Keysight Technologies MXA Signal Analyzer

Option HL6, External Mixing Upgrade Kit,
Serial Prefix ≥ MY/SG/US5328 to < MY/SG/US5606

KEYSIGHT TECHNOLOGIES

Installation Note

Notices

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Manual Part Number
N9020-90230

Edition
Edition 2, September 2018
Supersedes Edition 1, September 2018

Printed in USA/Malaysia

Published by:
Keysight Technologies, Inc.
1400 Fountaingrove Parkway
Santa Rosa, CA 95403

Option HL6, External Mixing Upgrade Kit, Serial Prefix ≥ MY/SG/US5328

Products Affected:	N9020A, MXA Signal Analyzer
Serial Numbers:	≥ MY53280000 to < MY56060000 ≥ SG53280000 to < SG56060000 ≥ US53280000 to < US56060000
To Be Performed By:	(X) Keysight Service Center (X) Personnel Qualified by Keysight ( ) Customer
Estimated Installation Time: Estimated Adjustment Time: Estimated Verification Time:	2.0 Hours 4.0 Hours 4.0 Hours

Introduction

This installation note explains how to install the hardware and provides guidelines for adjustment and verification for Option HL6, External Mixing Upgrade for MXA signal analyzers with serial number prefixes from MY/SG/US5328 to < MY/SG/US5606. A similar kit, Option EXM, is available for MXA signal analyzers serial number prefix = MY/SG/US5233 and ≥ MY/SG/US5606. There is no external mixing upgrade available for MXA signal analyzers with serial number prefix < MY/SG/US5233.

The A13 Front End Assembly that was originally installed in MXAs with serial number prefixes listed in the box above does not support External Mixing. Therefore, a new A13 Front End Assembly is also included in the kit, along with the necessary license, cables and connectors required for External Mixing.

Depending upon what other options are already installed, the A15 Front End Controller board currently installed in the MXA may also need to be replaced with the Enhanced Front End Controller (EFEC) board included in this kit. To allow the necessary adjustments the EFEC requires, a license for Option CR3, 2nd IF Output is also included.

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:
www.keysight.com/find/calibrationsoftware

NOTE Instrument software revision A.14.00 or later is required to install this upgrade.

NOTE The instrument must be readjusted and the performance tested to assure the instrument meets specifications following the hardware installation. The X-Series Performance Verification and Adjustment Software must be used and have revision E.11.04 or later. All adjustments are automated. This software is included in the N7814A, Keysight X-Series Signal Analyzer Calibration Application software.

Option HL6, External Mixing Upgrade Kit, Serial Prefix ≥ MY/SG/US5328

Installation Kit Parts List

Quantity	Description	Keysight Part Number
1	A13 Front End Assembly	N9020-60314
1	A15 Front End Controller w/ IF MUX	N9020-60172
1	Adapter-Coaxial Straight Female-SMA to Female-SMA, 50 Ω	1250-1666
1	Washer, Lock, Internal Tooth, ¼-inch	2190-0067
1	Nut-Hex-Double-Chamfer ¼-36-THD .125-IN-THK Stainless Steel	2950-0223
1	50 Ω Termination, SMA male	1810-0118
1	Cable Assembly, External Mixing, Front Panel (W27)	N9020-20166
1	Cable Assembly, μW Front End to W27 (W28)	N9020-20241
1	Opt EXM/HL6 Cable Kit with Wire Markers (includes W26, W36, W37, and W39, listed below)	N9020-60212
1	Cable Assembly, Coaxial 350 mm LG (W26)	8121-2027[a] with ends labeled '903' and '13'
1	Cable Assembly, Coaxial 240 mm LG (W36)	8121-1862[a] with ends labeled '902' and '7'
1	Cable Assembly, Coaxial 530 mm LG (W37)	8121-1401[a] with ends labeled '900' and '100'
1	Cable Assembly, Coaxial 525 mm LG (W39)	8121-2028[a] with one end labeled '1100'
1	Label, Warning	N9030-80018
5	Cable Ties	1400-0249
1	Entitlement Certificate	5964-5178
1	Entitlement Certificate Envelope	5967-7169
1	Installation Note	This note

a. This cable is included in the Opt EXM/HL6 Cable Kit with Wire Markers, p/n N9020-60212.

Tools Required

- T-10 TORX Driver
- T-20 TORX Driver
- 5/16-inch torque wrench
- ¼-inch open-end wrench
- 9/16-inch nut driver
- ¼-inch socket on 4-pound torque wrench
- Scissors or knife
- Diagonal cutters
- Keysight Calibration and Adjustment Software, N7814A (revision E.11.04 or later)
- Test equipment and computer supported by the X- Series Performance Tests and Adjustment Software
- MXA Signal Analyzer Service Guide. This manual is available as:
  - N9020A Option OBW or
  - Keysight part number N9020-90218
- Microsoft Windows based personal computer with internet access and USB port
- USB storage device with > 2 GB free memory

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.

Installation Procedure

Analyzer Information

1. Connect a power cord to the analyzer and turn on the analyzer.
2. After the analyzer has completed turning on, press **System**, **Show**, **System**. Make note of the following information from the Show System screen:

   Product Number: _____
   Serial Number: _____
   Instrument S/W Revision: _____

3. Check for the presence of one of the following options listed below in the Show System. Put a check mark or "X" after the option listed below that appears in the Show System menu.

   N9020A-B40_____
   N9020A-CR3_____
   N9020A-CRP_____
   N9020A-DP2_____
   N9020A-MPB_____
   N9020A-BBA_____

4. On the analyzer, press **System**, **Show**, **Hardware**. Note the Part #, Matl Rev, Rev, OF Rev, and Hw Id of the Front End Controller and Front End in the table below.

Assembly Name	Part #	Matl Rev	Rev	OF Rev	Hw Id
Front End Controller					
Front End					

5. Refer to the data in step 2 above. If the Product Number is not N9020A, **do not proceed** with the installation of this kit. This kit is to be installed only on N9020A signal analyzers.
6. Refer to the data in step 2 above. If the Serial Number prefix (the first six characters of the serial number) is earlier than MY5328, SG5328, or US5328, or is later than MY/SG/US5606 **do not proceed** with the installation of this kit. This kit is to be installed only on N9020A signal analyzers with serial prefixes from ≥ MY/SG/US5328 to < MY/SG/US5606.
7. Refer to the data in step 3 above. If option N9020A-BBA is present, there will be additional steps required to remove and replace the front panel assembly.
8. Refer to the data in step 3 above. If option N9020A-B40, N9020A-MPB and/or N9020A-DP2 is already present, the EFEC is already installed and you do not need to perform the Replace Front End Controller procedure.

9. Refer to the data in step 4 above. Verify that the Front End assembly has a HW ID of 70.
10. Refer to the data in step 3 and step 4 above. If the analyzer has N9020A-CR3 and/or N9020A-CRP installed, verify that it also has a Front End Controller with Hw Id of 75. If the Front End Controller has a Hw Id of 75, you do not need to perform the Replace Front End Controller procedure.

Update Instrument Software

Updating the instrument software and installing the necessary licenses before installing the new hardware will help ensure that the hardware installation was successful.

Go to the following website and determine whether or not the analyzer has the latest instrument software already installed:

http://www.keysight.com/find/xseries_software

If the analyzer does not have the latest instrument software already installed, download and install the latest version.

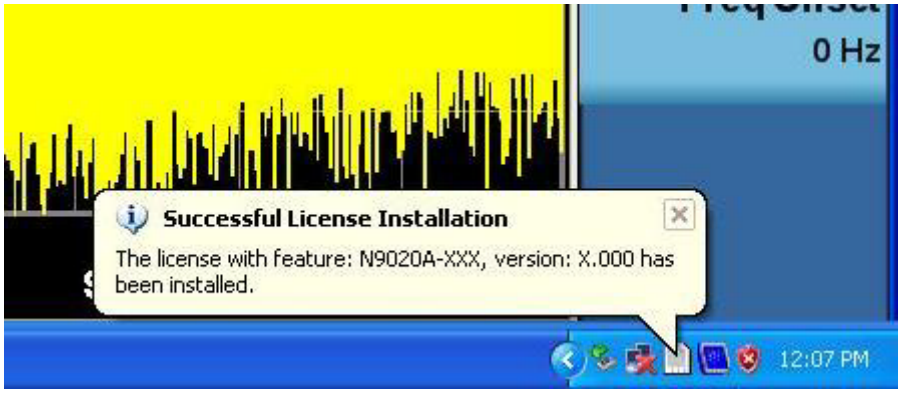
Licensing the New Options

1. Locate the Option Upgrade Entitlement Certificate (5964-5178) 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. Connect a mouse to another USB port. Windows will detect the new hardware and may display the configuration menu shown in Figure 1. This menu may be configured according to your preferences.

Figure 1 USB Storage Device Configuration Menu

7. The signal 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 as shown in Figure 2. Since the license file contains multiple licenses, multiple “Successful License Installation” messages will appear. Wait until all licenses have been consumed before removing the USB Storage Device.

Figure 2 Successful License Installation



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 options listed:
   - N9020A-EXM External Mixing
   - N9020A-CR3 Connector Rear, 2nd IF Output
   - N9060A-3FP Amplitude Correction and Limit Lines
   - N9060A-4FP TOI and Harmonics
   - N9060A-5FP ACP 18 Carrier Measurement
   - N9060A-6FP TV Trigger and IQ Analyzer Enhancement
   - N9060A-7FP Zero Span, Register, Trace, and Spurious Enhancements

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.

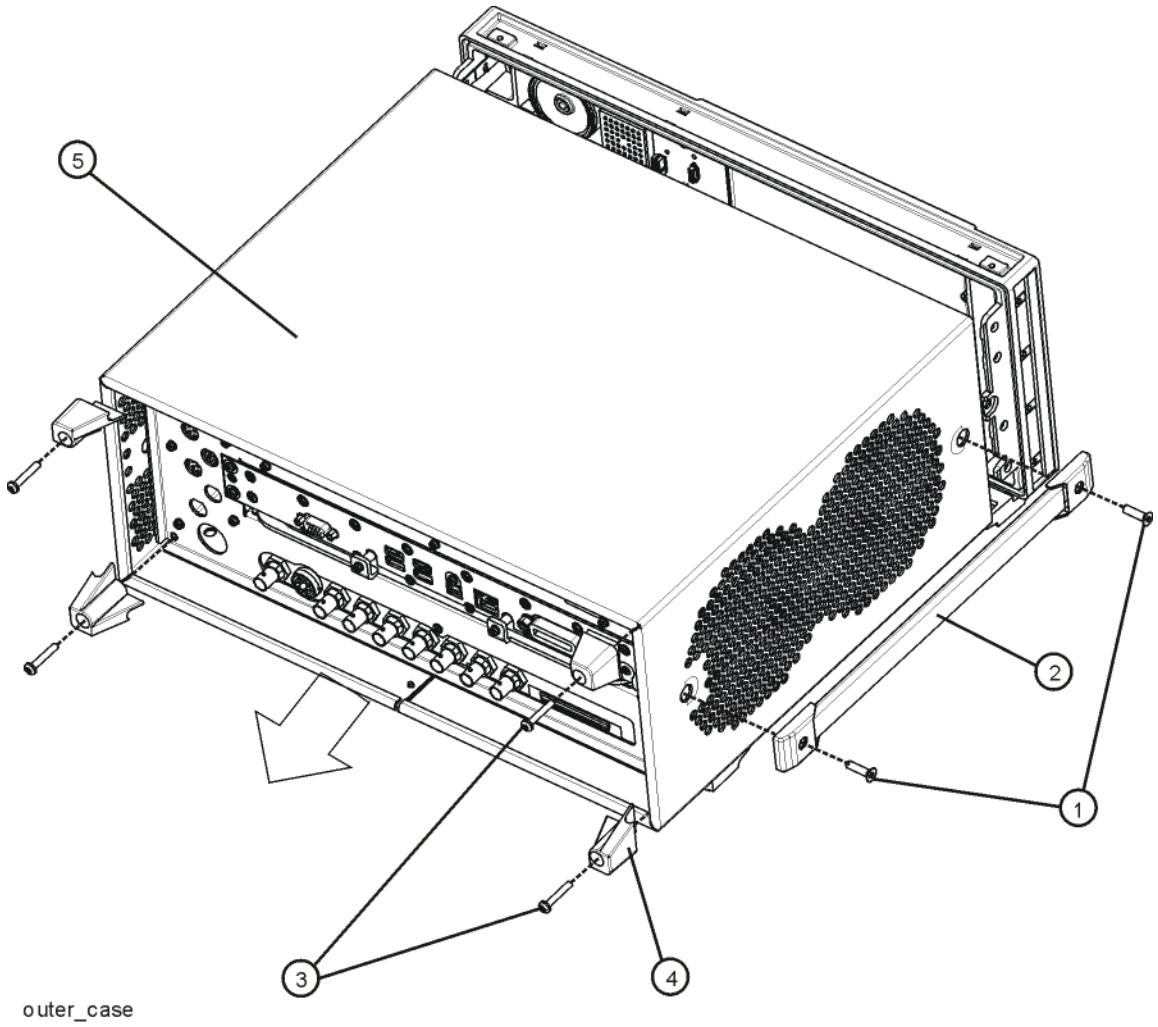
NOTE If the analyzer has Option PRC, Portable Configuration, refer to the "Portable Instrument (Option PRC)" section on page 12 to remove the outer case.

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

Standard Instrument (Benchtop Configuration)

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

Figure 3 Standard Instrument Outer Case Removal



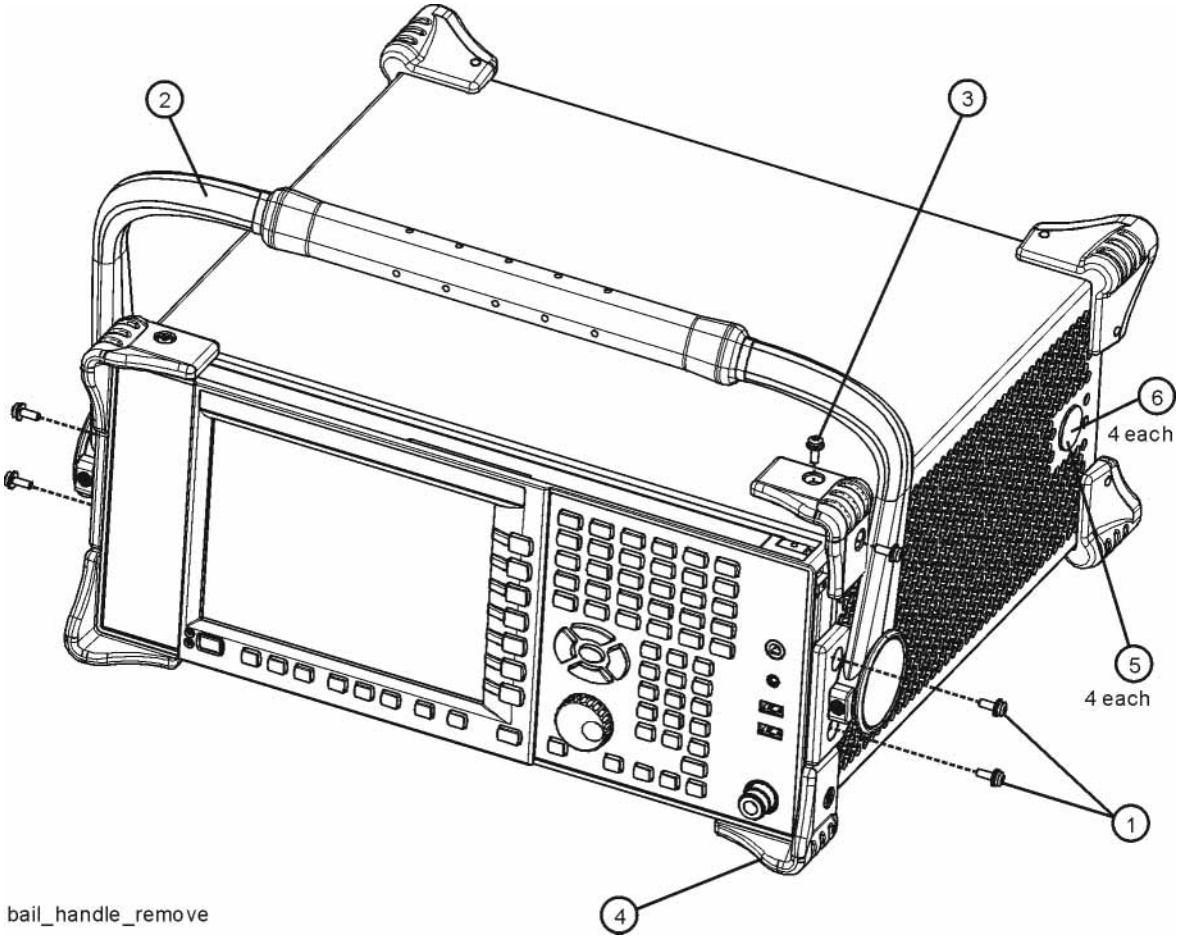
5. Proceed to the Front Frame Assembly Removal section to remove the front frame.

Portable Instrument (Option PRC)

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

1. Disconnect the instrument from ac power.
2. Refer to Figure 4. Using the T-20 driver, remove the four screws (two on each side) (1) that hold the bail handle (2) to the front frame.

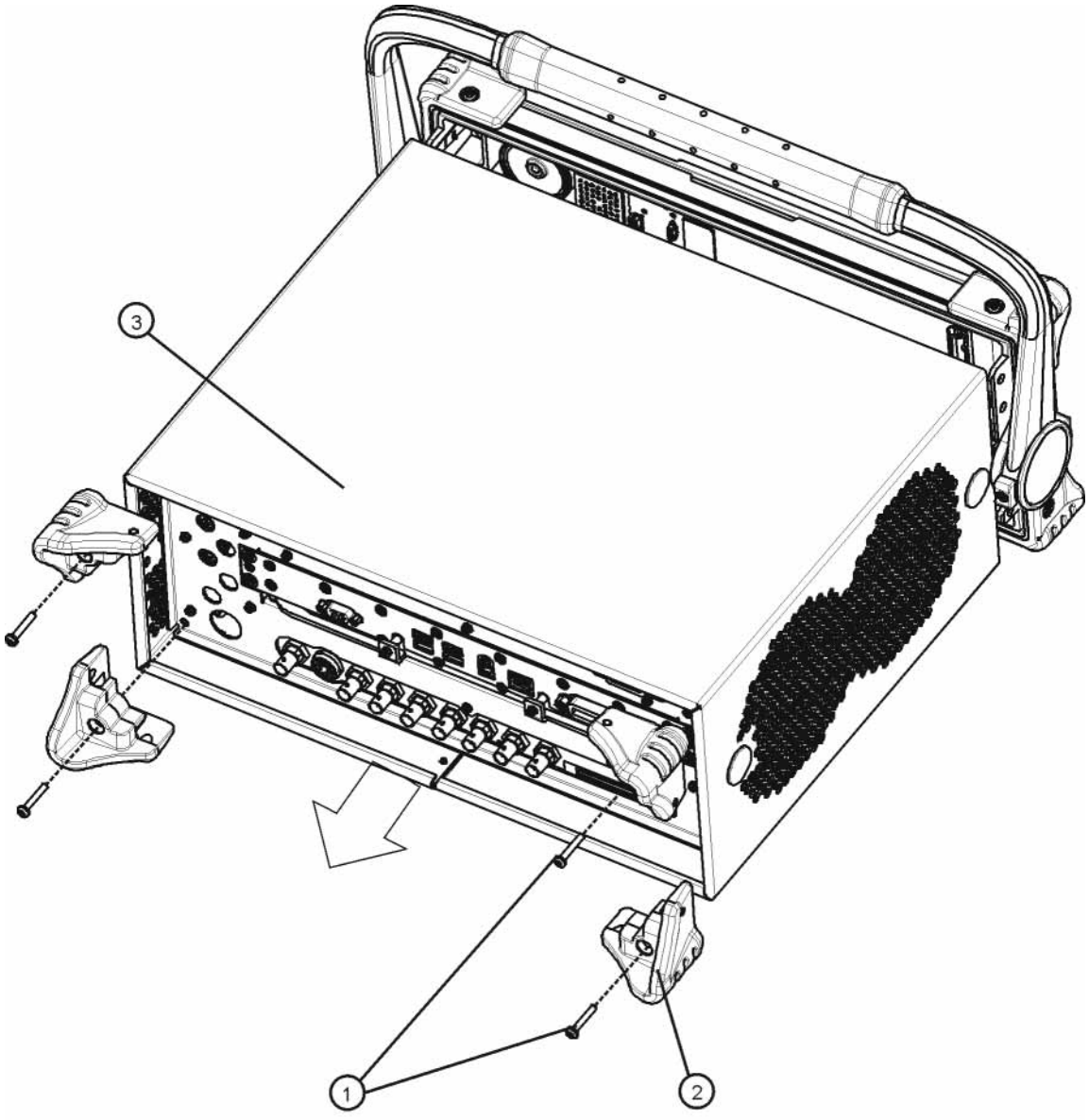
Figure 4 Bail Handle Removal



3. Using the T-20 driver, remove the four screws (two on each side) (6) that hold the strap handle plugs (5) in place.

4. Refer to Figure 5. Using the T-20 driver, remove the four screws including washers (1) that hold the rear bumpers (2) in place.
5. Pull the instrument cover (3) off towards the rear of the instrument.

Figure 5 Option PRC Instrument Outer Case Removal

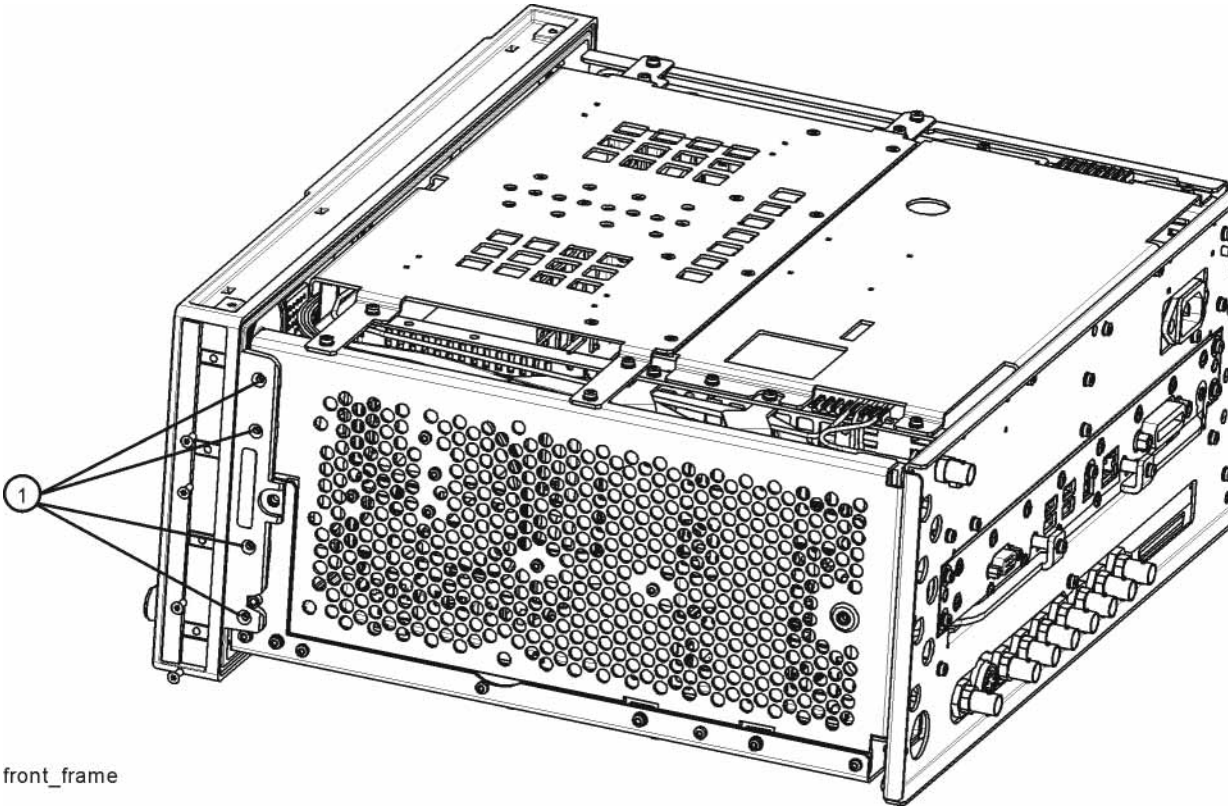


rear_bumper_remove

Front Frame Assembly Removal

1. Refer to Figure 6. Using the T-10 driver, remove the eight screws (1), four on each side, to detach the front frame from the chassis.

Figure 6 Front Frame Removal

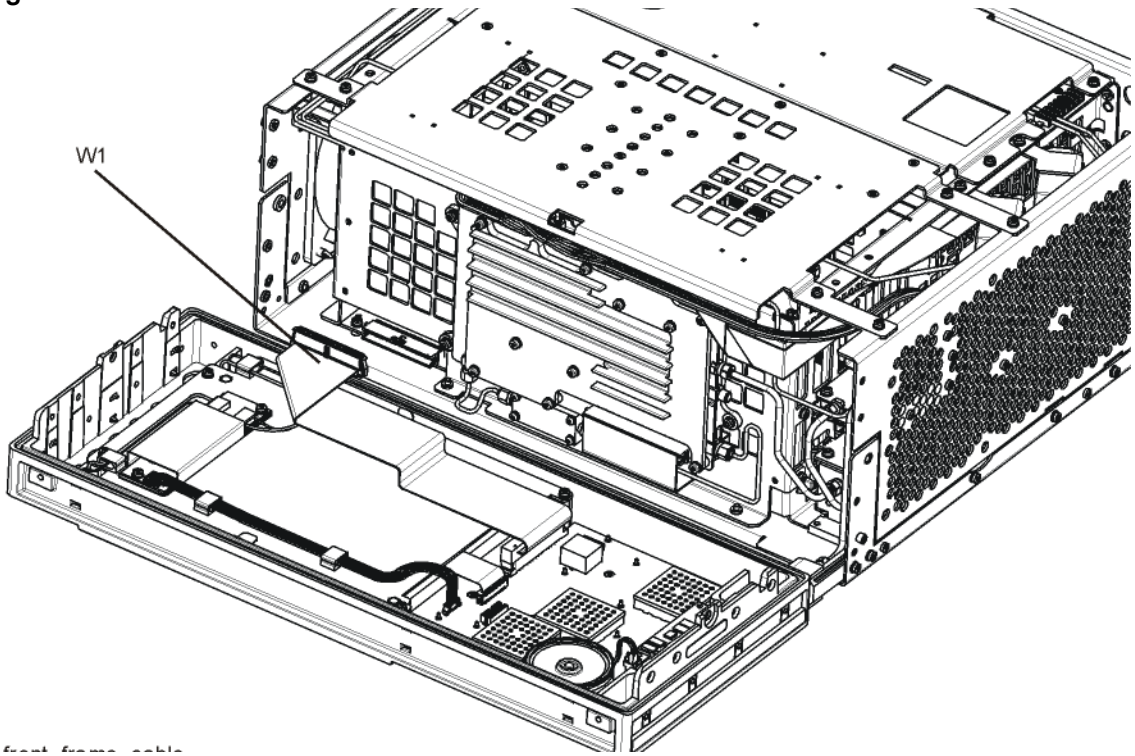


2. Refer to Figure 7. Pull the front frame carefully away from the chassis. Remove the ribbon cable W1 from the A8 Motherboard.

NOTE

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

Figure 7 Front Panel Cable



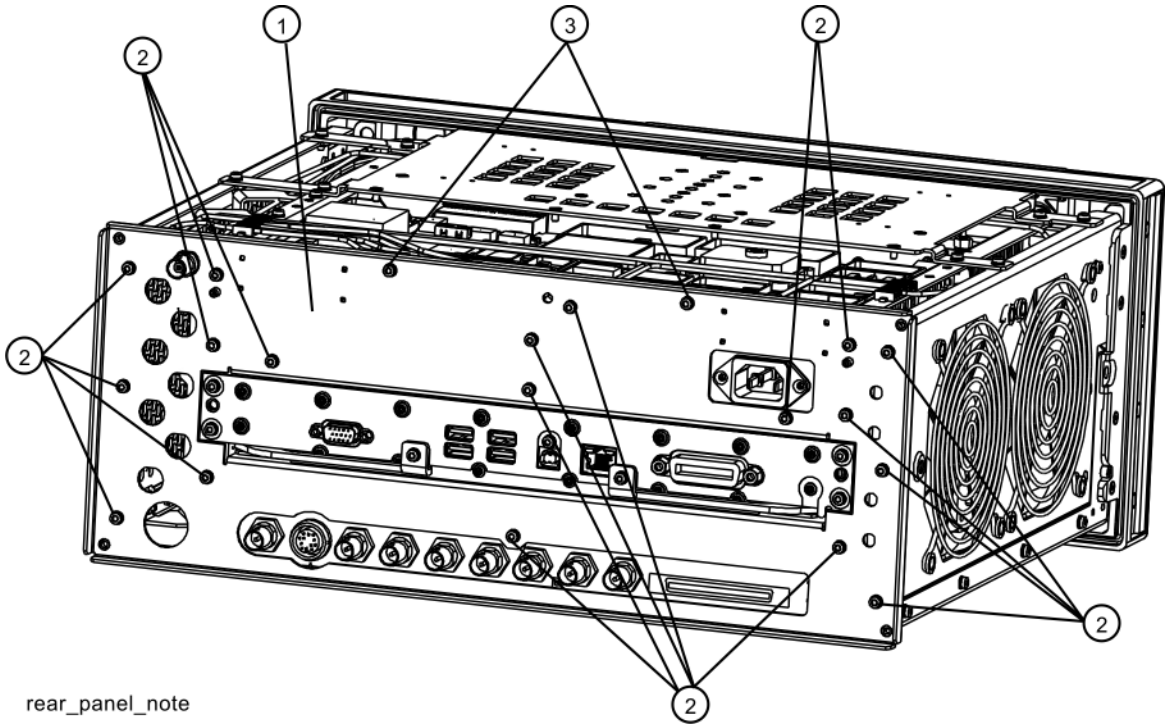
front_frame_cable

3. If the instrument has Option BBA (BBIQ inputs), there will be an additional cable (W24) that will need to be removed. W24 connects to the A18 BBIQ Interface Board. Pull the Front Frame Assembly carefully away from the chassis. Remove the ribbon cable W1 from the motherboard.

Rear Panel Removal

1. Refer to Figure 8. Using the T-10 driver, remove the screws (2) attaching the rear panel (1) to the chassis.
2. Use a 9/16-inch socket wrench to remove the nut securing the EXT REF IN connector from the rear panel.

Figure 8 Rear Panel Removal

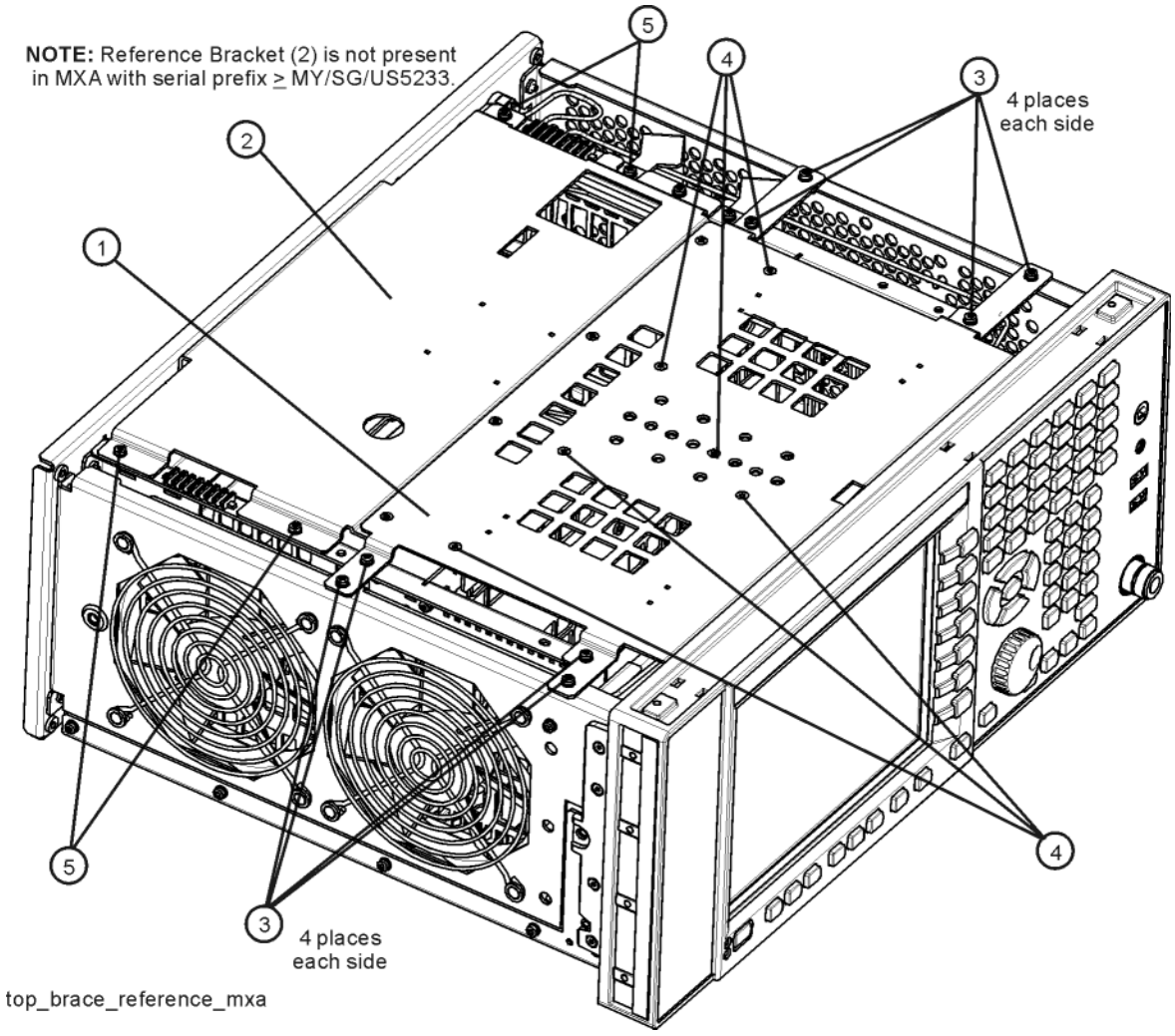


3. Instruments with Option CR3 or CRP will have an additional cable W39 that is attached to the rear panel. Remove W39 using either a 5/16” nut driver or a 5/16” open-end wrench.
4. The rear panel can now be removed.

Top Brace Removal

1. Refer to Figure 9. To remove the top brace (1), use the T-10 driver to remove the eight panhead screws (3) (0515-0372), four on each side, attaching the braces to the chassis. Also remove the six flathead screws (4) (0515-1227) attaching the top brace to the boards.

Figure 9 Top Brace Removal



Replace A13 Front End Assembly

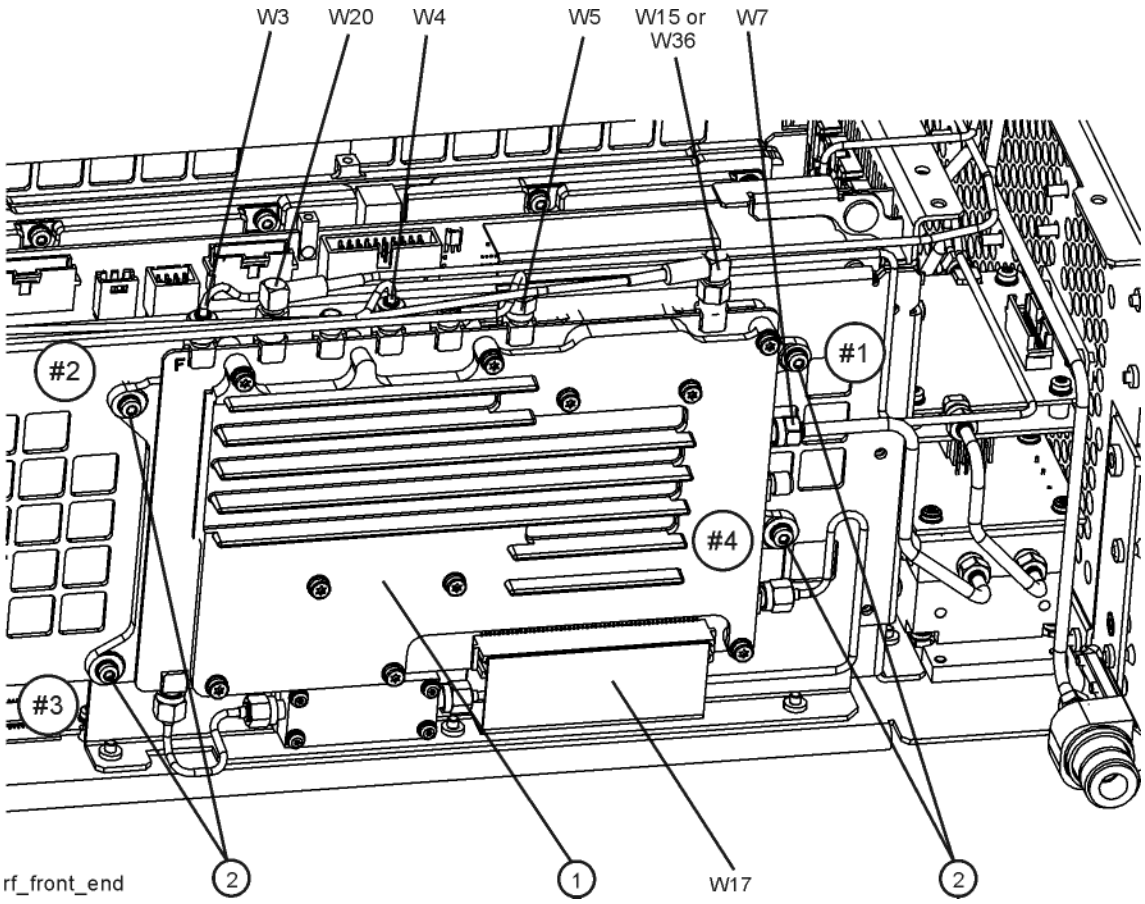
NOTE Refer to Analyzer Information at the beginning of the Installation Procedure. Only perform this procedure if the Front End has a Hw ID of 70 and the part number of the Front End is either E6607-61002 or E6607-61004.

1. Cut the cable ties securing the flexible coax cables and wire harnesses to the semi-rigid coax cables above the A13 RF Front End Assembly.
2. Refer to Figure 10. Using the 5/16 inch wrench, remove the cables W3, W4, W5, W7, W15, and W20 attached to the RF Front End Assembly (1).

NOTE W7 will not be present in instruments with Option 503.

3. Disconnect the ribbon cable W17 from the Front End Control Assembly.
4. Remove the four screws (2) using the T-10 driver. The RF Front End Assembly can now be removed from the chassis.

Figure 10 RF Front End Assembly Removal



5. Locate the A13 RF Front End Assembly in this kit. Refer to Figure 10. Place the RF Front End Assembly into the chassis. Replace the four screws (2). Using the T-10 driver, torque to 9 inch-pounds in the sequence shown, starting with #1.
6. Reattach the cables W3, W4, W5, W7 and W20 to the RF Front End Assembly (1). Torque the semi-rigid cables to 10 inch-pounds.

NOTE

W7 will not be present in instruments with Option 503.

7. Check the other end of the cable that previously connected to A13J7. If the other end of the cable goes to A15J902, this cable is W36 and the free end should be reconnected to A13J7. Torque to 10 inch-pounds. If the other end of the cable goes to A2J100, this cable is W15 and should not be reattached; this cable will be replaced by W36, included in the kit.

Replace Front End Control Assembly

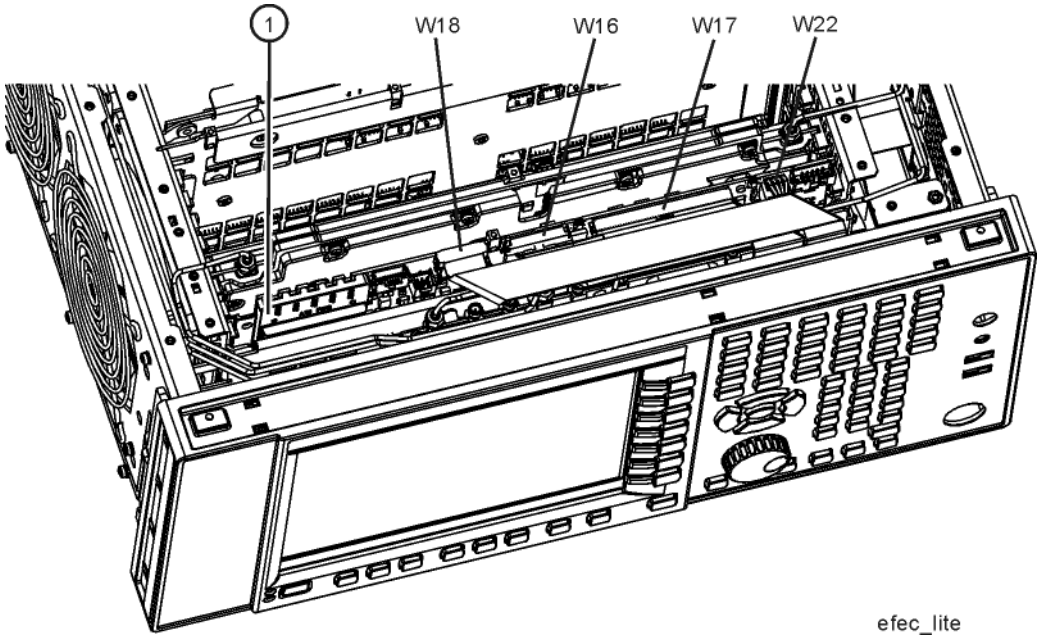
NOTE Refer to Analyzer Information at the beginning of the Installation Procedure. Only perform this procedure if the Front End Controller has a Hw ID of 71.

1. Refer to Figure 11. Remove the ribbon cables W16, W17, and W18 and the wire harness W22 from the Front End Control assembly (1).

NOTE W22 will not be present in instruments with Option 503.

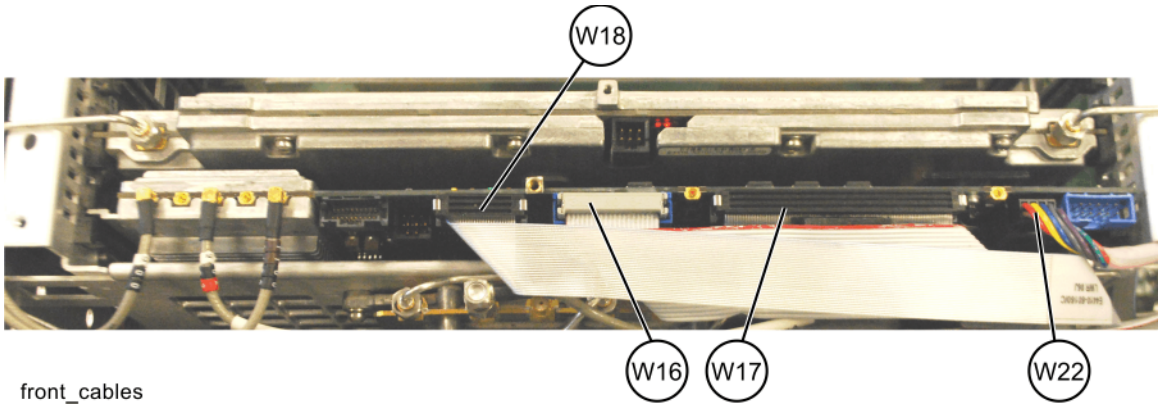
2. The Front End Control assembly can now be unplugged from the motherboard by leveraging up on the ejector and lifting the board up on the other side.

Figure 11 Front End Control Assembly Removal



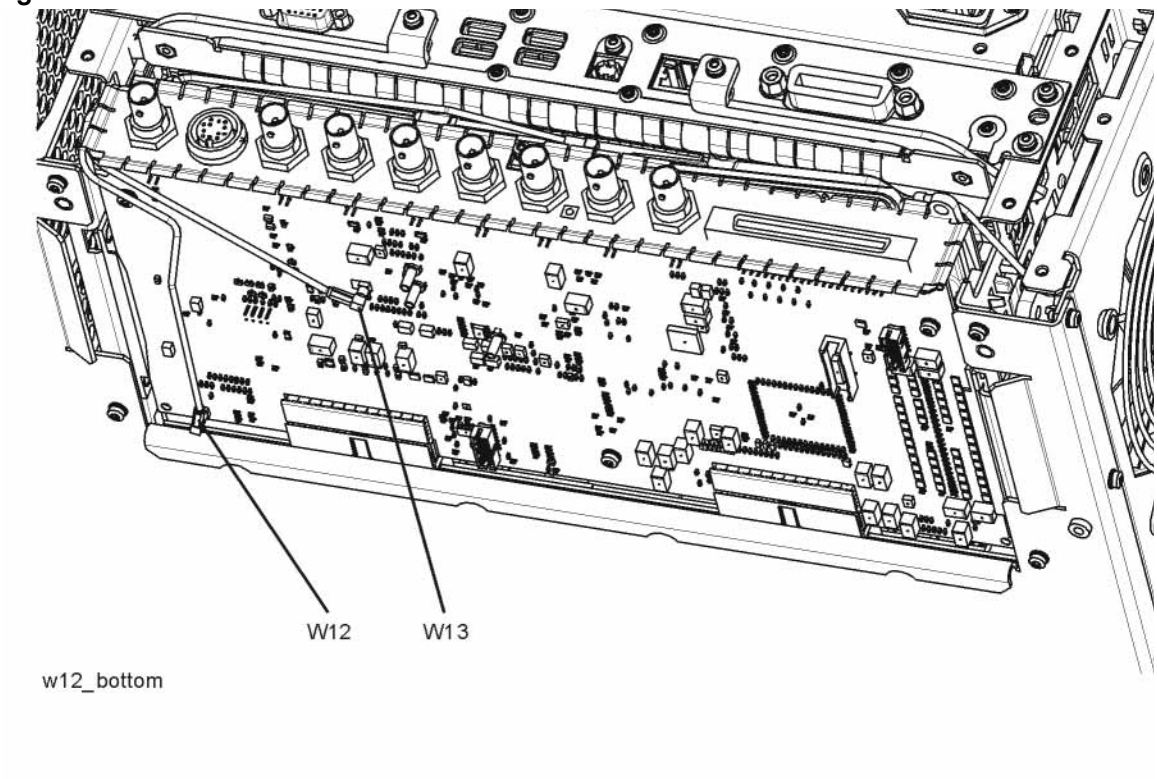
3. Refer to Figure 12. Install the Enhanced Front End Control assembly included in this kit into slot 6 in the chassis securing with the ejector.
4. Reattach the ribbon cables W16, W17, and W18 to the Front End Control assembly (1).
5. If the analyzer does not have Option 503, reconnect W22 wire harness to the Front End Control assembly (1).

Figure 12 Enhanced Front End Control Assembly Installation



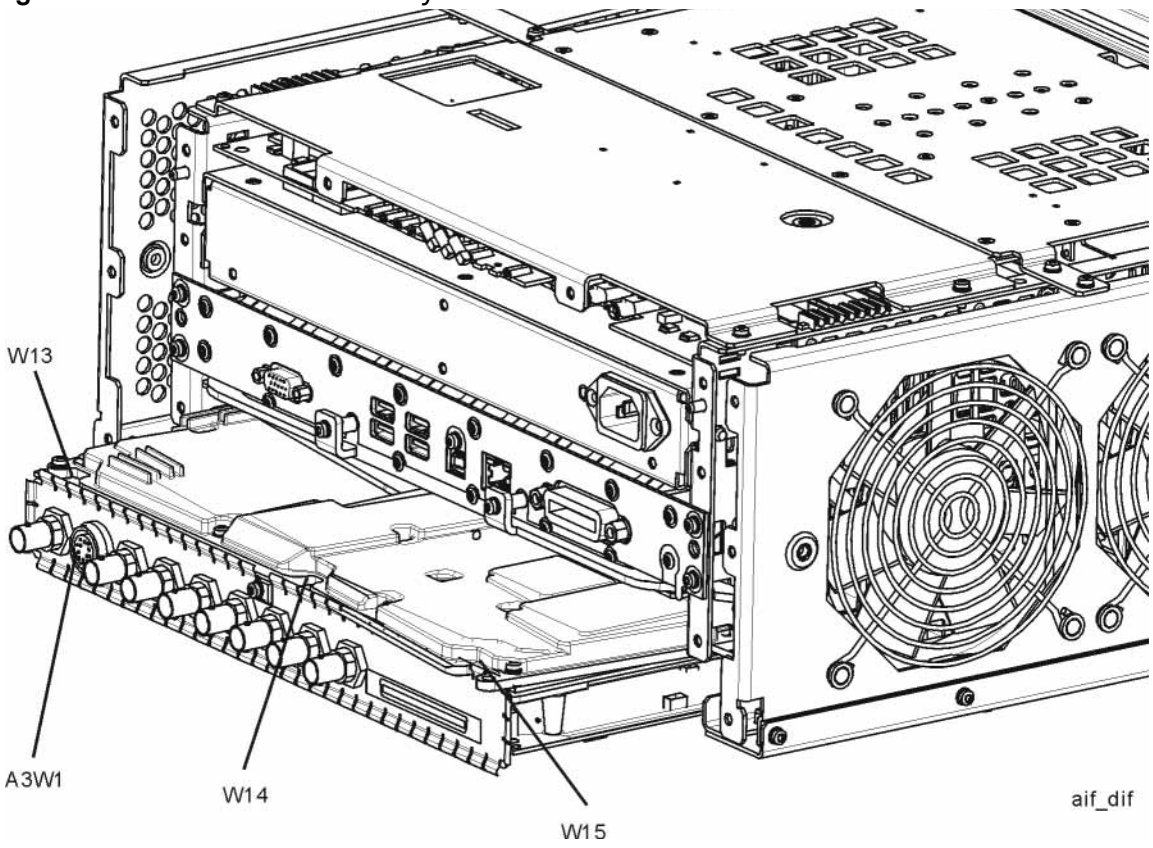
6. Refer to Figure 13. Disconnect cables W12 and W13 from the bottom of the DIF assembly.

Figure 13 Disconnect W12 and W13



7. Refer to Figure 14. Pull the AIF/DIF assembly part way out of the chassis. Disconnect cable W15 from the analyzer.
8. Completely remove W15 from the analyzer.

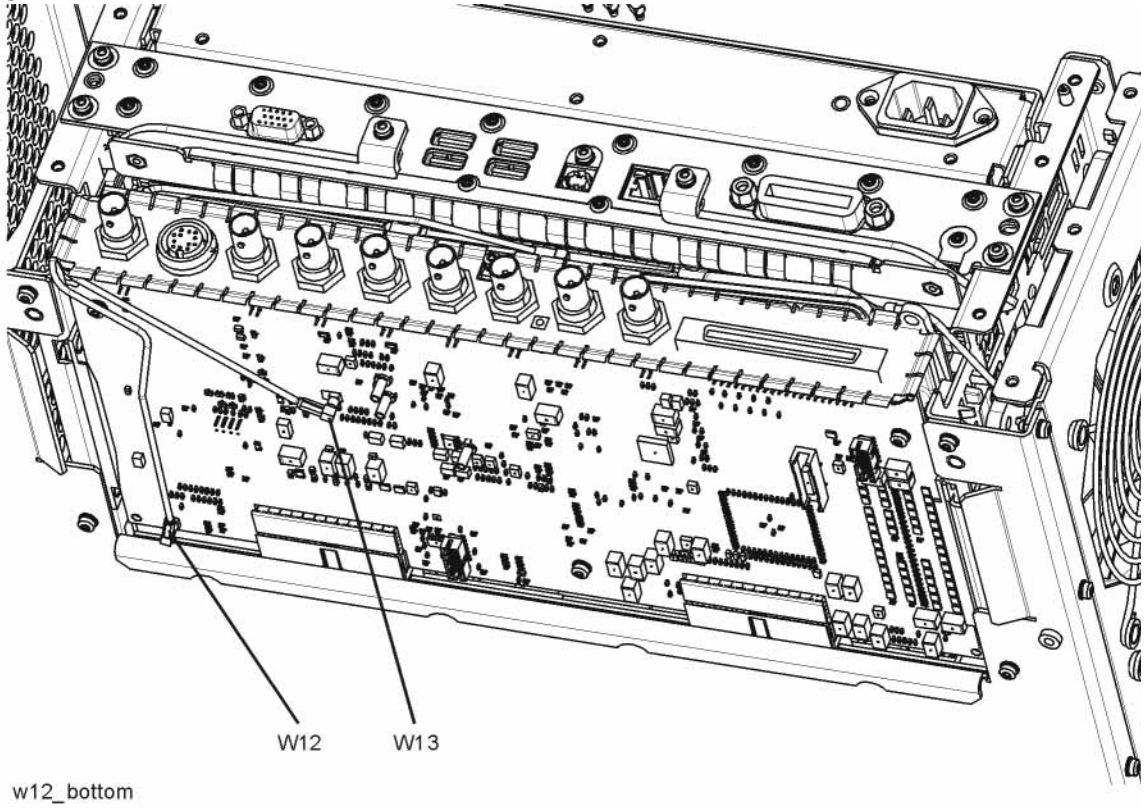
Figure 14 AIF/DIF Assembly Partial Removal



9. Locate W36 in the Opt EXM/HL6 Cable Kit. This cable will have part number 8121-1862 and will be labeled “902” on one end and “7” on the other. Connect the end labeled “902” to A15J902 on the A15 EFEC Assembly. Connect the other end to A13J7 on the A13 Front End Assembly. Torque the connector on A13J7 to 10 inch-pounds.
10. Locate W37 in the Opt EXM/HL6 Cable Kit. This cable will have part number 8121-1401 and will be labeled “900” on one end and “100” on the other. Connect the end labeled “900” to A15J900 on the A15 EFEC Assembly. Route the cable along the left side of the instrument above the fans. Route the cable down behind the rear of the second (rearmost) fan. Connect the cable to A2J100 on the A2 EAIF Assembly
11. Slide the AIF/DIF assembly into the slot at the rear of the instrument and push on the assembly to mate the connectors to the motherboard assembly.

12. Refer to Figure 15. Reconnect W12 to A3J14. Reconnect W13 to A3J15.

Figure 15 Reconnect W12 and W13

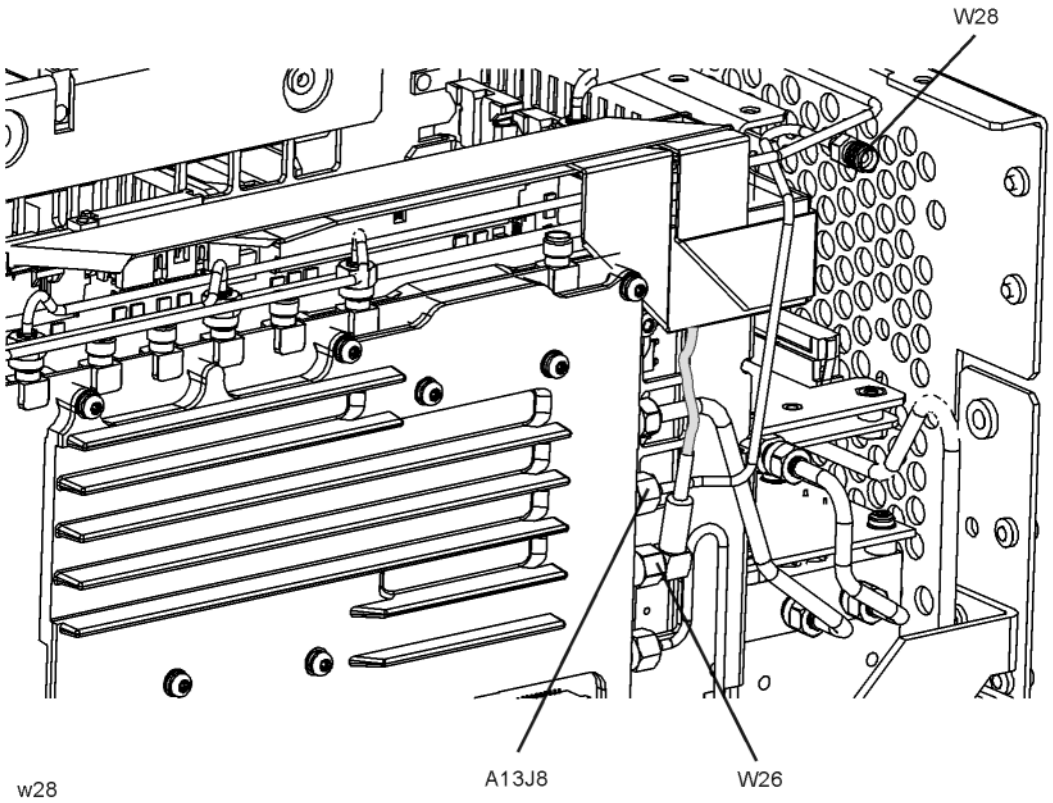


13. Locate W39 in the Opt EXM/HL6 Cable Kit. This cable will have part number 8121-2028 and will be labeled “1100” one end and no label on the other. Connect the end labeled “1100” to A15J1100 on the A15 EFEC Assembly. Route the cable along the left side of the chassis above the fans toward the rear panel. The other end of the connector will be secured to the rear panel later.

Add Cables to A13 Front End and A15 Front End Controller

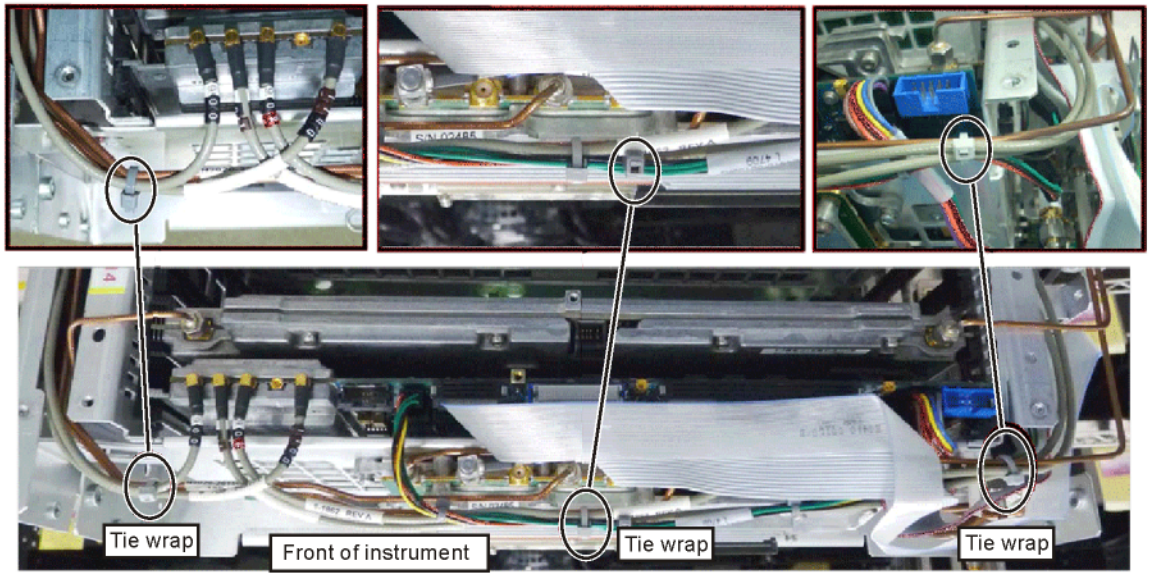
1. Locate the flexible coax assembly in the Opt EXM/HL6 Cable Kit with Markers that is labeled “8120-2027”. The ends should be labeled “903” and “13”. This is W26.
2. Connect the end of W26 that is labeled “903” to A15J903.
3. Refer to Figure 16. Connect the end of W26 that is labeled “13” to A13A1J13. J13 is one of the connectors along the right side of A13, near the A12 BYFA (if present).
4. Locate semi-rigid coax cable, part number N9020-20241, in the upgrade kit. This is W28. Connect the end with the SMA male connector A13J8, with the SMA female connector pointing towards where the front panel would be. The long, straight section of W28 should be parallel to the casting of the A13 Front End and parallel to the side chassis. Torque the cable nut to 10 inch-pounds.

Figure 16 Orientation of W28 in MXA



5. Refer to Figure 17. Dress the coaxial cables and semi-rigid cables neatly and tie together using cable ties (1400-0249) at the locations indicated.

Figure 17 Adding Cable Ties near A13 and A15 Assemblies



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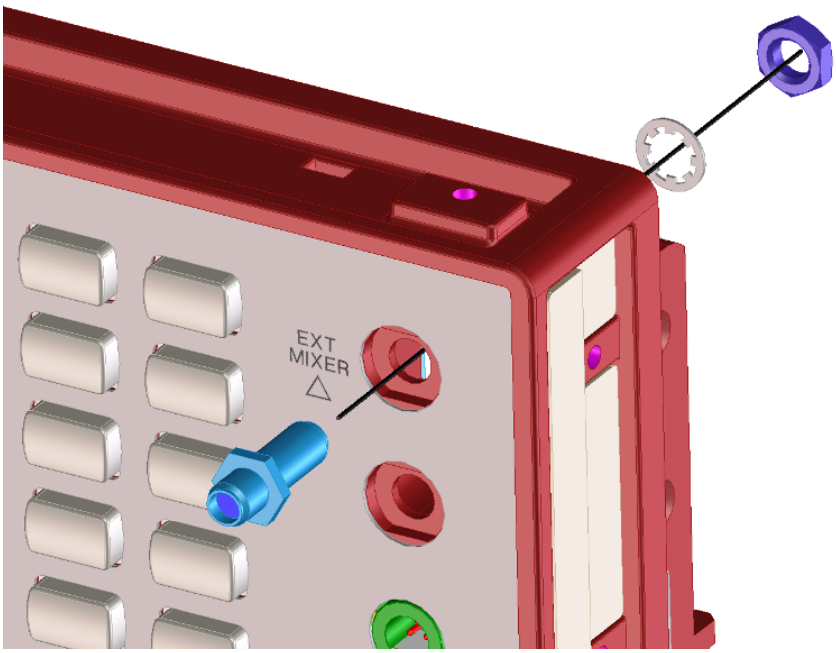
Add EXT MIXER Connector and Cable to Front Frame Assembly

1. Locate the SMA female to SMA female connector (1250-1666), ¼" lock washer (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 lock washer 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.
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 18. Secure the connector using the ¼" lock washer and ¼" hex nut from the rear. Torque to 21 inch-pounds.

Figure 18 Attaching SMA Female Connector



4. Locate the External Mixing, Front Panel semi-rigid coax assembly in the kit, part number N9020-20166. This is W27. Note that this cable is symmetrical; either end can be connected to the front-panel connector.
5. Connect one end of W27 to the SMA female connector as shown in Figure 19.
6. Orient W27 so that the cable slopes upward from the Ext Mixer connector at a 15 degree angle. The top of the connector should be approximately level with the top of the shield over the Front Panel Interface board. Refer to Figure 20. Torque the cable nut on the Ext Mixer connector to 10 inch-pounds.

Figure 19 Connecting W27 to Ext Mixer Connector

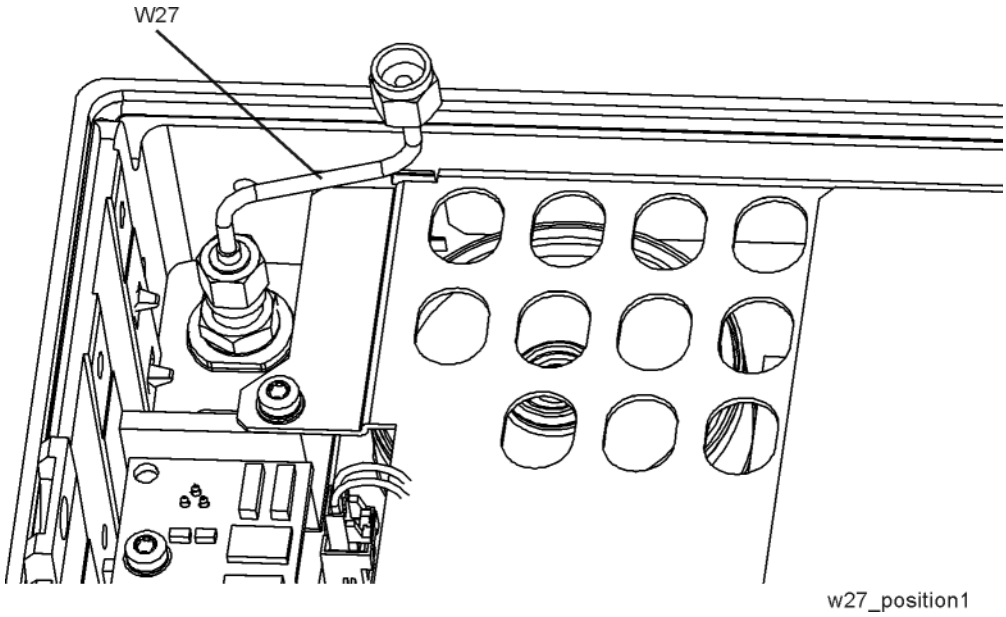
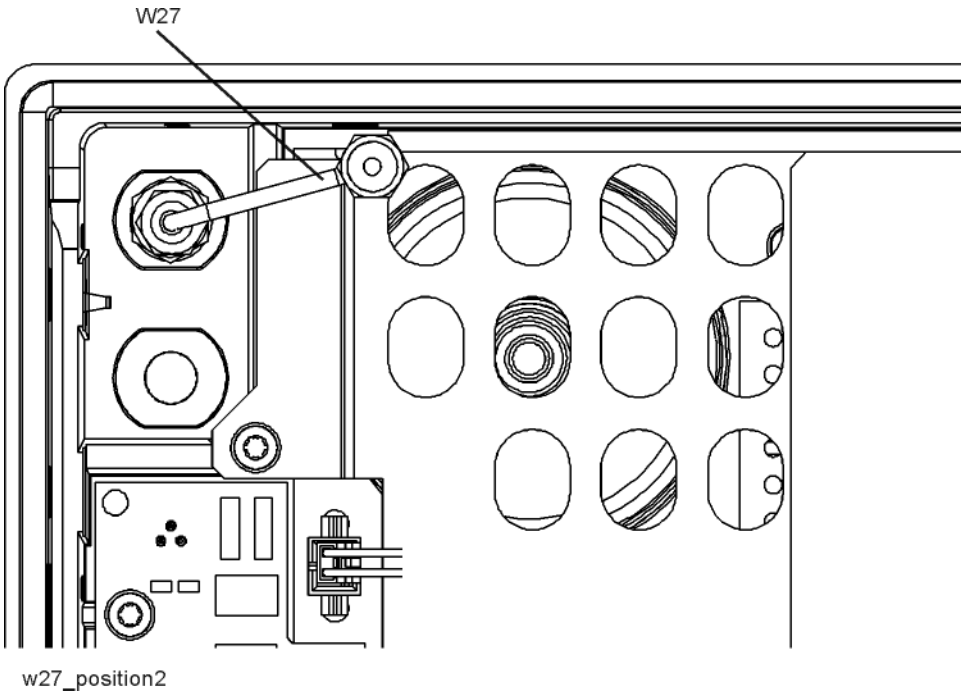


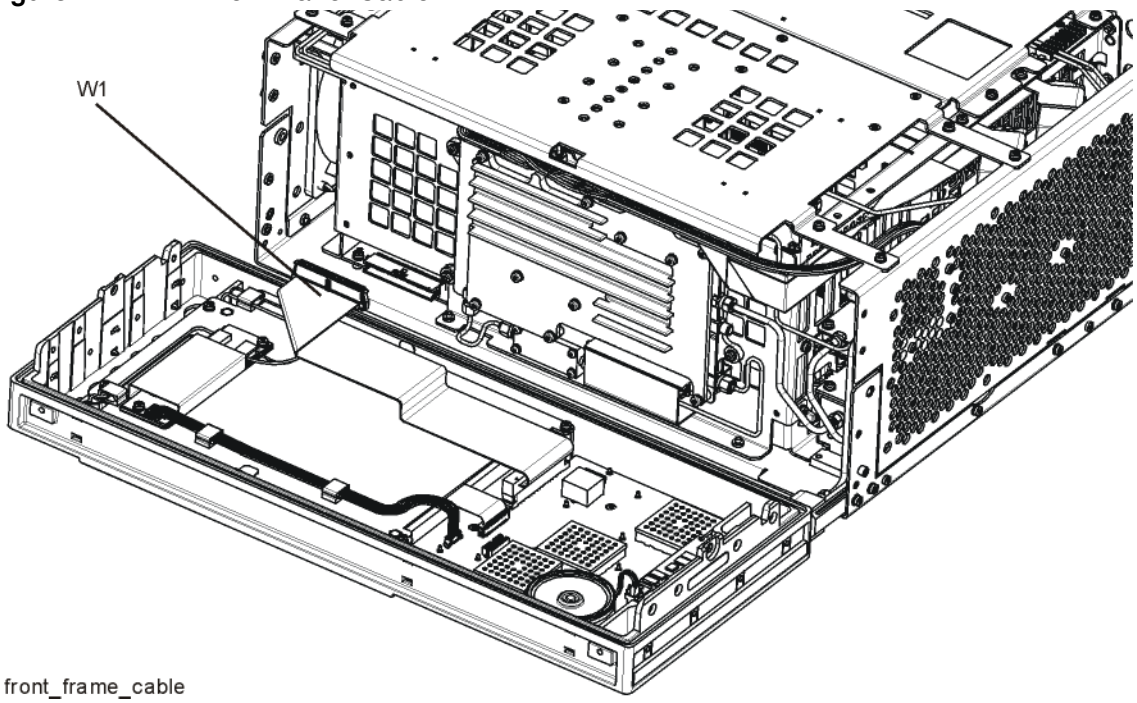
Figure 20 Proper Orientation of W27



Front Frame Replacement

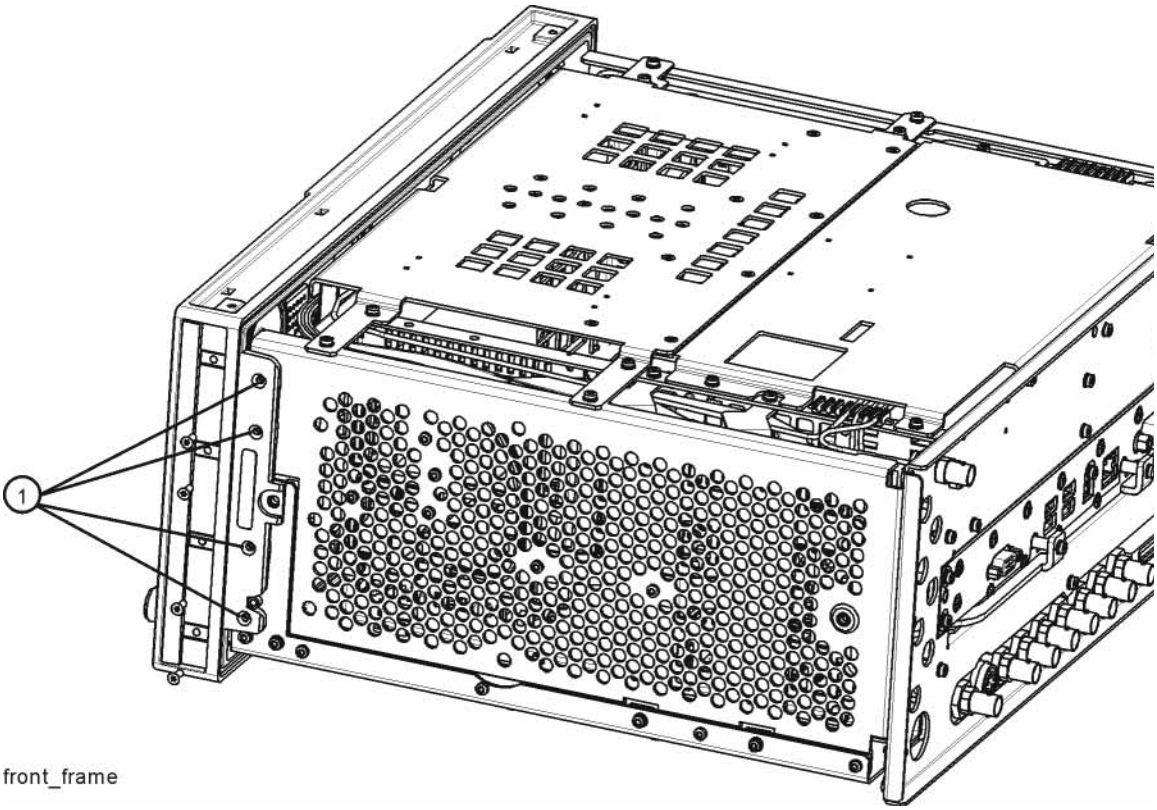
1. Refer to Figure 21. Reattach the ribbon cable W1. Ensure the locking tabs are engaged.
2. Reattach the ribbon cable W24 for instruments with Option BBA.

Figure 21 Front Panel Cable



3. Refer to Figure 22. Carefully position the Front Frame Assembly onto the chassis. Ensure no cables are crushed. Replace the eight screws (1), four on each side of the chassis. Torque to 9 inch-pounds.

Figure 22 Front Frame Replacement



4. Refer to Figure 23. When the front panel is installed, cables W27 and W28 typically do not align. This is OK since the cables are flexible.
5. Refer to Figure 24. Align and connect cables W27 and W28. Hand-tighten the nut.

Figure 23 W27 and W28 Before Alignment

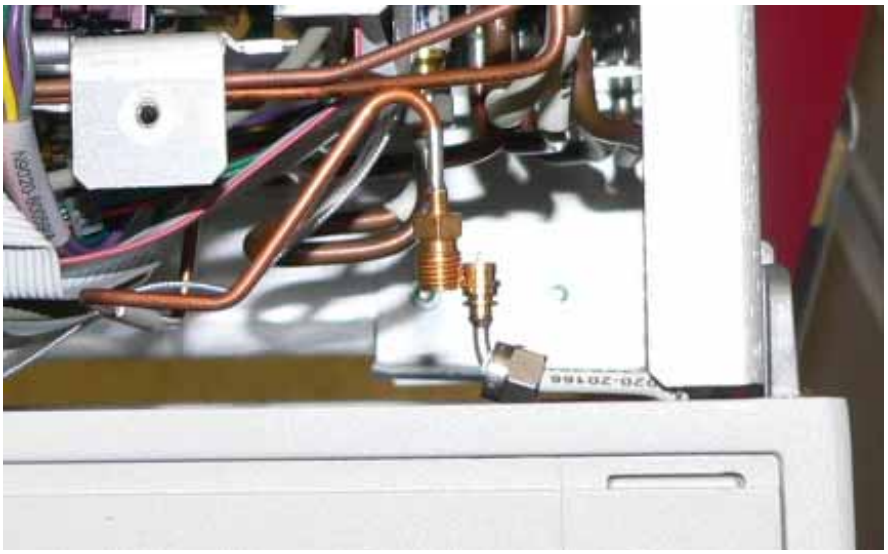
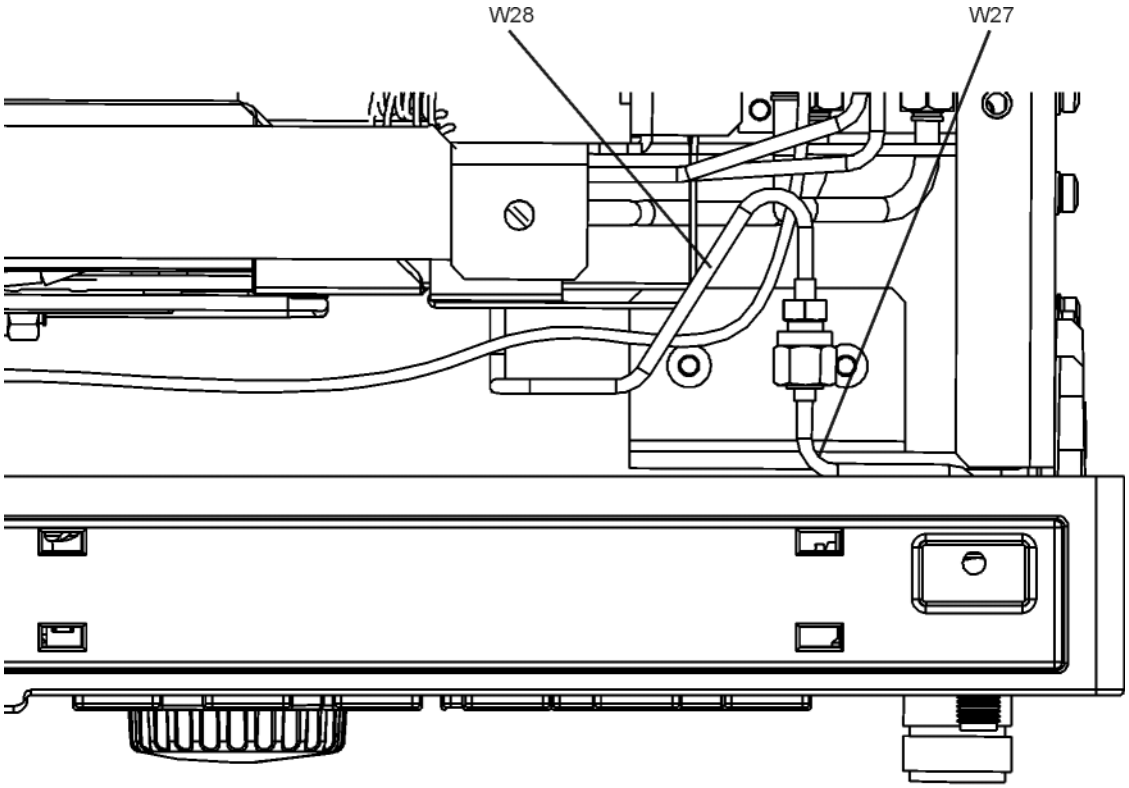


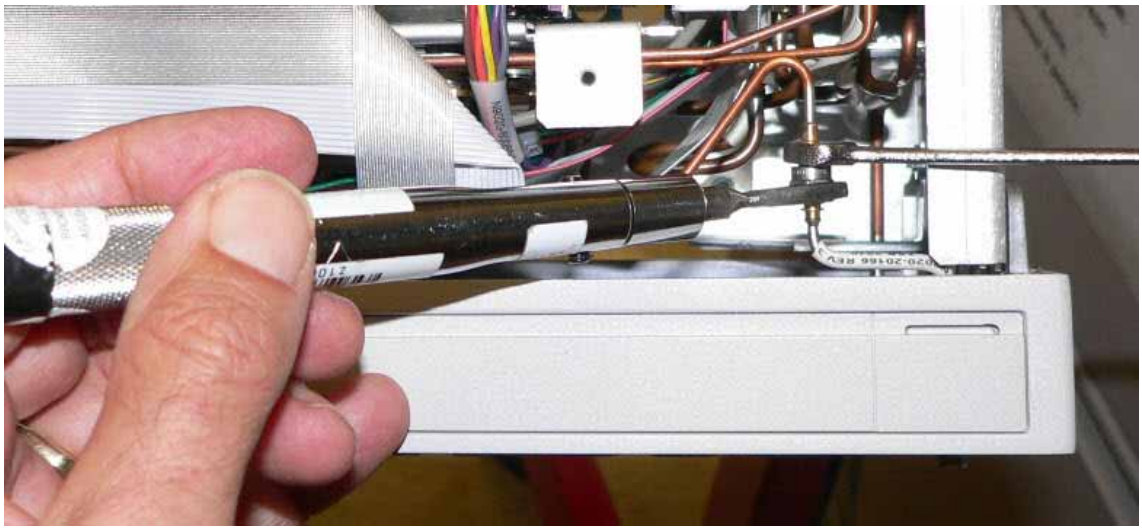
Figure 24 W27 and W28 Properly Aligned



w27_w28_align

6. Refer to Figure 25. Use a ¼” open-end wrench to prevent the SMA female connector on W28 from twisting. Use a 5/16” torque wrench to torque the nut on W27 to 10 inch-pounds.

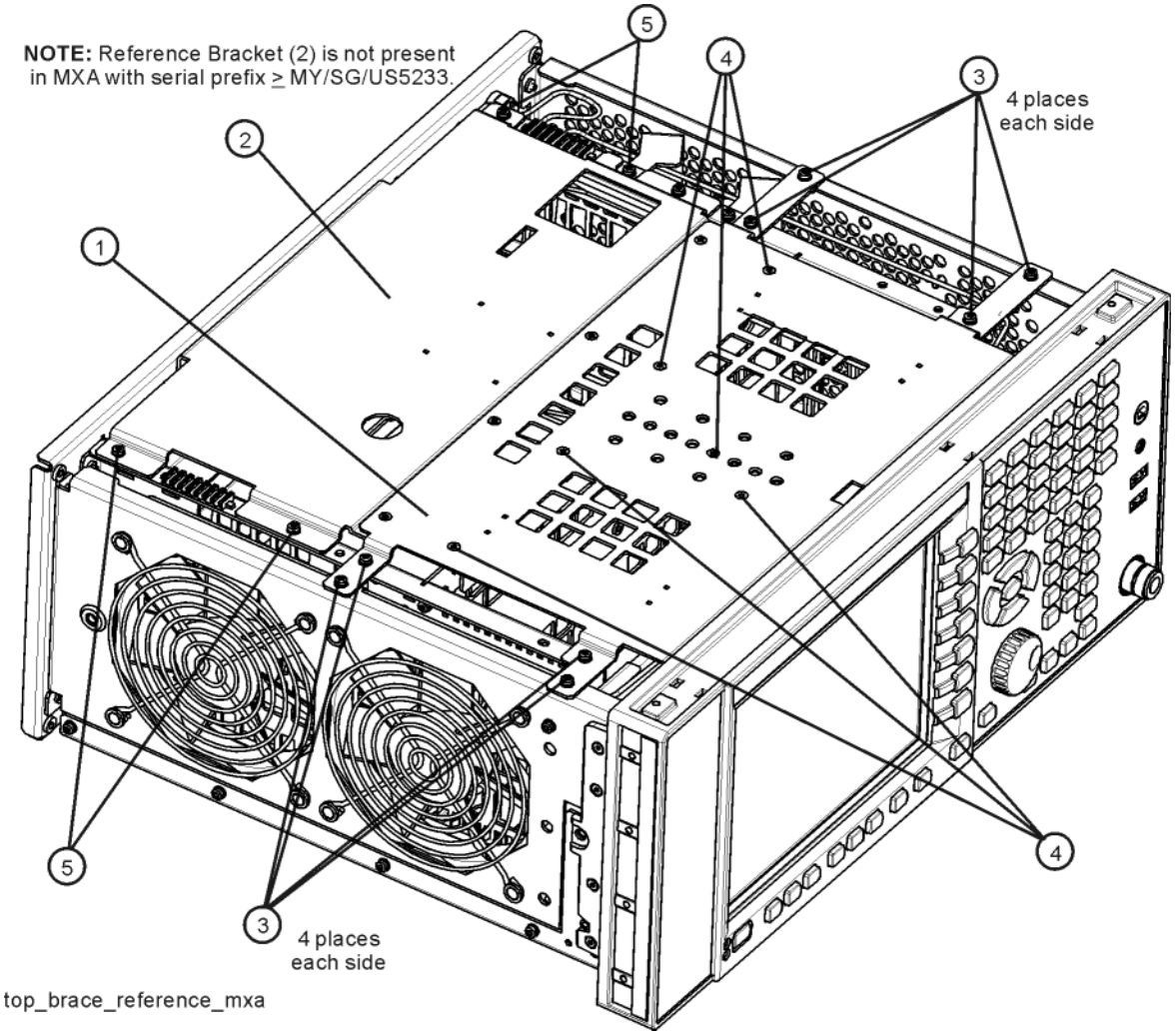
Figure 25 Torque Cable W28 onto W27



Reassembly

1. Refer to Figure 26. To replace the top brace (1), place it in the correct position and attach the appropriate screws. Torque to 9 inch-pounds.

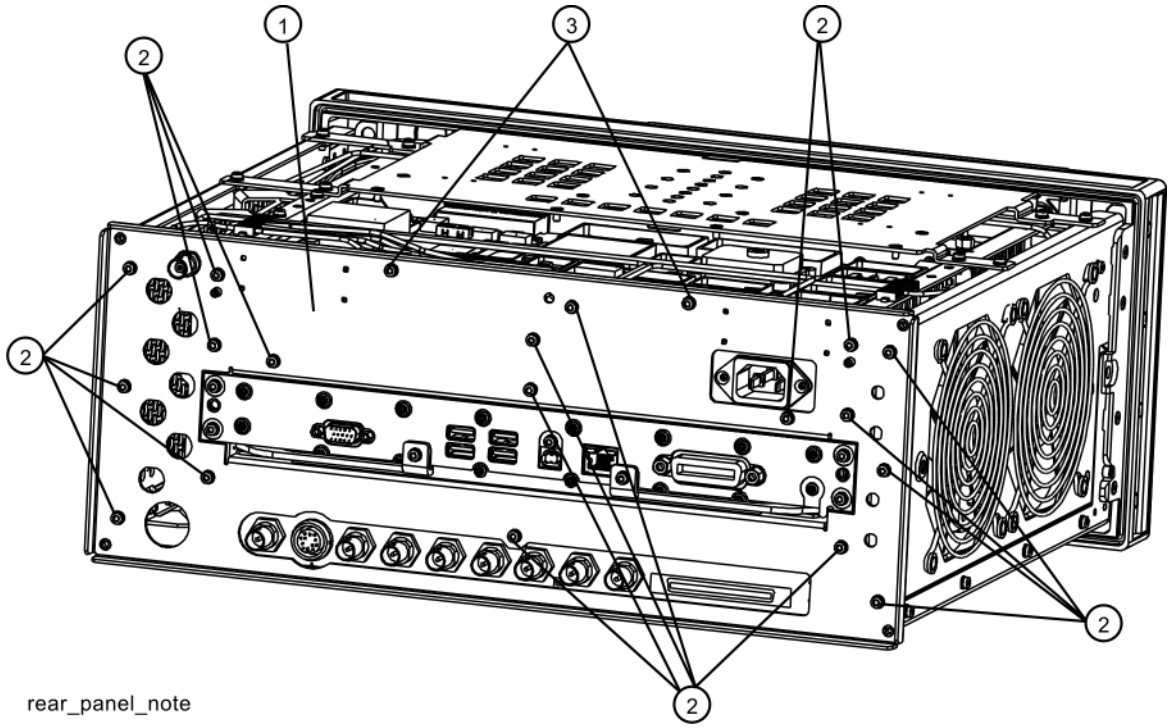
Figure 26 Top Brace Replacement



2. Remove the hole plug from the AUX IF OUT hole.
3. Attach the W23 External Reference cable to the rear panel and secure with a lock washer (2190-0102) and nut (0590-2332). Torque to 21 inch-pounds using a 9/16” nut driver.
4. Attach the W39 Aux IF Out cable to the rear panel and secure with the lock washer and nut that came with the cable. Torque to 9 inch-pounds with a 5/16” nut driver.

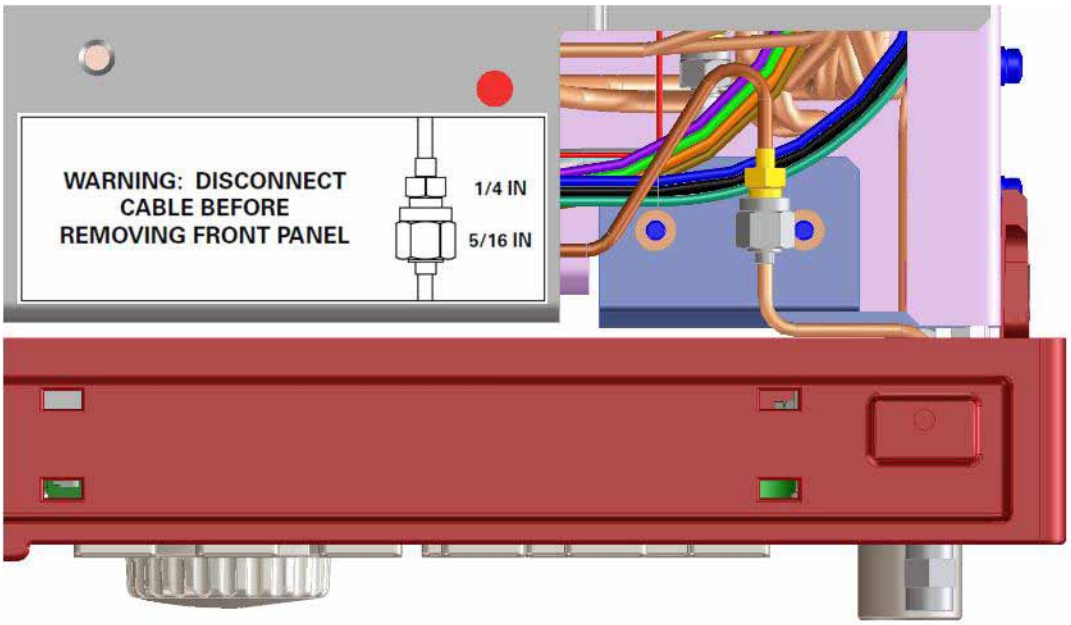
5. Refer to Figure 27. Place the rear panel (1) into position in the chassis. Replace the screws (2) to attach the rear panel to the chassis. Torque to 9 inch-pounds.

Figure 27 Rear Panel Replacement



6. In the upgrade kit, locate the Warning Label, N9030-80018.
7. Refer to Figure 28. Attach the Warning Label to the top brace as shown.

Figure 28 Add Warning Label to Top Brace



Final Installation for Standard Instruments (Benchtop Configuration)

1. Refer to Figure 3. Carefully slide the instrument cover back onto the instrument from the rear of the analyzer, making sure not to damage any internal cables. The seam on the cover should be on the bottom of the instrument. Be sure the cover seats into the gasket groove in the Front Frame Assembly.
2. Replace the four rear feet (4) to the rear of the instrument using the four screws (3). Torque to 21 inch-pounds.
3. Replace the strap handles (2) on both sides of the instrument using the four screws (1). Torque to 21 inch-pounds.
4. Replace the four instrument bottom feet.
5. Replace the four key locks to the bottom feet.
6. Locate the 50 Ω termination (1810-0118) in the kit. Connect the 50 Ω termination to the EXT MIXER connector.

Final Installation for Portable Instruments (Option PRC)

1. Refer to Figure 5. Carefully slide the instrument cover back onto the instrument from the rear of the analyzer, making sure not to damage any internal cables. The seam on the cover should be on the bottom of the instrument. Be sure the cover seats into the gasket groove in the Front Frame Assembly.
2. Refer to Figure 5. Replace the four rear bumpers (2) to the rear of the instrument using the four screws (1). Torque to 21 inch-pounds.
3. Refer to Figure 4. Replace the four hole plugs (5) to both sides of the instrument.
4. Refer to Figure 4. Replace the bail handle (2) (using the four screws (1)) to the Front Frame Assembly. Torque to 21 inch-pounds.
5. Locate the 50 Ω termination (1810-0118) in the kit. Connect the 50 Ω termination to the EXT MIXER connector.

Verify Hardware Installation

1. Verify the spectrum analyzer application loads and sweeps as expected.
2. Press **System**, **Show**, **Hardware** on the analyzer and verify that the Front End and Front End Controller assemblies identify themselves as:
   - Front End (Hw Id = 70, Part Number N9020-60314)
   - Front End Controller (Hw Id = 75)

Verify Optional Functionality

1. Press **Input/Output**
2. Verify that there is a softkey labeled "**External Mixer**".
3. Press **More**, **1 of 2**, **Output Config**.
4. Verify that there is a softkey labeled "**Aux IF Out**".
5. Press **Aux IF Out** and verify that there is a softkey labeled "**Second IF**".

Perform Preselector Characterization (Only applies to analyzers with Option 508, 513, or 526)

1. Press **System**, **Alignments**, **More**, **Advanced**.
2. Press **Characterize Preselector**, **Enter**. The characterization will take several minutes.
3. Wait until the analyzer resumes sweeping.

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.

Obtain Keysight X-Series Signal Analyzer Calibration Application SW, N7814A TME Calibration Application, version E.11.04 or later. Information on how to obtain this software can be found at:

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

The following tests are required to assure the installation was performed correctly. The instrument may not have been in spec before the upgrade was begun. Performing only these tests does not guarantee that the analyzer meets all specifications.

Utilities Required

None

Adjustments Required

– Perform all adjustments

Performance Testing Required

– Perform all performance tests

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:

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

1-800-829-4444 (8 am - 8 pm ET, Monday - Friday)

Edition 2, September 2018

N9020-90230

www.keysight.com