communications dc sources are designed for the unique challenges of simulating batteries and power adapters/chargers in wireless handsets and other battery-powered devices that draw current in short, pulsed bursts.

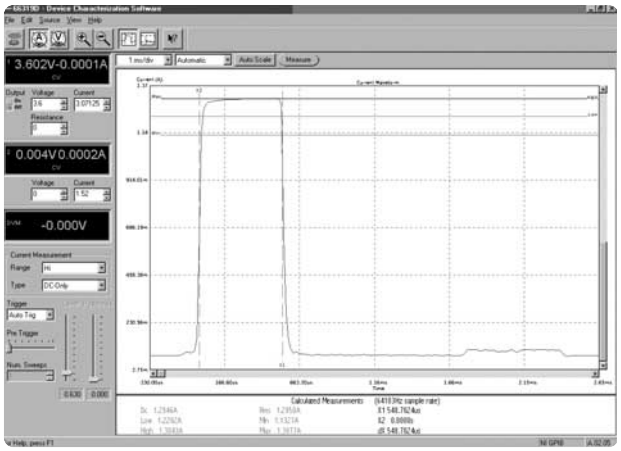
By combining both high-level sourcing (up to 5A peak) and fast, accurate low-level current measurements, these one-box solutions provide vital tools for R&D, production testing, and repair of wireless handsets and products. Single and dual output models include GPIB interface, accurate high performance dc sourcing, current sinking, and programmable output resistance, that is used to replace the main battery and the power adapter power source.

Excellent output stability and regulation regardless of how long the load leads are. This allows the dc source to be placed at a convenient distance from the DUT. Fast output response technology and output compensation control optimizes the dc power source in your test setup. Increase test throughput, measurement speed, and measurement accuracy, by eliminating fixture capacitors and their charge/discharge times.

In order to simplify the use of the dc source on the R&D and repair bench, Agilent offers an accessory software package.

The 14565A device characterization software is a graphical utility that requires no programming. Easily control the dc source output and measurement system from your computer screen. View the digitized pulsed current waveform and measurements automatically on your computer screen for fast and accurate battery current drain analysis.

For more information, please visit our Web site at:
www.agilent.com/find/pscare



6600 Series and 66000 Series dc Power Supplies

Features

- reliability –trouble-free dc power
- ease-of-use –reduce system development time with a standardized family of power supplies
- worldwide support network

Agilent offers an extensive selection of dc power supplies, to meet the power requirements of all sizes of base stations during final test. All have the exceptional reliability that Agilent power products are known for, which is key for keeping your production facility running smoothly. Protection features within each power supply provide for smooth limiting and/or shutdown of the dc power if a problem in the module under test occurs. These Agilent products, together with the worldwide network that supports them, gives you the trouble-free dc power you need.

66000A Modular Power System

A base station test system needs dc power for more than the DUT itself. Test fixtures often contain circuitry which need dc power. Small custom system control and monitoring modules also require bias supplies.

The 66000A MPS is a compact and flexible solution for all your miscellaneous system dc power needs. Up to eight isolated 150 watt dc power supplies will fit into each mainframe. Isolation and polarity reversal relays further enhance the flexibility and ease of use of the MPS. Each power supply displays it's output voltage and current, giving the system operator a quick confirmation that biases have been applied to the test fixture.

MPS Module	Max Volts	Max Amps
66101A	8 V	16 A
66102A	20 V	7.5 A
66103A	35 V	4.5 A
66104A	60 V	2.5 A
66105A	120 V	1.25 A
66106A	200 V	0.75 A

6600 Series System Power Supplies

At the power levels required to power a complete base station, the reliability of the dc power supply is extremely important. You need to count on your power sources to operate consistently and without failures. Also, your dc power source should have the built-in intelligence to protect your DUT, if the base station under test develops a flaw which would tend to cause heightened power consumption. The dc power must be quickly removed before additional damage can occur. This helps you to minimize manufacturing cost by maximizing yield and minimizing rework, and also allows higher and more consistent production throughput.

The Agilent 6600 Series dc power supplies have a documented history of exceptional reliability, and have the protection features needed for confidence in manufacturing test. For additional power beyond the 6.6 kwatt output of the 6691A and 6692A, these power supplies can be operated in parallel.

Models are available for both 24-volt and 48-volt base stations, with appropriate margin for test flexibility.

For more information, visit our Web site at:
www.agilent.com/find/power

Model	6673A	6674A	6683A	6684A	6691A	6692A
Max Volts	35 V	60 V	32 V	40 V	30 V	60 V
Max Amps	60 A	35 A	160 A	128 A	220 A	110 A

EPM-P Series Power Meters

Features

- peak, peak-to-average ratio and average power measurements
- time-gated power measurements
- real-time cursor measurements and analysis display
- analyzer software
- 5 MHz video bandwidth

The E4416A and E4417A high-performance, single and dual-channel power meters and E9320 peak and average power sensors provide a low-cost solution for peak, peak-to-average ratio, average power and time-gated measurements, for complex modulation formats. Time-gated measurements are performed using the meters comprehensive triggering features, such as an external TTL compatible trigger input. Up to four simultaneous time-gated measurements can be made and displayed. Individual start and duration (length) times can be setup, allowing the user to measure average, peak or peak-to-average ratio. For example, on a GSM signal, this capability can be used to measure the average power over 5% to 95% of the burst duration, as well as measuring the peak power and pulse droop.

The meter's 20 M samples/second continuous sampling rate provides the capability to accurately profile and measure complex modulation formats of up to 5 MHz bandwidth. The E9320 peak and average power sensors have two frequency ranges, from 50 MHz to 6 GHz to cover most wireless communications applications, and a higher frequency range 50 MHz to 18 GHz. Each frequency range currently has a choice of three different video bandwidth sensors:

- 300 kHz for TDMA signals, for example GSM
- 1.5 MHz for CDMA (IS-95)
- 5 MHz for W-CDMA

Two real-time markers are provided to allow close analysis of the signal under test. The gate control screen provides graphical signal representation of the signal under test, plus delta time, delta average, delta peak and delta peak-to-average ratio measurements with respect to markers 1 and 2 on the display. The trace control feature provides a trace zoom feature for closer examination of a signal, which is ideal for investigating glitches and overshoot and for closer examination of the rise time or fall time.

The Agilent EPM-P analyzer software is a PC-based tool for pulse and statistical analysis for TDMA and CDMA modulation formats. Versatile markers offer complete power and timing characterization of pulsed signals, to provide easy testing of TDMA component parameters and system performance. In addition to measuring the peak power, average power and peak-to-average ratio, the Agilent EPM-P analyzer software measures the following characteristics automatically:

- power: pulse top, pulse base, distal, mesial, proximal, overshoot and burst power
- frequency and time: pulse repetition frequency, pulse repetition interval, pulse width, off-time, rise time and fall time

For today's noise-like CDMA and W-CDMA formats, statistical analysis of the power distribution provides essential characterization to optimize system design, such as testing for amplifier compression. The EPM-P software provides the capability to determine the probability distribution function (PDF), cumulative distribution function (CDF) and complementary cumulative distribution function (1-CDF or CCDF). In order to make power measurements easily and quickly, eight pre-defined instrument configurations are stored in memory for common TDMA and CDMA wireless standards (GSM, EDGE, NADC, iDEN, *Bluetooth*, cdmaOne, W-CDMA and cdma2000).

For more information, visit our Web site at:
www.agilent.com/find/powermeters

Final Test

E8285A CDMA Mobile Station Test Set

Features

- high accuracy and speed for manufacturing test
- AMPS and IS-95/95A/B and J-STD-008 CDMA digital phone test capability
- both functional and parametric phone testing
- CDMA base station simulator
- PCS testing included
- supports 14.4 Kb vocoder test
- supports SMS and authentication
- supports gated power and open loop time response graphical measurements

The E8285A CDMA mobile station test set provides the key set of measurements necessary to manufacture high-quality, dual-mode CDMA mobile telephones that comply with the TIA/EIA IS-95/95A/B and J-STD-008 air interface standard. Acting as a calibrated, high-performance CDMA base station, the E8285A is optimized to provide high-accuracy measurements with the speed required for efficient manufacturing.

The E8290A point of service test (PoST) software automates phone testing for fast and repeatable measurements at the point of sale. This PC-based solution is very easy to use, reduces churn, reduces no trouble found (NTF), and improves customer care. The 83217A software can also be used to automate testing.

Final Test

8960 Series 10 Wireless Communications Test Set

Features

- test speed helps improve mobile test throughput
- accuracy and repeatability give confidence in mobile quality
- multi-format capability allows for flexible manufacturing
- reduced instruction set programming simplifies test code
- flexible architecture designed to grow with 3G technologies

Developed for high-volume, automated mobile phone manufacturing test, the proven 8960 Series 10 test set helps manufacturers lower test costs and increase production output.

The 8960 can reduce individual test times 30 to 300% compared to previous generation test equipment. For the mobile manufacturer, this translates into higher throughput and fewer test systems. The built-in accuracy and repeatability of the 8960 help increase yield and improve manufacturer confidence in their phone quality.

The 8960 can be configured for GSM, GPRS, TIA/EIA-136, AMPS, cdma2000, IS-95, and W-CDMA IS-95. Multi-format test capability allows manufacturers to test multi-format phones with a single test set, change production from one format to another, or manufacture mobile phones with different formats on the same line.

Designed for automated test, the 8960 remote user interface provides high-level commands specific to mobile phone formats. For the manufacturer, high-level commands simplify test code development and maintenance.

The test set's format-flexible architecture is designed to grow with 3G mobile phone technologies. As wireless technology advances, the 8960 will evolve to meet the needs of mobile manufacturers.

The 8960 Series 10 is the standard for mobile phone test in manufacturing.

For more information, please visit our Web page at:
www.agilent.com/find/8960support/

E6560A cdma2000/IS-95 Wireless Test Manager

Simplify and speed test development with Agilent's E6560A wireless test manager. The E6560A makes setting up and supporting a cdma2000 or IS-95 wireless appliance test easier than ever. Pick an example test plan, construct a unique plan from the standard test menu or create customized tests or calibration routines. The E6560A is complete test system software designed for use with a PC, Agilent's 8960 test set and selected mobile power sources, switches, test fixtures and other production automation hardware.

E6560A Wireless Test Manager Features:

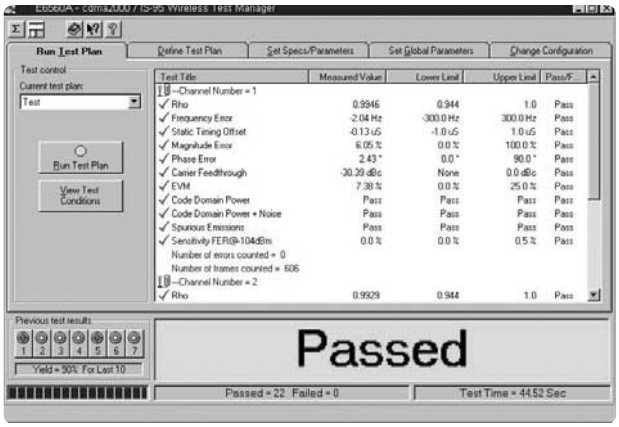
- comprehensive, ready-to-use cdma2000 and IS-95 specific tests and test plans
- click and drag tests to create a test plan
- menu selectable start/stop routines
- multi-up capability for control of one or two test stations with up to two test fixtures per station
- hardware support available for 8960 test set ,select mobile test production instruments and production automation equipment
- hardware selection and set-up is easy
- creating custom tests simplified with test development wizard
- modify standard tests, create unique interfaces and create support for additional hardware meeting specific needs using open test code written in Visual Basic
- develop, run and debug test plans without having to compile
- save test results in common file formats for further analysis

What can the E6560A do for you?

- It helps shorten time to market and reduces development effort to calibrate or test wireless appliances with simple and easy to use menu-driven software.
- The E6560A makes it easier to reduce test cost. You can change a test plan without writing code. Menu-driven tests/test plans, test parameter and spec setting make improving test easier.
- It lowers test support costs. All-in-one software means you won't have to learn multiple software applications. Programming is in Visual Basic, a common language with development and debugging tools.

In the future, additional wireless technologies will be added to create a family of Agilent wireless test software. Test engineers will be able to develop tests for new appliances and multi-format mobiles using the Agilent wireless test manager's familiar interface, development wizard and development environment.

For more information about the E6560A, please visit our Web site at:
www.agilent.com/find/wtmanagers



E4406A VSA-Series Transmitter Tester

Features

- one-button accurate GSM, cdmaOne, NADC, PDC, cdma2000, W-CDMA, and EDGE standards based measurements
- fast in-band modulation analysis
- exceptional accuracy and amplitude flatness
- simple, measurement-based user interface
- new baseband I/Q input
- new 89601A software option support for increased flexibility and enhanced demodulation capability

The E4406A VSA-series transmitter tester offers an excellent combination of speed and accuracy for making standards based measurements. The E4406A is designed to increase manufacturers' throughput while providing higher confidence in test results, the potential for increased profitability and the ability to provide tighter specifications to their customers.

One-button measurements make it easy to obtain test results, and a large, high-resolution color display makes results easy to view and interpret. With built-in, standards-based tests and state-of-the-art digital IF technology, engineers can be confident their test results are accurate.

When combined with the Agilent ESG-D/DP series of digital signal generators, the E4406A VSA transmitter tester provides a powerful, transmit-receive solution for wireless equipment manufacturers.

Please visit our Web site at:
www.agilent.com/find/vsa

Final Test

E8421 Wireless Test Fixture Solutions for Automated Test of Wireless Appliances

Features

- easily replaceable nest inside the fixture can be tailored, by your company, Agilent or a third party, to your unique requirements.
- automated or manual handling
- direct RF, over-the-air RF, audio, and limited button pushing test
- simple interface between fixture and device specific nest customization
- upgradeable for future test requirements

Agilent has developed a common fixture platform, which can be tailored to the handling and testing requirements of virtually any wireless product. From simple circuit elements to final assemblies, Agilent's common fixture solution can save you time and money, and reduce risk. Agilent's test fixture platform supports standard or custom electronics for the switching, signal processing, actuation, interfacing, and control functions required to test at board level or as final products. 60 dB isolation to >2 GHz assures reliable test results and the flexibility to place multiple test fixtures side-by-side. Audio testing and limited button pushing and RF testing may be performed within the fixture saving precious floor space. Agilent's fixturing solutions must be tailored to unique customer product requirements. This tailoring can be performed by the customer, Agilent, or a third party.

TS-50 Fixturing for Automated Test of Wireless Products

Features

- rapid design and assembly time
- configurable
- great RF performance and isolation
- rugged and reliable
- safe and easy to operate
- low cost

Agilent has developed a fixture platform, which can be tailored to the requirements of prototype testing, software development, and repair stations. For final assemblies, Agilent's manually operated fixtures can save you time and money. Test early prototype or production units while processes are being developed for volume production. Unique construction and special RF gasketing provide 60 dB isolation to 1 GHz and greater than 45 dB isolation at 2.4 GHz, preventing interference with adjacent test systems.

Final Test

GS-8000 Functional Test Solution

Features

- reduce test development time
- reduce time to market
- reduce time to ramp-up to volume
- reduce overall test cost per phone
- save space with multiple-up architecture

The GS-8000 is a family of pre-built functional test systems. The GS-8000 is based on the Agilent 8960 Series 10 test set and incorporates Agilent's mobile communications DC sources and optionally the 34970A data acquisition/switch unit. This hardware combined with the ready-to-use software, which uses the TestExec SL operating system, provides a complete test solution for GSM and GPRS wireless appliances. The system is designed to work with the GS-80 fixture, which is only available with the GS-8000, and GS-8800 fixture.

Test system developers can leverage the library of tests, measurements and utilities to create specific test plans and customize the software. Because of the software re-use methodology this platform concept reduces the test development time and lowers the software maintenance overhead.

The GS-8000's standardized integration, optimized hardware and software routines, formal software re-use, training, maintenance and support can reduce the overall cost of test.

Characterization of the system is important to ensure accurate measurements. The GS-8000 solution includes an optional characterization cart, based on the Agilent ESG signal generator and EPM power meter, with software that runs on the main system that enables any system hardware changes to be quickly and accurately characterized. It contains a UPS which allows it to be moved between systems without having to wait for the warm-up time of the instruments.

For more information visit the Web site at:
www.agilent.com/find/gs-8000

E2011E TestExec SL 4.1

Features

- complete test system execution environment for manufacturing functional test applications
- extensive configuration tools for rapid test system integration
- available on Windows NT and Windows 2000

Agilent TestExec SL is a proven full featured test executive platform that offers both a robust system development environment and a simple-to-use but fast execution engine. TestExec SL speeds time to market based on rapid test plan development and integration with a software framework for reuse. It also helps improve production capacity with tools that profile test execution and enable multiple-UUT testing.

Rapid test plan development

TestExec SL features a complete software framework for developing and debugging even the most complex test plans. Test plans use a structured hierarchy for logical grouping and association of test groups, tests and actions or measurements.

Test sequencing supports conditional flow control

Tests and actions can be developed in language of choice (C, C++, VEE, LabVIEW, BASIC).

Action Wizard utility generates Microsoft Visual C++® code and DLL's to integrate user-defined actions.

Debug environment includes breakpoint settings and watch and trace windows.

Framework for software reuse includes facilities for managing test libraries.

Test plans from all earlier embedded versions of TestExec SL can be read.

Usability tools for high performance

TestExec SL has many valuable time-saving integration tools that help test engineers take some of the pain out of system integration.

Throughput multiplier enables hardware-sharing multiple-UUT testing without the need for custom software.

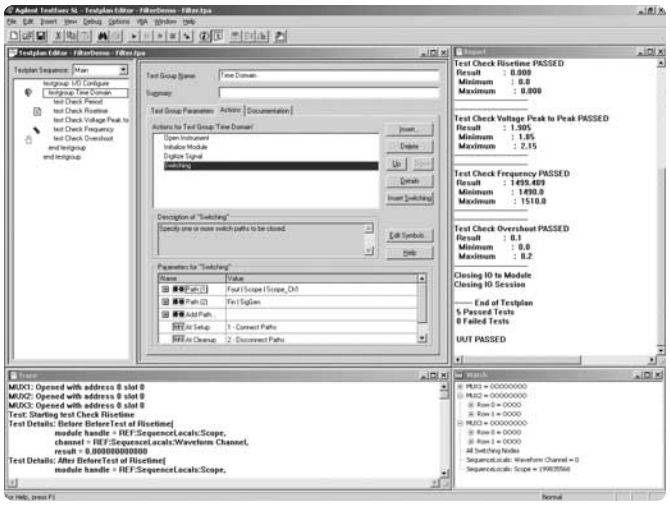
Switch manager helps manage the complex topologies between instrument and UUT.

Configurable data logging exports data in XML, CSV, ASCII and Agilent 3070 formats.

Test profiler compiles and displays key test performance results for optimal system tuning.

Run-time user interface customization supports Visual Basic and ActiveX.

For more information or to get an evaluation copy of the software, please visit our Web site at:
www.agilent.com/find/testexec



VEE Pro Programming Language – E2120G, E2119G, 82345G, and 82351G

Features

- easy graphical programming environment
- fast measurement analysis results

Agilent is in the business of connecting measurements to minds to market. The VEE software family builds upon the popularity of VEE 5.0 with its industry-standard approach to math analysis, visualization and signal processing. It integrates two separate software packages into a single graphical environment that handles both measurements/data collecting and spreadsheet/math analysis. You actually get the built-in power of MATLAB® script and the Signal Processing Toolkit from The MathWorks. These capabilities are embedded within VEE at no extra charge. With VEE 6.0, tests are developed faster, results are analyzed more easily, understanding is increased, and data analysis is greatly enhanced. VEE makes it possible within your familiar "home base"environment, leveraging the solutions you have in place today.

It's Your "Home Base"

As an open graphical environment, VEE works with category-leading products across all market segments. It accepts data from any vendor's instrument or PC card. It supports leading applications such as Microsoft Excel and Word, The MathWorks MATLAB, Microsoft Internet Explorer® and Netscape Navigator™. It supports all popular programming languages including Visual Basic, C, Visual C++ ® and LabVIEW. It works with all manufacturing equipment via ActiveX®—surface-mount machines, and robots. Agilent VEE can be used as a standalone solution or it can deliver measurement analysis results from custom in-house solutions. It becomes part of your operating environment without changing the way you do business.

Minimum System Requirements for Agilent VEE

- PC with a Pentium 120 MHz processor; 266 MHz Pentium II or higher recommended
- Microsoft Windows 95, Windows 98, Windows NT 4.0, or Windows 2000 operating system
- 32 MB RAM with Windows 95/98, 64 MB RAM with Windows NT/Windows 2000
- hard disk free space: Windows 95/98 (FAT 16/32 file system) 370 Mbytes Windows NT/2000 (FAT 16/FAT 32/NTFS file systems) 570/370/175 Mbytes respectively
- CD-ROM drive
- 15-inch monitor 800x600 (Super VGA); 17-inch 1024x768 Ultra VGA recommended
- PC keyboard
- two-button mouse (third button, if present, is not used)
- free 60-day VEE Pro 6 evaluation copy (order a free CD or download at www.agilent.com/find/vee)

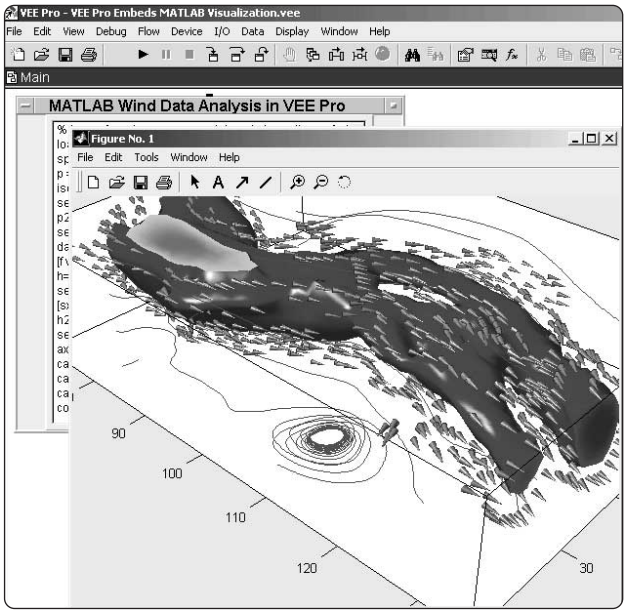
Embedded MATLAB, Built-In Analysis

The power of MATLAB script and the Signal Processing Toolkit from Embedded within VEE, Mathworks delivers unprecedented analysis and visualization capabilities in a single graphical environment. You get hundreds of functions with VEE, plus the 400 most popular MATLAB functions preprogrammed as one-click VEE objects, including:

- numeric and symbolic computation
- linear algebra and matrix computation
- Fourier and statistical analysis
- differential equation solving
- matrix manipulation
- trigonometric and other math operations
- data analysis
- manipulation and reduction
- volume visualization of scalars and vectors
- multiple lighting sources
- camera-based viewing
- engineering and scientific graphics
- 2-D and 3-D displays
- triangular and gridded data
- waterfall diagrams
- quiver, ribbon, scatter, bar, pie and stem plots

Signal processing functions including signal and linear system models, analog filter design, FIR and IIR digital filter design, spectrum estimation, and time-series modeling animation and sound processing and analysis.

VEE Pro Programming Language – E2120G, E2119G, 82345G, and 82351G, *continued*



VEE is Smart

Program the properties of your instruments quickly, easily, *graphically*. Take any measurement and control any PC card or instrument from any vendor. Create runtime executables easily with embedded I/O configuration, and distribute the programs at no extra charge. Verify instrument addresses and other parameters automatically at runtime. Troubleshoot instrument timeouts and other errors automatically.

VEE OneLab

VEE OneLab is a subset of VEE Pro designed for R&D engineers who need measurement-specific graphical programming, VEE OneLab is easier to use and offers better functionality. VEE OneLab provides the ease and flexibility of VEE Pro at a lower price than most similar packages

Final Test

VXI General Purpose Functional Test

Features

- modular architecture with a variety of mainframes (4, 6, 9, and 13-slot)
- superior cooling and power
- enhanced system monitoring

Electronic Functional Test

Today more devices are incorporating electronics to provide increasingly powerful functionality. This electronic content and the subsystems in which it resides are also growing in complexity. To assure the performance, quality, and reliability of these devices, manufacturers are finding the need to employ a greater degree of functional testing of these devices in all stages of design and manufacturing. Functional testing using VXI is a fast, efficient, and economical way of doing this.

Applications that benefit from VXI test systems include wireless handsets, telecommunications wireless and wireline infrastructure equipment, automotive electronics, electronic control systems, and military/aerospace avionics and control modules. VXI is used for functional testing of these devices and many others in design verification, manufacturing, and maintenance.

VXI provides a foundation for quickly creating test systems from off-the-shelf, reliable components. VXI supports your requirements to implement test systems that meet your time-to-market and time-to-volume needs.

VXI systems are easily modified and extended so you can efficiently deliver test systems that meet changing requirements as your device design progresses and as your product is modified and improved in manufacturing. As you need to create new test systems, you can efficiently leverage your previous knowledge and test system designs to meet your new testing requirements. By their modular, extensible nature, VXI systems can be configured in various ways for testing different types of electronic devices and for different parts of your manufacturing processes.

B-Size VXI Measurement and Switch Modules

Features

- smaller form factor
- lower cost

E1300B 9-slot VXI mainframe
E1301B 9-slot VXI monitoring mainframe
E1326B 5.5 digit multimeter
E1328A 4-channel D/A
E1330B Quad 8-bit digital I/O
E1332A 4-channel counter/totalizer
E1333A 3-channel universal counter
E1339A 72-channel digital output
E1343A 16-channel GP relay multiplexer
E1351A 16-channel FET relay multiplexer
E1361A 4x4 relay matrix switch
E1364A 16-channel form C switch
E1366A Dual 1x4 50 ohm RF mux
E1367A Dual 1x4 75 ohm RF mux
E1368A 18 GHz microwave switch
E1369A Microwave switch driver
E1370A Microwave switch/attenuator
E1399A Breadboard

For more information about VXI, please visit our Web site at: **www.agilent.com/find/vxi**

C-Size VXI Measurement and Switch Modules

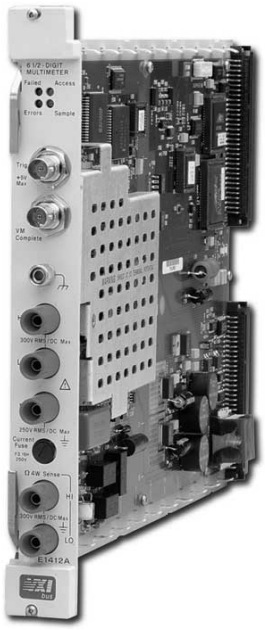
Features

- most complete range of measurement and switch modules
- high-quality measurement and switching

Available C-size VXI modules include:

E1412A 6.5 digit multimeter
E1418A 8/16 channel D/A
E1441A Arbitrary WF generator
E1442A 64-channel form C switch
E1445A Arbitrary function generator
E1458A 96-channel digital I/O
E1459A 64-channel isolated digital I/O
E1460A 64-channel relay multiplexer
E1463A 32-channel 5-amp form C switch
E1465A 16 x 16 relay matrix switch
E1466A 4 x 64 relay matrix switch
E1467A 8 x 32 relay matrix switch
E1468A 8 x 8 relay matrix switch
E1470A 60-channel 50 ohm RF multiplexer
E1472A Six 1x4 50 ohm RF multiplexer
E1474A Six 1x4 75 ohm RF multiplexer
E1490C Breadboard
E8401A Low cost 13-slot mainframe (500 watts)
E8403A 13-slot high power mainframe (1000 watts)
E8404A 13-slot enhanced monitoring mainframe (1000 watts)
E8408A 4-slot monitoring mainframe (175 watts)

For more information about VXI, please visit our Web site at: **www.agilent.com/find/vxi**



E1852A Bluetooth Test Set

Features

- low-cost standalone solution
- establishes link using standard *Bluetooth* protocol
- fast functional and performance test over the RF-interface
- additional features aid module calibration and diagnostics
- world-wide application and service support

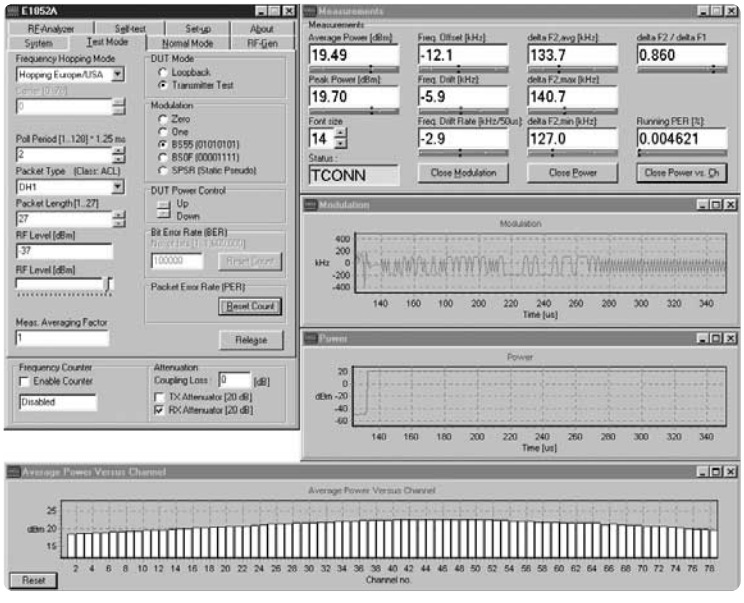
The E1852A Bluetooth test set quickly performs functional test and simultaneously measures key *Bluetooth* RF parameters. Adding this test set to an existing manufacturing process provides *Bluetooth* test capability, measurements can run concurrently with other tests. Automated test sequences are easily created and programming examples are provided.

The test set establishes a link over the air interface using standard *Bluetooth* protocol that supports both *Bluetooth normal* and *test* modes. These are used to verify transmitter and receiver performance under different test conditions as defined in the *Bluetooth* specification. With simply a *normal* mode connection it is possible to measure transmit power, frequency, modulation parameters and receiver sensitivity. These parameters can be captured within the time taken to perform a functional test.

Additional features make the E1852A a flexible tool for module calibration and diagnostics. RF generator and RF analyzer functions may be used for testing or calibrating input and output power; Received data and clock outputs are available for connection to other test equipment; A frequency counter is provided for checking and tuning reference oscillators. Included with the test set is software for a PC-based graphical user interface, providing straightforward measurement set-up. Results are presented numerically and graphically and may also be saved to a log file, making it easy to create defect reports or to capture results for further analysis.

Regular firmware updates are easily downloaded from the web to assure interoperability to the latest *Bluetooth* standards and to provide the latest features for the E1852A. Agilent provides worldwide application support to quickly get you up and running, and worldwide service support to help you maintain your manufacturing processes.

Please visit our Web site at:
www.agilent.com/find/bluetooth



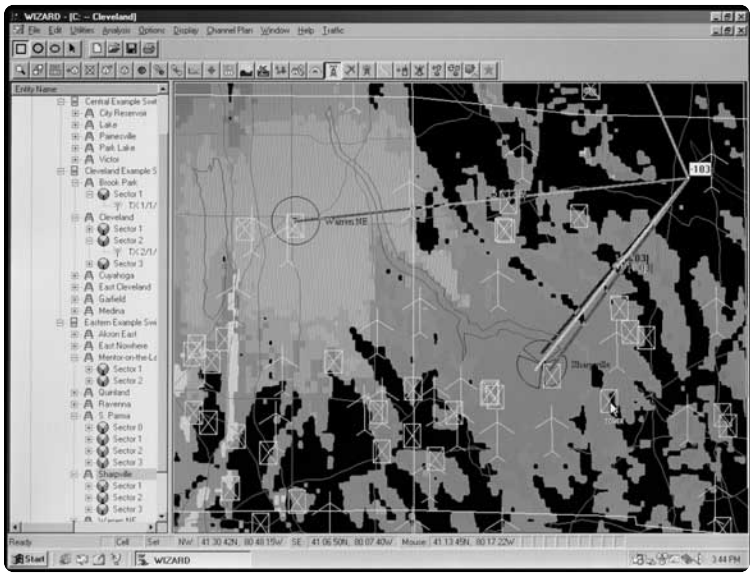
E6482A Wizard

Features

- full-featured analysis for 2G and 3G wireless technologies
- measured data integration
- runs on Windows 95, 98 and NT
- laptop-ready software
- imports/exports MapInfo
- exports to other Applications

Agilent has revolutionized the field of network design with WIZARD, the first portable network planning tool. WIZARD provides full-featured RF modeling capabilities and terrain-based propagation model analysis for all major 2G to 3G wireless technologies. Agilent's Windows-based package produces full-color prediction plots to aid network growth planning, interference analysis and multi-technology deployments. Operating in a network environment or on a laptop, WIZARD delivers detailed network planning –anytime, anywhere. WIZARD offers a wide range of capabilities designed to dramatically increase efficiency and sharpen accuracy.

Please visit our Web site at:
www.agilent.com/find/networkplanning



8935 Series Base Station Test Solutions

Features

- comprehensive analog/digital TX/RX RF test solution
- a rugged, full-featured, one-box test set designed for a technician's operating environment
- accurate power and modulation measurements
- swept antenna measurements consisting of return loss and cable fault location
- enhanced user interface coupled with a large, bright, electro-luminescent display for easy operation
- base station specific automation software for fast, consistent measurements
- cdma2000 1XRTT test capability for the E6380A

The 8935 series of base station test solutions are full featured, one-box test sets designed to meet the needs of network equipment manufacturers, installation teams and service providers.

The 8935 series consists of the E6380A AMPS/CDMA/cdma2000 test set and the E6381A AMPS/TDMA test set.

Building on the success of our third generation base station test equipment, and incorporating Agilent's pioneering efforts in digital measurement techniques, this generation of test gear heavily incorporates feed back from Cellular and PCS users. For example, the

8935 utilizes a larger, bright electro-luminescent display for easier viewing. A "rugged design" includes a membrane keypad, gasketed display, stand up operation, filtered airflow, and a ruggedized exterior to help protect the 8935 from day to day field use.

More importantly, the 8935 incorporates a less intimidating, more user-friendly interface with Windows-like pull down menus and one-key measurement execution. This interface, coupled with 8935's faster measurement speed and automated software results in less off-line time and improved system performance. Base station specific software is available for the following network manufacturers: CDMA (Lucent, Nortel, and Samsung); TDMA (Ericsson, Lucent, Nortel). Each of these software packages streamline test procedures providing a process that service provider technicians can easily implement – reducing errors due to test variability and set up, while increasing test repeatability.

Please visit our Web site at:
www.agilent.com/find/basestations

E6474A Base Station Over-Air Maintenance Tool

Features

- over-air base station testing for cdmaOne J-STD-008, and IS-2000 networks
- monitor base station performance quickly
- code domain power and spectrum display
- collects dynamic code domain statistics
- measures all CDMA network pilot signals
- automated report generator
- data recording and playback
- definable alarms to alert users of specific signal conditions
- built in memory of user-defined test scenarios

Operating a wireless network is an extremely competitive business. In order to stay competitive, it is necessary to continually improve service to attract and retain new customers, and reduce operating costs at the same time. Proactive maintenance can help in both of these areas, but typically takes time that technicians just don't have.

The Agilent over-air maintenance tool makes proactive base station testing possible. Technicians can easily execute first-level diagnostics on CDMA base stations using the system's over-the-air measurement functionality. Measurements are fast (less than 5 minutes per sector) and easy (usually two or three mouse clicks from start to finish with a complete report) and technicians can complete these diagnostics without getting out of their vehicle. The ability to do proactive maintenance with very little impact on the technician's time is particularly important for maintaining difficult to access sites. Pole-top base stations, for example, promise to reduce operating and deployment costs as well as deployment time. However, traditional testing methods are not practical for pole-top installations. With the over-air maintenance tool, maintaining pole-top installations is now practical.

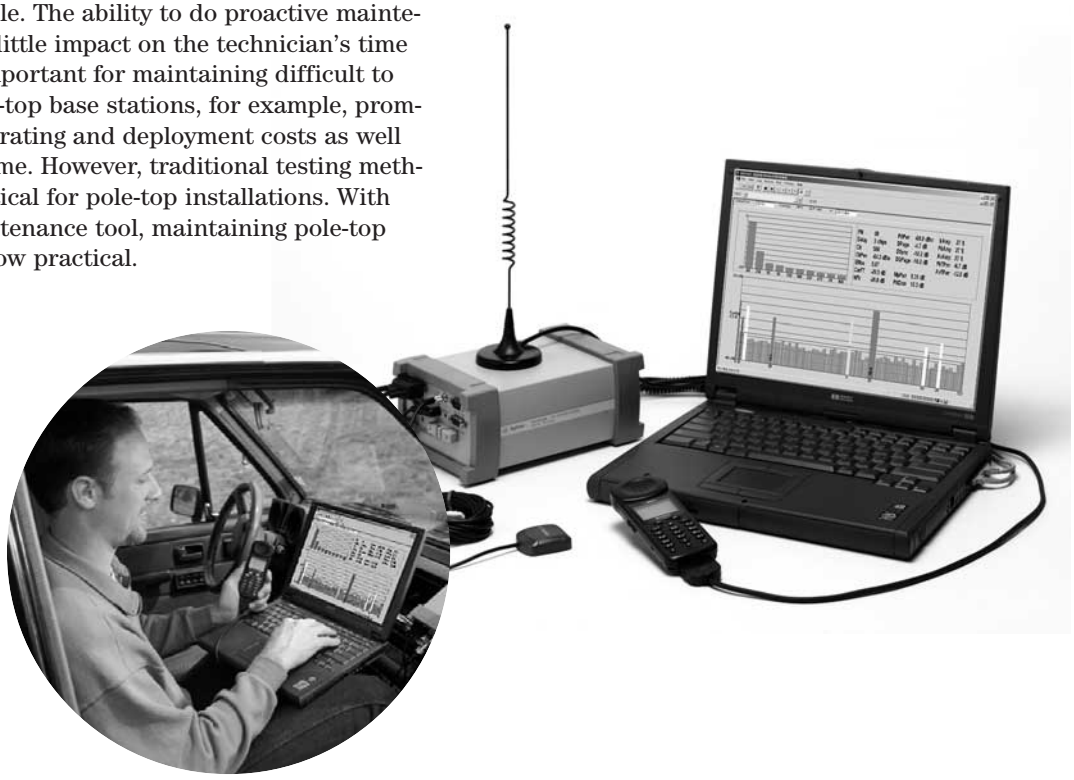
System Components

The system software runs on a PC that interfaces with an Agilent digital RF receiver. Multiple measurements can be made simultaneously and can be displayed real-time and logged to the database.

Two system software options are available:

- code domain power and spectrum mask software
- license (receiver-based)

Please visit our Web site at:
www.agilent.com/find/basestations



8712ET/ES and 8714ET/ES RF Network Analyzers with Option 100 and Option 101

Features

- fault location is used for installation and maintenance of antenna feedline systems
- structural return loss (SRL) measurements help determine cable quality
- split screen displays return loss and distance-to-fault simultaneously
- easily add title and date/time information to plots in the field
- internal 3.5 inch disk drive allows unlimited storage of traces

Option 100 adds fault-location and SRL measurement capability to the 8712E RF network analyzer family, which includes the 8712ET/ES and 8714ET/ES models. This option is easy to use and extremely useful for both the installation and maintenance of antenna-feedline systems.

Isolating the location of faults saves time and money by focusing the inspection and repair directly on the bad connector, cable, or antenna. You can also use this option to easily characterize the loss and velocity factors of your cables, and to accurately check the effect of cable damage by measuring SRL. Option 101 combines Option 100 with a rugged transport case to protect your instrument in the field during transport and operation.

Please visit our Web site at:
www.agilent.com/find/basestations

ESA-E Series Portable RF/MW Spectrum Analyzers

Features

- 5-minute warm up
- built-in help
- background auto-alignment
- snap-on battery/12V operation
- rugged packaging and construction
- flexible platform
- frequency coverage to 26.5 GHz
- external mixing capability to 325 GHz
- 7 measurement personalities

Agilent's ESA-E series spectrum analyzers are protected by a very rugged case for lasting accuracy in tough environments. Rubber-encased frames and the lack of vibration-prone internal adjustments improve reliability during transportation. Rain-resistant front panel, shielded vents, and side-mounted fan protect the instrument in adverse conditions. A communications focused user interface, large, high-resolution color display, and built-in help make the ESA-E series easy to use in a wide variety of conditions. The analyzers can make calibrated measurements quickly with a five-minute warm-up. The automatic, internal background-alignment feature gives consistently accurate results over varying temperatures, without manual calibration. An optional, rechargeable snap-on battery provides up to 1.9 hours of cordless operation. The flexible tilt handle optimizes viewing angles on the bench or floor for easy installation and service of base stations.

The ESA-E series analyzer's flexible platform allows engineers to enhance performance as their requirements change. Each analyzer comes with 6 card cage slots for adding future capabilities which can be expanded to include application-specific measurement personalities including GSM/GPRS, cdmaOne, modulation analysis, *Bluetooth*, cable fault location, phase noise and cable TV.

Please visit our Web site at:
www.agilent.com/find/esa

E7400 Series of Drive Test Solutions

Features

- scalable platform for multiple technologies [CDMA, TDMA, GSM, GPRS, cdma2000, W-CDMA (UMTS)]
- speeds network deployment
- simplifies wireless network optimization
- maximize productivity and minimize costs
- aids in site selection/evaluation and interference management
- performs both indoor and outdoor network measurements
- E7488A provides voice quality benchmarking for evaluating quality of service from subscriber's viewpoint

E7400 Drive Test Solutions Available

- E7473A CDMA drive test solution
- E7474A TDMA drive test solution
- E7475A GSM drive test solution
- E7476A W-CDMA (UMTS) drive test solution
- E7477A cdma2000 drive test solution
- E7478A GPRS drive test solution
- E7488A Portable VoicePrint voice quality benchmarking solution

The E7400 series of integrated air interface measurement systems offers comprehensive RF and call-based drive test measurements for wireless networks. A phone supplies critical call-based performance indicators, while a digital receiver provides complete characterization of the RF coverage. By providing call-based and RF parameters as a function of location, these systems allow you to characterize the performance of your networks and understand the underlying causes of performance problems.

The E7400 drive test solutions share a common, scalable test platform, which provides greater flexibility in meeting your network optimization needs. The software automates the data collection process and provides sophisticated alarm capabilities to notify users of specific network problems as they occur. All systems can make CW and channel power measurements for cell site evaluation and selection. A spectrum analyzer capability is provided for interference management and troubleshooting. The systems can also be configured for use with a pen-tablet computer for indoor measurements.

The E7476A W-CDMA (UMTS), E7477A cdma2000 and E7478A GPRS drive test systems allow end-to-end testing of data connections with independent uplink and downlink measurement results. Key data characteristics such as bit error ratio, packet error rate and data throughput can be measured together with network accessibility and recorded for post processing analysis.

Please visit our Web site at:
www.agilent.com/find/networks

E6474A Wireless Network Optimization Platform

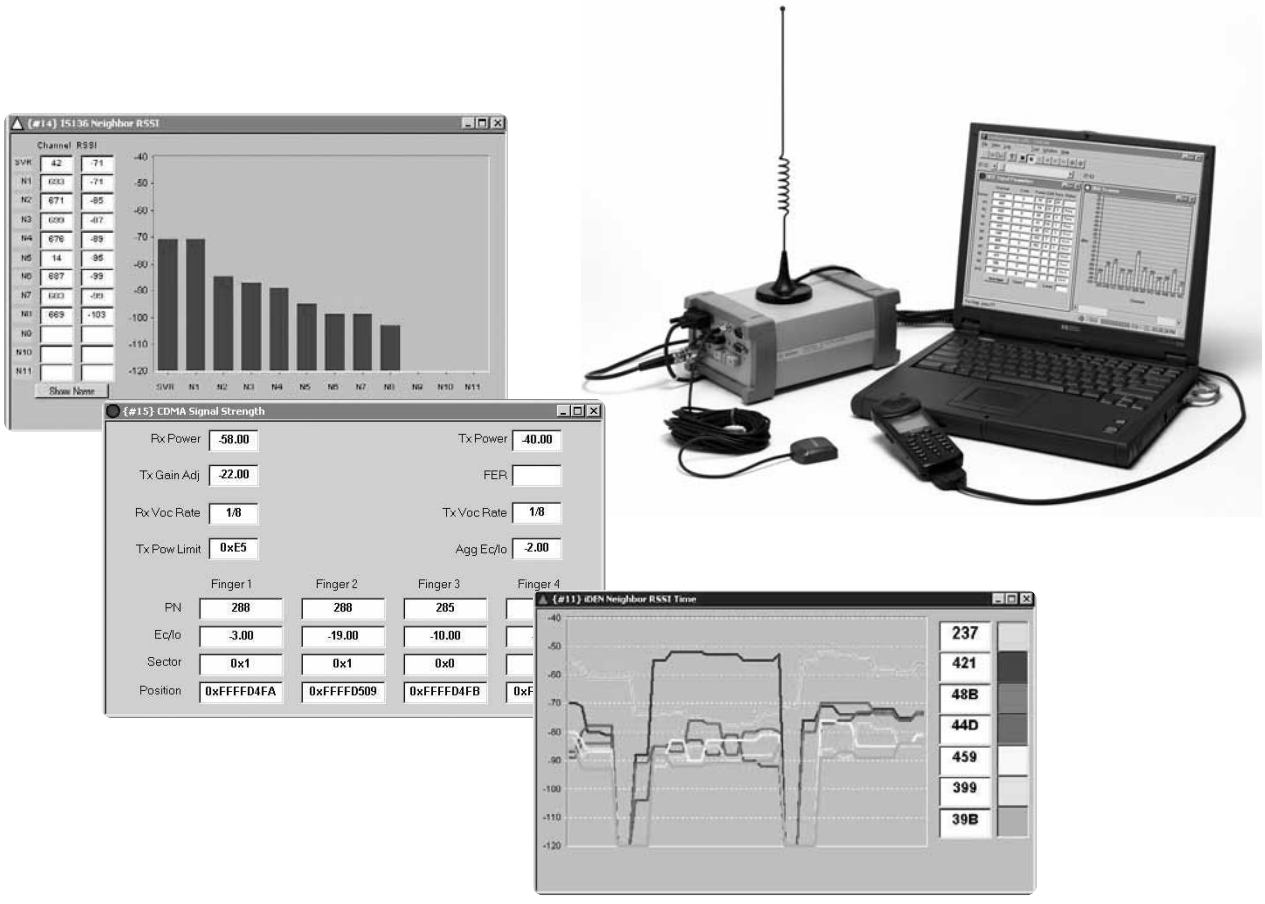
Features

- troubleshoot and optimize wireless networks quickly and accurately
- speeds turn-on of new data services
- available in multiple configurations for both indoor and outdoor network measurements
- comprehensive solution used for site evaluation, base-station turn-on, system acceptance and on-going optimization

The E6474A wireless network optimization platform enables wireless service providers and network equipment manufacturers to proactively address challenges with wireless voice and data networks by quickly and accurately identifying problems, which makes troubleshooting complex networks faster and more efficient than before. The E6474A provides a wireless network test solution that can be leveraged to enable site evaluation, base-station turn-on, system acceptance and on-going optimization. The E6474A provides industry-leading performance during all phases of the network lifecycle.

The E6474A supports CDMA, GSM, TDMA, iDEN, cdma2000 and W-CDMA (UMTS). The functionality of the E6474A can be increased, as an operator's network testing needs increase. Whether determining quality of service from the customer perspective, or performing comprehensive network management, the E6474A offers a common solution to meet these requirements. As network testing requirements increase, an operator may expand its tools, leveraging existing hardware and software. If an operator decides to enhance its current network, or migrate to a different technology, the E6474A can be leveraged so that tools and training investments are minimized as new technologies and data formats are evaluated and turned-on.

Please visit our Web site at:
www.agilent.com/find/networks



RECON Wireless Market Reports

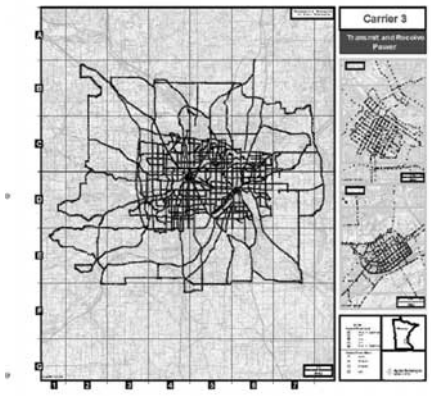
Features

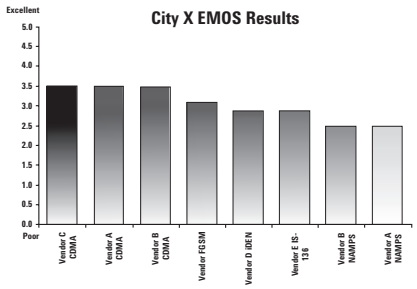
- competitive analysis from the subscribers perspective
- analysis for determining performance relative to competition
- results can be compared against global, regional and market references
- engineering parameters measured and geographically mapped
- identification of problem areas based on interference and coverage
- call failure analysis based on technology specific metrics
- reports that are delivered on the world wide web with an easy to use interface
- support for CDMA, iDEN, NAMPS, TDMA, PDC, JDCMA, jiDEN, EAMPS, GSM and ETACS technologies

Keeping a competitive edge in today's quickly evolving wireless industry requires vision. Operators need to know your networks position in relation to your competitors. RECON, Agilent's benchmarking service, can provide the vision of a network necessary to make decisions. From a full-scale competitive survey to a detailed call failure analysis, Agilent focuses on providing the essential information required for keeping wireless networks on top.

Outsourcing benchmarking projects to Agilent allows operators to take advantage of our expertise in network performance analysis and evaluation. Our reports provide detailed analysis on how subscribers perceive a network's voice quality and data services. Agilent presents these findings in market analysis reports that may be fully customized. Agilent also maintains an enormous database of current and historical performance records for use in trending reports.

Please visit our Web site at:
www.agilent.com/find/serviceproviders





8924E CDMA Manufacturing Test Set

Features

- low-cost and user-friendly interface for service market
- AMPS and IS-95/95A/B and J-STD-008 CDMA digital phone test capability
- both functional and parametric phone testing
- CDMA base station simulator
- optional PCS frequency coverage
- supports 14.4 Kb vocoder test
- supports SMS and authentication

The 8924E CDMA mobile station service test set provides the essential set of measurements required to verify the performance of CDMA and analog mobile phones in service applications.

The 8924E is best utilized when used in conjunction with the E8290A Point of Service Test (PoST) PC-based software. The mouse-driven, on-screen graphics allow customers to make fast, accurate and repeatable measurements with minimal training. This solution saves cost by reducing the number of no trouble found (NTF) phones sent back to manufacturers and by reducing the number of phones handed out as exchange replacements.

Data can be combined into customer care databases so trends in network and phone performance can be characterized.

The 83217A software can also be used to automate testing.

Please visit our Web site at:
www.agilent.com/find/mobiles

Mobile Appliance Screening and Repair

8920B, 8922S, and 89236B Manufacturing Test Sets

Features

- integrated one-box test sets for cellular/PCS mobile service
- full-function including RF parametric and call processing testing
- automated software available for ease-of-use

Agilent's integrated one-box mobile test sets are used in mobile service applications for incoming inspection or mobile repair. These one-box test sets provide accurate and fast RF parametric measurements on the transmitters and receivers of the mobiles. These test sets emulate a base station and provide call processing testing capabilities. Automated software is available to speed up the testing process and to simplify the user interface. This series of test sets supports all major standards, including analog cellular systems, CDMA, GSM, PCS, trunking, paging, and land mobiles.

Please visit our Web site at:
www.agilent.com/find/mobiles

E6393A

Mobile Appliance Screening and Repair

83236B PCS Interface

Features

- cost-effective PCS upgrade for TDMA and CDMA
- North American, Korean, and international-band PCS interface (1710-1990 MHz)
- upgrade existing 8920B, 8924C and 8924E systems in the field

Extend TDMA and CDMA phone test capabilities to PCS-band frequencies by adding the 83236B PCS interface to existing 8920B Option 800 (TDMA) and 8924C and 8924E CDMA) mobile test solutions.

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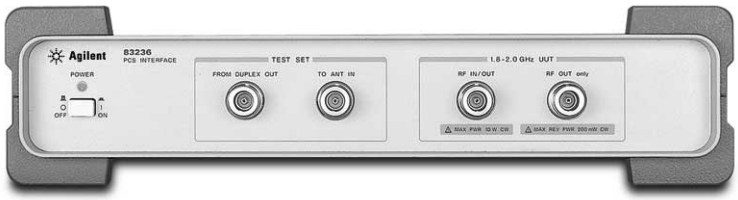


E6392B and E6393A/B Retail Mobile Station Test Sets

Features

- less than half of the price of the manufacturing test set
- just enough functionality for MS screening, repair and after repair calibrations
- built-in DC source for power supply and power consumption testing
- point of service test (PoST) server software networks multiple distributed test sets running PoST software via the internet or intranets

GSM (GPRS) specific features:

- GSM/DCS/PCS dual-band handover testing
- characterize the performance of GPRS capable mobiles over multi-slot configurations

CDMA/AMPS specific features:

- cdma2000 1x mobile phone testing capability
- signal generator level up to –20 dBm and power measurement down to –60 dBm
- complete coverage of worldwide CDMA cellular/PCS formats

Agilent's E6392B GSM (GPRS) and E6393A/B CDMA/AMPS mobile station test set combines just enough functionality, good performance, and an attractive low price. Designed especially for the mobile screening and repair applications, it lets you check the overall functionality of a mobile phone and provides the essential transmitter/receiver measurement capabilities that you need to diagnose and repair module-level faults.

Besides performance and functionality, E6392B and E6393A/B are surprisingly easy to use. About 30 minutes is all it takes to learn how to use this test set. An intuitive user interface and PCMCIA memory-card reader help make the test set especially easy to set up and operate. All settings, including configuration settings and cable losses, can be saved to a file. Different test conditions can be stored on a PCMCIA card for easy uploading into the instrument. Measurements can be selected and run by simply rotating a knob and pressing a few keys.

Please visit our Web site at:
www.agilent.com/find/mobiles

E829x Series Point of Service Test (PoST) Software

Features

- works with 8924, E6392, or E6393 mobile station test sets
- test on-the-spot in retail stores and return/repair facilities
- automate the testing of CDMA, AMPS, and GSM mobile phones
- verify phone performance with just a few mouse clicks
- capture customer information and phone performance results
- analyze phone performance trends for better customer care
- Point of Service Test (PoST) Server software networks multiple distributed test sets running PoST software via the Internet or intranets

Agilent's Point of Service Test (PoST) software provides the solution that automates Agilent's mobile station test sets for easy testing of CDMA, TDMA, GSM, and AMPS phones.

Using a PC and the version of PoST software that works with your Agilent test set, your sales clerks or other test operators can instantly determine whether or not a customer's phone is faulty. By testing on the spot, your business will be able to respond quickly to customer problems. You'll cut costs by handing out fewer replacement phones and by reducing the number of "no-trouble-found" phones that get sent back into the system for repair.

With the PoST software's powerful search, analysis, and storage capabilities, you can build a database of useful information to help you understand phone performance trends, improve customer care, and manage your service operation more efficiently.

You can centralize the management of your test programs and store test results measured at various remote facilities to a central web database with Point of Service Test (PoST) Server software. For the latest product compatibility and support information, please visit our Web site at: **www.agilent.com/find/post**

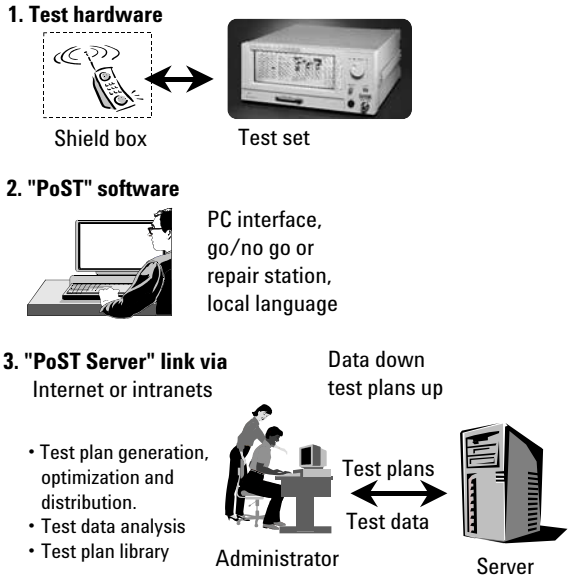
Mobile Appliance Screening and Repair

E8298A Point of Service Test (PoST) Server Software

If your application includes a number of one-box testers running Agilent's PoST software, either co-located or geographically dispersed, Agilent's E8298A PoST server software application provides the capability to link these separate test systems together via the internet or intranets. This software can improve efficiency and reduce cost with the following:

- increased visibility to measured data by uploading the data from each tester to a common, central server database where it can be further analyzed and stored
- a means to create and control the test plans that are run on the PoST software, storage on the server and automatic downloading to the PoST application in each of the test systems, assurance that all test systems in the network are running the same versions of the test plans, easy roll-out of changes as new mobile phones models are added to the test mix
- simplified implementation of the network by making use of the inter/intranet and through its use of flexible, industry standard server databases
- leveraging the capabilities of PoST software to create test plans and easy to use with a PC or human interface

To learn more about PoST server software and to learn about the latest product compatibility and support information, please visit our Web site at: **www.agilent.com/find/post**



Wireless Network Services

RF Consulting Services

Agilent's dedicated staff of professionals provides services for every level of the project, from full-scale network design to channel planning. Our goal is to provide customers with expertise and creative solutions that enable them to improve their competitive position, increase profits, and maximize quality of service. Our expertise includes:

Wireless RF Design Services

- turnkey services and growth planning
- market analysis and demographic studies
- traffic and system growth planning
- site selection and validation
- propagation model validation
- frequency/PN planning
- in-building design and commissioning
- technology experience in GSM, GPRS, UMTS, iDEN, CDMA, cdma2000, JCDMA, TDMA, AMPS, and other technologies
- general drive test services

Specialized Services

· technology transition planning for 2, 2.5 and 3G
· third-party design reviews and vendor evaluations
· research support
· network performance testing for all technologies
· automatic frequency planning
· intermodulation and co-location studies
· regulatory filings
· emergency location services compliance
· network optimization and performance analysis
  - independent evaluation of your network's performance
  - comprehensive test plan for optimizing your network
  - ensures peak network performance
  - reduces investment in network measurement equipment
  - maximizes return on investment

Please visit our Web site at:
www.agilent.com/find/serviceproviders

Wireless Network Services

Fixed Network Design

Agilent's fixed network design group provides the pinnacle of expertise in the planning, design, implementation and optimization for wireline and fixed wireless applications in both foreign and domestic markets.

Our team will create a state-of-the-art, cost-efficient network design to meet every customer's needs. Each network we design will be delivered with the highest degree of reliability and deployed using the most effective and timely methods available. We combine project-specific software, vendor-specific implementation guidelines and proven project management techniques to deliver the pinnacle of engineering services available in the telecommunications industry today.

Fixed Network Services Available Include:

- wireline and fixed wireless network design and evaluation
- turnkey project management
- service provider selection and contract negotiation
- capacity and bandwidth analysis for all global carrier technologies
- backhaul, transport and interconnect facilities design and implementation
- least-cost routing solutions
- network architecture selection
- switch, hub and node configurations
- traffic planning
- IP network services

Please visit our Web site at:
www.agilent.com/find/serviceproviders

Wireless Technology Training

Agilent's wireless technical training provides wireless engineering classes that are ISO-9001 certified. Our certificate series offers IEEE recognized CEU's. The classes are developed and taught by our experienced consulting staff. Our courses give your team the theoretical and practical insight needed to effectively engineer your wireless network. Stand-alone modular units allow for customized curriculum, flexible venues and can be delivered at Agilent locations or at client locations worldwide. Agilent delivers a complete curriculum of in-depth wireless technical training ranging from introductory overview courses to advanced engineering theory and process courses.

Areas covered include:

- technology training for 2, 2.5 and 3G access technologies
- wireless systems overview courses
- RF design theory and practices
- Agilent product training

Available curriculum:

RF Series I

- wireless systems overview
- statistics and macrocell propagation modeling
- measurements in wireless mobile communications
- link budgets
- microwave network engineering

RF Series II

- traffic planning
- frequency planning
- RF planning for cellular networks
- antenna systems for cellular communications

Technology training

- introduction to IS-95 CDMA networks
- RF planning of IS-95 CDMA networks
- RF optimization of IS-95 CDMA networks
- introduction to cdma2000 1xRTT networks
- WIZARD IS-95 CDMA training (optional)
- introduction to TDMA/IS136 networks
- introduction to GSM networks
- GPRS network design and optimization
- introduction to W-CDMA UMTS-FDD networks 1
- introduction to W-CDMA UMTS-FDD networks 2

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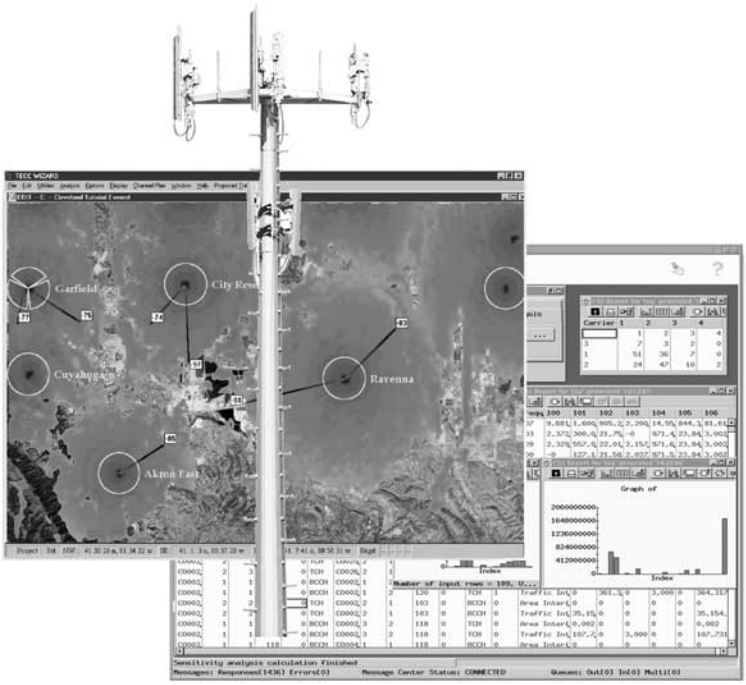

Network Installation

N1610A/B, N1660A Dual Line DS1/0 Service Advisor Test Tablet

Features

- comprehensive dual DS1 testing
- full and fractional T1 BERT testing
- optional signaling and pulse mask measurements
- Windows CE operating system
- touch sensitive color VGA screen

Agilent combines sophisticated, full-duplex analysis with unprecedented flexibility and simplicity of operation. The service advisor tablet and dual line DS1/0 plug-in module deliver a flexible, lightweight, battery-powered solution for dual T1 testing.

The N1610A/B service advisor portable test tablet is Agilent's newest platform for Telco, residential access and line qualification applications. The service advisor's advanced Windows CE operating system and consistent graphical user interface provide an easy to use and versatile tool for installing and maintaining services at the central office and outside plant.

Agilent's dual DS1/0 test module simplifies T1 and DS0 testing by providing complete analysis of line conditions and status in both directions with the touch of a single button. One color-coded summary screen displays simultaneous results on both sides of the circuit, providing a complete status view on all channels and highlighting possible trouble conditions. The optional software allows users to test and troubleshoot voice services and PBX equipment, while an integrated SCPI command line interface supports development of automated test routines.

Network Installation

E7580A ProBER 2, 2 Mb/s Handheld Test Set

Features

- handheld 2 Mb/s, n x 64 kb/s and 64 kb/s co-directional BER testing in an impact resistant case
- comprehensive error and alarm detection and generation
- unique set of signal quality measurements (pulse mask, jitter, level and frequency)
- easy-to-learn, easy-to-use graphical user-interface
- greater than 8 hours measurement operation from a single battery charge

The high-performance ProBER 2 handheld test set provides comprehensive in or out-of-service 2 Mb/s circuit testing. It has all the necessary error and alarm measurements to verify quality-of-service, plus a complete range of signal quality measurements including pulse mask, level, frequency, and jitter measurement. This unique combination means that ProBER 2 not only identifies the existence of a problem, it can pinpoint the cause of the impairment without the need for additional, more expensive equipment.

The easy-to-use graphical user interface ensures that even inexperienced technicians will find the tester easy to operate. And its on-line help facility means it can be put to work straightaway. ProBER 2 is therefore the ideal choice for network maintenance, path commissioning, equipment installation, and troubleshooting 2 Mb/s circuits.

Agilent Internet Advisor

Features

- automatic expert analysis and network health reporting
- statistical analysis can be customized
- extensive on-line help

The Agilent Internet Advisor gives you the functionality and performance to troubleshoot networks and solve network problems the first time you connect. You will have the ability to connect and monitor CDPD traffic at LAN or WAN access points. You will also have the capability to decode the following protocols as specified by the CDPD system specification release 1.1:

- all MNRP packet types and options
- MDLP protocol - I frames, U frames and S frames
- SNDCP protocol - header compression/decompression, data compression using V.42 bits, segmentation/reassembly, and encryption
- SME security services protocol: IKE and EKE

The following wireless application protocols can also be decoded:

- WSP - wireless session protocol
- WTP - wireless transaction protocol
- WDP - wireless datagram protocol
- RLP - radio link protocol
- RLC - radio link control
- MIP - mobile IP
- GTP - GPRS tunneling protocol
- IuUP - Iu interface user plane

Slide-in modules and undercradles provide access to all major interfaces, connecting to any network technology.

Capture all the data, even the highest speed. RISC processors and custom hardware capture the data you need for fast problem solving.

The Agilent Internet Advisor reveals problems reliably, automatically analyzes collected data, tells you what the problems are, their cause, and what you need to do to solve them.

Network Installation

N1725A auroraDuet /N1726A ITU auroraDuet – Complete Primary and Basic Rate ISDN Testers

Features

- emulation
- monitor and analysis capabilities
- automatic service tests
- voice and data tests
- BERT statistics
- multiple interfaces
- multi-protocol
- battery/AC operation

The Agilent N1725A auroraDuet has been designed to provide all around capability to ISDN technicians and engineers as an installation, troubleshooting and maintenance, integration, and product development tool. It can emulate ISDN from both the network and customer sides, which is key to its versatility.

The auroraDuet troubleshooting capabilities provide testing of local loop at the U-interface, in TE mode it simulates terminal equipment and validates line operation on S/T and U interfaces, checks cable continuity to S bus problems, and monitors D-Channel traffic on S/T and U interfaces for problem analysis.

The auroraDuet can simulate the NT and LT, appearing as the network itself. Equipment installers can commission and setup equipment before delivery and, in the TE mode, validate ISDN services provided to the customer site. The auroraDuet can save time and expense, improving customer services providing monitoring and diagnostics, voice and data testing of National, AT&T ®, and Nortel ® protocols. Rechargeable NiCad batteries or AC/DC power adapter included.

- combined basic rate, primary rate and T1 tester
- automated test suites for quick line status
- rugged and easy to operate

N1735A auroraTempo – Easy, Comprehensive Testing of Frame Relay Services

Features

- full SVC and PVC simulation
- CIR testing
- frame relay decode
- extensive statistics
- IP PING generation
- exhaustive physical layer testing
- accommodates full duplex T1 and V-series interface modules
- 2 Rx and 1 Tx on each interface
- dual-port, full-duplex operation
- intuitive menu system
- large display

The N1735A auroraTempo is essential for installing, configuring and maintaining frame relay services running over V-series interfaces, T1 circuits. It provides a full suite of physical layer and frame relay protocol test that allows you to speedily verify the service, or examine more complicated issues with real-time analysis, statistical analysis, and detailed simulation for both switched virtual circuits (SVCs) and permanent virtual circuits (PVCs).

The auroraTempo meets the needs of frame relay technicians with a portable, powerful cost-effective solution. It provides the necessary physical line tests along with complete frame level simulation and analysis. When installing a frame relay circuit, FRAD, frame relay switch or router, the auroraTempo performs tests for physical analysis, link management, end-to-end routing, stress testing and switch emulation.

Please visit our Web site at:
www.agilent.com/find/networkplanning

53140 Series Microwave Counter/Power Meter/DVMs and 53150 Series Microwave Counters

Features

- 20, 26.5, and 46 GHz frequency ranges
- battery and carrying case options for field use
- oven time base and rack mount options for ATE systems
- 53150 series: frequency and power measured by the same input
- 53140 series:
  - true power meter accuracy and range
  - DC DVM for AGC and site-battery monitoring

The 53140 series is everything you need for the installation and maintenance of microwave links, in one portable package.

The installation and maintenance of point-to-point microwave links typically requires a microwave counter, a true power meter, and a dc DVM. The 53140 series reduces the weight, volume, and burden of carrying multiple pieces of equipment in the field by combining these three instruments into one. The microwave counter offers the choice of frequency range up to 46 GHz. The true power meter meets your "laboratory-accuracy" requirements in the field – and a ±50 Vdc DVM is there to assist you with antenna alignment and telecom power supply measurements.

Finally, the 53140 series is lightweight, rugged, and the battery and soft carrying case options give complete portability in the field.

For more information, visit our Web site at:
www.agilent.com/find/53140

The 53150 series trades power measurement accuracy for user convenience, a smaller size, and a lower price

Is the convenience of measuring frequency and power with a single input more important to you than power measurement accuracy (>2 dB vs. >0.5 dB)? If a half-rack size microwave counter is required for your ATE system or if you have a tight budget, then the 53150 series microwave counters can meet your needs.

For more information, visit out Web site at:
www.agilent.com/find/53150

Support Overview

In a constantly changing environment, Agilent's ability to understand your business needs and quickly provide the latest end-to-end service and support solutions can give you the certainty and confidence to accelerate development and deployment of winning technologies for your customers.

Knowledge Services

As the world leader in test equipment, we have first-hand knowledge that you can apply toward streamlining test equipment technologies. No matter what type of Agilent equipment you have, our knowledge services can help maximize profitability and operational efficiency in your design, test or manufacturing applications.

Enterprise Business Consulting

Our overall methodology is to develop a clear, thorough understanding of your business goals, critical success factors, obstacles, and their implications. This serves as the foundation for developing appropriate recommendations for test strategy, methods, processes and tools. We will work with your team to define ways to improve the deployment, capability, effectiveness and throughput of your test processes, as well as the use of information gained from testing, which can contribute to improved business performance.

Manufacturing Process Consulting

Business has never been more challenging. Your customers expect more all the time — greater responsiveness, increased quality and higher value. In order to remain competitive, you must continually refine and improve your processes. Agilent's manufacturing process consulting services have helped companies produce improved results in their manufacturing and test operations.

R&D Process Consulting

Agilent's R&D process consulting services analyze and solve issues associated with product development. Our consulting services encompass the entire development cycle, from product planning through design and manufacture, and test. Agilent can help you improve product development capabilities by providing an integrated consulting service that addresses all aspects of development.

Technical Consulting

Agilent's technical consulting services are designed to provide you with the required technical expertise to complete and implement your test strategies. Agilent consulting engineers can transform hardware and software into high performance solutions. Our technical consulting services also address specific problems. Examples of available wireless services include:

- test code development
- test code optimization
- measurement capability study
- integration consulting with Agilent instruments

Education and Training

Agilent's education and training program offers you access to our depth of product expertise and helps keep you abreast of emerging technology. Encompassing technology education classes, product training, measurement fundamentals and applications training our classes can be delivered at your site or at an Agilent training center. A sample of some of our most popular training and education courses are provided below. For a complete list of course offerings in your area, please visit our Web site at: **www.agilent.com/find/education**

Examples of wireless courses:

- 3G Technology Overview
- GSM: Programming the Agilent 8960 for Mobile Station Test
- RF and Microwave Fundamentals
- 89600 Vector Signal Analyzer Course
- cdma2000 Technology
- *Bluetooth* for Wireless Technology Fundamentals

Support Solutions

Agilent's innovative support solutions help you meet your business goals. No matter what kind of Agilent equipment you have, or how much you have, Agilent's support solutions can help you get more from your test equipment. You can tailor our support solutions by choosing the level of support you need to balance cost and response times. Build the package you need today and change or add to it at anytime.

Repair Services

Agilent is the safe choice for your instruments providing experts with high-quality, fast repair.

- 3 or 5-year support options available at the time of product purchase
- 12-month service contract, post-warranty option
- per incident repair program with fixed-price repairs

System Uptime Services

System downtime can be expensive. Agilent's global resources and expertise prevent many system failures and provide solutions to your problems fast. Our system uptime services include a variety of on-site services such as installation, integration and verification, preventative maintenance and repair for selected systems and individual instruments. You can choose the response time that most suits your needs. For critical applications, we can often have an engineer at your site within a few hours

Cooperative Support

Agilent's cooperative support service puts you in control and gives you the support you need when you need it. We provide backup support for replacement parts, diagnostic tools, system training, and remote troubleshooting.

Calibration Services

Agilent's quality calibration service guarantees measurement confidence so you can keep your instruments operating at peak precision. All calibration measurements are traceable to international standards for reliable, accurate results. You can choose return-to-Agilent or on-site service and order the service as needed or on a regularly scheduled basis.

Volume On-Site Calibration

Agilent's VOSCAL service minimizes instrument downtime and associated costs by delivering to your site a fully operational, high-quality calibration laboratory complete with high-specification systems and automation. You receive a quality calibration without interfering with your output schedule.

Equipment Management Services

To help manage all your test and measurement assets, Agilent's global equipment management solution enables you to maximize utilization and reduce ownership costs of your test equipment. We can help you track the equipment you have, where it is being used, and when it needs to be serviced – and the calibration and repair history is documented at both the system and instrument level.

Andy Street –Agilent Consultant

"As an Agilent knowledge services technical consultant, I work with our customers to help solve their specific problems, and improve their competitive advantage. The consulting engagements I am involved with are focused in the wireless industry – specifically working with manufacturing customers on technology and application challenges. Throughout the consulting engagement, I work with the customer to help design and implement the appropriate test solutions to meet their performance, process and business needs. Agilent's collaborative consulting process provides the framework to define, plan and execute results-driven consulting engagements."

Andy Street is an Agilent consultant based in the UK. He holds a D.Phil from the University of Oxford and has experience in engineering, and research and development of a variety of RF/microwave communication systems. To date, he has published over forty technical papers and has filed three patents.

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Agilent Technologies' Test and Measurement Support, Services, and Assistance

Agilent Technologies aims to maximize the value you receive, while minimizing your risk and problems. We strive to ensure that you get the test and measurement capabilities you paid for and obtain the support you need. Our extensive support resources and services can help you choose the right Agilent products for your applications and apply them successfully. Every instrument and system we sell has a global warranty. Support is available for at least five years beyond the production life of the product. Two concepts underlie Agilent's overall support policy: "Our Promise" and "Your Advantage."

Our Promise

Our Promise means your Agilent test and measurement equipment will meet its advertised performance and functionality. When you are choosing new equipment, we will help you with product information, including realistic performance specifications and practical recommendations from experienced test engineers. When you use Agilent equipment, we can verify that it works properly, help with product operation, and provide basic measurement assistance for the use of specified capabilities, at no extra cost upon request. Many self-help tools are available.

Your Advantage

Your Advantage means that Agilent offers a wide range of additional expert test and measurement services, which you can purchase according to your unique technical and business needs. Solve problems efficiently and gain a competitive edge by contracting with us for calibration, extra-cost upgrades, out-of-warranty repairs, and on-site education and training, as well as design, system integration, project management, and other professional engineering services. Experienced Agilent engineers and technicians worldwide can help you maximize your productivity, optimize the return on investment of your Agilent instruments and systems, and obtain dependable measurement accuracy for the life of those products.

By internet, phone, or fax, get assistance with all your test & measurement needs

Online assistance:

www.agilent.com/find/assist

Phone or Fax
United States:
(tel) 1 800 452 4844

Canada:
(tel) 1 877 894 4414
(fax) (905) 282 6495

China:
(tel) 800 810 0189
(fax) 1 0800 650 0121

Europe:
(tel) (31 20) 547 2323
(fax) (31 20) 547 2390

Japan:
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(fax) (81) 426 56 7840

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