

# Keysight Add Bias Tees Upgrade Kit

To Upgrade PNA N5224A/B or N5225A/B Option 417 to Option 419 or PNA-X N5244B or N5245B Option 417 to Option 419 or N5244B or N5245B Option 422 to Option 423

Upgrade Kit Order Numbers: N5224AU-419, N5225AU-419, N5224BU-419, N5225BU-419, N5244BU-419, N5245BU-419, N5245BU-423, and N5245BU-423

Keysight Kit Number: N5225-60108

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](http://www.keysight.com).



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## Trademark Acknowledgments

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N5225-90108

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Keysight Add Bias Tees Upgrade Kit  
Upgrade Kit Number: N5225-60108  
Installation Note

## Description of the Upgrade

### NOTE

Some of the assembly drawings in this document may be different from your instrument, but the process is similar for both an "A" model and "B" model instruments.

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### NOTE

If you had an A model PNA-X with Option 219/419 with Option H85 that was upgraded to a B model, please refer to Options 217/417. If you had an A model PNA-X with Option 224/423 with Option H85 that was upgraded to a B model then refer to Option 222/422.

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This upgrade adds the following items to your N5224A/B or N5225A/B Option 417 or N5244B or N5245B Option 417 or N5244B or N5245B Option 422 analyzer:

- a bias tee in each source port channel
- front panel overlay replacement
- eight new RF cables

After installation of this upgrade, your analyzer will be an N5224A/B or N5225A/B or N5244B or N5245B Option 419 or N5244B or N5245B Option 423.

## 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>

## Description of the Upgrade Getting Prepared

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.

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### 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](http://www.keysight.com) and the **Contact Keysight** link.

## 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.

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### 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.
- Correct tools - refer to [“Tools Required for the Installation”](#) on page 7.
- Enough time - refer to [“About Installing the Upgrade”](#) on page 7.
- 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<sup>1</sup>.

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1. See [“Downloading the Online PNA Service Guide”](#) on page 6.

## 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.

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

### NOTE

If you are unfamiliar with the licensing process:

- For A models: Refer to <http://literature.cdn.keysight.com/litweb/pdf/N5225-90110.pdf>.
  - For B models: Refer to <http://literature.cdn.keysight.com/litweb/pdf/N5242-90024.pdf>.
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### 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.

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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
- **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 - N5224A, N5225A, N5244A, or N5245A.
  - Host ID

## Description of the Upgrade Getting Prepared

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). Refer to **“License Key Redemption” on page 5**.

## Verify the License Contents

Refer to the license message you received from Keysight:

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 license key file. If this is the case, contact Keysight for assistance. Refer to **“Getting Assistance from Keysight” on page 3**.

## 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](http://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.

## Protecting Your Workspace from Electrostatic Discharge

For information, click on the Chapter 1 bookmark, “Electrostatic Discharge Protection” in the PDF Service Guide<sup>1</sup>.

### 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            |

### Tools Required for the Installation

| Description  | Qty | Part Number |
|--|-----|-------------|
| T-10 TORX driver - set to 9 in-lbs (1.02 N.m)                                    | 1   | N/A         |
| T-20 TORX driver - set to 21 in-lbs (2.38 N.m)                                   | 1   | N/A         |
| 5/16-in (8 mm) nutsetter or open end torque wrench - set to 10 in-lbs (1.13 N.m) | 1   | N/A         |

#### CAUTION

Use a 5/16-in torque wrench set to 10 in-lbs on all cable connections.

### About Installing the Upgrade

|  |  |
|--|--|
| Products affected                          | N5224A/B, N5225A/B, N5244B, N5245B Option 417 and N5244B and N5245B Option 422 |
| Installation to be performed by            | Keysight service center or personnel qualified by Keysight                     |
| Estimated installation time                | 2 hours  |
| Estimated adjustment time                  | 0.5 hour   |
| 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 part is missing or damaged, contact Keysight Technologies. Refer to **“Getting Assistance from Keysight” on page 3**.

**Table 1** Contents of Upgrade Kit N5225-60108

| Ref Desig.  | Description   | Qty | Part Number |
|-------------|---|-----|-------------|
| --          | Installation note (this document)   | 1   | N5225-90108 |
| --          | Software Entitlement Certificate  | 1   | 5964-5145   |
| --          | China RoHS Addendum   | 1   | 9320-6722   |
| A42-<br>A45 | Bias tee  | 4   | 5087-7789   |
| --          | Bias tee bracket  | 4   | N5245-00011 |
| --          | Front panel overlay – PNA N5224/5A models                                   | 1   | N5227-80005 |
| --          | Front panel overlay – PNA N5224/5B models                                   | 1   | N5227-80020 |
| --          | Front panel overlay – PNA-X N5244/5B models                                 | 1   | N5242-80025 |
| --          | Machine screw, M3 x 8, pan head (to attach bias tee brackets to deck)       | 10  | 0515-0372   |
| --          | Machine screw, M3.0 x 6, flat head (to attach front frame to coupler plate) | 2   | 0515-1946   |
| --          | Machine screw, M3 x 14, pan head (to secure bias tees to brackets)          | 10  | 0515-2994   |
| W83         | RF cable, Front-panel Port 1 CPLR THRU to A42 port 1 bias tee               | 1   | N5245-20076 |
| W84         | RF cable, A33 port 1 coupler to A42 port 1 bias tee                         | 1   | N5245-20085 |
| W87         | RF cable, Port 3 CPLR THRU to A43 port 3 bias tee                           | 1   | N5245-20089 |
| W88         | RF cable, A43 port 3 bias tee to A34 port 3 coupler                         | 1   | N5245-20086 |
| W91         | RF cable, Port 4 CPLR THRU to A44 port 4 bias tee                           | 1   | N5245-20090 |
| W92         | RF cable, A44 port 4 bias tee to A35 port 4 coupler                         | 1   | N5245-20088 |
| W95         | RF cable, Port 2 CPLR THRU to A45 port 2 bias tee                           | 1   | N5245-20030 |
| W96         | RF cable, A45 port 2 bias tee to A36 port 2 coupler                         | 1   | N5245-20087 |

**NOTE**

Extra quantities of items such as protective plastic caps, screws, cable ties, and cable clamps may be included in this upgrade kit. It is normal for some of these items to remain unused after the upgrade is completed.

## Installation Procedure for the Upgrade

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.

### WARNING

This installation requires the removal of the analyzer's protective outer covers. The analyzer must be powered down and disconnected from the mains supply before performing this procedure.

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### NOTE

Some of the following figures provided in this procedure contain bias tees. Bias tees are included in the Option 219/419 upgrade kits and can be ignored for Options 217/417 and 222/422.

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### Overview of the Installation Procedure

- “Step 1. Obtain a Keyword and Verify the Information.”
- “Step 2. Remove the Outer Cover.”
- “Step 3. Remove the Front Panel Assembly.”
- “Step 4. Remove Some Bottom-Side (Test Set) Cables.”
- “Step 5. Install the Bias Tee Brackets.”
- “Step 6. Install the Bias Tee Assemblies.”
- “Step 7. Install Some Bottom-Side (Test Set) Cables.”
- “Step 8. Remove the Old Lower Front Panel Overlay.”
- “Step 9. Reinstall Front Panel Assembly.”
- “Step 10. Install the New Lower Front Panel Overlay.”
- “Step 11. Reinstall Front Panel Jumpers.”
- “Step 12. Position the Cables and Wires to Prevent Pinching.”
- “Step 13. Reinstall the Outer Cover.”
- “Step 14. Remove Option 417 or 422 (B Models Only) License.”
- “Step 15. Enable Option 419 or 423.”
- “Step 16. Perform Post-Upgrade Adjustments and Calibration.”
- “Step 17. Prepare the PNA for the User.”

## Step 1. Obtain a Keyword and Verify the Information

Follow the instructions on the Software Entitlement Certificate supplied to obtain a license key for installation of this upgrade. Refer to **“License Key Redemption” on page 5**.

Verify that the model number, serial number, and option number information on the license key match those of the instrument on which this upgrade will be installed.

If the model number, serial number, or option number do not match those on your license key, you will not be able to install the option. If this is the case, contact Keysight for assistance before beginning the installation of this upgrade. Refer to **“Contacting Keysight” on page 3**.

Once the license key (A models) or license key file (B models) has been received and the information verified, you can proceed with the installation at **“Step 2. Remove the Outer Cover” on page 10**.

### NOTE

If the model number, serial number, or option number do not match those on your license key (A models) or license key file (B models), you will not be able to install the option. If this is the case, contact Keysight for assistance before beginning the installation of this upgrade. Refer to **“Contacting Keysight” on page 3**.

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## Step 2. Remove the Outer Cover

For instructions, click the Chapter 7 bookmark “Removing the Covers” in the PDF Service Guide<sup>1</sup>.

## Step 3. Remove the Front Panel Assembly

For instructions, click the Chapter 7 bookmark “Removing and Replacing the Front Panel Assembly” in the PDF Service Guide<sup>1</sup>.

## Step 4. Remove Some Bottom-Side (Test Set) Cables

### CAUTION

Be careful not to damage the center pins of the semirigid cables. Some flexing of the cables may be necessary but do not over-bend them.

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### NOTE

When removing a cable, also remove the plastic cable clamp, if present. It is normal for some of the cable clamp’s adhesive to remain.

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1. Place the analyzer bottom-side up on a flat surface.

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1. See **“Downloading the Online PNA Service Guide” on page 6**.

2. Remove the cables in the following list in the order shown. To see an image showing the location of these cables, click the Chapter 6 bookmark “Bottom RF Cables, Standard 4-Port Configuration, Option 417” in the PDF Service Guide<sup>1</sup>.

These cables may be discarded - they will not be reinstalled.

- W20 (N5245-20099) Front panel port 1 CPLR THRU to A33 port 1 coupler
- W24 (N5245-20098) Front panel port 3 CPLR THRU to A34 port 3 coupler
- W32 (N5245-20097) Front panel port 2 CPLR THRU to A36 port 2 coupler
- W28 (N5245-20096) Front panel port 4 CPLR THRU to A35 port 4 coupler
- W36 (N5245-20155) Front panel jumpers (quantity = 12)

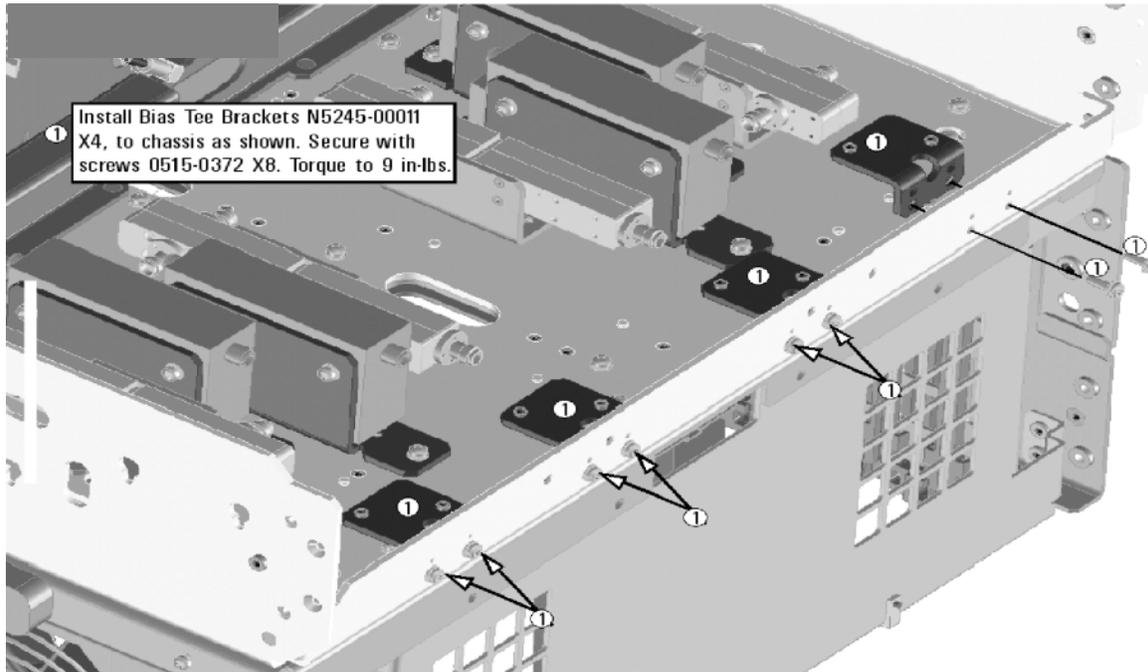
**NOTE:** Remove and save the cable guards for the front panel jumpers.

3. Leave the gray flexible cables, the wire harnesses, and the ribbon cables connected where possible. Any that are removed should be labeled for reconnection later.

## Step 5. Install the Bias Tee Brackets

Refer to **Figure 1** for this step of the procedure. New parts are listed in **Table 1 on page 8**.

Figure 1 Bias Tee Brackets Installation

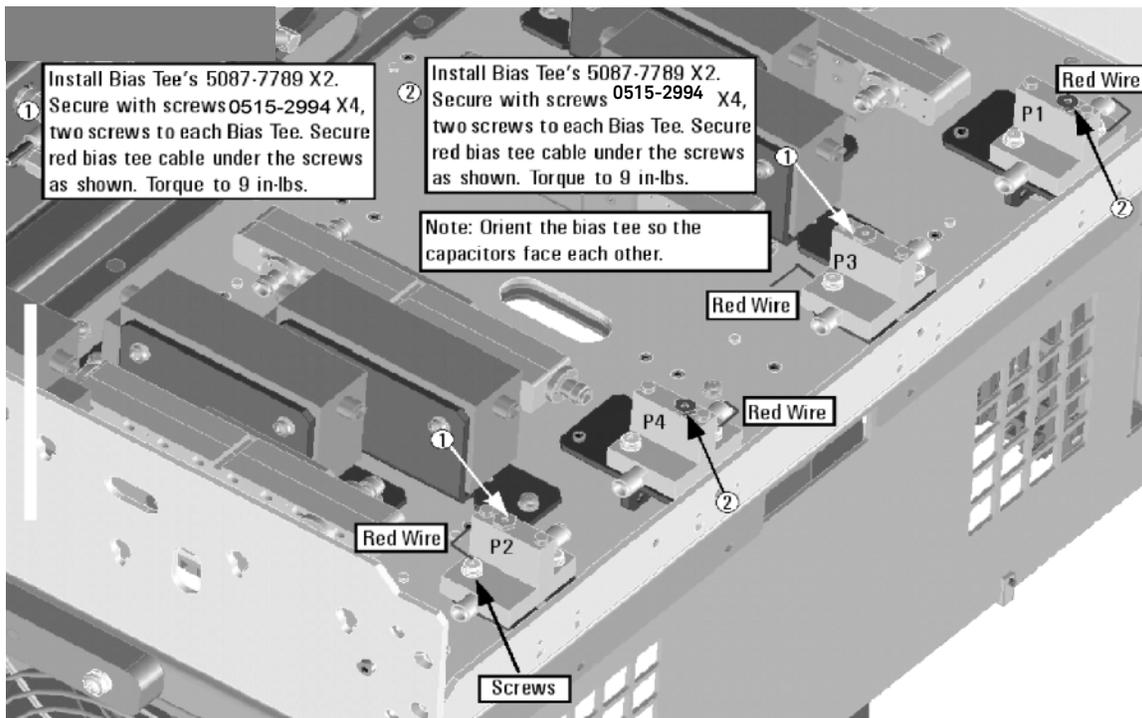


N5225\_108\_01

### Step 6. Install the Bias Tee Assemblies

Refer to [Figure 2](#) for this step of the procedure. New parts are listed in [Table 1 on page 8](#).

Figure 2 Bias Tee Installation



N5225\_108\_02

## Step 7. Install Some Bottom-Side (Test Set) Cables

Remove the A23 mixer brick assembly from the PNA. For instructions, click the Chapter 7 bookmark, "Removing and Replacing the A23 and A24 Mixer Bricks" in the PDF Service Guide<sup>1</sup>.

### CAUTION

Follow instructions carefully when making cable connections, especially wire harness connections. Incorrect connections can destroy components, resulting in additional customer costs.

### CAUTION

Be careful not to damage the center pins of the semirigid cables. Some flexing of the cables may be necessary but do not over-bend them.

### Install the Semirigid Cables

To see an image showing the location of these cables, click the Chapter 6 bookmarks "Bottom RF Cables, 4-Port Configuration, Option 419" in the PDF Service Guide. New parts are listed in [Table 1 on page 8](#).

Install the following new cables in the order listed.

1. See ["Downloading the Online PNA Service Guide" on page 6](#).

Description of the Upgrade  
Installation Procedure for the Upgrade

- W96 (N5245-20087) A45 port 2 bias tee to A36 port 2 coupler
- W92 (N5245-20088) A44 port 4 bias tee to A35 port 4 coupler
- W84 (N5245-20085) A33 port 1 coupler to A42 port 1 bias tee
- W88 (N5245-20086) A43 port 3 bias tee to A34 port 3 coupler
- W95 (N5245-20030) Port 2 CPLR THRU to A45 port 2 bias tee
- W91 (N5245-20090) Port 4 CPLR THRU to A44 port 4 bias tee
- W87 (N5245-20089) Port 3 CPLR THRU to A43 port 3 bias tee
- W83 (N5245-20076) Front-panel Port 1 CPLR THRU to A42 port 1 bias tee

### Install the Ribbon Cables and Wire Harnesses

To see an image showing the location of these cables, click the Chapter 6 bookmarks “Bottom Ribbon Cables and Wire Harnesses, 4-Port, Option 419” in the PDF Service Guide<sup>1</sup>. New parts are listed in **Table 1 on page 8**.

If not already done, connect bias tee cable harnesses as follows:

- A42 port 1 bias tee to A23 test set motherboard J541
- A43 port 3 bias tee to A23 test set motherboard J543
- A44 port 4 bias tee to A23 test set motherboard J544
- A45 port 2 bias tee to A23 test set motherboard J542

## Step 8. Remove the Old Lower Front Panel Overlay

Refer to **Figure 3 on page 15** for this step of the procedure. New parts are listed in **Table 1 on page 8**.

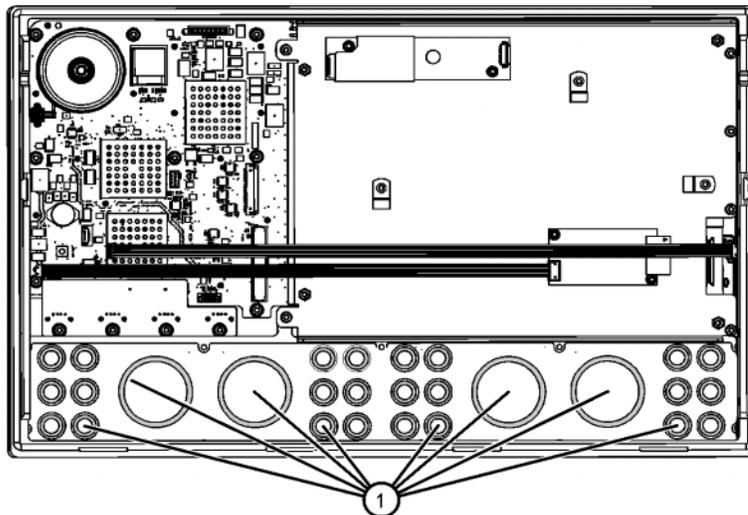
1. From the back side of the front panel, use a blunt object in the cutouts in the lower front dress panel to push on the old overlay (item ①) and separate it from the front dress panel.
2. From the front side of the front panel, pull off the overlay completely and discard it.
3. Remove any adhesive remaining on the front panel.

### CAUTION

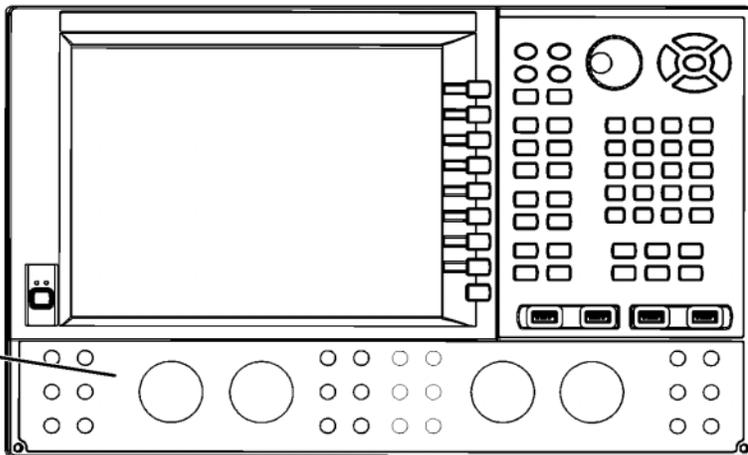
To avoid possible damage to the lower front panel overlay (label), do not attempt to attach the lower front panel label until **“Step 10. Install the New Lower Front Panel Overlay” on page 15**.

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Figure 3 A24 Mixer Brick Assembly



Old lower front-panel overlay visible through cutouts from rear of front panel. Push here to release old front-panel overlay.



New lower front-panel overlay. Align loosely to opening before pressing firmly.

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## Step 9. Reinstall Front Panel Assembly

For instructions on reinstalling the front panel assembly, click the Chapter 7 bookmark “Removing and Replacing the Front Panel Assembly” in the PDF Service Guide<sup>1</sup>.

1. Remove the protective backing from the new front panel overlay, N5227-80005 for N5224/5A models or N5227-80020 for PNA N5224/5B models or N5242-80025 for PNA-X N5244/5B (item ①).
2. Starting from either side, loosely place the overlay in the recess on the lower front panel, ensuring that it fits tightly against the edges of the recess.
3. Once the overlay is in place, press it firmly onto the frame to secure it.

## Step 10. Install the New Lower Front Panel Overlay

Follow the two instructions shown in [Figure 2-1](#) in this document. New parts are listed in [Table 1 on page 8](#) of this document.

## Step 11. Reinstall Front Panel Jumpers

Reinstall all twelve of the front panel jumper cables (W36), part number N5245-20155. Torque to 10 in-lbs.

## Step 12. Position the Cables and Wires to Prevent Pinching

On the top side of the PNA, carefully position the gray flex cables so they can't be pinched between the covers and the rails.

On the bottom side of the PNA, carefully fold or push down the ribbon cables and wires so they can't be pinched between the hardware and the outer cover. Ribbon cables and wires must never be positioned on top of hardware.

## Step 13. Reinstall the Outer Cover

For instructions, click the Chapter 7 bookmark “Removing the Covers” in the PDF Service Guide<sup>1</sup>.

## Step 14. Remove Option 417 or 422 (B Models Only) License

### Procedure Requirements

- The analyzer must be powered up and operating to perform this procedure.
- The Network Analyzer program must **not** be running.
- A keyboard and mouse must be connected to the network analyzer.

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1. See [“Downloading the Online PNA Service Guide” on page 6](#).

### A Model Option 417 or 422 License Removal Procedure

For B models, refer to [“B Model Option 417 or 422 License Removal Procedure.”](#)

1. To start the option enable utility, press UTILITY **System**, then **Service**, then **Option Enable**. An option enable dialog box will appear.
2. Click the arrow in the Select Desired Option box. A list of available options will appear.
3. In the Select Desired Option list, click 417 or 422.
4. Click Remove.

### B Model Option 417 or 422 License Removal Procedure

For A models, refer to [“A Model Option 417 or 422 License Removal Procedure.”](#)

1. To start the Keysight License Manager, press **Start > Keysight License Manager > Keysight License Manager**. A Keysight License Manager dialog box will appear.
2. Right click the on the desired option and click **Delete**.
3. In the Keysight License Manager dialog box that appears, press or click **Yes** to confirm delete.
4. A message displays stating that the option removal was successful.

## Step 15. Enable Option 419 or 423

### Procedure Requirements

- The analyzer must be powered up and operating to perform this procedure.
- The Network Analyzer program must **not** be running.
- 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.
- A keyboard must be connected to the network analyzer.

For "A" models, refer to [“Option Enable Procedure for "A" Model Instruments” on page 17.](#)

For "B" models refer to [“Option Enable Procedure for "B" Model Instruments ” on page 17.](#)

## Option Enable Procedure for "A" Model Instruments

1. To start the option enable utility, press UTILITY **System**, then **Service**, then **Option Enable**. An option enable dialog box will appear.
2. Click the arrow in the Select Desired Option box. A list of available options will appear.
3. In the Select Desired Option list, click **419 or 423 - Configurable Test Set**.
4. Using the keyboard, enter the 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.
5. Click **Enable**.
6. Click Yes in answer to the displayed question in the **Restart Analyzer?** box.
7. When the installation is complete, click **Exit**.

## "A" Model Option Verification Procedure

Once the analyzer has restarted and the Network Analyzer program is again running:

1. On the analyzer's **Help** menu, click **About Network Analyzer**.
2. Verify that "419" or "423" is listed after "Options:" in the display. Click OK.

### NOTE

If if the option(s) have not been enabled or an older option has not been removed, contact Keysight Technologies. Refer to ["Getting Assistance from Keysight" on page 3](#).

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## Option Enable Procedure for "B" Model Instruments

### NOTE

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

A single license file may contain more than one feature.

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1. Locate the email(s) from Keysight which contain license file attachments. These emails are a result of Step 3 on ["License Key Redemption" on page 5](#).
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 license file may contain more than one feature.

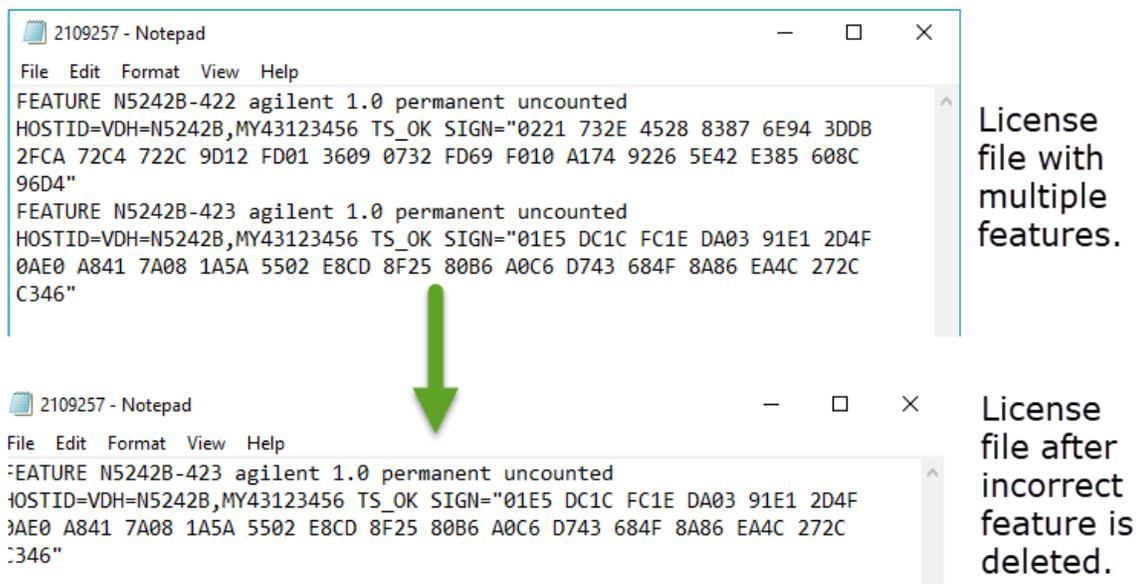
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### 3. Verifying and editing the license file:

For these steps, refer to the example in **Figure 3 on page 18**.

- a. Verify your USB flash drive is connected to a PC.
- b. Open your license file using a text read/write program similar to Notepad.
- c. If you have more than one licensed feature, delete the feature that is **not** required for this upgrade. (e.g., in this case N5242B-423 is the correct upgrade. So, N5242B-422 is to be deleted from the text file.)

**Figure 4** Editing a Keysight License File Using a Text Editor.



#### NOTE

The figure above may not contain your specific features and is an example only. In this example N5242B-422 is the incorrect feature. N5242B-423 is the correct feature

- d. Re-save the text license file to the root directory of your USB flash drive.
  - e. Verify that only the single correctly edited text license file is in the root directory of your USB drive.
  - f. Eject your USB flash drive and remove the USB flash drive from your PC.
4. Connect the USB flash drive to the PNA. Within 5 seconds, the PNA should display a small "New licenses installed" message.

Else, load the license key file(s), manually move your license file(s) to C:\Program Files\Agilent\licensing. It may take Keysight License Manager an extra ~5 seconds to enable the licenses.

**NOTE**

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

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5. Disconnect the USB flash drive from the PNA.
6. On the analyzer, click or press to open the KLM software from your PNA's Windows taskbar by pressing **Start > More Programs > Keysight License Manager folder > Keysight License Manager** and verify the options are correct.

### "B" Model Option Verification Procedure

**NOTE**

If the option(s) have not been enabled or if your older options have not been removed, contact Keysight Technologies. Refer to "[Getting Assistance from Keysight](#)" on page 3.

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1. Start the Network Analyzer program.
2. Once the Network Analyzer program is running:
  - Press **Help > About NA** and verify that Option 419 or 423 is listed in the PNA application.
3. After successful installation of all upgrades, some features require some adjustments to ensure the instrument meets its specified performance. Refer to the following Web site:  
<http://na.support.keysight.com/pna>.

## Step 16. Perform Post-Upgrade Adjustments and Calibration

### Adjustments

The following adjustments must be made due to the hardware changes of the analyzer.

- source adjustment
- IF gain adjustment
- receiver characterization
- receiver adjustment
- IF Response adjustment (For A model: Options 090, 093, or 094 Only. For B models: Options S93090xA/B, S93093A/B, or S93094A/B Only.)
- Noise adjustment (For N5244/5B models: Option 029 with S93029A/B 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<sup>1</sup>.

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<sup>1</sup>.

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.

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1. See **“Downloading the Online PNA Service Guide” on page 6**.

## Step 17. Prepare the PNA for the User

1. If necessary, reinstall front jumper cables.
2. Install the cable guards, pushing them over the front jumper cables until the cushioning material touches the front panel of the PNA.
3. Install the dust caps on the test ports.
4. Clean the analyzer, as needed, using a damp cloth.





This information is subject to change without notice.

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