Electromagnetic Compatibility
Test Report

Prepared in accordance with

FCC Part 15C, RSS-210 Issue 8 and ANSI C63.10

On

SPEECH AUGMENTATION DEVICE

ProxPad

PROXTALKER.COM, LLC
327 Huntingdon Avenue
Waterbury, CT 06708 USA

Prepared by:

TUV Rheinland of North America, Inc.

Manufacturer's statement - attestation

The manufacturer; PROXTALKER.COM, LLC as the responsible party for the equipment tested, hereby affirms:

a) That he has reviewed and concurs that the test shown in this report are reflective of the operational characteristics of the device for which certification is sought;

b) That the device in this test report will be representative of production units;

c) That all changes (in hardware and software/firmware) to the subject device will be reviewed.

d) That any changes impacting the attributes, functionality or operational characteristics documented in this report will be communicated to the body responsible for approving (certifying) the subject equipment.

Dan Driscoll	Dan Driscoll
Printed name of official	Signature of official
327 Huntingdon Avenue Waterbury, CT 06708 USA	27 August 2012
Address	Date
(203) 721-6074 EXT 12	dan@proxtalker.com
Telephone number	Email address of official

Client:	PROXTALKER.COM, LLC 327 Huntingdon Avenue Waterbury, CT 06708 USA	Dan Driscoll (203) 721-6074 EXT 12 / (203) 721-6070 dan@proxtalker.com	
Identification:	SPEECH AUGMENTATION DEVICE	***Serial No.:***	11081514
Test item:	ProxPad	***Date tested:***	29 Junel 2012
Testing location:	TUV Rheinland of North America 762 Park Avenue Youngsville, NC 27596-9470 U.S.A.	Tel: (919) 554-3668 Fax: (919) 554-3542	
Test specification:	**Emissions:** FCC Part 15, Subpart C, RSS-210 Issue 8: FCC Parts 15.207(a) and RSS-GEN 7.2.4, FCC Parts 15.225(a) and RSS-210 A2.6(a), FCC Parts 15.225(b) and RSS-210 A2.6(b), FCC Parts 15.225(c) and RSS-210 A2.6(c), FCC Parts 15.225(d) and RSS-210 A2.6(d), FCC Parts 15.225(e) and RSS-210 A2.6, FCC Part 2.1093 and RSS-102, Issue 4		
Test Result	**The above product was found to be Compliant to the above test standard(s)**		

tested by: Mark Ryan	***reviewed by:*** Michael Moranha
28 August 2012, ***Signature***	4 September 2012, ***Signature***
Other Aspects:	**None**

Abbreviations: OK, Pass, Compliant, Complies = passed
Fail, Not Compliant, Does Not Comply = failed
N/A = not applicable

90552 and 100881	**Testing Cert #3331.05**	**Industry Canada** **2932H-1 and 2932H-2**

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1 General Information

1.1 Scope

This report is intended to document the status of conformance with the requirements of the FCC Part 15C, RSS-210 Issue 8 and ANSI C63.10 based on the results of testing performed on 29 Junel 2012 on the SPEECH AUGMENTATION DEVICE, Model No. ProxPad, manufactured by PROXTALKER.COM, LLC This report only applies to the specific samples tested under the stated test conditions. It is the responsibility of the manufacturer to assure that additional production units of this model are manufactured with identical or EMI equivalent electrical and mechanical components. This report is further intended to document changes and modifications to the EUT throughout its life cycle. All documentation will be included as a supplement.

1.2 Purpose

Testing was performed to evaluate the EMC performance of the EUT (Equipment Under Test) in accordance with the applicable requirements, procedures, and criteria defined in the application of regulations and application of standards listed in this report.

1.3 Revision History

Revision	Date	Description of Revision
--	29 Aug 2012	Initial Release
A	4 Sept 2010	Updated wrong calibration dates in section 2.5 of test report

1.4 *Summary of Test Results*

Applicant	PROXTALKER.COM, LLC 327 Huntingdon Avenue Waterbury, CT 06708 USA	**Tel**	(203) 721-6074 EXT 12	**Contact**	Dan Driscoll
		Fax	(203) 721-6070	**e-mail**	dan@proxtalker.com
Description	SPEECH AUGMENTATION DEVICE	**Model**	ProxPad		
Serial Number	11081514	**Test Voltage/Freq.**	3 V DC Lithium battery		
Test Date Completed:	29 Junel 2012	**Test Engineer**	Mark Ryan		

Standards	Description	Severity Level or Limit	Worst-case Values	Test Result
FCC Part 15, Subpart C Standard	Radio Frequency Devices-Subpart C: Intentional Radiators	See called out parts below	See Below	**Complies**
RSS-210 Issue 8 Standard	Low-Power Licence-exempt Radiocommunication Devices Category I Equipment	See called out parts below	See Below	**Complies**
FCC Part 15.225 and RSS-210 Annex 2.6	Operation within the band 13.110 to 14.010 MHz	See called out parts below	See Below	Complies
FCC Parts 15.225(a) and RSS-210 A2.6(a)	Field strength within the band 13.553-13.567 MHz	The field strength Shall not exceed 15.848 mV/m (84 dBµV/m) at 30m		Complies
FCC Parts 15.225(b) and RSS-210 A2.6(b)	Field strength within the band 13.410 to 13.553 MHz and 13.567 to 13.710 MHz	The field strength Shall not exceed 334 µV/m (50.5 dBµV/m) at 30m	32.61 dBµV	Complies
FCC Parts 15.225(c) and RSS-210 A2.6(c)	Field strength within the band 13.110 to 13.410 MHz and 13.710 to 14.010 MHz	The field strength Shall not exceed 106 µV/m (40.5 dBµV/m) at 30m		Complies
FCC Parts 15.225(d) and RSS-210 A2.6(d)	Field strength oustide the band 13.110 to 14.010 MHz	The field strength Shall not exceed 30 µV/m (29.5 dBµV/m) at 30m		Complies
FCC Parts 15.225(e) and RSS-210 A2.6	Frequency Stability	Frequency stablility shall be maintained within ±0.01% (±100 ppm)		Complies
FCC Parts 15.207(a) and RSS-GEN 7.2.4	Conducted Emissions on AC Mains in transmit mode	Class A, 150kHz - 30MHz	Limit	Complies
RSS-GEN	Occupied Bandwidth	99% BW ≤ 0.5% of center freq.	136 kHz	Complies
FCC Part 15.109(a) and ICES-003	Radiated Emissions in Standby Mode	Class B, 30 - 1000 MHz	Limit	Complies
FCC Part 15.107(a), and ICES-003	Conducted Emissions on AC Mains in Standby mode	Class B, 150kHz - 30MHz	Limit	Complies
FCC Part 2.1093 and RSS-102, Issue 4	RF Exposure	SAR or MPE Requirements	2.87 mW	Complies

2 Laboratory Information

2.1 Accreditations and Endorsements

2.1.1 US Federal Communications Commission

TUV Rheinland of North America located at 762 Park Avenue, Youngsville, NC 27596-9470 is accredited by the commission for performing testing services for the general public on a fee basis. This laboratory test facilities have been fully described in reports submitted to and accepted by the FCC (Registration No 90552 and 100881). The laboratory scope of accreditation includes: Title 47 CFR Part 15, and 18. The accreditation is updated every 3 years.

2.1.2 NIST / A2LA

Program, which is administered under the auspices of the National Institute of Standards and Technology. The laboratory has been assessed and accredited in accordance with ISO Standard 17025:2005 (Certificate Number: 3331.05, Master Code: 134288). The scope of laboratory accreditation includes emission and immunity testing. The accreditation is updated annually.

2.1.3 Industry Canada

Registration No.: 2932H-1 The OATS has been accepted by Industry Canada to perform testing to 3 and to 10 meters, based on the test procedures described in ANSI C63.4-2009.

Registration No.: 2932H-2 The 5 meter chamber has been accepted by Industry Canada to perform testing to 3 meters, based on the test procedures described in ANSI C63.4-2009.

2.1.4 Japan – VCCI

The Voluntary Control Council for Interference by Information Technology Equipment (VCCI) is a group that consists of Information Technology Equipment (ITE) manufacturers and EMC test laboratories. The purpose of the Council is to take voluntary control measures against electromagnetic interference from Information Technology Equipment, and thereby contribute to the development of a socially beneficial and responsible state of affairs in the realm of Information Technology Equipment in Japan. TUV Rheinland at the 762 Park Ave. Youngsville, N.C 27596 address has been assessed and approved in accordance with the Regulations for Voluntary Control Measures. (Laboratory Registration No: A-0034).

2.1.5 Sample Calculation – radiated & conducted emissions

The field strength is calculated by subtracting the Amplifier Gain and adding the Cable Loss and Antenna Correction Factor to the measured reading. The basic equation is as follows:

Field Strength (dBμV/m) = RAW - AMP + CBL + ACF

Where: RAW = Measured level before correction (dBμV)

AMP = Amplifier Gain (dB)

CBL = Cable Loss (dB)

ACF = Antenna Correction Factor (dB/m)

$$\mu V/m = 10^{\frac{dB\mu V/m}{20}}$$

Sample radiated emissions calculation @ 30 MHz

Measurement +Antenna Factor–Amplifier Gain+Cable loss=Radiated Emissions (dBuV/m)

25 dBuV/m + 17.5 dB – 20 dB + 1.0 dB = 23.5 dBuV/m

2.2 Measurement Uncertainty Emissions

	U_{lab}	U_{cispr}
Radiated Disturbance @ 10m		
30 MHz – 1,000 MHz	3.3 dB	5.2 dB
Conducted Disturbance @ Mains Terminals		
150 kHz – 30 MHz	1.18 dB	3.6 dB
Disturbance Power		
30 MHz – 300 MHz	3.88 dB	4.5 dB
Temperature measurement	**Humidity measurements**	**DC Voltage measurements**
± 4. 0 %	± 4. 0 %	± 0.5 %

2.3 Calibration Traceability

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Measurement method complies with ANSI/NCSL Z540-1-1994 and ISO Standard 17025:2005. Equipment calibration records are kept on file at the test facility.

2.4 Software Used

Manufacturer	Name	Version
Quantum Change/EMC Systems LLC.	Tile	3.2U
TopRudder	RadCon RF Immunity	1.1.13
TUV	Alt "R"	1
TUV	Alt "C"	1
VolTech Instruments	IEC61000-3 for PM6000	1.24.12
California Intruments	AC Source GUI 32	1.19
CTS	CTS 3.0	3.2.0.32
KeyTek ECAT	Surgeware	V5.31
KeyTek ECAT	Burstware	V5.31
Rohde & Schwarz	Click Rate Analyzer	1.7.0

2.5 Measurement Equipment Used

Equipment	Manufacturer	Model #	Serial/Inst #	Last Cal dd/mm/yy	Next Cal dd/mm/yy
Radiated Emissions (5 Meter Chamber and Bench top)					
Amplifier, preamp	Agilent Technologies	8449B	3008A01480	14-Nov-11	14-Nov-12
Antenna Horn 1-18GHz	EMCO	3115	2236	13-Dec10	13-Dec-12
Antenna Horn 1-18GHz	EMCO	3115	5770	31-Aug-10	31-Aug-12
Ant. BiconiLog	Chase	CBL6140A	1108	31-Aug-11	31-Aug-12
Receiver, EMI	Rohde & Schwarz	ESIB40	100043	31-Aug-11	31-Aug-12
Receiver, EMI	Rohde & Schwarz	ESCI 7	100917	03-Apr-12	03-Apr-13
Cable, Coax	MicroCaox	MKR300C-0-0-1200-500500	002	31-Aug-11	31-Aug-12
Cable, Coax	MicroCaox	MKR300C-0-1968-500310	005	31-Aug-11	31-Aug-12
Cable, Coax	MicroCaox	UFB29C-1-5905-50U-50U	009	15-Nov-11	15-Nov-12
Cable, Coax	Andrew	FSJ1-50A	030	31-Aug-11	31-Aug-12
Cable, Coax	Andrew	FSJ1-50A	045	31-Aug-11	31-Aug-12
Conducted Emissions (AC/DC and Signal I/O)					
LISN 15-18 (NSLK 8126)	Schwarzbeck Mess-Electronik	NSLK 8126	003885	16-Nov-11	16-Nov-12
Receiver, EMI	Rohde & Schwarz	ESCI 7	100917	03-Apr-12	03-Apr-13
Spectrum Analyzer	Agilent Tec.	E7405A	US39440157	15-Nov-11	15-Nov-12
Cable, Coax	Pasternack	RG-223	051	31-Aug-11	31-Aug-12
Transient Limiter	Schaffner	CFL-9206	1649	31-Aug-11	31-Aug-12
General Laboratory Equipment					
Generator, Noise	York University	CNE III	Ser/98/66	CNR II	CNR II
Meter, Multi	Fluke	179	90580752	15-Nov-11	15-Nov-12
Meter, Temp/Humid/Barom	Davis Instruments	7400	PB00205A05	9-May-12	9-May-13
Meter, Temp/Humid/Barom	Davis Instruments	7400	PB00205A13	9-May-12	9-May-13

3 Product Information

3.1 Product Description

The EUT is a speech augmentation device that operates on one frequency (13.56MHz). The device has three modes of operation. The mode is selected by the position of the slide switch on the back panel of the unit. The modes are “OFF,” “ALWAYS ON,” and “PRESS TO ACTIVATE.” In the “ALWAYS ON” mode, the device is consuming power (transmitting) continuously.

3.2 Equipment Modifications

No modifications were needed to bring product into compliance.

4 Radiated emissions - FCC Parts 15.225, RSS-210 A2.6

(a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/ meter at 30 meters.

(b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

(d) The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

4.1 Over View of Test

Results	**Complies** (as tested per this report)				**Date**	5 - 6 April 2012	
Standard	FCC Parts 15.205, 15.209, 15.215(c), 15.225(a), 15.225(b), 15.225(c), 15.225(d), 15.225(e) and RSS-210 A2.6, and RSS-GEN 7.2.1						
Product Model	ProxPad			**Serial#**	11081514		
Test Set-up	Tested in a 5m Semi Anechoic chamber, placed on a 1.0m x 1.5m non-conductive table 80cm above the ground plane on a turn-table.						
EUT Powered By	6.0 V DC AA Battery Pack	**Temp**	72º F	**Humidity**	40%	**Pressure**	997 mbar
Perf. Criteria	(Below Limit)		**Perf. Verification**		Readings Under Limit		
Mod. to EUT	None		**Test Performed By**		Mark Ryan		

4.1.1 Test Procedure

All testing was performed in accordance with 47 CFR Part 15, ANSI C63.10:2009, RSS-GEN Issue 2. These test methods are listed under the laboratory's NVLAP Scope of Accreditation. This test measures the levels emanating from the EUT, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices.

4.1.2 Deviations

None.

4.1.3 Final Test

All final radiated and spurious emissions measurements were below (in compliance) the limits.

The worst –case emissions are shown below.

4.2 FCC Part 15.225(a) and RSS-210 A2.6(a) – in band emissions

(a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter (84 dBµV) at 30 meters.

The highest emissions of the EUT was investigated by placing the EUT in an anechoic chamber and was rotated on an 80cm high non-conductive table, the loop antenna was rotated from parallel to perpendicular. Three orientations of the EUT were evaluated. The highest emissions angle and orientation was noted. The EUT was then moved to the OATS to make the reading at the specified distance of 30m.

Due to high ambient noise, the EUT was returned to the chamber to make the remaining in-band measurements, an offset was set in the spectrum to include all corrections factors.

4.2.1 Deviations

None

4.2.1 Test Results

The EUT is compliant with this test requirement.

4.2.2 Final Graphs and Tabulated Data

	Raw Data (dBµV)			ANT & Cable CF dB	Corrected Data (dBµV)			Limit dBµV (Peak)	Margin dB
Distance (m)	Pk	Qp	Av		Pk	Qp	Av		
30.00	21.41	19.89	19.79	11.2	32.61	31.09	30.99	84.00	-51.39

Figure 1 – Signal Strength at 30m

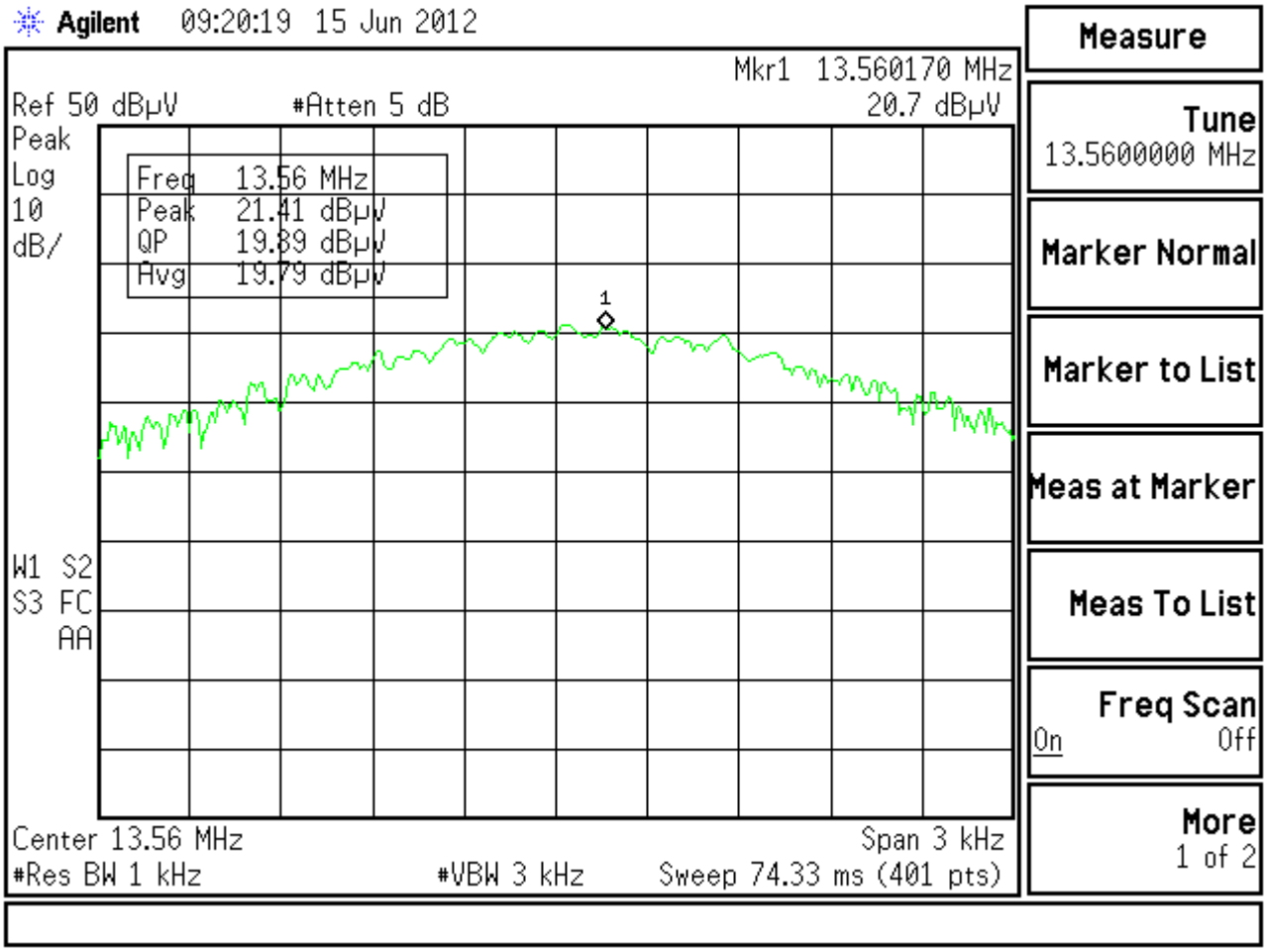


Figure 2 – Graph of Signal Strength of fundamental frequency at 30m in OATS

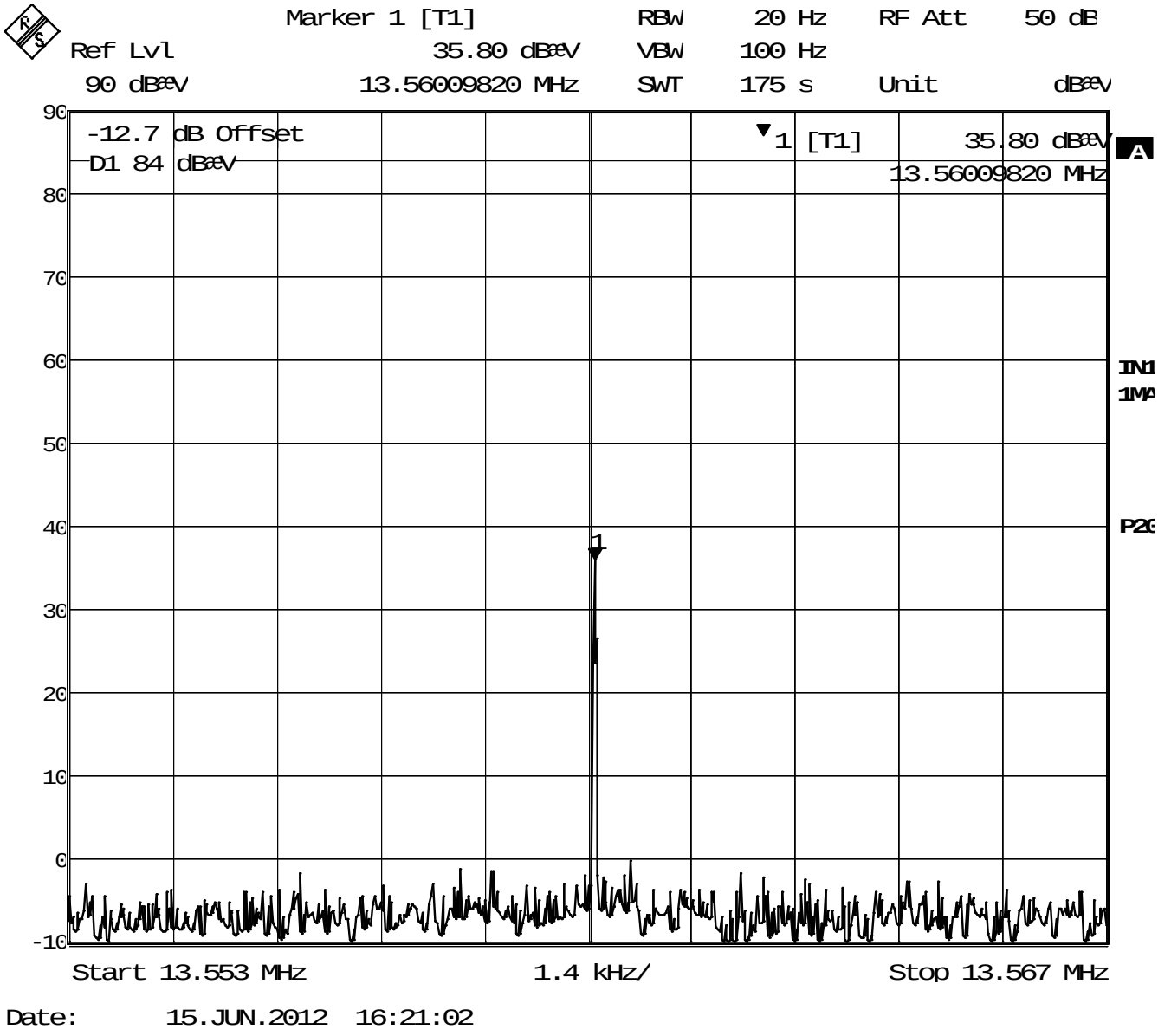


Figure 3 – Signal Strength at 3m in the anechoic chamber

Note: Due to high ambient noise, the EUT was returned to the chamber to make this measurement; an offset was set in the spectrum analyzer. Other than the fundamental frequency, no other emissions were noted in this frequency band.

4.3 FCC Part 15.225(b) and RSS-210 A2.6(b) – in band emissions

(b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter (50.5 dBµV) at 30 meters.

The highest emissions of the EUT was investigated by placing the EUT in an anechoic chamber and was rotated on an 80cm high non-conductive table, the loop antenna was rotated from parallel to perpendicular. Three orientations of the EUT were evaluated. The highest emissions angle and orientation was noted. The EUT was then moved to the OATS to make the reading at the specified distance of 30m.

Then the EUT was returned to the chamber to make the following measurements, an offset was set in the spectrum analyzer to mimic the results recorded on the OATS.

4.3.1 Deviations

None

4.3.2 Test Results

The EUT is compliant with this test requirement.

4.3.3 Final Graphs and Tabulated Data

Frequency Range (MHz)	Highest peak Emission (dBµV)	Limit (dBµV)	Margin (dB)
13.410–13.553	-0.74	50.5	-51.24
13.567–13.710	-1.87	50.5	-52.37

Figure 4 – Band segment emissions

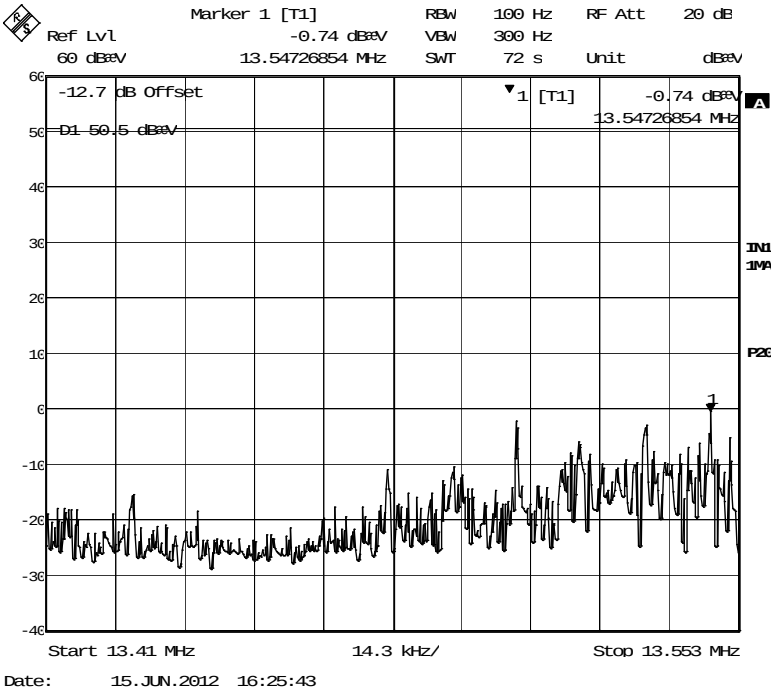


Figure 5 – Signal Strength at 13.410–13.553 MHz

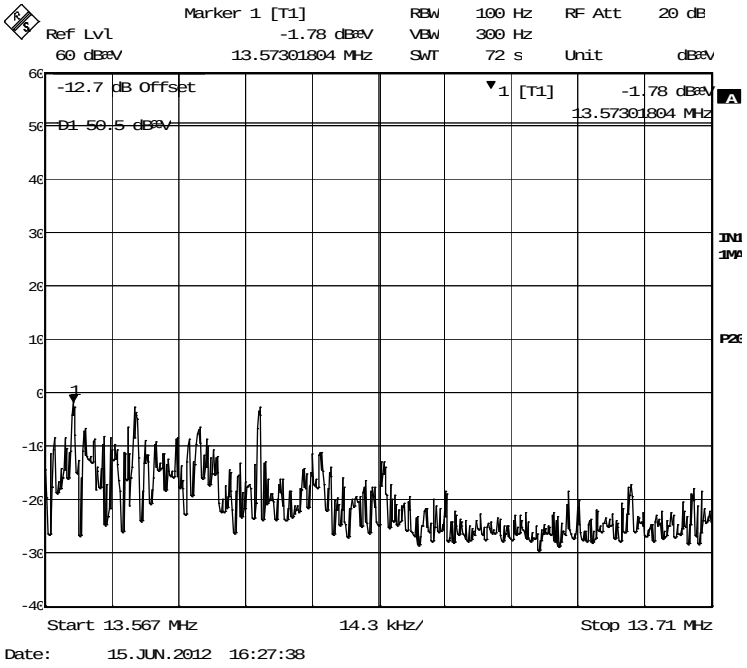


Figure 6 – Signal Strength at 13.567–13.710 MHz

4.4 FCC Part 15.225(c) and RSS-210 A2.6(c) – in band emissions

(c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter (40.5 dBµV) at 30 meters.

The highest emissions of the EUT was investigated by placing the EUT in an anechoic chamber and was rotated on an 80cm high non-conductive table, the loop antenna was rotated from parallel to perpendicular. Three orientations of the EUT were evaluated. The highest emissions angle and orientation was noted. The EUT was then moved to the OATS to make the reading at the specified distance of 30m.

Then the EUT was returned to the chamber to make the following measurements, an offset was set in the spectrum analyzer to mimic the results recorded on the OATS.

4.4.1 Deviations

None

4.4.2 Test Results

The EUT is compliant with this test requirement.

4.4.3 Final Graphs and Tabulated Data

Frequency Range (MHz)	Highest peak Emission (dBµV)	Limit (dBµV)	Margin (dB)
13.110–13.410	-5.89	40.5	-46.39
13.710–14.010	-4.54	40.5	-45.04

Figure 7 – Band segment emissions

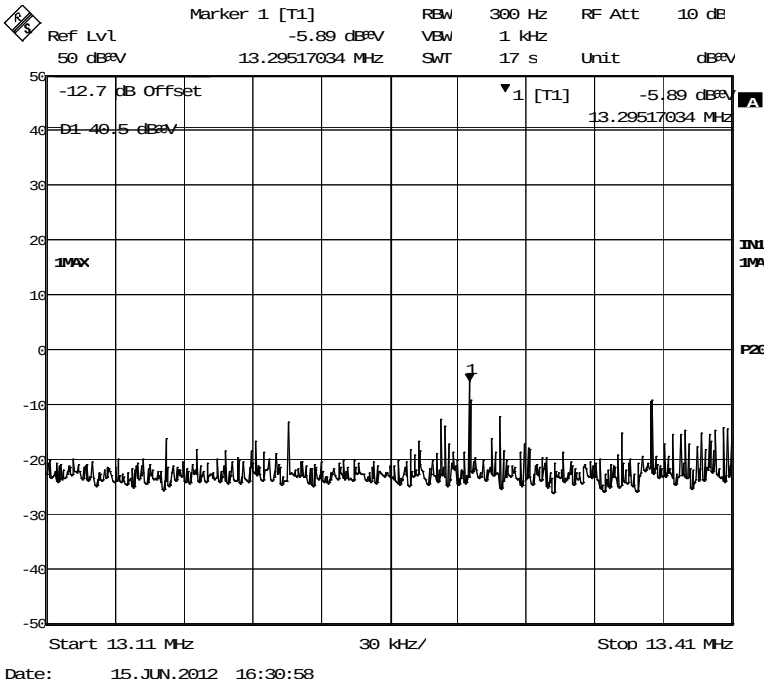


Figure 8 – Signal Strength at 13.110–13.410 MHz

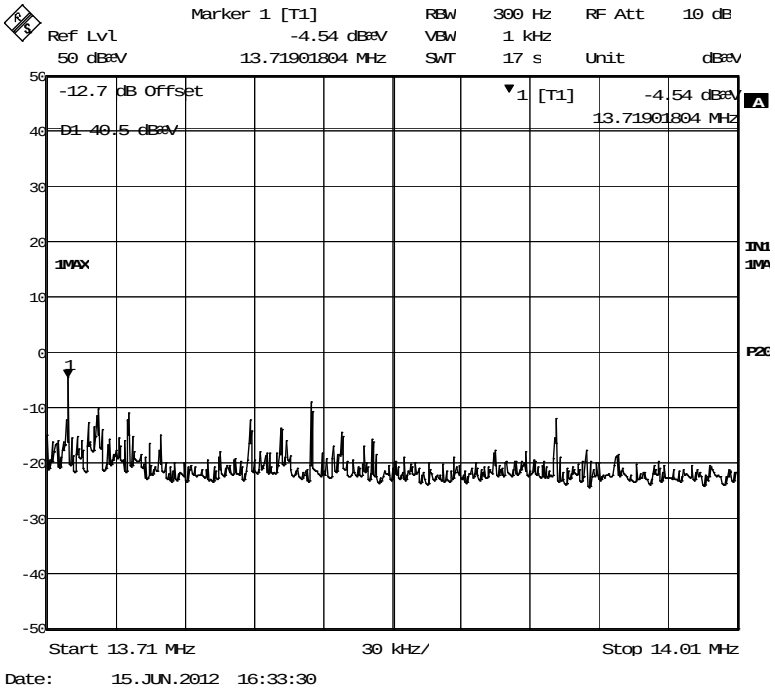


Figure 9 – Signal Strength at 13.710–14.010 MHz

4.5 FCC Part 15.225(d) and RSS-210 A2.6(d) – outside the band emissions

(d) The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in § 15.209 for FCC or 30 µV/m (29.5 dBuV/m) at 30m for Industry Canada.

The highest emissions of the EUT was investigated by placing the EUT in an anechoic chamber and was rotated on an 80cm high non-conductive table, the loop antenna was rotated from parallel to perpendicular. Three orientations of the EUT were evaluated. The highest emissions angle and orientation was noted. If emissions outside the band are shown, then the EUT will be moved to the OATS to make the reading at the specified distance of 30m.

For this test, the measurements below 30 MHz were made at the TUV Raleigh, NC facility in a 5m compliant chamber and the measurements above 30 MHz were made at the TUV Newtown CT OATS facility.

4.5.1 Deviations

None

4.5.2 Test Results

The EUT is compliant with this test requirement.

4.5.3 Final Graphs and Tabulated Data

Emission Freq (MHz)	ANT Polar (P/p)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBuV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBuA/m)	Measurement Detector Used
13.56	V	1.5	0	56.52	0.00	0.42	-43.97	12.96	
13.56	p	1.5	270	51.40	0.00	0.42	-43.97	7.84	
13.56	P	1.5	0	56.52	0.00	0.42	-43.97	12.96	Peak
13.56	P	1.5	0	56.43	0.00	0.42	-43.97	12.87	QP
13.56	P	1.5	0	56.40	0.00	0.42	-43.97	12.84	Avg.

Note: Antenna Polarity is defined as: P = Parallel, and p = perpendicular
EUT is 80cm on table measured at 3m, Antenna at 1m height
Highlighted signal shows worst case orientation and antenna polarity.

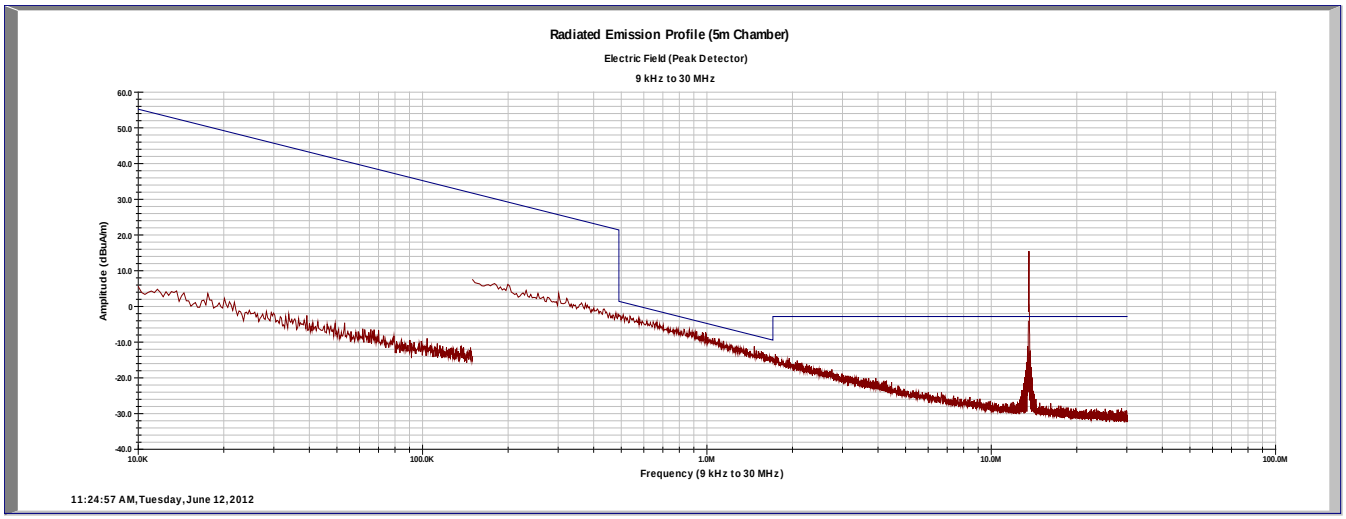


Figure 10 – Spurious emissions from 10 kHz to 30 MHz

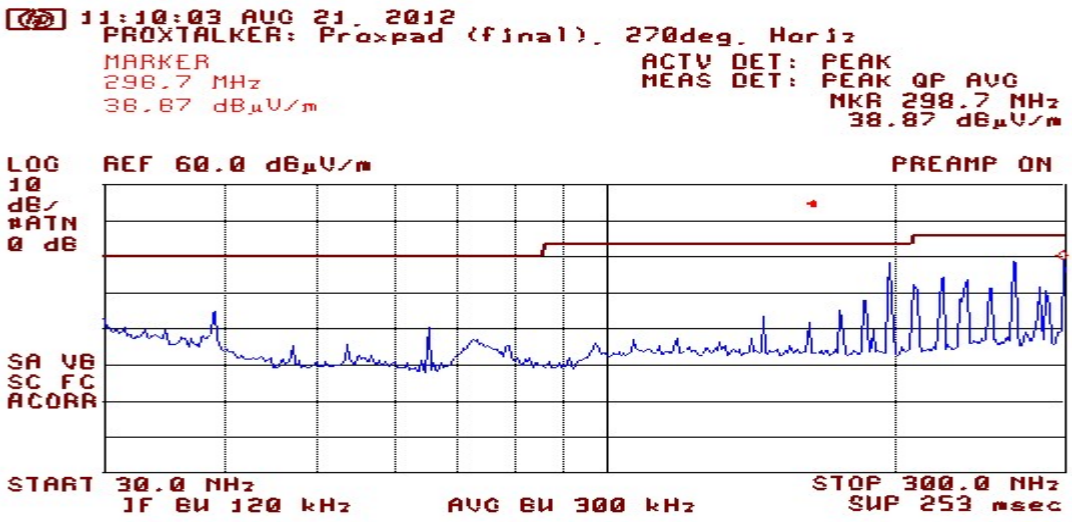
No emissions outside the operating band were observed.

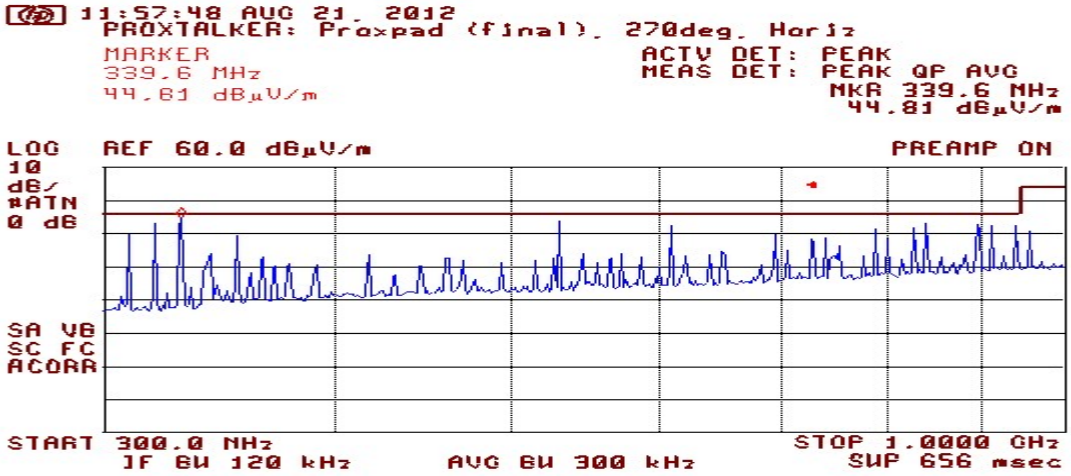
Note: the emission shown at 13.56 MHz is the fundamental frequency of the EUT.

This measurement was made at the TUV Rheinland Raleigh, NC facility.

4.5.3.1 Emissions Outside the Frequency Band:

Radiated Emissions – 30 MHz to 1000 MHz
Horizontal





Radiated Emissions Measurements												
Standard:	47 CFR 15.209					**PRESCAN or FINAL:**	Prescan		**Date:** 8/21/12		
Device Tested:	ProxTalker ProxPad LPP1 w/AC adapter power @					**Distance:**	3.0m				
	120VAC/60 Hz, batteries present, final modifications, 0,90,180, 270 degrees.										
Meas #	Freq (MHz)	Peak	Quasi-Peak	Average	Quasi-Peak Limit	Quasi-Peak Δ	Antenna + Cable Correction Factor (included in measured levels)	Result	Polarization	Angle (degrees)	Antenna Height (meters)	Comment
1	203.3927	39.43	38.82	37.66	43.50	-4.68	13.76	**Prescan**	Horizontal	270	1.50	
2	271.1926	39.59	38.69	36.68	46.00	-7.31	16.58	**Prescan**	Horizontal	270	1.50	
3	298.3179	40.83	40.07	38.82	46.00	-5.93	16.82	**Prescan**	Horizontal	270	1.50	
4	325.4235	42.92	42.26	41.39	46.00	-3.74	17.67	**Prescan**	Vertical	180	1.50	
5	338.9949	45.60	44.99	43.67	46.00	-1.01	18.29	**Prescan**	Horizontal	270	1.50	
6	531.0836	45.11	43.40	39.65	46.00	-2.60	23.37	**Prescan**	Horizontal	270	1.50	
7	627.6993	45.31	42.61	41.57	46.00	-3.39	24.43	**Prescan**	Horizontal	270	1.50	
8	917.3378	42.06	39.90	35.54	46.00	-6.10	28.01	**Prescan**	Vertical	90	1.50	
Tested by: Steve Petix												
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009												REFCC15B.xlt Revised 10MAR03

Figure 11 – Pre-scan Data – TUV Newtown, CT facility - 3m Chamber

Radiated Emissions Measurements												
Standard:	47 CFR 15.209(a)					**PRESCAN or FINAL:**	Final		**Date: 8/22/12**		
Device Tested:	ProxTalker ProxPad LPP1 w/AC adapter					**Distance:**	3.0m				
	Batteries present, final modifications.										
Meas #	Freq (MHz)	Peak	Quasi-Peak	Average	Quasi-Peak Limit	Quasi-Peak Δ	Antenna + Cable Correction Factor (included in measured levels)	Result	Polarization	Angle (degrees)	Antenna Height (meters)	Comment
1	203.4050	33.89	32.35	31.30	43.50	-11.15	13.76	Complied	Vertical	168	2.20	
2	271.2150	35.62	34.41	33.28	46.00	-11.59	16.58	Complied	Vertical	360	1.66	
3	298.3300	34.18	32.76	31.62	46.00	-13.24	16.82	Complied	Horizontal	360	1.15	
4	325.4400	30.07	28.26	26.46	46.00	-17.74	17.68	Complied	Vertical	0	2.90	
5	339.0100	42.25	41.54	40.73	46.00	-4.46	18.29	Complied	Vertical	58	2.07	
6	531.5550	41.49	39.32	38.68	46.00	-6.68	23.40	Complied	Horizontal	273	2.74	
7	628.1700	37.62	35.30	33.45	46.00	-10.70	24.43	Complied	Horizontal	132	2.85	
8	918.0625	37.07	33.78	30.74	46.00	-12.22	28.02	Complied	Horizontal	0	2.78	
Tested by: Steve Petix												
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009												REFCC15B.xlt Revised 10MAR03

Figure 12 – Final Data – TUV Newtown, CT facility - OATS

Spec Margin = E-Field Value - Limit, E-Field Value = FIM Value - Amp Gain + Cable Loss + ANT Factor ± Uncertainty
Combined Standard Uncertainty $u_c(y)$ = ± 1.6dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence
Notes: This data was taken at the TUV Rheinland Newtown Connecticut facility.

4.1 FCC Part 15.225(e) and RSS-210 A2.6 – Frequency Stability

(e) The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.
Carrier Frequency stability shall be maintained to ±0.01% (±100ppm).

4.1.1 Over View of Test

Results	**Complies** (as tested per this report)	**Date**	6 April 2012
Standard	FCC Parts 15.225(e) and RSS-210 A2.6		
Product Model	ProxPad	**Serial#**	11081514
Test Set-up	Tested in shielded room. EUT placed on table, see test plans for details		
Mod. to EUT	None	**Test Performed By**	Mark Ryan

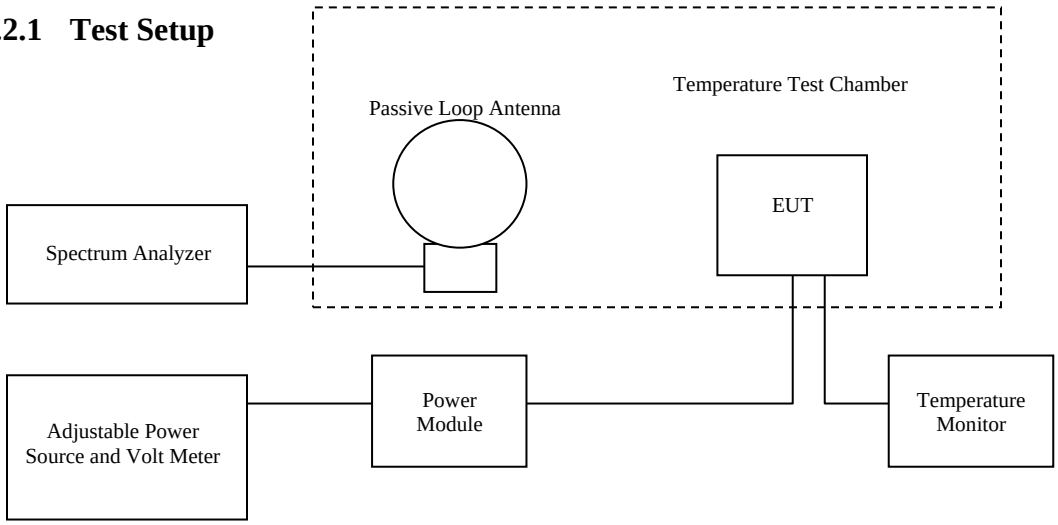
4.1.1 Test Procedure

This device can be operated by battery or with an AC power adapter. Therefore, both tests were performed. For the battery tests, a variable DC power supply replaced the batteries and was set to 6VDC and at the V_{min} value, stated by the manufactured to be; 4.0 VDC.

4.1.2 Final Test

The Extreme Temperature and voltage tests were performed simultaneously..

4.1.2.1 Test Setup



4.1.1 Final Graphs and Tabulated Data

Extreme Temperature and Voltage Test

-20° Celsius (Low Temp)					
Voltage (V)	Frequency (Hz)	Power (dBµA)	Plot Number	Δ Frequency (Hz)	Δ Power (dB)
f (Frequency) = 13.56 MHz					
85.0	13,559,909	10.49	8	110	-1.350
120.0	13,559,910	10.39	7	111	-1.450
276.0	13,559,908	10.35	9	109	-1.490

22° Celsius (Normal Temp)					
Voltage (V)	Frequency (Hz)	Power (dBµA)	Plot Number	Δ Frequency (Hz)	Δ Power (dB)
f (Frequency) = 13.56 MHz					
85.0	13,559,806	11.16	5	7	-0.680
120.0	13,559,799	11.84	4	0	0.000
276.0	13,559,806	11.2	6	7	-0.640

50° Celsius (High Temp)					
Voltage (V)	Frequency (Hz)	Power (dBµA)	Plot Number	Δ Frequency (Hz)	Δ Power (dB)
f (Frequency) = 13.56 MHz					
85.0	13,559,677	10.98	11	-122	-0.860
120.0	13,559,673	10.74	13	-126	-1.100
276.0	13,559,672	10.65	14	-127	-1.190

Notes: V_{min} = 85 VAC
V_{nom} = 120 VAC
V_{max} = 276 VAC
$V_{ps\ (hi)}$ = 240 VAC
$V_{ps\ (Low)}$ = 100 VAC

Frequency stability function of temperature				
Temperature (°C)	MCF(MHz)	PPM Error $[(MCF/ACF)-1]10^6$	Limit (±ppm)	Margin (ppm)
-20	13.559806	-7.67	100	92.33
22	13.559910	0.00	NA	NA
50	13.559672	-17.55	100	82.45

ACF (MHz): 13.559910

Low Battery at Nominal Temp					
Voltage (V)	Frequency (Hz)	Power (dBµA)	Plot Number	Δ Frequency (Hz)	Δ Power (dB)
f (Frequency) = 13.56 MHz					
6.0	13,559,819	12.04	17	20	0.000
4.0	13,559,819	11.51	18	20	-0.530

V_{batt} = 6 VDC

$V_{batt\ (low)}$ = 4.04 VDC, as defined by manufacturer

Frequency stability function of DC Voltage				
Voltage (V)	MCF(MHz)	PPM Error $[(MCF/ACF)-1]10^6$	Limit (±ppm)	Margin (ppm)
6	13.559819	0.00	NA	NA
4	13.559819	0.00	100.00	100.00

ACF (MHz): 13.559819

As tested, the EUT was found to be compliant to the requirements of the test standards

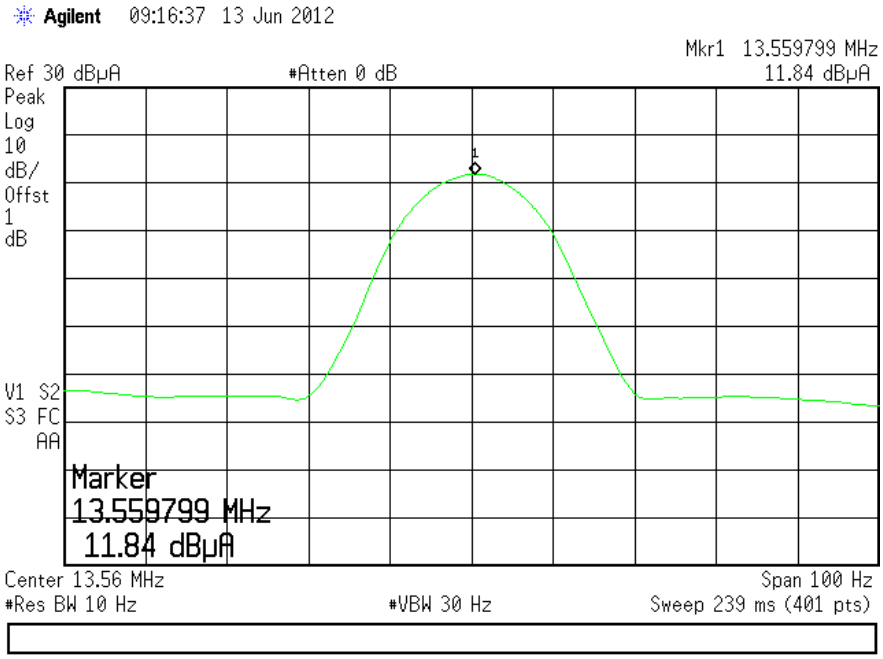


Figure 13 - Plot at Nominal Temperature and Voltage (22° C, at 120VAC)

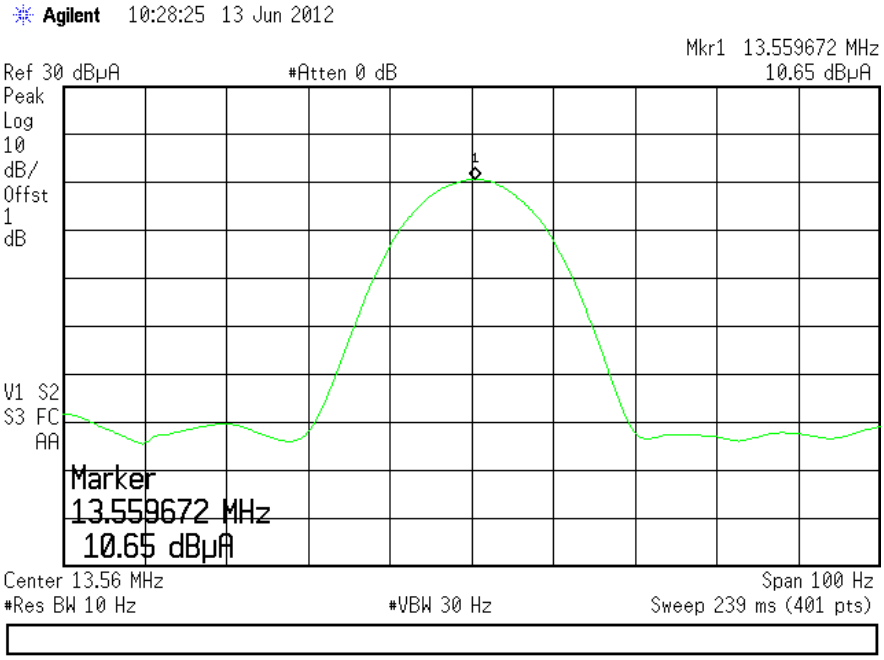


Figure 14 – Worst case deviation (50° C, at 276VAC)

Note: All plots are on file at TUV Rheinland.

4.2 FCC 207(a) and RSS-GEN 7.2.4 – Conducted Emissions on AC Mains

This test measures the electromagnet levels of spurious signals generated by the EUT on the AC power line that may affect the performance of other near by electronic equipment.

4.2.1 Over View of Test

Results	**Complies**				**Date**	09 July 2012	
Standard	FCC Parts 15.207(a) and RSS-GEN 7.2.4						
Product Model	ProxPad			**Serial#**	NA		
Test Set-up	Tested in shielded room. EUT placed on table, see test plans for details						
EUT Powered By	120VAC / 60Hz	**Temp**	74º F	**Humidity**	39%	**Pressure**	996 mbar
Frequency Range	150 kHz – 30 MHz						
Perf. Criteria	(Below Limit)	**Perf. Verification**	Readings Under Limit for L1 & Neutral				
Mod. to EUT	None	**Test Performed By**	Mark Ryan				

4.2.1 Test Procedure

Conducted and FCC emissions tests were performed using the procedures of ANSI C63.4:2009 including methods for signal maximizations and EUT configuration. The frequency range from 150kHz - 30MHz was investigated for conducted emissions.

EUT was placed 80cm above a ground plane, using procedures specified in ANSI C63.4.

Worst-case emissions shown; EUT in transmit mode with AC power module.

4.2.2 Deviations

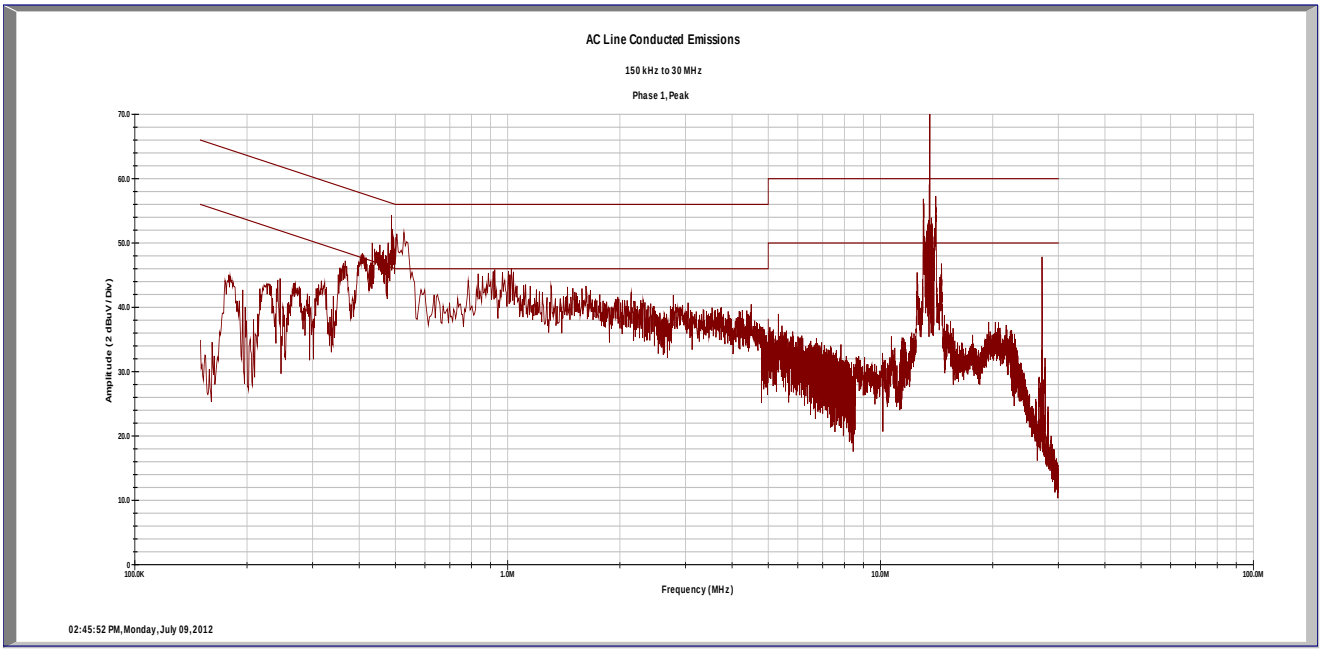
There were no deviations from the test methodology listed in the test plan for the conducted emission test.

4.2.3 Final Test

All final conducted emissions measurements were below (in compliance) the limits.

4.2.1 Final data and Graphs

Conducted Emissions @ 120V/60Hz w/o Dummy load (modified)
Line 1



Freq (MHz)	ID (1,2,3,N)	Quasi FIM (dBuV)	Ave FIM (dBuV)	Cable Loss (dB)	TL/LISN (dB)	Limit QP (dBuV)	Limit AVE (dBuV)	Margin QP (dB)	Margin AVE (dB)
0.18	1	31.94	24.25	0.03	9.93	64.39	54.39	-22.50	-20.19
0.49	1	37.03	25.01	0.04	9.94	56.17	46.17	-9.16	-11.18
0.54	1	36.89	27.82	0.04	9.94	56.00	46.00	-9.13	-8.20
1.01	1	30.15	19.42	0.06	9.96	56.00	46.00	-15.83	-16.56
13.56	**1**	**60.48**	**55.93**	**0.24**	**10.50**	**60.00**	**50.00**	**11.22**	**16.67**
27.11	1	23.59	6.18	0.36	10.46	60.00	50.00	-25.59	-33.00

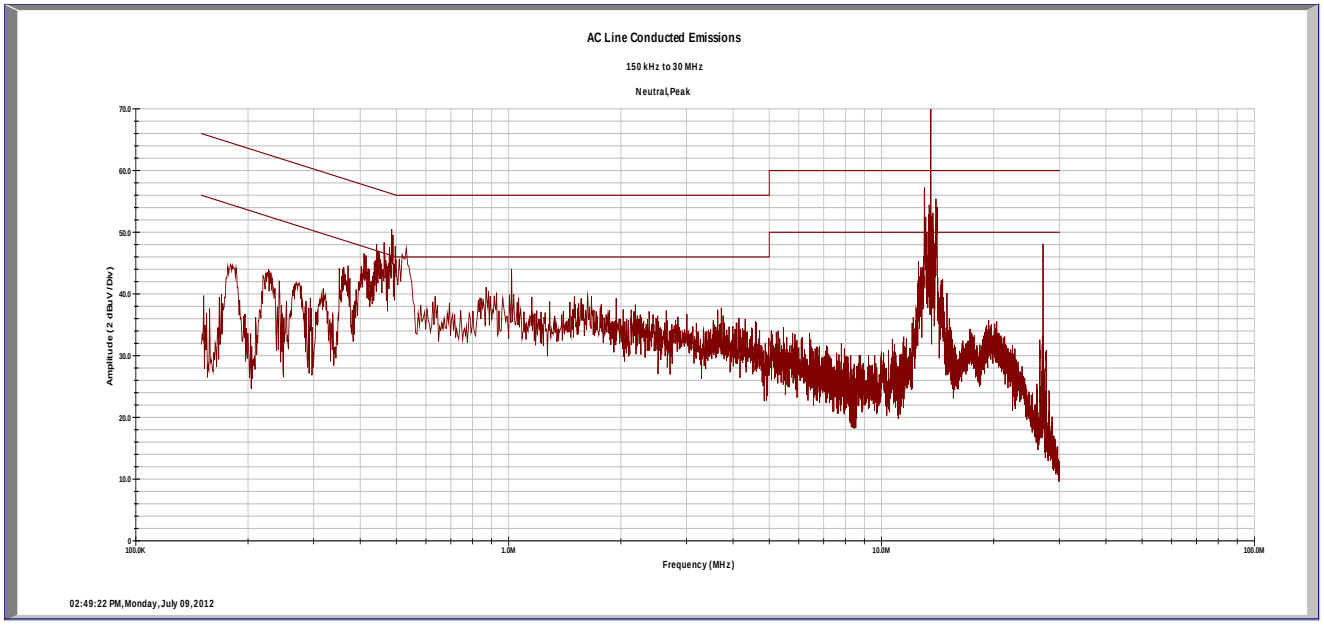
Quasi Spec Margin = Quasi FIM + Cable Loss + TL/LISN - QP Limit
Ave Spec Margin = Ave FIM + Cable Loss + TL/LISN CF - Ave Limit

Combined Standard Uncertainty $u_c(y) = \pm 1.66$dB Expanded Uncertainty $U = 3.33\ ku_c(y)$ $k = 2$ for 95% confidence

Notes: The signal in **BLUE** is the fundamental frequency of the intentional radiator.
This requires retesting with a dummy load resistor in place of the antenna.

Conducted Emissions @ 120V/60Hz wo/ Dummy load

Neutral



Freq (MHz)	ID (1,2,3,N)	Quasi FIM (dBuV)	Ave FIM (dBuV)	Cable Loss (dB)	TL/LISN (dB)	Limit QP (dBuV)	Limit AVE (dBuV)	Margin QP (dB)	Margin AVE (dB)
0.18	N	31.71	17.73	0.03	9.91	64.49	54.49	-22.84	-26.82
0.49	N	31.43	17.28	0.04	9.93	56.17	46.17	-14.77	-18.92
0.52	N	31.37	17.50	0.04	9.93	56.00	46.00	-14.66	-18.53
0.88	N	26.37	14.26	0.06	9.95	56.00	46.00	-19.62	-21.73
13.56	**N**	**59.82**	**53.42**	**0.24**	**10.42**	**60.00**	**50.00**	**10.49**	**14.09**
27.11	N	23.17	6.36	0.36	10.25	60.00	50.00	-26.22	-33.03

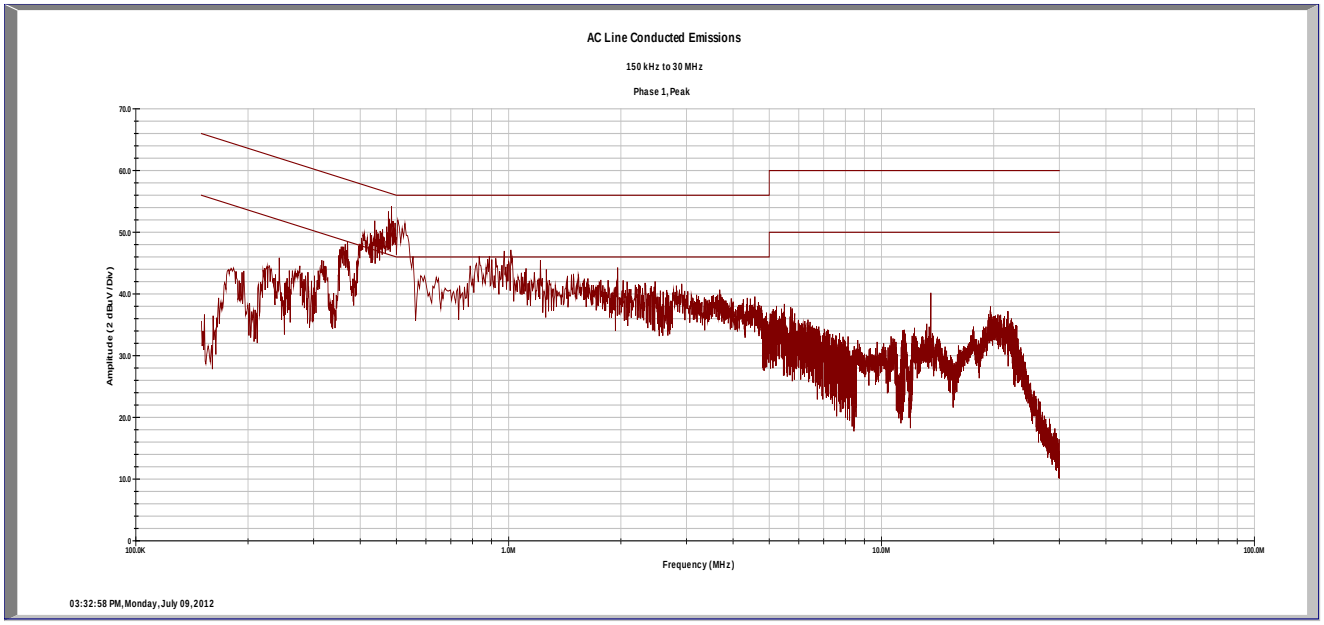
Quasi Spec Margin = Quasi FIM + Cable Loss + TL/LISN - QP Limit
Ave Spec Margin = Ave FIM + Cable Loss + TL/LISN CF - Ave Limit

Combined Standard Uncertainty $u_c(y) = \pm 1.66$dB Expanded Uncertainty $U = 3.33\ ku_c(y)$ k = 2 for 95% confidence

Notes: The signal in **BLUE** is the fundamental frequency of the intentional radiator.
This requires retesting with a dummy load resistor in place of the antenna.

Conducted Emissions @ 120V/60Hz w/ Dummy load

Line 1



Freq (MHz)	ID (1,2,3,N)	Quasi FIM (dBuV)	Ave FIM (dBuV)	Cable Loss (dB)	TL/LISN (dB)	Limit QP (dBuV)	Limit AVE (dBuV)	Margin QP (dB)	Margin AVE (dB)
0.18	1	32.11	23.77	0.03	9.92	64.49	54.49	-22.43	-20.77
0.48	1	36.08	23.49	0.04	9.93	56.37	46.37	-10.32	-12.91
0.53	1	36.93	26.40	0.04	9.94	56.00	46.00	-9.09	-9.62
1.01	1	30.02	19.11	0.06	9.96	56.00	46.00	-15.96	-16.87
13.56	**1**	**29.20**	**23.97**	**0.24**	**10.50**	**60.00**	**50.00**	**-20.06**	**-15.29**
20.24	1	20.04	10.80	0.30	10.50	60.00	50.00	-29.16	-28.40

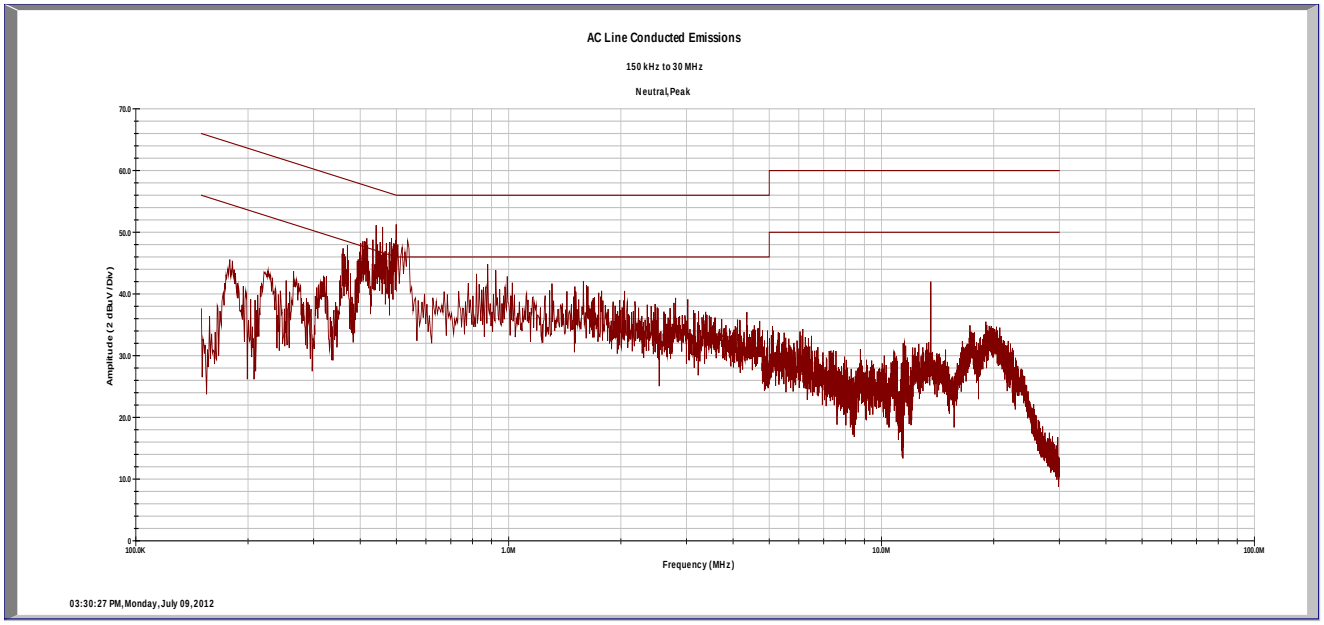
Quasi Spec Margin = Quasi FIM + Cable Loss + TL/LISN - QP Limit
Ave Spec Margin = Ave FIM + Cable Loss + TL/LISN CF - Ave Limit

Combined Standard Uncertainty $u_c(y) = \pm 1.66$dB Expanded Uncertainty $U = 3.33\ ku_c(y)$ k = 2 for 95% confidence

Notes: A dummy load resistor was utilized in place of the antenna
The signal in **BLUE** is the fundamental frequency of the intentional radiator.

Conducted Emissions @ 120V/60Hz w/ Dummy load

Neutral



Freq (MHz)	ID (1,2,3,N)	Quasi FIM (dBuV)	Ave FIM (dBuV)	Cable Loss (dB)	TL/LISN (dB)	Limit QP (dBuV)	Limit AVE (dBuV)	Margin QP (dB)	Margin AVE (dB)
0.18	N	31.14	18.47	0.03	9.91	64.49	54.49	-23.41	-26.08
0.44	N	29.95	15.30	0.04	9.92	57.10	47.10	-17.19	-21.84
0.53	N	31.54	18.09	0.04	0.00	56.00	46.00	-14.49	-17.94
0.88	N	23.90	11.54	0.06	9.95	56.00	46.00	-22.09	-24.45
13.56	**N**	**27.97**	**20.22**	**0.24**	**10.42**	**60.00**	**50.00**	**-21.36**	**-19.11**
19.77	N	17.13	6.61	0.30	10.35	60.00	50.00	-32.22	-32.74

Quasi Spec Margin = Quasi FIM + Cable Loss + TL/LISN - QP Limit
Ave Spec Margin = Ave FIM + Cable Loss + TL/LISN CF - Ave Limit

Combined Standard Uncertainty $u_c(y) = \pm 1.66$dB Expanded Uncertainty $U = 3.33\, ku_c(y)$ $k = 2$ for 95% confidence

Notes: A dummy load resistor was utilized in place of the antenna
The signal in **BLUE** is the fundamental frequency of the intentional radiator.

4.1 99% Power Bandwidth

For the purpose of RSS-GEN, Section 4.6.1; When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be 99% emission, as calculated or measured.

4.1.1 Test Over View

Results	**Complies** (as tested per this report)					**Date**	29 June 2012
Standard	RSS-210 Section A1.1.3						
Product Model	SPEECH AUGMENTATION DEVICE			**Serial#**	11081514		
Test Set-up	Direct Measurement from antenna port						
EUT Powered By	6 VDC batteries	**Temp**	78º F	**Humidity**	36%	**Pressure**	993 mbar
Perf. Criteria	(Below Limit)			**Perf. Verification**	Readings Under Limit		
Mod. to EUT	None			**Test Performed By**	Mark Ryan		

4.1.2 Test Procedure

Using the procedures of RSS-GEN section 4.6.1, the 10 Hz resolution bandwidth is 1% of the 1 kHz span. The 30 Hz video bandwidth is 3 times that of the resolution bandwidth.

4.1.3 Deviations

There were no deviations from the test methodology listed in the test plan for the Electrical Fast transients (EFT) Immunity test.

4.1.4 Final Results

The measured 99% bandwidth is: 96.2 Hz.

The Designation of Necessary Bandwidth per TRC-43 would be: 96H2

The EUT met the performance criteria requirement as specified in the test plan of this report and in the standards.

4.1.5 Final Data

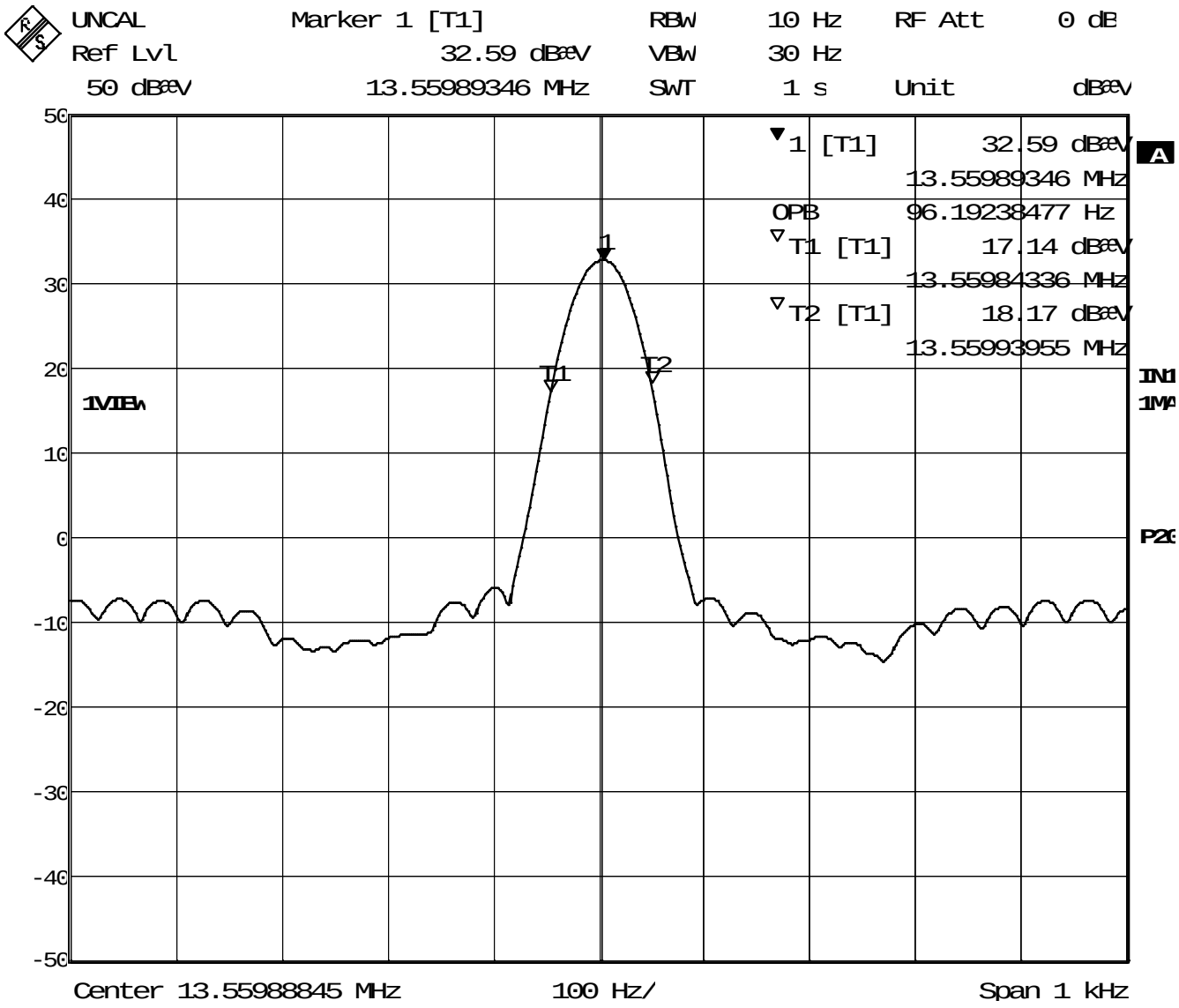


Figure 15 – 99% Power Bandwidth = 96.2 Hz

Span = 1 kHz, RBW = 10 Hz, VBW = 30 Hz

The EUT is compliant to the requirements of RSS-210 A1.1.3

5 Emissions in Standby Mode.

5.1 FCC 15.109(a) and RSS-210 – Radiated Emissions in Standby mode

This test measures the electromagnetic levels of spurious signals generated by the EUT that radiated from the EUT and may affect the performance of other nearby electronic equipment.

5.1.1 Over View of Test

Results	**Complies** (as tested per this report)				**Date**	6 April 2012	
Standard	FCC Part 15.109(a) and ICES-003						
Product Model	ProxPad		**Serial#**	11081514			
Configuration	See test plan for details						
Test Set-up	Tested in a 5m Semi Anechoic chamber, placed on a 1.0m x 1.5m non-conductive table 80cm above the ground plane on a turn-table.						
EUT Powered By	120 VAC – 60 Hz	**Temp**	74º F	**Humidity**	45%	**Pressure**	999 mbar
Frequency Range	30 MHz to 13 GHz @ 3m						
Perf. Criteria	(Below Limit)		**Perf. Verification**	Readings Under Limit			
Mod. to EUT	None		**Test Performed By**	Mark Ryan			

5.1.2 Test Procedure

Radiated emissions tests were performed using the procedures of ANSI C63.4:2009 including methods for signal maximizations and EUT configuration. The photos included with the report show the EUT in its maximized configuration.

The frequency range from 30 MHz to 13 GHz was investigated for radiated emissions.

Radiated emission testing was performed at a distance of 3 meters in a 5 meter semi-anechoic chamber.

5.1.3 Deviations

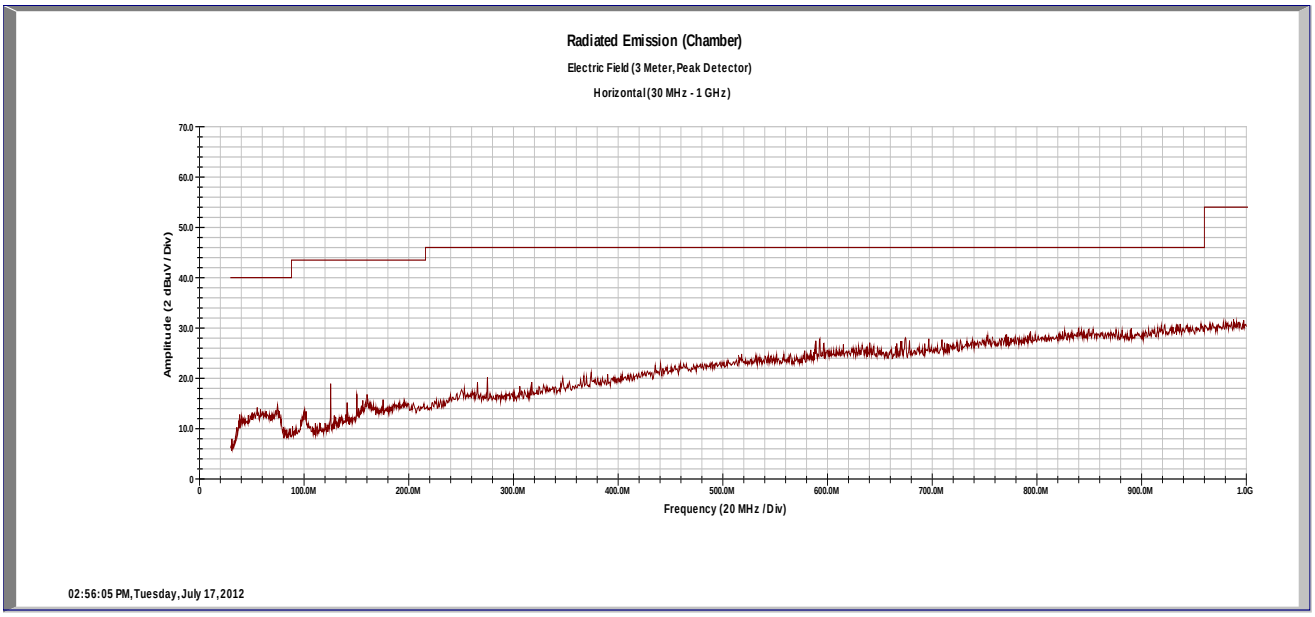
There were no deviations from the test methodology listed in the test plan for the radiated emission test.

5.1.4 Final Test

All final radiated emissions measurements were below (in compliance) the limits.

5.1.5 Final Graphs and Tabulated Data

Radiated Emissions Standby Mode – 30MHz to 1 GHz
Horizontal



Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBuV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBuV/m)	Spec Limit (dBuV/m)	Spec Margin (dB)

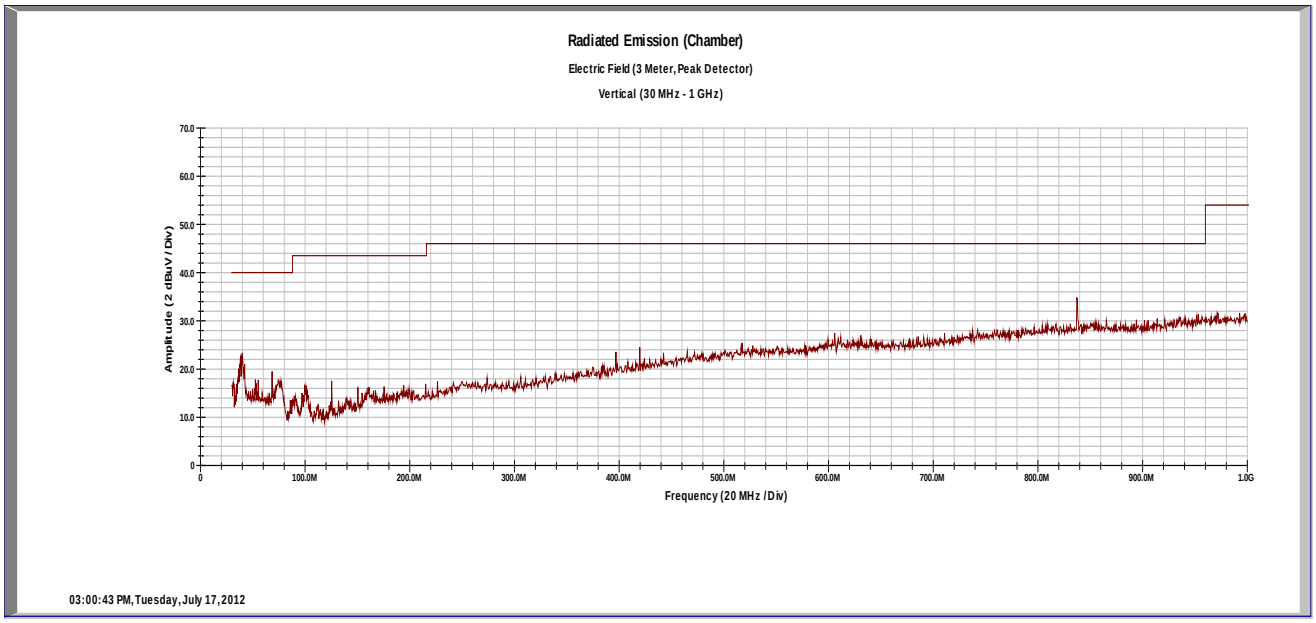
Spec Margin = E-Field Value - Limit, E-Field Value = FIM Value - Amp Gain + Cable Loss + ANT Factor ± Uncertainty

Combined Standard Uncertainty $u_c(y)$ = ± 1.6dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes: All emissions were below the noise floor of the instrumentation.
The signals shown below 200 MHz are anomalies in the preamp of the measuring spectrum analyzer.
The other signals are transients and were not measureable.

Radiated Emissions Standby Mode – 30MHz to 1 GHz

Vertical



Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBuV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBuV/m)	Spec Limit (dBuV/m)	Spec Margin (dB)

Spec Margin = E-Field Value - Limit, E-Field Value = FIM Value - Amp Gain + Cable Loss + ANT Factor ± Uncertainty

Combined Standard Uncertainty $u_c(y)$ = ± 1.6dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes: All emissions were below the noise floor of the instrumentation.
The signals shown below 200 MHz are anomalies in the preamp of the measuring spectrum analyzer.
The other signals are transients and were not measureable.

6 RF Exposure

6.1 Exposure Requirements – FCC KDB # 447498 DO1 and RSS-102 Issue 4

FCC KDB # 447498 DO1 - Mobile and Portable Device RF Exposure and Procedures and Equipment Authorization Policies section 1) c) states that unless excluded by *specific FCC test procedures*, portable devices with output power > $60/f_{(GHz)}$ mW shall include SAR data for equipment approval.

RSS-102 section 2.5.1 states that a device is exempt from SAR evaluation if the frequency is "from 3 kHz up to 1 GHz inclusively, and with output power (i.e. the higher of the conducted or equivalent isotropically radiated power (e.i.r.p.) source-based, time-averaged output power) that is less than or equal to 200 mW for general public use and 1000 mW for controlled use…".

6.1.1 Test Procedure

If the antenna is located > 20cm from the user, then an MPE calculation is acceptable.

If the antenna is located < 20cm (portable / mobile / hand-held device) from the user, then SAR evaluation is required.

6.1.2 Evaluation

The EUT may be used as a hand-held portable device where the antenna can be located less than 20cm from the user, therefore SAR evaluation is required.

6.1.2.1 Evaluation for FCC

FCC 447498 D01 Mobile Portable RF Exposure v04, Paragraph 2) section a) i) states:
"A device may be used in portable exposure conditions with no restrictions on host platforms when either the source-based time-averaged output power is ≤ $60/f_{(GHz)}$ mW or all measured 1-g SAR are < 0.4 W/kg."

The EUT operates below 300 MHz. As such, section 1) a) of FCC 447498 D01 states that the FCC Laboratory may be contacted for exclusion of SAR testing. This was done, ref: KDB TN# 444106. In the KDB response the reply stated: "…in general significant exposure concerns have not been expected for 15 subpart C devices under 15.225..." Since the field of the device is 32.61 dBuV/m at 30m, this device is exempt from SAR testing.

6.1.2.2 Evaluation for Industry Canada

The maximum EIRP peak power output of the EUT is: 32.61 dBµV/m at 30m. Using the standard field strength calculation, this is equivalent to a power output of 54.9 nW eirp. See section 6.1.4 of this report.

The EUT is well below the 200mW power level that SAR testing would be required for this frequency range.

6.1.3 Conclusion

SAR data is not required for either FCC or Industry Canada.

Note: the 54.9 nW eirp power level has not been time-averaged and it is considered the absolute worst case.

6.1.4 Calculated EIRP Level

Note: The EUT does not have a means to make direct measurements. Therefore the EIRP is calculated.

Per the equation in section 5.4.2 of FCC Document # 558074 D01 Measurement Guidance v01;

EIRP = E + 20Log(d) -104.8, where:

EIRP = the equivalent isotropic radiated power in dBm,

E = electric field strength in dBµV /m; E = 32.61 (see section 4.2 of this report),

d = measurement distance in meters; d = 30,

EIRP = 32.61 + 20Log(30) – 104.8 = 32.61 + 29.54 - 104.8 = **-42.6 dBm** which is equivalent to: 54.9 nW

Appendix A

1 Test Plan

This test report is intended to follow this test plan outlined here in unless otherwise stated in this here report. The following test plan will give details on product information, standards to be used, test set ups and refer to TUV test procedures. The test procedures will give the steps to be taken when performing the stated test. The product information below came via client, product manual, product itself and or the internet.

1.1 General Information

Client	PROXTALKER.COM, LLC
Address 1	327 Huntingdon Avenue
Address 2	Waterbury, CT 06708 USA
Contact Person	Dan Driscoll
Telephone	(203) 721-6074 EXT 12
Fax	(203) 721-6070
e-mail	dan@proxtalker.com

1.1.1 Product Name

Proxtalker ProxPad

1.1.2 Type of Product

Speech Augmentation Device

1.1.3 Equipment Under Test (EUT) Description

The EUT is a speech augmentation device that operates on one frequency (13.56MHz). The device has three modes of operation. The mode is selected by the position of the slide switch on the back panel of the unit. The modes are "OFF," "ALWAYS ON," and "PRESS TO ACTIVATE." In the "ALWAYS ON" mode, the device is consuming power (transmitting) continuously..

1.2 General Product Information

Size	**H**	2.6 cm	**W**	26.8 cm	**L**	26.8 cm
Weight	1kg		**Fork-Lift Needed**	No		
Notes						

1.2.1 Electrical Power Information

Name	**Type**	**Voltage**		**Frequency**	**Current Output**	**Notes**
		min	**max**			
AC Adapter	AC	100	240	50/60 Hz	0.5A DC	
Notes						

1.2.2 Operational Environment

Operating Temperature:	**Humidity:**
0° to 40° C	5% - 95% non-condensing

1.3 Monitoring of EUT during Testing

The operation of the EUT will be monitored by either a spectrum analyzer, or by monitoring a receiver with a demodulated line to an Oscilloscope.

During the application of disturbances, the analyzer will be viewed, either directly or by closed-circuit video. Any disturbances in the data will be noted in the test report.

1.4 EUT Configuration

Configuration	Description
Conducted Emissions Configuration	Antennas and matching network replaced with 5.6 Ohm load
Notes	All configurations are the same except as noted above

1.4.1 Block Diagram

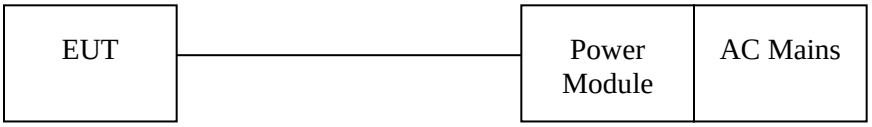


Diagram of system using power module to ac mains

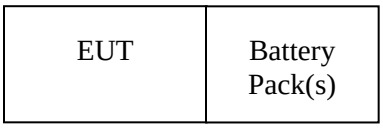


Diagram of system using battery power