



**Solutions for Wireless
Network Installation
and Operations**



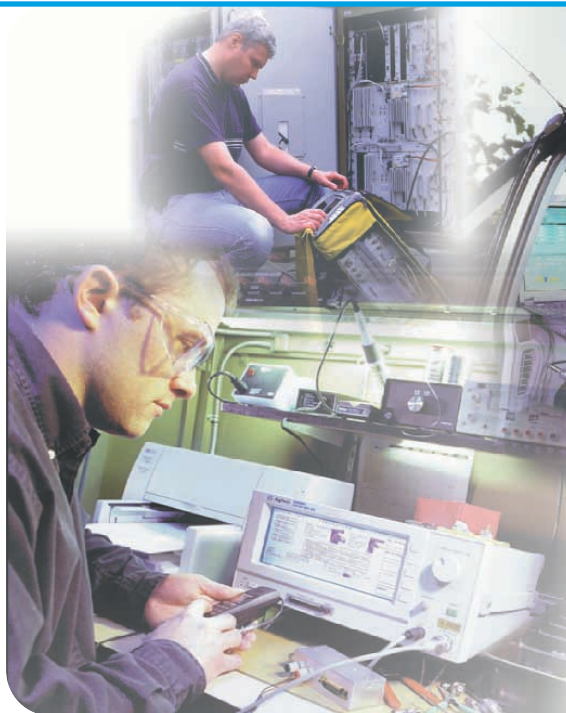
Agilent Technologies

The wireless revolution is here

As a wireless communications service provider or an installer and maintainer of wireless infrastructure, you are leading the charge—giving your customers freedom of movement, not just to talk, but to get information where they want it and when they want it.

This means that you are continually expanding your wireless network, adopting the complex digital formats and data rates that make it possible to deliver today's in-demand services. Every day, you face the challenges of optimizing and maintaining this growing communications network.

But you are also looking ahead for ways to make your business more profitable. And this means driving down costs, improving quality of service, and rolling out the next generation of communication products—so that you can attract and retain more customers in an increasingly competitive market.



Winning solutions

Agilent Technologies wireless solutions can help.

Our state-of-the-art test products give you the power you need to evolve your communications network as quickly as possible so you can launch new services. Drive systems and carry-around test instruments are loaded with advanced features that let your service teams handle situations more efficiently. Signaling monitoring systems help you manage the network and fight fraud. Innovative mobile station test sets let you expand the testing and repair of handsets to local service centers and even retail points of sale, for better customer service and fast identification of no-trouble-found (NTF) phones.

Our products support current and emerging formats, so that you can easily manage the constant change and expansion. Plus, with decades of wireless experience from R&D to network installation and maintenance, we provide a breadth of solutions—including training, consulting, financing, and customer care—that is unmatched in the industry.

By making Agilent Technologies your resource for wireless test solutions, you'll help keep your network and your business at the cutting-edge.



Agilent Technologies offers the widest selection of test equipment for deploying, optimizing, and managing your network

Expand and optimize your network the fastest way

With so many wireless choices today, you have to offer customers the services they want. What's more, you can't afford to let customers experience dropped calls or other service quality problems. Test tools play a vital role in preventing churn, by enabling you to launch new services quickly and expand your network coverage, all the while maintaining a high quality of service.

For deploying, optimizing, and managing your network, no one has a wider selection of test equipment than Agilent. Our products cover all cellular and PCS frequencies, and they include GSM, CDMA, TDMA, AMPS, DECT, and PDC/PHS formats—with solutions on the way for emerging EDGE and 3G technologies.



Drive-testing systems

Drive testing is an essential part of the wireless communication network life-cycle, from cell-site location through network maintenance. The **Agilent Technologies E7400 series of portable drive-test systems** provide air-interface measurements for CDMA and GSM networks. By combining digital-receiver and phone measurements, these drive-test systems provide an efficient way to continuously optimize the performance of your network and quickly uncover the source of a service problem.

All of the Agilent drive-test systems are based on the same easy-to-use graphical user interface. Software automates the data collection process. You have complete control over which measurements are logged—any or all. Sophisticated alarm capability notifies you of specific conditions. And post-processing software helps you analyze and interpret data—or export it to mapping and other software applications.



Rugged design and friendly user interface help boost test personnel productivity

Rugged base station test sets

At a time when the wireless telecommunication industry is enjoying unprecedented growth, many network operators are faced with a dilemma: they have to install and maintain their increasingly complex networks with a smaller, less experienced technical staff, and the challenges placed on this staff are high.

Several factors contribute to this situation, including corporate budget-tightening and a talent pool that continues to go up in price as it gets diluted among the growing number of wireless carriers.

To help network operators cope with these issues, Agilent has launched a new generation of base station test sets that boost the productivity of test personnel.

The Agilent Technologies 8935 series base station test sets are this new generation of test equipment. These full-featured, one-box test sets are designed to meet the needs of your installation and maintenance teams. Because hooking up and operating test equipment in the field can be difficult, all connectors on the test set are located conveniently on a recessed side panel. Other design improvements provide rugged packaging and a friendly user interface. Base-station-specific software automates measurements. Easy-to-use, fast, and accurate, these test sets deliver results—improved system performance with less time spent off-line.

- The **Agilent Technologies E6380A CDMA test set** makes measurements such as waveform quality (rho), frequency error, average power, CDMA channel power for cellular and PCS systems, and code-domain power, timing and phase analysis.

- The **Agilent Technologies E6381A TDMA test set** controls a base station automatically while it performs comprehensive RF measurements such as TDMA power, frequency error, and error vector magnitude.

The test sets perform antenna return loss, cable fault location, and cellular/PCS band interference testing using their built-in RF source and spectrum analysis capability.

Maintain your network with the greatest efficiency

Tools for testing the fixed part of your network

If your network is having problems, many times the source lies in the links between base stations and mobile telephone switching offices. Agilent offers hand-held and field portable solutions for testing your entire transport network—whether it employs fiber-optics, traditional wiring, or microwave links. Products range from basic tools such as power meters and counters to fiber-optic test equipment, digital microwave test sets, a modular T1 tester, and even a hand-held BERT. Many Agilent test products are designed to be upgraded as new technology comes on line, so your technicians can continue using a familiar instrument, and you can protect your investment in test equipment.

The new **Agilent Technologies E7580A ProBER 2 hand-held test set** is the first that can identify all key types of signal impairment on 2Mb/s transmission networks. It provides pulse mask, jitter, frequency, level, and quality-of-service error measurements. This ground breaking tool is ideal for provisioning, maintaining, and troubleshooting new and existing circuits.



The hand-held Agilent Technologies E7580A is ideal for provisioning, maintaining, and troubleshooting new and existing circuits



The new **Agilent Technologies service advisor tablet** provides the ultimate in portability and flexibility, accepting small plug-in modules for testing T1 and OC-3 between the switches in your core network. Additional modules for this next-generation test platform are being introduced continuously for testing higher rates and different standards and technologies.

The **Agilent Technologies T1 and E1 test advisors** provide superior physical layer testing—including full and fractional T1 and E1—in a laptop-sized, Windows®-based package.

For protocol testing, the **Agilent Technologies internet advisor** offers integrated LAN, WAN, and ATM inter-network monitoring and analysis capabilities under one handle. With this flexible, portable platform, you'll be ready to test the digital technologies that are enabling the newest services, such as voice over IP.

Windows® is a U.S. registered trademark of Microsoft Corporation.



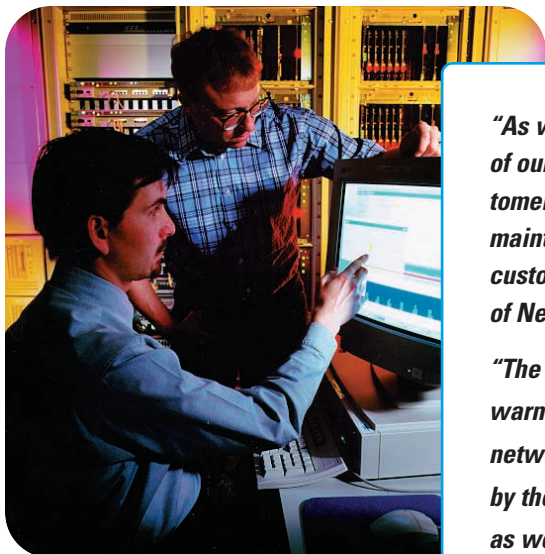
Comprehensive
solutions for
ensuring optimal
performance

General-purpose tools

To further ensure that your network is continuously optimized and to troubleshoot any performance problems, Agilent offers the industry's best selection of general-purpose instruments. Your engineers and technicians will find our spectrum analyzers, signal generators, power meters, and fading simulators useful in many applications.

The **Agilent Technologies 8711 series portable network analyzers** help assure the integrity of your antenna systems.

Our new **Agilent Technologies ESA-E series spectrum analyzers** are ideal when you need to troubleshoot transmitters or look for out-of-band interference. These compact analyzers are protected by the most rugged case on the market. They offer an intuitive user interface and a high-resolution color display with built-in help functions. They make calibrated measurements in just five minutes, and their automatic 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. If your budget is tight, you can choose the lower-cost Agilent Technologies ESA-L series spectrum analyzers.



Harness the power of the signaling network to solve problems and fight fraud

The Agilent Technologies acceSS7 network monitoring system provides detailed, accurate insights into every aspect of network activity by exploiting the valuable information that resides in the signaling (SS7) network. This information can help you improve overall network reliability and gain significant competitive advantages for your wireless communications business.

Using information derived from the SS7 network, from calls, and from services, the acceSS7 system can deliver:

- **Network surveillance**—detecting problems before they affect customers
- **Network troubleshooting**—diagnosing problems quickly and efficiently
- **Billing data collection**—enabling accurate billing between carriers
- **Fraud management**—identifying fraud as it takes place
- **Business intelligence**—providing unique information about the network and services to help make informed business decisions and to make the best use of existing infrastructure.

“As we increased the complexity and size of our network to support a growing customer base, we needed a system to help maintain the high quality of service our customers expect,” said Tom Forsyth, head of Network Technical Support for Orange.*

“The Agilent system will provide early warning and fast diagnosis of potential network problems. We were impressed by the acceSS7 system’s future potential as well as by Agilent’s technical knowledge of GSM and clear understanding of our needs.”

*Orange Personal Communications Services Limited, the United Kingdom’s most advanced digital phone network, has installed

Early warning system

The acceSS7 system monitors SS7 traffic and link status, gathers traffic statistics, analyzes SS7 protocols, and provides call trace and alarm reporting. The user interface instantly communicates the status of the SS7 network in multidimensional “radar-diagram” displays that complement real-time data acquisition across the network. This capability helps give you an early warning of network degradation before it affects your customers. The SS7 data collected by the acceSS7 system also can be used to detect fraud and to implement usage-billing and business intelligence applications.

Agilent’s acceSS7 network-monitoring system to maintain customer satisfaction proactively as Orange expands its network and deploys new services.

According to Orange, the system already has helped solve several network problems.

The system assists with network monitoring, diagnostics, management, and planning by supplying Orange with valuable, real-time information about the network, calls, and services. The information is used by multiple groups within Orange, including network operations, network engineering, and network planning.



Agilent Technologies
acceSS7 fraud manage-
ment tool kit monitors
the SS7 links in real time

Fraud management tool kit

As you well know, telephone fraud costs the telecommunications industry many billions of dollars every year. To help you combat this problem, the acceSS7's fraud-detection capability gives you an integrated, real-time view of much of the fraud on your network.

The **Agilent Technologies acceSS7 fraud management tool kit** monitors the SS7 links in real time, looking for a variety of user-defined fraud scenarios. The system generates call detail records (CDRs), which it passes to a detection and analysis engine, where they are compared against selected fraud scenarios.

If a preset threshold is exceeded, the system generates an alert, which the tool kit uses to build and maintain a prioritized list of cases. By responding to alerts generated in near-real time, you can focus your investigations on tracking down phone-fraud criminals and disconnecting fraudulent operations.

As new types of mobile phone fraud are uncovered, they can be added to the fraud list.

To help reduce fraud losses for GSM service providers, the acceSS7 fraud-management tool kit was recently enhanced with applications that enable you to rapidly detect and resolve specific GSM fraud scenarios, such as call-roaming fraud and technical fraud, including parallel call forwarding.

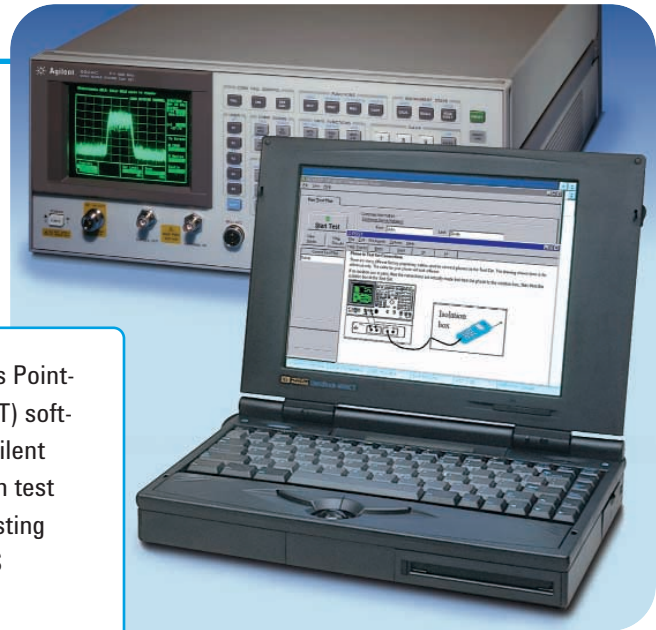
Point-of-Service-Test for CDMA, TDMA, and GSM phones

To help mobile phone retailers, wireless service providers, and repair organizations minimize costs; the family of **Agilent Technologies Point-of-Service-Test (PoST) software** packages provides quick and easy verification of the performance of CDMA, TDMA, and GSM dual-mode mobile phones.

With minimal training, sales clerks and other nontechnical personnel can initiate and make fast, accurate measurements of phones, finding “no trouble found” phones quickly, thus reducing the number of phones returned to manufacturers. With the easy-to-use, mouse-driven, Windows®-based interface, phone problems can be evaluated quickly at a retail store or local service center. With a password protection for software screens, test procedure development mode technical screens can be hidden from nontechnical staff, effectively making the PoST software less intimidating.

Yet, in the development mode, technical users can access the capabilities to create customized tests for different phone models. Test plans, as well as test specifications and parameters, can be set up and customized with ease.

Agilent Technologies Point-of-Service-Test (PoST) software controls an Agilent 8924E mobile-station test set for automatic testing of CDMA and AMPS mobile phones



Data analysis capability

To help reduce customer churn and improve customer care, PoST software provides detailed, accurate performance data that can be exported in PC databases and spreadsheet formats for use in trend analysis. For example, by collecting, merging, and analyzing the information from each of your retail stores' PoST software databases; it may be possible to identify problems in particular phone models.

Recurring customer comments may identify problem areas in network operation.

The combination of PoST software and Agilent's test sets is a practical test solution for the service providers' mobile-quality and repair groups, and verification labs.

The PoST software family utilizes Agilent Technologies CDMA, TMDA, and GSM mobile station test sets:

PoST CDMA (E8290A) is utilized by the following CDMA test sets:

- E8285A CDMA mobile station test set
- 8924C CDMA mobile station test set
- 8924E CDMA mobile station test set

PoST TDMA (E8291A) is utilized by:

- 8920B RF communications test set
Option 800 or 801

PoST GSM (E8292A) is utilized by:

- E6392A GSM mobile station test set



Increase efficiency across your entire service and repair network

Economical GSM mobile repair capability

To help your service technicians cope with the growing number of GSM phones coming into repair shops, the **Agilent Technologies E6392A GSM mobile-station test set** provides module-level repair capability for the price of an entry-level “go/no go” tester.

With this test set, you can delegate more troubleshooting and repair tasks to local service centers, increasing the effectiveness of your entire service network while keeping equipment costs in line. You can also reduce the number of “no trouble found” phones that get sent back to the manufacturer.

The Agilent Technologies GSM test set offers a combination of just-enough functionality, good performance, and a low price, making it possible to equip your service technicians at the local level with the capability to diagnose module-level faults. With full test capabilities for GSM900, E-GSM, and DCS1800, most GSM phones can be checked with this single instrument. And it takes only about 30 minutes to learn how to use.



To implement a distributed repair strategy and facilitate fast turn-around of mobile-phone repairs, you can combine the cost advantages of the E6392A with the factory-level quality of the **Agilent Technologies 8922 series GSM mobile station test set**. Following a spoke-and-hub approach, you can delegate module-level repairs to local (spoke) service centers, using the low-end E6392A for incoming inspection, troubleshooting, and repair of the mobile phones. At the central (hub) service depot, the low-end test set can be used for incoming inspection and the high-end 8922 for component-level testing and repair, including manufacturing-quality measurements, component-level troubleshooting, failure analysis, and final checkout.



Round-the-clock support

In a global communications marketplace, your operations may be scattered all around the world. But no matter where your network or service facilities are located, your Agilent test instruments and systems are protected. Agilent can provide 24-hours-a-day, 7-days-a-week coverage, as well as a full line of other service and support options.

Agilent Technologies' service centers are located worldwide to meet your global needs. Regardless of where or when you need assistance, an Agilent specialist will be there.

Increase the value of your investment

Wireless communications testing requires more than good test equipment. Agilent Technologies has the products, knowledge, and services to help you and your team do the job. The range of services we offer includes productivity assistance, start-up assistance, training and education programs for RF technicians and engineers, on-site product and application consulting, telephone product assistance, and more! We can help you deploy, optimize, and support your network more easily.

Professional training in the latest technologies—and in all the basics

Today, finding and keeping skilled engineers and technicians are likely among the biggest challenges you face. With technology changing rapidly and quality-of-service expectations on the rise, you need to keep your operations and maintenance teams at peak efficiency.

As a leading-edge supplier of instruments, systems, and software for the wireless communications industry, Agilent is at the forefront of new technologies and standards. By applying the knowledge gained from this position, we can assist you in training your personnel in both new and familiar technologies.

Our experienced instructors provide training for engineers and technicians in a number of areas, including:

- RF basics
- Digital RF communications basics
- CDMA and GSM mobile test
- CDMA and GSM base station testing and troubleshooting

These courses are available in many locations around the world. They can help you maximize the value of your investment in Agilent test equipment by improving the productivity of your people.

For more product information please visit:
www.agilent.com/find/wireless

For detailed training information please visit:
www.agilent.com/find/tmeducation

Financial services

Agilent Technologies offers the ease of one-stop shopping for financing test instruments. Our low-cost funds allow us to offer very competitive rates. Renting, leasing, or financing your instruments offers several important benefits:

- The latest technology without a large cash outlay
- Economical management of short-term projects
- Easy upgrading
- Flexible payment options
- Trade-ins and volume discounts, available worldwide

Please contact your nearest Agilent Technologies sales office for more information.

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

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www.agilent.com/find/assist

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Printed in U.S.A. May 1, 2001
5968-4775E



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