Add 26.5 GHz LO Source Upgrade Kit

To Upgrade PNA N5264A to include Option 108

Upgrade Kit Order Number: N5264AU- 108

KEYSIGHT TECHNOLOGIES

Installation Note

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.**

KEYSIGHT TECHNOLOGIES

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 adds the internal hardware necessary to provide a synthesized 10 MHz to 26.5 GHz LO source, with a maximum +10 dBm output power, at a rear panel LO OUT connector by adding Option 108. This option includes:

- a 13.5 GHz LO synthesizer board
- a multiplier/amplifier 26.5 GHz (HMA26.5)
- cables

Getting Assistance from Keysight

By internet or phone, 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, email Keysight Component Test Division (CTD) Support at **support_ctd-soco@keysight.com**, or telephone the CTD Hotline at (707) 577-6802 and leave a voice mail message. Please include details of the problem.

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 and full instrument calibration. To view the equipment list, click the Chapter 3 PDF bookmark "Tests and Adjustments" in the online 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 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 a license key from: http://www.keysight.com/find/softwarelicense. To complete the request, you will need to gather the following information:

?tFrom the certificate

- ❏ Order number
- ❏ Certificate number

?tFrom 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 your receive your license key via postal mail.

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

Downloading the Online PNA Service Guide

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

1. Go to *www.keysight.com*
2. In the Search box, enter the model number of the analyzer (Ex: N5264A) 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[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 required in this upgrade kit.

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

About Installing the Upgrade

Products affected	N5264A PNA-X Measurement Receiver
Installation to be performed by	Keysight service center or personnel qualified by Keysight
Estimated installation time	1.0 hour
Estimated adjustment time	0.5 hour
Estimated full instrument calibration time	1.0 hour

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 3.

Table 1 Contents of Upgrade Kit N5264-60101

Ref Desig.	Description	Qty	Part Number
	Assemblies		
A21	LO multiplier/amplifier 26.5 GHz (HMA26.5)	1	5087-7765 Was 5087-7711
A11	13.5 GHz LO synthesizer board	1	N5230-60002
	Hardware/Miscellaneous		
	Bracket, HMA26.5	1	N5242-00005
	Machine screw, M3.0 x 8, pan head	4	0515-0372
	Machine screw, M3.0 x 6, pan head	2	0515-0430
	Termination, 50 ohm load	1	1810-0118
	Installation note (this document)	1	N5264-90002
	Cables (listed in the order in which they are installed)		
W47	A21 HMA26.5 to rear panel LO OUT (J5)	1	N5264-20002
W41	A11 13.5 GHz LO synthesizer board to A21 HMA26.5	1	N5242-20110
W65	A10 frequency reference board J5 to A11 13.5 GHz LO synthesizer board J5	1	N5242-60028
--	A19 test set motherboard J209 to A21 HMA26.5	1	N5242-60011

1. In addition to the upgrade kit, the shipment includes an Option Entitlement Certificate. Refer to "License Key Redemption" on page 4 for important information about this certificate.

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.

Step 2. Remove the Outer Cover.

Step 3. Remove the Inner Cover.

Step 4. Remove the A19 Test Set Motherboard.

Step 5. Remove the A20 IF Multiplexer Board.

Step 6. Assemble the A21 LO Multiplier/Amplifier (HMA26.5) onto the Bracket.

Step 7. Install the A21 LO Multiplier/Amplifier (HMA26.5) and Cables.

Step 8. Reinstall the A20 IF Multiplexer Board.

Step 9, Reinstall the A19 Test Set Motherboard.

Step 10. Install the Ribbon Cable from the A21 HMA26.5 to the A19 Test Set Motherboard.

Step 11. Install the 50 Ohm Load on the PNA Rear Panel.

Step 12. Connect the Gray Cable to the A11 13.5 GHz LO Synthesizer Board.

Step 13. Install the A11 13.5 GHz LO Synthesizer Board and Cables.

Step 14. Reinstall the Inner Cover.

Step 15. Reinstall the Outer Cover.

Step 16. Enable Option 108.

Step 17. Perform Post-Upgrade Adjustments and Calibration.

Step 1. Obtain a Keyword

Follow the instructions on the keyword Entitlement Certificate supplied to obtain a keyword for installation of this upgrade.

Once the keyword has been obtained, you can proceed with the installation.

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 A19 Test Set Motherboard

NOTE	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.

NOTE	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.**

For instructions, click the Chapter 7 bookmark “Removing and Replacing the A19 test set motherboard” in the PDF Service Guide[1].

Step 5. Remove the A20 IF Multiplexer Board

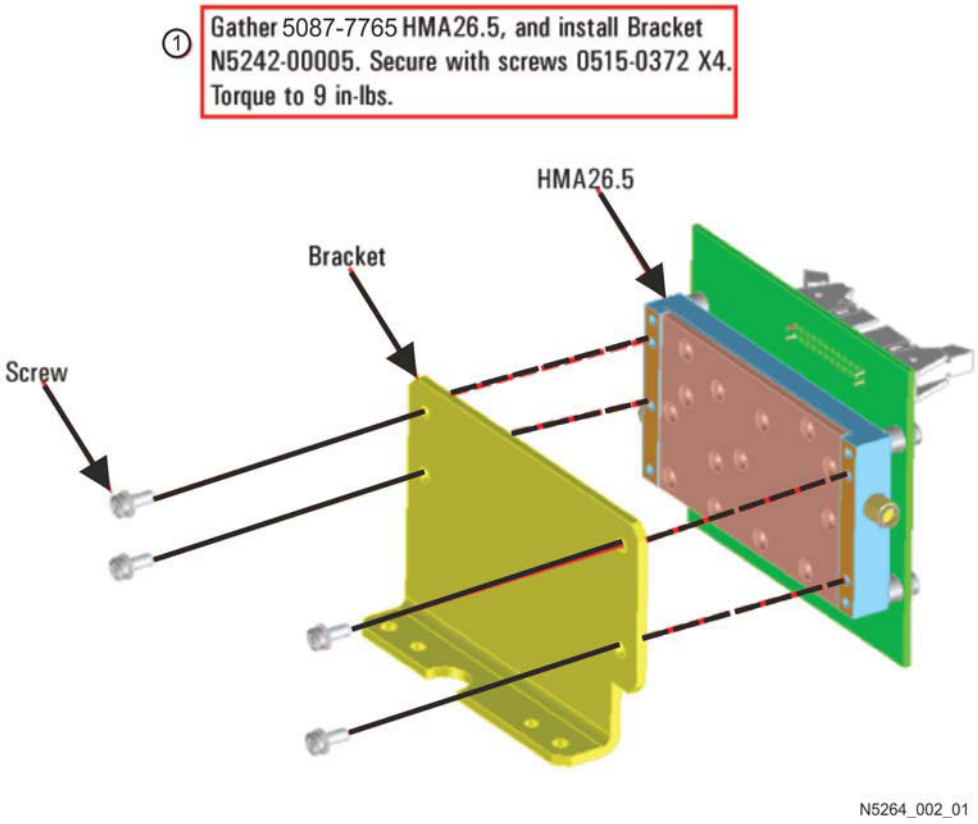
For instructions, click the Chapter 7 bookmark “Removing and Replacing the A20 IF Multiplexer Board” in the PDF Service Guide[1].

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

Step 6. Assemble the A21 LO Multiplier/Amplifier (HMA26.5) onto the Bracket

Follow the instruction shown in Figure 1 for this step of the procedure. New parts are listed in Table 1 on page 6 of this document.

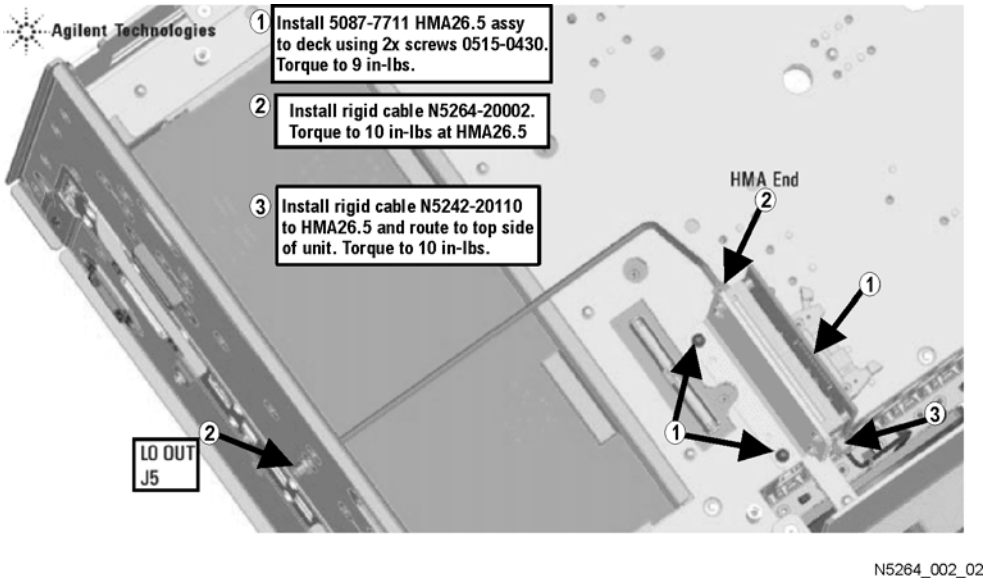
Figure 1 A21 LO Multiplier/Amplifier (HMA26.5) Assembly



Step 7. Install the A21 LO Multiplier/Amplifier (HMA26.5) and Cables

Follow the three instructions shown in Figure 2 for this step of the procedure. New parts are listed in Table 1 on page 6 of this document.

Figure 2 A21 LO Multiplier/Amplifier (HMA26.5) Installation



Step 8. Reinstall the A20 IF Multiplexer Board

For instructions, click the Chapter 7 bookmark "Removing and Replacing the A20 IF Multiplexer Board" in the PDF Service Guide[1].

Step 9, Reinstall the A19 Test Set Motherboard

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

Step 10. Install the Ribbon Cable from the A21 HMA26.5 to the A19 Test Set Motherboard

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

To view a graphic showing the location of this ribbon cable, click the Chapter 6 bookmark "Bottom Cables, All Options" in the PDF Service Guide[1].

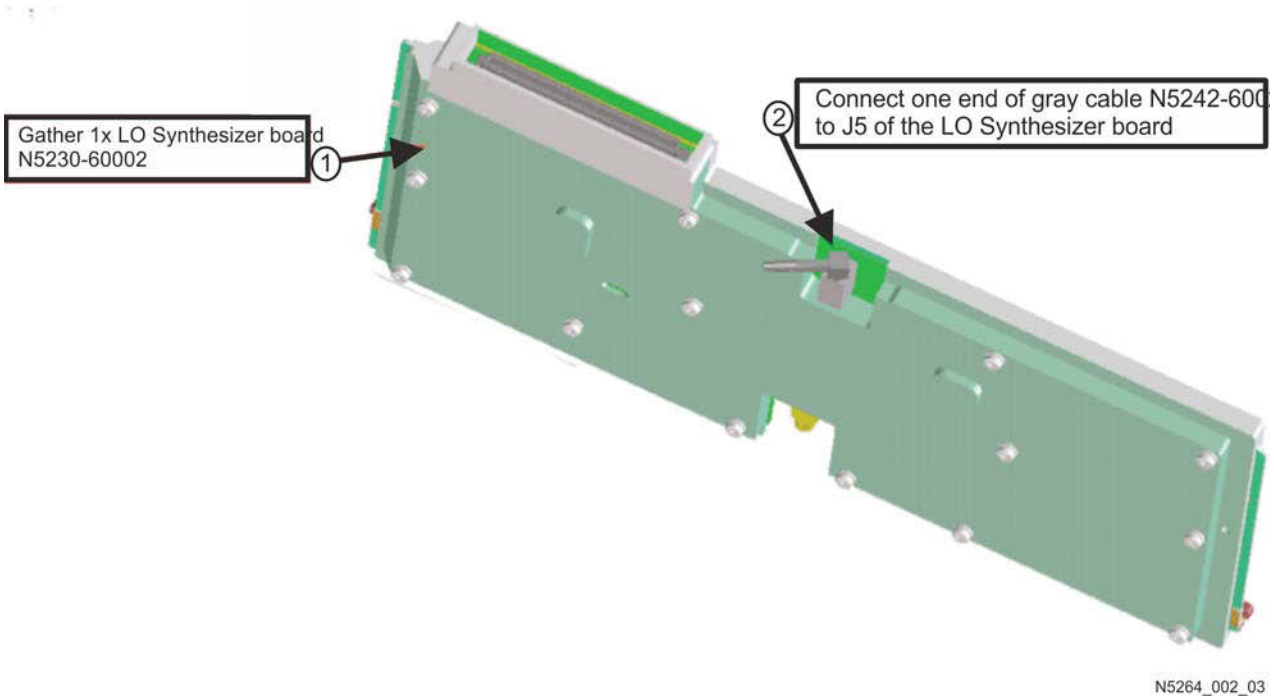
Step 11. Install the 50 Ohm Load on the PNA Rear Panel

Connect the 50 ohm load termination (1810-0118) to J5 on the PNA rear panel and torque to 10 in-lbs.

Step 12. Connect the Gray Cable to the A11 13.5 GHz LO Synthesizer Board

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

Figure 3 Gray Cable Connection to A11 13.5 GHz LO Synthesizer Board

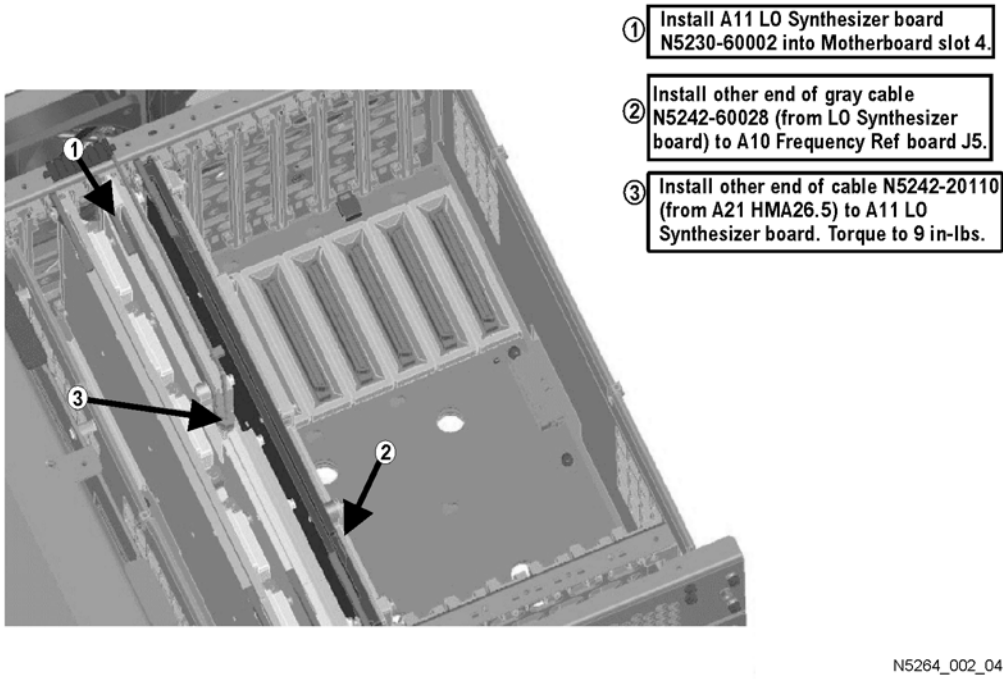


Step 13. Install the A11 13.5 GHz LO Synthesizer Board and Cables

1. Place the analyzer top-side up on a flat surface.
2. Follow the three instructions shown in Figure 3 for this step of the procedure. To view a graphic showing the location of the A11 LO Synthesizer board, click the Chapter 7 bookmark "Removing and Replacing the A10, A11, and A12 Boards" in the PDF Service Guide[1]. New parts are listed in Table 1 on page 6 of this document.

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

Figure 4 A11 13.5 GHz LO Synthesizer Board Installation



Step 14. Reinstall the Inner Cover

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

Step 15. Reinstall the Outer Cover

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

Step 16. Enable Option 108

Procedure Requirements

- The analyzer must be powered up and operating to perform this procedure.
- The Network Analyzer program must be running.
- A keyboard must be connected to the network analyzer.

Option Enable Procedure

NOTE: You must have a keyword to enable this option. If you have not yet obtained the necessary keyword, refer to "Step 1. Obtain a Keyword" on page 8 for instructions.

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 **108 - LO Source 26.5 GHz**.
4. Using the keyboard, enter the keyword you obtained, in the box provided. Enter this keyword *exactly* as provided.
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 "108" is listed after "Options:" in the display. Click **OK**.

NOTE	If Option 108 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.

Step 17. Perform Post-Upgrade Adjustments and Calibration

Adjustments

Due to the hardware changes of the analyzer, perform the Synthesizer Bandwidth adjustment.

Next, perform the Default EE adjustment. On the dialog box, select **Initialize** rather than **Adjust/Verify** because an adjustment is typically unnecessary.

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 the Service Guide online, use the following steps:

1. Go to www.keysight.com
2. In the Search box, enter the model number of your analyzer, N5264A, 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 "Tests & Adjustments" chapter.

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, refer to the "Tests & Adjustments" chapter of the Service Guide.

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. Refer to the analyzer's service guide for information on this performance test software.

This information is subject to change without notice.
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