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**FCC PART 15 SUBPART B &
ISED RSS-GEN (i4)
RECEIVER TEST REPORT**

Applicant	MGL AVIONICS CC
Address	Postnet Somerset Mall Suite 325 Private Bag X15 Somerset West West SOUTH AFRICA 7129
Model Number	V16
Product Description	VHF AIRBAND TRANSCEIVER
Date Sample Received	10/23/2017
Final Test Date	01/18/2018
Tested By	Franklin Rose
Approved By	Tim Royer
Test Results	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

Report Number	Version Number	Description	Issue Date
1854BUT17TestReport	Rev1	Initial Issue	01/31/2018

THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.

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GENERAL REMARKS

The attached report shall not be reproduced except in full without the written permission of Timco Engineering Inc.

Summary

The device under test does:

- Fulfill the general approval requirements as identified in this test report and was selected by the customer.
- Not fulfill the general approval requirements as identified in this test report

Attestations

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.

I attest that the necessary measurements were made at:

Timco Engineering Inc.
849 NW State Road 45
Newberry, FL 32669



Tested by:

Name and Title: Franklin Rose, Project Manager / Testing Technician

Date: 01/31/2018

Reviewed and approved by:



Name and Title: Tim Royer, Engineer

Date: 4/4/2018

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EUT SPECIFICATION

This test results relates only to the items tested.	
EUT DESCRIPTION	VHF AIRBAND TRANSCEIVER
REQUIREMENTS	CFR 47 FCC Pt 15.109, Pt 15.107, RSS-GEN(i4)
MODEL NUMBER	V16
TEST STANDARDS	ANSI C63.4 – 2014, FCC Part 15, RSS-Gen Issue 4
TEST FREQUENCIES	118.00 MHz, 127.5 MHz, 136.975 MHz
EUT POWER SOURCE	<input type="checkbox"/> 100–240Vac/50– 60Hz (While Charging)
	<input checked="" type="checkbox"/> DC Power
	<input type="checkbox"/> Battery Operated
TEST ITEM	<input type="checkbox"/> Prototype
	<input checked="" type="checkbox"/> Pre-Production
	<input type="checkbox"/> Production
TYPE OF EQUIPMENT	<input type="checkbox"/> Fixed
	<input checked="" type="checkbox"/> Mobile
	<input type="checkbox"/> Portable
MODIFICATIONS TO EUT:	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (explanation below)
TEST MODE DESCRIPTION	Receive only, Tuned to three places in band and scanning.
TEST FACILITIES	Timco Engineering Inc. located at 849 NW State Road 45 Newberry, FL 32669 USA. Designation #: US1070
LABORATORY TEST CONDITION	Temperature: 24-26°C Relative humidity: 50-65% Barometric Pressure: 30.01"

PERIPHERALS USED FOR TESTING

Description	Model	Connector	Cable Type	Length
Head Unit	n/a	COM	n/a	40 cm

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TEST RESULTS SUMMARY

Test Item	FCC Rule Part	RSS Specification	Result
Radiated Spurious Emissions	15.109	GEN sec 7.1	PASS
Powerline Conducted Emissions	15.107	GEN sec 8.8	n/a ¹

Note 1: The EUT does not receive power via AC Mains.

RADIATED SPURIOUS EMISSIONS

Rule Part No.: 15.109, IC RSS-GEN 7.1

Requirements: FCC Part 15.109(a), RSS GEN 7.1.2 Radiated Emission Limit

Class B Field Strength Limits @ 3 Meters			
Frequency (MHz)	Quasi-peak (dBuV/m)	Average (dBuV/m)	Peak (dBuV/m)
30 – 88	40.0	-	-
80 – 216	43.5	-	-
216 – 960	46.0	-	-
960 - 1000	54.0	-	-
> 1000	54.0	54	74

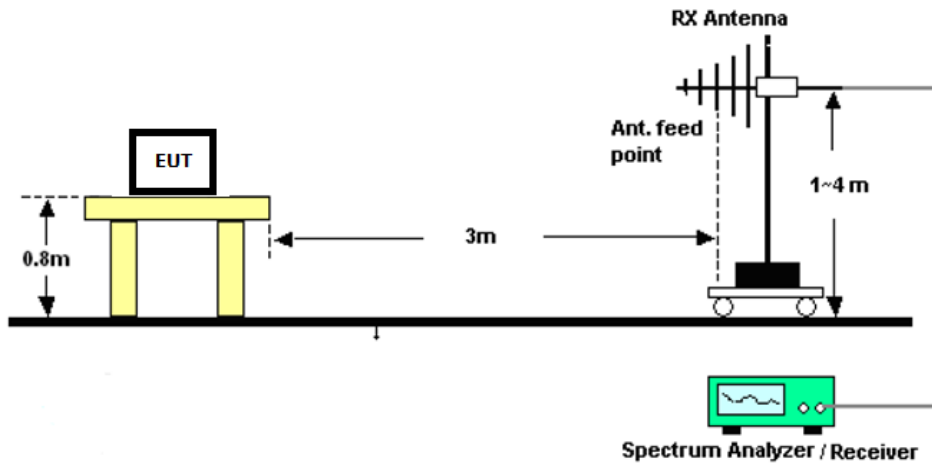
Measurement Procedure: The test procedure used was ANSI C63.4 using a spectrum analyzer with a preselector. The bandwidth of the spectrum analyzer was 100 kHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The video bandwidth was always greater than or equal to the RBW.

The frequency was scanned from 30 MHz to 5.0 GHz. When an emission was found, the table was rotated to produce the maximum signal strength. The EUT was measured in three (3) orthogonal planes when applicable.

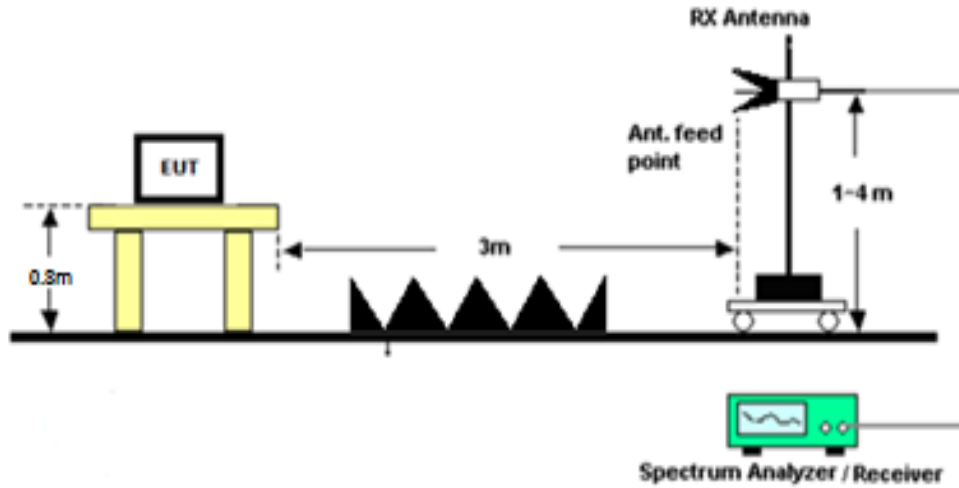
RADIATED SPURIOUS EMISSIONS

Setup:

Emissions 30 – 1000 MHz



Emissions above 1 GHz



RADIATED SPURIOUS EMISSIONS

Low End of Band 118.00 MHz, Scanned 30 MHz to 200 MHz

Test Data: Field Strength Plot, Horiz. Polarity



18.Jan 18 14:15

Test Spec CISPR 22 Radiated Disturbances

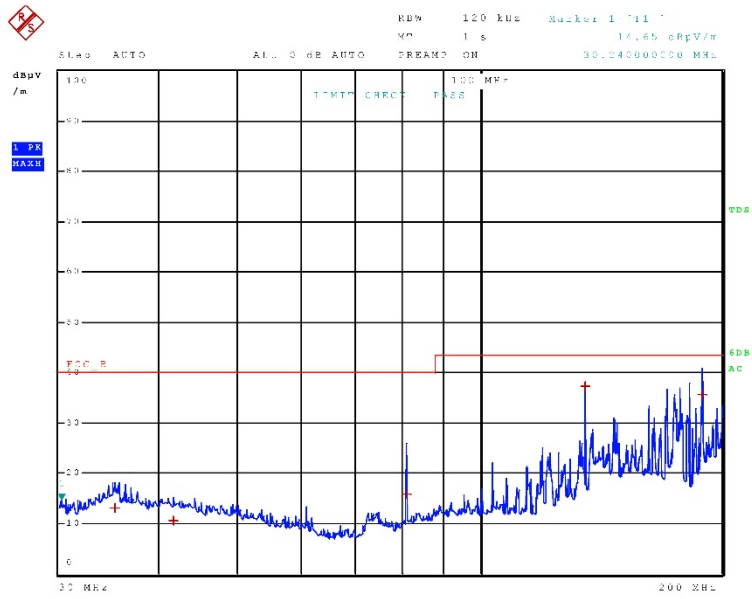
Polarity

Horizontal

Stepped Scan (1 Range)

Scan Start: 30 MHz
 Scan Stop: 200 MHz
 Detector: Trace 1: MAX PEAK
 Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
30.000000 MHz	200.000000 MHz	40.00 kHz	120.00 kHz	50 µs	Auto	20 dB	INPUT1



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RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Table, Horiz. Polarity

18.Jan 18 14:15

Test Spec CISPR 22 Radiated Disturbances
Polarity
Horizontal

Final Measurement

Meas Time: 1 s
Margin: 25 dB
Subranges: 5

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	35.240000000 MHz	13.22	Quasi Peak	-26.78
1	41.640000000 MHz	10.61	Quasi Peak	-29.39
1	81.000000000 MHz	15.90	Quasi Peak	-24.10
1	135.000000000 MHz	37.27	Quasi Peak	-6.23
1	189.000000000 MHz	35.59	Quasi Peak	-7.91

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RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Plot, Vert. Polarity



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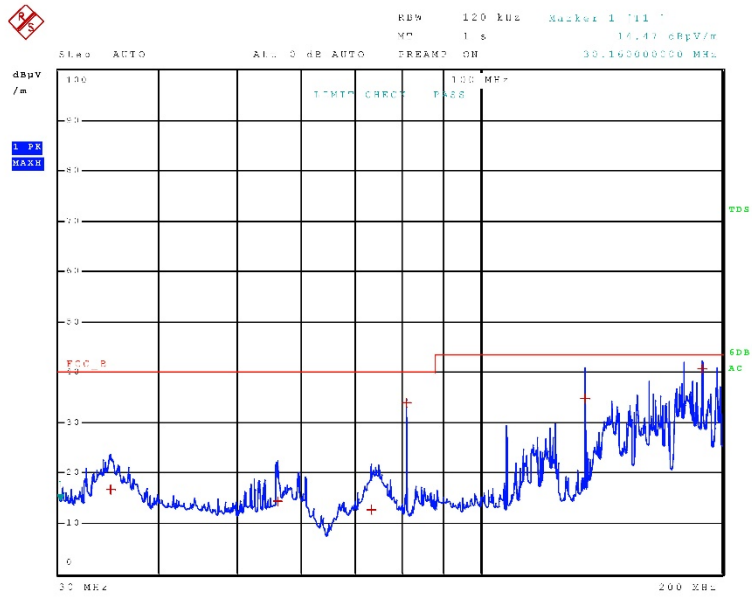
Test Spec CISPR 22 Radiated Disturbances

Polarity
Vertical

Stepped Scan (1 Range)

Scan Start: 30 MHz
Scan Stop: 200 MHz
Detector: Trace 1: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
30.000000 MHz	200.000000 MHz	40.00 kHz	120.00 kHz	50 µs	Auto	20 dB	INPUT1



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RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Table, Vert. Polarity

18.Jan 18 14:13

Test Spec CISPR 22 Radiated Disturbances

Polarity

Vertical

Final Measurement

Meas Time: 1 s
Margin: 25 dB
Subranges: 6

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	34.800000000 MHz	16.69	Quasi Peak	-23.31
1	56.160000000 MHz	14.45	Quasi Peak	-25.55
1	73.320000000 MHz	12.68	Quasi Peak	-27.32
1	81.000000000 MHz	33.87	Quasi Peak	-6.13
1	135.000000000 MHz	34.81	Quasi Peak	-8.69
1	189.000000000 MHz	40.59	Quasi Peak	-2.91

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RADIATED SPURIOUS EMISSIONS

Low End of Band 118.00 MHz, Scanned 200 MHz to 1 GHz

Test Data: Field Strength Plot, Horiz. Polarity



18.Jan 18 13:43

Test Spec CISPR 22 Radiated Disturbances

Polarity

Horizontal

Time Domain Scan (1 Range)

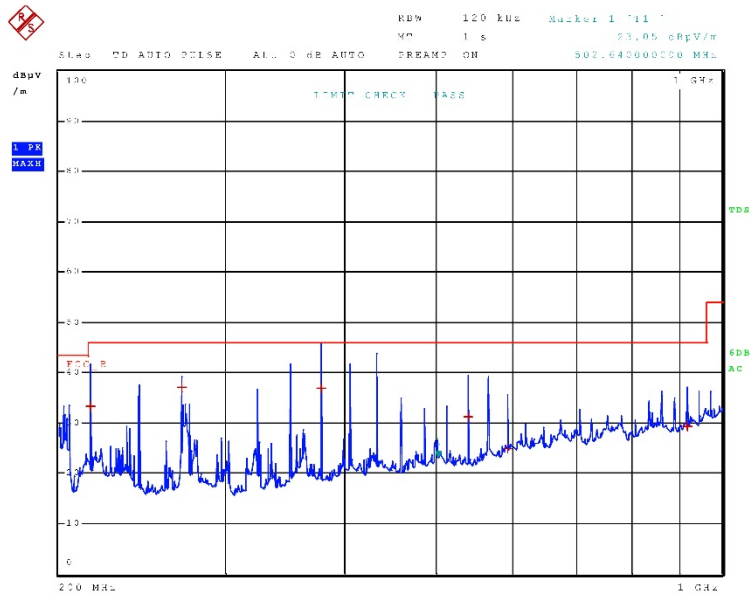
Scan Start: 200 MHz

Scan Stop: 1 GHz

Detector: Trace 1: MAX PEAK

Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
200.000000 MHz	1.000000 GHz	30.00 kHz	120.00 kHz	50 µs	Auto	20 dB	INPUT1



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RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Table, Horiz. Polarity

18.Jan 18 13:43

Test Spec CISPR 22 Radiated Disturbances

Polarity

Horizontal

Final Measurement

Meas Time: 1 s
Margin: 20 dB
Subranges: 6

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	215.990000000 MHz	33.29	Quasi Peak	-10.21
1	270.020000000 MHz	36.98	Quasi Peak	-9.02
1	377.990000000 MHz	36.96	Quasi Peak	-9.04
1	539.990000000 MHz	31.28	Quasi Peak	-14.72
1	593.990000000 MHz	24.98	Quasi Peak	-21.02
1	917.990000000 MHz	29.38	Quasi Peak	-16.62

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Test Data: Field Strength Plot, Vert. Polarity



18.Jan 18 13:44

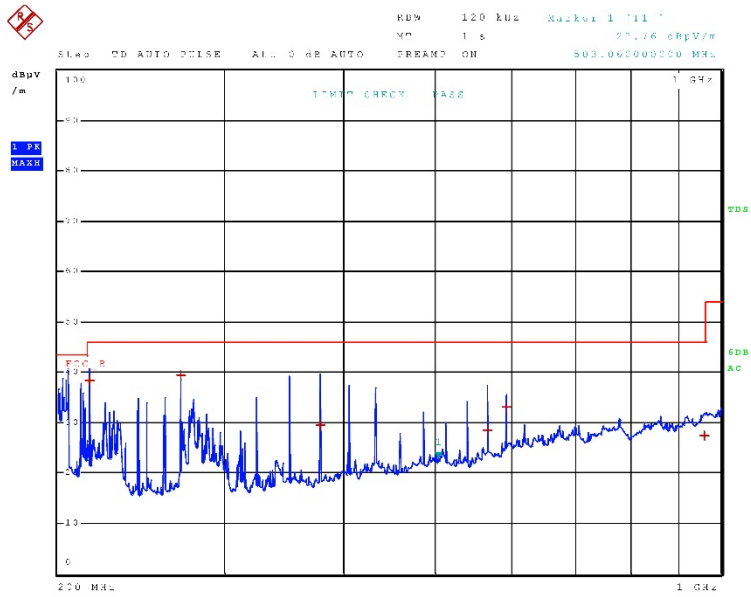
Test Spec CISPR 22 Radiated Disturbances

Polarity
Vertical

Time Domain Scan (1 Range)

Scan Start: 200 MHz
Scan Stop: 1 GHz
Detector: Trace 1: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
200.000000 MHz	1.000000 GHz	30.00 kHz	120.00 kHz	50 µs	Auto	20 dB	INPUT1



RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Table, Vert. Polarity

18.Jan 18 13:44

Test Spec CISPR 22 Radiated Disturbances
Polarity
Vertical

Final Measurement

Meas Time: 1 s
Margin: 20 dB
Subranges: 6

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	215.990000000 MHz	38.35	Quasi Peak	-5.15
1	269.990000000 MHz	39.31	Quasi Peak	-6.69
1	377.990000000 MHz	29.58	Quasi Peak	-16.42
1	566.990000000 MHz	28.56	Quasi Peak	-17.44
1	593.990000000 MHz	33.09	Quasi Peak	-12.91
1	959.690000000 MHz	27.45	Quasi Peak	-18.55

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RADIATED SPURIOUS EMISSIONS

Low End of Band 118.00 MHz, Scanned Above 1 GHz

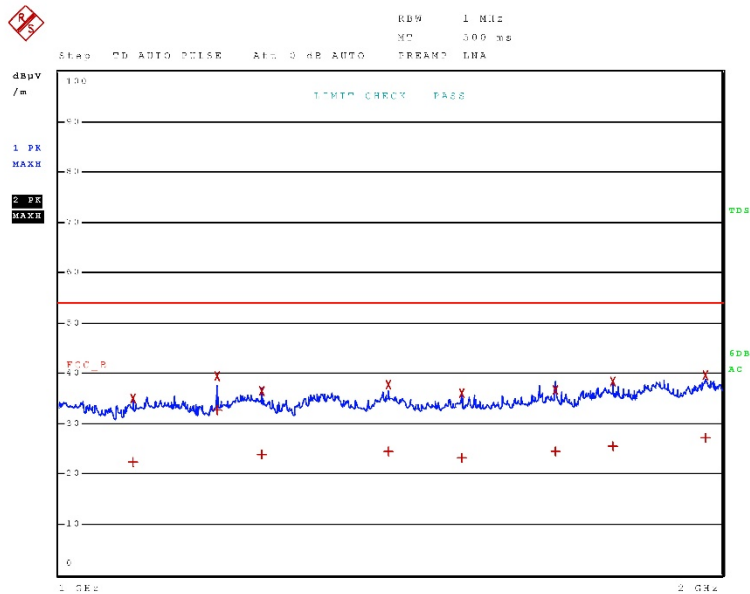
Test Data: Field Strength Plot, Horiz. Polarity

18.Jan 18 15:34

Time Domain Scan (1 Range)

Scan Start: 1 GHz
 Scan Stop: 2 GHz
 Detector: Trace 1: MAX PEAK Trace 2: MAX PEAK
 Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
1.000000 GHz	2.000000 GHz	250.00 kHz	1.00 MHz	100 μ s	Auto	35 dB	INPUT1



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RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Table, Horiz. Polarity

18.Jan 18 15:34

Final Measurement

Meas Time: 500 ms
Margin: 40 dB
Subranges: 16

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	1.080500000 GHz	22.46	CISPR Averag	-31.54
2	1.080500000 GHz	35.02	Max Peak	
1	1.179750000 GHz	32.74	CISPR Averag	-21.26
2	1.179750000 GHz	39.49	Max Peak	
1	1.236000000 GHz	23.82	CISPR Averag	-30.18
2	1.236000000 GHz	36.44	Max Peak	
1	1.411000000 GHz	24.46	CISPR Averag	-29.54
2	1.411000000 GHz	37.67	Max Peak	
1	1.524000000 GHz	23.23	CISPR Averag	-30.77
2	1.524000000 GHz	36.05	Max Peak	
1	1.679000000 GHz	24.42	CISPR Averag	-29.58
2	1.679000000 GHz	36.59	Max Peak	
1	1.783500000 GHz	25.63	CISPR Averag	-28.37
2	1.783500000 GHz	38.44	Max Peak	
1	1.963750000 GHz	27.15	CISPR Averag	-26.85
2	1.963750000 GHz	39.66	Max Peak	

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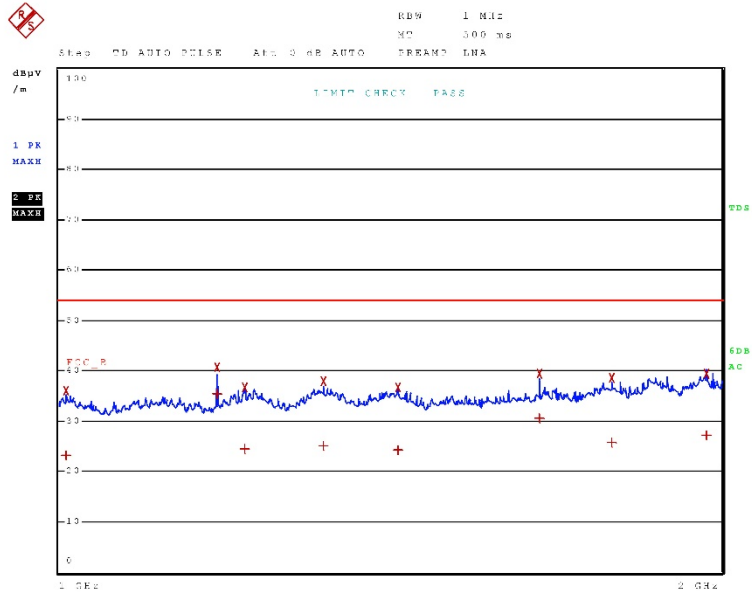
Test Data: Field Strength Plot, Vert. Polarity

18.Jan 18 15:32

Time Domain Scan (1 Range)

Scan Start: 1 GHz
 Scan Stop: 2 GHz
 Detector: Trace 1: MAX PEAK Trace 2: MAX PEAK
 Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
1.000000 GHz	2.000000 GHz	250.00 kHz	1.00 MHz	100 μ s	Auto	35 dB	INPUT1



RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Table, Vert. Polarity

18.Jan 18 15:32

Final Measurement

Meas Time: 500 ms
 Margin: 40 dB
 Subranges: 16

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	1.008000000 GHz	23.29	CISPR Averag	-30.71
2	1.008000000 GHz	36.12	Max Peak	
1	1.180000000 GHz	35.43	CISPR Averag	-18.57
2	1.180000000 GHz	40.68	Max Peak	
1	1.214750000 GHz	24.40	CISPR Averag	-29.60
2	1.214750000 GHz	36.67	Max Peak	
1	1.317750000 GHz	25.00	CISPR Averag	-29.00
2	1.317750000 GHz	37.90	Max Peak	
1	1.425750000 GHz	24.36	CISPR Averag	-29.64
2	1.425750000 GHz	36.55	Max Peak	
1	1.651750000 GHz	30.59	CISPR Averag	-23.41
2	1.651750000 GHz	39.43	Max Peak	
1	1.781750000 GHz	25.80	CISPR Averag	-28.20
2	1.781750000 GHz	38.57	Max Peak	
1	1.967000000 GHz	27.14	CISPR Averag	-26.86
2	1.967000000 GHz	39.45	Max Peak	

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RADIATED SPURIOUS EMISSIONS

Middle of Band 127.50 MHz, Scanned 30 MHz to 200 MHz

Test Data: Field Strength Plot, Horiz. Polarity



18.Jan 18 14:17

Test Spec CISPR 22 Radiated Disturbances

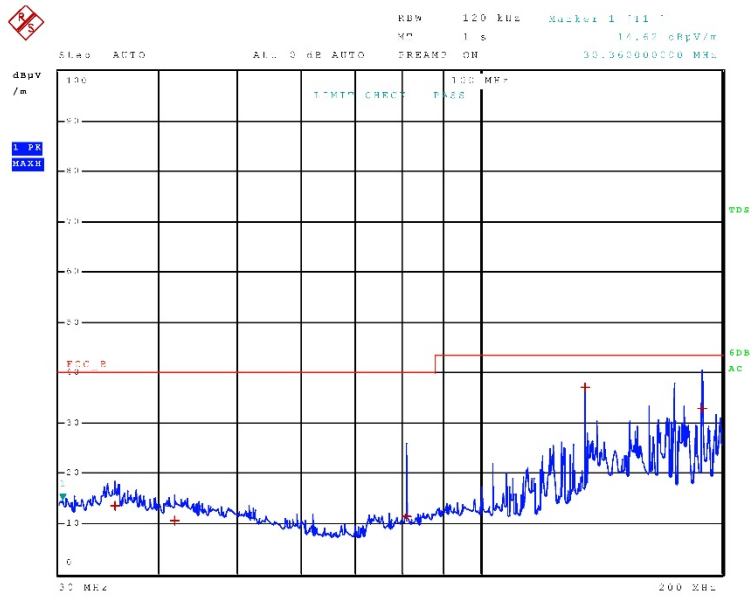
Polarity

Horizontal

Stepped Scan (1 Range)

Scan Start: 30 MHz
 Scan Stop: 200 MHz
 Detector: Trace 1: MAX PEAK
 Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
30.000000 MHz	200.000000 MHz	40.00 kHz	120.00 kHz	50 µs	Auto	20 dB	INPUT1



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RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Table, Horiz. Polarity

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Test Spec CISPR 22 Radiated Disturbances
Polarity
Horizontal

Final Measurement

Meas Time: 1 s
Margin: 25 dB
Subranges: 5

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	35.160000000 MHz	13.50	Quasi Peak	-26.50
1	41.800000000 MHz	10.69	Quasi Peak	-29.31
1	81.000000000 MHz	11.35	Quasi Peak	-28.65
1	135.000000000 MHz	37.14	Quasi Peak	-6.36
1	189.000000000 MHz	32.88	Quasi Peak	-10.62

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RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Plot, Vert. Polarity



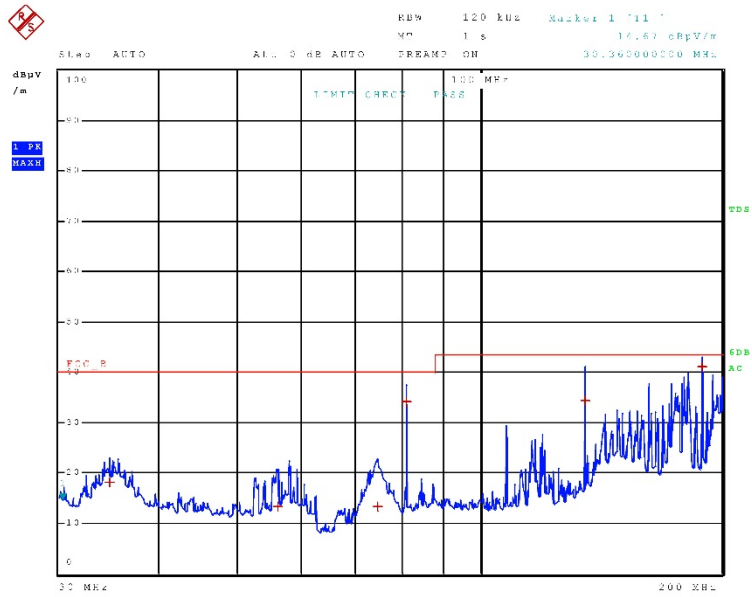
18.Jan 18 14:19

Test Spec: CISPR 22 Radiated Disturbances
 Polarity: Vertical

Stepped Scan (1 Range)

Scan Start: 30 MHz
 Scan Stop: 200 MHz
 Detector: Trace 1: MAX PEAK
 Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
30.000000 MHz	200.000000 MHz	40.00 kHz	120.00 kHz	50 μs	Auto	20 dB	INPUT1



RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Table, Vert. Polarity

18.Jan 18 14:19

Test Spec CISPR 22 Radiated Disturbances

Polarity

Vertical

Final Measurement

Meas Time: 1 s
Margin: 25 dB
Subranges: 6

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	34.720000000 MHz	18.14	Quasi Peak	-21.86
1	56.000000000 MHz	13.34	Quasi Peak	-26.66
1	74.680000000 MHz	13.35	Quasi Peak	-26.65
1	81.000000000 MHz	34.10	Quasi Peak	-5.90
1	135.000000000 MHz	34.32	Quasi Peak	-9.18
1	189.000000000 MHz	41.04	Quasi Peak	-2.46

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RADIATED SPURIOUS EMISSIONS

Middle of Band 127.50 MHz, Scanned 200 MHz to 1 GHz

Test Data: Field Strength Plot, Horiz. Polarity



18.Jan 18 13:41

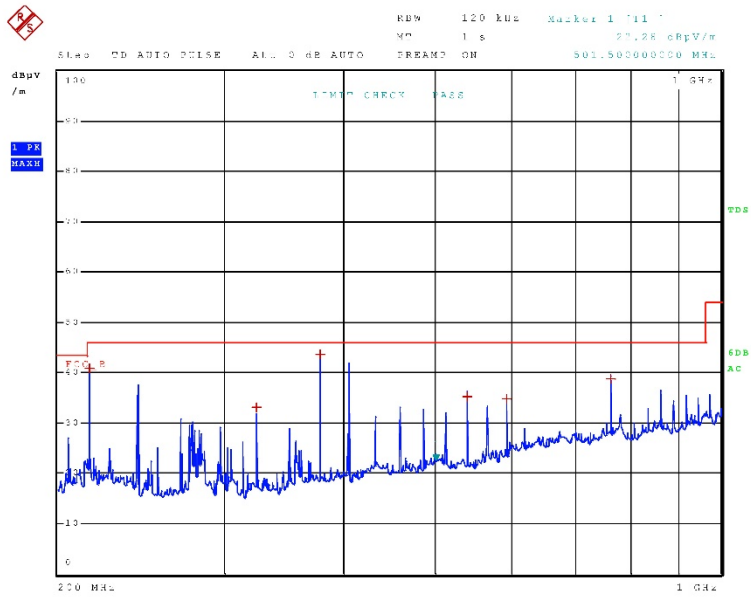
Test Spec CISPR 22 Radiated Disturbances

Polarity
Horizontal

Time Domain Scan (1 Range)

Scan Start: 200 MHz
Scan Stop: 1 GHz
Detector: Trace 1: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
200.000000 MHz	1.000000 GHz	30.00 kHz	120.00 kHz	50 µs	Auto	20 dB	INPUT1



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RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Table, Horiz. Polarity

18.Jan 18 13:41

Test Spec CISPR 22 Radiated Disturbances
Polarity
Horizontal

Final Measurement

Meas Time: 1 s
Margin: 20 dB
Subranges: 6

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	215.990000000 MHz	40.87	Quasi Peak	-2.63
1	323.990000000 MHz	32.98	Quasi Peak	-13.02
1	377.990000000 MHz	43.52	Quasi Peak	-2.48
1	539.990000000 MHz	35.29	Quasi Peak	-10.71
1	593.990000000 MHz	34.67	Quasi Peak	-11.33
1	764.990000000 MHz	38.70	Quasi Peak	-7.30

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RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Plot, Vert. Polarity



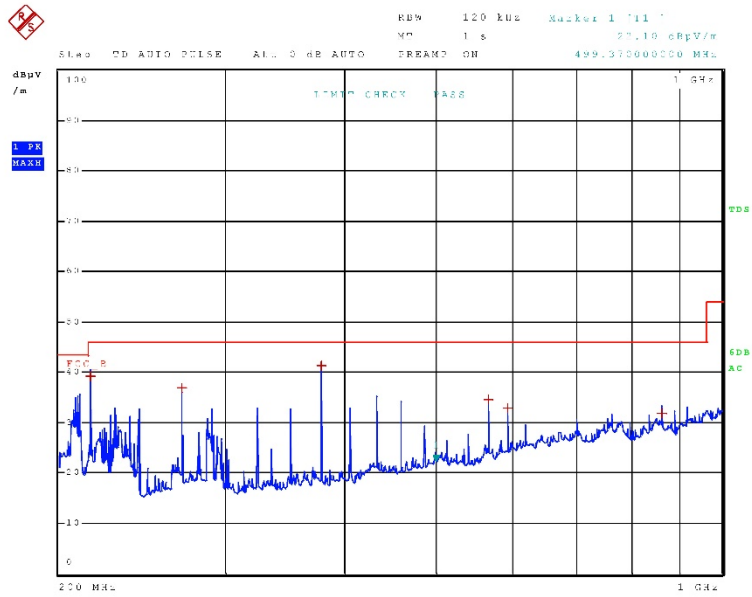
18.Jan 18 13:40

Test Spec: CISPR 22 Radiated Disturbances
 Polarity: Vertical

Time Domain Scan (1 Range)

Scan Start: 200 MHz
 Scan Stop: 1 GHz
 Detector: Trace 1: MAX PEAK
 Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
200.000000 MHz	1.000000 GHz	30.00 kHz	120.00 kHz	50 μs	Auto	20 dB	INPUT1



RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Table, Vert. Polarity

18.Jan 18 13:40

Test Spec CISPR 22 Radiated Disturbances

Polarity

Vertical

Final Measurement

Meas Time: 1 s
Margin: 20 dB
Subranges: 6

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	215.990000000 MHz	39.27	Quasi Peak	-4.23
1	269.990000000 MHz	36.89	Quasi Peak	-9.11
1	377.990000000 MHz	41.26	Quasi Peak	-4.74
1	566.990000000 MHz	34.51	Quasi Peak	-11.49
1	593.990000000 MHz	32.83	Quasi Peak	-13.17
1	864.020000000 MHz	31.84	Quasi Peak	-14.16

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Applicant: MGL AVIONICS CC
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RADIATED SPURIOUS EMISSIONS

Middle of Band 127.50 MHz, Scanned Above 1 GHz

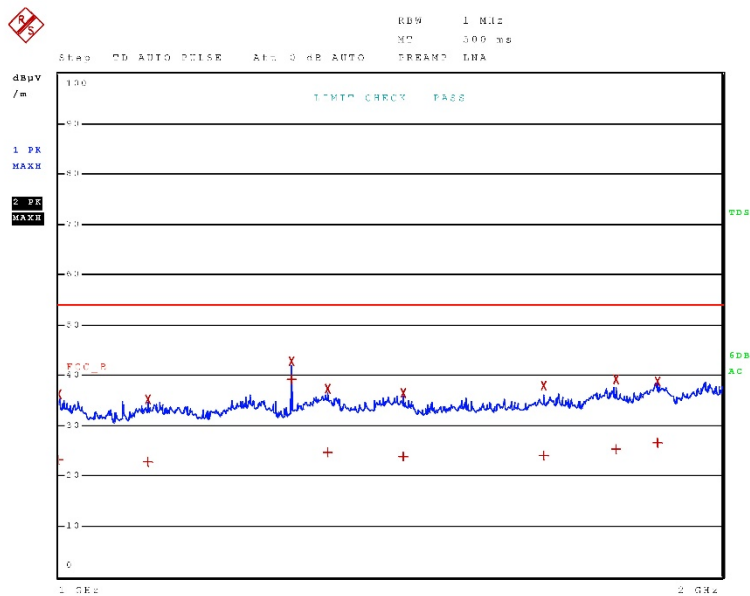
Test Data: Field Strength Plot, Horiz. Polarity

18.Jan 18 15:42

Time Domain Scan (1 Range)

Scan Start: 1 GHz
 Scan Stop: 2 GHz
 Detector: Trace 1: MAX PEAK Trace 2: MAX PEAK
 Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
1.000000 GHz	2.000000 GHz	250.00 kHz	1.00 MHz	100 μ s	Auto	35 dB	INPUT1



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Applicant: MGL AVIONICS CC
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Applicant: MGL AVIONICS CC
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RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Table, Horiz. Polarity

18.Jan 18 15:42

Final Measurement

Meas Time: 500 ms
Margin: 40 dB
Subranges: 16

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	1.000500000 GHz	23.23	CISPR Averag	-30.77
2	1.000500000 GHz	36.25	Max Peak	
1	1.097250000 GHz	22.81	CISPR Averag	-31.19
2	1.097250000 GHz	35.26	Max Peak	
1	1.275000000 GHz	39.09	CISPR Averag	-14.91
2	1.275000000 GHz	42.79	Max Peak	
1	1.324500000 GHz	24.68	CISPR Averag	-29.32
2	1.324500000 GHz	37.23	Max Peak	
1	1.433250000 GHz	23.87	CISPR Averag	-30.13
2	1.433250000 GHz	36.47	Max Peak	
1	1.659000000 GHz	24.12	CISPR Averag	-29.88
2	1.659000000 GHz	37.87	Max Peak	
1	1.790000000 GHz	25.25	CISPR Averag	-28.75
2	1.790000000 GHz	39.13	Max Peak	
1	1.869250000 GHz	26.58	CISPR Averag	-27.42
2	1.869250000 GHz	38.82	Max Peak	

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RADIATED SPURIOUS EMISSIONS

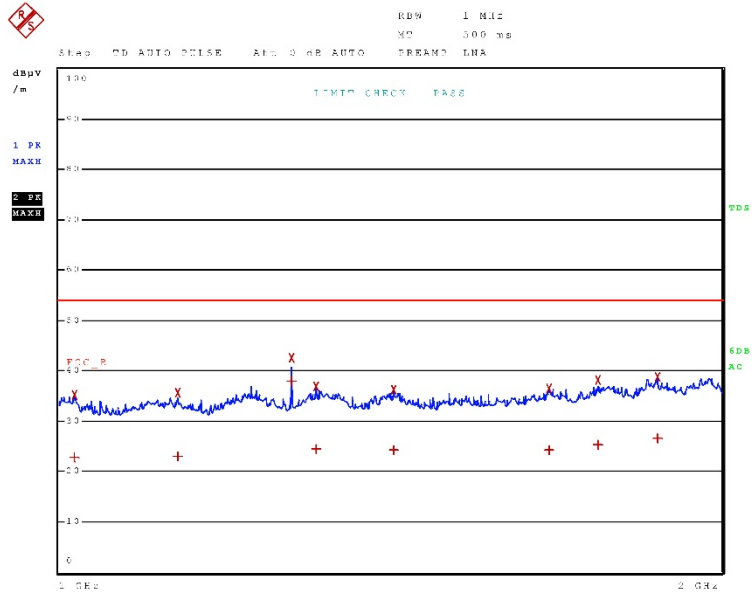
Test Data: Field Strength Plot, Vert. Polarity

18.Jan 18 15:43

Time Domain Scan (1 Range)

Scan Start: 1 GHz
 Scan Stop: 2 GHz
 Detector: Trace 1: MAX PEAK Trace 2: MAX PEAK
 Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
1.000000 GHz	2.000000 GHz	250.00 kHz	1.00 MHz	100 μ s	Auto	35 dB	INPUT1



RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Table, Vert. Polarity

18.Jan 18 15:43

Final Measurement

Meas Time: 500 ms
 Margin: 40 dB
 Subranges: 16

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	1.016000000 GHz	22.73	CISPR Averag	-31.27
2	1.016000000 GHz	35.22	Max Peak	
1	1.131750000 GHz	22.93	CISPR Averag	-31.07
2	1.131750000 GHz	35.58	Max Peak	
1	1.275000000 GHz	37.88	CISPR Averag	-16.12
2	1.275000000 GHz	42.46	Max Peak	
1	1.307750000 GHz	24.40	CISPR Averag	-29.60
2	1.307750000 GHz	36.95	Max Peak	
1	1.419000000 GHz	24.19	CISPR Averag	-29.81
2	1.419000000 GHz	36.21	Max Peak	
1	1.669250000 GHz	24.18	CISPR Averag	-29.82
2	1.669250000 GHz	36.40	Max Peak	
1	1.756250000 GHz	25.28	CISPR Averag	-28.72
2	1.756250000 GHz	38.19	Max Peak	
1	1.869000000 GHz	26.54	CISPR Averag	-27.46
2	1.869000000 GHz	38.69	Max Peak	

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Applicant: MGL AVIONICS CC
 MODEL: V16
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RADIATED SPURIOUS EMISSIONS

High End of Band 136.975 MHz, Scanned 30 MHz to 200 MHz

Test Data: Field Strength Plot, Horiz. Polarity



18.Jan 18 13:19

Test Spec CISPR 22 Radiated Disturbances

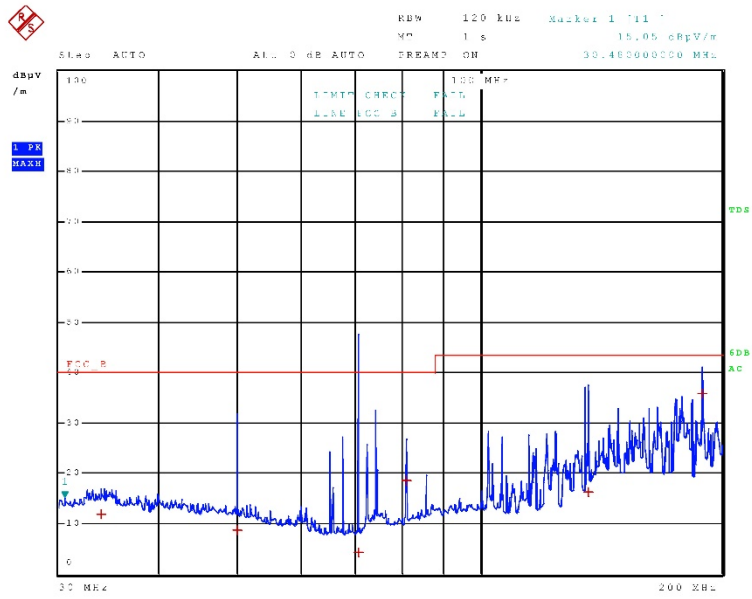
Polarity

Horizontal

Stepped Scan (1 Range)

Scan Start: 30 MHz
 Scan Stop: 200 MHz
 Detector: Trace 1: MAX PEAK
 Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
30.000000 MHz	200.000000 MHz	40.00 kHz	120.00 kHz	50 µs	Auto	20 dB	INPUT1



Applicant: MGL AVIONICS CC
MODEL: V16
Report: 1854BUT17TestReport_Rev1

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RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Table, Horiz. Polarity

18.Jan 18 13:19

Test Spec CISPR 22 Radiated Disturbances

Polarity
Horizontal

Final Measurement

Meas Time: 1 s
Margin: 25 dB
Subranges: 6

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	33.840000000 MHz	11.95	Quasi Peak	-28.05
1	49.960000000 MHz	8.79	Quasi Peak	-31.21
1	70.640000000 MHz	4.41	Quasi Peak	-35.59
1	81.000000000 MHz	18.53	Quasi Peak	-21.47
1	136.400000000 MHz	16.18	Quasi Peak	-27.32
1	189.000000000 MHz	35.75	Quasi Peak	-7.75

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Applicant: MGL AVIONICS CC
MODEL: V16
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RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Plot, Vert. Polarity



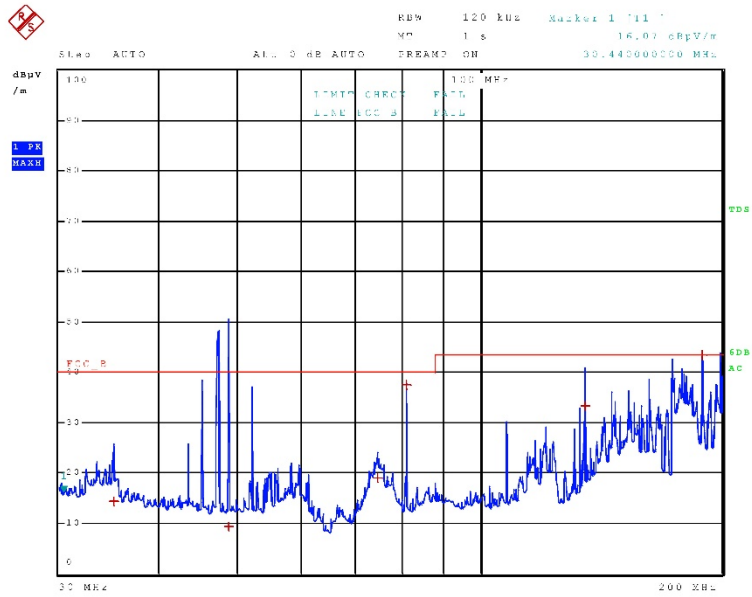
18.Jan 18 13:17

Test Spec CISPR 22 Radiated Disturbances
 Polarity Vertical
 Vertical

Stepped Scan (1 Range)

Scan Start: 30 MHz
 Scan Stop: 200 MHz
 Detector: Trace 1: MAX PEAK
 Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
30.000000 MHz	200.000000 MHz	40.00 kHz	120.00 kHz	50 µs	Auto	20 dB	INPUT1



RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Table, Vert. Polarity

18.Jan 18 13:17

Test Spec CISPR 22 Radiated Disturbances
Polarity
Vertical

Final Measurement

Meas Time: 1 s
Margin: 25 dB
Subranges: 6

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	35.080000000 MHz	14.42	Quasi Peak	-25.58
1	48.720000000 MHz	9.26	Quasi Peak	-30.74
1	74.720000000 MHz	18.93	Quasi Peak	-21.07
1	81.000000000 MHz	37.56	Quasi Peak	-2.44
1	135.000000000 MHz	33.33	Quasi Peak	-10.17
1	189.000000000 MHz	43.38	Quasi Peak	-0.12

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Applicant: MGL AVIONICS CC
MODEL: V16
Report: 1854BUT17TestReport_Rev1

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RADIATED SPURIOUS EMISSIONS

High End of Band 136.975 MHz, Scanned 200 MHz to 1 GHz

Test Data: Field Strength Plot, Horiz. Polarity



18.Jan 18 13:26

Test Spec CISPR 22 Radiated Disturbances

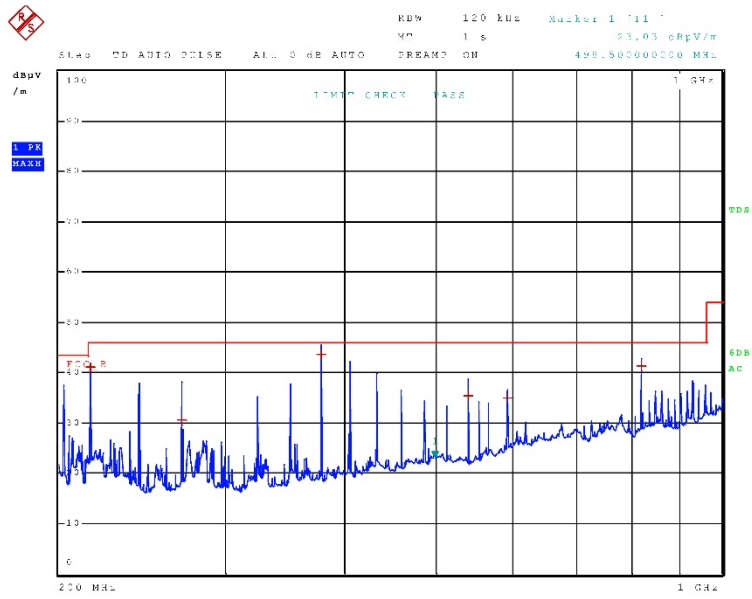
Polarity

Horizontal

Time Domain Scan (1 Range)

Scan Start: 200 MHz
 Scan Stop: 1 GHz
 Detector: Trace 1: MAX PEAK
 Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
200.000000 MHz	1.000000 GHz	30.00 kHz	120.00 kHz	50 µs	Auto	20 dB	INPUT1



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Applicant: MGL AVIONICS CC
 MODEL: V16
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RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Table, Horiz. Polarity

18.Jan 18 13:26

Test Spec CISPR 22 Radiated Disturbances
Polarity
Horizontal

Final Measurement

Meas Time: 1 s
Margin: 20 dB
Subranges: 6

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	215.990000000 MHz	40.98	Quasi Peak	-2.52
1	269.990000000 MHz	30.63	Quasi Peak	-15.37
1	377.990000000 MHz	43.51	Quasi Peak	-2.49
1	539.990000000 MHz	35.44	Quasi Peak	-10.56
1	593.990000000 MHz	34.98	Quasi Peak	-11.02
1	821.840000000 MHz	41.22	Quasi Peak	-4.78

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Applicant: MGL AVIONICS CC
MODEL: V16
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RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Plot, Vert. Polarity



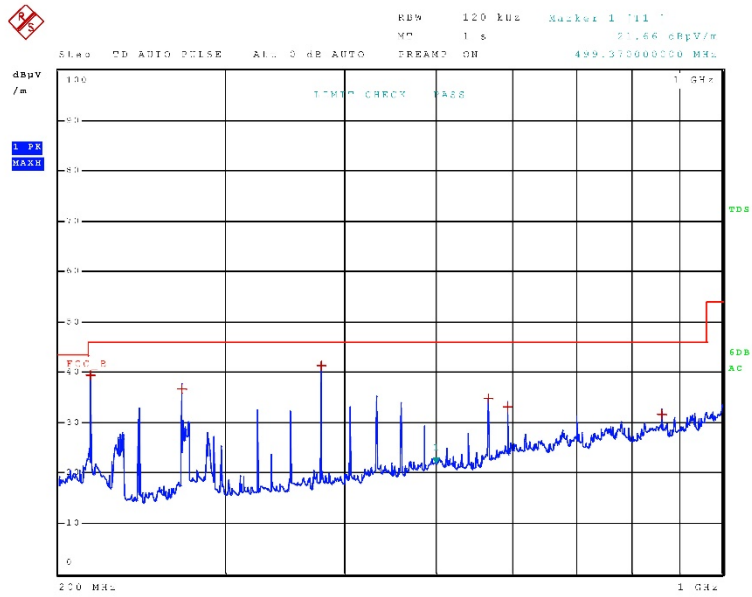
18.Jan 18 13:27

Test Spec: CISPR 22 Radiated Disturbances
 Polarity: Vertical

Time Domain Scan (1 Range)

Scan Start: 200 MHz
 Scan Stop: 1 GHz
 Detector: Trace 1: MAX PEAK
 Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
200.000000 MHz	1.000000 GHz	30.00 kHz	120.00 kHz	50 μs	Auto	20 dB	INPUT1



RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Table, Vert. Polarity

18.Jan 18 13:27

Test Spec CISPR 22 Radiated Disturbances
Polarity
Vertical

Final Measurement

Meas Time: 1 s
Margin: 20 dB
Subranges: 6

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	215.990000000 MHz	39.32	Quasi Peak	-4.18
1	269.990000000 MHz	36.65	Quasi Peak	-9.35
1	377.990000000 MHz	41.23	Quasi Peak	-4.77
1	566.990000000 MHz	34.68	Quasi Peak	-11.32
1	593.990000000 MHz	33.06	Quasi Peak	-12.94
1	864.020000000 MHz	31.68	Quasi Peak	-14.32

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Applicant: MGL AVIONICS CC
MODEL: V16
Report: 1854BUT17TestReport_Rev1

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RADIATED SPURIOUS EMISSIONS

High End of Band 136.975 MHz, Scanned Above 1 GHz

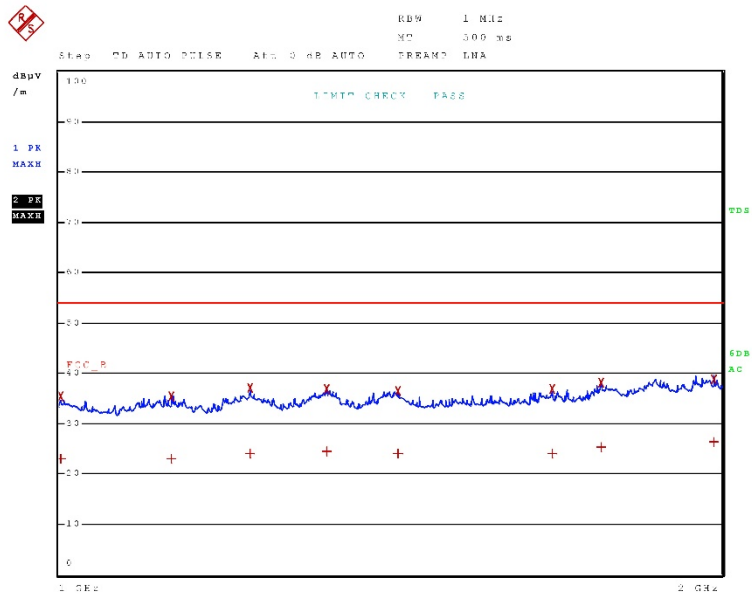
Test Data: Field Strength Plot, Horiz. Polarity

18.Jan 18 15:45

Time Domain Scan (1 Range)

Scan Start: 1 GHz
 Scan Stop: 2 GHz
 Detector: Trace 1: MAX PEAK Trace 2: MAX PEAK
 Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
1.000000 GHz	2.000000 GHz	250.00 kHz	1.00 MHz	100 μs	Auto	35 dB	INPUT1



Applicant: MGL AVIONICS CC
MODEL: V16
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RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Table, Horiz. Polarity

18.Jan 18 15:42

Final Measurement

Meas Time: 500 ms
 Margin: 40 dB
 Subranges: 16

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	1.000500000 GHz	23.23	CISPR Averag	-30.77
2	1.000500000 GHz	36.25	Max Peak	
1	1.097250000 GHz	22.81	CISPR Averag	-31.19
2	1.097250000 GHz	35.26	Max Peak	
1	1.275000000 GHz	39.09	CISPR Averag	-14.91
2	1.275000000 GHz	42.79	Max Peak	
1	1.324500000 GHz	24.68	CISPR Averag	-29.32
2	1.324500000 GHz	37.23	Max Peak	
1	1.433250000 GHz	23.87	CISPR Averag	-30.13
2	1.433250000 GHz	36.47	Max Peak	
1	1.659000000 GHz	24.12	CISPR Averag	-29.88
2	1.659000000 GHz	37.87	Max Peak	
1	1.790000000 GHz	25.25	CISPR Averag	-28.75
2	1.790000000 GHz	39.13	Max Peak	
1	1.869250000 GHz	26.58	CISPR Averag	-27.42
2	1.869250000 GHz	38.82	Max Peak	

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Applicant: MGL AVIONICS CC
 MODEL: V16
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RADIATED SPURIOUS EMISSIONS

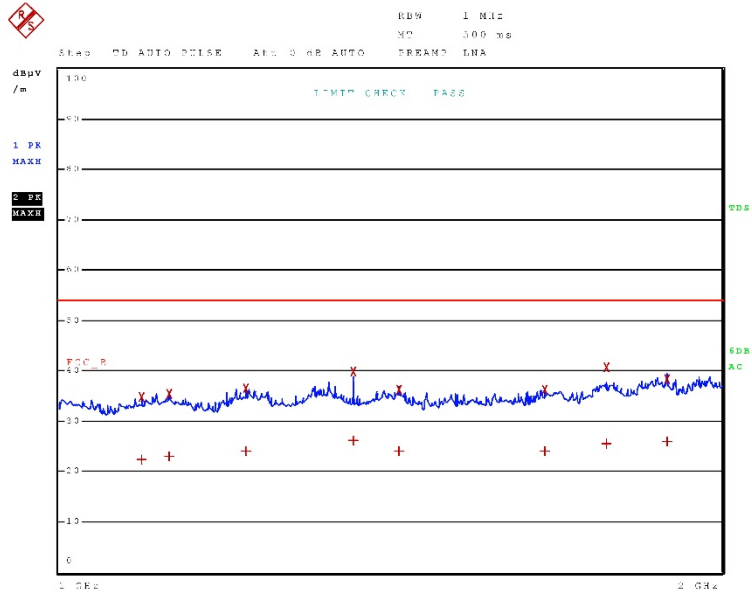
Test Data: Field Strength Plot, Vert. Polarity

18.Jan 18 15:44

Time Domain Scan (1 Range)

Scan Start: 1 GHz
 Scan Stop: 2 GHz
 Detector: Trace 1: MAX PEAK Trace 2: MAX PEAK
 Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
1.000000 GHz	2.000000 GHz	250.00 kHz	1.00 MHz	100 μ s	Auto	35 dB	INPUT1



RADIATED SPURIOUS EMISSIONS

Test Data: Field Strength Table, Vert. Polarity

18.Jan 18 15:44

Final Measurement

Meas Time: 500 ms
Margin: 40 dB
Subranges: 16

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	1.090000000 GHz	22.45	CISPR Averag	-31.55
2	1.090000000 GHz	34.87	Max Peak	
1	1.121750000 GHz	22.95	CISPR Averag	-31.05
2	1.121750000 GHz	35.41	Max Peak	
1	1.216000000 GHz	24.00	CISPR Averag	-30.00
2	1.216000000 GHz	36.40	Max Peak	
1	1.360000000 GHz	26.25	CISPR Averag	-27.75
2	1.360000000 GHz	39.79	Max Peak	
1	1.426250000 GHz	23.97	CISPR Averag	-30.03
2	1.426250000 GHz	36.34	Max Peak	
1	1.661000000 GHz	24.00	CISPR Averag	-30.00
2	1.661000000 GHz	36.28	Max Peak	
1	1.772250000 GHz	25.63	CISPR Averag	-28.37
2	1.772250000 GHz	40.55	Max Peak	
1	1.887250000 GHz	26.01	CISPR Averag	-27.99
2	1.887250000 GHz	38.44	Max Peak	

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POWER LINE CONDUCTED INTERFERENCE

Rules Part No.: Part 15.107, RSS-GEN sec 8.8

Requirements:

Frequency (MHz)	Quasi Peak Limits (dB μ V)	Average Limits (dB μ V)
0.15 – 0.5	66 – 56 *	56 – 46 *
0.5 – 5.0	56	46
5.0 – 30	60	50
* Decrease with logarithm of frequency		

Test Data: The following plots represent the emissions for power line conducted. Both lines were observed. 120 Volts AC 60 Hz supply voltage was used for all tests

Results: N/A. EUT is not intended for connection with AC Mains.

TEST EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
Antenna: Biconical 1057	Eaton	94455-1	1057	12/13/17	12/13/19
Antenna: Log-Periodic 1243	Eaton	96005	1243	02/09/16	02/09/18
Coaxial Cable - Chamber 3 cable set (backup)	Micro-Coax	Chamber 3 cable set (backup)	KMKM-0244-02 ; KMKM-0670-01; KFKF-0197-00	N/A	N/A
CHAMBER	Panashield	3M	N/A	04/25/16	1/31/18
Antenna: Double-Ridged Horn/ETS Horn 1	ETS-Lindgren	3117	00035923	01/30/17	01/30/19
EMI Test Receiver R & S ESU 40 Chamber	Rohde & Schwarz	ESU 40	100320	04/01/16	04/01/18
Bore-sight Antenna Positioning Tower	Sunol Sciences	TLT2	N/A	N/A	N/A
Pre-amp	RF-LAMBDA	RLNA00M45GA	N/A	01/04/16	01/04/19

*EMI RECEIVER SOFTWARE VERSION

The receiver firmware used was version 4.43 Service Pack 3

STATE OF THE MEASUREMENT UNCERTAINTY

The data and results referenced in this document are true and accurate. The measurement uncertainty was calculated for all measurements listed in this test report according To CISPR 16-4 or ENTR 100-028 Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: “Uncertainty in EMC Measurements” and is documented in the Timco Engineering, Inc. quality system according to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Timco Engineering, Inc. is reported:

Test Items	Measurement Uncertainty	Notes
RF Frequency Accuracy	± 49.5 Hz	(1)
RF Conducted Power	±0.93dB	(1)
Conducted spurious emission of transmitter valid up to 40GHz	±1.86dB	
Occupied Bandwidth	±2.65%	
Audio Frequency Response	±1.86dB	
Modulation limiting	±1.88%	
Radiated RF Power	±1.4dB	
Maximum frequency deviation: Within 300 Hz and 6kHz of audio freq.	±1.88%	
Within 6kHz and 25kHz of audio Freq.	±2.04%	
Rad Emissions Sub Meth up to 26.5GHz	±2.14dB	
Adjacent channel power	±1.47dB	(1)
Transient Frequency Response	±1.88%	
Temperature	±1.0°C	(1)
Humidity	±5.0%	

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

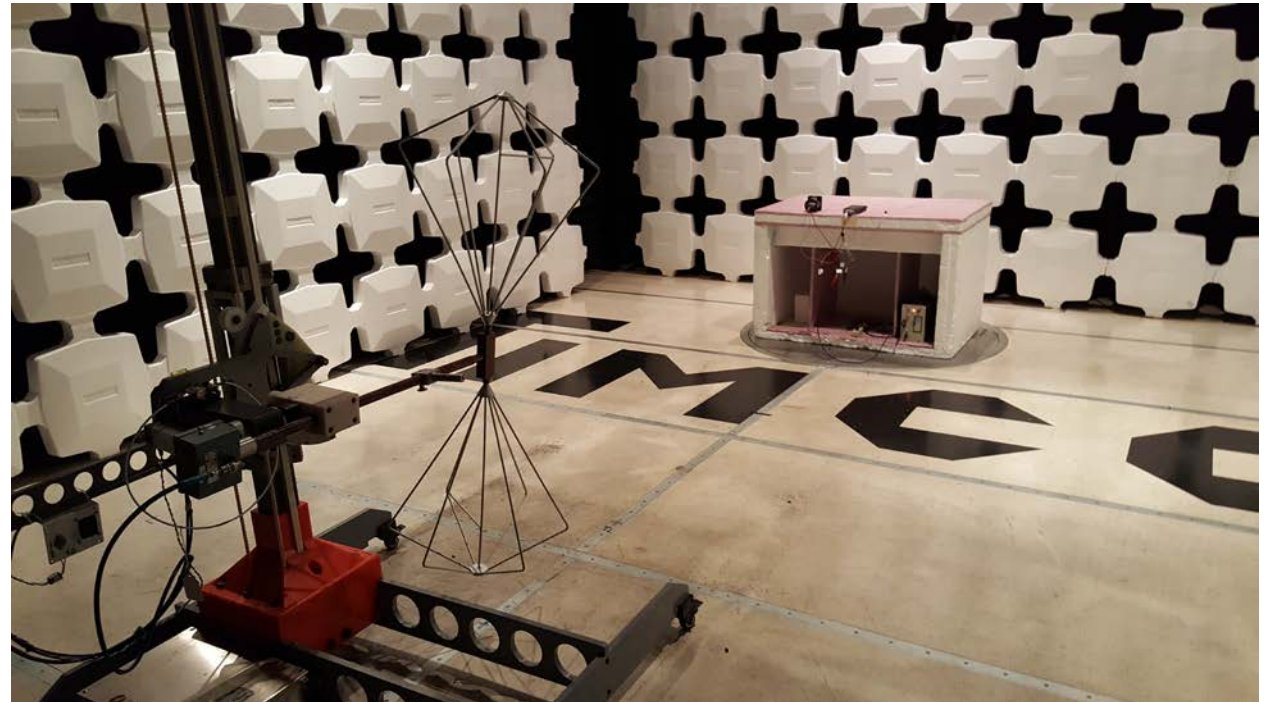
APPLICANT: MGL AVIONICS CC
MODEL: V16

TEST SET UP PHOTOS

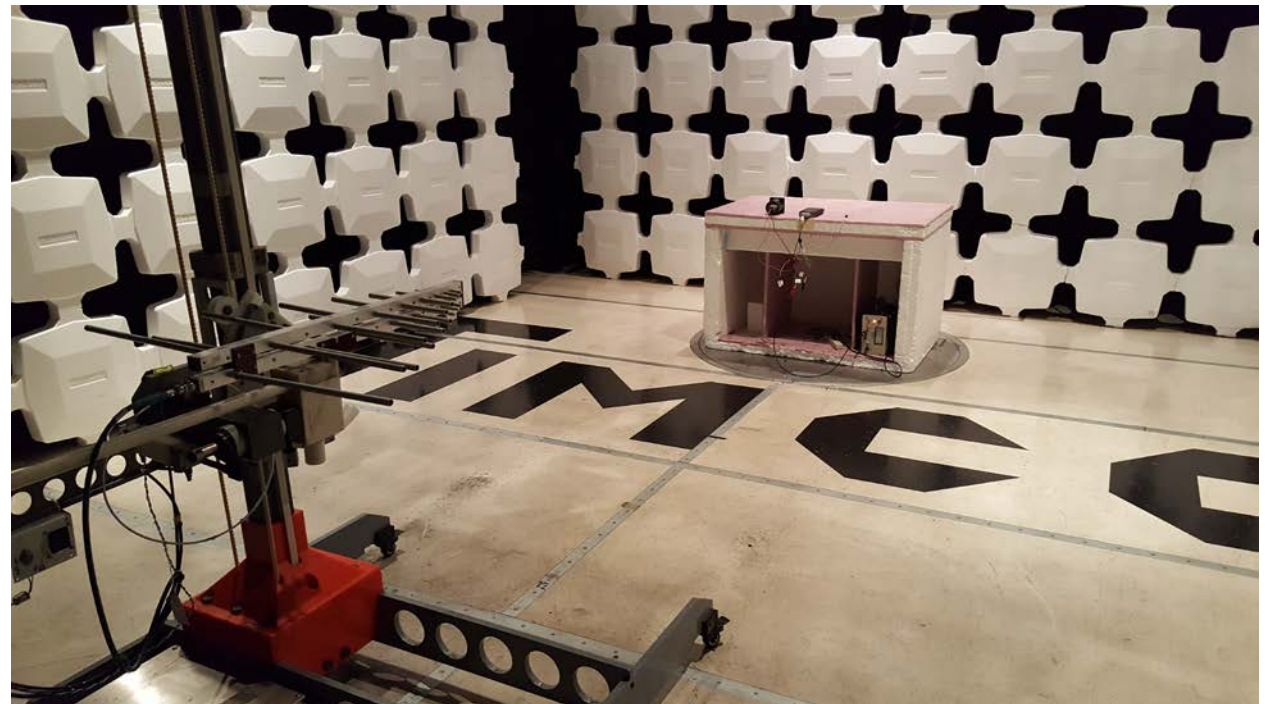
Radiated Spurious Emissions: Table Top



Radiated Spurious Emissions: 30 MHz – 200 MHz



Radiated Spurious Emissions: 200 MHz – 1 GHz



Radiated Spurious Emissions: Above 1 GHz

