

Keysight Extended Frequency Range Upgrade Kit

To Upgrade PNA N5221A to N5222A

Upgrade Kit Order Numbers: N5221AU-626

Keysight Kit Number: N5222-60109

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.



WARRANTY STATEMENT

THE MATERIAL CONTAINED IN THIS DOCUMENT IS PROVIDED "AS IS," AND IS SUBJECT TO BEING CHANGED, WITHOUT NOTICE, IN FUTURE EDITIONS. FURTHER, TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, KEYSIGHT DISCLAIMS ALL WARRANTIES, EITHER EXPRESS OR IMPLIED WITH REGARD TO THIS MANUAL AND ANY INFORMATION CONTAINED HEREIN, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. KEYSIGHT SHALL NOT BE LIABLE FOR ERRORS OR FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH THE FURNISHING, USE, OR PERFORMANCE OF THIS DOCUMENT OR ANY INFORMATION CONTAINED HEREIN. SHOULD KEYSIGHT AND THE USER HAVE A SEPARATE WRITTEN AGREEMENT WITH WARRANTY TERMS COVERING THE MATERIAL IN THIS DOCUMENT THAT CONFLICT WITH THESE TERMS, THE WARRANTY TERMS IN THE SEPARATE AGREEMENT WILL CONTROL.

DFARS/Restricted Rights Notice

If software is for use in the performance of a U.S. Government prime contract or subcontract, Software is delivered and licensed as "Commercial computer software" as defined in DFAR 252.227-7014 (June 1995), or as a "commercial item" as defined in FAR 2.101(a) or as "Restricted computer software" as defined in FAR 52.227-19 (June 1987) or any equivalent agency regulation or contract clause. Use, duplication or disclosure of Software is subject to Keysight Technologies' standard commercial license terms, and non-DOD Departments and Agencies of the U.S. Government will receive no greater than Restricted Rights as defined in FAR 52.227-19(c)(1-2) (June 1987). U.S. Government users will receive no greater than Limited Rights as defined in FAR 52.227-14 (June 1987) or DFAR 252.227-7015 (b)(2) (November 1995), as applicable in any technical data.

Description of the Upgrade

This upgrade extends the frequency range of the PNA model N5221A from 13.5 GHz up to 26.5 GHz. After installation of this upgrade, the PNA will be an N5222A.

Getting Assistance from Keysight

By internet, phone, or fax, 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

CAUTION The PNA contains extremely sensitive components that can be ruined if mishandled. Follow instructions carefully when making cable connections, especially wire harness connections.

The person performing the work accepts responsibility for the full cost of the repair or replacement of damaged components.

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](#)” below.
- An ESD-safe work area - refer to “[Protecting Your Workspace from Electrostatic Discharge](#)” below.
- 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 Guide¹.

License Key Redemption

NOTE The enclosed Option 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 a license key from: <http://www.keysight.com/find/softwarelicense>. To complete the request, you will need to gather the following information:

- From the certificate
 - Order number
 - Certificate number
- From your instrument
 - Model number
 - Serial number
 - Host ID

The instrument information is available on the network analyzer – on the analyzer’s **Help** menu, click **About Network Analyzer**.

If you provide an email address, Keysight will promptly email your license key. Otherwise, you will receive your license key via postal mail.

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

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: N5222A) 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.

Protecting Your Workspace from Electrostatic Discharge

- For information, click on the Chapter 1 bookmark, “Electrostatic Discharge Protection” in the PDF Service Guide¹.

ESD Equipment Required for the Installation

Description	Keysight Part Number
ESD grounding wrist strap	9300-1367
5-ft grounding cord for wrist strap	9300-0980
2 x 4 ft conductive table mat and 15-ft grounding wire	9300-0797
ESD heel strap (for use with conductive floors)	9300-1308

About Installing the Upgrade

Products affected	All N5221A 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

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

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)	N5222-90109
1	Option Entitlement Certificate	5964-5145
1	Nameplate, N5222A (26.5 GHz)	N5222-80001

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 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 (626), serial number, and upgraded model number (N5222A) 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—N5222A.
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](#).

This information is subject to change without notice.
© Keysight Technologies 2011 - 2014
August 2014



N5222-90109
www.keysight.com