

Keysight Technologies EXA Signal Analyzer

Option HLA, 40 MHz Analysis Bandwidth (B40) and
Microwave Preselector Bypass (MPB)
Upgrade Kit Serial Prefix \geq MY/SG/US5648

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Manual Part Number

N9010-90059

Edition

Edition 1, September 2018

Supersedes October 2016

Printed in USA/Malaysia

Published by:

Keysight Technologies, Inc.

1400 Fountaingrove Parkway

Santa Rosa, CA 95403

Option HLA, 40 MHz Analysis Bandwidth (B40) and Microwave Preselector Bypass (MPB) Upgrade Kit

Products Affected:	N9010A, EXA Signal Analyzer
Serial Numbers:	≥ MY56480000 ≥ SG56480000 ≥ US56480000
Options:	B40, MPB
To Be Performed By:	(X) Keysight Service Center (X) Personnel Qualified by Keysight () Customer
Estimated Installation Time:	3.0 Hours
Estimated Adjustment Time:	5.5 Hours ^a
Estimated Verification Time:	3.5 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:

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 any non-Option 503 EXA signal analyzer with serial number prefix \geq MY/SG/US5648 to add Options B40, 40 MHz analysis bandwidth, and MPB, microwave preselector bypass. Some parts might not be necessary if other certain options are already installed.

In addition to installing the hardware to support options B40 and MPB, licenses for the following options will also be installed:

- N9010A-B40, 40 MHz Analysis Bandwidth
- N9010A-B25, 25 MHz Analysis Bandwidth
- N9010A-DP2, Digital Processor & 2 GB Capture Memory
- N9010A-RTL, Real Time Link
- N9010A-MPB, Microwave Preselector Bypass
- N9010A-FS1, Fast Sweep Capability, enabled with B40, DP2, or MPB

The installation procedure begins with an “inventory” of the analyzer serial number, currently-installed options, installed hardware, and software version. This information will be used to determine which sub-procedures, if any, can be skipped.

Installation Kit Parts List

Quantity	Description	Keysight Part Number
1	A3 40 MHz Digital IF Assembly	N9020-60016
1	A15 Front End Controller w/ IF MUX	N9020-60172
1	Opt HL9/HLA Cable Kit with Wire Markers (includes cables W36, W37, W38, W39, W41, W42, and W50 listed below)	N9020-60155
1	Coaxial Fixed Attenuator, DC to 26.5 GHz, Option 006, PB Free (AT1)	08493-60026
1	Bracket, PS Bypass Switch 1	E4410-00104
1	Bracket, PS Bypass Switch 2	E4410-00110
1	Cable Assembly, SW - SW2 (W31)	E4410-20161
1	Cable Assembly, Switch 2 - YIG Tuned Filter (W32)	E4410-20163
1	Cable Assembly, Switch 1 - RF Assembly (W34)	E4410-20164
1	Cable Assembly, YIG Tuned Filter - Switch 1 (W33)	E4410-20165
1	Cable RF Switch 1 - Switch 2 (W35)	N9020-20210
1	Cable Assembly, Switch Control (W30)	E4410-60159
2	Coaxial Switch (SW1 and SW2)	N1810-60069
1	Cable Assembly, Coaxial 530 mm LG (W50)	8121-1401 ^a with ends labeled '726' and '17'
1	Cable Assembly, Coaxial 380mm LG (W54)	8121-2288 ^a with ends labeled '716' and '14'
1	Cable Assembly, Coaxial 530 mm LG (W37)	8121-1401 ^a with ends labeled '900' and '100'
1	Cable Assembly, Coaxial 620 mm LG (W38)	8121-1861 ^a with ends labeled '901' and '15'
1	Cable Assembly, Coaxial 240 mm LG (W36)	8121-1862 ^a with ends labeled '902' and '7'
1	Cable Assembly, Coaxial 280 mm LG (W41)	8120-8868 ^a with ends labeled '601' and '19'
1	Cable Assembly, Coaxial 525 mm LG (W39)	8121-2028 ^a with one end labeled '1100'
1	Screw M3 x 0.5 (8 mm long)	0515-0372
4	Screw M2.5 x 0.45 (20 mm long)	0515-1992
12	Cable Tie, Self-Locking, Nylon Gray	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 Option HL9/HLA Cable Kit with Wire Markers, p/n **N9020-60155**

Introduction

Tools Required

- T-8 TORX Driver
- T-6 TORX Driver
- T-10 TORX Driver
- T-20 TORX Driver
- 5/16-inch torque wrench
- 9/16-inch nut driver
- Scissors or knife
- Diagonal cutters
- Keysight Calibration and Adjustment Software, N7814A (revision E.17.00 or later)
- Test equipment and computer supported by the X-Series Performance Tests and Adjustment Software
- EXA Signal Analyzer Service Guide. This manual is available at:

<http://literature.cdn.keysight.com/litweb/pdf/N9010-90050.pdf>
- Microsoft Windows based personal computer with internet access and USB port
- USB storage device with >2GB 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 the options listed below in the Show System screen. Put a check mark or "X" after each option listed below that appears in the Show System menu.

N9010A-503 _____

N9010A-532 _____

N9010A-544 _____

N9010A-B25 _____

N9010A-CR3 _____

N9010A-CRP _____

N9010A-B40 _____

N9010A-DP2 _____

N9010A-MPB _____

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

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

5. If the analyzer is equipped with any of the following options (refer to the data in **step 3** above),

N9010A-B40

N9010A-DP2

N9010A-MPB

do not proceed with the installation of this upgrade kit. If any of these options are already installed, you do not need this upgrade kit, since the necessary hardware is already present.

6. Refer to the data in **step 3** above. If the analyzer has N9010A-503, N9010A-532, or N9010A-544 **do not** proceed with the installation of this kit. This kit can only be installed in analyzers with frequency range options 507, 513, and 526.
7. Refer to the data in **step 2** above. If the serial number is less than either MY56480000 or SG56480000 or US564830000, **do not** proceed with the installation of this kit. This kit is only for newer EXAs with Option 507, 513, or 526.
8. Refer to the data in **step 3** and **step 4** above. If the analyzer has N9010A-CR3 and/or N9010A-CRP installed, verify that it also has a Front End Controller with Hw Id of 41 or 75. If the Front End Controller has a Hw ID of 41 or 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

License Installation Procedure over USB

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.

NOTE

If you will also be installing any of the following upgrade products:

N9010AK-CR3, 2nd IF Output

N9010AK-CRP, Arbitrary IF Output

now would be the best time to install the licenses for these other upgrades, By installing the licenses now, the adjustments and performance verifications for these other upgrades will also be performed.

Figure 2 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 options listed:
 - N9010A-B40 Analysis bandwidth, 40 MHz
 - N9010A-B25 Analysis bandwidth, 25 MHz
 - N9010A-DP2 Digital Processor, 2 GB Deep Capture Memory
 - N9010A-MPB Microwave Preselector Bypass
 - N9010A-RTL Real Time Link
 - N9010A-FS1 Fast Sweep Capability, enabled with B40, DP2, or MPB

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 15** 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.

Installation Note N9010-90059



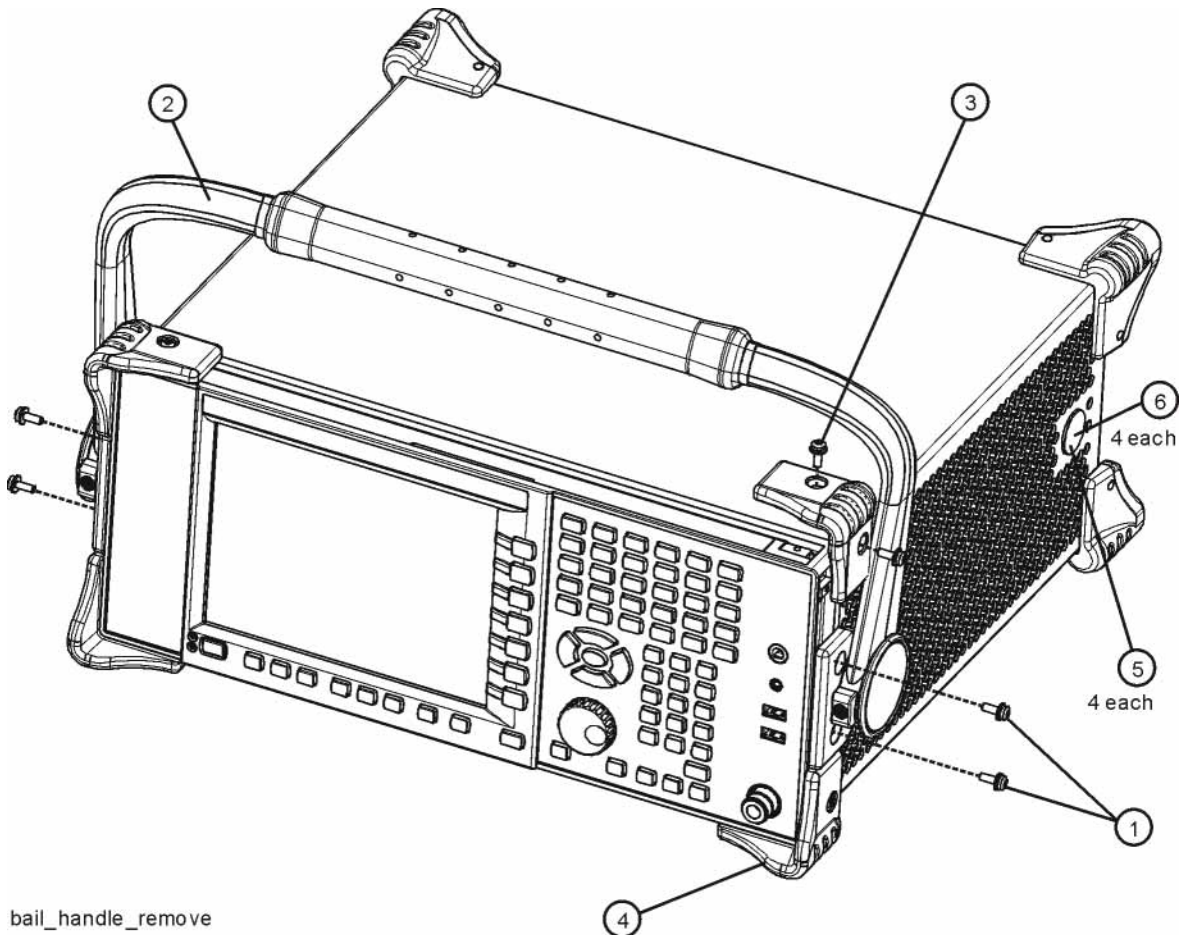
Portable Instrument (Option PRC)

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.

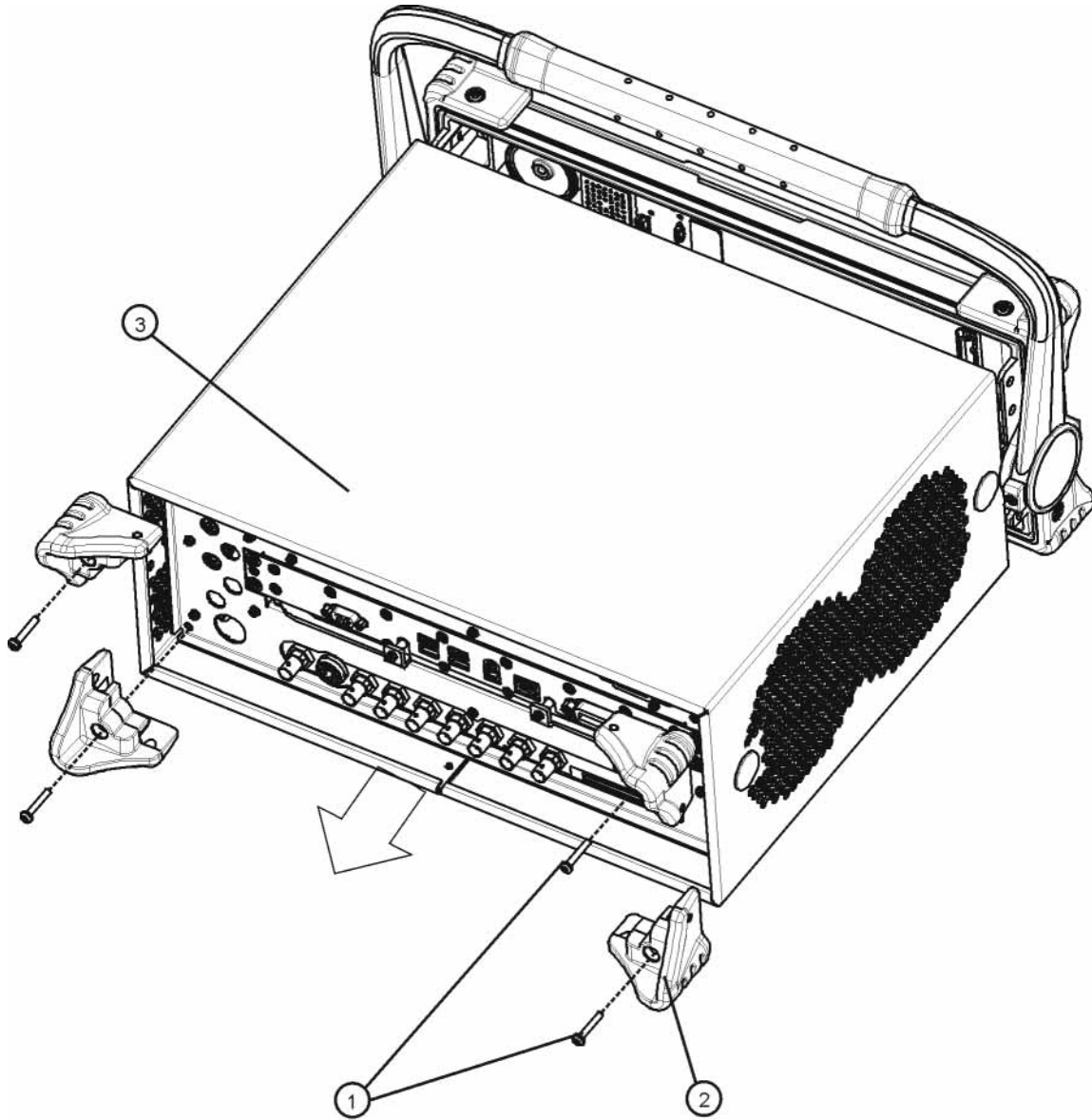
Figure 4 Bail Handle Removal



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

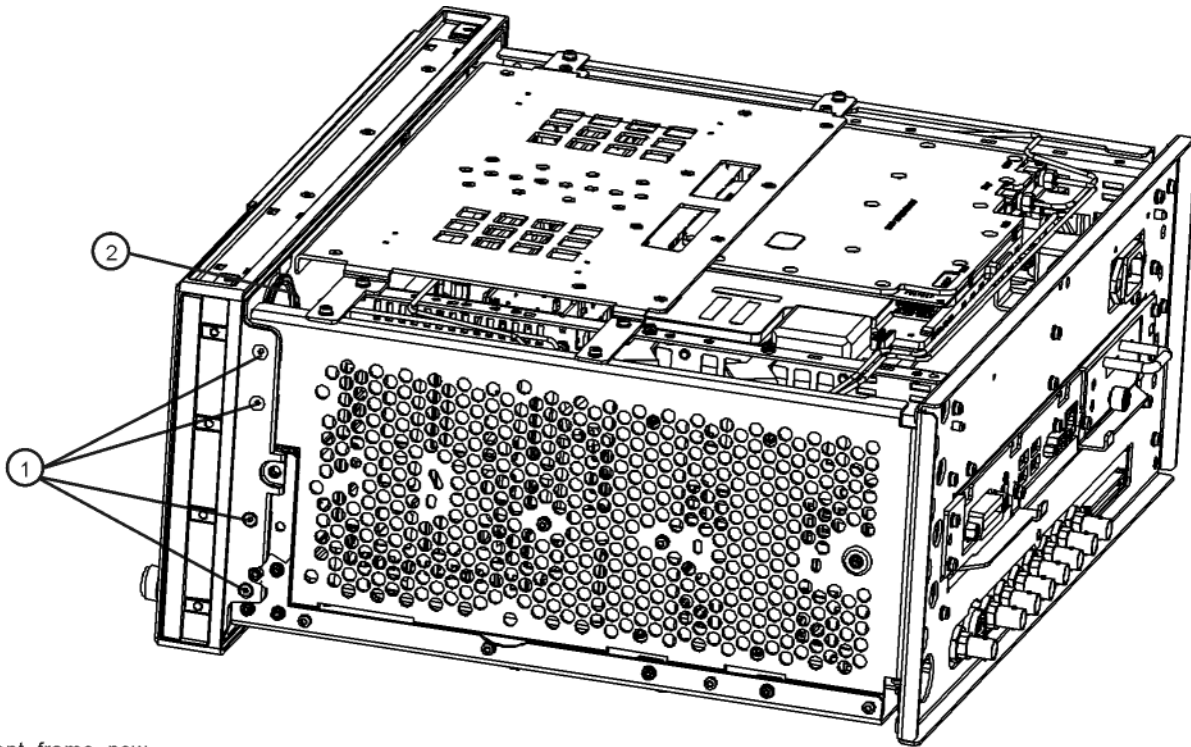


rear_bumper_remove

Front Frame Assembly Removal

1. Refer to **Figure 6**. If Option EXM, External Mixing, is installed disconnect semi-rigid cable connection (2) on LO/IF cable.
2. 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



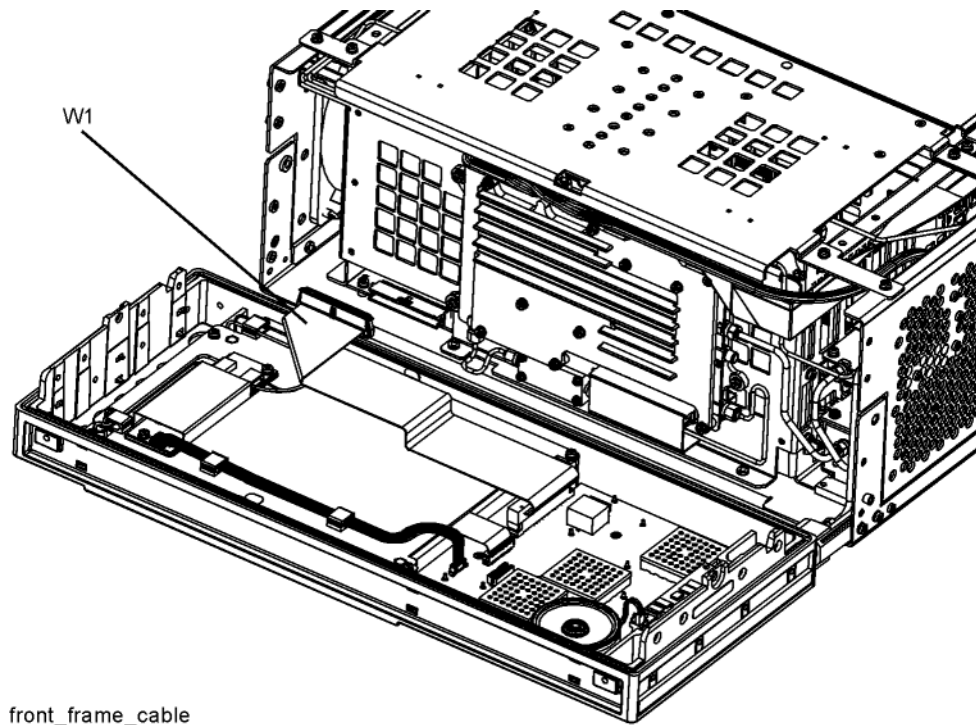
front_frame_new

3. 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.

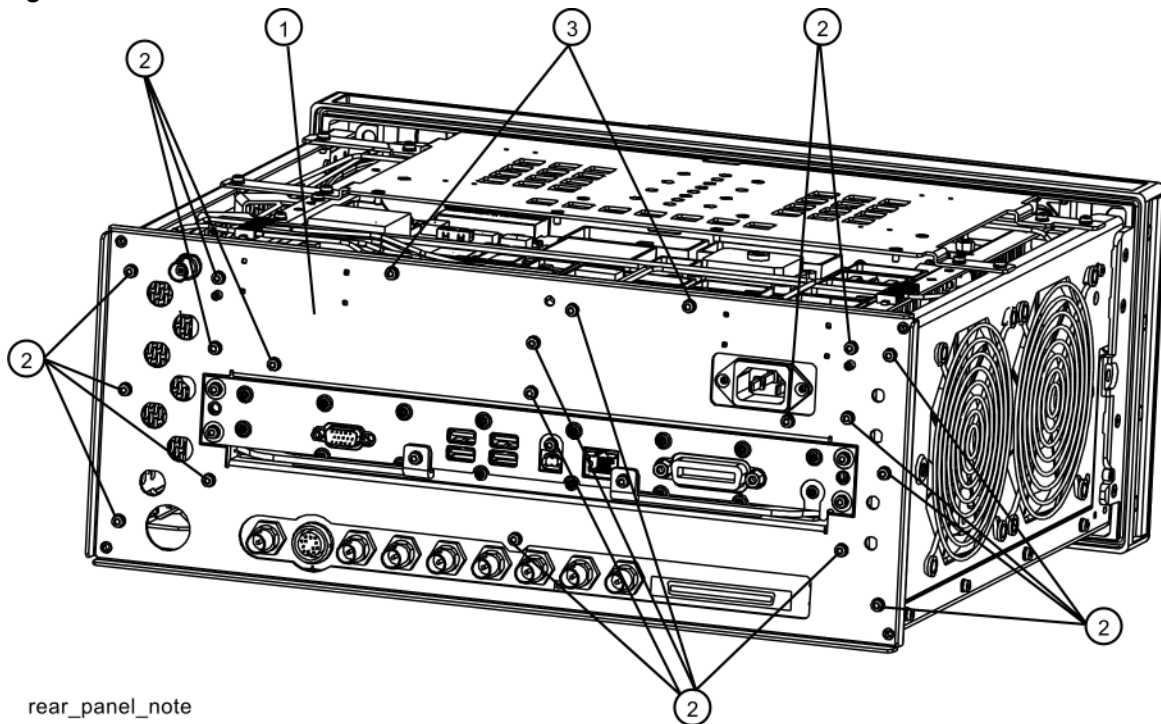
Figure 7 Front Panel Cable



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. The rear panel can now be removed.
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

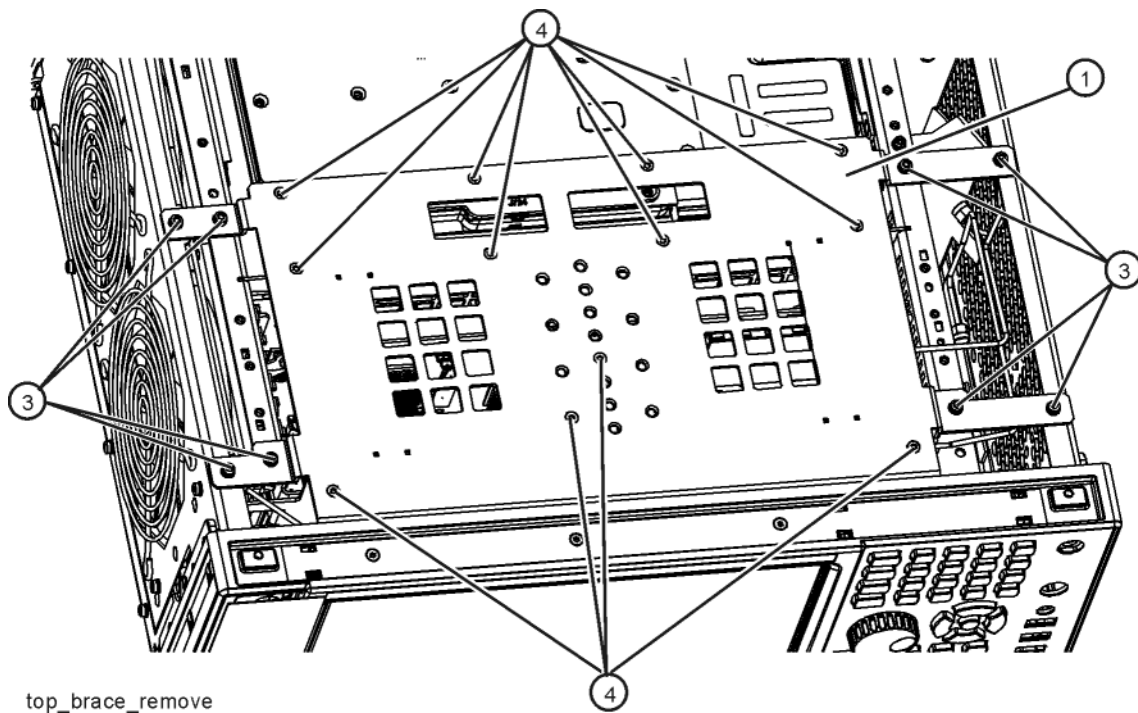


3. Instruments with Option CR3 or CRP will have an additional cable W39 that is attached to the rear panel. Remove W39 using either a 5/16" nut driver or a 5/16" open-end wrench.
4. The rear panel can now be removed.

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 brace to the chassis. Also remove and discard the twelve flat head screws (4) (0515-1996) attaching the top brace to the chassis and the boards.

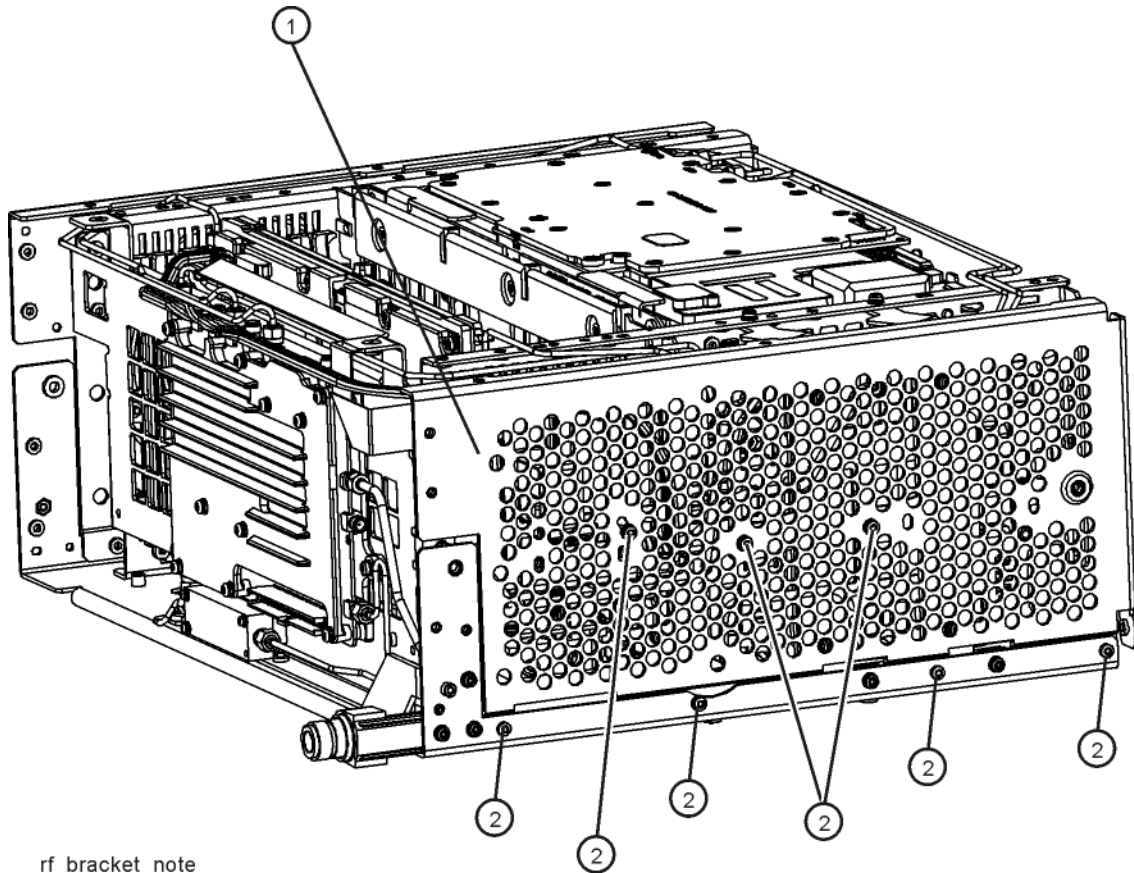
Figure 9 Top Brace Removal



RF Bracket Removal

1. Refer to **Figure 10**. Remove the RF bracket (1) by removing the remaining seven screws (2) using the T-10 driver.

Figure 10 RF Bracket Removal



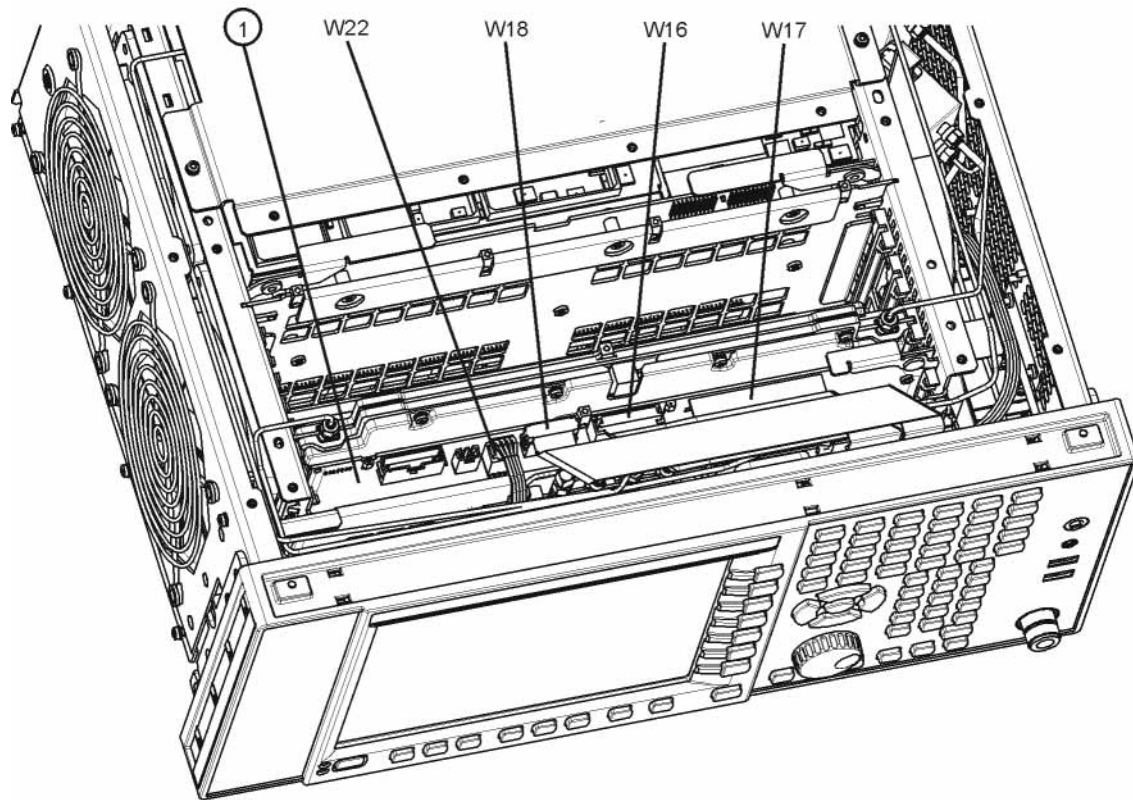
Replace Front End Control Assembly

NOTE

Refer to Analyzer Information at the beginning of the Installation Procedure. Do not perform this procedure if the Front End Controller has a Hw Id of 41 or 75.

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).
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.

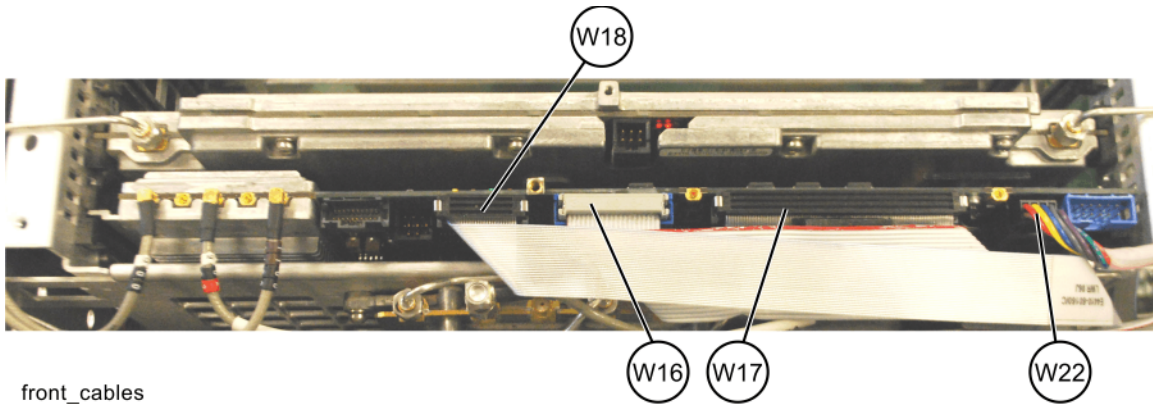
Figure 11 Front End Control Assembly Removal



front_end_control

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, W18, and W22 to the Front End Control assembly (1).

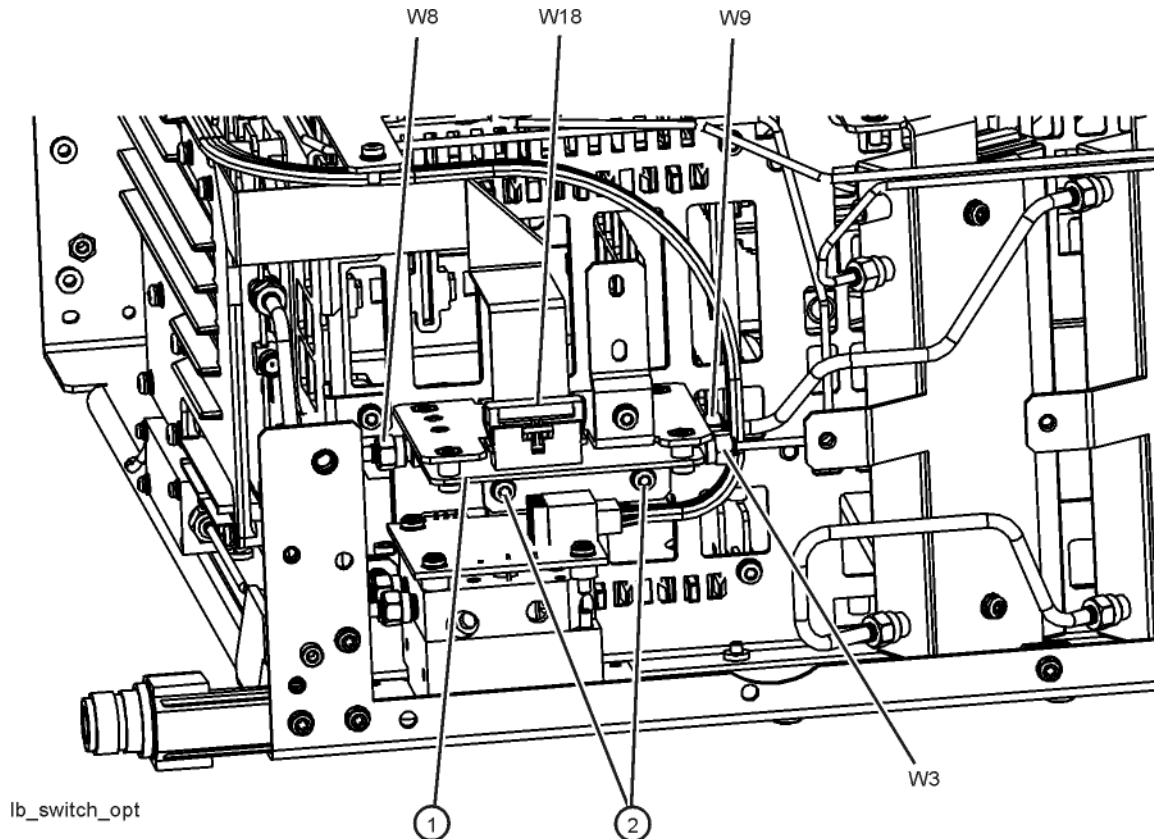
Figure 12 Enhanced Front End Control Assembly Installation



Installing Microwave Preselector Bypass Switches

1. Refer to **Figure 13**. Remove the ribbon cable W18.

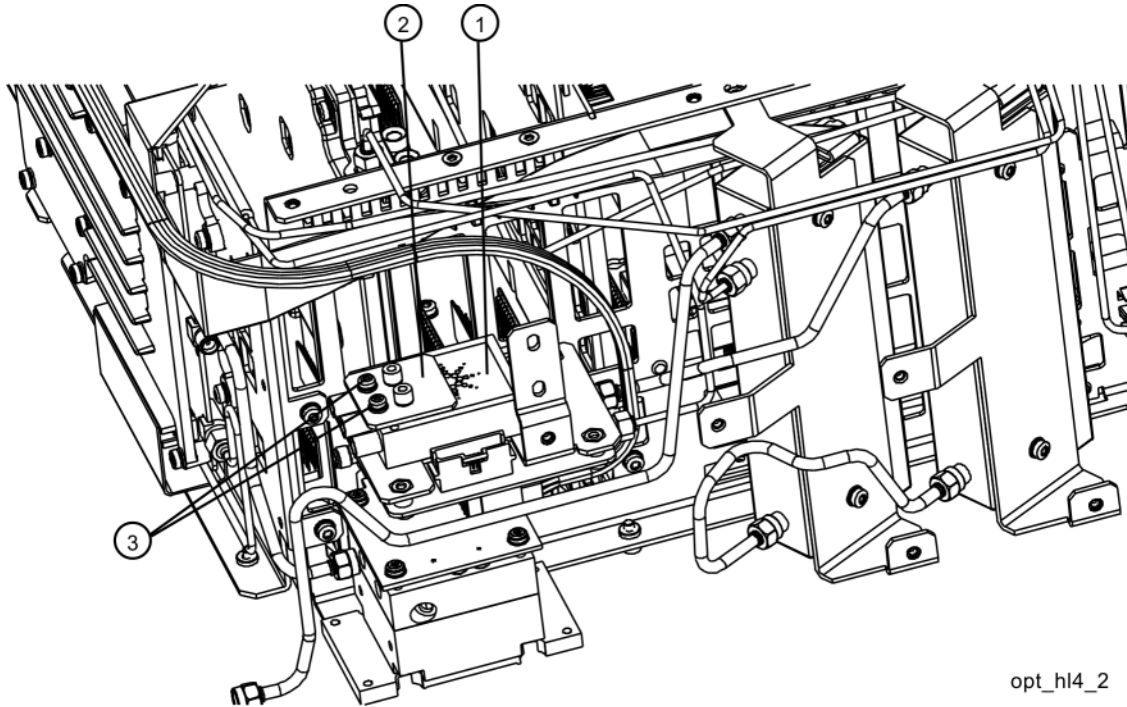
Figure 13 Low Band Switch Removal



2. Remove the semi-rigid cables W3 and W8 using the 5/16 inch wrench. W8 will not be used after the preselector bypass switches are installed.

3. Refer to **Figure 14**. Locate one of the two coaxial switches (N1810-60069) (1) and the PS Bypass Switch 1 Bracket (E4410-00104) (2) in the kit.

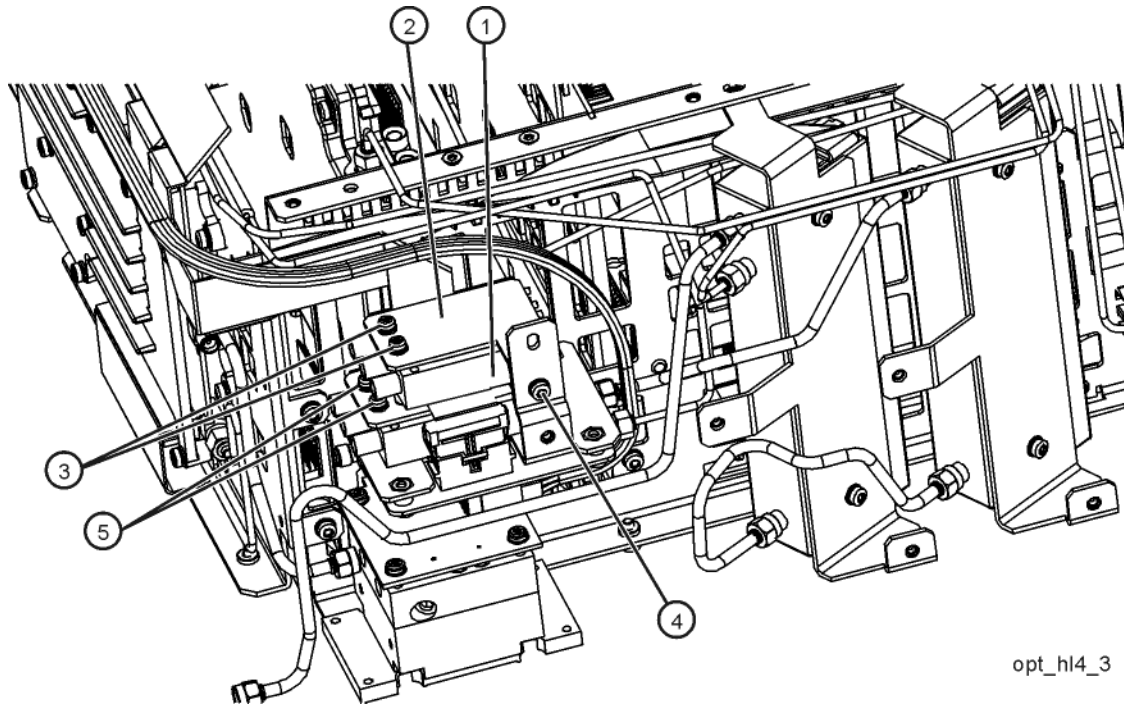
Figure 14 Switch 1 Placement



4. Mount the switch with the Keysight label facing up.
5. Attach the bracket and switch to the low band switch bracket using two 0515-1992 screws (3) included in the kit using the T-8 driver. Do not torque the screws at this time.

6. Refer to **Figure 15**. Locate the other coaxial switch (N1810-60065) (1) and the PS Bypass Switch 2 Bracket (E4410-00110) (2) in the kit.

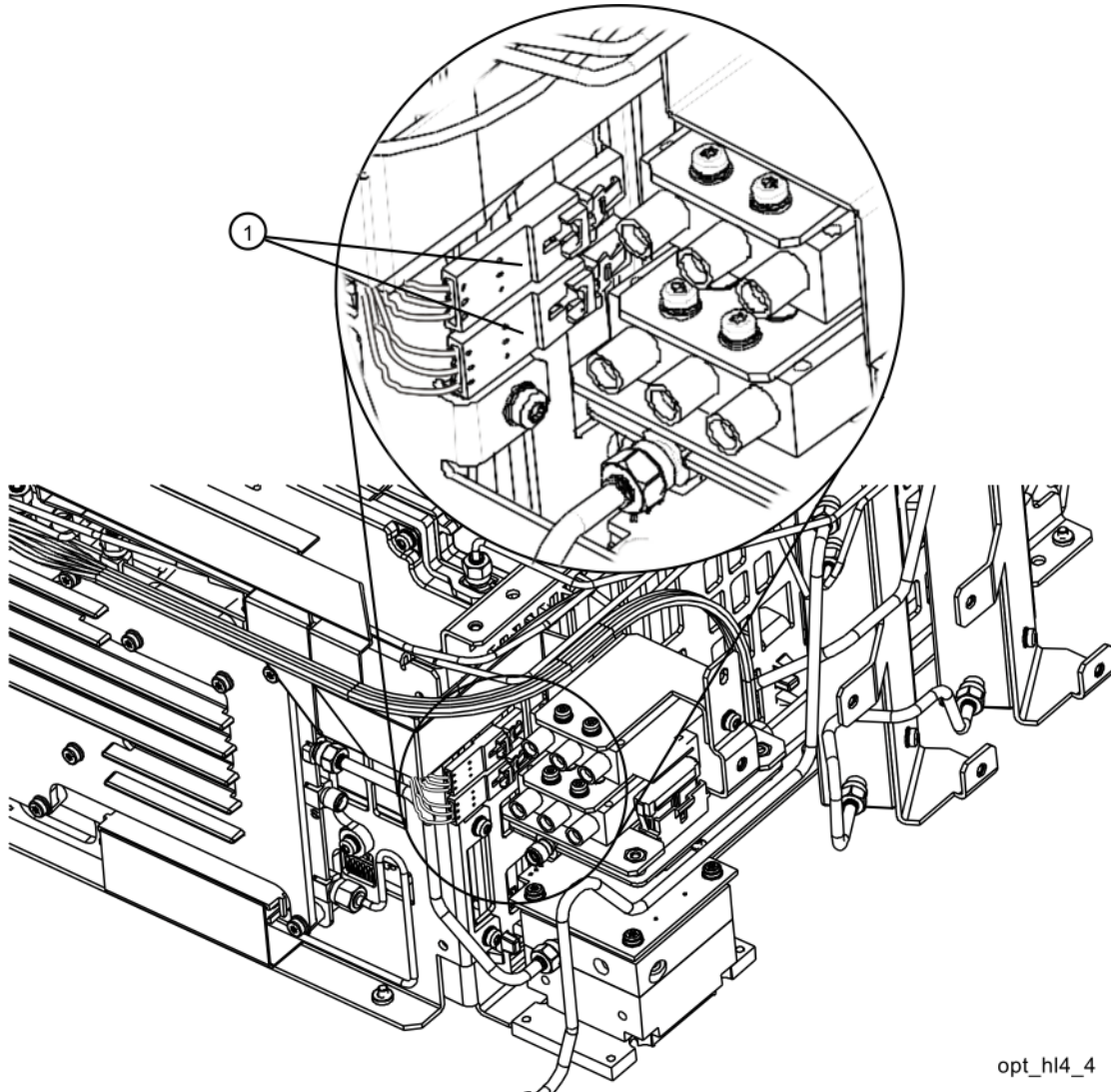
Figure 15 Switch 2 Placement



7. Place the second switch/bracket assembly (1)/(2) on the bracket previously installed. Assure Keysight label on switch is facing up. To attach use the two screws (3) (0515-1992) included in the kit using the T-8 driver.
8. Secure the bracket to the Low Band Switch bracket with a single screw (4) (0515-0372) included in the kit using the T-10 driver. Do not torque.
9. Align switches so they are parallel with the side of the instrument then torque the four screws (3) and (5) securing the switches to the brackets to 6 inch-pounds using the T-8 driver. Torque the screw (4) that secures the switch brackets together to 9 inch-pounds using the T-10 driver.

10. Locate the switch control cable harness (E4410-60159) in the kit.
11. Refer to **Figure 16**. Connect the end of the switch control harness with only one connector to J801 on the A15 Enhanced Front End Control Assembly.

Figure 16 Wire Harness Routing

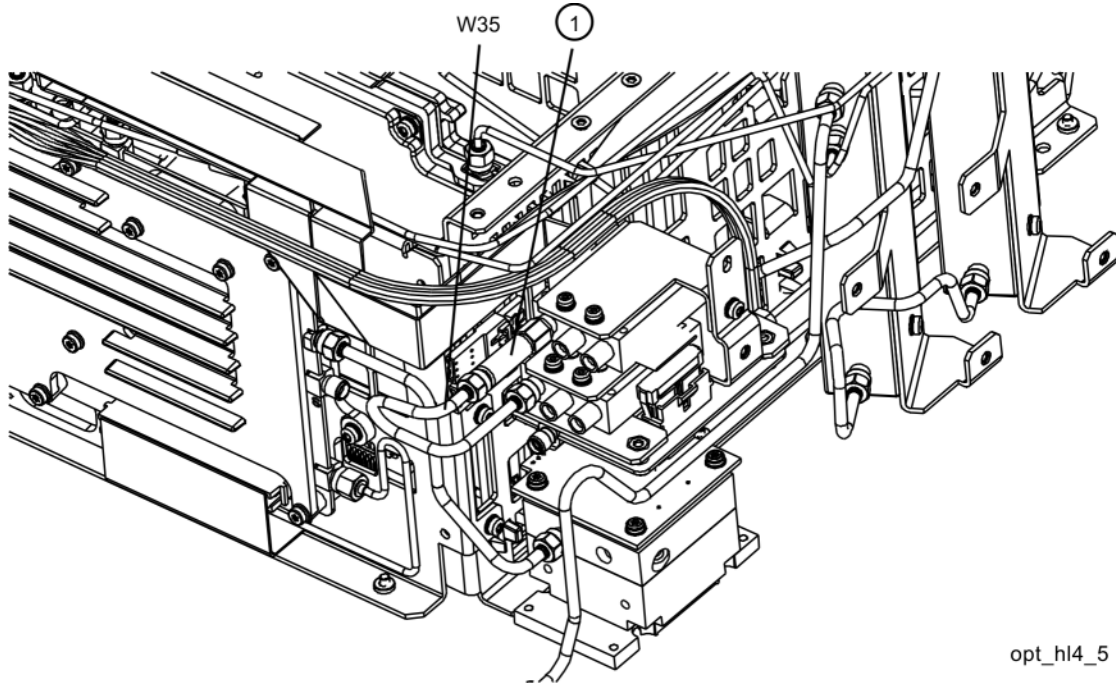


opt_hl4_4

12. Connect the remaining two wire harness connectors (1) to the switches. Once connected, position the connections along side the switches.
13. Connect ribbon cable W18 to J4 of the A11 Low Band Switch.

14. Refer to **Figure 17**. Attach the coaxial fixed attenuator (1) included in the kit to Switch 2 port 1. Torque to 10 inch-lbs.

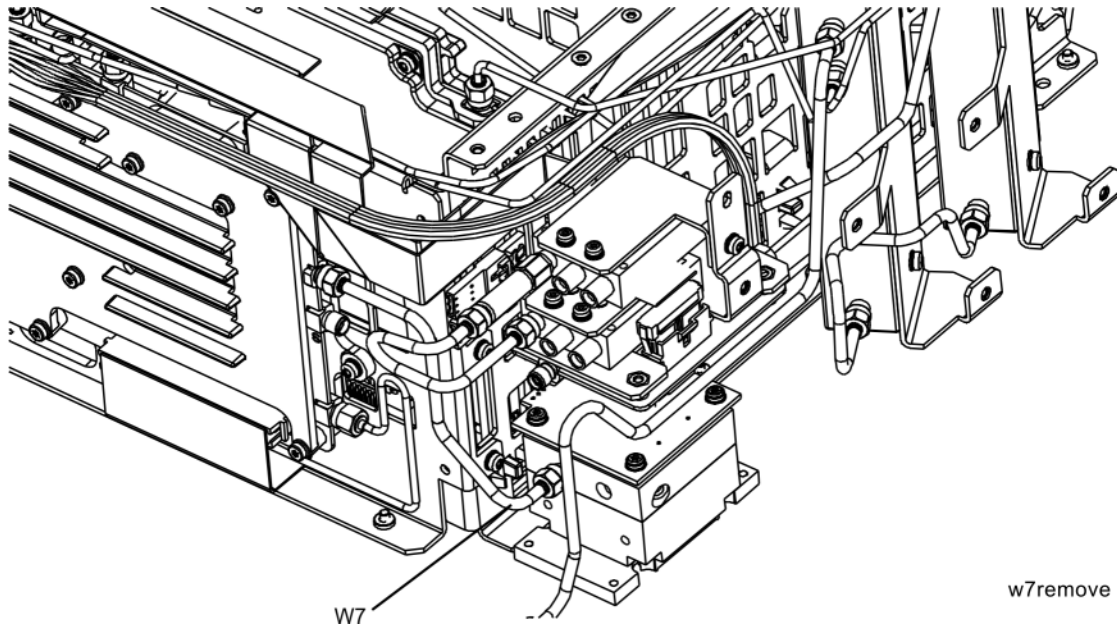
Figure 17 Attenuator Installation



15. Locate W35 semi-rigid coax cable (N9020-20210) in the kit. Connect the cable between the coaxial fixed attenuator (1) and port 1 of Switch 1 (the lower switch). Torque to 10 inch-pounds.

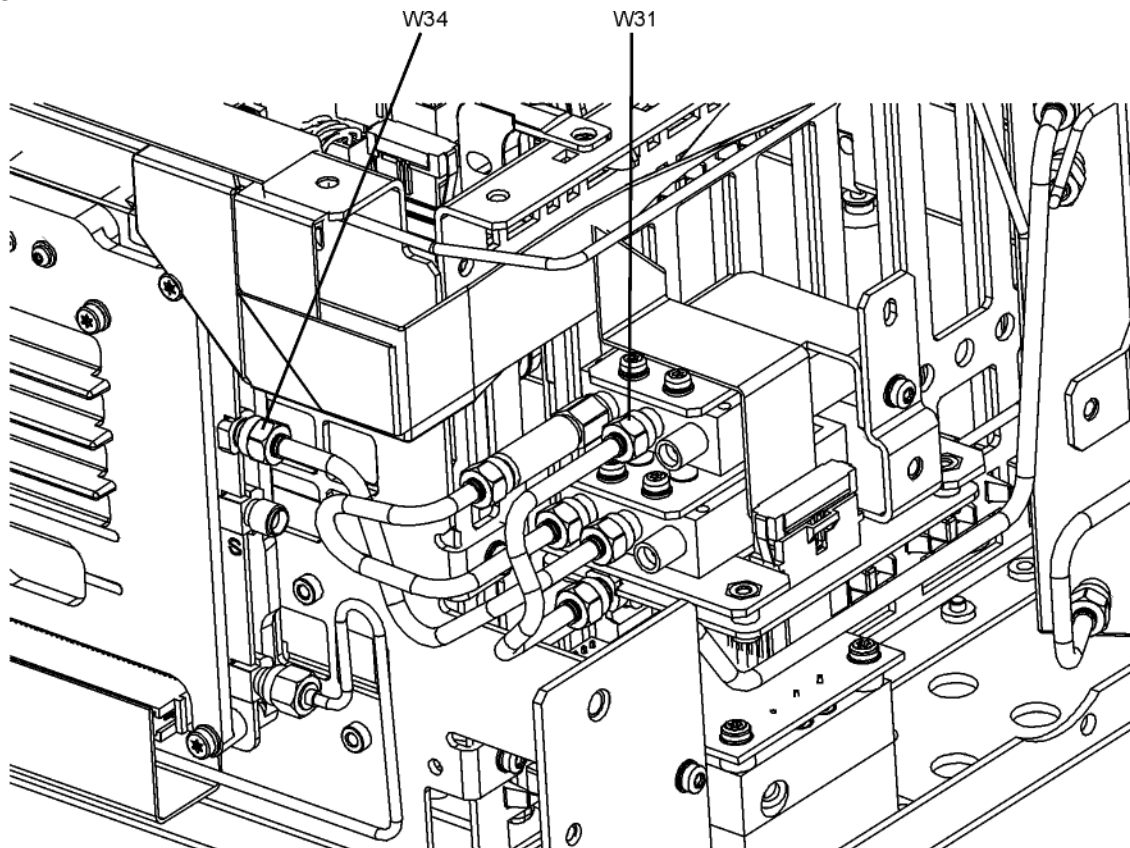
16. Refer to **Figure 18**. Remove semi-rigid coax cable W7 between the output of the A12 YTF preselector and the J9 of the A13 Front End Assembly.

Figure 18 Remove W7



17. Refer to **Figure 19**. Locate W34 semi-rigid coax cable (E4410-20164) in the kit. Connect the cable between the center port of Switch 1 (the lower switch) and J9 of the A13 Front End Assembly. Torque to 10 inch-pounds.
18. Locate W31 semi-rigid coax cable (E4410-20161) in the kit. Connect the cable between the center port of Switch 2 (the upper switch) and J3 of the A11 Low Band Switch. Torque to 10 inch-pounds.

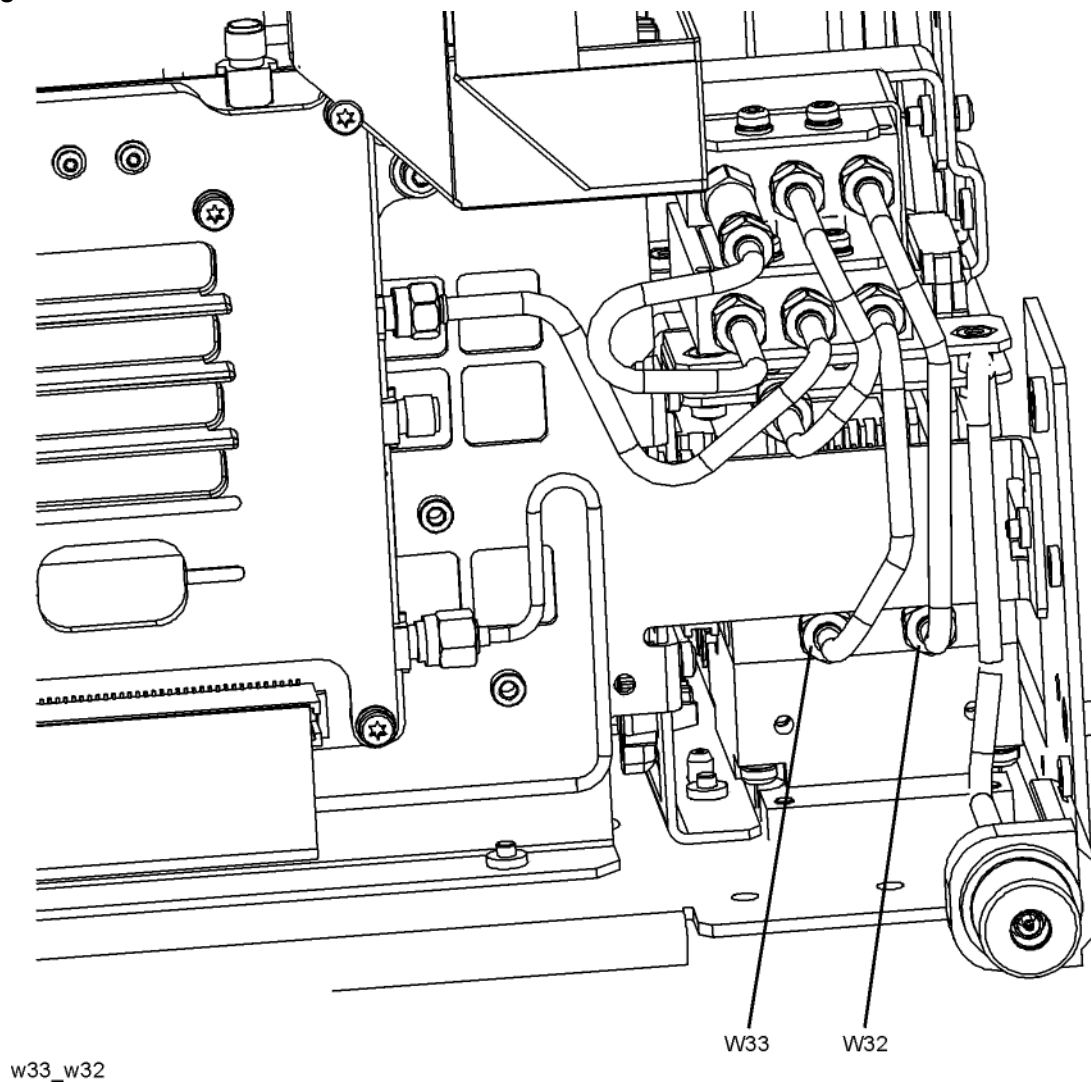
Figure 19 Install W34 and W31



w34_w31

19. Refer to **Figure 20**. Locate W33 semi-rigid coax cable (E4410-20165) in the kit. Connect the cable between port 2 of Switch 1 (the lower switch) and the output of the A12 YTF Preselector. Torque the cable at the A12 end first to 10 inch-pounds and then torque the cable at the Switch 1 end to 10 inch-pounds.
20. Locate W32 semi-rigid coax cable (E4410-20163) in the kit. Connect the cable between port 2 of Switch 2 (the upper switch) and the input of the A12 YTF Preselector. Torque the cable at the A12 end first to 10 inch-pounds and then torque the cable at the Switch 2 end to 10 inch-pounds.

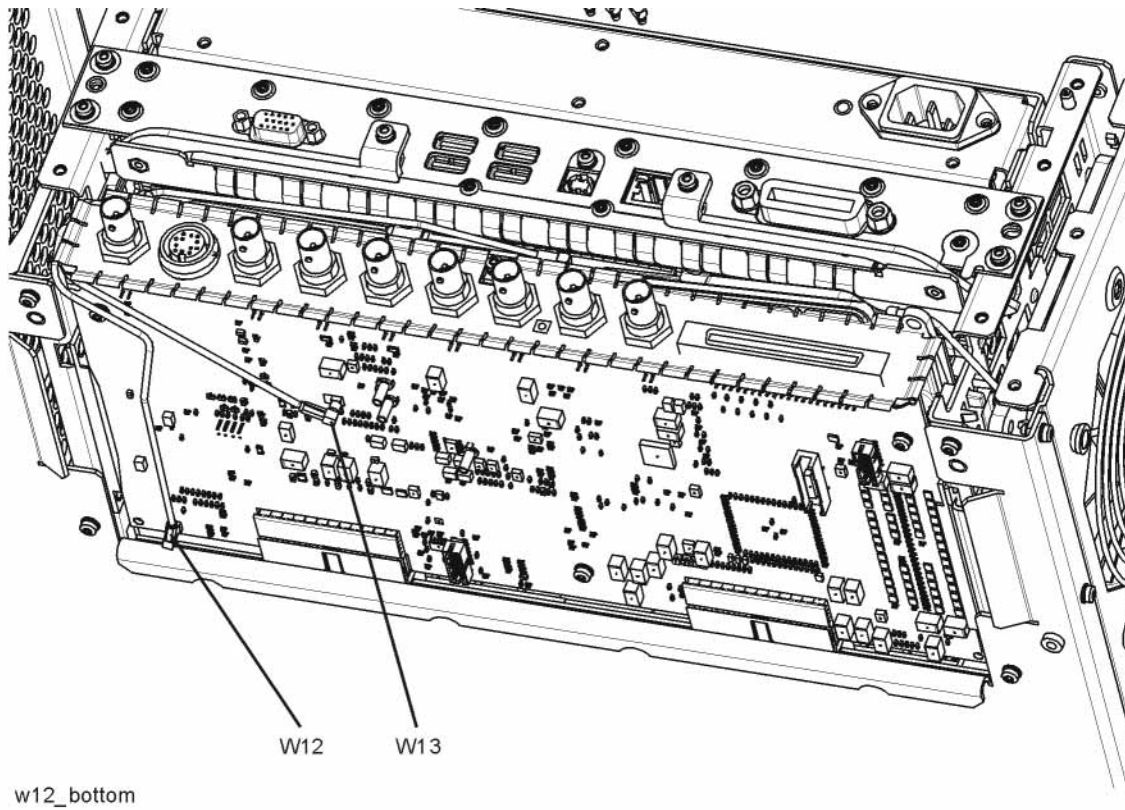
Figure 20 Install W33 and W32



Replace A2 Analog IF and A3 Digital IF Assemblies

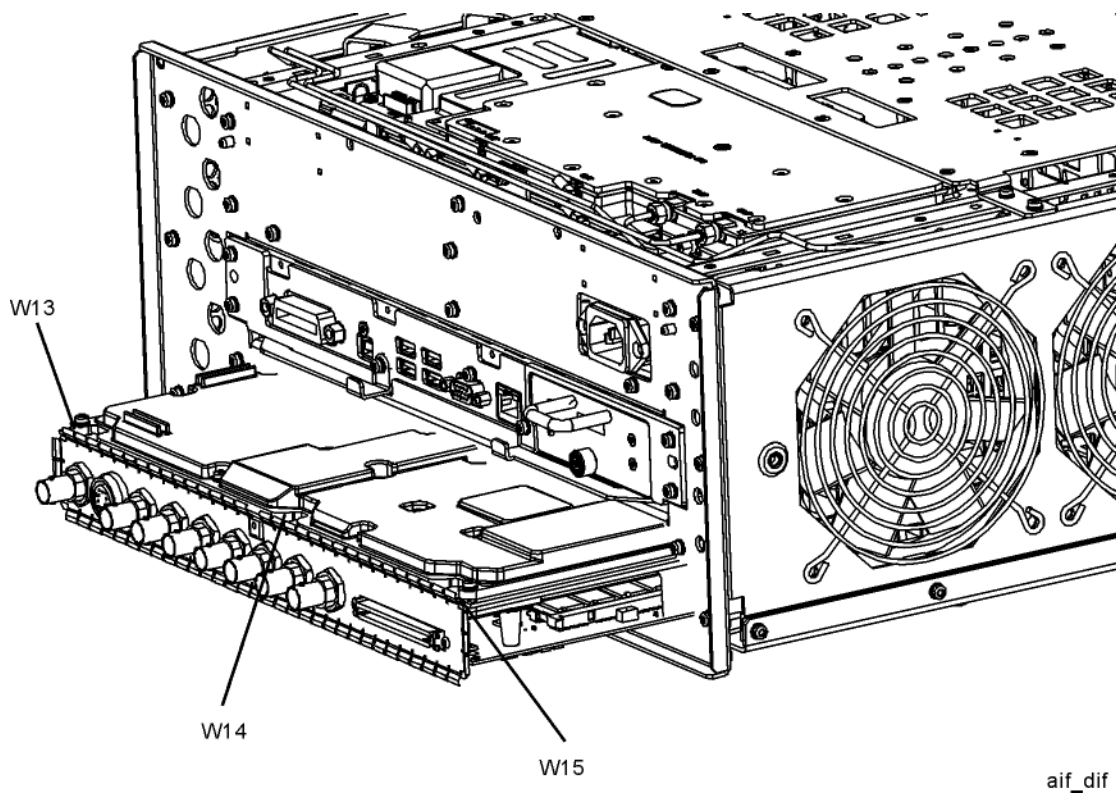
1. Refer to **Figure 21**. Disconnect cables W12 and W13 from the bottom of the DIF assembly.

Figure 21 W12 and W13 Removal



2. Refer to **Figure 22**. Pull the AIF/DIF assembly part way out of the chassis. Disconnect cables W13, W14, and W15 from the AIF assembly.

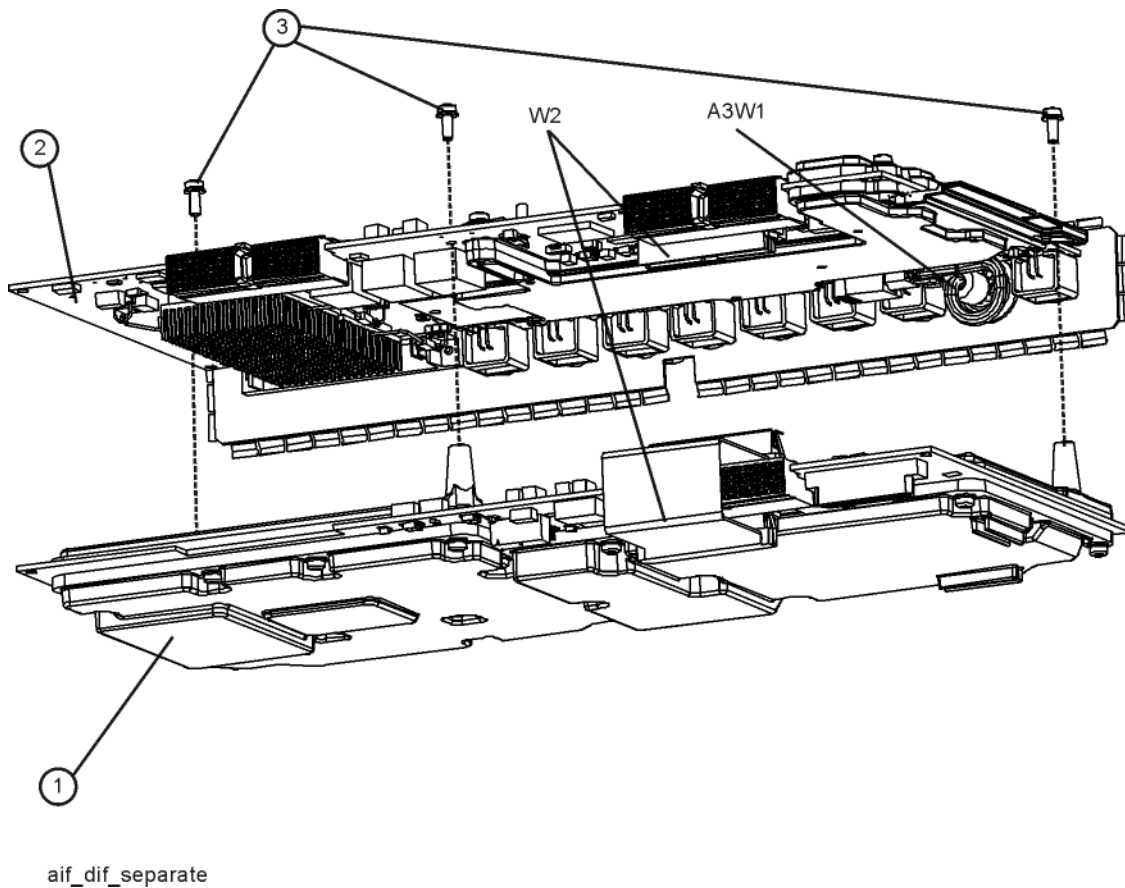
Figure 22 AIF/DIF Assembly Removal



3. Discard cable W13.
4. The AIF/DIF assembly can be removed from the chassis by pulling straight out the back.
5. Separate the A2 Enhanced Analog IF and the A3 25 MHz Digital IF. The A2 will be re-used but the A3 will be replaced with the A3 40 MHz Digital IF (**N9020-60016**) included in the kit. Retain the screws.
6. Locate the new A3 40 MHz Digital IF (**N9020-60016**) included in this kit.
7. Connect the W2 ribbon cable to J20 on the DIF (2).

8. Refer to **Figure 23**. To pair the AIF and DIF together again, set the DIF (2) in position over the AIF (1). Attach the AIF to the DIF with three screws (3) (0515-0372) removed in **step 5**. Torque to 9 inch-pounds, starting with the middle screw.

Figure 23 AIF/DIF Pairing



9. Connect the ribbon cable W2 to J820 on the AIF (1).
10. 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.

Figure 24 AIF Cables

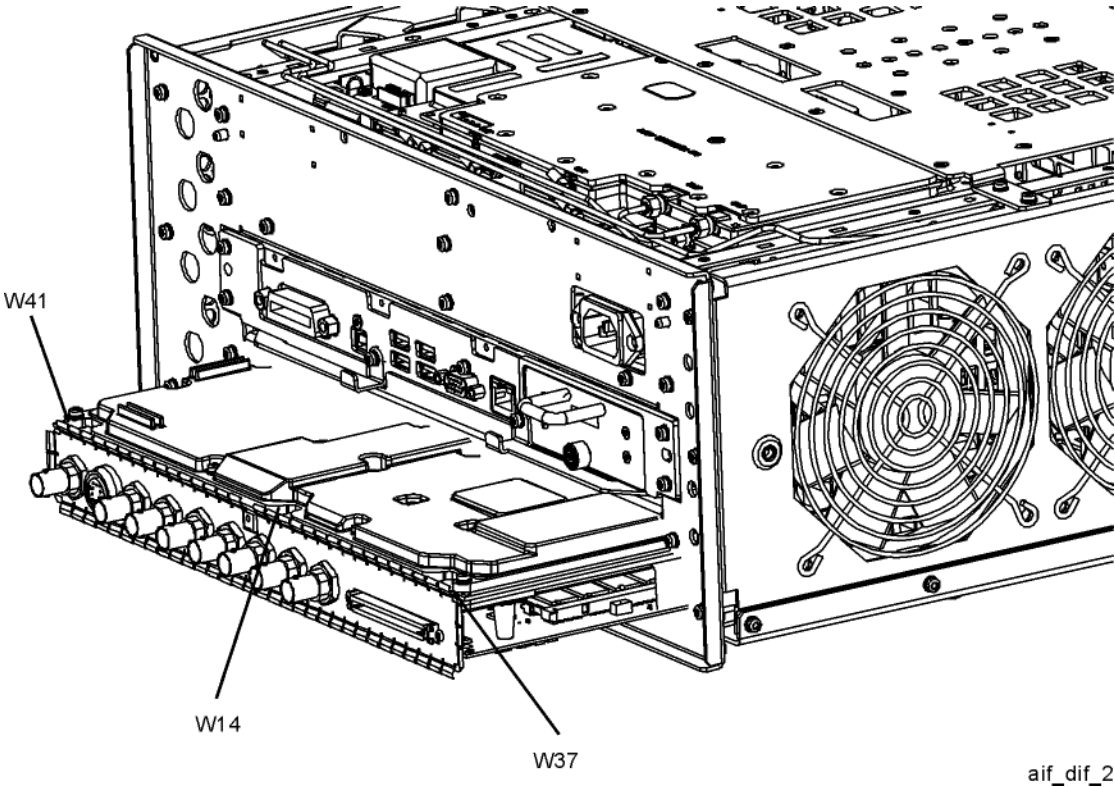
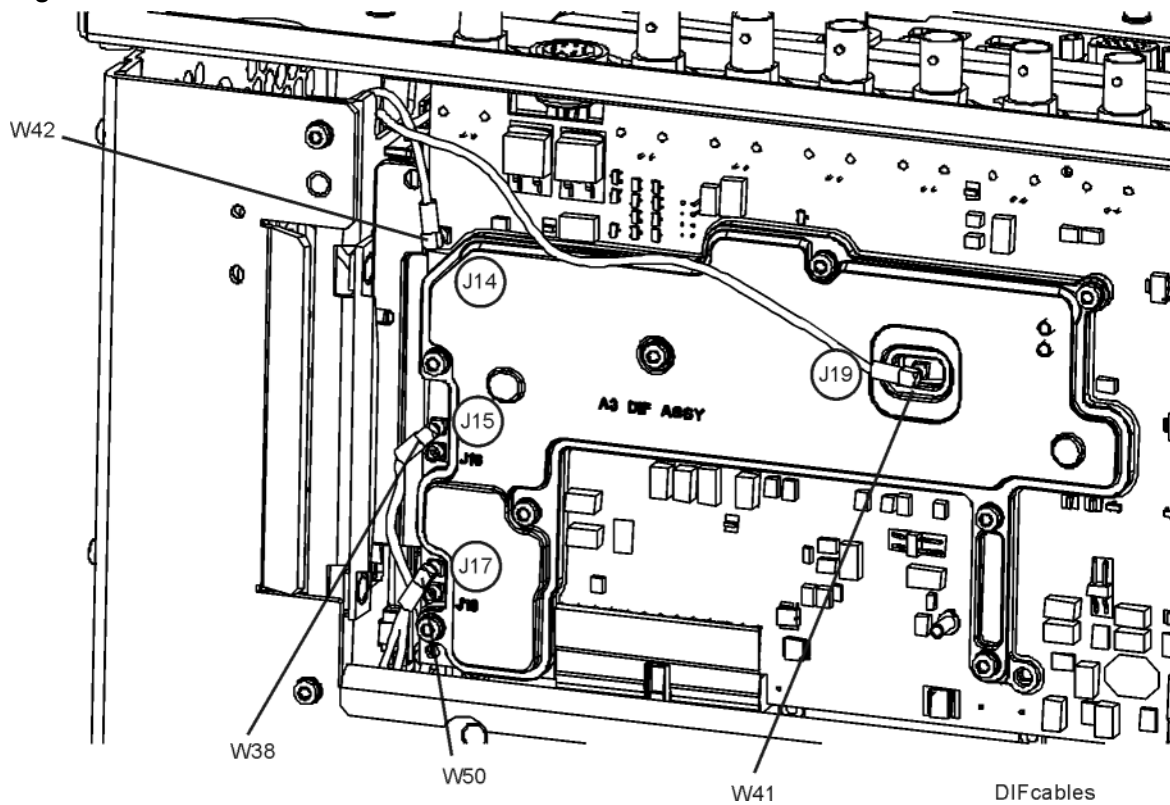


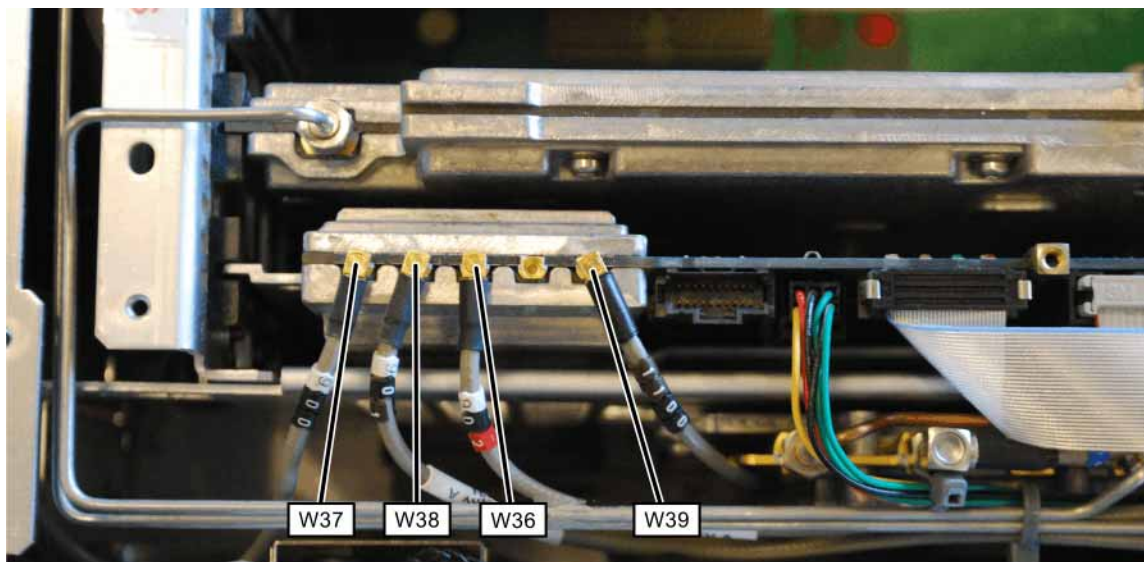
Figure 25 DIF Cables



Cable Installation

11. Remove the wire cable hold-down on the right side of the chassis to free the gray coax cables going to the A16 Reference Assembly.
12. Refer to **Figure 26**. Locate W38 in the Opt HL9/HLA Cable Kit. This cable will have part number 8121-1861 and will be labeled “901” on one end and “15” on the other. Connect the end labeled “901” to A15J901 on the A15 Enhanced Front End Controller (EFEC) Assembly. Route the cable along the side of the EFEC board to the right side of the instrument and through the cutout in the chassis between A9 and A12. Connect the other end to A3J15 on the A3 DIF Assembly.

Figure 26 W36, W37, W38, and W39 Cables

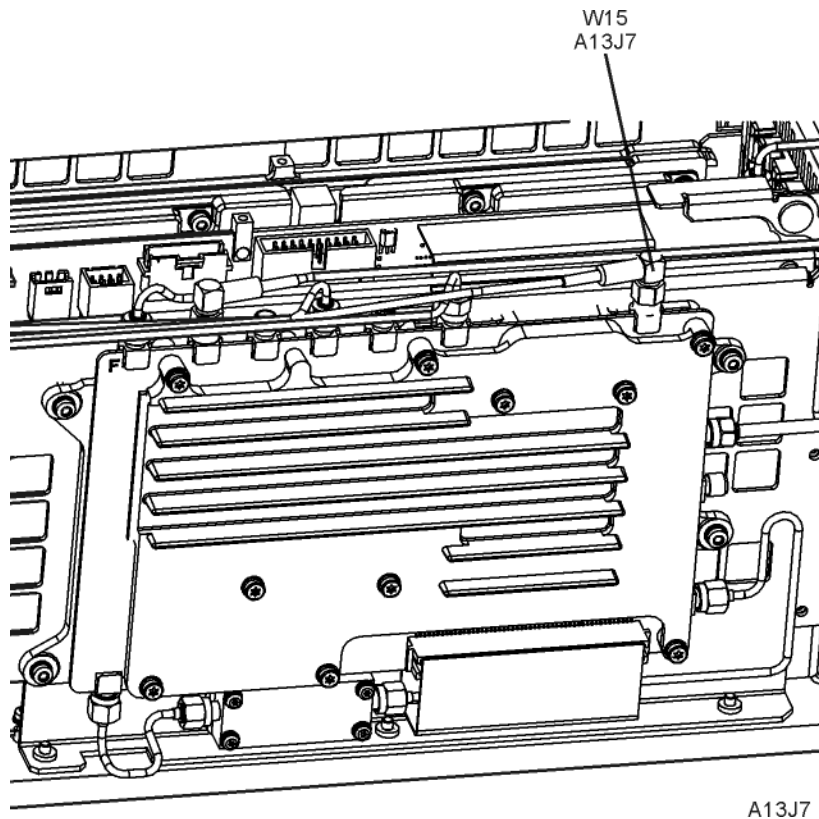


NOTE

Refer to Analyzer Information at the beginning of the Installation Procedure. Do not perform **step 13** and **step 14** below if the Front End Controller has a Hw Id of 41 or 75.

- 13.** Refer to **Figure 27**. Disconnect W15 from A13J7 of the A13 RF Front End Assembly and remove the cable; it will not be used.

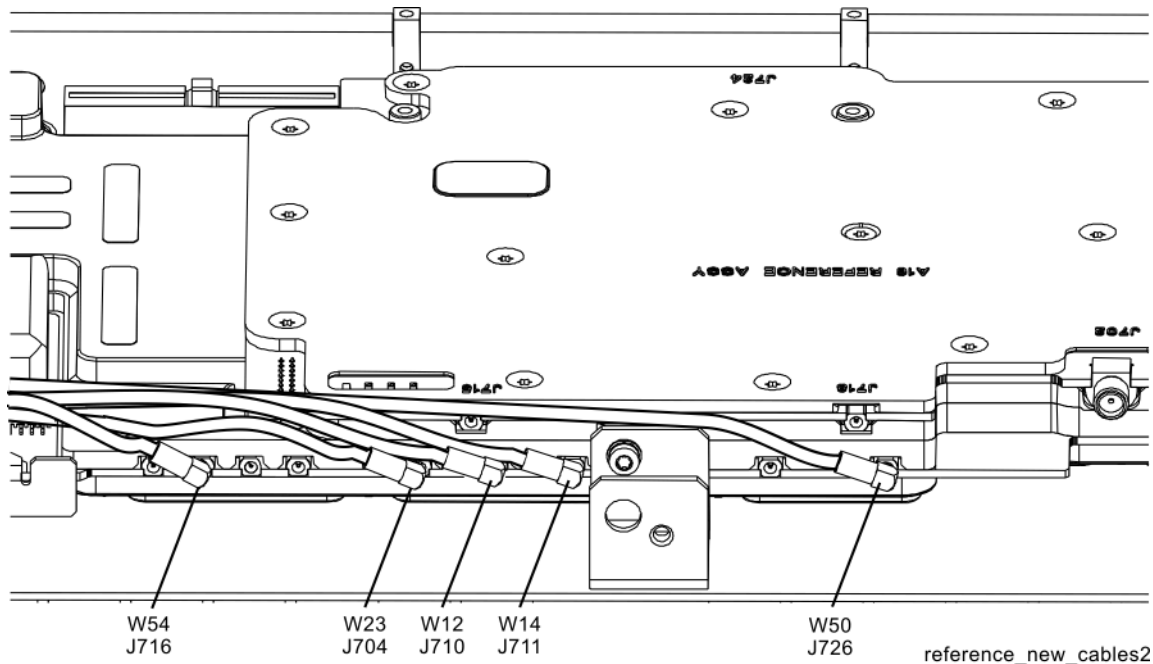
Figure 27 W15 A13J7



- 14.** Refer to **Figure 26** and **Figure 27**. Locate W36 in the Opt HLA 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.

15. Refer to **Figure 28**. Disconnect cable W12 from A16J710 on the A16 Reference Assembly and discard.

Figure 28 Reference Cables



16. Refer to **Figure 28**. Locate W54 in the Opt HL9/HLA Cable Kit. This cable has part number 8121-2288 and will be labeled “716” on one end and “14” on the other. Connect the end labeled “716” to A16J716 on the A16 Reference Assembly. Route the cable along the right side wall to A3J14 on the A3 DIF Assembly. Add this cable to the spiral wrap around W14.
17. Refer to **Figure 24** and **Figure 25**. Locate W41 in the Opt HL9/HLA Cable Kit. This cable will have part number 8120-8868 and will be labeled “601” on one end and “19” on the other. Connect the end labeled “19” to A3J19 on the A3 DIF Assembly. Route the cable to the right side of the instrument and up to the A2 EAI Assembly. Connect the cable to A2J601 with the cable routed behind the screw head near A2J601.
18. Refer to **Figure 24**. Connect W14 to A2J300 on the A2 EAI Assembly.

NOTE

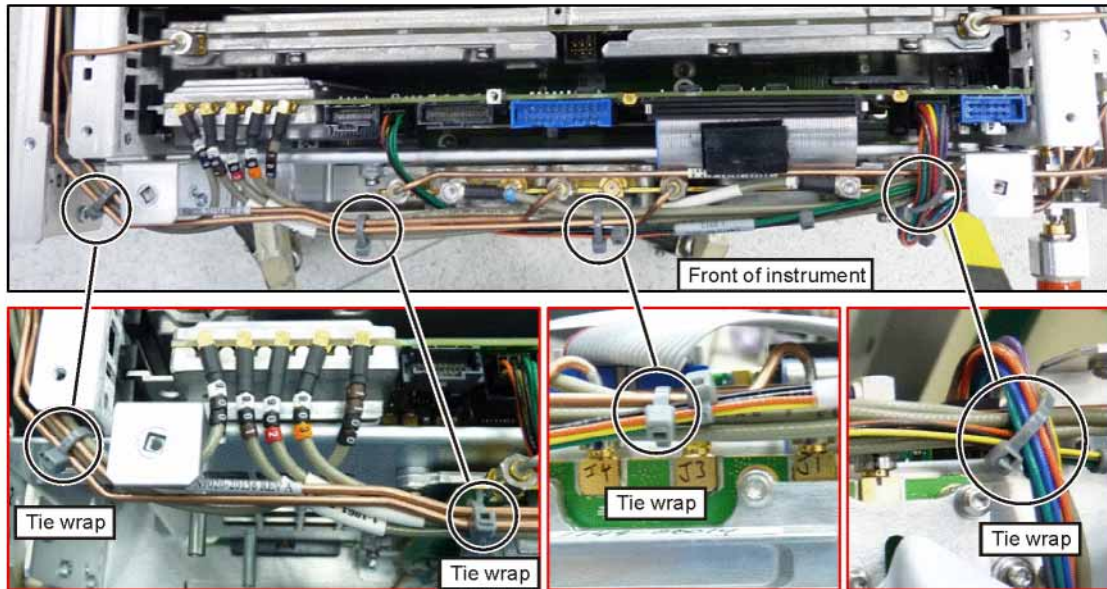
Refer to Analyzer Information at the beginning of the Installation Procedure. Do not perform **step 19** through **step 20** below if the Front End Controller has a Hw Id of 41 or 75.

- 19.** Refer to **Figure 24**. Locate W37 in the Opt HL9/HLA 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.
- 20.** Connect W37 to A2J100 on the A2 EAIF Assembly.
- 21.** Locate W39 in the Opt HLA 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.
- 22.** Refer to **Figure 28**. Locate W50 in the Opt HL9/HLA Cable Kit. This cable will have part number 8121-1401 and will be labeled “726” on one end and “17” on the other. Connect the end labeled “726” to A16J726 on the A16 Reference Assembly. Route the cable along the right side wall behind the A9 and A10 Input Attenuators and through the cutout in the chassis between A9 and A12. Connect the other end to A3J17 on the A3 Digital IF (DIF) Assembly.

Dressing Cables

1. Refer to **Figure 29**. Dress the coaxial cables and semi-rigid cables neatly and tie together using cable ties (1400-0249) at the locations indicated.

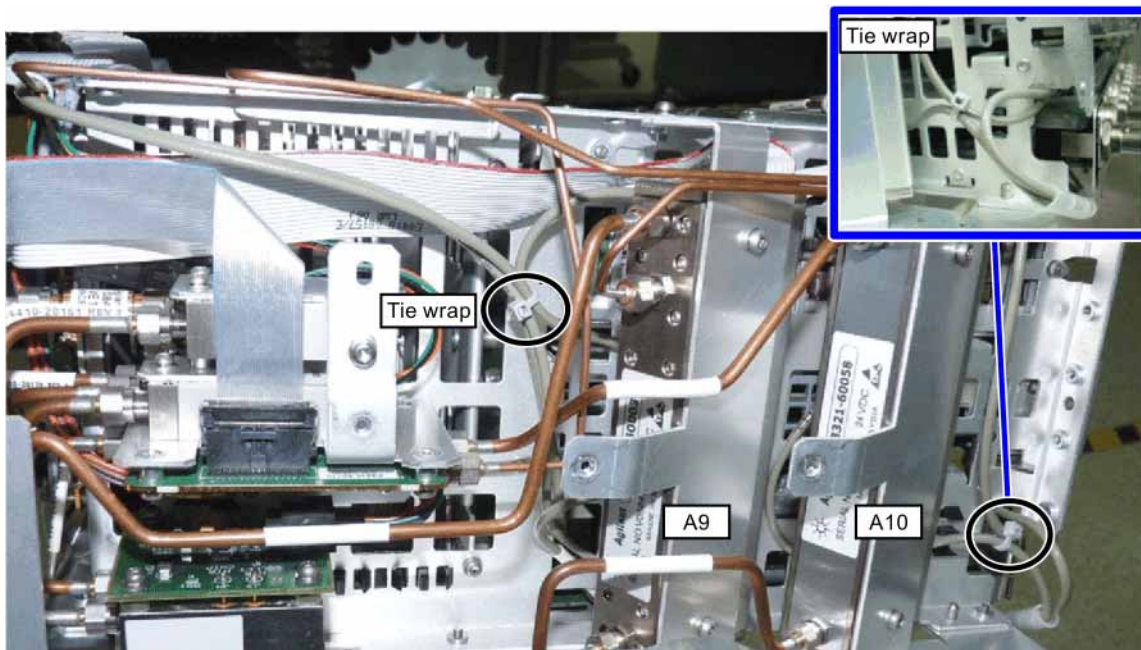
Figure 29 Adding Cable Ties near A13 and A15 Assemblies



tie_wraps_A13_A15

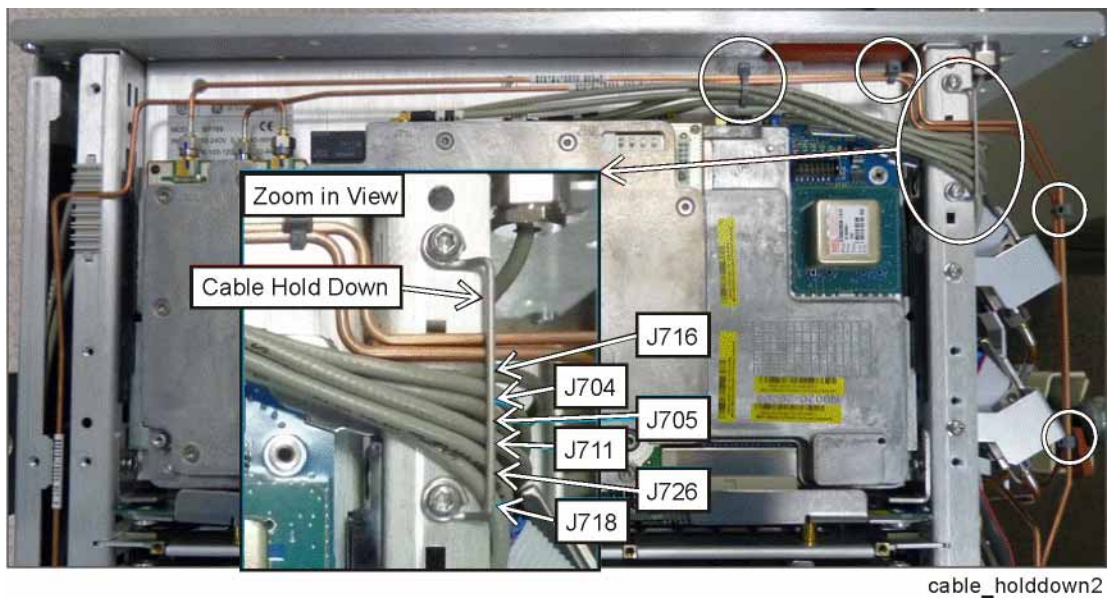
2. Refer to **Figure 30**. Dress the coaxial cables and semi-rigid cables neatly and tie together using cable ties (1400-0249) at the locations indicated.

Figure 30 Adding Cable Ties near A9 and A10 Assemblies



3. Refer to **Figure 31**. Reinstall the wire cable hold down. Assure the cables lie flat.
4. Dress the coaxial cables and semi-rigid cables neatly and tie together using cable ties (1400-0249) at the locations indicated.

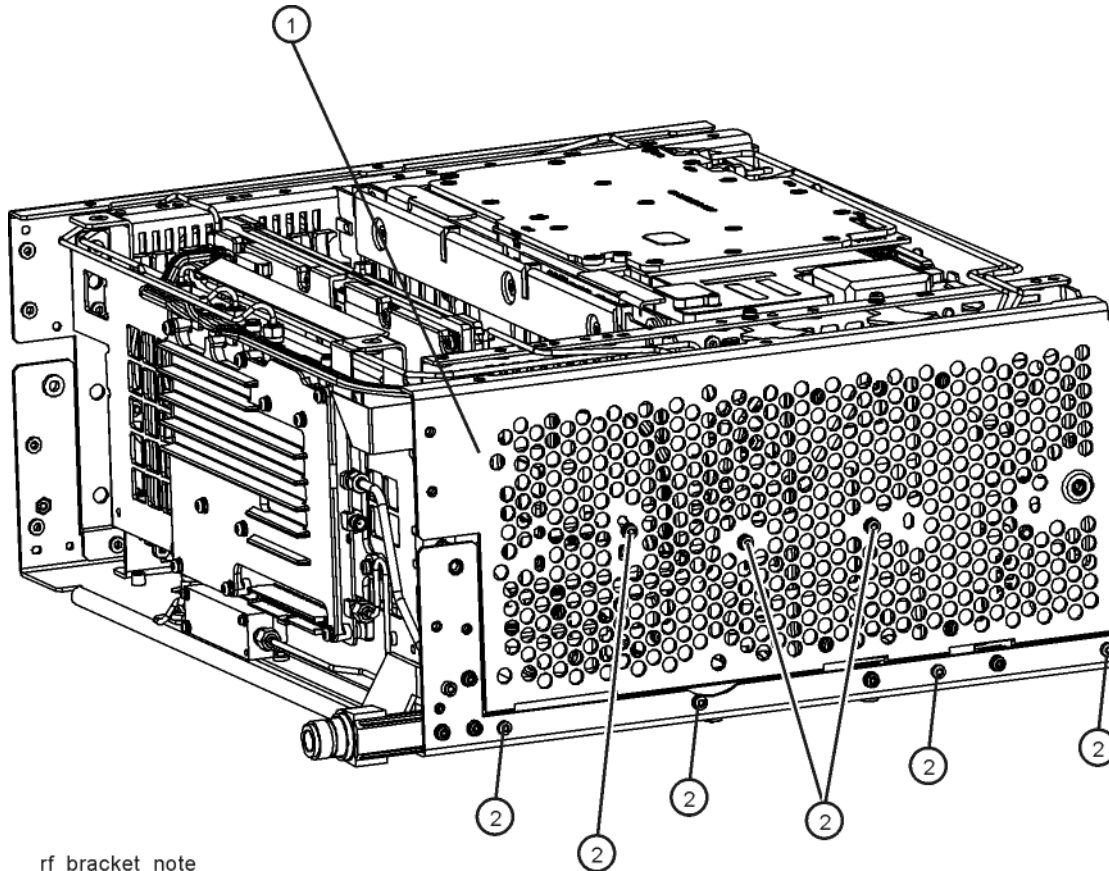
Figure 31 Cables Under Cable Hold Down



Reassembly

1. Refer to **Figure 32**. Reinstall the RF bracket (1) onto the chassis using seven screws (2). Torque to 9 inch-pounds.

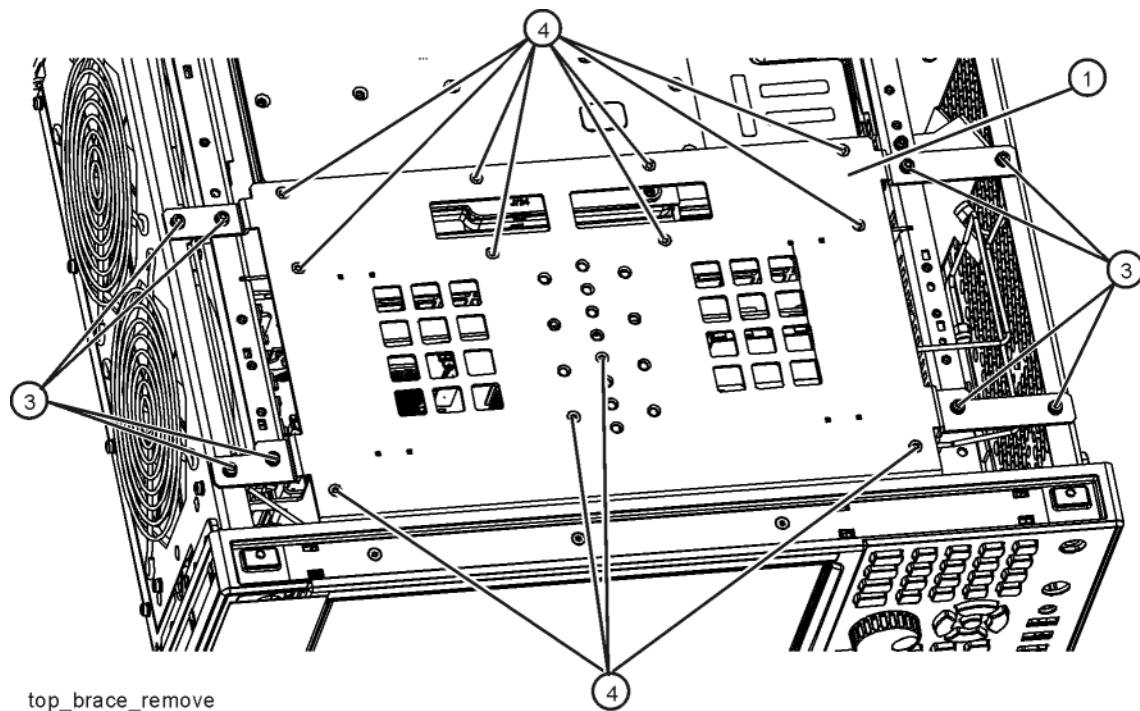
Figure 32 RF Bracket Replacement



rf_bracket_note

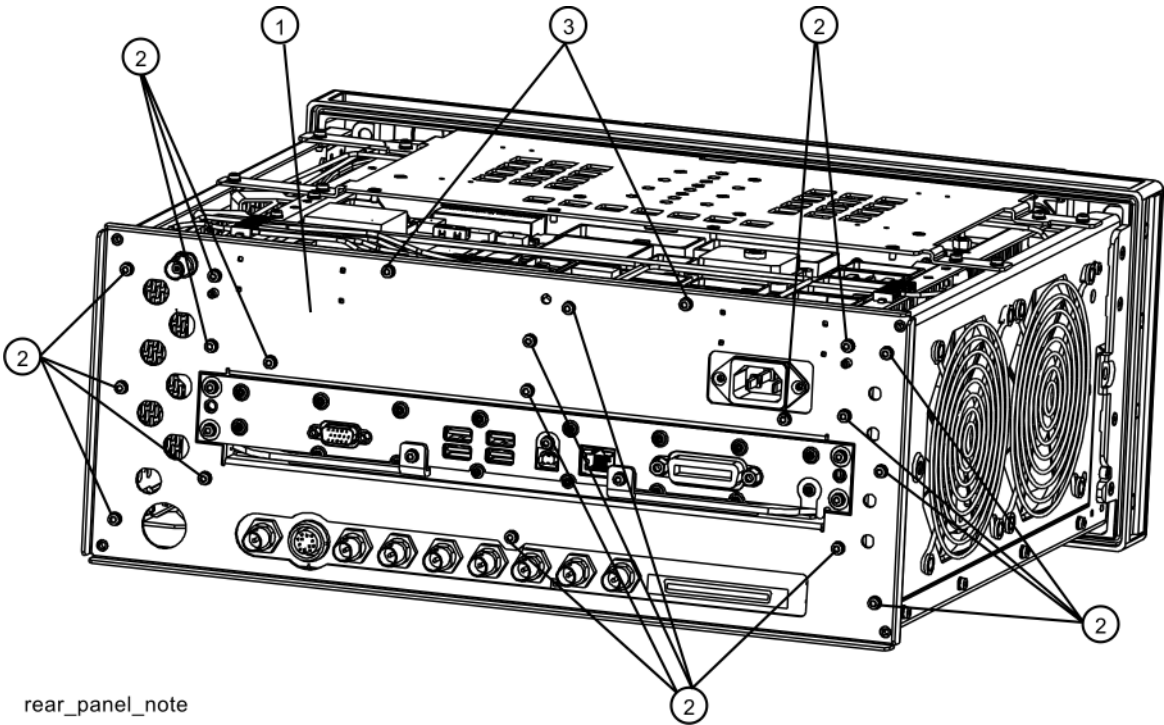
2. Refer to **Figure 33**. To replace the top brace (1), place it in the correct position and attach the appropriate screws. Torque to 9 inch-pounds.

Figure 33 Top Brace Replacement



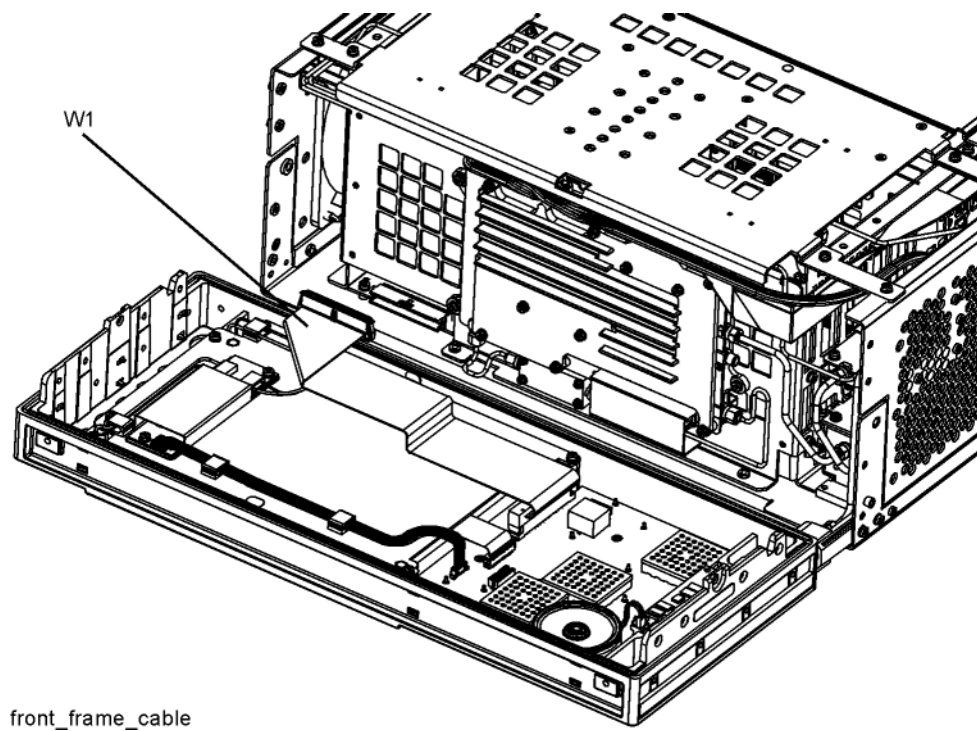
3. Remove the hole plug from the AUX IF OUT hole.
4. Attach the W23 External Reference cable to the rear panel and secure with a lock washer (2190-0102) and nut (0590-2332). Torque to 21 inch-pounds using a 9/16" nut driver.
5. Attach the W39 Aux IF Out cable to the rear panel and secure with the lock washer and nut that came with the cable. Torque to 9 inch-pounds with a 5/16" nut driver.
6. Refer to **Figure 34**. 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 34 Rear Panel Replacement



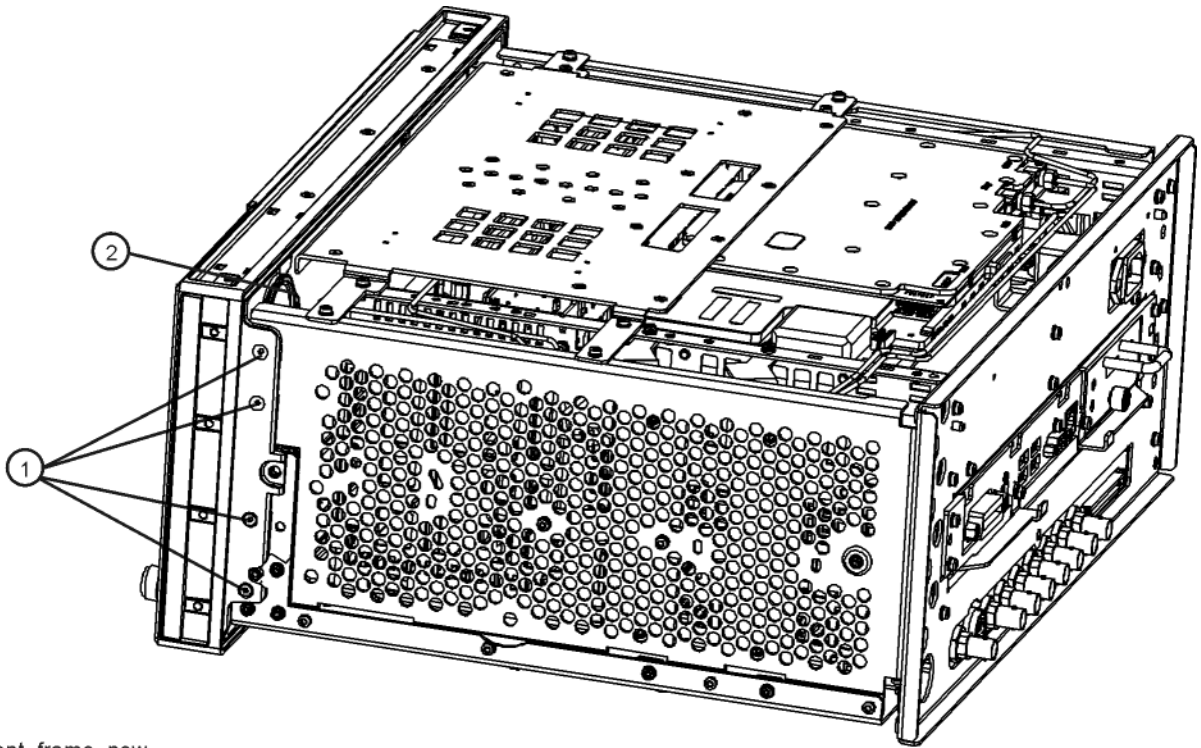
7. Refer to **Figure 35**. Reattach the ribbon cable W1.

Figure 35 Front Panel Cable



8. Refer to **Figure 36**. 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 36 Front Frame Replacement



front_frame_new

Final Installation for Standard Instruments (Benchtop Configuration, [Figure 3](#))

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.

Final Installation for Portable Instruments (Option PRC, [Figure 4](#) and [Figure 5](#))

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.

Loading New Hardware Drivers

On the first boot-up after installing the new hardware, the analyzer will detect the new hardware and will need to load drivers for the new hardware. The analyzer will boot-up as Instrument user, but loading the new drivers requires administrator privileges.

1. Turn on the analyzer and wait for the XSA application to launch.
2. During the start up of the XSA application, it will detect the new hardware and need to load new drivers. You will be prompted for an administrator login and password. The default administrator login is “administrator” and the default password is “Keysight4u!”.
3. You will receive two prompts as described above. The first prompt is for the “Agilent PXA DIF” and the other is for the “Agilent Receiver Module”. Both of these relate to the new A3 40 MHz Digital IF Assembly.
4. After the hardware drivers have been installed, the XSA application will continue to start up.

Update FPGA Code

On the first boot-up after installing the new hardware, the analyzer will detect the new A3 40 MHz BW Digital IF and A15 Front End Controller. However, the FPGA code in the new assemblies will not necessarily be synchronized with the instrument software installed earlier. The following procedure ensures that the FPGA code in the new assemblies is updated to the correct revision.

1. Turn on the analyzer and wait for the XSA application to launch.
2. Close the instrument application software by pressing **File, Exit, Enter** using the front panel keys.
3. Connect a USB mouse to one of the instrument front panel USB ports.
4. Using the mouse, click **Start, Log Off, Log Off**.
5. Re-login as “administrator”. The default password is “Keysight4u!”. Click **OK**.
6. Using the mouse, double-click on the Windows Explorer link on the desktop and navigate to the following folder:

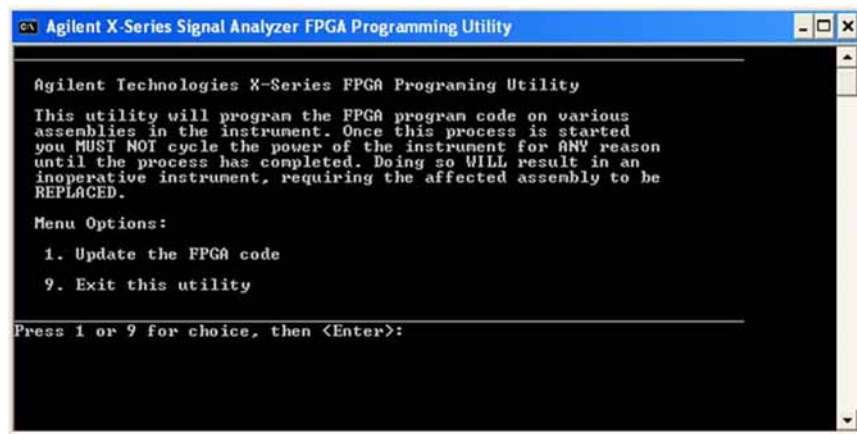
C:\Program Files\Keysight\SignalAnalysis\Physics

7. In this folder find and execute the file named:

FPGA_Prog.bat

8. The FPGA Programming Utility will start and a window as shown in **Figure 37** will appear.

Figure 37 FPGA Programming Utility



9. To program the FPGA code enter 1 and press Enter. You will need to confirm this selection by pressing 1 and Enter one more time.
10. The programming of the FPGA code could take several minutes to complete. Once it has finished the instrument will reboot itself to use the new code and this process will then be completed.

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 DIF, EAIF, and EFEC boards identify themselves as:
 - Analog IF (Hw Id = 57)
 - Digital IF (Hw Id = 34)
 - Front End Controller (Hw Id = 41 or 75)

Verify Optional Functionality

1. Press **Mode, IQ Analyzer (Basic)**.
2. Press **Mode Setup**.
3. Press **IF Path**.
4. Verify that softkeys appear labeled “**25 MHz**” and “**40 MHz**”.
5. Press **AMPTD Y Scale, More 1 of 2, uW Path Control**.
6. Verify that softkeys appear labeled “**Standard Path**” and “**uW Preselector Bypass**”.
7. Press **uW Preselector Bypass**. If the path was previously set to **Standard Path**, you should hear a click.
8. Press **Standard Path**. If the path was previously set to **uW Preselector Bypass** path, you should hear a click.

Perform Preselector Characterization

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 performance verification testing. Information on how to obtain this software can be found at

<http://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.

- Perform all adjustments

Performance Tests Required

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

- 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 the calibration must be made between the end user and the calibration provider.

For assistance, get in touch with 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 (8am-8pm EST Monday -Friday)

