

# E8356A-02E

# S E R V I C E N O T E

Supersedes:  
E8356A-02D

## E8356A PNA Series RF Network Analyzers

Serial Numbers: 00000000 thru 46999999

**Older Front Panel Interface (FPI) boards can cause the following problems:**

- **A serious won't boot condition**
- **USB signal integrity degradation**
- **Intermittent front panel keyboard performance**
- **Intermittent RPG lockup**
- **RPG shaft disconnection**

**Installing a new FPI board corrects these problems.**

**If the front panel assembly is removed, remember to add the new bracket modification described in Service Note E8356A-03.**

**To Be Performed By: Agilent-Qualified Personnel or Customer**

**Parts Required:**

P/N	Description	Qty.
E8361-63061	Printed-circuit assembly board	1

## ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:			
<b>MODIFICATION RECOMMENDED</b>			
ACTION CATEGORY:	<input type="checkbox"/> IMMEDIATELY <input type="checkbox"/> ON SPECIFIED FAILURE  <input checked="" type="checkbox"/> AGREEABLE TIME	STANDARDS:	Labor: Models w/ Opt 014 or 015: 2 hrs (add 2 hrs for E8361A) Models w/o Opt 014 or 015: 1 hr
LOCATION CATEGORY:	<input type="checkbox"/> CUSTOMER INSTALLABLE <input checked="" type="checkbox"/> ON-SITE <input checked="" type="checkbox"/> SERVICE CENTER	SERVICE INVENTORY:	<input type="checkbox"/> RETURN <input checked="" type="checkbox"/> SCRAP <input type="checkbox"/> SEE TEXT
AVAILABILITY:	<input type="checkbox"/> PRODUCT'S SUPPORT LIFE	NO CHARGE AVAILABLE UNTIL: January 1, 2010	
AUTHOR: MF      PRODUCT LINE: WN ADDITIONAL INFORMATION: Model-specific Service Notes on the same topic were written for the following PNA models: E8356/7/8A, N3381/2/3A, E8801/2/3A, E8361/2/3/4A, E8362/3/4B, and N5230A. Service Note History: -02A, Sept 05, Replace FPI boards E8356-60003 & E8356-60029. Not always necessary to replace E8361-63061 or E8356-60003 FPI boards. -02B, Nov05, Add bracket. / -02C, Jul07, RGP shaft can disconnect; RPG & FP keyboard can be intermittent upon boot-up. E8361-63061 to replace 5 FPI boards. /-02D, Nov07, E8356-60003 is not to be replaced if still functional. / -02E, Dec 07, Agilent prefers customers to replace the E8361-63061 rev 008 rather than modify.			

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## Situation:

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FPI boards E8356-60209 and the older E8356-60029 were both identified as causing:

- a serious “won’t boot” condition
- a USB signal integrity degradation.

These issues were noticed in production as well as service centers. The booting issue was due to a tantalum capacitor (C58, 4.7uF, and 50V) reversed biased at 10 percent of its rated voltage. Both issues were fixed with a board layout change of the E8361-63061, revisions 001 to 007 FPI boards.

Older E8361-63061 revision 008 FPI boards were identified as having the following problems:

- RPG shaft disconnections
- Intermittent front panel keyboard performance
- Intermittent RPG lockup.

Both intermittent problems have been traced to an incorrect voltage applied to a pin on the U4 IC.

## Solution/Action:

The Agilent Service Parts Organization is currently stocking E8361-63061 revision 009 FPI boards. This board should be used to replace the E8356-60029, E8356-60209, and E8361-63061 revisions 001 to 008 FPI boards.

Agilent Technologies prefers and recommends the Front Panel Interface board be completely replaced due to the difficulty of modifying the board. However, customers who have a skilled technician and appropriate tools, and can not wait a few days for a board to be shipped, can modify the E8361-63061 revision 008 using the information on pages 3 and 4.

The E8356A/57A/58A analyzers originally shipped with E8356-60003 FPI boards. These boards should NOT be replaced if they are still functional.

**NOTE:** The PNA may already have the E8361-63061 FPI board installed. Before replacing the FPI board, remove the round knob (RPG) from the front panel by gently pulling the knob forward. Examine the FPI board’s RPG spindle. A dot of red paint on the end of the spindle indicates a revision 001 through 008 FPI board. A dot of black paint on the end of the spindle indicates a revision 009 FPI board. If there is no red or black dot on the RPG spindle, remove the outer cover of the PNA so that you can see the FPI board. On the FPI board, next to the barcode label, is a revision sticker. If this sticker reads “009” it is not necessary to replace the FPI board. In this case, mark the end of the RPG spindle with a black permanent marker and reassemble the PNA.

**Action:**

Replace the following FPI boards with the E8361-63061 revision 009 FPI board. You can find instructions for replacing the FPI board in the Service Guide for your PNA<sup>1</sup>.

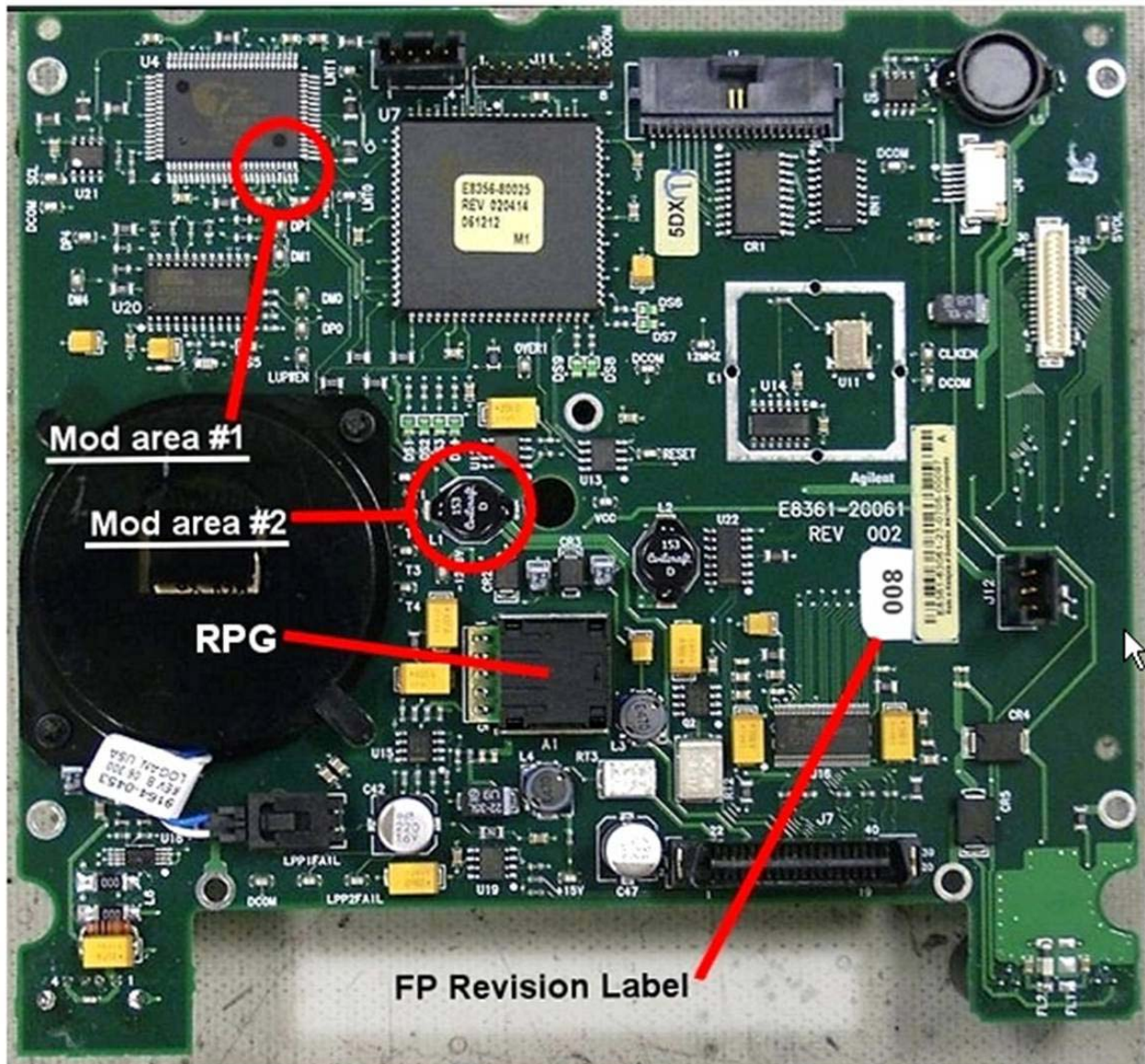
- E8356-60029
- E8356-60209
- E8361-63061 revisions 001 to 007
- E8361-63061 revision 008. *While not recommended*, this FPI board can be modified by a skilled technician, rather than replaced, using the following procedure.

**NOTE: While the front panel assembly is removed, remember to add the new bracket modification described in Service Note E8356A-03.**

The following procedure can also be found online at:

<http://na.tm.agilent.com/pna/frontpanelmod.html>.

Figure 1



Refer to Figure 1 for the two modification areas to be addressed. Note that while this picture happens to show the FPI board completely removed from the front frame assembly, this is not necessary to perform the required modifications.



- Modification #1 consists of shorting two pins of U4 together with a small amount of solder.
- Modification #2 consist of removing L1.

**Modification #1**

Carefully solder pins 21 and 22 together on U4. Refer to Figure 2 for the exact location. Use care so that no other pins are shorted. Use of a very fine tip soldering iron is recommended and a large work-task magnifying glass is very helpful.

**Modification #2**

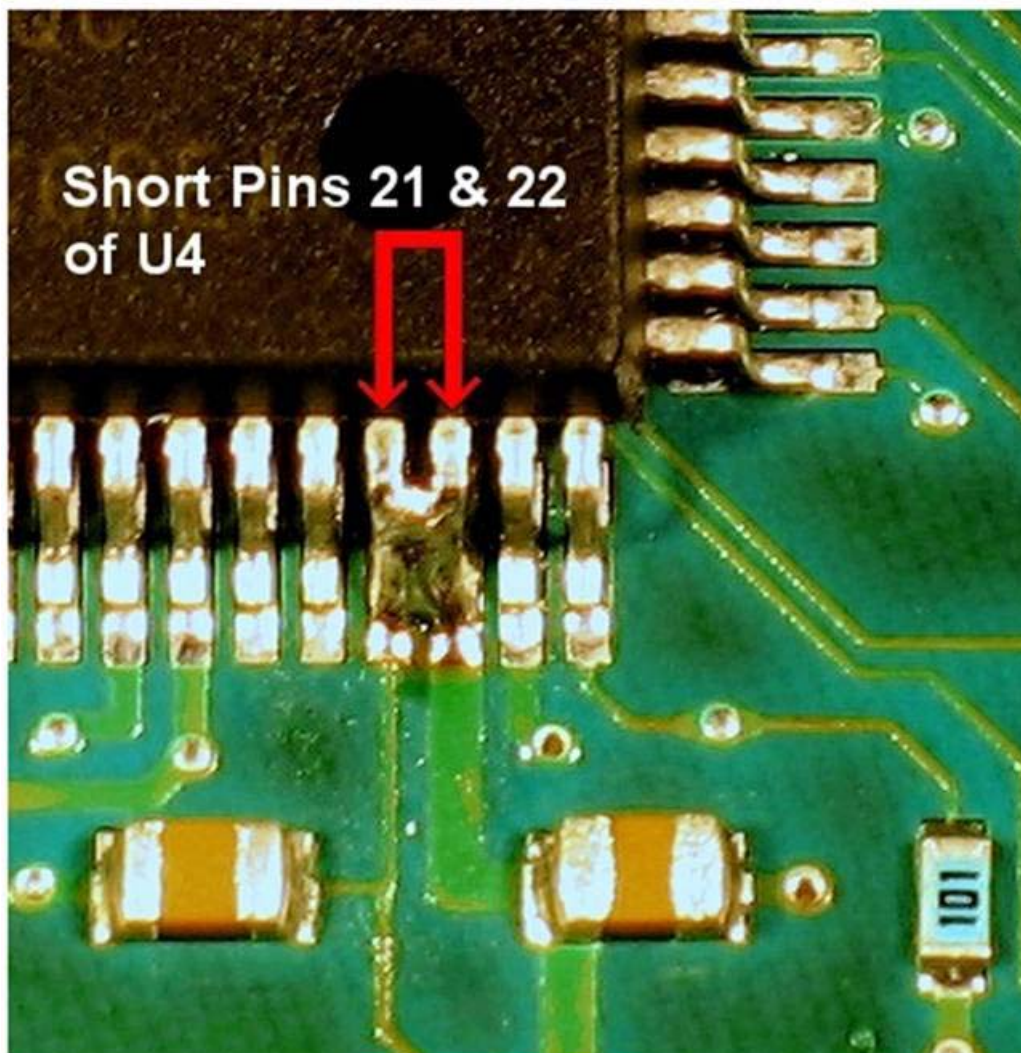
Unsolder and completely remove the black surface mount inductor L1 from the front panel assembly board. This is no longer needed and can be discarded.

**Identification Items**

When the modifications have been completed, you need to change the board revision number from its existing version to version 009. You can cross off the existing revision label and write in "009" or you can create your own label to place over it.

Look at the date code on the side of the RPG (Rotary Pulse Generator or optical encoder). If the date code is between 0609 and 0718 (inclusive) then skip this step and read the next paragraph. Otherwise, remove the front panel knob and place a large **black** dot on the end of the RPG shaft using a permanent marking pen and then replace the knob. This will indicate to others (service centers and repair personnel) that this modification has already been made. This location is used so that the PNA does not need to be first disassembled.

**Warning!** If the date code of the RPG is from 0609 to 0718, then you may have problems removing the knob. On these units, the RPG shaft may be pulled out of the RPG while trying to remove the knob, thus destroying the RPG. While Agilent will replace this for free, this would incur more unwanted downtime. For these cases you may just want to place a label on the back of the PNA, to the left of the CPU board. This label should read simply "FPI 009." If needed, the Agilent part number for the RPG is 1990-1865.

**Figure 2**

**Action 2 (Only for models with Option 014 or 015):** Perform Source Calibration and Receiver Calibration.

PNA models with Option 014 or 015 that have had an E8361-63061 FPI board installed require a new Source calibration and Receiver calibration. For instructions on performing these calibrations, refer to the calibration section of PNA Help that is embedded in the analyzer. PNA Help can also be viewed online. Use the Action 1 steps A-C above, but in Step C, click on the title/hyperlink for PNA Help.

**Action 3:** Perform tests on the A1, A2, and A3 assemblies to verify correct operation of the new FPI board.

You can find instructions for performing the necessary tests in the Service Guide for your PNA. To view this Service Guide information online, use the steps in the footnote below, but in Step F locate the chapter "Troubleshooting". Next, click on the title/hyperlink for the section "Front Panel Troubleshooting." Perform the tests for the A1, A2, and A3 assemblies.

<sup>1</sup>To view this Service Guide information online, use the following steps:

- A. Go to <http://www.agilent.com>.
- B. Enter your PNA model number (Ex: E8356A) in the Search function and click **Search**.
- C. Click on **Manuals**.
- D. Click on the title/hyperlink for the Service Guide. If you don't find your Service Guide listed on the Web page that is displayed initially, click on the **More** hyperlink.
- E. When the PDF of the Service Guide is displayed, click on the bookmark for the Contents section.
- F. Scroll through the Contents section to locate the chapter "Repair & Replacement Procedures."
- G. Click on the title/hyperlink for the section "Removing & Replacing Front Panel Subassemblies."
- H. Follow the instructions in the subsection "Removing the A3 Front Panel Interface Board Assembly."