

Installation Note

Add Option H85 High Power Configuration Capability Upgrade Kit

**To Upgrade PNA-X N5241A or N5242A Options 219, 219/029, 224, 224/
029, 419, 419/029, 423, or 423/029 to include Option H85**

Upgrade Kit Order Number: N5241AU- H85 and N5242AU- H85



**Agilent Kit Number: N5242-60110
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N5242-90018

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Safety Notes

The following safety notes are used throughout this document. Familiarize yourself with each of these notes and its meaning before performing any of the procedures in this document.

WARNING	Warning denotes a hazard. It calls attention to a procedure which, if not correctly performed or adhered to, could result in injury or loss of life. Do not proceed beyond a warning note until the indicated conditions are fully understood and met.
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CAUTION	Caution denotes a hazard. It calls attention to a procedure that, if not correctly performed or adhered to, could result in damage to or destruction of the instrument. Do not proceed beyond a caution sign until the indicated conditions are fully understood and met.
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Description of the Upgrade

This upgrade adds Option H85 (high power configuration) to your N5241A or N5242A Option 219, 224, 419, or 423 analyzer by:

- replacing specific semirigid cables
- removing the bias tees
- replacing the lower front panel overlay

Getting Assistance from Agilent

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 Agilent.

Contacting Agilent

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

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

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

NOTE	In any correspondence or telephone conversation, refer to the Agilent product by its model number and full serial number. With this information, the Agilent representative can determine whether your product is still within its warranty period.
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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](#)” 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 5.
- Enough time - refer to “[About Installing the Upgrade](#)” on page 6.
- Test equipment for the post-upgrade adjustments. To view the equipment list, click the Chapter 3 PDF bookmark “[Tests and Adjustments](#)” in the online 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 an Agilent 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.agilent.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, Agilent 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.agilent.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 load 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 PDF bookmark, “Electrostatic Discharge Protection” in the online Service Guide¹.

ESD Equipment Required for the Installation

Description	Agilent 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
5/16-in (8 mm) nutsetter or open end torque wrench - set to 21 in-lbs (2.38 N.m)	1	N/A

CAUTION Use a 5/16-in torque wrench set to 10 in-lbs on all cable connections except the front and rear panel cable connectors. Torque these connections to 21 in-lb.

About Installing the Upgrade

Products affected.	N5241A and N5242A Option 219, 224, 419, or 423
Installation to be performed by	Agilent service center or personnel qualified by Agilent
Estimated installation time	1 hour
Estimated adjustment time	0.5 hour
Estimated full instrument calibration time	4 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 Agilent Technologies. Refer to [“Getting Assistance from Agilent” on page 3](#).

Table 1 Contents of Upgrade Kit N5242-60110

Ref Desig.	Description	Qty	Part Number
-	Installation note (this document)	1	N5242-90018
Items for Options 219 or 219/029 or 224 or 224/029, 2-port PNA:			
W114	Front panel port 1 CPLR THRU to A29 port 1 coupler	1	N5242-20111
W116	Front panel port 2 CPLR THRU to A32 port 2 coupler	1	N5242-20112
W145	A52 port 1 noise bypass switch to A29 port 1 coupler (for PNA Option 219/029 and Option 224/029)	1	N5242-20145
--	Lower front panel overlay (for PNA Option 219)	1	N5242-80014
--	Lower front panel overlay (for PNA Option 219/029)	1	N5242-80017
--	Lower front panel overlay (for PNA Option 224)	1	N5242-80015
--	Lower front panel overlay (for PNA Option 224/029)	1	N5242-80018
Items for Options 419 or 419/029 or 423 or 423/029, 4-port PNA:			
W12	Front panel port 1 CPLR THRU to A29 port 1 coupler	1	N5242-20055
W24	Front panel port 2 CPLR THRU to A32 port 2 coupler	1	N5242-20063
W16	Front panel port 3 CPLR THRU to A30 port 3 coupler	1	N5242-20059
W20	Front panel port 4 CPLR THRU to A31 port 4 coupler	1	N5242-20064
W144	A52 port 1 noise bypass switch to A29 port 1 coupler (for PNA Option 419/029 and Option 423/029)	1	N5242-20144
--	Lower front panel overlay (for PNA Option 419 or Option 423)	1	N5242-80016
--	Lower front panel overlay (for PNA Option 419/029 or Option 423/029)	1	N5242-80019

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.**

Overview of the Installation Procedure

- Step 1. Obtain a Keyword and Verify the Information.
- Step 2. Remove the Outer Cover.
- Step 3. Remove the Inner Cover.
- Step 4. Remove the Front Panel Assembly.
- Step 5. Remove the Bias Tees.
- Step 6. Discard the Semirigid Bias Tee Cables.
- Step 7. Install the New Semirigid Cables.
- Step 8. Replace the Lower Front Panel Overlay.
- Step 9. Reinstall Front Panel Assembly.
- Step 10. Reassemble the PNA.
- Step 11. Enable Option H85.
- Step 12. Perform Post-Upgrade Adjustments and Calibration.

Step 1. Obtain a Keyword and Verify the Information

Follow the instructions on the Option Entitlement Certificate supplied to obtain a license key for installation of this upgrade. Refer to [“License Key Redemption” on page 4](#).

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 Agilent for assistance before beginning the installation of this upgrade. Refer to [“Contacting Agilent” on page 3](#).

Once the license key has been received and the information verified, you can proceed with the installation at step 2.

Step 2. Remove the Outer Cover

For instructions, click the Chapter 7 PDF bookmark “Removing the Covers” in the online Service Guide¹.

Step 3. Remove the Inner Cover

For instructions, click the Chapter 7 PDF bookmark “Removing the Covers” in the online Service Guide¹.

Step 4. Remove the Front Panel Assembly

For instructions, click the Chapter 7 PDF bookmark “Removing and Replacing the Front Panel Assembly” in the online Service Guide¹.

Step 5. Remove the Bias Tees

For instructions, click the Chapter 7 PDF bookmark “Removing and Replacing the A31-A41 Bias Tees” in the online Service Guide¹.

Step 6. Discard the Semirigid Bias Tee Cables

Since the bias tees will not be reinstalled, the semirigid cables disconnected in the previous step (4 cables for a 2-port PNA, or 8 cables for a 4-port PNA) may be discarded.

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

Step 7. Install the New Semirigid Cables

CAUTION Use a 5/16-in torque wrench set to 10 in-lbs on all cable connections except the front and rear panel cable connectors. Torque these connections to 21 in-lb.

For PNA Option 219 or Option 224

Install the following semirigid cables in the order listed. To see an image showing the location of these cables, click the Chapter 6 PDF bookmark “Bottom RF Cables, Standard 2-Port Configuration, Option 200” in the online Service Guide¹. (The Option 200 image is used because the bias tees, normally included with Option 219 and Option 224, have been removed.) New parts are listed in [Table 1 on page 7](#).

- W116 (N5242-20112) Front panel port 2 CPLR THRU to A32 port 2 coupler
- *For Option 219 or 224 only:* W114 (N5242-20111) Front panel port 1 CPLR THRU to A29 port 1 coupler
- *For Option 219/029 or 224/029 only:* W145 (N5242-20145) A52 port 1 noise bypass switch to A29 port 1 coupler

For PNA Option 419 or Option 423

Install the following semirigid cables in the order listed. To see an image showing the location of these cables, click the Chapter 6 PDF bookmark “Bottom RF Cables, Standard 4-Port Configuration, Option 400” in the online Service Guide¹. (The Option 400 image is used because the bias tees, normally included with Option 419 and Option 423, have been removed.) New parts are listed in [Table 1 on page 7](#).

- W24 (N5242-20063) Front panel port 2 CPLR THRU to A32 port 2 coupler
- W20 (N5242-20064) Front panel port 4 CPLR THRU to A31 port 4 coupler
- W16 (N5242-20059) Front panel port 3 CPLR THRU to A30 port 3 coupler
- *For Option 419 or 423 only:* W12 (N5242-20055) Front panel port 1 CPLR THRU to A29 port 1 coupler
- *For Option 419/029 or 423/029 only:* W144 (N5242-20144) A52 port 1 noise bypass switch to A29 port 1 coupler

Step 8. Replace the Lower Front Panel Overlay

Refer to [Figure 1 on page 11](#) for this step of the procedure. New parts are listed in [Table 1 on page 7](#).


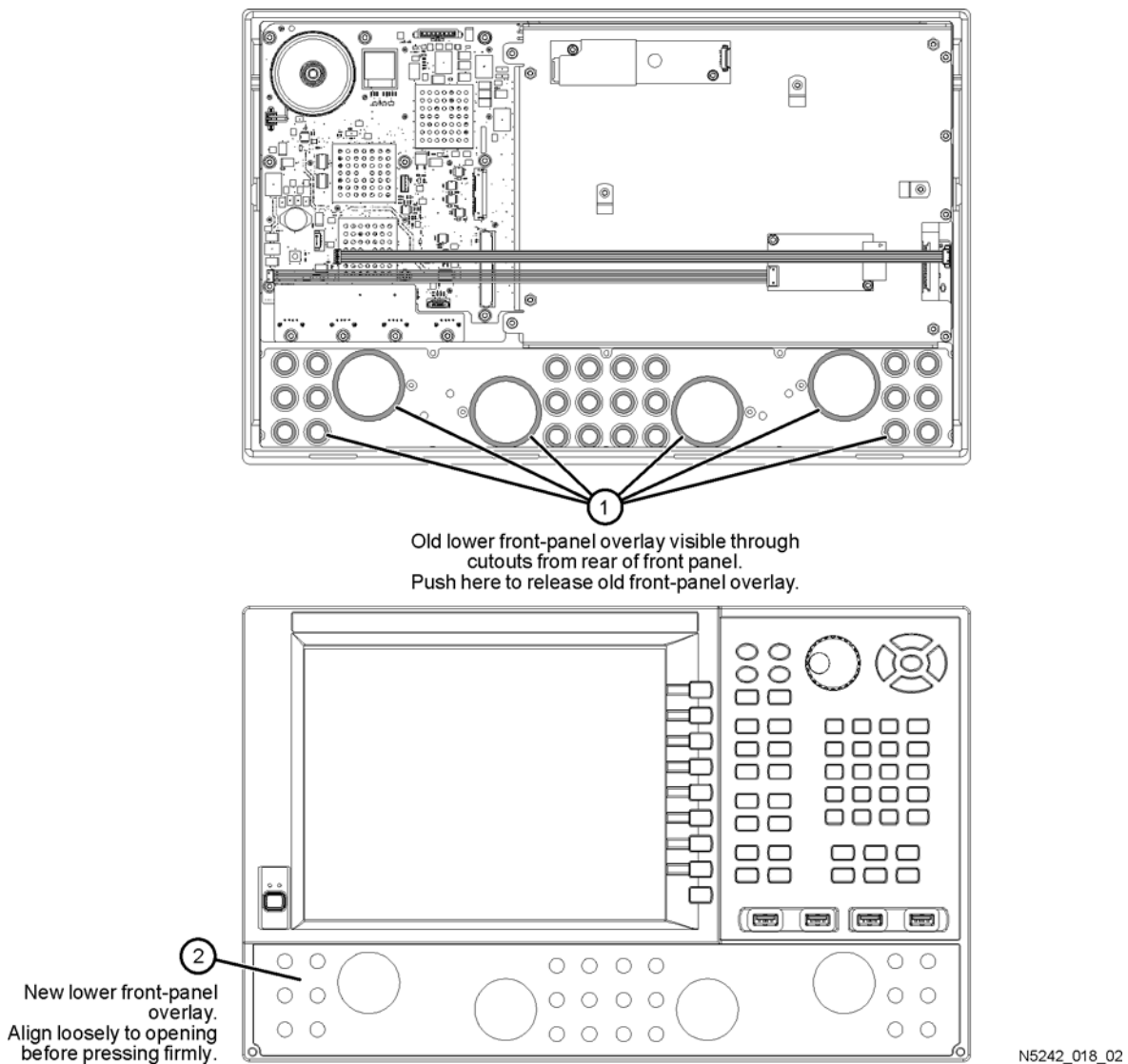
1. From the back side of the front panel, use a blunt object in the cutouts in the lower front dress panel to push on the old overlay (item ①) and separate it from the front dress panel.
2. From the front side of the front panel, pull off the overlay completely and discard it.
3. Remove any adhesive remaining on the front panel.
4. Remove the protective backing from the new front panel overlay (item ) .
5. Loosely place the overlay in the recess on the lower front panel.
6. Starting at the middle, press the overlay firmly onto the frame while sliding your fingers outward towards an end of the overlay. Repeat on all areas of the overlay.

Figure 1 Lower Front Panel Overlay Replacement



Step 9. Reinstall Front Panel Assembly

For instructions on reinstalling the front panel assembly, click the Chapter 7 PDF bookmark “Removing and Replacing the Front Panel Assembly” in the online Service Guide¹.

Step 10. Reassemble the PNA

For instructions, click the Chapter 7 PDF bookmark “Removing and Replacing the A31-A41 Bias Tees” in the online Service Guide¹. Refer to the “Replacement Procedure,” ignoring those instructions concerning the bias tees (since they are not being reinstalled).

Step 11. Enable Option H85

Procedure Requirements

- The analyzer must be powered up and operating to perform this procedure.
- The Network Analyzer program must be running.
- Obtain a license key for installation of this upgrade by following the instructions on the supplied Option Entitlement Certificate.

Option Enable 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 **H85 - Delete Bias Ts**.
4. Using the keyboard, enter the license key in the box provided. The license key is printed on the license message you received from Agilent. 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**.

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 “H85” is listed after “Options:” in the display. Click **OK**.

NOTE If Option H85 has not been enabled, perform the [”Option Enable Procedure”](#) again. If the option is still not enabled, contact Agilent Technologies. Refer to [”Getting Assistance from Agilent”](#) on page 3.

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

Step 12. Perform Post-Upgrade Adjustments and Calibration

Adjustments

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

- source adjustment
- receiver adjustment

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 PDF bookmark “Tests and Adjustments” in the online 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 PDF bookmark “Tests and Adjustments” in the online Service Guide¹.

If you experience difficulty with the basic functioning of the analyzer, contact Agilent. Refer to [“Contacting Agilent” 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 in the service guide, click the Chapter 3 PDF bookmark “Tests and Adjustments” in the online Service Guide¹.

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

