

# Keysight X-Series Signal Analyzers

## Internal Preamplifier

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### Installation Note

Part Number: N9010-90056

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Notice.

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## Internal Preamplifier Installation Kit

Products Affected:	CXA N9000A EXA N9010A MXA N9020A PXA N9030A UXA N9040B
Serial Numbers:	All
Options	CXA P03 - Preamplifier, 3.0 GHz P07 - Preamplifier, 7.5 GHz P13 - Preamplifier, 13.6 GHz P26 - Preamplifier, 26.5 GHz  EXA P03 - Preamplifier, 3.6 GHz P07 - Preamplifier, 7.0 GHz P13 - Preamplifier, 13.6 GHz P26 - Preamplifier, 26.5 GHz P32 - Preamplifier, 32 GHz P44 - Preamplifier, 44 GHz  MXA P03 - Preamplifier, 3.6 GHz P08 - Preamplifier, 8.4 GHz P13 - Preamplifier, 13.6 GHz P26 - Preamplifier, 26.5 GHz  PXA P03 - Preamplifier, 3.6 GHz P08 - Preamplifier, 8.4 GHz P13 - Preamplifier, 13.6 GHz P26 - Preamplifier, 26.5 GHz P43 - Preamplifier, 43 GHz P44 - Preamplifier, 44 GHz P50 - Preamplifier, 50 GHz  UXA P08 - Preamplifier, 8.4 GHz P13 - Preamplifier, 13.6 GHz P26 - Preamplifier, 26.5 GHz
To Be Performed By:	(X) Keysight Service Center (X) Personnel Qualified by Keysight (X) Customer
Estimated Installation Time:	0.5 Hours
Estimated Adjustment and Verification Time:	3.5 Hours (see Note 2)

## Introduction

This kit contains all of the instructions required to install any of the internal preamplifier options into an X-Series signal analyzer.

### NOTE

1. At the time of manufacture the hardware related to this option was fully adjusted and the option performance was verified to be within its warranted specifications. Within one year of the initial calibration date of the instrument this option is fully calibrated with no further adjustment or verification testing.

To determine the initial calibration date, locate the original calibration certificate that was shipped with the instrument at the time of purchase. The Date of Calibration is printed on the original calibration certificate.

To ensure that this newly installed option has been installed properly, the procedure that follows includes a functional check.

No factory test data is available for this option. If you require test data for this option then a full calibration is required after installation of this option. Arrangements regarding the level of calibration must be made with the calibration provider.

2. If this instrument has been adjusted as part of a repair or calibration during its first year, or if the instrument is more than one year old, additional adjustments and performance verification tests are required to ensure that this newly installed option is functioning properly. However, the completion of these tests does not guarantee that the instrument meets all warranted specifications.

If the option being installed is N9010A-P07, and the analyzer's serial number prefix is less than MY/SG/US5051, additional adjustments and performance verification tests are required.

If the option being installed is N9010A-P13 or N9010A-P26, and the analyzer's serial prefix is less than MY/SG/US5322, additional adjustments and performance tests are required.

If the option being installed is N9010A-P07, the analyzer's instrument software must be A.07.00 or later. Earlier software versions do not recognize N9010A-P07 as a valid option.

If the option being installed is N9010A-P13 or N9010A-P26, the analyzer's instrument software must be A.12.09 or later. Earlier software versions do not recognize N9010A-P13 or N9010A-P26 as valid options.

3. If the instrument is N9030A with Options 543, 544, or 550 and the preamp option to be installed is P03, P08, P13, or P26, instrument software must be A.10.52 or later. If the software is earlier, the preamp softkey will not appear.

4. The latest revision of the X-Series signal analyzer software may be downloaded from:

[http://www.keysight.com/find/Xseries\\_software](http://www.keysight.com/find/Xseries_software).

5. This option is licensed for one instrument model/serial number combination. The license key will only install on the designated instrument.

## Contents

Quantity	Description	Part Number
1	Installation Note	This note
1	Option Upgrade Entitlement Certificate	5964-5178

## Tools Required

- Keysight Calibration and Adjustment Software, N7814A
  - (revision E.09.00 or later required for PXA with frequency range above 26.5 GHz)
  - (revision E.10.00 or later required for EXA with frequency range above 26.5 GHz)
  - (revision E.11.00 or later required for EXA being upgraded with N9010A-P13 or N9010A-P26)
- Personal computer with internet access and USB port
- USB storage device with > 2 GB free memory

## Installation Procedure over USB

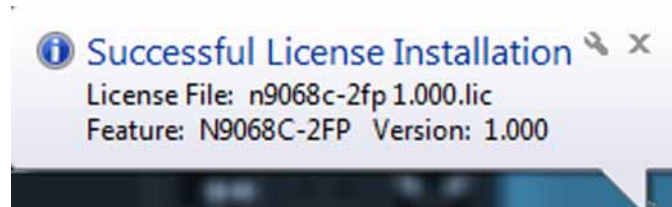
1. Locate the Option Upgrade Entitlement Certificate (5964-5178) from the kit.
2. Redeem the Option Upgrade Entitlement Certificate by following the instructions on the Certificate.
3. After redeeming your Option Upgrade Entitlement Certificate you will receive an email with an attached License File.
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 the signal analyzer 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 as shown in [Figure 2](#).

**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 folder on the signal analyzer

C:\Program Files\Agilent\licensing

### 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 newly installed option appears on the list.

### Functional Check:

Within one year of the initial calibration date of the instrument this option is fully calibrated with no further adjustment or verification testing. To ensure that this newly installed option has been enabled correctly the following functional check is recommended.

1. Press **System, Show, Errors, Clear Error Queue**. This will remove out-of-date errors.
2. Press **System, Alignments, Align Now, All**.
3. Watch for any errors during the instrument alignment.
4. Press **System, Show, Errors** to view the instrument error log.
5. Verify that there were no errors during the alignment.

### Optional Functional Check

If Option P03 or P07 (N9000AK-P07) was installed:

Press **Mode, Spectrum Analyzer**.

Press **Input/Output, RF Calibrator, 50 MHz**

Press **Frequency**, enter 50 MHz to display the 50 MHz calibrator.

Press **Span, 1 MHz**.

Press **Amplitude, More, Internal Preamp**, select **Low Band** to turn preamp on.  
The displayed signal amplitude should not change more than 0.2 dB.

If Option P07 (N9010AK-P07), P08, P13, P26, P32, P43, P44, or P50 was installed:

Press **Mode, Spectrum Analyzer**.

Press **Input/Output, RF Calibrator, 4.8 GHz**

Press **Frequency**, enter 4.8 GHz to display the 4.8 GHz calibrator.

Press **Span, 1 MHz**.

Press **Amplitude, More, Internal Preamp**, select **Full Range** to turn preamp on.  
The displayed signal amplitude should not change more than 0.2 dB.

## Utilities, Adjustments, and Performance Verification Tests

Calibration Software and specified test equipment is required to perform the adjustments, and can be used to automate the performance verification testing.

Obtain Keysight X-Series Signal Analyzer Calibration Application SW, N7814A. Revision E.09.xx or later required for PXA with frequency range above 26.5 GHz. Information on how to obtain this software can be found at:

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

### Utilities Required

None

### Adjustments Required

If the instrument is more than one year old, or if this instrument has been adjusted as part of calibration during its first year, the following adjustments are the minimum set required to ensure that this newly installed option is functioning properly.

**NOTE** If the option being installed is N9010A-P07 and the analyzer's serial number prefix is less than MY/SG/US5051, the adjustments listed below for the EXA must be performed.

If the option being installed is N9010A-P13 or N9010A-P26 and the analyzer's serial number prefix is less than MY/SG/US5322, the adjustments listed below for the EXA must be performed.

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<b>CXA (N9000A) Adjustments</b>
Freq Response Below 3.0 GHz, Preamp On
Freq Response Above 3.0 GHz, Preamp On (Option P07, P13, or P26)

<b>EXA (N9010A) Adjustments</b>
Freq Response Below 3.6 GHz, Preamp On
Freq Response Above 3.6 GHz, Preamp On (Option P07, P13, P26, P32, or P44)

<b>MXA (N9020A) &amp; PXA (N9030A) Adjustments</b>
Freq Response Below 3.6 GHz, Preamp On
Freq Response Above 3.6 GHz, Preamp On (Option P08, P13, P26, P43, P44, or P50)
Effective DANL (Option NFE) Adjustment (N9030A only)



## Performance Testing Required

If the instrument is more than one year old, or if the instrument has been adjusted as part of a calibration during its first year, the following performance verification tests are the minimum set required to ensure that this newly installed option is functioning properly. Performing only these tests does not guarantee the instrument meets all specifications.

**NOTE** If the option being installed is N9010A-P07, and the analyzer's serial number prefix is less than MY/SG/US5051, the performance verification tests listed below for the EXA must be performed.

If the option being installed is N9010A-P13 or N9010A-P26 and the analyzer's serial number prefix is less than MY/SG/US5322, the performance tests listed below for the EXA must be performed.

<b>CXA (N9000A) Performance Verification Tests</b>
Freq Response Below 3.0 GHz, Preamp On
Freq Response Above 3.0 GHz, Preamp On (Option P07, P13, or P26)
Displayed Average Noise Level

<b>EXA (N9010A) Performance Verification Tests</b>
Freq Response Below 3.6 GHz, Preamp On
Freq Response Above 3.6 GHz, Preamp On (Option P07, P13, P26, P32, or P44)
Displayed Average Noise Level

<b>MXA (N9020A) &amp; PXA (N9030A) Performance Verification Tests</b>
Freq Response Below 3.6 GHz, Preamp On
Freq Response Above 3.6 GHz, Preamp On (Option P08, P13, P26, P43, P44, or P50)
Displayed Average Noise Level
Effective DANL (Option NFE) (N9030A only)

### **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 calibration must be made between the end user and the calibration provider.

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:

Internal Preamplifier Installation Kit

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

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