Keysight Technologies N9030B PXA Signal Analyzer

Option B85, 25 MHz to 85 MHz Analysis Bandwidth Upgrade
Option B1X, 25 MHz to 160 MHz Analysis Bandwidth Upgrade
Option BU3, 40 MHz to 160 MHz Analysis Bandwidth Upgrade

KEYSIGHT TECHNOLOGIES

Installation Note

Notices

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Option B85 or B1X Retrofit Kit

Products Affected:	N9030B PXA, Option 503, 508, 513, 526, 544, 550
Serial Numbers:	All
To Be Performed By:	(X) Keysight Service Center
	(X) Personnel Qualified by Keysight
	( ) Customer
Estimated Installation Time:	1.5 Hours
Estimated Adjustment Time:	1.0 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 the following upgrade kits for N9030B PXA signal analyzers:

- Option B85, Analysis Bandwidth Upgrade, 25 MHz, or 40MHz, to 85 MHz, Hardware and License
- Option B1X, Analysis Bandwidth Upgrade, 25 MHz to 160 MHz, Hardware and License
- Option BU3, is the ordering number for the retrofit kit that installs option B1X on instruments with option B40 previously installed.

Refer to http://www.keysight.com/find/pxa_upgrades for information on all available upgrades

In addition to installing the licenses and hardware to support options B85, or B1X, as appropriate, the Option B85 and Option B1X kits also include a license for N9030B-B40.

NOTE

The B85 or B1X option is licensed for only one instrument model number/ serial number combination. The license file that is downloaded from the web will only install on the designated instrument.

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, Keysight X-Series Signal Analyzer Calibration Application software.

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 calibration provider.

Installation Kit Parts List

Quantity	Description	Keysight Part Number
1	Installation Note	This note
1	Option Upgrade Entitlement Certificate	5964-5178
1	Wideband Analog IF Assembly	N9020-60044
1	Wideband Digital IF Assembly	N9020-60311
1	Cable Assembly, Flat Flexible 80-Conductor 3-in-LG	8121-1854
14	Screw, M3 x 0.5, 6 mm, Flathead	0515-1946
	Cable Kit, includes cables below:	
1	Cable Assembly, Coaxial 650 mm-LG (with color bands 901 and 101 attached)	8121-1865
1	Cable Assembly, Coaxial 120G (with color bands 806 and 726 attached)	8121-0152
1	Cable Assembly, Coaxial 120G (with color bands 718 and 301attached)	8121-0152
1	Cable Assembly, Coaxial 530 mm LG (with color bands 102 and 15 attached)	8121-1401
1	Cable Assembly, Coaxial 530 mm LG (with color bands 17 and 805 attached)	8121-1401

Tools Required

- T-10 TORX Driver
- T-20 TORX Driver
- 5/16-inch torque wrench
- Keysight Calibration and Adjustment Software,
  N7814A TME Calibration Application, version E.16.00 or later
- Test equipment and computer supported by the X- Series Performance Tests and Adjustment Software
- PXA Signal Analyzer Service Guide. This manual is available for immediate download in PDF format from: www.keysight.com/find/N9030B_service_guide
- 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.

WARNING 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.

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.

Procedure

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.

Licensing the New Option(s)

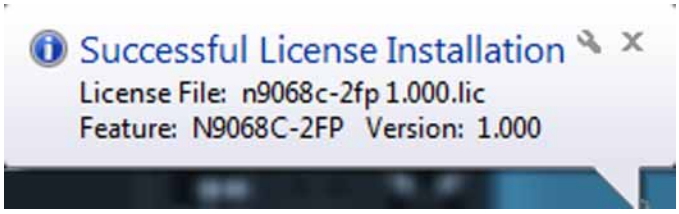
License Installation Procedure over USB

1. Locate the Option Upgrade Entitlement Certificate in the kit and follow the directions to redeem the upgrade product listed.
2. After redeeming the upgrade product from the Certificate, you will receive an e-mails with an attached License File. Locate a USB storage device. Perform a virus scan on this device before use.
3. Locate a USB storage device. Perform a virus scan on this device before use.
4. Save the License File to the root directory of the USB Storage Device.
5. 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

6. 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 similar to the one shown in Figure 2. If 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



Alternate Installation Procedure

The License File(s) 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 **System** and **Exit Program**. An Exit Program dialog box will appear; tap **OK** to confirm the exit.
2. Double-tap 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**
   - N9030B-B85 Analysis bandwidth, 85 MHz (if N9030BU-B85 is being installed)
   - N9030B-B1X Analysis bandwidth, 140 MHz (if N9030BU-B1X or N9030BU-BU3 is being installed)
   - N9030B-B40 Analysis bandwidth, 40 MHz
   - N9030B-DP4 Digital Processor, 4 GB capture memory

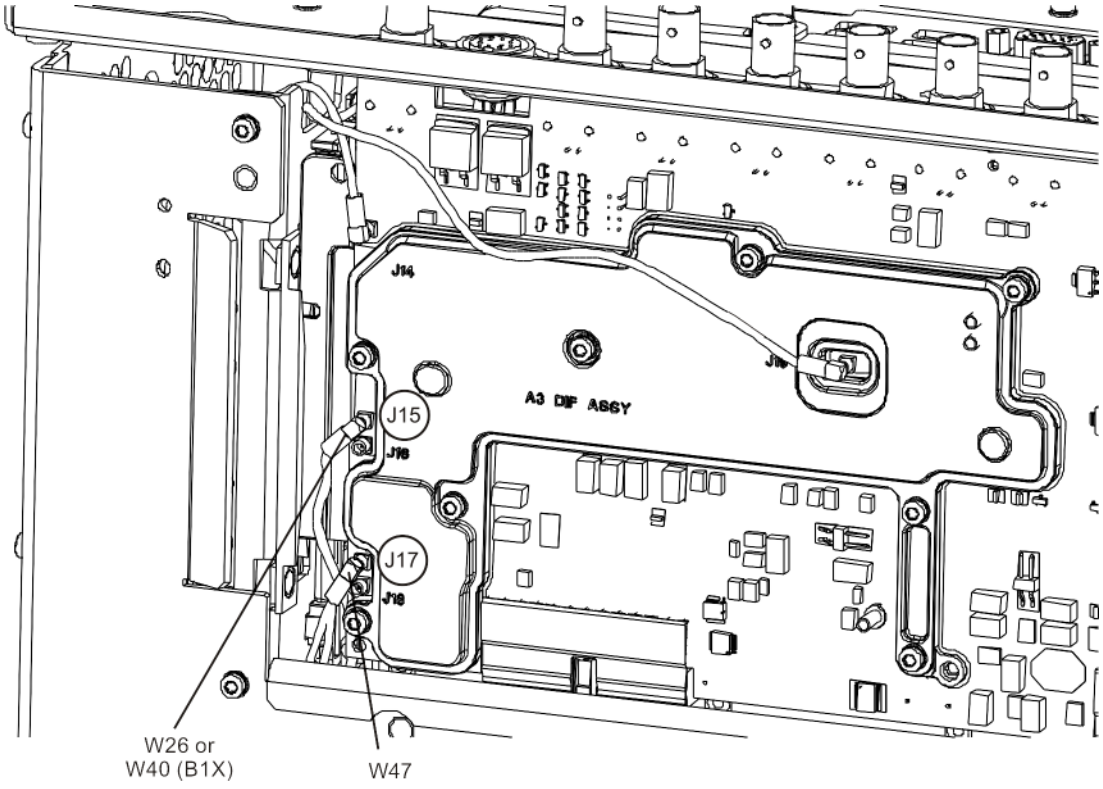
Analyzer Disassembly

1. Refer to the Assembly Replacement Procedures chapter in the N9030B Signal Analyzer Service Guide
2. Perform the removal procedures shown below in the order listed
   a. Instrument Outer Case
   b. Top Brace (discard flathead screws with patch lock)
   c. Right Side Chassis

Removing Cables

1. Refer to Figure 5. Remove wire cable hold down on right side of chassis to free gray coax cables.
2. Remove cable ties from bundle of gray coax cables.
3. Refer to Figure 3 that shows the A3 Digital IF assembly located on the bottom side of the instrument. Remove cable W47 connecting A3 Digital IF J17 to A16 Reference Assembly J726. Note cable routing from Digital IF J17 through the opening in the side panel. This cable will not be reused.
4. Remove cable W26 connecting A15 Front End Controller J901 to A3 Digital IF J15. Note cable routing from Digital IF J15 through the attenuator brackets and switches. This cable will not be reused.

Figure 3 A3 Digital IF Assembly Cables

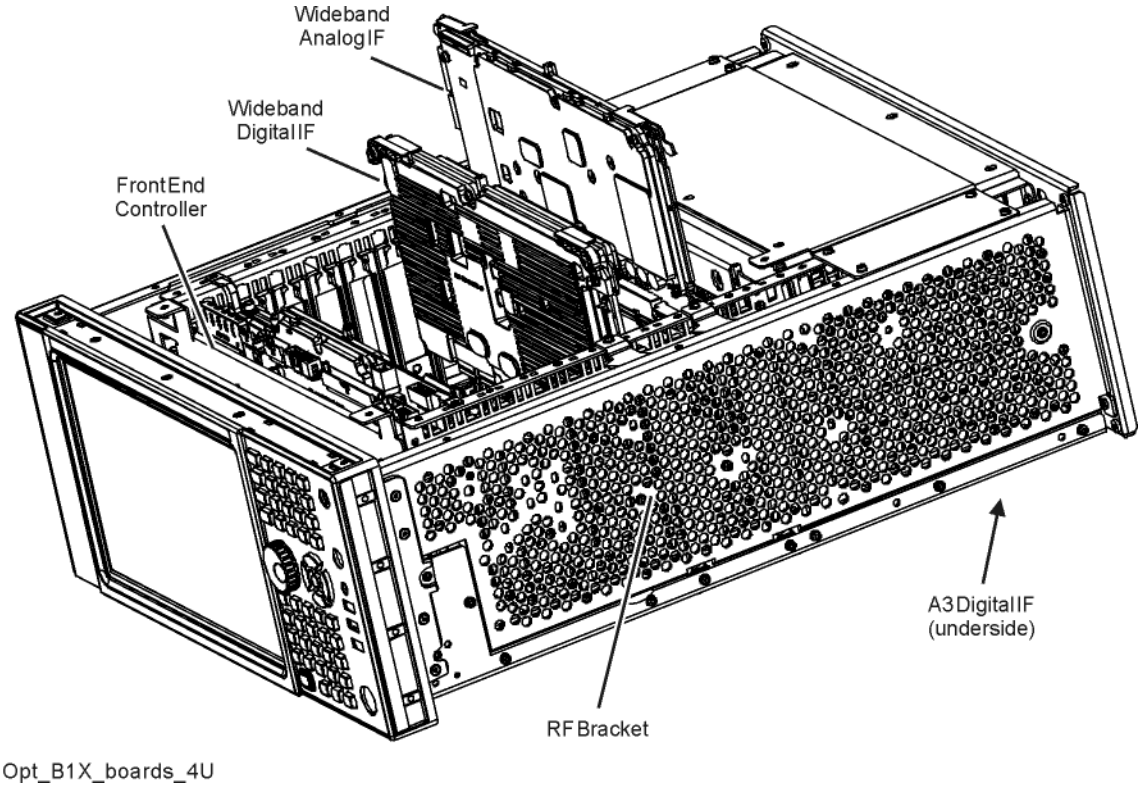


Opt_B1X_bottom_cables

Installing Boards and Cables

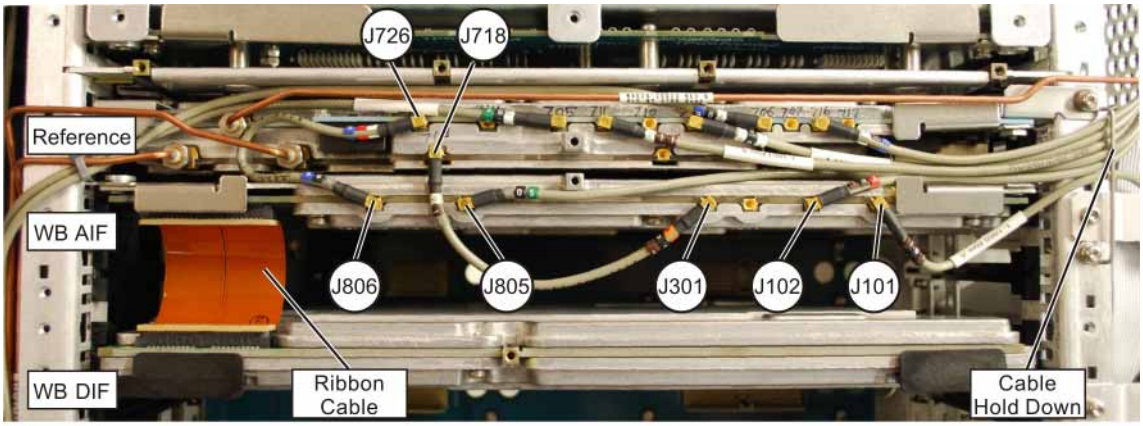
1. Refer to Figure 4. Install the Wideband Analog IF assembly into slot 3.
2. Install the Wideband Digital IF into slot 5. Slot 4 **must remain empty**.

Figure 4 Board Installation



3. Connect the flat ribbon cable 8121-1854 between the Wideband Analog IF assembly and the Wideband Digital IF assembly.

Figure 5 Option Cables



b1x_cables

4. Select the coax cable with color bands 102 and 15 from the kit. Connect the cable end with color code 102 to Wideband Analog IF assembly J102. Connect the other end of the cable to the A3 Digital IF J15. This cable must route through the chassis hole the same as the cable removed earlier.
5. Select the coax cable with color bands 805 and 17 from the kit. Connect the cable end with color code 805 to Wideband Analog IF assembly J805. Connect the other end of the cable to the A3 Digital IF assembly at J17. The cable must route through the same chassis hole as the cable installed in step 4.
6. Select the coax cable with color bands 301 and 718 from the kit. Connect the cable end with color code 301 to Wideband Analog IF assembly J301. Connect the other end of the cable to the A16 Reference assembly at J718.
7. Select the coax cable with color bands 806 and 726 from the kit. Connect the cable end with color code 806 to Wideband Analog IF assembly J806. Connect the other end of the cable to the A16 Reference assembly at J726.
8. Select the coax cable with color bands 101 and 901 from the kit. Connect the cable end with color code 101 to Wideband Analog IF assembly J101. Connect the other end of the cable to the A15 Front End Controller assembly at J901. This cable must route through the attenuator brackets and switch brackets the same as the W26 cable removed earlier.
9. Re-install the wire cable hold down. Assure the cables lay flat.
10. Attach two cable ties around the bundle of gray cables.

Analyzer Reassembly

1. Refer to the Assembly Replacement Procedures chapter in the N9030B Signal Analyzer Service Guide.
2. Perform the replacement procedures shown below in the order listed:
   a. Right Side Chassis
   b. Top Brace (use the new flathead screws supplied with this kit)
   c. Instrument Outer Case

Power Up and New Hardware Wizard

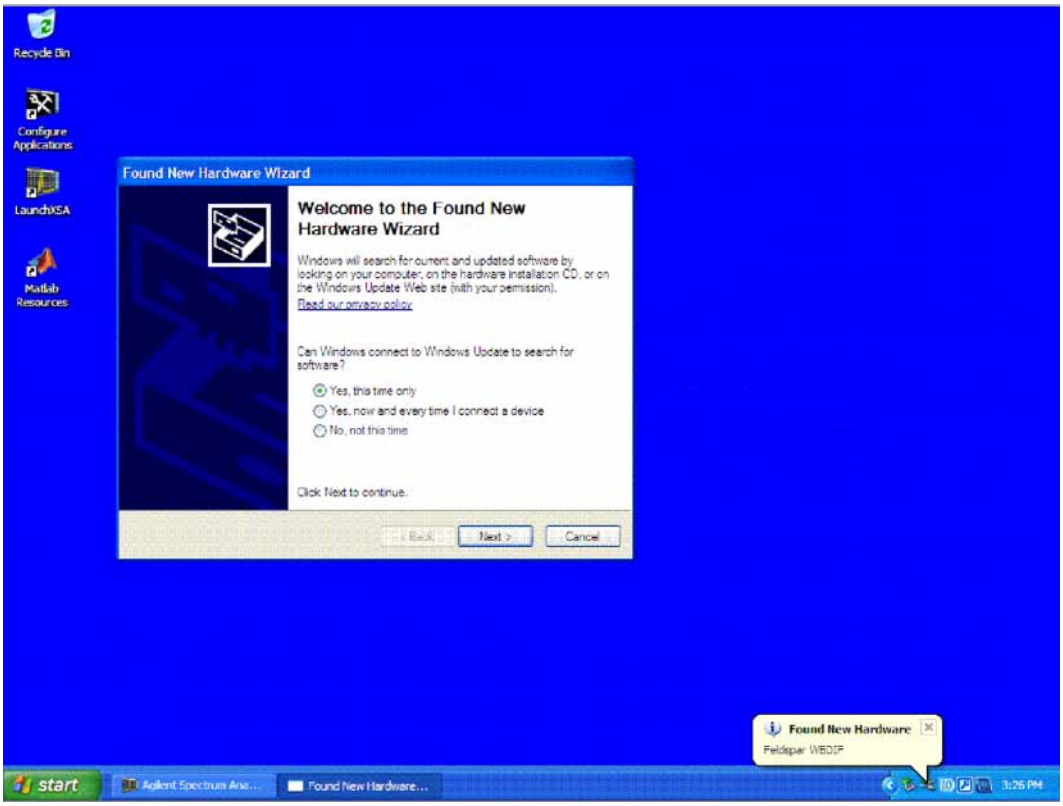
1. Connect a keyboard and mouse to the instrument.
2. Power on the instrument.
3. During the boot up process you may notice that the “Found New Hardware” bubble appears in the lower right screen, and a “Found New Hardware’ message window appears for a short period, and then is covered by the analyzer splash screen.
4. After the instrument is completely booted, press the front panel File key, select Exit, and click OK to view the desktop and see the “Found New Hardware” window shown in Figure 6.

Figure 6

5. Enter **administrator** as the user name, and **Keysight4u!** as the password. Select **OK**.

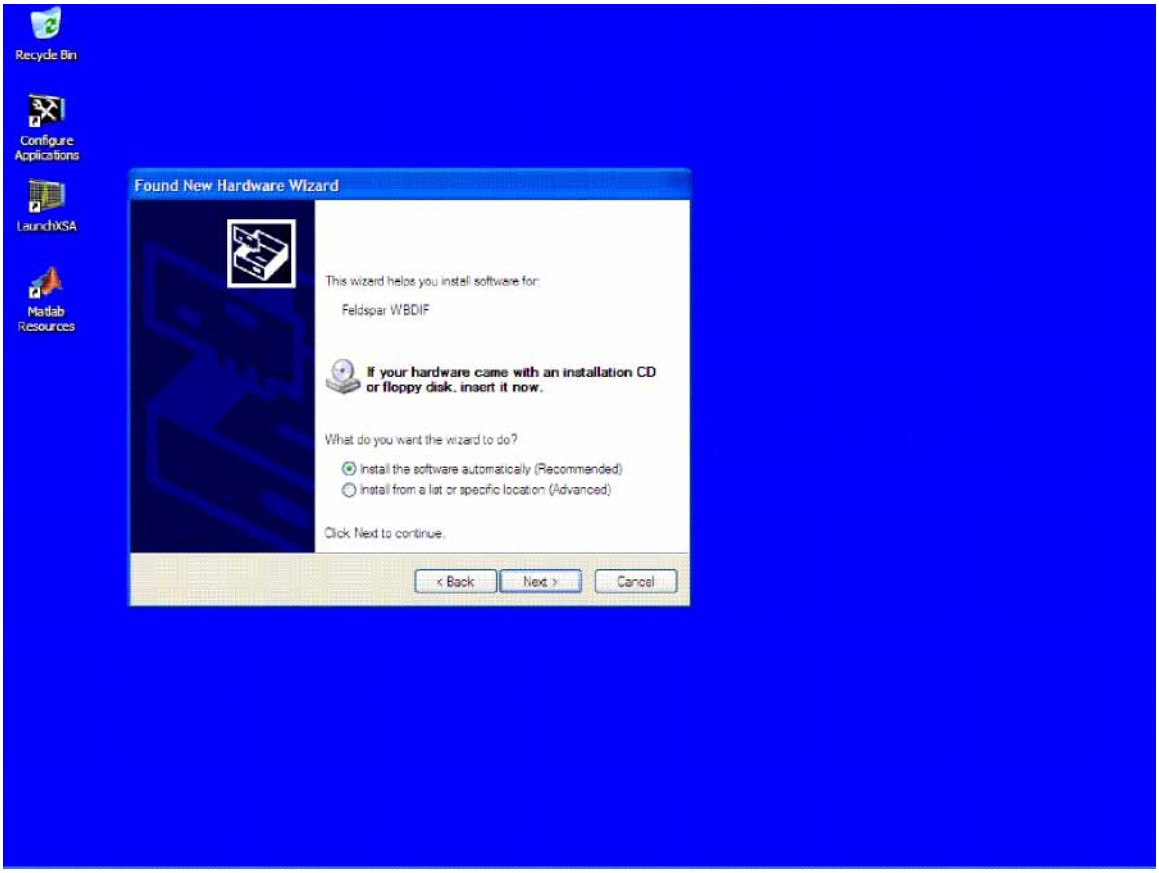
6. The screen in Figure 7 appears. Select Yes, This time only. Click Next.

Figure 7



7. The screen in Figure 8 appears. Ensure “Install the software automatically’ is selected and click Next.

Figure 8



8. The wizard will install the required software. Once you see the “Completing the Found New Hardware Wizard” screen appear, click Finish.

Update the instrument Software

NOTE Instrument software revision A.17.08 or later required.

1. Loading the latest instrument software is required to assure all FPGAs and drivers located on both the newly installed hardware and on the base instrument are synchronized. Therefore, even if the instrument contains the latest revision of software, you must reinstall the software to assure proper operation.

   The latest revision of software may be downloaded from:
   http://www.keysight.com/find/Xseries_software

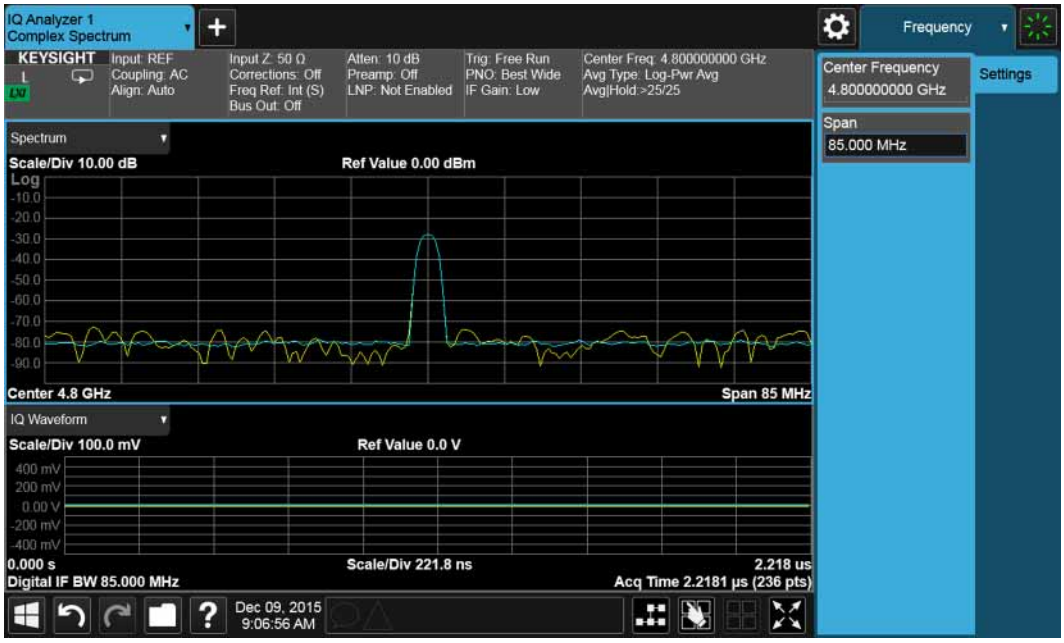
Verify Hardware Installation

1. Verify the spectrum analyzer application loads and sweeps as expected.
2. Press **System, Show Hardware** on the analyzer and verify that the new board assemblies identify themselves as follows:
   - WB Analog IF (Hw Id = 38)
   - WB Digital IF (Hw Id = 40)

Verify Optional Functionality

1. Press **MODE/MEAS, I/Q Analyzer (Basic), OK**.
2. Press **MEAS SETUP, IF Path**, and select the **IF Path** drop-down menu.
3. Verify that selections appear labeled either "**85 MHz**" or "**160 MHz**" appear, depending upon whether upgrade Option B85, or B1X, respectively, was installed
4. Select IF Path of either 85 MHz or 160 MHz, as appropriate.
5. Press **FREQ, Center Frequency, 4.8 GHz**. If the frequency range option is 503, set the Center Frequency to 1 GHz.
6. Press **Input/Output, RF Calibrator**, and select **4.8 GHz** from the **RF Calibrator** drop-down menu. If the frequency range option is 503, apply a 1 GHz, -28 dBm CW signal from a signal generator to the analyzer input.
7. Press **FREQ, Span, 85 MHz**.
8. The analyzer should display a signal in the center of the screen with an amplitude of approximately -28 dBm (see Figure 9).

Figure 9 4.8 GHz Signal



Utilities, Adjustments, and Performance Verification Tests

Calibration software and specified test equipment is required to perform the adjustments and performance verification testing.

Obtain Keysight X-Series Signal Analyzer Calibration Application SW, N7814A TME Calibration Application. version E.16.00 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 retrofit was begun. Performing only these tests does not guarantee the instrument meets specifications.

Utilities Required

None

Adjustments Required

Adjustment Name
IF Frequency Response Adjustment

Performance Tests Required

Verification Test Name
Perform all performance tests

End of installation.

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

1-800-452-4844 (8am-8pm EST Monday -Friday)

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