

Installation Note

Agilent PSA Series Spectrum Analyzers USB Retrofit Kit, Option 111



Agilent Technologies

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E4440-90320

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USB Retrofit Kit Option 111

Products Affected:	PSA E4440A PSA E4443A PSA E4445A PSA E4446A PSA E4447A PSA E4448A
Serial Numbers:	US4430 / US9999 MY4430 / MY9999 SG4430 / SG9999
To Be Performed By:	<input checked="" type="checkbox"/> Agilent Service Center <input checked="" type="checkbox"/> Personnel Qualified by Agilent <input type="checkbox"/> Customer
Estimated Hardware Installation Time:	30 minutes
Estimated Adjustment and Verification Time:	2 Hours (see Note 1)
Additional Recommended Task:	Agilent recommends that a full calibration be performed to verify instrument specifications (see Note 2)

Introduction

This retrofit kit adds USB device side I/O to the PSA series spectrum analyzer. USB device side I/O provides a link for controlling the PSA and extracting data from it through a standard SCPI interface. This feature does not enable control of USB mass storage devices. This implementation of USB can be thought of as a faster version of GPIB.

Once the hardware is installed, it is mandatory to update the PSA firmware so the PSA can recognize the new hardware.

NOTE

1. The installation of this kit requires that some performance testing be performed in order to assure the new option is functioning properly.

This installation note includes a list of required Performance tests. Completing the performance tests does not guarantee the instrument meets all specifications.

2. The instrument end user must determine whether they need a full instrument calibration following the installation of the kit. If a full calibration is required, arrangements regarding the level of calibration must be made between the end user and the calibration provider.
 3. This option is licensed for one instrument model/serial number combination. The license key will only install on the designated instrument.
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Contents

Quantity	Description	Agilent Part Number
1	Installation Note	This note
1	Option Upgrade Entitlement Certificate	5964-5141
1	PSA User's and Programmers Guide	--
1	512 MB Memory Assembly	E4440-60252
1	Digital IF Assembly	E4440-60206
1	USB cable	8121-1074
1	Cover Plate, rear panel	E4440-00061
9	Screw, M3 X 0.5 8 mm LG TORX	0515-0372

Tools Required

- T-20 Torx driver
- T-10 Torx driver
- PSA Series Spectrum Analyzer Service Guide. This manual is available as part of the E444xAU Option OBW kits.
- Calibration software. Latest software information and downloads available at <http://www.agilent.com/find/calibrationsoftware>
- Microsoft Windows based personnel computer with LAN card and CD-ROM drive.
- Windows 2000 or Windows XP
- Crossover cable if PC or analyzer is not connected to network. Use a CAT, RJ45 cable with cross pinning, Agilent p/n 8121-0545.
- Firmware A.0 9.00 or later. Download the latest revision from http://www.agilent.com/find/psa_firmware, or order the Firmware Update kit.

Depending on your model number, the firmware update kit is ordered as: Order E444xAU (Qty.1) Option UE2 (Qty. 1), where the “x” is the last digit of the model number. For example: E4440AU option UE2.

Installation Procedure

Preliminary Hardware Verification

1. Check for the presence of Option 115 or Option 117 by pressing **System, Show System**, and look at the option list.

NOTE Option 111, Option 115, and Option 117 share the same PC assembly.

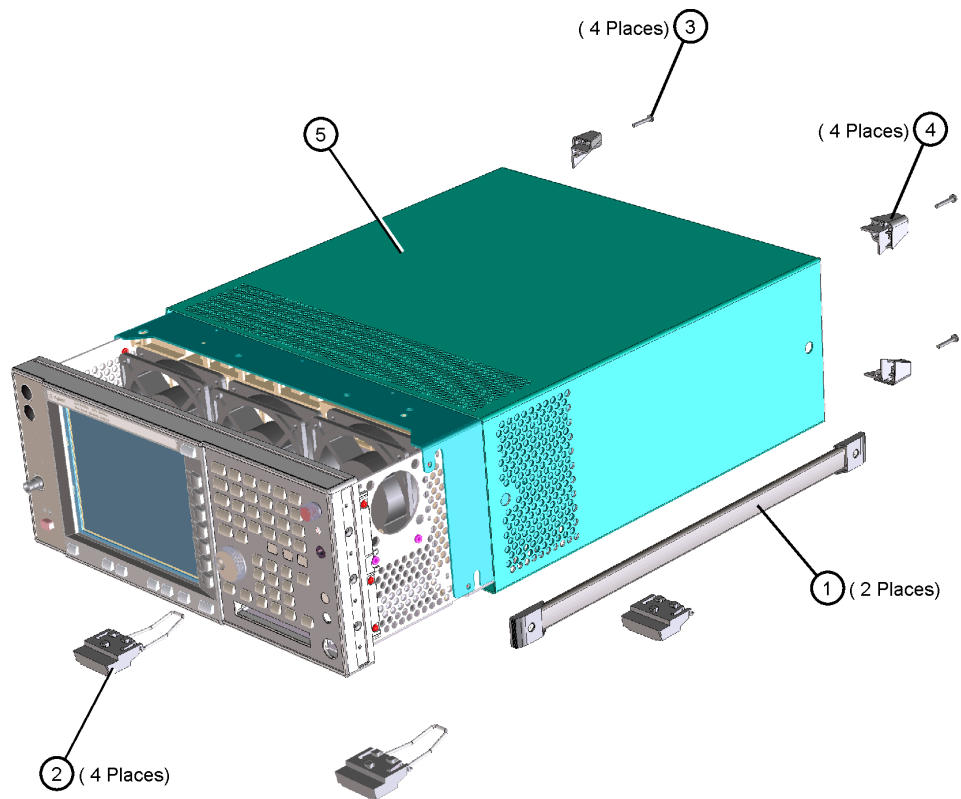
2. If Option 115 or Option 117 is present, press **System, Show Hardware**. Note the part number of the USB/Flash Driver.
3. Determine the part number of the USB assembly in the kit.
 - If the part numbers match, do not install the USB assembly from the kit.
 - If the part numbers do not match, install the USB assembly from the kit as outlined in this installation note.
4. Check the part number of the Digital IF assembly installed in the instrument. Press **System, Show Hardware**. Note the part number of the Digital IF.
5. Determine the part number of the Digital IF assembly in the kit by looking at the part number silk screened on the board assembly.
 - If the part numbers match, you do not need to install the Digital IF assembly from the kit.
 - If the part numbers do not match, install the replacement Digital IF assembly as outlined in this installation note.

Remove the Outer Case

CAUTION If the instrument is placed on its face during any of the following procedures, be sure to use a soft surface or soft cloth to avoid damage to the front panel, keys, or input connector.

1. Disconnect the instrument from ac power.
2. Refer to Figure 1. Remove the two handles on the sides of the instrument as shown. Use the T-20 driver to loosen the screws that attach each handle (1). Remove the handles.
3. Remove the four bottom feet (2). Lift up on the tabs on the feet, and slide the feet in the direction indicated by the arrows.
4. Remove the four screws (3) that hold the rear feet (4) in place.
5. Pull the instrument cover (5) off toward the rear of the instrument.

Figure 1 Instrument Outer Case Removal

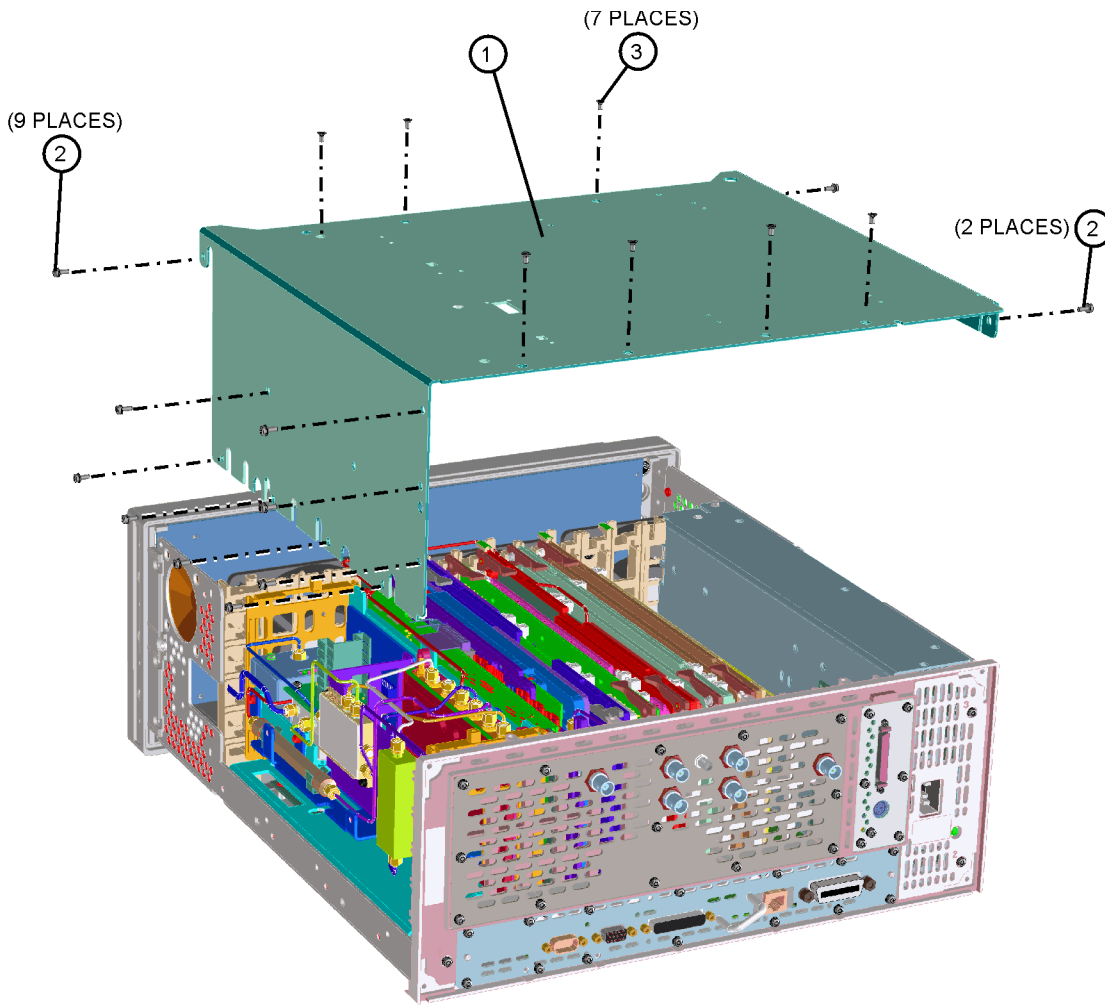


de83a

Remove the Top Brace

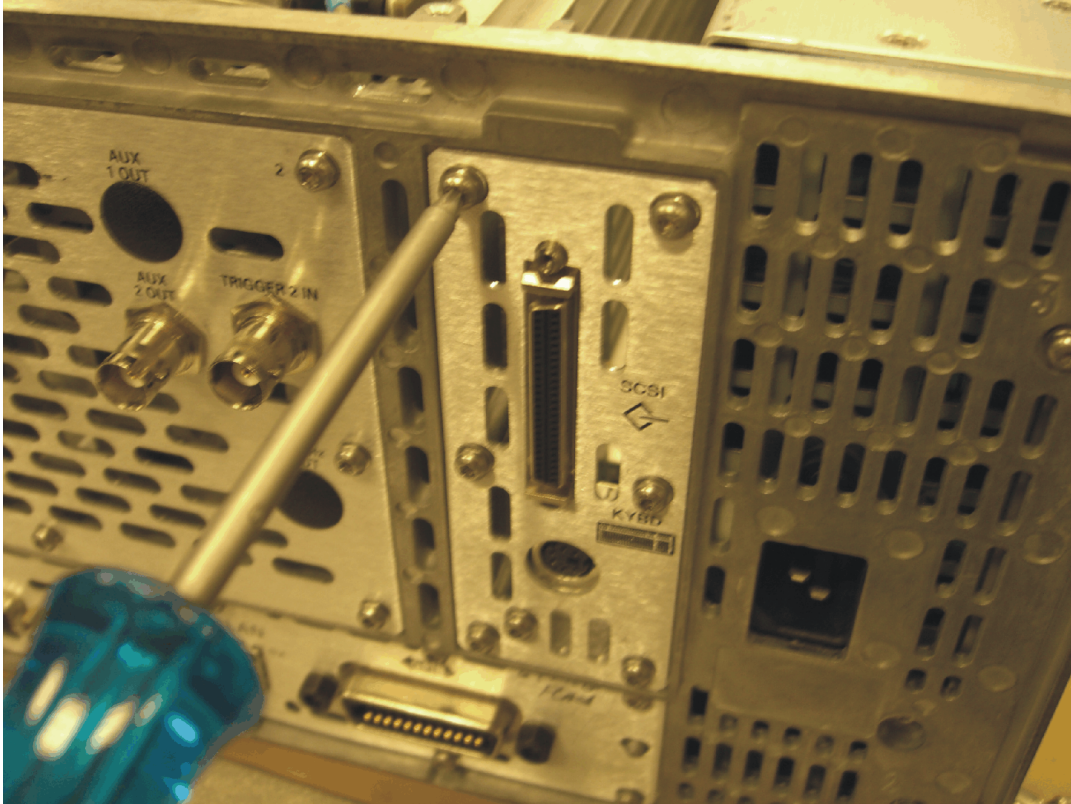
1. Refer to Figure 2. Use the T-10 driver to remove the top screws (3) (one screw is under the security label), and the side screws (2) attaching the top brace (1) to the deck.
2. Remove the top brace from the deck.

Figure 2 **Top Brace Removal**



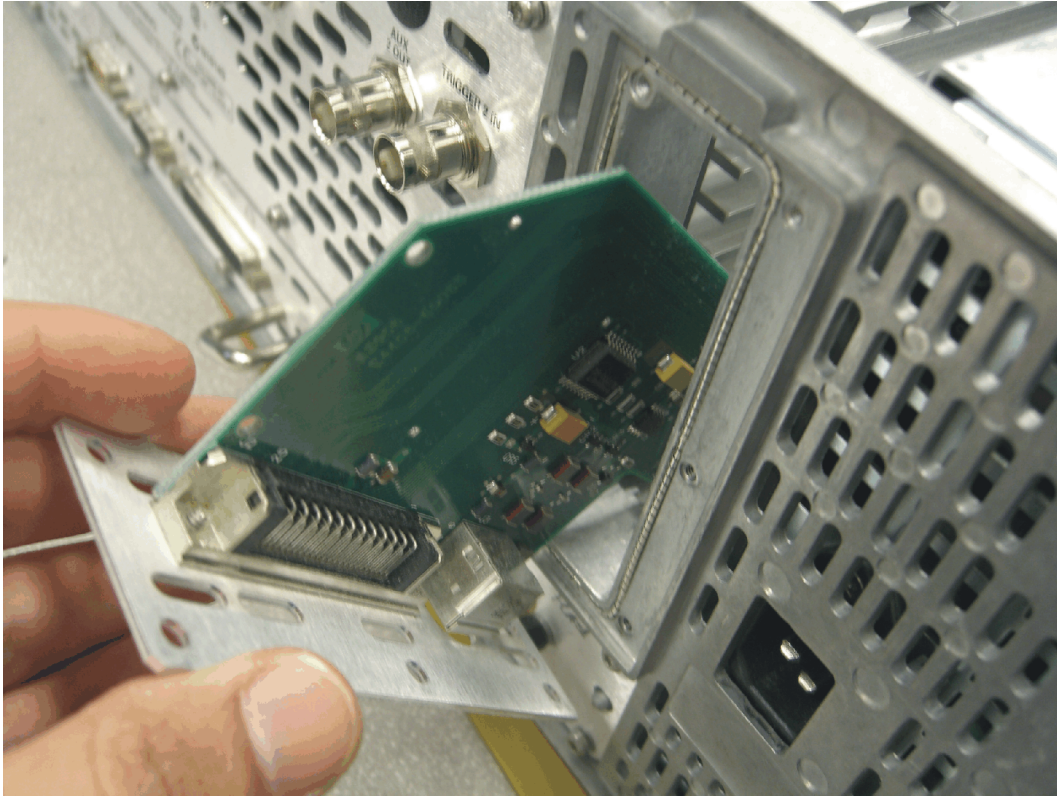
Installing the USB Assembly

1. Locate the A6 (SCSI Interface board). When facing the rear panel of the instrument, the A6 board is in the right side of the instrument.
2. Remove the 6 screws from the rear plate of the A6 SCSI interface board. The plate will stay attached to the board. See the picture below.

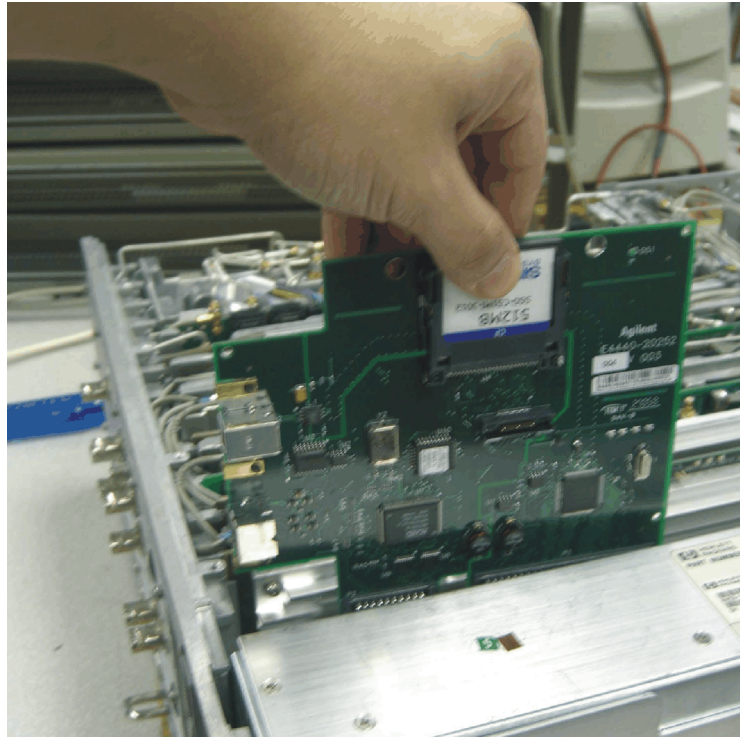


Installation Procedure

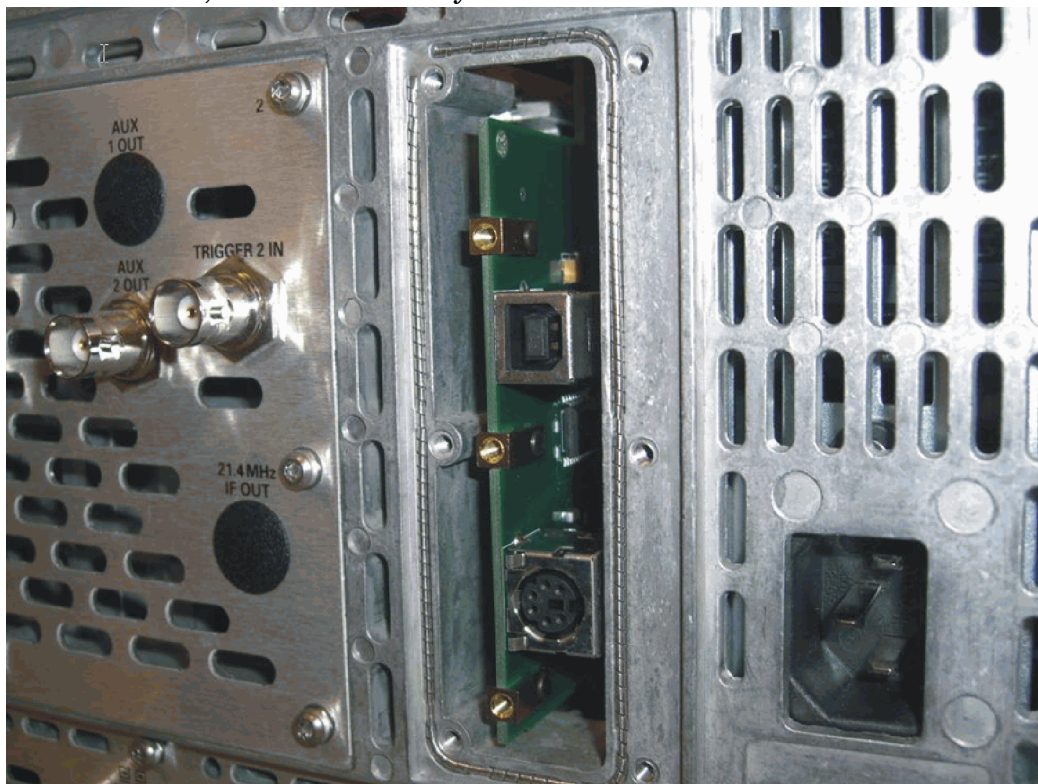
3. Remove the A6 SCSI interface board. To do this, gently lift the board vertically from its socket on the PSA motherboard. Once the A6 SCSI interface board is unseated from the motherboard, it can be removed through the rear panel.



4. Insert the USB assembly as shown below. Make sure to firmly insert the connectors into the PSA motherboard sockets, but do not exert so much force as to break the connector.

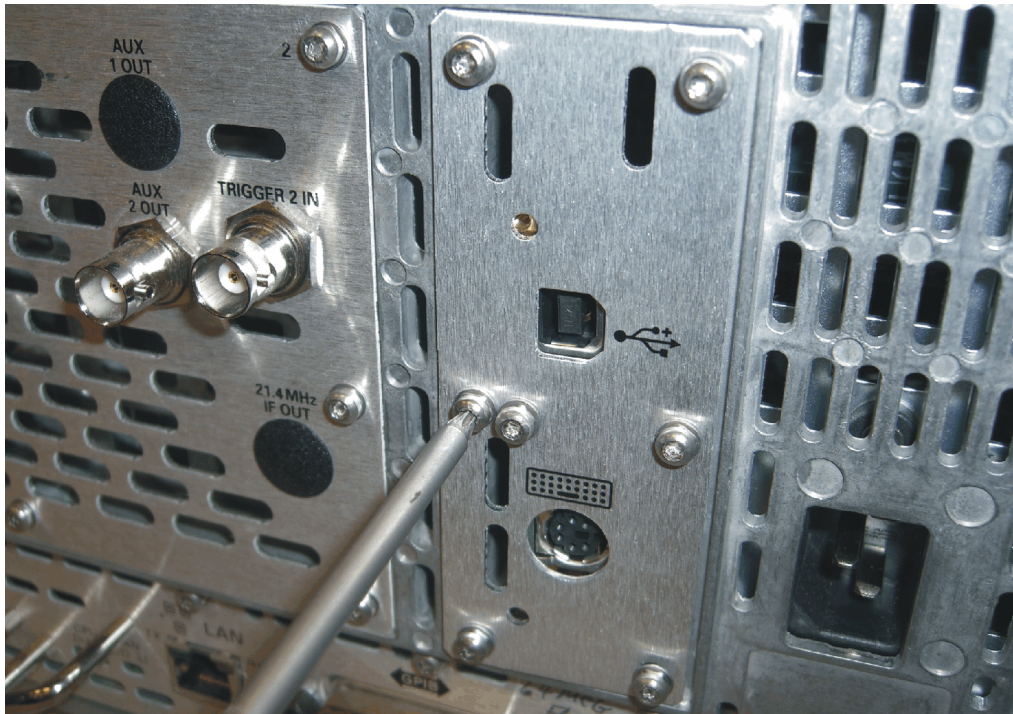


After installation, the USB assembly should look like this:



Installation Procedure

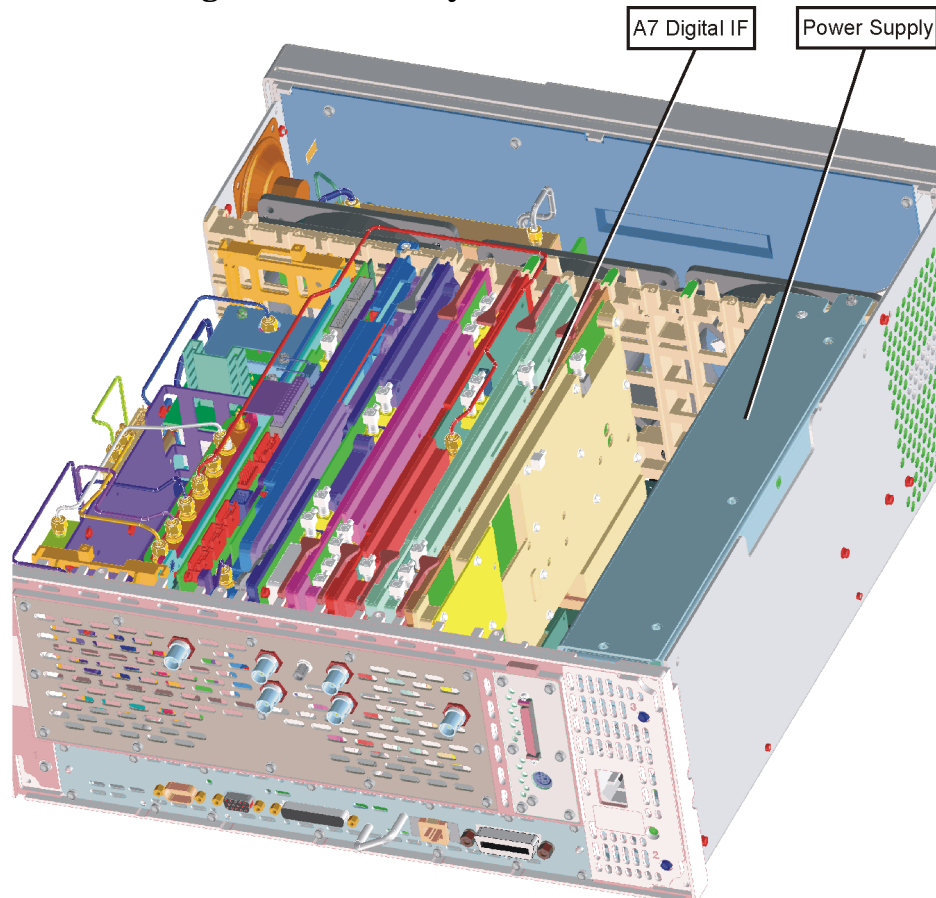
5. Put the rear plate in place on the PSA rear panel, and screw it into place as shown below. New screws are included in the kit.



Installing the Digital IF Assembly

1. Locate the A7 Digital IF assembly. It is in the fourth card slot from the power supply. Refer to Figure 3.

Figure 3 **A7 Digital IF Assembly Location**



digitalif

2. Remove the gray flexible coax cable for the Digital IF assembly, and remove the board assembly.
3. Locate the replacement Digital IF assembly in the kit and install it. Ensure the board is fully seated. Connect the gray coax cable to P3. Cable designator "P3" is silk screened on the PC board.

Replace the Top Brace

1. Refer to Figure 2.
2. Carefully position the top brace on the deck. There is an alignment pin on the mid web/fan assembly that should match up with the alignment hole on the top brace. Make sure that no coaxial cables will get pinched underneath the brace.
3. Using the T-10 driver, replace the top screws first, and then the side screws after the top screws are tightened. Torque to 9 inch pounds.

Replace the Outer Case

1. Refer to Figure 1.
2. Slide the instrument cover back onto the deck from the rear. The seam on the cover should be on the bottom. Be sure the cover seats into the gasket groove in the front frame.
3. Replace the four rear feet onto the rear of the instrument. Torque to 236 Ncm (21 in-lb).
4. Use the T-20 driver to replace the handles. Torque to 236 Ncm (21 in-lb).
5. Replace the four bottom feet by pressing them into the holes in the case and sliding them in the opposite direction of the arrows until they click into place. Note that the feet at the front have the tilt stands.

Install the Option Designator and License Keyword

NOTE The option designator 111 and the license keyword must be entered into instrument memory in addition to the correct firmware before the hardware will function.

1. Locate the Option Upgrade Entitlement Certificate in the kit and follow the directions to redeem it. You will receive an email that has the license keyword required for step 4.
2. Plug in instrument and power up.
3. On the instrument front panel press: **System, More**, until the **Licensing** softkey is visible. Press **Licensing** and **Option**. This will activate the alpha editor menu. Use the front panel numerical keypad to enter the option designator 111. Press the **Enter** key. Note that 111 now appears on the **Option** key.
4. Press **License Key**. The license key number is a hexadecimal number that will require the entry of both letters and numbers. The license keyword appears on the license keyword certificate that you received when you redeemed your license entitlement certificate. Use the alpha editor and the front panel numerical keypad to enter the license key number. Your entry will appear in the active function area of the display. If you make a typing error, use the backspace key to correct the error. Check the license key number you entered. Press **Enter, Activate License**.
5. Cycle instrument power and allow instrument to perform the auto align routine.

Install New Instrument Firmware

A complete firmware installation is required even if the instrument currently contains the latest firmware. If the instrument does contain the latest firmware, do the following:

- At the **Choose Components to load** screen, check the box for **Operating System Version X.XX for Firmware Version A.XX.XX**.
This will allow the instrument memory to be reconfigured.

Download the PSA Update Program and the PSA Firmware Procedure from

http://www.agilent.com/find/psa_firmware

Follow the directions to install the firmware.

Alternate method:

Install the Firmware Upgrade Kit E4440AU Option UE2.

Verify the Option is enabled

Check for the presence of Option 111 by pressing **System, Show System** and looking for 111 in the Options section of the display.

Also, just below the option information you should see some information regarding the USB such as USB product ID, status, speed, packets received and packets transmitted.

Adjustments and Performance Tests Required

Adjustments Required

None.

Performance Tests Required

NOTE The following performance tests are only required if the Digital IF assembly was replaced.

Performance testing requires the use of the calibration software. The latest software information and downloads are available at:
<http://www.agilent.com/find/calibrationsoftware>

Performance Tests
Absolute Amplitude Accuracy
Resolution BW Switching
Display Scale Fidelity

End of installation

For assistance, get in touch with your nearest Agilent Technologies Sales and Service Office. To find your local Agilent office access the following URL, or call the following telephone number:

<http://www.agilent.com/find/assist>

1-800-452-4844 (8am-8pm EST)