

# Installation Note

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## **Agilent Technologies ESA-E Series Spectrum Analyzers RF Preamplifier (Option 1DS) Retrofit Kit**



**Agilent Technologies**

Part Number E4401-90384 Supersedes: E4401-90208

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## RF Preamplifier (Option 1DS)

Products Affected: .....	ESA E4401B ESA E4402B ESA E4404B ESA E4405B ESA E4407B
Serial Numbers: .....	US00000000/US99999999
Options: .....	1DS
To Be Performed By: .....	(X) Agilent Service Center (X) Personnel Qualified by Agilent (X) Customer
Estimated Installation Time: .....	2.0 Hours

### Introduction

This kit contains the parts and instructions to install Option 1DS. No tools are required.

### Installation Kit Parts List

Item	Description	Part Number
1	RF Preamplifier Installation Note	this note
2	License Key Certificate	5964-5136 <sup>a</sup>
3	Letter	5964-5139 <sup>a</sup>

- a. This part cannot be ordered. The part number is given only to identify the item in this kit.

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**NOTE** After the RF preamplifier has been activated, you must adjust the frequency response of the preamplifier path. ESA Adjustment Software is required to perform this adjustment, but is not included in this kit. The Performance Verification and Adjustment Software may be obtained by ordering the Service documentation and Software (Option 0BW).

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## Procedure

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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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### Firmware Revision Verification

1. Turn on the analyzer and wait for the power-on alignments to complete. Check that there are no error messages displayed.
2. Press **System, More, Show System**. Make a note of the firmware revision and see if Option B72, Expansion Memory, is listed on the display.
3. If the firmware revision is A.04.00 or later, the firmware does not need to be upgraded and you can skip steps 4 through 6.
4. If your firmware revision is prior to A.04.00, you must upgrade your analyzer firmware before the license key can be activated.
5. If Option B72, Expansion Memory is installed, you should upgrade the instrument firmware to the latest version using one of the following methods:
  - Download the instrument firmware via the world-wide web at [http://www.agilent.com/find/esa\\_firmware](http://www.agilent.com/find/esa_firmware). This entire process of upgrading firmware will take approximately 45 minutes.  
**Note:** If you are upgrading an EMC analyzer, look for the link stating “*EMC Firmware*” at this website.
  - Receive the latest firmware upgrade disk set by ordering upgrade Option UE2.  
**Note:** Special instructions in the Agilent ordering configurator should have made you aware of Option UE2 in case access to the internet wasn’t available.
6. If Option B72, Expansion Memory is not installed, you should upgrade the instrument firmware to version A.07.05. This is the latest version for instruments that do not have Option B72 installed.
  - Download the instrument firmware via the world-wide web at [http://www.agilent.com/find/esa\\_firmware](http://www.agilent.com/find/esa_firmware). Look for the link stating “*ESA Firmware Version A.07.05*”. This entire process of upgrading firmware will take approximately 45 minutes.
  - Order upgrade Option B72, which includes the expansion memory and the latest ESA firmware upgrade disk set.

## Activate the Option 1DS License Key

The license key supplied in this kit allows you to activate the RF Preamplifier (Option 1DS).

1. Press **System, More, More, Licensing, Option**. When you press **Option**, the alpha editor will be activated. For instructions on using the alpha editor, refer to the *Agilent Technologies ESA Spectrum Analyzers User's Guide*.
2. Use the alpha editor to enter the three-character designation for the option, in this case, "1DS", that you want to activate.
3. Press **Enter** when done.
4. Press **License Key**. When you press **License Key** the alpha editor will be activated.
5. Use the alpha editor and the numeric keypad to enter the 12-character license key number (for example: D7C374DABD5B) for the option that you want to activate.
6. Press **Enter** when done.
7. Press **Activate** to turn on the option.
8. If the option and license key entries were correct, a message stating "Option Activated" will appear on the analyzer display.

## Adjust the RF Preamplifier

1. Use the Adjustment Software (not supplied) to perform the Frequency Response adjustment. Obtain the software by ordering either the Service Documentation Option (0BW), or the N2717A Performance Verification and Adjustment Software.

## Functional Testing

1. Press **System, More, Show System** to verify existence of Option 1DS.
2. Press **Preset, FREQUENCY/Channel, Stop Freq, 1 GHz, AMPLITUDE/Y Scale, Int Preamp (On)**. Verify that the preamplifier can be set to On.
3. To test the functionality and performance of this option, execute the following performance verification tests located in the *Agilent Technologies ESA Spectrum Analyzers Calibration Guide*.
  - "Frequency Response"
  - "Frequency Response (Preamp On)"
  - "Displayed Average Noise Level"
4. If you have problems performing any of these tests, contact the nearest Agilent Technologies sales and service office listed in the troubleshooting chapter of the *Agilent Technologies ESA Spectrum Analyzers User's Guide*.