

Installation Note

Agilent PSA Series Spectrum Analyzers Option B7J Digital Demodulation Hardware Retrofit Kit for Serial Prefix US4142 and Later



Agilent Technologies

Part Number E4440-90567 Supersedes: E4440-90126
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Digital Demodulation Hardware Retrofit Kit

Products Affected:	PSA E4440A PSA E4443A PSA E4445A PSA E4446A PSA E4448A
Serial Numbers:	US4142xxxx/US99999999 MY4142xxxx/MY99999999
To Be Performed By:	<input checked="" type="checkbox"/> Agilent Service Center <input checked="" type="checkbox"/> Personnel Qualified by Agilent <input type="checkbox"/> Customer
Estimated Installation Time:	1 Hour
Estimated Adjustment and Verification Time:	8 Hours

Introduction

The Option B7J retrofit kit provides the parts and instructions needed to install the digital demodulation hardware into the Agilent E4440A, E4443A, E4445A, E4446A, or E4448A spectrum analyzer. The option B7J kit is licensed for one instrument model number/serial number combination. The kit will only function on the instrument it was ordered for.

The digital demod hardware consists of an electronic attenuator that is enabled when the optional measurement personalities such as W-CDMA are used, or the instrument is placed into Basic mode.

NOTE

The instrument must be re-adjusted and the performance tested to ensure that the instrument meets specifications following the hardware installation. All adjustments are automated, and are included in the PSA Series Performance Verification and Adjustment Software.

This software is not included in this kit. If you do not have this software, order Option 0BW, PSA Service Documentation and Performance Tests and Adjustment Software through your local Agilent Technologies Sales and Service Office.

Contents

Item	Quantity	Description	Agilent Part Number
1	1	Option Upgrade Entitlement Certificate	---
2	1	Basic Mode Guide	---
3	1	PSA Documentation CD Rom	---
4	1	A27 Electronic Attenuator	E4440-60022
5	1	W51, Cable, semi-rigid, E-Attenuator to RHYTHM (for E4440A, E4443A, E4445A)	E4440-20110
6	1	W51, Cable, semi-rigid, E-Attenuator to SBTX/RHYTHM (for E4446A, E4448A)	E4446-20039
7	1	W52, Cable, semi-rigid, E-Attenuator to 3 GHz LPF (for E4440A, E4443A, E4445A)	E4440-20109
8	1	W52, Cable, semi-rigid, E-Attenuator to 3 GHz LPF (for E4446A, E4448A)	E4446-20040
9	2	W53, Cable, ribbon, E-Attenuator to Front End Driver	E4440-60078
10	1	Screws, 3.0-8 metric 6 each	0515-0372
11	1	Bracket, electronic attenuator	E4440-00024
12	1	Installation Note	this note

Tools Required

- T-20 Torx driver
- T-10 Torx driver
- 5/16-inch open end wrench
- 7/16-inch open end wrench
- Firmware revision A.02.04 or later. Download the latest revision from http://www.agilent.com/find/psa_firmware, or order the Firmware Update kit, E444xAU Option UE2.
- PSA Series Performance Tests and Adjustment software, A.02.00 or later.

Installation Procedure

1. Perform the following procedures in order:
 - a. Remove the instrument outer case.
 - b. Remove the instrument top brace.
 - c. Install the Option B7J retrofit kit.
 - d. Install the instrument top brace and outer case.
 - e. Install the option designator key.
 - f. Perform the adjustments and performance tests.

For assistance at any time during this procedure, 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>

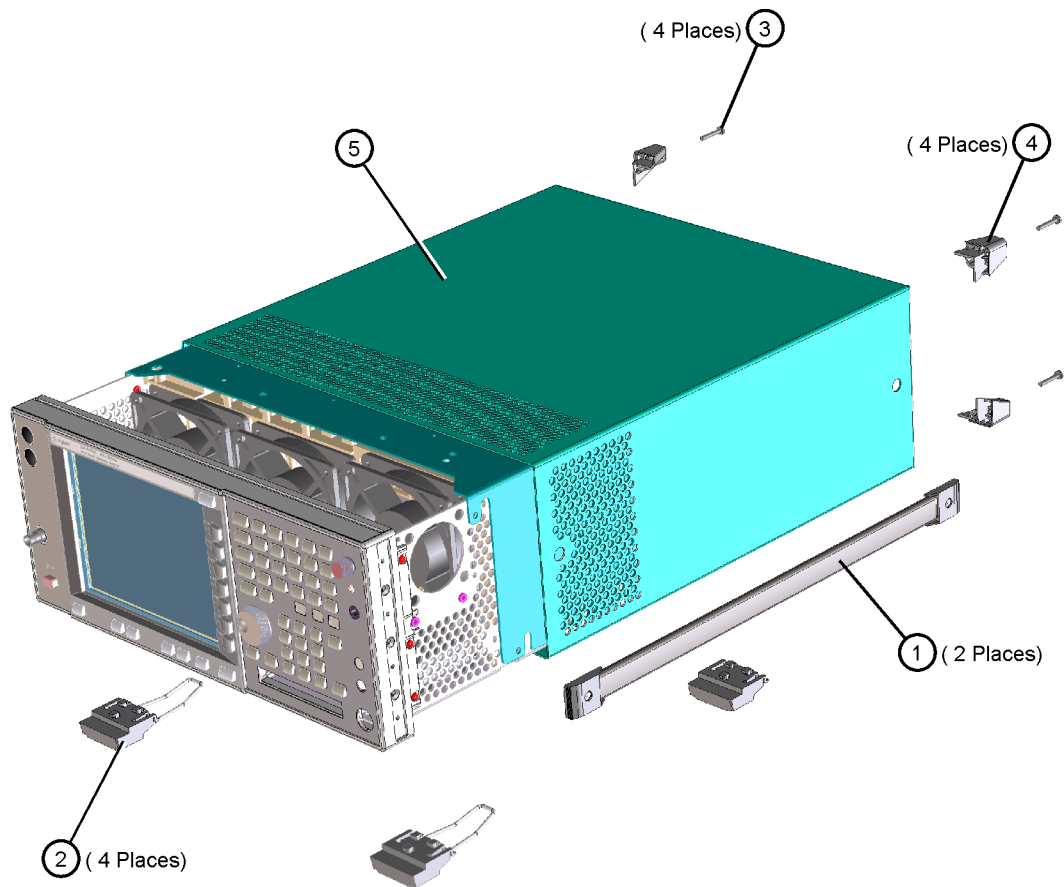
1-800-452-4844 (8am-8pm EST)

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

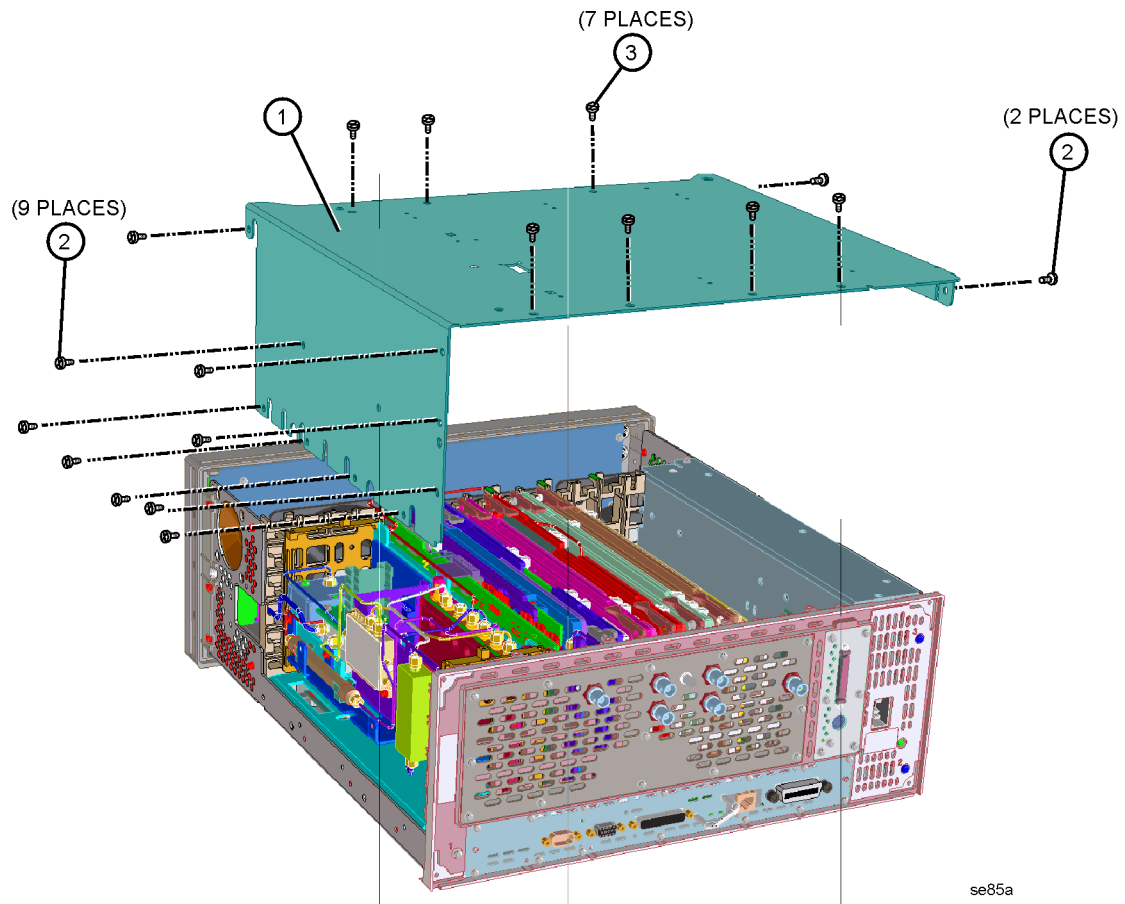


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Remove the Top Brace

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.

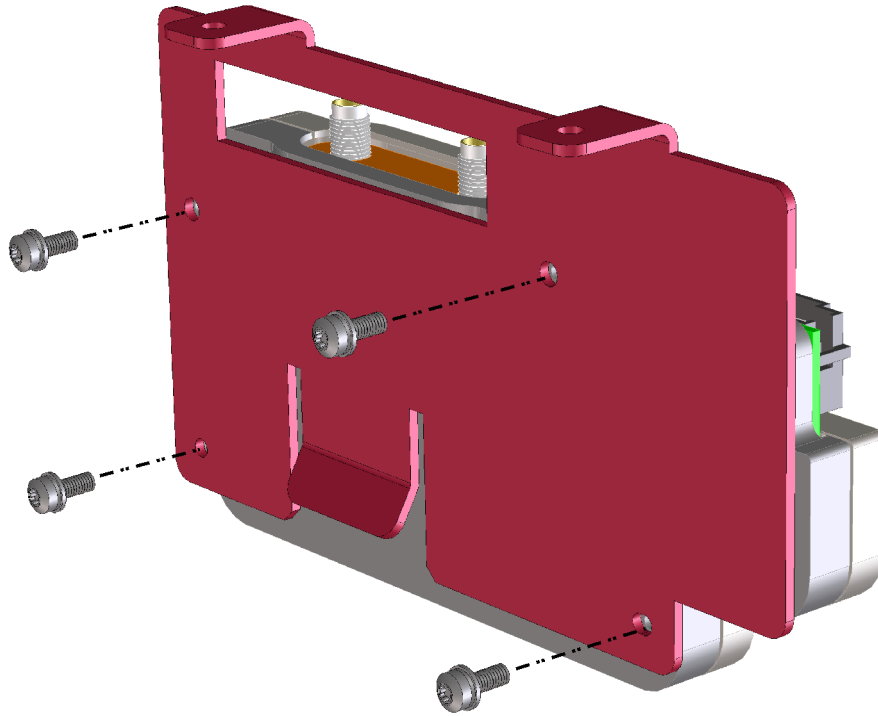
Figure 2 **Top Brace Removal**



Attach the Attenuator to the Bracket

1. Refer to [Figure 3](#). Install the electronic attenuator onto the attenuator bracket using four of the screws contained in the kit; torque to 101 Ncm (9 inch pounds).

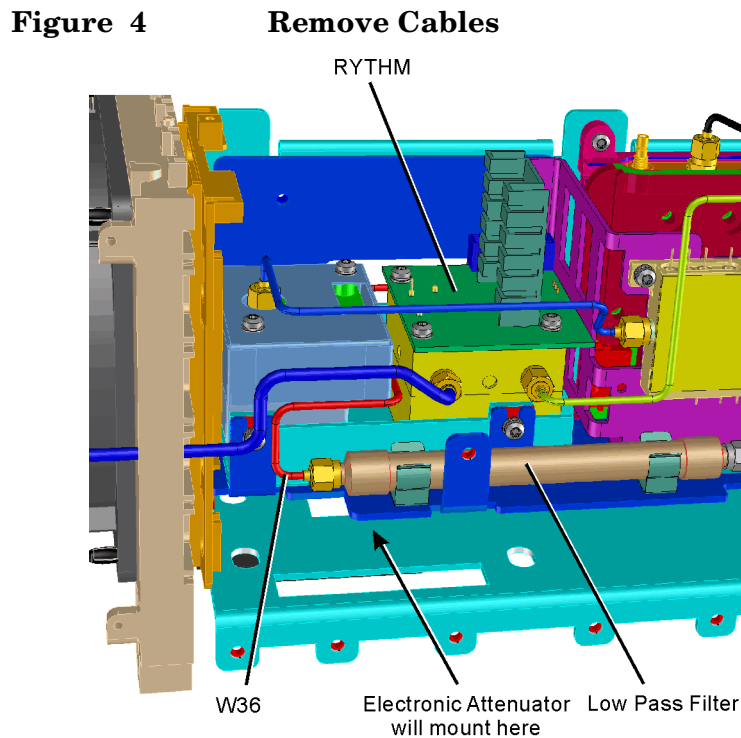
Figure 3 **Attach the Attenuator to the Bracket**



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Install the Attenuator

1. [Figure 4](#) shows the RF section and parts locations for the E4440A, E4443A, and E4445A. The location of the assemblies and cables are the same for the E4446A and E4448A. Locate the RF section on the right side of the instrument.



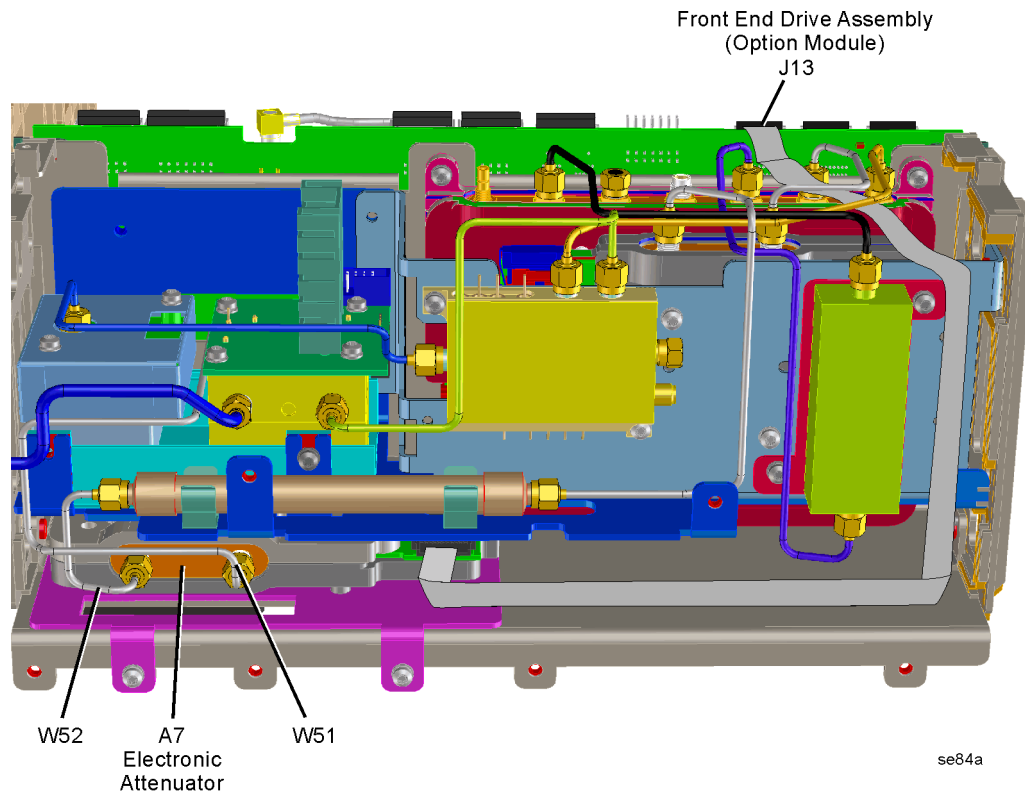
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CAUTION

In the following [step 2](#), use a 7/16-inch wrench on one of the wrench flats at the ends of the filter to prevent the filter body from rotating when removing the cable. Cables can be damaged if the low pass filter is allowed to rotate when loosening or tightening the cable connector.

2. Locate and remove cable W36 (RYTHM to low pass filter), using the 5/16-inch wrench. Discard this cable, since it will be replaced by another cable.
3. Connect one end of ribbon cable W53, contained in the kit, to the ribbon cable header on the electronic attenuator assembly. Make sure the alignment ribs on the cable connector line up with the keying feature on the cable header.
4. [Figure 5](#) shows installed attenuator and cable routing. Slide the electronic attenuator assembly into the instrument and secure with two screws included in the kit.

Figure 5 **Install the Attenuator**



5. a) If the instrument is an E4440A, E4443A, or E4445A, select the E4440-20110 semi-rigid cable from the kit. This cable is reference designator W51, shown in [Figure 5](#). Connect the cable between the RHYTHM and the electronic attenuator. Torque to 112 Ncm (10 in-lb).
- b) If the instrument is an E4446A, or E4448A, select the E4446-20039 semi-rigid cable from the kit. This cable is reference designator W51, shown in [Figure 5](#). Connect the cable between the RHYTHM and the electronic attenuator. Torque to 112 Ncm (10 in-lb).
6. a) If the instrument is an E4440A, E4443A, or E4445A, select the E4440-20109 semi-rigid cable from the kit. This cable is reference designator W52. Connect this cable between the low pass filter and the electronic attenuator. Use the 7/16-inch wrench to hold the filter in place when tightening the cable connector to 112 Ncm (10 in-lb).
- b) If the instrument is an E4446A, or E4448A, select the E4446-20040 semi-rigid cable from the kit. This cable is reference designator W52. Connect this cable between the low pass filter and the electronic attenuator. Use the 7/16-inch wrench to hold the filter in place when tightening the cable connector to 112 Ncm (10 in-lb).
7. Carefully route the electronic attenuator ribbon cable (W53) to the front end driver J13 as shown in [Figure 5](#). Plug the ribbon cable into front end driver connector J13 (option module).

Replace the Top Brace and Outer Case

1. Refer to [Figure 2](#). Carefully position the top brace on the deck. The alignment pin at the center of the web/fan assembly must mate with the alignment hole on the top brace. Make sure that no coaxial cables will get pinched underneath the brace.
2. Use the T-10 driver to replace and tighten the top screws first; then replace the side screws. Torque to 101 Ncm (9 in-lb).
3. Refer to [Figure 1](#). 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.
4. Replace the four rear feet onto the rear of the instrument. Torque to 236 Ncm (21 in-lb).
5. Use the T-20 driver to replace the handles. Torque to 236 Ncm (21 in-lb).
6. 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.

Turn the Instrument On

Plug in the instrument and apply power. The auto align will run, and may fail because the instrument cannot recognize Option B7J since it is not yet licensed or calibrated. Continue with the next procedure to install the option designator and license keyword for this option.

Obtaining a License Key and Activating the Option

The entitlement certificate supplied in this kit allows you to obtain a license key from our Agilent website so you can enable this upgrade option. Once you have retrieved the license key, you can begin the process of activating the option.

NOTE	Option designator B7J and the license key must be entered into instrument memory before the electronic attenuator will function.
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1. 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 alpha editor and the front panel numerical keypad to enter the upper-case option designator B7J. Enter the letters using the alpha editor and the numeric keypad to enter the numbers. Press the **Enter** key. Note that **B7J** now appears on the **Option** key.
2. Press **License Key**. The license key number is a hexadecimal number that will require the entry of both letters and numbers. 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**.
3. Cycle instrument power to cause the option to be placed into instrument memory.

Install the Option Firmware

1. Firmware with revision A.02.04 or greater must be loaded before the option will function. It is recommended that you load the latest instrument firmware.

For the latest update information and to download firmware, go to:

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

The firmware update program includes step-by-step instructions to guide you through the installation. The installation program will sense the presence of the option license and enable B7J.

2. After completing the firmware update process, press **System, More, Show System** and verify that B7J appears in the option field.

Perform Adjustments and Performance Tests

NOTE	This procedure requires the use of software included in Option 0BW, PSA Service Guide and Performance Tests and Adjustment Software. This option is available through your local Agilent Technologies Sales and Service Office.
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1. Load the PSA Series Performance Tests and Adjustment Software on your PC.
2. Perform the Frequency Response adjustment. This adjustment will take about two hours to perform.
3. Perform the Frequency Response (B7J) adjustment. This adjustment will take about one hour to perform.
4. Agilent recommends that all performance tests be performed since the calibration label was broken and the electronic attenuator added to the signal path.
5. The Option B7J installation is now complete.

For assistance, contact 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>

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