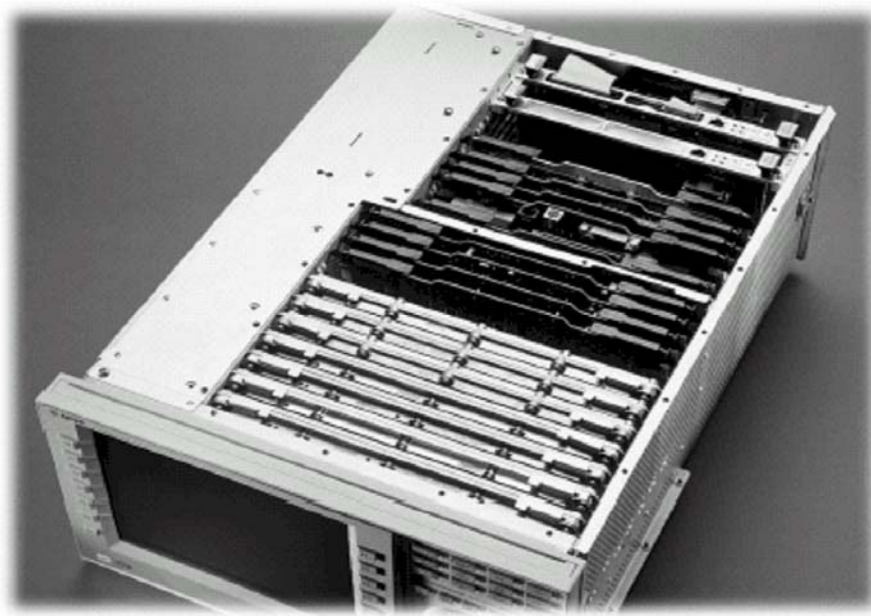


Installation Note

**Agilent Technologies 8960 Wireless Communication Test Set
Adds EGPRS capability to the E5515B and E5515C
Kit Part Number: E5515BU-765; E5515CU-765**



Notice:

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E5515-90310



Agilent Technologies

Kit List

Part Description
TDMS Baseband Generator #1
TDMA Baseband Generator #2
RTI, Real Time Interface
Installation Instructions

Web = <http://www.agilent.com/find/8960toolbox>

Equipment List

Item	Name	Example
Test Equipment	PC with GPIB	
	ESG	E4437B, E4433B
	VSA or PSA	E4406A or E444XA
	EPM and Power Sensor	E4418B with E4412A
	GSM test handset and Cable	
Tools/Cables	Splitter	11667A
	Screwdriver	Electric
	RF Cables	
	GPIB Cables	
Test/Calibration Software	EGPRS Verification	
	Test Set Verify	
Test/Calibration System	STE9000	If needed

Upgrade Guide

All E5515B/C units require option 002 hardware to support GPRS and EGPRS functionality. The hardware is available for the E5515B/C by ordering E5515BU/CU Option 612 or E5515BU/CU Option 622 based on the instruments serial number.

Test Applications Compatible with EGPRS Hardware

Only certain revisions of Test Applications and Lab Applications are compatible with E5515BU/CU option 765 hardware. The following table shows compatibility:

Test Application	Revision (>=)
GSM E1960A	A.11.06 or above only
AMPS/TDMA E1961A	A.08.12 or above only
CDMA200 E1962B	B.06.39 or above only
W-CDMA E1963A	A.03.23 or above only
GPRS E1964A	Not Supported
1xEV-DO E1966A	A.01.32 or above only
GSM/GPRS E1968A	A.01.25 or above only
Fast Switch E1985A	Not Supported
Fast Switch E1985B	B.03.08 or above only
Fast Switch E1985C	C.01.09 or above only
Fast Switch E1985E	E.01.15 or above only
Lab Application	Revision (>=)
GPRS E6701A	Not Supported
GPRS E6701B	Not Supported
GPRS/EGPRS E6701C	C.01.24 or above only
EGPRS License E6704A	Required for EGPRS
CDMA 2000 E6702A	A.03.09 or above only
WCDMA E6703A	A.01.23 or above only
GSM/GPRS/WCDMA E6785A	A.01.25 or above only

Verify Operation before Upgrade

- Verify that the E5515B/C is fully functional before upgrading.
- If equipment is available, verify operation of the test set with Test Set Verify software developed by WA PGU. Refer to the CD included in the kit. For the detail operating information of this software, please see Appendix 1.
- Perform a manual check of call processing using a mobile phone. An example of GSM call processing is given below.

Example for GSM Call Processing Test: See Appendix 3 for detail

1	Mobile Station Call Origination	
2	Base Station Call Origination	
3	Traffic Channel Hand Over	
4	Mobile Transmit Level Handover	
5	Mobile Transmit Timing Advance Handover	
6	Mobile Transmit Time Slot Handover	
7	Dual Band Handover: PGSM / DCS	Opt 002

GSM call set up and hand over (connected)

Call Setup Screen									
Call Control		Call Setup						Call Params	
Operating Mode		<div>Mobile Information</div> <div> <div>IMSI: 001012345678901</div> <div>IMEI: 520002514216040</div> <div>Revision Level: Phase 2</div> <div>Supported Band: PGSM</div> <div>Power Class: 4 (33 dBm)</div> <div>Called Number: 123</div> </div>						Traffic Band	
Active Cell								PGSM	
End Call								Traffic Channel	
								30	
Paging IMSI		<div>Last Location</div> <div> <div>NCC NMC LAC</div> <div>----</div> </div>						Timeslot	
001012345678901								4	
Cell Info		<div>Burst Timing Error</div> <div>0.50 T</div>						Timing Advance	
		<div>SACCH Reports</div> <div> <div>Timing Adv: 0</div> <div>Tx Level: 15 (-13 dBm)</div> <div>Rx Level: 23 (-88 to -87 dBm)</div> <div>Rx Qual: 0 (< 0.2 % BER)</div> </div>						<div>Counters</div> <div> <div>Page: 0</div> <div>RACH: 1</div> <div>Missing Burst: 1</div> <div>Corrupt Burst: 0</div> <div>Decode Error: 0</div> </div>	
		Active Cell Status :						MS TX Level	
		Connected						15	
		IntRef						Speech	
								Echo	
								2 of 4	

Upgrade Procedure

Removing and Installing Lab Applications and Test Applications

Before installing hardware, the E5515B/C must have the correct Lab Applications and/or Test Applications installed. The new EGPRS hardware does not functionally support all applications. **All unsupported applications must be removed from the hard drive of the E5515B/C.**

1. Use the Agilent File Utility software supplied with the E6701C Lab Application firmware package for this upgrade. The Agilent File Utility contains instructions and help to properly set up a PC for installing or removing firmware.
2. Use the Agilent File Utility to remove all revisions of non-supported Test Applications or Lab Applications. Refer to the table below for detail:

Test Application	Revision (>=)	Action To Take (if applies)
GSM E1960A	A.11.06 or above only	Remove <A.11.06
AMPS/TDMA E1961A	A.08.12 or above only	Remove < A.08.12
CDMA200 E1962B	B.06.39 or above only	Remove <B.06.39
W-CDMA E1963A	A.03.23 or above only	Remove <A.03.23
GPRS E1964A	Not Supported	Remove All, Install E1968A
1xEV-DO E1966A	A.01.32 or above only	Remove <A.01.32
GSM/GPRS E1968A	A.01.25 or above only	Remove <A.01.25
Fast Switch E1985A	Not Supported	Remove All, Install E1985B
Fast Switch E1985B	B.03.08 or above only	Remove <B.03.08
Fast Switch E1985C	C.01.09 or above only	Remove <C.01.09
Lab Application	Revision (>=)	Action To Take (if applies)
GPRS E6701A	Not Supported	Remove All, Install E6701C
GPRS E6701B	Not Supported	Remove All, Install E6701C
GPRS/EGPRS E6701C	C.01.24 or above only	Install latest and Remove <C.01.24
EGPRS License E6704A	License Only	Install license
CDMA 2000 E6702A	A.03.09 or above only	Remove <A.03.09
WCDMA E6703A	A.01.23 or above only	Remove <A.01.23
GSM/GPRS/WCDMA E6785A	A.01.25 or above only	Remove <A.01.25

3. Install the latest EGPRS Test Application ≥A.03.32, or Lab Application, ≥A.03.32. This would depend on which application license the customer has ordered. Make the application active for reboot. Turn off the E5515B/C and remove power. The Test and Lab Application upgrades are complete.

Disassembling E5515B/C

Attention:

Static shock! Don't touch the modules without static protection.

1. Remove handles, rear bumpers, external cover, and module top cover.
2. Use Figure 1 to locate modules. Remove ROM Baseband Generator #1 (ROM BBG 1) and ROM Baseband Generator #2 (ROM BBG 2). Remove Real Time Interface (RTI).
3. Clean chassis, Power supply, Fan and those modules that are not replaced.

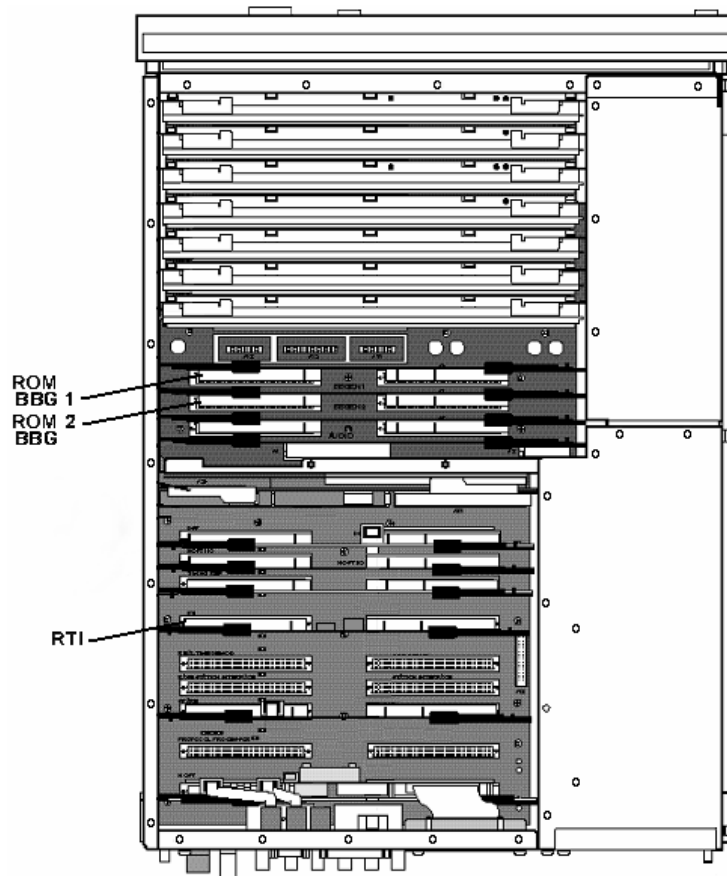


Figure 1 – Remove Modules

Reassembling E5515B/C

- Use Figure 1 (on previous page) to locate modules. Install new TDMA Baseband Generator #1 (TDMA BBG 1) and TDMA Baseband Generator #2 (TDMA BBG 2) from the kit. Install new Real Time Interface (RTI) from the kit.
- Carefully check that all of the modules are in the correct locations.
- Reinstall module top cover, external cover, rear bumpers, and handles.

Test and Calibration after Upgrade

1. Turn on the E5515B/C and warm up for 30 minutes. The unit should boot to the new E6701C Lab Application or E1968A Test Application.
2. Boot up trouble shooting. Please see Appendix 2.
3. Perform the users IQ Calibration for SOURCE 1 and SOURCE 2
4. Perform the users Trigger Setup calibration for the Spectrum Monitor.

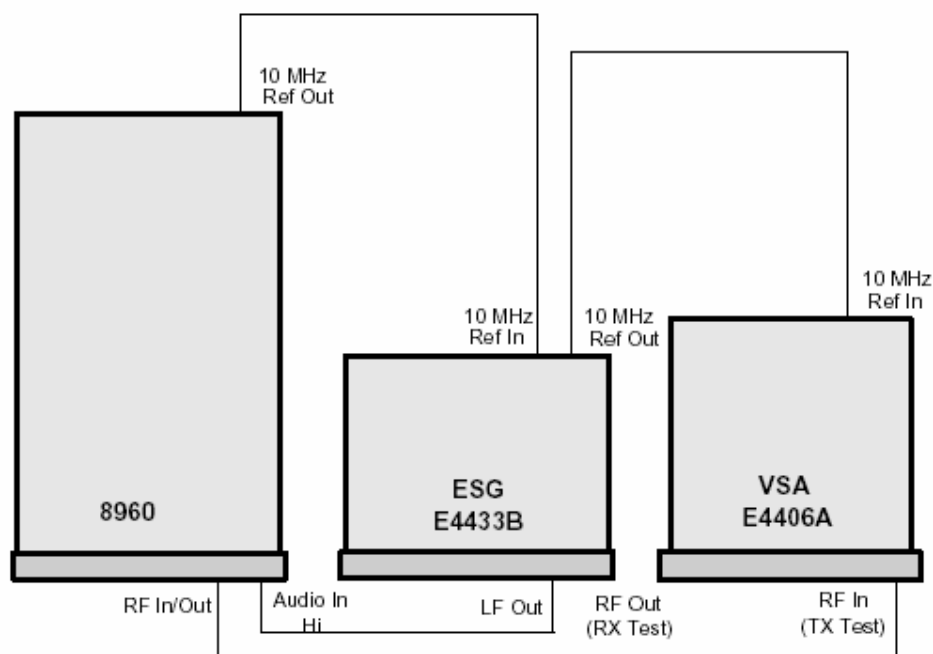
Refer to the web site at <http://www.agilent.com/find/8960toolbox> for the EGPRS Verification and Test Set Verify software:

5. Run the 'EGPRS Verification Software' for hardware test.
6. If available, run the Test Set Verify software and system to verify the test set after the upgrade. Test Set Verify software is developed and supplied by Wireless Division. Please see Appendix 1 for detail information.
7. Calibration can be done at an Agilent SSU Calibration Center on the ST9000 Calibration System. If requested by the customer. This is a full functional test to specified performance. For the details of STE9000, please consult engineers at an Agilent SSU Calibration Center. This upgrade does not void existing Calibrations.
8. When the upgraded E5515C passes the Test Set Verify or STE9000 Calibration, the upgrade is complete.

Note: Refer to the Appendix information at the end of this document for assistance in troubleshooting problems that may occur during the upgrade. Additional assistance may be obtained by calling 1-800-827-3848 or by emailing: spokane_service@agilent.com

Appendix 1

Test Set Verify Software/System



The Software has three parts:

- The test set verification program
- A test channel and sequence editing and creation program
- A file management program

The Test Set Verify Program runs a series of tests on the various Agilent Technologies and Hewlett-Packard test sets. Test Set Verify requires two pieces of equipment besides the Test Set: an ESG-4000D, ESG-D, or ESG-DP Series Signal Generator which has the options to test your product's format and bands and a 4406 VSA Series Transmitter Tester (Vector Spectrum Analyzer) with the correct options. No substitutes will work with the tests. The test personalities (GSM, TDMA, PCS, etc.) are selected automatically for the test equipment in the test system.

Default test channels are supplied with the program. One set of channels is supplied for each available Test Set and band (for example, Agilent 8960 E1960A test set in the GSM900 band). Most likely your products will require channels different than the ones supplied; so the tests can be edited. Tests can also be chained together in sequences to allow testing of more than one band at one time. Test data can be printed and archived.

More information about Test Set Verify:

<http://wireless.marketing.agilent.com/showgen.asp?Gid=1365>

Appendix 2

Trouble Shooting -- Boot Up

<input checked="" type="checkbox"/> Does boot-up blue box appear?			
No		Yes	
Tools: Host serial logging tool aid <input checked="" type="checkbox"/>		Does 3rd line 'IPC-LAN' appear?	
Check Host Processor and Hard Drive assemblies for logging startup. Replace assemblies if required. <input checked="" type="checkbox"/>	No	Yes	
	Tools: Host serial logging tool aid Check Hard Disk drive (host processor may not be able to read disk drive).	Does 9th line 'Start DSP Subsystem' appear?	
		No	Yes
		Tools: Host serial or Protocol serial logging tool aid	
		Tools: Host serial or DSP serial logging aid	
		Check Protocol Processor for startup. Digital assemblies like Host I/O may lock the bus	Check DSP Processor for startup. Digital assemblies like Host I/O may be locking bus

Appendix 3

Call Processing Test

Call Processing – GSM

Begin the test procedure by resetting the test set. Press the blue “SHIFT” key then the “FULL Preset” key. Turn on the phone.

Mobile Station Call Origination - Select menu 2 under ‘Call Parm’s’. On the phone enter several numbers and press the ‘Send’, ‘Talk’, or ‘Yes’ button. When a call is connected the test set screen should appear as in the following picture. The test data should appear in the ‘Burst Timing Error’ window and in the ‘SACCH Reports’ window, the ‘Active Cell Status’ window should say ‘Connected’.

Disconnect the call by pressing the ‘End Call’ button on either the phone or the 8960.

Base Station Call Origination - Select menu 1 under ‘Call Control’. On the 8960 press the ‘Originate Call’ button. The phone should ring (if the ringer is turned on). Press the ‘Send’, ‘Talk’, or ‘Yes’ button on the phone to connect the call.

When a call is connected the test data should appear in the ‘Burst Timing Error’ window and in the ‘SACCH Reports’ window, the ‘Active Cell Status’ window should say ‘Connected’. Do not disconnect; proceed to the next tests.

The 8960 and phone call connection must be tested for the following protocol steps:

- **Traffic Channel Handover** - Press the ‘Traffic Channel’ button on the 8960. Insure that the channel number can be changed and the call remains connected.
 - **Mobile Transmit Level Handover** - Press the ‘MS TX Level’ button on the 8960. Insure that the transmit level can be set to a level between 5 and 15 and the call remains connected. The ‘TX Level’ data in the ‘SACCH Reports’ window should also change.
 - **Mobile Transmit Timing Advance Handover** - Press the ‘Timing Advance’ button on the 8960. Insure that the timing advance number can be changed and the call remains connected.
 - **Mobile Transmit Timeslot Handover** - Press the ‘Timeslot’ button on the 8960. Insure that the timeslot number can be set to a timeslot between 3 and 5 and the call remains connected.
 - **Dual Band Handoff** - If the phone is dual-band, press the ‘Traffic Band’ button on the 8960. Insure that the band can be changed from ‘PGSM’ to ‘DCS’ bands and the call remains connected.
- Press ‘End Call’ on either the phone or the 8960 to disconnect and stop the test.