Keysight Technologies
N9010B EXA Signal Analyzer
N9020B/N9021B MXA Signal Analyzer

Option NF2, Noise Floor Extension,
Instrument Alignment Upgrade

KEYSIGHT
TECHNOLOGIES

Installation Note

Notices

Option NF2, Noise Floor Extension, Instrument Alignment

Products Affected:	N9010B EXA Signal Analyzer N9020B MXA Signal Analyzer N9021B MXA Signal Analyzer
Serial Numbers:	All
To Be Performed By:	(X) Keysight Service Center
	(X) Personnel Qualified by Keysight
	(X) Customer
Estimated Installation Time:	0.5 Hours
Estimated Adjustment Time:	0.5 Hours
Estimated Verification Time:	0.5 Hours

Introduction

This installation note explains how to install a license for Option NF2, Noise Floor Extension, Instrument Alignment and perform the necessary alignments and performance verification tests.

The latest instrument software version can be obtained from:
http://www.keysight.com/find/xseries_software

Software and test equipment is required for performance verification testing. Information on how to obtain this software can be found at:
www.keysight.com/find/calibrationsoftware

NOTE	The instrument must have an alignment performed and the performance tested to assure the instrument meets specifications following the license installation. The X-Series Performance Verification and Adjustment Software must be used. All performance verification tests are automated. This software is included in the N7814A, Keysight X-Series Signal Analyzer Calibration Application software.

Installation Kit Parts List

Quantity	Description	Keysight Part Number
1	Entitlement Certificate	5964-5178
1	Entitlement Certificate Envelope	5967-7169
1	Installation Note	This note

Tools Required

— Keysight Calibration and Adjustment Software, N7814A (revision E.16.00 or later)

— Test equipment and computer supported by the X-Series Performance Tests and Adjustment Software

— 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.

Installation Procedure

Update Instrument Software

1. Check the currently-installed version of the instrument software by pressing **System**, **Show System**. Look for the entry for "Instrument S/W Revision".

2. Keysight recommends that the analyzer be upgraded to the latest version of instrument software.

3. 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
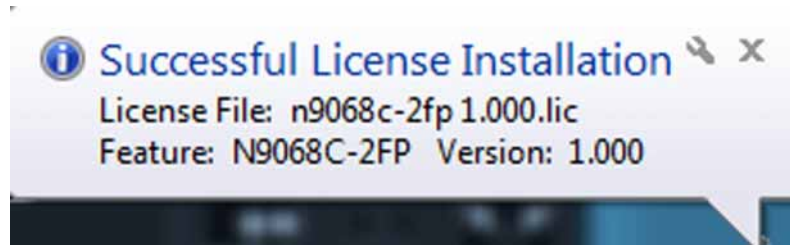
License Installation Procedure over USB

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 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
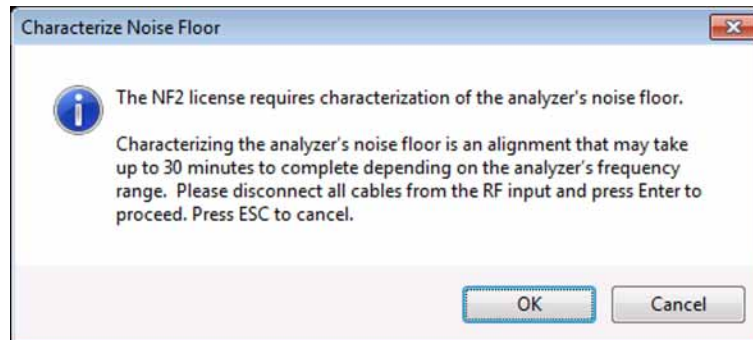

Alternate Installation Procedure

The License File can be manually installed over USB or LAN by placing the license file in the following analyzer folder:
C:\Program Files\Agilent\licensing.
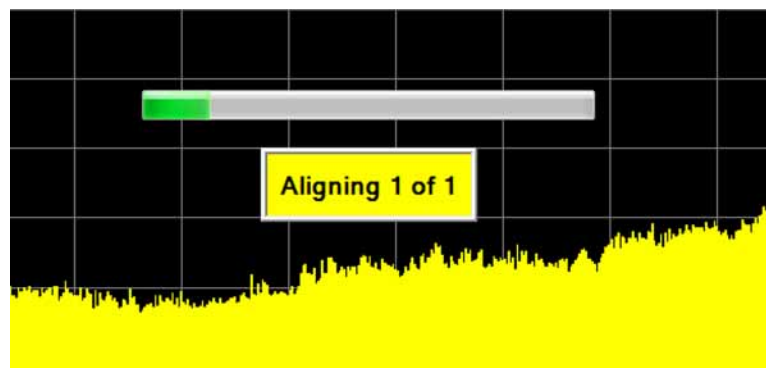
Verify the Installation and Perform Alignment

1. Cycle power on the signal analyzer

2. As the analyzer boots up, if you see a message similar to Figure 3 below prompting you to characterize the noise floor of the analyzer, press **OK** to start the alignment.

   Figure 3   Characterize Noise Floor Prompt

3. If you do not see a message similar to Figure 3 above, press **System**, **Alignments**, **Advanced**, **Characterize Noise Floor**, **OK**.

4. A progress indicator will appear on screen as shown in Figure 4 below.

   Figure 4   Characterize Noise Floor Progress Indicator

5. The characterization will take approximately 10 minutes for a 26.5 GHz analyzer and up to 30 minutes for a 50 GHz analyzer with Options P50 and MPB.

6. After the characterization has completed, press **Mode/Meas**, **Spectrum Analyzer**, **OK**. Press **Mode Preset**.

7. Press **FREQ**, **Center Frequency**, **1 GHz**, **Span**, **100 MHz**. Press **AMPTD**, **Ref Level**, −**50 dBm**.

8. Press **BW**, **enter 100 kHz**. Press **Trace**, **Detector**, **Average**. Press **SWEEP**, **Sweep Time**, **10 s**.

9. Press **Meas Setup**, **Advanced**, **Noise Floor Extension (Off)**.

10. Note the level of the displayed noise.

11. If the instrument software version is ≥ A.18.00, press **Meas Setup**, **Advanced**, **Noise Floor Extension (Full)**. If instrument software version is < A.18.00, press **Meas Setup**, **Advanced**, **Noise Floor Extension (On)**. Note that the level of the displayed noise should be at least 10 dB lower than the level noted in the previous step. The noise will have higher peak-to-peak variation than when Noise Floor Extension is Off, but the average of the noise should still be more than 10 dB below the level noted in the previous step.

Utilities, Adjustments, and Performance Verification Tests

Calibration software and specified test equipment is required to automate the 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 upgrade was begun. Performing only these tests does not guarantee that the analyzer meets all specifications.

Utilities Required

— None

Adjustments Required

— None

Performance Tests Required

Verification Test Name
Displayed Average Noise Level
Effective DANL (Option NFE or NF2)

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. If a full calibration is required, arrangements regarding the level of the calibration must be made between the end user and the calibration provider.

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

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

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