

# Installation Note

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**Agilent E8257D/67D PSG Signal Generators**  
**Add Option UNX (Ultra-Low Phase Noise Performance)**  
**Kit Part Numbers: E8257DK-UNX and E8267DK-UNX**

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**NOTE** For the latest revision of this installation note, go to the following website:  
<http://www.agilent.com/find/psg>

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Part Number E8251-90309  
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E8251-90309

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## Add Option UNX (Ultra-Low Phase Noise Performance) Kit Part Numbers: E8257DK-UNX and E8267DK-UNX

Product Affected: .....	E8257D/67D
Serial Numbers: .....	All
Options: .....	
To Be Performed By: .....	(X) Agilent Technologies Service Center (X) Personnel Qualified by Agilent Technologies (X) Customer
Estimated Installation Time: .....	2.0 hours
Estimated Verification Time: .....	2.0 hours

### Introduction

This upgrade kit adds Option UNX (Ultra-Low Phase Noise Performance) to an E8257D (Analog) or E8267D (Vector) PSG Signal Generator. This kit applies to instruments that have either a standard reference assembly or Option UNR.

Installation includes the following major steps, starting on [page 5](#):

1. Check signal generator functionality.
2. Record A31 Motherboard version number.<sup>1</sup>
3. Check firmware version and upgrade if <C.04.23.
4. Remove the outer and inner signal generator covers.
5. Remove the A32 10 MHz Crystal Oscillator (for instruments with Option UNR).<sup>1</sup>
6. Install the A32 10 MHz Crystal Oscillator.
7. Replace the A31L400 (E8257D) or A31L44 (E8267D) (for instruments with motherboard versions less than A0101)<sup>1</sup>
8. Install W122 Cable and 50 Ohm termination.<sup>1</sup>
9. Connect W135 to W122.<sup>2</sup>
10. Install the A7 Reference assembly.<sup>1</sup>
11. Activate Option UNX
12. Verify proper installation of Option UNX.
13. Re-assemble the signal generator.
14. Verify signal generator calibration.

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1. For instruments with serial prefixes <US4805/MY4805.  
2. For instruments with serial prefixes ≥US4805/MY4805.

## Installation Kit Parts List

Item	Quantity	Description	Part Number
1	1	Installation Note	E8251-90309
2	2	Screw M3x0.5 8mm-LG	0515-0372
3	1	A32 10 MHz Crystal Oscillator	E8251-60409
4	1	A7 Reference Board (Option UNX) <sup>a</sup>	E8251-60348
5	2	Inductor 470nH +/- 2% <sup>a</sup>	9140-2044
6	3	Cable Tie <sup>a</sup>	1400-0249
7	1	Termination-coaxial 50 ohm <sup>a</sup>	1810-0118
8	1	Cable assy semi-rigid <sup>a</sup>	E8251-20384
9	1	Entitlement Certificate	n/a

a. For instruments with serial prefixes <US4805/MY4805.

### Tools Required

- TORX T-10 driver
- TORX T-15 driver
- TORX T-20 driver
- Needle-nose pliers

### Safety Considerations

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**WARNING** Before you disassemble the signal generator, turn the power switch off and unplug the power cord. Failure to unplug the signal generator 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.

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## Check Signal Generator Functionality

Use the following procedure to confirm that the signal generator powers up and the internal check identifies no errors. The internal check evaluates the operation of the signal generator and returns an error message if it detects a problem.

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**NOTE** When the signal generator is first connected to ac line power, the error message ERROR 514, Reference Oven Cold occurs, which causes both the OVEN COLD annunciator and the ERR annunciator to turn on.

After approximately five minutes, the OVEN COLD annunciator automatically clears, but the ERR annunciator remains on until all errors are cleared from the error queue.

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1. Turn on the signal generator and let it warm up for at least five minutes.
2. Run the signal generator self-test by pressing **Utility > Instrument Info/Help Mode > Self Test > Run Complete Self Test**. Upon completion, a summary of the self-test will be displayed. Use the E8257D/67D PSG Service Guide, E8251-90359, to troubleshoot any failures detected by the test.

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**NOTE** Some circuits may require up to 50 minutes to warm up before passing the self-test. If self-tests continue to fail after 50 minutes of warm up, troubleshoot the instrument.

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3. Check to see if the ERR annunciator is on.
  - If the ERR annunciator is on, review the error messages in the error queue by pressing **Utility > Error Info**. The first page of error messages in the error queue appears in the display text area. (Refer to the signal generator error messages document for information about each error message.)

After resolving all problems causing errors, press **Clear Error Queue(s)**.
  - If the ERR annunciator is off, the signal generator functionality check has passed.

## Record A31 Motherboard Version Number (For Instruments with Serial Prefixes <US4805/MY4805)

1. Press **Utility > Instrument Info/Help Mode > Installed board info**.
2. Find the information for the Motherboard.
3. Write down the version number of the Motherboard.

## Check Firmware Version and Upgrade if <C.04.23

1. Press **Utility > Instrument Info/Help Mode > Diagnostic Info**.
2. Find the firmware information.
3. If the version of firmware is <C.04.23, upgrade the firmware.

## **Remove the Outer and Inner Signal Generator Covers**

### **Remove the Outer Cover**

Refer to [Figure 1](#).

1. Disconnect the power cord.
2. Using a T-20 driver, loosen the two screws (1) and remove the strap handle (2).
3. Using a T-15 driver, remove the center screws (3) on the four rear-panel feet (4).
4. Remove the four bottom feet (5) from the cover by lifting the tab and sliding the foot toward the tab.
5. Place the signal generator on its side.
6. Tilt the signal generator forward and slide the outer cover (6) back to remove it from the frame.

### **Remove the Inner Top Cover**

Refer to [Figure 2](#).

1. Using a T-10 driver, remove the screws (1) from the inner-top cover (2). There are twelve screws for E8257D and eleven screws for E8267D.
2. Remove the inner-top cover.

**Figure 1**

**Outer Cover Removal**

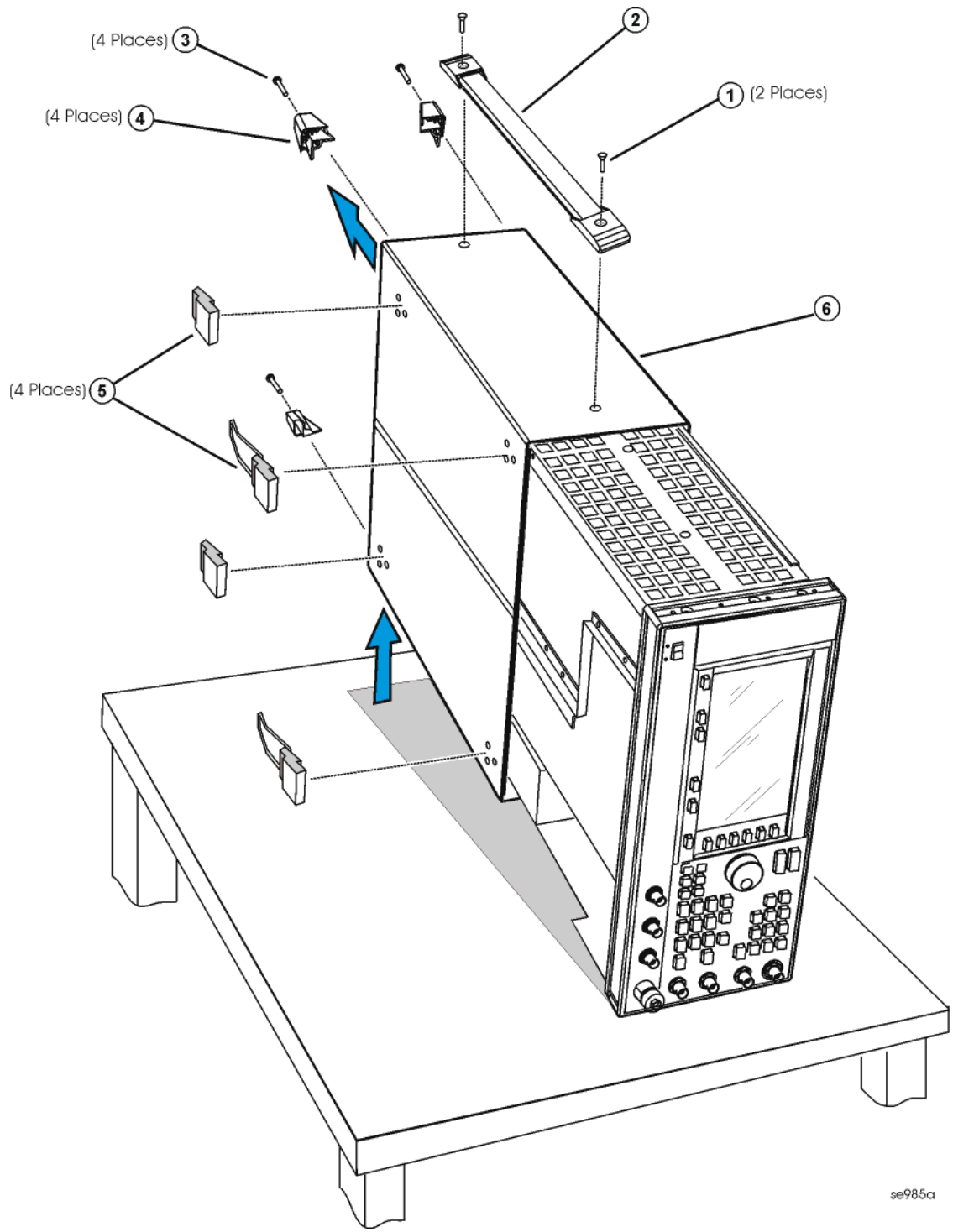
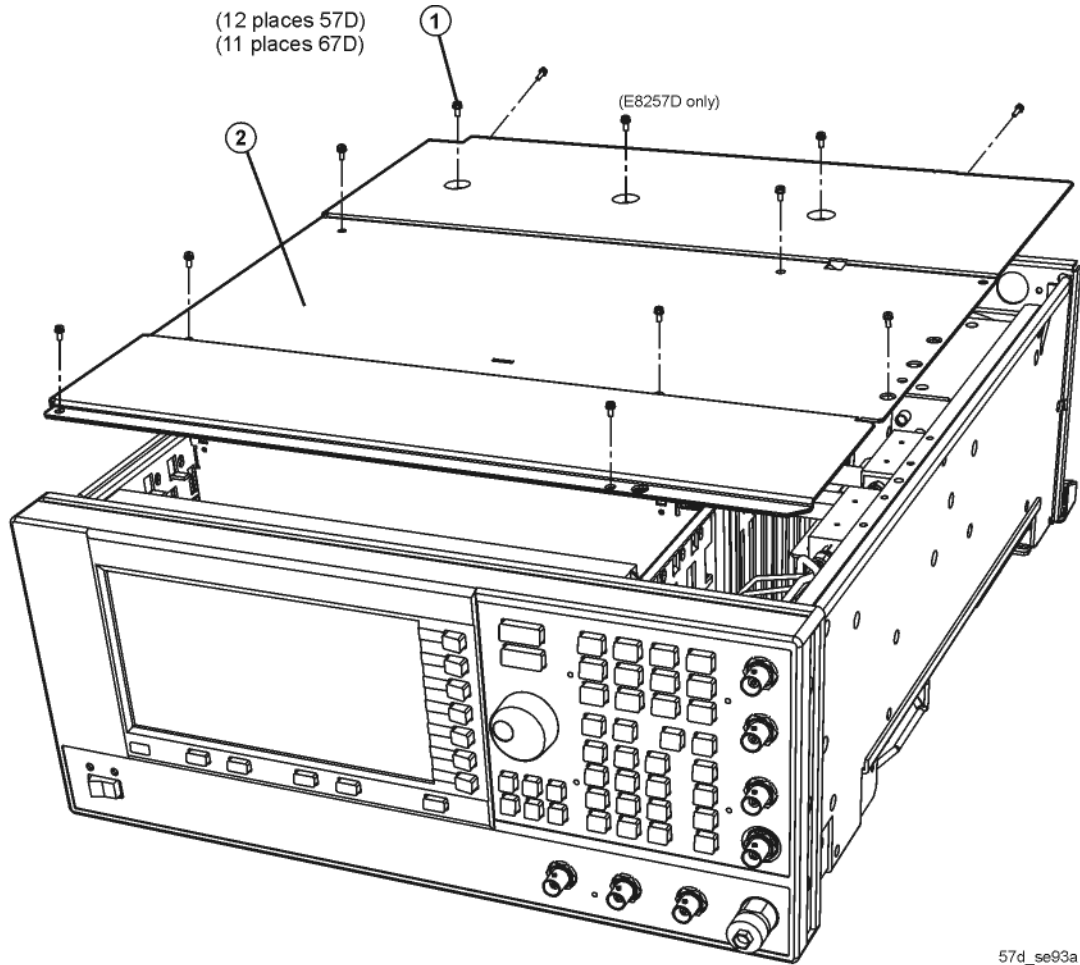


Figure 2

Inner Top Cover Removal





## **Remove the A32 10 MHz Crystal Oscillator (For instruments with Option UNR) (For Instruments with Serial Prefixes <US4805/MY4805)**

Refer to [Figure 3](#) for this procedure.

1. Position the signal generator with the rear panel facing you.
2. Using the needle-nose pliers, disconnect the W47 flexible cable (A31 Motherboard J1041) from A32J2.
3. Using the needle-nose pliers, disconnect the W48 flexible cable (10 MHz EFC) from A32J1.
4. Disconnect the A32W1 bias cable from the A21 Rear Panel Interface P2.
5. Using the T-10 driver, remove the three screws (1) that attach the A32 10 MHz Crystal Oscillator to the rear panel.
6. Remove the A32 10 MHz Crystal Oscillator.

## **Install the A32 10 MHz Crystal Oscillator**

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**NOTE** W47 may be shipped disconnected from the A32 10 MHz Crystal Oscillator. If it is disconnected, connect one end of the cable to A32J2 before you start the installation procedure.

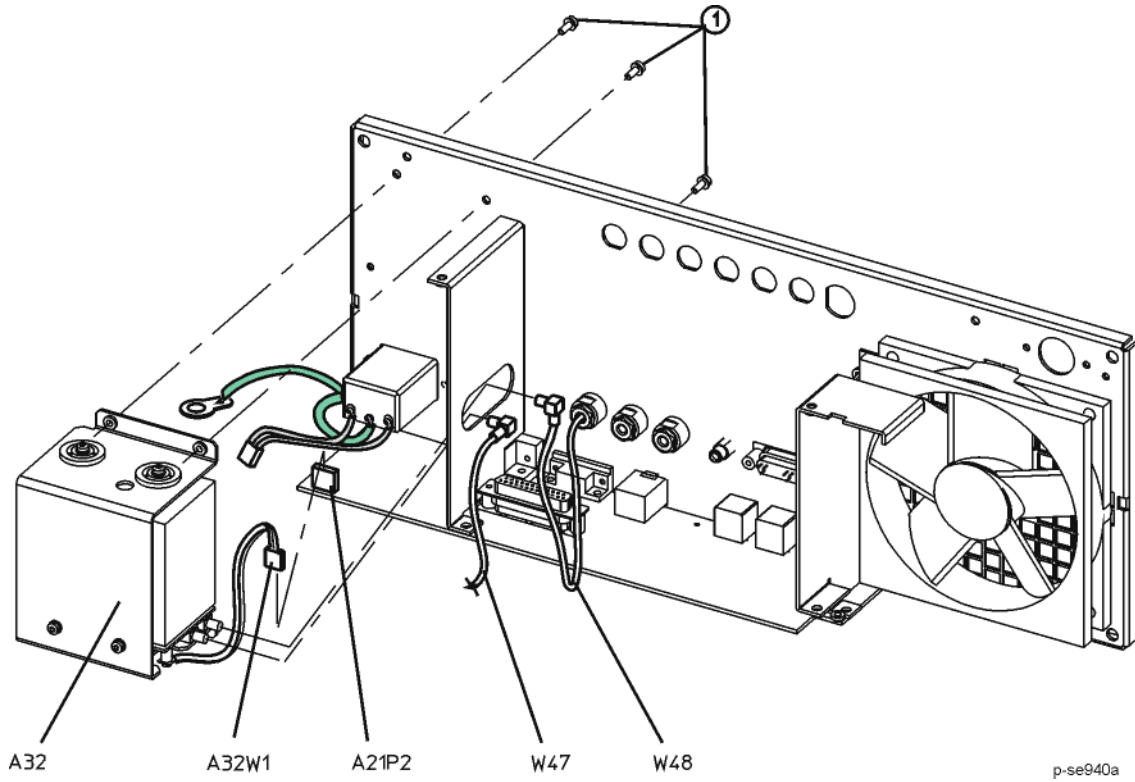
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Refer to [Figure 3](#).

1. Position the signal generator with the rear panel facing you.
2. Using a T-10 driver, install the three screws (1) to secure the A32 10 MHz Crystal Oscillator to the rear panel.
3. Connect A32W1 bias cable to the A21 Rear Panel Interface Board, A21P2.
4. Using needle-nose pliers, connect W48 flexible cable from 10 MHz EFC (rear panel connector) to A32J1.
5. Using needle-nose pliers, connect W47 flexible cable to J1041 of the A31 Motherboard.

Figure 3

A32 10 MHz Crystal Oscillator



**For Instruments with Motherboard Versions Less than A0101, replace A31L400 (E8257D) or A31L44 (E8267D) (For Instruments with Serial Prefixes <US4805/MY4805)**

Refer to [Figure 4](#).

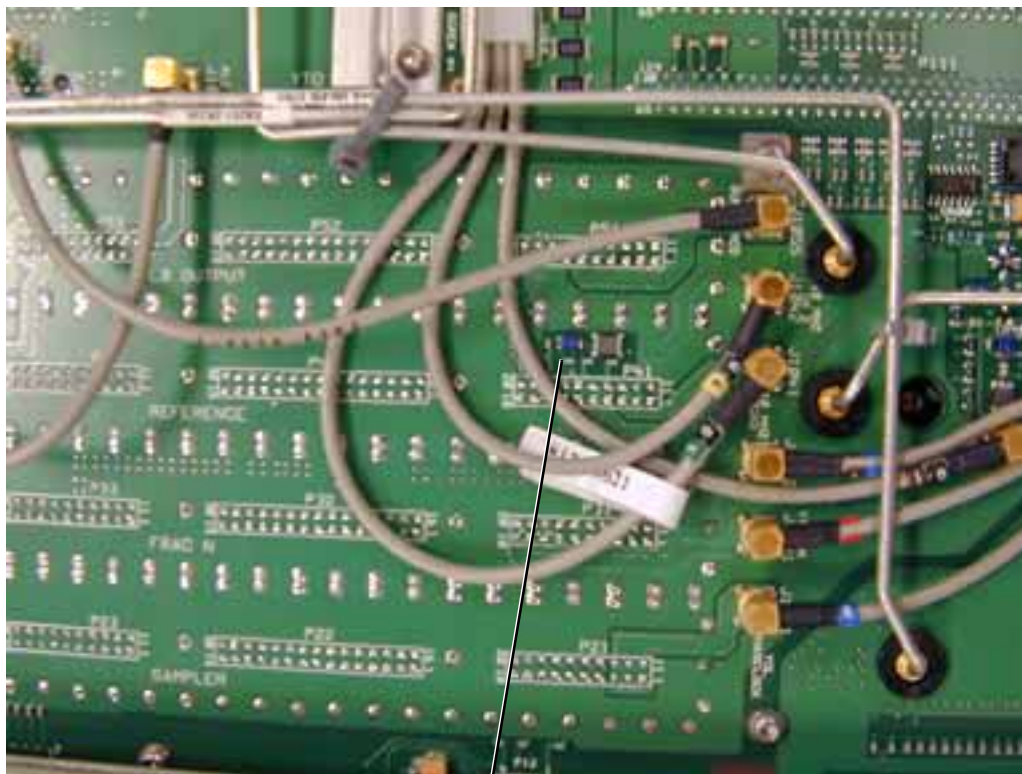
1. Position the signal generator with the A31 Motherboard facing you.
2. Remove A31L400 (E8257D) or A31L44 (E8267D).
3. Install the new inductor, provided in this kit.

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**NOTE**            There is a spare replacement inductor provided in this kit.

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**Figure 4**                            **A31L400 and A31L44**



E8257D- L400  
E8267D- L44

Front Panel

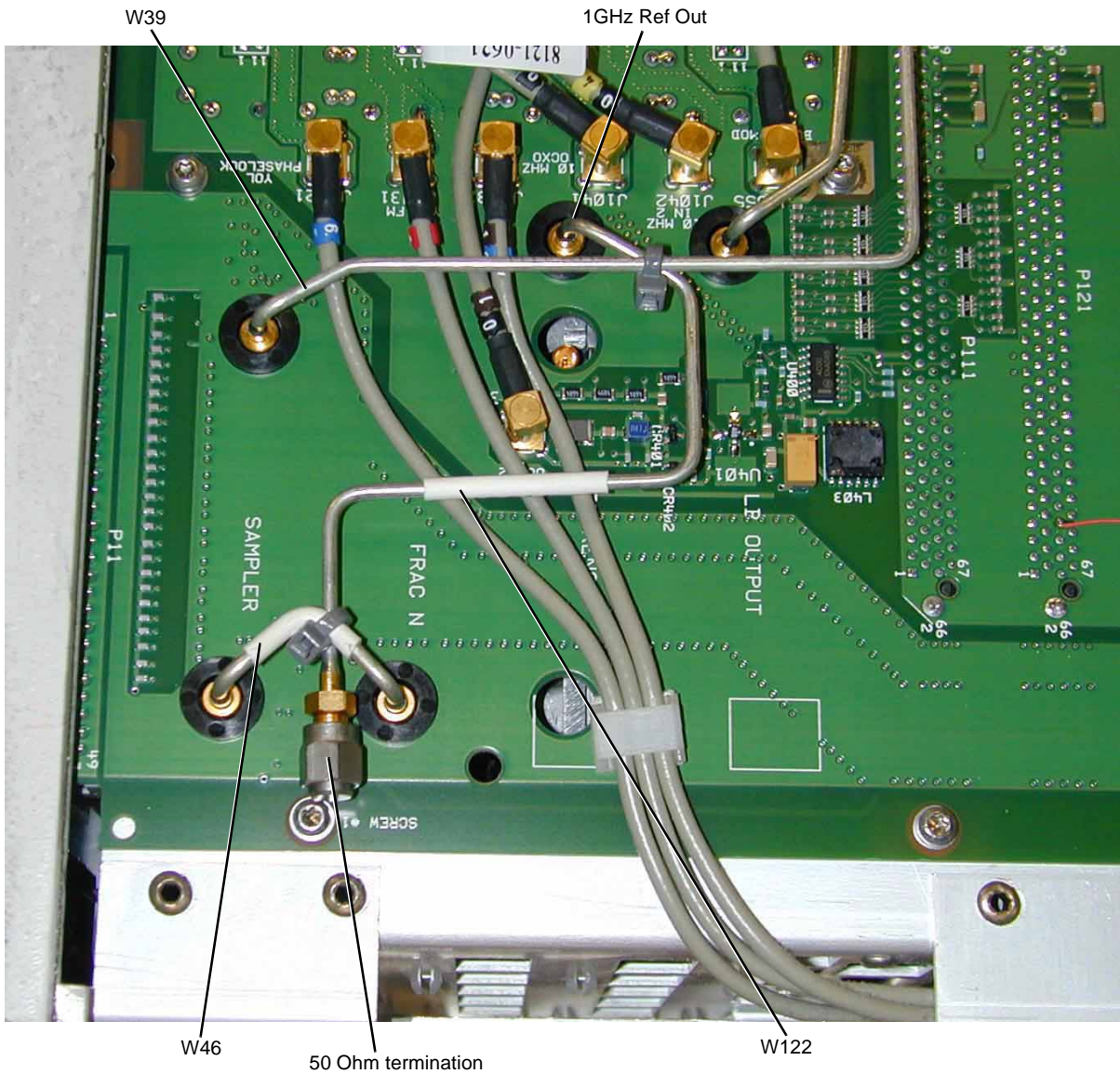
## **Install W122 Cable and 50 ohm Termination**

Refer to [Figure 5](#).

1. Position the signal generator with the front panel facing you.
2. Lift the retention levers and disconnect the A5 Sampler, A6 Frac-N, A7 Reference, and A8 Output boards from the A31 Motherboard.
3. Lift the boards out of the slots.
4. Position the signal generator with the A31 Motherboard facing away from you and the RF deck on top.
5. Using your hand or a pair of pliers, remove the W39 cable retainer tab.
6. Slightly pull W39 away from the A31 Motherboard.
7. Install W122 (E8251-20384, provided in this kit). Slide it under W46 and W39 and insert it into the 1GHz Ref Out.
8. Reattach W39 to the A31 Motherboard.
9. Using the cable ties provided in this kit, tie W122 to W46 and W39.
10. Position the signal generator with the front panel facing you.
11. Re-install the A5 Sampler, A6 Frac-N, and A8 Output boards.

Figure 5

W122 Installation



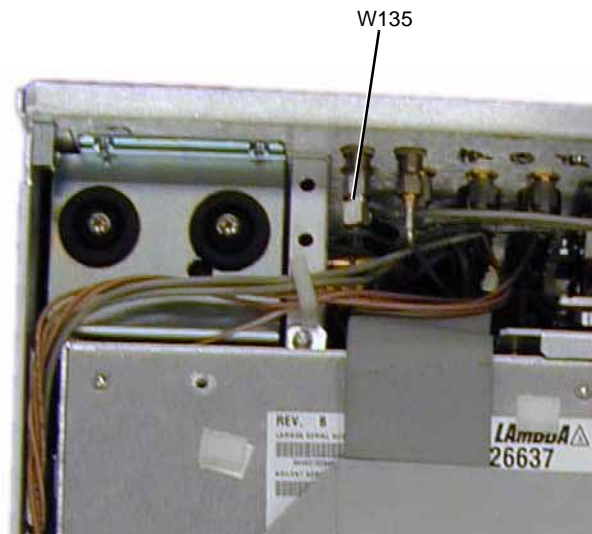
**Connect W135 to W122 (For Instruments with Serial Prefixes  $\geq$ US4805/MY4805)**

Refer to [Figure 5](#) and [Figure 6](#).

1. Position the signal generator with rear panel facing you.
2. Remove the zip tie from the 1 GHz out cable (W135) on the rear panel, refer to [Figure 6](#).
3. Position the signal generator with the A31 Motherboard on top.
4. Remove the 50 Ohm terminator from W122.
5. Connect the W135 to W122.

**Figure 6**

**W135**



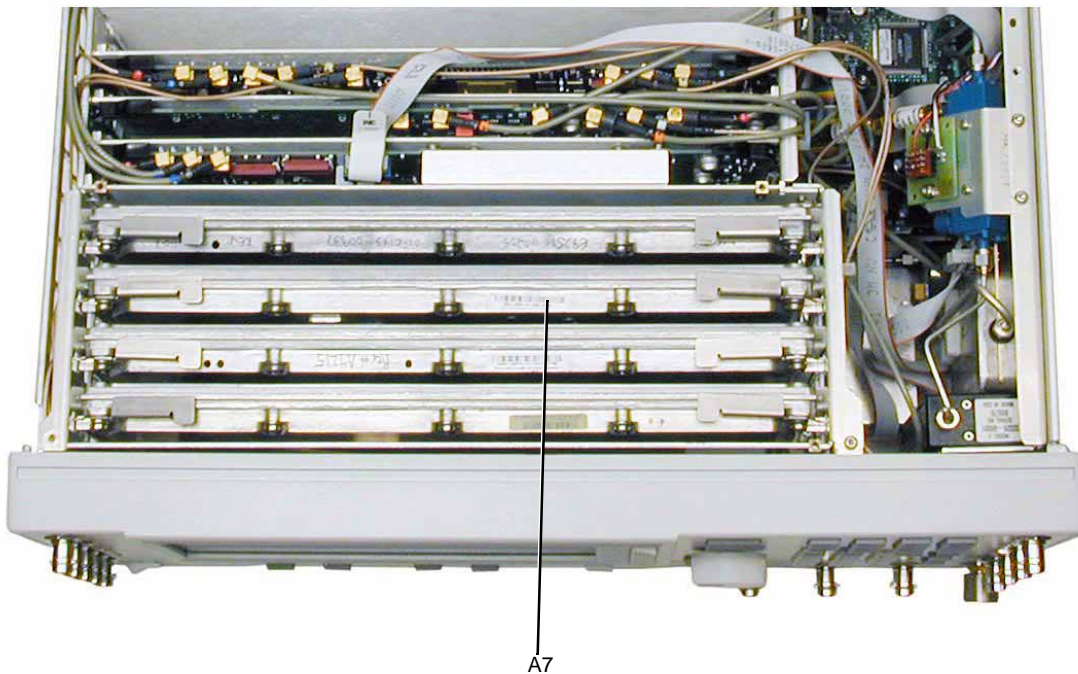
**Install the New A7 Reference Board (For Instruments with Serial Prefixes <US4805/MY4805)**

Refer to [Figure 7](#).

1. Position the signal generator with the front panel facing you.
2. Install the new A7 Reference board into the empty slot.

**Figure 7**

**A7 Reference**



## Activate Option UNX

1. Follow the instructions on the Entitlement Certificate.

## Verify Proper Installation of Option UNX

1. Turn the instrument on and allow it to warm up for 5 minutes.
2. Press: **Utility > Instrument Info/Help Info > Options Info**.
3. Make sure Option UNX is listed.

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**NOTE**            If you enable an option that does not have the required hardware installed, the menus for that option will be activated but the option *cannot* operate.

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## Re-Assemble the Signal Generator

Refer to [Figure 1](#) and [Figure 2](#).

1. Turn the signal generator off and unplug it.
2. Reinstall the inner and outer instrument covers by reversing the order for removal.
3. Torque all T-10 screws to 9 in-lbs.
4. Torque all T-15 and T-20 screws to 21 in-lbs.

## Verify Signal Generator Calibration

1. Turn the signal generator on and allow it to warm up for 30 minutes.
2. Perform the following adjustment/performance tests to verify signal generator calibration. Refer to the PSG Family Signal Generators Calibration Software:
  - a. ADC Calibration
  - b. Self Tests
  - c. Harmonic Spurious
  - d. Sub-Harmonic Spurious
  - e. Non-Harmonic Spurious
  - f. Single-Sidedband Phase Noise

