Keysight Technologies N9030B PXA Signal Analyzer

Option BUF, 255 to 510 MHz Analysis Bandwidth Upgrade

KEYSIGHT TECHNOLOGIES

Installation Note

Notices

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Option BUF, 255 MHz to 510 MHz Analysis Bandwidth

Products Affected	N9030B, PXA Signal Analyzer
Serial Numbers:	All
Options Required	N9030B-B2X, Analysis Bandwidth, 255 MHz N9030B-526, or 513, or 508 frequency range
To Be Performed By:	(X) Keysight Service Center ( ) Personnel Qualified by Keysight ( ) Customer
Estimated Installation Time: Estimated Adjustment Time: Estimated Verification Time:	2.5 Hours 6.0 Hours 4.0 Hours

Introduction

This installation note explains how to install an additional Wideband Digital IF assembly and associated hardware to upgrade an N9030B PXA analyzer (frequency range ≤ 26.5 GHz) that currently contains Option B2X, 255 MHz Analysis Bandwidth to Option B5X, 510 MHz Analysis Bandwidth.

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.

Contents

Quantity	Description	Keysight Part Number
1	Installation Note	This note
1	Option Upgrade Entitlement Certificate	-----
1	Wideband Digital IF assembly	N9020-60311
1	Flex Circuit, B5X 80 conductor	N9030-60034
1	Wire Harness, 4 switch control	N9030-60035
1	Flex Circuit, WB Stream	N9020-60278
1	Spring Clip (for flex cable)	N9030-00002
1	Front End assembly, 26.5 GHz, 510 MHz IF BW	N9020-60328
20	Screw, Flat Head, M3x0.5 6 mm long	0515-1946

Tools Required

- Personal computer with internet access and USB port
- USB storage device with > 2 GB free memory
- T-10 TORX Driver
- T-20 TORX Driver
- 5/16-inch torque wrench, 10 inch-pounds
- 1/4-inch open-end wrench (for External Mixing cable)
- Keysight Calibration and Adjustment Software, N7814A (revision E.18.02 or later required)
- Test equipment and computer supported by the Keysight Calibration and Adjustment Software
- PXA Signal Analyzer Service Guide, N9030-90071. Available online.

Initial Instrument Functionality Check

1. Power on the instrument and allow the instrument to boot up, run the alignments and display the measurement screen. The instrument will probably display a spectrum analyzer screen and you will see the instrument sweeping.
2. There should be no alignment failures. If there are failures, investigate and fix the problem before continuing.

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 after each option listed below that appears in the show System menu.

   N9030B-526, or 513, or 508 _____

   N9030B-B2X _____
4. Refer to the data in step 2 above. Verify that the Product Number in step 2 is appropriate for the upgrade being installed:

Kit to be Installed	Product Number (Step 2)
N9030BU-BUF	N9030B

   If the Product Number in step 2 is not appropriate for the Option BUF upgrade, **do not proceed** with the installation.
5. Refer to the data in step 2 above. If the instrument software is earlier than A.18.24, you must upgrade to version A.18.24 or later. Keysight recommends that you update to the latest instrument software version to ensure that you have the latest defect fixes. To check the latest instrument software version, visit the following website:
   http://www.keysight.com/find/N9030B_software
6. Refer to the data in step 3 above.

   Verify that N9030B-526, or 513, or 508 is checked (currently installed). This retrofit kit is for instruments with frequency range ≤ 26.5 GHz. It will not work on 3.6 GHz, or 44 GHz or 50 GHz instruments.

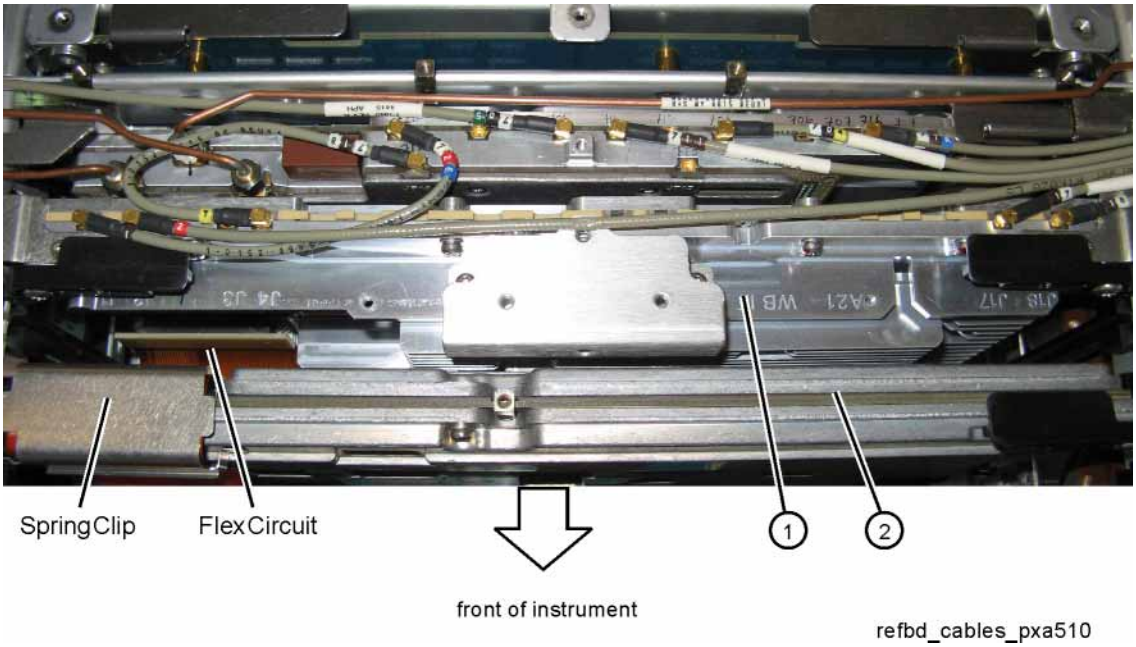
   Verify that N9030B-B2X is checked (currently installed).

   If N9030B-B2X is not installed, do not proceed with the installation of this kit.

Installation of Option B5X Wide Bandwidth hardware

1. Power down the instrument and wait for the yellow stand-by light to turn on. Remove the power cord from the rear panel.
2. Remove the instrument side strap handles, the bottom and rear feet, the outer case and the top brace.
3. Refer to Figure 1. Locate the Wideband Analog IF (1) and the Wideband Digital IF (2) assemblies.

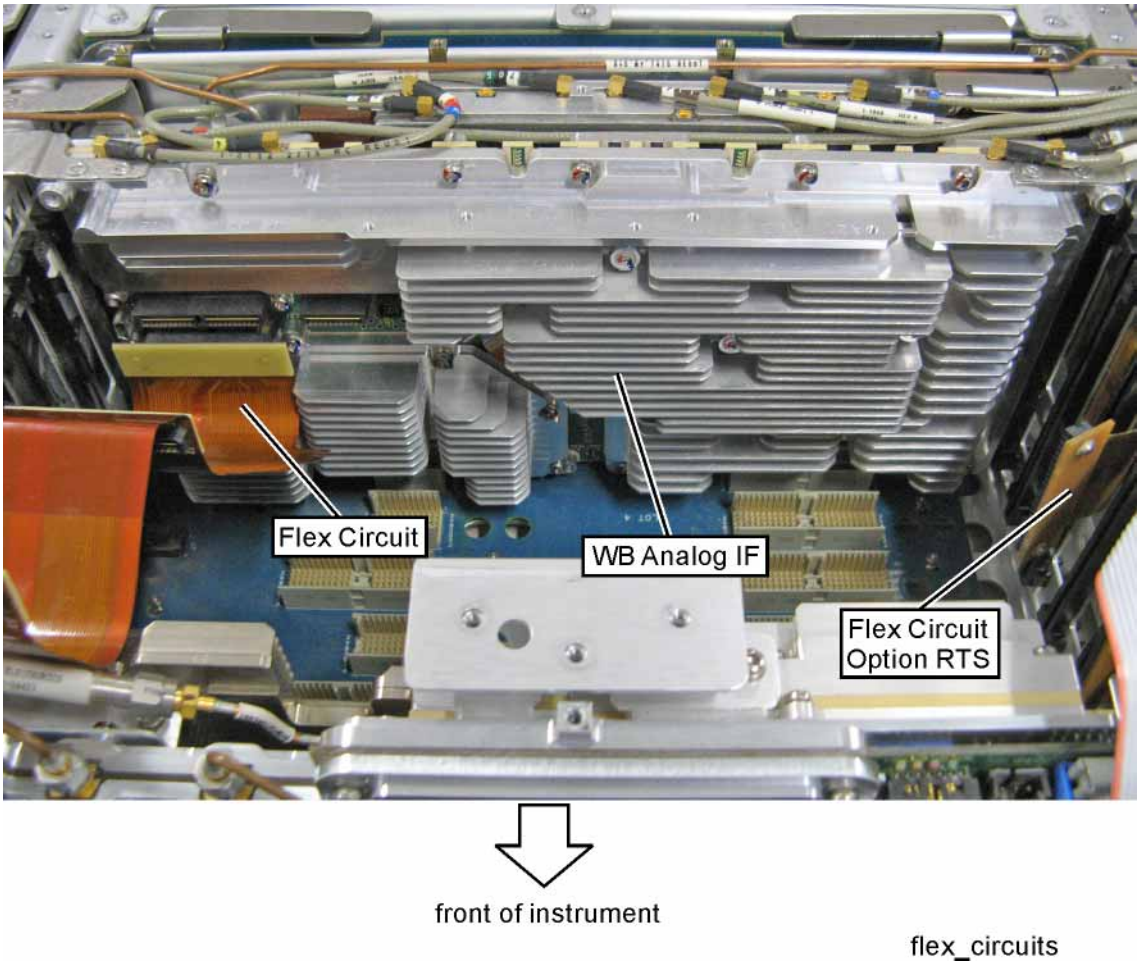
Figure 1 Wideband Analog IF and Wideband Digital IF installed in card cage



4. Note the flex circuit cable that connects the WB Analog IF to the WB Digital IF. This flex circuit will be replaced.
5. Use a screw driver to carefully pry the flex circuit connector from the WB Analog IF assembly.
6. On the WB Digital IF assembly, carefully remove the spring clip securing the flex circuit to the board header. A screwdriver can be used to spread the spring clip. Remove the flex circuit cable.
7. IMPORTANT! Look at the right side edge of the WB Digital IF assembly and see if there is another flex circuit cable connected. There will be a flex circuit cable if the instrument has Option RTS installed. Remove this flex cable if present.
8. Remove the WB Digital IF assembly to gain access to the flex circuit connector on the WB Analog. Assure this WB Digital IF assembly can be identified as the assembly that was removed from the instrument so it is not confused with the replacement WB Digital IF in the kit.

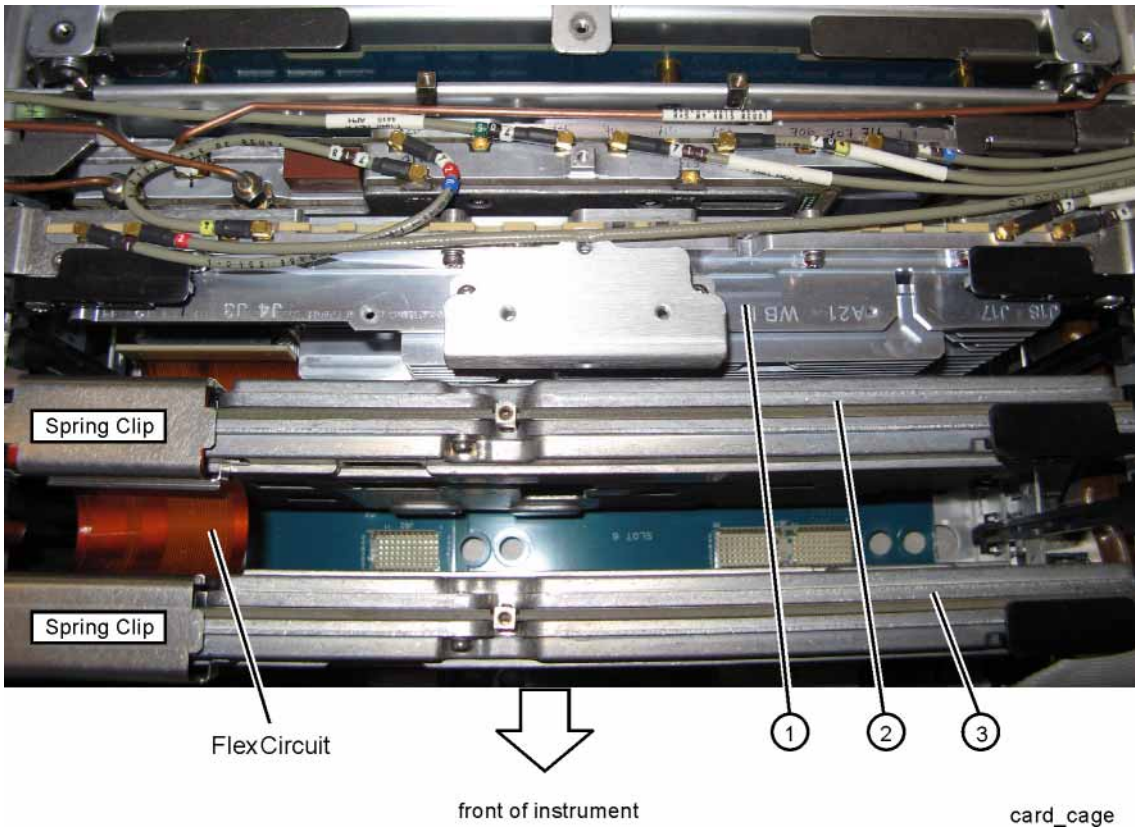
9. Locate the flex circuit cable in the kit. Refer to Figure 2. Attach the end of the cable with J1 marking to the WB Analog IF connector. Assure connection is secure.

Figure 2 Flex Circuits



10. Refer to Figure 3. Re-install the WB Digital IF previously removed, into motherboard slot 5.
11. Connect the new flex circuit from the WB Analog IF to the WB Digital IF.
12. If the instrument has Option RTS, reconnect the flex circuit previously removed from the right side of the WB Digital IF assembly. Shown in Figure 2.
13. Locate the WB Digital IF assembly in the kit and install into slot 7. Connect the new flex circuit cable to the assembly.
14. Locate the spring clip removed earlier, and the spring clip in the kit and install these clips over the flex circuit connections in the WB Digital IF assemblies.

Figure 3 Wideband Analog IF and both Wideband Digital IF Assemblies installed in card cage



15. **Perform the following steps ONLY if the instrument currently has Option RTS.** If the instrument does not have Option RTS go to the "Replace the A13 Front End Assembly" section.

16. When Option RTS was installed previously on instruments that have Option B2X, there was only one Wideband Digital IF in the instrument. This WB Digital IF assembly was connected to the WBDIF Extension board located on the right rear of the instrument, with a single Flex Circuit cable. Now that the instrument is being upgraded to Option B5X, there are two WB Digital IF assemblies, and an additional Flex Circuit cable is required so that both WB DIF assemblies can connect to the WBDIF Extension board.

17. Remove the right side RF Bracket. Remove two screws securing the RF Bracket to the front frame. Refer to the service guide, "RF Area" assembly replacement procedure for instructions on how to remove the RF Bracket.

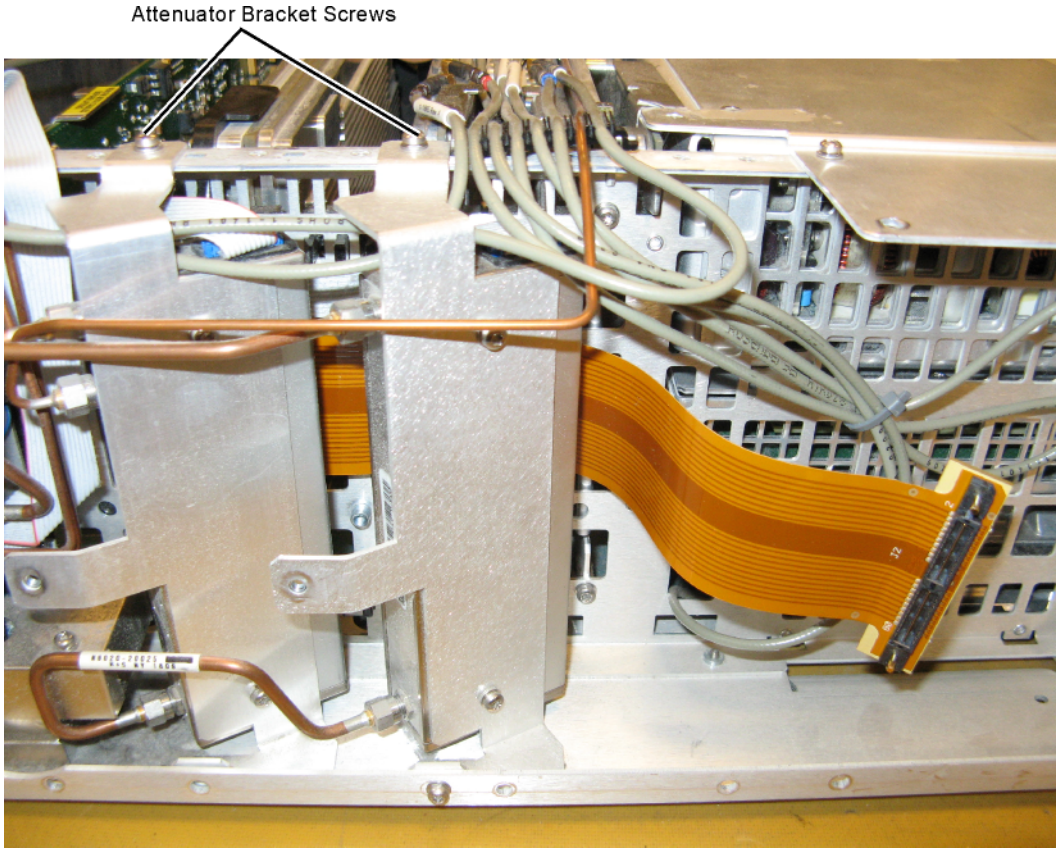
18. Refer to Figure 4. Remove the two screws holding both top attenuator brackets to the chassis. This is to allow room for the flex cable to be routed in back of the attenuators.

19. Locate Flex Circuit, WB Stream in the kit. Notice one end of the flex cable has a connector that has NO locator pins, and the other end of the flex cable has two locator pins.

20. Starting at the attenuator near the back of the instrument, push the end of the flex cable that does not have the locator pins behind both attenuators. This cable will route next to the attenuators and on the outside of the flex cable previously installed. The cable will route between the frame and the small ribbon cable, and through the opening in the instrument frame where the second Wideband Digital IF is located in motherboard slot 7.

21. Locate the connector on the right side of the Wideband Digital IF, and carefully align the flex cable over the two alignment pins on the PC board connector. Press the cable into the Wideband Digital connector.

Figure 4 Attenuator Bracket Screws

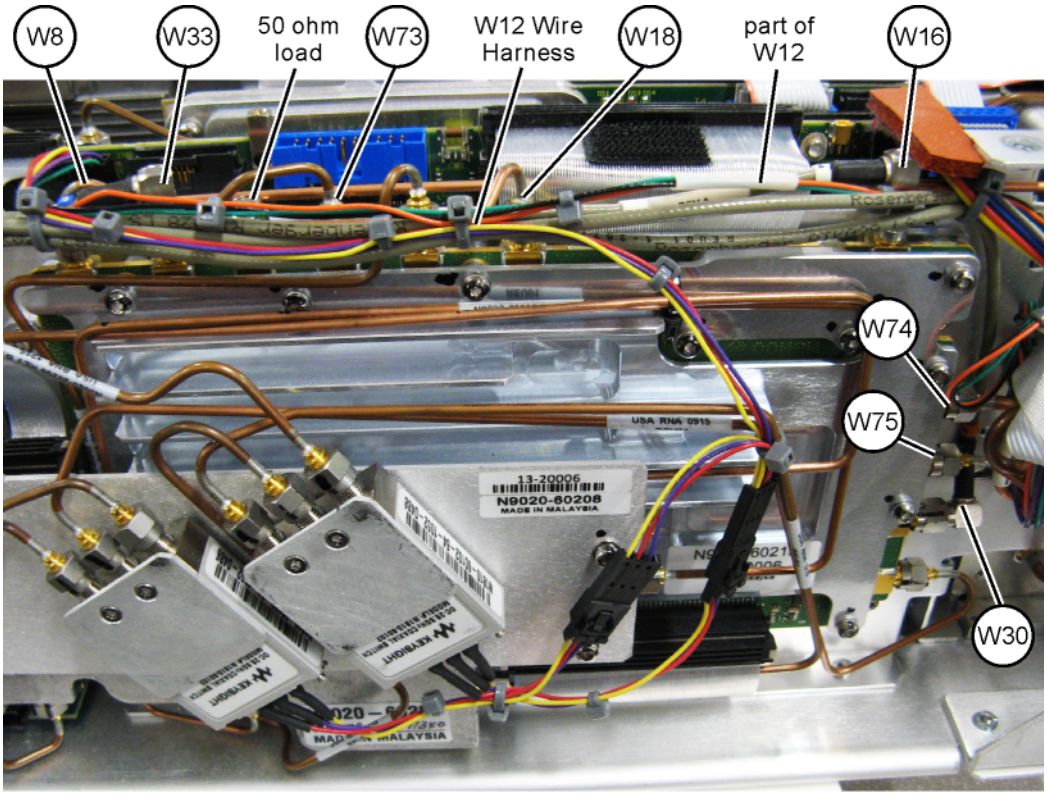


22. The other end of the flex circuit cable plugs into the WBDIF Extension board. You should not need to remove the WBDIF Extension board and bracket.

Replace the A13 Front End Assembly

1. See the PXA Service Guide RF Front End Assembly removal procedure.
2. Locate the replacement Front End Assembly in the kit. Notice this replacement Front End assembly has some switches and a filter that are necessary for switching in the 510 MHz IF path.
3. Install the replacement Front End Assembly. Do not connect cables to the A15 Front End Control assembly.
4. Assure 50 ohm load is attached to Front End J5.
5. Locate the Wire Harness, 4 switch control in the kit. See Figure 5. This wire harness replaces the existing W12 harness that goes to the Preselector Bypass switches. This new harness has two more connectors that connect to the replacement Front End Assembly coax switches.

Figure 5 B5X Front End Assembly showing W12 Wire Harness



front_end_microwave

6. See the PXA Service guide section on removal and replacement of Option MPB and LNP. You need to remove the current W12 wire harness cable from the MPB switch connectors and replace with the new W12 connections. Removing the minimum number of cables and loosening the LNP/MPB switch brackets will allow access to the wire harness connections.
7. Route Front End and Front End Controller cables and re-attach cable ties. Check cable routing to assure cables will not be pinched when covers are installed.
8. Replace the right side RF Bracket if removed earlier.

9. Replace the Front Frame Assembly. Be sure to reconnect the semi-rigid cable to the front panel Ext Mixer connector (if Option EXM installed).
10. Plug in the power cord and power on the instrument. Assure the instrument boots up. Some auto alignment failures may occur because the instrument may contain early software, and the adjustments have not been performed.
11. Turn on the 50 MHz calibrator and tune the instrument to 50 MHz. Verify the 50 MHz signal is present.

Instrument Software Installation

Upgrade the software to the latest revision. Even if the software is at the latest revision, reinstall the software because the software installation re-programs the FPGAs in the instrument.

The latest revision of the X-Series software can be downloaded from:
http://www.keysight.com/find/N9030B_software

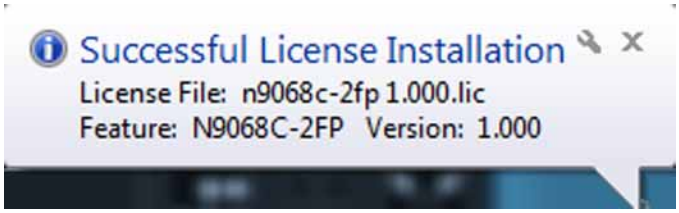
License Installation Procedure over USB

1. Locate the Option Upgrade Entitlement Certificate from the kit.
2. Redeem the Option Upgrade Entitlement Certificate by following the instructions on the Certificate.
3. After redeeming your Option Upgrade Entitlement Certificate you will receive an email with an attached License File.
4. Locate a USB storage device. Perform a virus scan on this device before use.
5. Save the License File to the root directory of the USB storage device.
6. Connect the USB storage device to the signal analyzer USB port. Windows will detect the new hardware and may display the configuration menu shown in Figure 6. This menu may be configured according to your preferences.

Figure 6 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 7.

Figure 7 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 folder on the signal analyzer

C:\Program Files\Agilent\licensing

Verify the License Installation and Hardware

1. Cycle power on the signal analyzer and wait until the analyzer boots to the measurement application screen.
2. Press **System**, **Show System** to display a list of installed options.
3. Verify that the installed options list contains the newly installed N9030B-B5X.

Complete the Hardware Installation

1. Replace the top brace, being careful to avoid damaging any cables. Use the flat head screws in the kit.
2. Replace the instrument cover, and bottom and rear feet.
3. Power up the instrument.

Verify Option B5X Functionality

1. Press **MODE/MEAS**, and select I/Q Analyzer (Basic). Assure Complex Spectrum is highlighted. Tap OK. Tap Frequency to view the pull down menu and select Meas Setup. Tap IF Path, then IF Path again and verify 510 MHz appears. You will not see a listing for 255 MHz path even though Option B2X is licensed. Select this 510 MHz path.
2. Turn on the 4.8 GHz calibrator signal (**Input/Output**, **RF Calibrator**, select **4.8 GHz**), and set the span to 510 MHz. Press **Frequency**, select **Span**, **510 MHz**. Tune the analyzer center frequency to 4.8 GHz. The 4.8 GHz signal should appear on screen.

Utilities, Adjustments, and Performance Verification Tests

Utilities Required

None

Adjustments Required

Adjustment Name
Perform all adjustments
Remember to perform YTF Alignment. Press **System**, **Alignments**, **Advanced**, **Characterize Preselector**.
Perform Characterize Noise Floor. Press **System**, **Alignments**, **Advanced**, **Characterize Noise Floor**.

Performance Testing Required

Verification Test Name
Perform all tests

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)

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