



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Project No. 8824
Test Report Release Date: 8/15/2017

TEST SPECIFICATIONS:

RTCA/DO-160G (December 8, 2010)

RADIO TECHNICAL COMMISSION FOR AERONAUTICS

ENVIRONMENTAL CONDITIONS

AND

TEST PROCEDURE FOR AIRBORNE EQUIPMENT

THE FOLLOWING **MEETS** SECTION 15, SECTION 17, & SECTION 21 OF THE
ABOVE TEST SPECIFICATION

Formal Name: RockAIR
Kind of Equipment: Satellite/Cellular Tracker
Test Configuration: Tabletop (Tested at 5vdc V ac; Tested at 24 V dc)
Model Number(s): RockAIR
Model(s) Tested: RockAIR
Serial Number(s): JJA-RQN-A
Date of Tests: May 5, 8 & 9, 2017
Test Conducted for: TracPlus Global Ltd
Level 1, The Clarion Building, 286 Princes Street
Dunedin, Otago 9054

NOTICE: "This test report relates only to the items tested and must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government." Please see the "Additional Description of Equipment Under Test" page listed inside of this report.

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1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Project No. 8824

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1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Project No. 8824

TABLE OF CONTENTS

i.	Cover Page.....	1
ii.	Signature Page	2
iii.	Table of Contents	3
iv.	NVLAP Certificate of Accreditation.....	5
1.0	Introduction	6
2.0	Test Facility	6
3.0	Test Set-Up.....	7
4.0	Operating Conditions of Test Sample	8
5.0	Performance Monitored.....	8
6.0	Description of Test Sample	9
7.0	Additional Description of Equipment Under Test.....	10
8.0	Photo ID Information	10
9.0	Photo ID Taken During Testing	11
10.0	Test Set Up Photos Taken During Testing	12
11.0	References	14
12.0	Test Results	14
13.0	Conclusion of Emissions and Susceptibility Tests.....	14
Appendix A Section 15 Magnetic Effect.....		15
1.0	Purpose	16
2.0	Test Procedure	16
3.0	Equipment Category.....	17
4.0	Limits & Results.....	17
5.0	Photos Taken During Testing.....	18
Section 15 Magnetic Effect Data Sheets.....		19
Appendix B Section 17 Voltage Spike		21
1.0	Purpose of Test.....	22
2.0	Equipment Categories	22
3.0	Test Setup and Apparatus.....	23
4.0	Test Procedure	23
5.0	Limits & Results.....	24
6.0	Photos Taken During Testing.....	26
Table 1 - Test Instrumentation.....		28
Table 2 - Test Equipment.....		28
Section 17 Voltage Spike Test Oscillograms.....		29
Section 17 Voltage Spike Test Data Sheets.....		32
Section 17 Voltage Spike Calibration Oscillograms		34



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Project No. 8824

TABLE OF CONTENTS

Appendix C	Section 21	Radiated Emissions	41
1.0	Purpose of Test		42
2.0	Equipment Categories		42
3.0	Test Setup and Apparatus		43
4.0	Test Procedure		45
5.0	Limits & Results		49
6.0	Conducted Photos Taken During Testing		53
7.0	Radiated Photos Taken During Testing		56
Table 1 - Test Instrumentation			64
Table 2 - Test Equipment			65
Section 21.4	Conducted Emission Verification Data and Charts		66
Section 21.4	28 Vdc Conducted Emission Test Data and Charts		69
Section 21.5	Radiated Emission Verification Test Data and Charts		84
Section 21.5	DC Radiated Emission Test Data and Charts		91
Section 21.5	Radiated Emission Ambient Test Data and Charts		176



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Project No. 8824

United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 100276-0

D.L.S. Electronic Systems, Inc.
Wheeling, IL

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,
listed on the Scope of Accreditation, for:*

Electromagnetic Compatibility & Telecommunications

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).*

2016-08-16 through 2017-09-30

Effective Dates



For the National Voluntary Laboratory Accreditation Program



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Project No. 8824

1.0 INTRODUCTION:

On May 5, 8 & 9, 2017, a series of emissions and susceptibility tests were made to demonstrate that the RockAIR, Model(s) RockAIR, Serial No. JJA-RQN-A, manufactured by Rock 7 Mobile was tested to the requirements of RTCA/DO-160G (December 8, 2010), Environmental conditions and Test Procedures for Airborne Equipment using the following test procedure(s): Section 15, Section 17, & Section 21.

2.0 TEST FACILITY:

D.L.S. Electronic Systems, Inc. is a full service EMC Testing Laboratory accredited to ISO Guide 17025. NVLAP Certificate and Scope can be viewed at <http://www.dlsemc.com/certificate>. Our facilities are registered with the FCC, Industry Canada, and VCCI. All tests were performed by personnel of D.L.S. Electronic Systems, Inc. at the following location(s):

Main Test Facility:
D.L.S. Electronic Systems, Inc.
1250 Peterson Drive
Wheeling, Illinois 60090

A list of the test equipment used, along with identification and calibration data, is included in the Table of each Appendix of this report. All primary equipment was calibrated against known reference standards with a verified traceable path to NIST.



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Project No. 8824

3.0 TEST SET-UP:

All emissions and susceptibility tests were performed at D.L.S. Electronic Systems, Inc. The RockAIR was placed on a conductive table. The following describes the lab that was used for testing:

LAB J: 21' long x 10' wide x 10' high screen shielded enclosure.

All lines leaving the room were filtered. The auxiliary equipment was located outside the main room.

The tests were run in the following lab:

LAB J: Section 15, Magnetic Effect

LAB J: Section 17, Voltage Spike

LAB J: Section 21, Emission of Radio Frequency Energy



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Project No. 8824

4.0 OPERATING CONDITIONS OF TEST SAMPLE:

All test measurements were made at a laboratory temperature of **72°F** at **38%** humidity with the following mode of operation:

The RockAIR is configured for operation using an iOS application (provided).

There are effectively four modes of operation.

Inactive, with no external power applied, either via USB or 12-24VDC

Active with external power applied, either via USB or 12-24VDC

Active and transmitting via cellular IP

Active and transmitting via Iridium SBD

For testing purposes, it is recommended that regular periodic tracking be disabled, and transmissions be triggered manually as required using the iOS application. The same application allows the enabling and disabling of cellular IP to force the device to use cellular IP or satellite SBD networks as required.

As each transmission from the device includes reception of handshake data from the corresponding satellite or cellular network, a single position report manually transmitted via the iOS application is considered to include both data transmission and reception.

Powered On with either USB 5Vdc or 24Vdc.

5.0 PERFORMANCE MONITORED:

The RockAIR performance was monitored as follows:

Power LED is monitored for functional status. EUT connected via Bluetooth to iPhone 7 running TP Connect app.



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Project No. 8824

6.0 DESCRIPTION OF TEST SAMPLE: (See also Paragraph 7.0)

6.1 DESCRIPTION:

The RockAIR is a self-contained tracker designed for use in light-aircraft and ground vehicles. It transmits GPS position reports, text messages and distress notifications using either the Iridium satellite Short Burst Data network and cellular IP networks based on network coverage and availability. It is powered externally via USB or vehicle power, and has an internal battery for the transmission of queued and shutdown reports when external power is removed. It is Bluetooth BLE capable and can be paired with a smart device for advanced features including two way messaging, device configuration and diagnostics.

6.2 PHYSICAL DIMENSIONS OF EQUIPMENT UNDER TEST:

Length:119mm x Width:98mm x Height: 26mm



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Project No. 8824

7.0 ADDITIONAL DESCRIPTION OF EQUIPMENT UNDER TEST:

There were no changes made during testing.

8.0 PHOTO ID INFORMATION:

The test set up can be seen in the accompanying photograph.

Item 0 RockAIR
 Model Number: RockAIR
 Serial Number: JJA-RQN-A

Item 1 Shielded USB Cable.

Item 2 Unshielded 12/24Vdc Power and Signal Cable.

Item 3 Unshielded I/O Signal Cable.



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Project No. 8824

9.0 PHOTO ID TAKEN DURING TESTING:



Photo ID



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Project No. 8824

10.0 TEST SET UP PHOTOS TAKEN DURING TESTING:



Test setup 24Vdc Power Input



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Project No. 8824

10.0 TEST SET UP PHOTOS TAKEN DURING TESTING:



Test Setup USB 5Vdc Power Input



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Project No. 8824

11.0 REFERENCES:

RTCA/DO-160G "Environmental Conditions and Test Procedures for Airborne Equipment" (Radio Technical Commission for Aeronautics, December 8, 2010)

NOTE: All listed paragraphs, figures and tables are reference to the above standard unless otherwise specified.

12.0 TEST RESULTS:

The RockAIR was subject to the test procedure(s) Section 15, Section 17, & Section 21. A detailed explanation of how these tests and their measurements were made is shown in Appendix(es) A-C at the end of this report.

13.0 CONCLUSION OF EMISSIONS AND SUSCEPTIBILITY TESTS:

The RockAIR, Model(s) RockAIR, **meets** Section 15, Section 17, & Section 21 of RTCA/DO-160G (December 8, 2010), Environmental conditions and Test Procedures for Airborne Equipment. See the Appendix(es) A-C for a detailed explanation of the test results.



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777

Appendix: A

APPENDIX A

RTCA/DO-160G

SECTION 15

PARAGRAPH

MAGNETIC EFFECT



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 15 Magnetic Effect

Appendix: A

1.0 PURPOSE:

This test determines the magnetic effect of the equipment to assist the installer in choosing the proper location of the equipment in the aircraft.

2.0 TEST PROCEDURE:

The equipment is operated in the steady state mode producing the maximum magnet deflection and oriented such that the maximum magnet deflection is produced. A measurement is made of the distance between the magnet pivot and the nearest part of the equipment at which the angle of DC exists.

While bringing the equipment and the magnet closer together and then further apart, the distance measurements were recorded which produce the deflection angle of DC. The minimum distance measured was used to determine the equipment class.

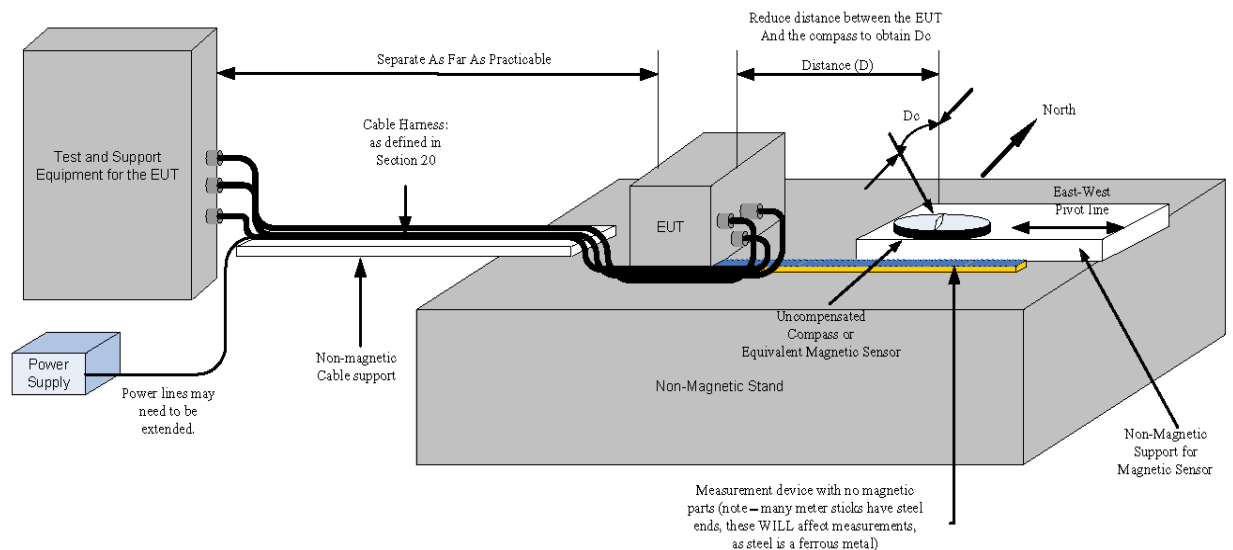


Figure 15-1 Test Installation and Procedure



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 15 Magnetic Effect

Appendix: A

3.0 EQUIPMENT CATEGORY:

The RockAIR was subjected to **Equipment Category Z**.

Equipment Category

Distance for a Deflection of DC

Z

less than .3 meters

4.0 LIMITS & RESULTS:

4.1 LIMITS:

The magnetic effect of the equipment was determined in terms of the deflection of a free magnet in a uniform magnetic field having a horizontal intensity of 14.4 A/m $\pm 10\%$ when the RockAIR is positioned on the east-west line through the pivot of a magnet.

4.2 RESULTS:

The RockAIR was tested with the measurements lying in between the distance of Deflection of DC for the Equipment Class selected by the manufacturer.

The RockAIR **meets RTCA DO-160G, Section 15, Category Z**.

Lab used: J

Tested to Section:

Summary:

EUT was tested in 4 modes, each powered by USB 5Vdc and 24Vdc. There were no problems found at this level.



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 15 Magnetic Effect

Appendix: A

5.0 PHOTOS TAKEN DURING TESTING (CON'T):



Section 15 Test



1250 Peterson Dr., Wheeling, IL 60090

Company:	TracPlus Global Ltd	
Model Tested:	RockAIR	
Report Number:	22777	Appendix: A
Standard:	RTCA/DO-160G Section 15 Magnetic Effect	

SECTION 15

MAGNETIC EFFECT

DATA SHEETS



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 15 Magnetic Effect

Appendix: A

RTCA/DO-160G Section 15 Magnetic Effects

Calculation of Dc:

$$D_c = \frac{14.4 \text{ A/m (18.144uT)}}{\text{Horizontal Component of Ambient Field Strength}}$$

Magnetic Field at D.L.S. Electronic Systems, Inc. = $\sim 18.889\text{uT}$
(National Geophysical Data Center, 10-23-13)

If Ambient Magnetic Field is $18.144\text{uT} \pm 10\%$, $D_c = 1$

Results:

Reducing the distance between the compass and the EUT(s) to obtain the allowable deflection ($D_c = 1 = 1^\circ$) resulted in the following:

EUT: TracPlus RockAIR s/n: JJA-RQN-A

DATE OF TEST: May 09, 2017

Deflection(D_c): 1°

Distance of D_c : $0 < D \leq .3\text{m}$

Category: Meets Category Z Equipment.

EUT was tested in both USB Power and 24Vdc Power modes.



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777

Appendix B

APPENDIX B

RTCA/DO-160G

SECTION 17

PARAGRAPH: 17.4

TEST PLAN:

VOLTAGE SPIKE



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 17 Voltage Spike

Appendix B

1.0 PURPOSE OF THE TEST:

This test determines whether the equipment can withstand the effects of voltage spikes arriving at the equipment on its power leads, either AC or DC. The main adverse effects to be anticipated are:

- a. Permanent damage, component failure, insulation breakdown.
- b. Susceptibility degradation, or changes in equipment performance.

2.0 EQUIPMENT CATEGORIES:

The RockAIR was subjected to **Category B**.

Category B

Equipment intended primarily for installations where a lower standard of protection against voltage spikes is acceptable is identified as Category B.



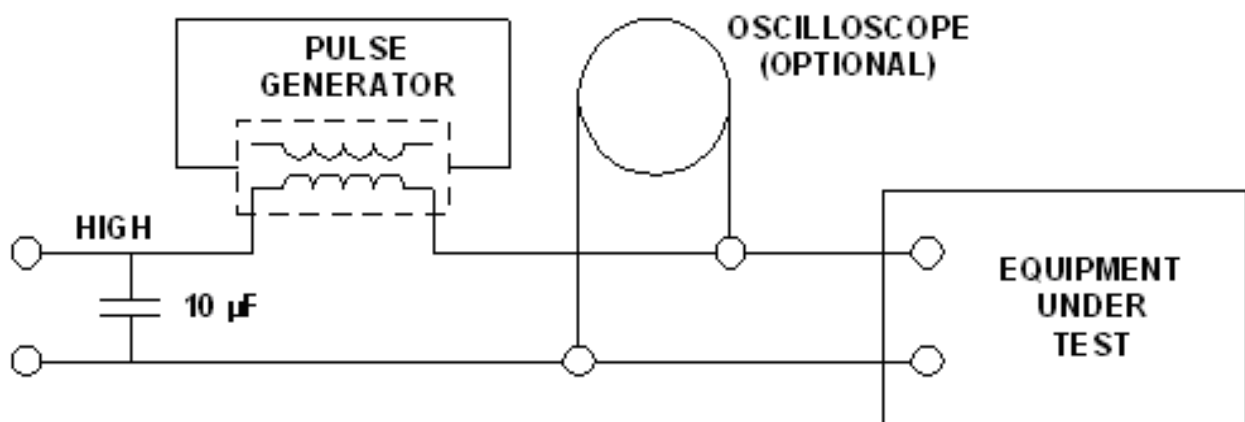
1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 17 Voltage Spike

Appendix B

3.0 TEST SETUP AND APPARATUS:

The transient generator used produced the waveform shown in [Figure 17-1](#) of the test specification. A typical test setup is shown in [Figure 17-2](#). Any method of generating the spike may be used if the waveform complies with [Figure 17-1](#). The generator was inserted in series with the RockAIR.



NOTE: FOR EQUIPMENTS DRAWING HIGH CURRENTS, ALTERNATE TEST METHODS MAY BE REQUIRED (To avoid saturating transformer etc.).

Figure 17-2 Voltage Spike Test Setup, DC or Single Phase AC

4.0 TEST PROCEDURE:

With the equipment under test disconnected, the transient wave shape was verified to be within specification. The RockAIR was set to its designated voltage. A series of positive and negative spikes (described in [Figure 17-1](#) of the Standard) were injected to each of the primary inputs of the equipment under test. A minimum of 50 transients of each polarity were injected within a period of one minute. The test was repeated for each operating mode or function of the equipment.



1250 Peterson Dr., Wheeling, IL 60090

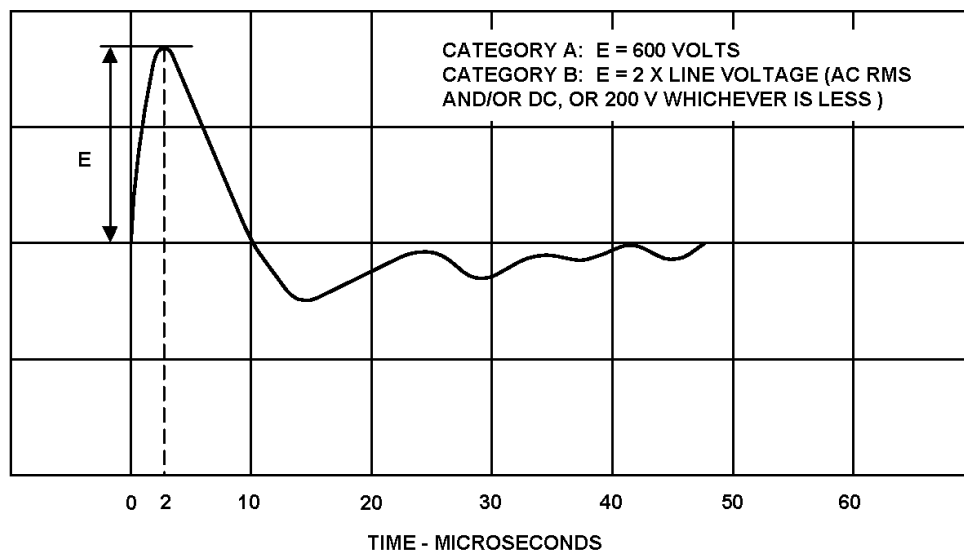
Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 17 Voltage Spike

Appendix B

5.0 LIMITS & RESULTS:

5.1 LIMITS:

A following Voltage Spike Waveform was used for the test:



THE GENERATOR SOURCE IMPEDANCE SHALL BE 50Ω NOMINAL. THE SPECIFIED VOLTAGE AND DURATIONS ARE FOR OPEN CIRCUIT CONDITIONS ONLY. THE PEAK VOLTAGE MAY BE SUBSTANTIALLY LOWER WITH THE EQUIPMENT CONNECTED. THE GENERATOR SOURCE IMPEDANCE SHALL BE VERIFIED BY TESTING WITH A $50 \Omega \pm 10\%$ LOAD RESISTOR, AND SHALL PRODUCE ONE HALF OF THE SPECIFIED VOLTAGE $\pm 10\%$.

Note: The waveform shown above is typical. The waveform requirement is accomplished if the pulse rise time is less than or equal to $2 \mu\text{sec}$ and the total pulse duration is at least $10 \mu\text{sec}$.

Figure 17-1 Voltage Spike Waveform

FIGURE 17-1



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 17 Voltage Spike

Appendix B

5.0 LIMITS & RESULTS (CON'T):

5.2 RESULTS:

The RockAIR **meets RTCA DO-160G, Section 17, Category B.**

Lab used: J

Tested to Section: 17.4

Summary:

EUT tested with 24Vdc input power only. There were no problems found at this level. See the data sheets at the end of this appendix for the test results.



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 17 Voltage Spike

Appendix B

6.0 PHOTOS TAKEN DURING TESTING



Section 17 Calibration



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 17 Voltage Spike

Appendix B

6.0 PHOTOS TAKEN DURING TESTING



Section 17 TEST



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 17 Voltage Spike

Appendix B

TABLE 1 / TEST INSTRUMENTATION

Description	Manufacturer	Model Number	Serial Number	Range	Cal On	Cal Due Dates
LISN, 50 Amp	Solar Electronics	9117-5-TS-50-N	12482	150 kHz-1 GHz	10/5/2016	10/5/2017
LISN, 50 Amp	Solar Electronics	9117-5-TS-50-N	17577	150 kHz-1 GHz	10/5/2016	10/5/2017
Oscilloscope, Digital	Agilent Technologies	54845A	US40240434	DC-1.5 GHz, 8MS/s	6/17/2016	6/17/2017
Probe, High Voltage	LeCroy	WP7200A	LCRY0705N13389	N/A	05/09/2017	N/A

All primary equipment is calibrated against known reference standards with a verified traceable path to NIST.

TABLE 2 / TEST EQUIPMENT

Description	Manufacturer	Model Number	Serial Number	Range
Capacitor	Mallory	10000AFC	JSU23X106AQC	10uF 230V 50/60Hz
Generator, Spike	Solar Electronics	7054-1	980705	N/A
Resistor, 50 Ohm, 3.5W	Ohmite	AX470K	001	50-Ohm 3.5W Ceramic
Transformer, Isolation	Hammond	171E		N/A
Transformer, Pulse	Solar Electronics	2201-1	DLS# 000386	2x10us 600V

The test equipment above does not require calibration.



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 17 Voltage Spike

Appendix B

SECTION 17

VOLTAGE SPIKE

TEST OSCILLOGRAMS

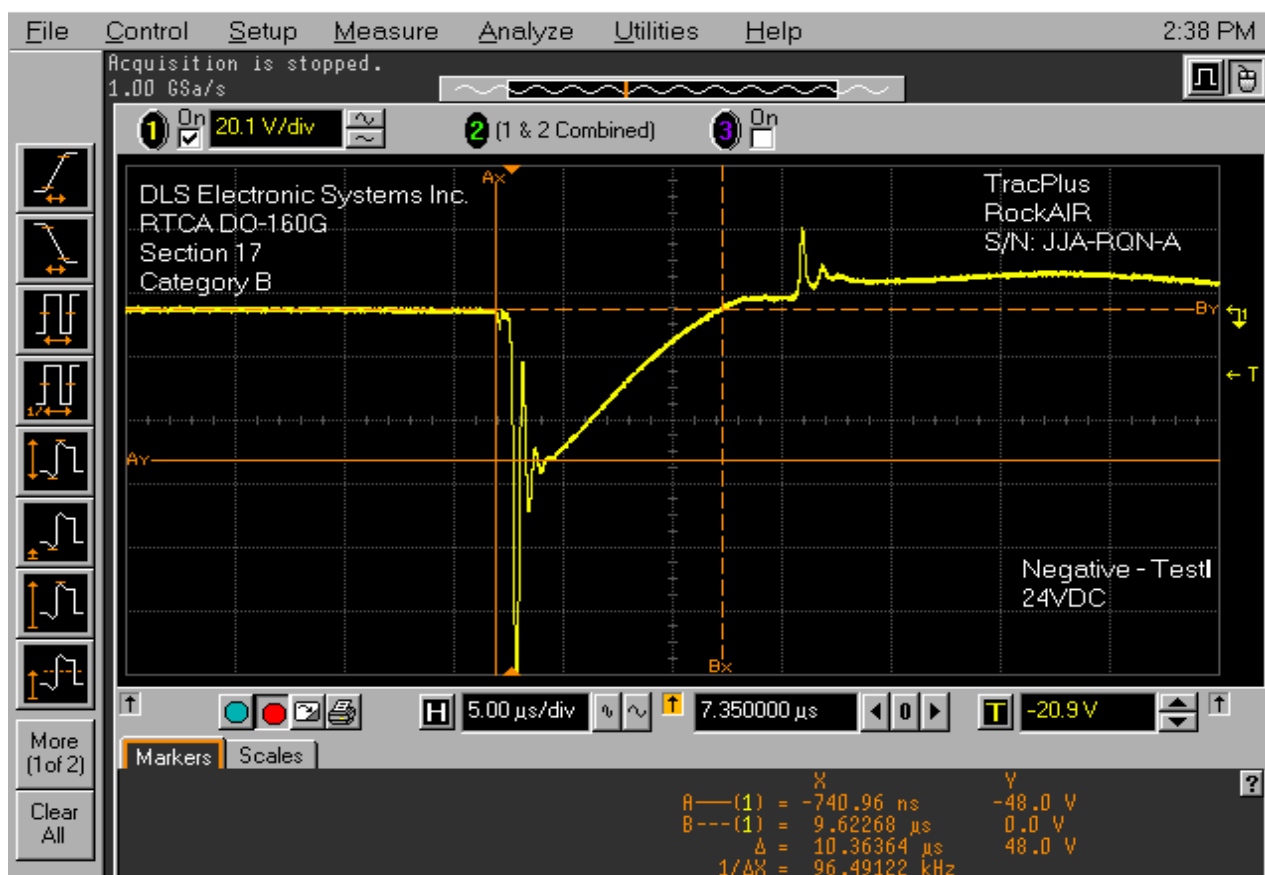


1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 17 Voltage Spike

Appendix B

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Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 1.00 GSa/s
Averaging off
9-bit BW Filter off Interpolation off

Channel 1 Scale 20.1 V/div Offset -35.20 V Coupling DC Impedance 1M Ohm
Attenuation 10.00 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 5.00 μs/div Position 7.350000 μs Reference center

Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level -20.9 V Slope falling

Marker

	X	Y
A—(1)	-740.96 ns	-48.0 V
B---(1)	9.62268 μs	0.0 V
Δ	10.36364 μs	48.0 V
1/ΔX	96.49122 kHz	

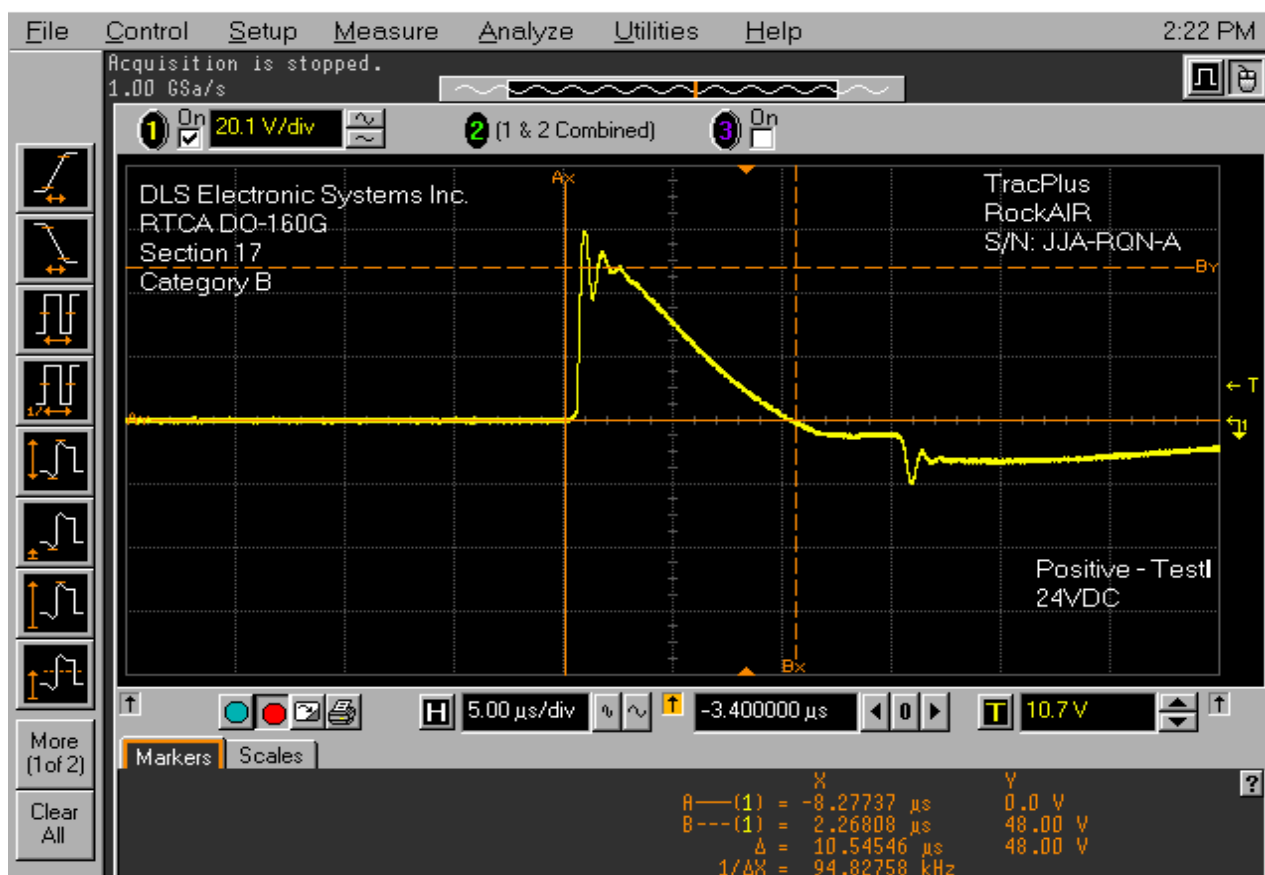


1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 17 Voltage Spike

Appendix B

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Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 1.00 GSa/s
Averaging off
9-bit BW Filter off Interpolation off

Channel 1 Scale 20.1 V/div Offset 0.0 V Coupling DC Impedance 1M Ohm
Attenuation 10.00 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 5.00 μs/div Position -3.400000 μs Reference center

Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level 10.7 V Slope falling

Marker

	X	Y
A—(1)	-8.27737 μs	0.0 V
B---(1)	2.26808 μs	48.00 V
Δ	10.54546 μs	48.00 V
1/ΔX	94.82758 kHz	



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 17 Voltage Spike

Appendix B

SECTION 17

VOLTAGE SPIKE

TEST DATA SHEETS



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
 Model Tested: RockAIR
 Report Number: 22777
 Standard: RTCA/DO-160G Section 17 Voltage Spike

Appendix B

Company: <u>TracPlus</u> EUT: <u>RockAIR</u> S/N: <u>JJA-RQN-A</u>			
Date: <u>5/9/17</u>		Engineer: <u>Jereme I</u> Result: <u>Pass</u>	
Voltage: <u>24V</u>		Category: <u>B</u>	
Calibration: Record the generator setting required to reach the OC limit			
Test: Apply at least 50 pulses in one minute.			
60Hz lines: 450 ppm. 400Hz lines: 372 ppm			
Results: Record any susceptibility noted and the threshold level or enter "None"			
Lead: <u>24V High Side</u>	Generator Setting: <u>200</u> Positive, <u>200</u> Negative		
Polarity	Limit (Vp)	Pulses Applied/min.	Susceptibility/ Threshold
Positive	48	50 Pulses	None
Negative	48	50 Pulses	None



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 17 Voltage Spike

Appendix B

SECTION 17

VOLTAGE SPIKE

CALIBRATION OSCILLOGRAMS

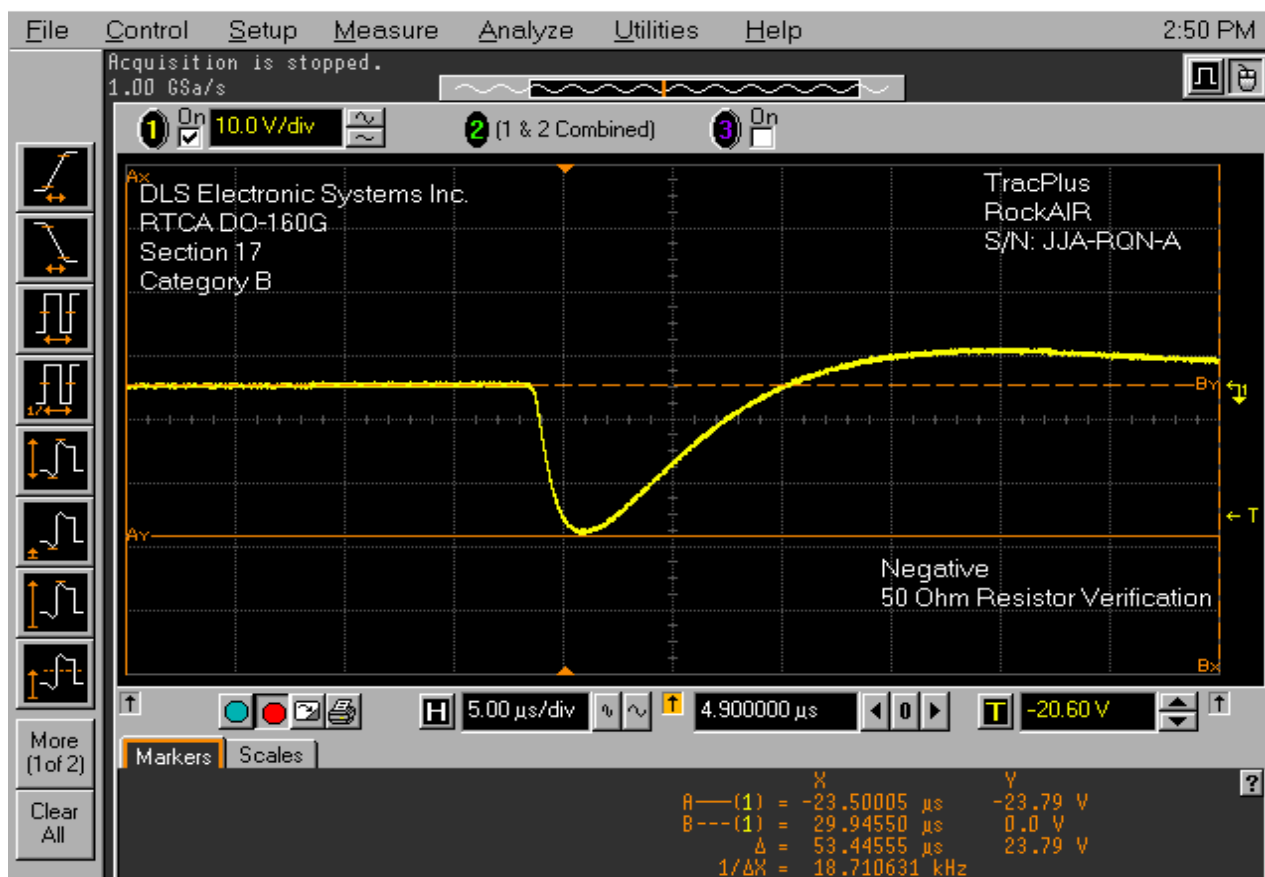


1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 17 Voltage Spike

Appendix B

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Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 1.00 GSa/s
Averaging off
9-bit BW Filter off Interpolation off

Channel 1 Scale 10.0 V/div Offset -5.50 V Coupling DC Impedance 1M Ohm
Attenuation 10.00 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 5.00 μs/div Position 4.900000 μs Reference center

Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level -20.60 V Slope falling

Marker

	X	Y
A—(1)	-23.50005 μs	-23.79 V
B---(1)	29.94550 μs	0.0 V
Δ	53.44555 μs	23.79 V
1/ΔX	18.710631 kHz	

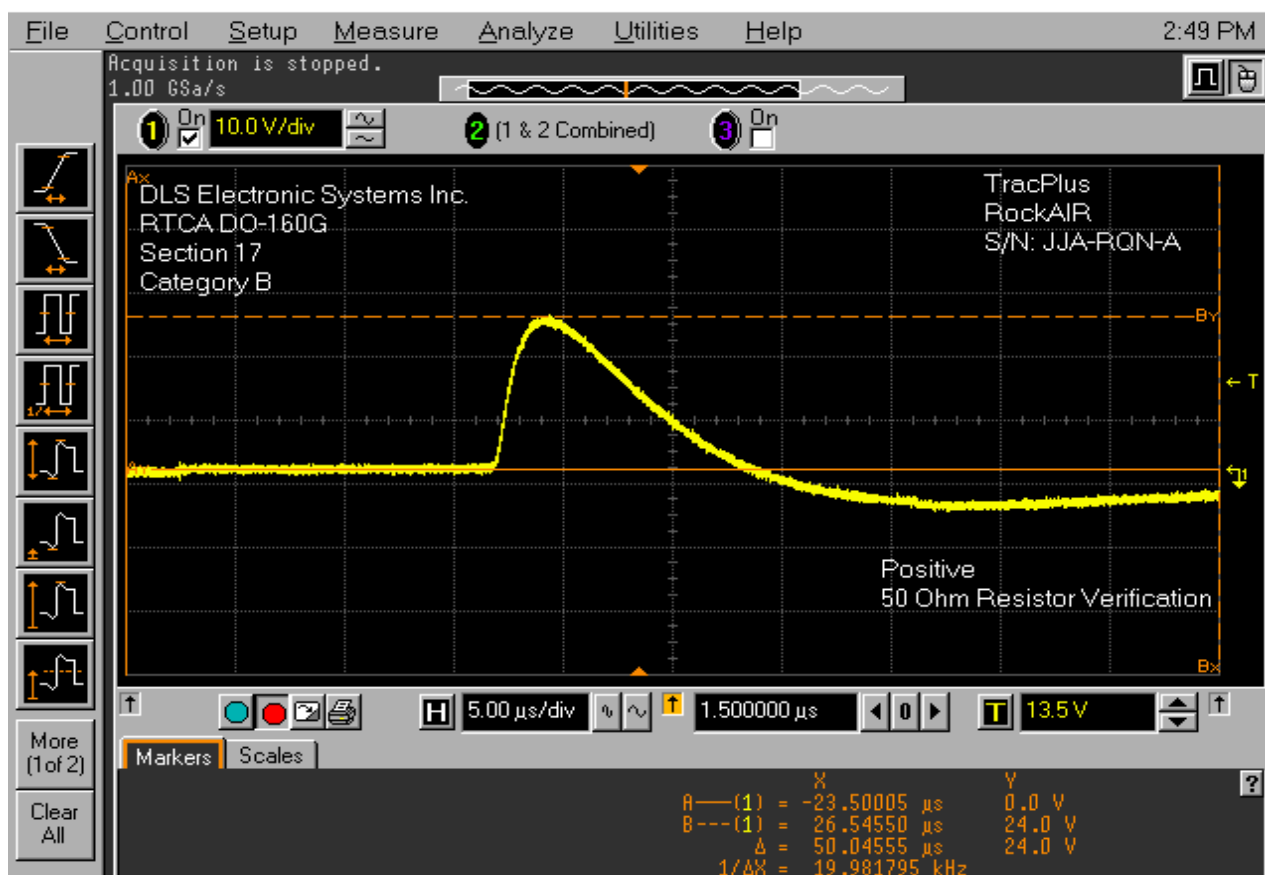


1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 17 Voltage Spike

Appendix B

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Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 1.00 GSa/s
Averaging off
9-bit BW Filter off Interpolation off

Channel 1 Scale 10.0 V/div Offset 7.60 V Coupling DC Impedance 1M Ohm
Attenuation 10.00 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 5.00 μ s/div Position 1.500000 μ s Reference center

Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level 13.50 V Slope falling

Marker

	X	Y
A—(1)	-23.50005 μ s	0.0 V
B---(1)	26.54550 μ s	24.0 V
Δ	50.04555 μ s	24.0 V
1/ Δ X	19.981795 kHz	

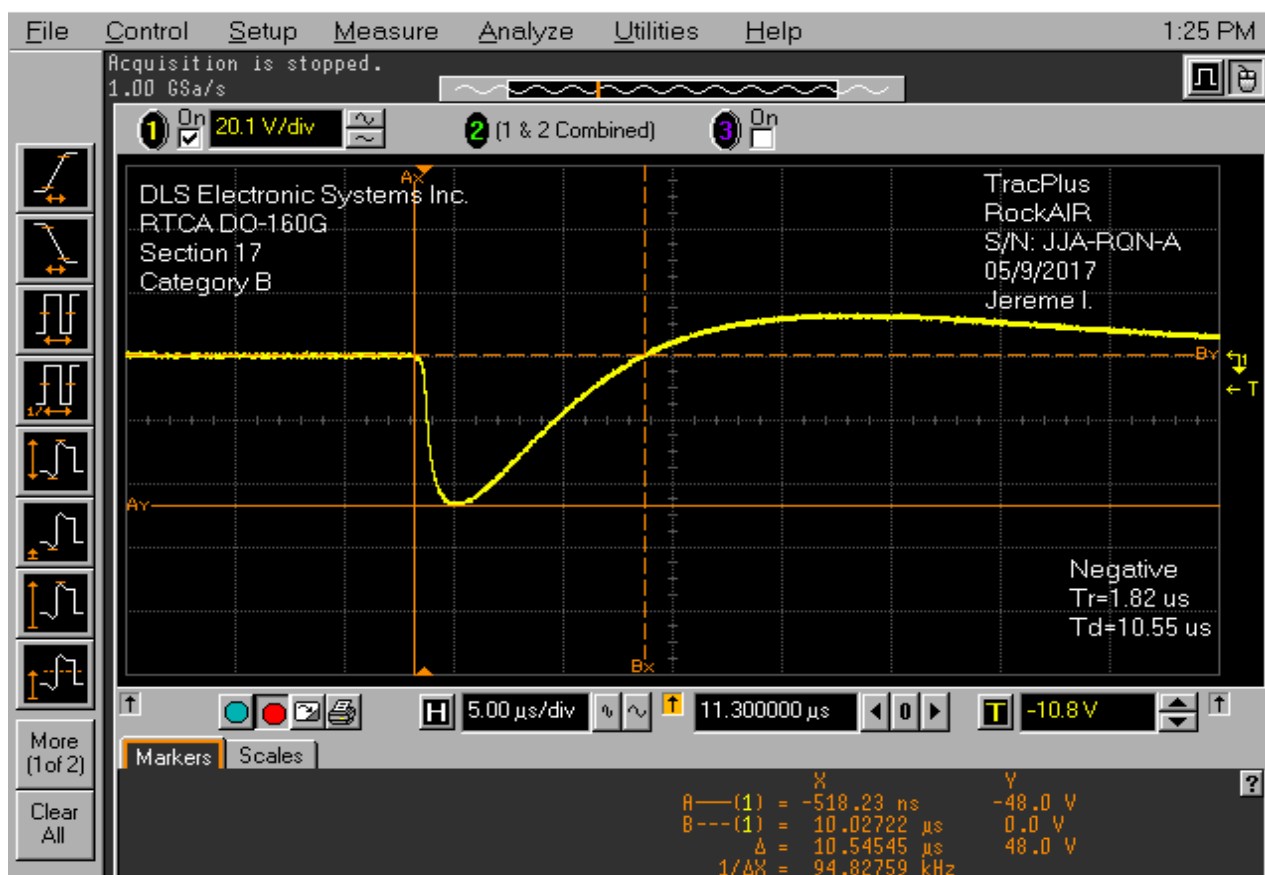


1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 17 Voltage Spike

Appendix B

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Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 1.00 GSa/s
Averaging off
9-bit BW Filter off Interpolation off

Channel 1 Scale 20.1 V/div Offset -20.80 V Coupling DC Impedance 1M Ohm
Attenuation 10.00 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 5.00 us/div Position 11.300000 us Reference center

Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level -10.8 V Slope falling

Marker

	X	Y
A---(1) =	-518.23 ns	-48.0 V
B---(1) =	10.02722 us	0.0 V
Δ =	10.54545 us	48.0 V
1/ΔX =	94.82759 kHz	

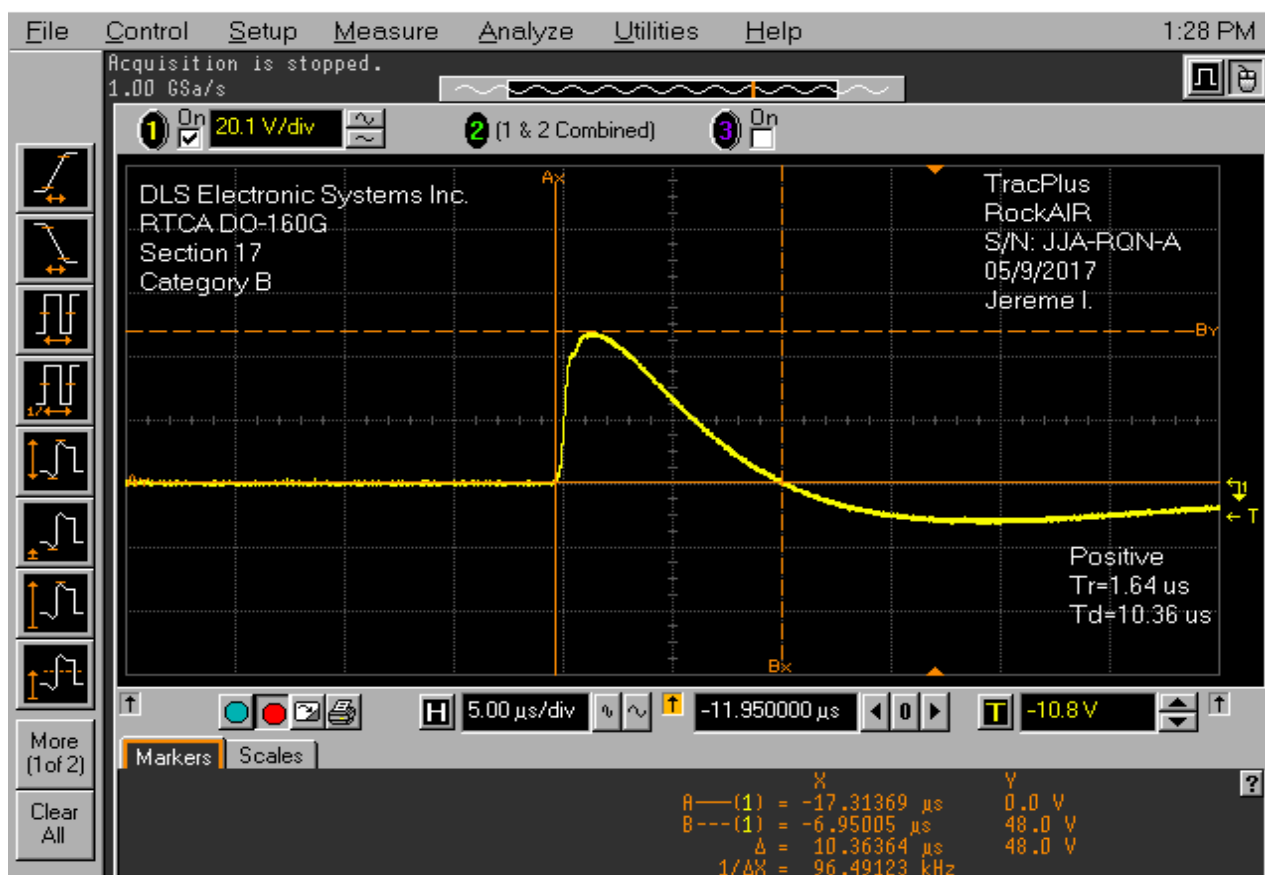


1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 17 Voltage Spike

Appendix B

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Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 1.00 GSa/s
Averaging off
9-bit BW Filter off Interpolation off

Channel 1 Scale 20.1 V/div Offset 19.60 V Coupling DC Impedance 1M Ohm
Attenuation 10.00 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 5.00 μs/div Position -11.950000 μs Reference center

Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level -10.8 V Slope falling

Marker

	X	Y
A---(1)	-17.31369 μs	0.0 V
B---(1)	-6.95005 μs	48.0 V
Δ	10.36364 μs	48.0 V
1/ΔX	96.49123 kHz	

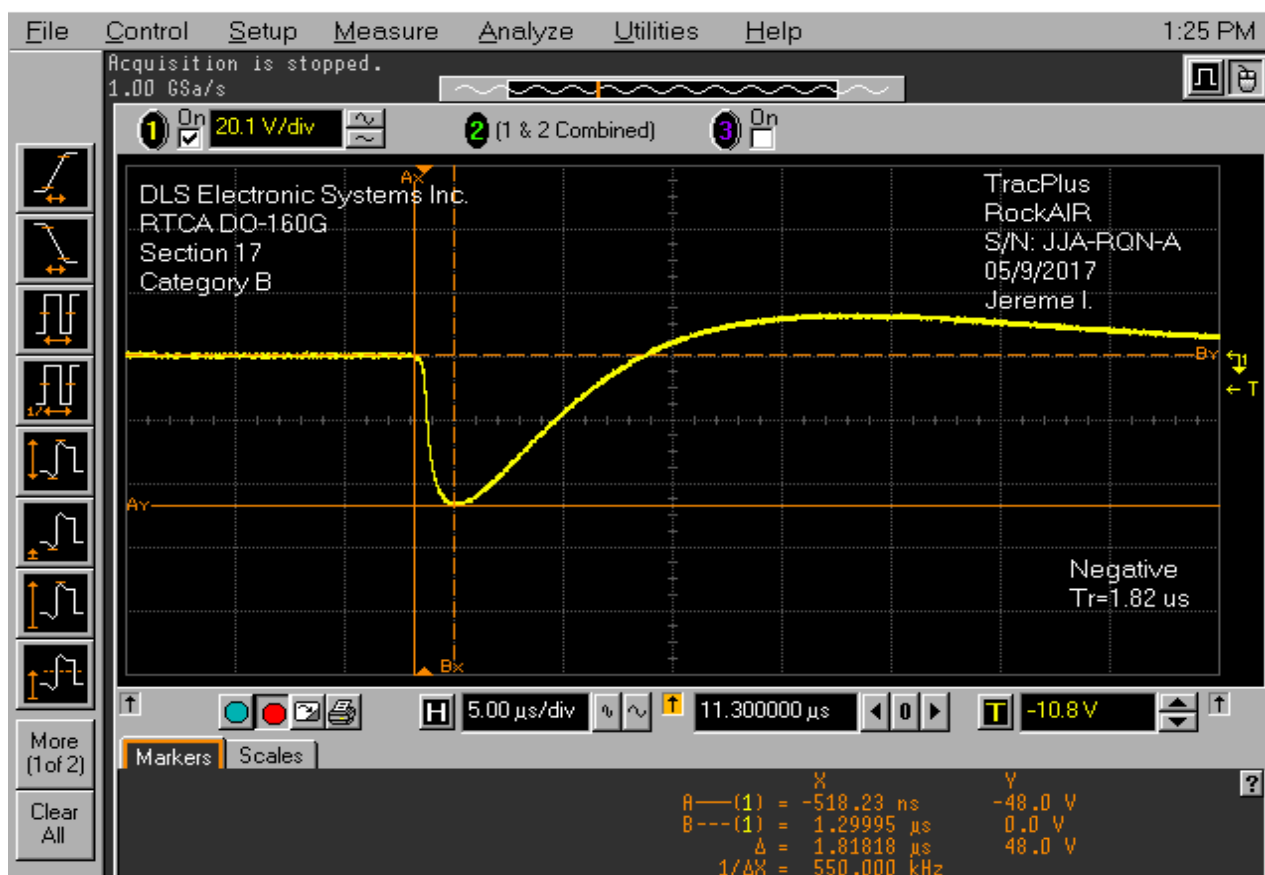


1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 17 Voltage Spike

Appendix B

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Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 1.00 GSa/s
Averaging off
9-bit BW Filter off Interpolation off

Channel 1 Scale 20.1 V/div Offset -20.80 V Coupling DC Impedance 1M Ohm
Attenuation 10.00 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 5.00 μs/div Position 11.300000 μs Reference center

Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level -10.8 V Slope falling

Marker

	X	Y
A—(1)	-518.23 ns	-48.0 V
B---(1)	1.29995 μs	0.0 V
Δ	1.81818 μs	48.0 V
1/ΔX	550.000 kHz	

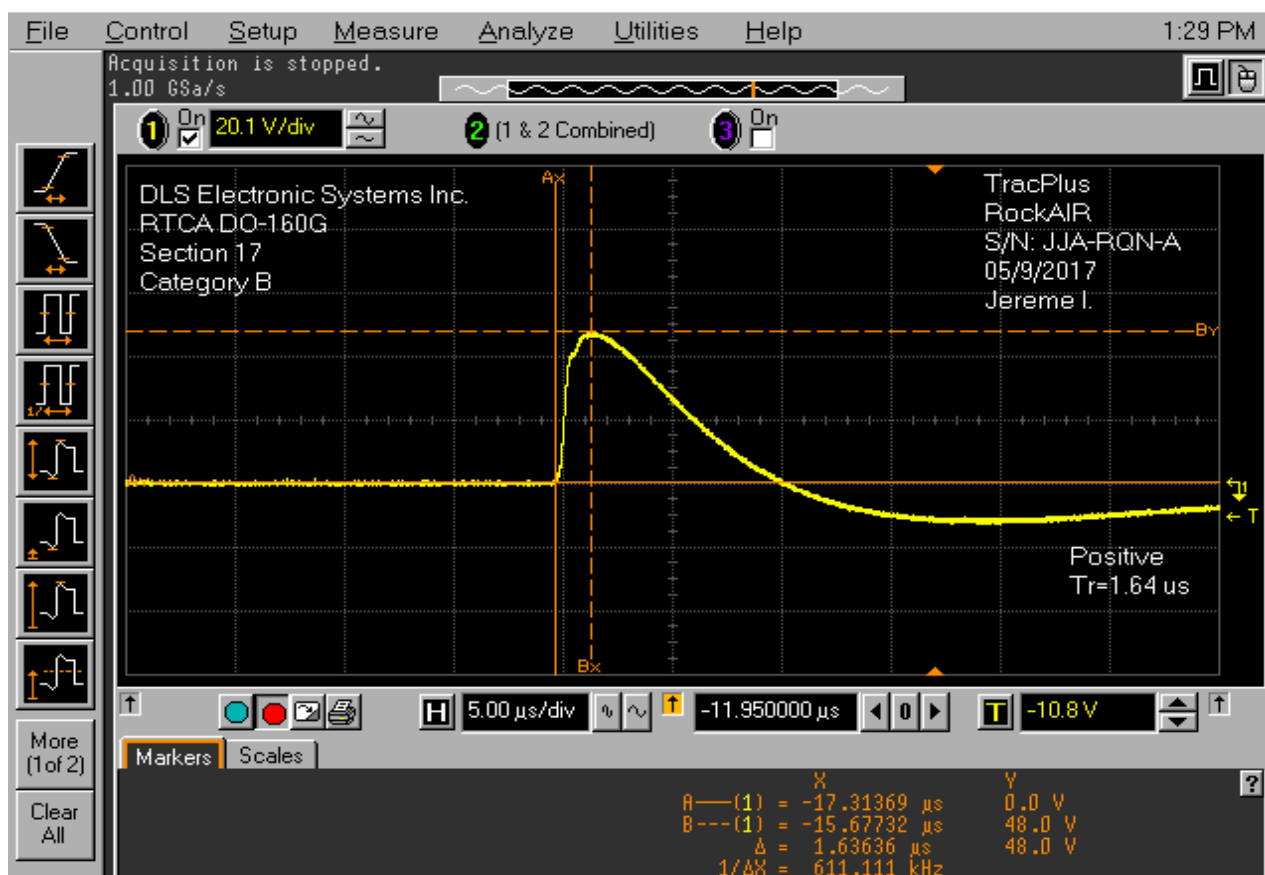


1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 17 Voltage Spike

Appendix B

Saved: 09 MAY 2017 13:29:02



Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 1.00 GSa/s
Averaging off
9-bit BW Filter off Interpolation off

Channel 1 Scale 20.1 V/div Offset 19.60 V Coupling DC Impedance 1M Ohm
Attenuation 10.00 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 5.00 us/div Position -11.950000 us Reference center

Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level -10.8 V Slope falling

Marker

	X	Y
A---(1)	-17.31369 us	0.0 V
B---(1)	-15.67732 us	48.0 V
Δ	1.63636 us	48.0 V
1/ΔX	611.111 kHz	



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777

Appendix: C

APPENDIX C

RTCA/DO-160G

SECTION 21

PARAGRAPH: 21.4 & 21.5

EMISSION OF RADIO FREQUENCY ENERGY



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1.0 PURPOSE OF THE TEST:

These tests determine that the equipment does not emit undesired RF noise in excess of the levels specified.

2.0 EQUIPMENT CATEGORIES:

Categories are defined in terms of location and separation between the equipment and aircraft radio antennas. As these parameters are widely linked to aircraft type and size, some examples are given with each category definition.

The RockAIR was subjected to the requirements of **Category M:**

Category M

Equipment and interconnected wiring located in areas where apertures are EM (electromagnetically) significant and not directly in view of radio receiver's antenna. This category may be suitable for equipment and associated interconnecting wiring located in the passenger cabin or in the cockpit of a transport aircraft.



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

3.0 TEST SETUP AND APPARATUS:

The conducted setup can be seen in Figure 21-6 shown below:

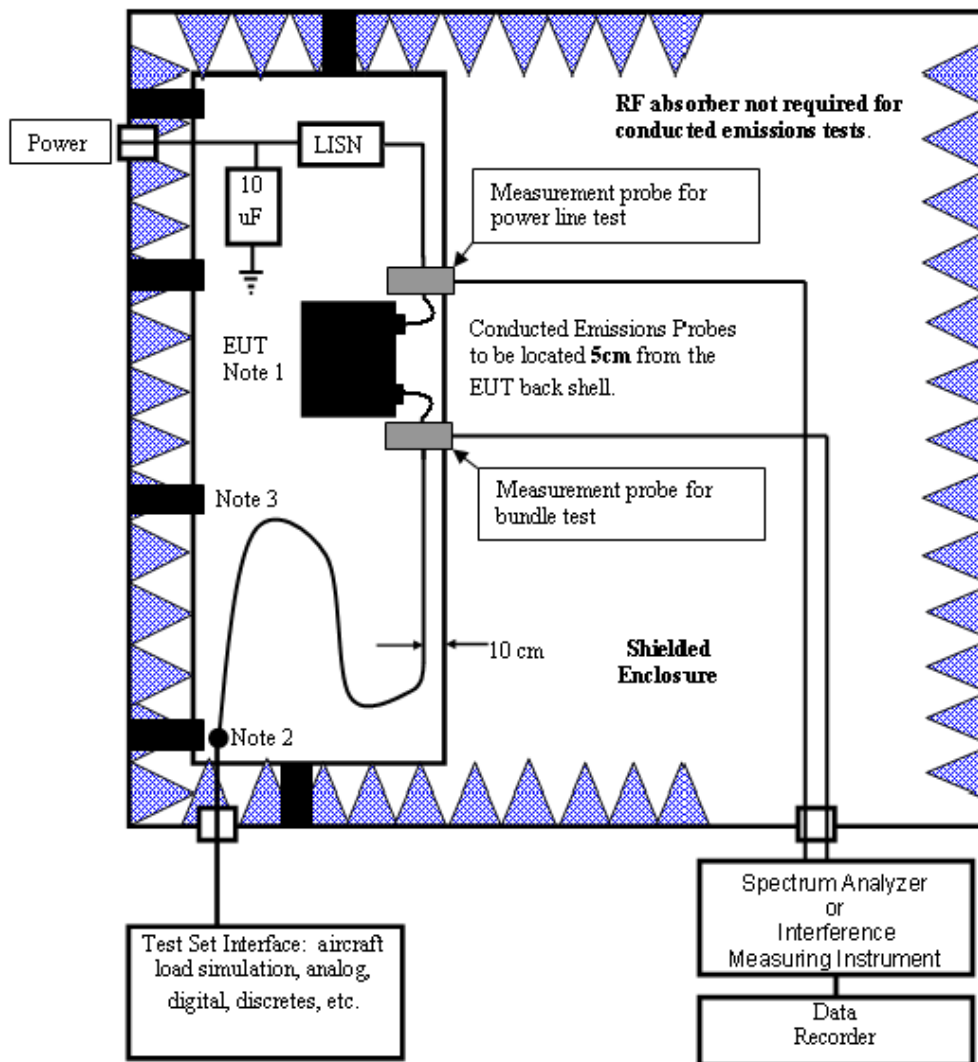


Figure 21-6 Typical Setup for Conducted RF Interference Test

Note 1 See Section 20.3 for EUT general requirements.

Note 2 End of exposed cable. Unshielded cable may be shielded from here to the wall.

Note 3 Bonding strap.



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

3.0 TEST SETUP AND APPARATUS:

The radiated setup can be seen in Figure 21-11 shown below:

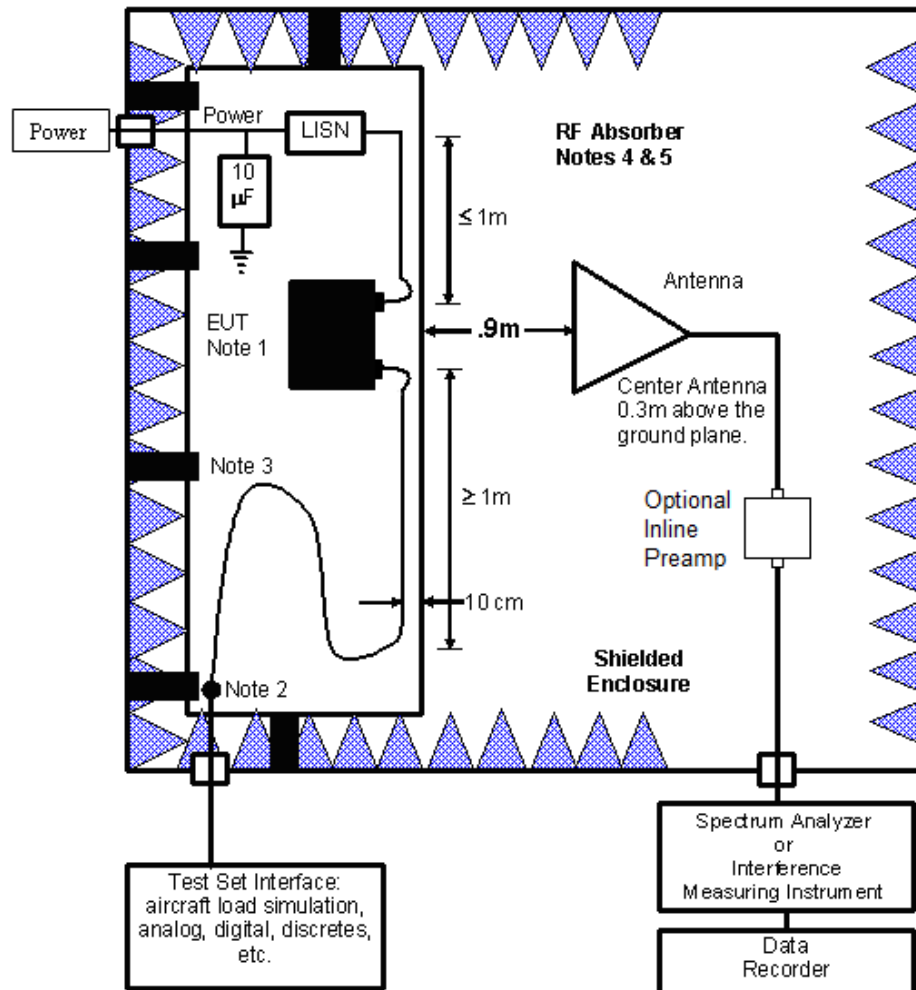


Figure 21-11 – Radiated Emissions Test Setup

- Note 1** See Section 20.3 for EUT general requirements.
Note 2 End of exposed cable. Unshielded cable may be shielded from here to the wall.
Note 3 Bonding strap.
Note 4 RF absorber shall be placed above, behind, and on both sides of test setup boundary, from ceiling to ground plane. The absorber shall extend ≥ 50 cm in front of the ground plane.
Note 5 RF absorber shall be placed behind the test antenna, from ceiling to floor. The distance between the absorber and the antenna shall be ≥ 30 cm.



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

4.0 TEST PROCEDURE:

Conducted RF Emission:

Measure conducted emissions from 150 kHz to 152 MHz. Interference currents generated by the equipment shall be measured by using a clamp-on interference measuring device.

- a. EUT emissions within the frequency ranges and in excess of the values given in Figure 21-1 shall not appear on any power line normally connected to an aircraft bus.
- b. EUT Emissions within the frequency ranges and in excess of the values given in Figure 21-2 shall not appear on any interconnecting cable bundles. Primary power lines are not considered to be interconnecting cable bundles. Antenna feed cables are considered to be interconnecting cables while in a non-transmitting or receive mode.
- c. Figure 21-6 shows a simplified test arrangement for the use of the current probe.
- d. Install the current probe five centimeters from the EUT. If the EUT connector plus back shell length exceeds five centimeters the probe shall be placed as close to the connector back shell as possible and the position noted.
- e. Measure and record the EUT emissions and apply the appropriate limit from Figures 21-1, & 2 for the selected category.



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

4.0 TEST PROCEDURE (CON'T):

Radiated RF Emission:

Measure radiated emissions from 100 MHz to 6000 MHz.

- a. Radiated interference fields generated by the equipment within the frequency ranges, and in excess of the values shown in Figure 21-8 for the appropriate categories, shall not be radiated from any unit, cable or interconnecting wiring.
- b. A typical arrangement of equipment for conducting the radiated RF emission test is shown in Figure 21-11.
- c. Field strength units are obtained by using any appropriate antenna and adding the appropriate antenna factor to the measured voltage in dB microvolts. Appropriate correction factor for cable losses and matching networks must also be applied.
- d. Linearly polarized antennas are required for radiated tests. Measure radiated emissions using both vertically and horizontally polarized orientations.
- e. Directly expose apertures in the EUT (e.g. displays, CRTs, connectors) to the receiving antenna, which may require additional EUT orientations or receive antenna positions. If all EUT apertures are not exposed to the receive antenna, justification must be documented in the test report.
- f. Consider EUT realistic operating modes which produce maximum emission.
- g. Radiated ambient data (EUT “off” and test support equipment “on”) is required only if EUT emissions are greater than 3 dB below the selected category limit.
- h. It is good engineering practice to check ambient radiated emissions prior to a radiated emissions test, and it is desirable that the ambient emissions be at least 6 dB below the selected limit time.
- i. Measure and record the EUT emissions conditions and apply the appropriate limit from Figure 21-8 for the selected category.



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

4.0 TEST PROCEDURE (CON'T):

General Requirements:

The equipment under test shall be set up on a ground plane and operated in accordance with the criteria in Subsection 20.3 subparagraph a and parts 1, 2 and 5 of subparagraph b, with the following additions:

- a. For radiated emission measurements as in Subsection 21.5, antenna spacing to the ground plane edge and the EUT spacing from the ground plane edge shall be maintained as shown in Figure 21-11.
- b. Interference shall be measured using the peak detector function of the interference measuring equipment. Interference measuring instruments with selectable IF bandwidths (BW) may be used, and the selected BW must be the values given in the following table.

Frequency Bands	BW
0.15 – 30 MHz	1 kHz
30 – 100 MHz	10 kHz
100 – 400 MHz	10 kHz
400 – 960 MHz	100 kHz
960 – 6000 MHz	1 MHz

Note 1: It may be necessary to use an in-line low noise preamplifier at the sense antenna output in cascade with the measurement receiver to lower the measurement noise floor for proper measurements in the notches above 960 MHz defined for categories M, H, P & Q.

Note 2: For measurement receivers or spectrum analyzers with a “maximum hold” feature that retain maximum detected levels after multiple scans over a given frequency range, multiple faster sweeps that produce the same minimum test times as shown in Table 1 are acceptable.

- c. Line Impedance Stabilization Networks (LISNs) shall be used as shown in Figure 21-6.
- d. Power return wires tied locally to the ground plane as noted in Section 20.3.a (6) are not tested.
- e. The time constant of the peak detector must be lower or equal to $1/BW$. Where applicable, video bandwidths shall be selected to be greater than or equal to the resolution bandwidth.
- f. Longer dwell, sweep and measurement times than those shown in Table 1 may be necessary to detect time-varying emissions. Dwell times in Table 1 are associated with a potential rate of variation of approximately 60Hz.



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

4.0 TEST PROCEDURE (CON'T):

- g. For emission measurements, the entire frequency range for each applicable test shall be scanned. Minimum measurement time for analog measurement receivers during emission testing shall be as specified in the above table. Larger receiver bandwidths may be used; however, they may result in higher measured emission levels.

NOTE: No bandwidth correction factors shall be applied to test data due to the use of larger bandwidths.

- h. Recorded data shall provide a minimum frequency resolution of 1% or twice the measurement receiver bandwidth, whichever is less stringent, and minimum amplitude resolution of 1 dB.
- i. Amplitude versus frequency profiles of emission data shall be automatically generated and shall be continuous.



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard:

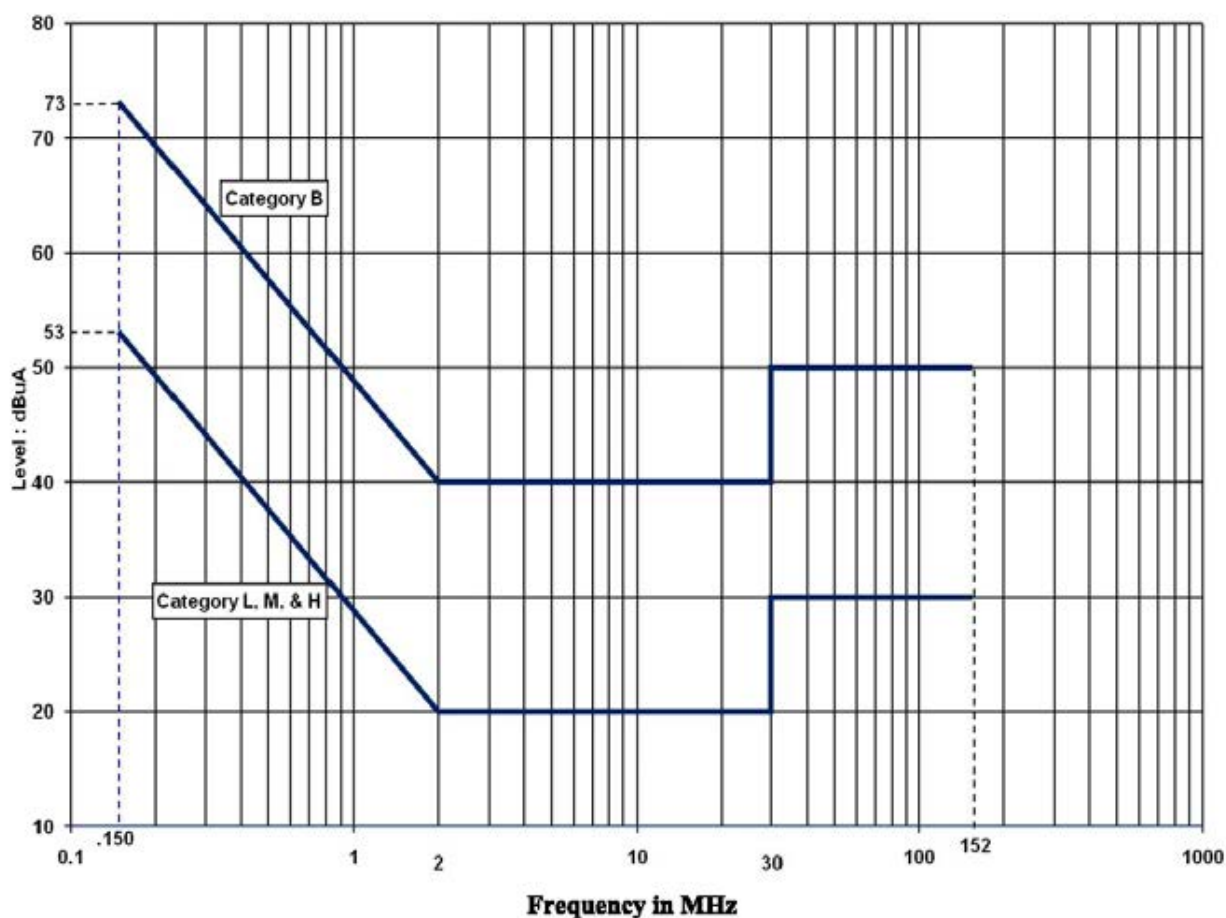
RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

5.0 LIMITS & RESULTS:

5.1 LIMITS:

The maximum level of conducted RF interference on the power lines is shown in **Figure 21-1** using **Category M**:



Curve definition : Limit Level = slope * log(freq in MHz) + intercept

Category B: F<2 MHz slope = -29.335, intercept = 48.83

Category L,M,&H: F<2 MHz slope = -29.335, intercept = 28.83

Figure 21-1 : Maximum Level of Conducted RF Interference – Power Lines



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
 Model Tested: RockAIR
 Report Number: 22777
 Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

5.0 LIMITS & RESULTS (CON'T):

5.1 LIMITS:

The maximum level of conducted RF interference on interconnecting bundles is shown in **Figure 21-2** using **Category M**:

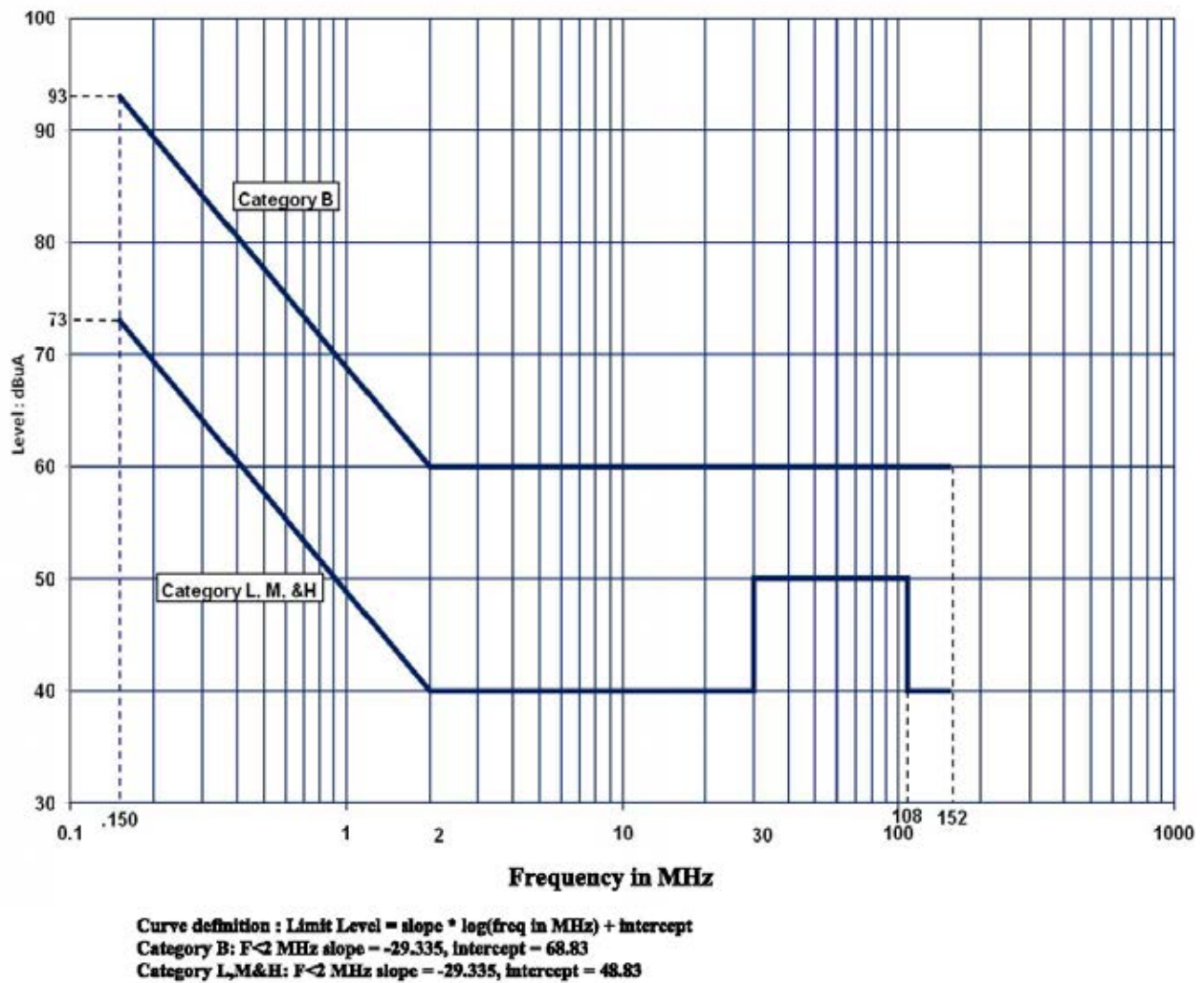


Figure 21-2 : Maximum Level of Conducted RF Interference – Interconnecting Bundles



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

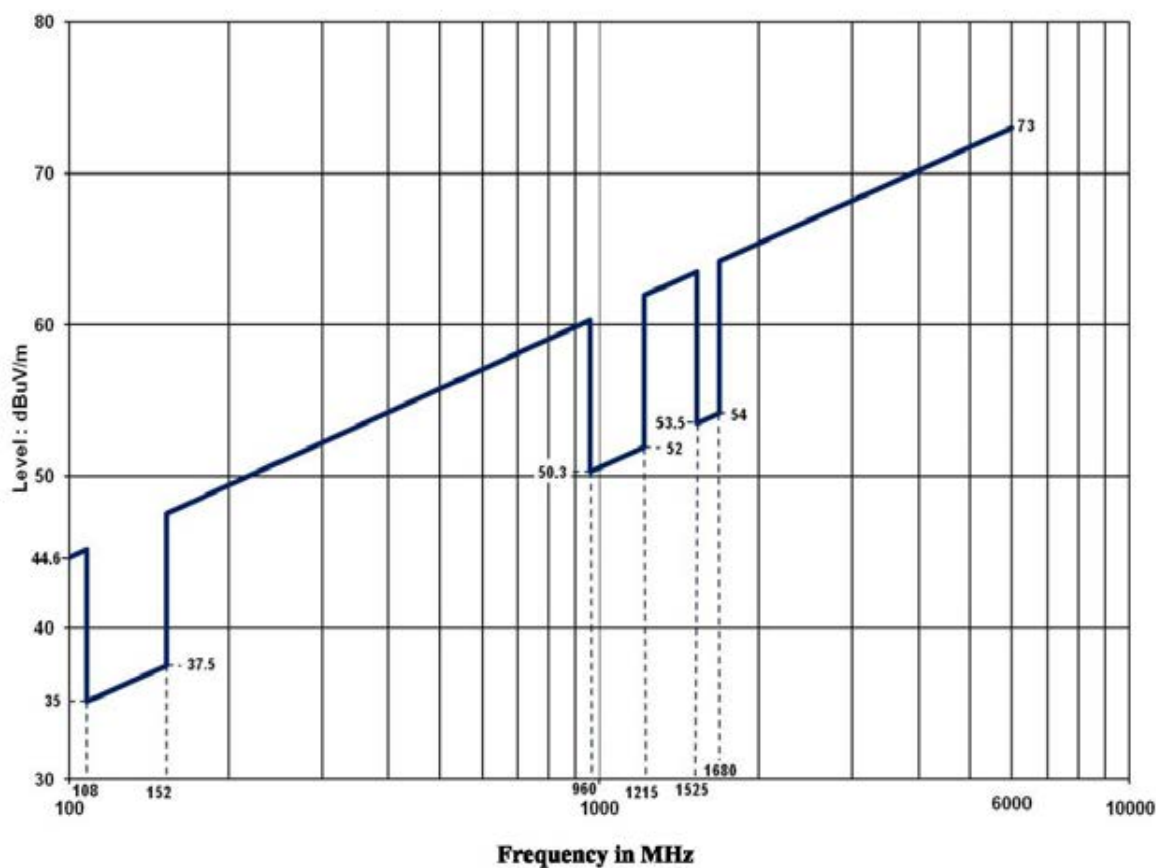
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

5.0 LIMITS & RESULTS (CON'T):

5.1 LIMITS:

The maximum level of radiated RF interference is shown in **Figure 21-8**:



Curve definition : Limit Level = slope * log(freq in MHz) + intercept
Category M: F > 100 MHz slope = 15.965, intercept = 12.682

Figure 21-8 : Maximum Level of Radiated RF Interference – Category M



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

5.2 RESULTS:

The RockAIR meets RTCA DO-160G, Section 21, Category M.

Lab used: J

Tested to Section: 21.4 & 21.5

Summary:

EUT was tested in 4 modes, each powered by USB 5Vdc and 24Vdc.



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

6.0 CONDUCTED PHOTOS TAKEN DURING TESTING



Section 21 CE System Verification



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

6.0 CONDUCTED PHOTOS TAKEN DURING TESTING



Section 21 CE USB 5Vdc Power Bundle Test



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

6.0 CONDUCTED PHOTOS TAKEN DURING TESTING



Section 21 CE 24Vdc Power Bundle Test



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

7.0 RADIATED PHOTOS TAKEN DURING TESTING



Section 21 RE 100-1000 MHz System Verification



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

7.0 RADIATED PHOTOS TAKEN DURING TESTING



Section 21 RE 1-6 GHz System Verification

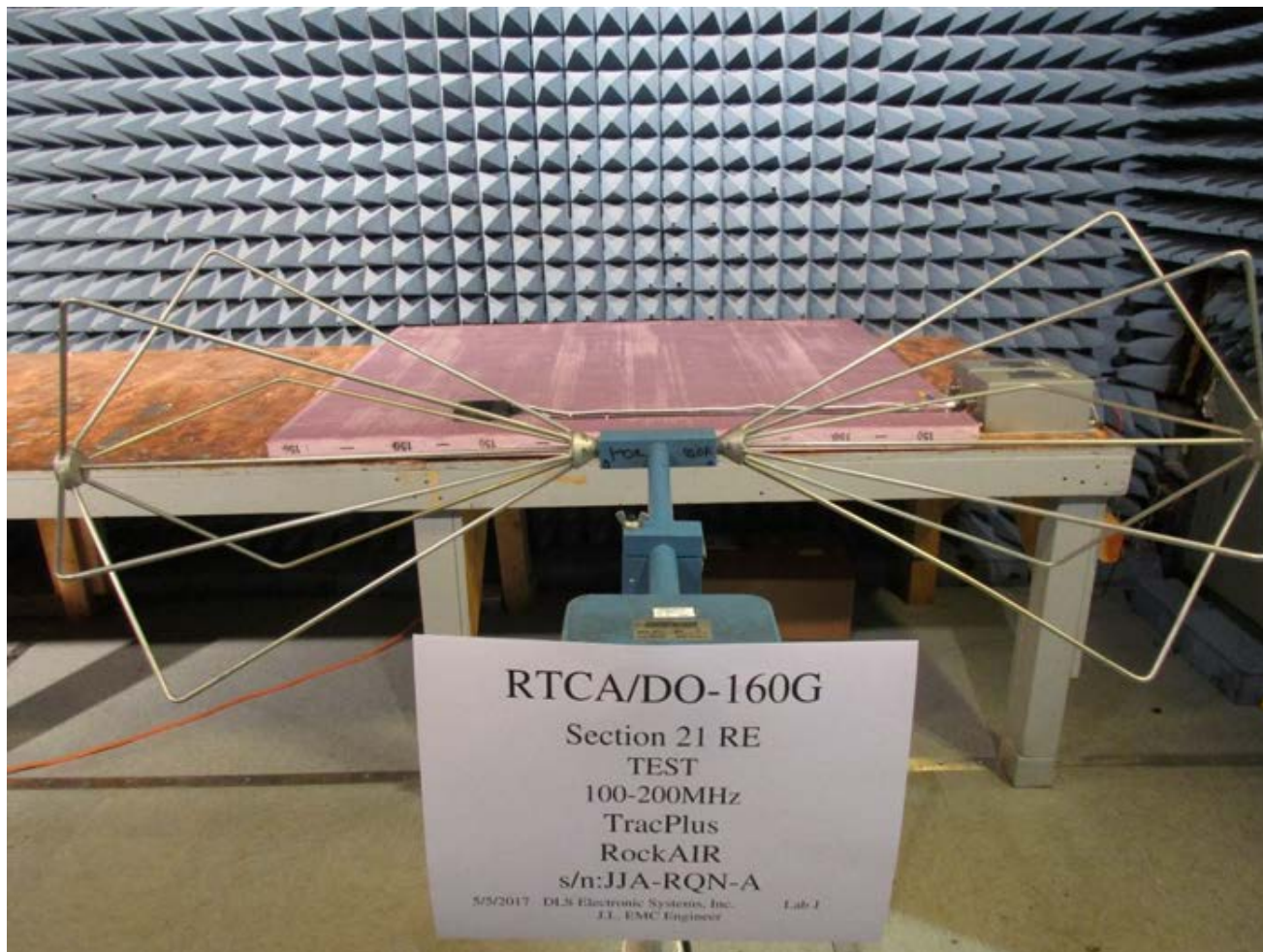


1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

7.0 RADIATED PHOTOS TAKEN DURING TESTING



Section 21 RE 100-200 MHz Horizontal Test



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

7.0 RADIATED PHOTOS TAKEN DURING TESTING



Section 21 RE 100-200 MHz Vertical Test



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

7.0 RADIATED PHOTOS TAKEN DURING TESTING



Section 21 RE 200-1000 MHz Horizontal Test



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

7.0 RADIATED PHOTOS TAKEN DURING TESTING



Section 21 RE 200-1000 MHz Vertical Test

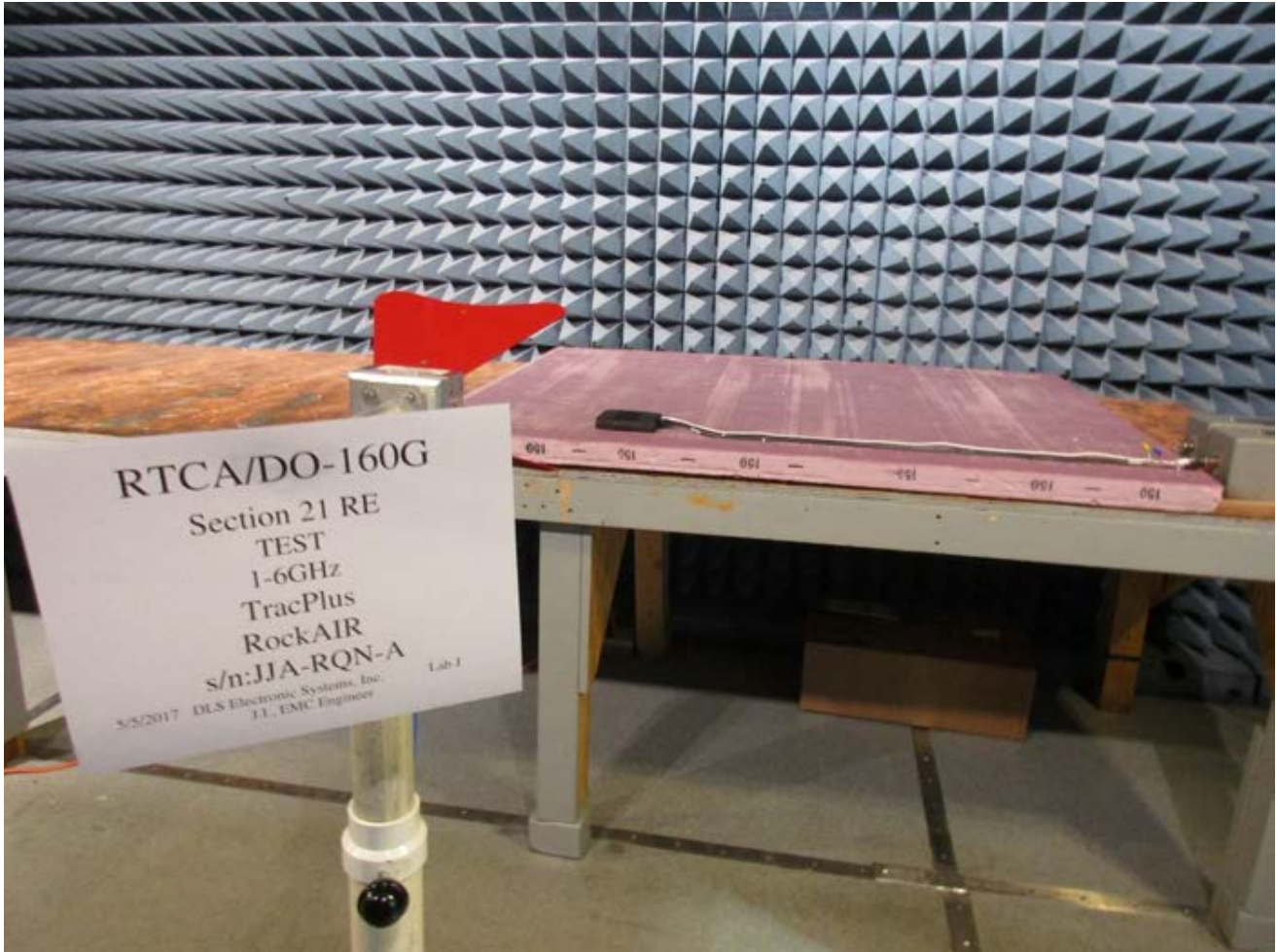


1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

7.0 RADIATED PHOTOS TAKEN DURING TESTING



Section 21 RE 1-6 GHz Horizontal Test

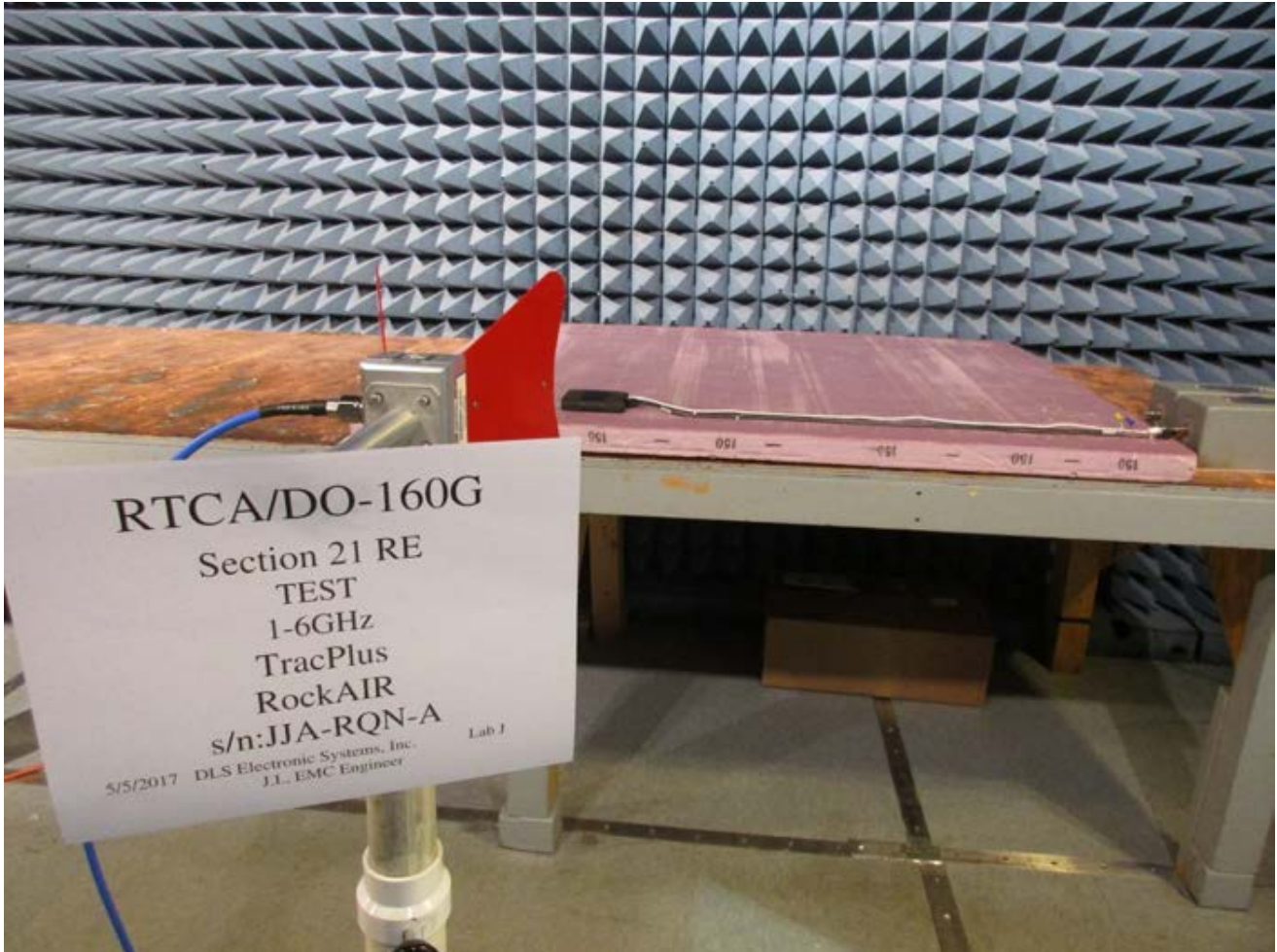


1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

7.0 RADIATED PHOTOS TAKEN DURING TESTING



Section 21 RE 1-6 GHz Vertical Test



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

TEST INSTRUMENTATION

TABLE 1

Description	Manufacturer	Model Number	Serial Number	Range	Cal On	Cal Due Dates
Antenna, Biconical	Electro-Metrics	BIA-25	2727	20 MHz-300 MHz	11/14/2016	11/14/2017
Antenna, Horn	ETS-Lindgren	3117	00135193	1 GHz-18 GHz	8/6/2016	8/6/2017
Antenna, Horn	EMCO	3106	2127	200 MHz-2 GHz	11/14/2016	11/14/2017
Cable, 10ft, BNC-BNC, RG223/U	Pasternack Enterprises	PE3087-120	10ft. SN015	10 kHz-1 GHz	9/1/2016	9/1/2017
Cable, 3ft, BNC-BNC, RG223/U	Pasternack Enterprises	PE3087-36	3ft. SN010	10 kHz-1 GHz	8/26/2016	8/26/2017
Cable, 6ft, BNC-BNC, RG223/U	Pasternack Enterprises	PE3087-72	6ft. SN018	10 kHz-1 GHz	4/3/2017	4/3/2018
Generator, Signal	Rohde & Schwarz	SML 01	101126	9 kHz-1.1 GHz	1/10/2017	1/10/2018
LISN, 50 Amp	Solar Electronics	9117-5-TS-50-N	17577	150 kHz-1 GHz	10/5/2016	10/5/2017
LISN, 50 Amp	Solar Electronics	9117-5-TS-50-N	12482	150 kHz-1 GHz	10/5/2016	10/5/2017
Preamplifier, RF	Electro-Metrics	BPA-1000	114	10 kHz-1 GHz	1/3/2017	1/3/2018

All primary equipment is calibrated against known reference standards with a verified traceable path NIST.



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

TEST EQUIPMENT

TABLE 2

Description	Manufacturer	Model Number	Serial Number	Range
Computer	Corsair	X-Gen	107914017804	N/A

The test equipment above does not require calibration.



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

RTCA/DO-160G

SECTION 21.4

CONDUCTED EMISSION OF RADIO

FREQUENCY ENERGY

VERIFICATION TEST DATA

AND CHARTS



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

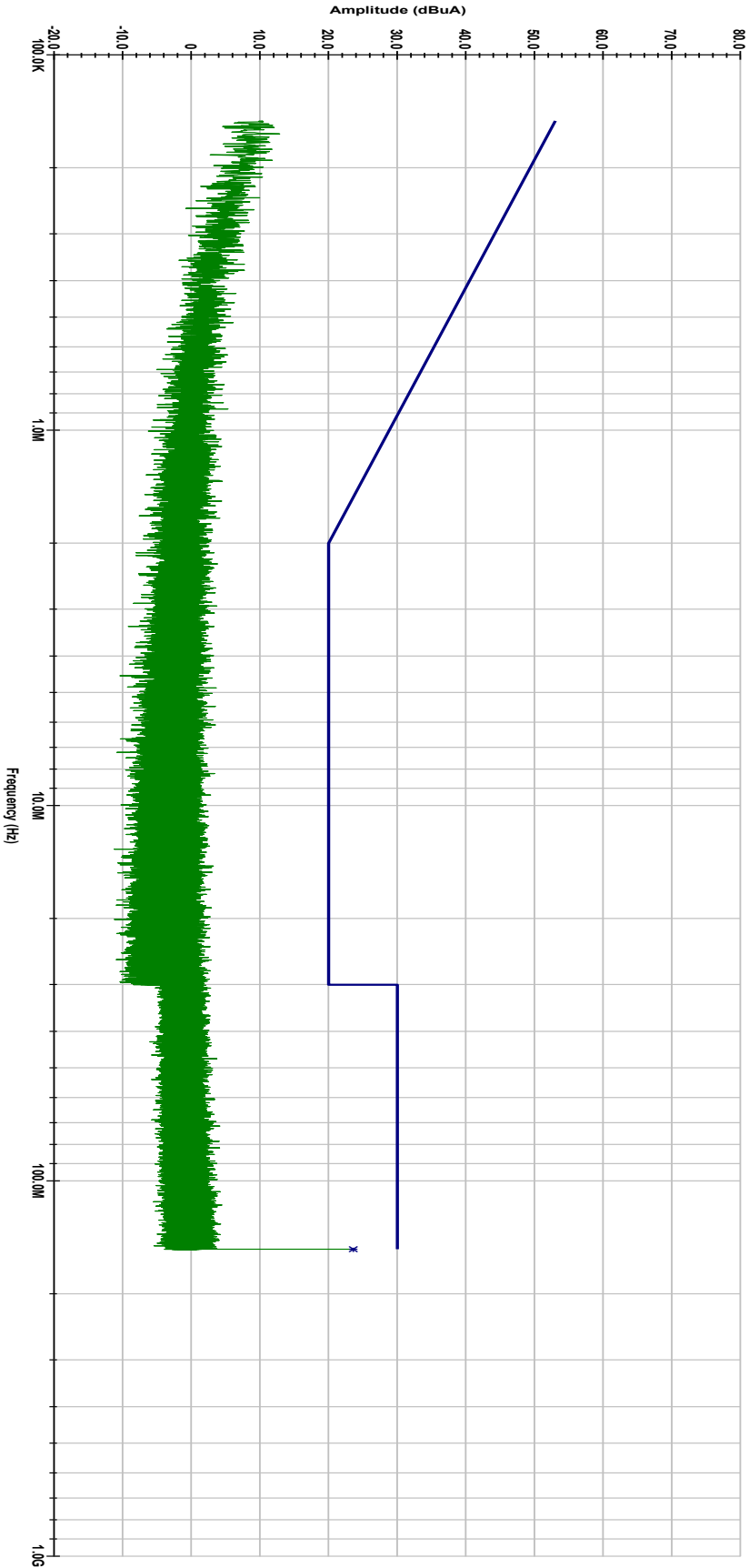
Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 CE

150MHz-152MHz Emissions (peak)

Company - TracPlus
EUT - RockAIR s/n:1351665
Limit - Power Leads Category M 0.15-152MHz
Mode - System Verification
Power Lead/Phase -
Engineer - JJ
Note - 6dB below @ 152MHz



1007:01 AM, Friday, May 05, 2017



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

10:07:01 AM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuA)
152.0 MHz	-06.433	0.000	23.567



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

RTCA/DO-160G

SECTION 21.4

CONDUCTED EMISSION OF RADIO

FREQUENCY ENERGY

TEST DATA AND CHARTS

28 Vdc



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 CE

150kHz-152MHz Emissions (peak)

Company - TracPlus

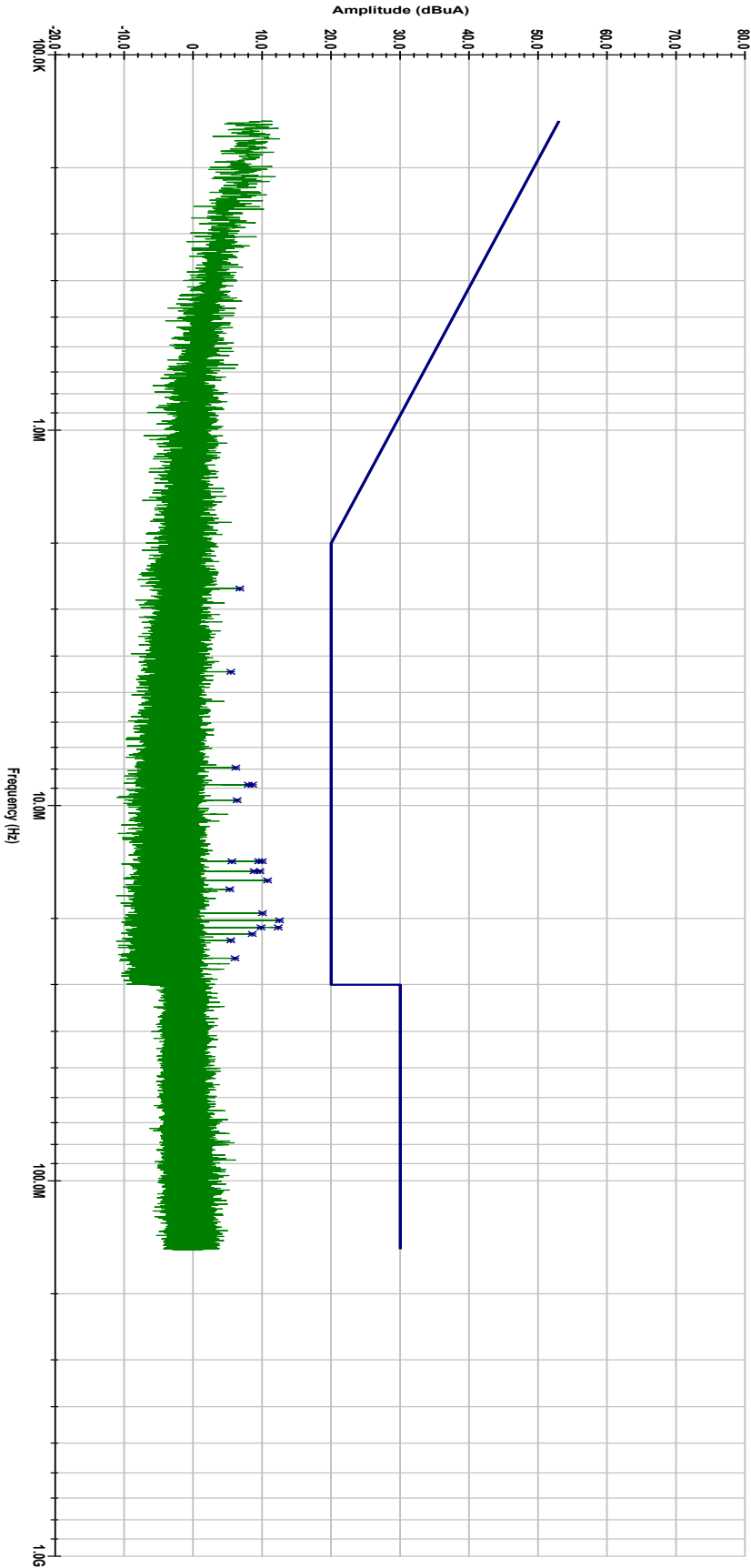
EUT - RockAIR s/n: JJA-R0N-A

Limit - Power Leads Category M 0.15-152MHz

Mode - Power ON

Power Lead/Phase - 24Vdc Bundle

Engineer - JJ



11:38:04 AM, Friday, May 05, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

11:38:04 AM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuA)
2.6416 MHz	-13.267	0.000	06.733
4.3999 MHz	-14.569	0.000	05.431
7.9189 MHz	-13.830	0.000	06.170
8.7961 MHz	-12.054	0.000	07.946
8.797 MHz	-11.387	0.000	08.613
9.6746 MHz	-13.647	0.000	06.353
14.07 MHz	-09.987	0.000	10.013
14.073 MHz	-10.513	0.000	09.487
14.075 MHz	-14.418	0.000	05.582
14.949 MHz	-10.330	0.000	09.670
14.951 MHz	-11.202	0.000	08.798
15.823 MHz	-09.252	0.000	10.748
16.707 MHz	-14.713	0.000	05.287
19.344 MHz	-09.964	0.000	10.036
20.225 MHz	-07.490	0.000	12.510
21.103 MHz	-07.678	0.000	12.322
21.104 MHz	-10.184	0.000	09.816
21.981 MHz	-11.460	0.000	08.540
22.86 MHz	-14.556	0.000	05.444
25.499 MHz	-13.962	0.000	06.038



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 CE

150kHz-152MHz Emissions (peak)

Company - TracPlus

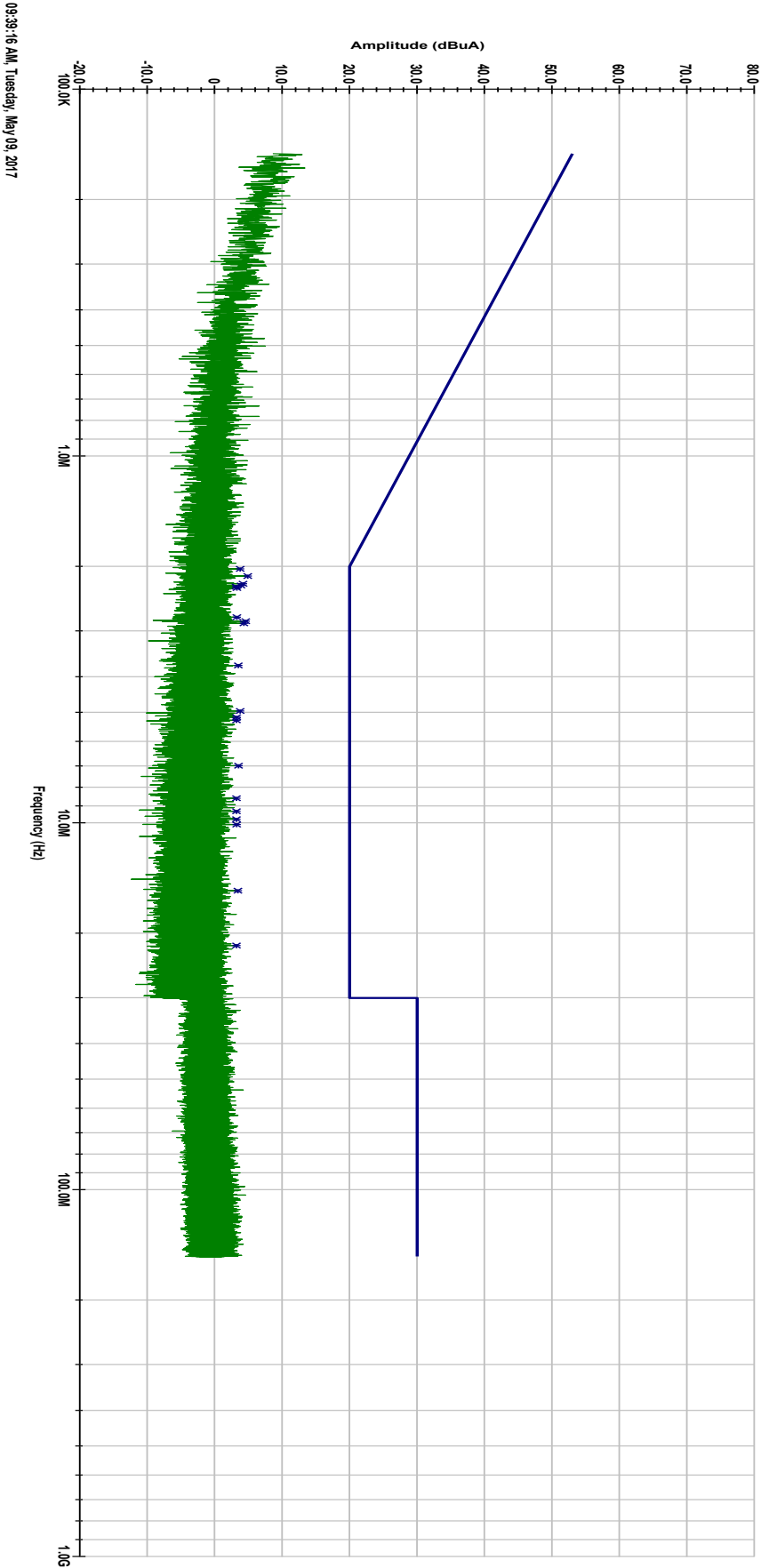
EUT - RockAIR s/n: JJA-R0N-A

Limit - Power Leads Category M 0.15-152MHz

Mode - Power ON

Power Lead/Phase - USB Powered Bundle

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

09:39:16 AM Frequency	May 09, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuA)
2.0306 MHz	-16.246	0.000	03.754
2.1251 MHz	-15.108	0.000	04.892
2.2287 MHz	-15.807	0.000	04.193
2.2532 MHz	-16.120	0.000	03.880
2.2681 MHz	-16.844	0.000	03.156
2.2897 MHz	-16.726	0.000	03.274
2.7499 MHz	-16.735	0.000	03.265
2.8216 MHz	-15.419	0.000	04.581
2.8585 MHz	-15.703	0.000	04.297
3.7237 MHz	-16.503	0.000	03.497
4.9546 MHz	-16.231	0.000	03.769
5.1507 MHz	-16.762	0.000	03.238
5.2519 MHz	-16.792	0.000	03.208
6.9836 MHz	-16.480	0.000	03.520
8.5685 MHz	-16.790	0.000	03.210
9.2999 MHz	-16.777	0.000	03.223
9.7729 MHz	-16.775	0.000	03.225
10.101 MHz	-16.747	0.000	03.253
15.308 MHz	-16.562	0.000	03.438
21.586 MHz	-16.786	0.000	03.214



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 CE

150kHz-152MHz Emissions (peak)

Company - TracPlus

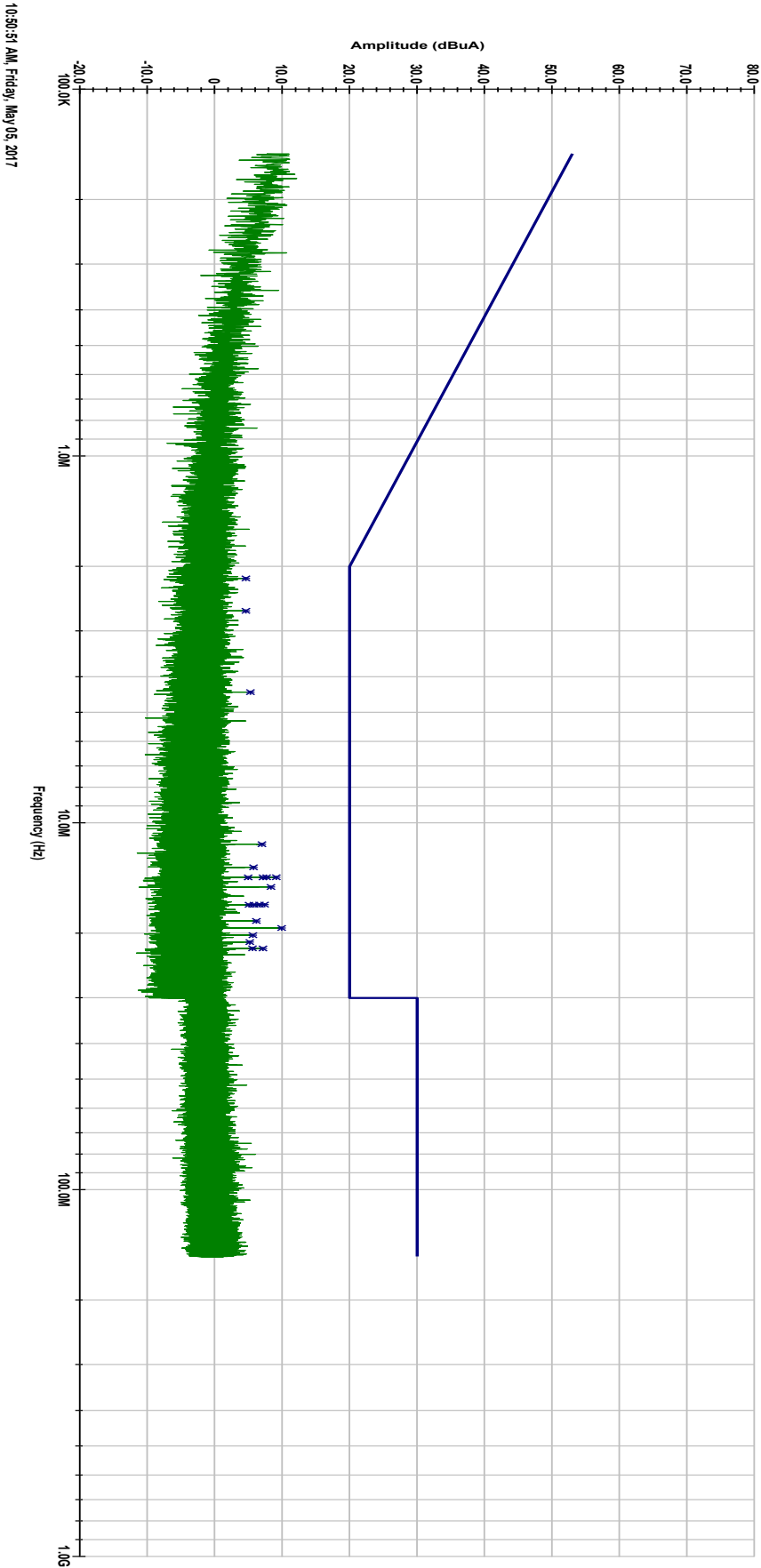
EUT - RockAIR s/n: JJA-R0N-A

Limit - Power Leads Category M 0.15-152MHz

Mode - Transmitting - Cellular

Power Lead/Phase - 24Vdc Bundle

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

10:50:51 AM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuA)
2.157 MHz	-15.384	0.000	04.616
2.6425 MHz	-15.375	0.000	04.625
4.3999 MHz	-14.722	0.000	05.278
11.432 MHz	-13.016	0.000	06.984
13.212 MHz	-14.253	0.000	05.747
14.068 MHz	-10.880	0.000	09.120
14.072 MHz	-12.319	0.000	07.681
14.074 MHz	-12.866	0.000	07.134
14.077 MHz	-15.052	0.000	04.948
14.954 MHz	-11.673	0.000	08.327
16.704 MHz	-12.614	0.000	07.386
16.707 MHz	-13.391	0.000	06.609
16.711 MHz	-14.196	0.000	05.804
16.714 MHz	-14.938	0.000	05.062
18.5 MHz	-13.824	0.000	06.176
19.343 MHz	-10.093	0.000	09.907
20.232 MHz	-14.349	0.000	05.651
21.123 MHz	-14.798	0.000	05.202
21.982 MHz	-14.414	0.000	05.586
21.983 MHz	-12.850	0.000	07.150



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 CE

150kHz-152MHz Emissions (peak)

Company - TracPlus

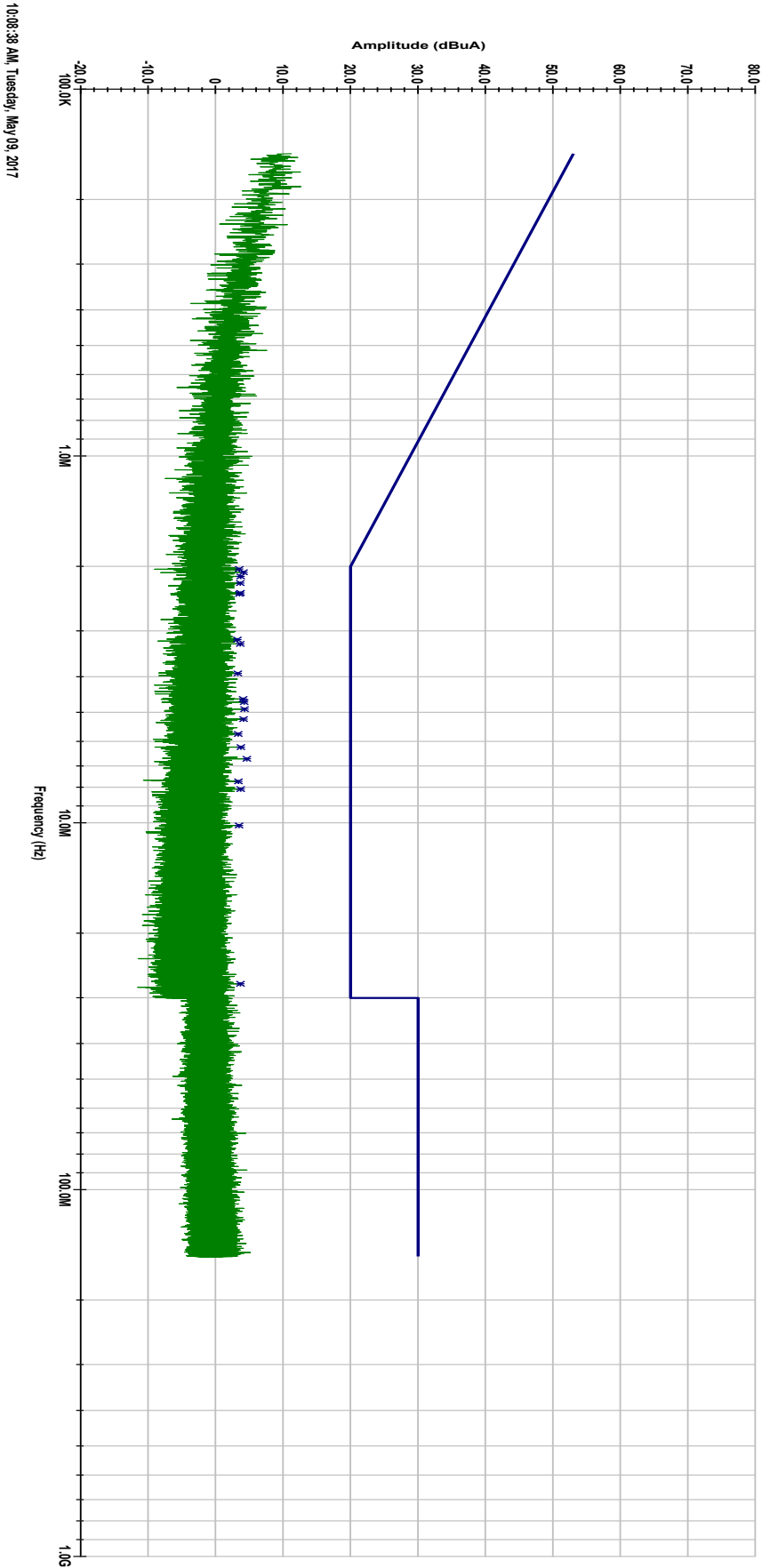
EUT - RockAIR s/n: JJA-R0N-A

Limit - Power Leads Category M 0.15-152MHz

Mode - Transmitting - Cellular

Power Lead/Phase - USB Powered Bundle

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

10:08:38 AM Frequency	May 09, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuA)
2.0318 MHz	-16.508	0.000	03.492
2.0733 MHz	-15.876	0.000	04.124
2.13 MHz	-16.307	0.000	03.693
2.2196 MHz	-16.368	0.000	03.632
2.3614 MHz	-16.325	0.000	03.675
2.3759 MHz	-16.494	0.000	03.506
3.164 MHz	-16.778	0.000	03.222
3.2532 MHz	-16.367	0.000	03.633
3.914 MHz	-16.714	0.000	03.286
4.596 MHz	-15.939	0.000	04.061
4.6855 MHz	-15.770	0.000	04.230
4.8982 MHz	-15.726	0.000	04.274
5.2116 MHz	-15.881	0.000	04.119
5.7224 MHz	-16.656	0.000	03.344
6.2178 MHz	-16.281	0.000	03.719
6.688 MHz	-15.379	0.000	04.621
7.707 MHz	-16.624	0.000	03.376
8.0905 MHz	-16.306	0.000	03.694
10.163 MHz	-16.559	0.000	03.441
27.442 MHz	-16.325	0.000	03.675



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 CE

150kHz-152MHz Emissions (peak)

Company - TracPlus

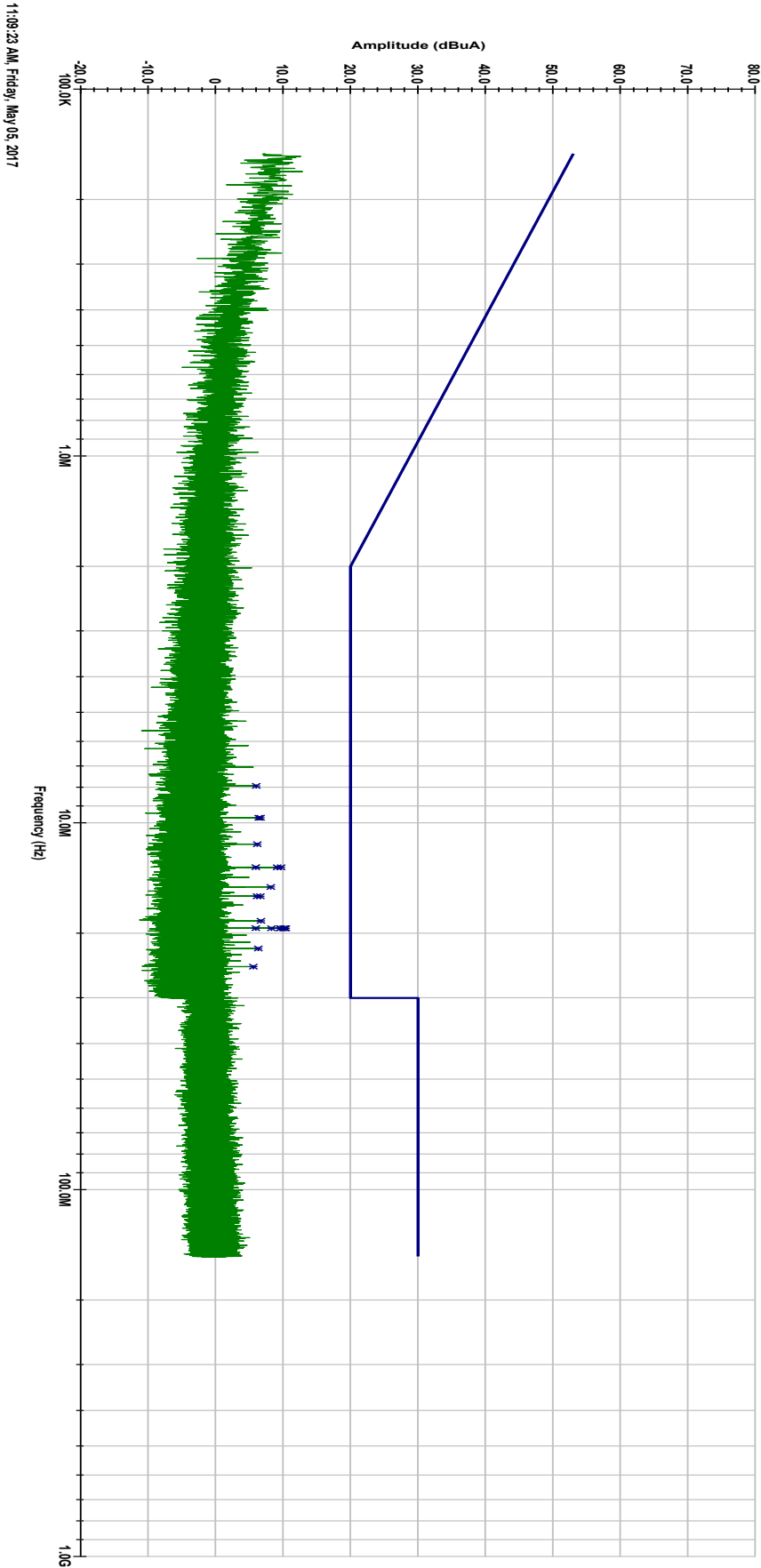
EUT - RockAIR s/n: JJA-R0N-A

Limit - Power Leads Category M 0.15-152MHz

Mode - Transmitting - Satellite

Power Lead/Phase - 24Vdc Bundle

Engineer - JJ



11:09:23 AM Friday, May 05, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

11:09:23 AM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuA)
7.9288 MHz	-13.980	0.000	06.020
9.6838 MHz	-13.634	0.000	06.366
9.6854 MHz	-13.361	0.000	06.639
11.433 MHz	-13.839	0.000	06.161
13.206 MHz	-14.061	0.000	05.939
13.213 MHz	-10.295	0.000	09.705
13.214 MHz	-10.897	0.000	09.103
14.952 MHz	-11.832	0.000	08.168
15.847 MHz	-13.385	0.000	06.615
15.85 MHz	-13.869	0.000	06.131
18.494 MHz	-13.274	0.000	06.726
19.367 MHz	-14.057	0.000	05.943
19.369 MHz	-09.601	0.000	10.399
19.373 MHz	-11.725	0.000	08.275
19.374 MHz	-09.729	0.000	10.271
19.378 MHz	-10.415	0.000	09.585
19.379 MHz	-09.930	0.000	10.070
19.381 MHz	-10.372	0.000	09.628
21.986 MHz	-13.683	0.000	06.317
24.662 MHz	-14.420	0.000	05.580



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 CE

150kHz-152MHz Emissions (peak)

Company - TracPlus

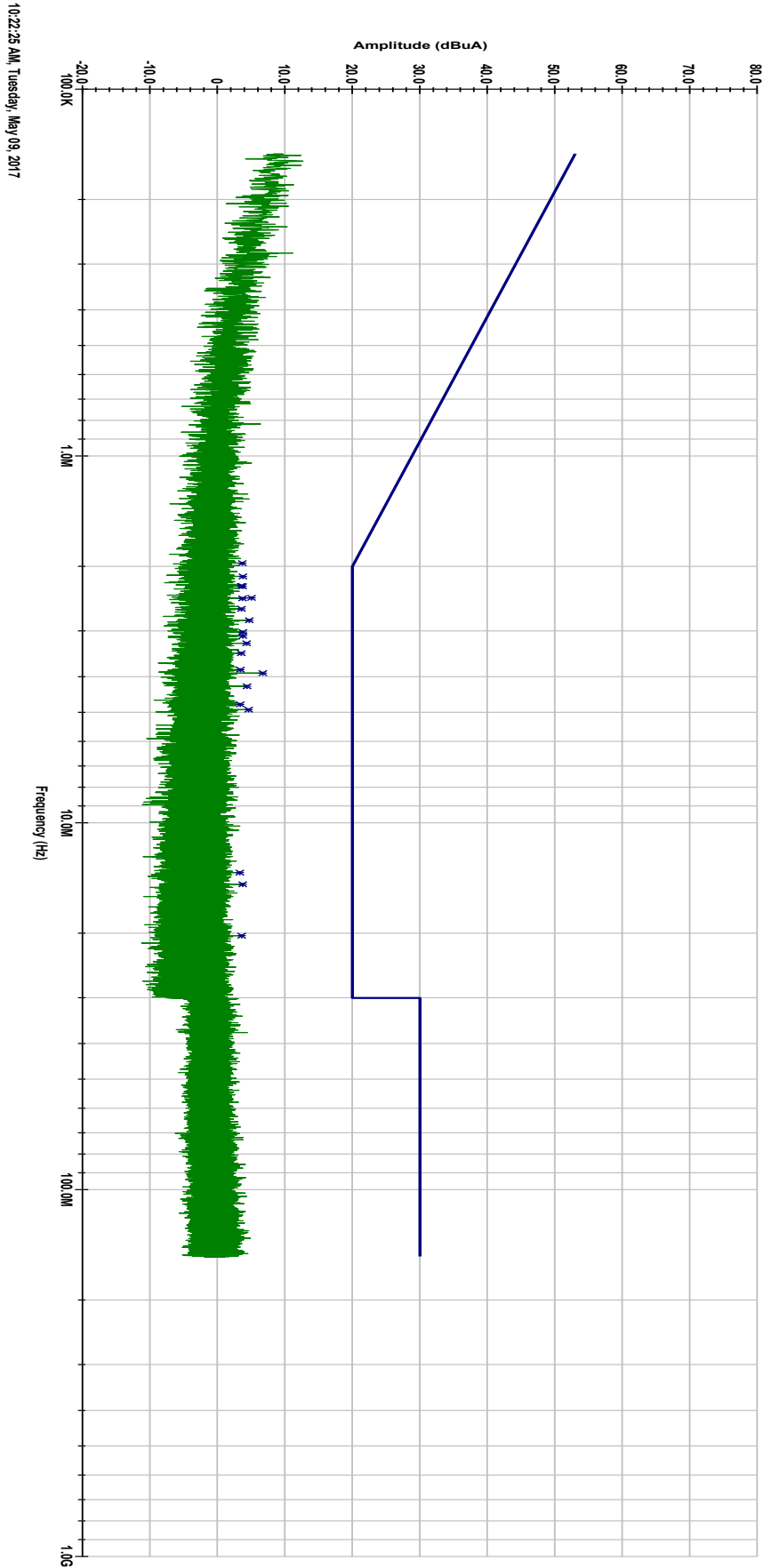
EUT - RockAIR s/n: JJA-R0N-A

Limit - Power Leads Category M 0.15-152MHz

Mode - Transmitting - Satellite

Power Lead/Phase - USB Powered Bundle

Engineer - JJ



10:22:25 AM, Tuesday, May 09, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

10:22:25 AM Frequency	May 09, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuA)
1.9588 MHz	-16.586	0.000	03.679
2.1292 MHz	-16.251	0.000	03.749
2.2602 MHz	-16.488	0.000	03.512
2.266 MHz	-16.281	0.000	03.719
2.436 MHz	-14.964	0.000	05.036
2.4447 MHz	-16.300	0.000	03.700
2.6093 MHz	-16.461	0.000	03.539
2.8042 MHz	-15.296	0.000	04.704
3.0202 MHz	-16.246	0.000	03.754
3.0931 MHz	-16.228	0.000	03.772
3.2378 MHz	-15.702	0.000	04.298
3.448 MHz	-16.472	0.000	03.528
3.8232 MHz	-16.601	0.000	03.399
3.9086 MHz	-13.293	0.000	06.707
4.2424 MHz	-15.624	0.000	04.376
4.7535 MHz	-16.630	0.000	03.370
4.9152 MHz	-15.386	0.000	04.614
13.663 MHz	-16.708	0.000	03.292
14.702 MHz	-16.280	0.000	03.720
20.305 MHz	-16.427	0.000	03.573



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 CE

150kHz-152MHz Emissions (peak)

Company - TracPlus

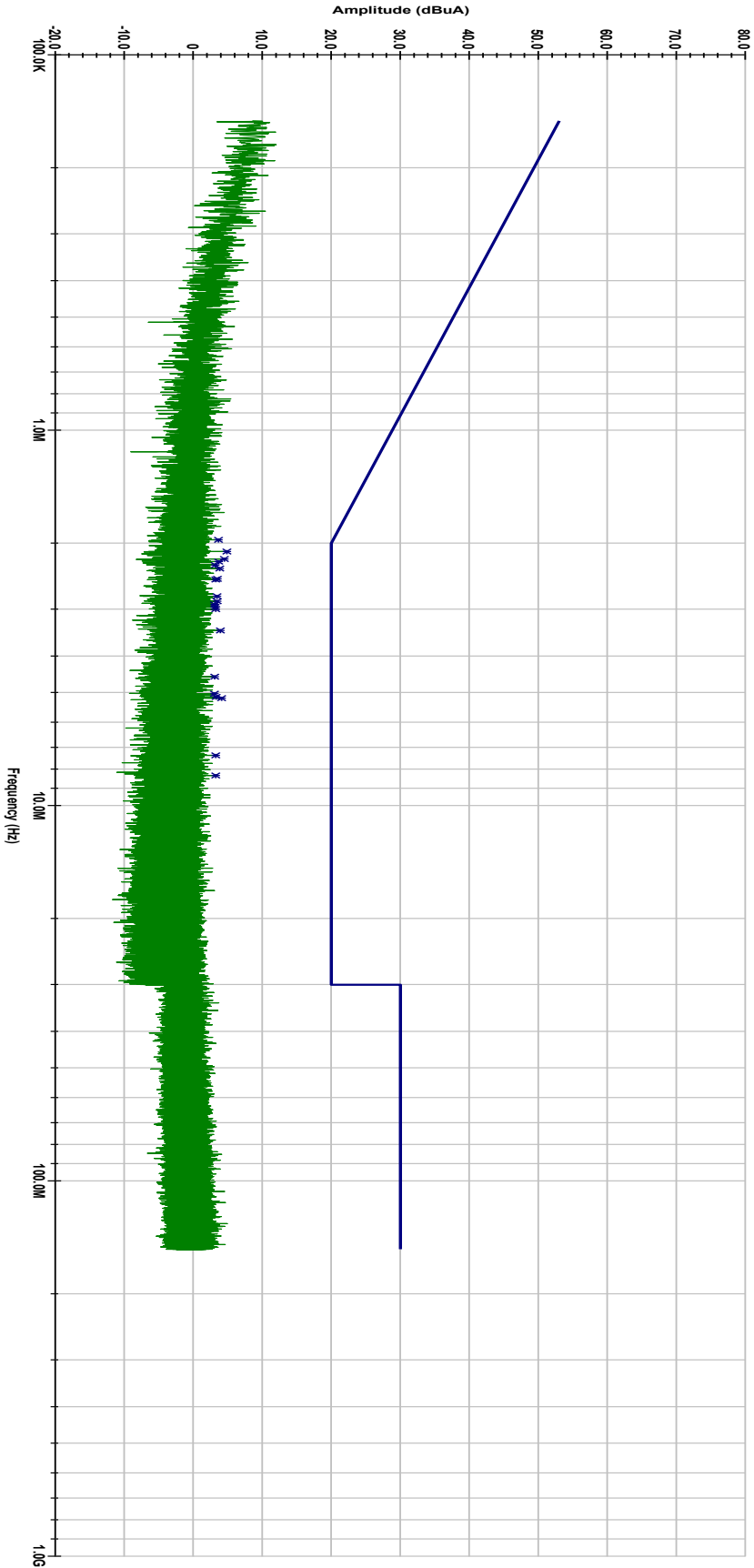
EUT - RockAIR s/n: JJA-R0N-A

Limit - Power Leads Category M 0.15-152MHz

Mode - Hibernate/Sleep

Power Lead/Phase - 24Vdc Bundle

Engineer - JJ



11:23:21 AM, Friday, May 05, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

11:23:21 AM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuA)
1.9592 MHz	-16.617	0.000	03.646
2.1056 MHz	-15.147	0.000	04.853
2.203 MHz	-15.499	0.000	04.501
2.2391 MHz	-16.337	0.000	03.663
2.2876 MHz	-16.805	0.000	03.195
2.3353 MHz	-16.166	0.000	03.834
2.4887 MHz	-16.508	0.000	03.492
2.4994 MHz	-16.754	0.000	03.246
2.7685 MHz	-16.584	0.000	03.416
2.8568 MHz	-16.551	0.000	03.449
2.9124 MHz	-16.934	0.000	03.066
2.9571 MHz	-16.848	0.000	03.152
2.9986 MHz	-16.770	0.000	03.230
3.4153 MHz	-16.102	0.000	03.898
4.535 MHz	-16.911	0.000	03.089
5.0342 MHz	-16.938	0.000	03.062
5.135 MHz	-16.694	0.000	03.306
5.1739 MHz	-15.898	0.000	04.102
7.3509 MHz	-16.772	0.000	03.228
8.3173 MHz	-16.756	0.000	03.244



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

RTCA/DO-160G

SECTION 21.5

RADIATED EMISSION OF RADIO

FREQUENCY ENERGY

VERIFICATION TEST DATA

AND CHARTS



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

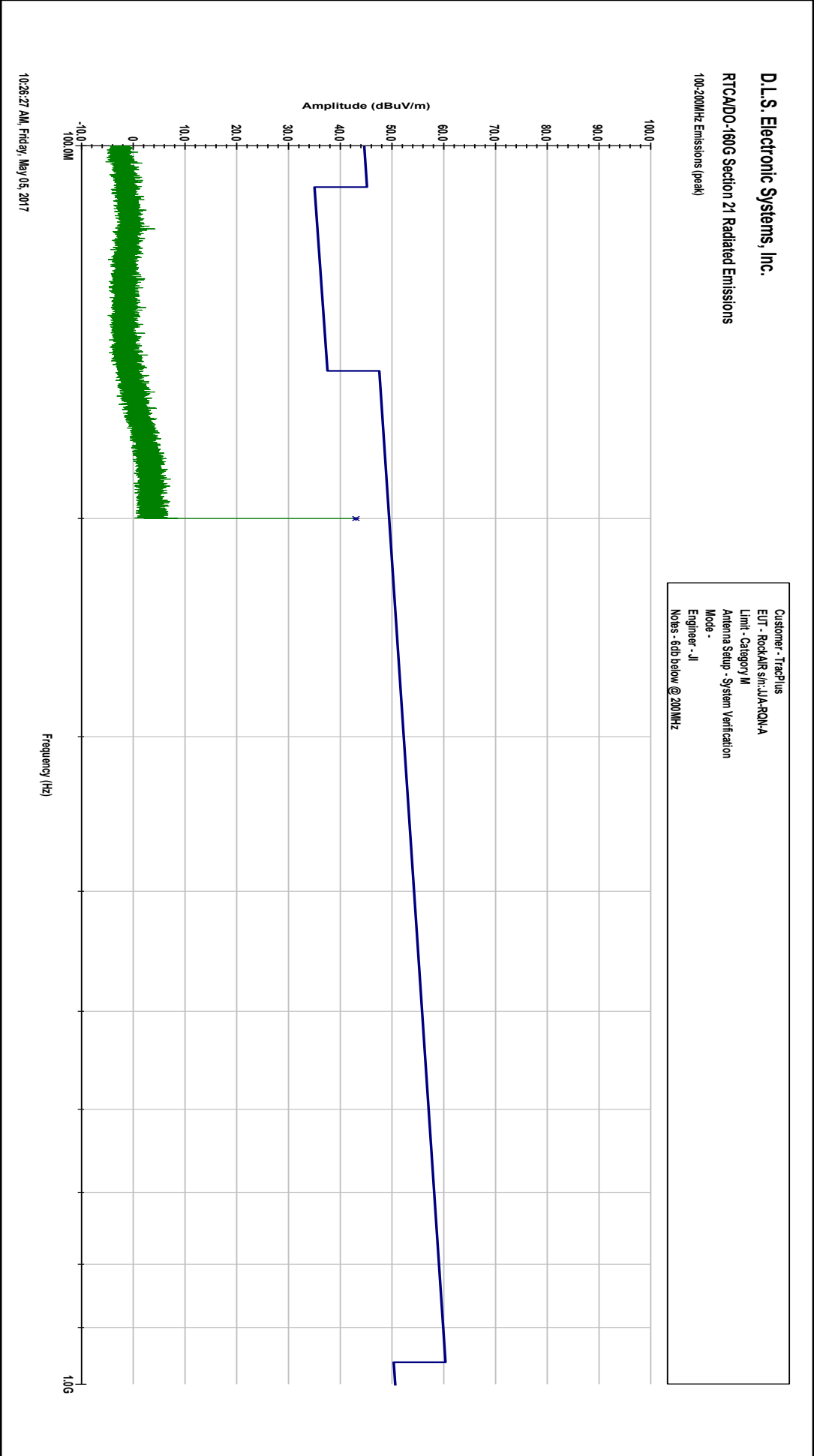
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

100-200MHz Emissions (peak)





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

10:26:27 AM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
200.0 MHz	-06.435	0.000	42.983



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

200MHz-1000MHz Emissions (peak)

Customer - TracPlus

EUT - RockAir str.3JA-RNA

Limit - Category M

Antenna Setup - System Verification

Mode -

Engineer - JJ

Notes - 6dB below @ 1000MHz





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

10:34:07 AM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (Amplitude in dBuV/m)
999.95 MHz	-05.686	0.000	44.908



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

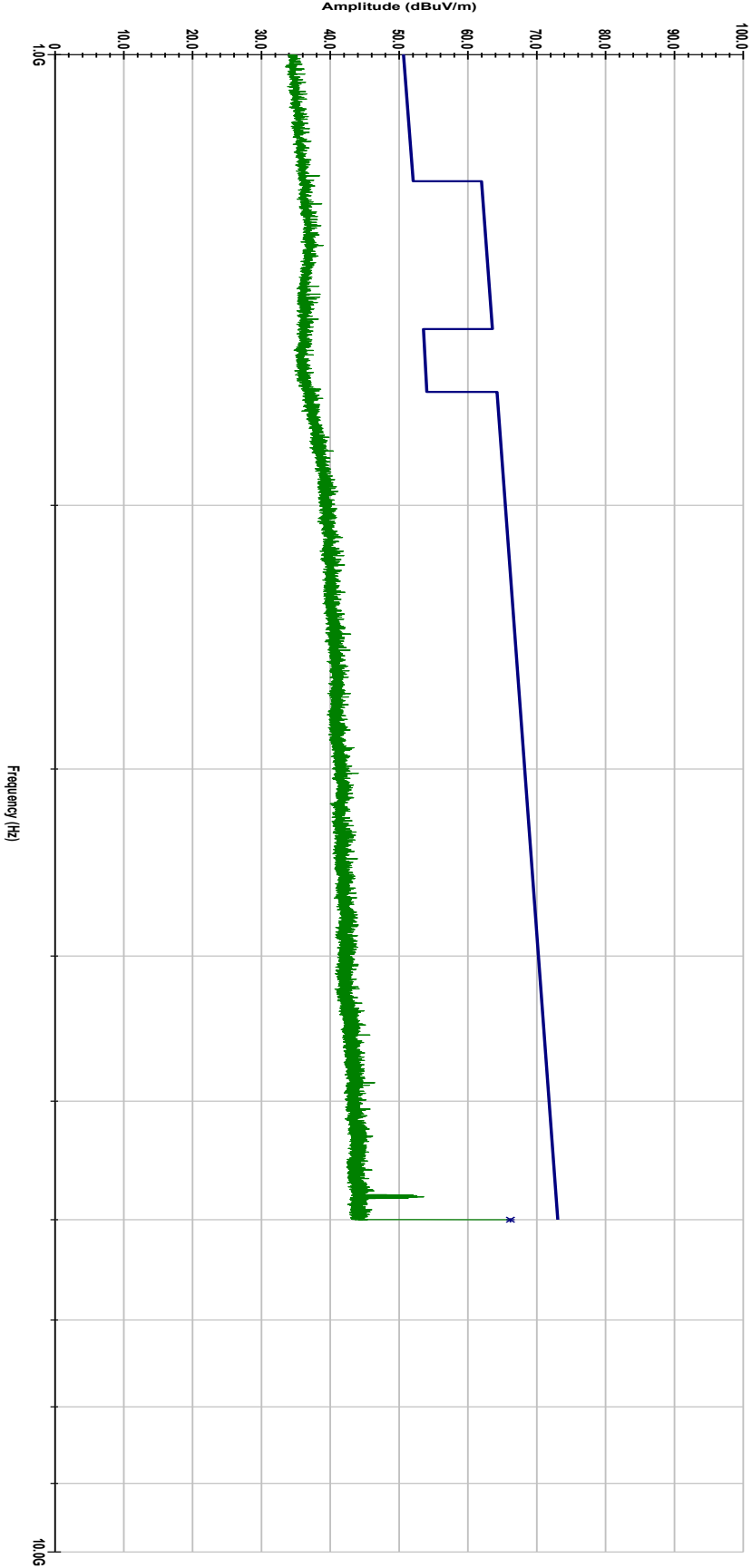
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

1GHz-6GHz Emissions (peak)



03:41:48 PM, Friday, May 05, 2017

Customer - TracPlus

EUT - RockAIR s/n: JJA-R0N-A

Limit - Category M

Antenna Setup - System Verification

Power / Mode -

Engineer - JJ

Notes - 6dB below @ 6GHz



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

03:41:48 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
6.0 GHz	-06.868	0.000	66.132



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

RTCA/DO-160G

SECTION 21.5

RADIATED EMISSION OF RADIO

FREQUENCY ENERGY

TEST DATA AND CHARTS

DC DATA



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

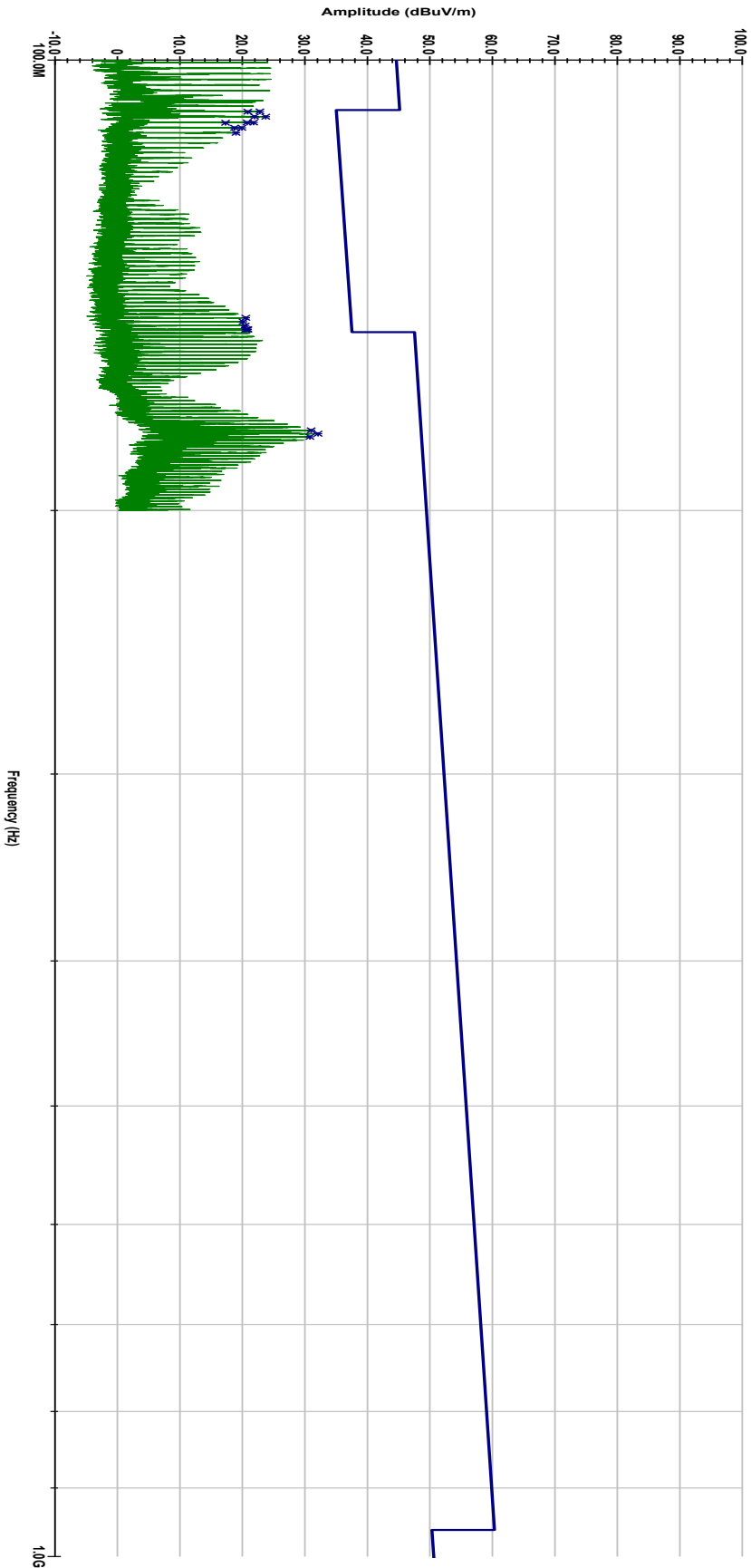
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

100-200MHz Emissions (peak)



12:47:49 PM, Friday, May 05, 2017

Customer - TracPlus

EUT - RockAIR sm-JJA-RQNA

Limit - Category M

Antenna Setup - Horizontal

Mode - Power ON

Engineer - JJ



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

12:47:49 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
108.24 MHz	-12.258	0.000	22.758
108.27 MHz	-14.196	0.000	20.822
109.08 MHz	-13.147	0.000	21.926
109.12 MHz	-11.371	0.000	23.704
110.1 MHz	-14.421	0.000	20.720
110.1 MHz	-13.380	0.000	21.761
110.13 MHz	-17.866	0.000	17.277
110.98 MHz	-15.321	0.000	19.879
111.0 MHz	-16.495	0.000	18.706
111.86 MHz	-16.314	0.000	18.943
148.68 MHz	-16.822	0.000	20.517
149.6 MHz	-17.290	0.000	20.093
150.48 MHz	-17.014	0.000	20.413
151.32 MHz	-16.678	0.000	20.790
151.36 MHz	-16.922	0.000	20.547
151.41 MHz	-16.640	0.000	20.832
151.43 MHz	-16.984	0.000	20.488
176.8 MHz	-17.607	0.000	30.956
177.71 MHz	-16.512	0.000	32.087
178.58 MHz	-17.854	0.000	30.778



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

100-200MHz Emissions (peak)

Customer - TracPlus

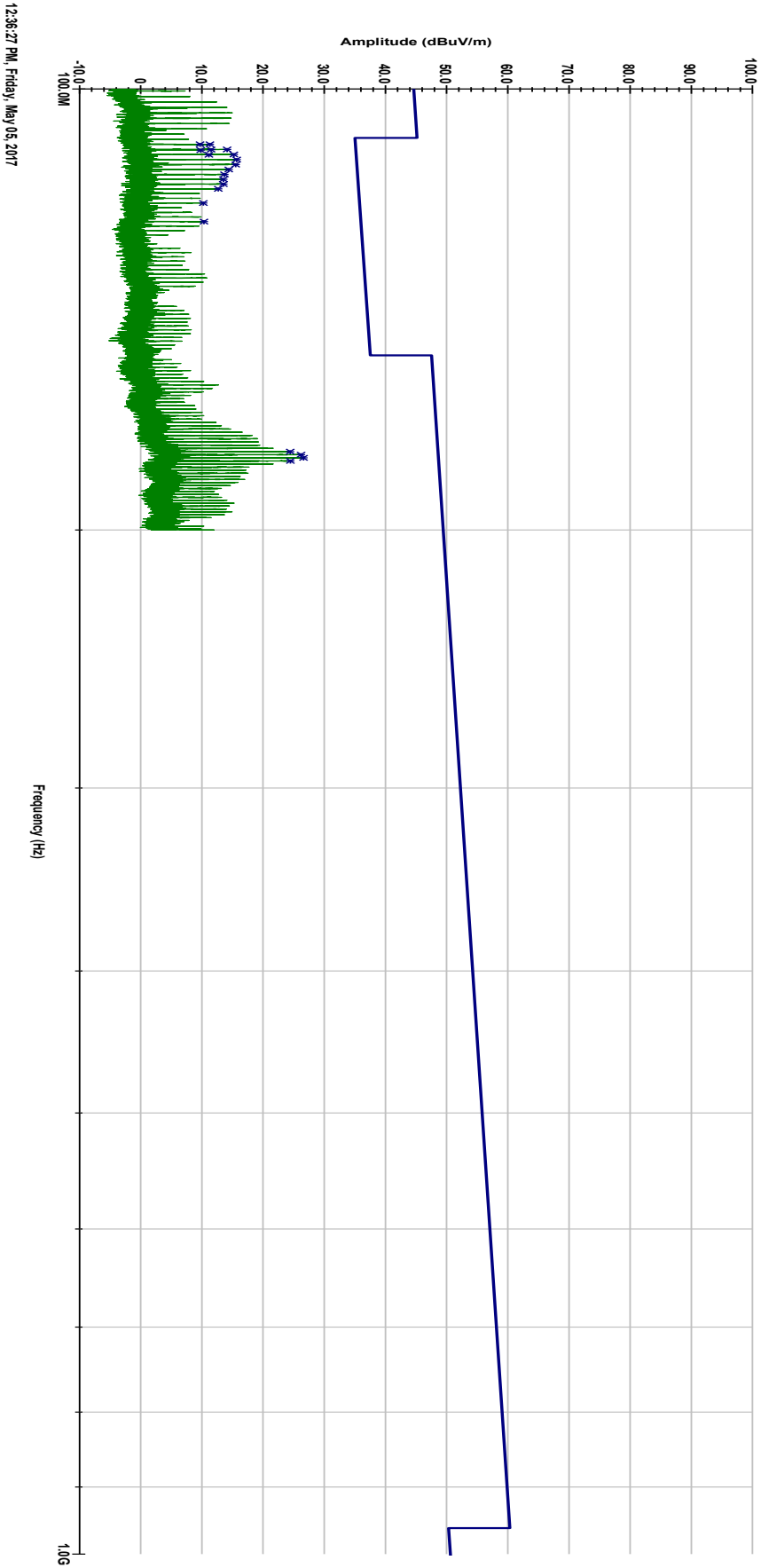
EUT - RockAIR sim:JA-RONA

Limit - Category M

Antenna Setup - Vertical

Mode - Power ON

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

12:36:27 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
109.08 MHz	-25.399	0.000	09.674
109.1 MHz	-23.799	0.000	11.276
109.98 MHz	-21.052	0.000	14.081
110.01 MHz	-23.667	0.000	11.468
110.08 MHz	-25.354	0.000	09.786
110.86 MHz	-20.000	0.000	15.191
110.9 MHz	-24.073	0.000	11.121
111.75 MHz	-19.566	0.000	15.683
112.62 MHz	-19.797	0.000	15.509
113.5 MHz	-21.019	0.000	14.345
114.37 MHz	-21.759	0.000	13.660
115.26 MHz	-21.999	0.000	13.477
116.13 MHz	-22.053	0.000	13.479
117.01 MHz	-22.933	0.000	12.653
119.63 MHz	-25.534	0.000	10.214
123.18 MHz	-25.641	0.000	10.321
176.83 MHz	-24.149	0.000	24.415
177.7 MHz	-22.420	0.000	26.178
178.57 MHz	-22.042	0.000	26.590
179.44 MHz	-24.229	0.000	24.437



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

200MHz-1000MHz Emissions (peak)

Customer - TracPlus

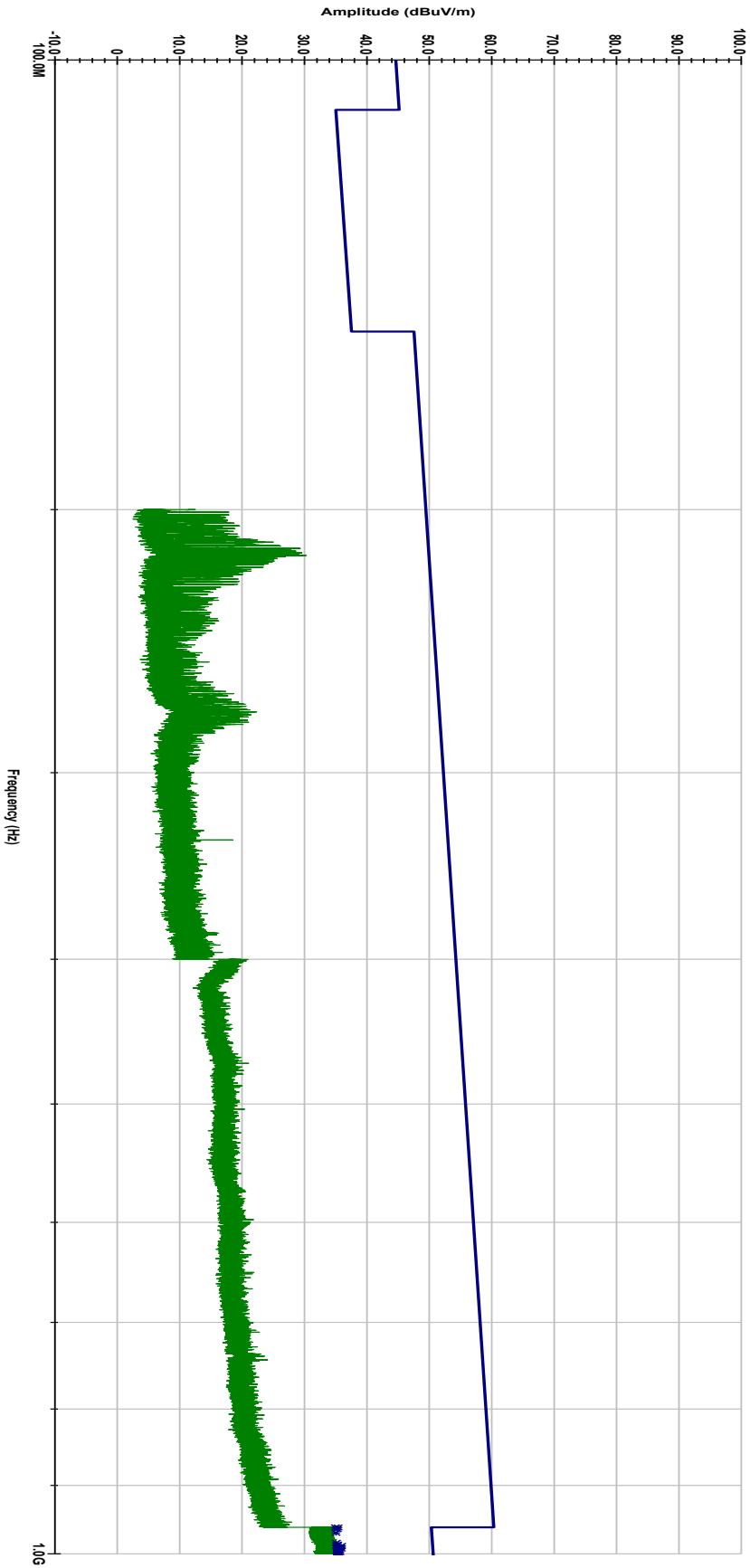
EUT - RockAir s/n: JA-RCA

Limit - Category M

Antenna Setup - Horizontal

Mode - Power ON

Engineer - JJ



03/07/06 PM, Friday, May 05, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

03:07:06 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (Amplitude in dBuV/m)
960.13 MHz	-15.397	0.000	34.904
960.35 MHz	-14.960	0.000	35.342
962.91 MHz	-15.083	0.000	35.239
968.41 MHz	-15.348	0.000	35.015
983.21 MHz	-15.394	0.000	35.078
985.91 MHz	-15.205	0.000	35.287
987.04 MHz	-15.311	0.000	35.189
987.45 MHz	-15.374	0.000	35.129
987.91 MHz	-14.574	0.000	35.933
989.45 MHz	-14.801	0.000	35.717
990.53 MHz	-15.213	0.000	35.313
991.53 MHz	-15.299	0.000	35.234
991.97 MHz	-14.685	0.000	35.851
995.93 MHz	-15.369	0.000	35.196
996.24 MHz	-15.393	0.000	35.175
997.36 MHz	-15.353	0.000	35.223
997.41 MHz	-14.934	0.000	35.642
997.79 MHz	-15.295	0.000	35.284
998.97 MHz	-15.068	0.000	35.519
999.03 MHz	-15.343	0.000	35.244



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

200MHz-1000MHz Emissions (peak)

Customer - TracPlus

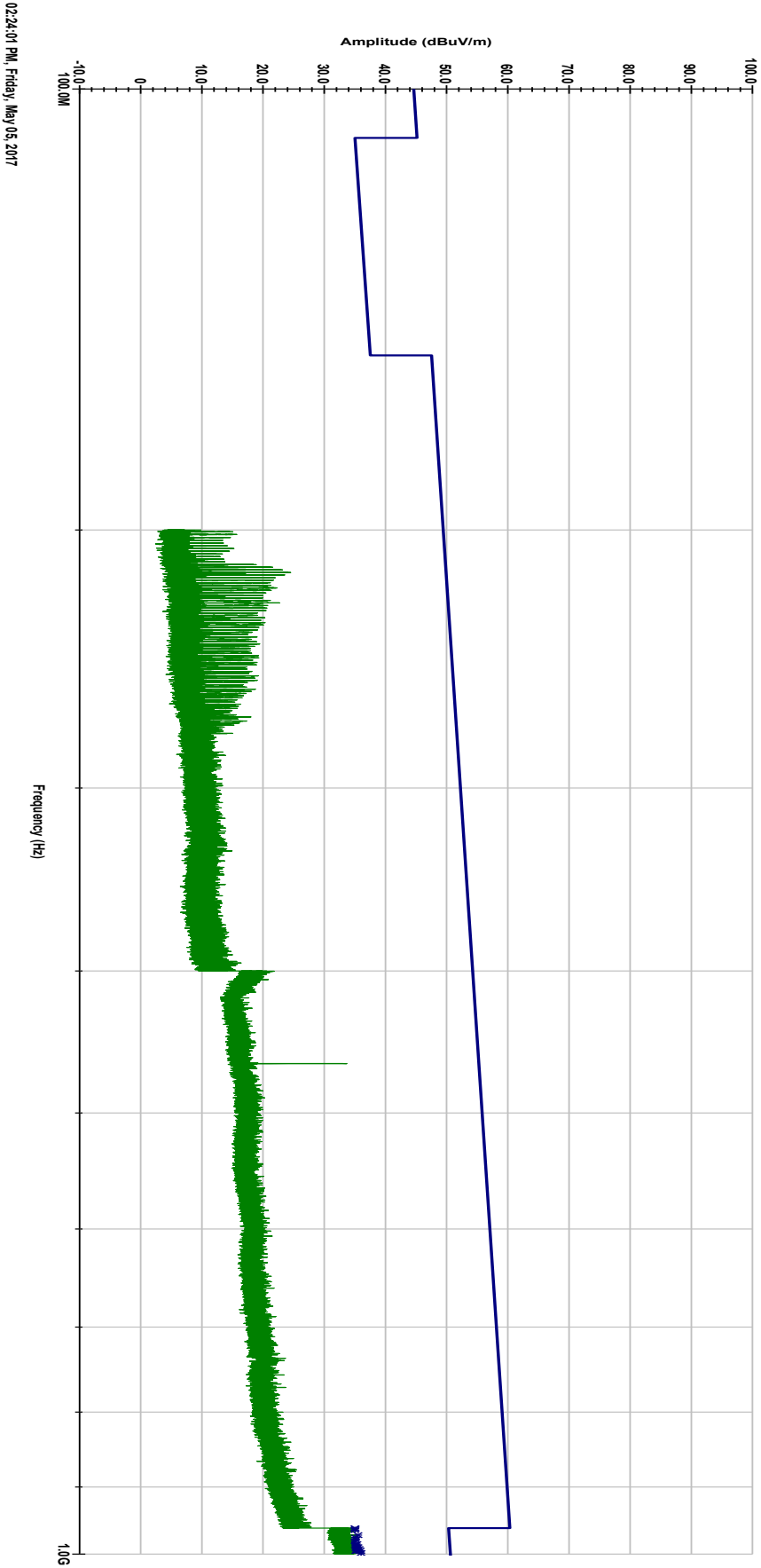
EUT - RockAir s/n: JA-RCA

Limit - Category M

Antenna Setup - Vertical

Mode - Power ON

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

02:24:01 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (Amplitude in dBuV/m)
960.2 MHz	-15.326	0.000	34.975
960.85 MHz	-15.279	0.000	35.028
963.09 MHz	-15.347	0.000	34.976
970.77 MHz	-14.907	0.000	35.473
974.46 MHz	-15.337	0.000	35.071
977.88 MHz	-15.266	0.000	35.167
980.21 MHz	-15.435	0.000	35.015
984.64 MHz	-15.170	0.000	35.313
984.87 MHz	-15.324	0.000	35.161
985.99 MHz	-15.438	0.000	35.055
989.29 MHz	-15.022	0.000	35.495
990.15 MHz	-15.306	0.000	35.217
992.16 MHz	-14.856	0.000	35.681
993.49 MHz	-15.158	0.000	35.390
993.57 MHz	-15.142	0.000	35.406
993.83 MHz	-15.198	0.000	35.352
994.8 MHz	-14.704	0.000	35.853
995.09 MHz	-15.318	0.000	35.241
995.21 MHz	-15.441	0.000	35.119
998.6 MHz	-14.579	0.000	36.006



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

1GHz-6GHz Emissions (peak)

Customer - TracPlus

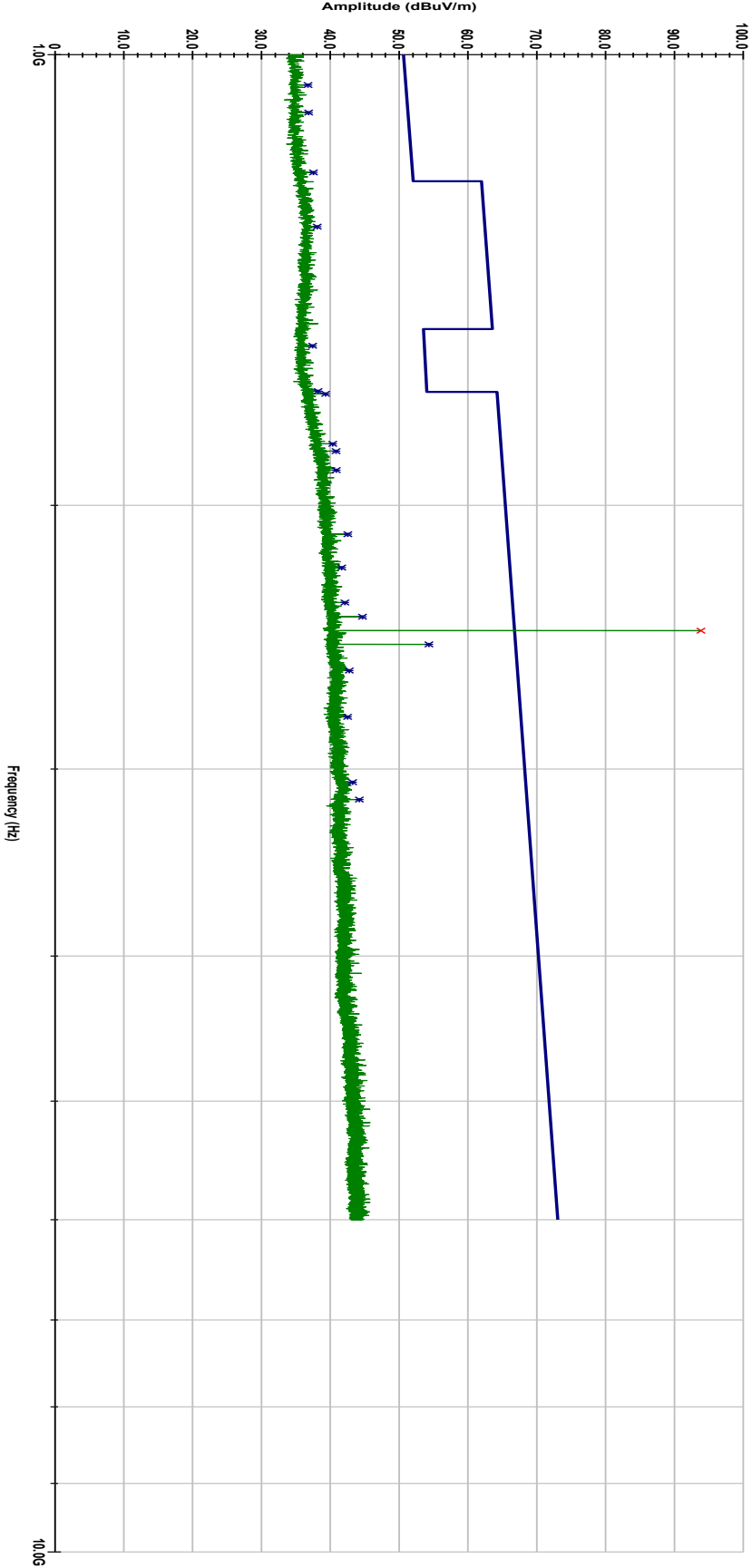
EUT - RockAIR s/n: JJA-R0N-A

Limit - Category M

Antenna Setup - Horizontal

Power / Mode - Power ON

Engineer - JJ



04:34:03 PM, Friday, May 05, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

04:34:03 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
1.0478 GHz	-14.198	0.000	36.733
1.0931 GHz	-14.404	0.000	36.833
1.1987 GHz	-14.393	0.000	37.510
1.3028 GHz	-24.350	0.000	38.061
1.5647 GHz	-16.229	0.000	37.404
1.6778 GHz	-15.797	0.000	38.196
1.685 GHz	-24.925	0.000	39.270
1.8194 GHz	-24.401	0.000	40.325
1.84 GHz	-24.003	0.000	40.802
1.8947 GHz	-24.180	0.000	40.828
2.0909 GHz	-23.184	0.000	42.507
2.2006 GHz	-24.414	0.000	41.632
2.3225 GHz	-24.336	0.000	42.084
2.3737 GHz	-21.922	0.000	44.649
2.425 GHz	0.000	27.094	93.813
2.4766 GHz	-12.586	0.000	54.279
2.5784 GHz	-24.424	0.000	42.720
2.7691 GHz	-25.144	0.000	42.495
3.0612 GHz	-25.127	0.000	43.207
3.1441 GHz	-24.325	0.000	44.194



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

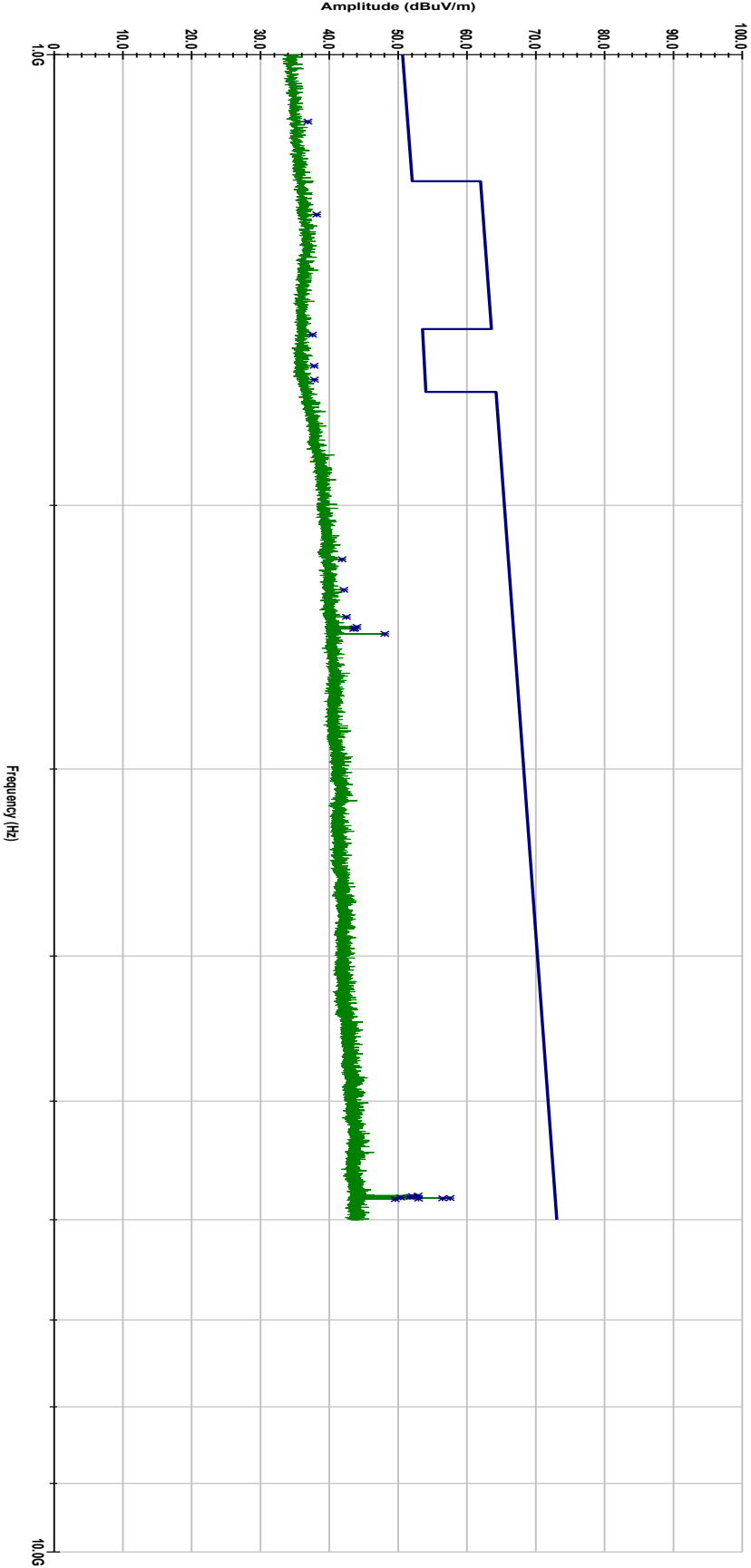
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

1GHz-6GHz Emissions (peak)



04:04:52 PM, Friday, May 05, 2017

Customer - TracPlus
EUT - RockAIR s/n: JJA-R0N-A
Limit - Category M
Antenna Setup - Vertical
Power / Mode - Power ON
Engineer - JJ



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

04:04:52 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
1.1084 GHz	-14.492	0.000	36.846
1.2787 GHz	-24.142	0.000	38.140
1.5381 GHz	-16.028	0.000	37.517
1.6137 GHz	-16.015	0.000	37.777
1.6484 GHz	-16.098	0.000	37.804
2.1731 GHz	-24.148	0.000	41.811
2.2772 GHz	-24.188	0.000	42.095
2.3744 GHz	-24.131	0.000	42.442
2.4109 GHz	-22.708	0.000	43.971
2.4159 GHz	-23.039	0.000	43.654
2.4188 GHz	-23.221	0.000	43.480
2.4369 GHz	-18.727	0.000	48.025
5.7816 GHz	-19.877	0.000	52.866
5.7866 GHz	-20.700	0.000	52.049
5.7919 GHz	-21.059	0.000	51.696
5.7978 GHz	-22.436	0.000	50.326
5.8028 GHz	-15.263	0.000	57.505
5.805 GHz	-16.343	0.000	56.428
5.8081 GHz	-19.851	0.000	52.924
5.8131 GHz	-23.239	0.000	49.542



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

100-200MHz Emissions (peak)

Customer - TracPlus

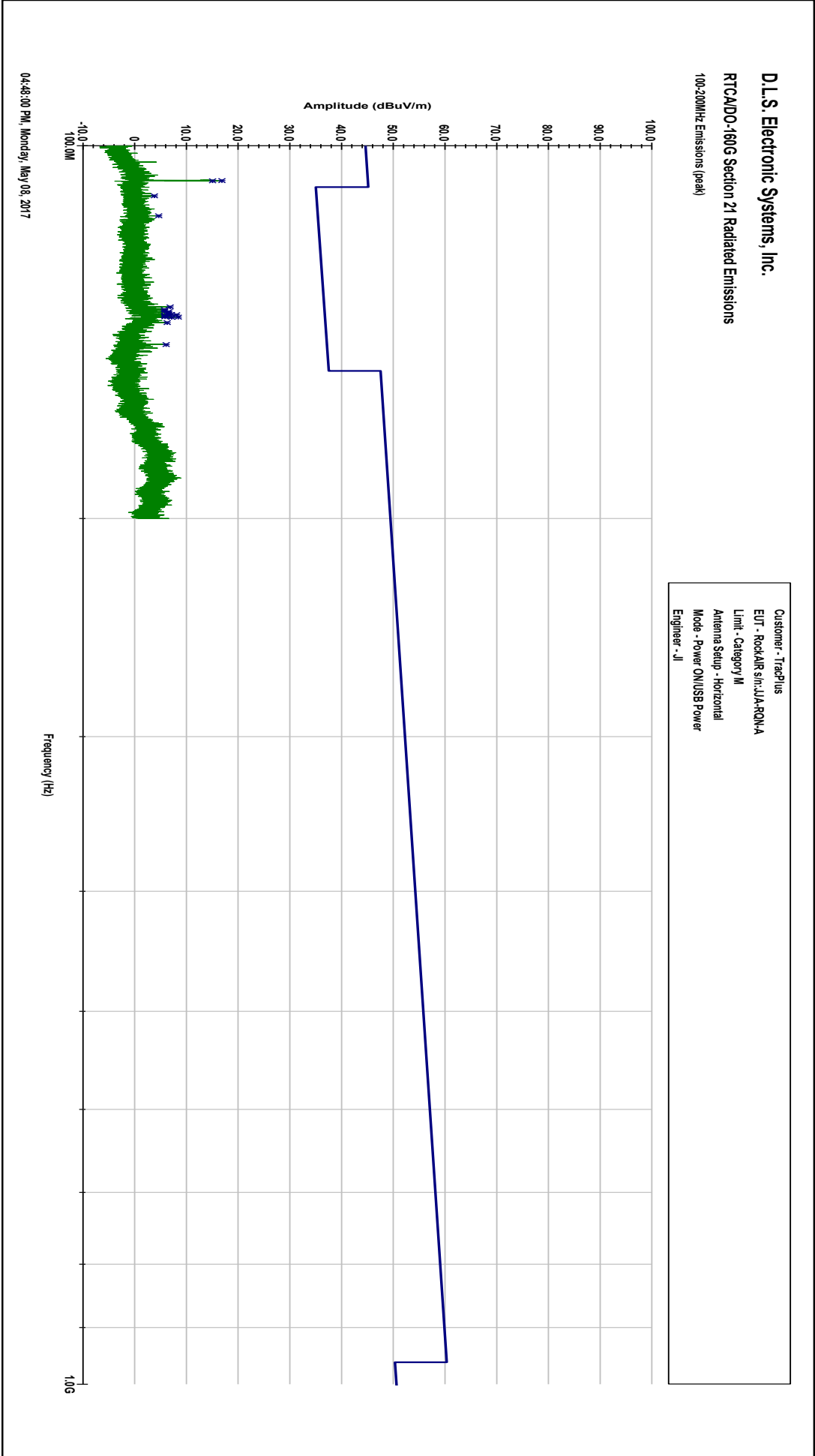
EUT - RockAIR s/n:JA-R0N-A

Limit - Category M

Antenna Setup - Horizontal

Mode - Power ON/USB Power

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

04:48:00 PM Frequency	May 08, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
106.71 MHz	-28.211	0.000	16.850
106.75 MHz	-30.035	0.000	15.028
109.78 MHz	-31.336	0.000	03.784
113.92 MHz	-30.785	0.000	04.605
134.95 MHz	-29.804	0.000	06.826
135.6 MHz	-30.966	0.000	05.698
136.12 MHz	-30.930	0.000	05.763
136.18 MHz	-30.117	0.000	06.579
136.26 MHz	-30.251	0.000	06.449
136.73 MHz	-30.310	0.000	06.415
136.77 MHz	-30.210	0.000	06.518
136.85 MHz	-29.665	0.000	07.067
136.95 MHz	-28.664	0.000	08.073
137.18 MHz	-30.988	0.000	05.762
137.32 MHz	-30.809	0.000	05.948
137.45 MHz	-30.958	0.000	05.806
137.55 MHz	-28.361	0.000	08.408
137.6 MHz	-29.655	0.000	07.117
138.93 MHz	-30.576	0.000	06.266
144.73 MHz	-31.099	0.000	06.043



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

100-200MHz Emissions (peak)

Customer - TracPlus

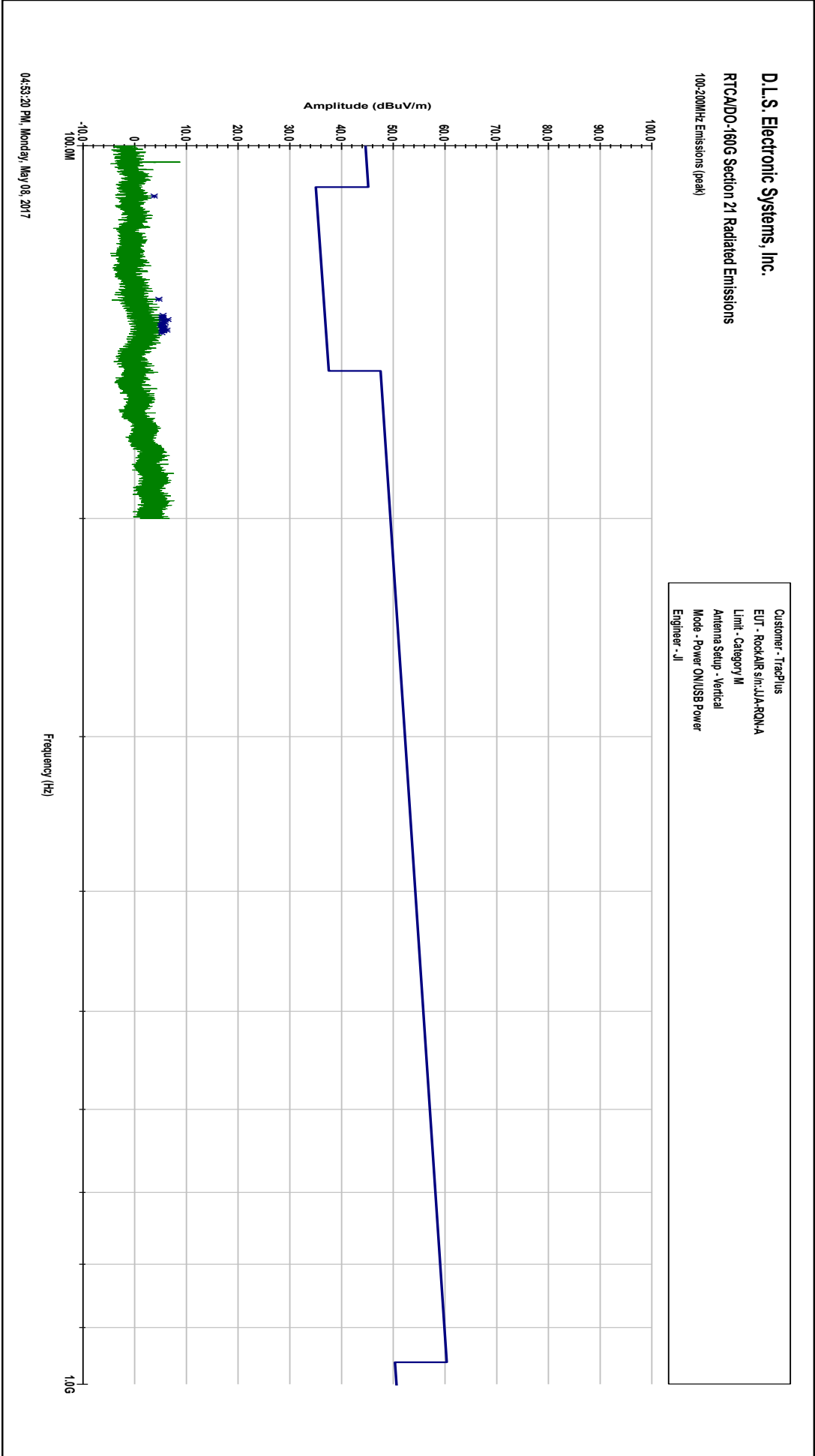
EUT - RockAIR sim:JA-RQNA

Limit - Category M

Antenna Setup - Vertical

Mode - Power ON/USB Power

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

04:53:20 PM Frequency	May 08, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
109.83 MHz	-31.386	0.000	03.737
133.02 MHz	-31.870	0.000	04.654
137.09 MHz	-31.280	0.000	05.464
137.58 MHz	-31.550	0.000	05.221
137.69 MHz	-31.332	0.000	05.445
138.18 MHz	-30.419	0.000	06.383
138.44 MHz	-31.318	0.000	05.498
138.93 MHz	-30.989	0.000	05.853
139.08 MHz	-31.492	0.000	05.358
139.56 MHz	-31.532	0.000	05.344
139.64 MHz	-31.831	0.000	05.048
140.22 MHz	-31.467	0.000	05.442
140.27 MHz	-31.544	0.000	05.368
140.28 MHz	-31.118	0.000	05.795
140.32 MHz	-31.494	0.000	05.421
140.36 MHz	-31.420	0.000	05.497
140.89 MHz	-30.739	0.000	06.206
140.97 MHz	-31.519	0.000	05.430
141.12 MHz	-31.400	0.000	05.557
141.57 MHz	-31.767	0.000	05.213



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

200MHz-1000MHz Emissions (peak)

Customer - TracPlus

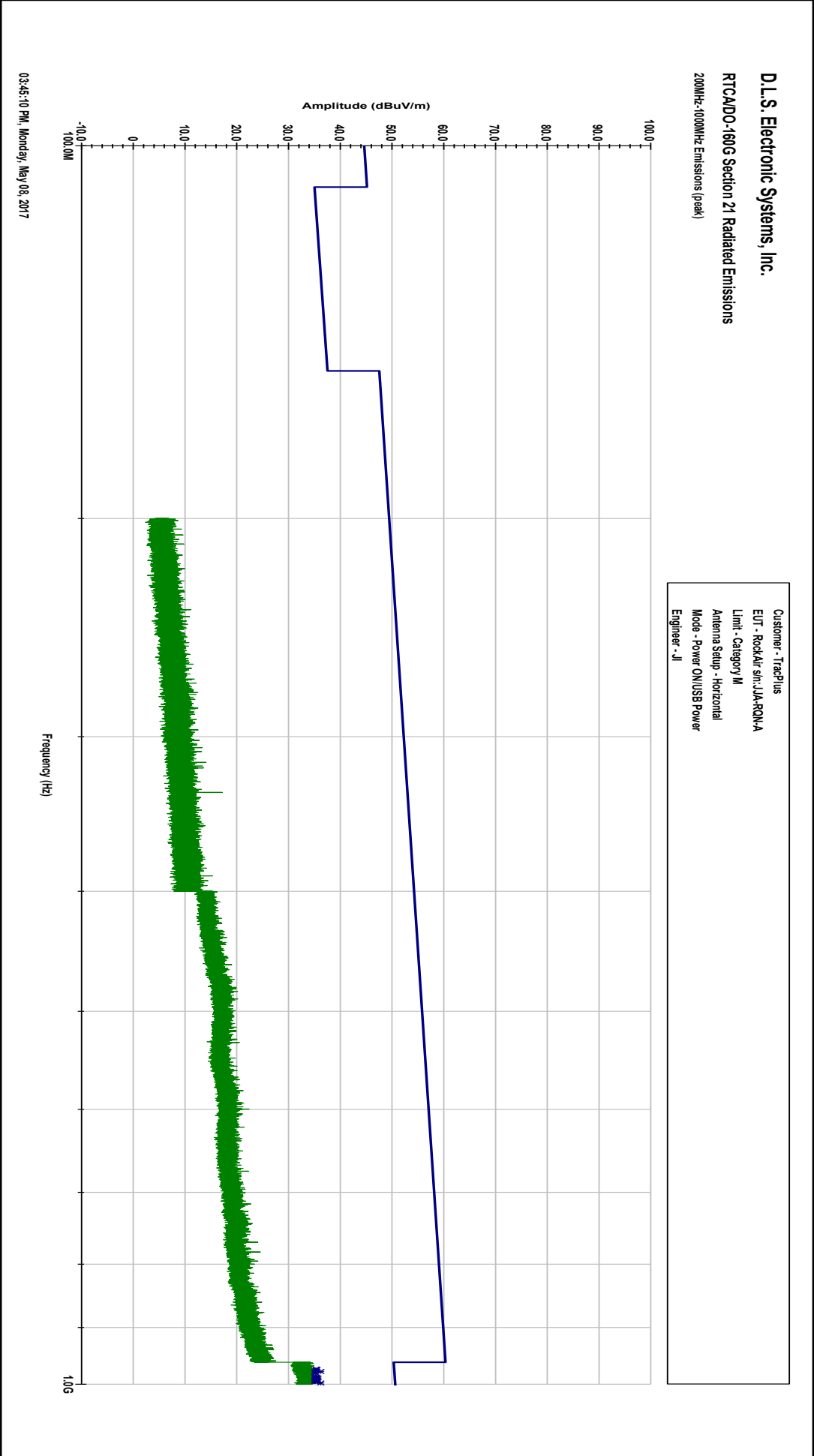
EUT - RockAir s/n: JA-RCA

Limit - Category M

Antenna Setup - Horizontal

Mode - Power ON/USB Power

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

03:45:10 PM Frequency	May 08, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (Amplitude in dBuV/m)
971.88 MHz	-15.105	0.000	35.283
972.87 MHz	-14.937	0.000	35.459
974.78 MHz	-15.121	0.000	35.289
976.6 MHz	-14.246	0.000	36.178
976.68 MHz	-15.379	0.000	35.046
980.17 MHz	-15.234	0.000	35.216
985.71 MHz	-15.416	0.000	35.075
986.83 MHz	-15.105	0.000	35.394
987.77 MHz	-15.366	0.000	35.139
988.48 MHz	-14.859	0.000	35.652
988.65 MHz	-15.226	0.000	35.286
989.14 MHz	-15.081	0.000	35.435
990.55 MHz	-15.169	0.000	35.357
990.91 MHz	-15.324	0.000	35.205
992.43 MHz	-14.969	0.000	35.571
993.32 MHz	-15.453	0.000	35.093
994.18 MHz	-15.243	0.000	35.309
994.99 MHz	-15.469	0.000	35.090
995.23 MHz	-15.009	0.000	35.551
997.79 MHz	-14.393	0.000	36.186



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

200MHz-1000MHz Emissions (peak)

Customer - TracPlus

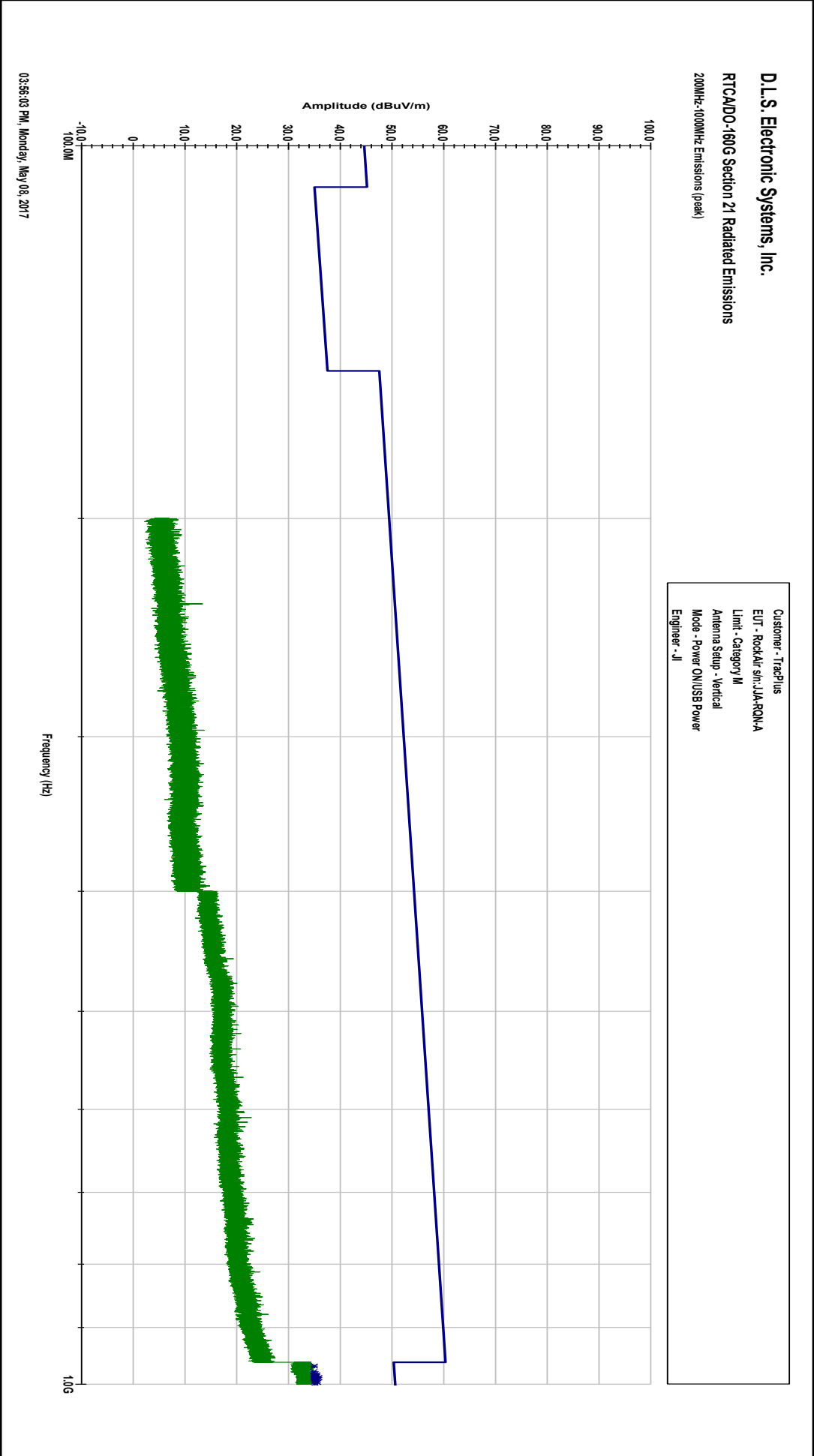
EUT - RockAir s/n: JA-RCA

Limit - Category M

Antenna Setup - Vertical

Mode - Power ON/USB Power

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

03:56:03 PM Frequency	May 08, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (Amplitude in dBuV/m)
966.82 MHz	-15.412	0.000	34.939
977.08 MHz	-15.575	0.000	34.852
980.61 MHz	-15.368	0.000	35.086
982.82 MHz	-15.033	0.000	35.436
983.65 MHz	-15.510	0.000	34.965
984.42 MHz	-15.372	0.000	35.109
985.51 MHz	-15.188	0.000	35.302
986.57 MHz	-15.500	0.000	34.997
986.92 MHz	-15.545	0.000	34.954
987.84 MHz	-14.697	0.000	35.810
988.03 MHz	-15.209	0.000	35.299
988.57 MHz	-15.531	0.000	34.980
989.17 MHz	-15.490	0.000	35.026
989.79 MHz	-14.915	0.000	35.605
990.33 MHz	-15.513	0.000	35.012
991.05 MHz	-15.195	0.000	35.335
991.23 MHz	-15.262	0.000	35.269
993.27 MHz	-15.438	0.000	35.108
996.68 MHz	-15.011	0.000	35.560
998.82 MHz	-15.542	0.000	35.044



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

1GHz-6GHz Emissions (peak)

Customer - TracPlus

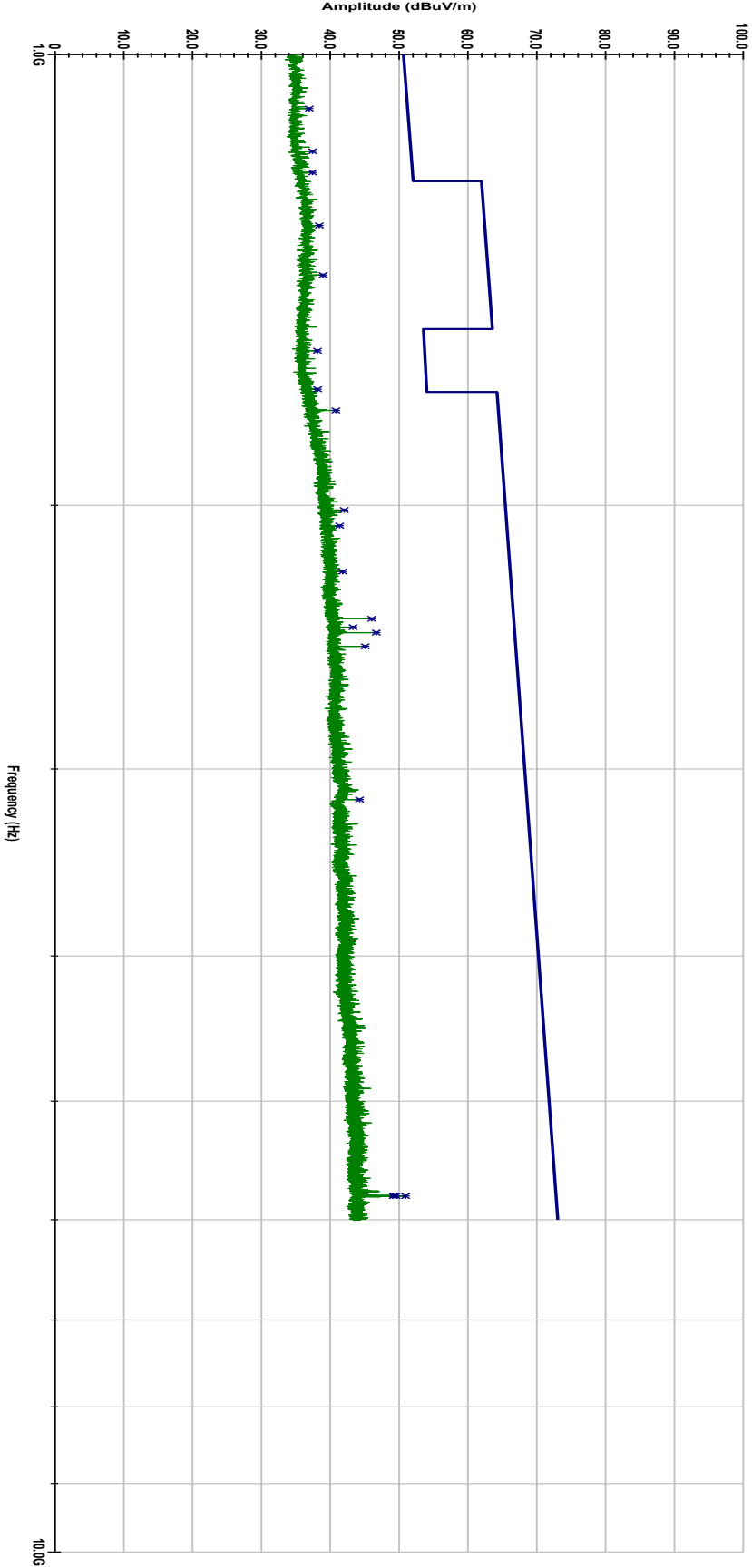
EUT - RockAIR s/n: JJA-R0N-A

Limit - Category M

Antenna Setup - Horizontal

Power / Mode - Power ON/USB Power

Engineer - JJ



02:33:32 PM, Monday, May 08, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

02:33:32 PM Frequency	May 08, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
1.0866 GHz	-14.276	0.000	36.918
1.1603 GHz	-14.255	0.000	37.412
1.1987 GHz	-14.491	0.000	37.412
1.3003 GHz	-24.019	0.000	38.378
1.4034 GHz	-24.005	0.000	38.922
1.5769 GHz	-15.564	0.000	38.109
1.6728 GHz	-15.862	0.000	38.116
1.7281 GHz	-23.584	0.000	40.786
2.0147 GHz	-23.444	0.000	41.989
2.0638 GHz	-24.266	0.000	41.335
2.2141 GHz	-24.301	0.000	41.787
2.3809 GHz	-20.619	0.000	45.973
2.4119 GHz	-23.413	0.000	43.268
2.4325 GHz	-20.104	0.000	46.637
2.4841 GHz	-21.861	0.000	45.025
3.1444 GHz	-24.290	0.000	44.230
5.7797 GHz	-23.529	0.000	49.211
5.7834 GHz	-23.246	0.000	49.499
5.7844 GHz	-23.621	0.000	49.125
5.7856 GHz	-21.844	0.000	50.903



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

1GHz-6GHz Emissions (peak)

Customer - TracPlus

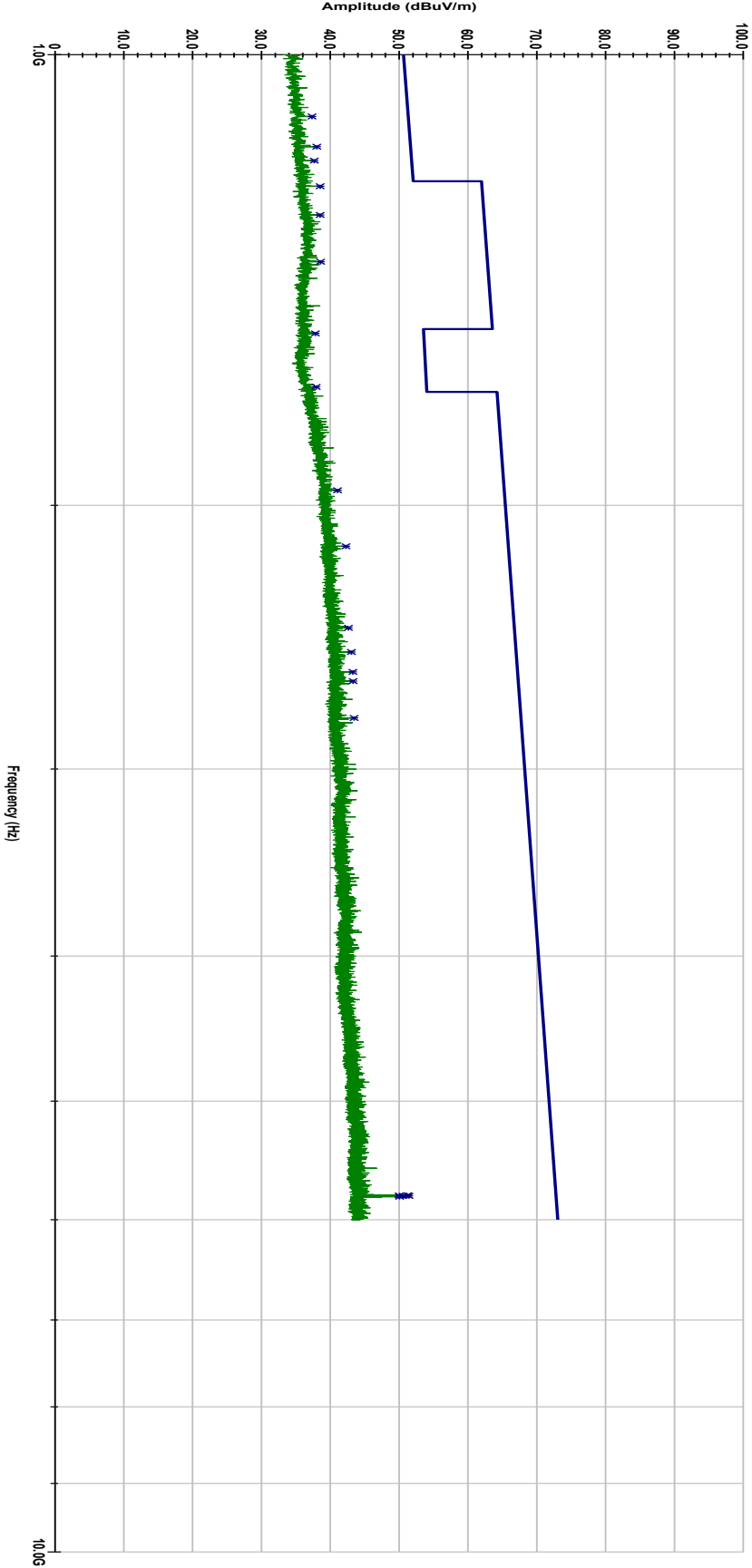
EUT - RockAIR s/n: JJA-R0N-A

Limit - Category M

Antenna Setup - Vertical

Power / Mode - Power ON/USB Power

Engineer - JJ



02:38:26 PM, Monday, May 08, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

02:38:26 PM Frequency	May 08, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
1.0997 GHz	-13.970	0.000	37.310
1.1522 GHz	-13.625	0.000	37.992
1.1772 GHz	-14.135	0.000	37.637
1.2244 GHz	-23.473	0.000	38.507
1.2797 GHz	-23.781	0.000	38.506
1.375 GHz	-24.245	0.000	38.540
1.5353 GHz	-15.731	0.000	37.803
1.6669 GHz	-16.039	0.000	37.920
1.9544 GHz	-24.190	0.000	41.033
2.13 GHz	-23.594	0.000	42.226
2.4147 GHz	-24.100	0.000	42.590
2.5059 GHz	-23.913	0.000	43.033
2.5841 GHz	-23.925	0.000	43.234
2.6209 GHz	-23.988	0.000	43.270
2.7738 GHz	-24.240	0.000	43.410
5.7778 GHz	-21.515	0.000	51.223
5.7797 GHz	-22.758	0.000	49.983
5.7828 GHz	-22.201	0.000	50.544
5.7838 GHz	-21.331	0.000	51.415
5.7916 GHz	-22.714	0.000	50.041



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

100-200MHz Emissions (peak)

Customer - TracPlus

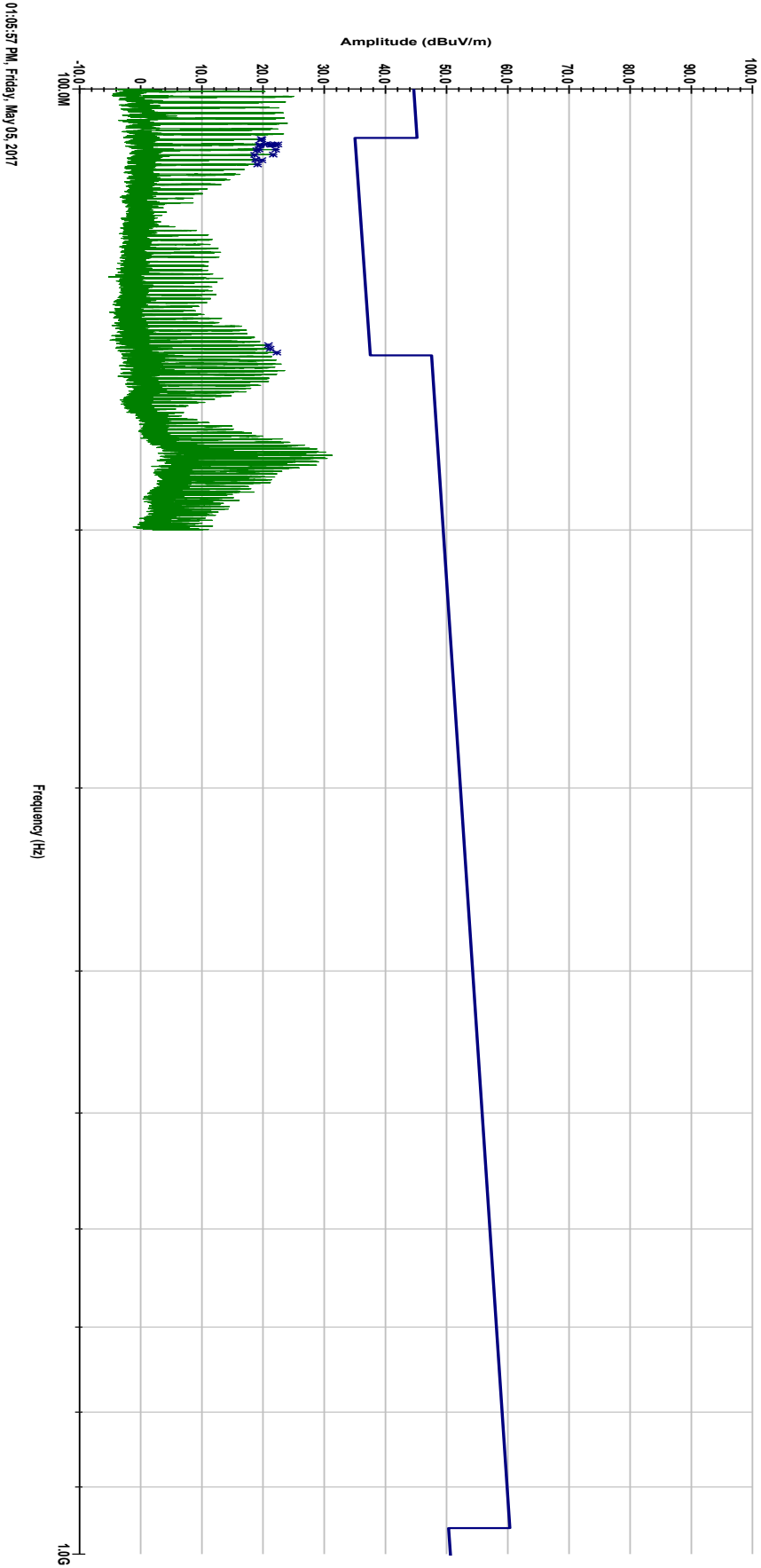
EUT - RockAIR s/n:JA-R0N-A

Limit - Category M

Antenna Setup - Horizontal

Mode - Transmit - Cellular

Engineer - JJ



01:05:57 PM, Friday, May 05, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

01:05:57 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
108.21 MHz	-15.355	0.000	19.659
108.25 MHz	-15.223	0.000	19.795
109.07 MHz	-14.511	0.000	20.562
109.1 MHz	-12.664	0.000	22.411
109.14 MHz	-13.142	0.000	21.934
109.15 MHz	-13.847	0.000	21.231
109.16 MHz	-13.618	0.000	21.461
109.2 MHz	-15.550	0.000	19.531
109.22 MHz	-15.743	0.000	19.339
109.96 MHz	-15.810	0.000	19.321
110.0 MHz	-13.089	0.000	22.046
110.13 MHz	-16.194	0.000	18.949
110.88 MHz	-13.556	0.000	21.637
110.92 MHz	-16.599	0.000	18.596
111.77 MHz	-16.477	0.000	18.774
111.85 MHz	-15.459	0.000	19.797
112.59 MHz	-16.230	0.000	19.075
149.57 MHz	-16.519	0.000	20.863
150.43 MHz	-16.283	0.000	21.141
151.34 MHz	-15.245	0.000	22.223



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

100-200MHz Emissions (peak)

Customer - TracPlus

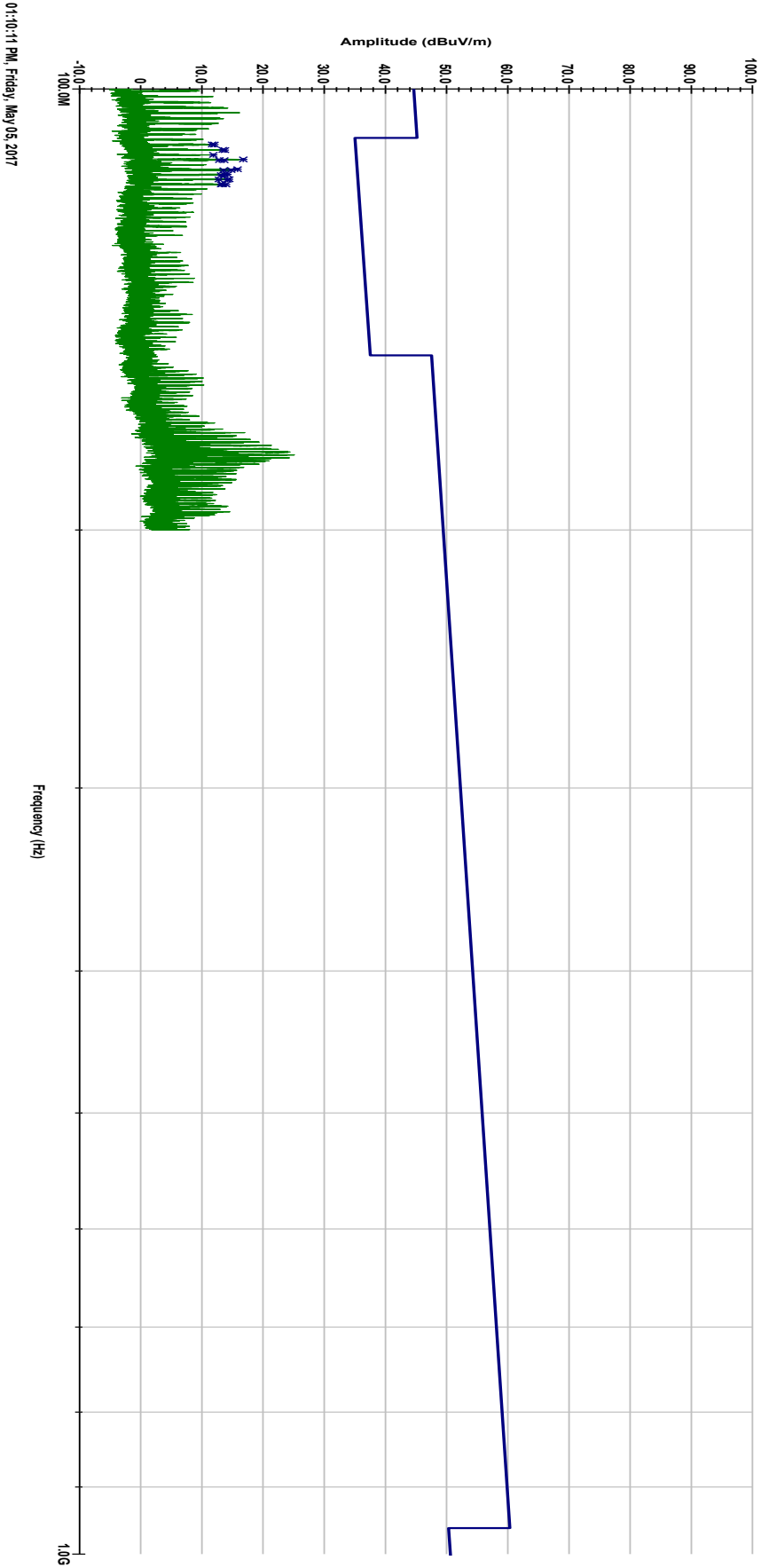
EUT - RockAIR s/n:JA-R0N-A

Limit - Category M

Antenna Setup - Vertical

Mode - Transmit Cellular

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

01:10:11 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
109.1 MHz	-23.434	0.000	11.640
109.14 MHz	-23.044	0.000	12.033
110.05 MHz	-21.763	0.000	13.375
110.1 MHz	-21.414	0.000	13.727
110.92 MHz	-23.352	0.000	11.843
111.71 MHz	-18.504	0.000	16.743
111.82 MHz	-22.428	0.000	12.826
111.85 MHz	-21.636	0.000	13.620
113.46 MHz	-19.571	0.000	15.789
113.6 MHz	-20.614	0.000	14.756
113.65 MHz	-21.846	0.000	13.526
114.38 MHz	-21.253	0.000	14.167
114.39 MHz	-21.793	0.000	13.627
114.51 MHz	-22.311	0.000	13.117
115.27 MHz	-21.033	0.000	14.443
115.29 MHz	-22.739	0.000	12.739
115.33 MHz	-21.335	0.000	14.146
116.14 MHz	-22.236	0.000	13.296
116.18 MHz	-22.397	0.000	13.138
116.21 MHz	-21.595	0.000	13.941



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

200MHz-1000MHz Emissions (peak)

Customer - TracPlus

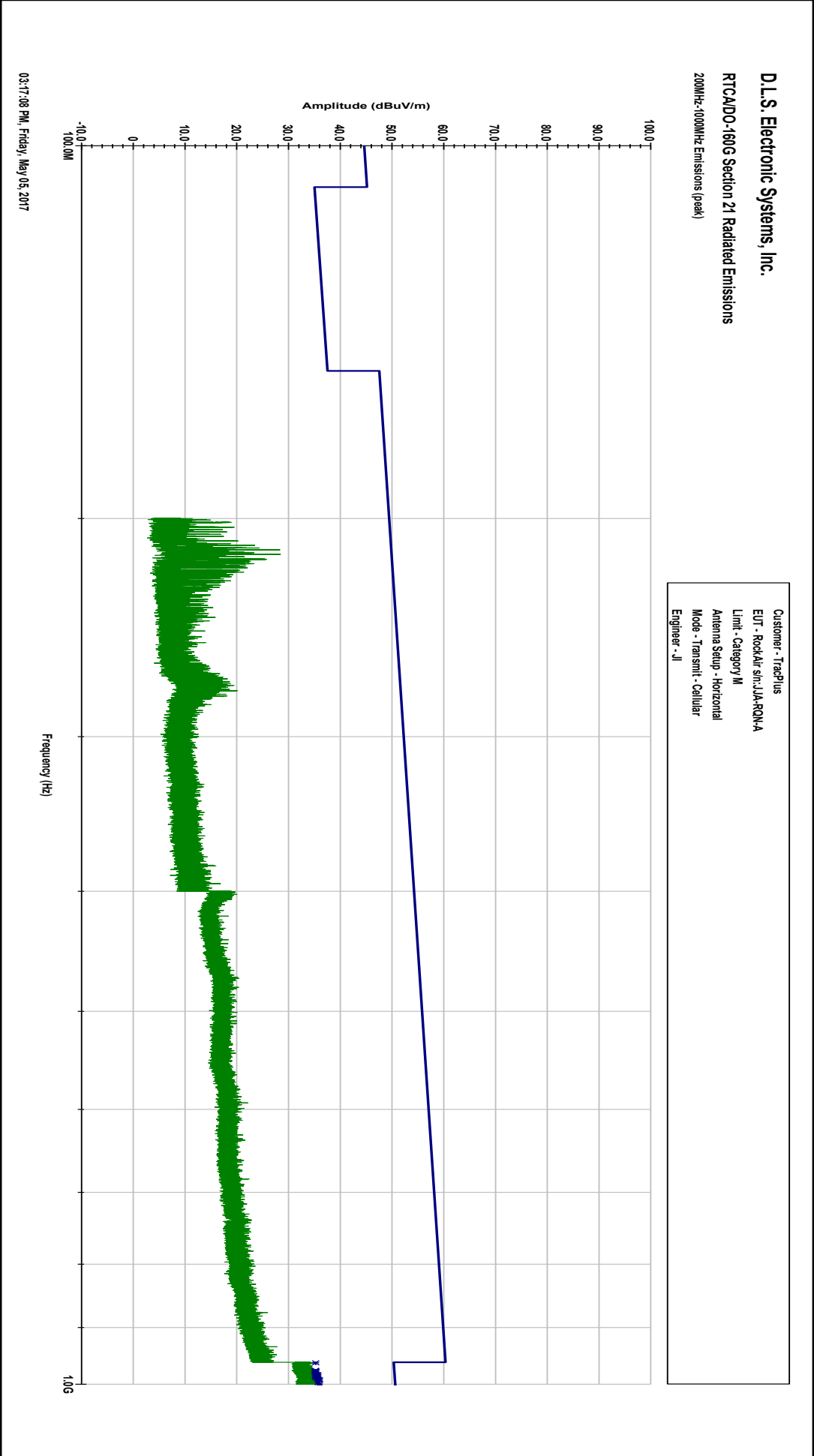
EUT - RockAir s/n: JA-RCA

Limit - Category M

Antenna Setup - Horizontal

Mode - Transmit - Cellular

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

03:17:08 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (Amplitude in dBuV/m)
961.13 MHz	-15.088	0.000	35.220
974.39 MHz	-15.187	0.000	35.220
975.48 MHz	-15.318	0.000	35.098
976.01 MHz	-15.126	0.000	35.294
977.53 MHz	-15.311	0.000	35.120
982.03 MHz	-14.884	0.000	35.580
982.4 MHz	-15.154	0.000	35.312
984.45 MHz	-14.808	0.000	35.674
984.48 MHz	-15.140	0.000	35.342
984.55 MHz	-15.346	0.000	35.136
984.65 MHz	-15.101	0.000	35.382
986.48 MHz	-14.987	0.000	35.509
987.78 MHz	-15.293	0.000	35.213
988.03 MHz	-15.255	0.000	35.253
990.59 MHz	-14.901	0.000	35.626
991.35 MHz	-14.875	0.000	35.657
991.77 MHz	-14.622	0.000	35.913
992.47 MHz	-14.617	0.000	35.923
997.5 MHz	-14.890	0.000	35.686
999.56 MHz	-14.640	0.000	35.952



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

200MHz-1000MHz Emissions (peak)

Customer - TracPlus

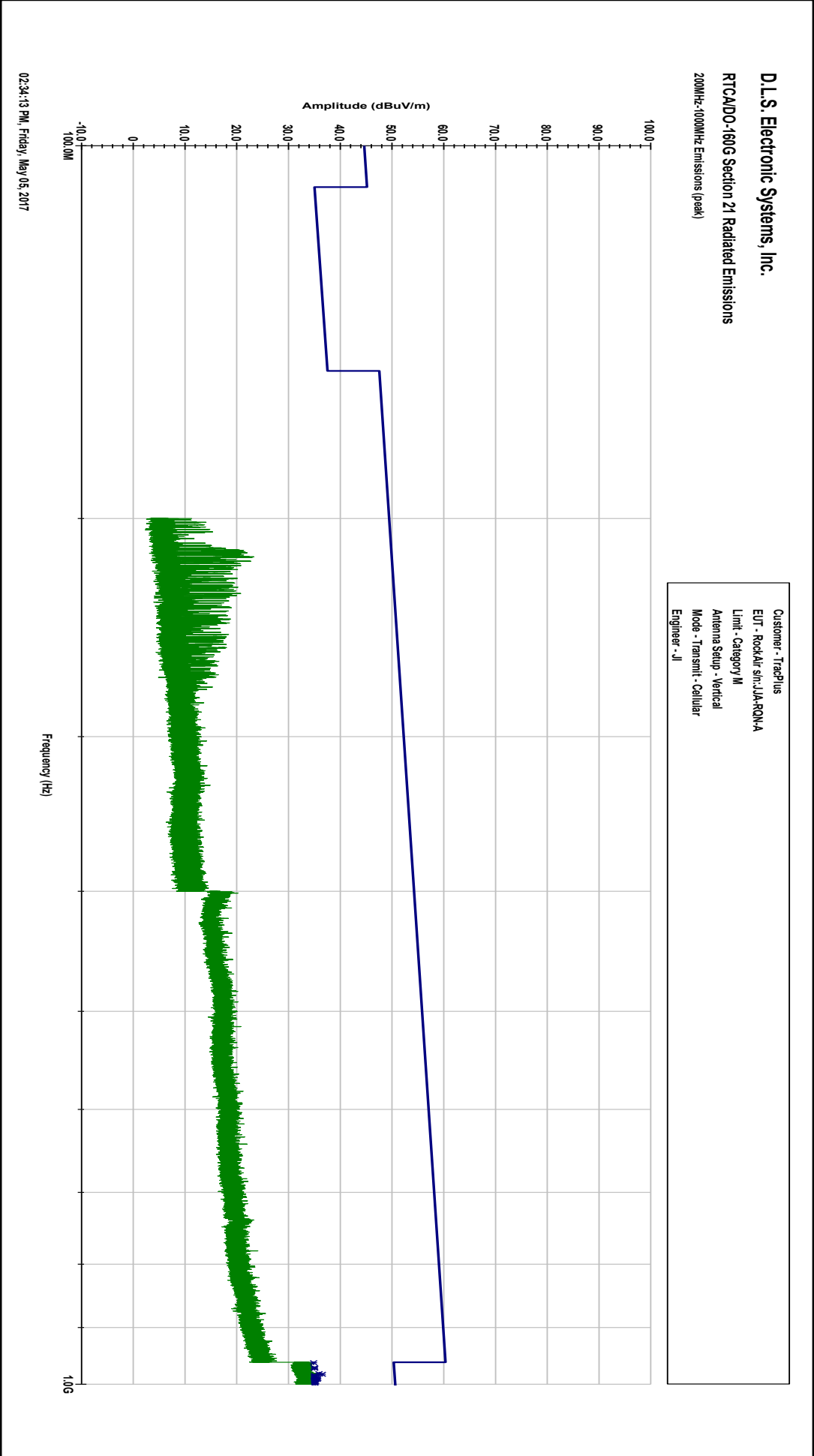
EUT - RockAir s/n: JA-RCA

Limit - Category M

Antenna Setup - Vertical

Mode - Transmit - Cellular

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

02:34:13 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (Amplitude in dBuV/m)
960.89 MHz	-15.497	0.000	34.810
969.65 MHz	-15.394	0.000	34.979
970.97 MHz	-15.363	0.000	35.019
980.44 MHz	-14.599	0.000	35.853
981.72 MHz	-13.954	0.000	36.507
983.25 MHz	-15.498	0.000	34.975
985.89 MHz	-15.552	0.000	34.940
986.63 MHz	-15.349	0.000	35.148
987.15 MHz	-15.509	0.000	34.992
987.93 MHz	-15.221	0.000	35.286
989.27 MHz	-14.888	0.000	35.629
990.73 MHz	-15.321	0.000	35.206
990.97 MHz	-15.000	0.000	35.529
991.16 MHz	-15.437	0.000	35.094
992.39 MHz	-15.524	0.000	35.015
992.94 MHz	-15.539	0.000	35.004
995.79 MHz	-15.347	0.000	35.217
995.89 MHz	-15.548	0.000	35.017
997.47 MHz	-15.511	0.000	35.065
999.0 MHz	-15.461	0.000	35.126



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

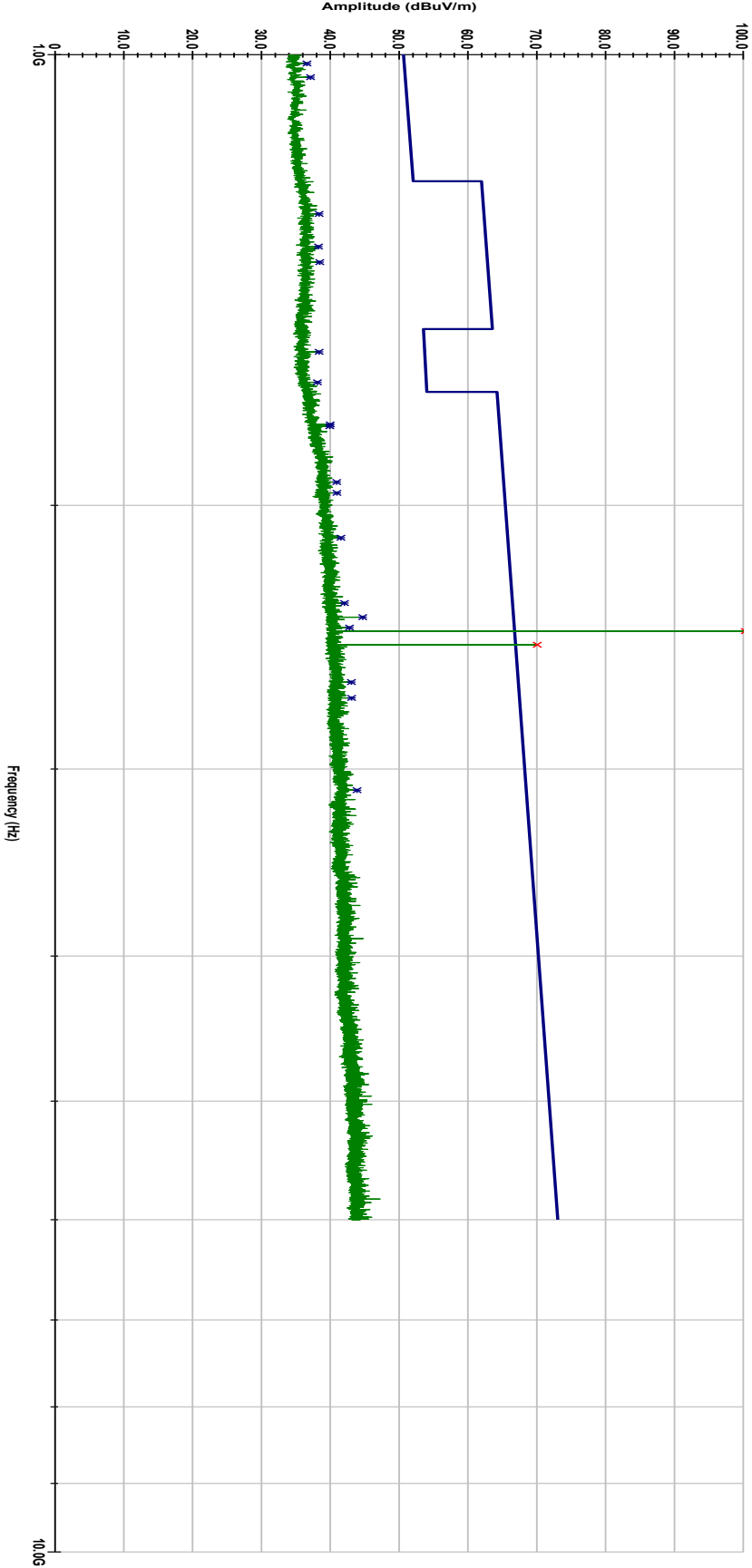
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

1GHz-6GHz Emissions (peak)



04:25:04 PM, Friday, May 05, 2017

Customer - TracPlus

EUT - RockAIR s/n: JJA-R0N-A

Limit - Category M

Antenna Setup - Horizontal

Power / Mode - Transmit - Cellular

Engineer - JJ



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

04:25:04 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
1.0137 GHz	-14.129	0.000	36.564
1.0353 GHz	-13.746	0.000	37.099
1.2775 GHz	-23.940	0.000	38.335
1.3434 GHz	-24.374	0.000	38.250
1.3759 GHz	-24.349	0.000	38.441
1.5794 GHz	-15.354	0.000	38.327
1.6553 GHz	-15.812	0.000	38.112
1.7659 GHz	-24.558	0.000	39.962
1.7709 GHz	-24.644	0.000	39.895
1.9297 GHz	-24.245	0.000	40.889
1.9622 GHz	-24.334	0.000	40.917
2.1022 GHz	-24.226	0.000	41.502
2.3241 GHz	-24.402	0.000	42.022
2.3753 GHz	-21.906	0.000	44.669
2.4137 GHz	-23.931	0.000	42.756
2.4269 GHz	0.000	33.527	100.251
2.4784 GHz	0.000	03.158	70.028
2.6247 GHz	-24.249	0.000	43.018
2.6894 GHz	-24.364	0.000	43.072
3.0991 GHz	-24.560	0.000	43.860



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

1GHz-6GHz Emissions (peak)

Customer - TracPlus

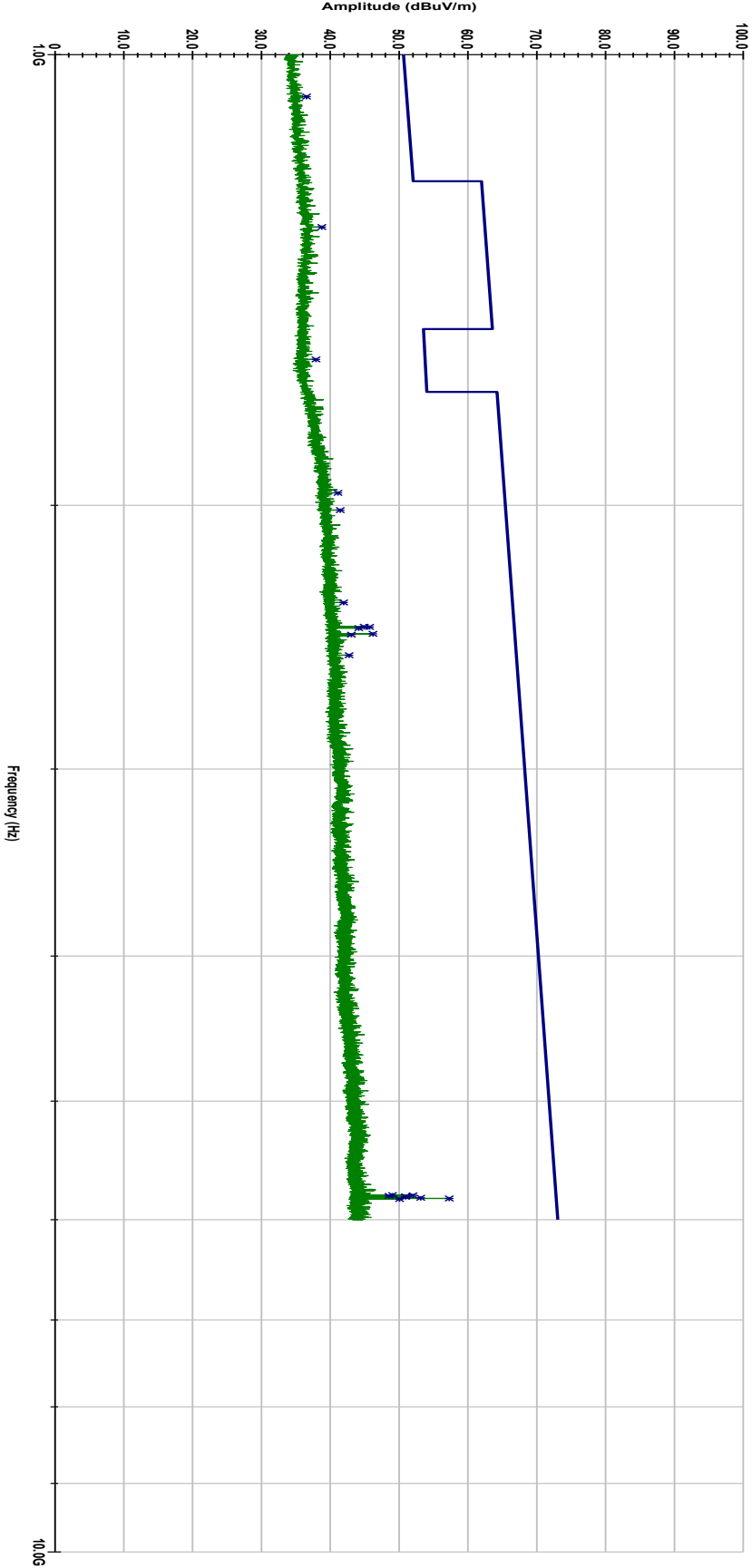
EUT - RockAIR s/n: JJA-R0N4

Limit - Category M

Antenna Setup - Vertical

Power / Mode - Transmit - Cellular

Engineer - JJ



04:09:44 PM, Friday, May 05, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

04:09:44 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
1.0666 GHz	-14.531	0.000	36.528
1.3038 GHz	-23.675	0.000	38.741
1.5981 GHz	-15.873	0.000	37.869
1.9619 GHz	-24.170	0.000	41.079
2.0147 GHz	-24.016	0.000	41.417
2.3225 GHz	-24.528	0.000	41.892
2.4106 GHz	-21.803	0.000	44.875
2.4112 GHz	-21.008	0.000	45.671
2.4156 GHz	-22.589	0.000	44.103
2.4369 GHz	-20.591	0.000	46.161
2.44 GHz	-23.726	0.000	43.035
2.5184 GHz	-24.287	0.000	42.694
5.7766 GHz	-23.749	0.000	48.988
5.7794 GHz	-20.761	0.000	51.979
5.7844 GHz	-24.281	0.000	48.465
5.7894 GHz	-21.891	0.000	50.861
5.79 GHz	-21.819	0.000	50.934
5.8012 GHz	-19.656	0.000	53.110
5.8063 GHz	-15.534	0.000	57.239
5.8116 GHz	-22.761	0.000	50.017



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

100-200MHz Emissions (peak)

Customer - TracPlus

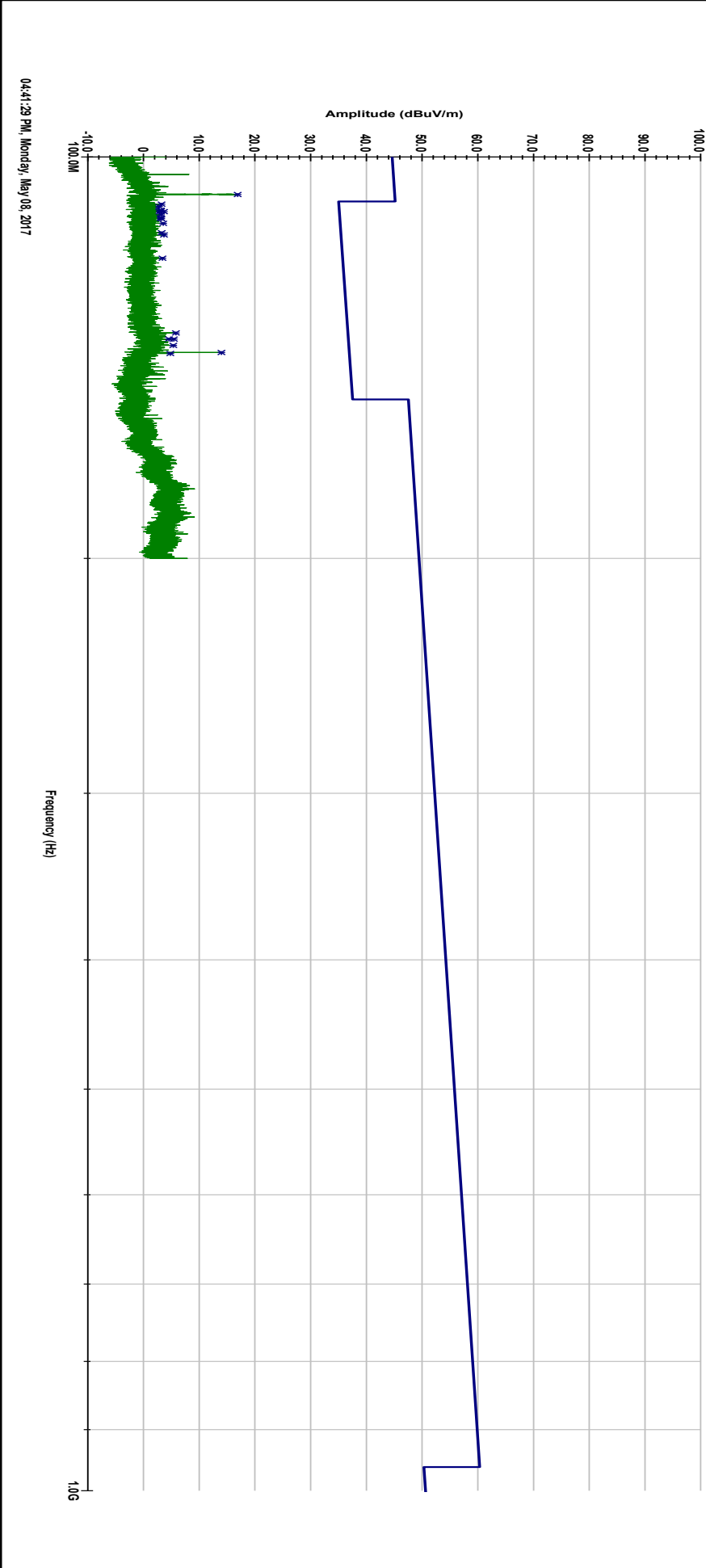
EUT - RockAIR s/n:JA-R0N-A

Limit - Category M

Antenna Setup - Horizontal

Mode - Transmit - Cellular/USB Power

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

04:41:29 PM Frequency	May 08, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
106.7 MHz	-28.187	0.000	16.873
108.5 MHz	-31.827	0.000	03.207
108.95 MHz	-32.276	0.000	02.789
109.63 MHz	-32.048	0.000	03.062
109.76 MHz	-32.003	0.000	03.116
109.91 MHz	-31.485	0.000	03.644
109.96 MHz	-32.276	0.000	02.855
110.54 MHz	-32.020	0.000	03.150
111.14 MHz	-32.160	0.000	03.050
111.26 MHz	-32.029	0.000	03.189
112.16 MHz	-31.769	0.000	03.507
114.0 MHz	-32.159	0.000	03.237
114.43 MHz	-31.768	0.000	03.655
119.13 MHz	-32.337	0.000	03.381
135.51 MHz	-30.859	0.000	05.801
136.93 MHz	-32.198	0.000	04.538
136.97 MHz	-31.330	0.000	05.408
138.45 MHz	-31.509	0.000	05.308
140.18 MHz	-22.936	0.000	13.972
140.4 MHz	-32.143	0.000	04.777



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

100-200MHz Emissions (peak)

Customer - TracPlus

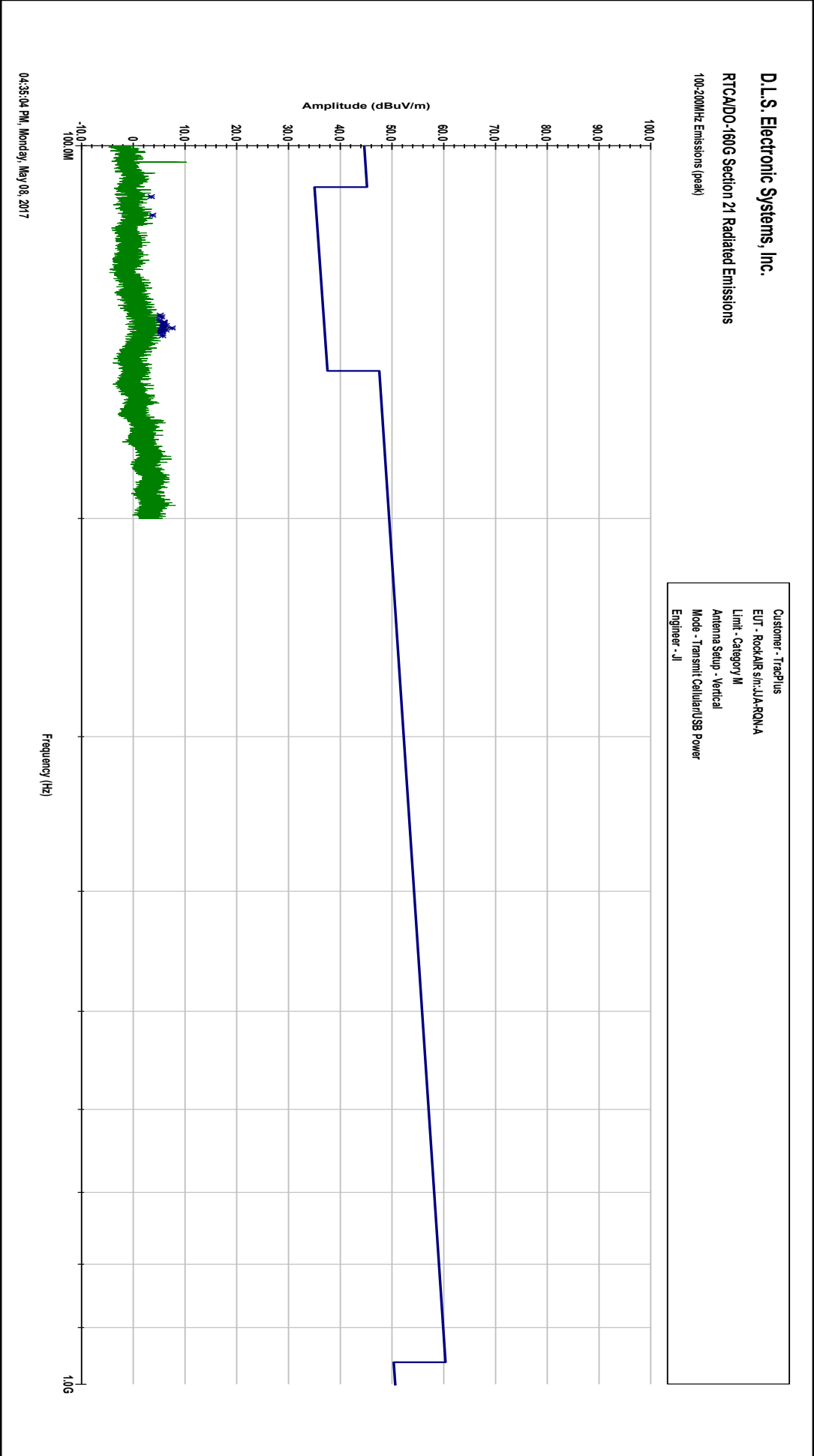
EUT - RockAIR sim:JA-RQNA

Limit - Category M

Antenna Setup - Vertical

Mode - Transmit Cellular/USB Power

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

04:35:04 PM Frequency	May 08, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
109.93 MHz	-31.699	0.000	03.431
113.78 MHz	-31.674	0.000	03.707
137.01 MHz	-31.561	0.000	05.179
137.48 MHz	-31.320	0.000	05.445
138.38 MHz	-31.682	0.000	05.132
138.8 MHz	-30.900	0.000	05.935
138.92 MHz	-31.029	0.000	05.813
138.98 MHz	-30.873	0.000	05.972
139.57 MHz	-31.091	0.000	05.785
139.75 MHz	-30.553	0.000	06.332
140.24 MHz	-31.164	0.000	05.747
140.28 MHz	-31.334	0.000	05.579
140.34 MHz	-29.436	0.000	07.480
140.87 MHz	-30.647	0.000	06.297
140.94 MHz	-31.634	0.000	05.313
141.01 MHz	-31.365	0.000	05.586
141.07 MHz	-31.505	0.000	05.449
141.35 MHz	-31.467	0.000	05.501
141.66 MHz	-31.657	0.000	05.328
142.36 MHz	-31.377	0.000	05.644



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

200MHz-1000MHz Emissions (peak)

Customer - TracPlus

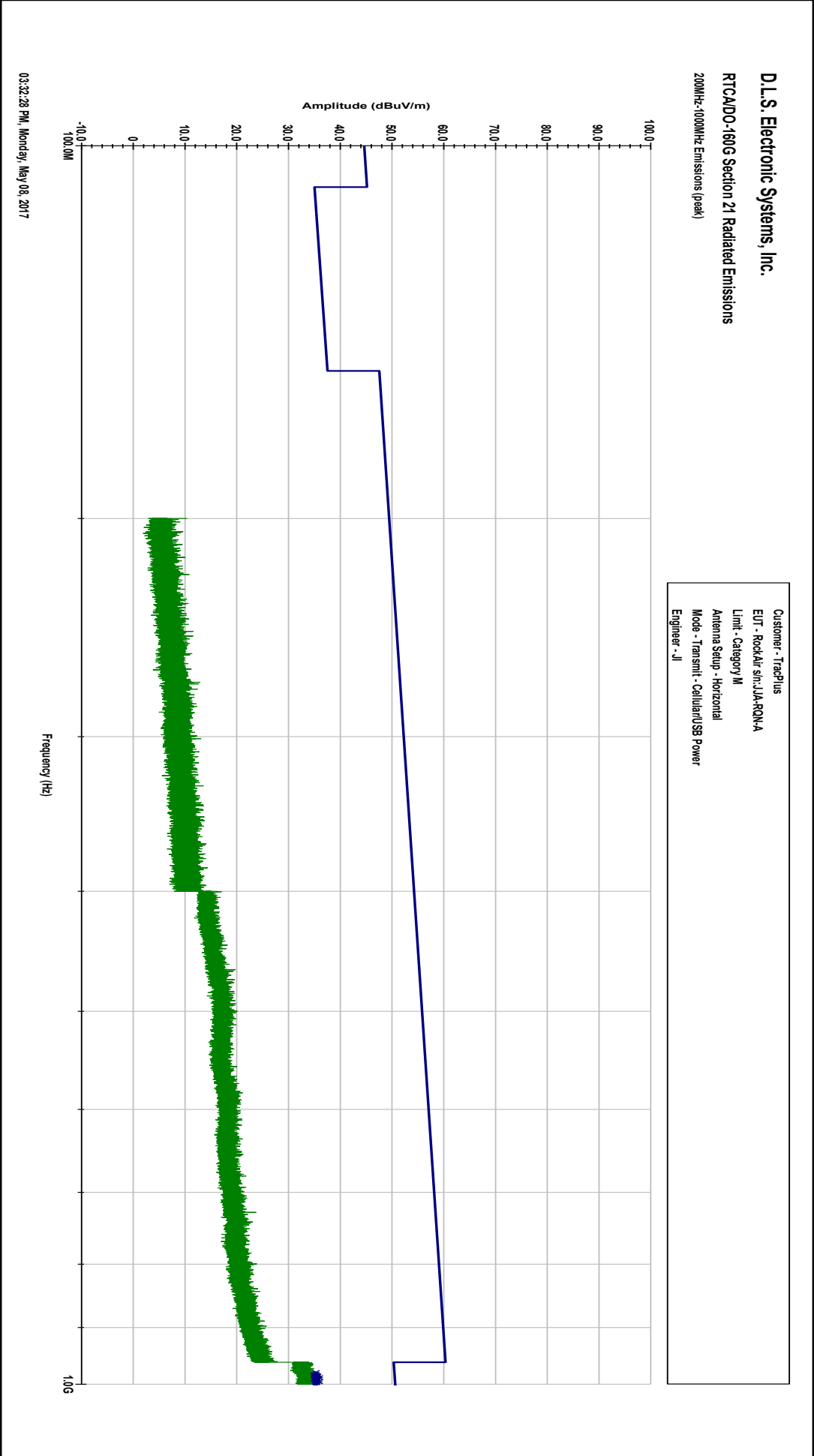
EUT - RockAir s/n:JA-RCA

Limit - Category M

Antenna Setup - Horizontal

Mode - Transmit - Cellular/USB Power

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

03:32:28 PM Frequency	May 08, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (Amplitude in dBuV/m)
978.76 MHz	-15.148	0.000	35.291
983.05 MHz	-15.520	0.000	34.952
983.65 MHz	-15.250	0.000	35.225
983.89 MHz	-15.482	0.000	34.995
984.12 MHz	-15.003	0.000	35.476
985.31 MHz	-14.876	0.000	35.612
986.25 MHz	-15.058	0.000	35.436
987.8 MHz	-15.293	0.000	35.213
988.13 MHz	-14.559	0.000	35.950
990.38 MHz	-15.457	0.000	35.068
990.84 MHz	-15.491	0.000	35.037
992.24 MHz	-15.160	0.000	35.378
993.14 MHz	-15.334	0.000	35.210
993.32 MHz	-15.253	0.000	35.293
994.47 MHz	-15.131	0.000	35.424
995.63 MHz	-14.660	0.000	35.902
996.25 MHz	-15.351	0.000	35.216
996.84 MHz	-15.188	0.000	35.384
997.17 MHz	-15.236	0.000	35.338
999.84 MHz	-15.411	0.000	35.183



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

200MHz-1000MHz Emissions (peak)

Customer - TracPlus

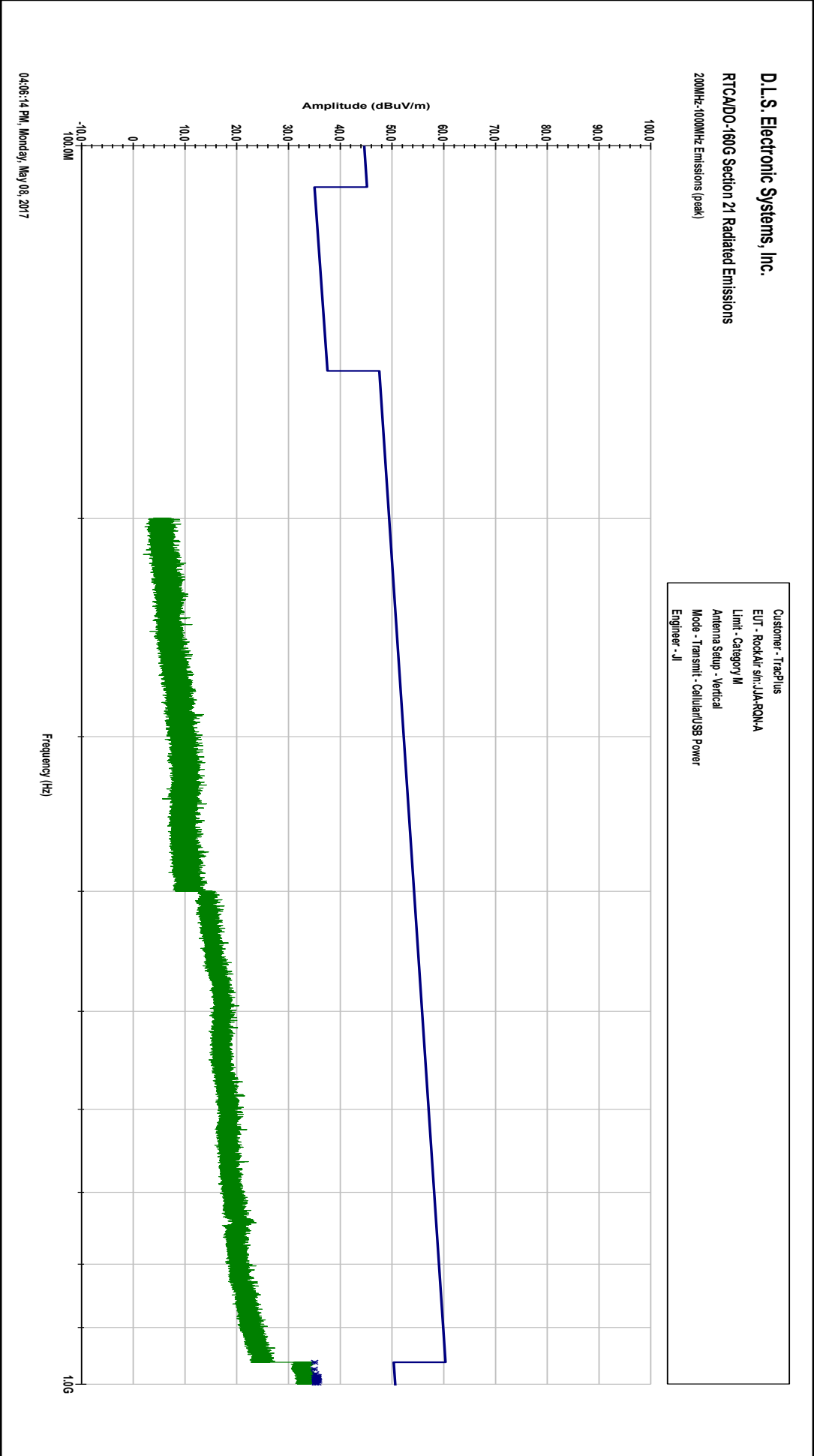
EUT - RockAir s/n:JA-RCA

Limit - Category M

Antenna Setup - Vertical

Mode - Transmit - Cellular/USB Power

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

04:06:14 PM Frequency	May 08, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (Amplitude in dBuV/m)
960.12 MHz	-15.269	0.000	35.032
972.29 MHz	-15.446	0.000	34.946
980.85 MHz	-15.278	0.000	35.177
985.44 MHz	-15.088	0.000	35.401
985.77 MHz	-14.822	0.000	35.669
987.72 MHz	-15.462	0.000	35.044
987.96 MHz	-14.877	0.000	35.630
988.15 MHz	-14.912	0.000	35.597
989.7 MHz	-14.900	0.000	35.620
990.53 MHz	-15.202	0.000	35.324
990.67 MHz	-15.096	0.000	35.431
991.44 MHz	-15.188	0.000	35.344
991.97 MHz	-15.358	0.000	35.179
992.54 MHz	-15.280	0.000	35.261
993.87 MHz	-14.971	0.000	35.579
994.04 MHz	-15.164	0.000	35.387
994.31 MHz	-14.767	0.000	35.787
996.52 MHz	-15.415	0.000	35.154
997.89 MHz	-14.939	0.000	35.641
998.41 MHz	-15.411	0.000	35.172



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

1GHz-6GHz Emissions (peak)

Customer - TracPlus

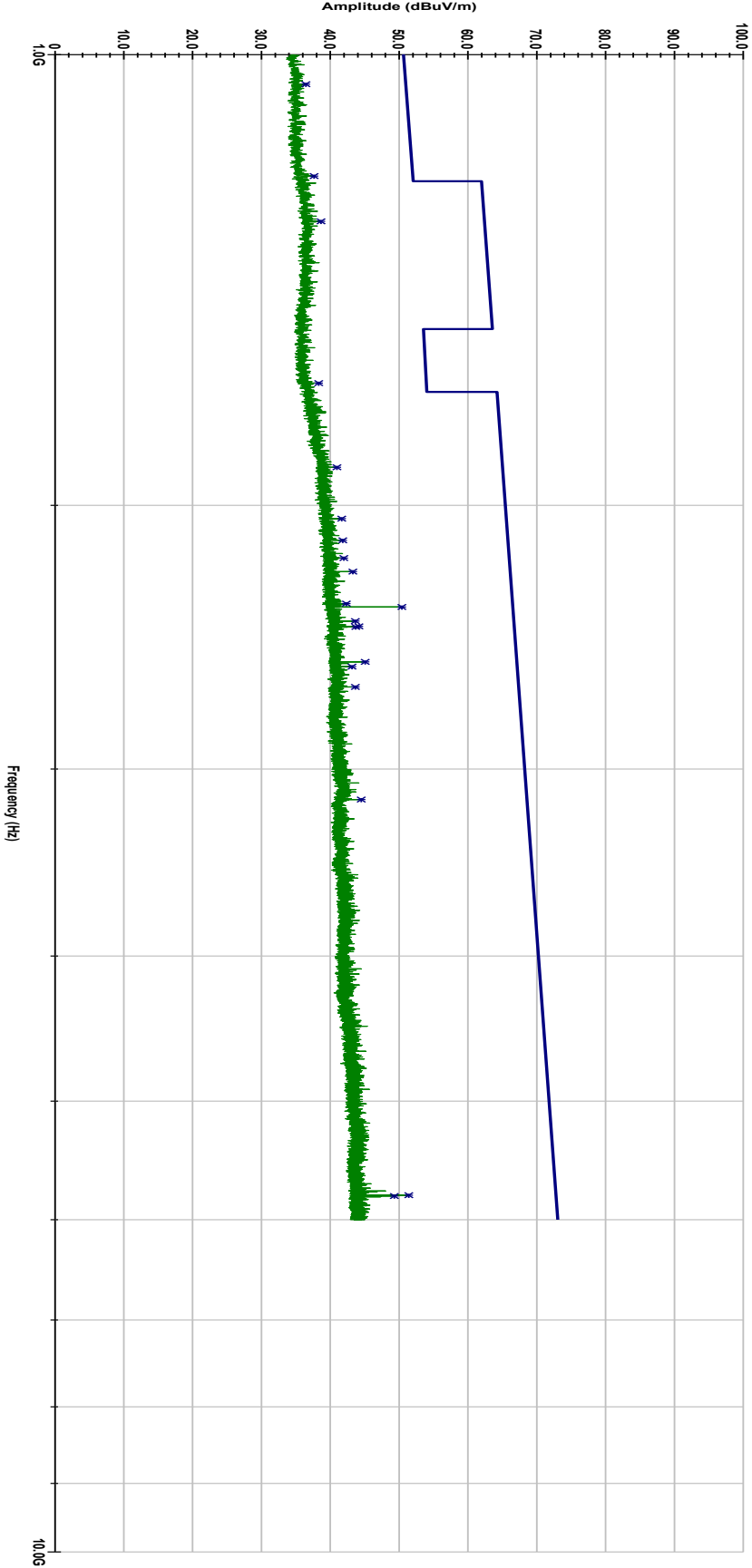
EUT - RockAIR s/n: JJA-R0N4

Limit - Category M

Antenna Setup - Horizontal

Power / Mode - Transmit - Cellular/USB Power

Engineer - JJ



02:55:21 PM, Monday, May 08, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

02:55:21 PM Frequency	May 08, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
1.0466 GHz	-14.491	0.000	36.432
1.2053 GHz	-14.327	0.000	37.615
1.2922 GHz	-23.725	0.000	38.629
1.6572 GHz	-15.649	0.000	38.280
1.8863 GHz	-24.042	0.000	40.935
2.0412 GHz	-23.894	0.000	41.631
2.1103 GHz	-23.969	0.000	41.786
2.1691 GHz	-24.023	0.000	41.922
2.2147 GHz	-22.854	0.000	43.236
2.3263 GHz	-24.137	0.000	42.293
2.3384 GHz	-16.099	0.000	50.368
2.3897 GHz	-23.022	0.000	43.595
2.4091 GHz	-22.560	0.000	44.113
2.4112 GHz	-23.010	0.000	43.669
2.5444 GHz	-22.001	0.000	45.051
2.5628 GHz	-23.970	0.000	43.132
2.6444 GHz	-23.706	0.000	43.614
3.1444 GHz	-24.047	0.000	44.473
5.7781 GHz	-21.360	0.000	51.379
5.7853 GHz	-23.488	0.000	49.260



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

1GHz-6GHz Emissions (peak)

Customer - TracPlus

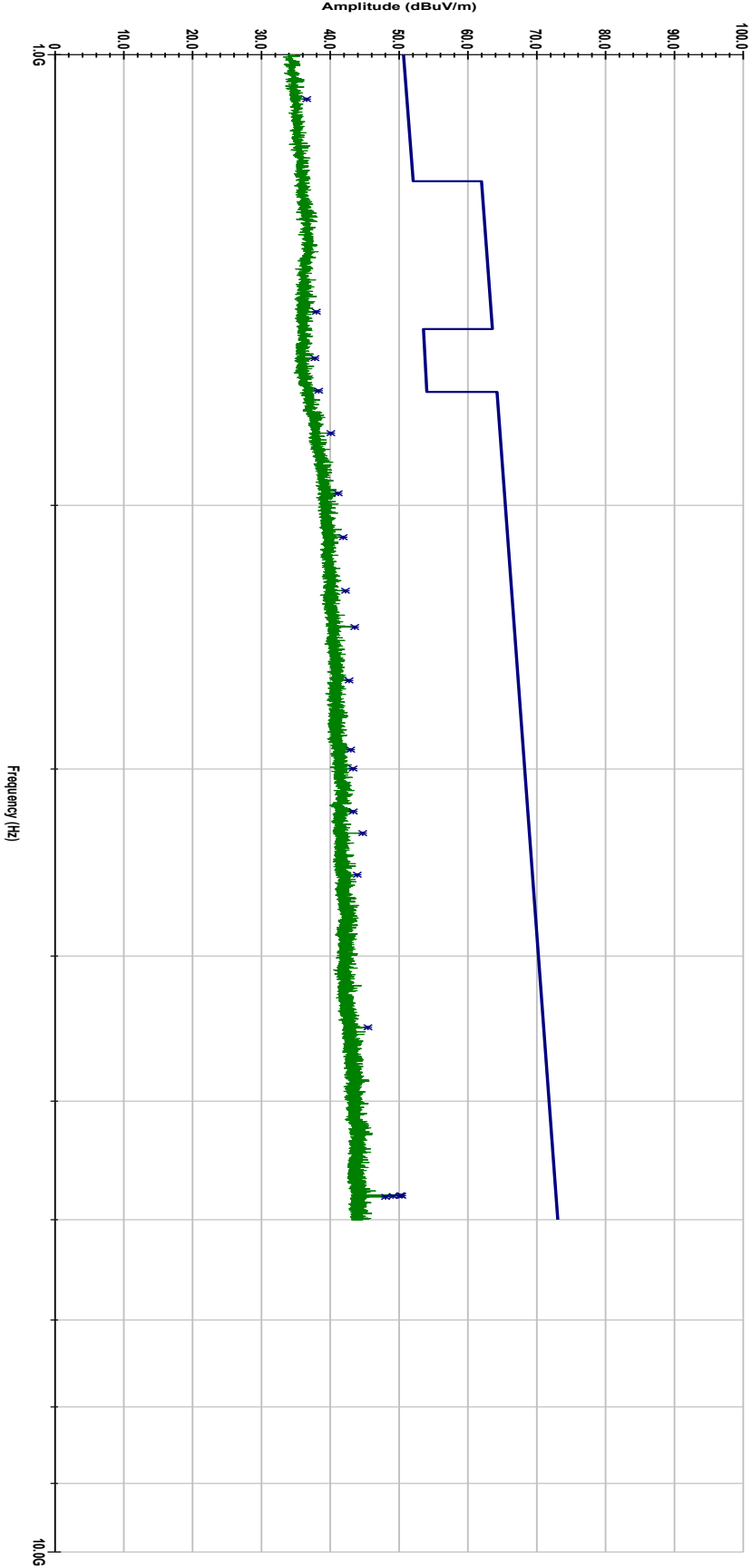
EUT - RockAIR s/n: JJA-R0N-A

Limit - Category M

Antenna Setup - Vertical

Power / Mode - Transmit - Cellular / USB Power

Engineer - JJ



02:43:37 PM, Monday, May 08, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

02:43:37 PM Frequency	May 08, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
1.0709 GHz	-14.537	0.000	36.552
1.485 GHz	-25.362	0.000	37.957
1.595 GHz	-15.988	0.000	37.744
1.6769 GHz	-15.706	0.000	38.284
1.7897 GHz	-24.582	0.000	40.031
1.9634 GHz	-24.149	0.000	41.106
2.1003 GHz	-23.886	0.000	41.836
2.2806 GHz	-24.127	0.000	42.166
2.4116 GHz	-23.175	0.000	43.505
2.6181 GHz	-24.567	0.000	42.684
2.9122 GHz	-25.042	0.000	42.946
2.9975 GHz	-24.922	0.000	43.267
3.2022 GHz	-25.334	0.000	43.313
3.3106 GHz	-24.198	0.000	44.679
3.53 GHz	-25.451	0.000	43.871
4.4634 GHz	-25.513	0.000	45.436
5.7778 GHz	-22.554	0.000	50.184
5.7828 GHz	-22.387	0.000	50.358
5.7856 GHz	-23.649	0.000	49.098
5.7922 GHz	-24.761	0.000	47.995



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

100-200MHz Emissions (peak)

Customer - TracPlus

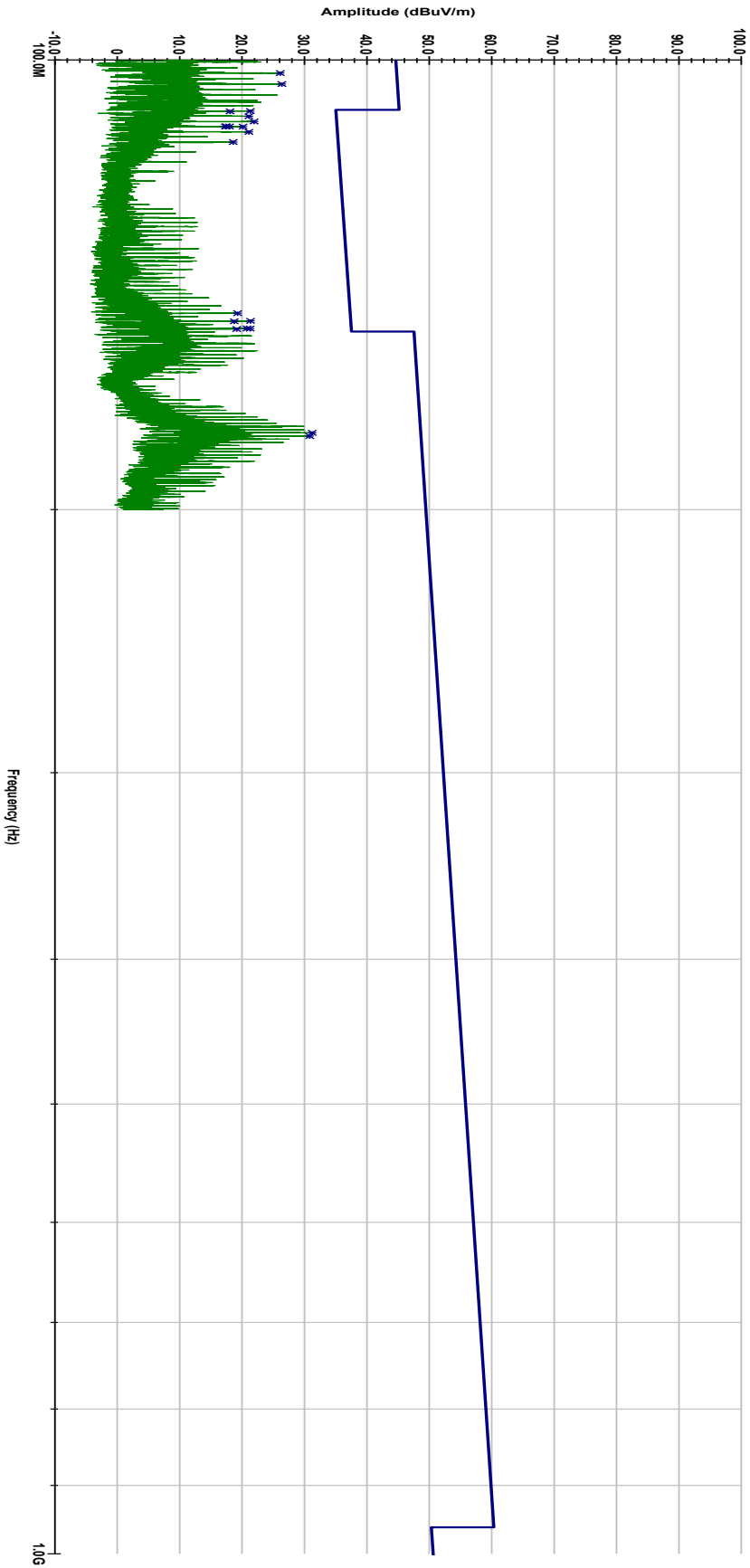
EUT - RockAIR s/n:JA-R0N-A

Limit - Category M

Antenna Setup - Horizontal

Mode - Transmit - Satellite

Engineer - JJ



01:20:13 PM, Friday, May 05, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

01:20:13 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
102.06 MHz	-18.666	0.000	26.079
103.8 MHz	-18.517	0.000	26.347
108.2 MHz	-13.722	0.000	21.292
108.25 MHz	-16.983	0.000	18.035
109.07 MHz	-14.023	0.000	21.049
109.96 MHz	-13.226	0.000	21.905
110.79 MHz	-17.755	0.000	17.432
110.8 MHz	-17.248	0.000	17.939
110.81 MHz	-17.866	0.000	17.322
110.83 MHz	-15.079	0.000	20.110
111.73 MHz	-14.193	0.000	21.055
113.49 MHz	-16.801	0.000	18.562
147.77 MHz	-18.052	0.000	19.242
149.53 MHz	-16.044	0.000	21.336
149.62 MHz	-18.687	0.000	18.697
151.28 MHz	-16.696	0.000	20.770
151.3 MHz	-16.194	0.000	21.272
151.41 MHz	-18.366	0.000	19.106
177.68 MHz	-17.389	0.000	31.208
178.59 MHz	-17.814	0.000	30.819



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

100-200MHz Emissions (peak)

Customer - TracPlus

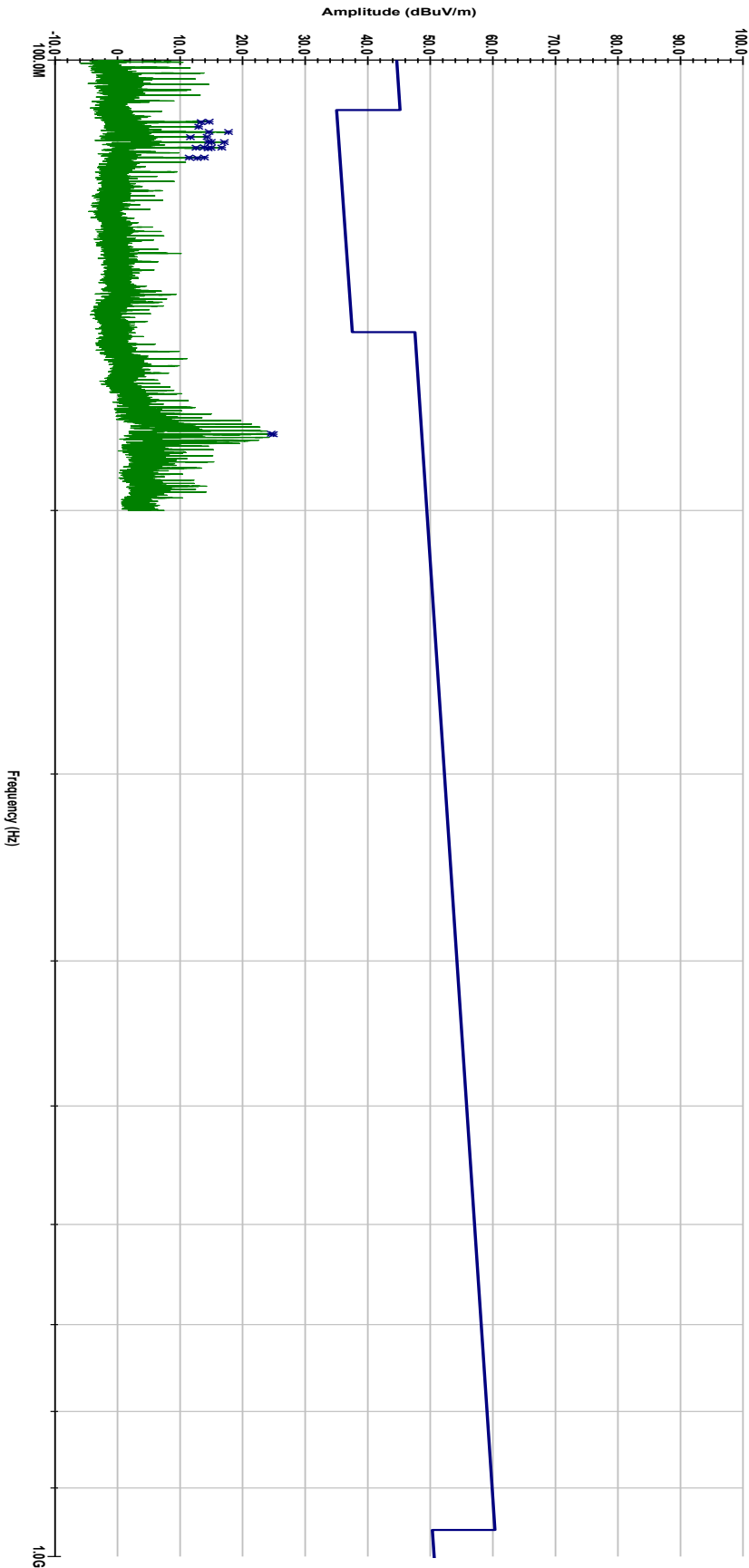
EUT - RockAIR s/n:JA-R0N-A

Limit - Category M

Antenna Setup - Vertical

Mode - Transmit Satellite

Engineer - JJ



01:15:39 PM, Friday, May 05, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

01:15:39 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
109.97 MHz	-20.501	0.000	14.631
110.03 MHz	-21.828	0.000	13.308
110.82 MHz	-22.223	0.000	12.965
111.68 MHz	-20.659	0.000	14.586
111.71 MHz	-17.548	0.000	17.699
112.56 MHz	-20.999	0.000	14.304
112.61 MHz	-23.688	0.000	11.618
113.43 MHz	-20.865	0.000	14.494
113.46 MHz	-20.404	0.000	14.956
113.48 MHz	-18.309	0.000	17.053
114.37 MHz	-21.585	0.000	13.834
114.42 MHz	-18.779	0.000	16.643
114.44 MHz	-22.917	0.000	12.507
114.47 MHz	-20.490	0.000	14.936
114.54 MHz	-20.959	0.000	14.471
116.17 MHz	-21.678	0.000	13.856
116.21 MHz	-24.122	0.000	11.414
116.27 MHz	-22.836	0.000	12.703
177.73 MHz	-24.065	0.000	24.534
177.88 MHz	-23.720	0.000	24.885



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

200MHz-1000MHz Emissions (peak)

Customer - TracPlus

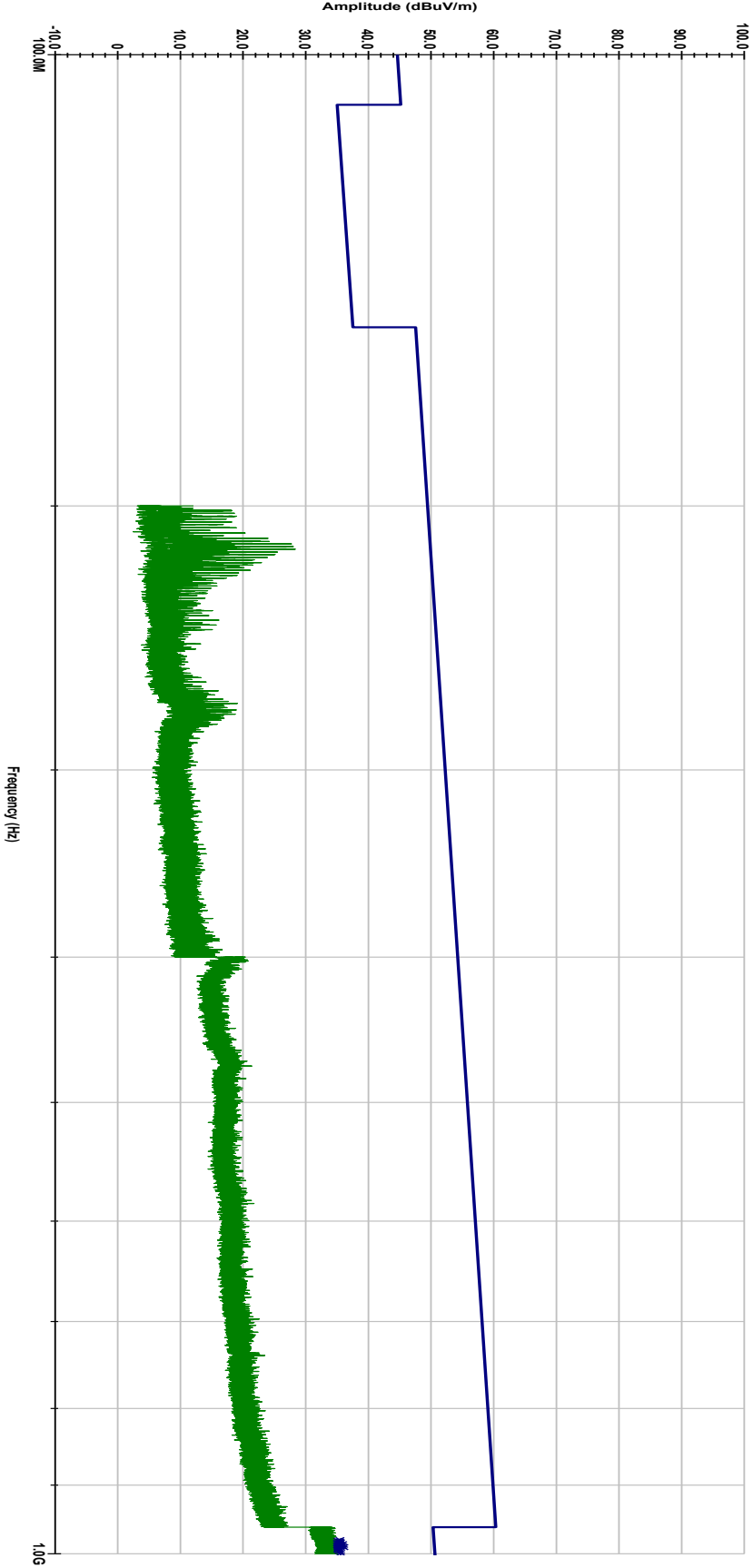
EUT - RockAir s/n: JA-RCA

Limit - Category M

Antenna Setup - Horizontal

Mode - Transmit - Satellite

Engineer - JJ



03:26:58 PM, Friday, May 05, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

03:26:58 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (Amplitude in dBuV/m)
979.37 MHz	-15.012	0.000	35.432
980.45 MHz	-15.355	0.000	35.097
981.36 MHz	-15.066	0.000	35.393
982.84 MHz	-14.935	0.000	35.534
983.92 MHz	-15.446	0.000	35.031
984.93 MHz	-15.092	0.000	35.393
985.44 MHz	-14.617	0.000	35.872
987.24 MHz	-15.440	0.000	35.062
987.54 MHz	-15.076	0.000	35.428
987.98 MHz	-14.892	0.000	35.616
988.33 MHz	-15.348	0.000	35.162
988.4 MHz	-14.671	0.000	35.839
989.94 MHz	-14.462	0.000	36.060
990.85 MHz	-15.291	0.000	35.237
991.55 MHz	-15.299	0.000	35.235
992.97 MHz	-15.386	0.000	35.157
993.83 MHz	-15.389	0.000	35.161
993.91 MHz	-15.428	0.000	35.123
996.1 MHz	-15.229	0.000	35.337
998.77 MHz	-15.016	0.000	35.570



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

200MHz-1000MHz Emissions (peak)

Customer - TracPlus

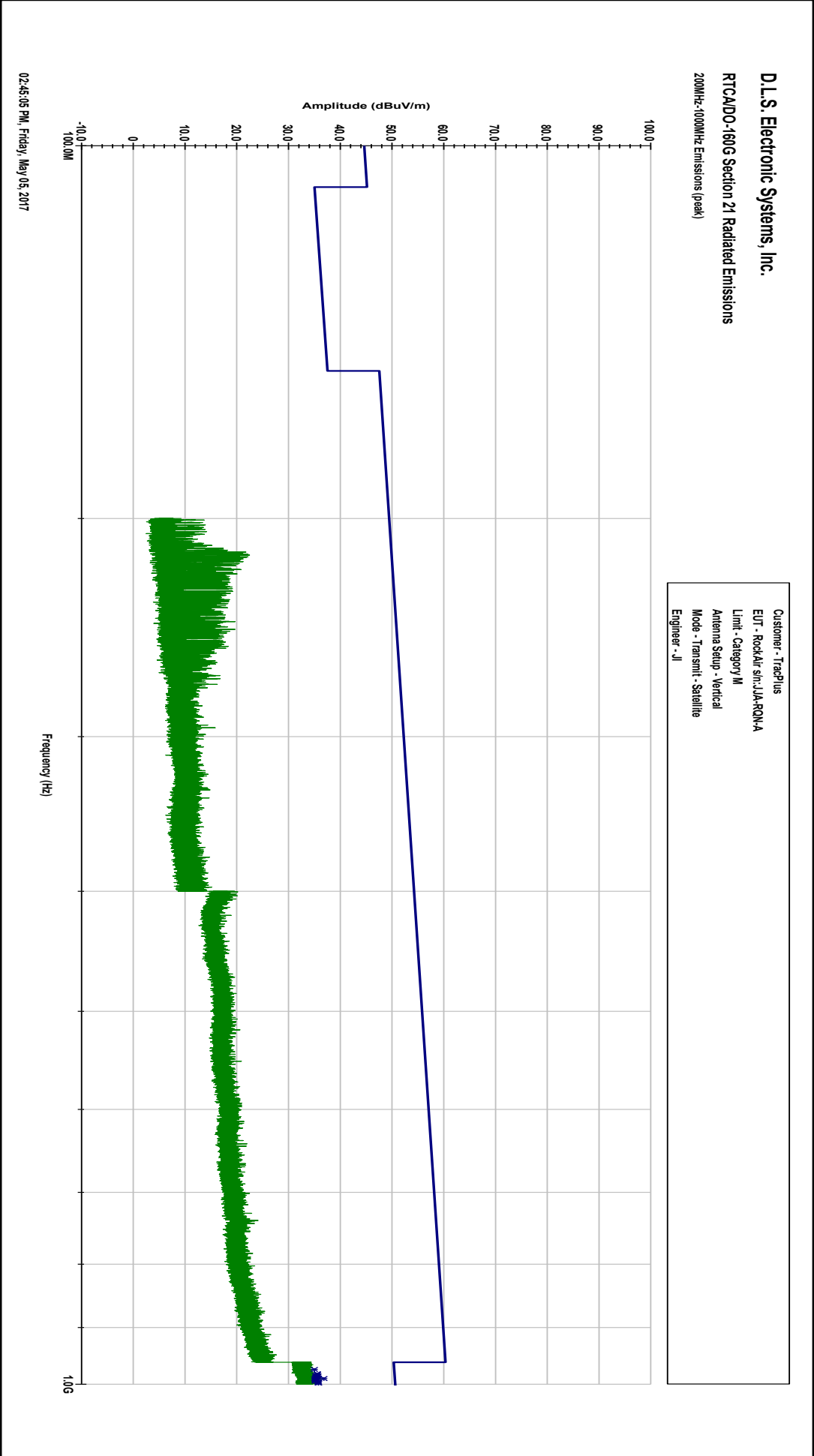
EUT - RockAir s/n: JA-RCA

Limit - Category M

Antenna Setup - Vertical

Mode - Transmit - Satellite

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

02:45:05 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (Amplitude in dBuV/m)
973.07 MHz	-15.445	0.000	34.952
980.98 MHz	-14.939	0.000	35.517
981.18 MHz	-14.980	0.000	35.478
981.97 MHz	-14.912	0.000	35.552
983.52 MHz	-15.274	0.000	35.201
985.04 MHz	-14.833	0.000	35.652
986.59 MHz	-15.134	0.000	35.363
987.22 MHz	-15.240	0.000	35.262
988.79 MHz	-14.813	0.000	35.700
989.26 MHz	-15.300	0.000	35.216
989.49 MHz	-13.730	0.000	36.789
990.2 MHz	-15.482	0.000	35.041
991.68 MHz	-15.133	0.000	35.402
992.4 MHz	-15.393	0.000	35.147
992.55 MHz	-15.361	0.000	35.180
992.77 MHz	-15.332	0.000	35.211
994.71 MHz	-15.393	0.000	35.163
995.76 MHz	-14.948	0.000	35.616
997.44 MHz	-14.853	0.000	35.723
998.18 MHz	-14.811	0.000	35.770



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

1GHz-6GHz Emissions (peak)

Customer - TracPlus

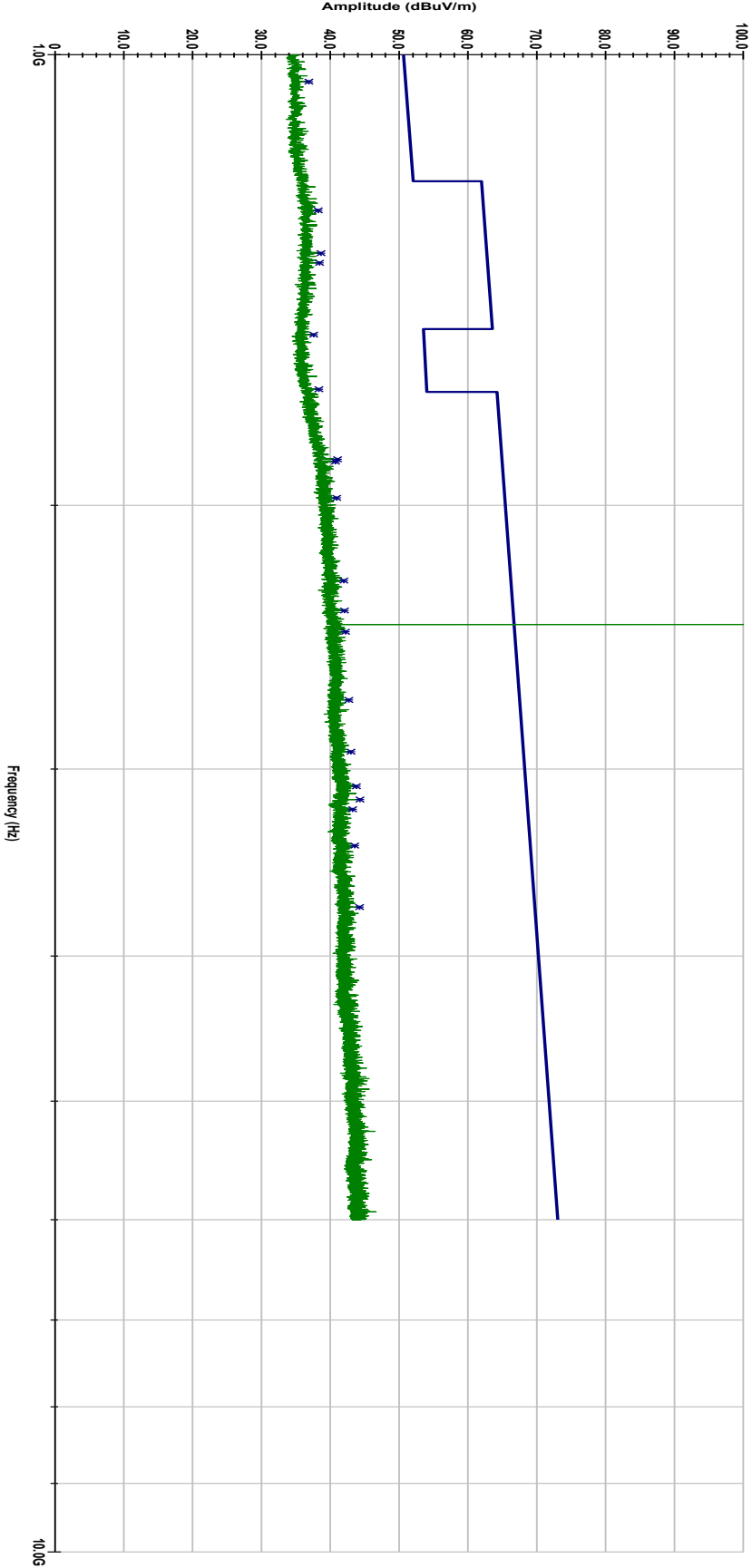
EUT - RockAIR s/n: JJA-RONA

Limit - Category M

Antenna Setup - Horizontal

Power / Mode - Transmit - Satellite

Engineer - JJ



04:19:22 PM, Friday, May 05, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

04:19:22 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
1.0425 GHz	-14.048	0.000	36.847
1.2706 GHz	-24.025	0.000	38.213
1.3572 GHz	-24.084	0.000	38.610
1.3775 GHz	-24.381	0.000	38.416
1.5381 GHz	-15.982	0.000	37.563
1.6731 GHz	-15.680	0.000	38.298
1.8631 GHz	-23.878	0.000	41.013
1.8697 GHz	-24.212	0.000	40.704
1.9772 GHz	-24.402	0.000	40.901
2.2453 GHz	-24.241	0.000	41.944
2.3509 GHz	-24.476	0.000	42.028
2.4022 GHz	0.000	37.485	104.139
2.4294 GHz	-24.542	0.000	42.189
2.6975 GHz	-24.788	0.000	42.669
2.9213 GHz	-25.033	0.000	42.977
3.0809 GHz	-24.615	0.000	43.764
3.1444 GHz	-24.245	0.000	44.275
3.1919 GHz	-25.425	0.000	43.199
3.375 GHz	-25.493	0.000	43.518
3.71 GHz	-25.442	0.000	44.225



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

1GHz-6GHz Emissions (peak)

Customer - TracPlus

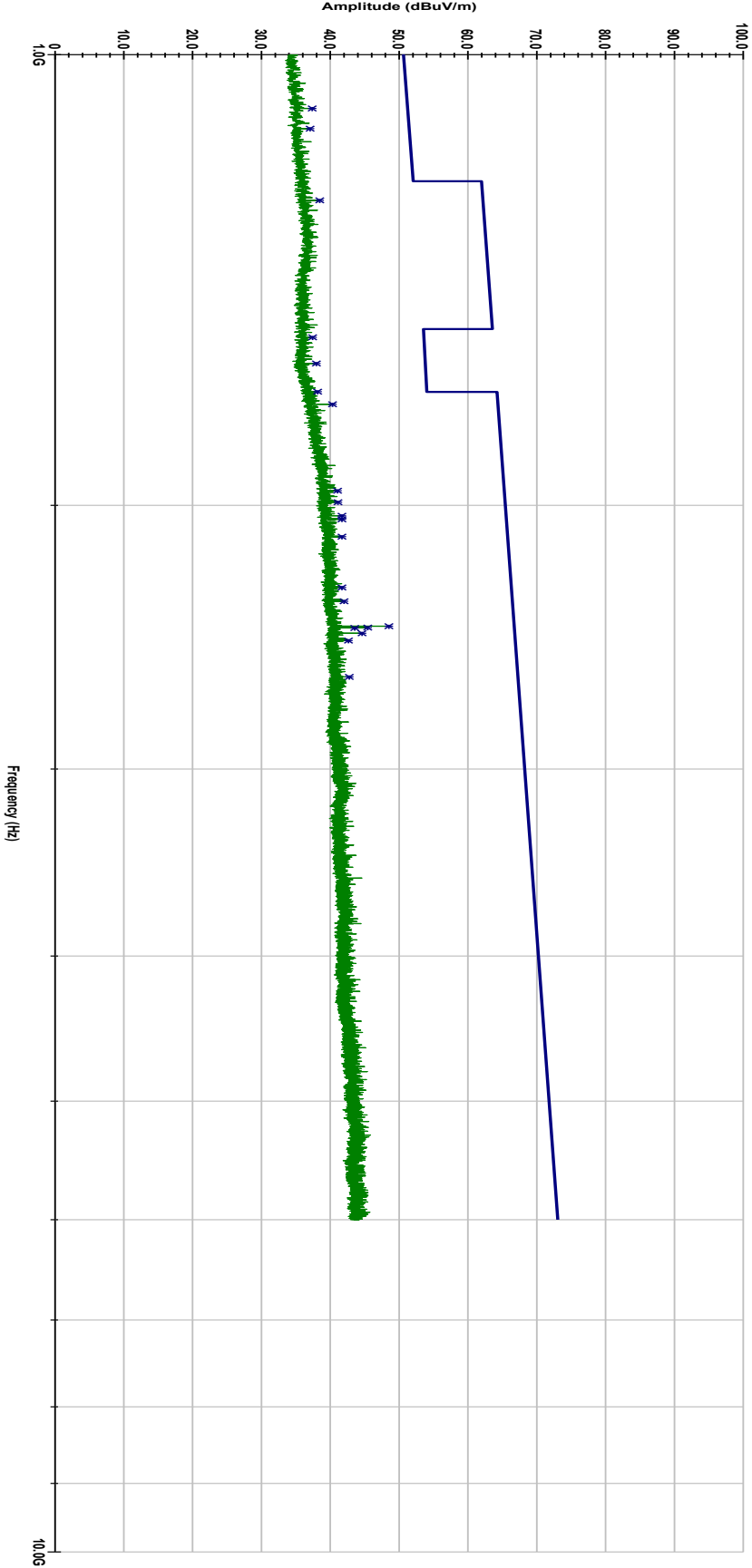
EUT - RockAIR s/n: JJA-R0N4

Limit - Category M

Antenna Setup - Vertical

Power / Mode - Transmit - Satellite

Engineer - JJ



04:14:14 PM, Friday, May 05, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

04:14:14 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
1.0862 GHz	-13.840	0.000	37.352
1.1206 GHz	-14.386	0.000	37.030
1.2513 GHz	-23.699	0.000	38.432
1.5447 GHz	-16.158	0.000	37.408
1.6081 GHz	-15.835	0.000	37.939
1.6794 GHz	-15.863	0.000	38.135
1.7122 GHz	-24.026	0.000	40.280
1.9556 GHz	-24.221	0.000	41.006
1.9906 GHz	-24.284	0.000	41.067
2.0322 GHz	-23.833	0.000	41.661
2.0434 GHz	-23.872	0.000	41.660
2.0987 GHz	-24.053	0.000	41.664
2.2691 GHz	-24.584	0.000	41.674
2.3178 GHz	-24.449	0.000	41.957
2.4084 GHz	-18.183	0.000	48.488
2.4134 GHz	-21.282	0.000	45.404
2.415 GHz	-23.169	0.000	43.521
2.4347 GHz	-22.155	0.000	44.591
2.4625 GHz	-24.207	0.000	42.618
2.6041 GHz	-24.477	0.000	42.736



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

100-200MHz Emissions (peak)

Customer - TracPlus

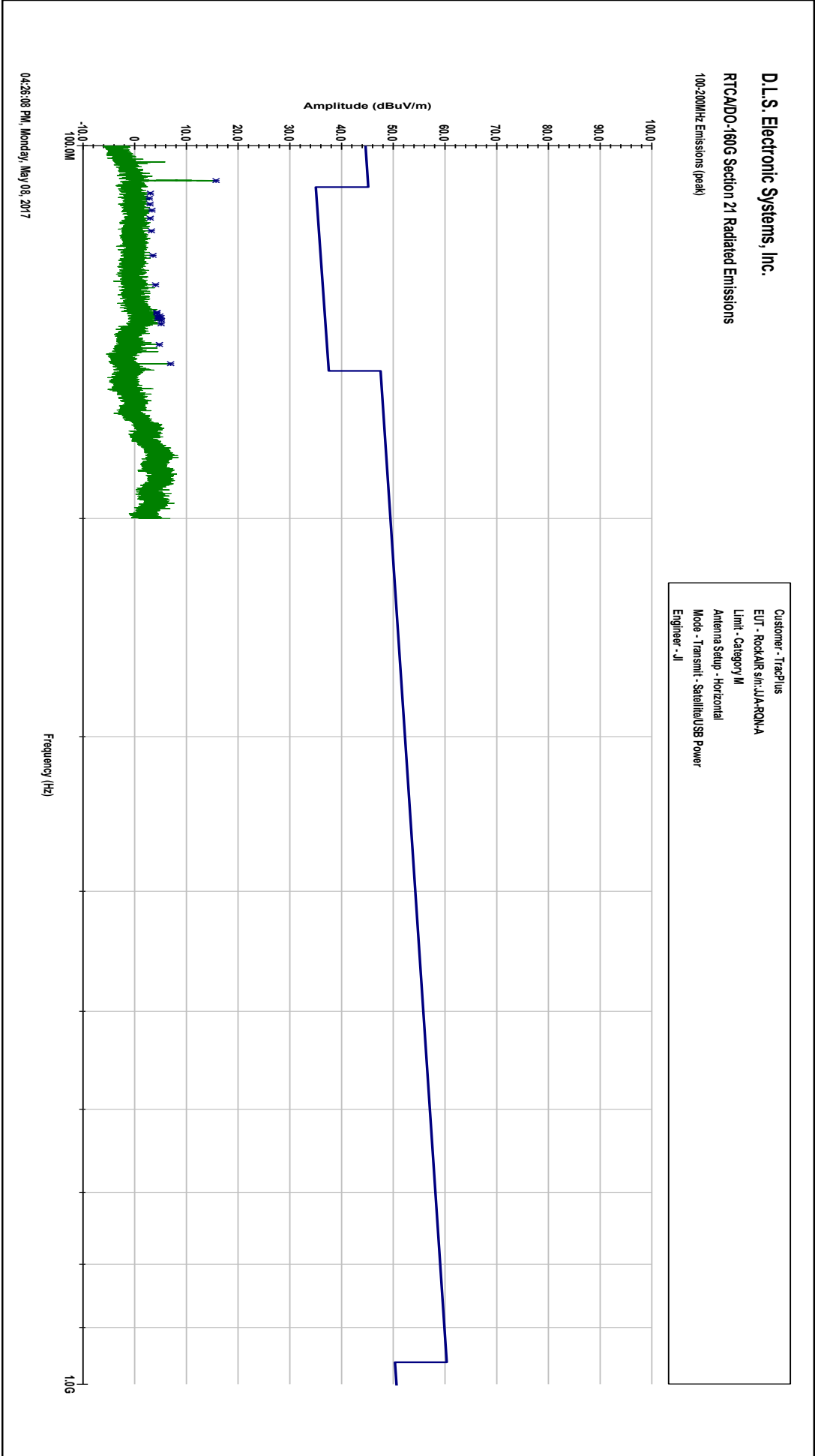
EUT - RockAIR sim:JA-RQNA

Limit - Category M

Antenna Setup - Horizontal

Mode - Transmit - Satellite/USB Power

Engineer - JJ



04:26:08 PM, Monday, May 08, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

04:26:08 PM Frequency	May 08, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
106.7 MHz	-29.368	0.000	15.691
109.22 MHz	-32.071	0.000	03.012
110.25 MHz	-32.353	0.000	02.798
111.46 MHz	-32.276	0.000	02.955
112.74 MHz	-31.994	0.000	03.320
114.41 MHz	-32.450	0.000	02.972
117.14 MHz	-32.392	0.000	03.203
122.62 MHz	-32.419	0.000	03.510
129.51 MHz	-32.323	0.000	04.005
136.31 MHz	-32.409	0.000	04.294
136.47 MHz	-32.448	0.000	04.264
137.22 MHz	-31.935	0.000	04.817
137.48 MHz	-32.312	0.000	04.454
137.63 MHz	-31.723	0.000	05.051
137.68 MHz	-32.082	0.000	04.693
137.92 MHz	-32.320	0.000	04.469
138.35 MHz	-31.651	0.000	05.161
139.28 MHz	-31.766	0.000	05.094
144.72 MHz	-32.381	0.000	04.760
150.0 MHz	-30.475	0.000	06.928



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

100-200MHz Emissions (peak)

Customer - TracPlus

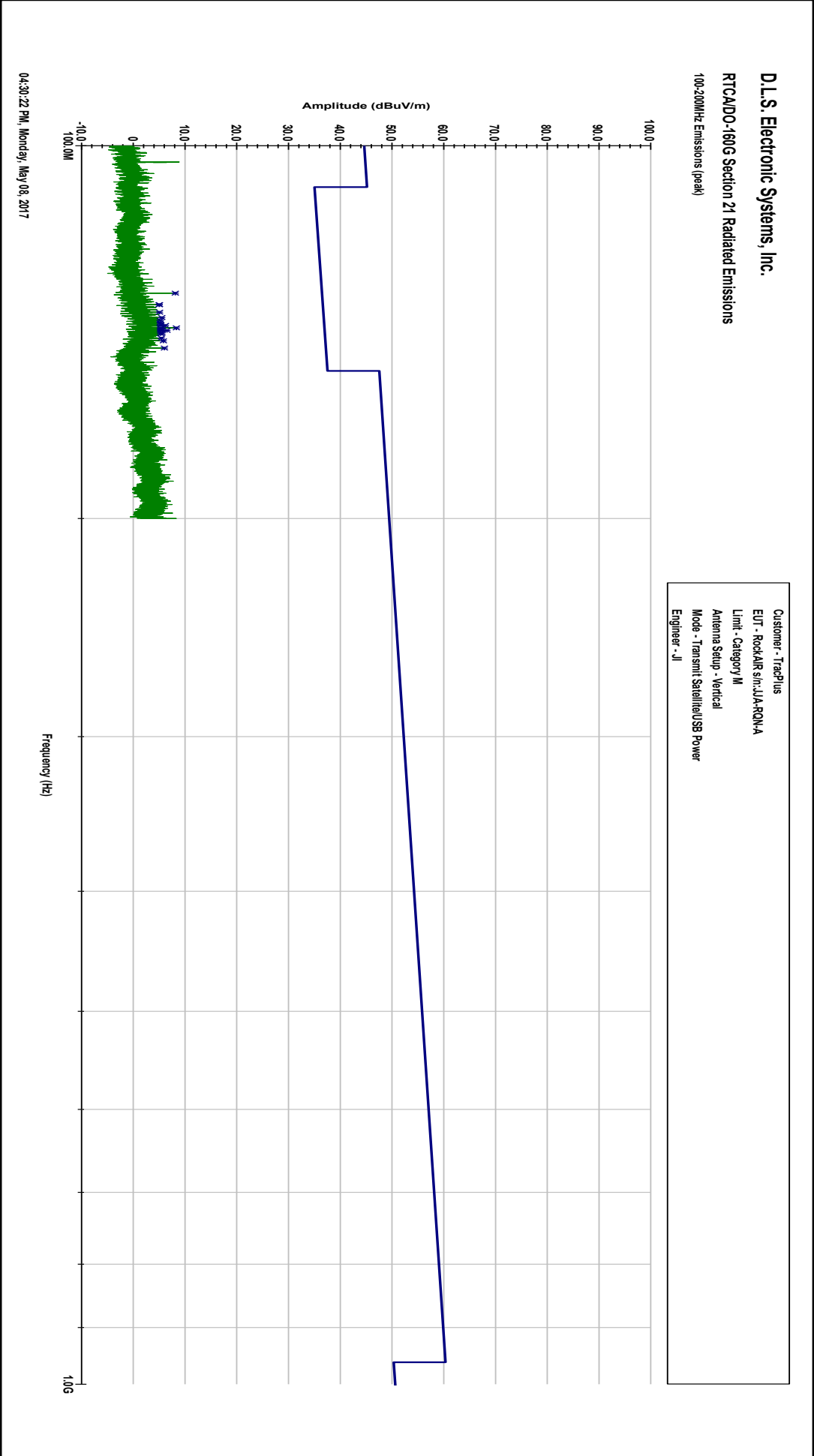
EUT - RockAIR sim:JA-RQNA

Limit - Category M

Antenna Setup - Vertical

Mode - Transmit Satellite/USB Power

Engineer - JJ



04:30:22 PM, Monday, May 08, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

04:30:22 PM Frequency	May 08, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
131.55 MHz	-28.353	0.000	08.090
134.39 MHz	-31.626	0.000	04.973
134.4 MHz	-31.572	0.000	05.028
136.29 MHz	-31.649	0.000	05.053
137.65 MHz	-31.295	0.000	05.479
138.37 MHz	-31.591	0.000	05.221
139.03 MHz	-31.701	0.000	05.147
139.58 MHz	-31.570	0.000	05.306
139.67 MHz	-30.697	0.000	06.184
140.33 MHz	-28.613	0.000	08.303
140.35 MHz	-31.678	0.000	05.239
140.45 MHz	-31.543	0.000	05.379
140.93 MHz	-31.742	0.000	05.204
140.95 MHz	-31.370	0.000	05.578
140.97 MHz	-30.442	0.000	06.507
141.66 MHz	-31.462	0.000	05.522
141.81 MHz	-31.756	0.000	05.237
142.99 MHz	-31.647	0.000	05.406
143.75 MHz	-31.309	0.000	05.783
145.69 MHz	-31.195	0.000	05.995



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

200MHz-1000MHz Emissions (peak)

Customer - TracPlus

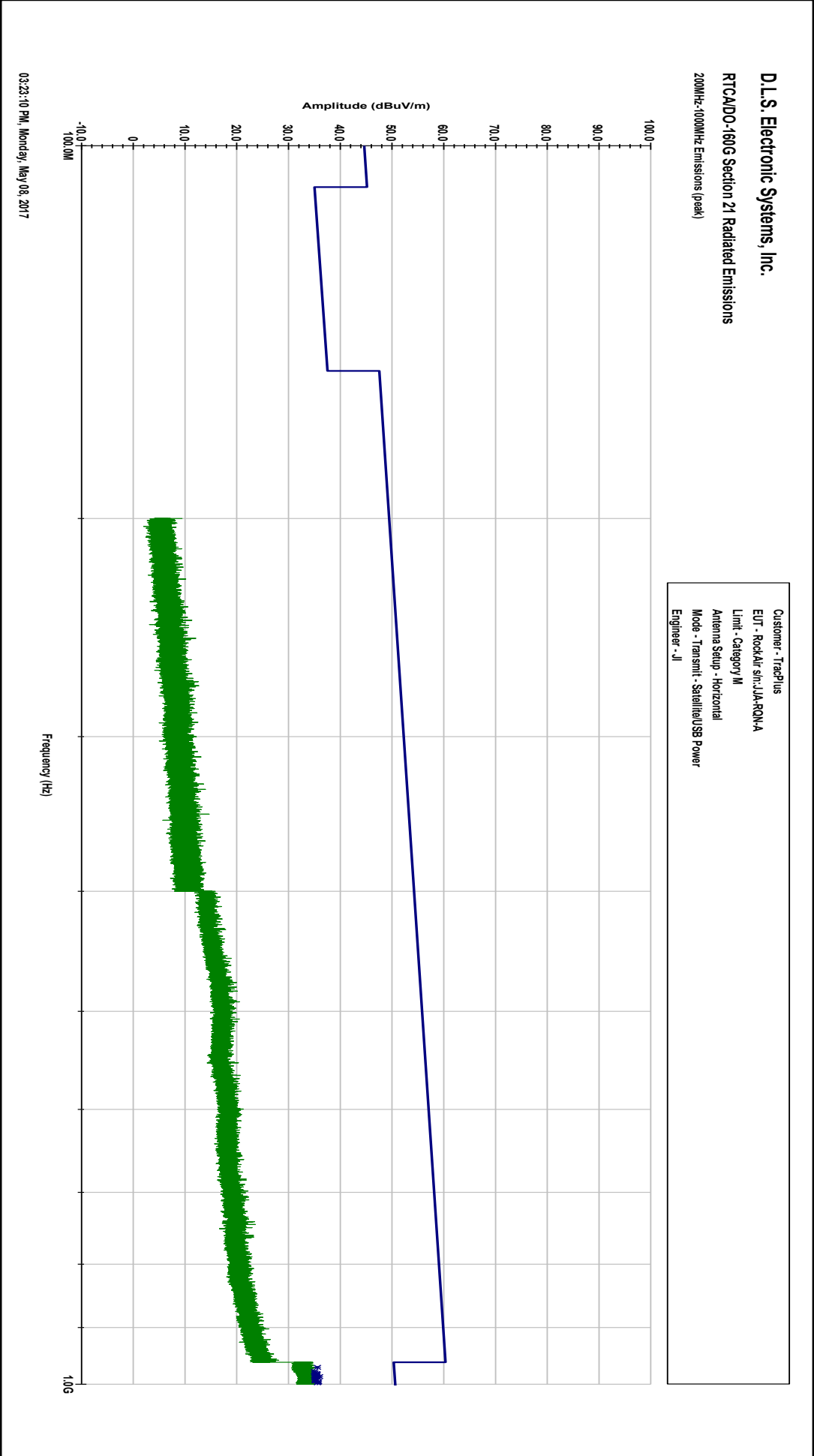
EUT - RockAir s/n: JA-RCA

Limit - Category M

Antenna Setup - Horizontal

Mode - Transmit - Satellite/USB Power

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

03:23:10 PM Frequency	May 08, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (Amplitude in dBuV/m)
969.15 MHz	-14.819	0.000	35.550
976.16 MHz	-15.383	0.000	35.038
979.21 MHz	-15.398	0.000	35.045
980.4 MHz	-15.030	0.000	35.421
981.58 MHz	-15.111	0.000	35.350
982.01 MHz	-14.974	0.000	35.489
984.16 MHz	-15.470	0.000	35.009
984.95 MHz	-15.106	0.000	35.379
986.11 MHz	-14.546	0.000	35.948
986.33 MHz	-15.219	0.000	35.276
986.92 MHz	-15.352	0.000	35.147
987.57 MHz	-15.404	0.000	35.100
988.4 MHz	-14.841	0.000	35.669
991.21 MHz	-15.302	0.000	35.229
992.11 MHz	-15.423	0.000	35.115
992.79 MHz	-15.380	0.000	35.163
994.18 MHz	-15.397	0.000	35.156
995.23 MHz	-14.800	0.000	35.760
996.4 MHz	-14.897	0.000	35.672
997.4 MHz	-15.018	0.000	35.558



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

200MHz-1000MHz Emissions (peak)

Customer - TracPlus

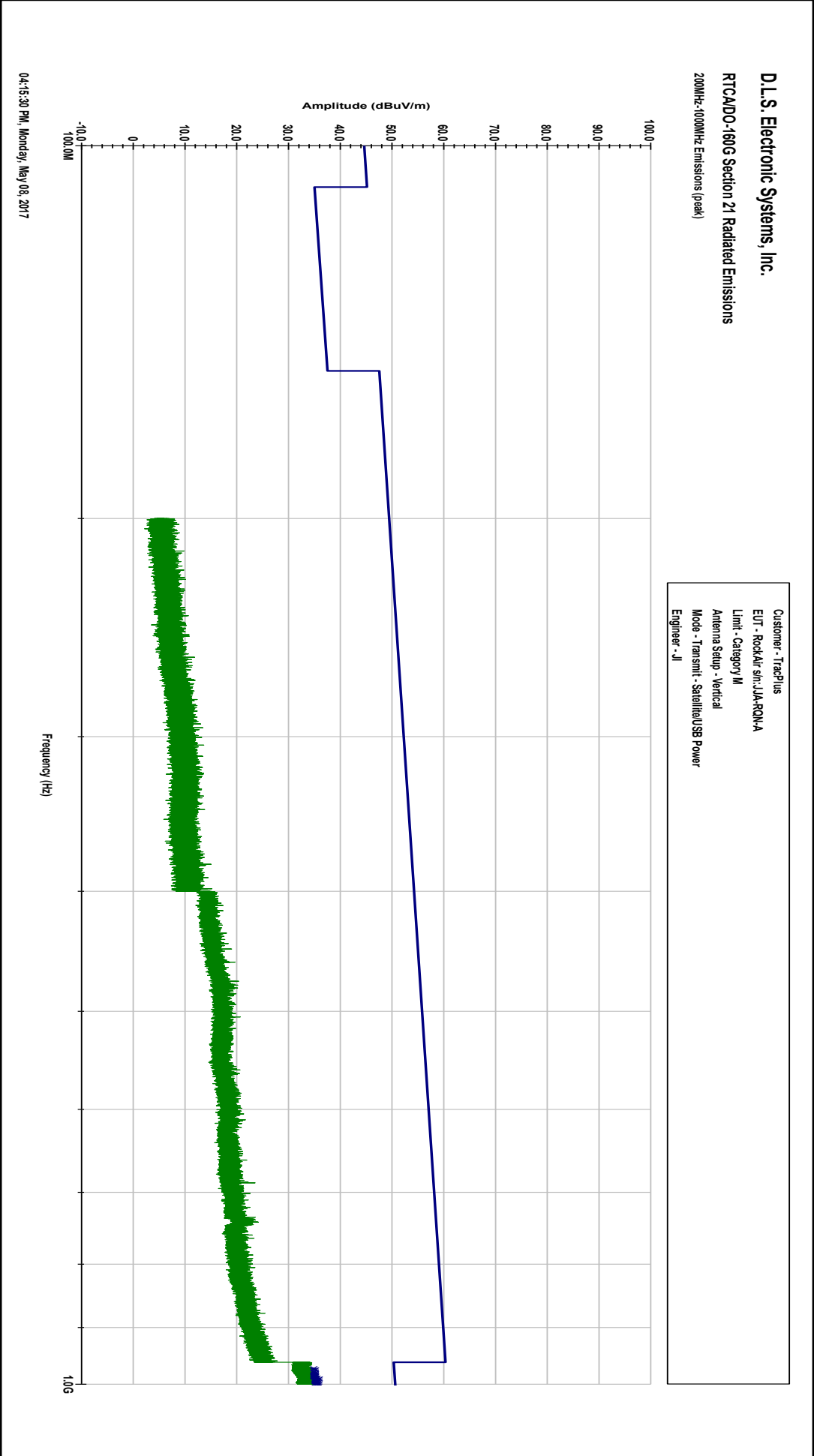
EUT - RockAir s/n:JA-RQNA

Limit - Category M

Antenna Setup - Vertical

Mode - Transmit - Satellite/USB Power

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

04:15:30 PM Frequency	May 08, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (Amplitude in dBuV/m)
971.62 MHz	-15.549	0.000	34.838
973.84 MHz	-15.255	0.000	35.148
977.77 MHz	-15.528	0.000	34.904
979.39 MHz	-15.316	0.000	35.128
982.19 MHz	-15.332	0.000	35.133
983.3 MHz	-15.591	0.000	34.882
984.47 MHz	-15.406	0.000	35.075
985.06 MHz	-15.257	0.000	35.229
985.42 MHz	-15.636	0.000	34.852
986.69 MHz	-15.588	0.000	34.910
988.68 MHz	-15.057	0.000	35.455
990.45 MHz	-14.641	0.000	35.884
991.69 MHz	-15.360	0.000	35.174
992.97 MHz	-15.403	0.000	35.141
993.4 MHz	-15.007	0.000	35.540
994.76 MHz	-15.466	0.000	35.090
997.65 MHz	-15.238	0.000	35.339
998.16 MHz	-14.992	0.000	35.589
998.82 MHz	-15.461	0.000	35.125
999.72 MHz	-14.754	0.000	35.838



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

1GHz-6GHz Emissions (peak)

Customer - TracPlus

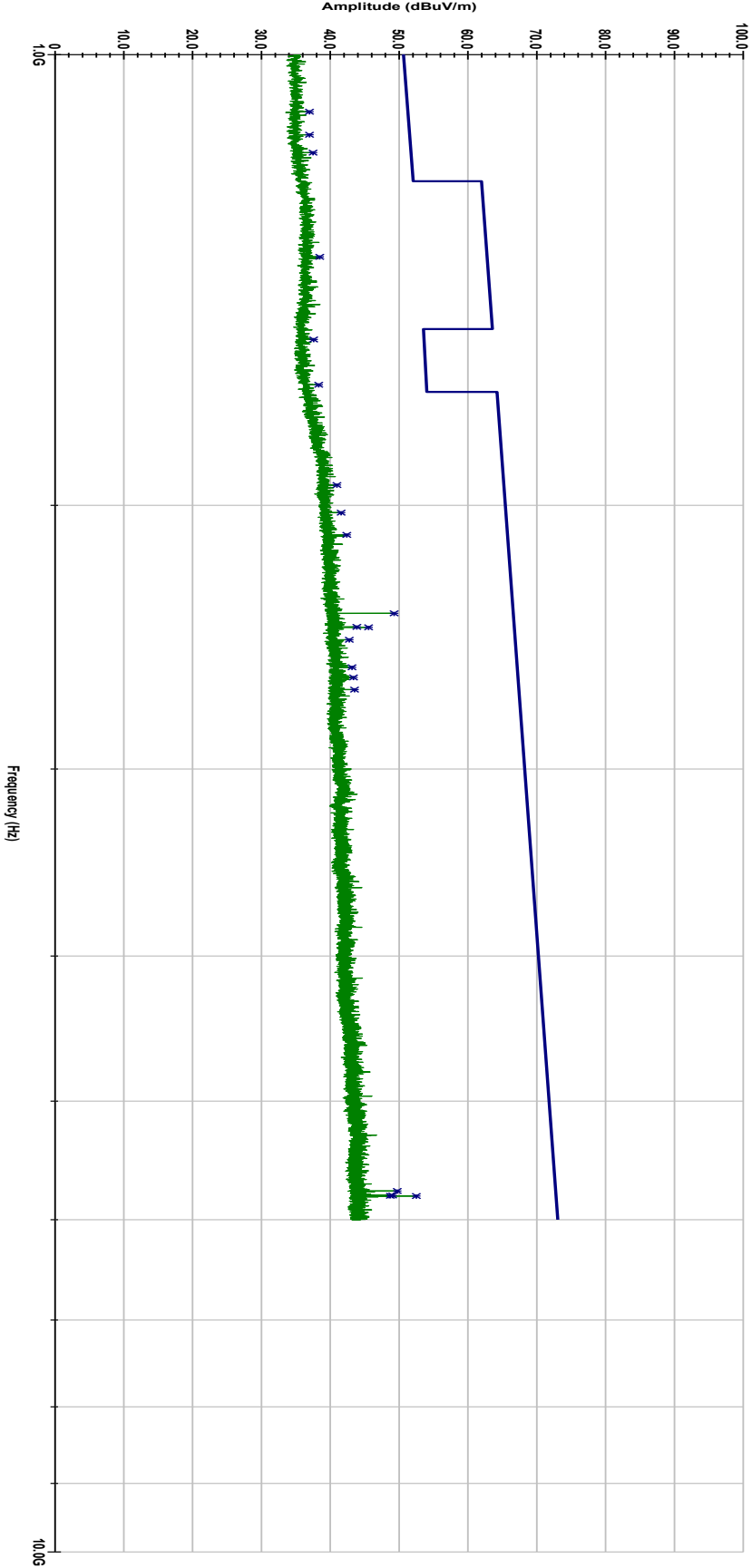
EUT - RockAIR s/n: JJA-R0N4

Limit - Category M

Antenna Setup - Horizontal

Power / Mode - Transmit - Satellite/USB Power

Engineer - JJ



03:01:02 PM, Monday, May 08, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

03:01:02 PM Frequency	May 08, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
1.0919 GHz	-14.293	0.000	36.935
1.1313 GHz	-14.542	0.000	36.943
1.1628 GHz	-14.236	0.000	37.447
1.3647 GHz	-24.298	0.000	38.435
1.5497 GHz	-16.048	0.000	37.535
1.6616 GHz	-15.676	0.000	38.267
1.9384 GHz	-24.246	0.000	40.920
2.0225 GHz	-23.930	0.000	41.530
2.0928 GHz	-23.349	0.000	42.349
2.3616 GHz	-17.305	0.000	49.230
2.4112 GHz	-22.844	0.000	43.835
2.4128 GHz	-21.164	0.000	45.520
2.4594 GHz	-24.082	0.000	42.735
2.5656 GHz	-23.989	0.000	43.121
2.6063 GHz	-23.898	0.000	43.321
2.6553 GHz	-23.850	0.000	43.498
5.7406 GHz	-23.012	0.000	49.681
5.78 GHz	-23.724	0.000	49.017
5.7825 GHz	-24.052	0.000	48.692
5.7853 GHz	-20.290	0.000	52.458



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

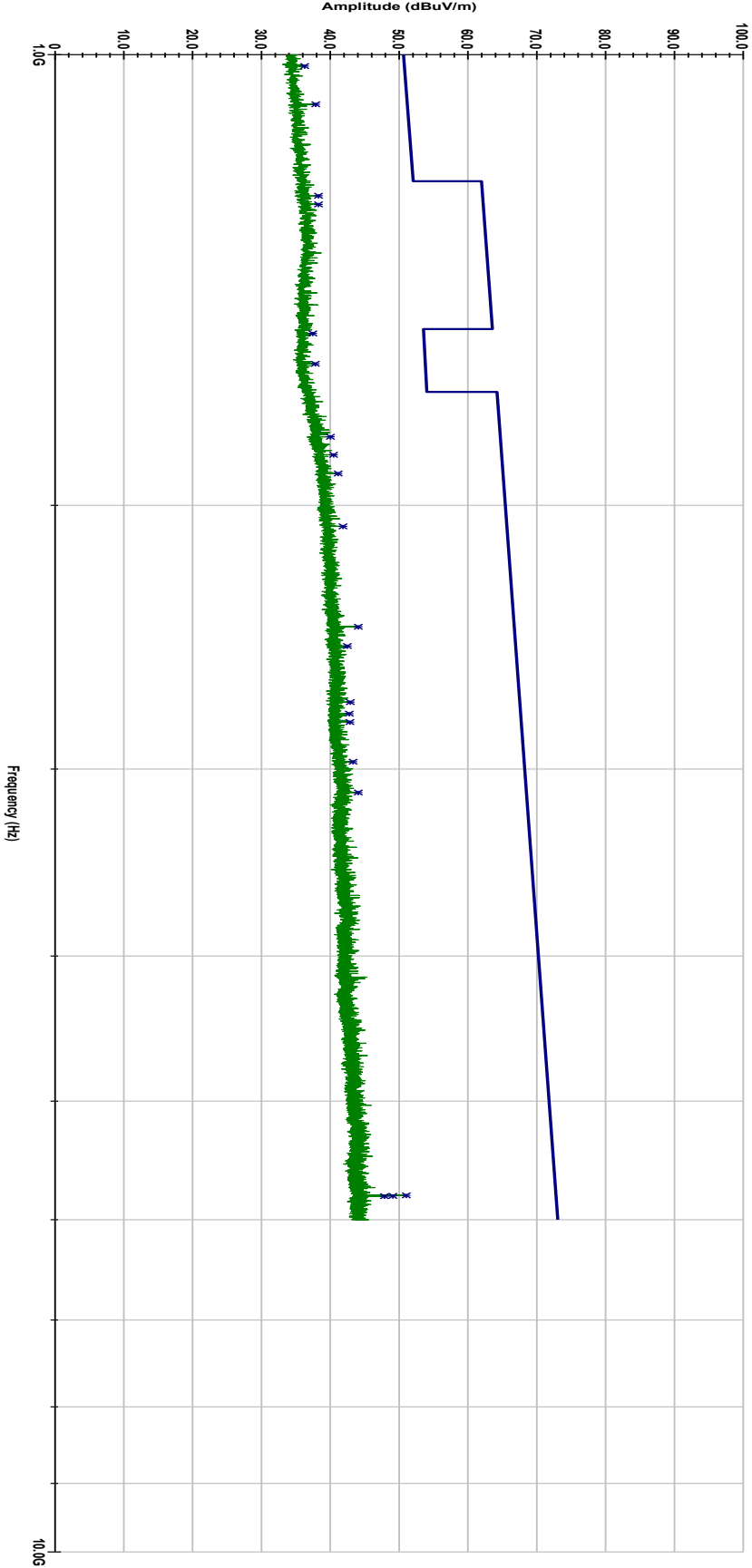
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

1GHz-6GHz Emissions (peak)



03:04:34 PM, Monday, May 08, 2017

Customer - TracPlus

EUT - RockAIR s/n: JJA-R0N-A

Limit - Category M

Antenna Setup - Vertical

Power / Mode - Transmit - Satellite/USB Power

Engineer - JJ



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

03:04:34 PM Frequency	May 08, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
1.0178 GHz	-14.495	0.000	36.227
1.0794 GHz	-13.291	0.000	37.855
1.2425 GHz	-23.843	0.000	38.240
1.2591 GHz	-23.926	0.000	38.248
1.5353 GHz	-16.092	0.000	37.442
1.6087 GHz	-15.988	0.000	37.788
1.8 GHz	-24.671	0.000	39.982
1.8503 GHz	-24.409	0.000	40.435
1.9044 GHz	-23.921	0.000	41.122
2.0656 GHz	-23.789	0.000	41.817
2.4106 GHz	-22.636	0.000	44.042
2.4831 GHz	-24.420	0.000	42.463
2.7066 GHz	-24.613	0.000	42.867
2.7553 GHz	-24.895	0.000	42.709
2.7909 GHz	-24.883	0.000	42.810
2.9666 GHz	-24.832	0.000	43.284
3.11 GHz	-24.398	0.000	44.046
5.7784 GHz	-21.730	0.000	51.010
5.7834 GHz	-23.696	0.000	49.049
5.7863 GHz	-24.898	0.000	47.851



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

100-200MHz Emissions (peak)

Customer - TracPlus

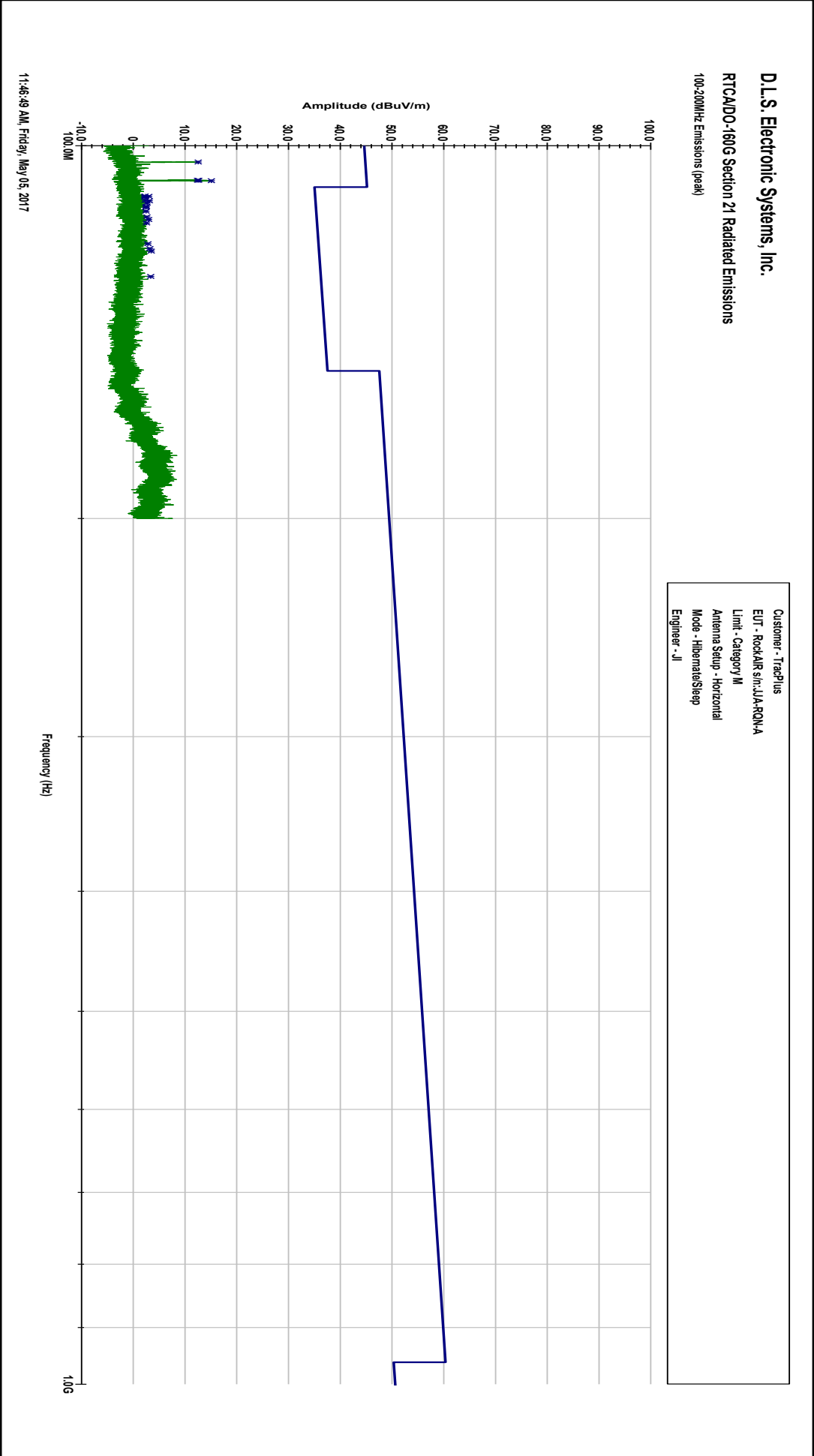
EUT - RockAIR s/n:JA-R0N-A

Limit - Category M

Antenna Setup - Horizontal

Mode - HibernataSleep

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

11:46:49 AM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
103.08 MHz	-32.295	0.000	12.520
106.63 MHz	-32.660	0.000	12.395
106.65 MHz	-32.442	0.000	12.614
106.72 MHz	-29.992	0.000	15.069
109.8 MHz	-32.892	0.000	02.229
109.85 MHz	-32.147	0.000	02.977
110.03 MHz	-32.924	0.000	02.212
110.67 MHz	-32.868	0.000	02.311
110.78 MHz	-32.107	0.000	03.078
111.28 MHz	-32.573	0.000	02.646
111.96 MHz	-32.748	0.000	02.515
112.15 MHz	-32.861	0.000	02.415
112.95 MHz	-32.901	0.000	02.427
114.14 MHz	-32.799	0.000	02.606
114.7 MHz	-32.484	0.000	02.956
115.45 MHz	-32.940	0.000	02.547
119.98 MHz	-32.949	0.000	02.821
121.07 MHz	-32.672	0.000	03.163
121.66 MHz	-32.415	0.000	03.457
127.5 MHz	-32.886	0.000	03.328



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

100-200MHz Emissions (peak)

Customer - TracPlus

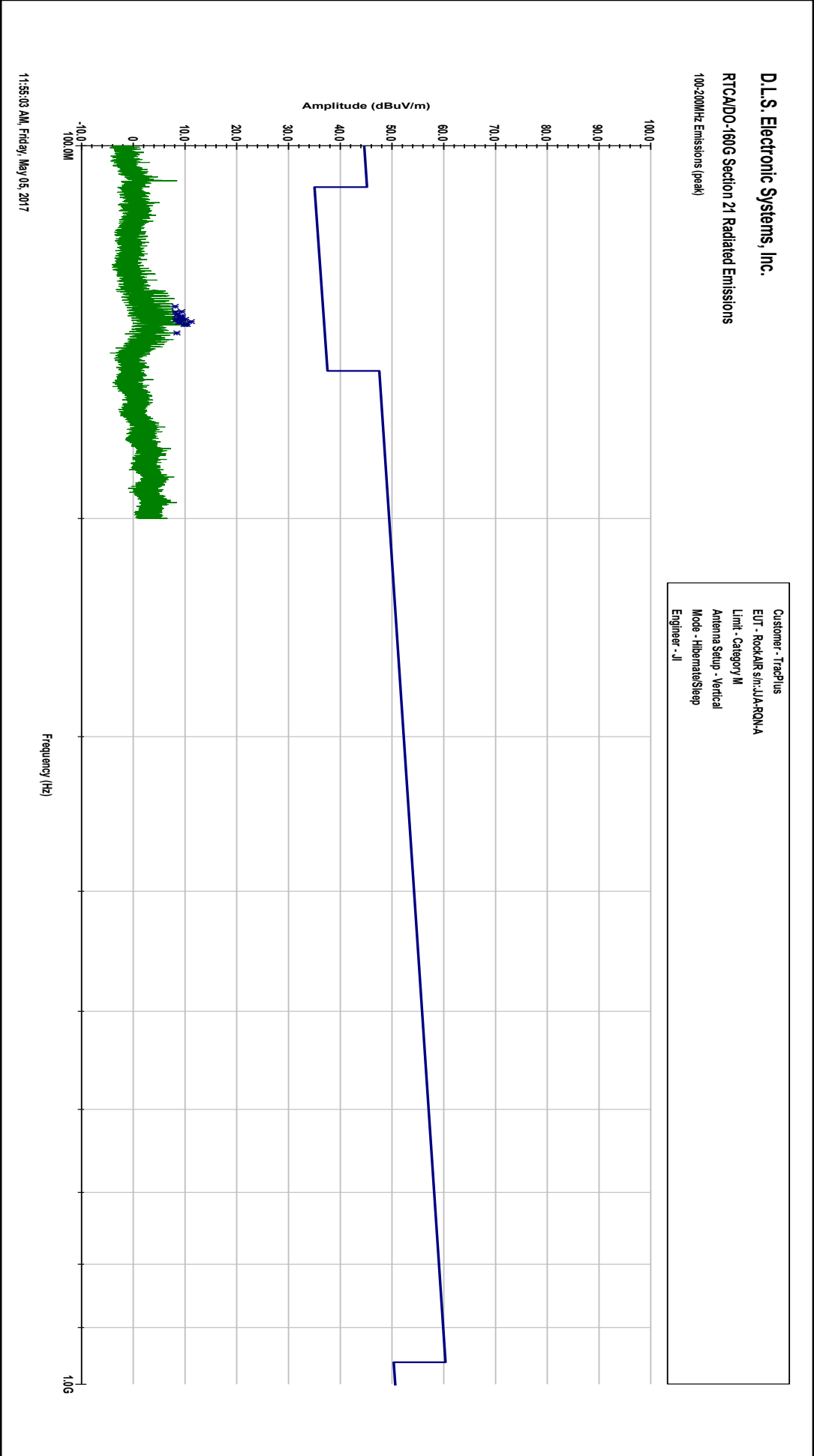
EUT - RockAIR s/n:JA-R0N-A

Limit - Category M

Antenna Setup - Vertical

Mode - HibernataSleep

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

11:55:03 AM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
134.82 MHz	-28.569	0.000	08.054
136.11 MHz	-27.343	0.000	09.349
136.23 MHz	-28.569	0.000	08.130
136.73 MHz	-28.186	0.000	08.540
136.83 MHz	-28.241	0.000	08.489
137.38 MHz	-27.831	0.000	08.929
137.46 MHz	-27.582	0.000	09.182
137.48 MHz	-27.279	0.000	09.486
137.98 MHz	-28.385	0.000	08.407
138.04 MHz	-27.404	0.000	09.391
138.1 MHz	-26.744	0.000	10.054
138.23 MHz	-28.617	0.000	08.188
138.7 MHz	-25.647	0.000	11.182
138.81 MHz	-27.908	0.000	08.928
138.83 MHz	-28.107	0.000	08.731
139.29 MHz	-26.656	0.000	10.206
139.38 MHz	-26.769	0.000	10.097
139.41 MHz	-26.485	0.000	10.383
139.47 MHz	-27.062	0.000	09.808
141.64 MHz	-28.585	0.000	08.399



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

200MHz-1000MHz Emissions (peak)

Customer - TracPlus

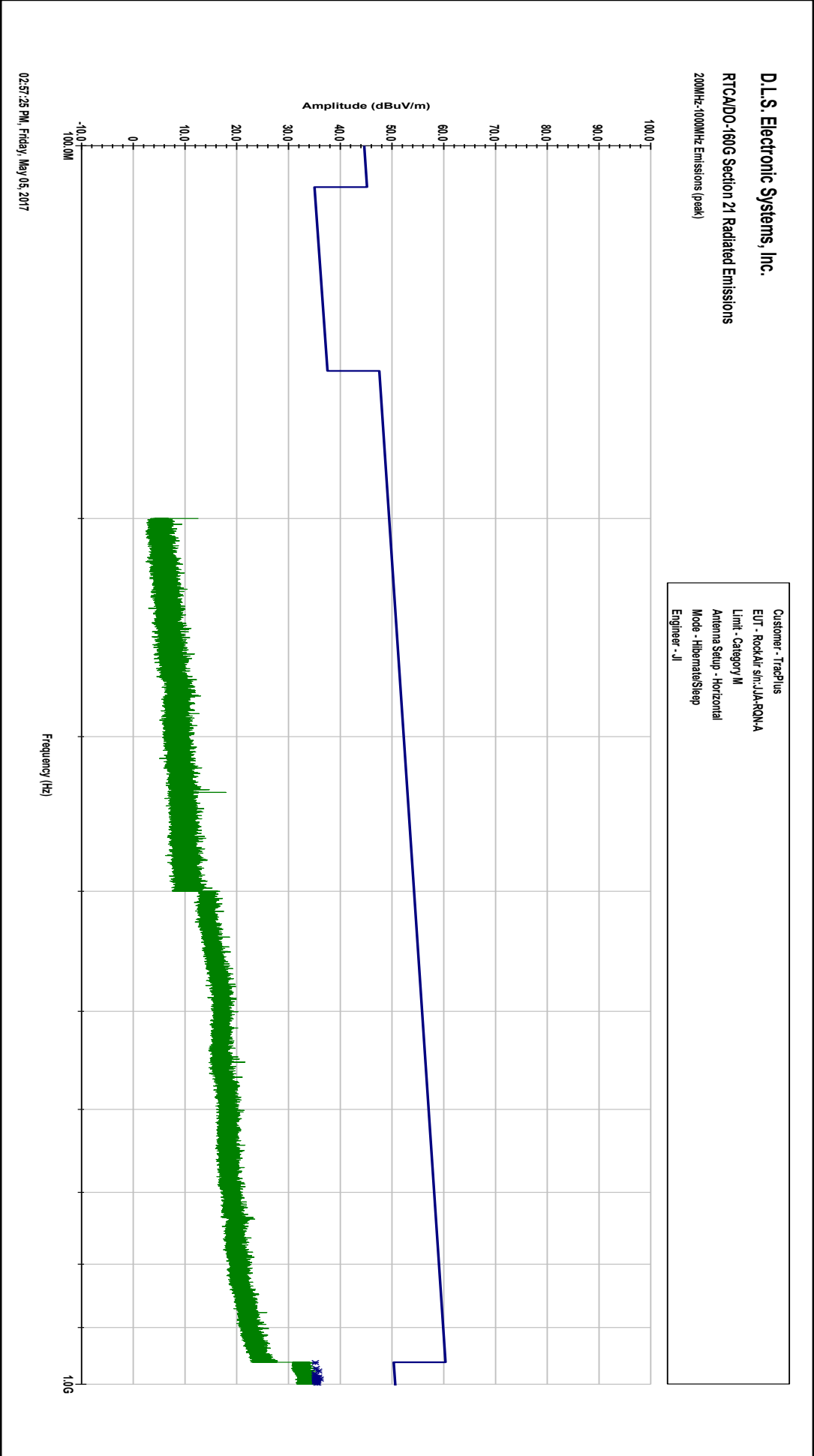
EUT - RockAir s/n: JA-RCA

Limit - Category M

Antenna Setup - Horizontal

Mode - Hibernate/Sleep

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

02:57:25 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (Amplitude in dBuV/m)
960.61 MHz	-15.166	0.000	35.139
970.95 MHz	-15.059	0.000	35.322
975.79 MHz	-14.621	0.000	35.796
980.49 MHz	-15.373	0.000	35.080
983.78 MHz	-15.304	0.000	35.173
986.69 MHz	-14.699	0.000	35.799
987.11 MHz	-15.156	0.000	35.345
987.25 MHz	-15.325	0.000	35.177
987.72 MHz	-15.169	0.000	35.336
989.16 MHz	-14.814	0.000	35.702
990.45 MHz	-15.403	0.000	35.122
990.66 MHz	-14.440	0.000	36.087
992.79 MHz	-15.320	0.000	35.223
993.67 MHz	-14.931	0.000	35.618
994.18 MHz	-15.178	0.000	35.375
994.63 MHz	-15.342	0.000	35.214
995.14 MHz	-15.212	0.000	35.347
996.33 MHz	-15.366	0.000	35.202
998.21 MHz	-14.992	0.000	35.590
998.53 MHz	-15.140	0.000	35.444



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

200MHz-1000MHz Emissions (peak)

Customer - TracPlus

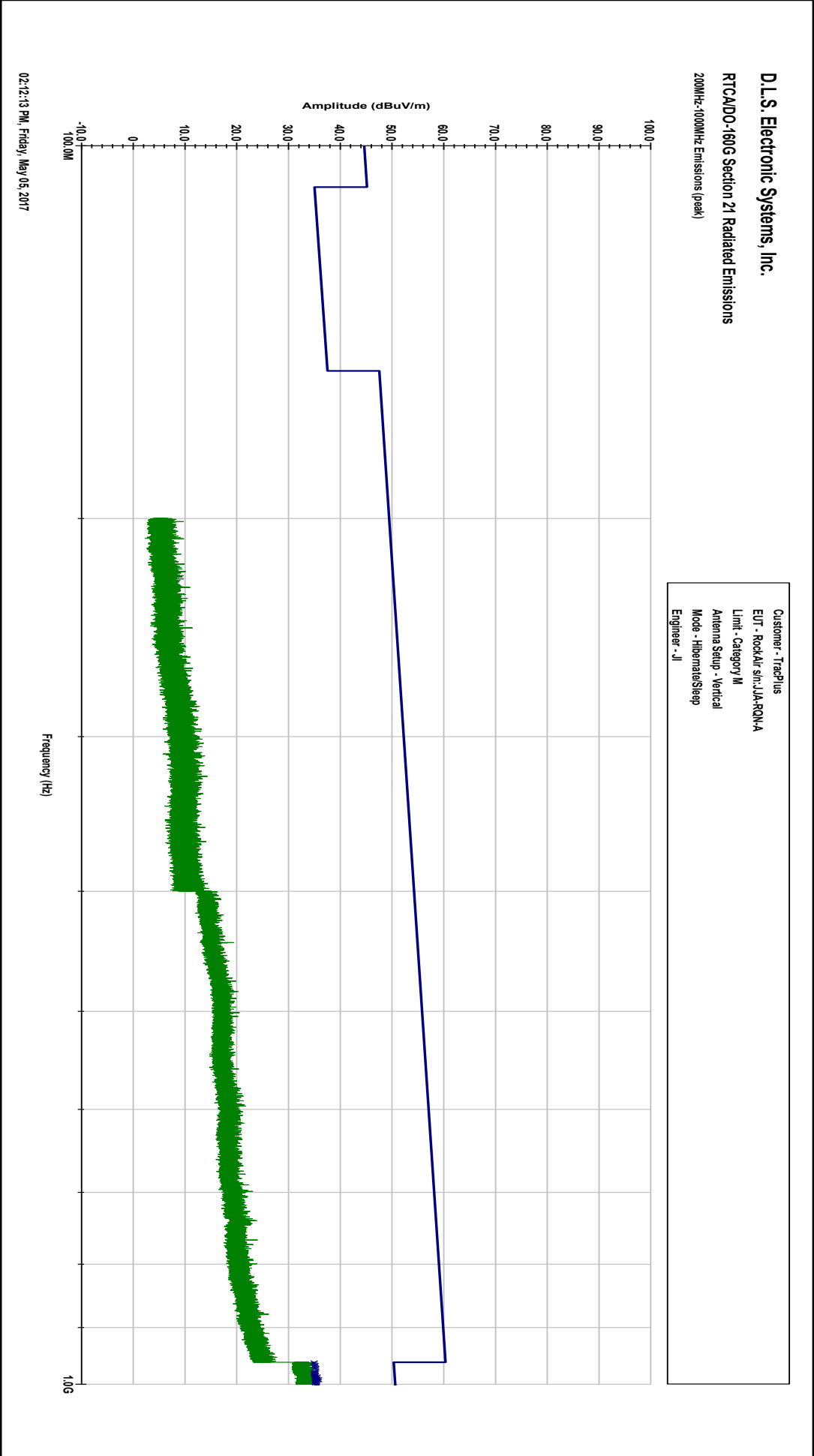
EUT - RockAir s/n: JA-RCA

Limit - Category M

Antenna Setup - Vertical

Mode - Hibernate/Sleep

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

02:12:13 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (Amplitude in dBuV/m)
961.28 MHz	-15.377	0.000	34.932
965.72 MHz	-15.247	0.000	35.096
970.73 MHz	-15.150	0.000	35.230
976.87 MHz	-15.315	0.000	35.110
979.69 MHz	-15.489	0.000	34.957
979.96 MHz	-15.440	0.000	35.008
982.27 MHz	-15.419	0.000	35.047
984.84 MHz	-15.360	0.000	35.124
986.61 MHz	-14.996	0.000	35.501
989.48 MHz	-15.444	0.000	35.074
991.45 MHz	-15.198	0.000	35.335
991.91 MHz	-14.770	0.000	35.766
992.57 MHz	-15.223	0.000	35.317
992.64 MHz	-15.224	0.000	35.317
992.69 MHz	-15.130	0.000	35.412
992.83 MHz	-15.109	0.000	35.434
996.07 MHz	-15.389	0.000	35.177
996.26 MHz	-15.369	0.000	35.198
997.52 MHz	-15.398	0.000	35.179
999.41 MHz	-15.156	0.000	35.434



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

1GHz-6GHz Emissions (peak)

Customer - TracPlus

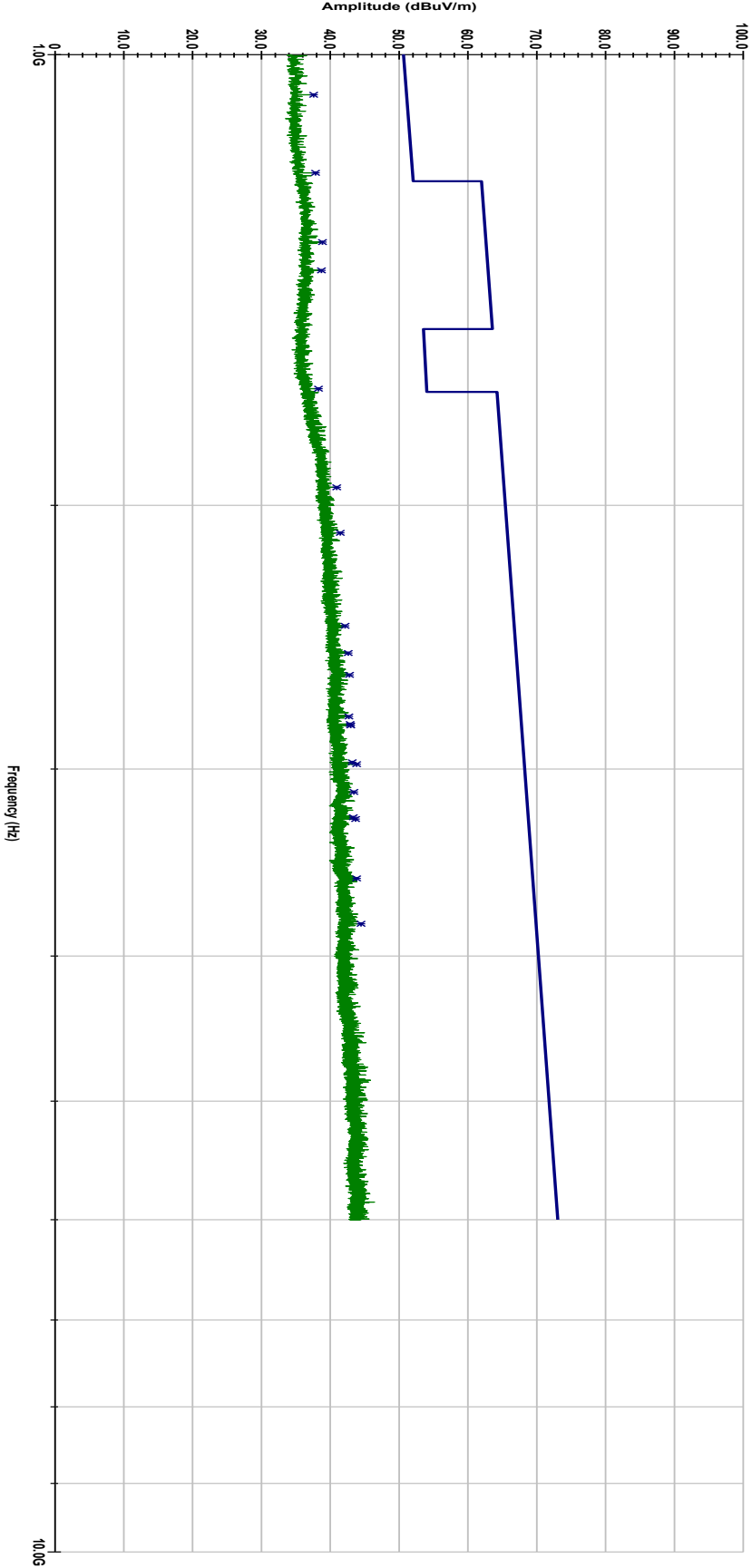
EUT - RockAIR s/n: JJA-R0N4

Limit - Category M

Antenna Setup - Horizontal

Power / Mode - Hibernate/Sleep

Engineer - JJ



04:30:08 PM, Friday, May 05, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

04:30:08 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
1.0638 GHz	-13.494	0.000	37.547
1.1994 GHz	-14.097	0.000	37.809
1.3341 GHz	-23.762	0.000	38.814
1.3934 GHz	-24.201	0.000	38.677
1.6716 GHz	-15.731	0.000	38.243
1.9453 GHz	-24.302	0.000	40.889
2.0866 GHz	-24.268	0.000	41.409
2.4072 GHz	-24.539	0.000	42.129
2.5103 GHz	-24.375	0.000	42.583
2.5956 GHz	-24.439	0.000	42.751
2.7672 GHz	-24.974	0.000	42.661
2.7997 GHz	-24.882	0.000	42.833
2.8053 GHz	-24.781	0.000	42.948
2.9694 GHz	-24.985	0.000	43.138
2.9778 GHz	-24.348	0.000	43.794
3.1078 GHz	-25.044	0.000	43.395
3.2309 GHz	-25.416	0.000	43.292
3.24 GHz	-25.092	0.000	43.636
3.5494 GHz	-25.572	0.000	43.788
3.8063 GHz	-25.402	0.000	44.442



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

1GHz-6GHz Emissions (peak)

Customer - TracPlus

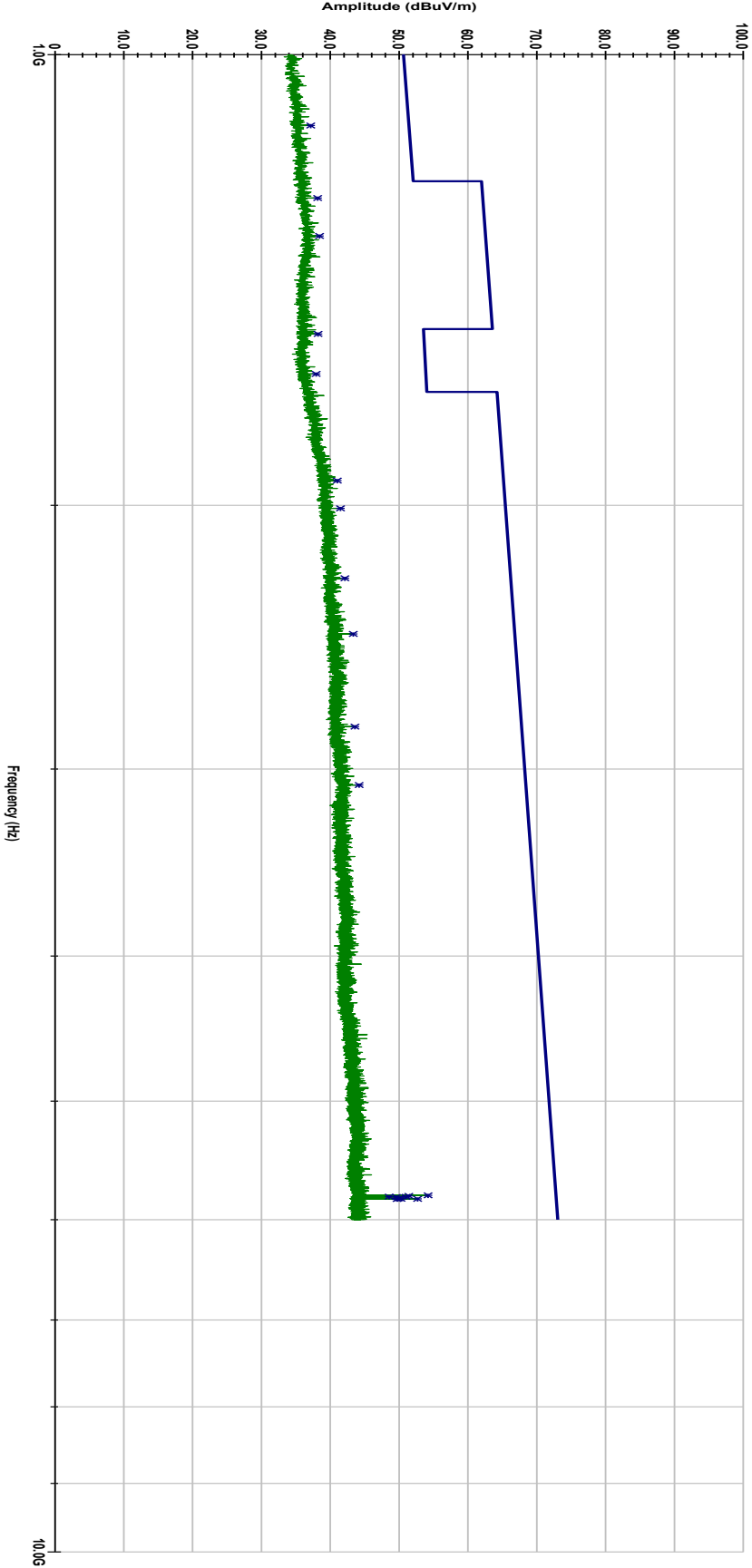
EUT - RockAIR s/n: JJA-R0N4

Limit - Category M

Antenna Setup - Vertical

Power / Mode - Hibernate/Sleep

Engineer - JJ



04:00:08 PM, Friday, May 05, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

04:00:08 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
1.1153 GHz	-14.271	0.000	37.111
1.2469 GHz	-23.967	0.000	38.140
1.3216 GHz	-24.122	0.000	38.388
1.5366 GHz	-15.359	0.000	38.180
1.6341 GHz	-15.948	0.000	37.909
1.9253 GHz	-24.138	0.000	40.981
2.0094 GHz	-23.977	0.000	41.439
2.2375 GHz	-24.063	0.000	42.098
2.4372 GHz	-23.452	0.000	43.302
2.8106 GHz	-24.183	0.000	43.559
3.075 GHz	-24.225	0.000	44.141
5.7787 GHz	-18.562	0.000	54.178
5.7841 GHz	-21.389	0.000	51.357
5.7909 GHz	-24.234	0.000	48.520
5.7919 GHz	-21.780	0.000	50.975
5.7941 GHz	-23.178	0.000	49.579
5.805 GHz	-22.819	0.000	49.952
5.8097 GHz	-22.532	0.000	50.244
5.8103 GHz	-20.115	0.000	52.662
5.8119 GHz	-23.120	0.000	49.660



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

RTCA/DO-160G

SECTION 21.5

RADIATED EMISSION OF RADIO

FREQUENCY ENERGY

AMBIENT TEST DATA AND CHARTS



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

100-200MHz Emissions (peak)

Customer - TracPlus

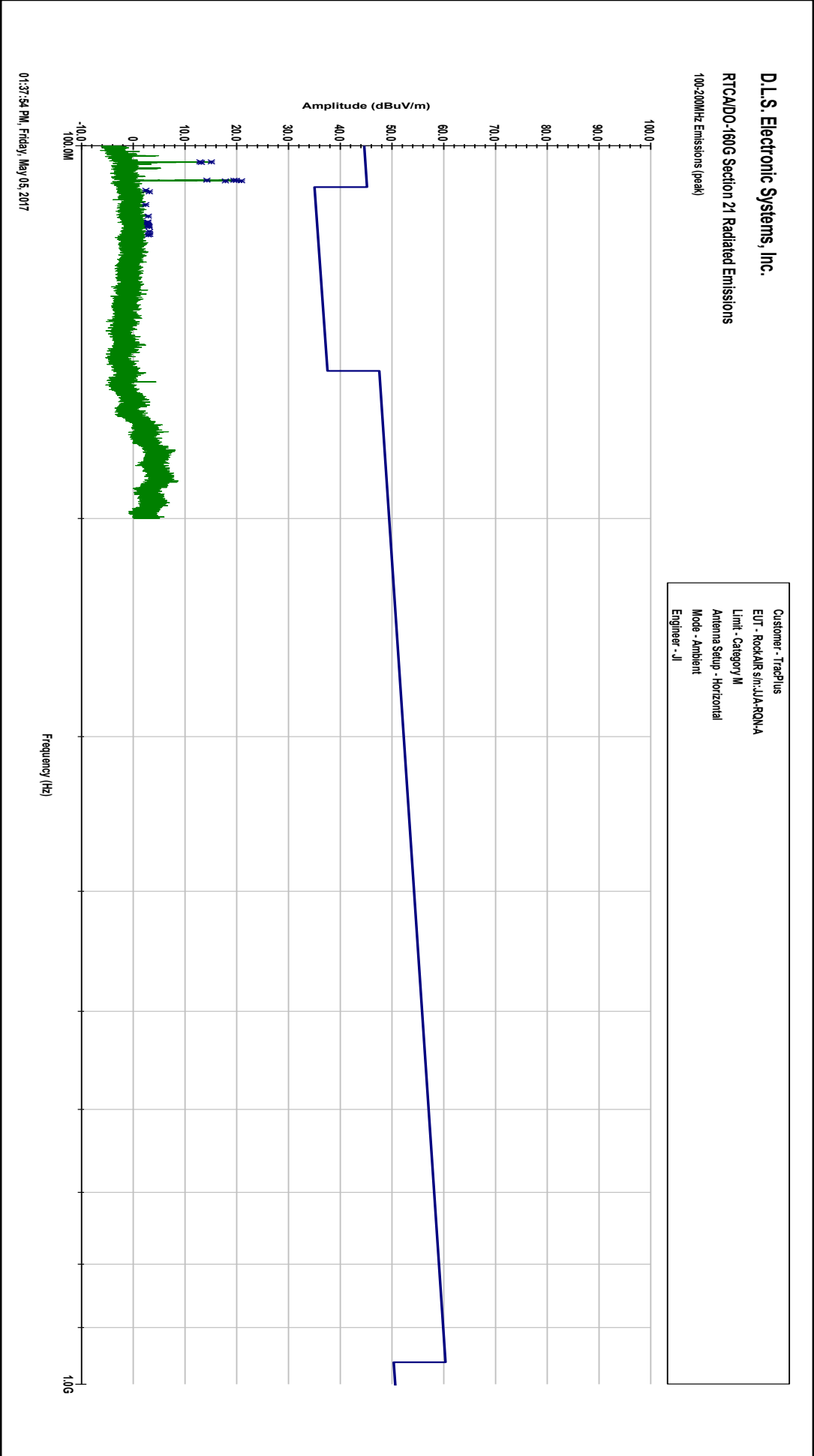
EUT - RockAIR sm-JJA-RQNA

Limit - Category M

Antenna Setup - Horizontal

Mode - Ambient

Engineer - JJ





Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

01:37:54 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
103.05 MHz	-31.964	0.000	12.849
103.06 MHz	-29.745	0.000	15.069
103.15 MHz	-31.709	0.000	13.111
106.62 MHz	-30.860	0.000	14.194
106.64 MHz	-25.636	0.000	19.420
106.65 MHz	-25.179	0.000	19.878
106.76 MHz	-24.189	0.000	20.875
106.77 MHz	-27.272	0.000	17.792
108.64 MHz	-32.628	0.000	02.415
108.96 MHz	-31.980	0.000	03.085
111.57 MHz	-32.862	0.000	02.376
113.98 MHz	-32.508	0.000	02.886
115.25 MHz	-32.678	0.000	02.797
115.34 MHz	-32.765	0.000	02.716
115.89 MHz	-32.692	0.000	02.824
116.05 MHz	-32.562	0.000	02.964
116.3 MHz	-32.489	0.000	03.053
117.29 MHz	-32.480	0.000	03.124
117.94 MHz	-32.517	0.000	03.127
118.06 MHz	-32.767	0.000	02.885



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

100-200MHz Emissions (peak)

Customer - TracPlus

EUT - RockAIR sim:JA-RONA

Limit - Category M

Antenna Setup - Vertical

Mode - Ambient

Engineer - JJ



01:32:18 PM, Friday, May 05, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

01:32:18 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
108.97 MHz	-32.819	0.000	02.246
109.18 MHz	-33.359	0.000	01.721
109.53 MHz	-33.361	0.000	01.742
109.62 MHz	-33.129	0.000	01.979
110.03 MHz	-33.581	0.000	01.556
110.5 MHz	-33.598	0.000	01.569
110.61 MHz	-33.083	0.000	02.092
111.06 MHz	-33.502	0.000	01.703
111.55 MHz	-32.073	0.000	03.163
113.15 MHz	-33.369	0.000	01.972
114.19 MHz	-33.104	0.000	02.304
115.07 MHz	-33.542	0.000	01.922
115.47 MHz	-33.385	0.000	02.104
115.56 MHz	-33.501	0.000	01.994
115.65 MHz	-33.292	0.000	02.208
116.75 MHz	-32.972	0.000	02.598
117.24 MHz	-31.702	0.000	03.898
117.7 MHz	-33.464	0.000	02.165
117.72 MHz	-32.481	0.000	03.149
122.6 MHz	-33.459	0.000	02.468



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy
Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

200MHz-1000MHz Emissions (peak)

Customer - TracPlus
EUT - RockAir s/n: JA-RCA
Limit - Category M
Antenna Setup - Horizontal
Mode - Ambient
Engineer - JJ





1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

02:03:30 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (Amplitude in dBuV/m)
971.31 MHz	-15.066	0.000	35.319
980.79 MHz	-15.125	0.000	35.330
981.45 MHz	-15.257	0.000	35.203
982.66 MHz	-15.061	0.000	35.408
987.23 MHz	-15.289	0.000	35.213
987.79 MHz	-14.318	0.000	36.188
988.84 MHz	-15.070	0.000	35.443
989.01 MHz	-14.446	0.000	36.069
989.33 MHz	-14.991	0.000	35.526
990.45 MHz	-15.186	0.000	35.339
990.92 MHz	-14.909	0.000	35.620
991.14 MHz	-15.066	0.000	35.465
991.36 MHz	-15.155	0.000	35.377
991.75 MHz	-15.341	0.000	35.194
992.6 MHz	-15.154	0.000	35.387
994.04 MHz	-15.276	0.000	35.275
994.53 MHz	-15.310	0.000	35.245
996.2 MHz	-14.599	0.000	35.968
996.85 MHz	-15.214	0.000	35.358
999.07 MHz	-13.693	0.000	36.894



1250 Peterson Dr., Wheeling, IL 60090

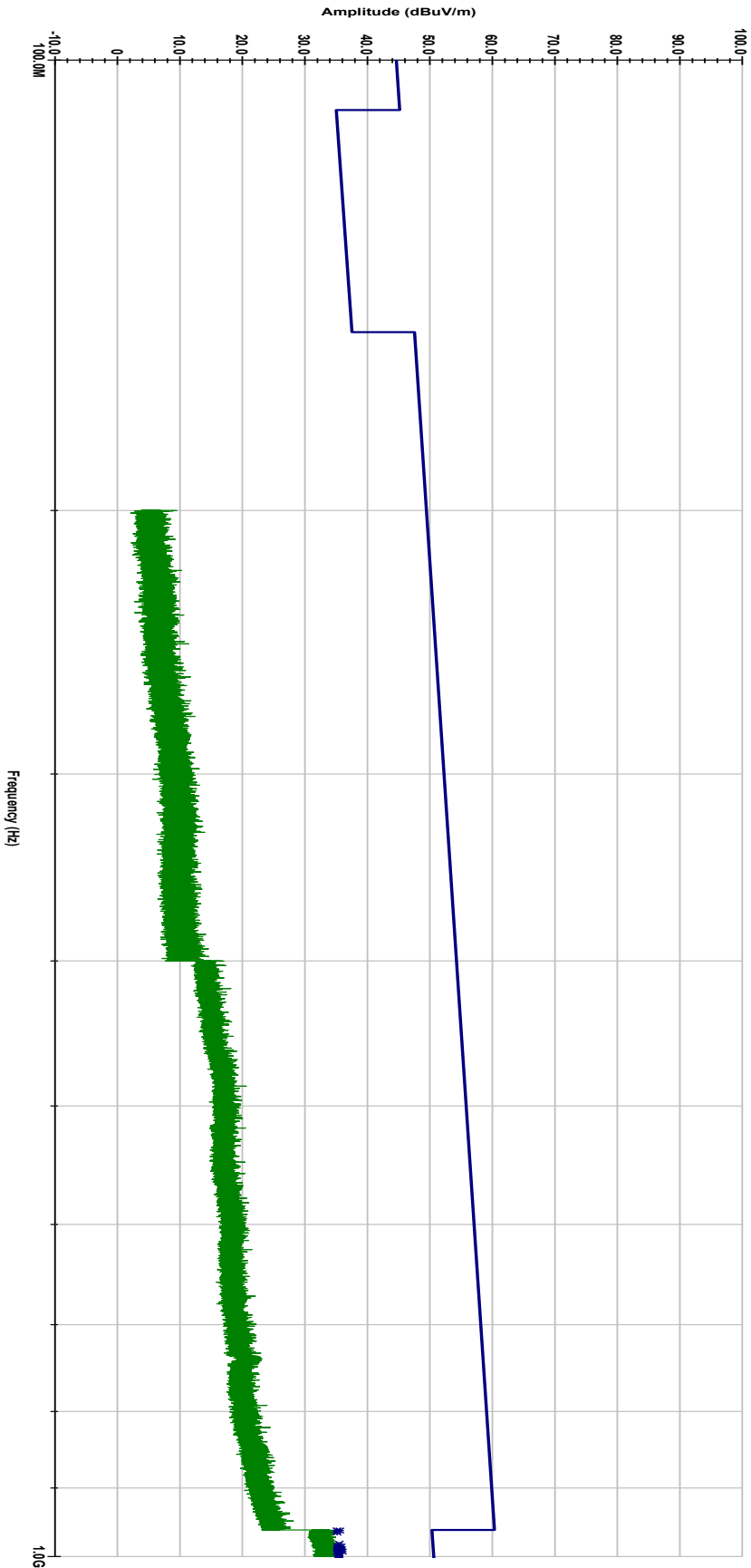
Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy
Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

200MHz-1000MHz Emissions (peak)

Customer - TracPlus
EUT - RockAir s/n: JA-RCA
Limit - Category M
Antenna Setup - Vertical
Mode - Ambient
Engineer - JJ



02:02:42 PM, Friday, May 05, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

02:02:42 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (Amplitude in dBuV/m)
960.64 MHz	-15.179	0.000	35.126
960.84 MHz	-14.747	0.000	35.559
963.89 MHz	-15.221	0.000	35.109
980.56 MHz	-14.994	0.000	35.459
984.52 MHz	-15.306	0.000	35.177
984.83 MHz	-14.731	0.000	35.754
987.12 MHz	-15.056	0.000	35.445
988.3 MHz	-15.315	0.000	35.195
988.77 MHz	-14.875	0.000	35.638
989.35 MHz	-14.701	0.000	35.817
989.92 MHz	-15.221	0.000	35.300
989.96 MHz	-15.180	0.000	35.342
991.83 MHz	-15.040	0.000	35.496
992.0 MHz	-15.146	0.000	35.390
992.55 MHz	-14.572	0.000	35.969
993.03 MHz	-15.399	0.000	35.146
995.83 MHz	-15.200	0.000	35.365
997.49 MHz	-15.141	0.000	35.435
999.01 MHz	-15.136	0.000	35.451
999.49 MHz	-15.305	0.000	35.286



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

1GHz-6GHz Emissions (peak)

Customer - TracPlus

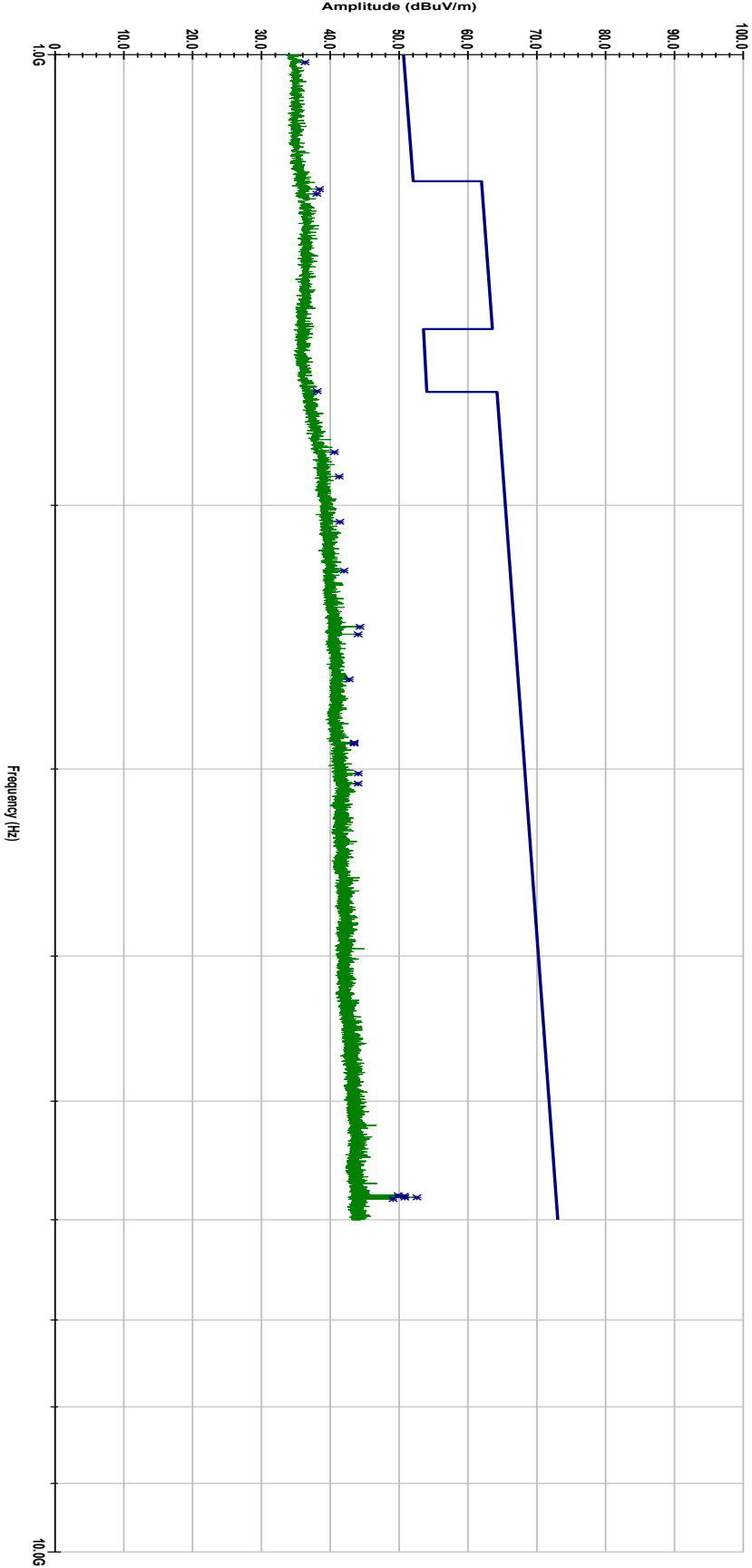
EUT - RockAIR s/n: JJA-R0N-A

Limit - Category M

Antenna Setup - Horizontal

Power / Mode - Ambient

Engineer - JJ



03:51:15 PM, Friday, May 05, 2017



Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

1250 Peterson Dr., Wheeling, IL 60090

03:51:15 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
1.0119 GHz	-14.391	0.000	36.289
1.2297 GHz	-23.608	0.000	38.402
1.2387 GHz	-24.059	0.000	38.002
1.6778 GHz	-15.912	0.000	38.081
1.8428 GHz	-24.260	0.000	40.555
1.9131 GHz	-23.805	0.000	41.270
2.0512 GHz	-24.208	0.000	41.350
2.2112 GHz	-24.104	0.000	41.975
2.4106 GHz	-22.412	0.000	44.266
2.4388 GHz	-22.770	0.000	43.988
2.6137 GHz	-24.501	0.000	42.737
2.8806 GHz	-24.461	0.000	43.452
2.885 GHz	-24.493	0.000	43.430
3.0203 GHz	-24.212	0.000	44.029
3.0681 GHz	-24.335	0.000	44.015
5.7791 GHz	-22.933	0.000	49.807
5.7841 GHz	-22.019	0.000	50.727
5.7969 GHz	-20.209	0.000	52.552
5.7981 GHz	-21.979	0.000	50.784
5.8122 GHz	-23.682	0.000	49.097



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd

Model Tested: RockAIR

Report Number: 22777

Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

D.L.S. Electronic Systems, Inc.

RTCA/DO-160G Section 21 Radiated Emissions

1GHz-6GHz Emissions (peak)

Customer - TracPlus

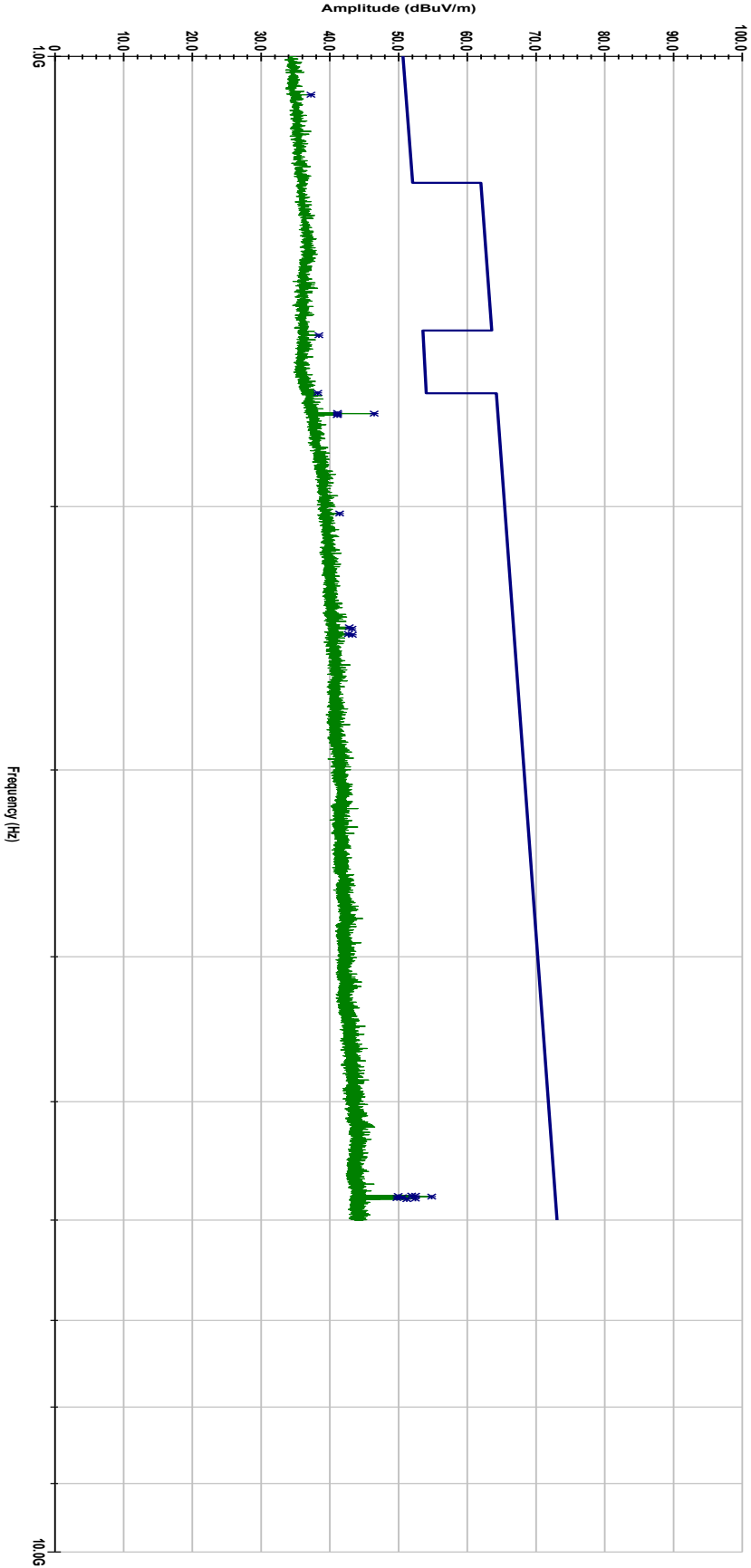
EUT - RockAIR s/n: JJA-R0N-A

Limit - Category M

Antenna Setup - Vertical

Power / Mode - Ambient

Engineer - JJ



03:55:34 PM, Friday, May 05, 2017



1250 Peterson Dr., Wheeling, IL 60090

Company: TracPlus Global Ltd
Model Tested: RockAIR
Report Number: 22777
Standard: RTCA/DO-160G Section 21 Emission of Radio Frequency Energy

Appendix: C

03:55:34 PM Frequency	May 05, 2017 Complying Emissions (dB below limit)	Excessive Emissions (dB exceeding limit)	Highest Emissions (amplitude in dBuV/m)
1.0609 GHz	-13.821	0.000	37.201
1.5362 GHz	-15.160	0.000	38.378
1.6787 GHz	-15.790	0.000	38.206
1.7316 GHz	-23.305	0.000	41.078
1.7331 GHz	-17.996	0.000	46.394
1.7356 GHz	-23.292	0.000	41.108
1.7372 GHz	-23.385	0.000	41.021
2.0213 GHz	-24.085	0.000	41.371
2.4084 GHz	-23.900	0.000	42.771
2.4144 GHz	-23.503	0.000	43.186
2.4341 GHz	-24.085	0.000	42.660
2.4366 GHz	-23.495	0.000	43.257
5.7781 GHz	-20.876	0.000	51.863
5.7791 GHz	-20.298	0.000	52.442
5.7816 GHz	-22.826	0.000	49.917
5.7866 GHz	-17.970	0.000	54.779
5.7919 GHz	-22.237	0.000	50.518
5.7991 GHz	-23.052	0.000	49.712
5.8044 GHz	-20.366	0.000	52.404
5.8094 GHz	-21.618	0.000	51.158