

Installation Note

Source Attenuator Upgrade Kit

For PNA Series RF Network Analyzers (E8801A, E8802A, E8803A, N3381A, N3382A, and N3383A)

Network Analyzer Model Number	Upgrade Kit Part Number
E8801A, E8802A, E8803A N3381A, N3382A, N3383A	E8801-60104



Agilent Technologies

Agilent Part Number: E8801-90023

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About the Upgrade Kit

Products affected.	E8801A, E8802A, and E8803A; all options N3381A, N3382A, and N3383A; all options
Installation to be performed by	Agilent service center, personnel qualified by Agilent, or customer
Estimated installation time	30 minutes
Estimated verification time	5 minutes

If you need assistance, refer to [“Getting Assistance from Agilent” on page 5](#).

Description of Option 1E1

An Option 1E1 analyzer is equipped with a 0 to 70 dB step attenuator in the source path.

This allows the source output power to the DUT to be attenuated from 0 to 70 dB, in 10 dB steps, without changing the level of the incident power in the reference path.

Items Included in the Upgrade Kit

Table 1 lists the parts included in this upgrade kit, Agilent part number E8801-60104. Check the contents of your kit against this list. If any item is missing or damaged, contact Agilent Technologies. Refer to [“Getting Assistance from Agilent” on page 5](#).

Table 1 Contents of Option 1E1 Upgrade Kit (E8801-60104)

Ref Des	Description	Qty	Part Number
	Installation note (this document)	1	E8801-90023
A27	Step attenuator, 0 to 70 dB in 10 dB steps	1	33321-60056
	Attenuator bracket	1	N3381-00001
	Machine screw, for mounting attenuator and bracket	3	0515-0372
	Ribbon cable, attenuator control	1	8120-5537
W41	RF cable, A12 source assembly to A27 step attenuator (all models)	1	N3381-20001
W42	RF cable, A27 step attenuator to A22 RF switch (E8801A, E8802A, E8803A)	1	E8801-20026
	RF cable, A27 step attenuator to A22 RF switch (N3381A, N3382A, N3383A)	1	N3381-20002

Getting Assistance from Agilent

By internet, phone, or fax, get assistance with all your test and measurement needs.

Table 2 Contacting Agilent

Online assistance: www.agilent.com/find/assist		
United States (tel) 1 800 452 4844	Latin America (tel) (305) 269 7500 (fax) (305) 269 7599	Canada (tel) 1 877 894 4414 (fax) (905) 282-6495
Europe (tel) (+31) 20 547 2323 (fax) (+31) 20 547 2390	Australia (tel) 1 800 629 485 (fax) (+61) 3 9210 5947	New Zealand (tel) 0 800 738 378 (fax) (+64) 4 495 8950
Japan (tel) (+81) 426 56 7832 (fax) (+81) 426 56 7840	Singapore (tel) 1 800 375 8100 (fax) (65) 836 0252	Malaysia (tel) 1 800 828 848 (fax) 1 800 801 664
India (tel) 1 600 11 2929 (fax) 000 800 650 1101	Hong Kong (tel) 800 930 871 (fax) (852) 2506 9233	Taiwan (tel) 0800 047 866 (fax) (886) 2 25456723
Philippines (tel) (632) 8426802 (tel) (PLDT subscriber only) 1 800 16510170 (fax) (632) 8426809 (fax) (PLDT subscriber only) 1 800 16510288	Thailand (tel) (outside Bangkok) (088) 226 008 (tel) (within Bangkok) (662) 661 3999 (fax) (66) 1 661 3714	People's Republic of China (tel) (preferred) 800 810 0189 (tel) (alternate) 10800 650 0021 (fax) 10800 650 0121

Installation Procedure for the Upgrade Kit

The network analyzer must be in proper working condition prior to installing this option. Any necessary repairs must be made before proceeding with this installation.

WARNING	This installation requires the removal of the analyzer's protective outer covers. The analyzer must be powered down and disconnected from the mains supply before performing this procedure.
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Electrostatic Discharge Protection

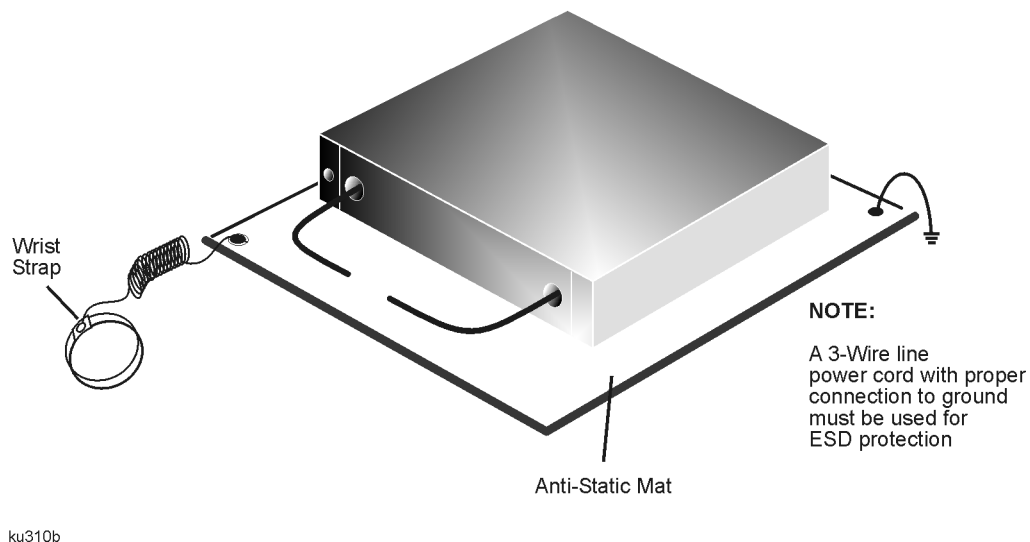
Protection against electrostatic discharge (ESD) is essential while removing or connecting cables or assemblies within the network analyzer.

Static electricity can build up on your body and can easily damage sensitive internal circuit elements when discharged. Static discharges too small to be felt can cause permanent damage. To prevent damage to the instrument:

- *always* wear a grounded wrist strap having a 1 M Ω resistor in series with it when handling components and assemblies.
- *always* use a grounded, conductive table mat while working on the instrument.
- *always* wear a heel strap when working in an area with a conductive floor. If you are uncertain about the conductivity of your floor, wear a heel strap.

Figure 1 shows a typical ESD protection setup using a grounded mat and wrist strap. Refer to “Tools and Equipment Required for the Installation” on page 7 for part numbers.

Figure 1 ESD Protection Setup



Overview of the Installation Procedure

The following steps comprise the installation of the Option 1E1 upgrade kit.

1. Remove the outer and inner covers.
2. Remove the standard instrument cable.
3. Install the Option 1E1 step attenuator and cables.
4. Reinstall the inner and outer covers.
5. Enable Option 1E1.
6. Verify that Option 1E1 is enabled.

Tools and Equipment Required for the Installation

Description	Qty	Part Number
T-10 TORX driver (set to 9 in-lbs)	1	N/A
T-20 TORX driver (set to 21 in-lbs)	1	N/A
5/16 in torque wrench (set to 10 in-lbs)	1	N/A
ESD grounding wrist strap	1	9300-1367
5 ft grounding cord for wrist strap	1	9300-0980
2 x 4 ft conductive table mat and 15 ft grounding wire	1	9300-0797
ESD heel strap (for use with conductive floors)	1	9300-1308

CAUTION	Use a 5/16 in torque wrench (set to 10 in-lbs) on all SMA cable connections.
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Step 1. Remove the Outer and Inner Covers

Refer to [Figure 2](#) for this procedure.

Remove the Outer Cover

CAUTION	This procedure is best performed with the analyzer resting on its front handles in the vertical position. <i>Do not place the analyzer on its front panel without the handles.</i> This will damage the front panel assemblies.
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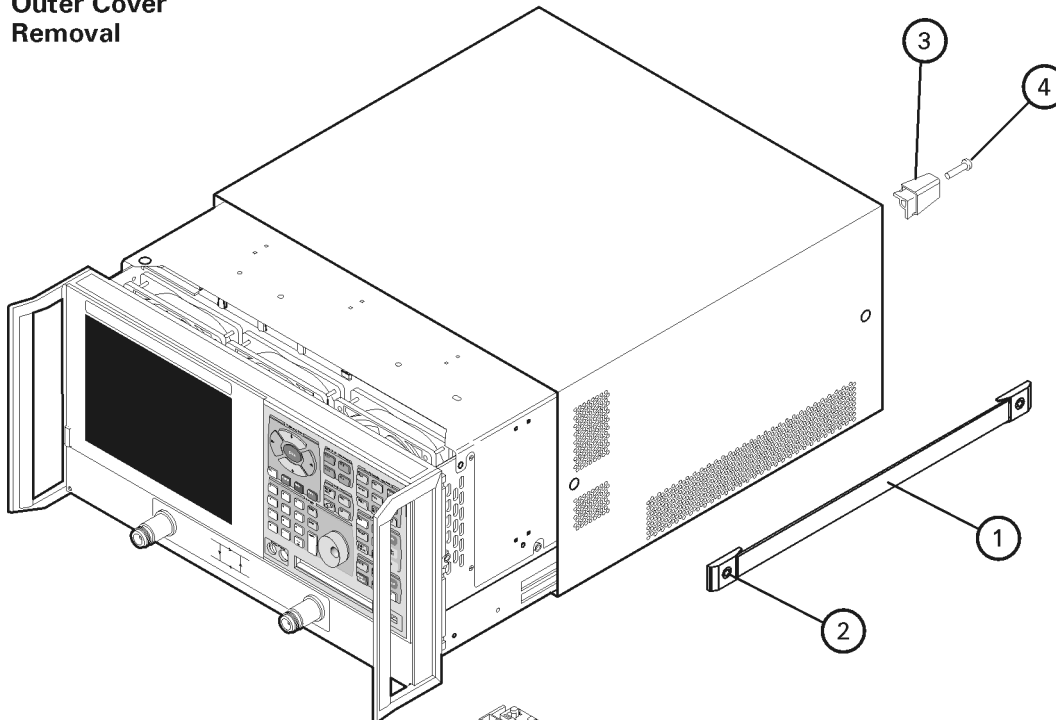
1. Disconnect the power cord (if it has not already been disconnected).
2. With a T-20 TORX driver, remove the strap handles (item ①) by loosening the screws (item ②) on both ends until the handle is free of the analyzer.
3. With a T-20 TORX driver, remove the four rear panel feet (item ③) by removing the center screws (item ④).
4. Slide the four bottom feet (item ⑤) off the cover.
5. Slide the cover off of the frame.

Remove the Inner Cover

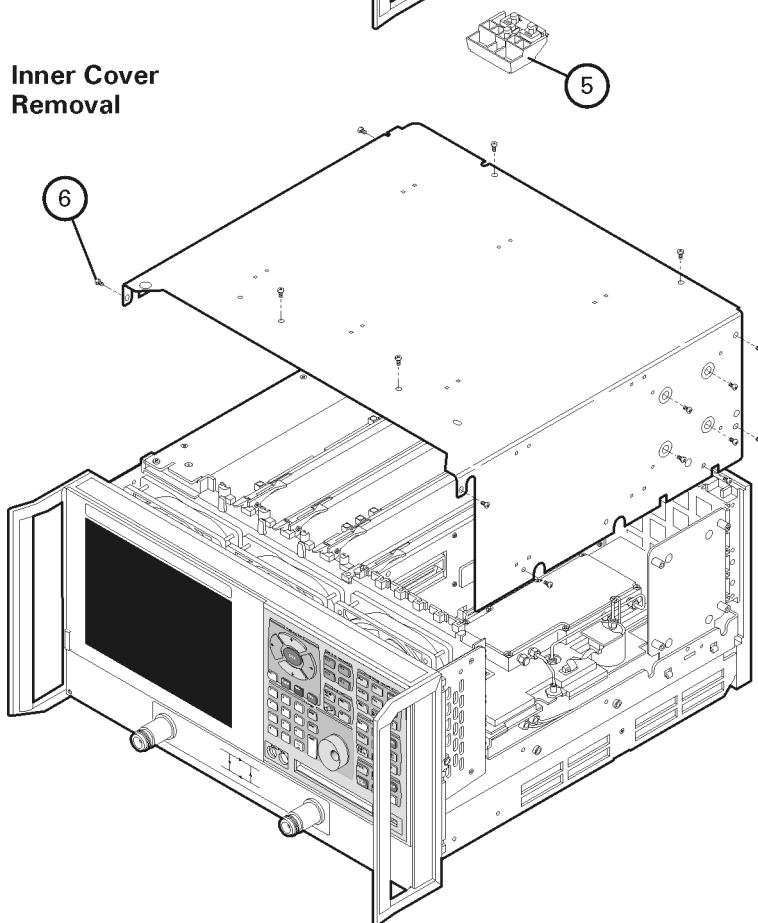
1. With a T-10 TORX driver, remove the 15 screws (item ⑥).
2. Lift off the cover.

Figure 2 Outer and Inner Cover Removal

**Outer Cover
Removal**



**Inner Cover
Removal**



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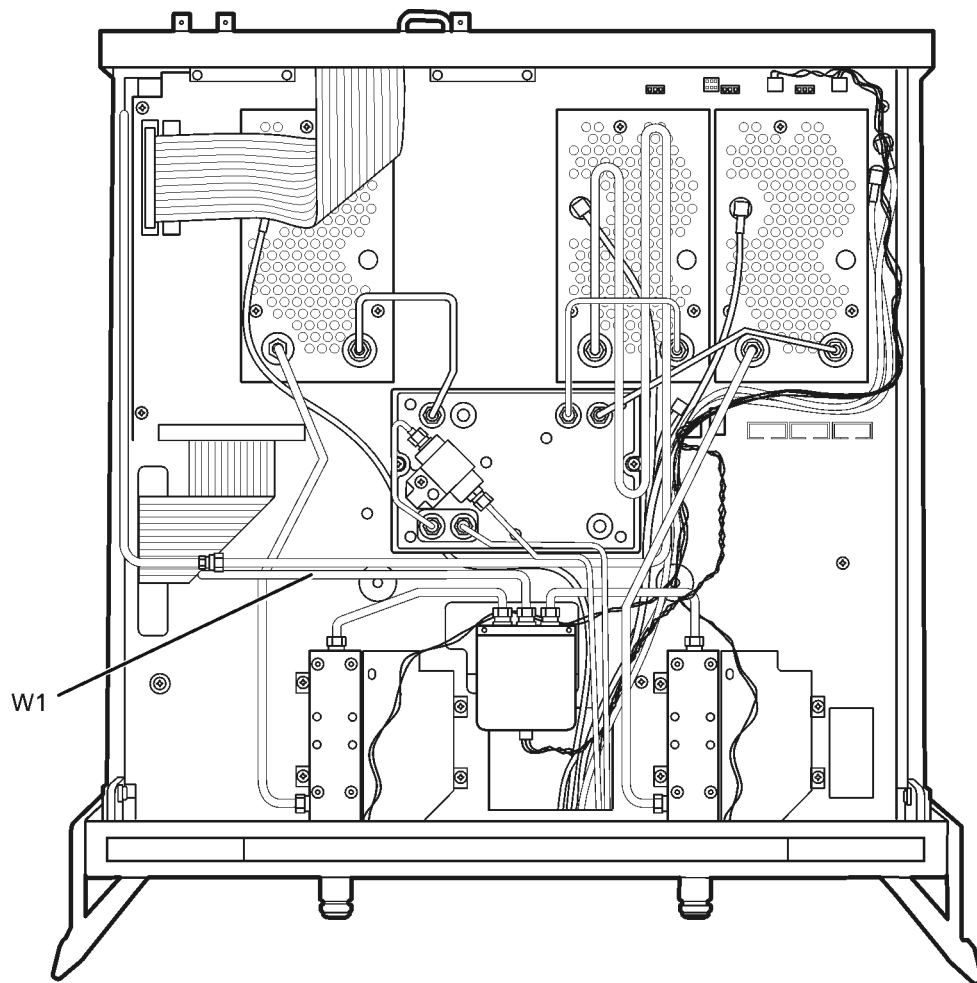
Step 2. Remove the Standard Instrument Cable

CAUTION Use a 5/16 in torque wrench (set to 10 in-lbs) on all SMA cable connections.

Refer to [Figure 3](#) or [Figure 4](#), as appropriate, for this procedure.

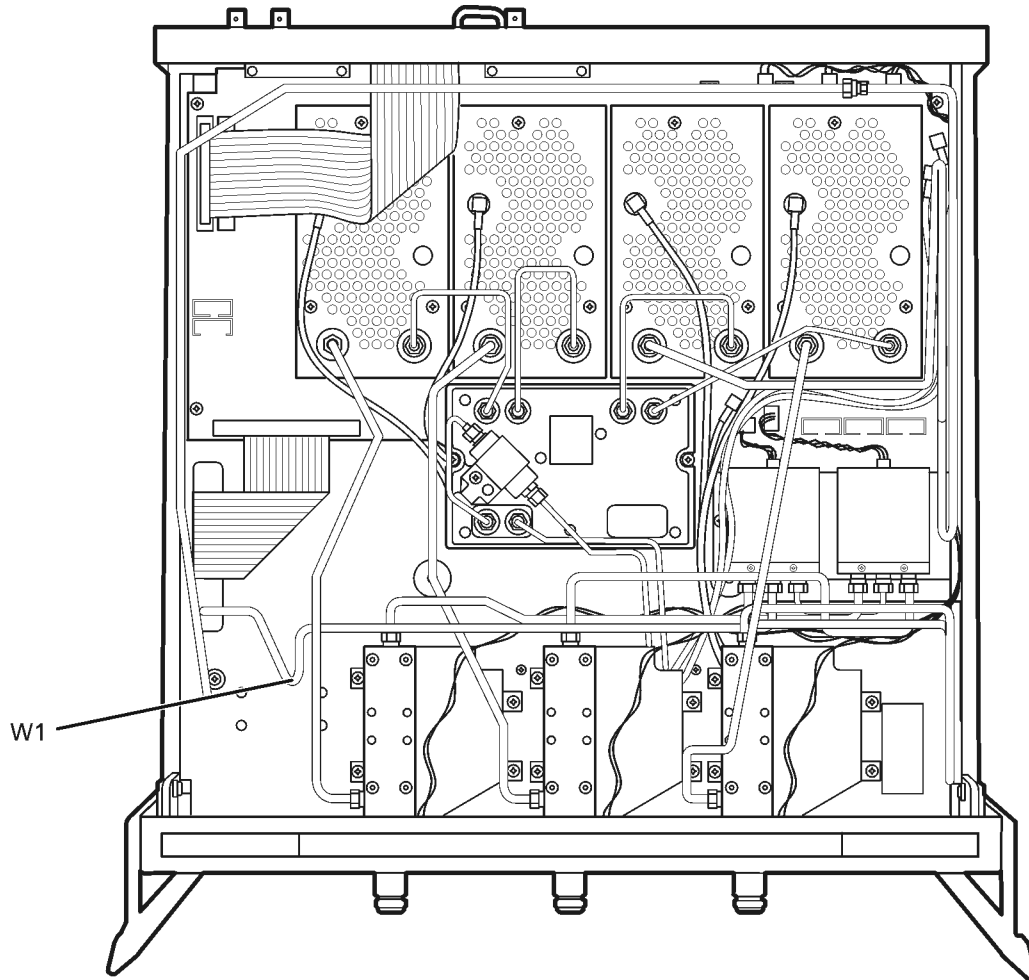
1. Remove and discard cable W1. One end of this cable is connected to the A12 source assembly that is located on the top of the analyzer. The other end is connected to the A22 RF switch located on the bottom of the analyzer.

Figure 3 Standard Cable Removal (E8801A, E8802A, E8803A)



dt402o

Figure 4 Standard Cable Removal (N3381A, N3382A, N3383A)



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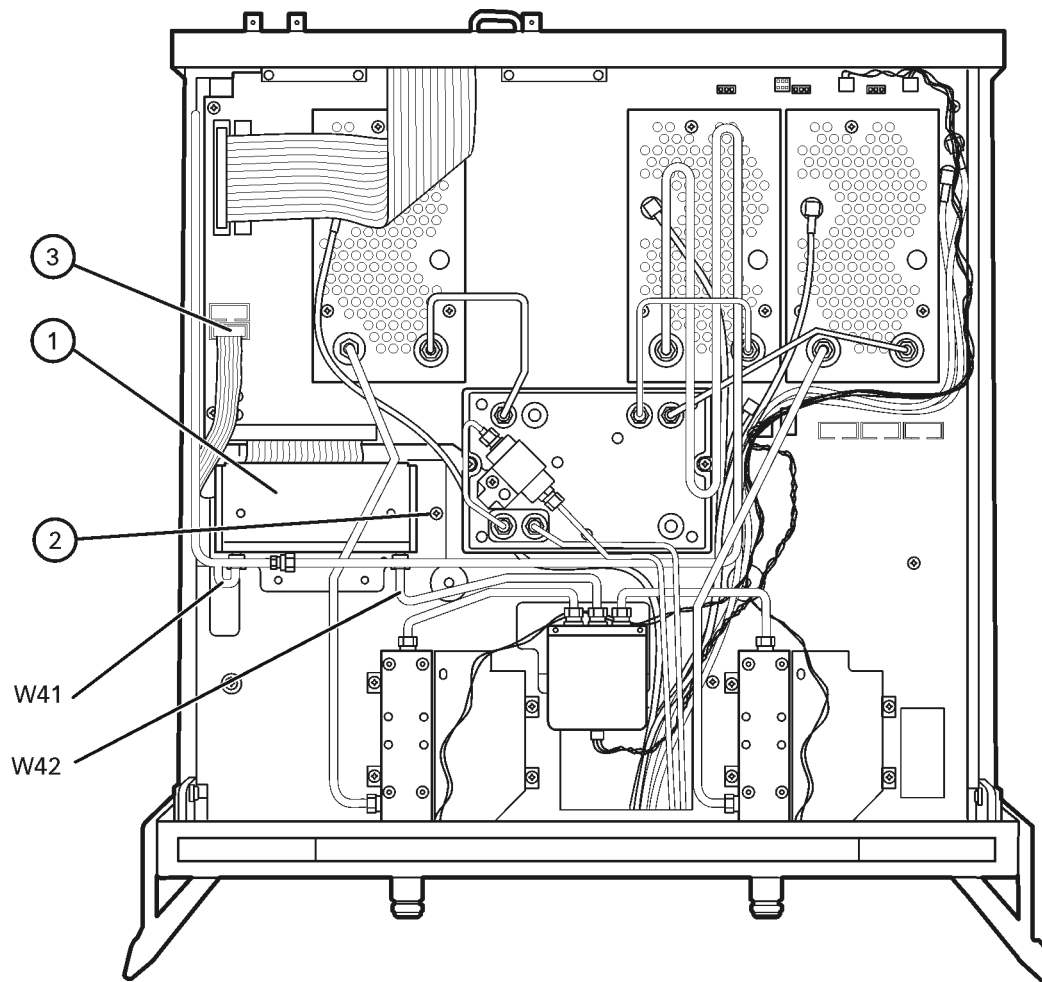
Step 3. Install the Option 1E1 Step Attenuator and Cables

CAUTION Use a 5/16 in torque wrench (set to 10 in-lbs) on all SMA cable connections.

Refer to [Figure 5](#) or [Figure 6](#), as appropriate, for this procedure. Refer to [Table 1 on page 4](#) for a listing of the parts needed.

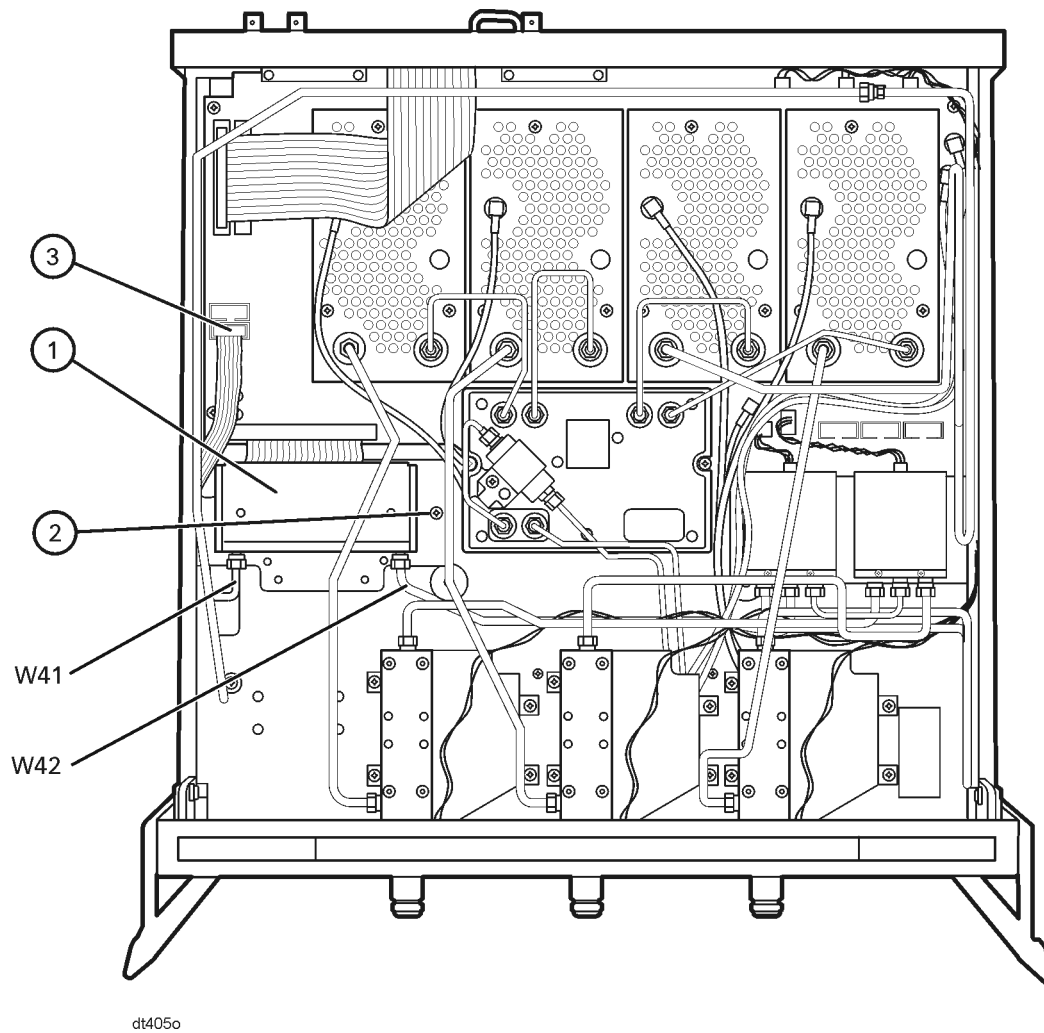
1. Install the step attenuator (item ①) onto the attenuator bracket using the two screws provided.
2. Install the bracket, with the attenuator connected, in the location shown using the screw (item ②) provided.
3. Connect the attenuator control cable (item ③) between the attenuator and the A16 motherboard connector shown in [Figure 5](#).
4. Install W41 between the A12 source assembly and the attenuator input.
5. Install W42 between the attenuator output and the A22 RF switch.

Figure 5 Option 1E1 Step Attenuator Installation (E8801A, E8802A, E8803A)



dt404o

Figure 6 Option 1E1 Step Attenuator Installation (N3381A, N3382A, N3383A)



Step 4. Reinstall the Inner and Outer Covers

Refer to [Figure 7](#) for this procedure.

Reinstall the Inner Cover

1. Place the inner cover on the analyzer. There are two alignment pins on the front frame that must be aligned with holes in the cover.
2. With a T-10 TORX driver, install the 15 screws (item ①).

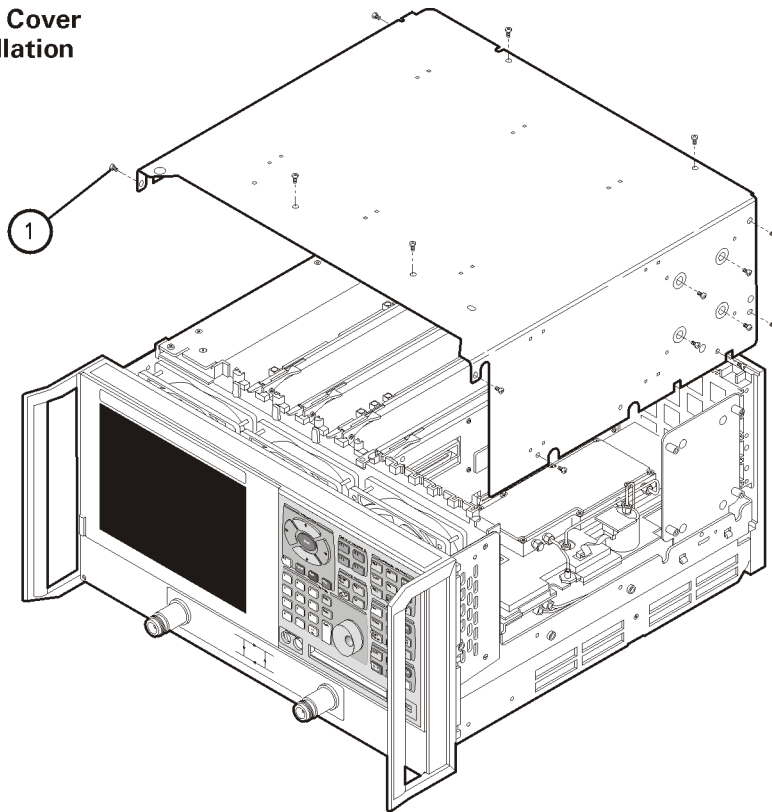
Reinstall the Outer Cover

CAUTION	This procedure is best performed with the analyzer resting on its front handles in the vertical position. <i>Do not place the analyzer on its front panel without the handles.</i> This will damage the front panel assemblies.
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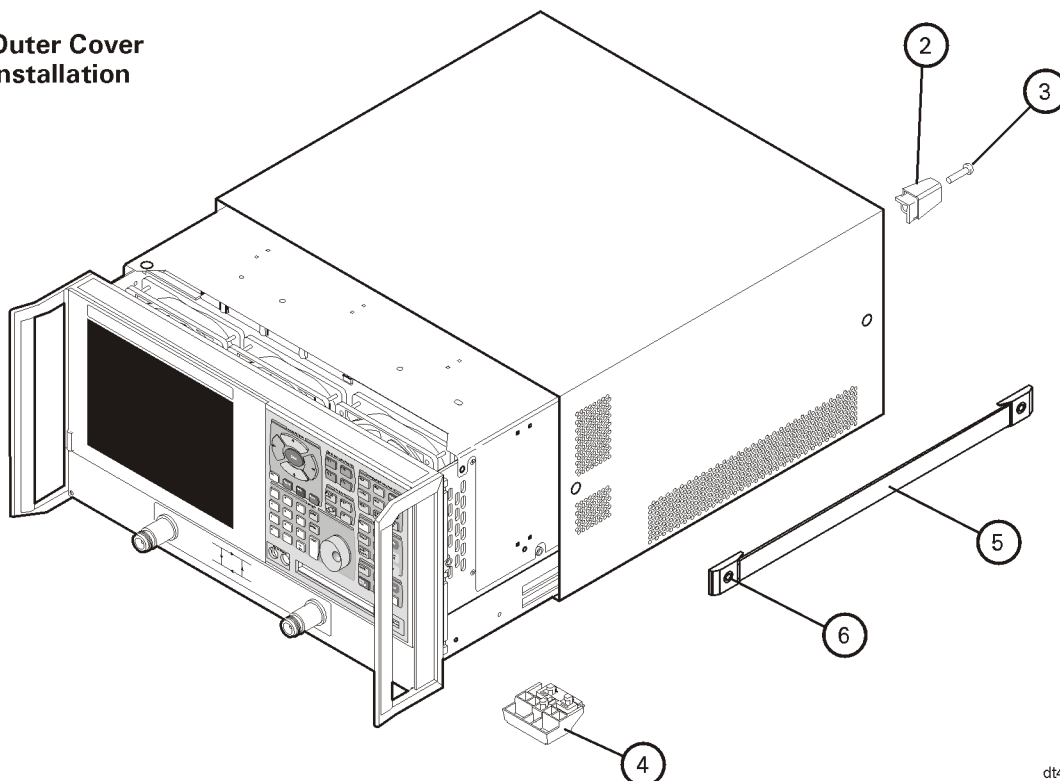
1. Slide the cover onto the frame.
2. With a T-20 TORX driver, install the four rear panel feet (item ②) by installing the center screws (item ③).
3. Slide the four bottom feet (item ④) onto the cover.
4. With a T-20 TORX driver, install the strap handles (item ⑤) by tightening the screws (item ⑥) on both ends.

Figure 7 Inner and Outer Cover Reinstallation

Inner Cover
installation



Outer Cover
Installation



dt413o

Step 5. Enable Option 1E1

Procedure Requirements

- The analyzer must be powered up and operating to perform this procedure.
- The Network Analyzer program must be running.
- A mouse is recommended for this procedure but is not required.

Mouse Procedure

1. On the analyzer's **System** menu, point to **Service**, and then click **Option Enable**.
2. In the **Select Desired Option** list, click **1E1 - Source Attenuator**.
3. Click **Install**.
4. Click **Yes** in answer to the displayed question in the **Restart Analyzer?** box.
5. When the installation is complete, click **Exit**.

Front Panel Keys Procedure

1. In the **COMMAND** block, press **Menu/Dialog**.
2. In the **NAVIGATION** block, press the Right Tab and Arrows to move over to the **System** menu and down to the **Service** selection. Press the Right Tab to display the extended menu and the Arrows to select **Option Enable**. Press **Click**.
3. Tab to the **Select Desired Option** list, and press Arrows to select **1E1 - Source Attenuator**.
4. Tab to **Install**, and then press **Click**.
5. Click **Yes** in answer to the displayed question in the **Restart Analyzer?** box.
6. When the installation is complete, in the **COMMAND** block, press **OK** (or tab to **OK**, and then press **Click**).

Step 6. Verify that Option 1E1 Is Enabled

Procedure Requirements

- The analyzer must be powered up and operating to perform this procedure.
- The Network Analyzer program must be running.
- A mouse is recommended for this procedure but is not required.

Mouse Procedure

1. On the analyzer's **Help** menu, click **About Network Analyzer**.
2. Verify that "1E1" is listed after "Options:" in the display. Click **OK**.

NOTE	If Option 1E1 has not been enabled, perform step 5 again. If the option is still not enabled, contact Agilent Technologies. Refer to "Getting Assistance from Agilent" on page 5 .
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Front Panel Keys Procedure

1. In the **COMMAND** block, press **Menu/Dialog**.
2. In the **NAVIGATION** block, press the Right Tab and Arrows to move over to the **Help** menu, and down to the **About Network Analyzer** selection. Press **Click**.
3. Verify that "1E1" is listed after "Options:" in the display. In the **COMMAND** block, press **OK** (or Tab to **OK**, and then press **Click**).

NOTE	If Option 1E1 has not been enabled, perform step 5 again. If the option is still not enabled, contact Agilent Technologies. Refer to "Getting Assistance from Agilent" on page 5 .
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