

01/17/2020

HID Global Corporation
6533 Flying Cloud Dr. Suite 1000
Eden Prairie, MN 55344

Dear Robert Cresswell,

Enclosed is the EMC test report for compliance testing of the HID Global Corporation, HID Aero™ / model X1100, tested to the requirements of:

Emission Tests: FCC Part 15 Subpart B (per ANSI C63.4: 2014);
Industry Canada ICES-003 Issue 6, April 2017
for a Class A Device

Thank you for using the services of Eurofins E&E North America. If you have any questions regarding these results or if we can be of further service to you, please feel free to contact me.

Sincerely yours,
EUROFINS E&E NORTH AMERICA



Documentation Department

Reference: (\\HID Global Corporation\\EMCA105195D-FCC/IC)



Certificates and reports shall not be reproduced except in full, without the written permission of Eurofins E&E North America. While use of the National Voluntary Laboratory Accreditation Program (NVLAP) letters, the NVLAP Logo, or the A2LA logo in this report reflects Eurofins E&E North America accreditation under these programs, the report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or A2LA, or any agency of the Federal Government. This letter of transmittal is not a part of the attached report.

Eurofins MET Laboratories Inc. (Eurofins E&E North America) is part of the Eurofins Electrical & Electronics (E&E) global compliance network.

Electromagnetic Compatibility Test Report

for the

**HID Global Corporation
HID Aero™ / model X1100**

Tested under

**FCC Part 15 Subpart B (per ANSI C63.4: 2014),
Industry Canada ICES-003 Issue 6, April 2017
for a Class A Device**

**Report: EMCA105195D-FCC/IC
01/17/2020**

**Prepared for:
HID Global Corporation
6533 Flying Cloud Dr. Suite 1000
Eden Prairie, MN 55344**



**Prepared by:
Eurofins E&E North America
13501 McCallen Pass, Austin, TX 78753**

Electromagnetic Compatibility Test Report

For the

HID Global Corporation
HID Aero™ / model X1100

Tested under

**FCC Part 15 Subpart B (per ANSI C63.4: 2014),
Industry Canada ICES-003 Issue 6, April 2017
for a Class A Device**

Report: EMCA105195D-FCC/IC



Jonathan Tavira and Matthew Hinojosa
Manager, Electromagnetic Compatibility Lab



Cheryl Anicete
Documentation Department

Engineering Statement: The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the applicable limits. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements per Test Summary (Section 1.0).

Report Status Sheet

Revision	Report Date	Reason for Revision
Ø	01/17/2020	Initial Issue.

Table of Contents

1.0 Testing Summary	1
2.0 Equipment Configuration	2
2.1 Overview.....	2
2.1.1 Test Site	2
2.1.2 Measurement Uncertainty.....	3
2.2 Detailed EUT Description and Test Setup	4
2.2.1 Description of Test Sample	4
2.2.2 Photograph(s) of Test Sample	4
2.2.3 Block Diagram.....	5
2.2.4 Equipment Configuration	6
2.2.5 Support Equipment	6
2.2.6 Ports and Cabling Information.....	6
2.2.7 Mode of Operation & Method of Monitoring EUT Operation	7
2.2.8 Modifications to EUT	7
2.2.9 Test Software Used.....	7
2.2.10 Disposition of EUT.....	7
3.0 Electromagnetic Compatibility Emission Criteria	8
3.1 Radiated Emission: Limits of Electromagnetic Radiation Disturbance	8
4.0 FCC Part 15 Subpart B Compliance Information	17
4.1 Verification Information	17
4.2 Label and User's Manual Information	22
5.0 ICES-003 Procedural & Labeling Requirements.....	24

List of Figures

Figure 1. HID Aero™ / model X1100	4
Figure 2. Block Diagram of Test Configuration	5
Figure 3. Radiated Emissions Limits calculated per FCC Part 15, §15.109 (a) (b) and ICES-003.....	8
Figure 4. RE FCC Quasi-Peak - (30 MHz – 1 GHz) Test Results	11
Figure 5. RE FCC - (30 MHz – 10 GHz), Plot.....	11
Figure 6. RE FCC Average/Peak - (1 - 6 GHz) Test Results	12
Figure 7. RE FCC Average - (1 - 6 GHz), Plot.....	12
Figure 8. RE (30 MHz – 1 GHz) Test Setup, Antenna View.....	13
Figure 9. RE (30 MHz – 1 GHz) Test Setup, Front View.....	13
Figure 10. RE (30 MHz – 1 GHz) Test Setup, Rear View.....	14
Figure 11. RE (1 – 6 GHz) Test Setup, Antenna View	14
Figure 12. RE (1 – 6 GHz) Test Setup, Front View.....	15
Figure 13. RE (1 – 6 GHz) Test Setup, Rear View	15

List of Terms and Abbreviations

AC	Alternating Current	FOKI	Frequency of Key Interest
μF	microfarad	GRP	Ground Reference Plane
μH	microhenry	H	Magnetic Field
μs	microseconds	HCP	Horizontal Coupling Plane
ACF	Antenna Correction Factor	Hz	Hertz
AV	Average	IEC	International Electrotechnical Commission
Cal	Calibration	kHz	kilohertz
CE	Conducted Emissions	kPa	kilopascal
CI	Conducted Immunity	kV	kilovolt
CISPR	Comite International Special des Perturbations Radioelectriques (International Special Committee on Radio Interference)	LISN	Line Impedance Stabilization Network
d	Measurement Distance	MHz	Megahertz
dB	Decibels	MI	Magnetic Immunity
dBμA	Decibels above one microamp	PRF	Pulse Repetition Frequency
dBμA/m	Decibels above one microamp per meter	QP	Quasi Peak
dBμV	Decibels above one microvolt	RE	Radiated Emissions
dBμV/m	Decibels above one microvolt per meter	RF	Radio Frequency
DC	Direct Current	RI	Radiated Immunity
E	Electric Field	RMS	Root-Mean-Square
EFT/B	Electrical Fast Transient/Burst	V/m	Volts per meter
ESD	Electrostatic Discharge	VCP	Vertical Coupling Plane
EUT	Equipment Under Test	VDI	Voltage Dips Interruptions
f	Frequency	VF	Voltage Fluctuations

1.0 Testing Summary

The tests specified below were performed with the following results:

Test Standard	Test Description	Compliance
FCC Part 15 Subpart B (per ANSI C63.4: 2014), ICES-003	CE (Mains)	NA
	RE, Class A	Compliant
Note(s): Not Applicable = The EUT is DC powered.		

Eurofins MET Laboratories Inc. (Eurofins E&E North America) is part of the Eurofins Electrical & Electronics (E&E) global compliance network.

2.0 Equipment Configuration

2.1. Overview

Eurofins E&E North America was contracted by HID Global Corporation to perform testing on the HID Aero™ / model X1100, under HID Global Corporation, purchase order number HID002079.

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform compliance testing of the HID Global Corporation, HID Aero™ / model X1100.

In accordance with §2.955(a) (3), the following data is presented in support of the verification of the HID Global Corporation, HID Aero™ / model X1100. HID Global Corporation should retain a copy of this document, which should be kept on file for at least two years after the manufacturing of the HID Aero™ / model X1100 has been **permanently** discontinued, as per §2.955(b).

The results obtained relate only to the item(s) tested.

Model(s) Tested:	HID Aero™ / model X1100
Model(s) Covered:	HID Aero™ / model X1100
Primary Power as Tested:	12-24 VDC
Equipment Emissions Class:	A
Highest frequency generated or used by the EUT:	528 MHz
Evaluated by:	Matthew Hinojosa, James Seib
Report Date:	01/17/2020

2.1.1. Test Site

All testing was performed at Eurofins E&E North America, 13501 McCallen Pass, Austin, TX 78753. All equipment used in making physical determinations is accurate and bears recent traceability to the National Institute of Standards and Technology.

Eurofins E&E North America is a ISO/IEC 17025 accredited site by A2LA, Austin #0591.06.

Eurofins MET Laboratories Inc. (Eurofins E&E North America) is part of the Eurofins Electrical & Electronics (E&E) global compliance network.

Radiated Emissions measurements were performed in a semi-anechoic chamber. In accordance with §2.948(a)(3), a complete site description is contained at Eurofins E&E North America.

2.1.2. Measurement Uncertainty

Test Method	Typical Expanded Uncertainty (dB)	K	Confidence Level
CEV Telecom Port	± 3.76	2	95%
Radiated Emissions, (30 MHz – 1 GHz)	± 2.95	2	95%
Radiated Emissions, (1 - 18 GHz)	± 3.54	2	95%

2.2. Detailed EUT Description and Test Setup

2.2.1. Description of Test Sample

The HID Aero™ / model X1100, Equipment Under Test (EUT), is a Door Reader Interface Module.

Intelligent Controller

The X100, X200, X300, and X1100 are used to control door access. The X1100 makes decisions to open doors based on the card swipes and can run other applications. The X1100 also sends log data to an attached server and can receive commands from the server. The X100, X200, and X300 interface with readers, inputs, and outputs and are controlled by the X1100.

2.2.2. Photograph(s) of Test Sample

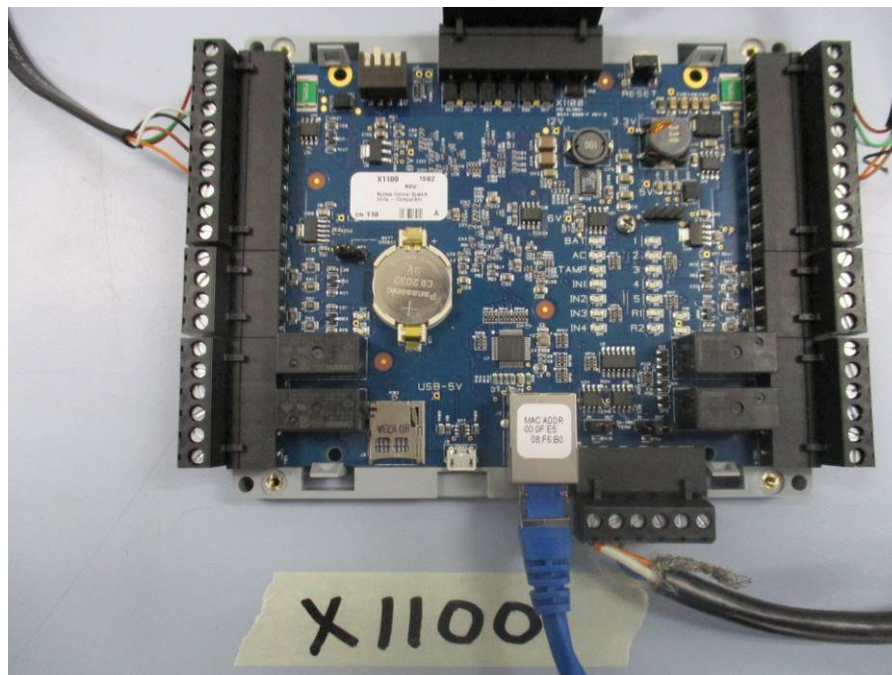


Figure 1. HID Aero™ / model X1100

2.2.3. Block Diagram

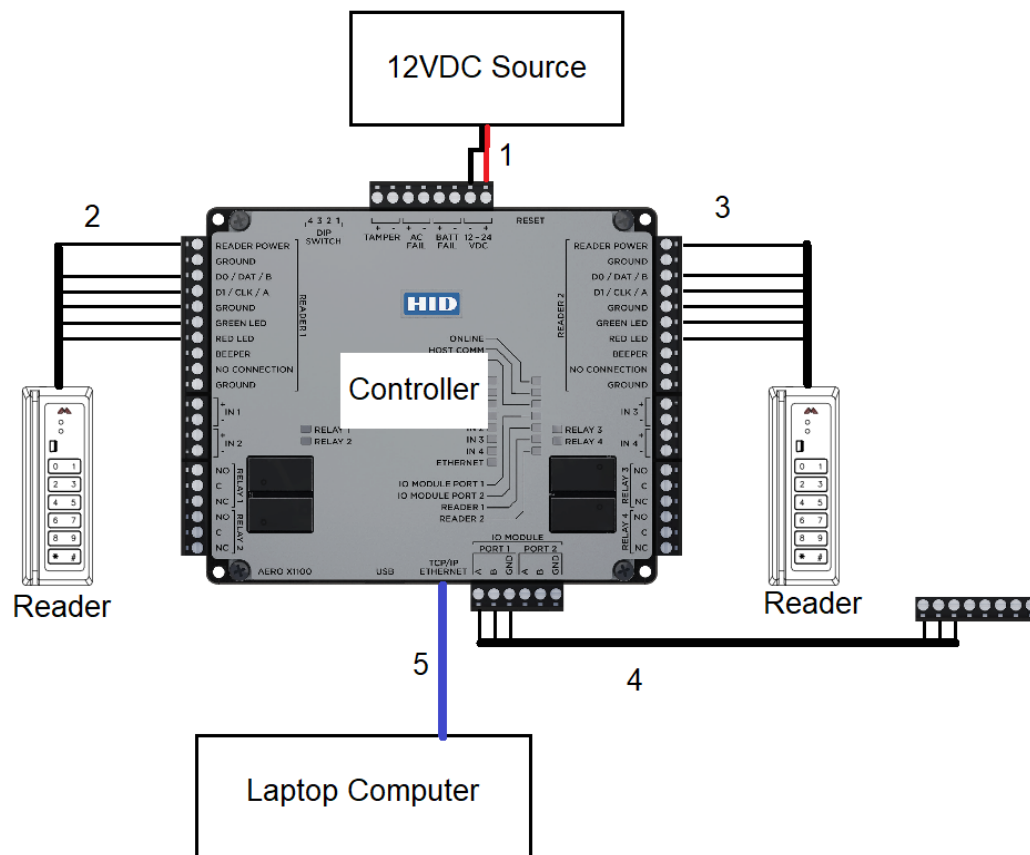


Figure 2. Block Diagram of Test Configuration

2.2.4. Equipment Configuration

The EUT was setup as outlined in Figure 2. All equipment incorporated as part of the EUT is included in the following list.

Ref. ID	Slot #	Name / Description	Model Number	Part Number	Serial Number	Rev. #
N/A	N/A	Intelligent Controller	X1100			

2.2.1. Support Equipment

Support equipment necessary for the operation and testing of the EUT is included in the following list.

Ref. ID	Name / Description	Manufacturer	Model Number	*Customer Supplied Calibration Data
N/A	12V lead-acid battery	Duracell		
N/A	Laptop computer	Dell		
N/A	Magnetic stripe card reader	Mercury Security	MR20	

* All 'customer supplied' support equipment will include the equipments calibration data. This column will be marked as either not applicable, not available, or will contain the calibration date supplied by the customer.

2.2.2. Ports and Cabling Information

Ref. ID	Port name on EUT	Cable Description or reason for no cable	Qty	Length as tested (m)	Max Length (m)	Shielded? (Y/N)	Termination Box ID & Port Name
1	12-24 VDC	2 conductor	1			N	12VDC Source
2	READER 1	6 conductor flat	1			N	Reader
3	READER 2	6 conductor flat	1			N	Reader
4	I/O MODULE PORT 1	3 conductor, 1 twisted pair, 120 ohm	1			Y	Unterminated
5	TCP/IP ETHERNET	Cat 5e cable	1			N	Laptop computer

2.2.3. Mode of Operation & Method of Monitoring EUT Operation

The EUT was operated in the following manner:

Normal Operation – The X1100 monitors supervised inputs and attached readers. When there is a card swipe at the reader, it activates an output relay (if conditions are met) and sends a response to the reader. It also sends commands to and makes decisions based on data received from attached X100, X200, and X300. All actions are logged and sent to the computer over Ethernet.

The X100, X200, and X300 monitor supervised inputs and attached readers, and sends data to the connected X1100. They also activate output relays when the appropriate command is received from the X1100

Performance of the EUT was monitored in the following manner:

Error message on monitoring computer or loss of connection with computer

2.2.4. Modifications to EUT

No modifications were made to the EUT.

2.2.5. Test Software Used

For Conducted Emissions, the current version is: Jamila CE Rev 1.02.

For Radiated Emissions testing, the current version is: Jamila RE (AU) Rev 1.002.

2.2.6. Disposition of EUT

The test sample including all support equipment (if any), submitted to the Electro-Magnetic Compatibility Lab for testing was returned to HID Global Corporation upon completion of testing.

3.0 Electromagnetic Compatibility Emission Criteria

3.1. Radiated Emission: Limits of Electromagnetic Radiation Disturbance

Test Method

The following standards specified below are covered in the scope of this test report:

Standard	Region	Applicability	
		30 - 1000 MHz <i>Semi-anechoic test environment</i>	> 1 GHz <i>Free-Space test environment</i>
FCC Part 15 Subpart B, Section 15.109(a) (b) (per ANSI C63.4: 2014)	United States	Yes	Yes
ICES-003 Issue 6, April 2017, Employing the methods of measurement in ANSI C63.4: 2014	Canada	Yes	Yes

Test Requirements

For radiated emission, the EUT shall meet the Class A radiated emission limits shown below.

Frequency (MHz)	Field Strength (dB μ V/m)	
	§15.109 (b), Class A Limit (dB μ V/m) @ 10 m	§15.109 (a), Class B Limit (dB μ V/m) @ 3 m
30 – 88	39.00	40.00
88 – 216	43.50	43.50
216 – 230	46.40	46.00
230 – 960	46.40	46.00
960 – 1000	49.50	54.00
Above 1 GHz		
1000 – 3000	49.50	54.00
3000 – 6000	49.50	54.00
6000 – 40000	49.50	54.00
If the highest frequency generated or used in the device or on which the device operates or tunes is: - less than 108 MHz, the upper frequency of measurement range is 1000 MHz - between 108 MHz – 500 MHz, the upper frequency of measurement range is 2000 MHz - between 500 – 1000 MHz, the upper frequency of measurement range is 5000 MHz - above 1000 MHz, the upper frequency of measurement range is the 5th harmonic of the highest frequency or 40 GHz, whichever is lower		

Figure 3. Radiated Emissions Limits calculated per FCC Part 15, §15.109 (a) (b) and ICES-003

Sample Calculation for Distance Correction factor (DCF) measurement:

$$F_d = 20 \cdot \log_{10} (D_m/D_s)$$

where:

F_d = Distance Factor in dB

D_m = Measurement Distance in meters

D_s = Specification Distance in meters

Sample formula for calculating the Corrected Data for the Radiated Emissions Measurements:

Frequency (MHz)	Antenna Polarity	EUT Azimuth (Degrees)	Antenna Height (cm)	Uncorrected Amplitude (dBμV/m)	ACF (dB/m) (+)	Pre Amp Gain + CBL (dB)(-)	DCF (dB) (+)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
249.99	V	359.9	240.7	55.46	11.4	28.335	10.46	38.525	47	-8.475

$$\begin{aligned} \text{Corrected Amplitude (dB}\mu\text{V/m)} &= \text{Uncorrected Amplitude (dB}\mu\text{V/m)} + \text{ACF (dB/m)} - (\text{Preamp Gain (dB)} + \text{CBL (dB)} + \text{DCF (dB)})^{**} \\ &= 55.46 + 11.4 - 28.335 + 10.46 = 38.525 \end{aligned}$$

** DCF Column represents the appropriate correction factor used when the measurement distance differs from the specification distance.

Test Procedure

The EUT was placed on a non-metallic table as shown in test setup pictures. Various antennas were placed near the EUT and measurements were taken of the field strengths and frequencies. For final measurements different measurement distances were used in accordance with applicable standards as listed under radiated emissions results section.

For pre-scanning, the EMI receiver scanned the desired frequency range (as listed under test results) to obtain an emission profile of the EUT. For each point of measurement, the turntable was rotated, and the antenna height was varied between 1 m and 4 m, in order to find the maximum radiated emissions. Measurements above 30 MHz were taken using this technique with the antenna in two polarizations: horizontal and vertical. Unless otherwise specified, measurements were made using a peak detector with a 120 kHz bandwidth (30 MHz – 1 GHz) and 1 MHz bandwidth (Above 1 GHz).

For emission above 1 GHz, a double ridged horn was used as a measurement antenna at the measurement distance as listed under Radiated Emissions Test Results, on an adjustable mast. A pre-scan was performed and used to find prominent radiated emissions. The pre-scan method includes investigation of the cone(s) of radiation output from the EUT using a bore-sighting antenna or with manual investigation by hand. For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied depending on the geometry of the EUT and previously investigated cone(s) of radiation. In order to ensure maximized emissions, the horn antenna was positioned both vertically and horizontally. Measurements in both horizontal and vertical polarities were made and the data was recorded. Unless otherwise specified, measurements were made using an average and peak (for CISPR >1 GHz) detector with a 1 MHz resolution bandwidth.

All peak emissions, within 20 dB of the limit, were reviewed and the six highest peaks were remeasured using a quasi-peak or average detector as appropriate. The antenna beam width (w) used for the measurement range of 1 GHz to 6 GHz was at least 50 degrees in the given range.

Test Result

The EUT was **compliant** with the Class A requirement(s) of this section. Measured emissions were below applicable limits.

Environmental Conditions for Radiated Emission	
Ambient Temperature:	21°C
Relative Humidity:	51.1%
Atmospheric Pressure:	93.53 kPa

Test Engineer(s): Matthew Hinojosa

Test Date(s): 08/25/2019, 09/26/2019

Test Data

Frequency (MHz)	Antenna Polarity	EUT Azimuth (Degrees)	Antenna Height (cm)	Uncorrected QP Amplitude (dBuV)	ACF (dB/m)	Pre Amp Gain & CBL Loss (dB)	DCF (dB)	Corrected QP Amplitude (dBuV)	QP Limit (dBuV)	Margin (dB)
59.50	V	293.8	335.3	43.8	10.1	24.235	0	29.665	39	-9.335
156.36	V	117.9	100	38.75	14.1	23.207	0	29.643	43.5	-13.857
195.47	V	75.1	100	37.63	14.047	23.003	0	28.674	43.5	-14.826
255.07	H	174.7	315.7	41.37	17.114	22.59	0	35.894	46.4	-10.506
562.40	H	333.7	139.2	33.8	22.6	21.389	0	35.011	47	-11.989
990.00	H	96.7	100	29	25.5	18.75	0	35.75	47	-11.250

Figure 4. RE FCC Quasi-Peak - (30 MHz – 1 GHz) Test Results

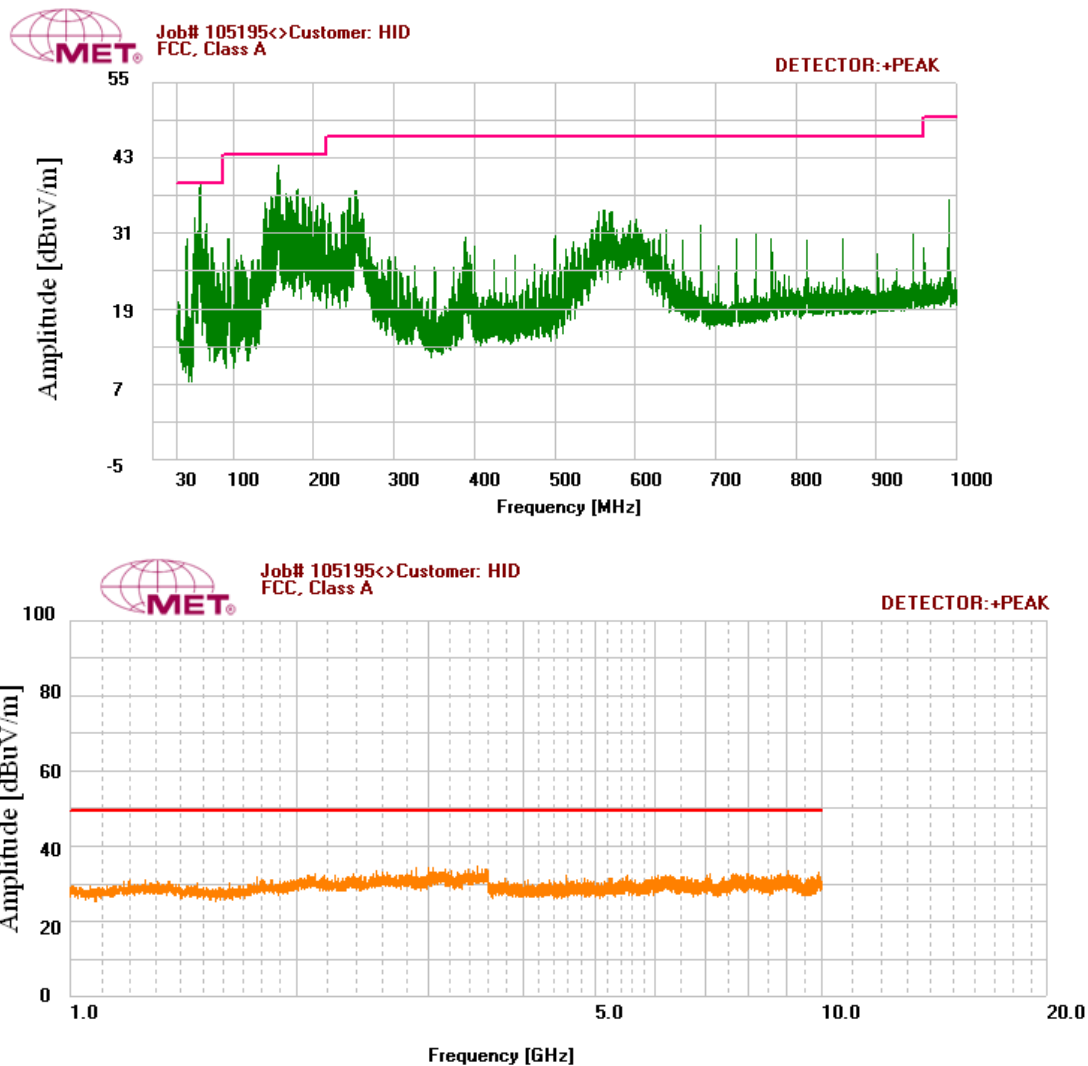


Figure 5. RE FCC - (30 MHz – 10 GHz), Plot

Test Data

Frequency (MHz)	Antenna Polarity	EUT Azimuth (Degrees)	Antenna Height (cm)	Uncorrected AVG Amplitude (dBuV)	ACF (dB/m)	Pre Amp Gain & CBL Loss (dB)	DCF (dB)	Corrected AVG Amplitude (dBuV)	AVG Limit (dBuV)	Margin (dB)
1122.00	H	324.5	400	29.4	27.212	28.899	-10.46	17.253	49.5	-32.247
1578.00	H	109	400	29.6	28.182	31.366	-10.46	15.956	49.5	-33.544
1584.00	V	163.1	329.2	31.5	28.218	31.408	-10.46	17.85	49.5	-31.650
2763.00	V	75.4	100	29.7	32.161	35.787	-10.46	15.614	49.5	-33.886
3512.00	V	0	224.5	29.6	32.899	36.719	-10.46	15.32	49.5	-34.180
3512.00	H	153.3	293.9	31	32.77	36.719	-10.46	16.591	49.5	-32.909

Figure 6. RE FCC Average/Peak - (1 - 6 GHz) Test Results

Note(s): * - At this frequency, the measured electric-field strength exhibits a margin of compliance that is less than 3 dB below the specification limit. We recommend that every emission measured, have at least a 3 dB margin to allow for deviations in the emission characteristics that may occur during the production process.

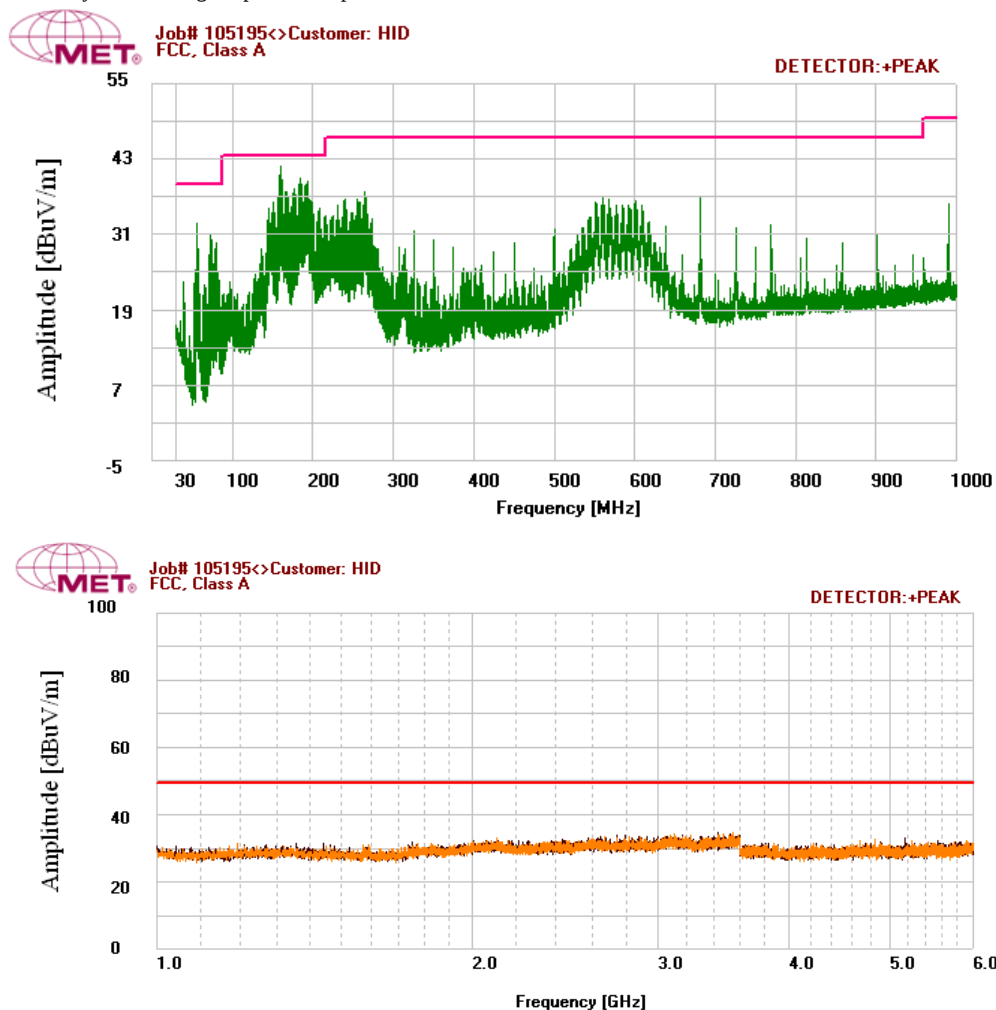


Figure 7. RE FCC Average - (1 - 6 GHz), Plot

Test Photos

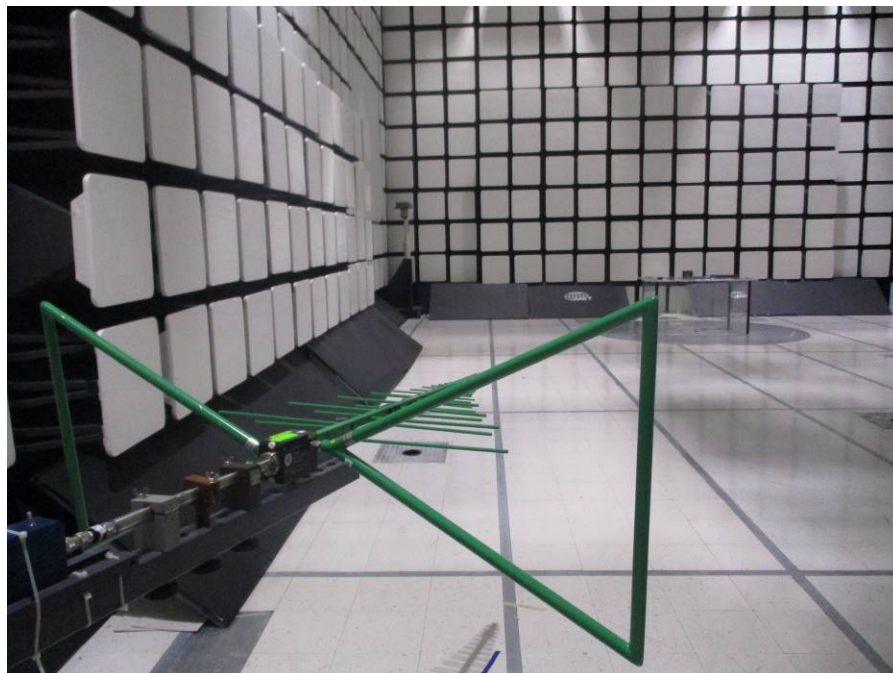


Figure 8. RE (30 MHz – 1 GHz) Test Setup, Antenna View

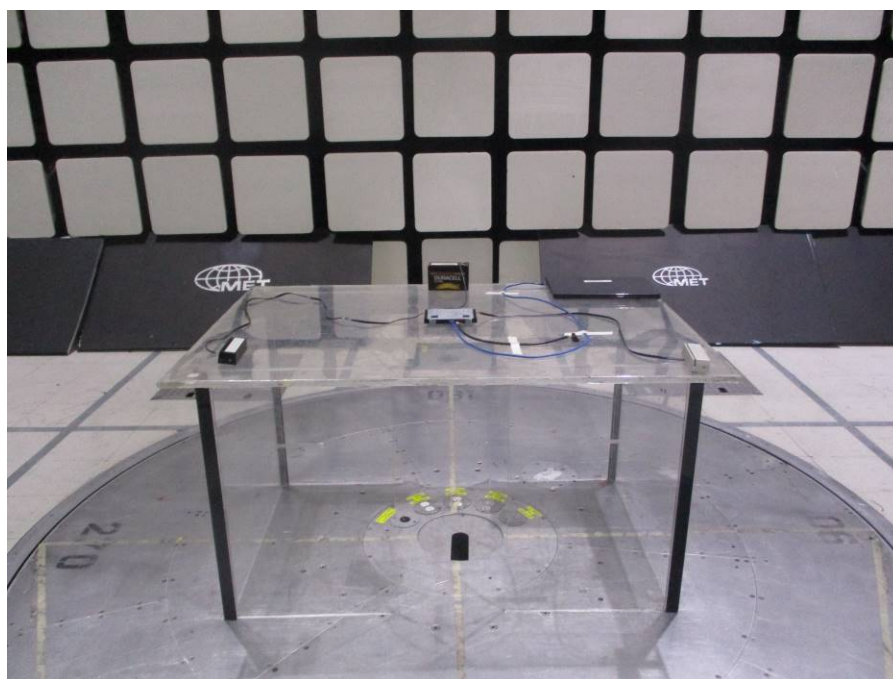


Figure 9. RE (30 MHz – 1 GHz) Test Setup, Front View

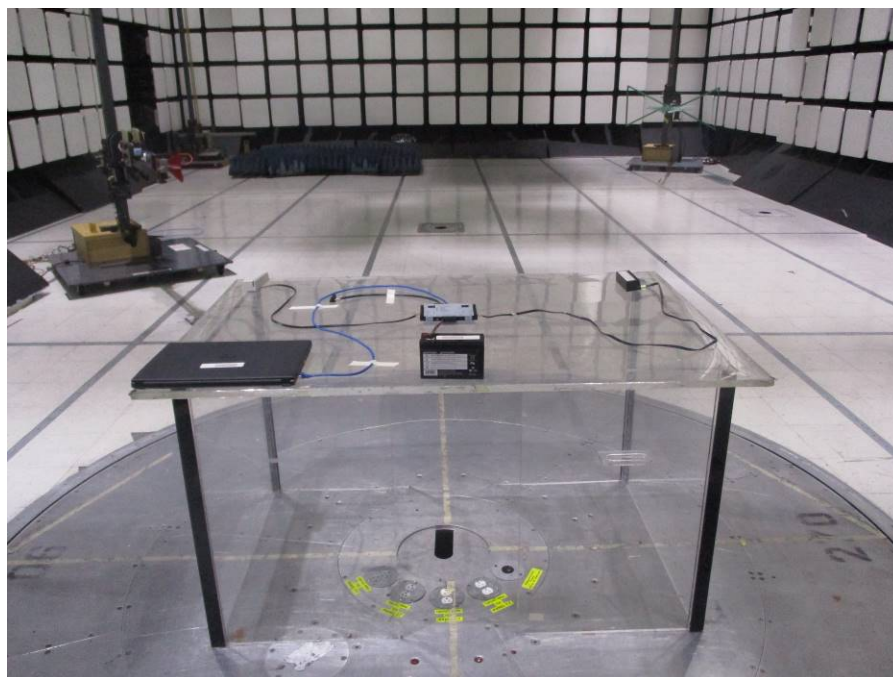


Figure 10. RE (30 MHz – 1 GHz) Test Setup, Rear View

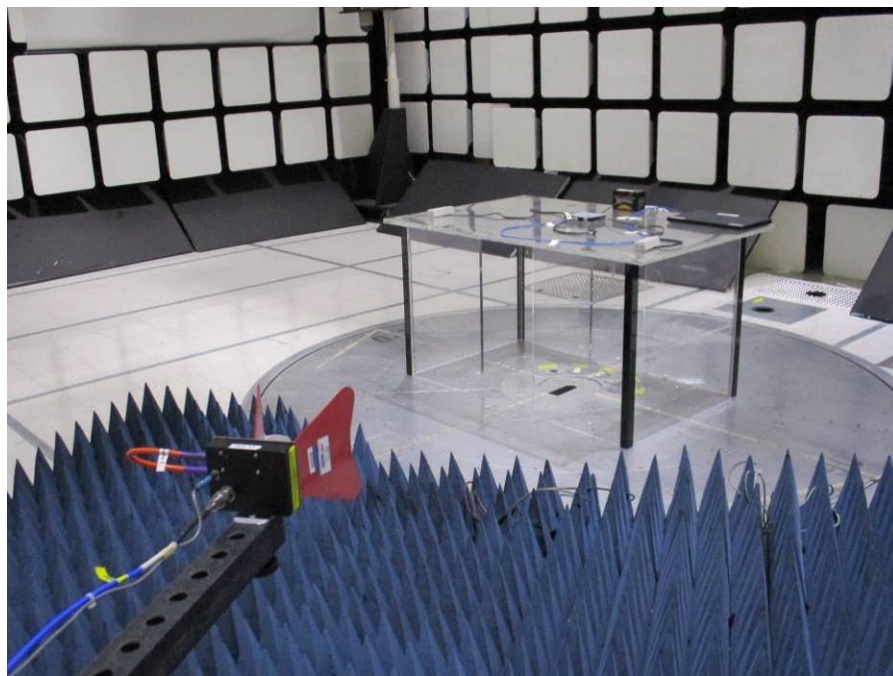


Figure 11. RE (1 – 6 GHz) Test Setup, Antenna View

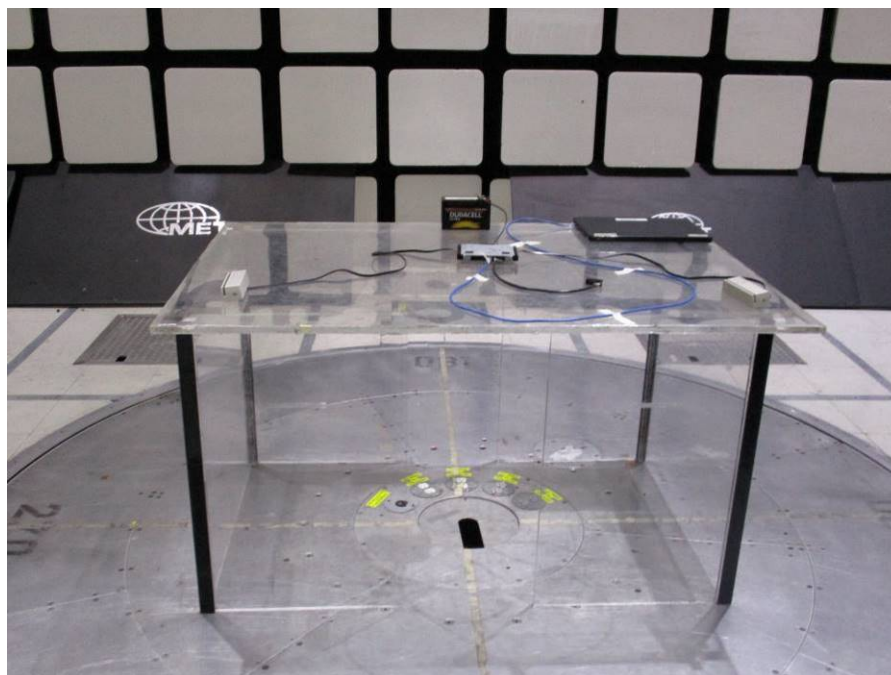


Figure 12. RE (1 – 6 GHz) Test Setup, Front View

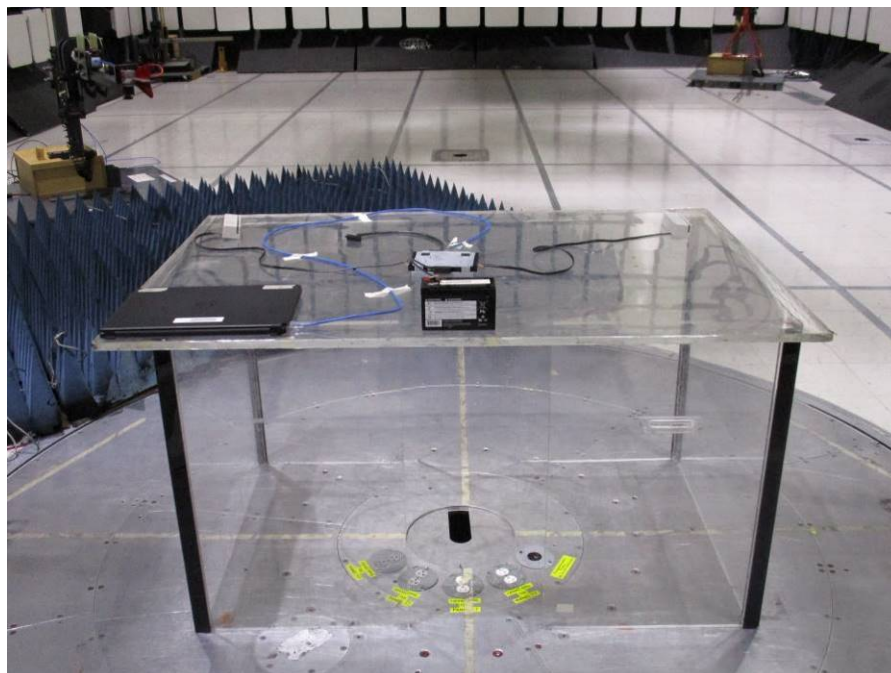


Figure 13. RE (1 – 6 GHz) Test Setup, Rear View

Test Equipment

Calibrated test equipment utilized during testing was maintained in a current state of calibration per the requirements of ISO/IEC 17025:2017.

Test Name: RE			Test Date(s): 08/25/2019		
Asset #	Equipment	Manufacturer	Model	Last Cal Date	Cal Due Date
1A1050	BiLog Antenna	Schaffner	CBL 6112D	08/29/2018	02/29/2020
1A1088	Preamplifier	Rohde & Schwarz	TS-PR1	See Note	See Note
1A1073	Multi Device Controller	ETS EMCO	2090	See Note	See Note
1A1074	System Controller	Panasonic	WV-CU101	See Note	See Note
1A1083	Test Receiver	Rohde & Schwarz	ESU40	10/18/2018	10/18/2019
1A1190	Temperature Humidity Pressure Sensor/Recorder	Omega	PRHTEMP2000	04/15/2019	04/15/2020
1A1106	10 M Semi-Anechoic Chamber (NSA)	ETS - Lindgren	04X07	12/18/2017	12/18/2019
			Test Date(s): 09/26/2019		
1A1183	Double Ridged Waveguide Antenna	ETS Lindgren	3117	10/10/2018	04/10/2020
1A1180	Amplifier	Miteq	AMF-7D-01001800-22-10P	See Note	See Note
1A1190	Temperature Humidity Pressure Sensor/Recorder	Omega	PRHTEMP2000	04/15/2019	04/15/2020
1A1074	System Controller	Panasonic	WV-CU101	See Note	See Note
1A1080	Multi Device Controller	ETS EMCO	2090	See Note	See Note
1A1106	10 M Semi-Anechoic Chamber (NSA)	ETS - Lindgren	04X07	12/18/2017	12/18/2019
1A1183	Double Ridged Waveguide Antenna	ETS Lindgren	3117	10/10/2018	04/10/2020
1A1180	Amplifier	Miteq	AMF-7D-01001800-22-10P	See Note	See Note
1A1190	Temperature Humidity Pressure Sensor/Recorder	Omega	PRHTEMP2000	04/15/2019	04/15/2020
1A1074	System Controller	Panasonic	WV-CU101	See Note	See Note
1A1080	Multi Device Controller	ETS EMCO	2090	See Note	See Note
Note: Functionally tested equipment is verified using calibrated instrumentation at the time of testing.					

4.0 FCC Part 15 Subpart B Compliance Information

4.1. Verification Information

The following is extracted from Title 47 of the Code of Federal Regulations, Part 2, Subpart I — Marketing of Radio frequency devices:

§ 2.801 Radio-frequency device defined.

As used in this part, a radio-frequency device is any device which in its operation is capable of Emitting radio-frequency energy by radiation, conduction, or other means. Radio- frequency devices include, but are not limited to:

- (a) The various types of radio communication transmitting devices described throughout this chapter.
- (b) *The incidental, unintentional and intentional radiators defined in Part 15 of this chapter.*
- (c) The industrial, scientific, and medical equipment described in Part 18 of this chapter.
- (d) Any part or component thereof which in use emits radio-frequency energy by radiation, conduction, or other means.

§ 2.803 Marketing of radio frequency devices prior to equipment authorization.

- (a) Except as provided elsewhere in this chapter, no person shall sell or lease, or offer for sale or lease (including advertising for sale or lease), or import, ship or distribute for the purpose of selling or leasing or offering for sale or lease, any radio frequency device unless:
 - (1) In the case of a device subject to certification, such device has been authorized by the Commission in accordance with the rules in this chapter and is properly identified and labeled as required by §2.925 and other relevant sections in this chapter; or
 - (2) In the case of a device that is not required to have a grant of equipment authorization issued by the Commission, but which must comply with the specified technical standards prior to use, such device also complies with all applicable administrative (including verification of the equipment or authorization under a Declaration of Conformity, where required), technical, labeling and identification requirements specified in this chapter.
- (d) Notwithstanding the provisions of paragraph (a) of this section, the offer for sale solely to business, commercial, industrial, scientific or medical users (but not an offer for sale to other parties or to end users located in a residential environment) of a radio frequency device that is in the conceptual, developmental, design or pre-production stage is permitted prior to equipment authorization or, for devices not subject to the equipment authorization requirements, prior to a determination of compliance with the applicable technical requirements *provided* that the prospective buyer is advised in writing at the time of the offer for sale that the equipment is subject to the FCC rules and that the equipment will comply with the appropriate rules before delivery to the buyer or to centers of distribution.

- (e)(1) Notwithstanding the provisions of paragraph (a) of this section, prior to equipment authorization or determination of compliance with the applicable technical requirements any radio frequency device may be operated, but not marketed, for the following purposes and under the following conditions:
- (i) *Compliance testing;*
 - (ii) Demonstrations at a trade show provided the notice contained in paragraph (c) of this section is displayed in a conspicuous location on, or immediately adjacent to, the device;
 - (iii) Demonstrations at an exhibition conducted at a business, commercial, industrial, scientific or medical location, but excluding locations in a residential environment, provided the notice contained in paragraphs (c) or (d) of this section, as appropriate, is displayed in a conspicuous location on, or immediately adjacent to, the device;
 - (iv) Evaluation of product performance and determination of customer acceptability, provided such operation takes place at the manufacturer's facilities during developmental, design or pre-production states; or
 - (v) Evaluation of product performance and determination of customer acceptability where customer acceptability of a radio frequency device cannot be determined at the manufacturer's facilities because of size or unique capability of the device, provided the device is operated at a business, commercial, industrial, scientific or medical user's site, but not at a residential site, during the development, design or pre-production stages.
- (e)(2) For the purpose of paragraphs (e)(1)(iv) and (e)(1)(v) of this section, the term *manufacturer's facilities* includes the facilities of the party responsible for compliance with the regulations and the manufacturer's premises, as well as the facilities of other entities working under the authorization of the responsible party in connection with the development and manufacture, but not the marketing, of the equipment.
- (f) For radio frequency devices subject to verification and sold solely to business, commercial, industrial, scientific and medical users (excluding products sold to other parties or for operation in a residential environment), parties responsible for verification of the devices shall have the option of ensuring compliance with the applicable technical specifications of this chapter at each end user's location after installation, provided that the purchase or lease agreement includes a provision that such a determination of compliance be made and is the responsibility of the party responsible for verification of the equipment.

The following is extracted from Title 47 of the Code of Federal Regulations, Part 2, Subpart J — Equipment Authorization Procedures:

§ 2.901 Basis and Purpose

- (a) In order to carry out its responsibilities under the Communications Act and the various treaties and international regulations, and in order to promote efficient use of the radio spectrum, the Commission has developed technical standards for radio frequency equipment and parts or components thereof. The technical standards applicable to individual types of equipment are found in that part of the rules governing the service wherein the equipment is to be operated.¹ *In addition to the technical standards provided, the rules governing the service may require that such equipment be verified by the manufacturer or importer, be authorized under a Declaration of Conformity, or receive an equipment authorization from the Commission by one of the following procedures: certification or registration.*
- (b) The following sections describe the verification procedure, the procedure for a Declaration of Conformity, and the procedures to be followed in obtaining certification from the Commission and the conditions attendant to such a grant.

§ 2.902 Verification.

- (a) *Verification is a procedure where the manufacturer² makes measurements or takes the necessary steps to insure that the equipment complies with the appropriate technical standards.* Submission of a sample unit or representative data to the Commission demonstrating compliance is not required unless specifically requested by the Commission pursuant to § 2.957, of this part.
- (b) Verification attaches to all items subsequently marketed by the manufacturer or importer which are identical as defined in § 2.908 to the sample tested and found acceptable by the manufacturer.

¹ In this case, the equipment is subject to the rules of Part 15. More specifically, the equipment falls under Subpart B (of Part 15), which deals with unintentional radiators.

² In this case, Eurofins E&E North America is acting as an agent of the manufacturer.

§ 2.948 Description of measurement facilities.

- (a) Each party making measurements of equipment that is subject to an equipment authorization under Part 15 or Part 18 of this chapter, regardless of whether the measurements are filed with the Commission or kept on file by the party responsible for compliance of equipment marketed within the U.S. or its possessions, shall compile a description of the measurement facilities employed.
 - (1) If the measured equipment is subject to the verification procedure, the description of the measurement facilities shall be retained by the party responsible for verification of the equipment.
 - (i) *If the equipment is verified through measurements performed by an independent laboratory, it is acceptable for the party responsible for verification of the equipment to rely upon the description of the measurement facilities retained by or placed on file with the Commission by that laboratory. In this situation, the party responsible for the verification of the equipment is not required to retain a duplicate copy of the description of the measurement facilities.*
 - (ii) If the equipment is verified based on measurements performed at the installation site of the equipment, no specific site calibration data is required. It is acceptable to retain the description of the measurement facilities at the site at which the measurements were performed.
 - (2) If the equipment is to be authorized by the Commission under the certification procedure, the description of the measurement facilities shall be filed with the Commission's Laboratory in Columbia, Maryland. The data describing the measurement facilities need only be filed once but must be updated as changes are made to the measurement facilities or as otherwise described in this section. At least every three years, the organization responsible for filing the data with the Commission shall certify that the data on file is current.

§ 2.952 Limitation on verification.

- (a) Verification signifies that the manufacturer or importer has determined that the equipment has been shown to be capable of compliance with the applicable technical standards if no unauthorized change is made in the equipment and if the equipment is properly maintained and operated. Compliance with these standards shall not be construed to be a finding by the manufacturer or importer with respect to matters not encompassed by the Commission's rules.
- (b) Verification of the equipment by the manufacturer or importer is effective until a termination date is otherwise established by the Commission.
- (c) No person shall, in any advertising matter, brochure, etc., use or make reference to a verification in a deceptive or misleading manner or convey the impression that such verification reflects more than a determination by the manufacturer or importer that the device or product has been shown to be capable of compliance with the applicable technical standards of the Commission's rules.

§ 2.953 Responsibility for compliance.

- (a) In verifying compliance, the responsible party, as defined in §2.909 warrants that each unit of equipment marketed under the verification procedure will be identical to the unit tested and found acceptable with the standards and that the records maintained by the responsible party continue to reflect the equipment being produced under such verification within the variation that can be expected due to quantity production and testing on a statistical basis.
- (b) The importer of equipment subject to verification may upon receiving a written statement from the manufacturer that the equipment complies with the appropriate technical standards rely on the manufacturer or independent testing agency to verify compliance. The test records required by §2.955 however should be in the English language and made available to the Commission upon a reasonable request, in accordance with §2.956.
- (c) In the case of transfer of control of equipment, as in the case of sale or merger of the grantee, the new manufacturer or importer shall bear the responsibility of continued compliance of the equipment.
- (d) Verified equipment shall be re-verified if any modification or change adversely affects the emanation characteristics of the modified equipment. The party designated in §2.909 bears responsibility for continued compliance of subsequently produced equipment.

§ 2.954 Identification.

Devices subject only to verification shall be uniquely identified by the person responsible for marketing or importing the equipment within the United States. However, the identification shall not be of a format which could be confused with the FCC Identifier required on certified, notified or type accepted equipment. The importer or manufacturer shall maintain adequate identification records to facilitate positive identification for each verified device.

§ 2.955 Retention of records.

- (a) For each equipment subject to verification, the responsible party, as shown in §2.909 shall maintain the records listed as follows:
 - (1) A record of the original design drawings and specifications and all changes that have been made that may affect compliance with the requirements of §2.953.
 - (2) A record of the procedures used for production inspection and testing (if tests were performed) to insure the conformance required by §2.953. (Statistical production line Emission testing is not required.)
- (b) The records listed in paragraph (a) of this section shall be retained for two years after the manufacture of said equipment item has been permanently discontinued, or until the conclusion of an investigation or a proceeding if the manufacturer or importer is officially notified that an investigation or any other administrative proceeding involving his equipment has been instituted.

§ 2.956 FCC inspection and submission of equipment for testing.

- (a) Each responsible party shall upon receipt of reasonable request:
- (1) Submit to the Commission the records required by §2.955.
 - (2) Submit one or more sample units for measurements at the Commission's Laboratory.
 - (i) Shipping costs to the Commission's Laboratory and return shall be borne by the responsible party.
 - (ii) In the event the responsible party believes that shipment of the sample to the Commission's Laboratory is impractical because of the size or weight of the equipment, or the power requirement or for any other reason, the responsible party may submit a written explanation why such shipment is impractical and should not be required.

Label and User's Manual Information

The following is extracted from Title 47 of the Code of Federal Regulations, Part 15, Subpart A — General:

§ 15.19 Labeling requirements.

- (a) *In addition to the requirements in Part 2 of this chapter, a device subject to certification or verification shall be labeled as follows:*
- (1) Receivers associated with the operation of a licensed radio service, e.g., FM broadcast under Part 73 of this chapter, land mobile operation under Part 90, etc., shall bear the following statement in a conspicuous location on the device:

This device complies with Part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.
 - (2) A stand-alone cable input selector switch, shall bear the following statement in a conspicuous location on the device:

This device is verified to comply with Part 15 of the FCC Rules for use with cable television service.
 - (3) All other devices shall bear the following statement in a conspicuous location on the device:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

- (4) Where a device is constructed in two or more sections connected by wires and marketed together, the statement specified under paragraph (a) of this section is required to be affixed only to the main control unit.
- (5) When the device is so small or for such use that it is not practicable to place the statement specified under paragraph (a) of this section on it, the information required by this paragraph shall be placed in a prominent location in the instruction manual or pamphlet supplied to the user or, alternatively, shall be placed on the container in which the device is marketed. However, the FCC identifier or the unique identifier, as appropriate, must be displayed on the device.

§ 15.21 Information to user.

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The following is extracted from Title 47 of the Code of Federal Regulations, Part 15, Subpart B — Unintentional Radiators:

§ 15.105 Information to the user.

- (a) For a Class A digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at own expense.

- (b) For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

5.0 ICES-003 Procedural & Labeling Requirements

The manufacturer, importer or supplier shall meet the labelling requirements set out in this section and in Notice 2014-DRS1003 for electronic labelling for every unit:

- i. prior to marketing in Canada, for ITE manufactured in Canada and
- ii. prior to importation into Canada, for imported ITE.

Each unit of an ITE model shall bear a label (see below) that represents the manufacturer's or the importer's SDoC with Innovation, Science and Economic Development Canada's ICES-003. This label shall be permanently affixed to the ITE or displayed electronically and its text must be clearly legible. If the dimensions of the device are too small or if it is not practical to place the label on the ITE and electronic labelling has not been implemented, the label shall be, upon agreement with Innovation, Science and Economic Development Canada, placed in a prominent location in the user manual supplied with the ITE. The user manual may be in an electronic format and must be readily available.

Innovation, Science and Economic Development Canada ICES-003 Compliance Label:

CAN ICES-3 ()/NMB-3(*)*

* Insert either "A" or "B" but not both to identify the applicable Class of ITE.

END OF REPORT