

# Keysight Add Option H85 High Power Configuration Capability Upgrade Kit

To Upgrade PNA-X N5241A, N5242A or N5249A  
Options 219, 219/029, 224, 224/029, 419, 419/029,  
423, or 423/029 to include Option H85

Upgrade Kit Order Numbers: N5241AU- H85,  
N5242AU- H85 and N5249AU- H85

Keysight Kit Number: N5242-60110

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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## 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.

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**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

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**IMPORTANT** In June 2013, the N5241A/AS and N5242A/AS analyzers underwent significant hardware changes. Some components that have 2.4 mm connectors (bias tees, couplers, and some semi-rigid cables) were replaced with components that have 3.5 mm connectors.

**If your analyzer's serial number prefix is MY/SG/US5310 and below:**  
Your analyzer was originally shipped with 2.4 mm components. The 2.4 mm couplers and connecting cables in your analyzer must be replaced with the new 3.5 mm items included in this kit.

**If your analyzer's serial number prefix is MY/SG/US5321 and above:**  
Your analyzer was shipped with 3.5 mm components, so it is not necessary to replace the couplers and connecting cables. These items are included in this kit, but will not be used for your upgrade. Set them aside for possible use in the future.

Be very careful to use the appropriate hardware in your analyzer. Using the wrong hardware can ruin analyzer components, resulting in additional customer costs.

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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

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## 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.

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**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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## 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 Guide<sup>1</sup>.

## License Key Redemption

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**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.

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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.

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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](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 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 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
5/16-in (8 mm) nutsetter or open end torque wrench - set to 21 in-lbs (2.38 N.m)	1	N/A
1-in (25.4 mm) torque wrench - set to 72 in-lbs (8.15 N.m)	1	N/A

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**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.

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## About Installing the Upgrade

Products affected . . . . .	N5241A, N5242A and N5249A Option 219, 224, 419, or 423
Installation to be performed by . . . . .	Keysight service center or personnel qualified by Keysight
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 Keysight Technologies. Refer to [“Getting Assistance from Keysight” on page 3](#).

**Table 1 Contents of Upgrade Kit N5242-60110**

Ref Desig.	Description	Qty	Part Number
<b>Items for all analyzers:</b>			
-	Installation note (this document)	1	N5242-90018
A29, A32	Test port couplers (ports 1 and 2)	2	5087-7813 Was 5087-7710
--	Bulkhead connector assembly for test set front plate	4	1250-3805
<b>Items for Options 219 or 219/029 or 224 or 224/029, 2-port PNA:</b>			
	Bumper for test port coupler	2	0403-0285
W114	Front panel port 1 CPLR THRU to A29 port 1 coupler	1	N5242-20111
W115	Front panel Port 1 CPLR ARM to A29 port 1 coupler	1	N5222-20070
W117	Front panel Port 2 CPLR ARM to A32 port 2 coupler	1	N5222-20071
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
<b>Items for Options 419 or 419/029 or 423 or 423/029, 4-port PNA:</b>			
A30, A31	Test port couplers (ports 3 and 4)	2	5087-7813 Was 5087-7710
--	Bulkhead connector assembly for test set front plate	11	1250-3805
--	Vibration mount (between couplers 1 & 3, and 2 & 4)	2	0460-2725
--	Gap pad (between each coupler and test set front plate)	4	E4403-20033
W12	Front panel port 1 CPLR THRU to A29 port 1 coupler	1	N5222-20045
W14	Front panel Port 1 CPLR ARM to A29 port 1 coupler	1	N5222-20030
W16	Front panel port 3 CPLR THRU to A30 port 3 coupler	1	N5222-20049
W18	Front panel Port 3 CPLR ARM to A30 port 3 coupler	1	N5222-20015
W20	Front panel port 4 CPLR THRU to A31 port 4 coupler	1	N5222-20054
W22	Front panel Port 4 CPLR ARM to A31 port 4 coupler	1	N5222-20018
W24	Front panel port 2 CPLR THRU to A32 port 2 coupler	1	N5222-20053
W26	Front panel Port 2 CPLR ARM to A32 port 2 coupler	1	N5222-20034
W144	A52 port 1 noise bypass switch to A29 port 1 coupler (for PNA Option 419/029 and Option 423/029)	1	N5242-20304
W151	Front panel port 3 CPLR THRU to A30 port 3 coupler	1	N5242-20309



**Table 1 Contents of Upgrade Kit N5242-60110**

<b>Ref Desig.</b>	<b>Description</b>	<b>Qty</b>	<b>Part Number</b>
W152	Front panel Port 4 CPLR THRU to A31 port 4 coupler	1	N5242-20311
W153	Front panel port 2 CPLR THRU to A32 port 2 coupler	1	N5242-20310
--	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

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## 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.

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**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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### 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. Remove the A29 and A32 Test Port Couplers and Cables (For Option 219 or 224 Analyzers with Serial Numbers Prefixed MY/SG/US5310 and Below).

Step 7. Assemble the New (3.5 mm) A29 and A32 Test Port Couplers (For Option 219 or 224 Analyzers with Serial Numbers Prefixed MY/SG/US5310 and Below).

Step 8. Install the New (3.5 mm) A29 and A32 Test Port Couplers onto the Front Plate (For Option 219 or 224 Analyzers with Serial Numbers Prefixed MY/SG/US5310 and Below).

Step 9. Install the Bulkhead Connectors in the Test Set Front Plate (For Option 219 or 224 Analyzers with Serial Numbers Prefixed MY/SG/US5310 and Below).

Step 10. Remove the A29 - A32 Test Port Couplers and Cables (For Option 219 or 224 Analyzers with Serial Numbers Prefixed MY/SG/US5310 and Below).

Step 11. Assemble the A29 - A32 Test Port Coupler Assemblies (For Option 419 or 423 Analyzers with Serial Numbers Prefixed MY/SG/US5310 and Below).

Step 12. Install the Test Port Coupler Assemblies to the Test Set Front Plate (For Option 419 or 423 Analyzers with Serial Numbers Prefixed MY/SG/US5310 and Below).

Step 13. Install the Bulkhead Connectors in the Test Set Front Plate (For Option 419 or 423 Analyzers with Serial Numbers Prefixed MY/SG/US5310 and Below).

Step 14. Install the New Semirigid Cables.

Step 15. Replace the Lower Front Panel Overlay.

Step 16. Reinstall Front Panel Assembly.

Step 17. Position the Cables and Wires to Prevent Pinching.

Step 18. Reassemble the PNA.

Step 19. Enable Option H85.

Step 20. Perform Post-Upgrade Adjustments and Calibration.

Step 21. Prepare the PNA for the User.

### **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 Keysight for assistance before beginning the installation of this upgrade. Refer to [“Contacting Keysight” 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 Guide<sup>1</sup>.

### **Step 3. Remove the Inner Cover**

For instructions, click the Chapter 7 PDF bookmark [“Removing the Covers”](#) in the online Service Guide<sup>1</sup>.

### **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 Guide<sup>1</sup>.

### **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 Guide<sup>1</sup>.

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.

### **Steps 6 - 9: For Option 219 or 224 Analyzers with Serial Numbers Prefixed MY/SG/US5310 and Below**

If your Option 219 or 224 analyzer serial number is prefixed MY/SG/US5321 and above, go to [“Step 14. Install the New Semirigid Cables” on page 18](#).

If your Option 419 or 423 analyzer serial number is prefixed MY/SG/US5310 and below, go to [“Step 10. Remove the A29 - A32 Test Port Couplers and Cables \(For Option 219 or 224 Analyzers with Serial Numbers Prefixed MY/SG/US5310 and Below\)” on page 14](#).

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

If your Option 419 or 423 analyzer serial number is prefixed MY/SG/US5321 and above, go to [“Step 14. Install the New Semirigid Cables”](#) on page 18.

**Step 6. Remove the A29 and A32 Test Port Couplers and Cables  
(For Option 219 or 224 Analyzers with Serial Numbers Prefixed MY/SG/US5310 and Below)**

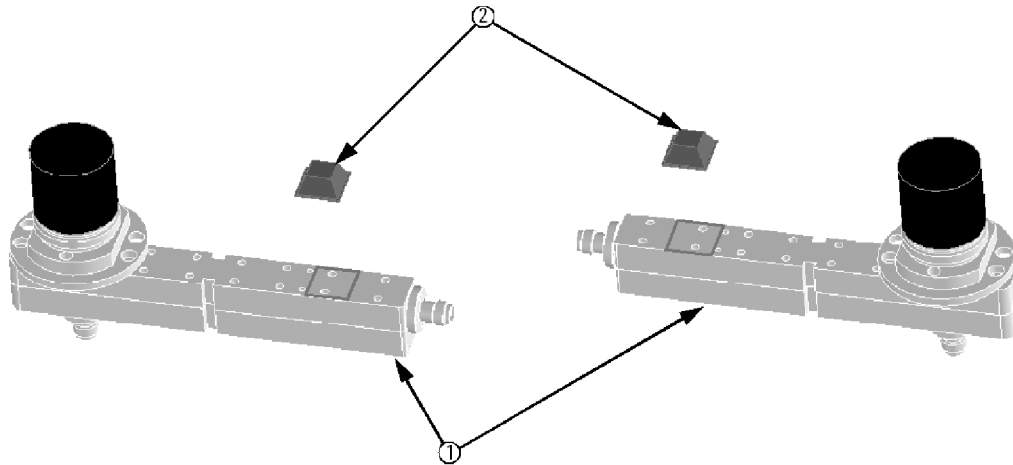
For instructions, click the Chapter 7 bookmark [“Removing and Replacing the A29–A32 Test Port Couplers”](#) in the PDF Service Guide. Refer to [“Downloading the Online PNA Service Guide”](#) on page 5.

Discard each test port coupler and its two cables that you just removed from the PNA. These old couplers and cables have 2.4 mm connectors and must be replaced with the new couplers (3.5 mm connectors) included in the kit.

**Step 7. Assemble the New (3.5 mm) A29 and A32 Test Port Couplers  
(For Option 219 or 224 Analyzers with Serial Numbers Prefixed MY/SG/US5310 and Below)**

1. Locate the two new test port couplers (5087-7813). These components have 3.5 mm connectors.
2. As shown in [Figure 1](#), adhere a bumper (0403-0285) onto each coupler by aligning the bumper edge with the two threaded holes.

**Figure 1 A29 and A32 Test Port Couplers Assembly**

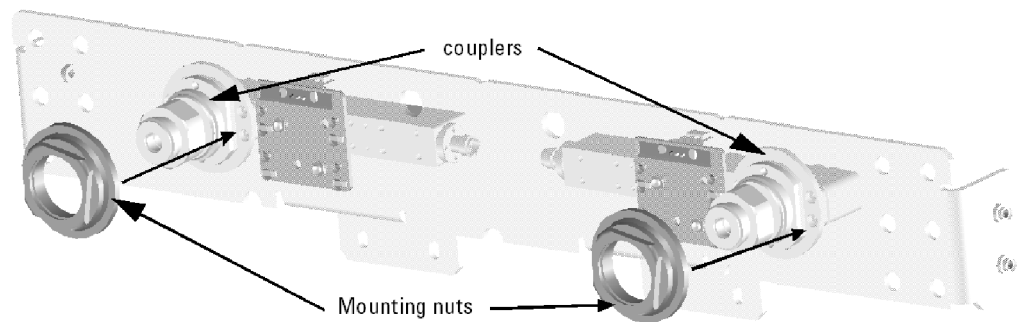


n5242\_002\_07

**Step 8. Install the New (3.5 mm) A29 and A32 Test Port Couplers onto the Front Plate  
(For Option 219 or 224 Analyzers with Serial Numbers Prefixed MY/SG/US5310  
and Below)**

1. As shown in **Figure 2**, install the two new test port couplers onto the front plate.
2. Reinstall the two mounting nuts, but hand tighten only. They will be fully tightened later.

**Figure 2 A29 and A32 Test Port Couplers Installation onto Front Plate**



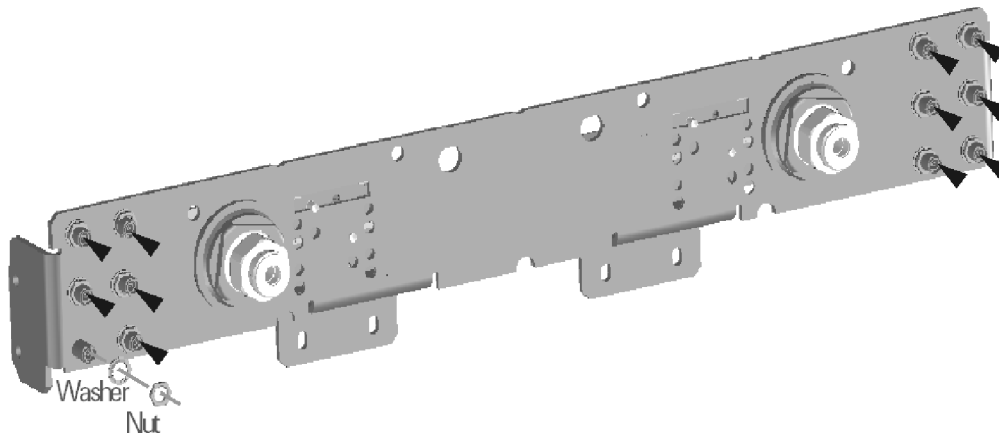
n5242\_002\_08

**Step 9. Install the Bulkhead Connectors in the Test Set Front Plate  
(For Option 219 or 224 Analyzers with Serial Numbers Prefixed MY/SG/US5310  
and Below)**

Refer to [Figure 3](#) for this procedure. Some bulkhead connectors may already be installed on your analyzer's front plate. New parts are listed in [Table 1 on page 7](#).

1. From the back side of the test set front plate, insert a bulkhead connector into a hole in the plate.
2. Install 1x washer and 1x nut. Hand tighten nut and ensure bulkhead connector hexagon nut, on the back side of test set front plate, is aligned to the test set subpanel hexagon indent.
3. Repeat previous two steps for the remaining bulkhead connectors.
4. Torque nuts, on the front side of test set front plate, to 21 in-lbs.
5. Torque mounting nuts for the test port couplers, on the front side of test set front plate, to 72 in-lbs.

**Figure 3 Bulkhead Connectors Installation**



N5242\_003\_21

**Steps 10 - 12: For Option 419 or 423 Analyzers with Serial Numbers Prefixed MY/SG/  
US5310 and Below**

If your Option 419 or 423 analyzer serial number is prefixed MY/SG/US5321 and above, go to [“Step 14. Install the New Semirigid Cables” on page 18](#).

**Step 10. Remove the A29 - A32 Test Port Couplers and Cables  
(For Option 219 or 224 Analyzers with Serial Numbers Prefixed MY/SG/US5310  
and Below)**

1. Remove all four test port couplers and their cables from the PNA. For instructions, click the Chapter 7 bookmark, "Removing and Replacing the A29 - A32 Test Port Couplers" in the PDF Service Guide<sup>1</sup>.
2. Discard the test port couplers and their cables that you just removed from the PNA. These old couplers and cables have 2.4 mm connectors and must be replaced with the new couplers (3.5 mm connectors) included in the kit.

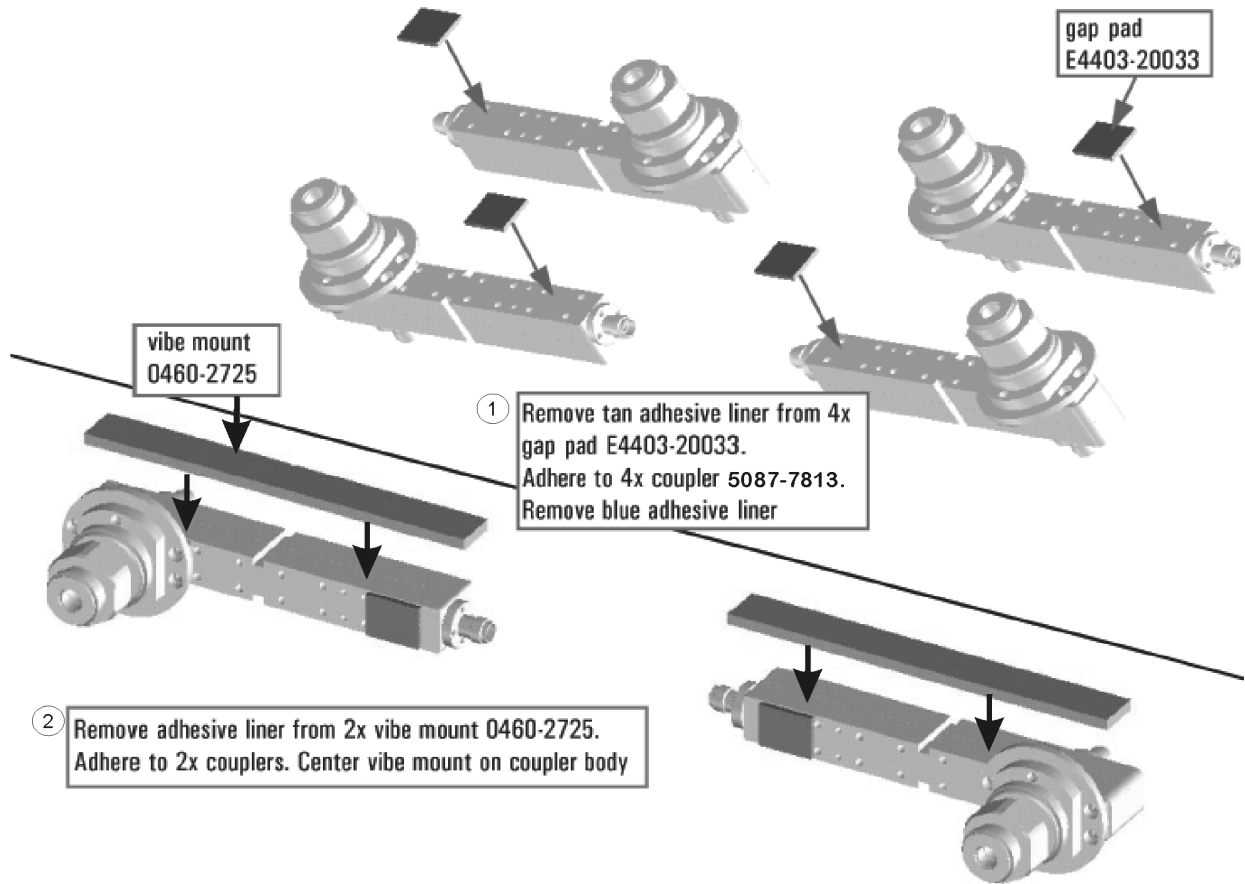
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1. See ["Downloading the Online PNA Service Guide"](#) on page 5.

**Step 11. Assemble the A29 - A32 Test Port Coupler Assemblies  
(For Option 419 or 423 Analyzers with Serial Numbers Prefixed MY/SG/US5310  
and Below)**

Follow the two instructions shown in [Figure 4](#). New parts are listed in [Table 1 on page 7](#) of this document.

**Figure 4 A29 - A32 Test Port Coupler Assembly**



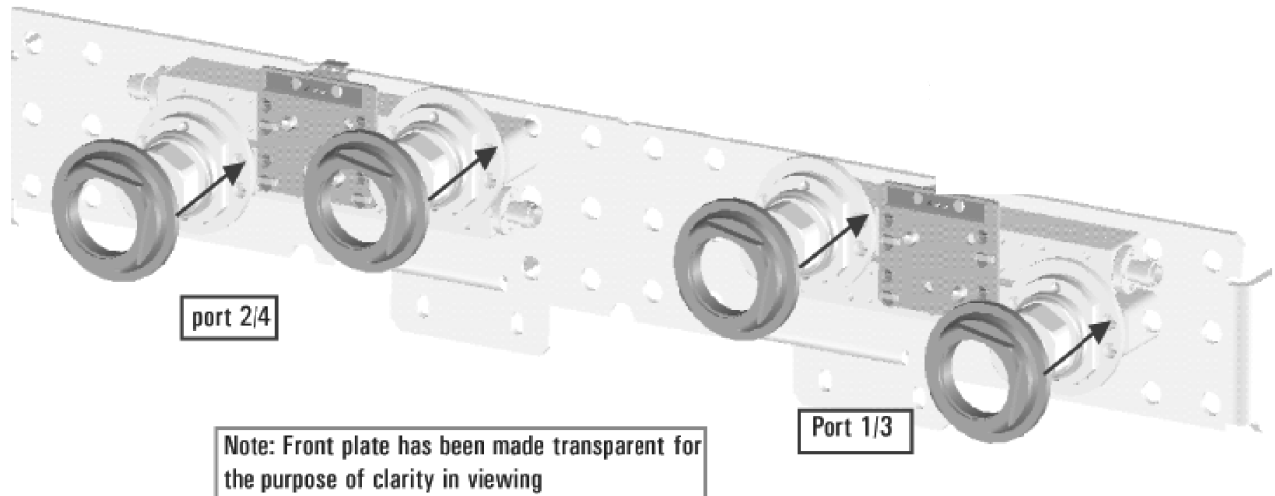
N5242\_015\_11



**Step 12. Install the Test Port Coupler Assemblies to the Test Set Front Plate  
(For Option 419 or 423 Analyzers with Serial Numbers Prefixed MY/SG/US5310  
and Below)**

Refer to **Figure 5**. Install the test port coupler assemblies to the test set front plate. Port 1/3 and 2/4 couplers must be installed at the same time. Hand tighten the mounting nuts - do not torque at this time.

**Figure 5 Test Port Coupler Assemblies Installation**



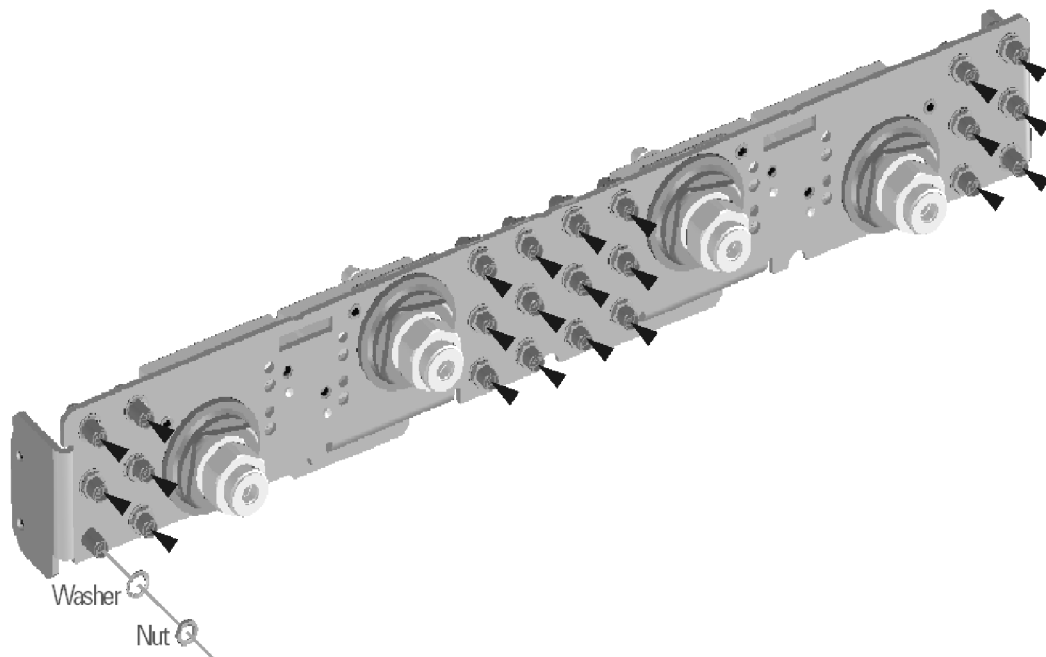
N5242\_015\_12

**Step 13. Install the Bulkhead Connectors in the Test Set Front Plate  
(For Option 419 or 423 Analyzers with Serial Numbers Prefixed MY/SG/US5310  
and Below)**

Refer to [Figure 3](#) for this procedure. New parts are listed in [Table 1](#) on [page 7](#).

3. From the back side of the test set front plate, insert a bulkhead connector into a hole in the plate.
4. Install 1x washer and 1x nut. Hand tighten nut and ensure bulkhead connector hexagon nut, on the back side of test set front plate, is aligned to the test set subpanel hexagon indent.
5. Repeat previous two steps for the remaining bulkhead connectors.
6. Torque nuts, on the front side of test set front plate, to 21 in-lbs.
7. Torque mounting nuts for the test port couplers, on the front side of test set front plate, to 72 in-lbs.

**Figure 6 Bulkhead Connectors Installation**



N5242\_004\_09

## Step 14. Install the New Semirigid Cables

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

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**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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**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.

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### 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 Guide<sup>1</sup>. (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](#).

*For Option 219 or 224 only:*

- W116 (N5242-20112) Front panel port 2 CPLR THRU to A32 port 2 coupler
- W114 (N5242-20111) Front panel port 1 CPLR THRU to A29 port 1 coupler

*For Option 219/029 or 224/029 only:*

- W116 (N5242-20112) Front panel port 2 CPLR THRU to A32 port 2 coupler
- W145 (N5242-20145) A52 port 1 noise bypass switch to A29 port 1 coupler

*For all analyzers with serial numbers prefixed MY/SG/US5310 and below:*

- W115 (N5222-20070) Front panel Port 1 CPLR ARM to A29 port 1 coupler
- W117 (N5222-20071) Port 2 CPLR ARM to A32 port 2 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 Guide<sup>1</sup>. (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](#).

*For Option 419 or 423 only:*

- 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
- W12 (N5222-20045) Front panel port 1 CPLR THRU to A29 port 1 coupler

*For Option 419/029 only:*

- W144 (N5242-20144) A52 port 1 noise bypass switch to A29 port 1 coupler
- 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 423/029 only:*

- W151 (N5242-20309) Front panel port 3 CPLR THRU to A30 port 3 coupler
- W152 (N5242-20311) Front panel Port 4 CPLR THRU to A31 port 4 coupler
- W153 (N5242-20310) Front panel port 2 CPLR THRU to A32 port 2 coupler

*For all analyzers with serial numbers prefixed MY/SG/US5310 and below:*

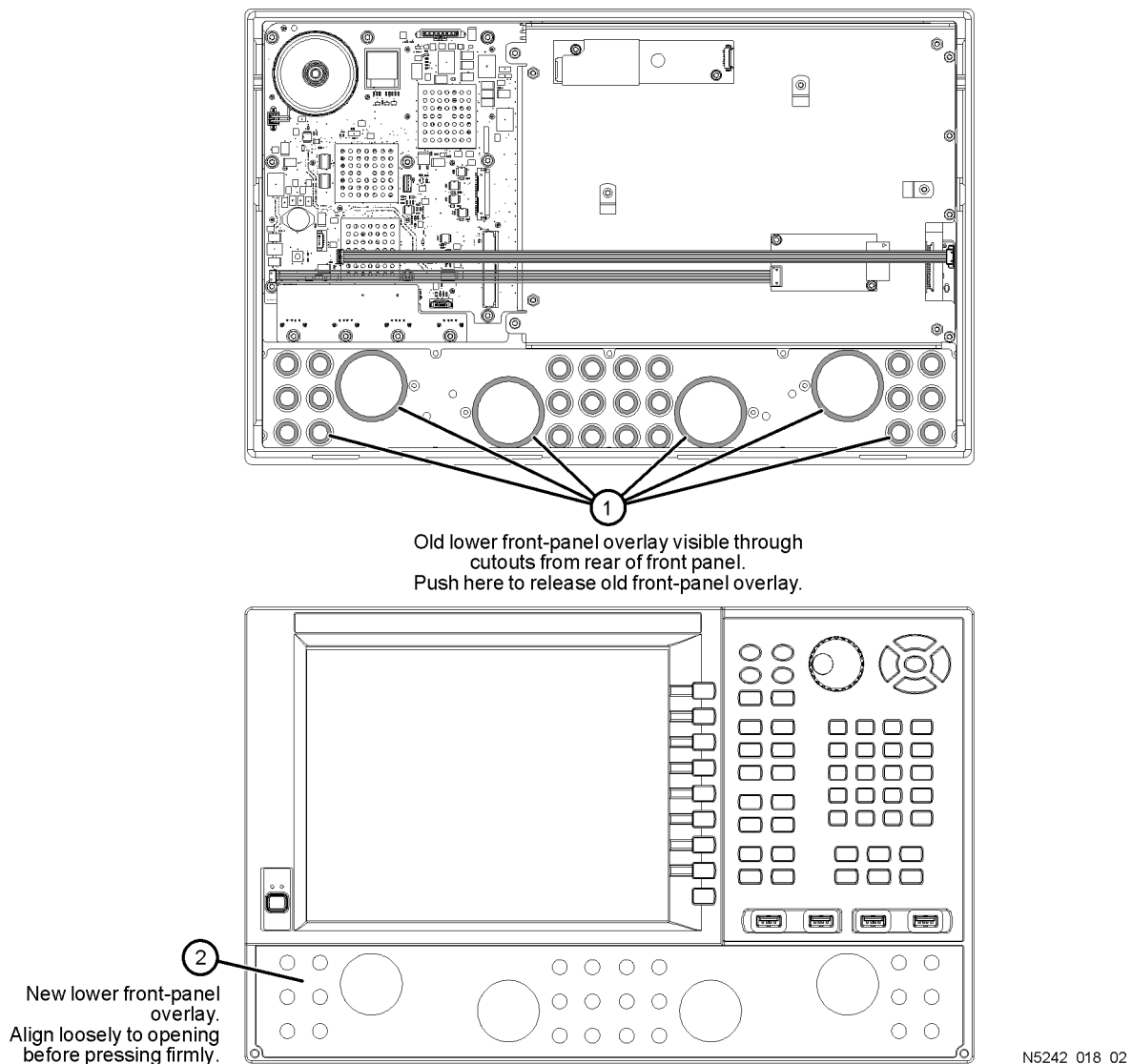
- W14 (N5222-20030) Front panel Port 1 CPLR ARM to A29 port 1 coupler
- W18 (N5222-20015) Front panel Port 3 CPLR ARM to A30 port 3 coupler
- W22 (N5222-20018) Front panel Port 4 CPLR ARM to A31 port 4 coupler
- W26 (N5222-20034) Front panel Port 2 CPLR ARM to A32 port 2 coupler

## Step 15. Replace the Lower Front Panel Overlay

Refer to [Figure 7 on page 20](#) 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 [1](#)).
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 7 Lower Front Panel Overlay Replacement**



## Step 16. 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 Guide<sup>1</sup>.

## Step 17. Position the Cables and Wires to Prevent Pinching

On the top side of the PNA, carefully position the grey 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 18. Reassemble the PNA

For instructions, click the Chapter 7 PDF bookmark “Removing and Replacing the A31-A41 Bias Tees” in the online Service Guide<sup>1</sup>. Refer to the “Replacement Procedure,” ignoring those instructions concerning the bias tees (since they are not being reinstalled).

## Step 19. 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 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**.

### Option Verification Procedure

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

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

1. On the analyzer's **Help** menu, click **About Network Analyzer**.
2. Verify that "H85" is listed after "Options:" in the display. Click **OK**.

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

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## Step 20. 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 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 PDF bookmark "Tests and Adjustments" in the online 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 in the service guide, click the Chapter 3 PDF bookmark "Tests and Adjustments" in the online Service Guide<sup>1</sup>.

## Step 21. 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.

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

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