Keysight Technologies N9000B CXA Signal Analyzer

Option T03 and T06, Tracking Generator Upgrade Kit

KEYSIGHT TECHNOLOGIES

Installation Note

Notices

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Option T03 and T06, Tracking Generator Upgrade Kit

Products Affected:	N9000B CXA Signal Analyzer
Serial Numbers:	Any with Option T03 and T06
To Be Performed By:	(X) Keysight Service Center
	(X) Personnel Qualified by Keysight
	( ) Customer
Estimated Installation Time:	2 Hours
Estimated Adjustment Time:	1 Hours
Estimated Verification Time:	1 Hours

Software and test equipment is required for making adjustments and for performance verification testing.

Information on how to obtain this software can be found at:

www.keysight.com/find/calibrationsoftware

While Keysight does recommend that a full calibration be performed after the installation of this upgrade, the end user must ultimately determine whether they want this service or not. If a full calibration is required, arrangements regarding the level of calibration must be made between the end user and the calibration provider.

Introduction

This kit includes parts to upgrade any N9000B CXA signal analyzer to add Option T03 and T06 tracking generator.

1. Pre-upgrade Status Check
2. Hardware Installation
3. Upgrade instrument software
4. License files installation
5. Function activation
6. Installation verification

N9000BU-T03/T06, Tracking Generator Upgrade Kit Parts List

Quantity	Description	Part Number
1	Tracking Generator Assembly	N9000-65402
1	RF Input Connector Assembly	N9000-60032
1	EMI O-ring Shielding	8160-1637
1	Carton Box for Tracking Generator	E4403-80035
1	Cable Assembly, SMA TG-RF, 2nd LO	N9000-20104
1	Cable Assembly, SMA TG-RF, Bridge	N9000-20105
1	Cable Assembly, SMA TG-RF, 1st LO	N9000-20106
1	Cable Assembly, MMCX TG-LO	N9000-20107
1	Cable Assembly, SMA TG Out	N9000-20109
1	Overlay	N9000-80100
2	Screw M3*0.5 (8 mm)	0515-0372
1	Entitlement Certificate	5964-5178
1	Entitlement Certificate Envelope	5967-7169
1	Installation Note	This note

Tools Required

- T-10 TORX Driver
- T-20 TORX Driver
- 5/16-inch torque wrench
- Keysight Calibration and Adjustment Software, N7814A
- Test equipment and computer supported by the X-series Performance Tests and Adjustment Software
- Microsoft Windows based personal computer with Internet access and USB port
- USB storage device with > 2 GB free memory

Initial Instrument Functionality Check

Power on the instrument and allow the instrument to boot up. Run an alignment and display the measurement screen. (The instrument will probably display a spectrum analyzer screen and you will see the instrument sweeping.)

There should be no alignment failures. If there are failures, investigate and fix the problem before continuing.

WARNING Before you disassemble the instrument, turn the power switch to Standby. After the instrument has completely shut down, unplug the instrument. Failure to unplug the instrument can result in personal injury.

CAUTION Electrostatic discharge (ESD) can damage or destroy electronic components. All work on electronic assemblies should be performed at a static-safe workstation. Refer to the documentation that pertains to your instrument for information about static-safe workstations and ordering static-safe accessories.

Installation Procedure

Analyzer Information

1. Connect a power cord to the analyzer and turn on the analyzer.
2. After the analyzer has completed turning on, press **System**, **Show**, **System**. Make note of the following information from the Show System screen:

   Product Number: _____
   Serial Number: _____
   Instrument S/W Revision: _____

3. Refer to the data in step 2 above. If the Product Number is not N9000B, **do not proceed** with the installation of this kit. This kit is to be installed only on N9000B signal analyzers.

Analyzer Disassembly

CAUTION If the instrument is placed on its face during any of the following procedures, be sure to use a soft surface or soft cloth to avoid damage to the front panel, keys, or input connector.

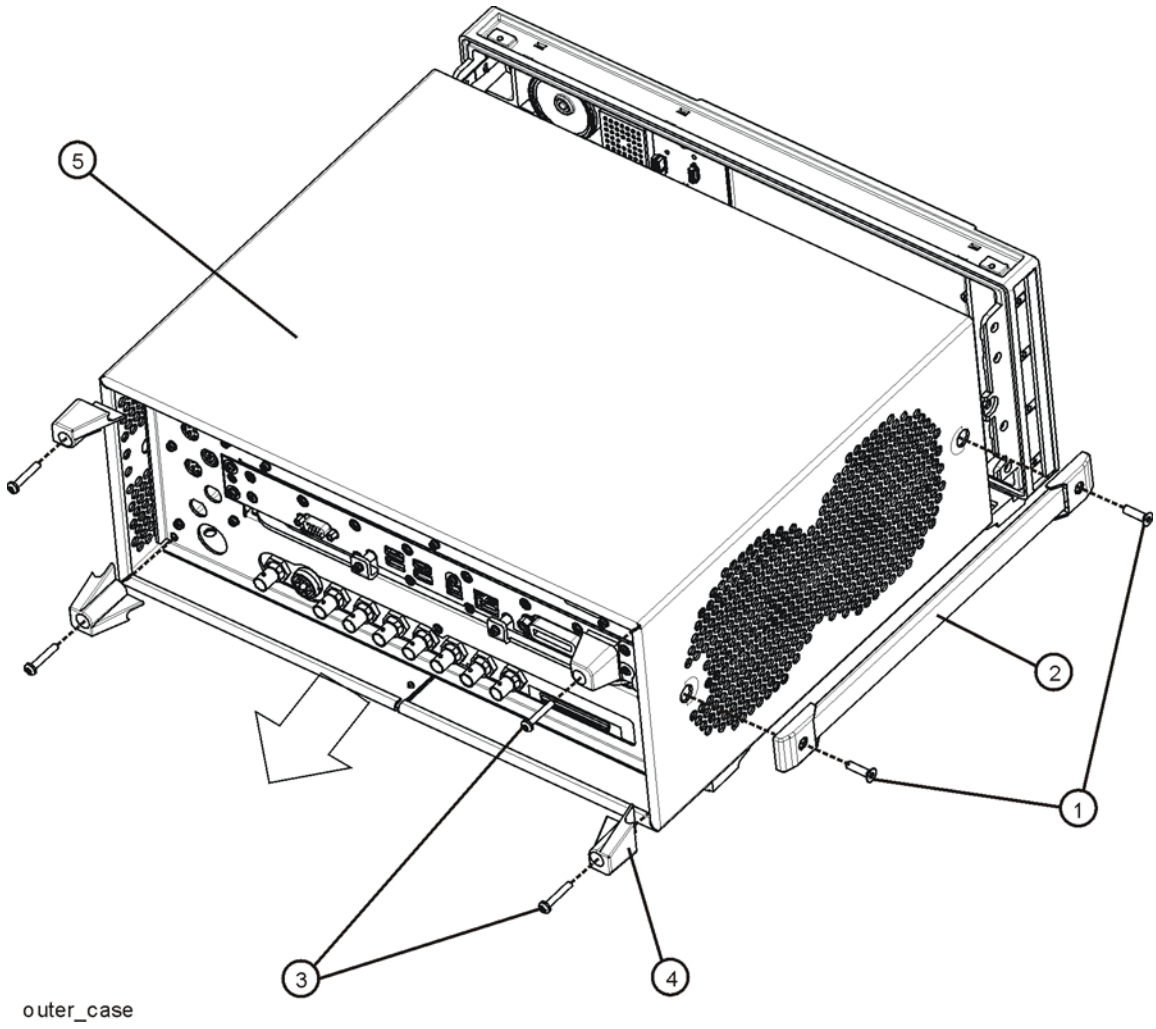
NOTE If the analyzer has Option PRC, Portable Configuration, refer to the "Portable Instrument (Option PRC)" section on page 13 to remove the outer case.

NOTE Make sure any adapters on the front panel are removed.

Standard Instrument (Benchtop Configuration)

1. Disconnect the instrument from ac power.
2. Refer to Figure 1. Using the T-20 driver, remove the four screws (two on each side) **(1)** that attach the handle strap **(2)** on each side of the instrument.
3. Using the T-20 driver, remove the four screws (including washers) **(3)** that hold the rear feet **(4)** in place. The rear feet will not be re-used.
4. Pull the instrument cover **(5)** off towards the rear of the instrument. The instrument cover will not be re-used.

Figure 1 Standard Instrument Outer Case Removal



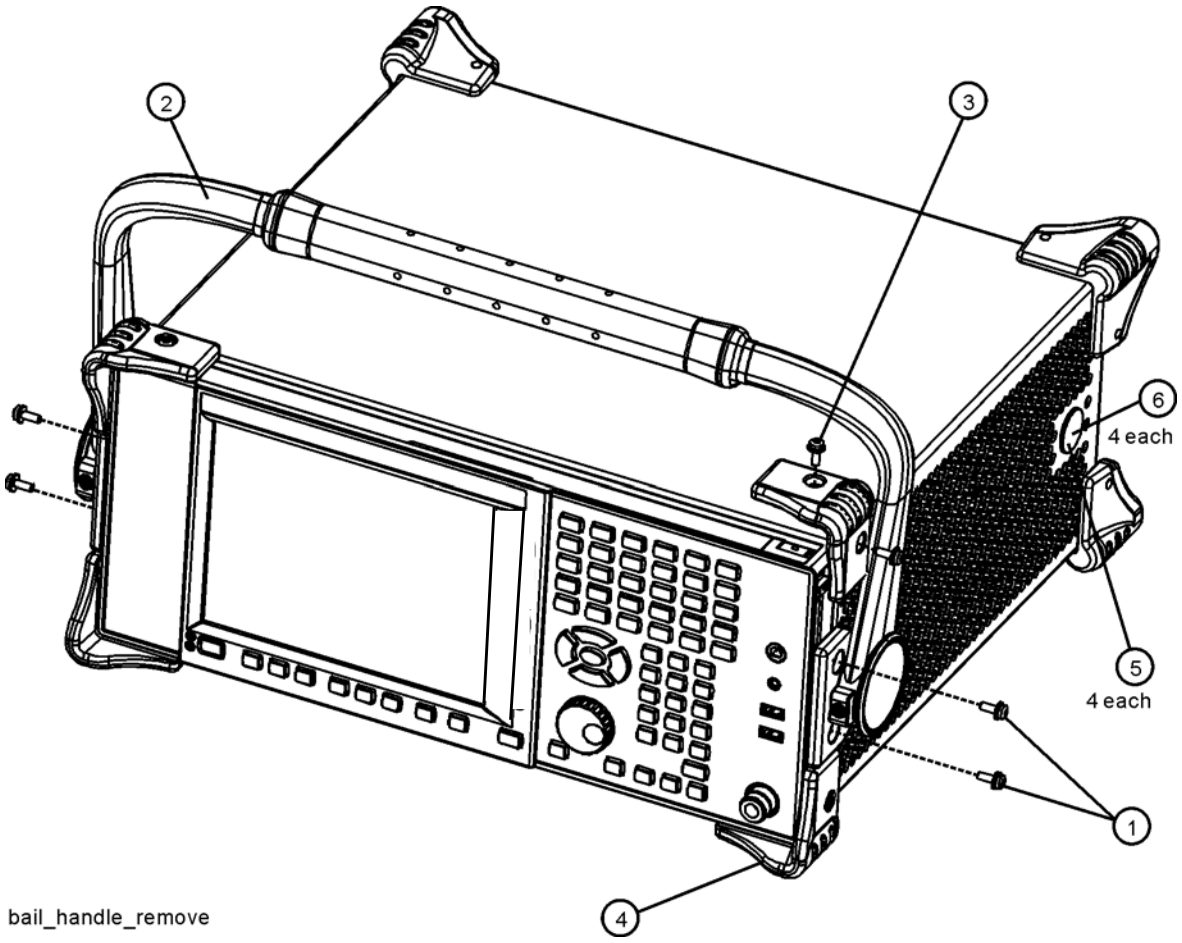
5. Proceed to the Front Frame Assembly Removal section to remove the front frame.

Portable Instrument (Option PRC)

NOTE Make sure any adapters on the front panel are removed.

1. Disconnect the instrument from ac power.
2. Refer to Figure 2. Using the T-20 driver, remove the four screws (two on each side) (1) that hold the bail handle (2) to the front frame. The bail handle assembly will not be re-used.

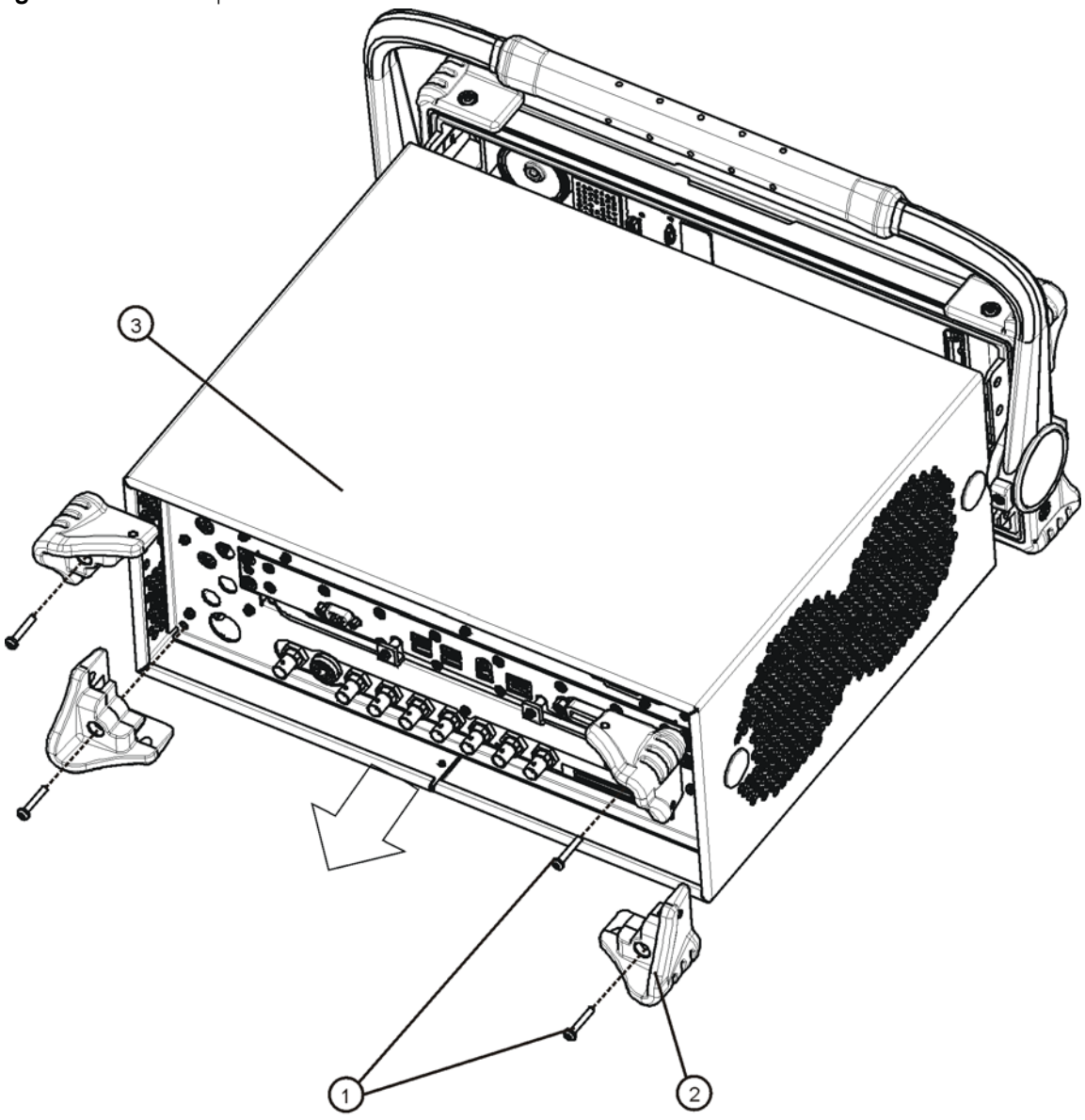
Figure 2 Bail Handle Removal



3. Using the T-20 driver, remove the screws (3) which secure the four front bumpers (4) to the front frame assembly. These screws and bumpers will be not be re-used.
4. Using the T-20 driver, remove the four screws (two on each side) (6) that hold the strap handle plugs (5) in place. The strap handle plugs will not be re-used.

5. Refer to Figure 3. Using the T-20 driver, remove the four screws including washers (1) that hold the rear bumpers (2) in place. The rear bumpers will not be re-used.
6. Pull the instrument cover (3) off towards the rear of the instrument. The instrument cover will not be re-used.

Figure 3 Option PRC Instrument Outer Case Removal

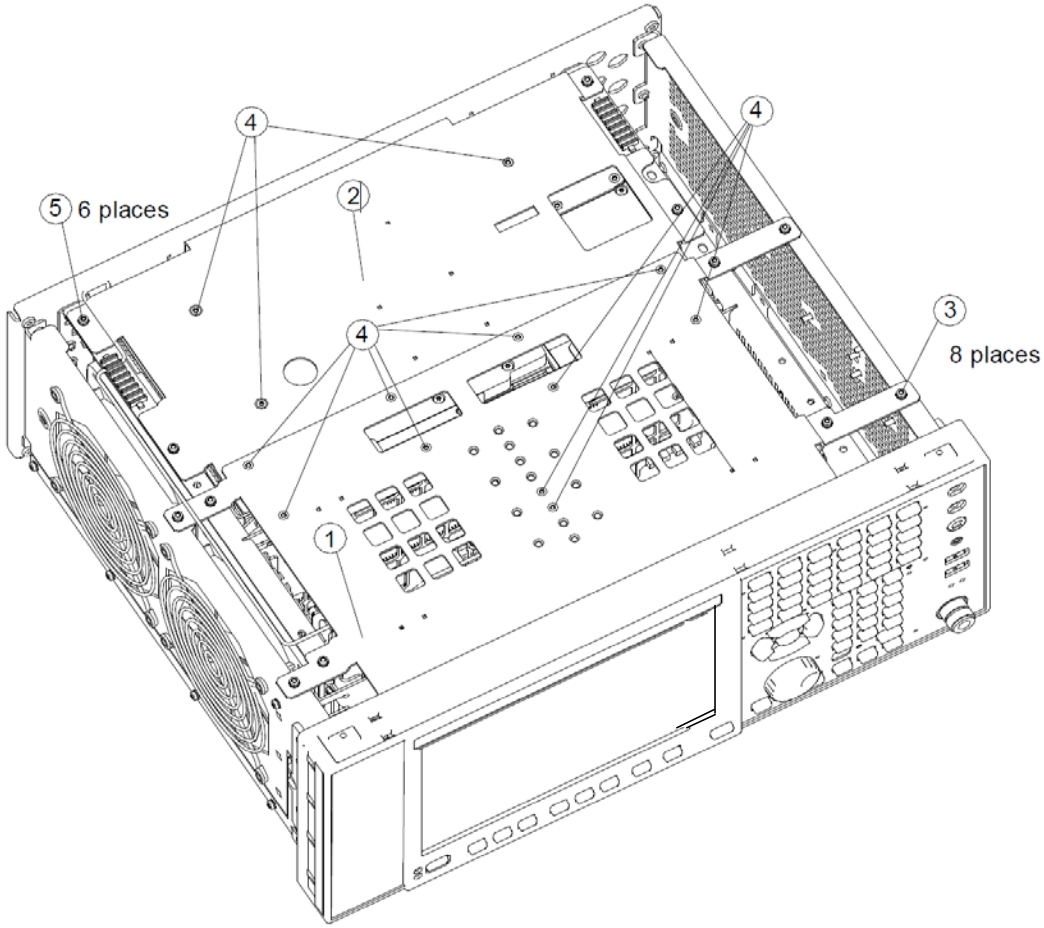


rear_bumper_remove

Top Brace and Reference Bracket Removal

1. Refer to Figure 4. To remove the top brace (1), use the T-10 driver, remove the eight screws (3) (0515-0372) attaching the top brace to the chassis, the six screws (4) (0515-1227) attaching the top brace to the boards, and the four screws (4) attaching the top brace to the reference bracket

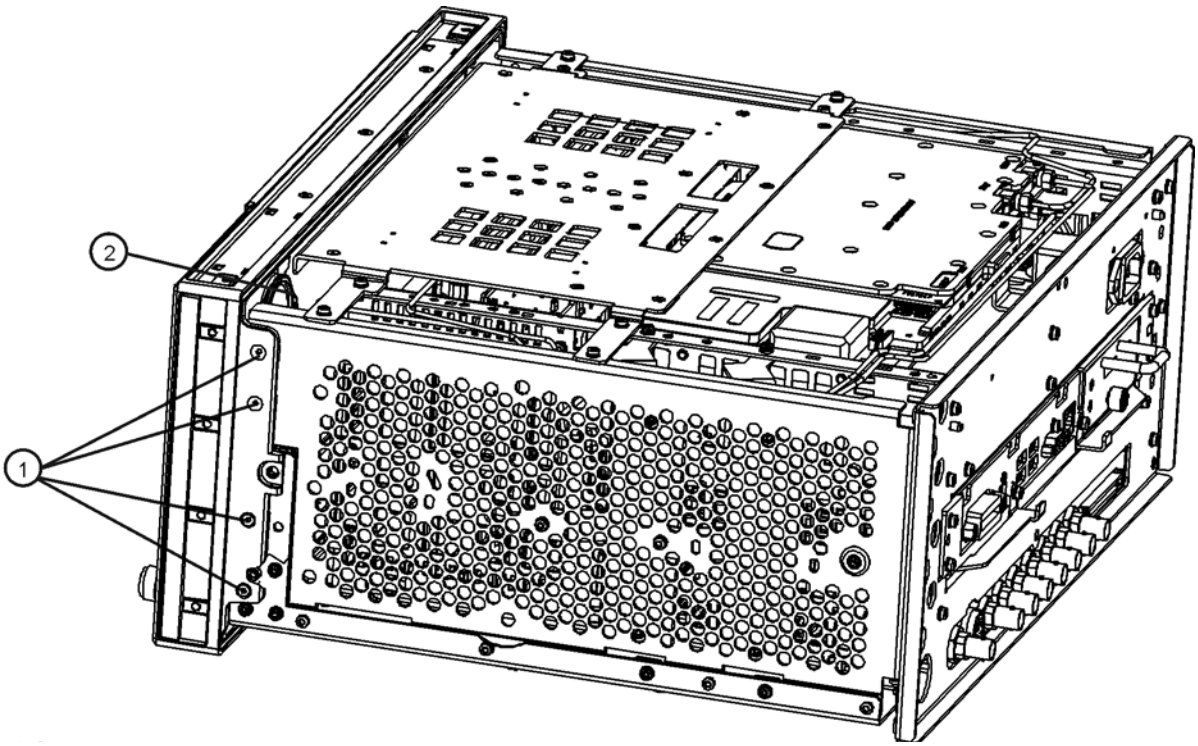
Figure 4 Top Brace and Reference Bracket Removal



Front Frame Assembly Removal

1. Refer to Figure 5. Using the T-10 driver, remove the eight screws **(1)**, four on each side, to detach the front frame from the chassis.

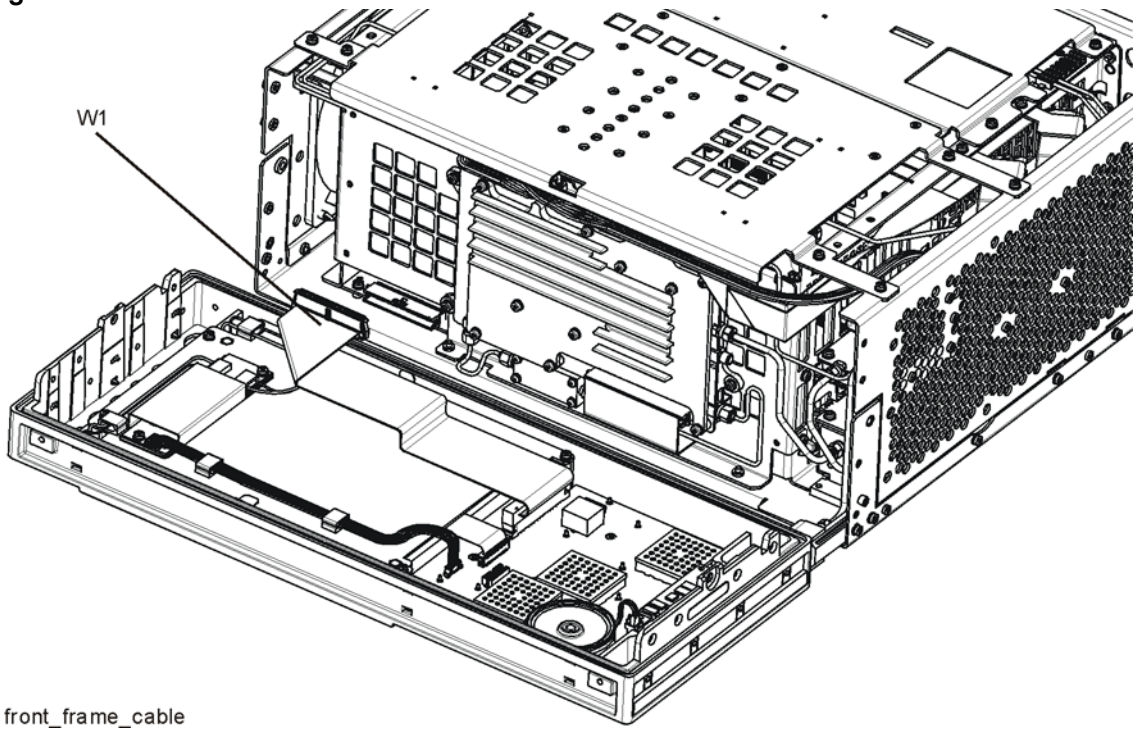
Figure 5 Front Frame Removal



2. Refer to Figure 6. Pull the front frame carefully away from the chassis. Remove the ribbon cable W1 from the A8 Motherboard.

NOTE W1 may have locking springs on each side. Depress the spring on each side of the connector to remove from the motherboard.

Figure 6 Front Panel Cable



3. Pull the Front Frame Assembly carefully away from the chassis.

Tracking Generator Installation

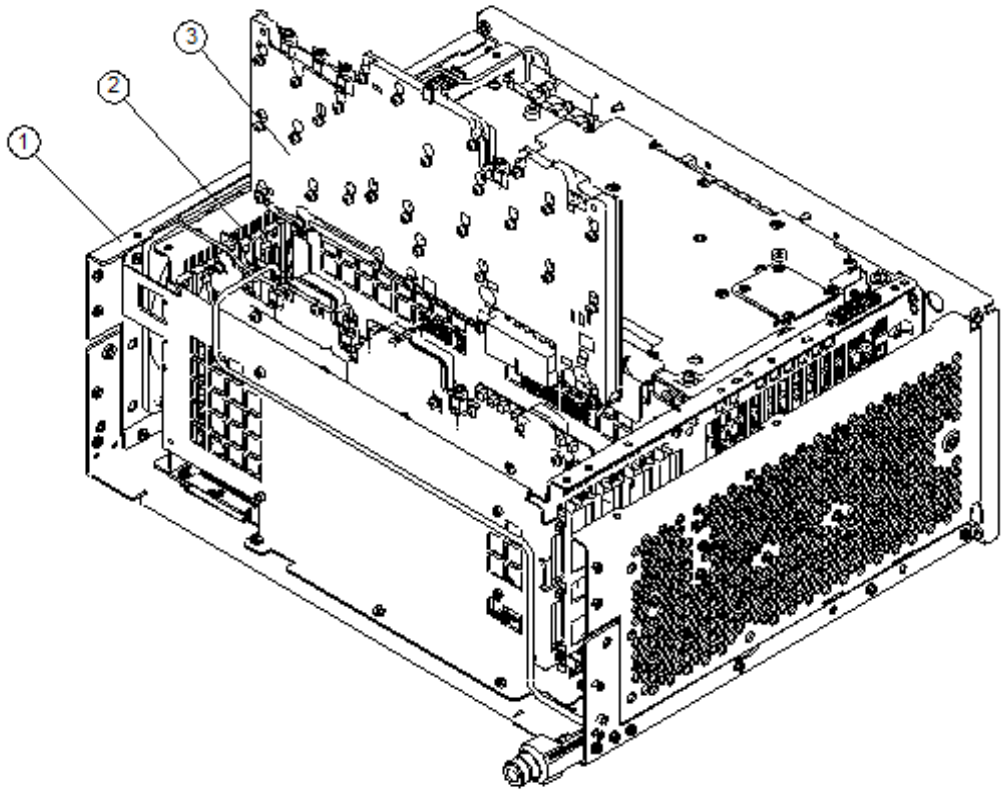
Please follow the procedures below to install the tracking generator in N9000B unit.

Install the Tracking Generator Assembly

Op Locate the tracking generator assembly in the kit.

2. Refer to Figure 7 to install the assembly (3) into slot 4 in the chassis and press down to plug it into the motherboard.

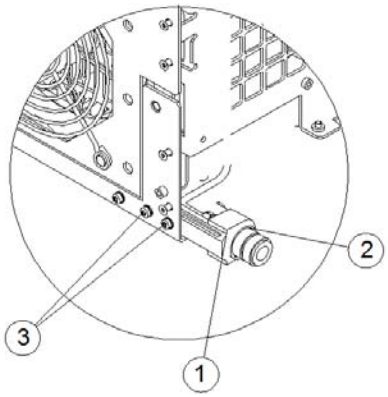
Figure 7 Tracking Generator Assembly Installation



Install the RF Input Connector Assembly

1. Locate the tracking generator assembly in the unit.
2. Refer to Figure 8 to install the RF input connector assembly (1) into the instrument chassis.
3. Tighten the screws (3) with 9 inch-pounds.
4. Install the EMI O-ring (2) Shielding onto the RF input connector.

Figure 8 Tracking Generator Assembly Installation



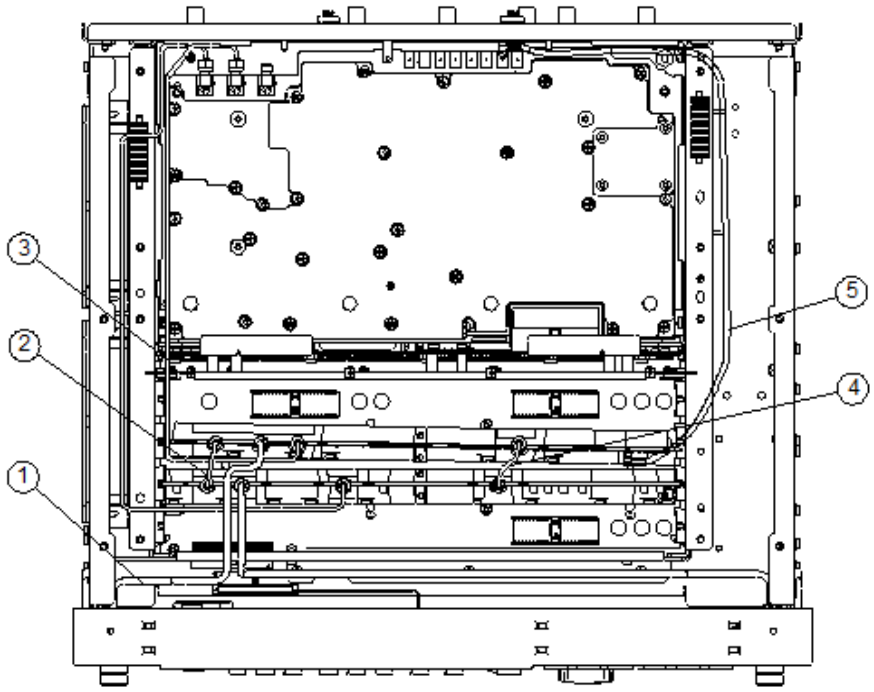
Install the Cable Assembly

1. Locate the cable assembly(N9000-20109) in the retrofit kit.
2. Refer to Figure 9, attach the semi-rigid cable to RF input connector assembly and tighten the SMA connector with 10 in-lbs.

Figure 9 Install the RF Semi-rigid Cable

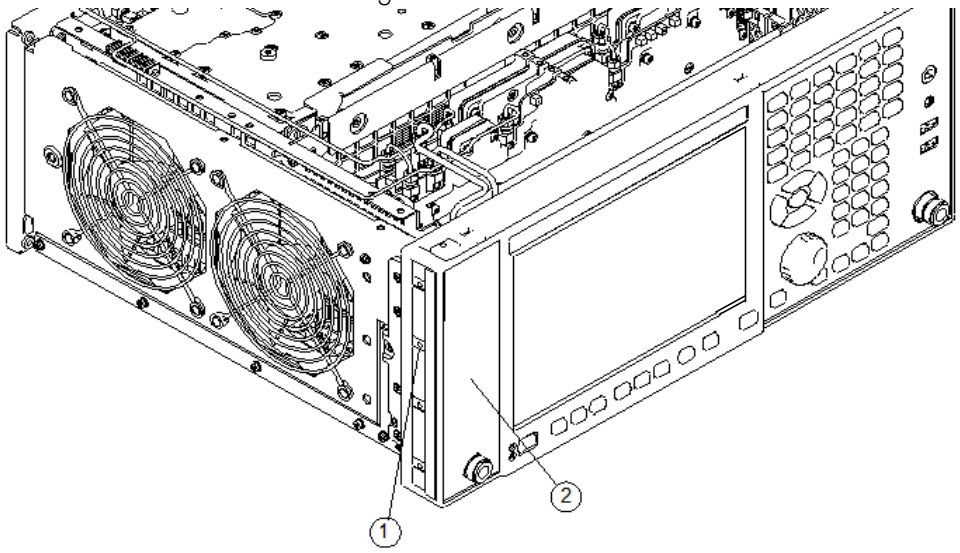
3. Refer to Figure 10, connect the other end of the cable (1) to tracking generator assembly. Tighten the SMA connector with 10 in-lbs.

Figure 10 Install the RF Semi-rigid Cable



4. Locate the cable assemblies N9000-20104, N9000-20105, N9000-20106, and N9000-20107 in the retrofit kit.
5. Refer to Figure 10, install N9000-20105 (2), N9000-20106 (3), N9000-20104 (4), and N9000-20107 (5) onto the corresponding instrument assemblies.
6. Re-install the front frame assembly, top brace, reference bracket and instrument outer case. Avoid pinching cables when installing the top brace.
7. Locate the overlay in the retrofit kit. Refer to Figure 11, attach the overlay (2) to the front frame assembly (1).

Figure 11 Install the RF Semi-rigid Cable



Final Installation for Standard Instruments (Benchtop Configuration, Figure 1)

1. Refer to Figure 1. Locate the new instrument dress cover (N9020-00068) in the kit. Carefully slide the instrument cover onto the instrument from the rear of the analyzer, making sure not to damage any internal cables. The seam on the cover should be on the bottom of the instrument. Be sure the cover seats into the gasket groove in the Front Frame Assembly.
2. Locate the four new rear feet (5041-7903), the four 25mm long M5 pan head screws (0515-1619) and the four flat washers (3050-0893) in the kit. Install the four rear feet **(4)** to the rear of the instrument using the four screws **(3)** and washers. Torque to 21 inch pounds.
3. Locate the two new strap handles (N9020-60252) in the kit. Install the strap handles **(2)** on both sides of the instrument using the four screws **(1)**. Torque to 21 inch pounds.
4. Locate the Top Trim Strip, without bumpers (N9020-40005) in the kit. Attach the Top Trim Strip to the top of the Front Frame Assembly.
5. Locate the two Side Trim Strips (5041-7905) in the kit. Remove the backing and apply one Side Trim Strip to each side of the Front Frame Assembly.
6. Locate the four new Bottom Feet (5041-7906) and two Tilt Stands (1460-1345) in the kit. Attach two of the Tilt Stands to two of the Bottom Feet. Install the two bottom feet with the tilt stands to the bottom of the analyzer near the front of the analyzer. Install the other two bottom feet to the bottom of the analyzer near the rear of the analyzer.
7. Locate the four new Key Locks (5021-2840) in the kit. Install the four key locks to the bottom feet.

Final Installation for Portable Instruments (Option PRC, Figure 2 and Figure 3)

1. Refer to Figure 3. Locate the new instrument dress cover (N9020-00068) in the kit. Carefully slide the instrument cover back onto the instrument from the rear of the analyzer, making sure not to damage any internal cables. The seam on the cover should be on the bottom of the instrument. Be sure the cover seats into the gasket groove in the Front Frame Assembly.
2. Refer to Figure 3. Locate the four new Rear Bumpers (N9020-40015), the four 25 mm long M5 pan head screws (0515-1619) and the four flat washers (3050-0893) in the kit. Install the four rear bumpers **(2)** to the rear of the instrument using the four screws **(1)** and washers. Torque to 21 inch pounds.
3. Refer to Figure 2. Locate the four new Hole Plugs (N9020-40015) and four 14mm long M5 flat head screws (0515-5209) in the kit. Replace the four hole plugs **(5)** to both sides of the instrument.
4. Locate the Top Trim Strip, Opt PRC (N9020-40006) in the kit. Attach the Top Trim Strip to the top of the Front Frame Assembly.
5. Locate eight of the 14 mm long M4 pan head screws (0515-0435) and four new front bumpers (N9020-40016) in the kit. Secure the front bumpers **(4)** to the front frame assembly using the screws **(1)** Torque to 21 inch pounds.
6. Refer to Figure 2. Locate the remaining four 14mm long M4 pan head screws (0515-0435) and the new Bail Handle Assembly (N9020-60251) in the kit. Install the bail handle **(2)** (using the four screws **(1)**) to the Front Frame Assembly. Torque to 21 inch pounds.
7. Locate the four Bottom Foot Hole Plugs (N9020-40007) in the kit. Install the Bottom Foot Hole Plugs in spaces provided on the bottom of the dress cover.

Updating the Instrument Software

1. Visit the following website to determine the latest instrument software version for the N9000B:

   http://www.keysight.com/find/xseries_software

2. Compare the latest software version with the software version noted in step 2 of the Analyzer Information procedure earlier in this note.
3. If the latest software version found on the website above is newer than the currently-installed software version, an instrument software update is required. The latest revision of the X-Series signal analyzer software may be downloaded from the website noted above.

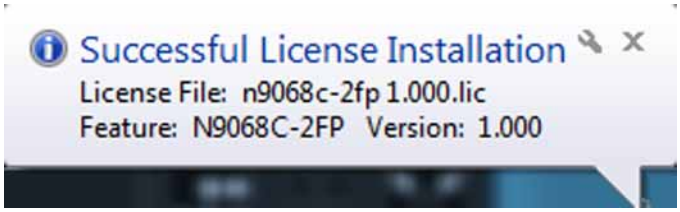
Installation Verification

Power the instrument on and verify that the instrument will not only boot up, but that the signal analyzer application software will load properly. This would include verifying that there are no error messages displayed in the Status Bar of the application window.

License the Options

1. Located Option Upgrade Entitlement Certificate in the kit and follow the directions to redeem it. You will receive and email with an attached License File.
2. Located the USB Storage Device. Perform a virus scan on this device before use. Save the License File to the root directory of the USB Storage Device.
3. Connect the USB Storage Device to the signal analyzer USB port.
4. The signal analyzer will automatically consume the License File. (This may take a few minutes) When the License File is consumed, the Keysight License Manager will display a “Successful License Installation” **message similar to the one shown in** Figure 12.

Figure 12 Successful License Installation



Tracking Generator Function Activation

After the installation is completed, please follow the procedures below to activate the option.

1. Press [Meas Setup] > {Source} > {Select Source}. A submenu to select source will appear on the screen.
2. Touch screen to highlight the source in Available Source List, and press {Select Highlighted Source}. The internal TG will appear under {Select Source:}.

Adjustments, and Performance Verification

Adjustments and performance verification testing requires the use of the calibration software. The latest software information and downloads are available at:

http://www.keysight.com/find/calibrationsoftware

Adjustments Required

TG Level Accuracy

TG Path Delay

Performance Testing Required

TG Absolute Amplitude and Flatness

TG Power Sweep

TG Spurious Outputs

For assistance, contact your nearest Keysight Technologies Sales and Service Office. To find your local Keysight office access the following URL, or if in the United States, call the following telephone number:

http://www.keysight.com/find/assist

1-800-829-4444 (8 am - 8 pm ET, Monday - Friday)

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