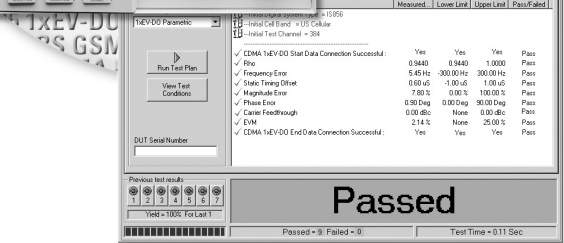


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8960 Series 10 Wireless Communications Test Set – Mainframe, Applications, and Software

The building blocks of the 8960 are an E5515 test set mainframe and mobile test applications (TAs) or lab applications (LAs). Test applications provide RF parametric measurements and base station emulation capabilities for all major 2G/3G cellular technologies. Lab applications add a wide range of IP data test capabilities and support real-world testing of today's hot applications such as data throughput, SMS/MMS, AGPS, simultaneous services, and more.

Wireless Test Manager is a family of easy-to-use software which automates parametric measurements and basic call processing tests on the 8960 that Wireless Test Manager runs on a Windows® PC.

Interactive Functional Test software automates real-world data application test on the 8960. Interactive Functional Test software runs on a Windows PC.

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 latest 8960 configuration information, see www.agilent.com/find/8960config.



Configuring a New 8960 for Your Application

Tables 1 and 2 show the recommended or required options to purchase with a new 8960 for testing various wireless formats. Table 1 is for testing parametric performance with a TA. Table 2 is for testing parametric performance and signaling functionality with an LA. Table 3 lists LA annual contracts. An annual contract provides early LA releases and LA upgrades for the term of the contract.

If adding a TA or LA to an existing E5515 mainframe, refer to the section entitled, *Adding wireless technology formats to your 8960 test set*.

Table 1. Configuring a new 8960 with a test application

Wireless technology format (Parametric performance)	TA model (option)	Mainframe model	Mainframe options (model no. — option)		Wireless Test Manager
	Required	Required ¹	Required	Recommended	
AMPS/136 (TDMA)	E1961A	E5515C		002, 003	E6567C
cdma2000®/IS-95/AMPS	E1962B	E5515C	003	002	E6567C
Release A: New control channels	E1962B-401	E5515C	003	002	
Advanced AMPS	E1962B-402	E5515C	003	002	
Authentication	E1962B-403	E5515C	003	002	
Digital bus (fading)	E1962B-405	E5515C	003	002	
Multi-unit synchronization	E1962B-406	E5515C	003	002	
Protocol logging	E1962B-407	E5515C	003	002	
cdma2000 SMS	E1962B-409	E5515C	003	002	
cdma2000 1x advanced	E1962B-410	E5515C	003	002	
W-CDMA	E1963A	E5515C	003	002	E6568C
W-CDMA end-to-end video	E1963A-401	E5515C	003	002	
W-CDMA video loopback	E1963A-402	E5515C	003	002	
HSDPA test modes	E1963A-403	E5515C	003	002	
HSDPA 14.4 Mbps test mode ²	E1963A-405	E5515C	003	002	
W-CDMA enhanced audio	E1963A-408	E5515C	003	002	
W-CDMA advanced SMS	E1963A-409	E5515C	003	002	
HSUPA test modes ³	E1963A-413	E5515C	003	002	
HSPA+ test modes ⁴	E1963A-423	E5515C	003	002	
1xEV-DO	E1966A	E5515C	003	002	E6568C
1xEV-DO Release A and B	E1966A-102	E5515C	003	002	
1xEV-DO multi-carrier ⁵	E1966A-103	E5515C	003	002	
1xEV-DO Rel B Optional DRC ⁶	E1966A-104	E5515C	003	002	
Digital bus (fading)	E1966A-405	E5515C	003	002	
Multi-unit synchronization	E1966A-406	E5515C	003	002	
Protocol logging	E1966A-407	E5515C	003	002	
GSM/GPRS⁷	E1968A	E5515C	002	003	E6568C
GSM	E1968A-101	E5515C	002	003	
GPRS	E1968A-102	E5515C	002	003	
EGPRS	E1968A-103	E5515C	002	003	
Evolved EDGE ⁸	E1968A-104	E5515C	002	003	
GSM and GPRS	E1968A-201	E5515C	002	003	
GSM, GPRS, and EGPRS	E1968A-202	E5515C	002	003	
GSM/GPRS VAMOS	E1968A-406	E5515C	002, 003		
GSM/GPRS enhanced audio	E1968A-408	E5515C	002	003	
GSM/GPRS advanced SMS	E1968A-409	E5515C	002	003	
PAvT	E1968A-410	E5515C	002	003	
I/Q capture capability	E1968A-411	E5515C	002	003	
Mobile calculated BER	E1968A-419	E5515C	002	003	
Class 34	E1968A-430	E5515C	002	003	
Class 45	E1968A-431	E5515C	002	003	

1. New E5515s do not work with old revisions or discontinued applications. Please contact your Agilent sales representative to determine application compatibility.
2. HSDPA 14.4 Mbps test mode (E1963A-405) requires HSDPA test modes (E1963A-403)
3. HSUPA test modes (E1963A-413) requires HSDPA test modes (E1963A-403). Please contact your Agilent sales representative to determine application compatibility.
4. HSPA+ test modes (E1963A-423) requires HSDPA test modes (E1963A-403), HSUPA test modes (E1963A-413), and HSDPA 14.4 Mbps. test mode (E1963A-405)
5. E1966A-103 requires both E1966A-102 and E1966A-406.
6. E1966A-104 requires E1966A-102.
7. Must order at least one format option (-101, -102, -103, -201, or -202) with E1968A GSM/GPRS TA.
8. E1968A-104 requires E1968A-103 or E1968A-202 licenses.

Table 1. Configuring a new 8960 with a test application (continued)

Wireless technology format (Parametric performance)	TA model (option)	Mainframe model	Mainframe options (model no. — option)		Wireless Test Manager
	Required	Required ⁹	Required	Recommended	
TD-SCDMA_GSM fast switch	E1969A	E5515C	002, 003		E6567C
Test application¹⁰					E6567C
TD-SCDMA non-signaling test mode	E1969A-101	E5515C	003	002	
TD-SCDMA signaling mode	E1969A-201	E5515C	003	002	
TD-SCDMA FDT ¹⁹	E1969A-301	E5515C	003	002	
TD-HSDPA	E1969A-403 ¹⁸	E5515C	003	002	
E5515 application features¹¹	E1999A	E5515C		002, 003	
Fast device tune enhanced	E1999A-202	E5515C		002, 003	
GPS single channel source	E1999A-206	E5515C	003	002	
PESQ measurment ¹²	E1999A-301	E5515C		002, 003	
2-box voice handover ²⁰	E1999A-501	E5515C		002, 003	
Test application fast switching¹³	E1987A	E5515C	002, 003		
UMTS test application suite¹⁴	E1993A	E5515C	002, 003		E6568C
cdma2000/1xEV-DO TA suite¹⁵	E1996A	E5515C	003	002	
Test application suite¹⁶	E1991B	E5515C	002, 003		
Revision to current¹⁷	E5515C-R2C	E5515C		002, 003	

9. New E5515s do not work with old revisions or discontinued applications. Please contact your Agilent sales representative to determine application compatibility.
10. Must order at least one option (-101, -201) with E1969A TD-SCDMA_GSM fast switch test application. E1969A allows fast switching across TD-SCDMA and GSM/GPRS/EGPRS test applications that have a valid license.
11. E5515 Application Features require one or more TA formats (models E1962B, E1963A, E1966A, and E1968A). See Table 1 for required mainframe options for each TA.
12. E1999A-301 is required to enable PESQ measurement in the E1962B, E1963A, and E1968A TAs and the E6701H, E6702C, and E6703G LAs.
13. E1987A allows fast switching across all TA technology formats that have a valid license except for TD-SCDMA and 136 (TDMA). E1987A is free and does not require and E1987A license.
14. E1993A includes TAs for W-CDMA, GSM, GPRS, EGPRS, and fast switching (models E1963A, E1968A-202, E1987A). Suite does not include feature options. Feature options can be ordered as additional options to E1993A (See Table 1 for E1963A-xxx and E1968A-xxx options).
15. E1996A includes TAs for cdma2000, 1xEV-DO, and fast switching (models E1962B, E1966A, E1987A). Suite does not include feature options. Feature options can be ordered as additional options to E1996A (See Table 1 for E1962B-xxx and E1966A-xxx options).
16. E1991B includes TAs for cdma2000, 1xEV-DO, W-CDMA, GSM, GPRS, EGPRS, 136 (TDMA), AMPS, and fast switching (models E1961A, E1962B, E1963A, E1966A, E1968A-202, E1987A). Suite does not include feature options. Feature options can be ordered as additional options to E1991B (See Table 1 for E1962B-xxx, E1963A-xxx, E1966A-xxx, and E1968A-xxx options).
17. One time upgrade that enables revision to current license protected features on test applications. R2C applies to all the TAs installed on a single E5515C test set. See Table 1 for required mainframe options for each TA.
18. E1969A-403 requires E1969A-201.
19. E1969A-301 requires E1969A-201 or E1969A-101.
20. E1999A-501 is required to enable 2-box voice handover in the E1963A and E1968A.

Table 2. Configuring a new 8960 with a lab application

Wireless technology format (Parametric and signaling)	LA model (option)	Mainframe model	Mainframe options (model no. – option)		Wireless Test Manager	Interactive Functional Test SW
	Required	Required ¹	Required	Recommended		
GSM/GPRS	E6701H	E5515C	002	003	E6568C	N5970A
GSM/GPRS/EGPRS fading ²	E6701H	E5515C	002, 003, 004	003		E6567C
GSM/GPRS/EGPRS encryption ³	E6705A	E5515C	002			
EGPRS4	E6704A	E5515C	002	003	E6568C	N5970A
Enhanced GAN license⁵	E6708A					
cdma2000	E6702D	E5515C	003	002	N5880A	N5971A
cdma2000 fading ²	E6702D	E5515C	003, 004	002		
W-CDMA/HSPA	E6703G	E5515C	002, 003	002	N5882A	N5970A
W-CDMA fading ²	E6703G	E5515C	003, 004	002		
W-CDMA/HSPA ciphering ⁶	E6715A	E5515C	003	002		
1xEV-DO with Release A & B	E6706D	E5515C	003	002	N5884A	N5970A
1xEV-DO fading ²	E6706D	E5515C	003, 004	002		
cdma2000/1xEV-DO LA Suite⁷	E6716D	E5515C	003	002	N5880A N5884A	N5971A
UMTS lab application suite⁸	E6717E	E5515C	002, 003		E6568C	N5970A
Lab application suite⁹	E6719G	E5515C	002, 003		E6569C	
Lab application fast switching¹⁰	E6785G	E5515C	002, 003		E6569C	

1. New E5515s will not work with older revisions or discontinued applications. Please contact your Agilent sales representative to determine application compatibility.
2. More information on fading is on the Web. Go to www.agilent.com/find/8960-fading.
3. E6705A requires E6701F or newer. E6705A may optionally be used with E6708A for UMA/GAN ciphering.
4. E6701 LA required for E6704A LA.
5. E6708A for 2G/3G requires E6701G and/or E6703F or newer and optionally E6705A and/or E6715A for UMA/GAN ciphering. E6708A license installs on 8960 and enables the E6962B GANC (generic access network controller) software (downloaded free from the Web and installed on a standalone PC) to connect to the 8960 to facilitate GAN data connectivity. User supplies 3rd party security gate way (SEGW) SW for the PC.
6. E6715A requires E6703F or newer. E6715A may optionally be used with E6708A for UMA/GAN ciphering.
7. E6716D includes LAs for cdma2000 and 1xEV-DO (models E6702D, E6706D, E6785G)
8. E6717E includes LAs for W-CDMA/HSPA, GSM, GPRS, EGPRS, and fast switching (models E6701H, E6703G, E6704A, and E6785G).
9. E6719G includes LAs for cdma2000, 1xEV-DO, W-CDMA/HSPA, GSM, GPRS, EGPRS, and fast switching (models E6701H, E6702D, E6703G, E6704A, E6706D, and E6785G).
10. E6785G fast switches between GSM/GPRS, W-CDMA, cdma2000, and 1xEV-DO. Requires one or more of the following: E6701H, E6702D, E6703G, E6706D LAs. Order E6704A LA to add EGPRS to fast switching.

Table 3. Lab application annual contracts¹ and extensions

Format	Application	Annual contract	Annual contract extension ²
GSM/GPRS (EGPRS)	E6701 (E6704)	E6720A-001	E6720A-201
cdma2000	E6702	E6720A-002	E6720A-202
W-CDMA/HSPA	E6703	E6720A-003	E6720A-203
1xEV-DO	E6706	E6720A-006	E6720A-206
UMTS	E6717 (E6701/ E6703)	E6720A-007	E6720A-217

1. An annual contract provides early LA releases and LA upgrades for the term of the contract.
2. When renewing, order the annual contract extension to avoid overlapping existing and new terms.

Test Set Mainframe

E5515C 8960 Series 10 mainframes. Require at least one Agilent Technologies' test or lab application. Older revision and discontinued applications are not compatible with new E5515s. Trying to run incompatible applications will cause new E5515s to lock-up. Please contact your Agilent sales representative to determine application compatibility.

Test set mainframe options

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

E5515C-003 Flexible CDMA base station emulator. Required for all cdma2000/IS-95/AMPS, W-CDMA/HSPA, 1xEV-DO, and TD-SCDMA applications.

E5515C-004 Digital bus. Enables fading in cdma2000, 1xEV-DO, GSM/GPRS/EGPRS and W-CDMA/HSPA LAs. Requires E5515C-003.

E5515C-371 E6571C Wireless Test Manager run-time license. Compatible with E656xA/B/C Wireless Test Manager models. Requires a PC with a USB port.

E5515C-ABA Documentation for applications purchased with a mainframe. Consists of a CD-ROM that includes all of the test and lab application documentation.

Standard warranty

R-51B-001-C 1-year return-to-Agilent warranty

Optional warranty

R-51B-001-3C 1-year return-to-Agilent warranty extended to 3 years

R-51B-001-5C 1-year return-to-Agilent warranty extended to 5 years

Optional calibration

R-50C-011-3 Agilent Calibration Upfront Support Plan 3 year coverage

R-50C-011-5 Agilent Calibration Upfront Support Plan 5 year coverage

R-50C-021-3 Z540 Calibration Upfront Support Plan 3 year coverage

R-50C-021-5 Z540 Calibration Upfront Support Plan 5 year coverage

Accessories

Programmed test SIM cards

E5515-10008 UMTS (W-CDMA) USIM card. Included with E6703

External adapters

E5520A FM adapter. Connects to the RF Out Only port on the E5515C to enable testing of FM receivers.

Test Applications and Feature Options

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

E1961A	AMPS/136 mobile test application. (Requires E5515C.)
E1962B	cdma2000/IS-95/AMPS mobile test application. (Requires E5515C and E5515C-003.)
E1962B-401	cdma2000 Rel A control channels. (Requires E5515C and E5515C-003.)
E1962B-402	Advanced AMPS. (Requires E5515C and E5515C-003.)
E1962B-403	cdma2000 authentication. (Requires E5515C and E5515C-003.)
E1962B-405	cdma2000 digital bus (fading). (Requires E5515C and E5515C-003 & -004.)
E1962B-406	cdma2000 multi-unit synchronization. (Requires 2 E5515C & E5515C-003.)
E1962B-407	cdma2000 protocol logging. (Requires E5515C, E5515C-003, E6584A-002.)
E1962B-409	cdma2000 SMS. (Requires E5515C and E5515C-003.)
E1962B-410	cdma2000 1x Advanced. (Requires E5515C and E5515C-003.)
E1963A	W-CDMA mobile test application. (Requires E5515C and E5515C-003.)
E1963A-401	W-CDMA end-to-end video. (Requires E5515C and E5515C-003.)
E1963A-402	W-CDMA video loopback. (Requires E5515C and E5515C-003.)
E1963A-403	HSDPA test modes. (Requires E5515C and E5515C-003.)
E1963A-405	HSDPA 14.4 Mbps test mode. (Requires E5515C, E5515C-003, and E1963A-403.)
E1963A-408	W-CDMA enhanced audio. (Requires E5515C and E5515C-003.)
E1963A-409	W-CDMA advanced SMS. (Requires E5515C and E5515C-003.)
E1963A-413	HSUPA test modes. (Requires E5515C, E5515C-003, and E1963A-403.)
E1963A-423	HSPA+ test modes. (Requires E5515C, E5515C-003, E1963A-403, E1963A-405, and E1963A-413.)
E1966A	1xEV-DO terminal test application. (Requires E5515C and E5515C-003.)
E1966A-102	1xEV-DO Release A and B. (Requires E5515C and E5515C-003.)
E1966A-103	1xEV-DO Rel B multi-carrier. (Requires 2 or 3 E5515Cs and E5515C-003, E1966A-102, E1966A-406.)
E1966A-104	1xEV-DO Rel B optional DRC. (Requires E5515C, E5515C-003 and E1966A-102; or optionally, 2 or 3 E5515Cs and E5515C-003, E1966A-102, E1966A-103, E1966A-406)
E1966A-405	1xEV-DO digital bus (fading). (Requires E5515C and E5515C-003 & -004.)
E1966A-406	1xEV-DO multi-unit synchronization. (Requires 2 or more E5515C & E5515C-003.)
E1966A-407	1xEV-DO protocol logging. (Requires E5515C, E5515C-003, E6584A-006.)

Test Applications and Feature Options (continued)

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

E1968A

E1968A GSM/GPRS mobile test application. GSM, GPRS, EGPRS formats available. Must specify an option for a specific format or combination of formats.

- E1968A-101** GSM functionality. (Requires E5515C and E5515C-002.)
- E1968A-102** GPRS functionality. (Requires E5515C and E5515C-002.)
- E1968A-103** EGPRS functionality. (Requires E5515C and E5515C-002.)
- E1968A-104¹** Evolved EDGE functionality.
(Requires E5515C and E5515C-002.)
- E1968A-201** GSM/GPRS functionality.
(Requires E5515C and E5515C-002.)
- E1968A-202** GSM/GPRS/EGPRS functionality.
(Requires E5515C and E5515C-002.)
- E1968A-406** GSM/GPRS VAMOS.
(Requires E5515C, E5515C-002 and E5515C-003.)
- E1968A-408** GSM/GPRS Enhanced Audio.
(Requires E5515C and E5515C-002.)
- E1968A-409** GSM/GPRS advanced SMS.
(Requires E5515C and E5515C-002.)
- E1968A-410** EGPRS phase and amplitude versus time.
(Requires E5515C, E5515C-002.)
- E1968A-411** I/Q capture capability.
(Requires E5515C and E5515C-002.)
- E1968A-419** GSM/GPRS mobile calculated BER.
(Requires E5515C and E5515C-002.)
- E1968A-430** Class 34. (Requires E5515C and E5515C-002.)
- E1968A-431** Class 45. (Requires E5515C and E5515C-002.)

E1969A

TD-SCDMA_GSM fast switch test application. Must specify an option for TD-SCDMA. Fast switches across TD-SCDMA and GSM/GPRS/EGPRS TA formats. (Requires E5515C, E5515C-002, E5515C-003.)

- E1969A-101** TD-SCDMA non-signaling test mode.
(Requires E5515C and E5515C-003.)
- E1969A-201** TD-SCDMA signaling mode. (Requires E5515C and E5515C-003.)
- E1969A-301** TD-SCDMA fast device tune. (Requires E5515C and E5515C-003.)
- E1969A-403** TD-HSDPA (Requires E5515C and E5515C-003.)

E1987A

Fast switching test application. Fast switches across all TA formats except for TD-SCDMA and 136 (TDMA). (Requires at least two TAs, E5515C, and E5515 options for the wireless formats to be switched.)

Test application suites and application features

E1991B	8960 test application suite. Includes TAs for GSM, GPRS, EGPRS, AMPS, 136 (TDMA), cdma2000, 1xEV-DO, W-CDMA, and fast switching. Contains E1968A-202, E1961A, E1962B, E1963A, E1966A, and E1987A TAs. (Requires E5515C, E5515C-002, and E5515C-003. E1991B is for installation on a single 8960 test set. TA feature options are not included and must be ordered separately as options to E1991B.)								
E1993A	8960 UMTS test application suite. Includes TAs for GSM, GPRS, EGPRS, W-CDMA, and fast switching. Contains E1968A-202, E1963A, and E1987A TAs. (Requires E5515C, E5515C-002, and E5515C-003. E1993A is for installation on a single 8960 test set. TA feature options are not included and must be ordered separately as options to E1993A.)								
E1996A	8960 cdma2000/1xEV-DO test application suite. Includes TAs for cdma2000, 1xEV-DO, AMPS, and fast switching. Contains E1962B, E1966A, and E1987A TAs. (Requires E5515C, E5515C-003. E1996A is for installation on a single 8960 test set. TA feature options are not included and must be ordered separately as options to E1996A.)								
E1999A	E5515 application features <table> <tr> <td>E1999A-202</td><td>Fast device tune enhanced measurement. Enables fast device tune measurement in E1962B, E1963A, E1966A, E1968A, and E1987A TAs. (Requires E1962B, E1963A, E1966A, or E1968A TA.)</td></tr> <tr> <td>E1999A-206</td><td>Single channel GPS source. Simulates GPS signal with default navigation messages. (Requires E5515C, E5515C-003 and a TA.)</td></tr> <tr> <td>E1999A-301</td><td>PESQ measurement. Provides an objective method to predict vocoder speech quality using the industry standard PESQ algorithm. (Requires one of the E1962B, E1963A, E1968A, E6701H, E6702C and E6703G applications.)</td></tr> <tr> <td>E1999A-501</td><td>2-box voice handover. Enables 2-box voice handovers between E1963A and E1968A. (Requires E1963A and E1968A TA.)</td></tr> </table>	E1999A-202	Fast device tune enhanced measurement. Enables fast device tune measurement in E1962B, E1963A, E1966A, E1968A, and E1987A TAs. (Requires E1962B, E1963A, E1966A, or E1968A TA.)	E1999A-206	Single channel GPS source. Simulates GPS signal with default navigation messages. (Requires E5515C, E5515C-003 and a TA.)	E1999A-301	PESQ measurement. Provides an objective method to predict vocoder speech quality using the industry standard PESQ algorithm. (Requires one of the E1962B, E1963A, E1968A, E6701H, E6702C and E6703G applications.)	E1999A-501	2-box voice handover. Enables 2-box voice handovers between E1963A and E1968A. (Requires E1963A and E1968A TA.)
E1999A-202	Fast device tune enhanced measurement. Enables fast device tune measurement in E1962B, E1963A, E1966A, E1968A, and E1987A TAs. (Requires E1962B, E1963A, E1966A, or E1968A TA.)								
E1999A-206	Single channel GPS source. Simulates GPS signal with default navigation messages. (Requires E5515C, E5515C-003 and a TA.)								
E1999A-301	PESQ measurement. Provides an objective method to predict vocoder speech quality using the industry standard PESQ algorithm. (Requires one of the E1962B, E1963A, E1968A, E6701H, E6702C and E6703G applications.)								
E1999A-501	2-box voice handover. Enables 2-box voice handovers between E1963A and E1968A. (Requires E1963A and E1968A TA.)								

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 main frame use E5515 application documentation options.)

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/8960downloads . Option 010 is recommended if you do not have high-speed Internet access.)
TA Model#-ABA	Documentation for test applications purchased standalone. Consists of a CD-ROM that includes all of the test and lab application documentation.

Lab Applications and Feature Options

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

E6701H	GSM/GPRS lab application. (Requires E5515C and E5515C-002. Order E5515C-003 and E5515C-004 to enable fading.)
E6702D	cdma2000 lab application. (Requires E5515C and E5515C-003. Order E5515C-004 to enable fading.)
E6703G	W-CDMA/HSPA lab application. (Requires E5515C and E5515C-003. Order E5515C-004 to enable fading.) Includes E5515-61286 UMTS (W-CDMA) USIM card.
E6704A	EGPRS lab application. (Requires E6701 and E5515C with E5515C-002.)
E6705A	GSM/GPRS Encryption. E6705A requires E6701F or newer. E6705A may optionally be used with E6708A for UMA/GAN ciphering.
E6706D	1xEV-DO lab application with Release A & B. (Requires E5515C and E5515C-003. Order E5515C-004 to enable fading.)
E6708A	Enhanced GAN license for 2G/3G. License installed on 8960, enables the E6962B GANC software (download for free from Web and install on standalone PC) to connect 8960 and test advanced UMA/GAN capability. Requires E6701G and/or E6703F or newer. User also supplies 3rd party security gateway (SEGW) software for the PC.
E6785G	Fast switching lab application for GSM/GPRS/EGPRS, W-CDMA, cdma2000, and 1xEV-DO. Requires one or more LAs (E6701H, E6702D, E6703G, E6706D), E5515C, E5515C-002, and E5515C-003. For EGPRS capability, add E6704A. Order E5515C-004 to enable fading.
E6715A	W-CDMA/HSPA Ciphering. E6715A requires E6703G or newer. E6715A may optionally be used with E6708A for UMA/GAN ciphering.
E6716D	cdma2000/1xEV-DO lab application suite. Includes LAs for cdma2000 and 1xEV-DO with Release A & B. Contains E6702D, E6706D, E6785G LAs. (Requires E5515C and E5515C-003. Order E5515C-004 to enable fading. E6716D is for installation on a single 8960 test set.)
E6717E	8960 lab application UMTS suite. Includes LAs for GSM, GPRS, EGPRS, and W-CDMA/HSPA. Contains E6701H, E6703G, E6704A, and E6785G fast switching LA. (Requires E5515C, E5515C-002, and E5515C-003. Order E5515C-004 to enable fading. E6717E is for installation on a single 8960 test set.)
E6719G	Lab application suite. Includes LAs for GSM, GPRS, EGPRS, cdma2000, W-CDMA/HSPA, 1xEV-DO with Release A & B, and fast switching. Contains E6701H, E6702D, E6703G, E6704A, and E6706D LAs plus E6785G fast switching LA. (Requires E5515C, E5515C-002, and E5515C-003. Order E5515C-004 to enable fading. E6719G is for installation on a single 8960 test set.)

Lab application includes

- 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 order with E5515 mainframe use E5515 application documentation options.)

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

- LA Model#-010** Lab application installation. (CD-ROM with the necessary files and utilities needed for loading lab applications. LAs can be downloaded from www.agilent.com/find/8960downloads. Option 010 is recommended if you do not have high-speed Internet access.)
- LA Model#-ABA** Documentation for lab applications purchased standalone. Consists of a CD-ROM that includes all of the test and lab application documentation.

Lab application annual contract **E6720A**

Annual contracts for 8960 lab applications. Must specify an option for each format. For contract renewals, order the contract extension to avoid overlap of existing and renewal terms.

E6720A-001 For E6701 GSM/GPRS and E6704A EGPRS LAs

E6720A-002 For E6702 cdma2000 LA

E6720A-003 For E6703 W-CDMA/HSPA LA

E6720A-006 For E6706 1xEV-DO LA

E6720A-017 For E6701 GSM/GPRS, E6704A EGPRS, E6703 W-CDMA/HSPA LAs

E6720A-201 Contract extension for E6701 GSM/GPRS and E6704A EGPRS LAs

E6720A-202 Contract extension for E6702 cdma2000 LA

E6720A-203 Contract extension for E6703 W-CDMA LA

E6720A-206 Contract extension for E6706 1xEV-DO LA

E6720A-217 Contract extension for E6701 GSM/GPRS, E6704A EGPRS, E6703 W-CDMA LAs

Annual contracts include

- Individualized early notification of new LA models and revisions
- LA subscription releases give early access to new features and enhancements
- LA upgrades and licenses (if required) over the term of the contract at no additional charge
- New applications and licenses delivered electronically on demand via the Web

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

E6584A

PC software that works with 8960 lab applications to capture and analyze wireless protocols. (CD-ROM included with LA. Download application for free at www.agilent.com/find/8960downloads.) To order a CD-ROM without an LA, order E6584A.

Wireless Test Manager Software

Wireless Test Manager software runs on a standalone PC to automate the 8960 and requires a specific model and revision of TA and LA. See the data sheet or overview to determine compatible TAs and LAs at www.agilent.com/find/wtm. Wireless Test Manager software run Visual Basic .NET[®] and utilize a USB security key.

Formats	WTM model
TA and LA Wireless Test Manager software	
cdma2000/IS-95/AMPS	E6567C, E6567C-100
1xEV-DO	E6567C, E6567C-100
GSM/GPRS/EGPRS	E6568C, E6568C-100
W-CDMA/GSM/GPRS/EGPRS	E6568C, E6568C-100
cdma2000/IS-95/1xEV-DO	E6567C, E6567C-100
Run-time license for all formats	E6571C
LA Wireless Test Manager software	
cdma2000/IS-95/AMPS	N5880A, N5880A-100
1xEV-DO	N5884A, N5884A-100
W-CDMA	N5882A, N5882A-100

Interactive Functional Test Software

Interactive Functional Test software runs on a standalone PC to automate functional testing on the 8960 and requires a specific model and revision of LA and the annual contract. They utilize a USB security key. See the data sheet at www.agilent.com/find/8960ift.

Formats	Interactive functional test model
UMTS (GSM/GPRS/EGPRS/ W-CDMA/ HSDPA/HSUPA)	N5970A, N5970A-1TP, N5970A-R2C
cdma2000/1xEV-DO	N5971A, N5971A-1TP, N5971A-R2C

Location Server Emulator Software

E6965A

The E6965A Location Server Emulator Software is a standalone Windows PC-based software application that emulates a network-based location server. The E6965A facilitates testing of location services related hardware and firmware/software in SUPL enabled terminal (SET) devices that utilize assisted GPS (A-GPS) positioning. Secure user plane location (SUPL) is a technology which utilizes existing cellular infrastructure and standards to transfer location services (LCS) data over a user plane bearer, such as internet protocol (IP). The E6965A with options 1FP and 2FP facilitates A-GPS/location service testing via the user plane by emulating a SUPL location platform. Used in combination with the Agilent 8960 wireless communications test set and an appropriate lab application, the E6965A makes it possible to test a SUPL-enabled terminal on your benchtop. For more information see www.agilent.com/find/E6965A.

E6965A-1FP SUPL server emulator

E6965A-2FP LCS positioning server emulator

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 a TA or LA revision to get new features

TAs and LAs are periodically revised to add new features, improve performance, or resolve known issues. New features typically require a TA option upgrade, TA revision to current upgrade, LA model upgrade, LA option upgrade, or an E5515 mainframe hardware upgrade. Refer to Table 4 to determine the appropriate TA upgrade. The latest features available for the 8960 are described in the TA release notes at **www.agilent.com/find/8960manuals**. To determine if a hardware (HW) upgrade may be required to enable a feature, contact your Agilent Sales Representative to specify and order hardware upgrades.

TA and LA downloads are available at **www.agilent.com/find/8960downloads**. A valid license is required. Contact your Agilent Sales Representative for application upgrade information.

NOTE: Application suites (E1991, E1993, E1996, E6716, E6717, E6719) can be updated by upgrading the individual constituent applications. For example, to upgrade the E6701F GSM/GPRS lab application and the E6703E W-CDMA lab application purchased in the E6717C UMTS LA suite, the individual upgrades E6701HU-001 and E6703GU-002 should be purchased. There are no upgrade products for the suites as a whole.

Table 4. TA Upgrades

TA format	Feature	Application	Feature option upgrade ¹
cdma2000	cdma2000 Rel A new control channels	E1962B	E1962BU-401
	Advanced AMPS	E1962B	E1962BU-402
	Authentication	E1962B	E1962BU-403
	Digital bus (fading)	E1962B	E1962BU-405
	Multi-unit synchronization	E1962B	E1962BU-406
	Protocol logging	E1962B	E1962BU-407
	cdma2000 SMS	E1962B	E1962BU-409
	cdma2000 1x Advanced	E1962B	E1962BU-410
W-CDMA	W-CDMA end-to-end video	E1963A	E1963AU-401
	W-CDMA video loopback	E1963A	E1963AU-402
	HSDPA test modes	E1963A	E1963AU-403
	HSDPA 14.4 Mbps test mode ²	E1963A	E1963AU-405
	W-CDMA enhanced audio	E1963A	E1963AU-408
	W-CDMA advanced SMS	E1963A	E1963AU-409
	HSUPA test modes ³	E1963A	E1963AU-413
	HSPA+ test modes ⁴	E1963A	E1963AU-423
1xEV-DO	1xEV-DO Rel A and B	E1966A	E1966AU-102
	1xEV-DO Rel B multi-carrier ⁵	E1966A	E1966AU-103
	1xEV-DO Rel B optional DRC ⁶	E1966A	E1966AU-104
	Digital bus (fading)	E1966A	E1966AU-405
	Multi-unit synchronization	E1966A	E1966AU-406
	Protocol logging	E1966A	E1966AU-407
GSM/GPRS/EGPRS	Evolved EDGE	E1968A	E1968A-104 ¹¹
	GSM/GPRS VAMOS	E1968A ¹⁰	E1968A-406
	GSM/GPRS enhanced audio	E1968A ⁷	E1968A-408
	GSM/GPRS advanced SMS	E1968A ⁶	E1968A-409
	PAvT	E1968A ⁶	E1968A-410
	I/Q capture	E1968A ⁶	E1968A-411
	Mobile-calculated BER	E1968A ⁶	E1968A-419
	Class 34	E1968A ⁶	E1968A-430
	Class 45	E1968A ⁶	E1968A-431
TD-SCDMA	TD-HSDPA	E1969A ¹²	E1969A-403 ¹³
	FDT	E1969A	E1969A-301
Multiple	Fast device tune enhanced	Multiple ⁸	E1999AU-201, E1999A-202
	Single channel GPS source	Multiple	E1999A-206
	PESQ measurement	Multiple	E1999A-301
	2-box voice handover	Multiple	E1999A-501
Revision to current	Revision to current, one-time upgrade	Multiple ⁹	E5515CU-R2C

1. Some TA features are enabled by a feature option. Required feature options are listed.

2. HSDPA 14.4 Mbps test mode (E1963AU-405) requires HSDPA test modes (E1963A/AU-403).

3. HSUPA test modes (E1963AU-413) requires HSDPA test modes (E1963A/AU-403).

4. HSPA+ test modes (E1963AU-423) requires HSDPA test modes (E1963A/AU-403), HSDPA 14.4 Mbps test mode (E1963A/AU-405), and HSUPA test modes (E1963A/AU-413).

5. E1966A-103 requires both E1966A-102 and E1966A-406.

6. E1966A-104 requires E1966A-102; or optionally, E1966A-103 and E1966A-406.

7. E1968A plus required technology format feature option (e.g. E1968A-101, 102, 103, 104, 201, or 202).

8. To upgrade an existing E1999A-201 Fast Device Tune feature option to E1999A-202 Fast Device Tune Enhanced, order E1999AU-201. Otherwise, use E1999A-202 to order a new Fast Device Tune Enhanced feature option.

9. One license enables all revision to current license protected features in all licensed TAs (E1962B, E1963A, E1966A, E1968A, E1987A.)

Refer to the TA Release Notes at www.agilent.com/find/8960manuals for Revision to Current license protected TA feature information.

10. E1968A-406 requires E1968A-101 license.

11. E1968A-104 requires E1968A-103 or E1968A-202 license.

12. E1969A-403 requires E1969A-201 license.

13. E1969A-301 requires E1969A-101 or E1969A-201 license.

2. Upgrading an existing application to a new model number

Upgrading a TA or LA to a new model number (e.g. E1985B to E1987A or E6701E to E6701F) offers important new features and functionality. LA upgrades to newer model numbers are offered as an upgrade product. TA upgrades may be free downloads or upgrade products. TA and LA upgrades are customer-installable. Refer to Table 5 for available TA model upgrades and Table 6 for available LA upgrades. Some TA and LA model upgrades may require an E5515 hardware upgrade to run or enable specific features. Contact your Agilent Sales Representative for specific application upgrade information.

Table 5. TA model number upgrades

TA format	Application		Upgrade to order
	From	To	
GSM TA	E1960A	E1968A-101	Free upgrade ¹
GPRS TA	E1964A	E1968A-102	Free upgrade ¹
Fast switch TA	E1985A, B, C, D, or E	E1987A	Free upgrade ^{1, 2}

1. Download free upgrades at www.agilent.com/find/8960downloads.

2. E5515C with serial number < GB45070001 or any US serial number may require a hardware upgrade. Please contact an Agilent Sales Representative for more information.

Table 6. LA model number upgrades

TA format	Application		Upgrade to order
	From	To	
GSM/GPRS LA	E6701F	E6701H	E6701HU-001 ¹
GSM/GPRS LA	E6701G	E6701H	E6701HU-002 ¹
cdma2000 LA	E6702B	E6702D	E6702DU-002 ¹
cdma2000 LA	E6702C	E6702D	E6702DU-003 ¹
W-CDMA/HSPA LA	E6703E	E6703G	E6703GU-002 ¹
W-CDMA/HSPA LA	E6703F	E6703G	E6703GU-003 ¹
1xEV-DO LA	E6706B	E6706D	E6706DU-002 ¹
1xEV-DO LA	E6706C	E6706D	E6706DU-003 ¹
Fast switching	E6785A, B, C, D, F	E6785G	Free upgrade ¹

1. E5515C with serial number GB45070001 or any US serial number may require a hardware upgrade to run or enable certain features. Please contact an Agilent sales representative for more information.

2. Download free upgrades at www.agilent.com/find/8960downloads.

3. Upgrading a test application to a lab application

Upgrading a TA to an LA (e.g. E1962B to E6702D) is customer-installed. Some TA to LA upgrades may require an E5515 mainframe hardware upgrade. TA to LA upgrades must be customer installed, they cannot be ordered pre-installed on new instruments. Contact your Agilent Sales Representative for compatibility information.

Table 8. TA to LA upgrades

TA format	Application		Upgrade to order
	From	To	
cdma2000 TA to LA	E1962B	E6702D	E6702DU-001 ¹
W-CDMA TA to LA	E1963A	E6703G	E6703GU-001 ¹
1xEV-DO TA to LA	E1966A	E6706D	E6706DU-001 ¹
Fast switching	E1987A	E6785G	Free upgrade ^{1, 2}

1. E5515C with serial number GB45070001 or any US serial number may require a hardware upgrade to run or enable certain features. Please contact an Agilent sales representative for more information.

2. Download free upgrades at www.agilent.com/find/8960downloads.

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 E5515 may save considerable expense when compared to purchasing a new test set. Adding a new TA or LA to an existing E5515B or E5515C may require a hardware upgrade. Contact your Agilent Sales Representative for details and delivery information.

Important: Existing TA and LAs installed on an E5515B or E5515C may have to be updated to a newer revision or new model after a hardware upgrade. Older LA models may not work on an upgraded E5515. Before ordering an E5515 hardware upgrade, check with your Agilent Sales Representative to make sure you have ordered the necessary LA upgrades to run on the upgraded E5515 hardware.



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