

# Installation Note

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## Enhanced Memory Upgrade Kit (Option B72) for Agilent ESA-E Series and ESA-L Series Spectrum Analyzers



**Agilent Technologies**



E4401-90498

Part Number E4401-90498 Supersedes: E4401-90332

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## Enhanced Memory Upgrade Kit (Option B72)

Products Affected: . . . . .	ESA E4401B ESA E4402B ESA E4403B ESA E4404B ESA E4405B ESA E4407B ESA E4408B ESA E4411B
Serial Numbers: . . . . .	US00000000/US99999999 MY00000000/MY99999999
Options: . . . . .	B72
To Be Performed By: . . . . .	(X) Agilent Service Center (X) Personnel Qualified by Agilent (X) Customer
Estimated Installation Time: . . . . .	1 Hour
Estimated Verification Time: . . . . .	0.5 Hours

### Introduction

This procedure retrofits the memory expansion to 10 MB (Option B72) into the ESA-E Series and ESA-L Series analyzers listed above. The procedure involves removing the currently installed A4A1 4 MB Flash SIMM and A4A2 16 MB DRAM SIMM from the A4 Processor assembly. Since saved files (for example, traces, states, and limit lines), personalities, and portions of the analyzer firmware are stored on the A4A1 4 MB Flash SIMM, all of this data will be lost when the larger A4A1 12 MB Flash SIMM is installed. The firmware will be restored by also installing the firmware upgrade kit (included). Saved files may be backed up on a floppy disc and later restored. Personalities, including any license keys, will have to be reloaded.

## Installation Kit Parts List

### Contents of Option B72 Memory Expansion Upgrade Kit (10 MB, E4401-60101)

Item	Quantity	Description	Part Number
1	1	A4A1 12 MB Flash SIMM	E4401-60081
2	1	A4A2 32 MB DRAM SIMM	E4401-60289
3	1	Installation Note	this note
4	1	Firmware Upgrade Kit	---

### Tools Required

- T-10 TORX screwdriver
- T-15 TORX screwdriver
- 1 or 2: 1.44 MB DOS-formatted floppy discs, (optional, to back up saved files)

### Torque Settings

To avoid potential RFI leakage and prevent connector damage, tighten screws and RF coax cable connectors to the values in the following table:

Item	Torque N-cm	Torque in-lb
SMA connectors	95	8.5
SMC connectors	61	5.5
3.5-mm, T-10 TORX screws	157	14
4-mm, T-15 TORX screws	236	21
Pozidrive screws	157	14

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## Procedure

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**WARNING** Before you disassemble the instrument, turn the power switch OFF and unplug the instrument. Failure to unplug the instrument 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. Refer to the documentation that pertains to your instrument for information about static-safe workstations and ordering static-safe accessories.

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### Backing-up Saved Files and Personalities

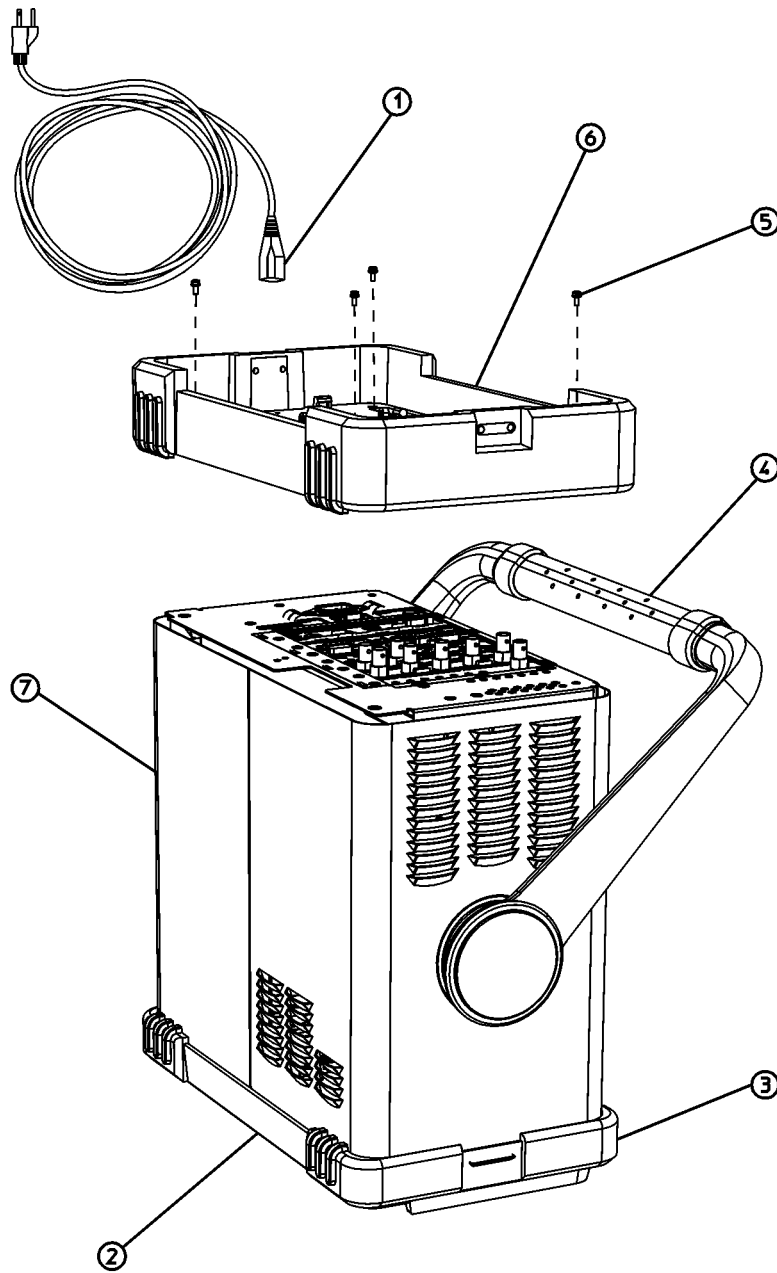
1. If you have any installed personalities, such as GSM (Option BAH) or Phase Noise (Option 226), obtain a copy of the personality software. If the current firmware revision is older than the revision included with this kit (refer to the Firmware Upgrade Kit, included), you may need to obtain a newer revision of the personality to be compatible with the new firmware revision. You have several ways of getting this software:
  - a. Download from the web at: <http://www.agilent.com/find/esa>.
  - b. Contact your local Agilent Technologies Sales and Service office.
  - c. Locate the original distribution disc(s). (This only applies if the personality was retrofitted after the initial analyzer purchase and contains a compatible revision).
2. Obtain the license keyword for each licensed personality. There is one, 12-character license keyword for each licensed personality. If you have firmware revision A.03.03 or earlier, only the CATV Measurement Suite, Option H01 or H0J, will require licensing. If you have firmware revision A.04.00 or later, press **System, More, More, Personalities**. If there is a “Yes” in the Licensed column, you need to obtain a license keyword for that personality. To obtain the license keyword, you have two options:
  - a. Refer to the License Key Certificate for that personality (This only applies if the personality was retrofitted after the initial analyzer purchase).
  - b. Contact your local Agilent Technologies Sales and Service office, and provide the product number, serial number, options numbers, and, if available, Host ID of your analyzer. This information is listed in the Show System screen (press **System, More, Show System**). Host ID is displayed on analyzers with firmware revision A.04.00 or later only.
3. If you do not need to save any stored files, proceed to the procedure “Outer Cover Removal.” Otherwise, continue with the next step.
4. Insert a DOS-formatted, 1.44 MB floppy disc into the analyzer floppy disc drive.

5. If the firmware revision is A.03.03 or earlier, press **File, File Manager, Copy**. Copy each file from the C: drive (flash) to the A: drive (floppy). This must be done one file at a time. It may be necessary to use two floppy discs.
6. If the firmware revision is A.04.00 or later, press **File, Copy**. Copy each file from the C: drive (flash) to the A: drive (floppy). This must be done one file at a time. It may be necessary to use two floppy discs.

### **Outer Cover and Rear Frame Removal**

1. Refer to Figure 1. Disconnect the spectrum analyzer from ac power (1).
2. Remove any adapters or cables (2) connected to the front frame.
3. Carefully place the analyzer on the work surface with the front frame (3) facing down.
4. Position the handle (4) as shown.
5. Remove the four screws (5) that hold the rear frame and outer case in place.
6. Remove the rear frame (6).
7. Pull the outer cover (7) off towards the rear of the instrument.

**Figure 1. Outer Cover and Rear Frame Removal**

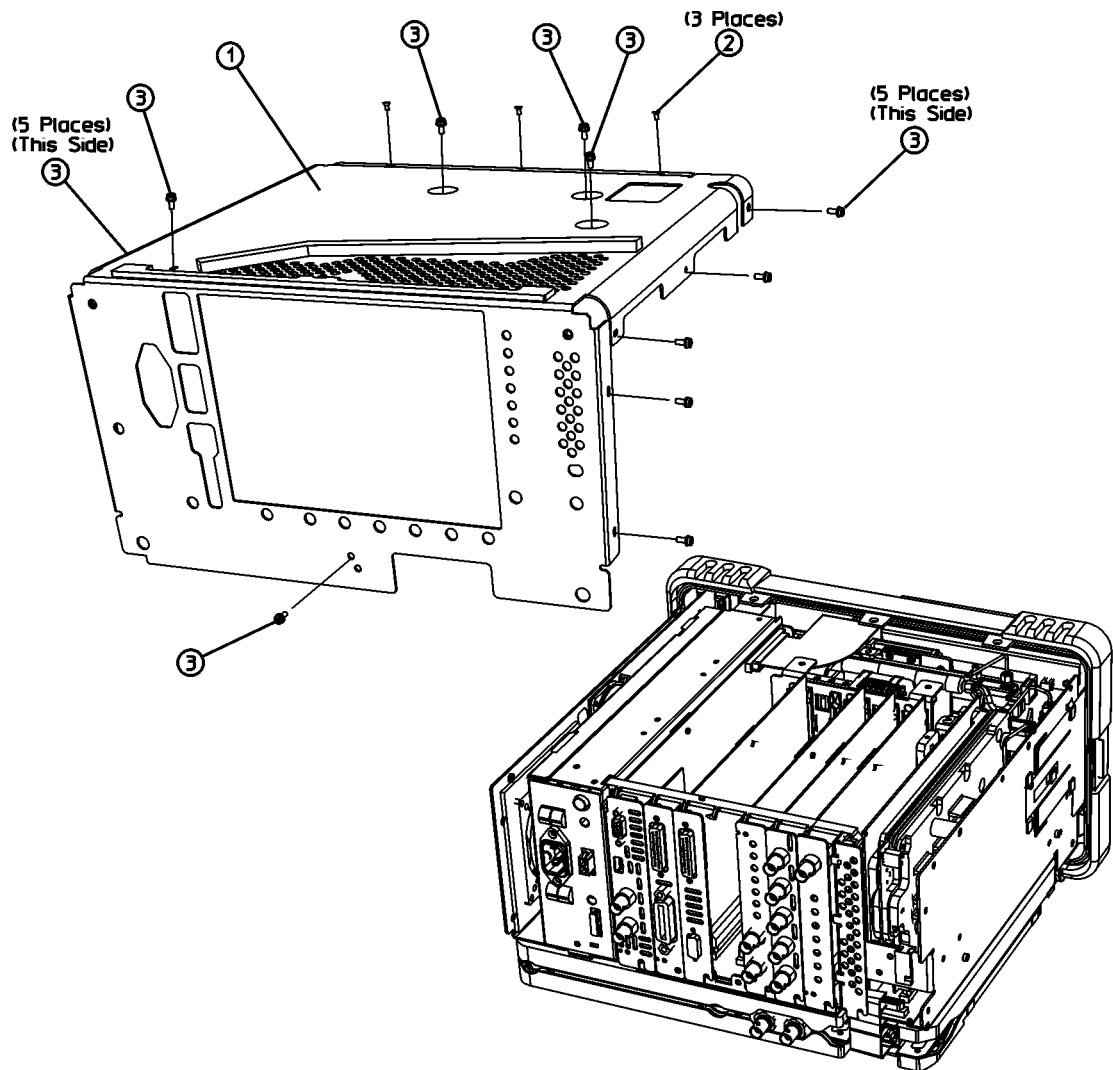


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## Inner Shield Removal

1. Lay the instrument flat as shown in Figure 2.
2. Remove the 15 screws (2) and (3) attaching the inner shield to the chassis. Note that the number of screws attaching the inner shield may vary with option mixes.
3. Remove the inner shield (1) from the chassis.

**Figure 2. Inner Shield Removal**



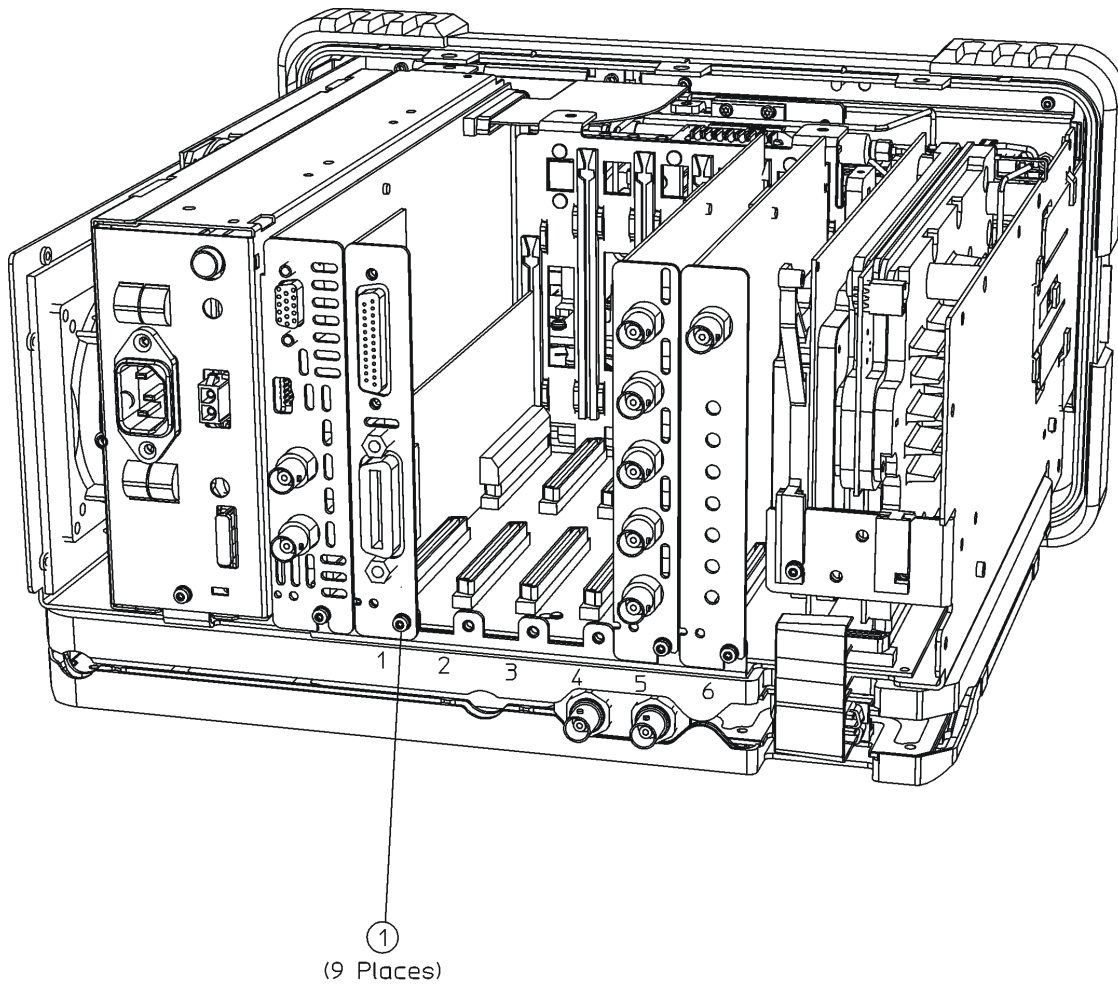
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## Installing the Option

1. Refer to Figure 3. Loosen, but do not remove, all 9 of the screws (1) securing the boards and blank plates at the rear of the chassis.

**Figure 3. Instrument, Rear View**



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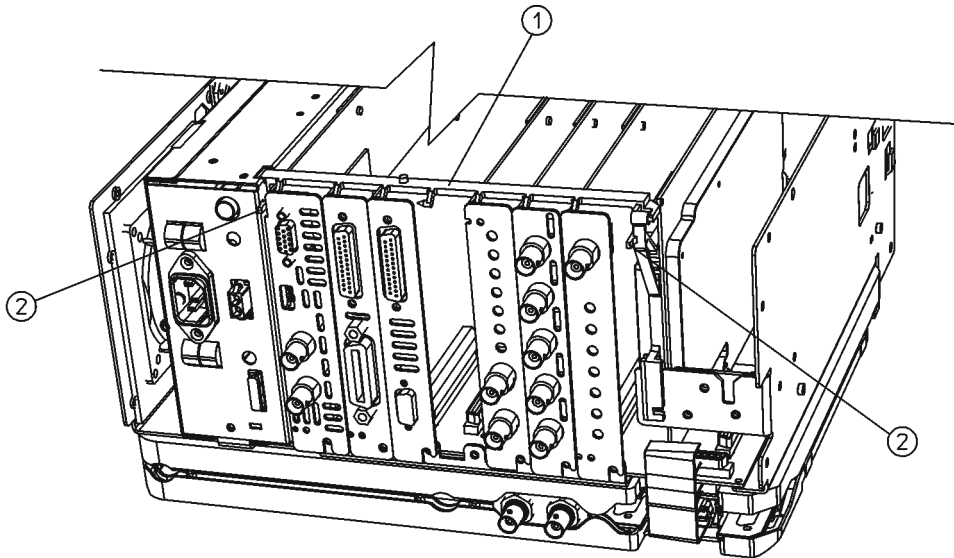
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**CAUTION** The vibration support bar can easily be broken if it is forced. Remove it with care.

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2. Refer to Figure 4. Remove the vibration support bar (1) at the top rear of the instrument by pressing in the locking tabs (2) and rotating the bar upward. The bar can be removed by sliding it out of the holes in each assembly.

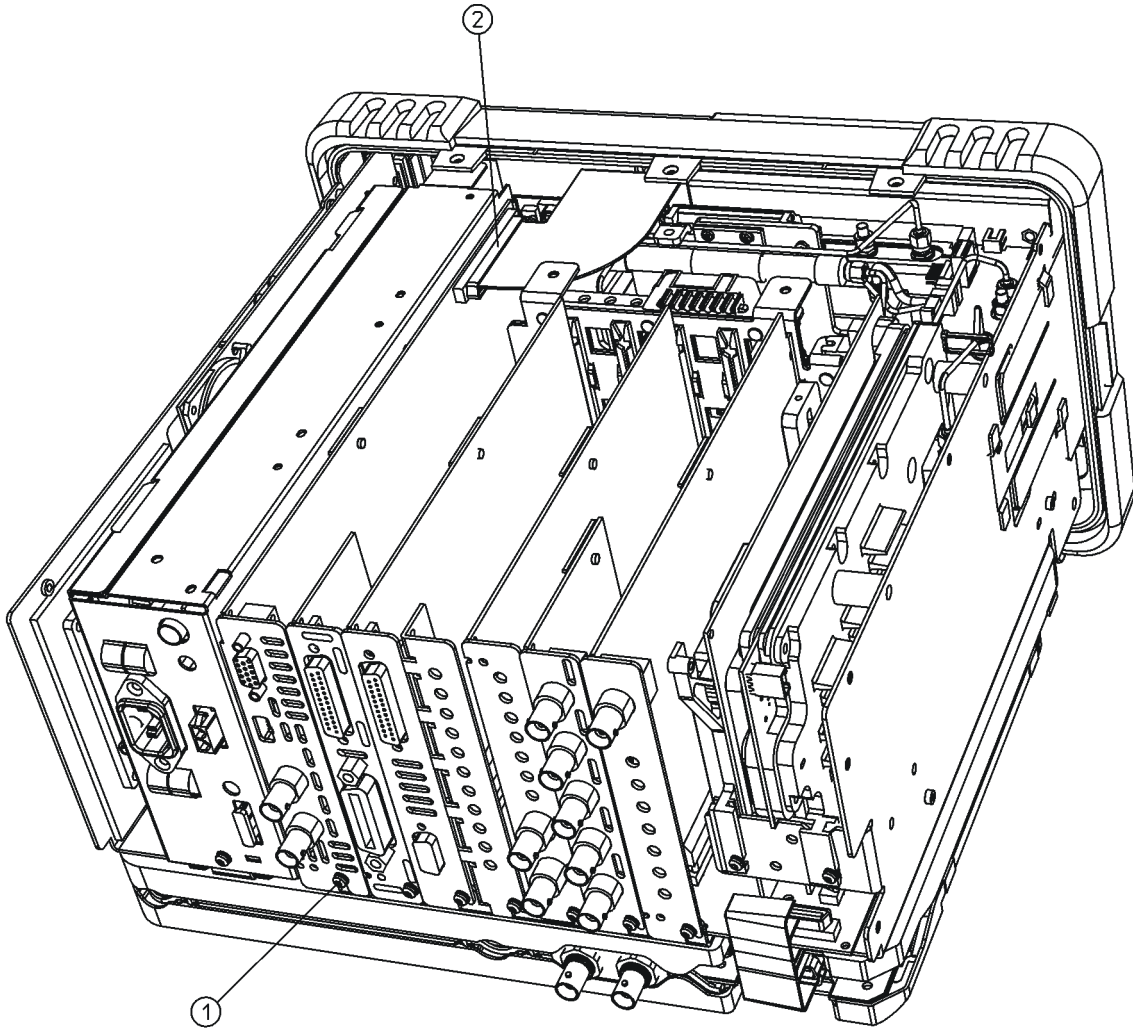
**Figure 4. Removing the Vibration Support**



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3. Refer to Figure 5. Remove the single screw (1) securing the A4 processor assembly to the chassis.
4. Disconnect the front panel ribbon cable (2) from the processor assembly.
5. Carefully lift the processor assembly to remove it from the motherboard connector.

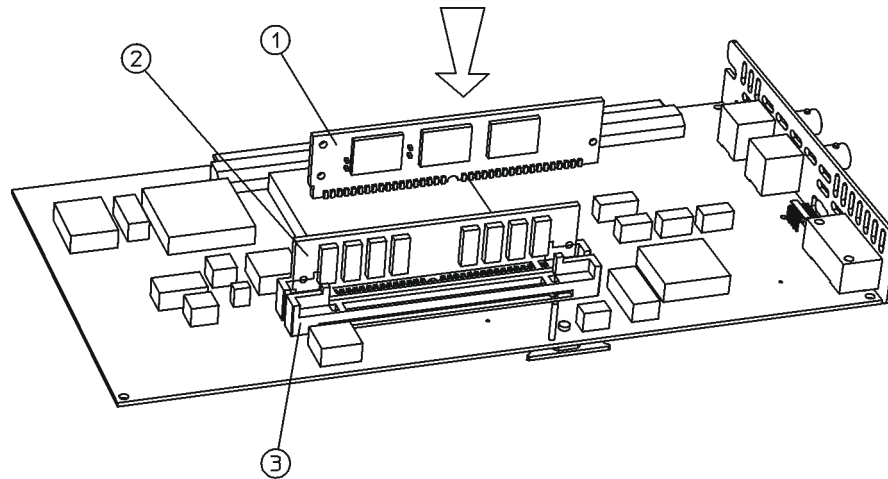
**Figure 5. Locating and Removing the A4 Processor Board**



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6. Refer to Figure 6. Carefully remove the A4A1 4 MB flash SIMM (1) card on the A4 board assembly. This card is shown elevated above its connector (3) in the figure.
7. Install the new A4A1 12MB Flash SIMM card in the (upper) connector (3).
8. Carefully remove the A4A2 16MB DRAM SIMM card (2) on the A4 board assembly.
9. Install the new A4A2 32MB DRAM SIMM in the (lower) connector.
10. Replace the A4 processor assembly into the motherboard by reversing the procedure used to remove the assembly. Re-install the vibration support and instrument covers.

**Figure 6. Replace Flash SIMMs and DRAM SIMMs**



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## Reassembly

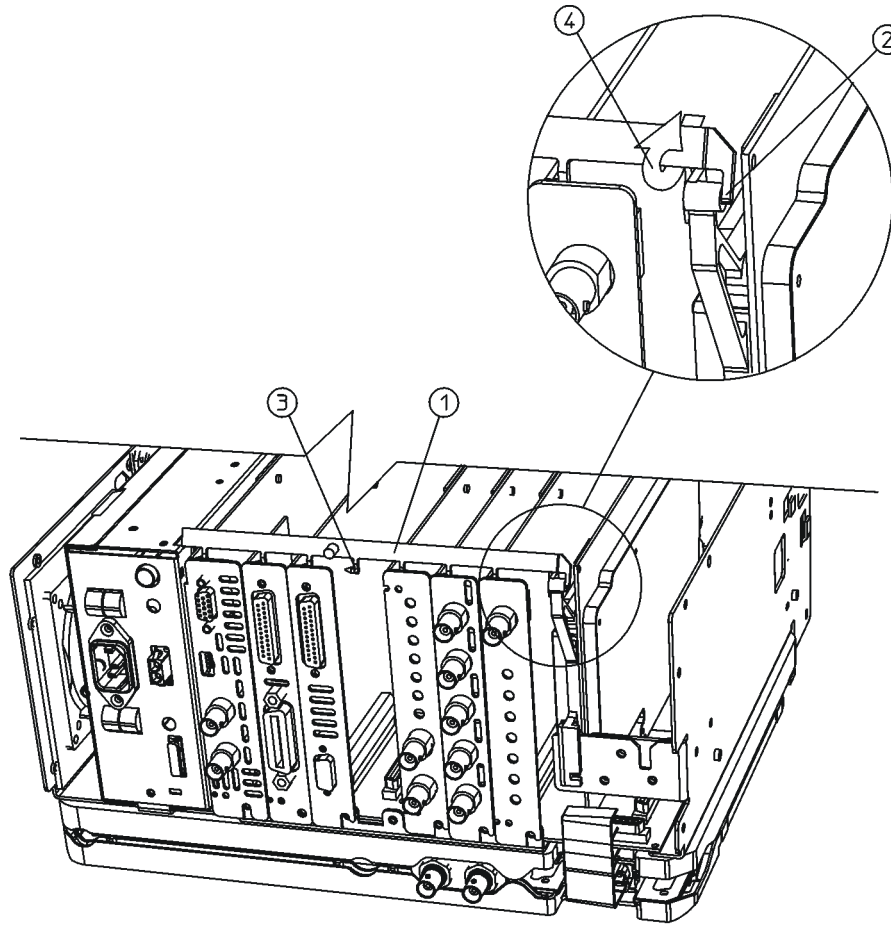
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**CAUTION** The vibration support bar can easily be broken if it is forced. Install it with care.

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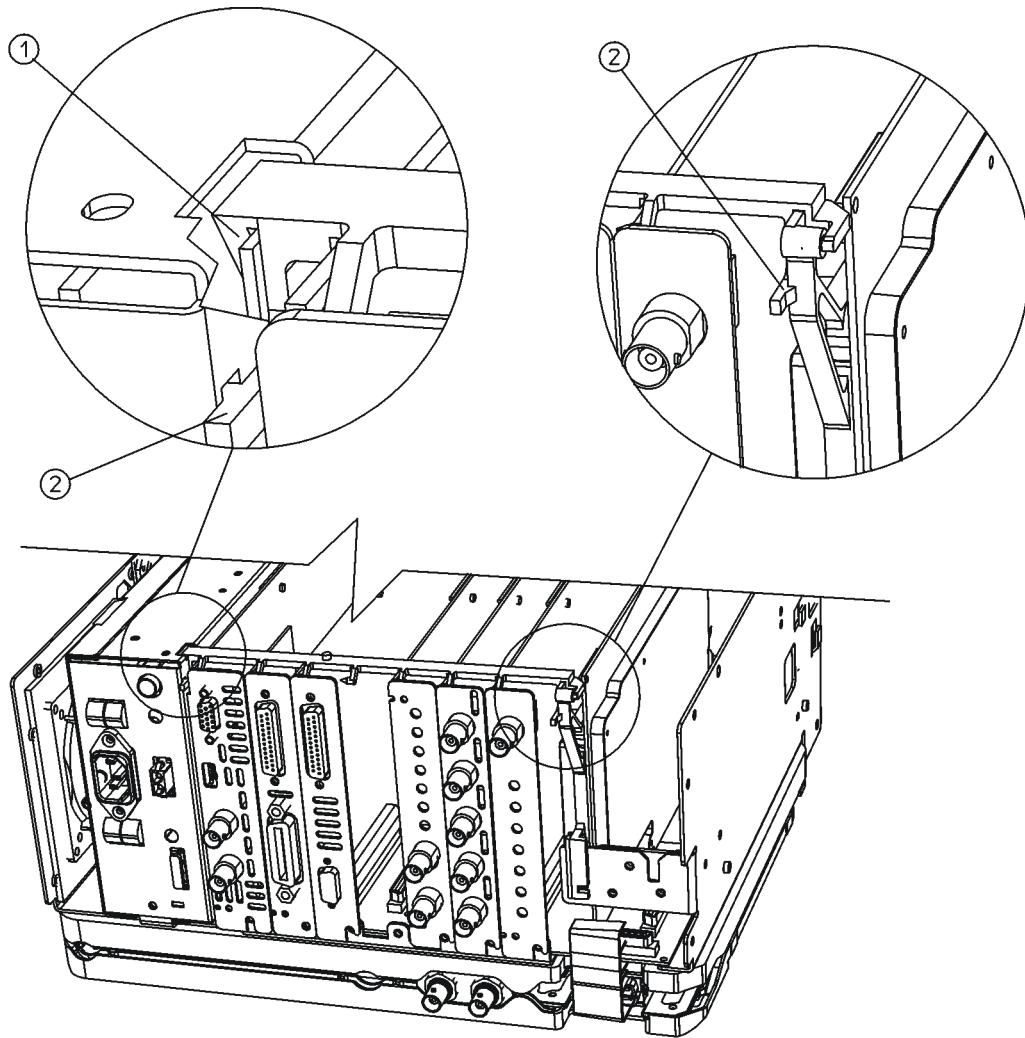
1. Refer to Figure 7. Replace the vibration support bar (1) as follows:
  - a. Position the vibration support bar (1) as shown and insert the hook (2) into the support arm of the IF.
  - b. Engage each hook (3) of the other assemblies or blanks in turn.
  - c. As you position each of the assemblies or blanks, rotate the support bar (4) to lock each one in place.
  - d. Refer to Figure 8. Make sure that the tab (1) is positioned in the slot of the power supply chassis and the vibration bar is fully seated and locked into position (2).

**Figure 7. Installing the Vibration Support Bar**



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**Figure 8. Seating the Vibration Support Bar**



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2. Tighten all the screws that were loosened in the removal procedure to 9 inch-pounds.
3. Refer to Figure 2. Carefully position the inner shield (1) on the instrument.
4. Replace the screws (2) and (3), and tighten them to 9 inch-pounds.
5. Carefully place the spectrum analyzer on the work surface with the front frame facing down as shown in Figure 1.
6. Replace the instrument outer cover aligning the grill on the side of the case to the fan on the A5 power supply assembly.
7. Fit the leading edge of the case completely into the slot on the back of the front frame assembly.
8. Replace the rear frame assembly (6) using the four screws (5) to fasten the rear frame to the instrument. Tighten the screws to 21 inch-pounds torque.

## Installing the Firmware

1. Connect an ac power cable to the rear of the analyzer.
2. Open the Firmware Upgrade Kit.
3. Locate the ESALOADR disc from the Firmware Upgrade Kit. Insert the ESALOADR disc into the analyzer floppy disc drive.
4. Turn the analyzer power on. After approximately one minute, the ESALOADR program will automatically load and prompt you through the remainder of the firmware installation process. Refer to the Firmware Upgrade Kit installation note for more details.
5. Be sure to perform a full alignment after the firmware and power suite is installed. If the alignment has not been done, proceed as follows:
  - a. If the analyzer model is an E4402B, E4403B, E4404B, E4405B, E4407B, or E4408B connect a BNC cable from the AMPTD REF OUT to INPUT 50Ω.
  - b. Press **System, Alignments, Align Now, All**. The alignment will take approximately five minutes.

## Restoring Saved Files and Personalities

1. Re-install any personalities loaded previously according to the instructions for that personality.
2. Enter the license keywords for any licensed personalities according to the instructions for that personality.
3. If files were backed-up on floppy disc, insert the floppy disc(s) into the floppy disc drive. Copy all files from the A: drive to the C: drive.

## Post-Upgrade Verification

1. Refer to the *Agilent ESA Spectrum Analyzer Calibration Guide* and perform the following performance verification tests:
  - Displayed Average Noise Level
  - Residual Responses
2. The memory expansion upgrade is now complete.