

# Keysight N9010A EXA Signal Analyzer and N9020A MXA Signal Analyzer

## Option NFE, Noise Floor Extension Upgrade

## Notices

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### **Manual Part Number**

N9020-90235

### **Edition**

Edition 1, April 2019

Supersedes: August 2014

Printed in USA/Malaysia

Published by:

Keysight Technologies, Inc.

1400 Fountaingrove Parkway

Santa Rosa, CA 95403

# Option NFE, Noise Floor Extension

Products Affected:	N9010A, EXA Signal Analyzer N9020A, 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 license for Option NFE, Noise Floor Extensions and perform the necessary alignments and performance verification tests.

**NOTE**

The licenses that enable Noise Floor Extensions in the EXA and MXA are N9010A-NF2 and N9020A-NF2, respectively. The description that will appear in the Show System screen will be “Noise Floor Extension, instrument alignment”.

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Installing this kit requires that the analyzer have instrument software version A.14.05 or later installed. The latest instrument software version can be obtained from:

[http://www.keysight.com/find/xseries\\_software](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:

<http://www.keysight.com/find/calibrationsoftware>

**NOTE**

Instrument software revision A.14.05 or later is required to install this upgrade.

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**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.

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## 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.13.00 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. If the currently-installed instrument software revision is earlier than A.14.05, it will be necessary to upgrade the software.
3. Even if the currently-installed instrument software revision is A.14.05 or later, Keysight recommends that the analyzer be upgraded to the latest version of instrument software.
4. 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](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.

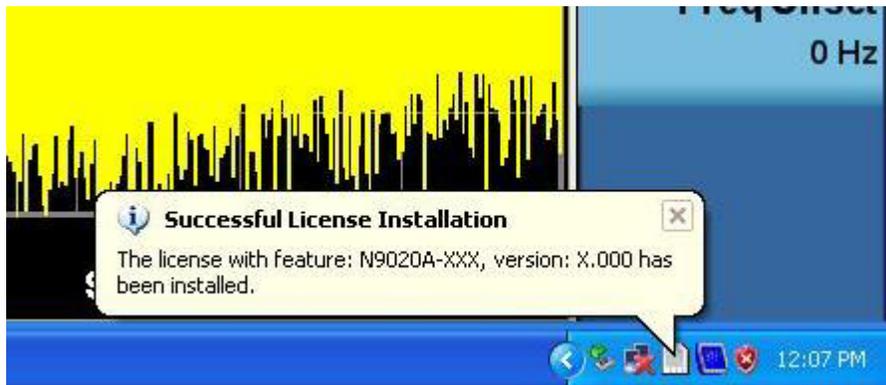
**Figure 1** USB Storage Device Configuration Menu



## Installation Procedure

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.

**Figure 2** Successful License Installation



## Alternate Installation Procedure

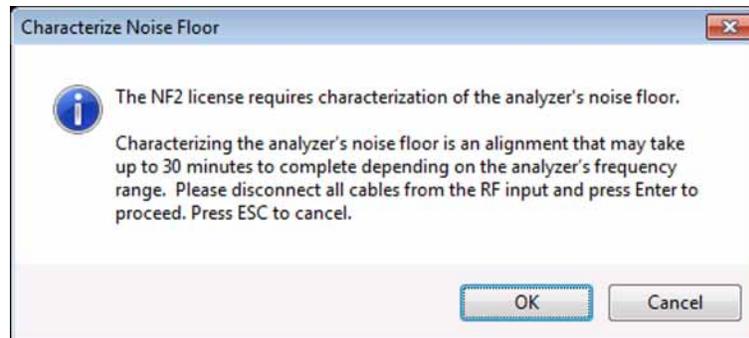
The License File can be manually installed over USB or LAN by placing the license file in the following analyzer folder:

C:\Program Files\Agilent\licensing.

## Verify the Installation and Perform Alignment

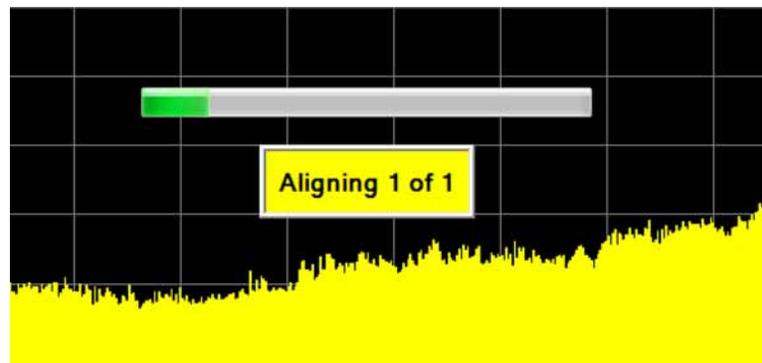
1. Cycle power on the signal analyzer
2. As the analyzer boots up, if you see a message similar to **Figure 3** below prompting you to characterize the noise floor of the analyzer, press **OK** to start the alignment.

**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 44 GHz analyzer with Options P44 and MPB.
6. After the characterization has completed, press **Mode, Spectrum Analyzer, Mode Preset**.
7. Press **FREQ, 1 GHz, SPAN, 100 MHz, AMPTD, Ref Level, -50 dBm**.

## Installation Procedure

8. Press **BW, 100 kHz, Trace/Detector, More 1 of 3, Detector, Average, Sweep/Control, Sweep Time, 10 s.**
9. Press **Mode Setup, Noise Reduction, Noise Floor Extension (Off).**
10. Note the level of the displayed noise.
11. If instrument software version is  $\geq$  A.18.00, press **Mode Setup, Noise Reduction, Noise Floor Extension (Full)**. If instrument software version is  $<$  A.18.00, press **Mode Setup, Noise Reduction, 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.13.00 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)

### **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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Edition 1, April 2019

N9020-90235

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