

N5171B-07A

# Information Only Service Note

Supersedes:  
N5171B-07

## N5171B X-Series EXG Analog Signal Generator

Serial Numbers: ALL

**The Problem** - A3 RF assembly boards showing Heater and Unlock errors

### Parts Required:

P/N	Description	Qty.
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NONE

### ADMINISTRATIVE INFORMATION

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<input type="checkbox"/>	Calibration Required
X	Calibration NOT Required

PRODUCT LINE: 15
AUTHOR: PY

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ADDITIONAL INFORMATION:

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Situation:

Recently we noticed several A3 RF Assemblies return to factory with the following Heater and Unlock errors at the Annunciators area. It can also include errors 619, FPGA revision is invalid. Do refer to Figure 1a and 1b for the details.

Figure 1a – Heater and Unlock Errors with Invalid FPGA Rev #

FREQUENCY 6.000 000 000 000 GHz RF OFF -144.00 dBm

**HEATER** **UNLOCK ERR**

Name	Part#/Rev#	Serial#	HUID	OFR	PIC	Opts	Extr
RF	N5180-69238	23144700080	0000	000	000	0000	0000
Analog FPGA		0,0000,0000:0000					
PCI FPGA		7,0130,0000:feb9					
Ref FPGA		0,0000,0000:0000					
Synth FPGA		0,0000,0000:0000					
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BB	N5180-60145	23140900119	0000	000	000	0000	0000
IF FPGA		2,0c11,0138:f2a7					
BBG FPGA		40c8,0762,1000:e88e					
Memory		2GB + 2GB					

**Invalid FPGA Rev#**

**ERROR: 530, ALC Detector Heater Failed**

Or

FREQUENCY 6.000 000 000 000 GHz RF OFF -144.00 dBm

**HEATER** **ERR**

Name	Part#/Rev#	Serial#	HUID	OFR	PIC	Opts	Extr
RF	N5180-69238	23141900058	0000	000	000	0000	0000
Analog FPGA		ffff,ffff,ffff:ffff					
PCI FPGA		7,0130,0000:feb9					
Ref FPGA		ffff,ffff,131a:0000					
Synth FPGA		0,0000,0000:0000					
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BB	N5180-60145	23122000012	0000	000	000	0000	0000
IF FPGA		2,1462,112e:da60					
BBG FPGA		40d6,1794,0338:e524					
Memory		2GB + 2GB					

**Invalid FPGA Rev#**

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Figure 1b – Multiple Error 619

<b>FREQUENCY</b>		<b>RF OFF</b>
6.000 000 000 000 GHz		-144.00 dBm
<b>HEATER</b>		<b>ERR</b>
<b>Error Queue</b>		
619, FPGA revision is invalid; FPGA: ANALOG (found 0, expected 7).		(neu) 1/10
619, FPGA revision is invalid; FPGA: ANALOG (found 0, expected 1db01501).		(neu) 2/10
619, FPGA revision is invalid; FPGA: REFERENCE (found 0, expected 2).		(neu) 3/10
619, FPGA revision is invalid; FPGA: REFERENCE (found 0, expected 12ba131a).		(neu) 4/10
11/30/2022 11:27		

<b>FREQUENCY</b>		<b>RF OFF</b>
6.000 000 000 000 GHz		-144.00 dBm
<b>HEATER</b>		<b>ERR</b>
<b>Error Queue</b>		
619, FPGA revision is invalid; FPGA: SYNTH (found 0, expected 12d).		(neu) 5/10
617, Configuration Error; The backup memory contains license keys for serial number CN83000142. Use the service procedure to overwrite the backup memory.		(neu) 6/10
533, RF Analog FPGA DCM unlocked		(neu) 7/10
508, Synthesizer Unlocked; FracN Loop.		(neu) 8/10
11/30/2022 11:28		

**Solution/Action:**

This Service Note is to emphasize on the proper handling of the A3 RF Assembly board, from removal of the assembly from the carton box, handling on the workbench to removal from instrument and the replacement procedure.

A. Removal from the carton box

Below figures 3 and 4 shows the correct and incorrect method to remove the A3 RF assembly board from the carton box.



Figure 3



Figure 4

B. While working with the board

Avoid tilting the board where components touches the workbench. This would give pressure on the PCA and potentially can damaged the PCA as well as the components in the area. Always lay the board flat on the workbench. Refer to Figure 5.

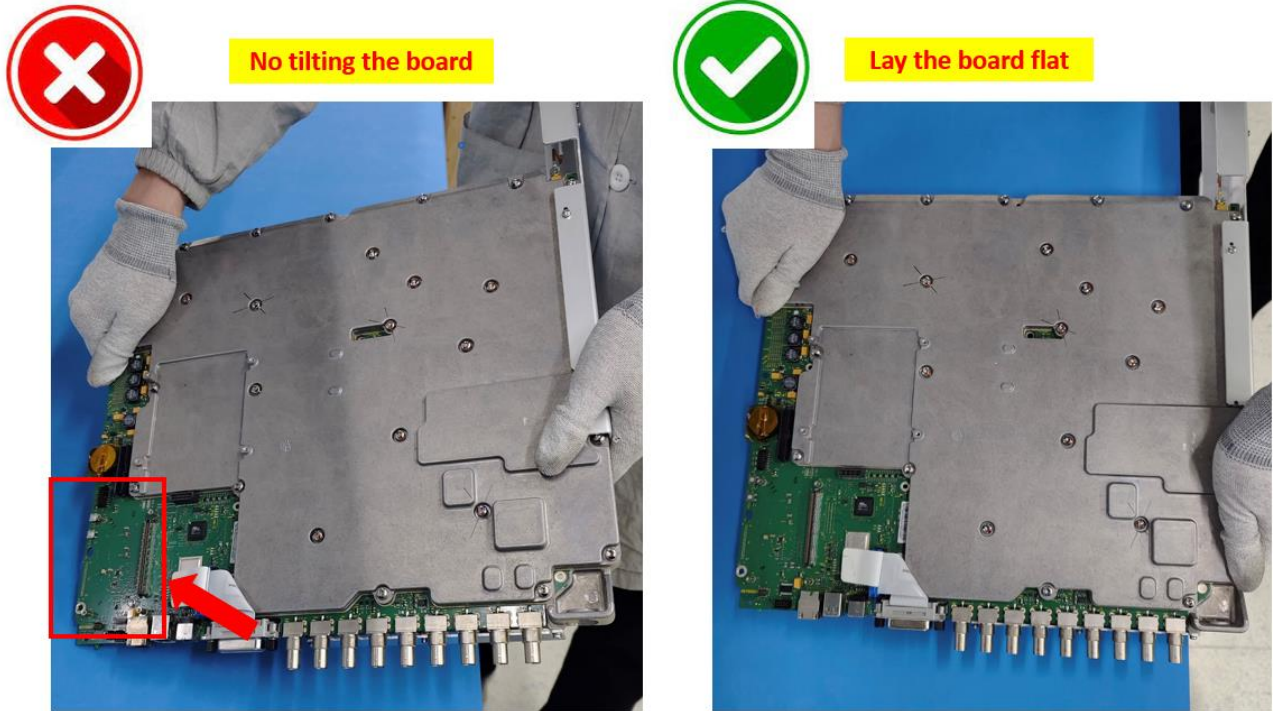


Figure 5



Figure 6 shows the correct and incorrect method of holding the board while removing and fixing the fixture.

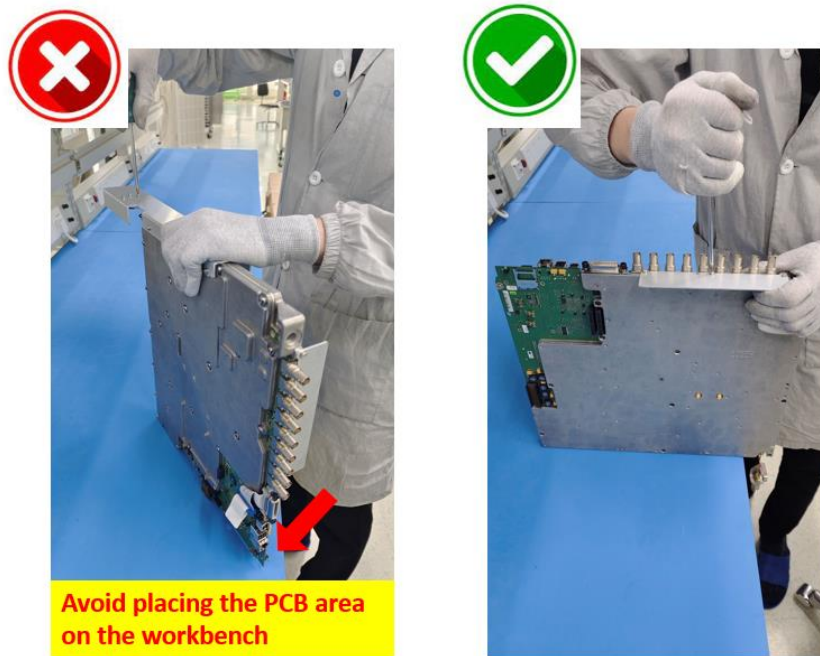


Figure 6

C. Removal from the instrument

Pry slots are provided on both sides of the A3 RF assembly to aid in removing of the board. Use a flat head (a wedge-shaped flat tip) screwdriver to loosen the board from the chassis as shown in Figure 7.



Figure 7

Figure 8 shows the correct and incorrect method of holding the board while removing and installing the board to the instrument.

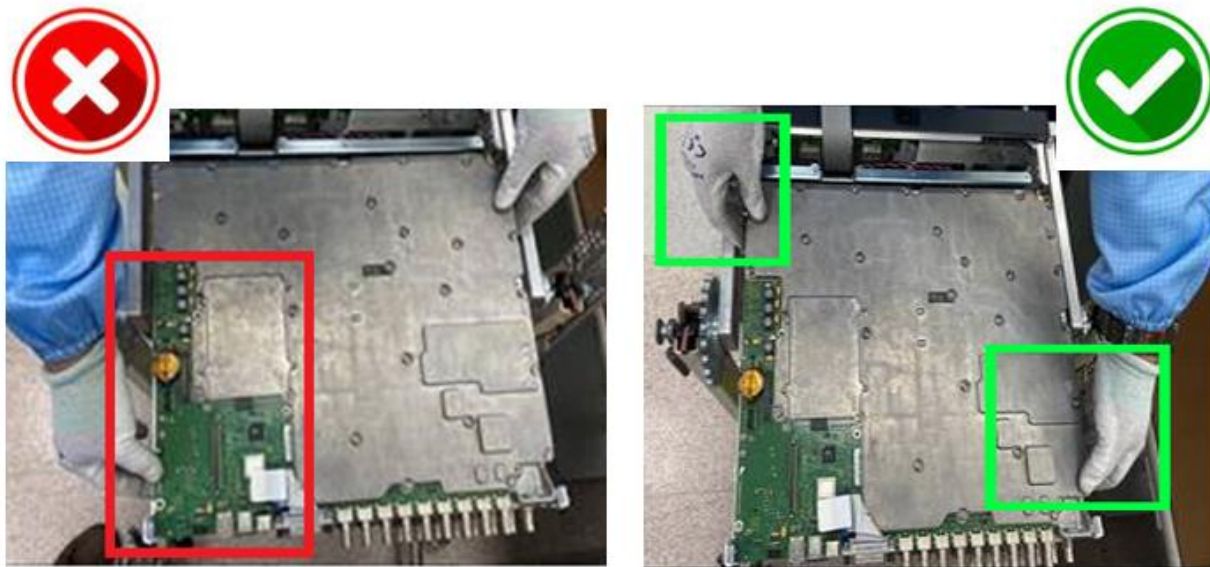


Figure 8

Another precaution is when removing and reinstalling back the screw (refer to Figure 9), it is not necessary to remove the ribbon cable to avoid re-attaching the ribbon cable back.

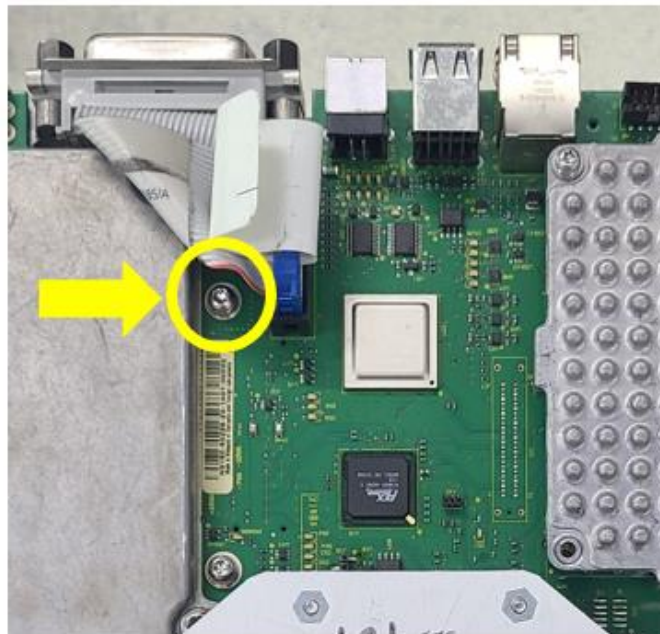


Figure 9

This service note is to complement the X-Series Signal Generator Service Guide (N5180-90059), Assembly Replacement Section for A3 RF assembly.

Revision History:

Date	Service Note Revision	Author	Reason for Change
13 Dec 2022	01	Petrina Yong	As Published
14 June 2023	02	Petrina Yong	Added more handling procedure