

# Keysight PXA Signal Analyzer Option HL1 Microwave Preselector Bypass (MPB) and Low Noise Path (LNP)

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## Installation Note

Part Number N9030-90043  
Printed in USA August 2014



N9030-90043

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## Option HL1 Microwave Preselector Bypass (MPB) and Low Noise Path (LNP) Retrofit Kit

Products Affected:	PXA N9030A, Option 508, 513, and 526
Serial Numbers:	All
To Be Performed By:	<input checked="" type="checkbox"/> Agilent Service Center <input checked="" type="checkbox"/> Personnel Qualified by Agilent <input type="checkbox"/> Customer
Estimated Installation Time:	2.5 Hours
Estimated Adjustment Time:	5.5 Hours
Estimated Verification Time:	4.0 Hours

### Introduction

This installation note explains how to install the hardware, and provides guidelines for adjustment and verification for Option MPB, Microwave Preselector Bypass, and Option LNP, Low Noise Path. Please note that the Option HL1 kit designator is only an ordering number.

Option MPB provides mechanical switches and associated hardware that bypass the A12 YTF (YIG Tuned Filter). The YTF limits the bandwidth of the input signal and also this filter can drift causing slight amplitude errors.

Option LNP provides a mechanical switch and associated hardware to bypass the A11 Low Band Assembly when the instrument is tuned to frequencies above 3.6 GHz (High Band path). The A11 Low Band assembly contributes loss to the input signal path and reducing this loss improves the Display Average Noise Level of the instrument. SHI performance increases also.

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### 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. All adjustments are automated. This software is included in the N7814A performance test & adjustment software package.

The option is licensed for one instrument model number/serial number combination. The license file that is downloaded from the web will only install on the designated instrument.

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## Option HL1 Microwave Preselector Bypass (MPB) and Low Noise Path (LNP) Retrofit Kit

### Installation Kit Parts List

Quantity	Description	Agilent Part Number
1	Installation Note	This note
1	Option Upgrade Entitlement Certificate	5964-5178
2	Coax Switch	N1810-60069
1	Transfer Switch, (top switch)	87222-60026
1	Coaxial Fixed Attenuator	08493-60026
1	Bracket, Switch	E4410-00104
1	Bracket, (middle switch)	E4410-00110
1	Bracket, (top switch)	N9020-00022
1	Cable, Wire Harness, Preselector Bypass Control	E4410-60159
1	Cable, Coax, YTF - Bottom Switch port 3	E4410-20165
1	Cable, Coax, Bottom Switch Center Port to Front End Assembly J 9	E4410-20164
1	Cable, Coax, Center Switch port 2 SW 2 to YTF	E4410-20163
1	Cable, Coax, Bottom Switch Port 1 to Coaxial Fixed Attenuator	N9020-20210
1	Cable, Coax, Attenuator B - Top Switch Port 1	N9020-20143
1	Cable, Coax, Top Switch Port 4 to Low Band Switch Assembly J1	N9020-20146
1	Cable Assembly, Top Switch Port 2 to Center Switch (center port)	N9020-20144
1	Cable, Coax, Low Band Switch Assembly J3 to Top Switch Port 3	N9020-20145
1	Cable, Ribbon, Top Switch Control to Front End Controller Assembly J802 connector	N9020-60087
4	Screw-Machine w/crest-cup-con-wshr Pan-HD TORX-T8 M2.5X0.45 20 mm-LG	0515-1992
3	Machine w/crest-cup-con-wshr Pan-HD TORX-T8 M2.5X0.45 6 mm-LG	0515-1934
2	Screw-Machine 90-Deg-Flt-HD TORX-T10 M3X0.5 8 MM-LG	0515-1035
2	Screw-Machine w/crest-cup-con-wshr Pan-HD TORX-T10 M3X0.5 8 MM-LG	0515-0372

## Option HL1 Microwave Preselector Bypass (MPB) and Low Noise Path (LNP) Retrofit Kit

### Tools Required

- T-8 TORX Driver
- T-10 TORX Driver
- T-20 TORX Driver
- 5/16-inch torque wrench
- Agilent Calibration and Adjustment Software, N7814A
- Test equipment and computer supported by the X- Series Performance Tests and Adjustment Software
- PXA Signal Analyzer Service Guide. This manual is available as N9030A Option OBW or p/n N9030-90030
- Microsoft Windows based personnel 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.

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<b>WARNING</b>	<b>Before you disassemble the instrument, turn the power switch to Standby and unplug the instrument. Failure to unplug the instrument can result in personal injury.</b>
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<b>CAUTION</b>	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.
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## Installation Procedure

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**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.

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

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### Remove the instrument outer case, top brace, front panel, and right side chassis (RF side bracket)

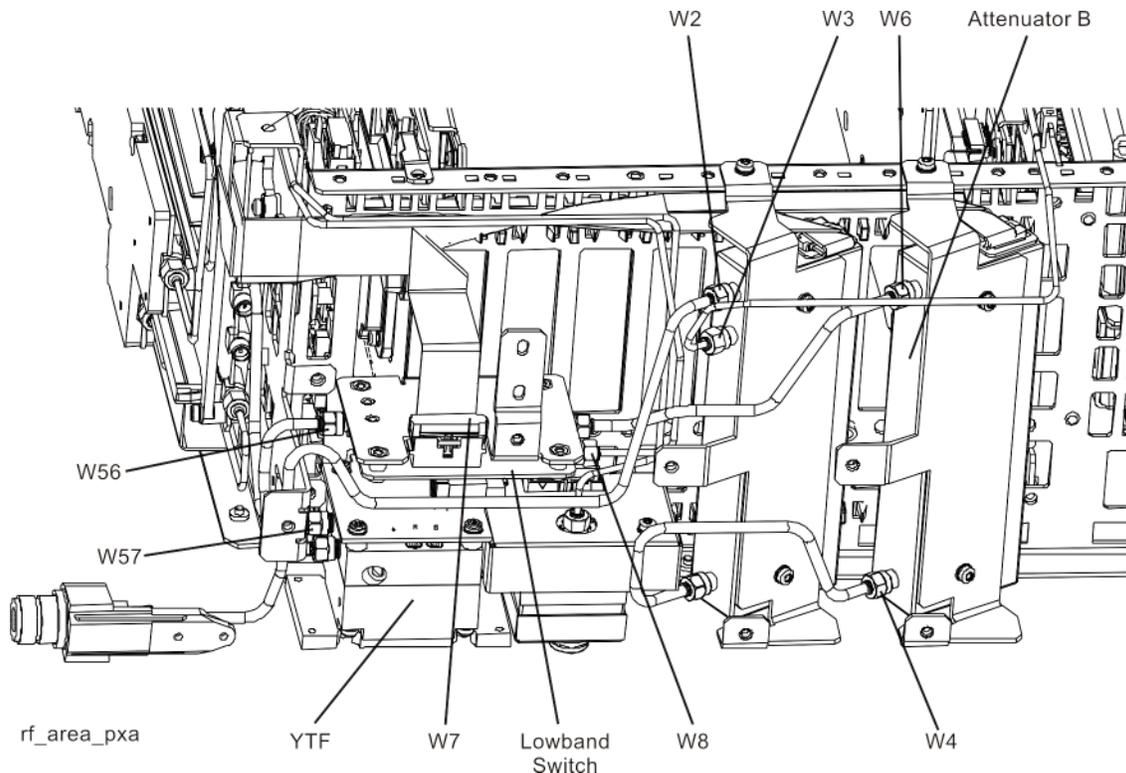
See the Instrument Outer Case, Top Brace, front frame, and RF area removal procedures in the Service Guide's "Assembly Replacement Procedures" chapter.

### Installing the retrofit kit

#### Removing Cables

1. Refer to [Figure 1](#). Locate Attenuator B on the right side of the instrument, and remove cable W6 from between the Attenuator and the Low Band Switch Assembly. This cable will not be reused.

**Figure 1** RF Section



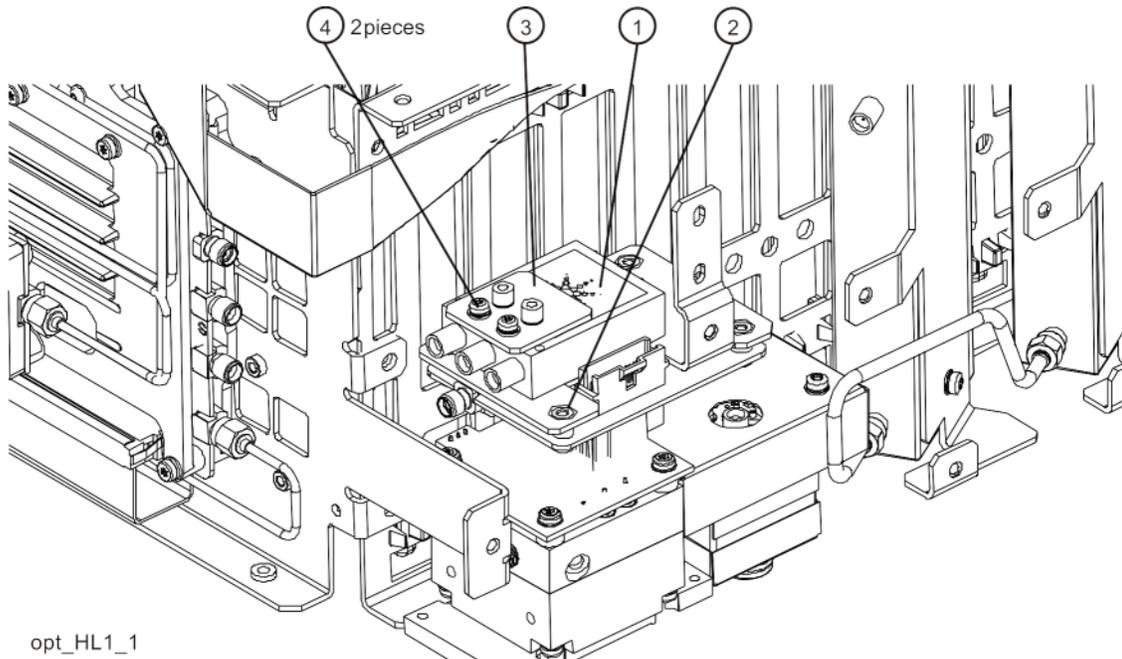
## Option HL1 Microwave Preselector Bypass (MPB) and Low Noise Path (LNP) Retrofit Kit

2. Locate the YTF and remove W56 from between the YTF and the Low Band Switch Assembly, and remove W57 between the YTF and the Front End Assembly at J9. These cables will not be reused.
3. Disconnect the W7 ribbon cable from the Low Band Switch Assembly.

### Installing Switches and Control Cables

1. Refer to [Figure 2](#). Locate one of the N1810-60069 switches in the kit. Move W7 ribbon cable away from Low Band bracket to allow placement of additional switches and brackets in the following steps. Place N1810-60069 switch **(1)** on Low Band bracket **(2)** with Agilent label facing up.

**Figure 2**      **Switch 1 Placement**

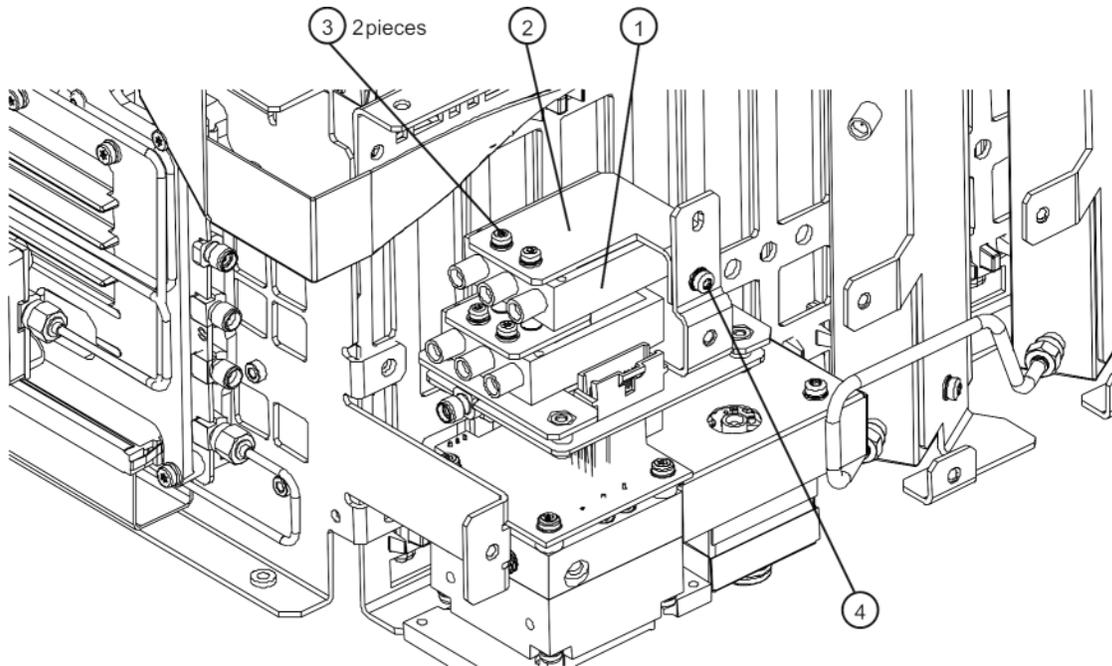


2. Locate Bracket, E4410-00104, in the kit and install bracket **(3)** as shown using two, 0515-1992 screws **(4)** provided. Do not torque screws at this time.

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3. Refer to [Figure 3](#). Locate the other N1810-60069 switch in the kit, and place switch **(1)** on the bracket previously installed. Assure Agilent label on switch is facing up.

**Figure 3**      **Switch 2 Placement**



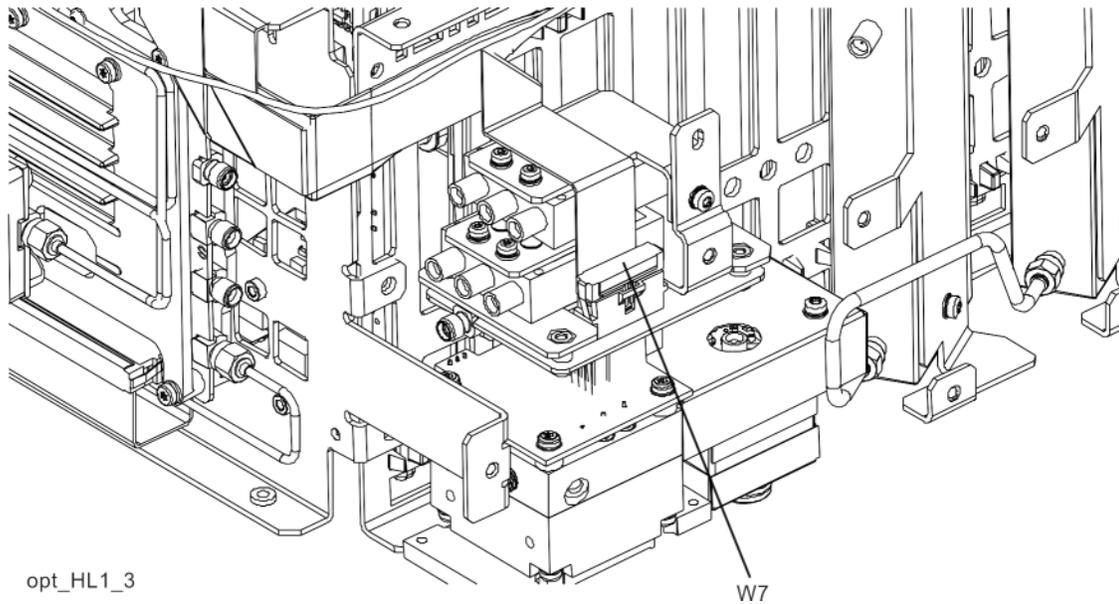
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4. Locate bracket E4410-00110 **(2)** in the kit and install on top of switch and secure with two 0515-1992 screws provided **(3)**. Do not torque screws.
5. Secure the bracket just installed, to the Low Band Switch bracket with one 0515-0372 screw provided **(4)**. Do not torque.
6. Align switches so they are parallel with side of instrument then torque the four screws securing the switches to the brackets to 6 in lbs. Torque the screw that secures the switch brackets together to 9 inch-lbs.

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7. Refer to [Figure 4](#). Route W7 over bracket and switch as shown and insert W7 connector into Low Band Switch header

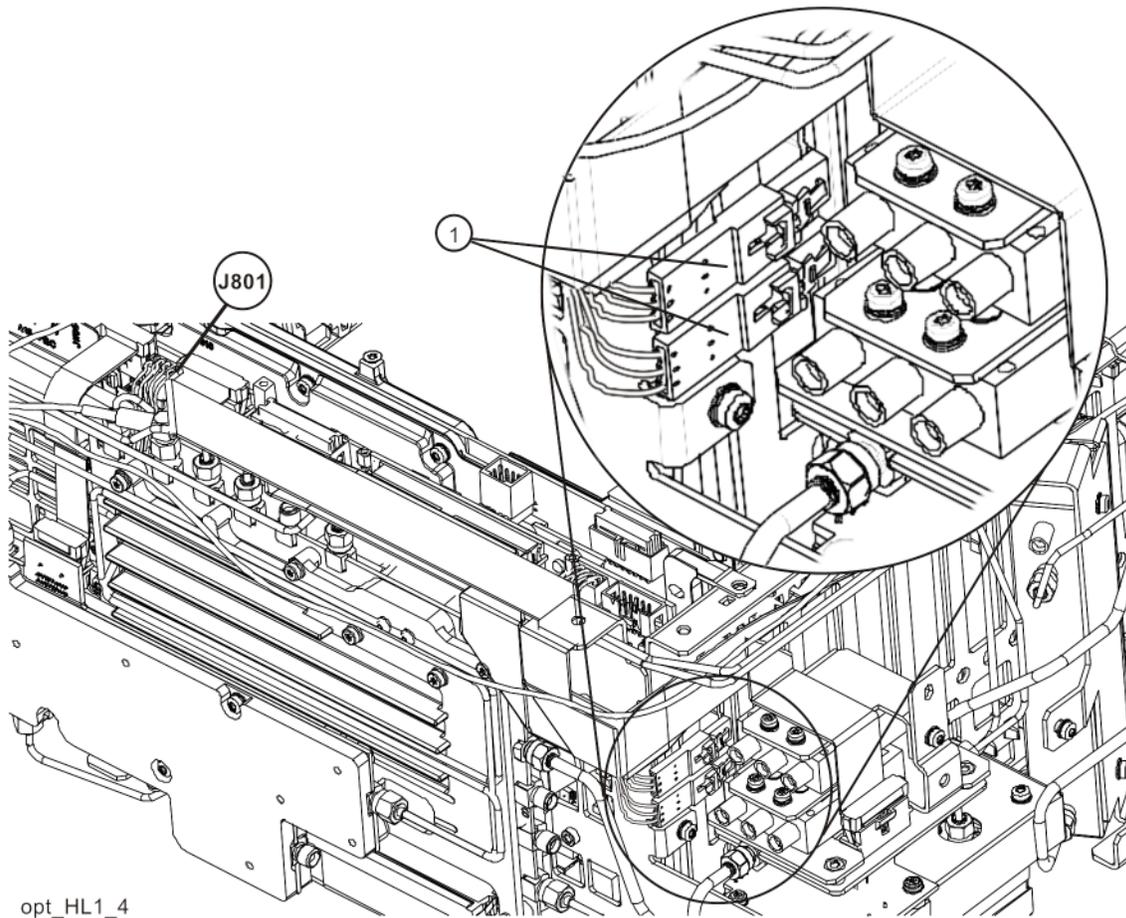
**Figure 4**      **W7 Routing**



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8. Refer to [Figure 5](#). Locate Wire Harness E4410-60159 in the kit and attach the end with the single connector to the Front End Control assembly J801 connector. Route the cable between the inner chassis and the switches just installed, and mate with connectors **(1)** on the switches. Once connected, position the connections along side the switches to allow access to the switch.

**Figure 5** Wire Harness Routing

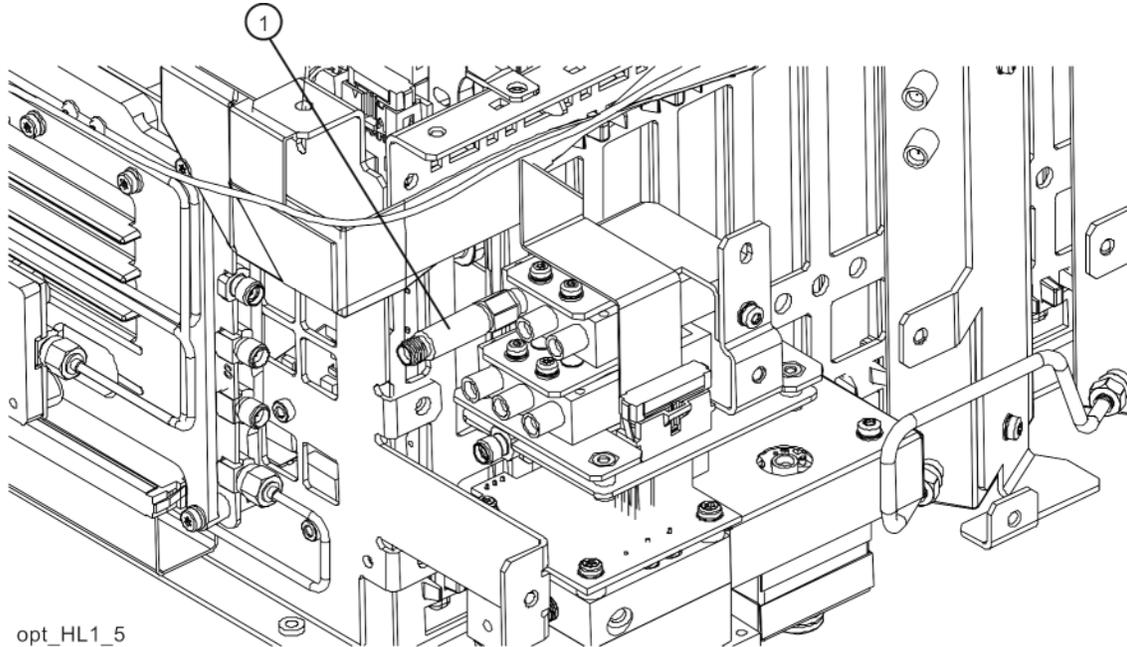


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9. Refer to [Figure 6](#). Attach the coaxial fixed attenuator (**1**) from the kit to switch port 1. Torque to 10 inch-lbs.

**Figure 6**

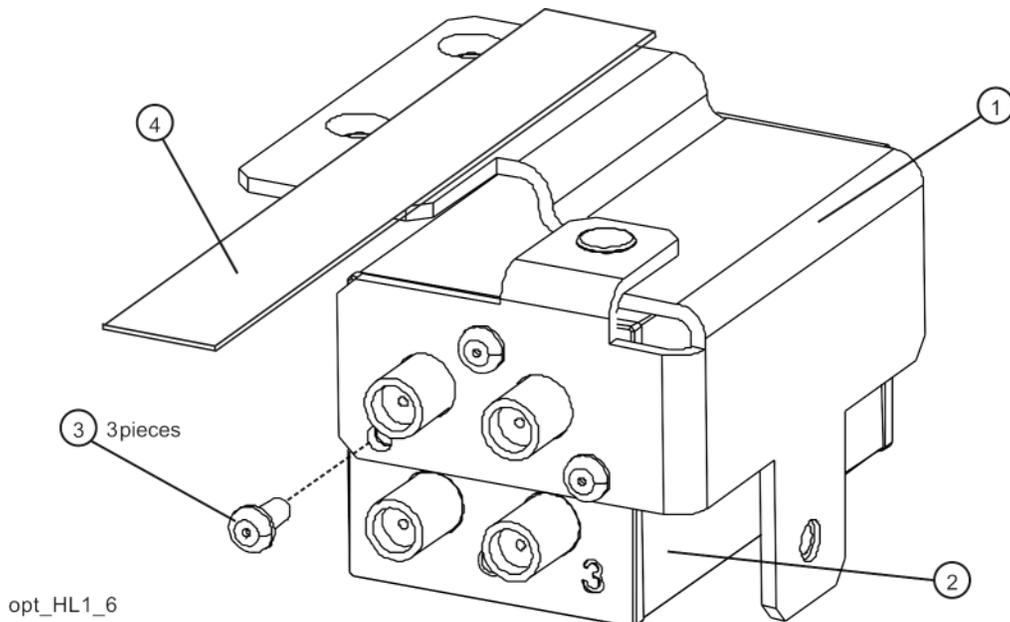
**W7 Routing**



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10. Refer to [Figure 7](#). Locate the 87222-60026 switch, N9020-00022 bracket, and N9020-60087 ribbon cable in the kit. Install the bracket (1) to the switch (2) using three 0515-1934 screws provided (3). Assure the number 3 on the switch is positioned as shown. Torque screws to 6 inch-lbs. Install the ribbon cable (4) into the switch connector header.

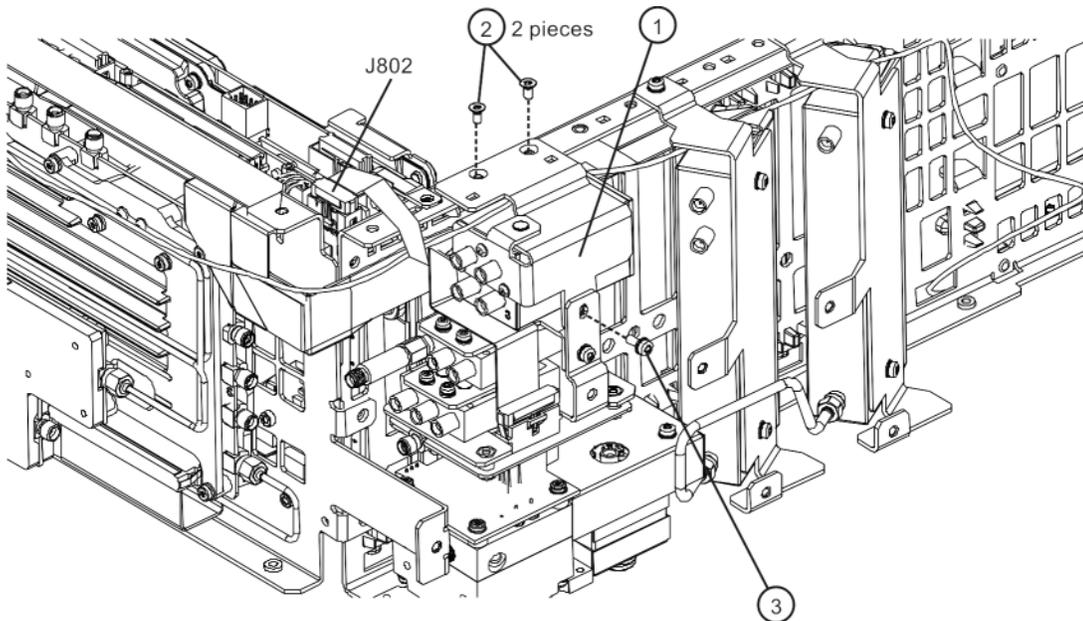
**Figure 7**      **Bracket Mount to Switch**



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11. Install the switch assembly **(1)** as shown in [Figure 8](#). Route the switch control cable between the switch and the chassis. Connect the ribbon cable to the Front End Controller J802 as shown. Secure switch bracket to chassis frame with 0515-1035 screws provided **(2)**. Secure switch bracket to existing switch bracket with 0515-0372 screw **(3)**. Torque screws to 9 inch-lbs.

**Figure 8**      **Switch Assembly Installation**

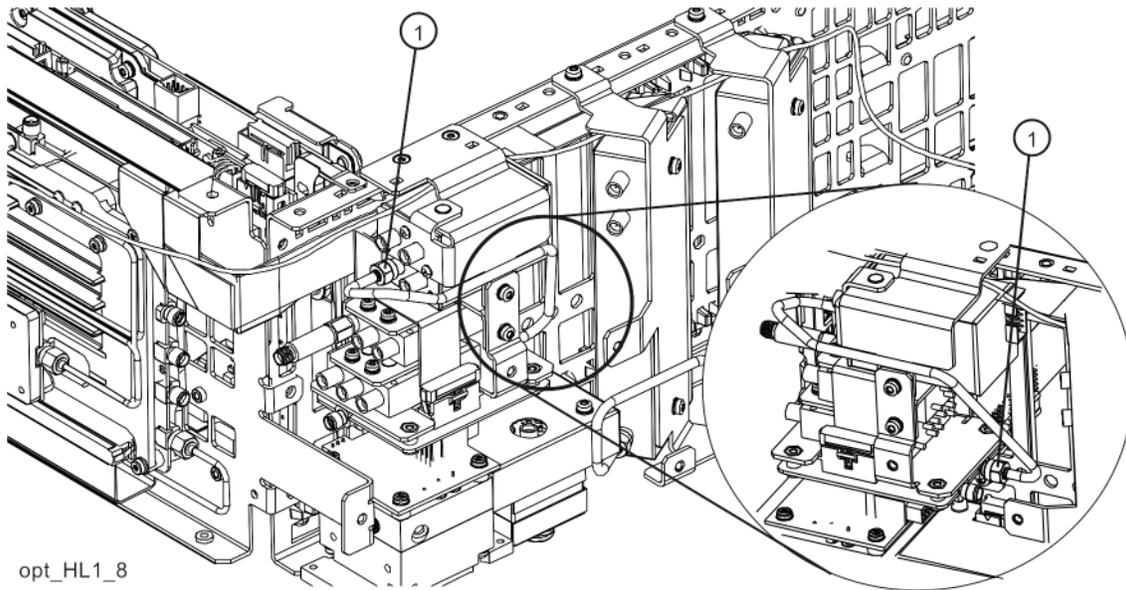


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12. Refer to [Figure 9](#). Install rigid cable N9020-20146 (1) between top switch port 4 and Low Band Switch Assembly connector that is closest to the inner chassis. Torque to 10 inch-lbs.

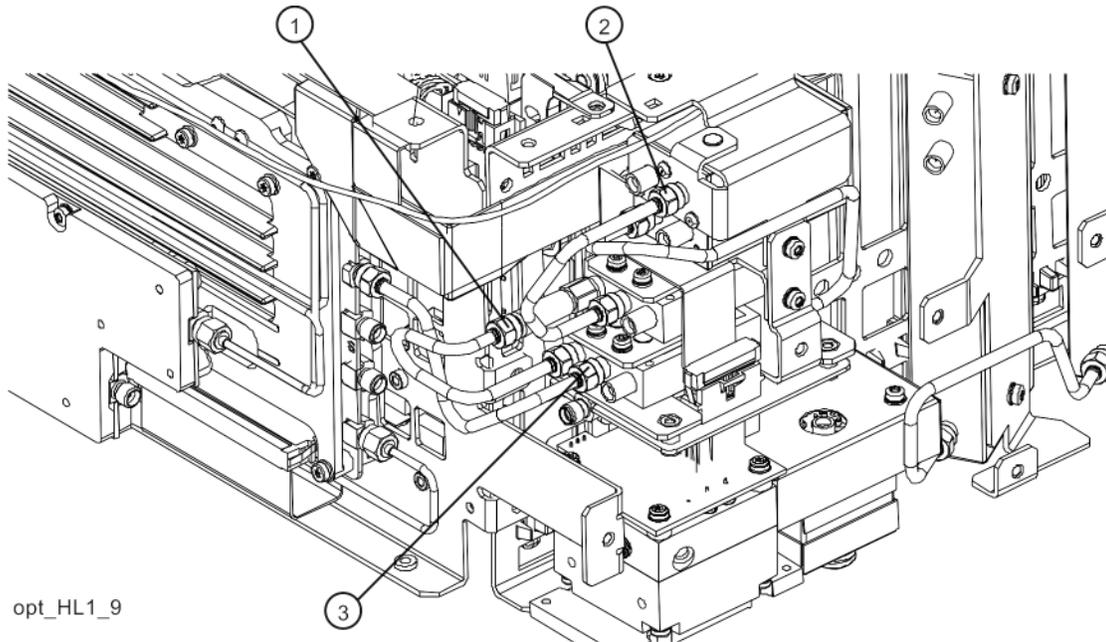
**Figure 9** N9020-20146 Rigid Cable Installation



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13. Refer to [Figure 10](#). Install rigid cable N9020-20210 (**1**) between attenuator (connected to center switch port 1) and bottom switch port 1. Torque to 10 inch-lbs.

**Figure 10** N9020-20210, N9020-20144, and N9020-20164 Rigid Cables Installation

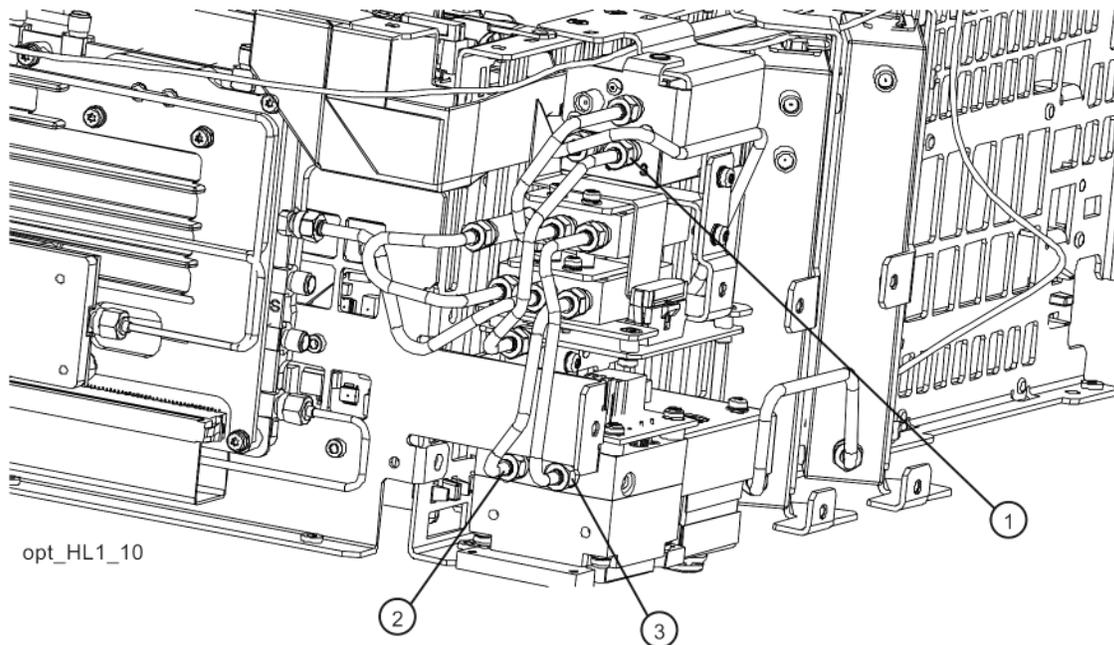


14. Install rigid cable N9020-20144 (**2**) from top switch port 2 to center switch center port. Torque to 10 inch-lbs.
15. Install rigid cable N9020-20164 (**3**) from bottom switch center port to Front End Assembly J9. Torque to 10 inch-lbs.

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16. Refer to [Figure 11](#). Install rigid cable N9020-20145 (**1**) from top switch port 3 to Low Band Switch Assembly as shown. Torque to 10 inch-lbs.

**Figure 11** N9020-20145, N9020-20165, and N9020-20163 Rigid Cables Installation

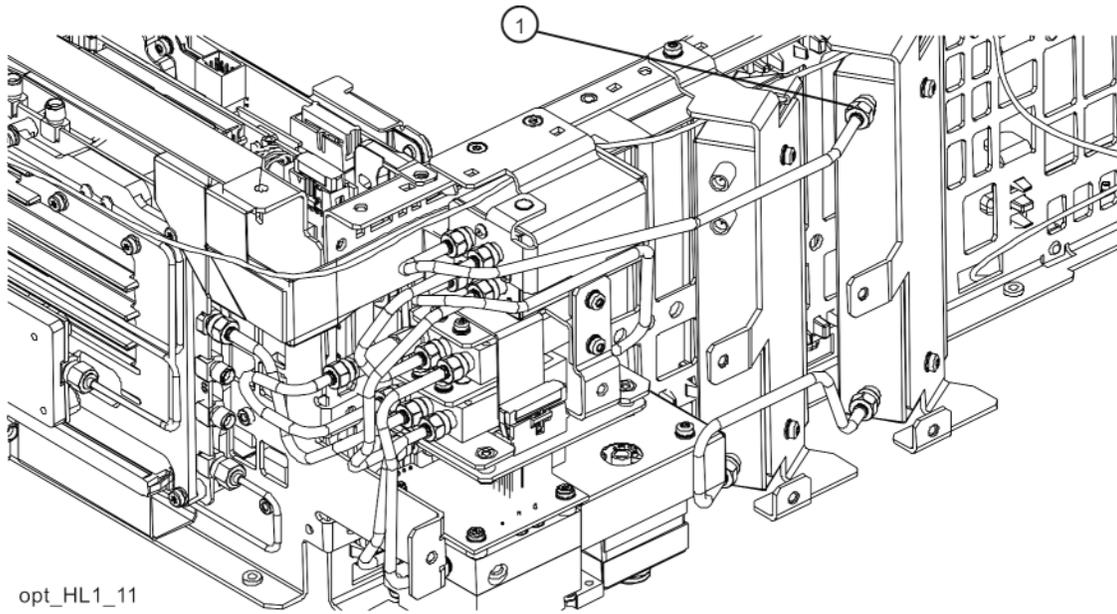


17. Install rigid cable N9020-20165 (**2**) from bottom switch port 2 to YTF Assembly as shown. Torque to 10 inch-lbs.
18. Install rigid cable N9020-20163 (**3**) from middle switch port 2 to YTF Assembly as shown. Torque to 10 inch-lbs.

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19. Refer to [Figure 12](#). Install rigid cable N9020-20143 (1) from top switch port 1 to Attenuator B output as shown. Torque to 10 inch-lbs.

**Figure 12** N9020-20143 Rigid Cable Installation



20. Replace the right side chassis, front panel, top brace, and instrument cover.
21. Power on the instrument and allow it to boot. There may be alignment failures since the newly installed hardware is not licensed. The analyzer should display a measurement screen.

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## License Installation Procedure over USB

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**NOTE** Even though the retrofit kit was ordered as Option HL1, the kit installs instrument options MPB and LNP. The license file mentioned below will install both option MPB and LNP.

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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 the signal analyzer USB port. Windows will detect the new hardware and may display the configuration menu shown in [Figure 13](#). This menu may be configured according to your preferences.

**Figure 13** 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 Agilent License Manager will display a “Successful License Installation” message as shown in [Figure 14](#).

Figure 14 Successful License Installation



### Verify the Installation

1. Cycle the power on the signal analyzer.
2. Press **System, Show, System** to display a list of installed options.
3. Verify that the LNP and MPB options appear on the list.

## Option HL1 Microwave Preselector Bypass (MPB) and Low Noise Path (LNP) Retrofit Kit

### 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.agilent.com/find/calibrationsoftware>

### Utilities Required

None

### Adjustments Required

Adjustment Name
Perform all adjustments

### Performance Tests Required

Verification Test Name
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 Agilent Technologies Sales and Service Office. To find your local Agilent office access the following URL, or if in the United States, call the following telephone number:

<http://www.agilent.com/find/assist>

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