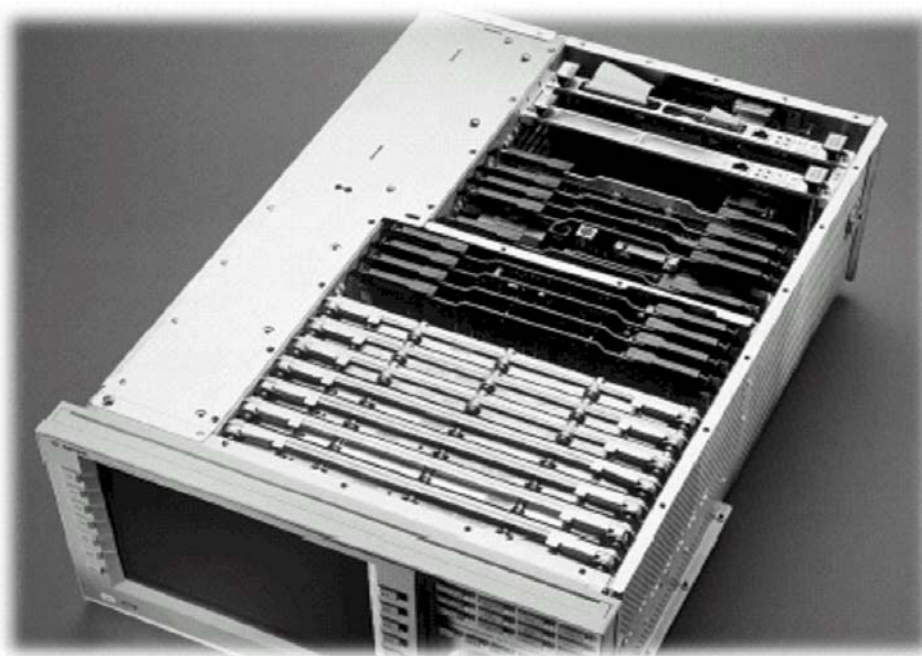


# Installation Note

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**Agilent Technologies 8960 Wireless Communication Test Set  
Protocol Processor Upgrade 3  
Kit Part Number: E5515CU-508**



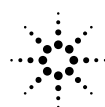
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E5515-90361



**Agilent Technologies**

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# Agilent Technologies 8960 Wireless Communication Test Set Protocol Processor Upgrade 3 Kit Part Number: E5515CU-508

<b>Products Affected:</b> .....	E5515C
<b>Required Options:</b> .....	Options 515, 607, 613
<b>Replaces Board:</b> .....	E5515-60659 or below
<b>Applications Supported:</b> .....	See Appendix 1
<b>To Be Performed By:</b> .....	(X) Agilent Technologies Service Center (X) Personnel Qualified by Agilent Technologies
<b>Estimated Installation Time:</b> .....	0.5 hours
<b>Estimated Verification Time:</b> .....	0.5 hours

## ***Introduction***

This kit provides the instructions for installing E5515CU-Opt 508 Protocol Processor into the E5515C Wireless Test Set. This is one of several upgrades that are required to enable the latest E5515C high speed capabilities and features.

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**NOTE:** This upgrade kit requires the installation of the most current revisions of application software that is compatible with this HW. Failure to install compatible applications may result in boot-up failures.

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**NOTE:** It is assumed that the E5515 is fully operational prior to a HW upgrade. Installing HW upgrades in a non-operational instrument may complicate a successful installation and verification process.

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If this kit is one of several HW options being installed, the following installation sequence is recommended. The actual installation will depend on the specific HW option kit(s) being installed:

- 1) Bottom section RF modules (RFIO, Attenuators)
- 2) Top section RF modules (Vector, Synth Doubler, BBG)
- 3) Digital modules (ADC, DSP, RTI, LSS, Protocol)
- 4) Rear section modules (HDD, Host Processor, Rear Panel)

## ***Installation Kit Parts List***

Item	Qty	Description
1	1	Protocol Processor
2	1	CA AY Multi-conductor RJ45 TO RJ11 cable
3	1	Host I/O PROM
4	1	Removable Jumper (controls fan speed)
5	1	Installation Instructions (this document)

## ***Tools Required***

TORX T-8 and T-20 drivers  
PC with LAN capabilities

## ***Safety Considerations***

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**WARNING:** Before you disassemble the test set, turn the power switch off and unplug the power cord. Failure to unplug the test set can result in personal injury.

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**CAUTION:** Electrostatic discharge (ESD) can damage or destroy electronic components. All work on electronic assemblies should be performed at a static-safe workstation.

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### ***Install Compatible Versions of Existing Applications:***

Upgrade all existing compatible applications to the latest revision.

HW compatibility info is available at: [www.agilent.com/find/e5515releasenotes](http://www.agilent.com/find/e5515releasenotes)

Test Application downloads are available at: [www.agilent.com/find/8960TA](http://www.agilent.com/find/8960TA)

Lab Application downloads are available at: [www.agilent.com/find/8960upgrades](http://www.agilent.com/find/8960upgrades)

1. Make active one of the new application versions. This will ensure the instrument will boot to a compatible application after the HW installation.
2. Follow the Firmware installation instructions that come with the Applications

### ***Remove Non-compatible Applications:***

1. Remove all non-compatible applications from the test set. Removing older application revisions prevents improper operation of the test set. The test set must be connected to a PC using a cross-over cable via the test set's LAN port.
  - a. Run the Agilent 8960 File Utility (installs with application download)
  - b. Select the Direct Connection (Single test set) button.
  - c. Select the Test Application tab.
  - d. Highlight the old revision(s) of application(s) and select the Delete From test set button. All licenses should remain on the instrument. Removing an application does not remove the license for that application.

### ***HW Disassembly:***

#### **Remove outer cover and top cover for the 8960**

1. Remove handles and rear bumpers.
2. Remove the screws on the Rear Panel holding outer cover.
3. Slide outer cover off.
4. Remove the 26 screws holding the top cover on and remove the cover.

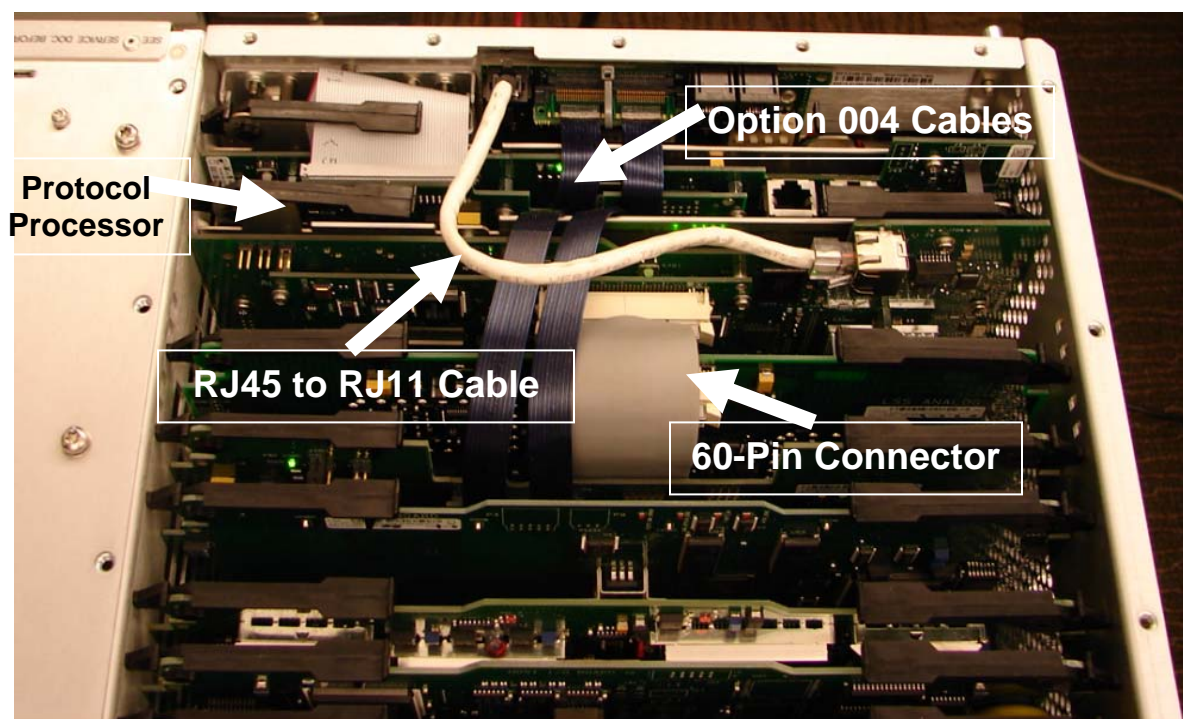
#### **Remove the old Protocol Processor**

1. Remove the Protocol Processor Assembly. The Protocol is the second board from the rear of the instrument. If installed, carefully disconnect the ribbon cable from the Protocol Assembly and pull the board straight up using the 2 black cam-outs on the top of the assembly. If installed, Option 004 cables will also have to be removed.
2. Remove the LSS Digital board (DLSS) from the old Protocol Processor – this will be reinstalled on the new Protocol Processor. There are qty 6 TORX-8 screws holding the DLSS on the Protocol Board. If a new DLSS module is also being installed at this time, then the old DLSS module can be discarded.

## **HW Assembly:**

### **Install Protocol Board**

1. Carefully position the DLSS board over the corresponding connectors on the Protocol Processor assembly and push the DLSS connectors so they are fully inserted. Make sure the Protocol board is properly supported to avoid flexing the Protocol board.
2. With the 6 TORX-8 screws, fasten the DLSS to the Protocol Board.
3. Re-install the Protocol Processor Assembly back into the instrument.
4. Re-connect the Mini 60 pin cable between the DLSS and Analog LSS boards. Make sure the connectors are fully inserted and the connector end-tabs snap into place. The 60 pin connector may be extra if an older version of the DLSS was
5. If the test set has option 004 installed, the ANALOG/DIGITAL cable connects to the BBIO board and the Protocol Processor. Refer to the Option 004 documentation for a more detailed description of the cable installation.
6. Install the LAN cable (CA AY Multi-conductor RJ45 TO RJ11) between the Protocol Process and rear panel (Figure 1).

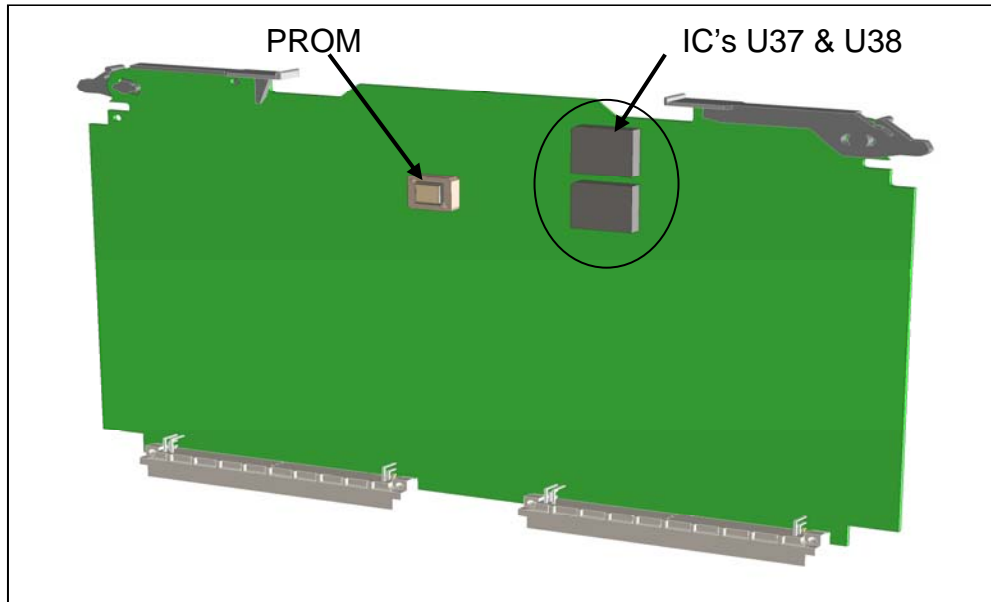


RJ45 to RJ11 Cable Connection  
**Figure 1**

### **Upgrade Host I/O PROM** (applies only to the new style Host I/O E5515-60223 modules)

1. Replace the Host I/O PROM if your instrument has a new style E5515-60223 Host I/O Module. The Host I/O version can be easily identified by the two IC's circled in Figure 2.
  - a. If the two IC's identified in Figure 2 are missing, this is the new style E5515-60223. This version will require the PROM replacement.

- a. If the two IC's are present on the E5515-60223 module, this is an old style assembly. This does not require a PROM replacement.
2. To replace the PROM, use an appropriate tool to gently pry the PROM from the IC socket and replace it with the PROM provided by the upgrade kit. Make sure the new PROM is inserted in the socket with the proper orientation. Orientation marks are provide for both the socket and PROM.



**Figure 2**

***Install Fan Jumper*** (applies only if H08 Option was installed)

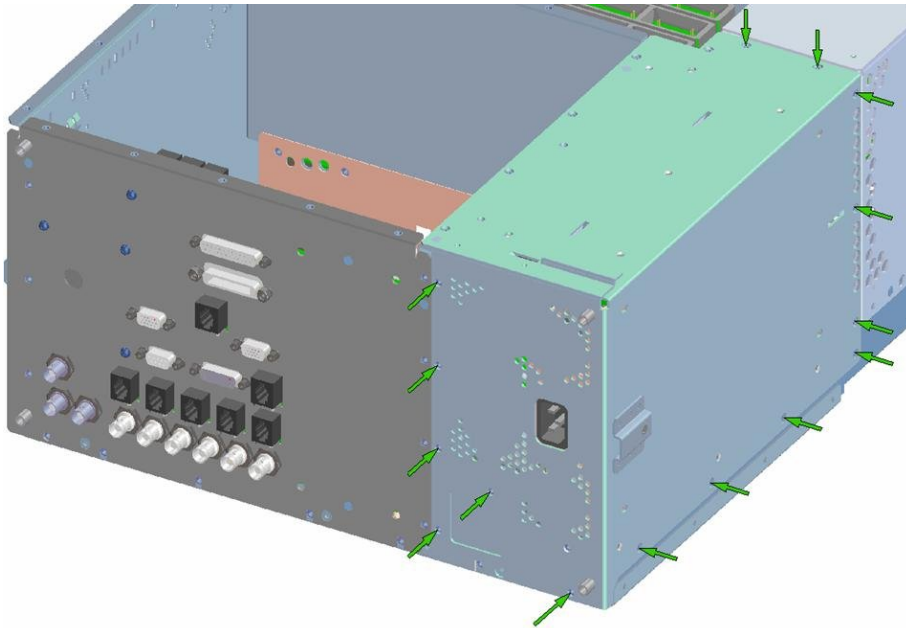
**Note**

*Installing the fan jumper returns the fan speed to normal operation. If Option H08 was installed, the fan jumper was removed which causes the fan to operate at maximum speed.*

**Remove Power Supply Assembly**

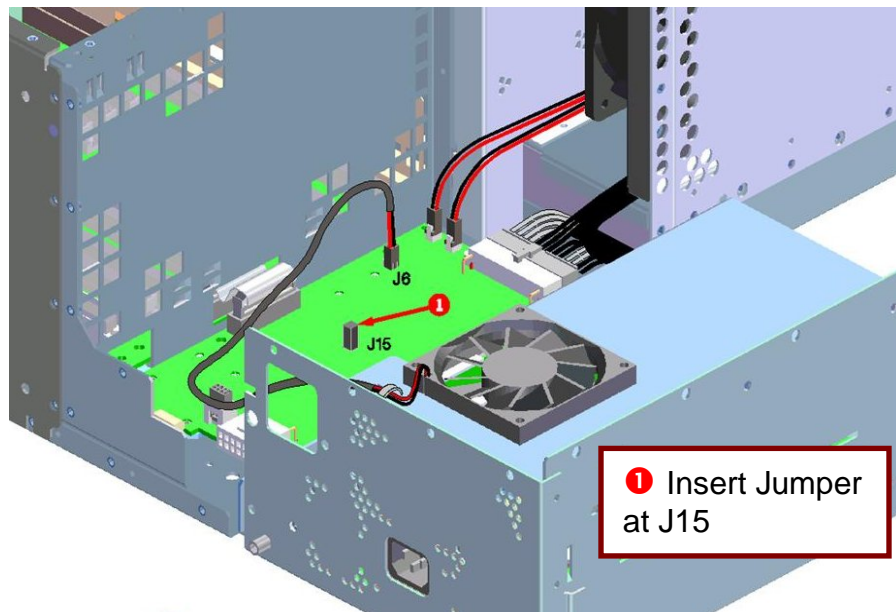
1. Remove 15 screws to access the power supply assembly (Figure 3)
2. Carefully lift the Power Supply Assembly away from the chassis.





**Figure 3**

3. Install the supplied jumper at J15. This jumper controls cooling fan speed. The cooling fans will operate at normal speed when the jumper has been re-installed (Figure 4)



**Figure 4**

### **Install Power Supply Assembly**

1. Reassemble Power Supply onto the chassis. Engage the alignment pins and be careful not to pinch any wires when attaching the Power Supply Assembly (Figure 4).

## Replace covers

1. Replace the top cover and secure it with the 26 screws.
2. Install the outer cover on.
3. Replace the outer cover screws on the Rear Panel.
4. Attach the rear bumpers and handles.

## Verification Test after all HW Upgrades are Installed

1. Turn on the E5515. The unit should boot to the new Application.
2. Check for boot up and/or error messages. If any error message are displayed, re-check installation process for errors.
3. After warming up the instrument for at least 30 minutes, perform the user calibrations.

### Calibration Procedure for Instruments with DLSS Installed

	Calibration Interval = 1 year				Calibration Interval = 1 month		
Application or Format	IQ Calibrations (See Note 1)	Burst Mod Offset 1 Calibration	Thermal Power Null Adjust	Digital Average Power Calibration	Spectrum Monitor Calibration	Channel Power Calibration	Calibrate Measurements
Cdma2000/IS-95/AMPS	Step 1 Perform IQ1 and IQ2 once from one of these applications or formats	Step 2 Perform once from one of these applications or formats	Step 3 Perform once from one of these applications or formats	Step 4A Perform once from one of these applications or formats	Step 5 Perform once from one of these applications or formats	Covered by Step 5 (See Note 2)	
1xEV-DO				Step 4B Cycle Power			
W-CDMA					Step 6 Perform once from this application		Covered by Step 6 (See Note 2)
GSM/GPRS/EGPRS					Step 7 Perform once from one of these applications or formats		
AMPS/136							
Note 1 – Calibrate Second IQ Modulator only applies to instruments with Option 002: RF Source 2.							
Note 2 – You do not need to run this calibration if Spectrum Monitor calibration is run first.							

4. If additional verification testing is desired, tools are available from Agilent to verify the functional and parametric performance of the instrument.
  - a. Self Test software – requires no external test equipment. Good for functional verification if traceable parametric measurements are not required. For more information, see <http://wireless.marketing.agilent.com/docloader.asp?did=12376>
  - b. Test Set Verify software and system – requires external test equipment. Best for traceable functional verification parametric measurements. For more information, see <http://www.spk.agilent.com/~yerxa/Upgrades/index.htm>

**Questions and concerns: contact Agilent Technologies Support:**  
 Phone: (800) 827-3848 (U.S. & Canada)  
 Web: [www.agilent.com/find/8960support](http://www.agilent.com/find/8960support)

# Appendix 1

**NOTE:** For the most up-to-date summary of compatible E5515 applications, access the E5515 Mainframe Revision website at: [www.agilent.com/find/e5515releasenotes](http://www.agilent.com/find/e5515releasenotes)

All existing Applications must be upgraded to the latest revision and switched to one of the new revisions. All non-compatible Applications must be upgraded to work with the new boards that are included in this upgrade kit. Follow the Firmware installation instruction that come with the Applications.

Summary of Supported Applications		
E1961A	AMPS/136	A.12.00 or greater
E1962B	CDMA 2000 TA	B.14.00 or greater
E1963A	W-CDMA TA	A.13.00 or greater
E1966A	1xEV-DO TA	A.09.00 or greater
E1968A	GSM/GPRS/EGPRS TA	A.09.00 or greater
E1976A	1xEV-DO FTM TA	A.03.00 or greater
E1987A	GSM/GPRS/W-CDMA Fast Switch TA	A.08.00 or greater
E6590A	GSM/GPRS RF Modem -- Anite	B.05.00 or greater
E6701F	GSM/GPRS Lab App F	F.01.00 or greater
E6702B	CDMA 2000 Lab App B	B.07.00 or greater
E6703E	WCDMA/HSPA Lab App E	E.01.00 or greater
E6706B	1xEV-DO Lab App	B.01.00 or greater
E6785E	GSM/GPRS_W-CDMA Lab App E	E.01.00 or greater
Applications Not Compatible		
E1960A	GSM	NOT SUPPORTED
E1962A	CDMA 2000 TA	NOT SUPPORTED
E1964A	GPRS	NOT SUPPORTED
E1985A/B/C	GSM/GPRS_AMPS/136_W-CDMA	NOT SUPPORTED
E1985E	CDMA2000_1xEV-DO	NOT SUPPORTED
E6701A/B/C/D/E	GSM/GPRS Lab App B/C/D/E	NOT SUPPORTED
E6701T/U	GSM/GPRS LA – High Data Rate	NOT SUPPORTED
E6702A	CDMA 2000 Lab App A	NOT SUPPORTED
E6703A/B/C/D	W-CDMA Lab App	NOT SUPPORTED
E6703T/U	WCDMA/HPPA LA – High Data Rate	NOT SUPPORTED
E6706A	1xEV-DO Lab App	NOT SUPPORTED
E6785A/B/C/D	GSM/GPRS_W-CDMA Lab App	NOT SUPPORTED
E6785T/U	Fast Switch LA – High Data Rate	NOT SUPPORTED

Table 1