

Keysight Extended Frequency Range Upgrade Kit

To Upgrade PNA-L N5231A to N5232A, or
PNA-L N5234A to N5235A, or PNA-L N5239A to N5231A,
or PNA-L N5239A to N5232A

Upgrade Kit Order Numbers: N5231AU-620, or
N5234AU-650, or N5239AU-613, or N5239AU-620

Keysight Document Number: N5235-90105

NOTICE: This document contains references to Agilent Technologies. Agilent's former Test and Measurement business has become Keysight Technologies. For more information, go to www.keysight.com.



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Description of the Upgrade

This upgrade extends the frequency ranges of the following PNA models:

- N5231A from 13.5 GHz up to 20 GHz. After installation of this upgrade, the PNA will be an N5232A.
- N5234A from 43.5 GHz up to 50 GHz. After installation of this upgrade, the PNA will be an N5235A.
- N5239A from 8.5 GHz up to 13.5 GHz. After installation of this upgrade, the PNA will be an N5231A.
- N5239A from 8.5 GHz up to 20 GHz. After installation of this upgrade, the PNA will be an N5232A.

Getting Assistance from Keysight

By internet or phone, get assistance with all your test and measurement needs.

Contacting Keysight

Assistance with test and measurements needs and information on finding a local Keysight office are available on the Web at:

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

If you do not have access to the Internet, please contact your Keysight field engineer.

NOTE In any correspondence or telephone conversation, refer to the Keysight product by its model number and full serial number. With this information, the Keysight representative can determine whether your product is still within its warranty period.

Getting Prepared

To successfully install this upgrade kit, you will need the following:

- A license key - refer to [“License Key Redemption”](#).
- A PDF copy or a paper copy of the PNA Service Guide - refer to [“Downloading the Online PNA Service Guide”](#) below.
- Enough time - refer to [“About Installing the Upgrade”](#) on page 6.
- Test equipment for the post-upgrade adjustments and full instrument calibration. To view the equipment list, click the Chapter 3 bookmark [“Tests and Adjustments”](#) in the PDF Service Guide¹.

1. See [“Downloading the Online PNA Service Guide”](#) on page 5.

License Key Redemption

NOTE The enclosed Option Entitlement Certificate (OEC) is a receipt, verifying that you have purchased a licensed option for the N5241A or N5244A. You must now use a Keysight Web page to request a license key for the N5241A or N5244A that will receive the option.

To complete the license key request, you must gather the following information:

- *From the Option Entitlement Certificate (OEC)*
 - Order number
 - Certificate number
- *From your instrument*
(Instrument information is available in the network analyzer - on the toolbar, click **Help**, then click **About Network Analyzer**.)
 - Model number
 - Serial number
- *From the online Keysight HostID utility*
Part of the OEC procedure to obtain the 12-digit license key online requires you to provide the HostID number of the PNA. This HostID number is NOT the one currently shown on the PNA. To find your new HostID, go to <http://www.na.support.keysight.com/pna/upgrades.html> and, using the HostID utility, enter the PNA serial number and your new, upgraded PNA-X model number.
 - New Host ID

Using the information just gathered, you must request a license key from: <http://www.keysight.com/find/softwarelicense>. If you provide an email address, Keysight will promptly email your license message. Otherwise, you will receive it via postal mail.

Downloading the Online PNA Service Guide

To view the online Service Guide for your PNA model number, use the following steps:

1. Go to www.keysight.com.
2. In the Search box, enter the model number of the analyzer (Ex: N5232A) and click **Search**.
3. Click **Technical Support > Manuals**.
4. Click **Service Manual**.
5. Click the service guide title to download the PDF file.
6. When the PDF of the Service Guide is displayed, scroll through the Contents section bookmarks to locate the information needed.

About Installing the Upgrade

Products affected	N5231A, N5234A, and N5239A microwave network analyzers
Installation to be performed by	Keysight service center, personnel qualified by Keysight, or customer
Estimated installation time	5 minutes
Estimated verification time	5 minutes
Estimated adjustment time	2 hours
Estimated full instrument calibration time	4.5 hours

Items Included in the Upgrade Kit

Check the contents of your kit against the following list. If any of these items is missing, contact Keysight Technologies. Refer to [“Getting Assistance from Keysight” on page 3](#).

Table 1 Contents of Upgrade Kit

Quantity	Description	Part Number
1	Installation Note (this document)	N5235-90105
1	Option Entitlement Certificate	5964-5145
1	Nameplate, N5231A (13.5 GHz)	N5231-80002
1	Nameplate, N5232A (20 GHz)	N5232-80004
1	Nameplate, N5235A (50 GHz)	N5235-80003

Installation Procedure for the Upgrade

Installation Requirements

- The network analyzer must be in proper working condition prior to installing this option. Any necessary repairs must be made before proceeding with this installation.
- This installation does not require removal of the analyzer’s protective outer covers.
- The analyzer must be powered up and operating to perform this installation. The network analyzer program must be running.
- This installation requires that a keyboard and a mouse be connected to the network analyzer.

Step 1. Verify the Option, Serial, and New Model Numbers

If you haven't done so already, follow the instructions in ["License Key Redemption"](#) on page 5. As stated, you must use the online Keysight HostID utility to get a new Host ID.

Refer to the license message you received from Keysight:

- Verify that the analyzer's option number, serial number, and upgraded model number match those on the license message you received from Keysight.
- Note the 12-digit license key for later use.

If the model number, serial number, or option number do not match those on the license message you received from Keysight, you will not be able to install the option. If this is the case, contact Keysight for assistance. Refer to ["Getting Assistance from Keysight"](#) on page 3.

Step 2. Enter the New Model Number

1. Click **System > Service > Option Enable**.
2. Click **Repair**.
3. Click the **Check if model shown is incorrect** check box.
4. Click **Begin Repair**.
5. In the drop down list that appears, select your new, upgraded PNA model number.
6. Using the keyboard, enter the 12-digit license key in the box provided. The license key is printed on the license message you received from Keysight. Enter this key *exactly* as it is printed on the message.
7. Click **Change Model**.
8. Click **Yes** in answer to the displayed question in the **Restart Analyzer?** box.
9. When the installation is complete, click **Exit**.

NOTE The PNA contains adjustment data for the original frequency range only. Performance above this range is not calibrated and may cause errors to be displayed. This will be corrected when the source and receiver adjustments are performed.

NOTE Previously installed software options require new license keys. Contact Keysight to receive these keys.

Step 3. Verify that the New Model Number Is Enabled

Once the analyzer has restarted and the network analyzer program is again running:

1. On the toolbar, click **Help**, then click **About Network Analyzer**.
2. Verify that the new model number you enabled is shown in the display. Click **OK**.

NOTE If the new model number has not been enabled, perform the “**Step 2. Enter the New Model Number**” procedure again. If the option is still not enabled, contact Keysight Technologies. Refer to “**Getting Assistance from Keysight**” on page 3.

Step 4. Replace the Nameplate

Remove the Old Nameplate

1. Using a sharp object such as a knife blade, lift one end of the old nameplate. Be careful not to scratch the front-panel painted surface.
2. Using your fingers, pull the nameplate completely off of the front panel and discard it.
3. If any adhesive remains on the front panel surface, it can be removed by rubbing it with your finger. Do not use a sharp object to remove this adhesive. If necessary, the surface can be cleaned with isopropyl alcohol.

Install the New Nameplate

1. Remove the protective backing from the new nameplate to expose the adhesive. Avoid touching the adhesive with your fingers as this may affect its ability to adhere to the front panel surface.
2. *Loosely* align the new nameplate over the recess in the front panel and apply lightly.
3. Once the nameplate is properly aligned, press it firmly onto the surface to secure it.

Step 5. Perform Post-Upgrade Adjustments and Calibration

Adjustments

The following post-upgrade adjustments must be made.

- source adjustment
- receiver adjustment
- receiver characterization

These adjustments are described in the PNA Service Guide and in the PNA on-line HELP. A list of equipment required to perform these adjustments is also found in the service guide.

To view this service guide information, click the Chapter 3 bookmark “Tests and Adjustments” in the PDF Service Guide¹.

After the specified adjustments have been performed, the analyzer should operate and phase lock over its entire frequency range.

Operator’s Check

Perform the Operator’s Check to check the basic functionality of the analyzer. For instructions, click the Chapter 3 bookmark “Tests and Adjustments” in the PDF Service Guide¹.

If you experience difficulty with the basic functioning of the analyzer, contact Keysight. Refer to [“Contacting Keysight” on page 3](#).

Calibration

Although the analyzer functions, its performance relative to its specifications has not been verified. It is recommended that a full instrument calibration be performed using the analyzer’s internal performance test software. To view information on the performance test software, click the Chapter 3 bookmark “Tests and Adjustments” in the PDF Service Guide¹.

1. See [“Downloading the Online PNA Service Guide” on page 5](#).

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