CLASS II PERMISSIVE CHANGE
TEST REPORT

Report Number: 103638505MPK-001
Project Number: G103638505
August 30, 2018

Testing performed on the
P-620 Denali Mullion-Mount Reader & Keypad
Model: P-620
FCC ID: T8I-PYRAMID
IC: 6504A-PYRAMID
to

FCC Part 15 Subpart C (15.209)
FCC Part 15 Subpart C (15.207)
RSS-210 Issue 9
FCC Part 15, Subpart B
Industry Canada ICES-003

For

Farpointe Data, Inc.

Test Performed by:	Test Authorized by:
Intertek	Farpointe Data, Inc.
1365 Adams Court	232 Santa Ana Ct.
Menlo Park, CA 94025 USA	Sunnyvale, CA 94085 USA

Prepared by: _____ **Date:** August 30, 2018
Anderson Soungpanya

Reviewed by: _____ **Date:** August 30, 2018
Krishna Vemuri

Report No. 103638505MPK-001	
Equipment Under Test:	P-620 Denali Mullion-Mount Reader & Keypad
Trade Name:	Farpointe Data, Inc.
Model Number:	P-620
Serial Number:	182000776
Applicant:	Farpointe Data, Inc
Contact:	Kirk Bierach
Address:	Farpointe Data, Inc. 232 Santa Ana Ct. Sunnyvale, CA 94085
Country:	USA
Tel. Number:	(408) 731-8700
Email:	kirkb@farpointedata.com
Applicable Regulation:	FCC Part 15 Subpart C (15.209) FCC Part 15 Subpart C (15.207) RSS-210 Issue 9 FCC Part 15, Subpart B Industry Canada ICES-003 Issue 6
Test Site Location:	ITS – Site 1 1365 Adams Drive Menlo Park, CA 94025
Date(s) of Test:	August 27, 2018

We attest to the accuracy of this report:

Anderson Soungpanya
EMC Project Engineer

Krishna K Vemuri
Engineering Team Lead

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1.0 Summary of Tests

TEST	REFERENCE FCC 15.225	REFERENCE RSS-210	RESULTS
Radiated Transmitter Emissions	15.209	RSS-GEN	Complies
Line Conducted Emissions	15.207	RSS-GEN	Complies
Antenna Requirement	15.203	RSS-GEN	Complies[1]
Radiated Emission from Digital Part and Receiver	15.109	ICES 003	Complies
AC Line Conducted Emission	15.107	ICES 003	Complies

[1] EUT utilizes an internal Antenna.

2.0 General Description

2.1 Product Description

Farpointe Data, Inc. supplied the following description of the EUT:

The Card Reader + Keypad combines a capacitive touch keypad with an RFID proximity card reader into a single integrated device. The Keypad itself is alphanumeric and backlit. In operation the keypad and RFID card reader portion of the P-620 share the same Wiegand data lines. Specifically, data from either the keypad or the RFID proximity card reader is passed to the access control system on the same cable. Keypad data is passed according to either the 8- Bit Burst (default) or 26- Bit Wiegand data format. And such the P- 620 is appropriate for use in applications requiring keypad only, RFID card reader only, or keypad plus RFID card reader applications (commonly known as card + PIN). Reader may be powered by the access panel or a UL listed Class 2 power supply

For more information, refer to the following product specification, declared by the manufacturer.

Overview of the EUT	
Applicant name & address:	Farpointe Data, Inc. 232 Santa Ana Ct. Sunnyvale, CA 94085 USA
Contact info / Email:	Kirk Bierach / Kirkb@farpointedata.com
Model:	P-620
FCC Identifier:	T8I-PYRAMID
IC Identifier:	6504A-PYRAMID
Operating Frequency:	Single frequency, 125 kHz
Number of Channels:	1
Type of Modulation:	CW
Antenna Type:	Internal Antenna

EUT receive date: August 23, 2018
EUT receive condition: The EUT was received in good condition with no apparent damage. As declared by the Applicant it is identical to the production units.
Test start date: August 27, 2018
Test completion date: August 27, 2018

2.2 Related Submittal(s) Grants

None

2.3 Test Methodology

Both AC mains line-conducted and radiated emissions measurements were performed according to the procedures in ANSI C63.4: 2014. Radiated tests were performed at an antenna to EUT distance of 10 meters, unless stated otherwise in this test report. All other measurements were made in accordance with the procedures in part 2 of CFR 47, ANSI C63.10: 2013 & RSS-GEN Issue 4.

2.4 Test Facility

The radiated emission test site and conducted measurement facility used to collect the data is 10m semi-anechoic chamber located in Menlo Park, California. This test facility and site measurement data have been fully placed on file with the FCC and Industry Canada (Site # 2042L-1).

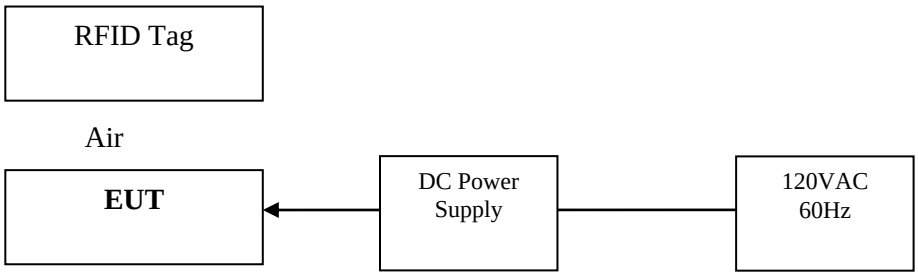
3.0 System Test Configuration

3.1 Support Equipment and description

Support Equipment			
Type	**Model #**	**Quantity**	**S/N**
DC Power Supply	Extech	1	D30030012
RFID Card	Not Listed	1	N/A

3.2 Block Diagram of Test Setup

The diagram shown below details the interconnection of the EUT and support equipment. For specific layout, refer to the test configuration photograph in the relevant section of this report.



S = Shielded **U** = Unshielded	**F** = With Ferrite **m** = Length in Meters

3.3 Justification

The EUT was configured to continuously transmit and looking for tags. This report covers the RFID radio only.

For radiated emission measurements the EUT is placed on a non-conductive table.

P-620 is identical to P-640, except for form factor. P-620 is arranged in a 2x6 keypad layout, P-640 in a 3x4 keypad layout. P-620 proximity coil is smaller than P-640 proximity coil. Otherwise, Electronic circuitry is identical.

3.4 Software Exercise Program

EUT was programmed to continuously transmit and read tags.

3.5 Mode of Operation during test

EUT was continuously transmitting and reading tags during the tests.

3.6 Modifications required for Compliance

No modifications were installed by Intertek Testing Services during compliance testing in order to bring the product into compliance.

3.7 Additions, deviations and exclusions from standards

No additions, deviations or exclusion have been made from standard.

4.0 Measurement Results

4.1 Field Strength of Fundamental and Radiated Emissions Outside the band

4.1.1 Requirements

§15.209 Radiated emission limits; general requirements.

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Limits for Electromagnetic Radiated Disturbance, FCC Section 15.109(b)

Frequency (MHz)	Class A at 10m dB(µV/m)	Class B at 3m dB(µV/m)
30-88	39.0	40.0
88-216	43.5	43.5
216-960	46.4	46.0
Above 960	49.5	54.0

Note: Three sets of units are commonly used for EMI measurement, decibels below one milliwatt (-dBm), decibels above a microvolt (dBµV), and microvolts (µV). To convert between them, use the following formulas: 20 LOG_{10} (µV) = dBµV, dBm = dBµV-107

4.1.2 Procedure

Radiated Measurements Below 30 MHz

During the test the EUT is rotated and the measuring antenna angles are varied during the search for maximum signal level.

Radiated emissions are taken at ten meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. Measurements for below 30 MHz were made at 10 meters. Data results below are corrected for distance back to 30 meters.

Radiated Measurements Above 30 MHz

During the test the EUT is rotated and the measuring antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters.

Radiated emissions are taken at ten meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. Measurements for above 30 MHz were made at 10 meters.

Radiated emission measurements were performed from 9kHz to 1 GHz.
Analyzer resolution is:

200Hz or greater for 9kHz to 150kHz
9 kHz or greater for 150kHz to 30 MHz
120 kHz or greater for 30MHz to 1000 MHz
For those frequencies quasi-peak detector applies

Data includes of the worst-case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation is as follows:

FS = RA + AF + CF – AG – DCF

Where FS = Field Strength in dB (μV/m)

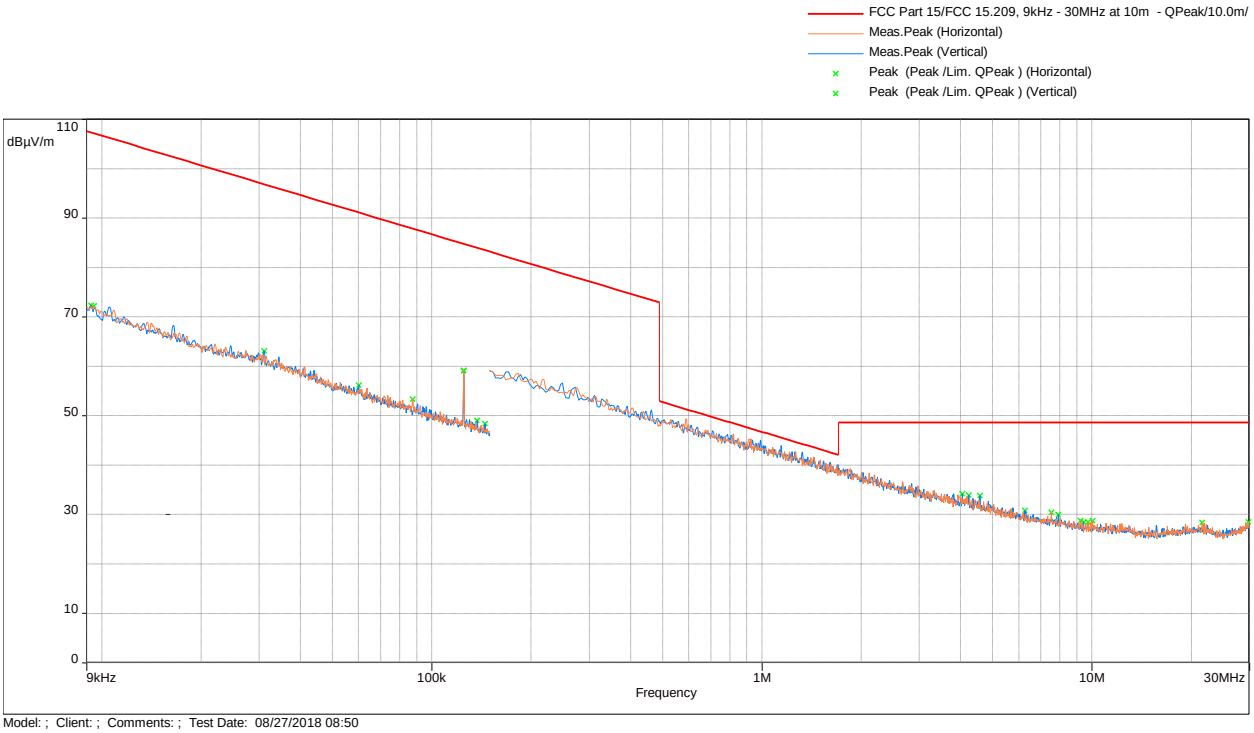
RA = Receiver Amplitude (including preamplifier) in dB (μV)
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB (1/m)
AG = Amplifier Gain in dB
DCF = Distance Correction Factor

Note: FS was measured with loop antenna below 30MHz

4.1.3 Test Result

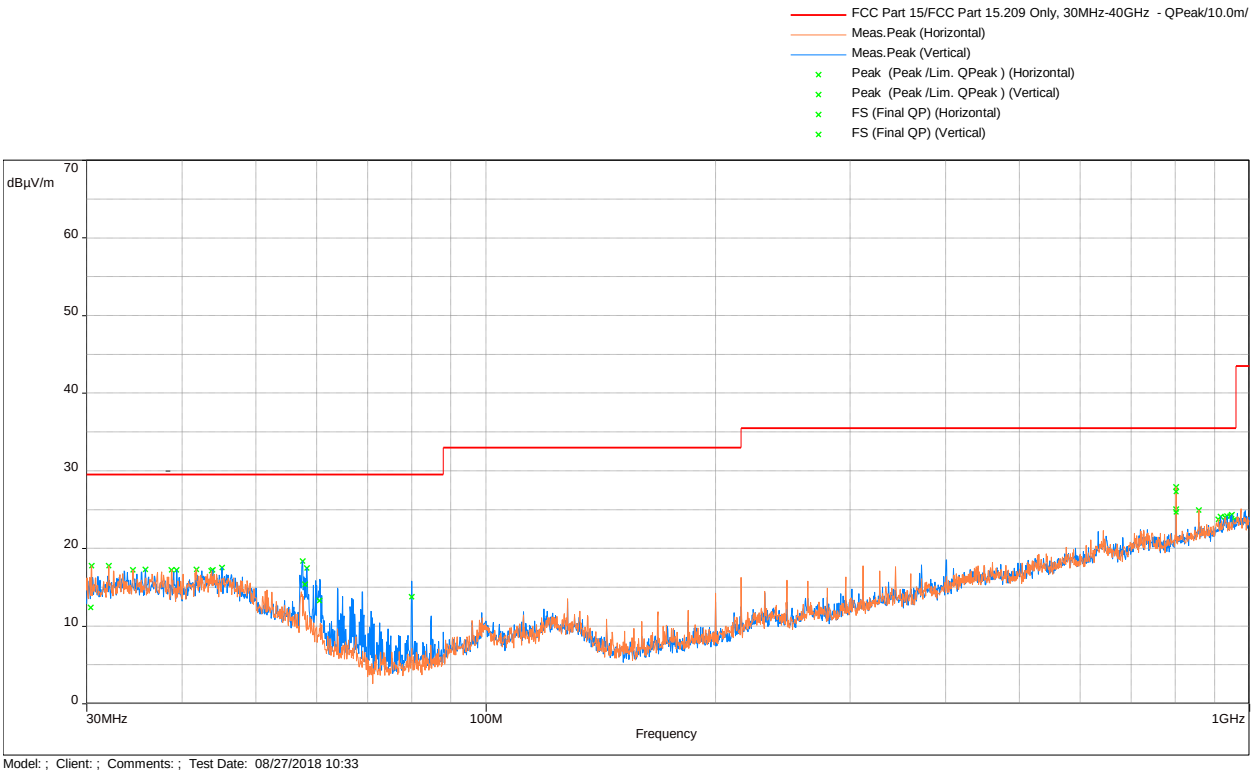
The data below shows the significant emission frequencies, the limit and the margin of compliance. Note: Measurements were performed at parallel and perpendicular orientation of loop antenna, and vertical and horizontal orientations of EUT.

15.209 Radiated Spurious Emissions from 9 kHz to 30MHz



Frequency (MHz)	Peak @10m (dBµV/m)	QP-Limit@10m (dBµV/m)	Margin (dB)	Angle (°)	EUT Orientation	Correction (dB)
0.125	59.13	84.76	-25.63	1.75	Horizontal	14.06
0.125	59.01	84.76	-25.75	83	Vertical	14.06

15.109 Class B & 15.209 Radiated Spurious Emissions from 30 MHz to 1000 MHz

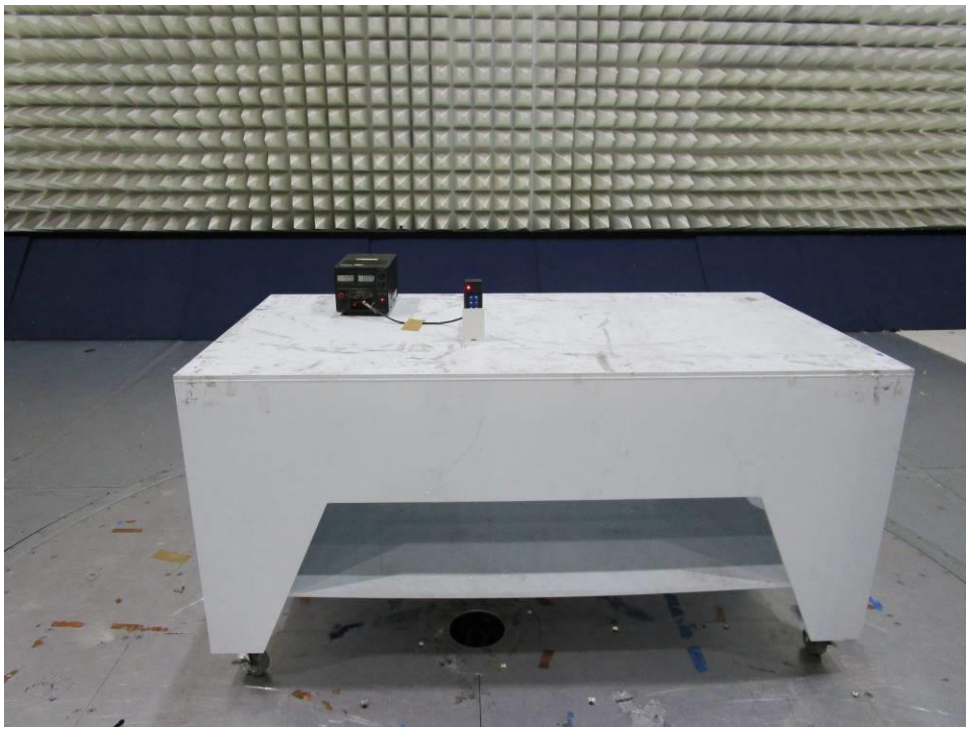


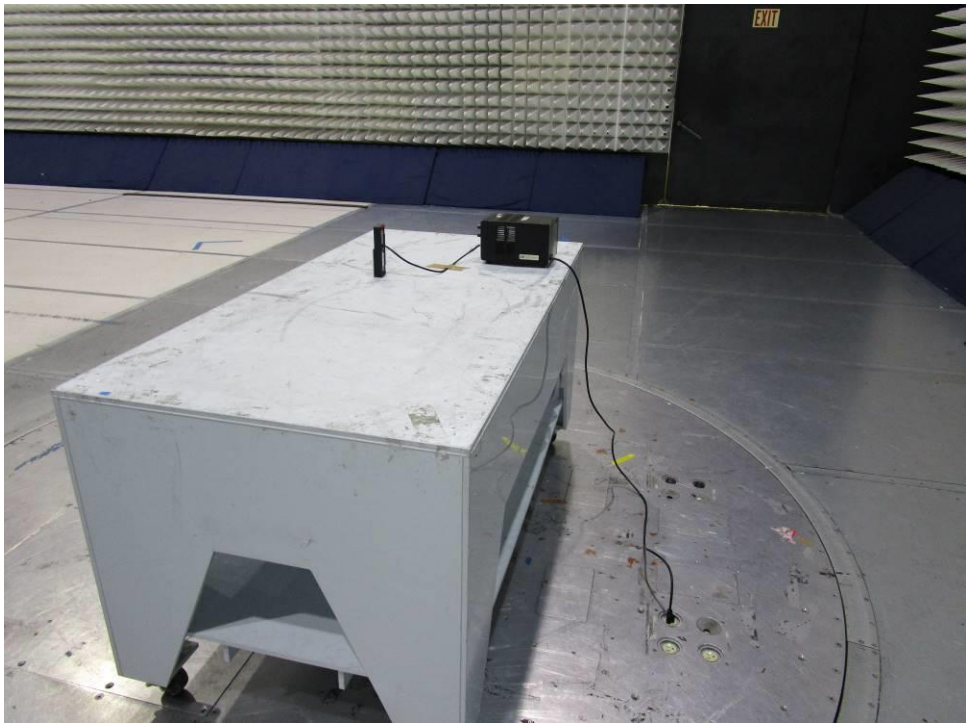
Frequency (MHz)	QPeak@10m (dBµV/m)	Lim. QPeak (dBµV/m)	Margin (dB)	Angle (°)	Height (m)	Antenna Polarization	Correction (dB)
30.398	12.35	29.50	-17.15	46	3.13	Horizontal	-9.53
801.811	27.29	35.50	-8.21	327	3.44	Horizontal	-3.49
57.995	15.34	29.50	-14.16	58	3.96	Vertical	-15.65
60.599	13.26	29.50	-16.24	177	3.35	Vertical	-16.51
80.023	13.75	29.50	-15.75	292	3.60	Vertical	-20.24
801.814	24.67	35.50	-10.83	121	1.89	Vertical	-3.49

Results	Complies

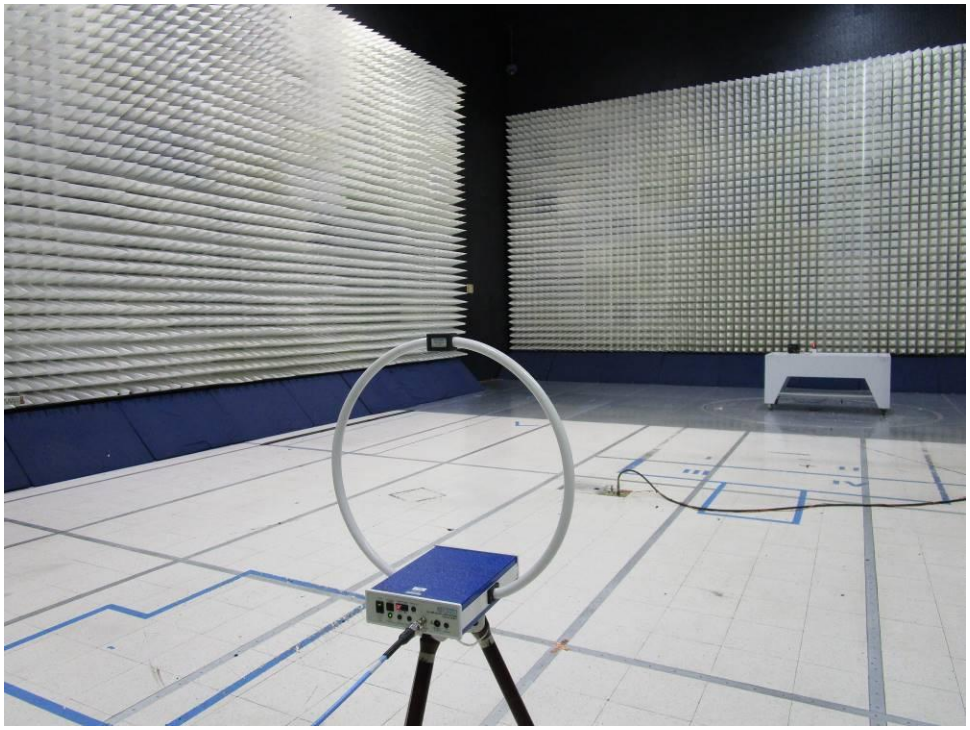
4.1.4 Test Configuration Photographs

The following photographs show the testing configurations used.





4.1.4 Test Configuration Photographs (Continued)



4.2 AC Line Conducted Emission
FCC Rule 15.107/15.207

4.2.1 Requirement

Frequency Band MHz	Class B Limit dB(µV)		Class A Limit dB(µV)	
	Quasi-Peak	Average	Quasi-Peak	Average
0.15-0.50	66 to 56 *	56 to 46 *	79	66
0.50-5.00	56	46	73	60
5.00-30.00	60	50	73	60

*Note: *Decreases linearly with the logarithm of the frequency. At the transition frequency the lower limit applies.*

4.2.2 Procedure

Measurements are carried out using quasi-peak and average detector receivers in accordance with CISPR 16. An AMN is required to provide a defined impedance at high frequencies across the power feed at the point of measurement of terminal voltage and also to provide isolation of the circuit under test from the ambient noise on the power lines. An AMN as defined in CISPR 16 shall be used.

The EUT is located so that the distance between the boundary of the EUT and the closest surface of the AMN is 0.8m.

Where a flexible mains cord is provided by the manufacturer, this shall be 1m long or if in excess of 1m, the excess cable is folded back and forth as far as possible so as to form a bundle not exceeding 0.4m in length.

The EUT is arranged and connected with cables terminated in accordance with the product specification.

Conducted disturbance is measured between the phase lead and the reference ground, and between the neutral lead and the reference ground. Both measured values are reported.

The EUT, where intended for tabletop use, is placed on a table whose top is 0.8m above the ground plane. A vertical, metal reference plane is placed 0.4m from the EUT. The vertical metal reference-plane is at least 2m by 2m. The EUT shall be kept at least 0.8m from any other metal surface or other ground plane not being part of the EUT. The table is constructed of non-conductive materials. Its dimensions are 1m by 1.5m but may be extended for larger EUT.

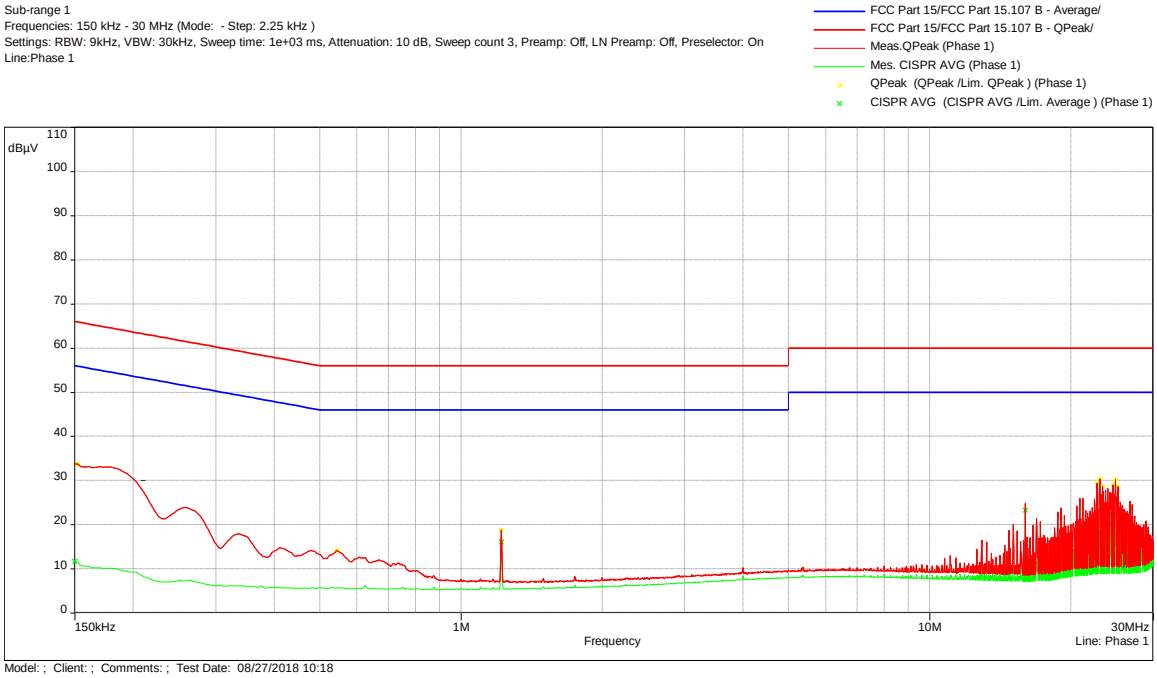
Floor standing EUT are placed on a horizontal metal ground plane and isolated from the ground plane by resting on an insulating material. The metal ground plane extends at least 0.5m beyond the boundaries of the EUT and has minimum dimensions of 2m by 2m.

EUT was placed in transmission mode then tested for conducted emissions per 15.207 and 15.107.

4.2.3 Test Result

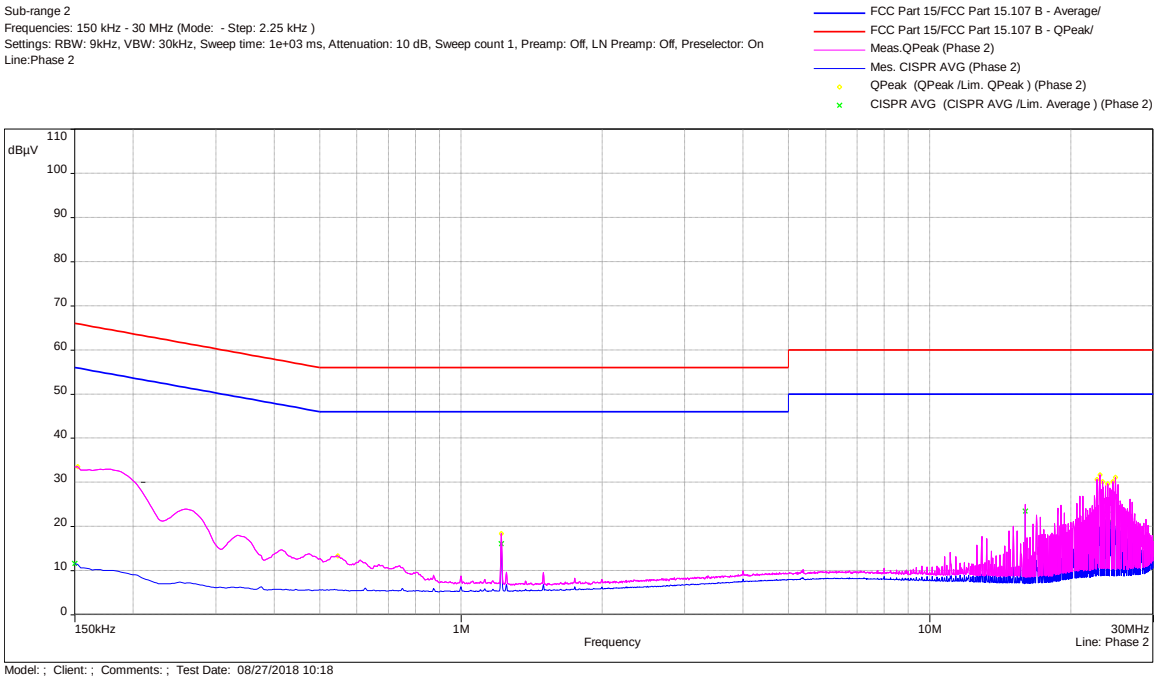
15.107 Class B & 15.207 AC Line Conducted Emission from 150kMHz to 30 MHz

Phase 1



Model: ; Client: ; Comments: ; Test Date: 08/27/2018 10:18

Phase 2



Model: ; Client: ; Comments: ; Test Date: 08/27/2018 10:18

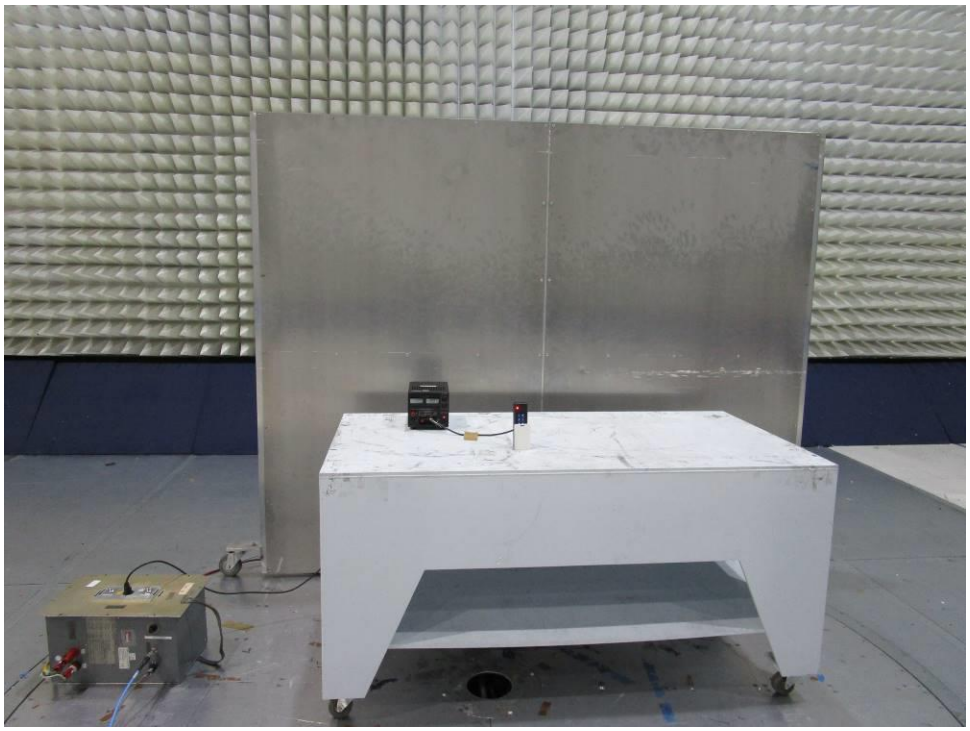
Quasi Peak Table					
Frequency (MHz)	QPeak (dBµV)	Lim. QPeak (dBµV)	QPeak-Lim (dB)	Phase	Correction (dB)
0.152	33.77	65.88	-32.10	Phase 1	11.51
0.152	33.54	65.88	-32.34	Phase 2	11.51
0.544	14.11	56	-41.89	Phase 1	11.59
0.546	13.31	56	-42.69	Phase 2	11.59
1.221	18.78	56	-37.22	Phase 1	11.62
1.221	18.38	56	-37.62	Phase 2	11.62
22.769	29.39	60	-30.61	Phase 1	11.98
22.769	30.66	60	-29.34	Phase 2	11.98
23.078	31.69	60	-28.31	Phase 2	11.98
23.078	30.28	60	-29.72	Phase 1	11.98
23.386	30.13	60	-29.87	Phase 2	11.98
23.386	28.61	60	-31.39	Phase 1	11.98
24.000	29.63	60	-30.37	Phase 2	11.98
24.617	30.14	60	-29.86	Phase 2	11.99
24.617	28.99	60	-31.01	Phase 1	11.99

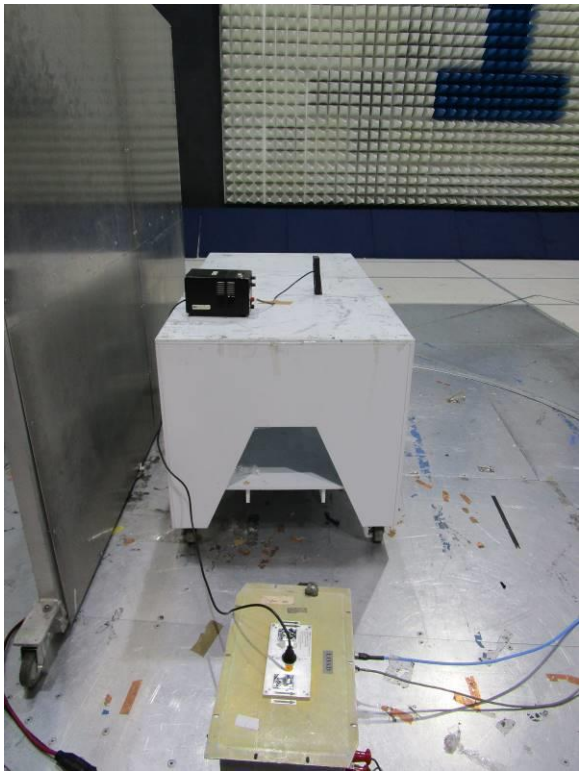
Average Table					
Frequency (MHz)	AVG (dBµV)	Lim. Average (dBµV)	AVG-Lim (dB)	Phase	Correction (dB)
0.150	11.65	56	-44.35	Phase 1	11.51
0.150	11.55	56	-44.45	Phase 2	11.51
1.221	16.08	46	-29.92	Phase 1	11.62
1.221	16.02	46	-29.98	Phase 2	11.62
16.001	23.24	50	-26.76	Phase 1	11.94
16.001	23.46	50	-26.54	Phase 2	11.94
23.501	19.69	50	-30.31	Phase 1	11.98
23.501	20.93	50	-29.07	Phase 2	11.98
23.750	20.02	50	-29.98	Phase 1	11.98
23.750	21.24	50	-28.76	Phase 2	11.98
24.000	21.32	50	-28.68	Phase 1	11.98
24.000	22.71	50	-27.29	Phase 2	11.98
24.250	20.00	50	-30.00	Phase 1	11.99
24.250	21.10	50	-28.90	Phase 2	11.99

Results	Complies

4.2.4 Test Configuration Photographs

The following photographs show the testing configurations used.





5.0 List of test equipment

Measurement equipment used for emission compliance testing utilized the equipment on the following list:

Equipment	Manufacturer	Model/Type	Asset No.	Calibration Interval	Cal Due
Active Loop Antenna	Com Power	AL-130R	ITS 01589	12	10/10/18
Pre-Amplifier	Sonoma Instrument	310	ITS 01493	12	10/20/18
EMI Receiver	Rohde and Schwarz	ESR7	ITS 01607	12	10/09/18
BI-Log Antenna	Antenna Research	LPB-2513	ITS 00355	12	02/21/19
LISN	FCC	FCC-LISN-PA-NEMA-5-15	ITS 00552	12	11/14/18
Transient Limiter	COM-POWER	LIT-153A	ITS 01452	12	06/21/19

* Calibration performed by ITS prior to the test. # Calibration not required

Software used for emission compliance testing utilized the following:

Name	Manufacturer	Version	Template/Profile
BAT-EMC	Nexio	3.16.0.64	Farpointe_G103638505

6.0 Document History

Revision/ Job Number	Writer Initials	Reviewer Initials	Date	Change
1.0 / G103638505	AS	KV	August 30, 2018	Original document

END OF REPORT