Keysight Extended Frequency Range Upgrade Kit

To Upgrade PNA-X N5249A/49B to N5241A/41B, N5249A/49B or N5241A/41B to N5242A/42B, or N5244A/44B to N5245A/45B

Upgrade Kit Order Number:
N5249AU-913, N5249AU-960, N5241AU-960, N5244AU-990, N5249BU-613, N5249BU-626, N5241BU-626, and N5244BU-650

Keysight Kit Part Numbers: N5242-60113 and N5245-60110

KEYSIGHT TECHNOLOGIES

Installation Note

Notices

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Safety Notices

CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood and met.

WARNING

A **WARNING** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

Keysight Extended Frequency Range Upgrade Kit
Upgrade Kit Number: N5242-60113 and N5245-60110

Installation Note

Description of the Upgrade

This upgrade extends the frequency range of the PNA-X model N5249A/49B from 8.5 GHz up to 13.5 or 26.5 GHz, or a N5241A/41B from 13.5 GHz up to 26.5 GHz, or N5244A/44B from 43.5 GHz up to 50 GHz. After installation of this upgrade, the PNA-X will be a N5241A/41B, N5242A/42B, or a N5245A/45B.

Getting Assistance from Keysight

Installing this upgrade kit requires special skills and experience. If you think you may not be qualified to do the work, or need advice, contact Keysight.

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.**

If You Have Problems With the Upgrade Kit Contents

Keysight stands behind the quality of the upgrade kit contents. If you have problems with any item in the kit, refer to www.keysight.com and the **Contact Keysight** link.

KEYSIGHT TECHNOLOGIES

Getting Prepared

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

- A license key - refer to "License Key Redemption" below.
- A PDF copy or a paper copy of the PNA Service Guide - refer to "Downloading the Online PNA Service Guide" on page 5.
- Enough time - refer to "About Installing the Upgrade" on page 5.
- 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 Guide[1].

License Key Redemption

NOTE The only difference between an A model license key redemption and a B model is that the A model uses a 12-character license key and the B model uses a license key file.

NOTE Ensure that you are connected to an external server, before attempting to download your email and license key file.

If you are unfamiliar with the licensing process, refer to the http://literature.cdn.keysight.com/litweb/pdf/N5242-90024.pdf.

NOTE The enclosed Software Entitlement Certificate is a receipt, verifying that you have purchased a licensed option for the PNA of your choice. You must now use a Keysight Web page to request a license key for the instrument that will receive the option.

To enable the option product, you must request license key(s) (A models) or license key files(s) (B models) from the Keysight Software Manager: http://www.keysight.com/find/softwaremanager.

To complete the request, you will need to gather the following information:

- From the certificate
  - 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

1. See "Downloading the Online PNA Service Guide" on page 5.

– **A models ONLY:** 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 - N5241A, N5242A, or N5245A.

  – Host ID

Using the information just gathered, you must request license key(s) for your A model or for your B models, a license key file(s) from the Keysight Software Manager: http://www.keysight.com/find/softwaremanager.

You will need to provide an email address, Keysight will promptly email your A model license key(s) or a for a B model, license key file(s) attachment message. Refer to "License Key Redemption" on page 4.

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: N5242A) 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	All N5249A/49B, N5241A/41B and N5244A/44B 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 to 6 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 N5242-60113

Qty	Description	Part Number
1	Installation Note (this document)	N5242-90020
1	Software Entitlement Certificate	5964-5145
1	Nameplate, N5241A (13.5 GHz); for upgrade from N5249A to N5241A only	N5241-80001
1	Nameplate, N5242A (26.5 GHz); for upgrade from N5249A or N5241A to N5242A only	N5242-80006
1	Nameplate, N5241B (13.5 GHz); for upgrade from N5249B to N5241B only	N5241-80002
1	Nameplate, N5242B (26.5 GHz); for upgrade from N5249B or N5241B to N5242B only	N5242-80022

Table 2 Contents of Upgrade Kit N5245-60110

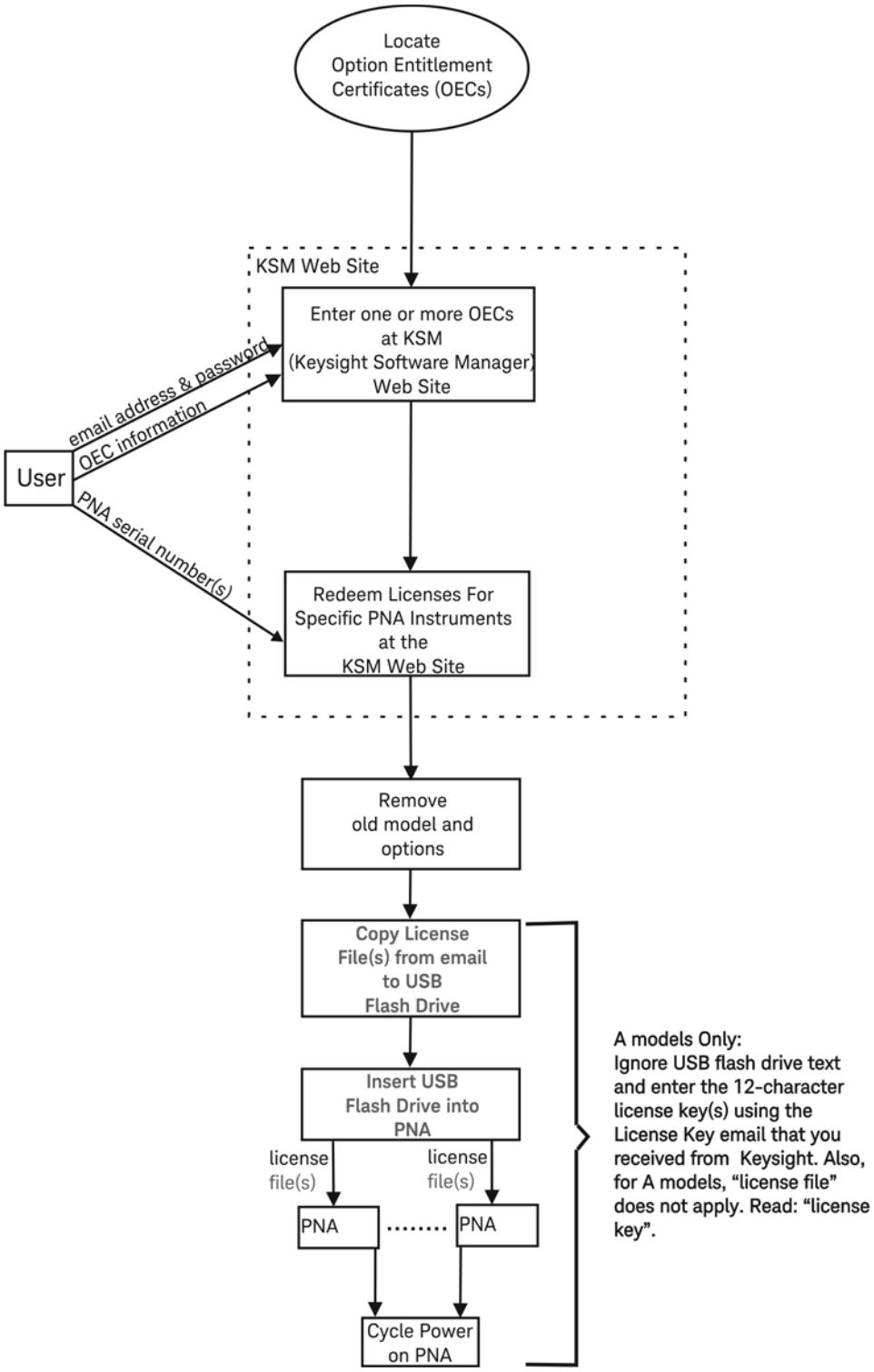
Qty	Description	Part Number
1	Installation Note (this document)	N5242-90020
1	Software Entitlement Certificate	5964-5145
1	Nameplate, N5245A (50 GHz); for upgrade from N5244A to N5245A only	N5245-80003
1	Nameplate, N5245B (50 GHz); for upgrade from N5244B to N5245B only	N5245-80026

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.

Figure 3 An overview of this process, described in these instructions, is shown below (B model shown. For exceptions, see **Step 5. A models Only**—same figure).



Overview of the Installation Procedure

"Step 1. Verify the Option, Serial, and New Model Numbers" on page 10

"Step 2. Erase Old Adjustment Data" on page 10

"Step 3. Enter the New Model Number" on page 11

"Step 4. Verify that the New Model Number Is Enabled" on page 13

"Step 5. Replace the Nameplate" on page 13

"Step 6. Perform Post-Upgrade Adjustments and Calibration" on page 13

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

This step contains the following sections:

– “"A" Model Verifying the Upgrade Information” on page 10
– “"B" Model Verifying the Upgrade Information” on page 10
– “All Models—If the Instrument Numbers Do Not Match the License File” on page 10

"A" Model Verifying the Upgrade Information

If you haven’t done so already, follow the instructions in “License Key Redemption” on page 4. 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 (913, 960, or 990), serial number, and upgraded model number (N5241A, N5242A, or N5245A) match those on the license message you received from Keysight.
– Note the 12-digit license key for later use.

"B" Model Verifying the Upgrade Information

Refer to the message—with the license file(s)—you received from Keysight:

– Verify that the analyzer’s option number (613, 626, or 650), serial number, and upgraded model number (N5241B, N5242B, or N5245B) match those on the license message you received from Keysight.

All Models—If the Instrument Numbers Do Not Match the License File

If the model number, serial number, or option number do not match those on the license file 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. Erase Old Adjustment Data

NOTE

The PNA-X contains adjustment data for the original frequency range only. Performance above this range is not calibrated and may cause errors to be displayed. More adjustment data is required for the expanded frequency span. Erasing and recreating the adjustment data allows the larger data set to be stored congruently.

On your PNA being upgraded:

1. **Power up your PNA.**
2. **If open, close the PNA application.**

3. Open up **Windows Explorer**.
4. Open the directory location for your instrument:
   A Models:
   `C:\Program Files (x86)\Agilent\Network Analyzer\Service`
   B Models:
   `C:\Program Files (x86)\Keysight\Network Analyzer\Service`
5. Double-click or press to open the `CalFileSystemConverter.exe` file.
6. In the "Cal File System Converter" window: Click or press the **Erase Cal File System** button.
7. Click or press: **Close**
8. Double-click or press to Open the PNA application.

Step 3. Enter the New Model Number

This step contains the following sections:

– "Model Enable Procedure for "A" Model Instruments" on page 11
– "Model Enable Procedure for "B" Model Instruments" on page 12

Model Enable Procedure for "A" Model Instruments

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-X model number – N5241A, N5242A, or N5245A.
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 Previously installed software options require new license keys. Contact Keysight to receive these keys.

Model Enable Procedure for "B" Model Instruments

NOTE For this step, you will need a USB flash drive.

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1. Locate the email(s) from Keysight which contain license file attachments. These emails are a result of “License Key Redemption” on page 4.
2. Copy the license file(s) from the email(s) to the **root** directory of the USB flash drive. More than one license file may be copied to the USB flash drive.

NOTE A single license file may contain licenses for more than one instrument.

3. Insert the USB flash drive into the PNA’s USB drive slot.
4. Open a Windows Explorer window(s) and manually move your license file to

   `C:\Program Files\Agilent\licensing`.

   It may take Keysight License Manager an extra ~5 seconds to enable the license and automatically power down your PNA.

   Successful License Installation is displayed on the bottom of the window.
5. Shut down the PNA application and restart.

Optional: Cycle power on the instrument to activate the newly installed option upgrade(s). (Press the power button once to power down the instrument.)

NOTE Attempting to re-install a license file that is already installed may generate a “Corrupt Media” error message. Ignore this message.

6. If the license file installed and the PNA rebooted as expected, remove the USB flash drive from the PNA.

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

Step 4. 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.

   Refer to the license message you received from Keysight:

   – Verify that the analyzer's model and serial numbers match those on the license message you received from Keysight.

NOTE If the new model number has not been enabled, contact Keysight Technologies. Refer to "Getting Assistance from Keysight" on page 3.

Step 5. 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. Select the proper nameplate. There is more than one nameplate provided, be sure to select the correct one for your analyzer.
2. 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.
3. **Loosely** align the new nameplate over the recess in the front panel and apply lightly.
4. Once the nameplate is properly aligned, press it firmly onto the surface to secure it.

Step 6. Perform Post-Upgrade Adjustments and Calibration

Adjustments

The following post-upgrade adjustments must be made.

– source adjustment

– IF gain adjustment

– receiver characterization

– receiver adjustment

- IF Response adjustment (For A models: Options 090, 092, 093, or 094 Only. For B models: Options S93090xA, S93093A, or S93094A Only.)
- noise adjustment (For A models: Option 029. For B models: Option 029 with S93029A Only.)

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 Guide[1].

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 Guide[1].

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 Guide[1].

1. See “Downloading the Online PNA Service Guide” on page 5.



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