Keysight Add Configurable Test Set Upgrade Kit

To Upgrade PNA N5224A/B or N5225A/B Option 400 to Option 401
Upgrade Kit Order Numbers: N5224AU-401, N5225AU-401,
N5224BU-401, N5225BU-401

Keysight Kit Number: N5225-60105

KEYSIGHT
TECHNOLOGIES

Installation Note

Notices

Trademark Acknowledgments

Manual Part Number

N5225-90105

Edition

Edition 2, October 2020
Supersedes: June 2019

Printed in USA/Malaysia

Warranty

Technology Licenses

U.S. Government Rights

Safety Notices

CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood and met.

WARNING

A **WARNING** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

Keysight Add Configurable Test Set Upgrade Kit
Upgrade Kit Number: N5225-60105
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.

This upgrade adds the following items to your N5224A/B Option 400 or N5225A/B Option 400 network analyzer:

— reference mixer switch

— front panel jumpers

— front panel jumpers cable guards

— front panel overlay replacement

— new cables

After installation of this upgrade, your analyzer will be an N5224A/B Option 401 or N5225A/B Option 401.

KEYSIGHT
TECHNOLOGIES

Getting Assistance from Keysight

By internet, phone, or fax, get assistance with all your test and measurement needs.

Contacting Keysight

Assistance with test and measurements needs and information on finding a local Keysight office are available on the Web at:
http://www.keysight.com/find/assist

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

NOTE	In any correspondence or telephone conversation, refer to the Keysight product by its model number and full serial number. With this information, the Keysight representative can determine whether your product is still within its warranty period.

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 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.

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 8.

— Enough time - refer to "About Installing the Upgrade" on page 8.

— 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[1].

---

1. See "Downloading the Online PNA Service Guide" on page 7.

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.

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

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.

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.

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.

— Host ID

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) attachment message. Refer to "License Key Redemption" on page 6.

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 4.

Downloading the Online PNA Service Guide

To view the online Service Guide for your PNA model number, use the following steps:

1. Go to www.keysight.com.

2. In the Search box, enter the model number of the analyzer (Ex: 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	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 and N5225A/B Option 400
Installation to be performed by	Keysight service center or personnel qualified by Keysight
Estimated installation time	2 hours
Estimated adjustment time	0.5 hours
Estimated full instrument calibration time	4.5 hours

---

1. See "Downloading the Online PNA Service Guide" on page 7.

Items Included in the Upgrade Kit[1]

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 4.

Table 1   Contents of Upgrade Kit N5225-60105

Ref Desig.	Description	Qty	Part Number
--	Installation note (this document)	1	N5225-90105
--	Software Entitlement Certificate	1	5964-5145
A37	Reference mixer switch	1	5087-7759
--	Bracket (for A37 reference mixer switch)	1	N5245-00024
--	Machine screw, M3 x 8, pan head (2 to attach bracket to reference mixer switch; 2 to attach reference mixer switch assembly to deck)	5	0515-0372
--	Cable clamp	8	1400-1334
--	Guard, jumper cables, center 4-Port - "A" Models	1	N5242-00030
--	Guard, jumper cables, center 4-Port - "B" Models	1	N5242-00049
--	Guard, jumper cables, side 2-Port - "A" Models	2	N5242-00029
--	Guard, jumper cables, side 2-Port -"B" Models	2	N5242-00048
--	Front panel overlay - "A" Models	1	N5227-80005
--	Front panel overlay -"B" Models	1	N5227-80020
W19	RF cable, A29 port 1 receiver coupler to front-panel Port 1 SOURCE OUT	1	N5245-20039
W20	RF cable, port 1 CPLR THRU to A33 port 1 coupler	1	N5245-20099
W21	RF cable, A29 port 1 receiver coupler to A37 reference mixer switch	1	N5245-20110
W22	RF cable, A33 port 1 coupler to front-panel Port 1 CPLR ARM	1	N5245-20014
W23	RF cable, A30 port 3 receiver coupler to front-panel Port 3 SOURCE OUT	1	N5245-20051
W24	RF cable, port 3 CPLR THRU to A34 port 3 coupler	1	N5245-20098
W25	RF cable, A30 port 3 receiver coupler to front-panel REF 3 SOURCE OUT	1	N5245-20016
W26	RF cable, A34 port 3 coupler to front-panel Port 3 CPLR ARM	1	N5245-20015
W27	RF cable, A31 port 4 receiver coupler to front-panel Port 4 SOURCE OUT	1	N5245-20052
W28	RF cable, port 4 CPLR THRU to A35 port 4 coupler	1	N5245-20096

1. In addition to the upgrade kit, the shipment includes an Software Entitlement Certificate. Refer to "License Key Redemption" on page 6 for important information about this certificate.

Table 1   Contents of Upgrade Kit N5225-60105

Ref Desig.	Description	Qty	Part Number
W29	RF cable, A31 port 4 receiver coupler to front-panel REF 4 SOURCE OUT	1	N5245-20017
W30	RF cable, A35 port 4 coupler to front-panel port 4 CPLR ARM	1	N5245-20018
W31	RF cable, A32 port 2 receiver coupler to front-panel port 2 SOURCE OUT	1	N5245-20040
W32	RF cable, port 2 CPLR THRU to A36 port 2 coupler	1	N5245-20097
W33	RF cable, A32 port 2 receiver coupler to front-panel REF 2 SOURCE OUT	1	N5245-20108
W34	RF cable, A36 port 2 coupler to front-panel port 2 CPLR ARM	1	N5245-20019
W36	RF cable, Front panel jumper	12	N5245-20155
W37	RF cable, port 1 RCVR A IN to A27 mixer brick (A)	1	N5245-20041
W38	RF cable, port 3 RCVR C IN to A28 mixer brick (C)	1	N5245-20037
W39	RF cable, port 4 RCVR D IN to A28 mixer brick (D)	1	N5245-20038
W40	RF cable, port 2 RCVR B IN to A27 mixer brick (B)	1	N5245-20042
W41	RF cable, A37 reference mixer switch to front-panel REF 1 SOURCE OUT	1	N5245-20007
W42	RF cable, REF 1 RCVR R1 IN to A37 reference mixer switch	1	N5245-20006
W43	RF cable, A37 reference mixer switch to A27 mixer brick (R1)	1	N5245-20009
W44	RF cable, REF 3 RCVR R3 IN to A28 mixer brick (R3)	1	N5245-20020
W45	RF cable, REF 4 RCVR R4 IN to 3 dB pad on A28 mixer brick (R4)	1	N5245-20021
W46	RF cable, REF 2 RCVR R2 IN to A27 mixer brick (R2)	1	N5245-20011
--	Ribbon cable, A23 test set motherboard J554 to A37 reference mixer switch	1	8121-0966

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.

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 Existing Cables."

"Step 5. Remove a 3 dB Pad."

"Step 6. Assemble the A37 Reference Mixer Switch Assembly."

"Step 7. Install the A37 Reference Mixer Switch Assembly."

"Step 8. Install the New Cables."

"Step 9. Remove the Old Lower Front Panel Overlay."

"Step 10. Reinstall Front Panel Assembly."

"Step 11. Install the New Lower Front Panel Overlay."

"Step 12. Install Front Panel Jumpers."

"Step 13. Position the Cables and Wires to Prevent Pinching."

"Step 14. Reinstall the Outer Cover."

"Step 15. Remove Option 400 License."

"Step 16. Enable Option 401."

"Step 17. Perform Post-Upgrade Adjustments and Calibration."

"Step 18. 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 6.

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 4.

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 12.

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 4.

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 Front Panel Assembly

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

Step 4. Remove Some Existing 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 the following cables. 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].

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

---

1. See "Downloading the Online PNA Service Guide" on page 7.

— W107(N5224-20005) A29 port 1 receiver coupler to A27 mixer brick (R1)/3-dB pad

— W108(N5224-20024) A30 port 3 receiver coupler to A28 mixer brick (R3)

— W109(N5224-20027) A31 port 4 receiver coupler to A28 mixer brick (R4)/3-dB pad

— W110 (N5224-20028) A32 port 2 receiver coupler to A27 mixer brick (R2)

— W111(N5224-20013) A29 port 1 receiver coupler to A33 port 1 coupler

— W112(N5224-20015) A30 port 3 receiver coupler to A34 port 3 coupler

— W113(N5224-20016) A31 port 4 receiver coupler to A35 port 4 coupler

— W114(N5224-20014) A32 port 2 receiver coupler to A36 port 2 coupler

— W115(N5224-20022) A33 port 1 coupler to A27 mixer brick (A)

— W116(N5224-20023) A34 port 3 coupler to A28 mixer brick (C)

— W117(N5224-20026) A35 port 4 coupler to A28 mixer brick (D)

— W118 (N5224-20025) A36 port 2 coupler to A27 mixer brick (B)

These cables must be saved - they will be reinstalled.

— W12 (N5245-20109) A29 port 1 receiver coupler to W11

— W14 (N5245-20043) A30 port 3 receiver coupler to W13

— W16 (N5245-20044) A31 port 4 receiver coupler to W15

— W18 (N5245-20111) A32 port 2 receiver coupler to W17

Step 5. Remove a 3 dB Pad

Remove and discard the 3 dB pad connected to A27 mixer brick port R1.

Step 6. Assemble the A37 Reference Mixer Switch Assembly

Mount the bracket (N5245-00024) to the reference mixer switch (5087-7759) using two screws (0515-0372). Use a T-10 TORX driver to tighten the screws. New parts are listed in Table 1 on page 9.

Step 7. Install the A37 Reference Mixer Switch Assembly

Refer to Figure 1 for this step of the procedure. New parts are listed in Table 1 on page 9. Use a T-10 TORX driver to tighten all screws.

Figure 1 Reference Mixer Switch Assembly
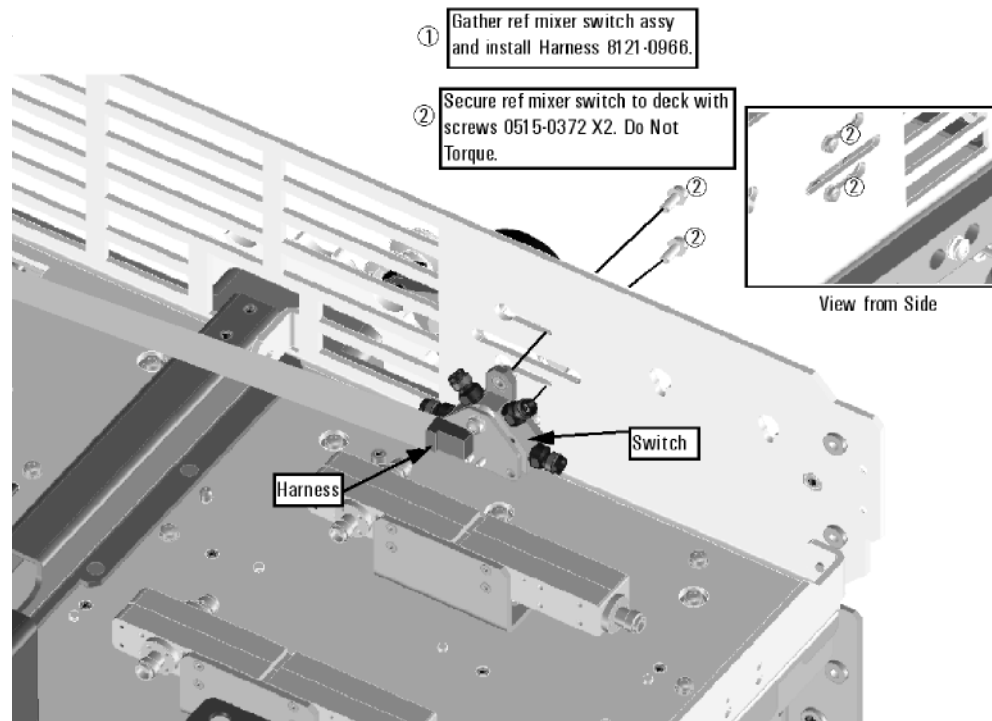
Step 8. Install the New Cables

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

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 401" in the PDF Service Guide[1]. New parts are listed in Table 1 on page 9.
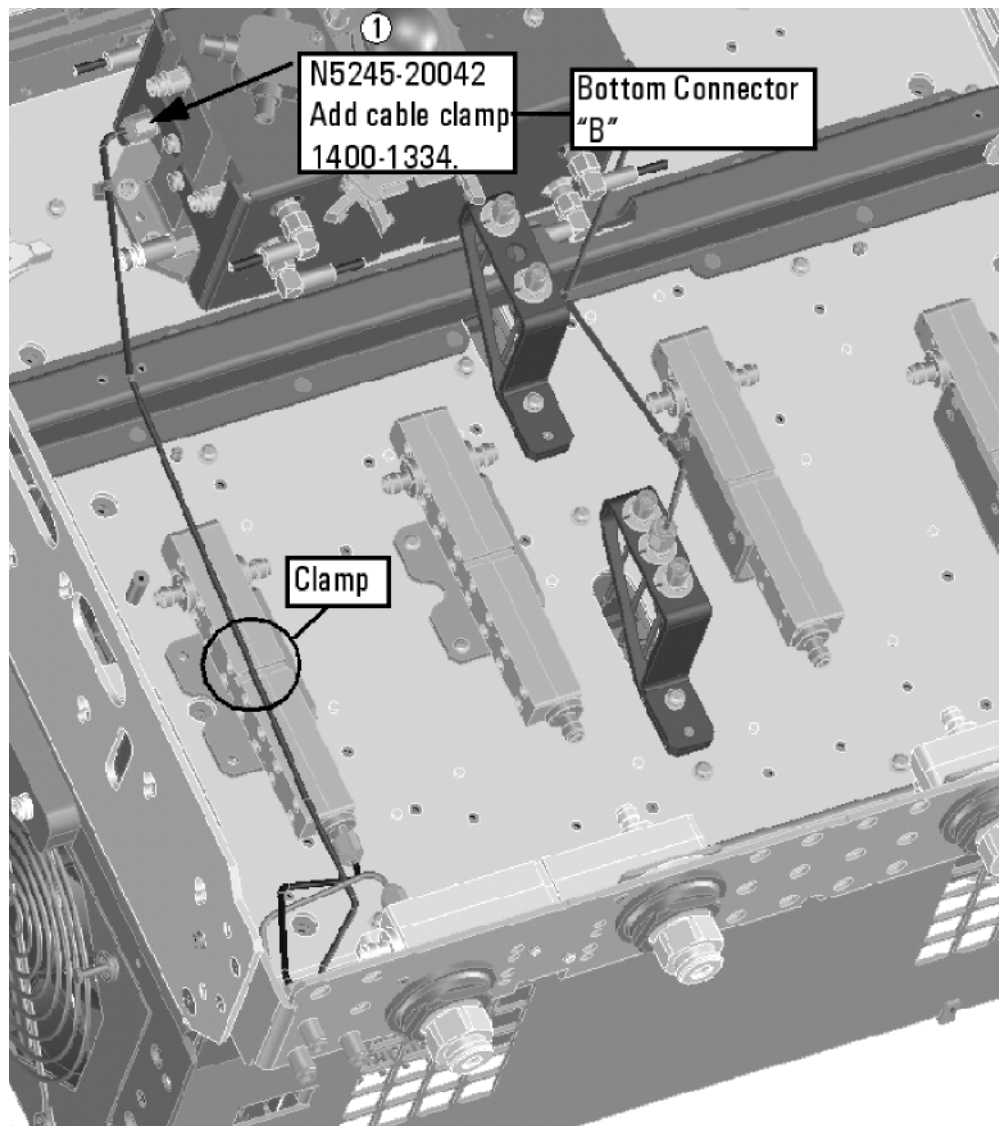
Install the following new cables in the order listed.

— W40 (N5245-20042) Port 2 RCVR B IN to A27 mixer brick (B)

* As shown in Figure 2 on page 15, install one cable clamp (part number 1400-1334) to secure W40 (part number N5245-20042).

---

1. See "Downloading the Online PNA Service Guide" on page 7.

Figure 2   Location of Cable Clamp to Secure W40

N5225_105_02

— W34 (N5245-20019) A36 port 2 coupler to front-panel port 2 CPLR ARM

— W31 (N5245-20040) A32 port 2 receiver coupler to front-panel port 2 SOURCE OUT

— W32 (N5245-20097) Port 2 CPLR THRU to A36 port 2 coupler

— W28 (N5245-20096) Port 4 CPLR THRU to A35 port 4 coupler

— W33 (N5245-20108) A32 port 2 receiver coupler to front-panel REF 2 SOURCE OUT

* As shown in Figure 3 on page 16, install three cable clamps (part number 1400-1334) to secure W40 (part number N5245-20108).

Figure 3   Location of Cable Clamps to Secure W33

N5225_105_03

— W46(N5245-20011) REF 2 RCVR R2 IN to A27 mixer brick (R2)
— W39(N5245-20038) Port 4 RCVR D IN to A28 mixer brick (D)
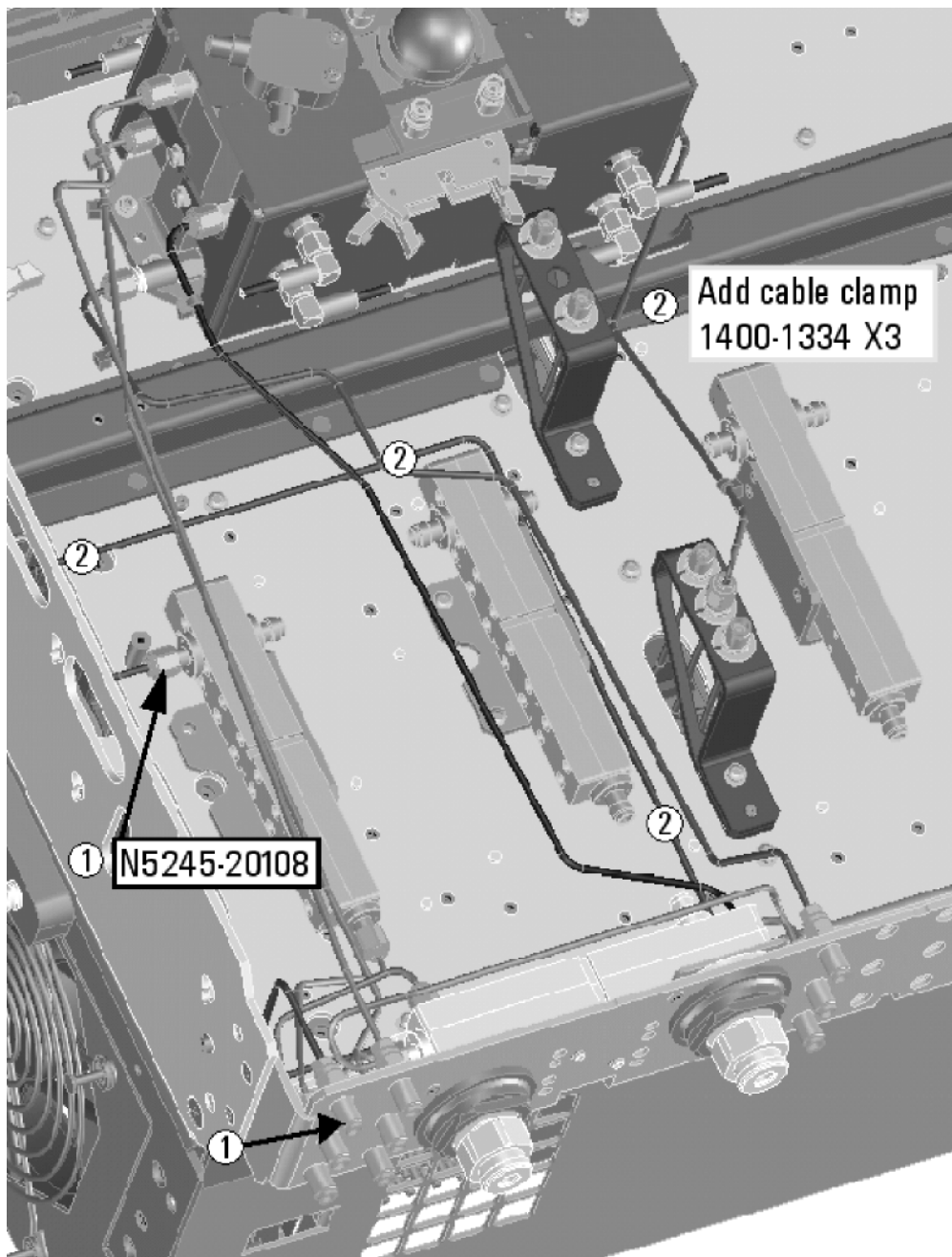— W45(N5245-20021) REF 4 RCVR R4 IN to 3 dB pad on A28 mixer brick (R4)
— W30(N5245-20018) A35 port 4 coupler to front-panel port 4 CPLR ARM
— W27   (N5245-20052) A31 port 4 receiver coupler to front-panel Port 4
    SOURCE OUT

— W29(N5245-20017) A31 port 4 receiver coupler to front-panel REF 4 SOURCE OUT
— W18(reuse) (N5245-20111) A32 port 2 receiver coupler to W17
— W38(N5245-20037) Port 3 RCVR C IN to A28 mixer brick (C)
— W44(N5245-20020) REF 3 RCVR R3 IN to A28 mixer brick (R3)
— W12(reuse) (N5245-20109) A29 port 1 receiver coupler to W11
— W20(N5245-20099) Port 1 CPLR THRU to A33 port 1 coupler
— W24   (N5245-20098) Port 3 CPLR THRU to A34 port 3 coupler
— W26   (N5245-20015) A34 port 3 coupler to front-panel Port 3 CPLR ARM
— W23   (N5245-20051) A30 port 3 receiver coupler to front-panel Port 3 SOURCE OUT
— W25(N5245-20016) A30 port 3 receiver coupler to front-panel REF 3 SOURCE OUT
— W37(N5245-20041) Port 1 RCVR A IN to A27 mixer brick (A)
— W22(N5245-20014) A33 port 1 coupler to front-panel Port 1 CPLR ARM
— W19(N5245-20039) A29 port 1 receiver coupler to front-panel Port 1 SOURCE OUT
— W42 (N5245-20006) REF 1 RCVR R1 IN to A37 reference mixer switch
— W41 (N5245-20007) A37 reference mixer switch to front-panel REF 1 SOURCE OUT
— W43(N5245-20009) A37 reference mixer switch to A27 mixer brick (R1)
— W21(N5245-20110) A29 port 1 receiver coupler to A37 reference mixer switch

shows two screws that attach the reference mixer switch to the test set deck. At this time, torque these two screws to 9 in-lbs.
— W14(reuse) (N5245-20043)A30 port 3 receiver coupler to W13
— W16(reuse) (N5245-20044)A31 port 4 receiver coupler to W15

Install the Ribbon Cable

To see an image showing the location of this cable, click the Chapter 6 bookmarks "Bottom Ribbon Cables and Wire Harnesses, 4-Port, Option 401" in the PDF Service Guide[1]. New parts are listed in Table 1 on page 9.

If not already done, connect the reference mixer switch ribbon cable (8121-0966) as follows:

— A23 test set motherboard J554 to A37 reference mixer switch

---

1. See .

Step 9. Remove the Old Lower Front Panel Overlay

Refer to Figure 4 on page 19 for this step of the procedure. Although this figure shows a 4-port PNA, the concept is the same for a 2-port PNA. New parts are listed in Table 1 on page 9.

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 11. Install the New Lower Front Panel Overlay" on page 20.

Figure 4   Lower Front Panel Overlay Replacement
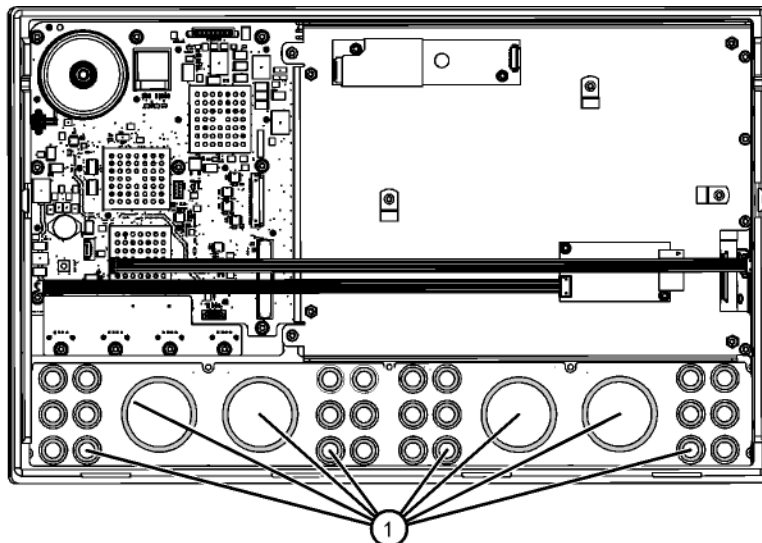
Old lower front-panel overlay visible through
cutouts from rear of front panel.
Push here to release old front-panel overlay.

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

N5225_105_04

Step 10. 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[1].

Step 11. Install the New Lower Front Panel Overlay

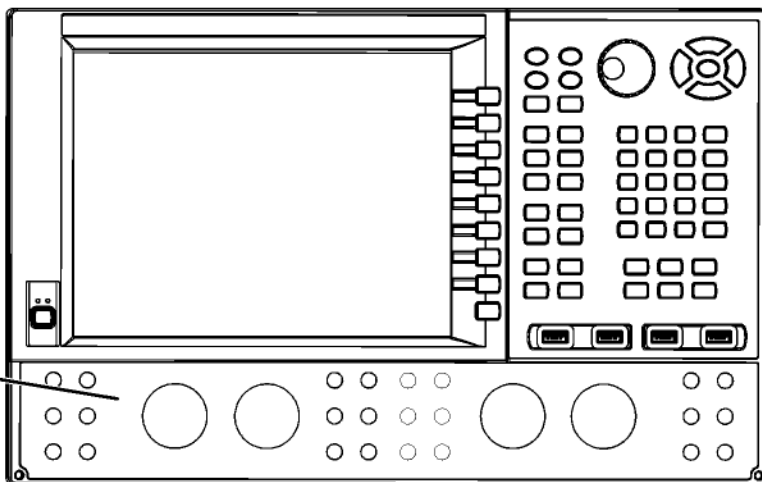Refer to Figure 4 on page 19 for this step of the procedure. New parts are listed in Table 1 on page 9.

1. Remove the protective backing from the new front panel overlay, N5227-80005 for "A" models and N5227-80020 for "B" models (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 12. Install Front Panel Jumpers

As shown in Figure 4, install 12 front panel jumper cables (part number N5245-20155).

---

1. See "Downloading the Online PNA Service Guide" on page 7.

Figure 5　　　　　　　Front Panel Jumper Cables Installation

① Install 6x jumper cables and torque to 10 in-lbs.

N5225_105_05

Step 13. 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 14. Reinstall the Outer Cover

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

Step 15. Remove Option 400 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.

A Model Option 400 License Removal Procedure

For B models, refer to "B Model Option 400 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 **400**.

4. Click **Remove**.

B Model Option 400 License Removal Procedure

For B models, refer to "A Model Option 400 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 16. Enable Option 401

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.

— Obtain a license key (A models) or license key file (B models) for installation of this upgrade by following the instructions on the supplied Software Entitlement Certificate.

— A keyboard must be connected to the network analyzer.

For "A" models, refer to **"Option Enable Procedure for "A" Model Instruments" on page 23**.

For "B" models refer to **"Option Enable Procedure for "B" Model Instruments " on page 24**.

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 **401 - 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 "401" 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 4.

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.

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 6.

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.

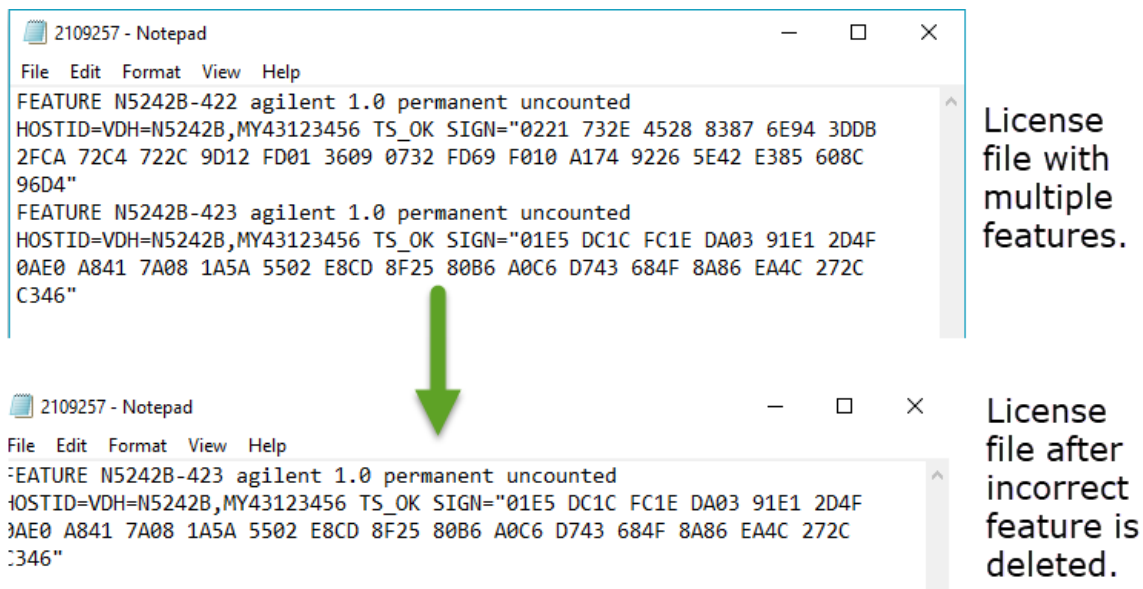**NOTE**

A license file may contain more than one feature.

3. Verifying and editing the license file:

   For these steps, refer to the example in Figure 6 on page 25.

   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 6   Editing a Keysight License File Using a Text Editor

License file with multiple features.

License file after incorrect feature is deleted.

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.

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 4.

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 17. 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

— 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[1].

After the specified adjustments have been performed, the analyzer should operate and phase lock over its entire frequency range.

---

1. See "Downloading the Online PNA Service Guide" on page 7.

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 Keysight. Refer to "Contacting Keysight" on page 4.

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].

Step 18. 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.

KEYSIGHT
TECHNOLOGIES

N5225-90105