

N5166B-03A

Information Only Service Note

Supersedes:
N5166B-03

N5166B X-Series CXG Vector Signal Generator

Serial Numbers: ALL

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

Parts Required:

| P/N | Description | Qty. |
|-----|-------------|------|
|-----|-------------|------|

NONE

ADMINISTRATIVE INFORMATION

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

| |
|------------------|
| PRODUCT LINE: 15 |
| AUTHOR: PY |

ADDITIONAL INFORMATION:

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 | | | | | | |
| 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

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 | | | | | | |
| 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

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.

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.

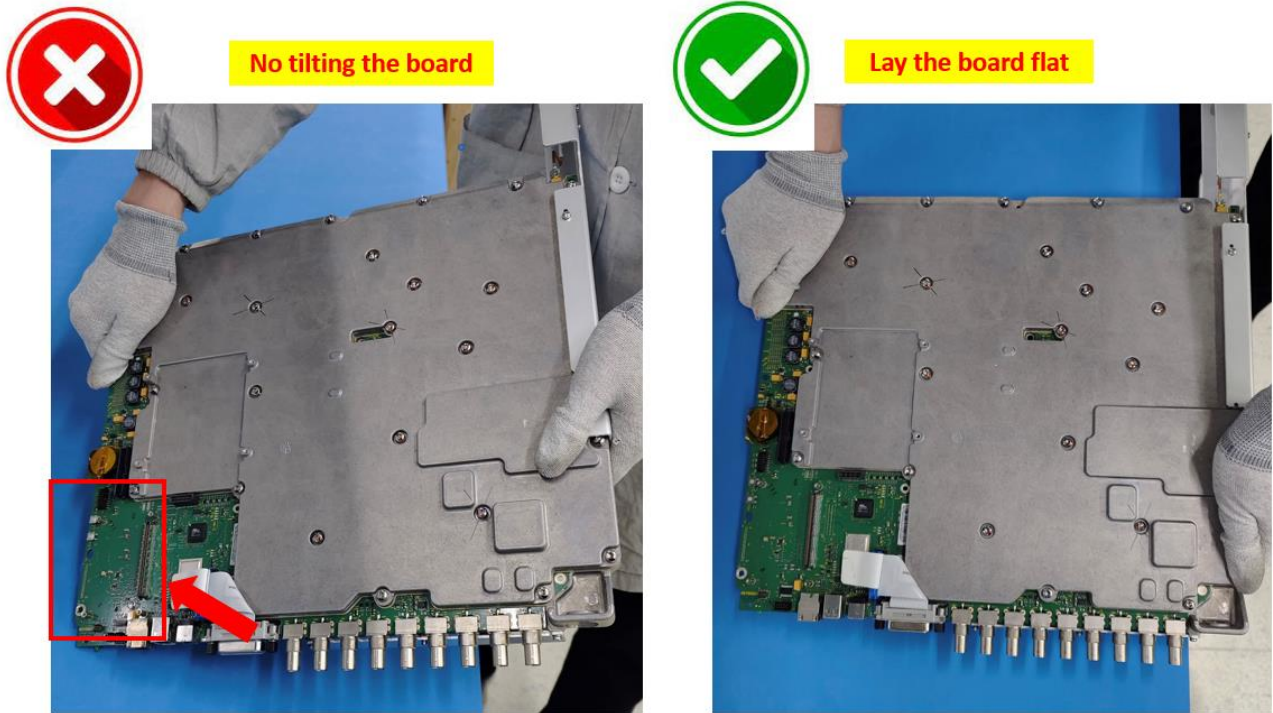


Figure 5

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

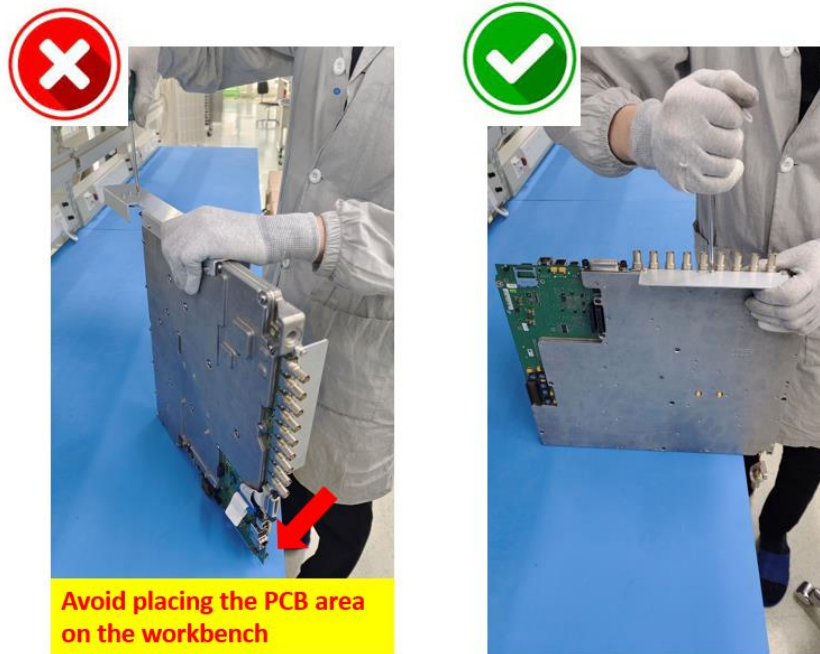


Figure 6

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.

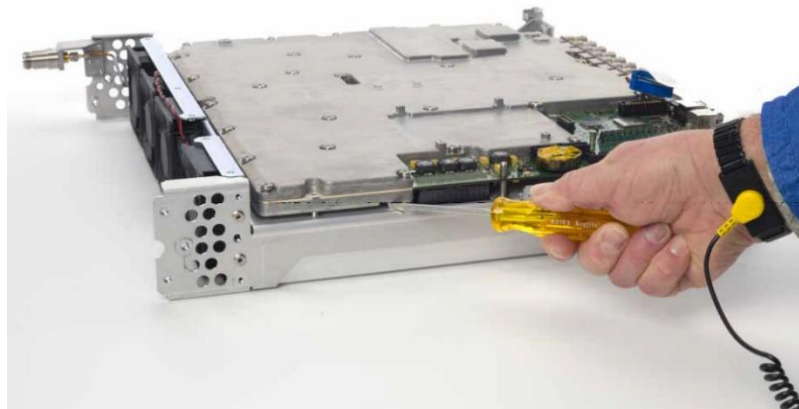


Figure 7

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

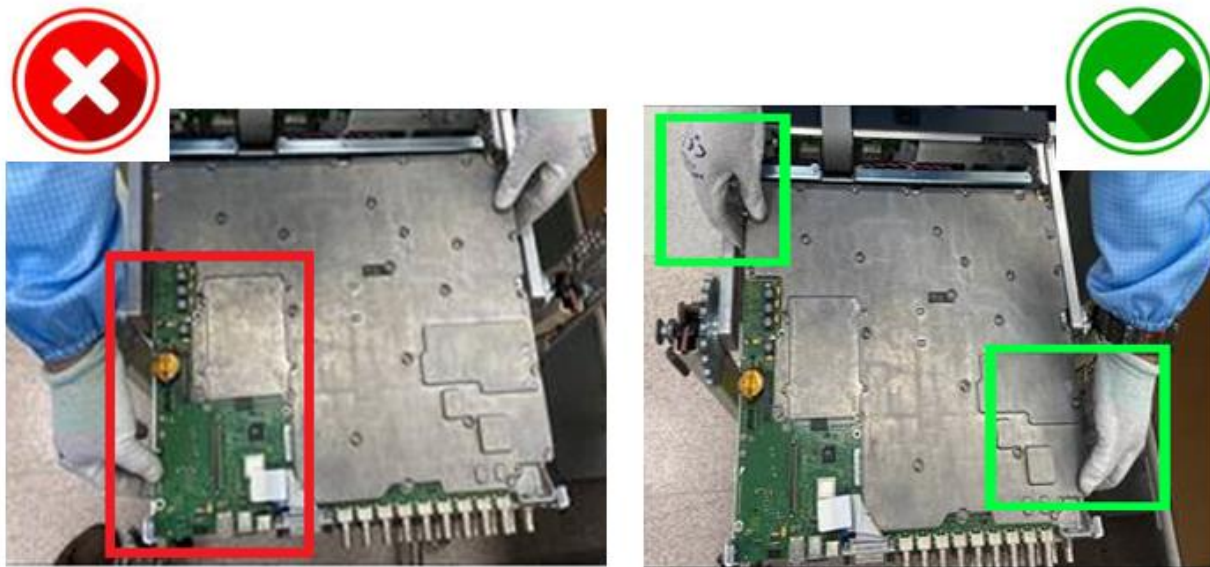


Figure 8

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.

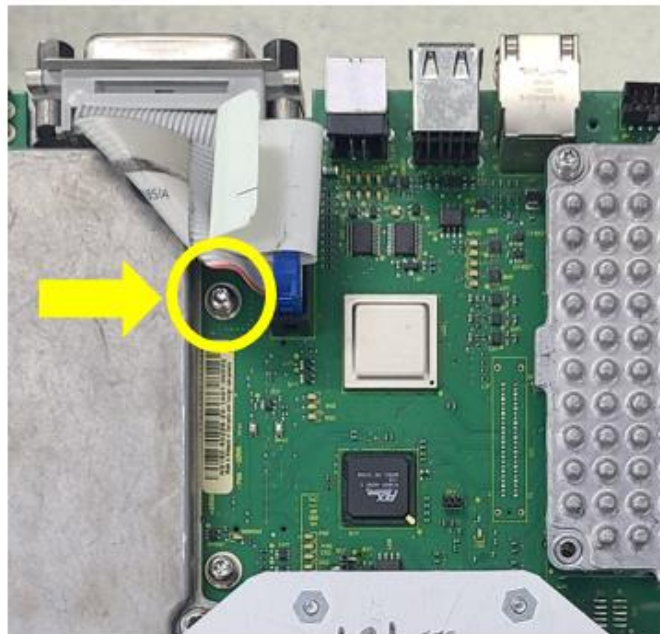


Figure 9

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 |
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