Agilent
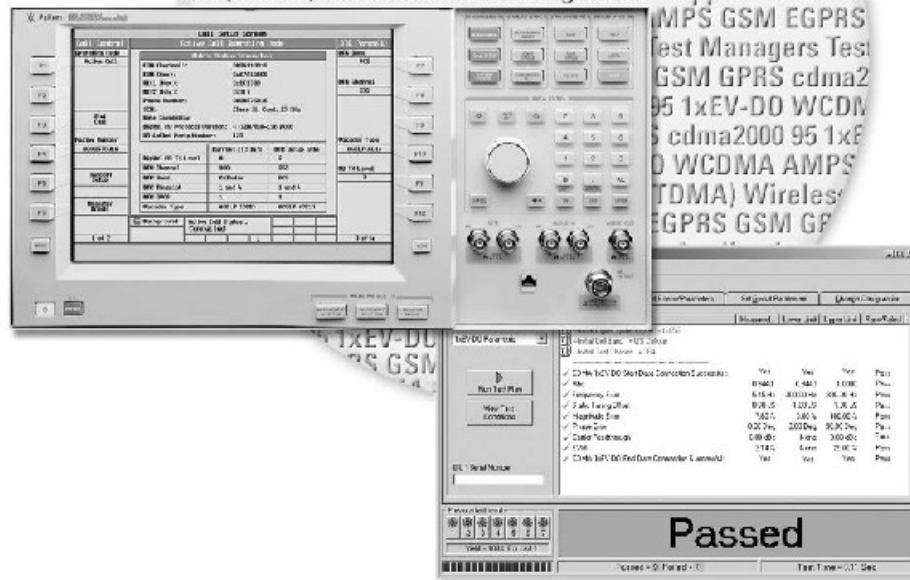**8960 Series 10**
Wireless Communications Test Set

Configuration Guide

This configuration guide describes how to configure a new 8960 test set for single or multiple wireless formats and lists the upgrades available for existing 8960 test sets.

Notice

For the newest 8960 configuration information, select the 8960 Configuration guide from the Key Library at **www.agilent.com/find/8960**

Agilent Technologies

8960 Series 10 Wireless Test Set – Mainframe, Applications, and Software

The building blocks of the 8960 are an E5515 test set mainframe and mobile test applications (TAs) or lab applications (LAs). Test applications provide parametric test capability. Lab applications test parametric performance and add signaling functionality.

Wireless Test Manager is a family of easy-to-use 8960 test automation software. Wireless Test Manager runs on a Windows® PC.

Configuring a *New* 8960 for Your Application

Table 1 shows the recommended or required options to purchase with a new 8960 in order to test a specific wireless format. If adding a test or lab application to an existing mainframe, refer to the section entitled, *Adding wireless formats to your 8960 test set*.

Table 1. New purchase configuration information

Wireless technology format	TA, LA model (option)	Mainframe model	Mainframe options (model no. - option)		Wireless Test Manager
Formats for test applications	Required	Required	Required	Recommended	
AMPS/136 (TDMA)	E1961A	E5515C[1] or B[1]		002, 003[2]	E6563A, E6571A
cdma2000/IS-95/AMPS	E1962B	E5515C[1]	003	002	E6560A/C, E6571A/C
cdma2000 Rel A New Control Channels	E1962B-401	E5515C[1]	003	002	E6560A/C, E6571A/C
W-CDMA	E1963A	E5515C[1]	003	002	E6562A/C, E6571A/C
W-CDMA Video Test	E1963A-401	E5515C[1]	003	002	E6562A/C, E6571A/C
W-CDMA HSDPA Test Modes	E1963A-403	Contact an Agilent Sales Representative for configuration			—
1xEV-DO	E1966A	E5515C[1]	003	002	E6564A, E6571A
GSM	E1968A-101	E5515C[1] or B[1]	002	003[2]	E6566A/C, E6571A/C
GPRS	E1968A-102	E5515C[1] or B[1]	002	003[2]	E6566A/C, E6571A/C
EGPRS	E1968A-103	E5515C[1] or B[1]	002	003	E6566C, E6571C
GSM and GPRS	E1968A-201	E5515C[1] or B[1]	002	003[2]	E6566A/C, E6571A/C
GSM, GPRS, and EGPRS	E1968A-202	E5515C[1] or B[1]	002	003[2]	E6566C, E6571C
Phase & Amplitude vs. Time	E1968A-410	Contact an Agilent Sales Representative for configuration			—
Test Application Fast Switching[3]	E1985D	E5515C[1]	002, 003		E6569A/C, E6571A/C
Test Application Fast Switching[3,4]	E1987A	E5515C[1]	002, 003		E6569A/C, E6571A/C
Test Application Suite[5]	E1991B	E5515C[1]	002, 003		E6569A/C, E6571A/C
UMTS Test Application Suite[6]	E1993A	E5515C[1]	002,003		E6569A/C, E6571A/C
Formats for lab applications					
GSM/GPRS	E6701D	E5515C[1] or B[1]	002	003[2]	E6566A/C
cdma2000[7]	E6702B	E5515C[1]	003	002	E6560A/C
W-CDMA[7]	E6703C	E5515C[1]	003	002	E6562A/C
EGPRS[8]	E6704A	E5515C[1] or B[1]	002	003	E6566C
1xEV-DO	E6706A	E5515C[1]	003	002	Not supported
Lab Application Fast Switching[9]	E6785C	E5515C[1]	002, 003		E6569A/C
UMTS Lab Application Suite[10]	E6717A	E5515C[1]	002,003		E6569A/C, E6571A/C
Lab Application Suite[11]	E6719B	E5515C[1]	002, 003		E6569A/C

1. New E5515s will not work with older revision or discontinued applications. For information on application compatibility, go to **www.agilent.com/find/E5515** and select either E5515B or E5515C Release Notes from the Key Library.
2. Option 003 is not available to order on new E5515Bs.
3. Includes E1985B for GSM/GPRS to AMPS/136 to W-CDMA, E1985C for GSM/GPRS to cdma2000/IS-95/AMPS, and E1985E for cdma2000/IS-95/AMPS to 1xEV-DO. GSM/GPRS fast switching includes EGPRS. Two or more TAs are required for fast switching. For example, E1962B and E1968A-101 are needed to switch between cdma2000 and GSM. GSM/GPRS fast switching includes EGPRS.
4. E1987A allows fast switching across all TA technology formats. E1985 applications switch across specified formats.
5. E1991B TA Suite includes TAs for cdma2000, 1xEV-DO, IS-95, W-CDMA, GSM, GPRS, EGPRS, 136 (TDMA), AMPS, and fast switching TAs. Model numbers included are E1961A, E1962B, E1963A, E1966A, E1968A-202, E1985D, and E1987A. Does not include E1962B-401 or E1963A-401.
6. E1993A UMTS TA Suite includes TAs for W-CDMA, GSM, GPRS, EGPRS, and fast switching TAs. Model numbers included are E1963A, E1968A-202, E1985B, and E1987A. Does not include E1963A-401.
7. Fading is available. Contact your Agilent Sales Representative or go to the Web for information. Go to **www.agilent.com/find/E6702B** for cdma2000 fading. Go to **www.agilent.com/find/E6703C** for W-CDMA fading.
8. E6701D LA required for E6704A LA.
9. E6785C fast switches from GSM/GPRS to W-CDMA. Requires E6701D and E6703C LAs. Order E6704A LA to add EGPRS to fast switching.
10. E6717A UMTS LA Suite includes LAs for W-CDMA, GSM, GPRS, and EGPRS. Model numbers included are E6701D, E6703C, E6704A, and E6785C.
11. E6719B LA Suite includes LAs for cdma2000, W-CDMA, GSM, GPRS, and EGPRS. Model numbers included are E6701D, E6702B, E6703C, E6704A, and E6785C.

Test Set Mainframes

E5515C   8960 Series 10 mainframes. (Require at least one Agilent
E5515B   Technologies test or lab application. E5515C is required for CDMA
capability in a new test set. Older revision and discontinued
applications are not compatible with new E5515s. Trying to run
incompatible applications will cause new E5515s to lock-up.
Specifically, E5515B S/N greater than, or equal to GB45080001 and
E5515C greater than, or equal to GB45070001 do not work with
applications released before January 2005 or the following
discontinued applications: E1960A, E1964A, E1985A, E1992A,
E6701A/B, E6702A, E6703A, and E6785A/B.) For more information
on application compatibility, go to **www.agilent.com/find/8960** and
select E5515C or E5515B Release Notes from the Key Library.

Test set mainframe options

E5515B-002   Second RF source. (Required for all GSM, GPRS, and EGPRS
E5515C-002   applications.)

E5515C-003   Flexible CDMA base station emulator. (Required for all cdma2000/
IS-95/AMPS, W-CDMA, and 1xEV-DO applications. Not available in
new E5515Bs.)

E5515C-370   E6571A Wireless Test Manager run-time license. Compatible with
E656xA/B/C Wireless Test Manager models. Requires a PC with
parallel port.

E5515B-ABA   Documentation for applications purchased with a mainframe.
E5515C-ABA   Includes all 8960 test and lab application documentation. Consists of
a CD-ROM with programming guides, getting started guides, and
paper copies of GPIB syntax guides. US-English localization.
To download documentation in other languages, go to
www.agilent.com/find/8960, select product model, Key Libraries,
and download the Help files. Not all languages are available.

E5515B-0B0   Delete documentation on applications purchased with a mainframe.
E5515C-0B0

E5515B-AX4   Rack flange kit without handles.
E5515C-AX4

E5515B-AX5   Rack flange kit with handles.
E5515C-AX5

E5515B-UK6   Commercial calibration certificate with test data.
E5515C-UK6

Warranty and service

3-year customer return repair service
5-year customer return repair service

Calibration

3-year customer return calibration service
5-year customer return calibration service

Operational verification

E5515B-B8A   Operation verification at installation. Contact your Agilent Sales
E5515C-B8A   Representative for more information.

Accessories

Programmed test SIM cards
E5515-10007   E5515-61277 UMTS (W-CDMA) USIM card (included with new
E6703C LA)
08922-61887   GSM SIM card (programmed micro-size, 15 mm x 25 mm)
08922-80047   GSM SIM card (programmed, credit card size)

Test Applications

E1961A   AMPS/136 mobile test application. (Requires E5515C or E5515B.)

E1962B   cdma2000/IS-95/AMPS mobile test application. (Requires E5515C and E5515C-003.)

> **E1962B-401**   cdma2000 Rel A New Control Channels. (Requires E5515C and E5515C-003.)

E1963A   W-CDMA mobile test application. (Requires E5515C and E5515C-003.)

> **E1963A-401**   W-CDMA video phone test. (Requires E5515C and E5515C-003.)
> **E1963A-403**   W-CDMA HSDPA test modes. (Contact an Agilent Sales Representative for E5515 requirements.)

E1966A   1xEV-DO terminal test application. (Requires E5515C and E5515C-003.)

E1968A   E1968A GSM/GPRS mobile test application. GSM, GPRS and EGPRS wireless technology functionality is available. Must specify an option for a specific format or combination of formats. E5515B with serial number < GB40470001 or < US40350001 may require a hardware upgrade. Please contact an Agilent Sales Representative for more information.

> **E1968A-101**   GSM functionality. (Requires E5515C and E5515C-002, or E5515B and E5515B-002.)
>
> **E1968A-102**   GPRS functionality. (Requires E5515C and E5515C-002, or E5515B and E5515B-002.)
>
> **E1968A-103**   EGPRS functionality. (Requires E5515C and E5515C-002, or E5515B and E5515B-002.)
>
> **E1968A-201**   GSM/GPRS functionality. (Requires E5515C and E5515C-002, or E5515B and E5515B-002.)
>
> **E1968A-202**   GSM/GPRS/EGPRS functionality. (Requires E5515C and E5515C-002, or E5515B and E5515B-002.)
>
> **E1968A-410**   EGPRS phase and amplitude versus time. (Contact an Agilent Sales Representative for E5515 requirements.)

E1985D   Fast switching test applications. Includes E1985B for GSM, GPRS, and EGPRS to AMPS, and 136 or W-CDMA fast switch; E1985C for GSM, GPRS, and EGPRS to cdma2000, IS-95, and AMPS fast switch; and E1985E for cdma2000, IS-95, and AMPS to 1xEV-DO fast switch. (Requires E5515C, TAs, and E5515 options for the wireless formats to be switched.)

E1987A   New fast switching test application. E1987A switches across all TA formats. E1985 applications only switch across some formats. (Requires E5515C, at least two TAs, and E5515 options for the wireless formats to be switched.)

E1991B   8960 test application suite. Includes test applications for GSM, GPRS, EGPRS, AMPS, 136, cdma2000, IS-95, 1xEV-DO, and W-CDMA. Contains E1968A-202, E1961A, E1962B, E1963A, and E1966A TAs, plus E1985D and E1987A fast switching TAs. Order E1962B-401 cdma2000 Rel A and E1963A-401 W-CDMA video phone test TA options separately; they are not included in the TA suite. (Requires E5515C, E5515C-002, and E5515C-003. E1991B is for installation on a single 8960 test set.)

E1993A   8960 UMTS test application suite. Includes TAs for GSM, GPRS, EGPRS, and W-CDMA. Contains E1968A-202 and E1963A TAs, plus E1987A and E1985B fast switching TAs. Order E1963A-401 W-CDMA video phone test TA option separately; it is not included in the UMTS TA suite. (Requires E5515C, E5515C-002, and E5515C-003. E1993A is for installation on a single 8960 test set.)

Note: If adding a test application to an existing mainframe, see the section entitled, *Adding wireless formats to your 8960 test set.*

Test application includes

- Test application license.
- 8960 documentation set. (Includes documentation for all 8960 TAs and LAs. Must specify language localization option. When ordered with an E5515 mainframe use E5515 application documentation options.)
- If ordering more than one TA, specify language localization option for one TA and order Option 0B0 on the other TAs to avoid receiving multiple 8960 documentation sets.

Test application options available when ordered standalone (without an E5515 mainframe)

TA Model#-010 Test application installation set for test applications purchased standalone. (CD-ROM with the necessary files and utilities needed for loading test applications. Test applications can be downloaded from **www.agilent.com/find/8960ta**. Option 010 is recommended if you do not have high-speed Internet access.)

TA Model#-ABA Documentation for test applications purchased standalone. Includes all test and lab application documentation. Consists of CD-ROM with programming guides, getting started guides, and paper copies of GPIB syntax guides. US-English localization. To download document in other languages, go to **www.agilent.com/find/8960**, select Key Libraries and download the Help files. Not all languages are available.

TA Model#-0B0 Delete documentation.

Lab Applications

E6701D   GSM/GPRS lab application. (Requires E5515C and E5515C-002, or E5515B and E5515B-002.)

E6702B   cdma2000 lab application. (Requires E5515C and E5515C-003.)

E6703C   W-CDMA lab application. (Requires E5515C and E5515C-003.) Includes E5515-10007 UMTS (W-CDMA) USIM card.

E6704A   EGPRS lab application. (Requires E6701D and E5515C with E5515C-002 or E5515B with E5515B-002.)

E6706A   1xEV-DO lab application. (Requires E5515C, E5515C-003, E1966A, and E6706AU-001. Currently only available as an upgrade from E1966A TA to E6706A.)

E6785C   Fast switching lab application for GSM/GPRS/EGPRS_W-CDMA. (Requires E6701D, E6703C, E5515C, E5515C-002, and E5515C-003. For EGPRS capability, add E6704A.)

E6717A   8960 lab application UMTS suite. Includes LAs for GSM, GPRS, EGPRS, and W-CDMA. Contains E6701D, E6703C, E6704A LAs and E6785C fast switching LA. (Requires E5515C, E5515C-002, and E5515C-003. E6717A is for installation on a single 8960 test set.)

E6719B   Lab application suite. Includes LAs for GSM, GPRS, EGPRS, cdma2000, W-CDMA, and fast switching. Contains E6701D, E6702B, E6703C, E6704A LAs and E6785C fast switching LA. (Requires E5515C, E5515C-002, and E5515C-003. E6719B is for installation on a single 8960 test set.)

Note: If adding a lab application to an existing mainframe, see the section entitled, *Adding wireless formats to your 8960 test set*.

Lab applications include

- Lab application license.
- Wireless protocol advisor (WPA) software for specified format. WPA is PC software that works with 8960 lab applications to capture and analyze wireless protocols.
- 8960 application documentation. (Must specify localization option. When ordered with E5515 mainframe use E5515 application documentation options.)
- If ordering more than one LA, specify language localization option for one LA and order Option 0B0 on the other LAs to avoid receiving multiple 8960 documentation sets.

Lab application options available when ordered standalone (without an E5515 mainframe)

LA Model#-010 Lab application installation set. (CD-ROM with the necessary files and utilities needed for loading test applications. Lab applications can be downloaded from **www.agilent.com/find/8960la**. Option 010 is recommended if you do not have high-speed Internet access.)

LA Model#-ABA Documentation for lab applications purchased standalone. Includes all test and lab application documentation. Consists of CD-ROM with programming guides, getting started guides, and paper copies of GPIB syntax guides. US-English localization. To download document in other languages, go to **www.agilent.com/find/8960**, select Key Libraries, and download the Help files. Not all languages are available.

LA Model#-0B0 Delete documentation.

Wireless protocol applications (WPA) ordered standalone (without an LA)

E6584A PC software that works with 8960 lab applications to capture and analyze wireless protocols. (Included with LA. To order without LA, order E6584A and option to specify format.)

E6584A-001 GSM/GPRS/EGPRS decodes for WPA software.

E6584A-002 cdma2000 decodes for WPA software

E6584A-003 W-CDMA decodes for WPA software

Wireless Test Manager software

Wireless Test Managers require a specific model and revision of TA and LA. See the individual test manager data sheet or overview to determine compatible TAs and LAs at **www.agilent.com/find/wtmanagers.**

Find your software development platform and select your products...

Platform	Product	Description
Visual Studio .NET®		
	E6560C	cdma2000/IS-95/AMPS Wireless Test Manager
	E6562C	W-CDMA Wireless Test Manager
	E6566C	GSM/GPRS/EGPRS Wireless Test Manager
	E6569C	Wireless Test Manager Suite
	E6571C	Wireless Test Manager Run-Time License for operation only on E656xC versions
Visual Basic 6®		
	E6560A	cdma2000/IS-95 Wireless Test Manager
	E6562A	W-CDMA Wireless Test Manager
	E6563A	AMPS/136 Wireless Test Manager
	E6564A	1xEV-DO Wireless Test Manager
	E6566A	GSM/GPRS Wireless Test Manager
	E6568B	W-CDMA/GSM/GPRS Wireless Test Manager
	E6569B	Wireless Test Manager Suite
	E6571A	Wireless Test Manager Run-Time License for operation on E656xA/B and E656xC versions.

Upgrading an existing 8960 test set

The 8960 is a flexible test set that can be upgraded to meet your changing wireless test needs. There are four types of 8960 upgrades

1. updating an existing test/lab application
2. upgrading an application to a new model number
3. upgrading a test application to a lab application
4. adding a wireless technology format

To get timely information about 8960 application improvements, register for Agilent Email Updates at **www.agilent.com/find/emailupdates**.

1. Updating an existing application to get the newest features

TAs and LAs are periodically revised to add new functionality, improve performance, or resolve known issues. TA revision updates are free. LA revision updates within a model number are free (E6703B B.01.xx to E6703B B.02.xx.) To upgrade an LA to a new model number (E6703B to E6703C), refer to *2. Upgrading an existing application to a new model.* A valid application license is required. Free TA and LA downloads are available at **www.agilent.com/find/8960ta**. Some new features are part of free upgrades, other new features require a TA option upgrade, LA model upgrade, or an E5515 mainframe hardware upgrade. To determine if a hardware upgrade is required to enable a feature listed in Table 2, please contact your Agilent Sales Representative.

Table 2. New feature upgrades

Application	Format	Feature
Test applications		
E1962B	cdma2000	cdma2000 Rel A new control channels (E1962B-401)
E1963A	W-CDMA	Video test (E1963A-401)
E1963A	W-CDMA	BLER for asynchronous channels
E1963A	W-CDMA	HSDPA test modes (E1963A-403)
E1968A-103	EGPRS	Class 10 measurements (full multi-slot)
E1968A	GSM/GPRS/EGPRS	Phase and amplitude versus time (E1968A-410)
Lab applications		
E6701D/ E6704A	GSM/GPRS/EGPRS	EGPRS Class 10 measurements (full multi-slot)
E6701D/ E6704A	GSM/GPRS/EGPRS	EGPRS Class 12 signaling
E6702B	cdma2000	cdma2000 Rel A new control channels
E6702B	cdma2000	Fading
E6703C	W-CDMA	384K data throughput
E6703C	W-CDMA	BLER for asynchronous channels
E6703C	W-CDMA	Fading
E6703C	W-CDMA	Video test

2. Upgrading an existing application to a new model number

Upgrading existing TAs and LAs to new model numbers (e.g. E6701C to E6701D) can provide significant new functionality and feature improvements. LA upgrades to newer model numbers are offered as an upgrade product. TA upgrades may be upgrade products or free downloads. TA and LA upgrades are customer installable. See Table 3 below for available TA and LA upgrades. Some upgrades may require an E5515 hardware upgrade to run or enable specific features. Contact your Agilent Sales Representative for specific application upgrade information.

Table 3. Application model number upgrades

Current application	Recommended upgrade	Upgrade description	Order
E6701C	E6701D	GSM/GPRS LA upgrade	E6701DU-001
E6701B	E6701D	GSM/GPRS LA upgrade	E6701DU-002
E6702A	E6702B	cdma2000 LA upgrade	E6702BU-002
E6703A	E6703C	W-CDMA LA upgrade	E6703CU-002
E6703B	E6703C	W-CDMA LA upgrade	E6703CU-003
E1960A	E1968A-101[1]	GSM TA functionality	Free download
E1964A	E1968A-102[1]	GPRS TA functionality	Free download
E1985A	E1985B, E1985C, and E1985E[2]	Add new fast switching TAs	Free download
E1985B	Add E1985C and E1985E[2]	Add new fast switching TAs	Free download
E1985A/B/C/E	E1987A[3]	Upgrade to new E1987A fast switching TA	Free download

1. E5515B with serial number < GB40470001 or < US40350001 may require a hardware upgrade. Please contact an Agilent Sales Representative for more information.
2. E5515 may require a hardware upgrade or option retrofit. Please contact an Agilent Sales Representative for more information.
3. E5515C with serial number < GB45070001 or E5515B with serial number < GB45080001 may require a hardware upgrade. Please contact an Agilent Sales Representative for more information.

3. Upgrading a test application to a lab application

Upgrading a TA to an LA (e.g. E1962B to E6702B) is customer installed; TA to LA upgrades cannot be ordered pre-installed on new instruments. Some TA to LA upgrades may require an E5515 mainframe hardware upgrade. Contact your Agilent Sales Representative for compatibility information.

Table 4. TA to LA upgrade products

TA to upgrade from	LA to upgrade to	Upgrade description	Order
E1962B	E6702B	Upgrade from cdma2000 TA to cdma2000 LA	E6702BU-001
E1963A	E6703C	Upgrade from W-CDMA TA to W-CDMA LA	E6703CU-001
E1966A	E6706A	Upgrade from 1xEV-DO TA to 1xEV-DO LA	E6706AU-001

4. Adding wireless technology formats to your 8960 test set

You can add any TA or LA to an existing E5515B or E5515C. Being able to purchase another wireless format for your existing test set may save considerable expense when compared to purchasing a new E5515C. Adding a new TA or LA to an existing E5515B or E5515C may require a hardware upgrade. Contact your Agilent Sales Representative for specific upgrade order and delivery information.

Important: Existing TAs and LAs installed on an E5515B or E5515C may have to be updated to a newer version after hardware upgrade.

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

www.agilent.com

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. 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 receive your new Agilent equipment, we can help verify that it works properly and help with initial product operation.

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 onsite 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.

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.

For more information on Agilent Technologies' products, applications or services, please contact your local Agilent office.

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The complete list is available at:
www.agilent.com/find/contactus

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