Installation Note

Add 4-Port Capability Upgrade Kit

To Upgrade PNA-X N5241A or N5242A Option 200 to Option 400

Upgrade Kit Order Numbers: N5241AU- 940 and N5242AU- 940

Agilent Technologies

N5242-90015

WARRANTY STATEMENT

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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.**

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.

Description of the Upgrade

This upgrade converts your N5241A or N5242A Option 200 2-port analyzer to a N5241A or N5242A Option 400 4-port analyzer by adding:

- an additional 26.5 GHZ source board
- an additional 13.5 GHZ source synthesizer board
- an additional mixer brick
- two additional bridges
- two additional couplers
- a splitter
- a modified front panel, including 2 new test ports
- many new cables

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.

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.

- An ESD-safe work area - refer to "Protecting Your Workspace from Electrostatic Discharge" on page 5.

- 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 bookmark "Tests and Adjustments" in the PDF Service Guide[1].

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 your 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.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 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[1].

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
3/16-in (5 mm) nutsetter or open end torque wrench - set to 6 in-lbs (0.68 N.m)	1	N/A
5/8-in (16 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
1/4-in (6 mm) open end wrench	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 200
Installation to be performed by	Agilent service center or personnel qualified by Agilent
Estimated installation time	5 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 Agilent Technologies. Refer to "Getting Assistance from Agilent" on page 3.

Table 1   Contents of Upgrade Kit N5242-60107

Ref Desig.	Description	Qty	Part Number
-	Installation note (this document)	1	N5242-90015
A8	26.5 GHz source 2 board	1	5087-7307
A13	13.5 GHz source 2 synthesizer board	1	N5230-60002
A22	Splitter	1	5087-7139
A24	Mixer brick 2	1	5087-7722
A26	Test port 3 bridge	2	5087-7315
A27	Test port 4 bridge		
A30	Test port 3 coupler	2	5087-7710
A31	Test port 4 coupler		
-	Machine screw, M3.0 x 20, pan head (3 to attach mixer brick 2 to mounting block; 4 to attach 2 bridges to brackets)	7	0515-1410
-	Machine screw, M3.0 x 8, pan head (to attach mixer brick 2 to mounting block)	2	0515-0372
-	Machine screw, M3.0 x 6, pan head (to attach 2 bridges to deck)	4	0515-0430
-	Machine screw, M3.0 x 14, pan head (to attach splitter to mixer brick mounting block	2	0515-0665
-	Machine screw, M4 x 10, pan head (to attach A8 source 2 assy to A19 motherboard)	2	0515-0380
-	Front frame, 1-piece, machined, 4-port	1	N5245-20128
-	Lower front panel overlay, 4-port	1	N5242-80003
-	Keypad overlay	1	N5242-80005
-	Power switch overlay	1	N5242-80007
-	Nameplate, N5241A	1	N5241-80001
-	Nameplate, N5242A	1	N5242-80006
-	Test set front sub panel, 4-port	1	N5242-00003
-	Gap pad (between each coupler and test set front sub panel)	4	E4403-20033
-	Vibration mount (between couplers 1 & 3, and 2 & 4)	2	0460-2725
-	Mounting nuts (for ports 3 & 4 test port couplers)	2	5022-1087
-	Short (for Mixer Brick A24)	1	0960-0055
-	Bracket for test port bridges	2	N5242-00006
-	Cable guard	1	N5242-00030
-	Tie wrap, 3 to secure N5242-20076 and 2 to secure N5242-20079 cable to side of deck	5	1400-0249
W2	A13 13.5 GHz source 2 synth board J1207 to A8 26.5 GHz source 2 board P1	1	N5242-20124
W5	A8 26.5 GHz source 2 board to W6	1	N5242-20091

Table 1   Contents of Upgrade Kit N5242-60107

Ref Desig.	Description	Qty	Part Number
W6	W5 to A26 port 3 bridge	1	N5242-20051
W7	A8 26.5 GHz source 2 board to W8	1	N5242-20092
W8	W7 to A27 port 4 bridge	1	N5242-20052
W12	A29 port 1 coupler to front-panel Port 1 CPLR THRU	1	N5242-20055
W14	A29 port 1 coupler to front-panel Port 1 CPLR ARM	1	N5242-20040
W15	A26 port 3 bridge to front-panel Port 3 SOURCE OUT	1	N5242-20057
W16	A30 port 3 coupler to front-panel Port 3 CPLR THRU	1	N5242-20059
W17	A26 port 3 bridge to front-panel REF 3 SOURCE OUT	1	N5242-20033
W18	A30 port 3 coupler to front-panel Port 3 CPLR ARM	1	N5242-20025
W19	A27 port 4 bridge to front-panel Port 4 SOURCE OUT	1	N5242-20060
W20	A31 port 4 coupler to front-panel Port 4 CPLR THRU	1	N5242-20064
W21	A27 port 4 bridge to front-panel REF 4 SOURCE OUT	1	N5242-20035
W22	A31 port 4 coupler to front-panel Port 4 CPLR ARM	1	N5242-20028
W24	A32 port 2 coupler to front-panel Port 2 CPLR THRU	1	N5242-20063
W26	A32 port 2 coupler to front-panel Port 2 CPLR ARM	1	N5242-20044
W30	Front panel jumpers	6	E8356-20072
W32	Port 3 RCVR C IN to A24 mixer brick (C)	1	N5242-20058
W33	Port 4 RCVR D IN to A24 mixer brick (D)	1	N5242-20065
W42	A21 HMA26.5 to A22 splitter	1	N5242-20015
W43	A22 splitter to A23 mixer brick	1	N5242-20013
W44	A22 splitter to A24 mixer brick	1	N5242-20014
W49	REF 3 RCVR R3 IN to A24 mixer brick (R3)	1	N5242-20077
W50	REF 4 RCVR R4 IN to A24 mixer brick (R4)	1	N5242-20078
W52	A23 mixer brick (R1) to A20 IF multiplexer (P411)	1	N5242-60021
W53	A23 mixer brick (R2) to A20 IF multiplexer (P412)	1	N5242-60022
W55	A24 mixer brick (D) to A20 IF multiplexer (P801)	1	N5242-60024
W56	A24 mixer brick (R4) to A20 IF multiplexer (P414)	1	N5242-60019
W57	A24 mixer brick (R3) to A20 IF multiplexer (P413)	1	N5242-60020
W58	A24 mixer brick (C) to A20 IF multiplexer (P601)	1	N5242-60023
W67	A10 frequency reference board J7 to A13 13.5 GHz source 2 synth board J5	1	N5242-60030
-	Ribbon cable, A19 test set motherboard J213 to A24 mixer brick 2	1	N5242-60006

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 A19 Test Set Motherboard.

Step 6. Remove Some Existing Semirigid Test Set Cables.

Step 7. Remove the A23 Mixer Brick Assembly.

Step 8. Assemble the A24 Mixer Brick and A22 Splitter.

Step 9. Assemble the A26 and A27 Test Port Bridges.

Step 10. Install the Mixer Bricks Assembly and Test Port Bridge Assemblies.

Step 11. Assemble the A29 - A32 Test Port Coupler Assemblies.

Step 12. Install the LED Boards and Test Port Coupler Assemblies to the Test Set Front Plate.

Step 13. Install the Coupler Plate Assembly to the Deck.

Step 14. Install the Second Source Boards.

Step 15. Install the Semirigid Test Set Cables.

Step 16. Secure the Front Panel Bulkhead Connectors.

Step 17. Reinstall the A19 Test Set Motherboard.

Step 18. Replace the 2-Port Front Frame with a 4-Port Front Frame.

Step 19. Reinstall the Front Panel Assembly.

Step 20. Install the Front Panel Overlays.

Step 21. Install the Front Panel Jumper Cables.

Step 22. Reinstall the Inner Cover.

Step 23. Reinstall the Outer Cover.

Step 24. Install Cable Guard.

Step 25. Enable Option 400.

Step 26. 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 bookmark "Removing the Covers" in the PDF Service Guide[1].

Step 3. Remove the Inner Cover

For instructions, click the Chapter 7 bookmark "Removing the Covers" in the PDF Service Guide[1].

Step 4. Remove the Front Panel Assembly

For instructions, click the Chapter 7 bookmark "Removing and Replacing the Front Panel Assembly" in the PDF Service Guide[1].

Step 5. Remove the A19 Test Set Motherboard

For instructions, click the Chapter 7 bookmark "Removing and Replacing the A19 Test Set Motherboard" in the PDF Service Guide[1].

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

Step 6. Remove Some Existing Semirigid 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.

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

2. Remove all bottom-side semirigid cables except for those in the table below. To see an image showing the location of these cables, click the Chapter 6 bookmark "Bottom RF Cables, Standard 2-Port Configuration, Option 200" in the PDF Service Guide[1]. Do not discard the cables because some will be reused later in the procedure.

Reference Designator	Type[a]	Part Number	Qty	Description
W3	SR	N5242-20091	1	A5 source (1) to W4
W9	SR	N5242-20092	1	A5 source (1) to W10
W45	SR	N5242-20093	1	A5 source (1) to W46
W46	SR	N5242-20090	1	W46 to rear-panel EXT TSET DRIVE RF OUT (J6)
W47	SR	N5242-20089	1	A23 mixer brick to EXT TSET DRIVE LO OUT (J5)

a. SR = semirigid coaxial cable.

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 7. Remove the A23 Mixer Brick Assembly

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[1].

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

Step 8. Assemble the A24 Mixer Brick and A22 Splitter

Refer to Figure 1 in this document for this step. New parts are listed in Table 1 on page 7 of this document.

1. Install the A24 mixer brick (5087-7722) to the mounting block by hand-starting three screws (item ①; 0515-1410). Do not tighten.

2. Install two screws (item ②; 0515-0372) and torque to 9 in-lbs.

3. Go back and torque the three screws (item ①; 0515-1410) to 9 in-lbs.

Figure 1   A24 Mixer Brick Assembly

N5242_015_05
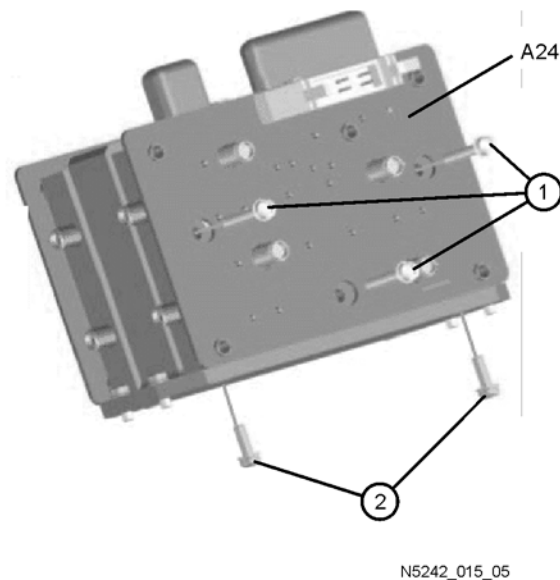
Refer to Figure 2 in this document for the remainder of this step.

4. Follow the eleven instructions shown in Figure 2. New parts are listed in Table 1 on page 7 of this document.

NOTE	Graphics in this document such as Figure 2 use very brief text to instruct where to connect a cable. For example, text that reads "N5242-60018 IFMUX P201 - BRK1 B" means to connect the N5242-60018 gray flexible cable at the A20 IF MUX board connector P201 and at A23 Mixer Brick 1 connector B.

Figure 2   A23 and A24 Mixer Brick Assembly
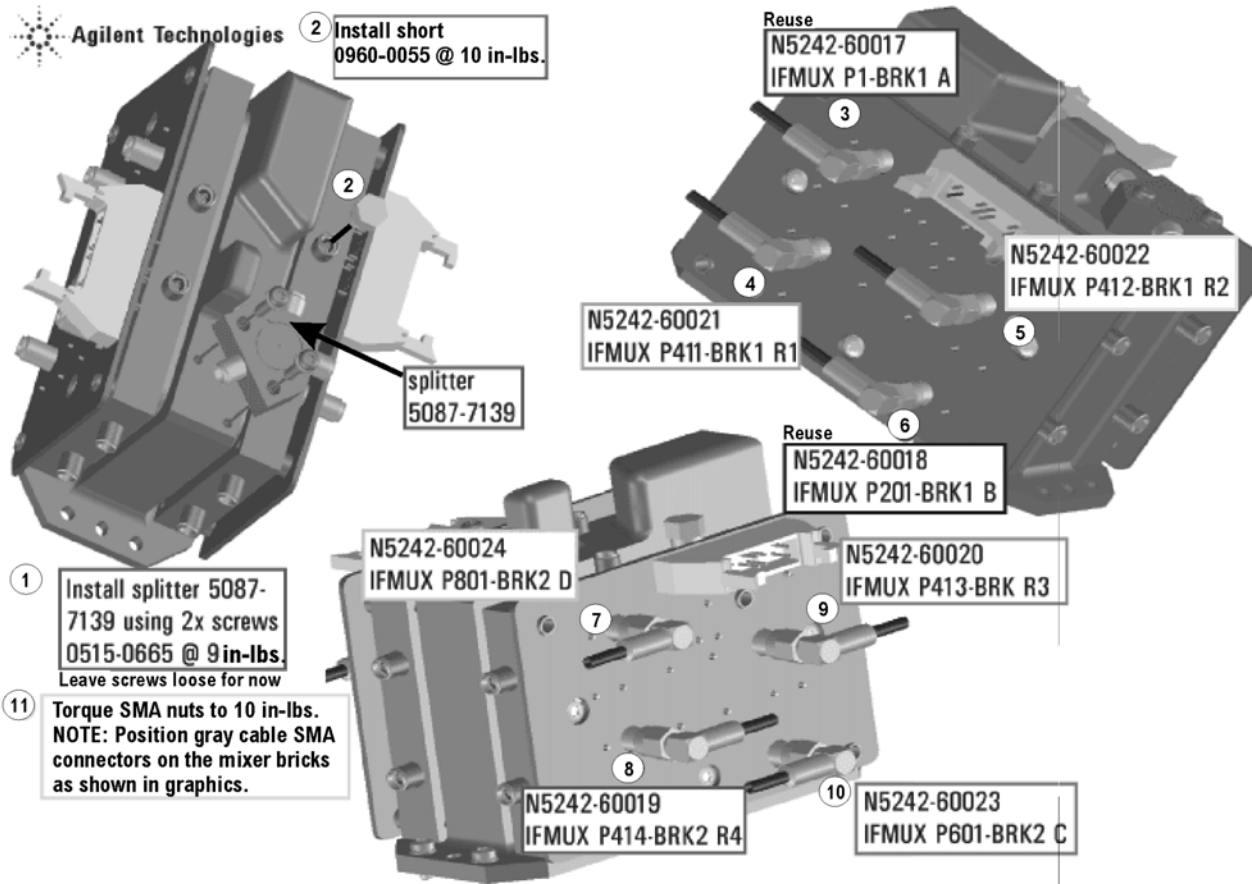
N5242_015_06

Step 9. Assemble the A26 and A27 Test Port Bridges

Follow the two instructions shown in Figure 3 in this document. New parts are listed in Table 1 on page 7 of this document.

Figure 3   A26 and A27 Test Port Bridge Assembly

1. Prefab internal bridge 5087-7729 to bracket N5242-00006 using 2x screws 0515-1410 @ 9 in-lbs.
   Note: Orientation of bridge to bracket.

2. Now, prefab internal bridge 5087-7729 with different orientation as shown in image to the right. See image for details
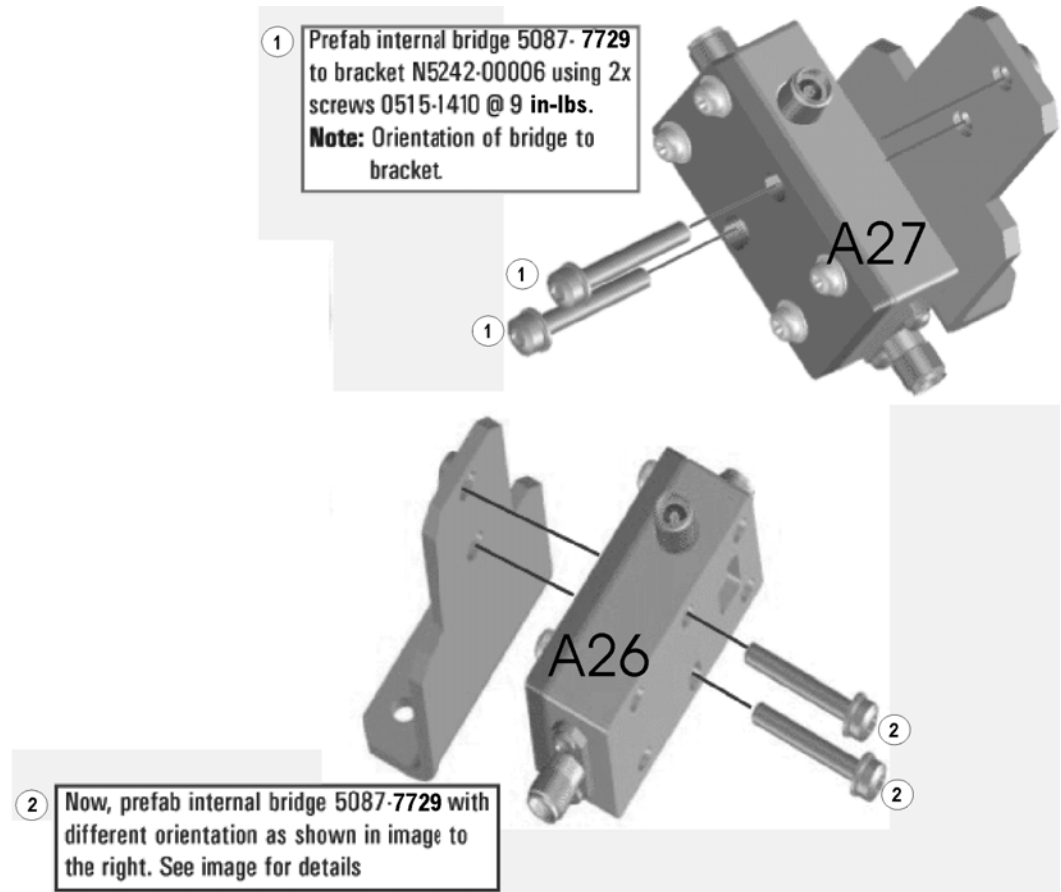
N5242_015_07

Step 10. Install the Mixer Bricks Assembly and Test Port Bridge Assemblies

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

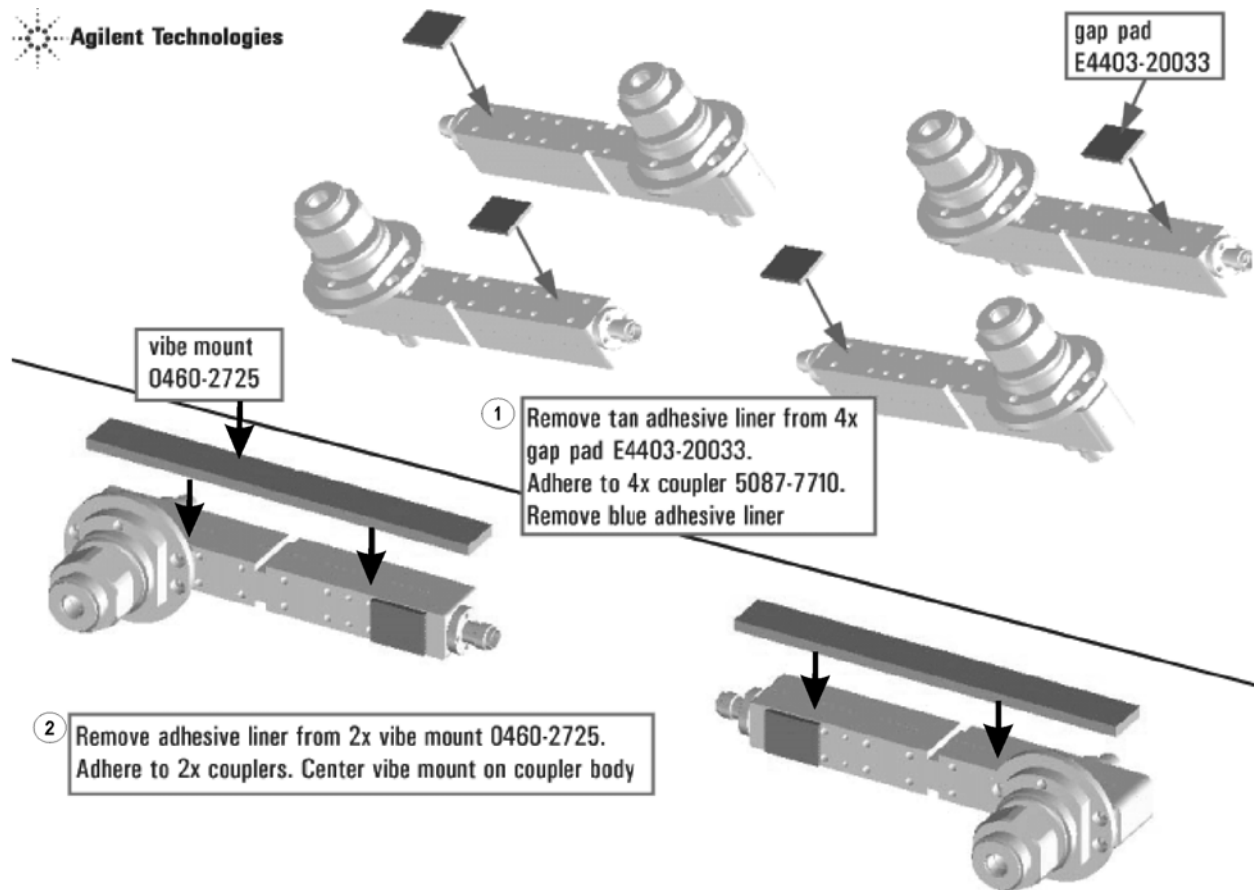**Figure 4   A23, A24 Mixer Bricks Installation and A26, A27 Test Port Bridges Installation**
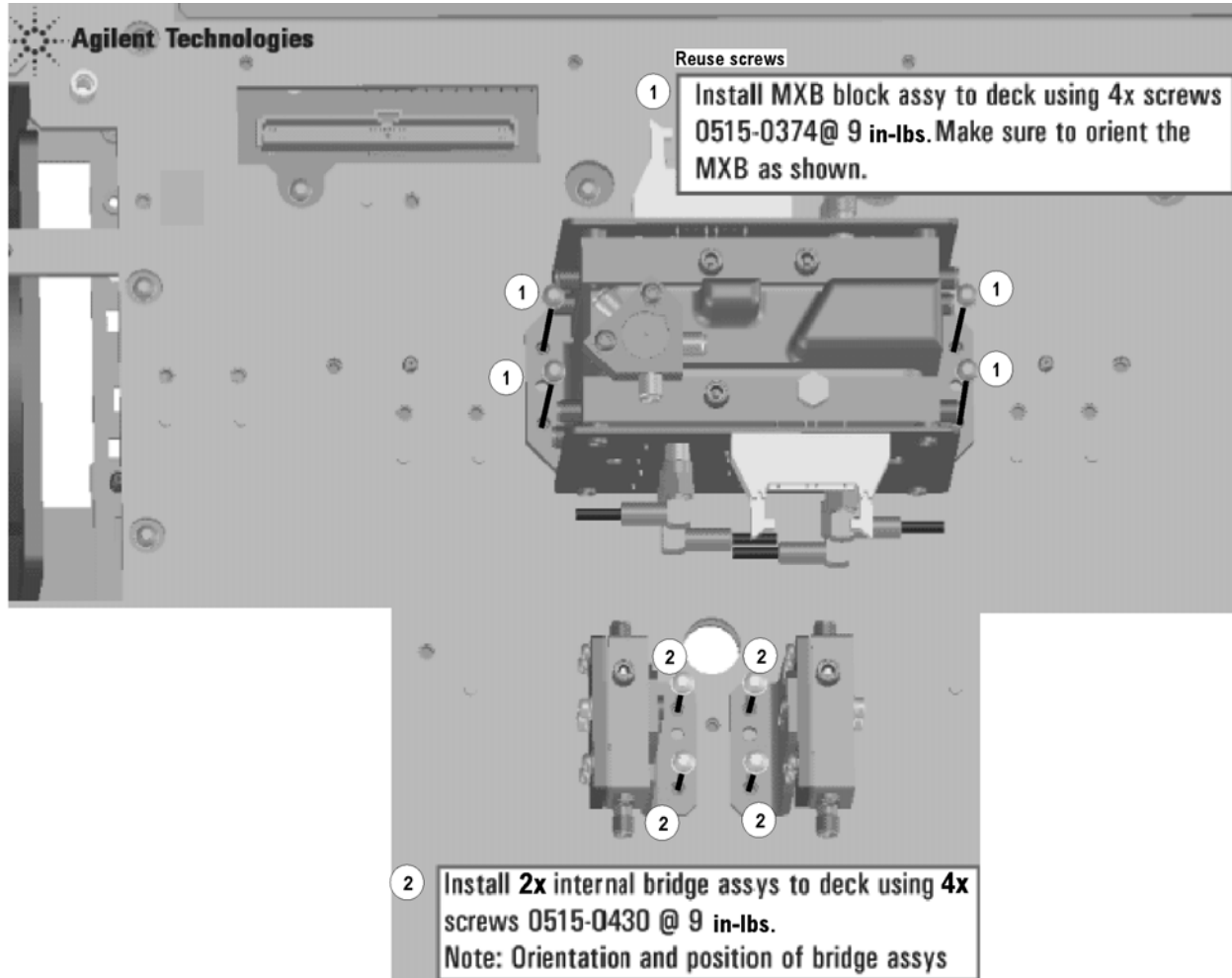
Step 11. Assemble the A29 - A32 Test Port Coupler Assemblies

1. Remove the A29 test port 1 coupler and A32 test port 2 coupler from the PNA. For instructions, click the Chapter 7 bookmark, "Removing and Replacing the A29 - A32 Test Port Couplers" in the PDF Service Guide[1].

2. Using pliers, remove the adhesive bumper on the A29 test port 1 coupler and on the A32 test port 2 coupler.

3. Follow the two instructions shown in Figure 5. New parts are listed in Table 1 on page 7 of this document.

Figure 5   A29 - A32 Test Port Coupler Assembly


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gap pad
E4403-20033

vibe mount
0460-2725

(1) Remove tan adhesive liner from 4x gap pad E4403-20033.
Adhere to 4x coupler 5087-7710.
Remove blue adhesive liner

(2) Remove adhesive liner from 2x vibe mount 0460-2725.
Adhere to 2x couplers. Center vibe mount on coupler body

N5242_015_11

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

Step 12. Install the LED Boards and Test Port Coupler Assemblies to the Test Set Front Plate

1. Remove two screws from each LED board and remove the boards from the 2-port test set front plate of the PNA.

2. Remove the 2-port test set front plate from the test set deck.

3. Follow the two instructions shown in Figure 6 of this document. New parts are listed in Table 1 on page 7 of this document.

**Figure 6   LED Board Assemblies and Test Port Coupler Assemblies Installation**
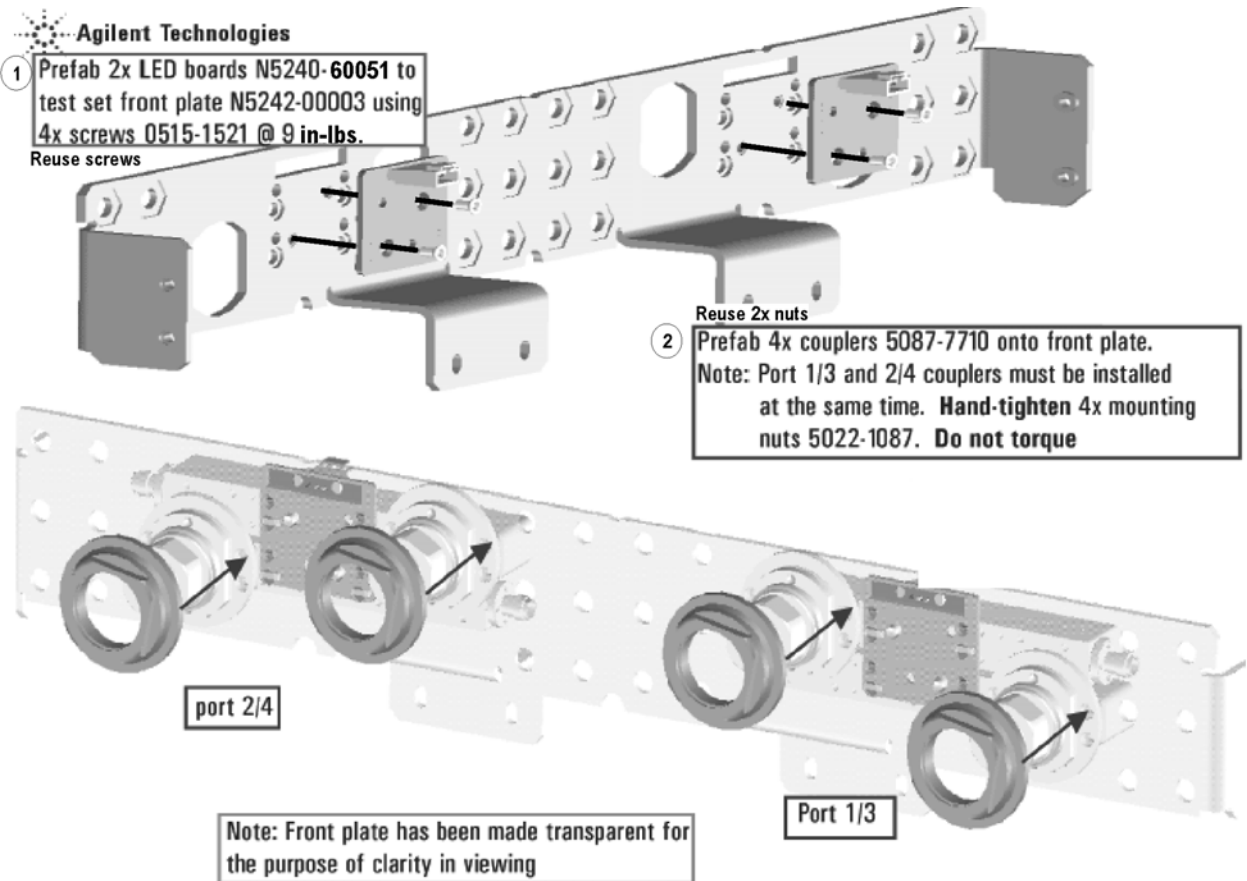
Step 13. Install the Coupler Plate Assembly to the Deck

Follow the four instructions shown in Figure 7.

Figure 7   Coupler Plate Assembly Installation

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Reuse screws
1. Install coupler plate assy to deck. Hand-tighten 4x screws 0515-0372. **Do not torque.**

Reuse screws
2. Install 4x screws 0515-1227 @ 9 **in-lbs**. Alternate sides in torque sequence.

3. Torque the 4x screws in step 1 to 9 **in-lbs**.

4. Torque 4x coupler mounting nuts to 72 **in-lbs**.
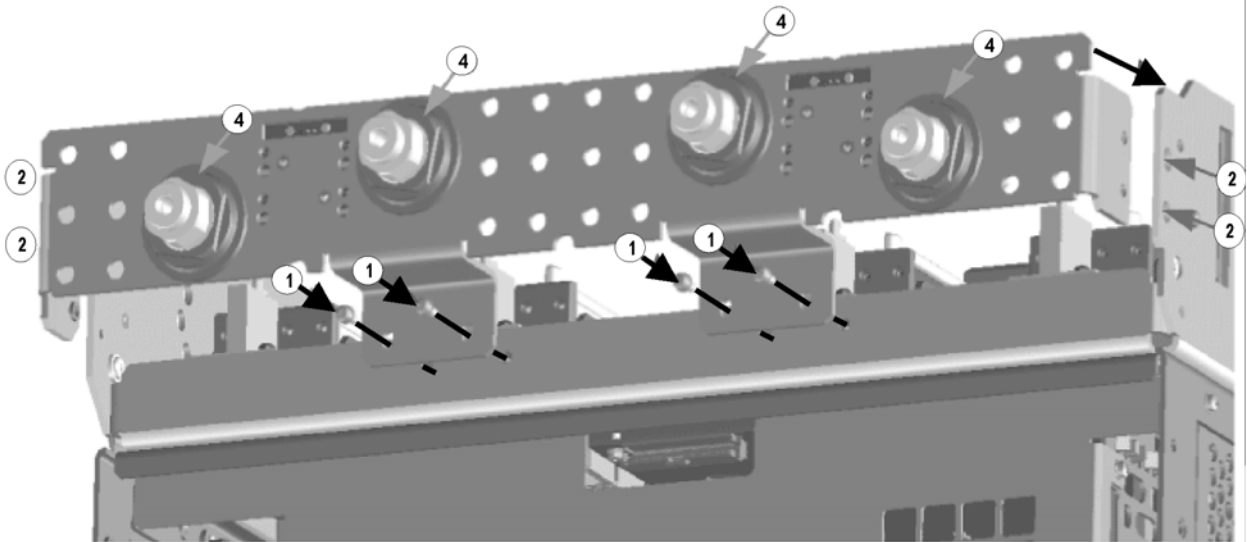
N5242_015_13

Step 14. Install the Second Source Boards

Install Cables on Source 2 Board

Refer to Figure 8 of this document for this part of this step. New parts are listed in Table 1 on page 7 of this document.

1. Attach new cables W5 (N5242-20091) and W7 (N5242-20092) to the A8 26.5 GHz source 2 board as shown. Make sure that both cables are parallel to the A8 26.5 GHz source board as shown in the END VIEW. Cable W5 is the longer of the two cables.

2. Use a 5/16-in torque wrench set to 10 in-lbs to tighten the cable connectors.

Figure 8   Second Source Boards Installation, Part 1
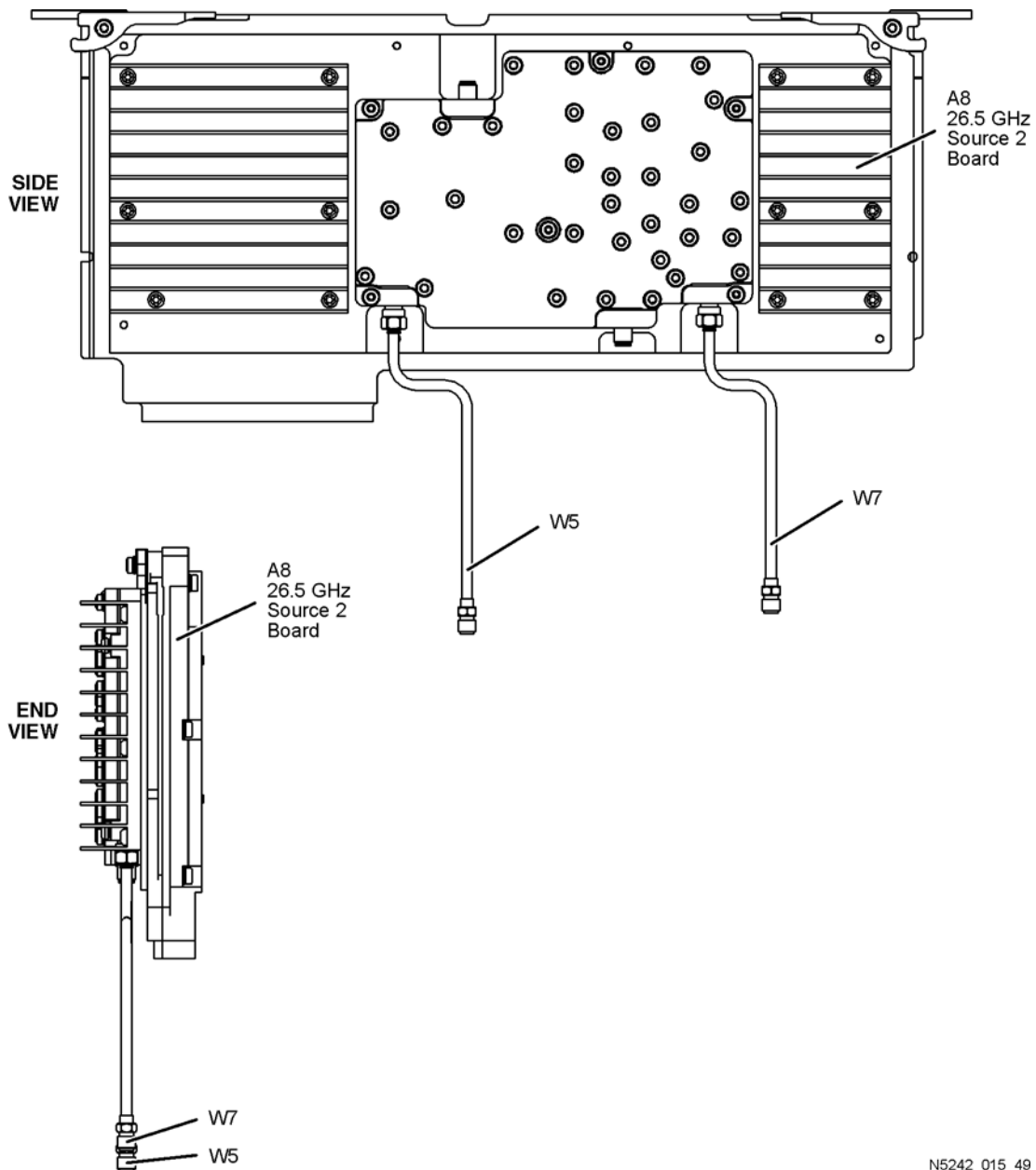
**Install Cable on Source 2 Synthesizer Board**

Install gray cable W67 (N5242-60030) to connector J5 of the Source 2 Synthesizer board. The loose end of the cable will be connected on the A10 frequency reference board (J7) after the Source 2 Synthesizer board has been installed in the analyzer.

Install the Second Source Boards into the Analyzer

Refer to for this part of this step of the procedure. New parts are listed in .

1. Install the A8 26.5 GHz source 2 board (5087-7307) and the A13 13.5 GHz source 2 synthesizer board (N5230-60002) in the analyzer as shown. Secure the A8 26.5 GHz source 2 board with two screws (item ①; 0515-0380) and torque to 21 in-lbs.

2. Connect cable W2 (N5242-20124) between the A8 26.5 GHz source 2 board and the A13 13.5 GHz source 2 synthesizer board as shown. Be sure to position the cable in the wire looms as shown. Tighten the cable connectors to 10 in-lbs using a 5/16-in torque wrench.

3. Connect the loose end of new gray flex cable W22 (N5242-60030) on the A10 frequency reference board (J7). (The other end of this cable was previously connected to J5 of the source 2 synthesizer board.)

Figure 9   Second Source Boards Installation

A13
13.5 GHz
Source 2
Synthesizer
Board

A8
26.5 GHz
Source 2
Board

W2

Wire
Looms
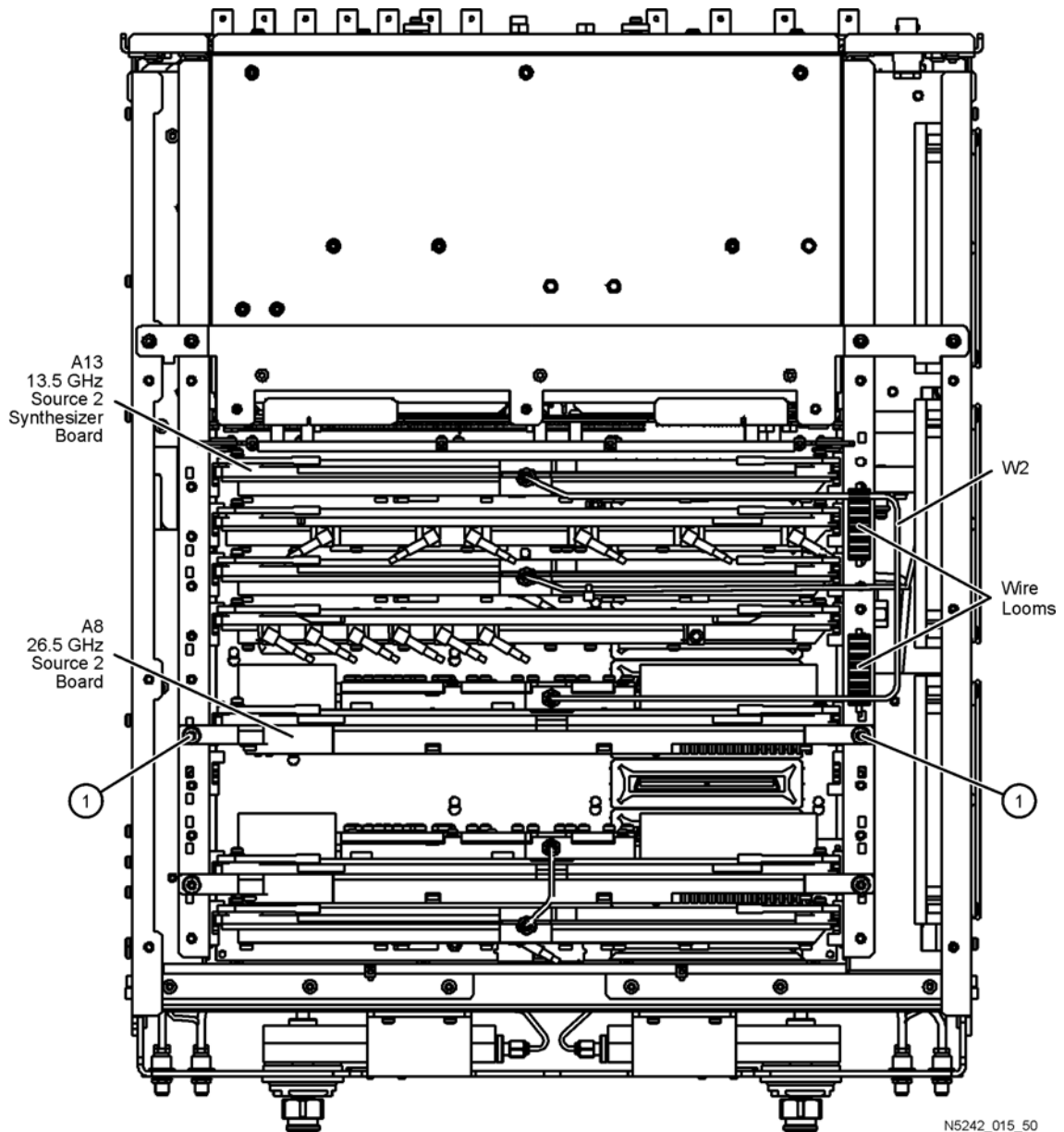
N5242_015_50

Step 15. Install the Semirigid Test Set 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.

To see an image showing the location of these cables, click the Chapter 6 bookmark "Bottom RF Cables, Standard 4-Port Configuration, Option 400" in the PDF Service Guide[1].

1. Install the following semirigid cables in the order listed. New parts are listed in Table 1 on page 7.

   - W50 (N5242-20078) REF 4 RCVR R4 IN to A24 mixer brick (R4)
   - W49 (N5242-20077) REF 3 RCVR R3 IN to A24 mixer brick (R3)
   - W34 (reuse) (N5242-20062) Port 2 RCVR B IN to A23 mixer brick (B)
   - W26 (N5242-20044) A32 port 2 coupler to front-panel Port 2 CPLR ARM
   - W33 (N5242-20065) Port 4 RCVR D IN to A24 mixer brick (D)
   - W22 (N5242-20028) A31 port 4 coupler to front-panel Port 4 CPLR ARM
   - W24 (N5242-20063) A32 port 2 coupler to front-panel Port 2 CPLR THRU
   - W20 (N5242-20064) A31 port 4 coupler to front-panel Port 4 CPLR THRU
   - W19 (N5242-20060) A27 port 4 bridge to front-panel Port 4 SOURCE OUT
   - W23 (reuse) (N5242-20061) A28 port 2 bridge to front-panel Port 2 SOURCE OUT
   - W27 (reuse) (N5242-20079) A28 port 2 bridge to front-panel REF 2 SOURCE OUT
     * Secure W27 to side of deck with 2x tie wraps (1400-0249)
   - W21 (N5242-20035) A27 port 4 bridge to front-panel REF 4 SOURCE OUT
   - W32 (N5242-20058) Port 3 RCVR C IN to A24 mixer brick (C)
   - W18 (N5242-20025) A30 port 3 coupler to front-panel Port 3 CPLR ARM
   - W31 (reuse) (N5242-20056) Port 1 RCVR A IN to A23 mixer brick (A)
   - W14 (N5242-20040) A29 port 1 coupler to front-panel Port 1 CPLR ARM
   - W12 (N5242-20055) A29 port 1 coupler to front-panel Port 1 CPLR THRU
   - W16 (N5242-20059) A30 port 3 coupler to front-panel Port 3 CPLR THRU
   - W15 (N5242-20057) A26 port 3 bridge to front-panel Port 3 SOURCE OUT
   - W17 (N5242-20033) A26 port 3 bridge to front-panel REF 3 SOURCE OUT
   - W11 (reuse) (N5242-20054) A25 port 1 bridge to front-panel Port 1 SOURCE OUT

     * Loosen 3x screws on A33 Reference Mixer Switch board, then slide the board to the rear of the instrument to connect the following two cables (N5242-20042 and N5242-20043).
   - W36 (reuse) (N5242-20042) REF 1 RCVR R1 IN to A33 reference mixer switch

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

- W35 (reuse) (N5242-20043) A33 reference mixer switch to front-panel REF 1 SOURCE OUT
  * Torque 3x screws on A33 Reference Mixer Switch board to 9 in-lbs.

  * Use 1/4" wrench to hold source cable connectors when tightening mating semi-rigid cables.
- W10 (reuse) (N5242-20053) W9 to A28 port 2 bridge
- W6 (N5242-20051) W5 to A26 port 3 bridge
- W8 (N5242-20052) W7 to A27 port 4 bridge
- W4 (reuse) (N5242-20050) W3 to A25 port 1 bridge
- W48 (reuse) (N5242-20076) A33 reference mixer switch to A23 mixer brick (R1)
  * Secure W48 to side of deck with 3x tie wraps (1400-0249).
- W13 (reuse) (N5242-20011) A25 port 1 bridge to A33 reference mixer switch
- W40 (reuse) N5242-20049) REF 2 RCVR R2 IN to A23 mixer brick (R2)
- W43 (N5242-20013) A22 splitter to A23 mixer brick
  * Leave the W43 loose for now.
- W44 (N5242-20014) A22 splitter to A24 mixer brick
  * Leave the W44 loose for now.
- W42 (N5242-20015) A21 HMA26.5 to A22 splitter
  * Leave the W42 loose for now.

  * Tighten 2x screws on A22 splitter @ 9 in-lbs.
  * Tighten cable nuts on W42, W43, and W44 @10 in-lbs.
- W41 (reuse) (N5242-20110) A11 13.5 GHz synthesizer to A21 HMA26.5
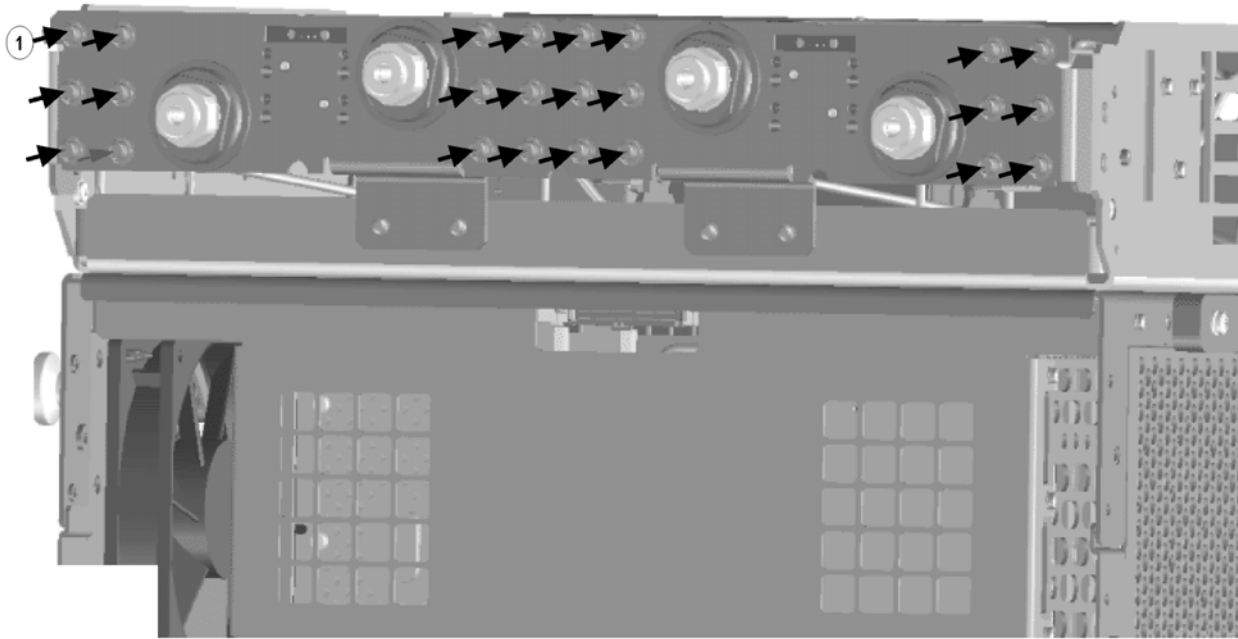 * Route cable through deck cutout to A11 synthesizer board.

Step 16. Secure the Front Panel Bulkhead Connectors

Follow the instruction shown in Figure 10 in this document.

Figure 10 Bulkhead Connections, Front Panel

N5242_015_31

Step 17. Reinstall the A19 Test Set Motherboard

1. For instructions, click the Chapter 7 bookmark "Removing and Replacing the A19 Test Set Motherboard" in the PDF Service Guide[1].

2. Connect new ribbon cable N5242-60006 from J213 to A24 mixer brick (2).
   To see an image showing the location of the cable, click the Chapter 6 bookmark "Bottom Ribbon Cables and Wire Harnesses, Standard 4-Port Configuration, Option 400" in the PDF Service Guide[1].

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

Step 18. Replace the 2-Port Front Frame with a 4-Port Front Frame

Before the front frame can be replaced, the items making up the back side of the front panel assembly must be removed. For instructions on removing these items, click the Chapter 7 bookmark "Removing and Replacing the A1-A3 and Other Front Panel Subassemblies" in the PDF Service Guide[1]. New parts are listed in Table 1 on page 7.

1. In the section "Removing the A2 USB Board," perform step 1 (the only step).

2. In the section "Removing the A1 Front Panel Interface Board and Keypad Assembly", perform steps 1 - 5.

3. In the section "Removing the Power Switch Board and Power Button Keypad", perform only steps 1 and 2.

4. Remove the braided gasket from the backside edges of the 2-port front frame and install it in the 4-port front frame (N5245-20128).

5. Reassemble the front panel assembly with the new 4-port front frame (N5245-20128) by reversing the order of the instructions previously followed.

Step 19. Reinstall the 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[1].

Step 20. Install the Front Panel Overlays

To see an image of the front panel overlay, keypad overlay, and power button overlay, click the Chapter 6 bookmark "Front Panel Assembly, Front Side, All Options" in the PDF Service Guide[1]. New parts are listed in Table 1 on page 7.

1. Remove the protective backing from the new front panel overlay (N5242-80003 for instruments without option 029 or N5242-80012 for instruments with option 029).

2. Loosely place the overlay in the recess on the front panel.

3. Placing two fingers at the middle, press the overlay firmly onto the frame while sliding your fingers in opposite directions towards the ends of the overlay. Repeat on all areas of the overlay.

4. Repeat steps 1-3 to install the keypad overlay (N5242-80005).

5. Repeat steps 1-3 to install the power button overlay (N5242-80007).

6. Repeat steps 1-3 to install the new nameplate (N5241-80001 for N5241A models or N5242-80006 for N5242A models).

Step 21. Install the Front Panel Jumper Cables

For instructions on installing the W30 front panel jumpers (E8356-20072), click the Chapter 7 bookmark "Removing and Replacing the Front Panel Assembly" in the PDF Service Guide[1].

Step 22. Reinstall the Inner Cover

For instructions, click the Chapter 7 bookmark "Removing the Covers" in the PDF Service Guide[1].

Step 23. Reinstall the Outer Cover

For instructions, click the Chapter 7 bookmark "Removing the Covers" in the PDF Service Guide[1].

Step 24. Install Cable Guard

Push the cable guard over the six new front jumper cables until its cushioning material touches the front panel of the PNA.

Step 25. Enable Option 400

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 **P04 - 4-Ports**.

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 "400" is listed after "Options:" in the display. Click **OK**.

NOTE   If Option 400 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.

Step 26. Perform Post-Upgrade Adjustments and Calibration

Adjustments

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

- default EE
- 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 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 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, click the Chapter 3 bookmark "Tests and Adjustments" in the PDF Service Guide[1].

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