



HEXAGON



APN-108

G-III Reference Receiver CARDSTATUSB Troubleshooting



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Background

The CARDSTATUSB log in the G-III reference receiver contains status information for the Input/Output Master card (IOMaster), all digital signal processing cards (DSPC), the RF Carrier Card (RFCC), all RF Daughter Cards (RFDC), and the fans. For each card, there are many error and warning bits. This document provides steps for what to do when any of these bits are set to 1. The thresholds for when the G-III receiver sets the errors and warnings for the temperature and voltages are also included.

Note that errors will stop regular receiver operation and put the G-III receiver into Failed mode. The G-III receiver will continue to operate in Normal mode if there are warnings but no errors.

The latest version of the WAAS G-III Reference Receiver User Manual is linked from [here](#). Manuals for other G-III variants can be requested from NovAtel support through the [NovAtel Customer Portal](#). The manual includes the format for all logs, including CARDSTATUSB. The CARDSTATUSB log is the same in each variant.

The steps to install the G-III receiver are given in chapter 2 of the [user manual](#).

Operating environmental conditions are given in the Appendix of this document.

Common Troubleshooting Steps

For many but not all of the errors, a suitable approach is below. When this document mentions “Common Troubleshooting Steps”, refer to this section. Note that this approach is not intended for warnings, only errors.

1. Connect the receiver to power and a 10 MHz input.
2. Power cycle the receiver.
3. Check the LCD display to see if the error is present. If yes, continue from step 7.
4. Enter the configuration commands and change the state to Operational with this command:
`CHANGESTATE OPERATIONAL.`
5. Let the receiver run for about 5 minutes.
6. Check the LCD display to see if the error is present. If not, continue to use the receiver as normal and exit this procedure.
7. Reload the receiver firmware.
8. Check the LCD display to see if the error is present. If yes, continue from step 12.
9. Enter the configuration commands and change the state to Operational with this command:
`CHANGESTATE OPERATIONAL.`
10. Let the receiver run for about 5 minutes.
11. Check the LCD display to see if the error is present. If not, continue to use the receiver as normal and exit this procedure.
12. If the error is still present, contact NovAtel support through the [NovAtel Customer Portal](#) regarding repair of the receiver.

To power cycle the receiver, remove the power and re-apply power about 10 seconds later.

To update the firmware, follow the process in the user manual. It is the same for all product variants, so it is recommended to use the process described in section 6 of revision 3 of the [WAAS G-III Reference Receiver User Manual](#). To obtain a firmware version, contact NovAtel support through the [NovAtel Customer Portal](#). The FTP site in the manual is no longer supported.



Collecting Data

Some of the errors and warnings require data for NovAtel to investigate. In that case, these logs should be collected and provided.

```
LOG VERSIONB
LOG RXCOMMANDSB
LOG ETHSTATUSB
LOG EXCEPTIONDATAB
LOG RAWFRAMEDATAB ONNEW
LOG ALMANACB ONNEW
LOG CARDSTATUSB ONTIME 1
LOG MEASUREMENTDATAB ONTIME 1
LOG SATPOSB ONTIME 10
LOG TIMESOLUTIONB ONTIME 1
LOG AGCINFOB ONTIME 1
```

Logging Exception Data

Some receiver failures record information that can be retrieved in the EXCEPTIONDATAB log. This log is for NovAtel investigation purposes only and the format is not published.

A specialized tool is required to collect EXCEPTIONDATAB logs. Some DSPC failures will not be included in EXCEPTIONDATAB if the EXCEPTIONDATAB log is requested in Operational state. The receiver must be RESET and the EXCEPTIONDATAB log captured in Configuration state.

An executable tool was made to assist customers in logging the EXCEPTIONDATAB logs in Configuration state for NovAtel to investigate. The tool will reset the receiver, wait two minutes for it to reboot, and log the EXCEPTIONDATAB.

If this tool is required, contact NovAtel support through the [NovAtel Customer Portal](#).



CARDSTATUSB Error and Warning Words

The following pages give information for errors and warnings for each of the cards in the G-III receiver.

Error words indicate a receiver failure. These will put the receiver into Failed mode until it is power cycled or reset. Whenever the actions are “Common troubleshooting steps”, refer to that section above. Some of the error words require data for the NovAtel investigation, so in these cases refer to the Collecting Data section above.

Warning words do not indicate a receiver failure, and do not put the receiver into Failed mode. Some of the warning words provide information that should be investigated, but some others do not require any user action. In some cases, it is recommended to provide data for a NovAtel investigation. In these cases, refer to the Collecting Data section above.

Reserved fields in error words are always 0, while reserved fields in warning words are either always 0 or do not require any user action.

The errors and warnings for the temperatures and voltages are based on numerical thresholds. These are also included in this section for each card. The temperatures are in degrees C and voltages are in Volts. The temperature thresholds are the same for all cards.

IOMaster Error Status Word

Nibble	Bit #	Description	Action
N0	0	Reserved (0)	
	1	Reserved (0)	
	2	Reserved (0)	
	3	Operational SW CRC integrity test failed	Common troubleshooting steps.
N1	4	RF carrier card test failed	Common troubleshooting steps.
	5	NVM test failed	Common troubleshooting steps.
	6	Temperature monitor communications test failed	Common troubleshooting steps.
	7	Voltage monitor communications test failed	Common troubleshooting steps.
N2	8	CPU test failed	Common troubleshooting steps.
	9	Internal communication test failed	Open a support case, provide data including EXCEPTIONDATAB.
	10	External communication test failed	Ensure ethernet is connected. Common troubleshooting steps.
	11	Reserved (0)	
N3	12	Reserved (0)	
	13	Reserved (0)	
	14	Reserved (0)	
	15	Reserved (0)	
N4	16	Temperature error test failed	Ensure correct operating environmental conditions. If yes, remove power and let the receiver cool down before re-starting.
	17	Voltage error test failed	Ensure input voltage is suitable (120/240 VAC ~ 50/60 Hz). If it is, then common troubleshooting steps.
	18	Fans error test failed	Common troubleshooting steps.
	19	Receiver configuration failed	Open a support case, provide data including EXCEPTIONDATAB.
N5 - N7	20 - 31	Reserved (0)	

DSPC Error Status Word

Nibble	Bit #	Description	Description
N0	0	Reserved (0)	
	1	Reserved (0)	
	2	Reserved (0)	
	3	Operational SW CRC integrity test failed	Common troubleshooting steps.
N1	4	Reserved (0)	
	5	NVM test failed	Common troubleshooting steps.
	6	Temperature monitor communications test failed	Common troubleshooting steps.
	7	Voltage monitor communications test failed	Common troubleshooting steps.
N2	8	CPU test failed	Common troubleshooting steps.
	9	Internal communication test failed	Open a support case, provide data including EXCEPTIONDATAB.
	10	Reserved (0)	
	11	Reserved (0)	
N3	12	ADC test failed	Common troubleshooting steps.
	13	ADC lock test failed	Common troubleshooting steps.
	14	MINOS test failed	Common troubleshooting steps.
	15	FPGA test failed	Common troubleshooting steps.
N4	16	Temperature error test failed	Ensure correct operating environmental conditions. If yes, remove power and let the receiver cool down before re-starting.
	17	Voltage error test failed	Ensure input voltage is suitable (120/240 VAC ~ 50/60 Hz). If it is, then common troubleshooting steps.
	18	Reserved (0)	
	19	Reserved (0)	
N5 - N7	20 - 31	Reserved (0)	

RFCC Error Status Word

Nibble	Bit #	Description	Description
N0	0 - 3	Reserved (0)	
N1	4-7	Reserved (0)	
N2	8-11	Reserved (0)	
N3	12	Reserved (0)	
	13	Reserved (0)	
	14	Reserved (0)	
	15	FPGA test failed	Common troubleshooting steps.
	16	Temperature error test failed	Ensure correct operating environmental conditions. If yes, remove power and let the receiver cool down before re-starting.
	17	Voltage error test failed	Ensure input voltage is suitable (120/240 VAC ~ 50/60 Hz). If it is, and antenna power is on, then check Value 8 of the first record to ensure the voltage is between 12.73 and 14.07. If the voltage is out of range, connect a different antenna and restart the receiver to see if the error has cleared. If the error is still present, then common troubleshooting steps.
N4	18	Reserved (0)	
	19	Reserved (0)	
N5 - N7	20 - 31	Reserved (0)	

RFDC Error Status Word

Nibble	Bit #	Description	Description
N0	0-3	Reserved (0)	
N1	4-7	Reserved (0)	
N2	8-11	Reserved (0)	
N3	12-15	Reserved (0)	
N4	16	Temperature error test failed	Ensure correct operating environmental conditions. If yes, remove power and let the receiver cool down before re-starting.
	17	Voltage error test failed	Ensure input voltage is suitable (120/240 VAC ~ 50/60 Hz). If it is, then common troubleshooting steps.
	18	Reserved (0)	
	19	Reserved (0)	
N5 - N7	20-31	Reserved (0)	

IOMaster Warning Status Word

Nibble	Bit #	Description	Description
N0	0	Reserved (0)	
	1	Reserved (0)	
	2	Reserved (0)	
	3	Reserved (0)	
N1	4	Reserved (0)	
	5	NVM test warning	No action.
	6	Temperature monitor communications test warning	No action.
N2	7	Voltage monitor communications test warning	No action.
	8	CPU usage warning	If seen regularly, gather data and open a support case.
	9	Internal communication warning	If seen regularly, gather data and open a support case.
	10	External communication warning	Ensure ethernet is connected to computer.
N3	11	Stack usage warning	If seen regularly, gather data and open a support case.
	12	Reserved (0)	
	13	Reserved (0)	
	14	Reserved (0)	
N4	15	Reserved (0)	
	16	Temperature warning test failed	Ensure correct operating environmental conditions.
	17	Voltage warning test failed	Ensure input voltage is suitable (120/240 VAC ~ 50/60 Hz).
	18	Fans warning test failed	No action.
N5 - N7	19	Reserved (0)	
	20 -31	Reserved (0)	

DSPC Warning Status Word

Nibble	Bit #	Description	Description
N0	0	Reserved (0)	
	1	Reserved (0)	
	2	Reserved (0)	
	3	Reserved (0)	
N1	4	Reserved (0)	
	5	Reserved (0)	
	6	Temperature monitor communications test warning	No action.
	7	Voltage monitor communications test warning	No action.
N2	8	CPU usage warning	If seen regularly, gather data and open a support case.
	9	Internal communication warning	If seen regularly, gather data and open a support case.
	10	Reserved (0)	
	11	Stack usage warning	If seen regularly, gather data and open a support case.
N3	12	ADC test warning	No action.
	13	Reserved (0)	
	14	Reserved (0)	
	15	Reserved (0)	
N4	16	Temperature warning test failed	Ensure correct operating environmental conditions.
	17	Voltage warning test failed	Ensure input voltage is suitable (120/240 VAC ~ 50/60 Hz).
	18	Reserved (0)	
	19	Reserved (0)	
N5 - N7	20 -31	Reserved (0)	

RFCC Warning Status Word

Nibble	Bit #	Description	Description
N0	0	PLL lock test warning	Ensure the 10MHz reference is connected and that the connection is tight.
	1	Reserved (0)	
	2	Reserved (0)	
	3	Reserved (0)	
N1	4	Reserved (0)	
	5	Reserved (0)	
	6	Temperature monitor communications test warning	No action.
	7	Voltage monitor communications test warning	Ensure the antenna is connected to the RF_IN and that the connection is tight. Check if the antenna power supply voltage in the log is within the threshold and replace antenna if not.
N2	8	Reserved (0)	
	9	Reserved (0)	
	10	Reserved (0)	
	11	Reserved (0)	
N3	12	Reserved (0)	
	13	Reserved (0)	
	14	Reserved (0)	
	15	Reserved (0)	
N4	16	Temperature warning test failed	Ensure correct operating environmental conditions.
	17	Voltage warning test failed	Ensure input voltage is suitable (120/240 VAC ~ 50/60 Hz). If the OSC_VC value is low, then ensure the 10MHz reference is connected and that the connection is tight.
	18	Reserved (0)	
	19	Reserved (0)	
N5 - N7	20 - 31	Reserved (0)	

RFDC Warning Status Word

Nibble	Bit #	Description	Description
N0	0	PLL lock test warning	Ensure the 10MHz reference is connected and that the connection is tight.
	1	Reserved (0)	
	2	Reserved (0)	
	3	Reserved (0)	
N1	4	Reserved (0)	
	5	Reserved (0)	
	6	Temperature monitor communications test warning	No action.
	7	Voltage monitor communications test warning	No action.
N2	8-11	Reserved (0)	
N3	12-15	Reserved (0)	
N4	16	Temperature warning test failed	Ensure correct operating environmental conditions.
	17	Voltage warning test failed	Ensure input voltage is suitable (120/240 VAC ~ 50/60 Hz).
	18	Reserved (0)	
	19	Reserved (0)	
N5 - N7	20-31	Reserved (0)	

IOMaster Temperature and Voltage Thresholds

Temperature	High - Set Flag	High - Clear Flag	Low - Set Flag	Low - Clear Flag
Warning	76	74	-30	-27
Error	79	77	-35	-32
Failure	82	80	-40	-37

Supply Name	Nominal Level	UV Limit	Error Low	Warning Low		Warning High		Error High	OV Limit
				Set	Clear	Set	Clear		
5V0	5.000	4.504	4.750	4.755	4.760	5.245	5.240	5.250	5.506
3V3	3.300	3.145	3.150	3.160	3.165	3.435	3.430	3.445	3.447
2V5	2.500	2.375	2.380	2.390	2.395	2.615	2.610	2.620	2.623
1V8	1.800	1.710	1.715	1.720	1.725	1.875	1.870	1.880	1.888
1V5	1.000	0.950	0.955	0.960	0.965	1.040	1.035	1.045	1.051
1V2	1.200	1.139	1.145	1.150	1.155	1.245	1.240	1.255	1.259
1V05	1.100	1.001	1.005	1.010	1.015	1.090	1.085	1.095	1.098
0V75	0.750	0.724	0.726	0.727	0.730	0.772	0.770	0.773	0.774

DSPC Temperature and Voltage Thresholds

Temperature	High - Set Flag	High - Clear Flag	Low - Set Flag	Low - Clear Flag
Warning	76	74	-30	-27
Error	79	77	-35	-32
Failure	82	80	-40	-37

Supply Name	Nominal Level	UV Limit	Error Low	Warning Low		Warning High		Error High	OV Limit
				Set	Clear	Set	Clear		
5V0	5.000	4.504	4.750	4.755	4.760	5.245	5.240	5.250	5.506
3V3	3.300	3.145	3.150	3.160	3.165	3.435	3.430	3.445	3.447
2V5_S	2.500	2.375	2.380	2.390	2.395	2.615	2.610	2.620	2.623
2V5	2.500	2.375	2.380	2.390	2.395	2.615	2.610	2.620	2.623
1V8	1.800	1.710	1.715	1.720	1.725	1.875	1.870	1.880	1.888
1V5	1.000	0.950	0.955	0.960	0.965	1.040	1.035	1.045	1.051
1V2	1.200	1.139	1.145	1.150	1.155	1.245	1.240	1.255	1.259
1V05	1.100	1.001	1.005	1.010	1.015	1.090	1.085	1.095	1.098
0V75	0.750	0.724	0.726	0.727	0.730	0.772	0.770	0.773	0.774

RFCC Temperature and Voltage Thresholds

Temperature	High - Set Flag	High - Clear Flag	Low - Set Flag	Low - Clear Flag
Warning	76	74	-30	-27
Error	79	77	-35	-32
Failure	82	80	-40	-37

There are two voltages that are affected by the ANTENNAPOWER command, 13V0RF and 13V0RF_A. There are limits that have been defined for 2 cases: when ANTENNAPOWER is ON and ANTENNAPOWER is OFF, so both are given below.

Supply	Nominal	UV	Error	Warning Low		Warning High		Error	OV
Name	Level	Limit	Low	Set	Clear	Set	Clear	High	Limit
5V0	5.000	4.500	4.750	4.755	4.760	5.245	5.240	5.250	5.506
3V3	3.300	3.145	3.150	3.160	3.165	3.435	3.430	3.455	3.447
2V5	2.500	2.375	2.380	2.390	2.395	2.615	2.610	2.620	2.623
1V5	1.500	1.425	1.430	1.440	1.445	1.567	1.562	1.572	1.575
OSC_VC	1.350	0.250	0.750	0.850	0.950	2.350	2.250	2.400	3.050
9V0A	9.000	8.550	8.640	8.740	8.840	9.260	9.160	9.360	9.450
ISO_3V0A	3.000	2.845	2.850	2.860		3.135		3.155	3.134
ISO_3V3A	3.300	3.145	3.150	3.160	3.165	3.435	3.430	3.455	3.447
ISO_3V3CLK	3.300	3.145	3.150	3.160	3.165	3.435	3.430	3.455	3.447

ANTENNAPOWER is ON:

Supply	Nominal	UV	Error	Warning Low		Warning High		Error	OV
Name	Level	Limit	Low	Set	Clear	Set	Clear	High	Limit
13V0RF	13.400	12.630	12.730	12.830	12.880	13.970	13.920	14.070	14.170
13V0RF_A	0.000	0.000	0.000	0.000	0.000	0.270	0.260	0.280	0.300

ANTENNAPOWER is OFF (values are intentionally very large):

Supply	Nominal	UV	Error	Warning Low		Warning High		Error	OV
Name	Level	Limit	Low	Set	Clear	Set	Clear	High	Limit
13V0RF	0.000	-110.00	-109.00	-108.00	-107.00	108.00	107.00	109.00	110.00
13V0RF_A	0.000	-110.00	-109.00	-108.00	-107.00	108.00	107.00	109.00	110.00

RFDC Temperature and Voltage Thresholds

Temperature	High - Set Flag	High - Clear Flag	Low - Set Flag	Low - Clear Flag
Warning	76	74	-30	-27
Error	79	77	-35	-32
Failure	82	80	-40	-37

Supply	Nominal	UV	Error	Warning Low		Warning High		Error	OV
Name	Level	Limit	Low	Set	Clear	Set	Clear	High	Limit
2V5	2.500	2.375	2.380	2.390	2.395	2.615	2.610	2.620	2.623
3V3	3.300	3.145	3.150	3.160	3.165	3.435	3.430	3.455	3.447
4V5	4.500	4.275	4.280	4.290	4.295	4.711	4.706	4.716	4.719

Examples of CARDSTATUSB Investigations

This section includes examples of receivers with flagged CARDSTATUS bits and the corresponding troubleshooting steps. The CARDSTATUS logs were converted to ASCII for these examples.

Example #1

```
@CARDSTATUSA,11,UNKNOWN,0,186.000,0,0,0;CONFIGURATION,FAILED,30,4268,0,7,
IOMASTER,7,0,98.3,27.0,4.940,3.321,2.492,0.000,1.797,1.491,1.192,1.061,0.746,00000000,00000000,
DSPC,2,0,96.5,27.0,4.985,3.334,2.492,2.502,1.799,1.487,1.195,1.062,0.743,00000000,00000000,
DSPC,2,1,97.0,27.0,4.990,3.305,2.505,2.496,1.795,1.490,1.192,1.055,0.741,00000000,00000000,
RFCC,4,0,0.0,27.9,5.034,3.322,2.512,1.610,2.992,1.490,0.088,0.021,8.924,00020000,00020000,
RFCC,4,0,0.0,2.5,2.513,2.504,2.506,2.505,2.501,2.502,2.497,2.506,00020000,00020000,
RFCC,4,0,0.0,3.3,3.285,2.497,0.000,0.000,0.000,0.000,0.000,0.000,0.000,00020000,00020000,
RFDC,4,1,0.0,53.7,47.687,3.224,2.452,4.453,0.000,0.000,0.000,0.000,0.000,00000000,00000000,
4,3183,0,3183,0,3214,0,3183,0*8f630986
```

In this log, bit 17 of the RFCC error word is flagged. From the RFCC Error Status Word section, this is the Voltage warning test failed bit.

Based on the recommendations in the RFCC Error Status Word section, first ensure the input voltage is suitable (120/240 VAC ~ 50/60 Hz). If it is, then if antenna power is on, check Value 8 of the first RFCC record to see if it is between 12.73 and 14.07. In this log the 0.088 is out of range, so try another antenna and power cycle the receiver. If the error is cleared, the problem was with the antenna. If the error is still present, then follow the common troubleshooting steps of power cycling, reloading, and if needed creating a support case in the [Customer Support Portal](#).

Example #2

```
@CARDSTATUSA,1,UNKNOWN,0,95.000,0,0,0;CONFIGURATION,FAILED,30,10655,0,7,
IOMASTER,7,0,98.6,27.0,4.911,3.321,2.488,0.000,1.807,1.494,1.187,1.067,0.743,00000000,00000000,
DSPC,2,0,96.4,27.0,79.519,53.069,39.932,39.923,28.761,23.805,19.101,16.837,11.909,00020000,00020080,
DSPC,2,1,96.8,26.0,4.972,3.327,2.495,2.486,1.783,1.491,1.196,1.054,0.744,00000000,00000000,
RFCC,4,0,0.0,27.3,5.008,3.285,2.495,1.629,2.995,1.493,0.157,2.158e-03,8.928,00000000,00000000,
RFCC,4,0,0.0,2.5,2.489,2.494,2.505,2.502,2.498,2.497,2.497,2.495,2.501,00000000,00000000,
RFCC,4,0,0.0,3.3,3.286,2.493,0.000,0.000,0.000,0.000,0.000,0.000,0.000,00000000,00000000,
RFDC,4,1,0.0,52.9,46.027,3.222,2.455,4.412,0.000,0.000,0.000,0.000,0.000,00000000,00000000,
4,3214,0,3214,0,3183,0,3214,0*b9052c73
```

In this log, bits 7 and 17 error word of the DSPC on slot 0 is flagged. From the DSPC Error Status Word section, this is the Voltage monitor communications test failed bit and the Voltage warning test failed bit. Based on the DSPC Temperature and Voltage Thresholds section, all voltages are too high. Based on the recommendations in the DSPC Error Status Word section, first ensure the input voltage is suitable (120/240 VAC ~ 50/60 Hz). If it is, then follow the common troubleshooting steps of power cycling, reloading, and if needed creating a support case in the [Customer Support Portal](#).

Example #3

```
@CARDSTATUSA,30729316,FINE,136,155760.000,0,0,0;OPERATIONAL,FAILED,0,32879,16,6,
IOMASTER,7,0,97.9,28.0,4.933,3.331,2.484,0.000,1.789,1.494,1.187,1.064,0.746,00000200,00000200,
DSPC,2,0,95.7,30.0,4.975,3.325,2.509,2.509,1.786,1.491,1.191,1.056,0.744,00000000,00000000,
RFCC,4,0,0.0,29.7,5.026,3.321,2.516,1.498,2.993,1.503,0.150,2.023e-03,8.991,00000000,00000000,
RFCC,4,0,0.0,2.5,2.504,2.506,2.504,2.498,2.509,2.501,2.508,2.491,2.499,00000000,00000000,
RFCC,4,0,0.0,3.3,3.290,2.493,0.000,0.000,0.000,0.000,0.000,0.000,0.000,00000000,00000000,
RFDC,4,1,0.0,54.7,48.078,3.253,2.450,4.416,0.000,0.000,0.000,0.000,0.000,00000000,00000000,
4,3214,0,3214,0,3245,0,3214,0*cb3d877b
```

In this log, bit 9 in the error word of the IOMaster is flagged. From the IOMaster Error Status Word section, this is the Internal communication test failed bit. Additionally, the DSPC on slot 1 is missing. Following the instructions in the IOMaster Error Status Word section, create a support case in the [Customer Support Portal](#).

Example #4

```
@CARDSTATUSA,2963629,FINE,151,498634.000,0,0,0;OPERATIONAL,NORMAL,0,17633,0,7,
IOMASTER,7,0,97.2,25.0,4.942,3.327,2.500,0.000,1.805,1.494,1.189,1.058,0.746,00000000,00000000,
DSPC,2,0,90.2,26.0,4.970,3.312,2.494,2.491,1.794,1.485,1.196,1.056,0.742,00000000,00000000,
DSPC,2,1,91.2,25.0,4.996,3.305,2.491,2.492,1.793,1.490,1.191,1.059,0.736,00000000,00000000,
RFCC,4,0,0.0,23.5,5.019,3.302,2.495,0.031,3.005,1.494,0.136,8.093e-04,8.932,00020001,00000000,
RFCC,4,0,0.0,2.5,2.487,2.493,2.498,2.486,2.497,2.497,2.490,2.491,2.497,00020001,00000000,
RFCC,4,0,0.0,3.3,3.286,2.493,0.000,0.000,0.000,0.000,0.000,0.000,0.000,00020001,00000000,
RFDC,4,1,0.0,54.1,47.883,3.216,2.435,4.390,0.000,0.000,0.000,0.000,0.000,00000001,00000000,
4,3214,0,3183,0,3214,0,3183,0*511022c8
```

In this log, bits 0 and 17 in the warning word of the RFCC are flagged, and bit 0 in the warning word of the RFDC is flagged. Following the instructions in the RFCC Warning Status Word and RFDC Warning Status Word section, check the 10 MHz connection. The OSC_VC value was also very low based on the RFCC Temperature and Voltage Thresholds section, which is also an indication to check the 10 MHz connection. In this case the 10 MHz was unplugged.

Appendix – Operating Environmental Conditions

The operating environmental conditions in the G-III requirements documents are given in this table.

	Units	Operating	Degraded	Non-Operating
Temperature	degrees C	+12.7 to +29.5	-25.0 to +12.7 and +29.5 to +55.0	-40.0 to +85.0
Maximum Temperature Gradient	degrees C/hour	2	2	N/A
Relative Humidity (non-condensing)	%	10 to 80	10 to 80 ⁽¹⁾	0 to 100 ^{(1), (2)}
Air Flow	m ³ /minute	1	1	N/A
Altitude	Meters above MSL	-90 to 3000	-90 to 3000	0 to 5000
Vibration	N/A	MIL-STD-810, method 514.6, Procedure I, General Vibration ⁽³⁾	MIL-STD-810, method 514.6, Procedure I, General Vibration ⁽³⁾	MIL-STD-810, method 514.6-9, Procedure II, Loose Cargo Transportation ⁽⁴⁾

(1) Above 40 degrees C, the relative humidity should be based on a dew point no greater than 40 degrees.

(2) Includes condensation due to temperature changes.

(3) 0.21 g (rms) of random vibration applied to each axis (x,y,z); 5-350 Hz w/Power Spectral Density (PSD) of 0.0001 g²/Hz, 350-500 Hz w/slope of - 6 dB/Oct and PSD of 0.0001 g²/Hz; 500 Hz w/PSD of 0.00005 g²/Hz.

(4) Severity; 25.4 mm P-P circular synchronous motion, at 5 Hz frequency. Duration: 45 minutes duration (each 20 minutes equivalent to 240 km of transportation); Suitable test bed and fencing required as per standard.

NovAtel Support

To help answer questions and/or diagnose any technical issues that may occur, the [NovAtel Support website](#) is a first resource. To submit a support case, go to the [NovAtel Customer Portal](#). Select Ground Reference Receivers from the “Product or Service Type” field.

Documentation

The latest version of the WAAS G-III manual is linked from [here](#). Manuals for other G-III variants can be requested from NovAtel support through the [NovAtel Customer Portal](#).

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For more contact information, please visit [novatel.com/contact-us](#)

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