

Information Only Service Note

Supersedes:
N5181B-08A

N5181B X-Series MXG Analog Signal Generator

Serial Numbers: ALL

The Problem - Improper handling during removal and installing during A3 RF assembly boards potential for Heater and Unlock errors

Parts Required:

P/N	Description	Qty.
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NONE

ADMINISTRATIVE INFORMATION

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

PRODUCT LINE: 15
AUTHOR: PY

ADDITIONAL INFORMATION:

Situation:

The A3 RF Assemblies which are returned to factory as DEF and DEFOA still having the Heater and Unlock errors.

Heater and Unlock errors are displayed on 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 #

The screenshot shows a device interface with the following elements:

- FREQUENCY:** 6.000 000 000 000 GHz
- Power:** -144.00 dBm
- RF OFF:** Indicated in a yellow box.
- HEATER:** Indicated in a yellow box.
- UNLOCK ERR:** Indicated in a yellow box.
- Installed Board Information:**

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						
Invalid FPGA Rev#							
BB	N5180-60145	23140900119	0000	000	000	0000	0000
IF FPGA	2,0c11,0138:f2a7						
BBG FPGA	40c8,0762,1000:e88e						
Memory	2GB + 2GB						
- ERROR: 530, ALC Detector Heater Failed:** Indicated in a yellow box at the bottom.

Or

The screenshot shows a device interface with the following elements:

- FREQUENCY:** 6.000 000 000 000 GHz
- Power:** -144.00 dBm
- RF OFF:** Indicated in a yellow box.
- HEATER:** Indicated in a yellow box.
- ERR:** Indicated in a yellow box.
- Installed Board Information:**

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						
Invalid FPGA Rev#							
BB	N5180-60145	23122000012	0000	000	000	0000	0000
IF FPGA	2,1462,112e:da60						
BBG FPGA	40d6,1794,0338:e524						
Memory	2GB + 2GB						
- 11/30/2022 11:30:** Time stamp at the bottom right.

Figure 1b – Multiple Error 619

FREQUENCY		RF OFF
6.000 000 000 000 GHz		-144.00 dBm
HEATER		ERR
Error Queue		
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		

FREQUENCY		RF OFF
6.000 000 000 000 GHz		-144.00 dBm
HEATER		ERR
Error Queue		
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. **The A3 RF Assembly DEF failure due to Heater issue is at 15%. The procedure mentioned below need to be adhere also when returning the DEF since the DEF will be repaired and stock to SLSC as refurbishment.**

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.

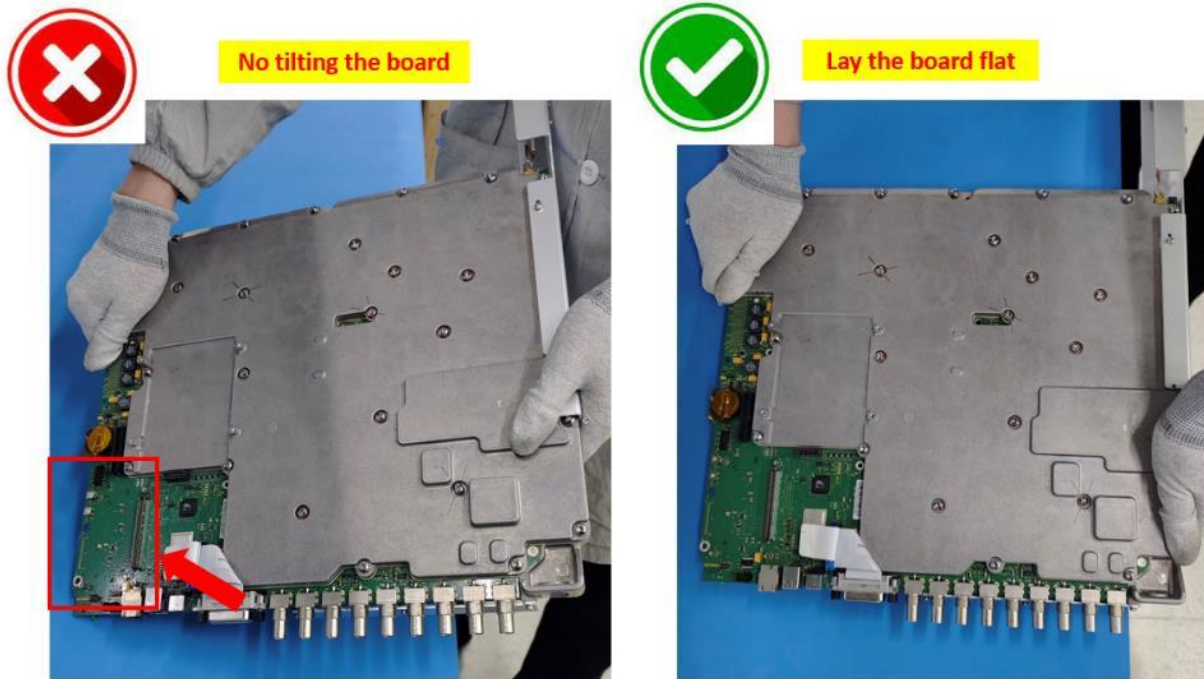


Figure 5

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

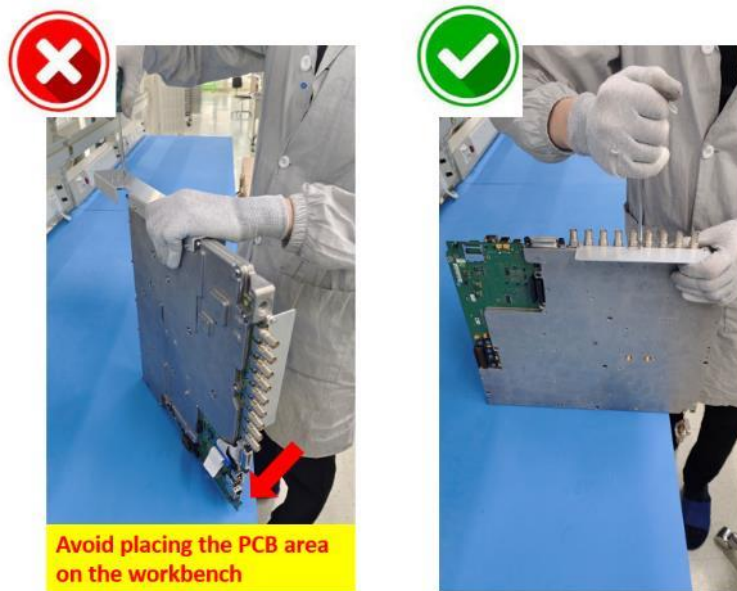


Figure 6

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.

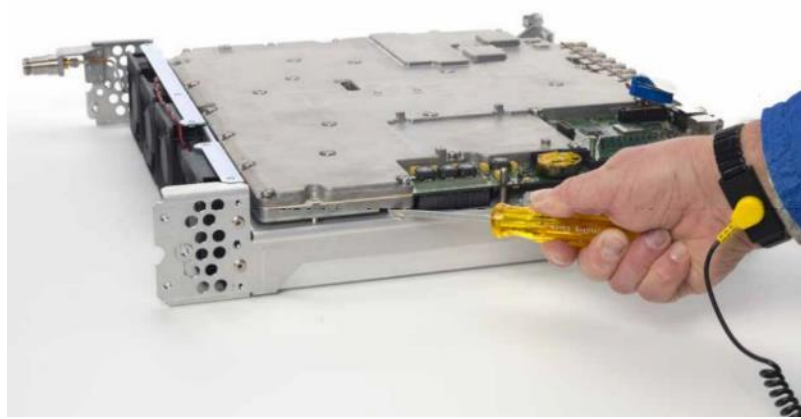


Figure 7

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

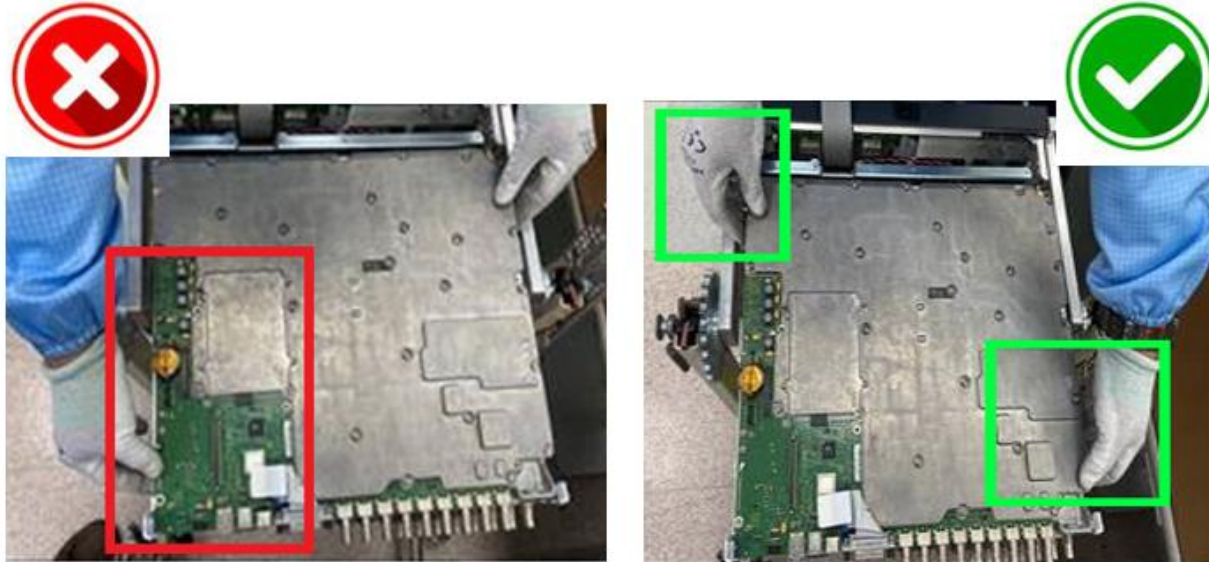


Figure 8

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.

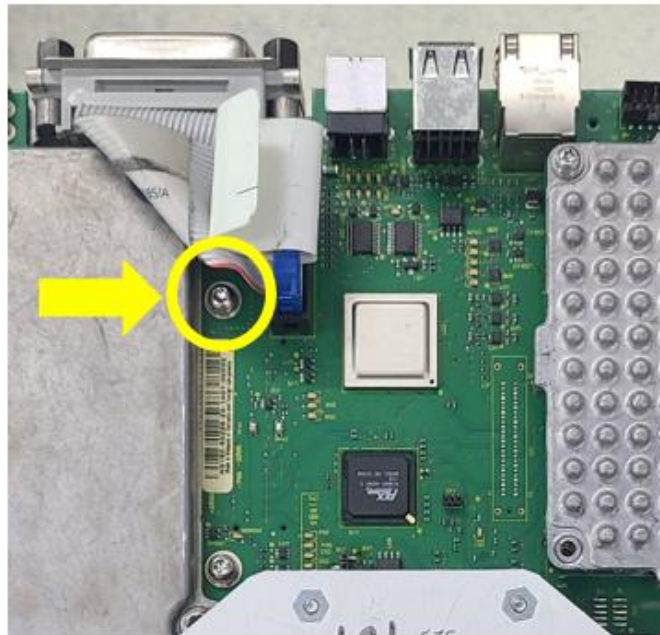


Figure 9

D. Returning DFF / DFFOA to SI SC warehouse

Refer to Figure 5 and 6 to re-install the bracket. Placed the board back into the ESD bag and return it back into the carton box. Referring to Figure 10, slot the bracket into the groove of the foam board. This is to ensure the board will be secure during shipment.



Figure 10

Figure 11 shows the shipment condition of the board if the bracket is not placed properly in the groove. The ESD packaging when placed properly will be securely inside the red foam. This will prevent the board damaged during shipping.



Figure 11

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
11 July 2024	03	Petrina Yong	Revise 'The Problem' statement for a better clarity and add handling procedure for returning DEF and DEFOA.