Wireless Communication Test Sets

Agilent 8960 and E6601A Wireless Test Sets
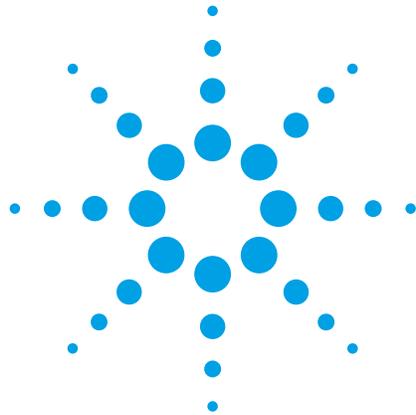
Flexible test solutions for today's mobile phone development, manufacturing, and repair.
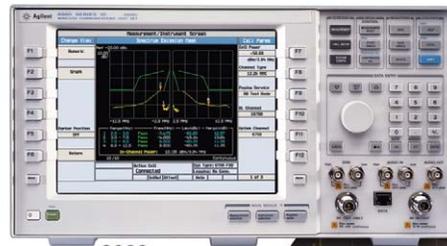
8960

New
E6601A
optimized for
manufacturing
test
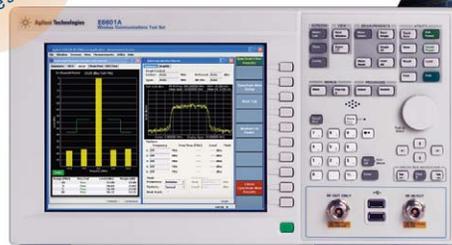
E6601A
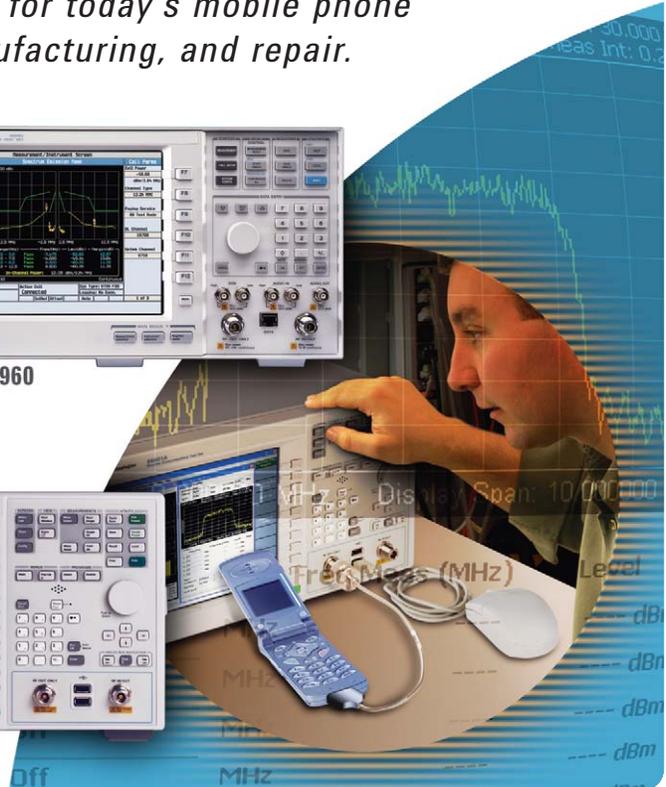
Agilent Technologies

Two choices for fast, flexible testing
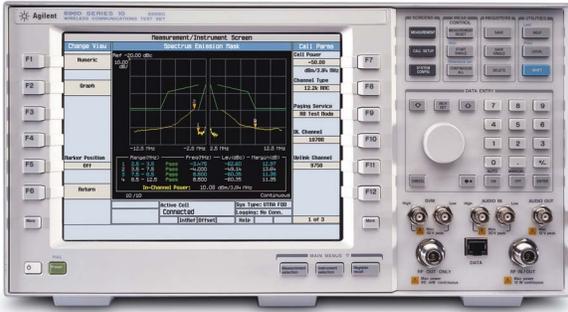
Agilent 8960 Wireless Communications Test Set

Solutions for all of today's wireless technologies[1]:
- GSM
- EGPRS
- HSDPA
- cdma2000®
- GPRS
- 1xEV-DO
- HSUPA
- W-CDMA
- IS-95

When you want proven RF and signaling protocol test capability —
Choose the 8960 Wireless Communications Test Set. It has the widest range of wireless technology formats and features on the market, along with full call processing and network simulation capability.

Configure it for your application
The 8960 can be configured for wireless device test applications across the product lifecycle—at every stage of product design and development, manufacturing test, service, and repair.

The 8960 platform consists of the E5515C wireless test set and three hardware options. It's further tailored for your application with a selection of technology-specific lab application and test application software.

Agilent E6601A Wireless Communications Test Set

When you need an optimized solution to calibrate wireless devices during high-throughput manufacturing —
Choose the new E6601A Wireless Communications Test Set. It's the next-generation solution for wireless device calibration. The E6601A is an innovative, flexible platform with calibration and fast device tune applications designed for measurement speed. Buy the functionality you need today, optimize asset management with flexible licensing, and add new functionality as you go.

Run test programs on a fully-integrated PC
With the E6601A you no longer need an external computer for each test set on the production line. Run your test programs using the E6601A's fully-integrated PC. The PC not only runs test programs internally—it controls additional instruments and the device under test (DUT).

The E6601A is a lower cost, flexible platform with system integration features, industry-leading measurement speed, and a two-year recommended calibration cycle. This test set offers just what you need to achieve the lowest possible cost of test.

1 Not all technologies are available for all instruments and all applications. Visit the product Web sites for detailed availability information:
   www.agilent.com/find/8960 and **www.agilent.com/find/e6601a**

8960: One platform, many optimized solutions
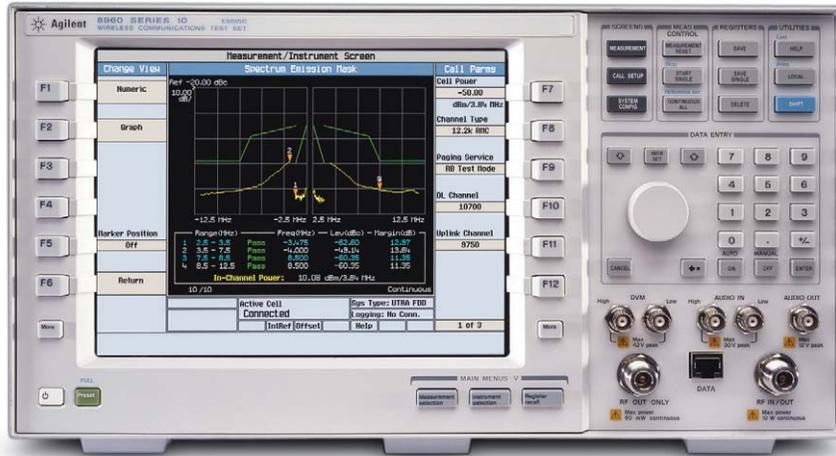
Agilent 8960 Wireless Communications Test Set

The Agilent 8960 Wireless Communications Test Set offers the ultimate in power and flexibility across a wide range of wireless device applications.

The platform
The 8960 hardware platform consists of the E5515C base model and three hardware options:

- A flexible CDMA base station emulator
- A second RF signal source
- A digital bus option for R&D applications.

You can further tailor the test solution with technology-specific lab applications or test applications and with Agilent's Wireless Test Manager Software. All major wireless device formats are covered.

Lab applications
Lab applications for R&D work provide parametric measurements, base station emulation, and logging of the protocol messages exchanged between the wireless device and the test set. Agilent's Wireless Protocol Advisor software, which is included with the lab applications, provides flexible protocol triggering and analysis. The 8960 plus lab applications emulates a network with full connectivity to the Internet—a "network in a box."

Test applications
In manufacturing and service-and-repair environments, test applications provide fast, accurate parametric measurements, and base-station emulation for fast, reliable wireless device testing.

Wireless Test Manager
Streamline the test development process with this family of powerful, easy-to-use, technology-specific PC software. Wireless Test Managers provide simple automation of R&D and manufacturing tests, so you can expedite test plan implementation and optimize test code in automated environments.

Lab applications and test applications available now:

• GSM	• EGPRS	• HSDPA	• 1xEV-DO
• GPRS	• W-CDMA	• HSUPA	• 1xEV-DO Rev. A
• IS-95		• cdma2000	• AMPS/136

Wireless Test Manager applications available now:

• GSM	• EGPRS	• cdma2000	• IS-95
• GPRS	• W-CDMA	• 1xEV-DO	• AMPS/136

8960: All formats – all phases of your product lifecycle

Design & Development

Hardware verification-integration
8960 + TA or LA + WTM
(Network in a box)

Protocol testing for wireless
device or application
8960 + LA + WPA + WTM
(Network in a box)

Conformance testing
8960-based
Anite test system

Manufacturing

Customer-built test solutions
8960 + TA +WTM + additional
instruments as required

Agilent-built test solutions
8960 + TA + WTM +
additional instruments
and custom racking

Fully-configured custom test
solutions built around the 8960
tailored to your requirements

Service & Repair

Incoming and final test
stations built around the
8960 + TA + WTM +
additional instruments
as required

System configuration

By selecting the basic 8960 test set and configuring it with one or more hardware or software options, you can tailor the instrument to satisfy your current test needs and then upgrade the solution as your products change.

Change is easy

Are you testing only one technology today? Moving to a new technology in the future? The multi-technology 8960 solution is ready when you are. No time-consuming re-racking, re-cabling, or re-calibrating is necessary. Simply purchase and install the new software and begin testing.

A fully-optioned test set will run all lab and test applications.

Keep pace with technology

Agilent has a consistent history of adding the latest wireless formats to the 8960 for R&D testing, before the technologies are needed in manufacturing. GPRS, EGPRS, W-CDMA, HSDPA, HSUPA, cdma2000, 1xEV-DO and 1xEV-DO Rev. A were all available in the 8960 in time to meet volume production of new devices.

The 8960 also boasts a modular design, a base station emulator, and frequency coverage up to 2.7 GHz. These all add up to a powerful test platform with room to grow for the future.

E6601A: The next generation of manufacturing test

Agilent E6601A Wireless Communications Test Set

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Calibration applications available now:
W-CDMA/HSDPA
GSM/GPRS/EGPRS
cdma2000/1xEV-DO
TD-SCDMA

Additional fast calibration techniques available:
Phase and amplitude versus time (PAvT)
Fast device tune

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The E6601A is Agilent's newest platform for wireless manufacturing test. It's designed to work efficiently with modern manufacturing non-signaling test processes so you achieve the lowest possible cost of test.

The platform
The E6601A test set has a built-in open Windows® XP PC, six USB ports, and LAN and GPIB connectivity. You won't need a computer for each test set on your line, and you'll save money and valuable space.

Write programs on a desktop computer and easily download them over a LAN directly into the E6601A. You can install and run your test executive software, store measurement data, and manipulate files—all on the test set. Plug in a mouse and keyboard for quick navigation of the measurement and PC screens.

A Windows XP remote desktop feature lets you monitor E6601A test sets on the production line from your office computer using a LAN connection. Manage your manufacturing line from anywhere in the world that you have Internet access.

Measurement hardware
An internal source, analyzer, and spectrum monitor are used for RF measurements. Single-sample measurement suites, 25 MHz bandwidth, and high dynamic range make fast correlated measurements of power, frequency error, in-channel and out-of-channel spectrum, and more from a single sample. Helping you lower your test times and cost of test.

Buy-what-you-need
With selectable calibration formats and flexible licensing, you can quickly respond to short-term needs for increased test capacity or new wireless formats.

Licensing options
Application programs are enabled by purchasing a license, which may be perpetual, temporary for one instrument, or transportable from one instrument to another.

Flexible licensing reduces your capital equipment investment and lets you respond quickly to short-term demands for increased test capacity. Transportable licenses let you move valuable test assets to rebalance your test capacity.

Licenses and software updates can be downloaded from USB memory sticks, over the LAN, or from another PC.

E6601A: Optimized for manufacturing throughput
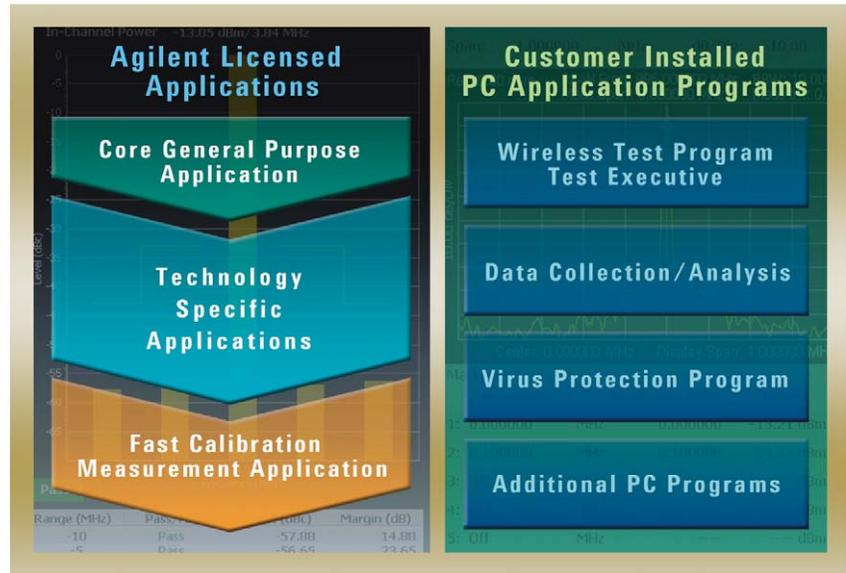
General purpose application

The general purpose application provides basic control of the E6601A measurements and is included with all E6601A test sets.

Calibration applications

New calibration applications provide the technology-specific transmitter and receiver measurements necessary to calibrate a wireless device. The E6601A has a calibrated source for RSS calibration and an analyzer for making fast, highly accurate, and repeatable measurements of power, spectral width, spurious level, and modulation quality needed for today's high volume mobile phone manufacturing processes.

Fast calibration measurements

Calibrate mobile phones with cutting-edge fast calibration measurments available on the E6601A. Fast Device Tune provides state-of-the-art simultaneous Tx and Rx mobile phone calibration, resulting in Agilent's fastest possible test times. The Dynamic Power measurement greatly reduces mobile phone Tx power calibration, and the Phase and Amplitude Versus Time measurement combines complex power amplifier linearization with Tx power calibration. All to help you maximize your throughput and lower your cost to test.

8960: Solutions for R&D Developers
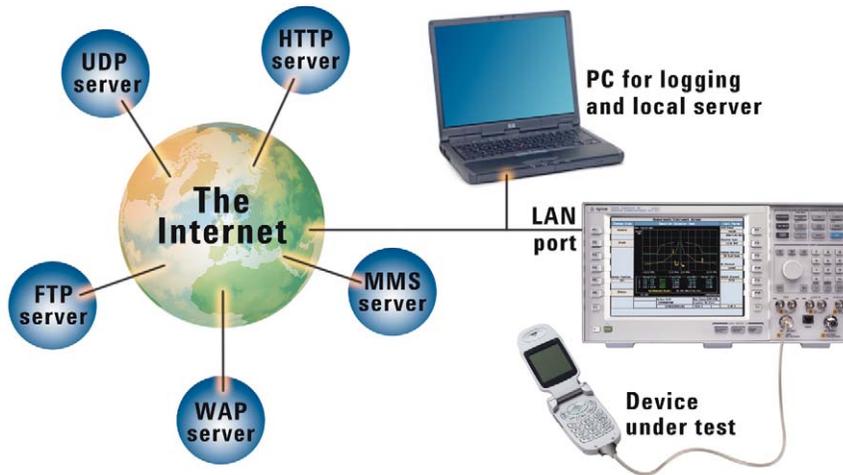
Evolving standards, increasingly complex protocol stacks and sophisticated embedded applications are putting far more demand on the design of hardware and software.

Lab engineers need fast, effective ways to test their designs under real-world conditions. Until now, that has meant using expensive conformance systems or travel to real networks.

One-box solution

The 8960 with lab application software provides a one-box test solution designed specifically for the needs of wireless designers. This solution provides RF measurements that meet conformance standards—and it emulates the operating network with real data traffic flows for functional testing of software and hardware.

Covering the latest technologies including HSDPA, HSUPA and 1xEV-DO Rev. A, the 8960 is sized and priced so you can put one on each of your R&D desks.

Log messages across protocol layers

The Wireless Protocol Advisor software provides a complete, real-time log stream of messages from your device to the network for capturing and troubleshooting problems.

Network for functional test

■ Internet connectivity
Verify that your device can connect to the Internet with a direct connection from the 8960 to the LAN with real packet data connections at the data rates listed below

■ Data throughput testing
Graphically show data rates of your device up to 7.2 Mbps for HSDPA, 2.0 Mbps for HSUPA, and 3.1 Mbps for 1xEV-DO Rev. A using the 8960 data throughput monitor

■ Functional test
Verify your latest mobile features against a network
- SMS/MMS
- Video
- Hand-overs
- Inter-RAT handovers
- Instant messaging
- PPT/PoC (push to talk)
- Service suspend and resume
- Simultaneous services (DTM)
- UMA/GAN
- Multiple PDP contexts
- More

■ Add channel impairments
Add fading capability with AWGN and diversity impairments for meeting standards requirements

Conformance and interoperability testing

Adding the 8960 to Anite Telecoms solutions provides a common test platform for consistent test results from early-design RF and protocol testing to full conformance and interoperability verification.

For more information visit the Anite Web site:
www.anite.com/telecoms

The right test solutions across the product life cycle: Solutions for manufacturing

Assembled PCB → Wireless device calibration → Wireless device final test → Wireless device user interface test → Wireless device sample QA

New E6601A optimized for manufacturing test

Agilent E6601A

Agilent 8960
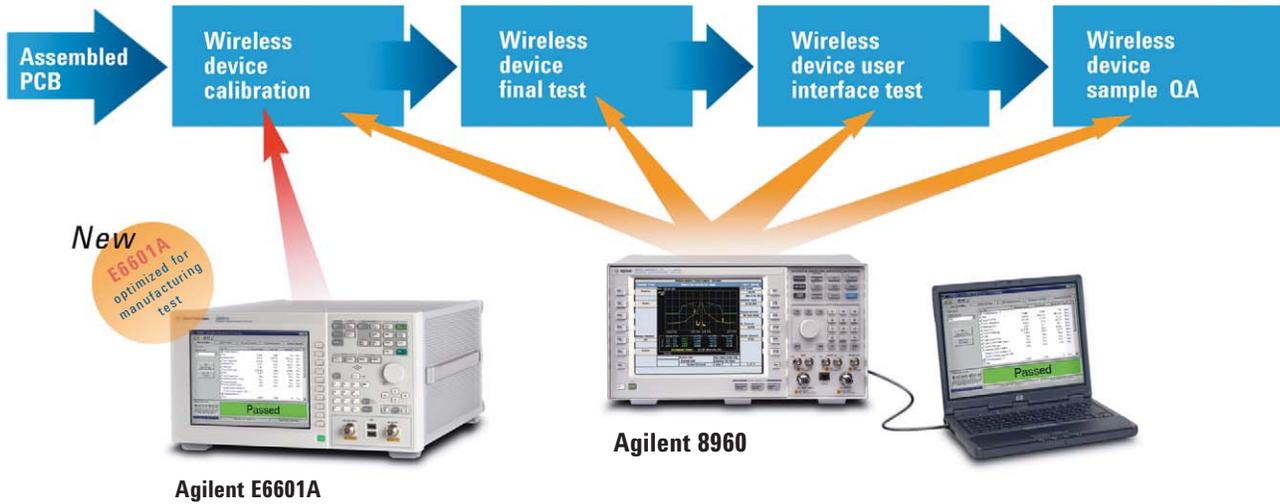
The E6601A is optimized for the calibration phase of the manufacturing process where the most test time is spent measuring and generating the calibration data for each wireless device.

With the Fast Device Tune measurement added, the E6601A can synchronize with a test sequence in a wireless device to further reduce calibration test time. The E6601A is optimized for fast, accurate wireless device calibration.

The lower initial cost of the E6601A, industry-leading measurement speed, built-in Windows PC, and open architecture for scalability, add up to the lowest possible cost of test in manufacturing.

The 8960 is a proven test set with the widest range of technologies available. Today, six of the top eight mobile handset manufacturers use the 8960 for mobile device manufacturing. More wireless devices are tested in production on the 8960 than on all other wireless test sets combined.

With signaling and base station emulation capability, the 8960 can be used in all of your manufacturing line test positions. The 8960 has full call-processing functionality, which is required today for final test, user interface testing, and full QA phone function testing.

The 8960 also provides test mode capability for non-call processing test needs.

The right choice

Whichever Agilent test set you choose, you are assured of measurement speed, accuracy, and repeatability.

You also receive Agilent's renowned multi-format technology support, outstanding product reliability, and global support delivered locally.

The right test solutions across the product life cycle: Solutions for automated test

Test automation

Fast, accurate measurements and call-processing speed are only part of the reason the 8960 is ideal for automated test applications. Agilent's Wireless Test Manager software family offers powerful, easy-to-use test automation software that runs on a Windows PC. Wireless Test Manager helps R&D, manufacturing, and repair engineers develop and optimize automated tests faster and easier than ever before.

Wireless Test Manager software is available for most wireless formats and features technology-specific tests, intuitive-to-use operator and development interfaces, test system instrument control capability, and Microsoft® Visual Basic® and Visual Basic .NET programming for custom test development.

Learn more about automated test:

www.agilent.com/find/wtm
www.agilent.com/find/8960mfg

Agilent resources to get your automated test system on line

Make the best use of limited engineering resources by letting Agilent experts help you define, design, program, and install your next wireless test system. Agilent offers a wide range of products and services, working with your team from test-process analysis and solution definition through to the creation of full turnkey systems that are ready to test your products.

A tailor-made competitive advantage

Designing and introducing a new wireless device is challenging. The last thing you want to worry about is the design and implementation of test systems. Agilent's GS-8800 RF design verification systems and GS-8000 functional test systems are complete solutions that can be tailored and optimized to meet your unique testing needs.

A common fundamental architecture enables the GS-8800 design verification system to be scaled down to the GS-8000 manufacturing solution. This structure allows you to leverage test software from design to manufacturing, thereby reducing development time. To better assure your success, Agilent offers worldwide system support.

Learn more about how to maximize your investment in automated test:

www.agilent.com/find/gs-8000

The right test solutions across the product life cycle:
Solutions for service and repair


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┌───────────┐      ◇            ┌───────────┐
│Test phone │───▶│Failed│──NO──▶│Return to  │
│           │    │ test │       │inventory  │
└───────────┘     ◇             └───────────┘
      ▲           │
      │          YES
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      │          ◇             ┌───────────┐
      │      │ Under │──YES──▶│Return to  │
      │      │warranty│        │manufacturer│
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┌───────────┐ YES  ◇      NO   ┌───────────┐
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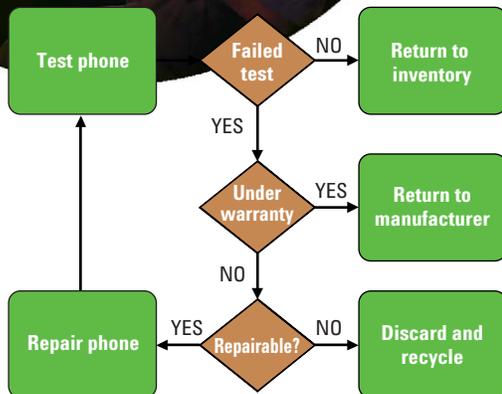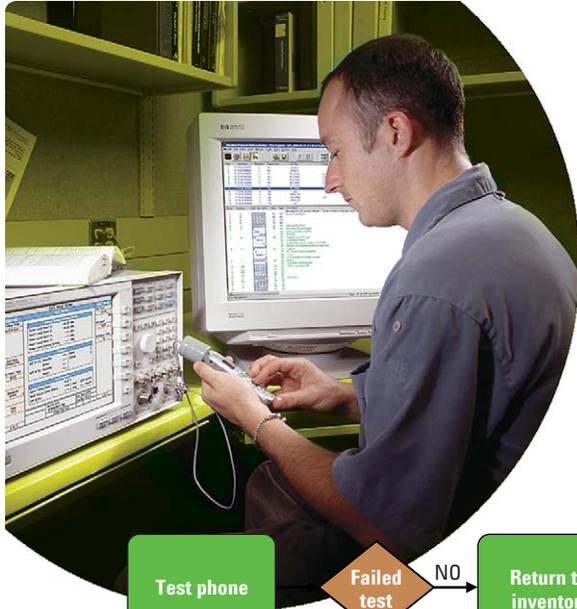
Are good products being returned to your supplier for repair or replacement?

If customers are returning large numbers of wireless devices, you need to be sure products are truly faulty before sending them back to the manufacturer. The cost of "no trouble found" phones can be high. The 8960 provides an easy-to-use, cost effective way to test a wide range of products and formats at your return centers.

Wireless Test Manager software allows simple test plan development—no need to be a programming expert. Simply choose from a menu of test steps to develop your test plan, save it, and call up the test plan as needed.

Test operators can quickly verify whether a returned product has an identifiable problem. The test set can be updated easily to support new products and technologies as they are deployed in the market. With the 8960 solution, you speed the repair process, reduce phone return costs, and quickly return good products to your replacement phone inventory.

Ensure the quality of reworked or repaired products
The 8960 quickly performs full post-repair testing, assuring that the products returned to your inventory operate correctly and are compatible with your network. Wireless Test Manager eliminates the need to be a software expert to write post-repair test programs or run the tests.

Manage your repair costs
Flexible leasing is available from Agilent to minimize your initial investment in setting up or expanding a service and repair operation.

Learn more at **www.agilent.com/find/8960**

For low-cost mobile phone testing, Agilent offers the GS-8210 when you need "just-enough-test" for a quick go/no-go test to ensure a successful repair in your service and repair depot. The GS-8210 system includes a mobile station tester, test software, and RF shielded test box with a built-in antenna coupler.

Learn more at **www.agilent.com/find/gs8210**

Innovative new tools for instrument calibration and repair
Control instrument costs and turn-around-time with the Agilent N5891A Test Set Repair Tools and N7805A Wireless Communications Test Set Calibration Software.

You'll be putting the same diagnostic, adjustment, and calibration tools that Agilent Service Centers run in your own calibration lab.

Two choices — one is right for your application

Whether you need a design, validation, manufacturing, or repair service solution, one of Agilent's wireless test sets will meet your needs. Choose the functionality you need to deliver the performance and reliability your customers demand.

The 8960 is Agilent's most flexible platform with call-processing capability and application software for development, manufacturing, service, and repair.

For high volume mobile phone manufacturing test applications using non-signaling test modes, the E6601A is optimized to provide Agilent's most efficient choice for mobile phone manufacturers.

Find out more at our Web sites:

www.agilent.com/find/8960

www.agilent.com/find/e6601a

Need help or more information?
To obtain the latest information about product enhancements and Agilent support of emerging technologies contact your Agilent Sales Representative.
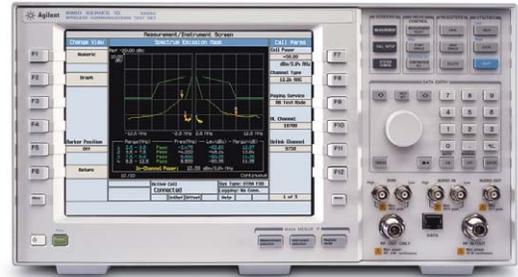
Agilent 8960 Series 10 Wireless Communications Test Set

Agilent E6601A Wireless Communications Test Set

Leverage Agilent's Expertise

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China	800 810 0189
Denmark	+45 70 13 15 15
Finland	+358 (0) 10 855 2100
France	+33 (0) 825 010 700
Germany	+49 (0) 1805 24 6333
Hong Kong	800 930 871
India	1600 112 929
Ireland	+353 (0) 1 890 924 204
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Thailand	1800 226 008
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Remove all doubt

Our repair and calibration services will get your equipment back to you, performing like new, when promised. You will get full value out of your Agilent equipment throughout its lifetime. Your equipment will be serviced by Agilent-trained technicians using the latest factory calibration procedures, automated repair diagnostics and genuine parts. You will always have the utmost confidence in your measurements.

Agilent offers a wide range of additional expert test and measurement services for your equipment, including initial start-up assistance onsite education and training, as well as design, system integration, and project management.

For more information on repair and calibration services, go to:

www.agilent.com/find/removealldoubt

Agilent Email Updates

www.agilent.com/find/emailupdates
Get the latest information on the products and applications you select.

Agilent Direct

www.agilent.com/find/agilentdirect
Quickly choose and use your test equipment solutions with confidence.

Agilent Open

www.agilent.com/find/open
Agilent Open simplifies the process of connecting and programming **test systems** to help engineers design, validate and manufacture electronic products. Agilent offers open connectivity for a broad range of system-ready instruments, open industry software, PC-standard I/O and global support, which are combined to more easily integrate test system development.

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	*0.14€/minute
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Switzerland (German)	0800 80 53 53 (Option 1)
United Kingdom	44 (0) 118 9276201

Other European Countries:
www.agilent.com/find/contactus
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