Keysight N9032B PXA Signal Analyzer

Option EXM, External Mixing Upgrade

KEYSIGHT

INSTALLATION NOTE

Notices

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Option EXM, External Mixing Upgrade

Products Affected:	N9032B PXA
Serial Numbers:	All
To Be Performed By:	(X) Keysight Factory (X) Keysight Service Center (X) Advanced User ( ) User
Estimated Installation Time: Estimated Adjustment Time: Estimated Verification Time:	1.5 Hours 1.0 Hours[a] 4.0 Hours[a]

a.To ensure that these newly installed options are functioning properly, the procedure that follows includes the requirement of performing certain adjustments and performance verification tests. However, the completion of these tests does not guarantee that the instrument meets all advertised specifications.

Software and test equipment is required for making adjustments and for performance verification testing.

Information on how to obtain this software can be found at:

https://www.keysight.com/find/calibrationsoftware

While Keysight does recommend that a full calibration be performed after the installation of this upgrade, the end user must ultimately determine whether they want this service or not. If a full calibration is required, arrangements regarding the level of calibration must be made between the end user and the calibration provider.

Introduction

This kit includes parts to upgrade a N9032B PXA signal analyzer with option EXM, External Mixing. This kit includes parts to upgrade a PXA regardless of frequency range option installed.

In addition to installing the hardware to support option EXM, a license for the following option will also be installed:

– N9032B-EXM, External Mixing

Instrument Calibration

The validity of any existing calibration that the instrument being upgraded may have will not be affected by the installation of this upgrade. However, the adjustments and performance verification testing prescribed in the following procedure must be run in order to validate the portion on the instrument calibration associated with the performance option being installed.

NOTE

At the time of manufacture the hardware related to this option was fully adjusted and the option performance was verified to be within its warranted specifications. Within one year of the initial calibration date of the instrument this option is fully calibrated with no further adjustment or verification testing.

To determine the initial calibration date, locate the original calibration certificate that was shipped with the instrument at the time of purchase. The Date of Calibration is printed on the original calibration certificate.

Installation Kit Parts List

Quantity	Description	Keysight Part Number
1	Adapter- Coaxial Straight Female-SMA to Female-SMA, 50Ω	1250-1666
1	Washer, Lock, Internal Tooth, ¼ inch	2190-0067
1	Nut-Hex-Double-Chamfer 1/4-36-THD.125-IN-THK, Stainless Steel	2950-0223
1	Cable Assembly, External Mixing, Front Panel (W66)	N9020-20166
1	Cable Assembly, A13J8 to W66 (W72)	N9020-20167
1	Label, Warning (for Top Brace)	N9030-80018
17	Screw, M3 x 0.5, (6 mm long), flat head	0515-1946
1	Entitlement Certificate	
1	Installation Note	This note

Tools Required

- T-10 TORX Driver
- T-20 TORX Driver
- 5/16-inch torque wrench
- ¼-inch open-end wrench
- Small flat blade screwdriver
- Keysight Calibration and Adjustment Software
- Test equipment and computer supported by the N78111B PXA Calibration Application
- Personal computer with internet access and USB port
- USB storage device

Initial Instrument Functionality Check

Power on the instrument and allow the instrument to boot up. Run an alignment and display the measurement screen. (The instrument will probably display a spectrum analyzer screen and you will see the instrument sweeping.)

There should be no alignment failures. If there are failures, investigate and fix the problem before continuing.

WARNING Before you disassemble the instrument, turn the power switch to Standby. After the instrument has completely shut down, unplug the instrument. Failure to unplug the instrument can result in personal injury.

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.

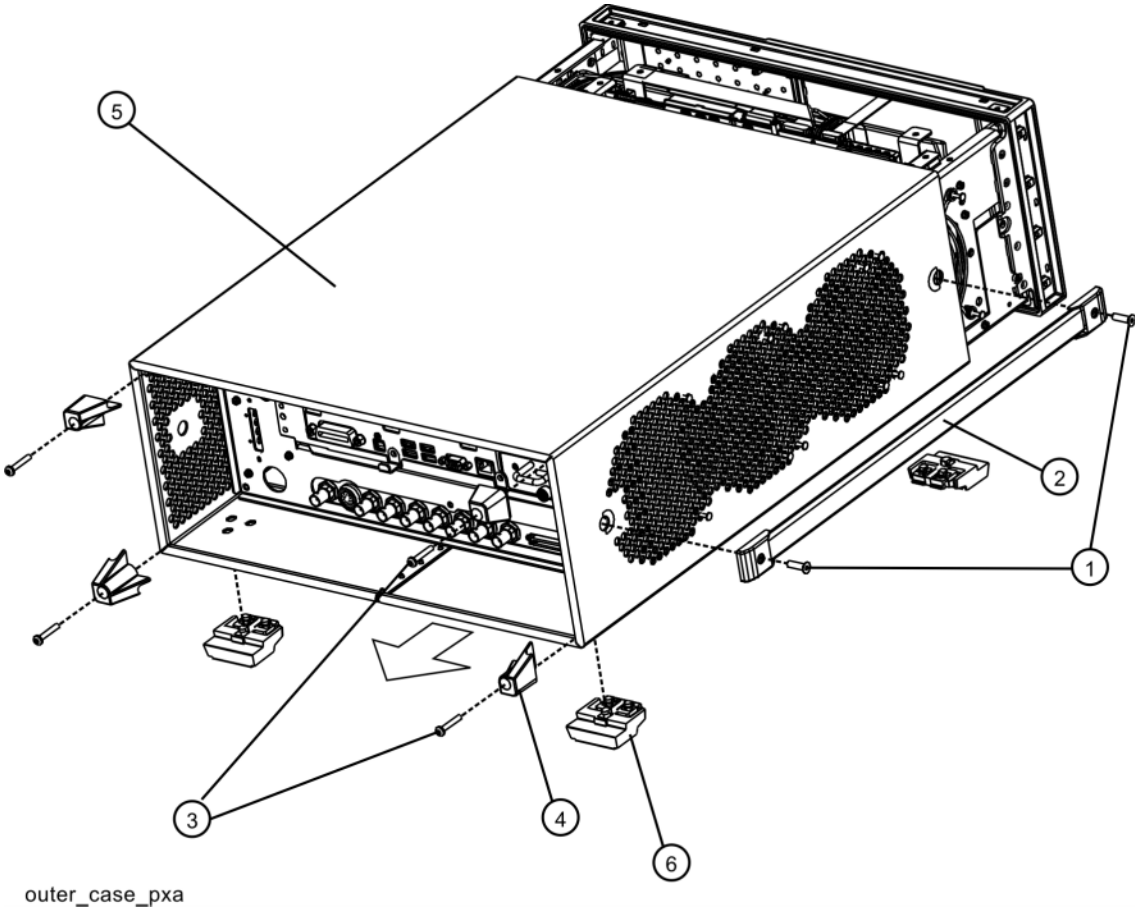
Analyzer Disassembly

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.

NOTE Make sure any adapters on the front panel are removed.

1. Disconnect the instrument from ac power.
2. Refer to Figure 1. Using the T-20 driver, remove the 4 screws (1) (two on each side) that attach the handle strap (2) on each side of the instrument.
3. Remove the four key locks from the instrument four bottom feet.
4. Remove the four instrument bottom feet (6).
5. Using the T-20 driver, remove the four screws (including washers) (3) that hold the rear feet (4) in place.
6. Pull the instrument cover (5) off towards the rear of the instrument.

Figure 1 Instrument Outer Case Removal



Top Brace Removal

Refer to Figure 2. To remove the top brace **(1)**, use the T-10 driver to remove the twelve screws **(2)** (0515-0372) attaching the top brace to the chassis. Remove the wire hold down (as shown in Figure 3). Remove and discard the seventeen screws **(3)** (0515-1946) attaching the top brace.

Figure 2 Top Brace Removal

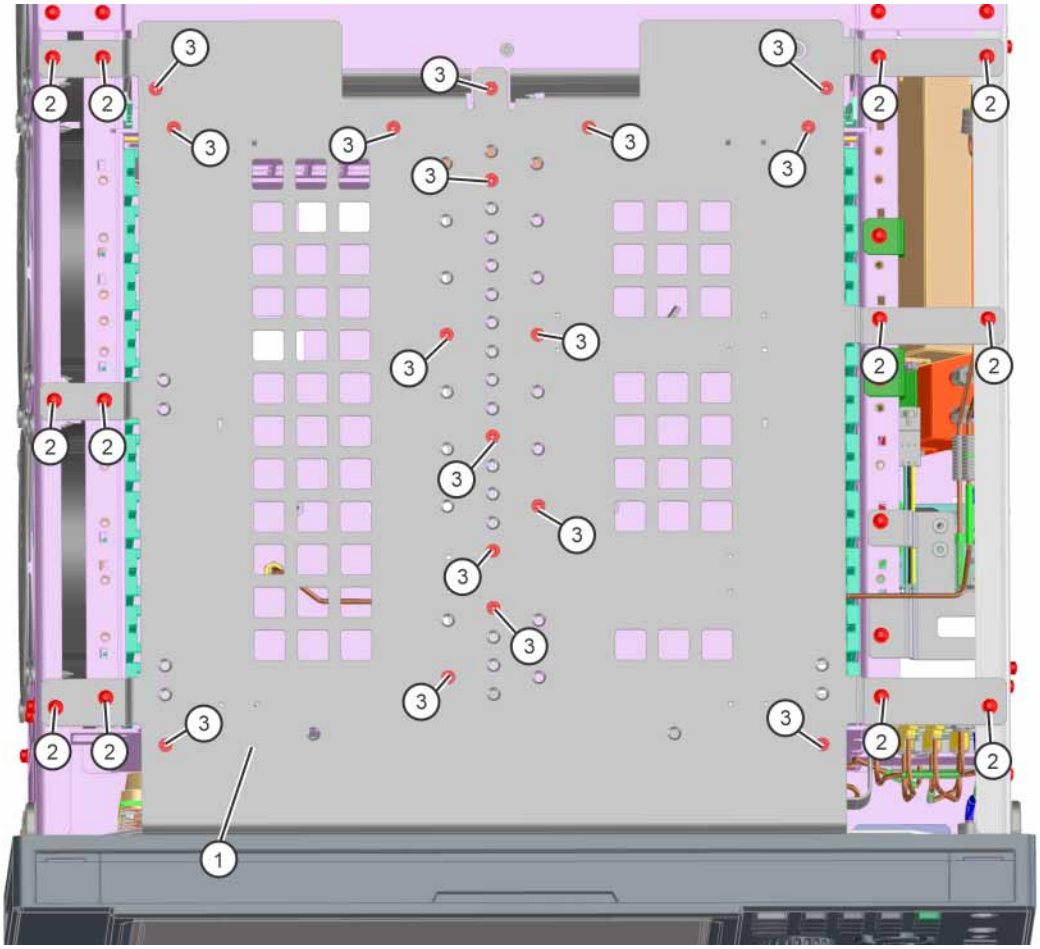
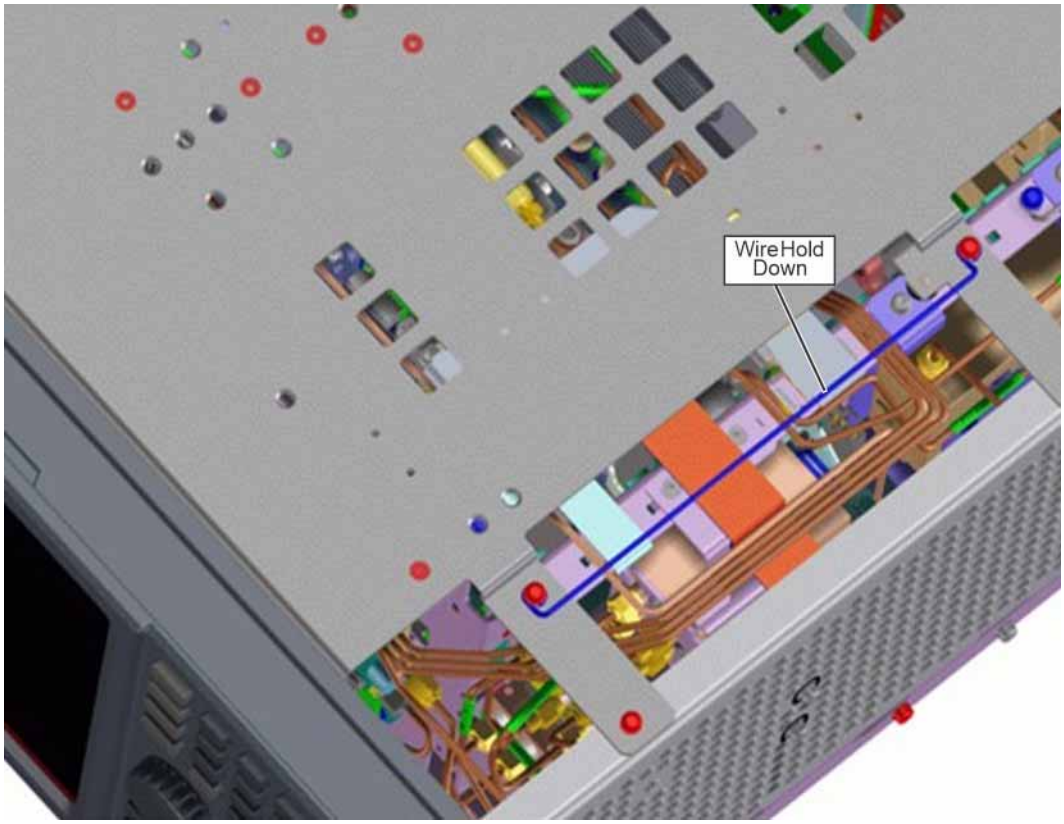


Figure 3 Wire Hold Down



Front Frame Assembly Removal

NOTE Make sure any connectors on the front panel are removed.

1. Remove the plastic side trim strips by inserting a small flat blade screwdriver between the bottom of the trim strip and the frame. Then carefully working up the side of the trim strip to remove it. Avoid scratching the front frame paint.
2. Refer to Figure 4. Using the T-10 driver, remove the twelve screws (1) (0515-1035), six on each side, to detach the Front Frame Assembly from the chassis.
3. Refer to Figure 5. Pull the Front Frame Assembly carefully away from the chassis. Remove the ribbon cable W1 from the motherboard. The cable has locking tabs on each side, pinch and pull to release.

NOTE W1 may have locking springs on each side. Depress the spring on each side of the connector to remove from the motherboard.

Figure 4 Front Frame Removal

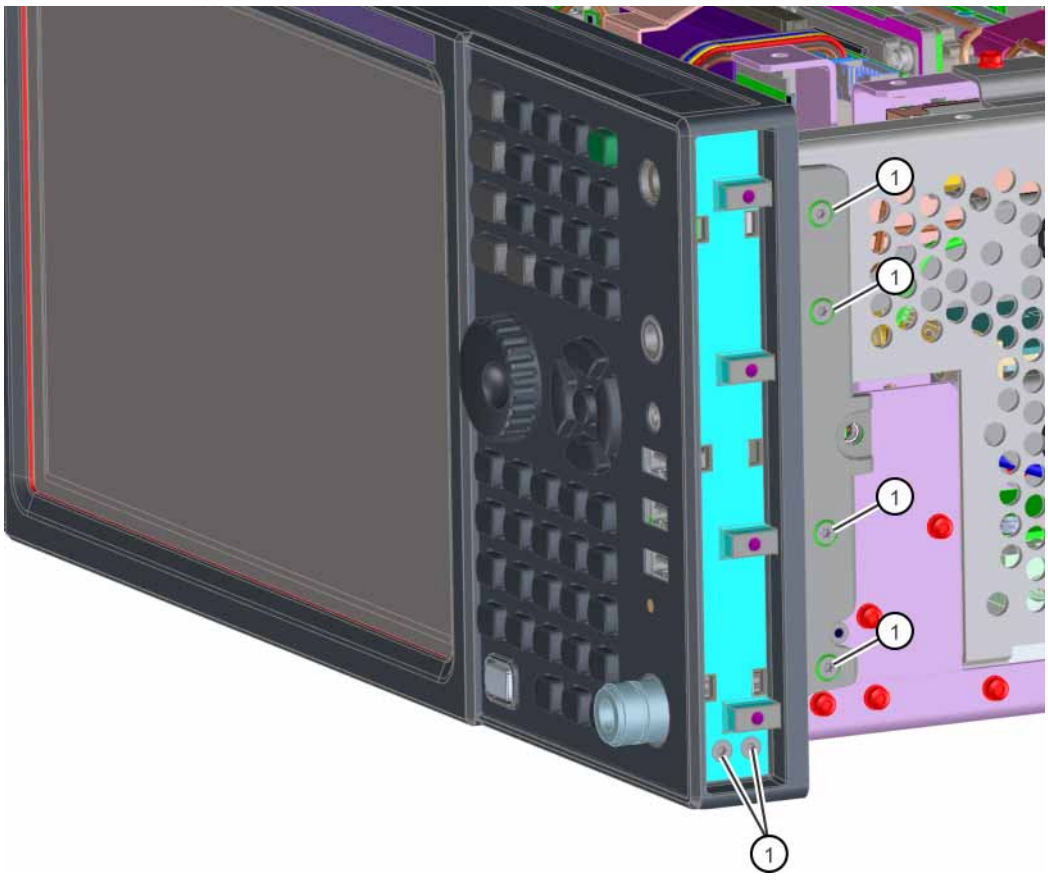
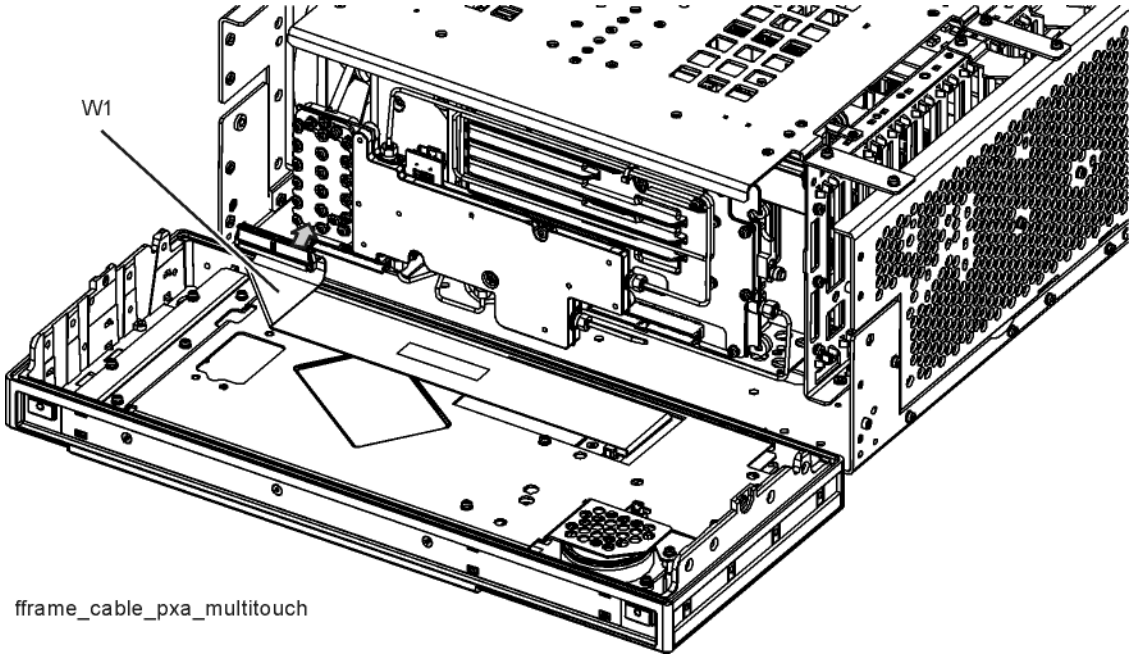


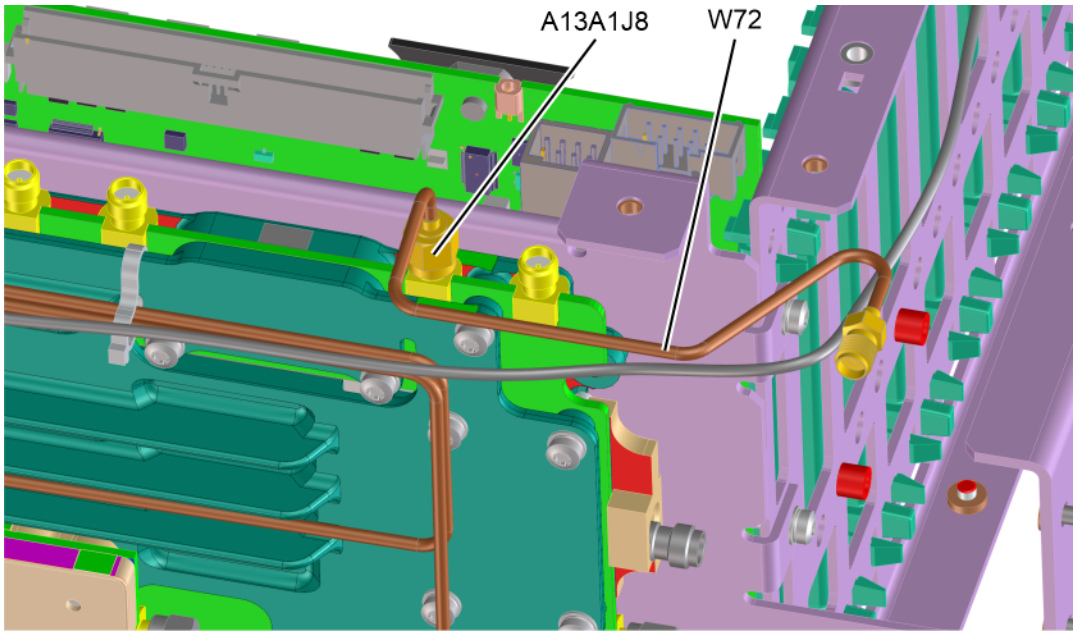
Figure 5 Front Panel Cable



Add a Cable to the A13 Front End Assembly J8

1. Remove the SMA termination on A13A1J8. A13A1J8 is to the left of A13A1J13.
2. Save this SMA termination. It will be installed on the front panel EXT mixer connector.
3. Locate semi-rigid coax cable, part number N9020-20167, in the upgrade kit. This is W72. Connect the end with the SMA male connector A13A1J8, with the SMA female connector pointing towards where the front panel would be. The long, straight section of W72 should be parallel to the casting of the A13 Front End and level. Refer to Figure 6. Torque the cable nut to 10 inch-pounds.

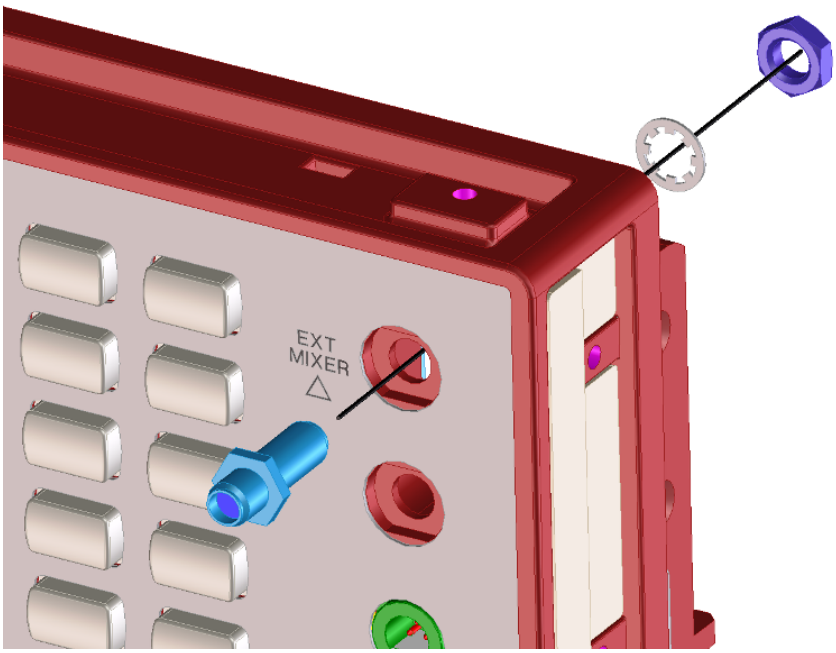
Figure 6 Orientation of W72



Add EXT MIXER Connector and Cable to Front Frame Assembly

1. Locate the SMA female to SMA female connector (1250-1666), ¼" lockwasher (2190-0067), and ¼" hex nut (2950-0223) in the kit. If the SMA connector includes hardware, discard that hardware and use the 2190-0067 lockwasher and 2950-0223 hex nut included in this kit.
2. Remove the hole-plug in the top-most hole in the upper right corner of the front frame assembly. This hole will be labeled "EXT MIXER".
3. Insert the SMA female to SMA female connector in the hole in the front frame assembly from the front of the assembly. The hex feature on the connector should engage with the recess in the front frame assembly. Refer to Figure 7. Secure the connector using the ¼" lockwasher and ¼" hex nut from the rear. Torque to 21 inch-pounds.

Figure 7 Attaching SMA Female Connector



4. Locate the SMA termination removed on page 11 step 2. Attach this SMA termination to the front panel EXT Mixer SMA connector.
5. Locate the External Mixing, Front Panel semi-rigid coax assembly in the kit, part number N9020-20166. This is W66. Note that this cable is symmetrical; either end can be connected to the front-panel connector.
6. Connect one end of W66 to the SMA female connector as shown in Figure 8.
7. Orient W66 so that the cable is parallel with the front frame. The top of the connector should be approximately level with the top of the shield over the Front Panel Interface board speaker. Refer to Figure 9. Torque the cable nut on the Ext Mixer connector to 10 inch-pounds.

Figure 8 Connecting W66 to Ext Mixer Connector

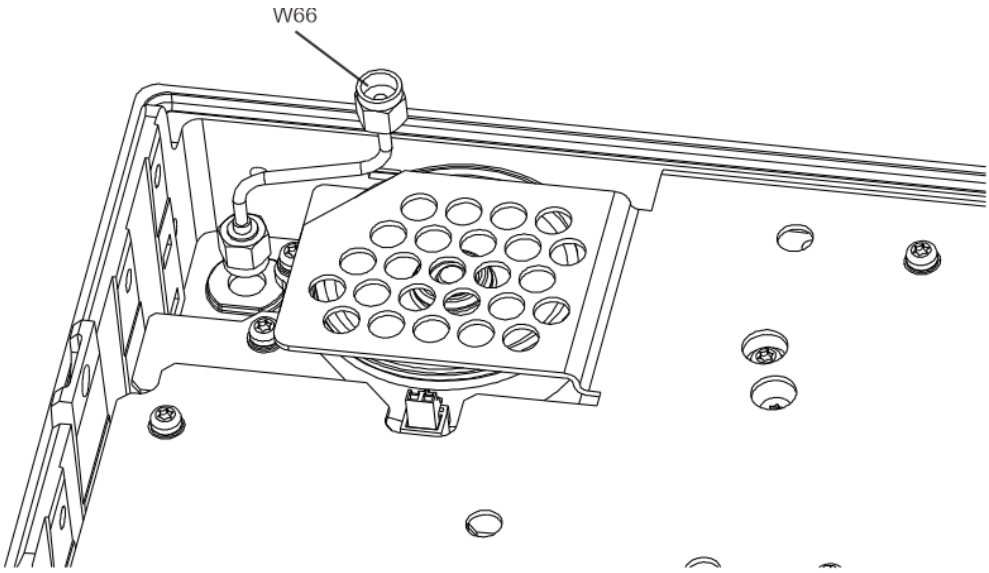
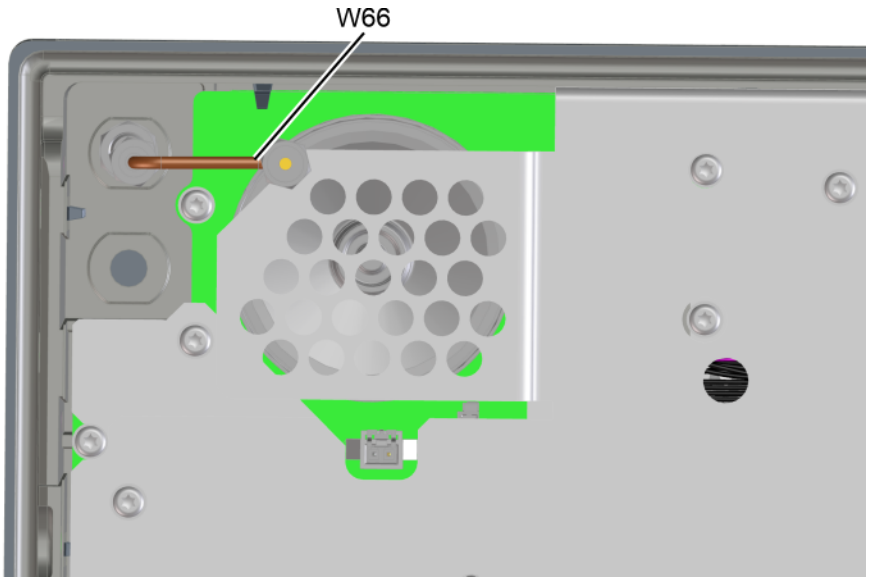


Figure 9 Proper Orientation of W66



Front Frame Replacement

1. Refer to Figure 10. Reattach the ribbon cable W1. Ensure the locking tabs are engaged.
2. Refer to Figure 11. Carefully position the Front Frame Assembly onto the chassis. Ensure no cables are crushed. Replace the twelve screws (1) (0515-1035), six on each side of the chassis. Torque to 9 inch-pounds.

Figure 10 Front Panel Cable

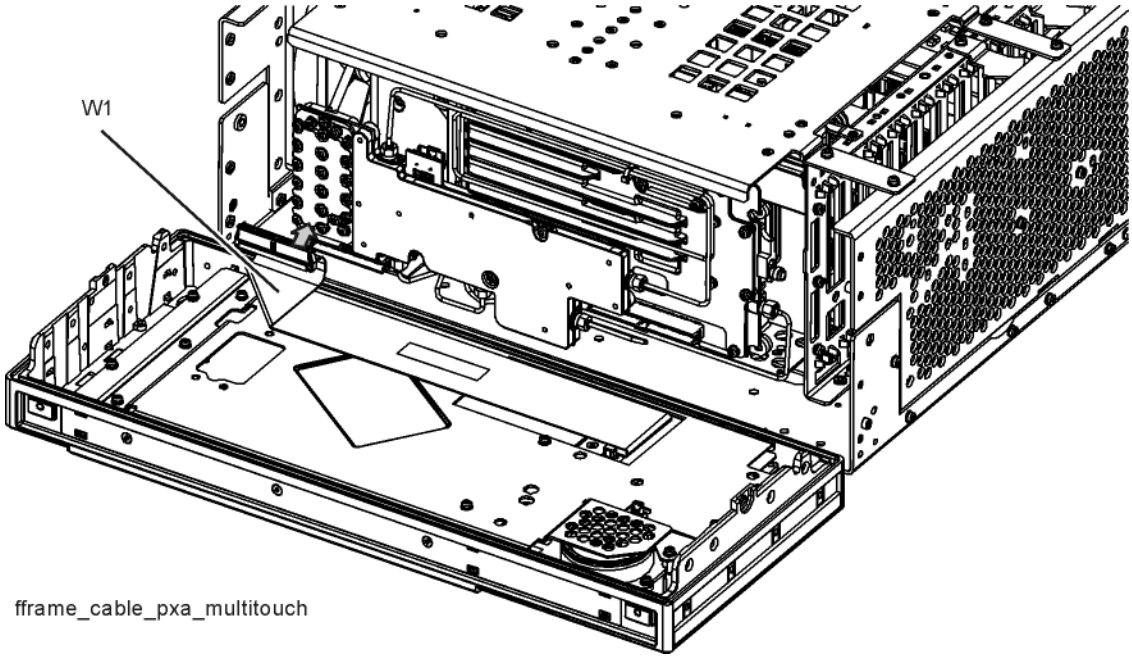
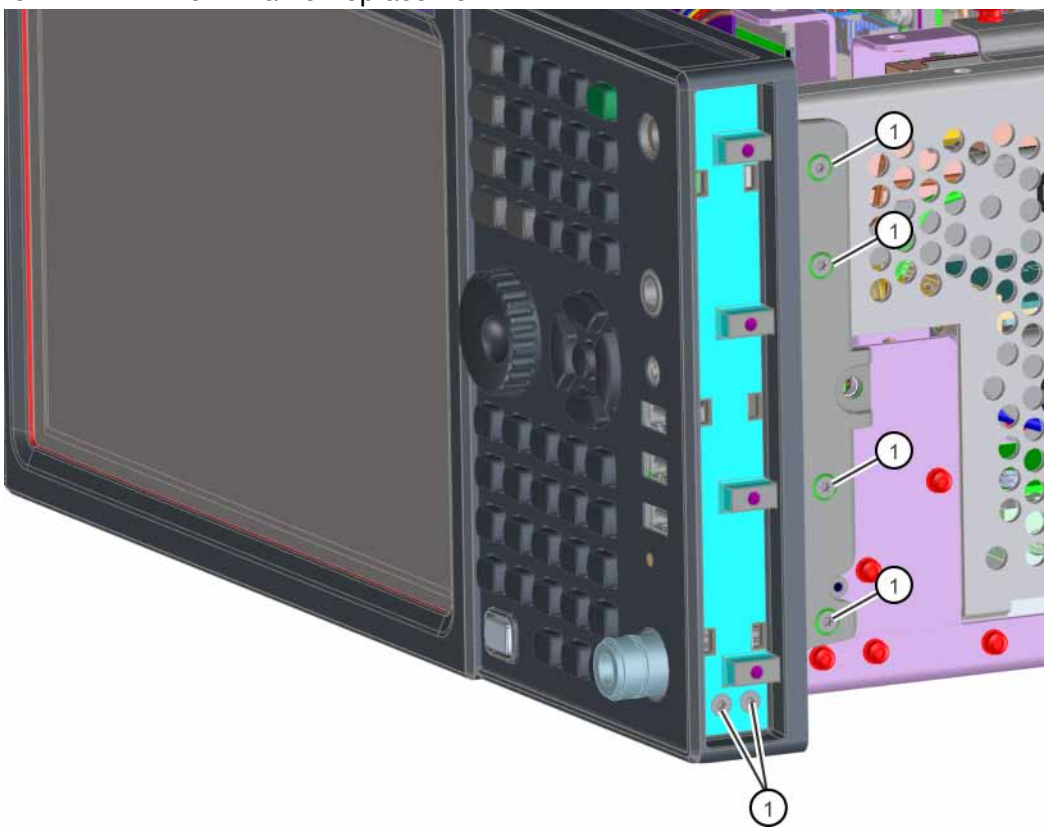


Figure 11 Front Frame Replacement



3. Refer to Figure 12. When the front panel is installed, cables W72 and W66 typically do not align perfectly. This is OK since the cables are slightly flexible. If additional alignment is needed loosen W72 at A13J8 and re-position.
4. Refer to Figure 13. Align and connect cables W72 and W66. Hand-tighten the nut.

Figure 12 W72 and W66 Before Alignment

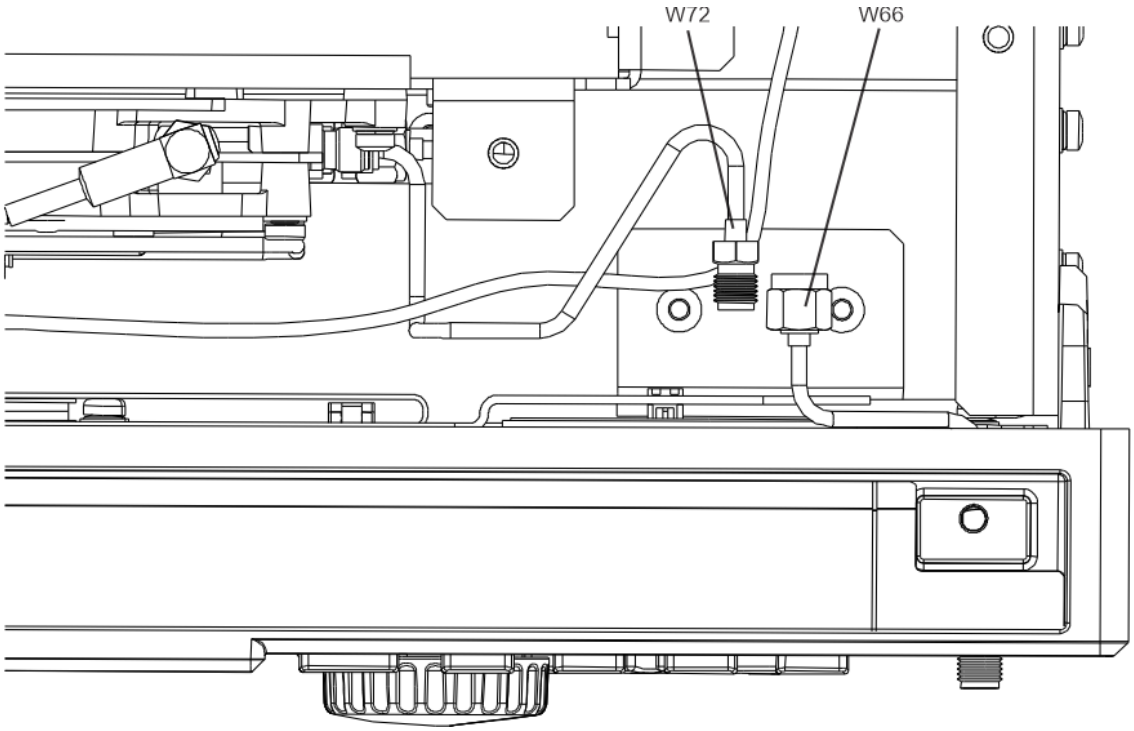
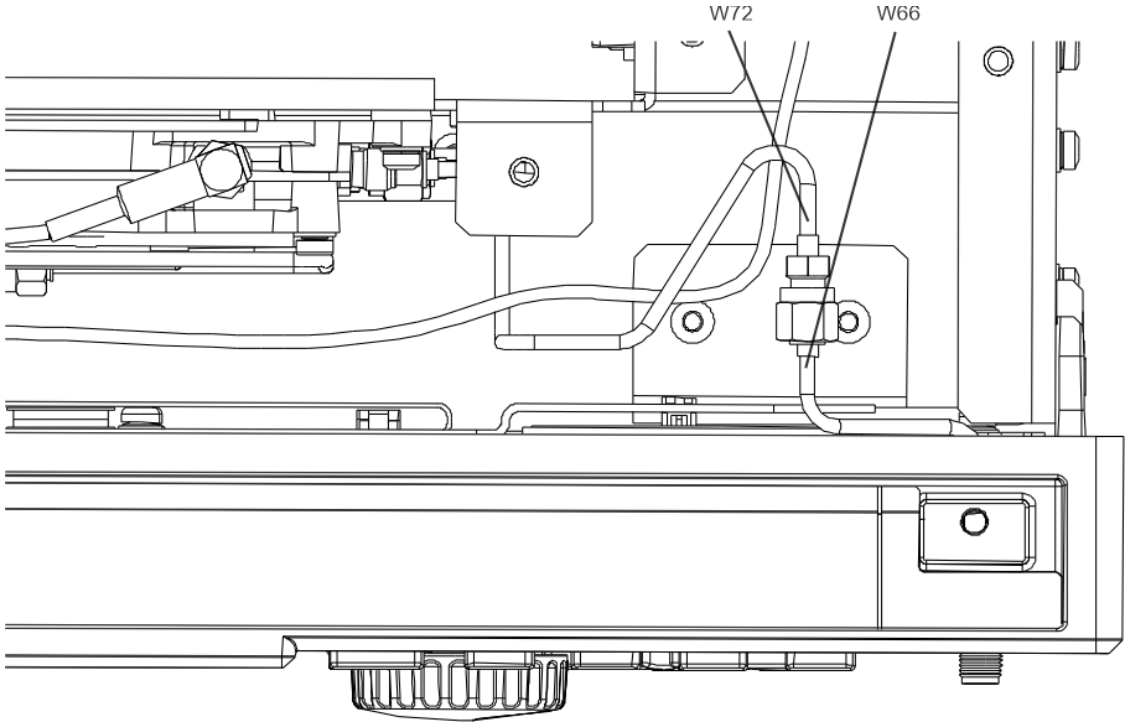
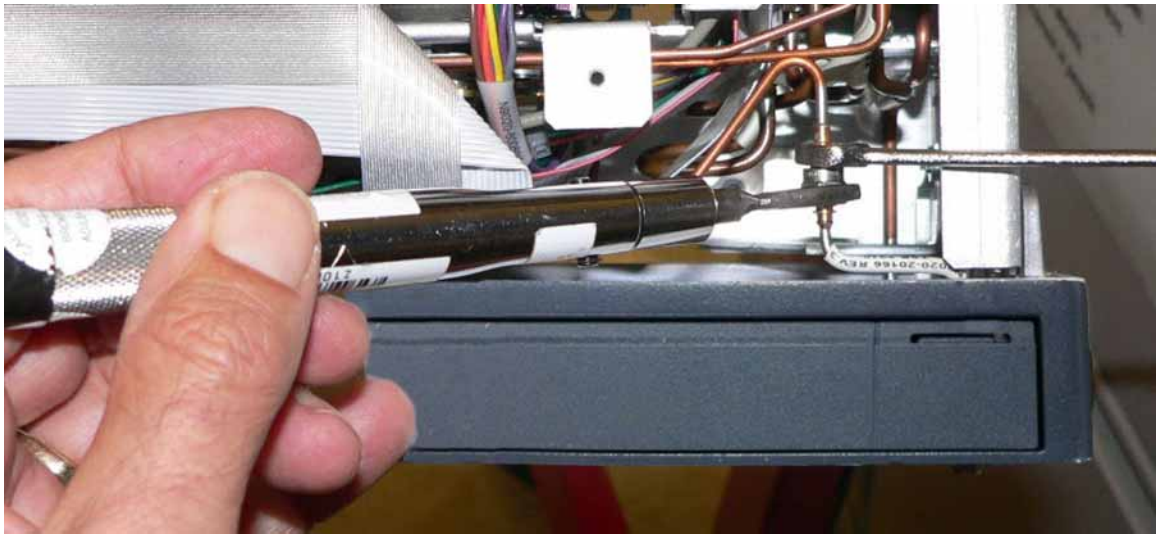


Figure 13 W72 and W66 Properly Aligned



5. Refer to Figure 14. Use a ¼" open-end wrench to prevent the SMA female connector on W72 from twisting. Use a 5/16" torque wrench to torque the nut on W66 to 10 inch-pounds.

Figure 14 Torque Cable W66 onto W72



Top Brace Replacement

1. Refer to Figure 15. To replace the top brace, place the brace in the correct position and attach to the chassis using the twelve screws (2) (0515-0372). Attach the top brace using the seventeen screws (3) (0515-1946) included in the kit.
2. Refer to Figure 16. Reinstall wire hold down 1.
3. Torque all screws to 9 inch-pounds.

Figure 15 Top Brace Replacement

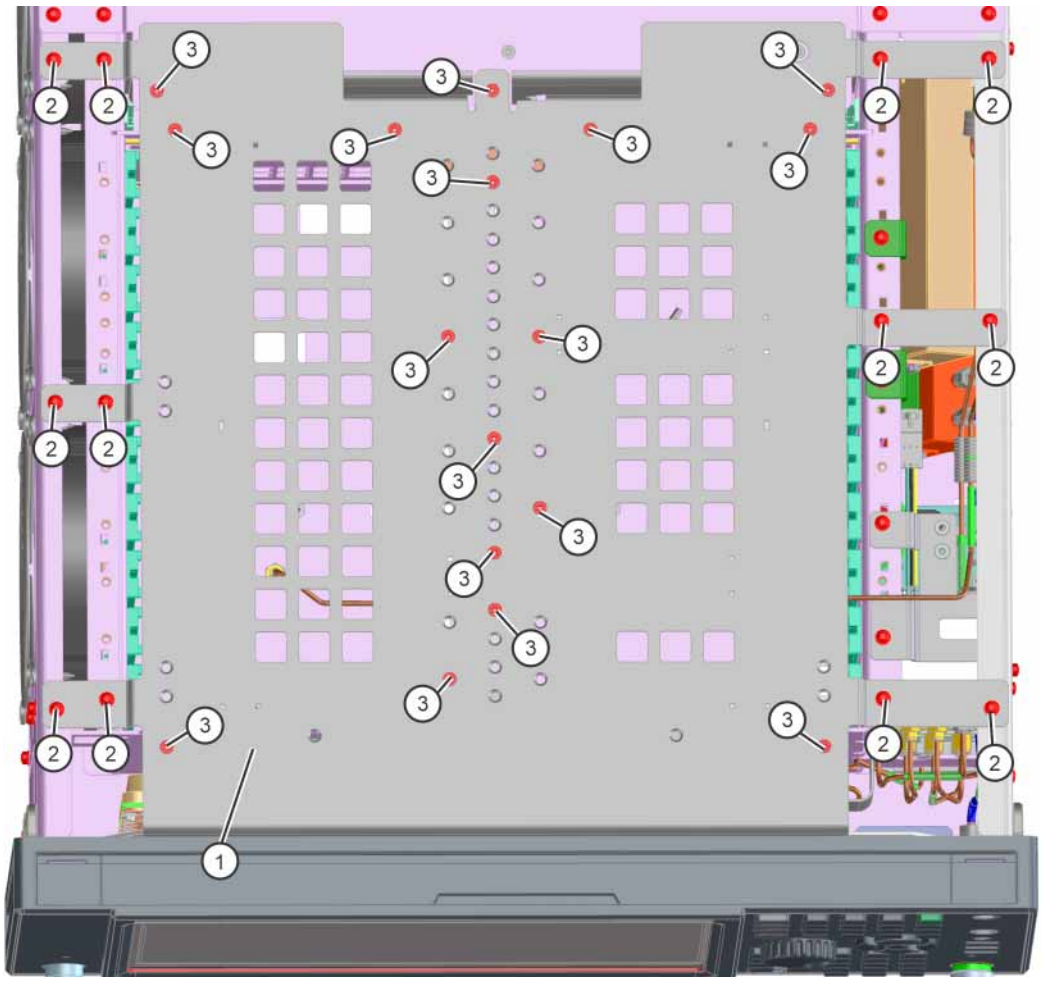
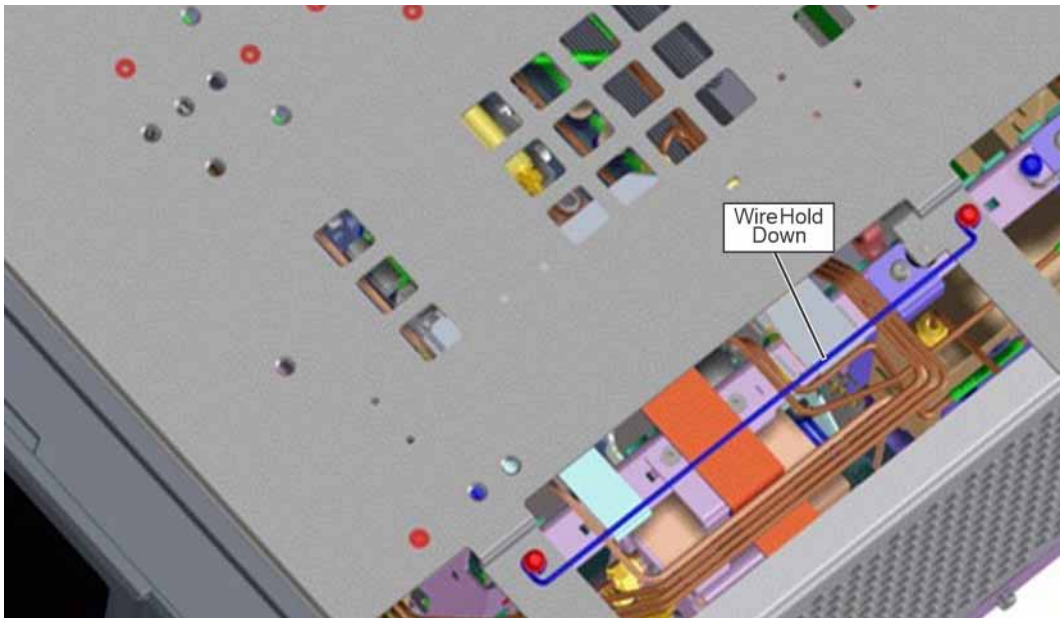
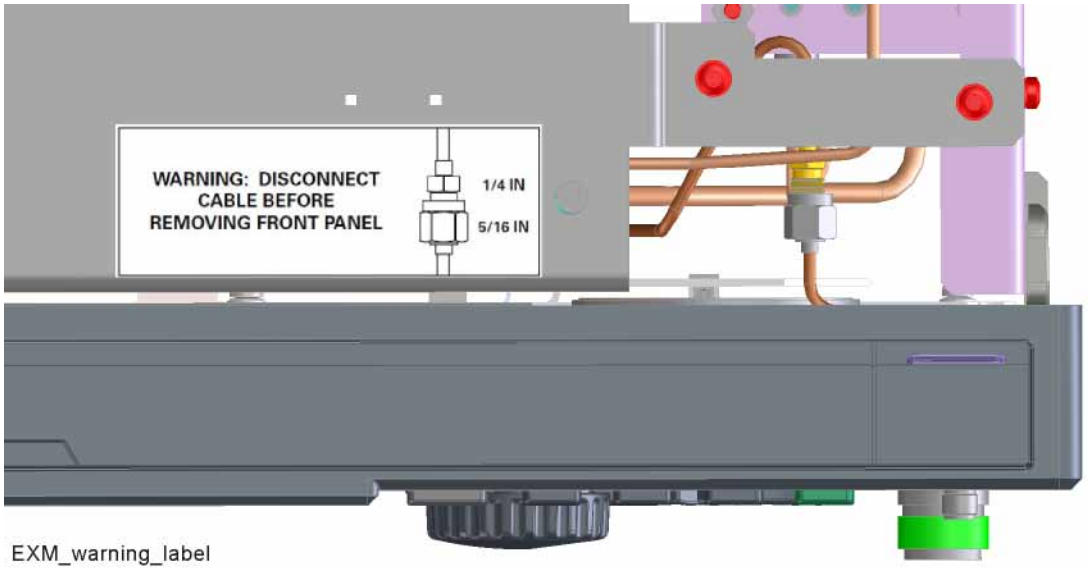


Figure 16 Wire Hold Downs



4. In the upgrade kit, locate the Warning Label, N9030-80018.
5. Refer to Figure 17. Attach the Warning Label to the top brace as shown.

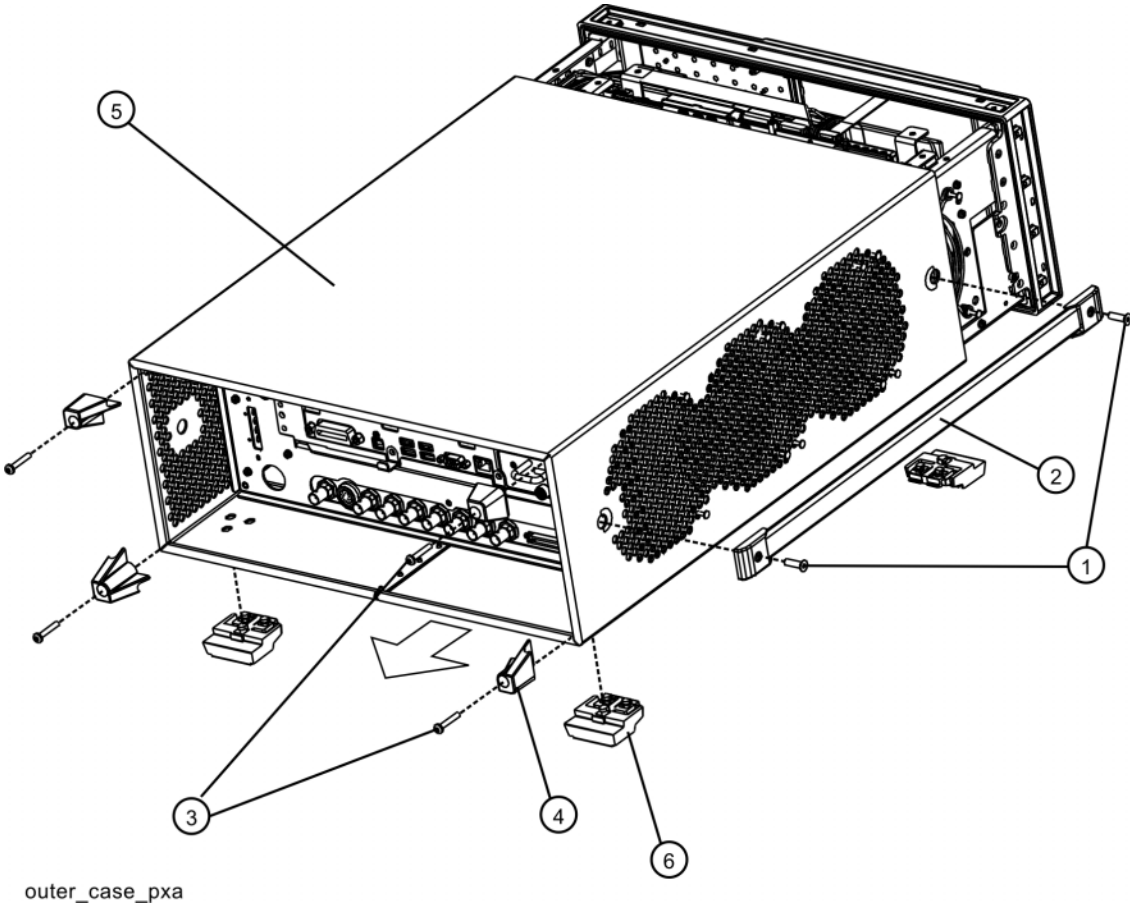
Figure 17 Add Warning Label to Top Brace



Final Assembly

1. Refer to Figure 18. 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 Assembly.
2. Replace the four rear feet to the rear of the instrument. Torque the rear feet screws (0515-1619 and 3050-0893 washers) to 21 inch-pounds.
3. Replace the bottom feet by sliding into place until they snap in. Install the locks by pressing in flat.
4. Replace the handle straps on both sides of the instrument. Torque the handle strap screws to 21 inch-pounds.

Figure 18 Instrument Outer Cover Replacement

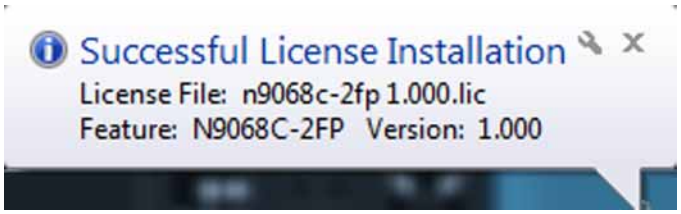


Licensing the New Option

Installation Procedure over USB

1. Locate the Option Upgrade Entitlement Certificate from the kit.
2. Redeem the Option Upgrade Entitlement Certificate by following the instructions on the Certificate.
3. After redeeming your Option Upgrade Entitlement Certificate you will receive an email with an attached License File.
4. Locate a USB storage device. Perform a virus scan on this device before use.
5. Save the License File to the root directory of the USB Storage Device.
6. Connect the USB Storage Device to one of the analyzer's USB ports.
7. The analyzer will automatically consume the License File (this may take a few minutes). When the License File is consumed the Keysight License Manager will display a "Successful License Installation" message similar to the one shown in Figure 19.

Figure 19 Successful License Installation



Alternate Installation Procedure

The License File can be manually installed over USB or LAN by placing the license file in the following analyzer folder: C:\Program Files\Agilent\licensing.

Verify the License Installation

1. Before the licenses will be recognized, the XSA application must be restarted. Press **File**, **Exit**. An Exit Analyzer dialog box will appear; press **Enter** to confirm the exit.
2. Double-click on the LaunchXSA icon on the Windows desktop. Wait for the XSA application to finish starting (the analyzer should be sweeping).
3. Press **System**, **Show System** on the analyzer to display a list of all displayed options. You should see the following option listed:
   - N9032B-EXM External Mixing

Verify Optional Functionality

1. Press **MODE/MEAS, Spectrum Analyzer**, **Swept SA**, **OK**.
2. Press **Input/Output** and tap **Select Input**.
3. Verify that there is a selection for "**External Mixer**" below the "**RF**" selection.

Utilities, Adjustments, and Performance Verification Tests

Calibration Software and specified test equipment is required to perform the adjustments, and can be used to automate the performance verification testing. Information on how to obtain this software can be found at:

https://www.keysight.com/find/calibrationsoftware

Utilities Required

None

Adjustments Required

The following adjustments are the minimum set required to ensure that the newly installed hardware is functioning properly

- IF Input Gain Option EXM
- LO Output Power Option EXM

Performance Testing Required

The following performance verification tests are the minimum set required to ensure that this newly installed option is functioning properly.

- IF Input Gain Accuracy EXM
- LO Output Power Accuracy EXM

A full calibration is required to assure the instrument meets all specifications

The end user must ultimately determine whether they want a full calibration to be performed after the installation of this upgrade or not. If a full calibration is required, arrangements regarding the level of calibration must be made between the end user and the calibration provider.

For assistance, contact your nearest Keysight Technologies Sales and Service Office. To find your local Keysight office access the following URL, or if in the United States, call the following telephone number:

https://www.keysight.com/find/assist

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