



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

To accelerate the testing of wireless devices throughout design and manufacturing, use the Agilent Technologies 8960 Series 10 wireless communications test set.

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/3.5G 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. 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](http://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 outlines the various test application configuration options. Table 2 outlines the lab application configurations available. 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 E5515C/E 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              | TA model (option) | Mainframe model       | Mainframe options<br>(For E5515C only, model no. - option) |             | Wireless Test Manager |
|-----------------------------------------|-------------------|-----------------------|------------------------------------------------------------|-------------|-----------------------|
|                                         | Required          | Required <sup>1</sup> | Required                                                   | Recommended |                       |
| <b>cdma2000®/IS-95/AMPS</b>             | <b>E1962B</b>     | <b>E5515C, E5515E</b> | <b>003</b>                                                 | <b>002</b>  | <b>E6567E</b>         |
| Release A: New control channels         | E1962B-401        | E5515C, E5515E        | 003                                                        | 002         |                       |
| Advanced AMPS                           | E1962B-402        | E5515C, E5515E        | 003                                                        | 002         |                       |
| Authentication                          | E1962B-403        | E5515C, E5515E        | 003                                                        | 002         |                       |
| Digital bus (fading)                    | E1962B-405        | E5515C, E5515E        | 003                                                        | 002         |                       |
| Multi-unit synchronization              | E1962B-406        | E5515C, E5515E        | 003                                                        | 002         |                       |
| Protocol logging                        | E1962B-407        | E5515C, E5515E        | 003                                                        | 002         |                       |
| cdma2000 SMS                            | E1962B-409        | E5515C, E5515E        | 003                                                        | 002         |                       |
| cdma2000 1x advanced                    | E1962B-410        | E5515C, E5515E        | 003                                                        | 002         |                       |
| <b>W-CDMA</b>                           | <b>E1963A</b>     | <b>E5515C, E5515E</b> | <b>003</b>                                                 | <b>002</b>  | <b>E6568E</b>         |
| W-CDMA end-to-end video                 | E1963A-401        | E5515C, E5515E        | 003                                                        | 002         |                       |
| W-CDMA video loopback                   | E1963A-402        | E5515C, E5515E        | 003                                                        | 002         |                       |
| HSDPA test modes                        | E1963A-403        | E5515C, E5515E        | 003                                                        | 002         |                       |
| HSDPA 14.4 Mbps test mode <sup>2</sup>  | E1963A-405        | E5515C, E5515E        | 003                                                        | 002         |                       |
| W-CDMA enhanced audio                   | E1963A-408        | E5515C, E5515E        | 003                                                        | 002         |                       |
| W-CDMA advanced SMS                     | E1963A-409        | E5515C, E5515E        | 003                                                        | 002         |                       |
| HSUPA test modes <sup>3</sup>           | E1963A-413        | E5515C, E5515E        | 003                                                        | 002         |                       |
| HSPA+ test modes <sup>4</sup>           | E1963A-423        | E5515C, E5515E        | 003                                                        | 002         |                       |
| DC-HSDPA test modes <sup>5</sup>        | E1963A-433        | E5515E                |                                                            |             |                       |
| <b>1xEV-DO</b>                          | <b>E1966A</b>     | <b>E5515C, E5515E</b> | <b>003</b>                                                 | <b>002</b>  | <b>E6567E</b>         |
| 1xEV-DO Release A and B                 | E1966A-102        | E5515C, E5515E        | 003                                                        | 002         |                       |
| 1xEV-DO multi-carrier <sup>6</sup>      | E1966A-103        | E5515C, E5515E        | 003                                                        | 002         |                       |
| 1xEV-DO Rel B Optional DRC <sup>7</sup> | E1966A-104        | E5515C, E5515E        | 003                                                        | 002         |                       |
| Digital bus (fading)                    | E1966A-405        | E5515C, E5515E        | 003                                                        | 002         |                       |
| Multi-unit synchronization              | E1966A-406        | E5515C, E5515E        | 003                                                        | 002         |                       |
| Protocol logging                        | E1966A-407        | E5515C, E5515E        | 003                                                        | 002         |                       |
| 1xEV-DO factory test mode               | E1976A            | E5515C, E5515E        | 003                                                        | 002         |                       |
| 1xEV-DO FTM Rel A and B                 | E1976A-102        | E5515C, E5515E        | 003                                                        | 002         |                       |
| <b>GSM/GPRS<sup>8</sup></b>             | <b>E1968A</b>     | <b>E5515C, E5515E</b> | <b>002</b>                                                 | <b>003</b>  | <b>E6568E</b>         |
| GSM                                     | E1968A-101        | E5515C, E5515E        | 002                                                        | 003         |                       |
| GPRS                                    | E1968A-102        | E5515C, E5515E        | 002                                                        | 003         |                       |
| EGPRS                                   | E1968A-103        | E5515C, E5515E        | 002                                                        | 003         |                       |
| Evolved EDGE <sup>9</sup>               | E1968A-104        | E5515C, E5515E        | 002                                                        | 003         |                       |
| GSM and GPRS                            | E1968A-201        | E5515C, E5515E        | 002                                                        | 003         |                       |
| GSM, GPRS, and EGPRS                    | E1968A-202        | E5515C, E5515E        | 002                                                        | 003         |                       |
| GSM/GPRS VAMOS                          | E1968A-406        | <b>E5515C, E5515E</b> | 002, 003                                                   |             |                       |
| GSM/GPRS enhanced audio                 | E1968A-408        | E5515C, E5515E        | 002                                                        | 003         |                       |
| GSM/GPRS advanced SMS                   | E1968A-409        | E5515C, E5515E        | 002                                                        | 003         |                       |
| PAvT                                    | E1968A-410        | E5515C, E5515E        | 002                                                        | 003         |                       |
| I/Q capture capability                  | E1968A-411        | E5515C, E5515E        | 002                                                        | 003         |                       |
| Mobile calculated BER                   | E1968A-419        | E5515C, E5515E        | 002                                                        | 003         |                       |
| Class 34                                | E1968A-430        | E5515C, E5515E        | 002                                                        | 003         |                       |
| Class 45                                | E1968A-431        | E5515C, E5515E        | 002                                                        | 003         |                       |

1. New E5515s may 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) require HSDPA test modes (E1963A-403). Please contact your Agilent sales representative to determine application compatibility.
4. HSPA+ test modes (E1963A-423) require HSDPA test modes (E1963A-403), HSUPA test modes (E1963A-413), and HSDPA 14.4 Mbps test modes (E1963A-405).
5. DC-HSDPA test modes (E1963A-433) require HSDPA test modes (E1963A-403), HSUPA test modes (E1963A-413), HSDPA 14.4 Mbps test modes (E1963A-405), and HSPA+ test modes (E1963A-423). This feature requires E5515E HW, or E5515C with E5515CU-80E, or equivalent HW upgrade. Please contact your Agilent Sales Representative for more information.
6. E1966A-103 requires both E1966A-102 and E1966A-406.
7. E1966A-104 requires E1966A-102.
8. Must order at least one format option (-101, -102, -103, -201, or -202) with E1968A GSM/GPRS TA.
9. E1968A-104 requires E1968A-103 or E1968A-202 licenses.

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

| Wireless technology format                          | TA model (option)            | Mainframe model        | Mainframe options<br>(For E5515C only, model no. - option) |                 | Wireless Test Manager |
|-----------------------------------------------------|------------------------------|------------------------|------------------------------------------------------------|-----------------|-----------------------|
|                                                     | Required                     | Required <sup>10</sup> | Required                                                   | Recommended     |                       |
| <b>TD-SCDMA_GSM fast switch</b>                     | <b>E1969A</b>                | <b>E5515C, E5515E</b>  | <b>002, 003</b>                                            |                 |                       |
| <b>Test application<sup>11</sup></b>                |                              |                        |                                                            |                 |                       |
| TD-SCDMA non-signaling test mode                    | E1969A-101                   | E5515C, E5515E         | 003                                                        | 002             |                       |
| TD-SCDMA signaling mode                             | E1969A-201                   | E5515C, E5515E         | 003                                                        | 002             |                       |
| TD-SCDMA FDT <sup>20</sup>                          | E1969A-301                   | E5515C, E5515E         | 003                                                        | 002             |                       |
| TD-HSDPA                                            | E1969A-403 <sup>19</sup>     | E5515C, E5515E         | 003                                                        | 002             |                       |
| TD-SCDMA protocol logging                           | E1969A-407 <sup>22, 25</sup> | E5515C, E5515E         | 003                                                        | 002             |                       |
| TD-HSUPA test mode                                  | E1969A-413 <sup>23, 25</sup> | E5515C, E5515E         | 003                                                        | 002             |                       |
| Packet data service                                 | E1969A-502 <sup>24, 25</sup> | E5515C, E5515E         | 003                                                        | 002             |                       |
| <b>E5515 application features<sup>12</sup></b>      | <b>E1999A</b>                | <b>E5515C, E5515E</b>  |                                                            | <b>002, 003</b> |                       |
| Fast device tune enhanced                           | E1999A-202                   | E5515C, E5515E         |                                                            | 002, 003        |                       |
| GPS single channel source                           | E1999A-206                   | E5515C, E5515E         | 003                                                        | 002             |                       |
| PESQ measurement <sup>13</sup>                      | E1999A-301                   | E5515C, E5515E         |                                                            | 002, 003        |                       |
| 2-box voice handover <sup>21</sup>                  | E1999A-501                   | E5515C, E5515E         |                                                            | 002, 003        |                       |
| <b>Test application fast switching<sup>14</sup></b> | <b>E1987A</b>                | <b>E5515C, E5515E</b>  | <b>002, 003</b>                                            |                 |                       |
| <b>UMTS test application suite<sup>15</sup></b>     | <b>E1993A</b>                | <b>E5515C, E5515E</b>  | <b>002, 003</b>                                            |                 | <b>E6568E</b>         |
| <b>cdma2000/1xEV-DO TA suite<sup>16</sup></b>       | <b>E1996A</b>                | <b>E5515C, E5515E</b>  | <b>003</b>                                                 | <b>002</b>      | <b>E6567E</b>         |
| <b>Test application suite<sup>17</sup></b>          | <b>E1991B</b>                | <b>E5515C, E5515E</b>  | <b>002, 003</b>                                            |                 |                       |
| <b>Revision to current<sup>18</sup></b>             | <b>E5515C-R2C</b>            | <b>E5515C, E5515E</b>  |                                                            | <b>002, 003</b> |                       |

10. New E5515s may not work with old revisions or discontinued applications. Please contact your Agilent sales representative to determine application compatibility.

11. Must order at least one option (-101 or -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.

12. 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.

13. E1999A-301 is required to enable PESQ measurement in the E1962B, E1963A, and E1968A TAs and the E6701I, E6702E, and E6703H LAs.

14. E1987A allows fast switching across all TA technology formats that have a valid license except for TD-SCDMA. E1987A is free and does not require and E1987A license.

15. E1993A includes TAs for W-CDMA, GSM, GPRS, EGPRS, and fast switching (models E1963A, E1968A-202, and 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).

16. E1996A includes TAs for cdma2000, 1xEV-DO, and fast switching (models E1962B, E1966A, and 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).

17. E1991B includes TAs for cdma2000, 1xEV-DO, W-CDMA, GSM, GPRS, EGPRS, AMPS, and fast switching (models E1961A, E1962B, E1963A, E1966A, E1968A-202, and 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).

18. 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 or E5515E test set. See Table 1 for required mainframe options for each TA.

19. E1969A-403 requires E1969A-201.

20. E1969A-301 requires E1969A-201 or E1969A-101.

21. E1999A-501 is required to enable 2-box voice handover in the E1963A and E1968A.

22. E1969A-407 requires E1969A-201.

23. E1969A-413 requires E1969A-201 and E1969A-403.

24. E1969A-502 requires E1969A-201 and E1969A-403.

25. These three features require E5515E, or the latest E5515C, or E5515C with the CU-80C, CU-80E or CU-787 upgrade. Please contact your Agilent Sales Representative for more information.

Table 2. Configuring a new 8960 with a lab application

| Wireless technology format                         | LA model (option) | Mainframe model       | Mainframe options<br>(For E5515C only, model no. - option) |             | Wireless Test Manager    | Interactive Functional Test SW |
|----------------------------------------------------|-------------------|-----------------------|------------------------------------------------------------|-------------|--------------------------|--------------------------------|
|                                                    | Required          | Required <sup>1</sup> | Required                                                   | Recommended |                          |                                |
| <b>GSM/GPRS</b>                                    | <b>E6701I</b>     | <b>E5515C, E5515E</b> | <b>002</b>                                                 | <b>003</b>  |                          | <b>N5970A</b>                  |
| GSM/GPRS/EGPRS fading <sup>2</sup>                 | E6701I            | E5515C, E5515E        | 002, 003, 004 <sup>11</sup>                                | 003         |                          |                                |
| GSM/GPRS/EGPRS encryption <sup>3</sup>             | E6705A            | E5515C, E5515E        | 002                                                        |             |                          |                                |
| <b>EGPRS<sup>4</sup></b>                           | <b>E6704A</b>     | <b>E5515C, E5515E</b> | <b>002</b>                                                 | <b>003</b>  |                          | <b>N5970A</b>                  |
| <b>Enhanced GAN license<sup>5</sup></b>            | <b>E6708A</b>     |                       |                                                            |             |                          |                                |
| <b>cdma2000</b>                                    | <b>E6702E</b>     | <b>E5515C, E5515E</b> | <b>003</b>                                                 | <b>002</b>  | <b>N5880A</b>            | <b>N5971A</b>                  |
| cdma2000 fading <sup>2</sup>                       | E6702E            | E5515C, E5515E        | 003, 004 <sup>11</sup>                                     | 002         |                          |                                |
| <b>W-CDMA/HSPA</b>                                 | <b>E6703H</b>     | <b>E5515C, E5515E</b> | <b>002, 003</b>                                            | <b>002</b>  | <b>N5882A</b>            | <b>N5970A</b>                  |
| W-CDMA fading <sup>2</sup>                         | E6703H            | E5515C, E5515E        | 003, 004 <sup>11</sup>                                     | 002         |                          |                                |
| W-CDMA/HSPA ciphering <sup>6</sup>                 | E6715A            | E5515C, E5515E        | 003                                                        | 002         |                          |                                |
| <b>1xEV-DO with Release A &amp; B</b>              | <b>E6706E</b>     | <b>E5515C, E5515E</b> | <b>003</b>                                                 | <b>002</b>  | <b>N5884A</b>            | <b>N5970A</b>                  |
| 1xEV-DO fading <sup>2</sup>                        | E6706E            | E5515C, E5515E        | 003, 004 <sup>11</sup>                                     | 002         |                          |                                |
| <b>cdma2000/1xEV-DO LA Suite<sup>7</sup></b>       | <b>E6716E</b>     | <b>E5515C, E5515E</b> | <b>003</b>                                                 | <b>002</b>  | <b>N5880A<br/>N5884A</b> | <b>N5971A</b>                  |
| <b>UMTS lab application suite<sup>8</sup></b>      | <b>E6717F</b>     | <b>E5515C, E5515E</b> | <b>002, 003</b>                                            |             |                          | <b>N5970A</b>                  |
| <b>Lab application suite<sup>9</sup></b>           | <b>E6719H</b>     | <b>E5515C, E5515E</b> | <b>002, 003</b>                                            |             |                          |                                |
| <b>Lab application fast switching<sup>10</sup></b> | <b>E6785H</b>     | <b>E5515C, E5515E</b> | <b>002, 003</b>                                            |             |                          |                                |

1. New E5515s will not work with most older revisions or discontinued applications. The E6701I, E6702E, E6703H, E6706E, and related LA suites require the latest E5515C or E5515E. Old E5515Cs need to be upgraded with E5515CU-80C or -80E to run these new LAs. Please contact your Agilent Sales Representative to determine application compatibility.
2. For more information on fading visit [www.agilent.com/find/8960-fading](http://www.agilent.com/find/8960-fading) or or visit <http://www.agilent.com/find/E5515releasenotes>.
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 third-party security gateway (SEGW) SW for the PC.
6. E6715A requires E6703F or newer. E6715A may optionally be used with E6708A for UMA/GAN ciphering.
7. E6716E includes LAs for cdma2000 and 1xEV-DO (models E6702E, E6706E, and E6785H).
8. E6717F includes LAs for W-CDMA/HSPA, GSM, GPRS, EGPRS, and fast switching (models E6701I, E6703H, E6704A, and E6785H).
9. E6719H includes LAs for cdma2000, 1xEV-DO, W-CDMA/HSPA, GSM, GPRS, EGPRS, and fast switching (models E6701I, E6702E, E6703H, E6704A, E6706E, and E6785H).
10. E6785H fast switches between GSM/GPRS, W-CDMA, cdma2000, and 1xEV-DO. Requires one or more of the following: E6701I, E6702E, E6703H, and E6706E LAs. Order E6704A LA to add EGPRS to fast switching.
11. E5515E-004 is needed for E5515E to enable fading functionality.

Table 3. Lab application annual contracts<sup>1</sup> and extensions

| Format                  | Application             | Annual contract | Annual contract extension <sup>2</sup> |
|-------------------------|-------------------------|-----------------|----------------------------------------|
| <b>GSM/GPRS (EGPRS)</b> | E6701 (E6704)           | E6720A-001      | E6720A-201                             |
| <b>cdma2000</b>         | E6702                   | E6720A-002      | E6720A-202                             |
| <b>W-CDMA/HSPA</b>      | E6703                   | E6720A-003      | E6720A-203                             |
| <b>1xEV-DO</b>          | E6706                   | E6720A-006      | E6720A-206                             |
| <b>UMTS</b>             | E6717 (E6701/<br>E6703) | E6720A-017      | 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/E** 8960 Series 10 mainframes. Require at least one of the Agilent Technologies test or lab applications. Older revision and discontinued applications are not compatible with new E5515s. 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/E-004** Digital bus. Enables fading in cdma2000, 1xEV-DO, GSM/GPRS/EGPRS, and W-CDMA/HSPA LAs. (Note: E5515C-004 requires E5515C-003.)

**E5515C/E-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.

|                   |                                                                                                                                                                   |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>E1962B</b>     | cdma2000/IS-95/AMPS mobile test application.<br>(Requires E5515E or E5515C with E5515C-003.)                                                                      |
| <b>E1962B-401</b> | cdma2000 Rel A control channels.<br>(Requires E5515E or E5515C with E5515C-003.)                                                                                  |
| <b>E1962B-402</b> | Advanced AMPS. (Requires E5515E or E5515C with E5515C-003.)                                                                                                       |
| <b>E1962B-403</b> | cdma2000 authentication.<br>(Requires E5515E or E5515C with E5515C-003.)                                                                                          |
| <b>E1962B-405</b> | cdma2000 digital bus (fading).<br>(Requires E5515E with E5515E-004 or E5515C with E5515C-003 and E5515C-004.)                                                     |
| <b>E1962B-406</b> | cdma2000 multi-unit synchronization.<br>(Requires two E5515Es or E5515Cs with E5515C-003.)                                                                        |
| <b>E1962B-407</b> | cdma2000 protocol logging.<br>(Requires E5515E or E5515C with E5515C-003 and E6584A-002.)                                                                         |
| <b>E1962B-409</b> | cdma2000 SMS. (Requires E5515E or E5515C with E5515C-003.)                                                                                                        |
| <b>E1962B-410</b> | cdma2000 1x Advanced.<br>(Requires E5515E or E5515C with E5515C-003.)                                                                                             |
| <b>E1963A</b>     | W-CDMA mobile test application.<br>(Requires E5515E or E5515C with E5515C-003.)                                                                                   |
| <b>E1963A-401</b> | W-CDMA end-to-end video.<br>(Requires E5515E or E5515C with E5515C-003.)                                                                                          |
| <b>E1963A-402</b> | W-CDMA video loopback.<br>(Requires E5515E or E5515C with E5515C-003.)                                                                                            |
| <b>E1963A-403</b> | HSDPA test modes.<br>(Requires E5515E or E5515C with E5515C-003.)                                                                                                 |
| <b>E1963A-405</b> | HSDPA 14.4 Mbps test mode.<br>(Requires E5515E or E5515C with E5515C-003 and E1963A-403.)                                                                         |
| <b>E1963A-408</b> | W-CDMA enhanced audio.<br>(Requires E5515E or E5515C with E5515C-003.)                                                                                            |
| <b>E1963A-409</b> | W-CDMA advanced SMS.<br>(Requires E5515E or E5515C with E5515C-003.)                                                                                              |
| <b>E1963A-413</b> | HSUPA test modes.<br>(Requires E5515E or E5515C with E5515C-003 and E1963A-403.)                                                                                  |
| <b>E1963A-423</b> | HSPA+ test modes.<br>(Requires E5515E or E5515C with E5515C-003, E1963A-403, E1963A-405, and E1963A-413.)                                                         |
| <b>E1963A-433</b> | DC-HSDPA test mode.<br>(Requires E5515E, E1963A-403, E1963A-405, E1963A-413, and E1963A-423.)                                                                     |
| <b>E1966A</b>     | 1xEV-DO terminal test application.<br>(Requires E5515C and E5515C-003.)                                                                                           |
| <b>E1966A-102</b> | 1xEV-DO Release A and B.<br>(Requires E5515E or E5515C with E5515C-003.)                                                                                          |
| <b>E1966A-103</b> | 1xEV-DO Rel B multi-carrier.<br>(Requires two or three E5515Es or E5515Cs and E5515C-003, E1966A-102, and E1966A-406.)                                            |
| <b>E1966A-104</b> | 1xEV-DO Rel B optional DRC.<br>(Requires E5515E or E5515C and E1966A-102; or optionally, two or three E5515Es or E5515Cs, E1966A-102, E1966A-103, and E1966A-406) |
| <b>E1966A-405</b> | 1xEV-DO digital bus (fading).<br>(Requires E5515E with E5515E-004, or E5515C with E5515C-003 and E5515C-004.)                                                     |
| <b>E1966A-406</b> | 1xEV-DO multi-unit synchronization.<br>(Requires two or more E5515Es, or E5515Cs with E5515C-003.)                                                                |
| <b>E1966A-407</b> | 1xEV-DO protocol logging.<br>(Requires E5515E or E5515C with E5515C-003 and 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.

|                               |                                                                                                                                                                                                          |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>E1968A</b>                 | E1968A GSM/GPRS mobile test application. GSM, GPRS, EGPRS formats available. Must specify an option for a specific format or combination of formats.                                                     |
| <b>E1968A-101</b>             | GSM functionality. (Requires E5515E or E5515C with E5515C-002.)                                                                                                                                          |
| <b>E1968A-102</b>             | GPRS functionality. (Requires E5515E or E5515C with E5515C-002.)                                                                                                                                         |
| <b>E1968A-103</b>             | EGPRS functionality. (Requires E5515E or E5515C with E5515C-002.)                                                                                                                                        |
| <b>E1968A-104<sup>1</sup></b> | Evolved EDGE functionality.<br>(Requires E5515E or E5515C with E5515C-002.)                                                                                                                              |
| <b>E1968A-201</b>             | GSM/GPRS functionality.<br>(Requires E5515E or E5515C with E5515C-002.)                                                                                                                                  |
| <b>E1968A-202</b>             | GSM/GPRS/EGPRS functionality.<br>(Requires E5515C and E5515C-002.)                                                                                                                                       |
| <b>E1968A-406</b>             | GSM/GPRS VAMOS.<br>(Requires E5515E or E5515C with E5515C-002 and E5515C-003.)                                                                                                                           |
| <b>E1968A-408</b>             | GSM/GPRS Enhanced Audio.<br>(Requires E5515E or E5515C with E5515C-002.)                                                                                                                                 |
| <b>E1968A-409</b>             | GSM/GPRS advanced SMS.<br>(Requires E5515E or E5515C with E5515C-002.)                                                                                                                                   |
| <b>E1968A-410</b>             | EGPRS phase and amplitude versus time.<br>(Requires E5515E or E5515C with E5515C-002.)                                                                                                                   |
| <b>E1968A-411</b>             | I/Q capture capability.<br>(Requires E5515E or E5515C with E5515C-002.)                                                                                                                                  |
| <b>E1968A-419</b>             | GSM/GPRS mobile calculated BER.<br>(Requires E5515E or E5515C with E5515C-002.)                                                                                                                          |
| <b>E1968A-430</b>             | Class 34. (Requires E5515E or E5515C with E5515C-002.)                                                                                                                                                   |
| <b>E1968A-431</b>             | Class 45. (Requires E5515E or E5515C with E5515C-002.)                                                                                                                                                   |
| <b>E1969A</b>                 | 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 E5515E or E5515C with E5515C-002 and E5515C-003.) |
| <b>E1969A-101</b>             | TD-SCDMA non-signaling test mode.<br>(Requires E5515E or E5515C with E5515C-003.)                                                                                                                        |
| <b>E1969A-201</b>             | TD-SCDMA signaling mode. (Requires E5515E or E5515C with E5515C-003.)                                                                                                                                    |
| <b>E1969A-301</b>             | TD-SCDMA fast device tune. (Requires E5515E or E5515C with E5515C-003.)                                                                                                                                  |
| <b>E1969A-403</b>             | TD-HSDPA (Requires E5515E or E5515C with E5515C-003.)                                                                                                                                                    |
| <b>E1969A-407</b>             | Protocol logging. (Requires E5515E or E5515C/E5515C-003, and E1969A-201.)                                                                                                                                |
| <b>E1969A-413</b>             | TD-HSUPA. (Requires E5515E or E5515C/E5515C-003, E1969A-201, and E1969A-403.)                                                                                                                            |
| <b>E1969A-502</b>             | Packet data service. (Requires E5515E or E5515C/E5515C-003, E1969A-201, and E1969A-403.)                                                                                                                 |
| <b>E1976A</b>                 | 1xEV-DO factory test mode test application. (Requires E5515E or E5515C with E5515C-003.)                                                                                                                 |
| <b>E1976A-102</b>             | 1xEV-DO Release A and Release B factory test mode<br>(Requires E5515E or E5515C with E5515C-003.)                                                                                                        |
| <b>E1987A</b>                 | Fast switching test application. Fast switches across all TA formats except for TD-SCDMA. (Requires at least two TAs, E5515C/E and E5515 options for the wireless formats to be switched.)               |

## Test application suites and application features

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>E1991B</b> | 8960 test application suite. Includes TAs for GSM, GPRS, EGPRS, AMPS, cdma2000, 1xEV-DO, W-CDMA, and fast switching. Contains E1968A-202, E1962B, E1963A, E1966A, and E1987A TAs. (Requires E5515E or E5515C with 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.)                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>E1993A</b> | 8960 UMTS test application suite. Includes TAs for GSM, GPRS, EGPRS, W-CDMA, and fast switching. Contains E1968A-202, E1963A, and E1987A TAs. (Requires E5515E or E5515C with 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.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>E1996A</b> | 8960 cdma2000/1xEV-DO test application suite. Includes TAs for cdma2000, 1xEV-DO, AMPS, and fast switching. Contains E1962B, E1966A, and E1987A TAs. (Requires E5515E or E5515C with 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.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>E1999A</b> | E5515 application features <ul style="list-style-type: none"> <li><b>E1999A-202</b> 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.)</li> <li><b>E1999A-206</b> Single channel GPS source. Simulates GPS signal with default navigation messages. (Requires E5515E or E5515C with E5515C-003 and a TA.)</li> <li><b>E1999A-301</b> PESQ measurement. Provides an objective method to predict vocoder speech quality using the industry standard PESQ algorithm. (Requires one of the E1962B, E1963A, E1968A, E6701I, E6702E, and E6703H applications.)</li> <li><b>E1999A-501</b> 2-box voice handover. Enables 2-box voice handovers between E1963A and E1968A. (Requires E1963A and E1968A TA.)</li> </ul> |

## 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.)

## 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](http://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.

|               |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>E6701I</b> | GSM/GPRS lab application. (Requires E5515E or E5515C (with S/N MY52101001 and above) with E5515C-002. Order E5515E-004 or E5515C-003 with E5515C-004 to enable fading.)                                                                                                                                                                                                                                                     |
| <b>E6702E</b> | cdma2000 lab application. (Requires E5515E or E5515C (with S/N MY52101001 and above) with E5515C-003. Order E5515E-004 or E5515C-004 to enable fading.)                                                                                                                                                                                                                                                                     |
| <b>E6703H</b> | W-CDMA/HSPA lab application. (Requires E5515E or E5515C (with S/N MY52101001 and above) with E5515C-003. Order E5515E-004 or E5515C-004 to enable fading.) Includes E5515-61286 UMTS (W-CDMA) USIM card.                                                                                                                                                                                                                    |
| <b>E6704A</b> | EGPRS lab application. (Requires E6701 and E5515E or E5515C with E5515C-002.)                                                                                                                                                                                                                                                                                                                                               |
| <b>E6705A</b> | GSM/GPRS encryption. E6705A requires E6701F or newer. E6705A may optionally be used with E6708A for UMA/GAN ciphering.                                                                                                                                                                                                                                                                                                      |
| <b>E6706E</b> | 1xEV-DO lab application with Release A & B. (Requires E5515E or E5515C (with S/N MY52101001 and above) with E5515C-003. Order E5515E-004 or E5515C-004 to enable fading.)                                                                                                                                                                                                                                                   |
| <b>E6708A</b> | 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 third party security gateway (SEGW) software for the PC.                                                                                             |
| <b>E6785H</b> | Fast switching lab application for GSM/GPRS/EGPRS, W-CDMA, cdma2000, and 1xEV-DO. Requires one or more LAs (E6701I, E6702E, E6703H, E6706E), E5515E or E5515C (with S/N MY52101001 and above) with E5515C-002 and E5515C-003. For EGPRS capability, add E6704A. Order E5515E-004 or E5515C-004 to enable fading.                                                                                                            |
| <b>E6715A</b> | W-CDMA/HSPA ciphering. E6715A requires E6703G or newer. E6715A may optionally be used with E6708A for UMA/GAN ciphering.                                                                                                                                                                                                                                                                                                    |
| <b>E6716E</b> | cdma2000/1xEV-DO lab application suite. Includes LAs for cdma2000 and 1xEV-DO with Release A & B. Contains E6702E, E6706E, E6785H LAs. (Requires E5515E or E5515C (with S/N MY52101001 and above) with E5515C-003. Order E5515E-004 or E5515C-004 to enable fading. E6716E is for installation on a single 8960 test set.)                                                                                                  |
| <b>E6717F</b> | 8960 lab application UMTS suite. Includes LAs for GSM, GPRS, EGPRS, and W-CDMA/HSPA. Contains E6701I, E6703H, E6704A, and E6785H fast switching LA. (Requires E5515E or E5515C with E5515C-002 and E5515C-003. Order E5515E-004 or E5515C-004 to enable fading. E6717F is for installation on a single 8960 test set.)                                                                                                      |
| <b>E6719H</b> | Lab application suite. Includes LAs for GSM, GPRS, EGPRS, cdma2000, W-CDMA/HSPA, 1xEV-DO with Release A & B, and fast switching. Contains E6701I, E6702E, E6703H, E6704A, and E6706E. LAs plus E6785H fast switching LA. (Requires E5515E or E5515C (with S/N MY52101001 and above) with E5515C-002 and E5515C-003. Order E5515E-004 or E5515C-004 to enable fading. E6719H 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 ordered with E5515 mainframe use E5515 application documentation options.)

### Lab application options available when ordered standalone

(without an E5515 mainframe)

|                      |                                                                                                                                                                                                                                                                                                        |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>LA Model#-010</b> | Lab application installation. (CD-ROM with the necessary files and utilities needed for loading LAs. LAs can be downloaded from <a href="http://www.agilent.com/find/8960downloads">www.agilent.com/find/8960downloads</a> . Option 010 is recommended if you do not have high-speed Internet access.) |
| <b>LA Model#-ABA</b> | 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, and 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, and 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](http://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](http://www.agilent.com/find/wtm). Wireless Test Manager software runs Visual Basic .NET® and utilizes a USB security key.

| Formats                                  | WTM model          |
|------------------------------------------|--------------------|
| TA and LA Wireless Test Manager software |                    |
| <b>cdma2000/IS-95/AMPS</b>               | E6567E, E6567E-100 |
| <b>1xEV-DO</b>                           | E6567E, E6567E-100 |
| <b>GSM/GPRS/EGPRS</b>                    | E6568E, E6568E-100 |
| <b>W-CDMA/GSM/GPRS/EGPRS</b>             | E6568E, E6568E-100 |
| <b>cdma2000/IS-95/1xEV-DO</b>            | E6567E, E6567E-100 |
| <b>Run-time license for all formats</b>  | E6571E             |
| LA Wireless Test Manager software        |                    |
| <b>cdma2000/IS-95/AMPS</b>               | N5880A, N5880A-100 |
| <b>1xEV-DO</b>                           | N5884A, N5884A-100 |
| <b>W-CDMA</b>                            | 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. It uses a USB security key. See the data sheet at [www.agilent.com/find/8960ift](http://www.agilent.com/find/8960ift).

| Formats                                           | Interactive functional test model |
|---------------------------------------------------|-----------------------------------|
| <b>UMTS (GSM/GPRS/EGPRS/ W-CDMA/ HSDPA/HSUPA)</b> | N5970A, N5970A-1TP,<br>N5970A-R2C |
| <b>cdma2000/1xEV-DO</b>                           | N5971A, N5971A-1TP.<br>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](http://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](http://www.agilent.com/find/emailupdates). When upgrading applications, an 8960 HW upgrade may need to enable the mainframe to run the new applications or enable the new features. For example, adding the DC-HSDPA application may require that the E5515C HW be updated with E5515CU-80E, E5515CU-58C, -80C, or -80E. Other individual E5515C HW upgrade kits may be required to support specific features or applications for other wireless technologies. Please contact your Agilent Sales Representative for more information.

### 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](http://www.agilent.com/find/8960manuals). To determine if a hardware (HW) upgrade may be required to enable a feature, contact your Agilent Sales Representative.

TA and LA downloads are available at [www.agilent.com/find/8960downloads](http://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, and 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. Typically using newer 8960 HW requires the latest application revisions, but there are some exceptions. For more information visit [http:// www.agilent.com/find/E5515releasenotes](http://www.agilent.com/find/E5515releasenotes).

Table 4. TA Upgrades

| TA format                  | Feature                                                                                                                                                                                                                                                              | Application                                                                                          | Feature option upgrade <sup>1</sup>                                                                                                      |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>cdma2000</b>            | cdma2000 Rel A new control channels<br>Advanced AMPS<br>Authentication<br>Digital bus (fading)<br>Multi-unit synchronization<br>Protocol logging<br>cdma2000 SMS<br>cdma2000 1x Advanced                                                                             | E1962B<br>E1962B<br>E1962B<br>E1962B<br>E1962B<br>E1962B<br>E1962B<br>E1962B                         | E1962BU-401<br>E1962BU-402<br>E1962BU-403<br>E1962BU-405<br>E1962BU-406<br>E1962BU-407<br>E1962BU-409<br>E1962BU-410                     |
| <b>W-CDMA</b>              | W-CDMA end-to-end video<br>W-CDMA video loopback<br>HSDPA test modes<br>HSDPA 14.4 Mbps test mode <sup>2</sup><br>W-CDMA enhanced audio<br>W-CDMA advanced SMS<br>HSUPA test modes <sup>3</sup><br>HSPA+ test modes <sup>4</sup><br>DC-HSDPA test modes <sup>5</sup> | E1963A<br>E1963A<br>E1963A<br>E1963A<br>E1963A<br>E1963A<br>E1963A<br>E1963A<br>E1963A               | E1963AU-401<br>E1963AU-402<br>E1963AU-403<br>E1963AU-405<br>E1963AU-408<br>E1963AU-409<br>E1963AU-413<br>E1963AU-423<br>E1963AU-433      |
| <b>1xEV-DO</b>             | 1xEV-DO Rel A and B<br>1xEV-DO Rel B multi-carrier <sup>6</sup><br>1xEV-DO Rel B optional DRC <sup>7</sup><br>Digital bus (fading)<br>Multi-unit synchronization<br>Protocol logging                                                                                 | E1966A<br>E1966A<br>E1966A<br>E1966A<br>E1966A<br>E1966A                                             | E1966AU-102<br>E1966AU-103<br>E1966AU-104<br>E1966AU-405<br>E1966AU-406<br>E1966AU-407                                                   |
| <b>GSM/GPRS/EGPRS</b>      | Evolved EDGE<br>GSM/GPRS VAMOS<br>GSM/GPRS enhanced audio<br>GSM/GPRS advanced SMS<br>PAvT<br>I/Q capture<br>Mobile-calculated BER<br>Class 34<br>Class 45                                                                                                           | E1968A<br>E1968A <sup>10</sup><br>E1968A<br>E1968A<br>E1968A<br>E1968A<br>E1968A<br>E1968A<br>E1968A | E1968A-104 <sup>11</sup><br>E1968A-406<br>E1968A-408<br>E1968A-409<br>E1968A-410<br>E1968A-411<br>E1968A-419<br>E1968A-430<br>E1968A-431 |
| <b>TD-SCDMA</b>            | TD-HSDPA<br>FDT<br>Protocol logging<br>TD-HSUPA<br>Packet data services                                                                                                                                                                                              | E1969A<br>E1969A<br>E1969A<br>E1969A<br>E1969A                                                       | E1969A-403 <sup>12</sup><br>E1969A-301 <sup>13</sup><br>E1969A-407 <sup>14</sup><br>E1969A-413 <sup>15</sup><br>E1969A-502 <sup>16</sup> |
| <b>Multiple</b>            | Fast device tune enhanced<br>Single channel GPS source<br>PESQ measurement<br>2-box voice handover                                                                                                                                                                   | Multiple <sup>8</sup><br>Multiple<br>Multiple<br>Multiple                                            | E1999AU-201, E1999A-202<br>E1999A-206<br>E1999A-301<br>E1999A-501                                                                        |
| <b>Revision to current</b> | Revision to current, one-time upgrade                                                                                                                                                                                                                                | Multiple <sup>9</sup>                                                                                | 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. DC-HSDPA test modes (E1963AU-433) require HSDPA test modes (E1963A/AU-403), HSDPA 14.4 Mbps test modes (E1963A/AU-405), HSUPA test modes (E1963A/AU-413), and HSPA+ test modes (E1963A/AU-423). DC-HSDPA requires E5515E or E5515C with E5515CU-80E upgrade.

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

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

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](http://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.

14. E1969A-407 requires E1969A-201 license. Requires E5515E, or E5515C (with S/N MY52101001 and above), or an old E5515C with E5515CU-80C or -80E, or any other equivalent hardware upgrade. Contact your Agilent Sales Representatives for more information.

15. E1969A-413 requires E1969A-201 and E1969A-403 license. Requires E5515E, or E5515C (with S/N MY52101001 and above), or an old E5515C with E5515CU-80C or -80E, or any other equivalent hardware upgrade. Contact your Agilent Sales Representatives for more information.

16. E1969A-502 requires E1969A-201 and E1969A-403 license. Requires E5515E, or E5515C (with S/N MY52101001 and above), or an old E5515C with E5515CU-80C or -80E, or any other equivalent hardware upgrade. Contact your Agilent Sales Representatives for more information.

## 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<sup>3</sup>

| TA format             | Application           |            | Upgrade to order             |
|-----------------------|-----------------------|------------|------------------------------|
|                       | From                  | To         |                              |
| <b>GSM TA</b>         | E1960A                | E1968A-101 | Free upgrade <sup>1</sup>    |
| <b>GPRS TA</b>        | E1964A                | E1968A-102 | Free upgrade <sup>1</sup>    |
| <b>Fast switch TA</b> | E1985A, B, C, D, or E | E1987A     | Free upgrade <sup>1, 2</sup> |

1. Download free upgrades at [www.agilent.com/find/8960downloads](http://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.

3. To upgrade to any of the latest TA revisions (shipped after March 12, 2012) requires at least the E5515CU-787 upgrade. Please contact your Agilent Sales Representative for more information.

Table 6. LA model number upgrades

| TA format             | Application                 |        | Upgrade to order            |
|-----------------------|-----------------------------|--------|-----------------------------|
|                       | From                        | To     |                             |
| <b>GSM/GPRS LA</b>    | E6701F                      | E6701I | E6701IU-001 <sup>1</sup>    |
| <b>GSM/GPRS LA</b>    | E6701G                      | E6701I | E6701IU-002 <sup>1</sup>    |
| <b>GSM/GPRS LA</b>    | E6701H                      | E6701I | E6701IU-003 <sup>1</sup>    |
| <b>GSM/GPRS LA</b>    | E6701U                      | E6701I | E6701IU-004 <sup>1</sup>    |
| <b>cdma2000 LA</b>    | E6702B                      | E6702E | E6702EU-002 <sup>1</sup>    |
| <b>cdma2000 LA</b>    | E6702C                      | E6702E | E6702EU-003 <sup>1</sup>    |
| <b>cdma2000 LA</b>    | E6702D                      | E6702E | E6702EU-004 <sup>1</sup>    |
| <b>cdma2000 LA</b>    | E6702T                      | E6702E | E6702EU-005 <sup>1</sup>    |
| <b>W-CDMA/HSPA LA</b> | E6703E                      | E6703H | E6703HU-002 <sup>1</sup>    |
| <b>W-CDMA/HSPA LA</b> | E6703F                      | E6703H | E6703HU-003 <sup>1</sup>    |
| <b>W-CDMA/HSPA LA</b> | E6703G                      | E6703H | E6703HU-004 <sup>1</sup>    |
| <b>W-CDMA/HSPA LA</b> | E6703U                      | E6703H | E6703HU-005 <sup>1</sup>    |
| <b>1xEV-DO LA</b>     | E6706B                      | E6706E | E6706EU-002 <sup>1</sup>    |
| <b>1xEV-DO LA</b>     | E6706C                      | E6706E | E6706EU-003 <sup>1</sup>    |
| <b>1xEV-DO LA</b>     | E6706D                      | E6706E | E6706EU-004 <sup>1</sup>    |
| <b>1xEV-DO LA</b>     | E6706U                      | E6706E | E6706EU-005 <sup>1</sup>    |
| <b>Fast switching</b> | E6785A, B, C, D, E, F, or G | E6785H | Free upgrade <sup>1,2</sup> |

1. To upgrade to any of the latest LA revisions requires E5515E, the latest E5515C (with S/N MY52101001 and above), or E5515C with at least E5515CU-787 or E5515CU-80C. Please contact your Agilent Sales Representative for more information.

2. Download free upgrades at [www.agilent.com/find/8960downloads](http://www.agilent.com/find/8960downloads).

### 3. Upgrading a test application to a lab application

Upgrading a TA to an LA (e.g. E1962B to E6702E) 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 7. TA to LA upgrades

| TA format                | Application |        | Upgrade to order             |
|--------------------------|-------------|--------|------------------------------|
|                          | From        | To     |                              |
| <b>GSM/GPRS TA to LA</b> | E1968A      | E6701I | E6701IU-005 <sup>1</sup>     |
| <b>cdma2000 TA to LA</b> | E1962B      | E6702E | E6702EU-001 <sup>1</sup>     |
| <b>W-CDMA TA to LA</b>   | E1963A      | E6703H | E6703HU-001 <sup>1</sup>     |
| <b>1xEV-DO TA to LA</b>  | E1966A      | E6706E | E6706EU-001 <sup>1</sup>     |
| <b>Fast switching</b>    | E1987A      | E6785H | Free upgrade <sup>1, 2</sup> |

1. The latest LA revisions require E5515E, the latest E5515C (with S/N MY52101001 and above), or E5515C with at least E5515CU-787 or E5515CU-80C. Please contact your Agilent Sales Representative for more information.

2. Download free upgrades at [www.agilent.com/find/8960downloads](http://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 E5515E 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 E5515E 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 E5515E 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.

### 5. Three main hardware upgrade kits for the E5515C

There are three primary E5515C upgrade kits: E5515CU-80E, -80C, and -58C. Each of these kits include a batch of HW modules. Other kits are available for E5515C-specific HW upgrades. Some HW upgrade kits are used to enable the E5515C to operate new 8960 TAs and LAs.

**E5515CU-80E** This HW upgrade kit updates most, but not all, key E5515C modules to be the same as the E5515E in order to support DC-HSDPA. Contact your Agilent Sales Representative for more information or visit <http://www.agilent.com/find/E5515CU-80E>.

**E5515CU-80C** This HW upgrade kit updates most, but not all, E5515C modules to be the same as the E5515C hardware shipped from March 12, 2012. Contact your Agilent Sales Representative for more information or visit <http://www.agilent.com/find/E5515CU-80C>.

**E5515CU-58C** This kit is used to upgrade very old E5515C units to a HW version that is equivalent to the HW release of September 2008. However, not all modules not included. Contact your Agilent Sales Representative for more information or visit <http://www.agilent.com/find/e5515CU-58C>.





## Agilent Email Updates

[www.agilent.com/find/emailupdates](http://www.agilent.com/find/emailupdates)

Get the latest information on the products and applications you select.



Agilent Advantage Services is committed to your success throughout your equipment's lifetime. To keep you competitive, we continually invest in tools and processes that speed up calibration and repair and reduce your cost of ownership. You can also use Infoline Web Services to manage equipment and services more effectively. By sharing our measurement and service expertise, we help you create the products that change our world.

[www.agilent.com/find/advantageservices](http://www.agilent.com/find/advantageservices)



[www.agilent.com/quality](http://www.agilent.com/quality)

[www.agilent.com](http://www.agilent.com)

[www.agilent.com/find/8960](http://www.agilent.com/find/8960)

For more information on Agilent Technologies' products, applications or services, please contact your local Agilent office. The complete list is available at:

[www.agilent.com/find/contactus](http://www.agilent.com/find/contactus)

### Americas

|               |                |
|---------------|----------------|
| Canada        | (877) 894 4414 |
| Brazil        | (11) 4197 3600 |
| Mexico        | 01800 5064 800 |
| United States | (800) 829 4444 |

### Asia Pacific

|                    |                |
|--------------------|----------------|
| Australia          | 1 800 629 485  |
| China              | 800 810 0189   |
| Hong Kong          | 800 938 693    |
| India              | 1 800 112 929  |
| Japan              | 0120 (421) 345 |
| Korea              | 080 769 0800   |
| Malaysia           | 1 800 888 848  |
| Singapore          | 1 800 375 8100 |
| Taiwan             | 0800 047 866   |
| Other AP Countries | (65) 375 8100  |

### Europe & Middle East

|                |                      |
|----------------|----------------------|
| Belgium        | 32 (0) 2 404 93 40   |
| Denmark        | 45 45 80 12 15       |
| Finland        | 358 (0) 10 855 2100  |
| France         | 0825 010 700*        |
|                | *0.125 €/minute      |
| Germany        | 49 (0) 7031 464 6333 |
| Ireland        | 1890 924 204         |
| Israel         | 972-3-9288-504/544   |
| Italy          | 39 02 92 60 8484     |
| Netherlands    | 31 (0) 20 547 2111   |
| Spain          | 34 (91) 631 3300     |
| Sweden         | 0200-88 22 55        |
| United Kingdom | 44 (0) 118 927 6201  |

*For other unlisted countries:*

[www.agilent.com/find/contactus](http://www.agilent.com/find/contactus)

Revised: January 6, 2012

Product specifications and descriptions in this document subject to change without notice.

© Agilent Technologies, Inc. 2002 - 2007,  
2010 - 2012  
Published in USA June 1, 2012  
5968-7873E

Windows and Visual Basic .NET are U.S. registered trademarks of Microsoft Corp.

cdma2000 is a registered certification mark of the Telecommunications Industry Association. Used under license.



**Agilent Technologies**