



TEST REPORT

Report Number: 100919375DEN-001

Project Number: G100919375

Testing performed on the
ListenPoint ALS Module, Model: LPT-T216

To

47 CFR FCC Part 95G
RSS 210, Issue 8

For

Listen Technologies Corporation

Test Performed by:
Intertek Testing Services NA, Inc.
1795 Dogwood St., Suite 200
Louisville, CO 80027

Test Authorized by:
Listen Technologies Corporation
14912 Heritagecrest Way
Bluffdale, UT 84065

Prepared by:

A handwritten signature in black ink, appearing to read "Michael Spataro".

Michael Spataro

Date: November 5, 2013

Reviewed by:

A handwritten signature in black ink, appearing to read "Randy Thompson".

Randy Thompson

Date: November 8, 2013

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Revision Level	Date	Report Number	Notes
0	10/29/2012	100919375DEN-001	Original Issue
1	11/5/2013	100919375DEN-001	Changed number of channels pg. 3 Changed testing end date pg. 3 Changed MU statement pg. 5 Unchecked continuous receive mode box pg. 7 Retested frequency stability pg. 8 Replace plot 4.5.1.1 pg. 16 Replaced plot 4.5.1.4 pg. 17 Updated Table 2 pg. 26 Added AC conducted emissions Sec.4.7 pg 28 -31 Updated equipment list pg. 32

1.0 DESCRIPTION OF THE SAMPLE (EUT)

Model:	LPT-T216
Type of EUT:	Auditory Assistance
Company:	Listen Technologies Corporation
Customer:	Guy W. Leishman
Address:	14912 Heritagecrest Way Bluffdale, UT 84065
Phone:	1-801-233-8992
Fax:	1-801-233-8995
e-mail:	guy.leishman@listentech.com
Standards Information:	☒ 47 CFR, Part 15B, §15.107 and §15.109, Class B ☒ RSS-210, Issue 8, 2010 ☒ RSS-Gen, Issue 3, 2010 ☒ 47 CFR, Part 95G ☒ ICES-003, Issue 5 ☐ Other
Operating Frequency Range(s):	216.0125-216.9875 MHz
Number of Channels:	57
Modulation:	☐ FHSS ☐ Digital ☒ Other FM
Type of equipment:	☒ Stand -alone ☐ Module ☐ Combined ☐ Plug-in
Date Sample Submitted:	October 10, 2012
Test Work Started:	October 10, 2012
Test Work Completed:	November 5, 2013
Test Sample Conditions:	☐ Damaged ☐ Poor (Usable) ☒ Good
Special Test Arrangement:	None
Test Facility Accreditation:	A2LA (Certificate No. 2506.02)
Test Methodology:	Measurements performed according to the procedures in ANSI C63.4-2009, C63.10-2009 and TIA-603C

2.0 TEST SUMMARY

Referring to the performance criteria and the operating mode during the tests specified in this report, the equipment complies with the requirements according to the following standards.

TEST SPECIFICATION	TEST PARAMETERS	RESULT
95.639/RSS 210 A4.3	Maximum Transmitter Power	Pass
95.629/RSS 210 A4.3	Emission Type	Pass
95.629/RSS 210 A4.3	Frequency Range	Pass
95.629/RSS 210 A4.3	Frequency Stability	Pass
95.633/RSS 210 A4.3	Emission Bandwidth	Pass
95.635/RSS 210 A4.3	Unwanted Emissions (Antenna Conducted Spurious)	Pass
95.636/RSS Gen	Unwanted Emissions (Radiated Spurious)	Pass
FCC Part 2.1047	Modulation Characteristics	Pass
RSS-GEN	AC conducted emissions	Pass

2.1 Statement of the measurement uncertainty

The measured value related to the corresponding limit will be used to decide whether the equipment meets the requirements.

The measurement uncertainty figures were calculated and correspond to a coverage factor of $k = 2$, providing a confidence level of respectively 95.45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian).

Parameter	Uncertainty $\pm$	Notes
Radiated emissions, 10kHz to 30 MHz	3.4 dB	
Radiated emissions, 30 to 200 MHz HP	2.2 dB	
Radiated emissions, 30 to 200 MHz VP	3.8 dB	
Radiated emissions, 200 to 1000 MHz HP	2.8 dB	
Radiated emissions, 200 to 1000 MHz VP	2.7 dB	
Radiated emissions, 1 to 18 GHz	5.2 dB	
Conducted port emissions 10kHz to 1000 MHz	1.0 dB	
Conducted port emissions 1 – 26.5 GHz	1.6 dB	
AC mains Conducted emissions, 9kHz to 30 MHz	3.14 dB	

3.0 EQUIPMENT UNDER TEST

3.1 Power configuration

Rated voltage:	☒ 120VAC ☐ 230VAC ☐ 400VAC ☐ Other: 24VDC
Rated current:	
Rated frequency:	☐ 50Hz ☒ 60Hz
Power source:	☐ Internal battery ☒ External power source
Battery:	☐ Nickel Cadmium ☐ Alkaline ☐ Nickel-Metal Hydride ☐ Lithium-Ion

3.2 Antenna configuration

Antenna type:	☒ Integral ☐ External
Antenna connectors:	☒ RF connector provided ☐ no temporary RF connector provided
Antenna gain:	2.0 dBi

3.3 EUT configuration

The equipment under test was operated during the measurement under the following conditions:

- ☒ - Standby
- ☒ - Continuous modulated
- ☒ - Continuous un-modulated
- ☐ - Continuous receiving mode
- ☐ - Test program
- ☐ -

Operating modes of the EUT:

No.	Description
1	The device was pre-programmed to transmit continuously over different frequency channels at low, middle, and high power outputs, one channel being transmitted at a given time.

Cables:

No.	Type	Length	Designation	Note
1	RG 45 communication cable	<3ft	ListenPoint system connection	

Support equipment/Services:

No.	Item	Description
1	LT-R12	Room Module
2	LPT-C6	Control Unit

3.4 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

☒ Normal

Temperature:	+15 to +35 ° C
Humidity:	20-75 %
Atmospheric pressure:	86-106 kPa

☒ Extreme

☐ Temperature:	+0 to +35 ° C
☒ Temperature:	-30 to +50 ° C
☒ AC mains:	± 15%
☐ Battery:	0.85 -1.15 times

General notes: None

4.0 TEST CONDITIONS AND RESULTS

4.1 Frequency Stability

Test location: ☐ OATS ☐ Anechoic Chamber ☒ Other

Test date: November, 4 2013

Tested by: Michael Spataro

Test result: **Pass**

Max. Margin: -28.1 PPM below the limits

☒ Conducted measurements					
☐ Radiated measurements		Substitution antenna gain dBi Cable loss dB			
EUT Antenna gain: 2.0dBi		Test Results			
Frequency 216.512MHz		Assigned Frequency (MHz)	Measured Frequency (MHz)	Deviation PPM	Limit PPM
T _{nom} (20.7° C)	V _{nom} (120VAC)	216.5125	216.512500	0.0	50
	V _{min} (102VAC)	216.5125	216.512625	0.6	50
	V _{max} (138VAC)	216.5125	216.512500	0.0	50
V _{nom} (120VAC)	T _{max} (50°C)	216.5125	216.5128750	1.7	50
	T (40°C)	216.5125	216.5127500	1.2	50
	T (30°C)	216.5125	216.5126250	0.6	50
	T (20°C)	216.5125	216.5126250	0.6	50
	T (10°C)	216.5125	216.5122500	1.2	50
	T (0°C)	216.5125	216.5117500	3.5	50
	T (-10°C)	216.5125	216.5108750	8.7	50
	T (-20°C)	216.5125	216.5091250	15.6	50
	T _{min} (-30°C)	216.5125	216.5077500	21.9	50

Notes: For temperature stability testing the recorded frequency represents the worst case from 4 measurements take at each temperature in accordance with ANSI C63.10 sec 6.8.

4.2 Emission Bandwidth/Emissions Type

Test location: ☐ OATS ☐ Anechoic Chamber ☒ Other

Test date: October 10, 2012

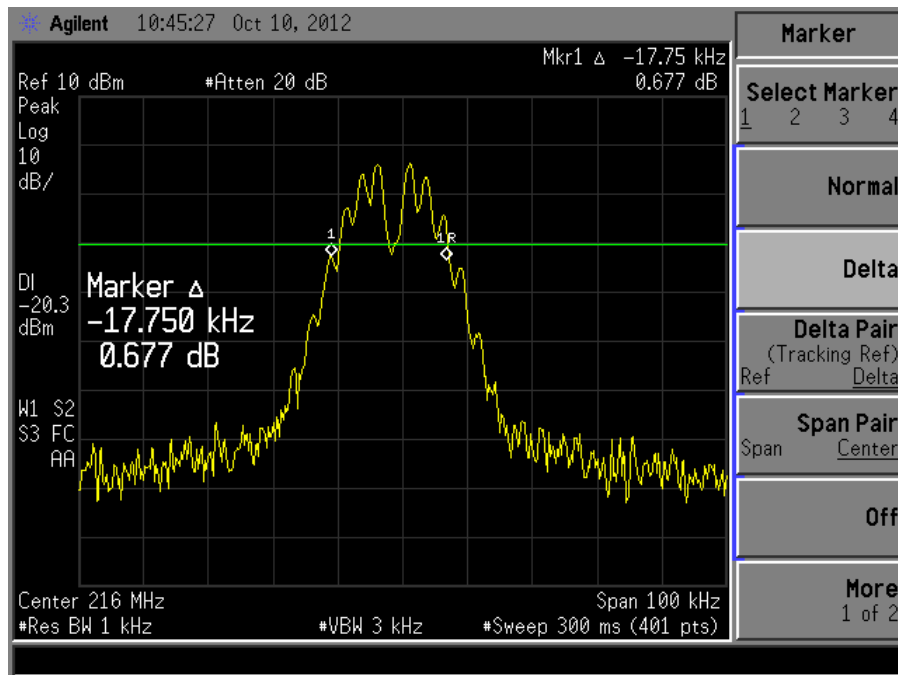
Tested by: Yuriy Litvinov

Test result: **Pass**

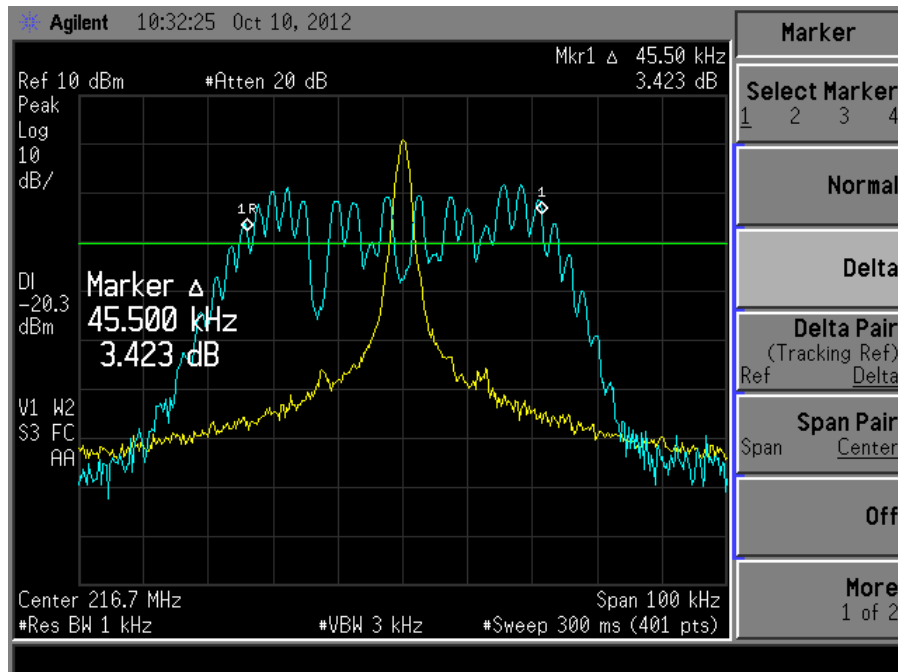
Max. Margin:

☒ Conducted measurements						
☐ Radiated measurements	Substitution antenna gain		dBi	Cable loss		dB
	Test Results					
Frequency	Measured Bandwidth (KHz)	Limit (KHz)		Margin (kHz)	Result	
Channel 1/216.0125MHz	17.75	25			Pass	
Channel 55/216.725MHz	45.5	50			Pass	

Notes: The bandwidth was run with 2500Hz audio signal 16 dB higher than the level needed to produce 50% modulation (251mV)
The LPT-T216 transmitter voice only, and not used for two-way communications; therefore, it complies with emissions type requirements.



Graph 4.2.1 2500KHz Modulated Carrier



Graph 4.2.2 2500KHz Modulated Carrier

4.3 Frequency Range

Test location: ☐ OATS ☐ Anechoic Chamber ☒ Other

Test date: October 10, 2012

Tested by: Michael Kanda

Test result: **Pass**

Lowest Frequency Ch. 1		Highest Frequency Ch. 60
Lowest Frequency / Channel 1		
T_{nom}	V_{nom}	216.0125 MHz
T_{min}	V_{min}	
	V_{max}	
T_{max}	V_{min}	
	V_{max}	
Highest Frequency / Channel 60		
T_{nom}	V_{nom}	216.9875MHz
T_{min}	V_{min}	
	V_{max}	
T_{max}	V_{min}	
	V_{max}	

Notes: 95.629 LPRS transmitter frequencies.

(a) LPRS transmitters may operate on any frequency listed in paragraphs (b), (c), and (d) of this section. Channels 19, 20, 50, and 151-160 are available exclusively for law enforcement tracking purposes. AMTS transmissions are limited to the 216.750-217.000 MHz band for low power point-to-point network control communications by AMTS coast stations. Other AMTS transmissions in the 216-217 MHz band are prohibited.

4.4 Maximum Transmitter Power

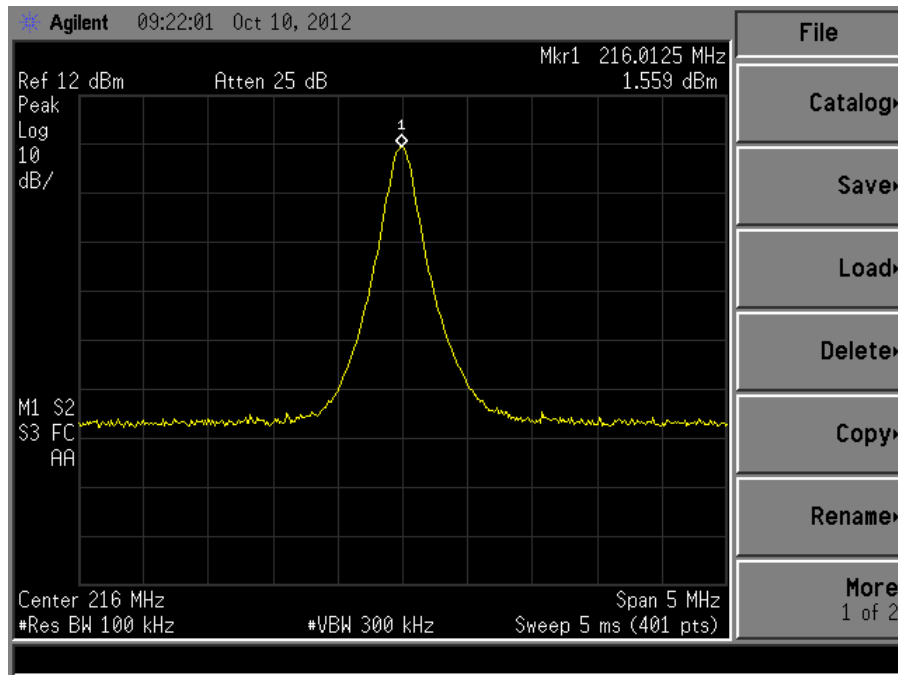
Test location: ☐ OATS ☐ Anechoic Chamber ☒ Other

Test result: **Pass**

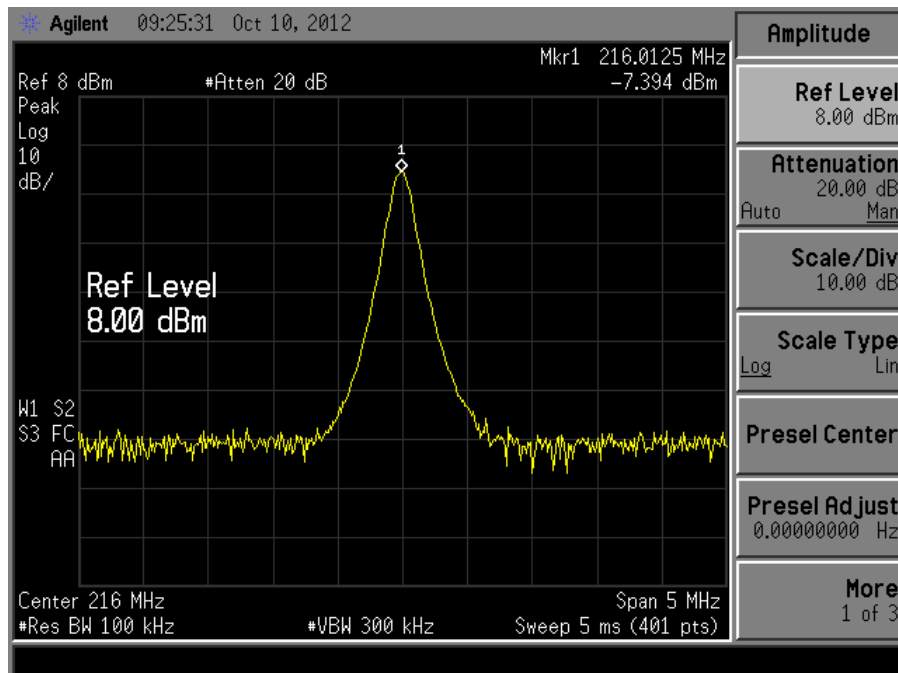
Max. Margin: 18.44dBm below the limits

Power Output:	Conducted					
Frequency Range:	☒ 216.0125-216.9875MHz ☐ 2400-2483.5MHz ☐ 5725-5850MHz					
Output Power Options	Measured power dBm	Attenuation dB	Power at Antenna dBm	Limit dBm	Limit Reduction dB	Margin dB
Low	-17.9	0	-17.9	20	0	37.9
Mid	-7.36	0	-7.36	20	0	27.36
High	1.56	0	1.56	20	0	18.44
RBW:	☒ 100KHz ☐ 1MHz ☐ 3MHz					
VBW:	☒ 300KHz ☐ 1MHz ☐ 3MHz					
Antenna Gain:	☐ < 6dBi ☐ >6dBi and = dBi, Output power reduction = dB					

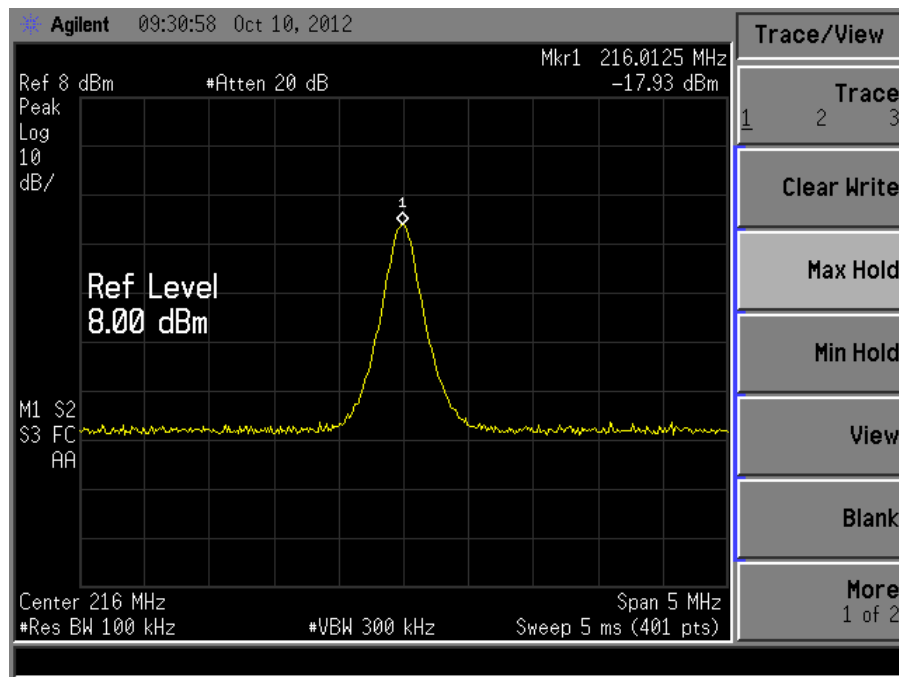
Notes: The maximum transmitter output power authorized for LPRS stations is 100 mW (20dBm)
 Graphs 4.4.1 High Power Output
 Graphs 4.4.2 Mid Power Output
 Graphs 4.4.3 Low Power Output



Graph 4.4.1 High Power output



Graph 4.4.2 Mid Power output



Graph 4.4.3 Low Power output

4.5 Unwanted Spurious emissions

4.5.1 Conducted spurious emissions

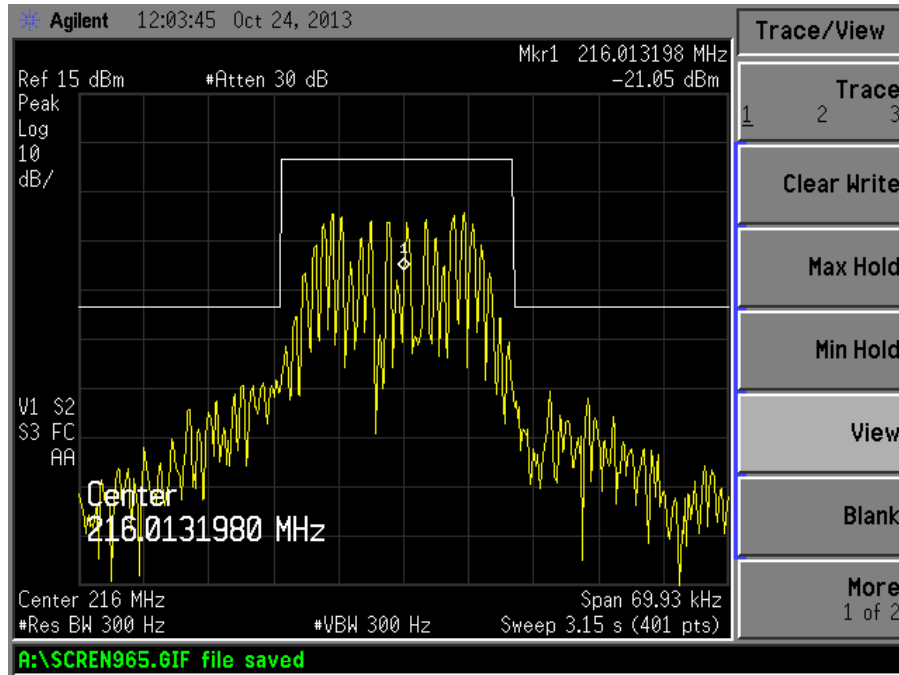
Test location: ☐ OATS ☐ Anechoic Chamber ☒ Other

Test date: October 10, 2012/November 5, 2013

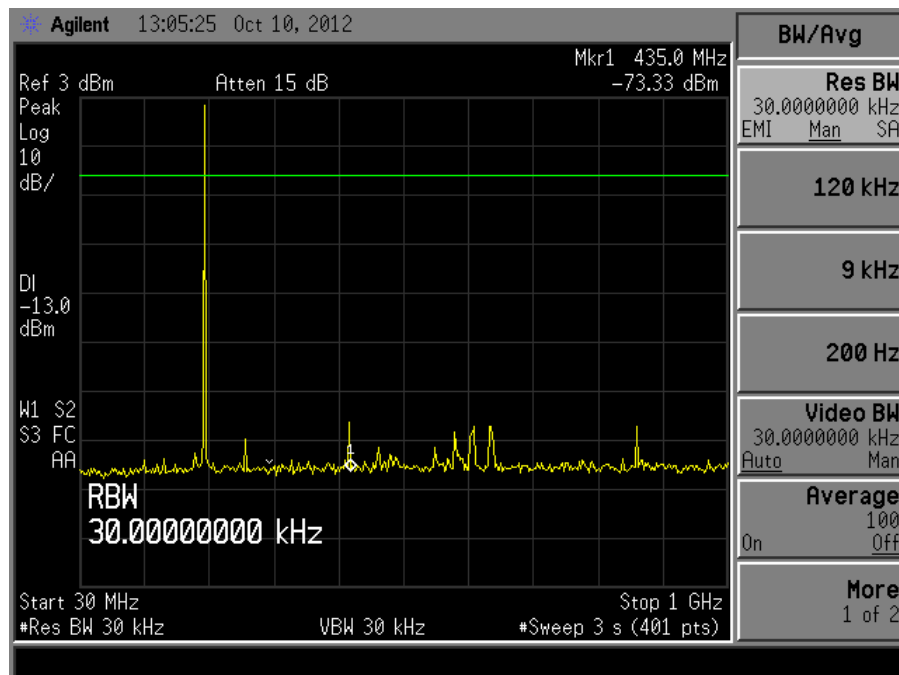
Test result: Pass

LPRS Unwanted Emissions	Measured Emissions (dBm)	Limits (dBm)	Margin (dB)
25KHz Channel			
12.5 kHz to 22.5 kHz from the channel center		30dBc	Pass
22.5 kHz away from the channel center		-13dBm	Pass
50KHz Channel			
25 kHz to 35 kHz from the channel center		30dBc	Pass
35 kHz away from the channel center		-13dBm	Pass
Analyzer Settings:	☒ RBW=300Hz ☒ VBW=1KHz		

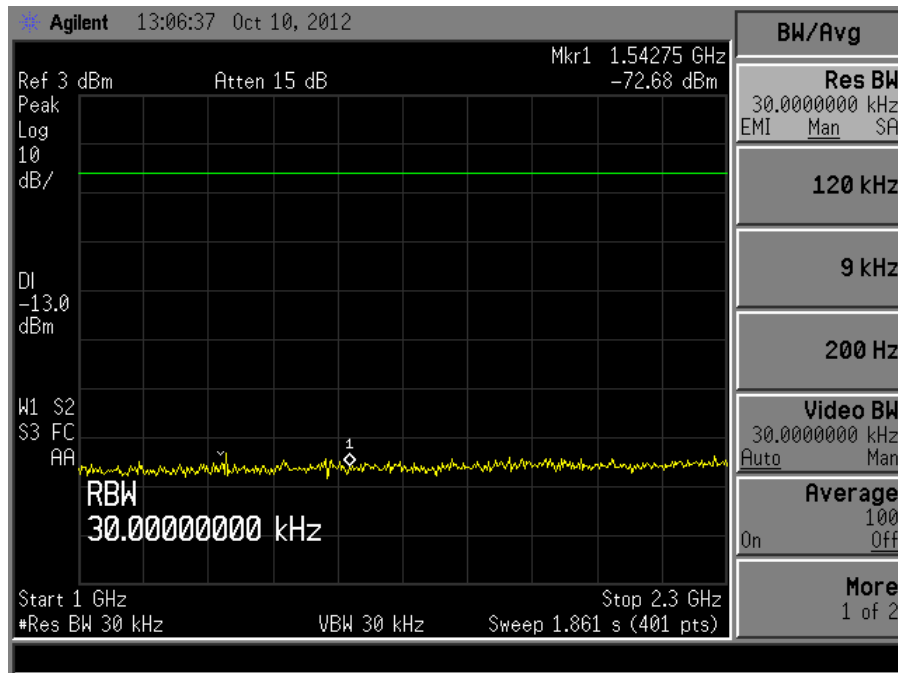
Notes: Emissions for LPRS transmitters operating on extra band channels (50 kHz) shall be attenuated below the unmodulated carrier in accordance with the following:
Emissions 25 kHz to 35 kHz from the channel center frequency: at least 30 dB; and
Emissions more than 35 kHz away from the channel center frequency: at least $43 + 10\log(\text{carrier power in watts})$ dB.



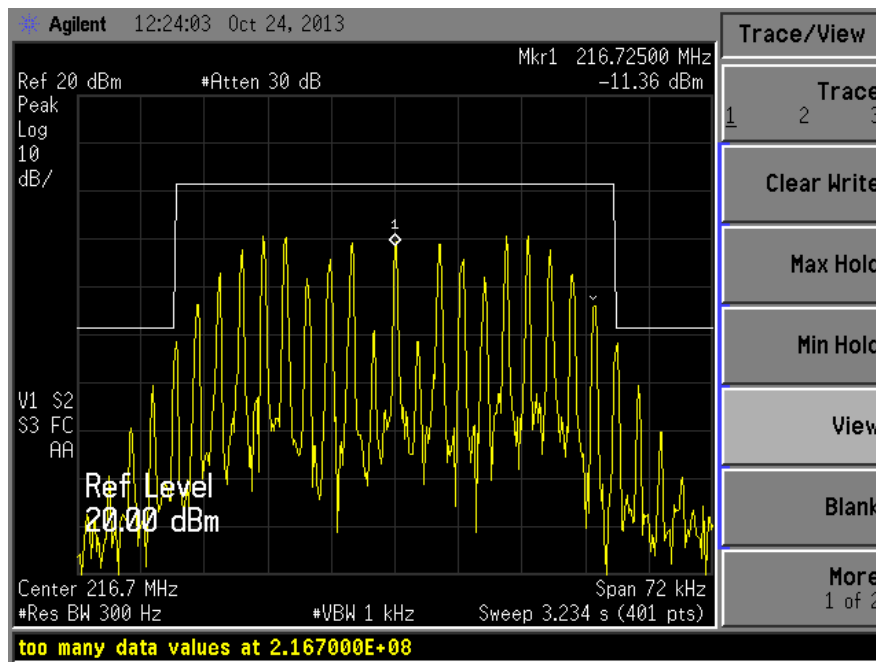
Graph 4.5.1.1



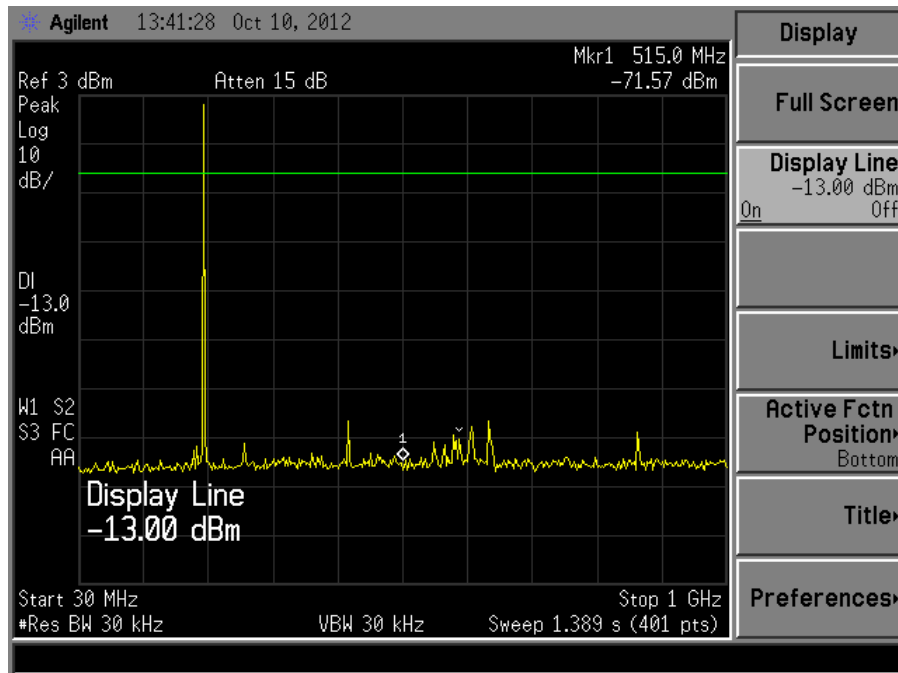
Graph 4.5.1.2



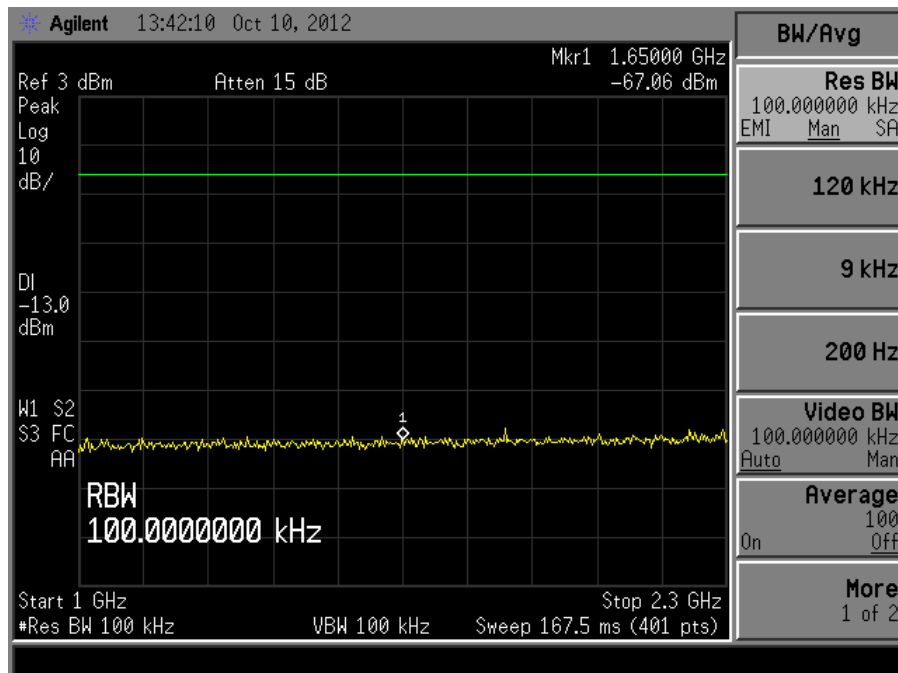
Graph 4.5.1.3



Graph 4.5.1.4



Graph 4.5.1.5



Graph 4.5.1.6

4.5.2 Radiated spurious emissions

Test location: ☐ OATS ☒ Anechoic Chamber

Test distance: ☐ 10 meters ☒ 3 meters

Test result: Pass

Frequency range: 30MHz-2.3 GHz

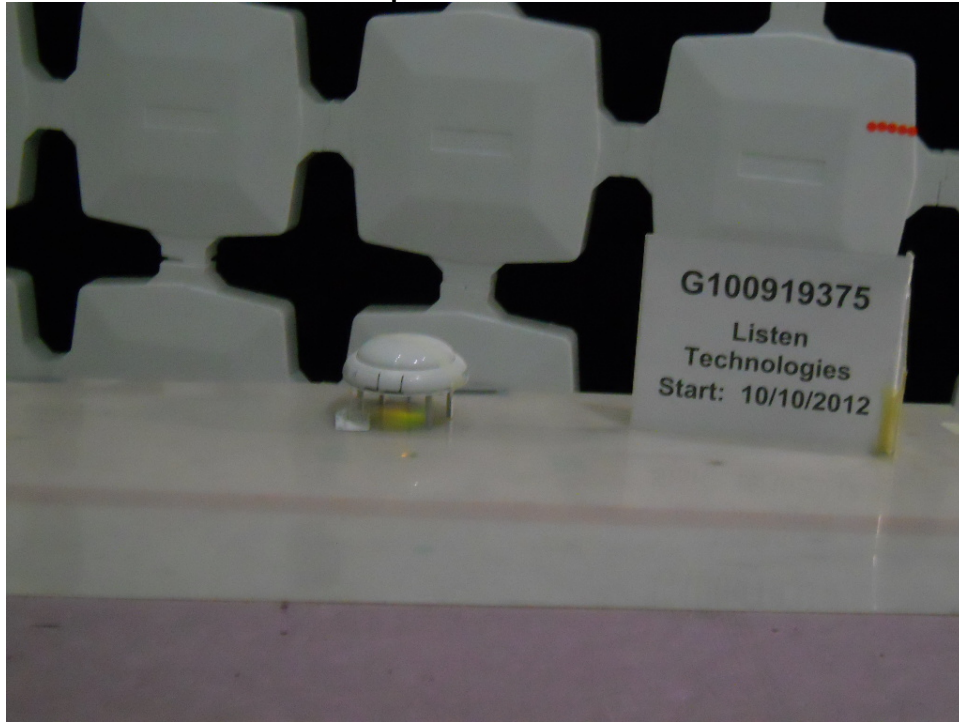
Max. Emissions margin: -3.47dB below the limit at 106.71MHz

Notes: Emissions for LPRS transmitters operating on extra band channels (50 kHz) shall be attenuated below the unmodulated carrier in accordance with the following:

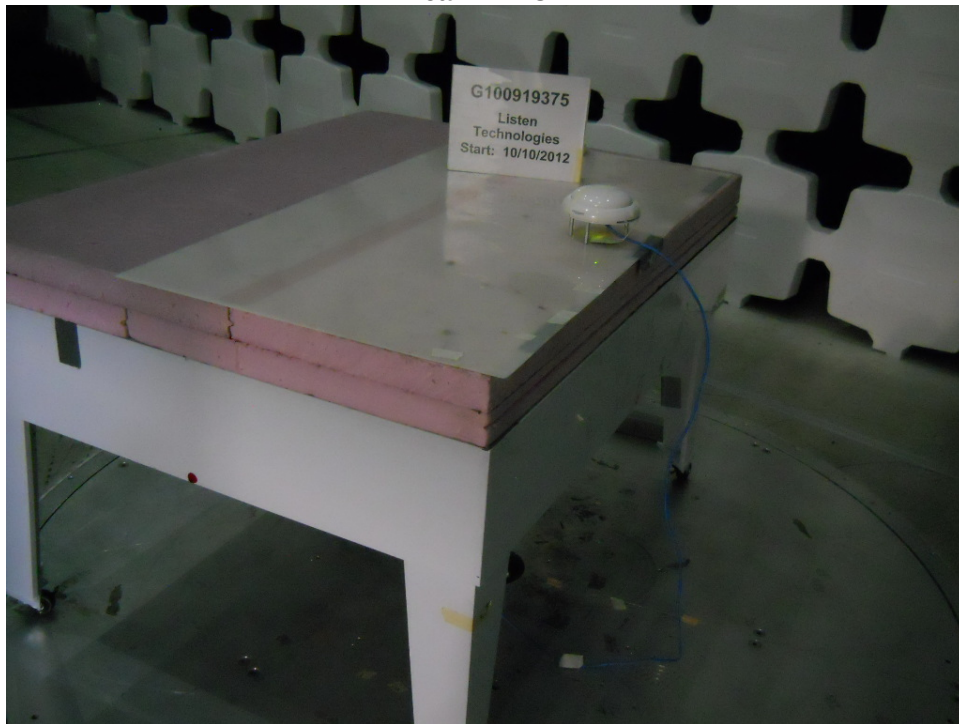
Emissions 25 kHz to 35 kHz from the channel center frequency: at least 30 dB; and

Emissions more than 35 kHz away from the channel center frequency: at least $43 + 10\log(\text{carrier power in watts})$ dB.

Test Setup Photos: Front – Axis 1



Rear – Axis 1



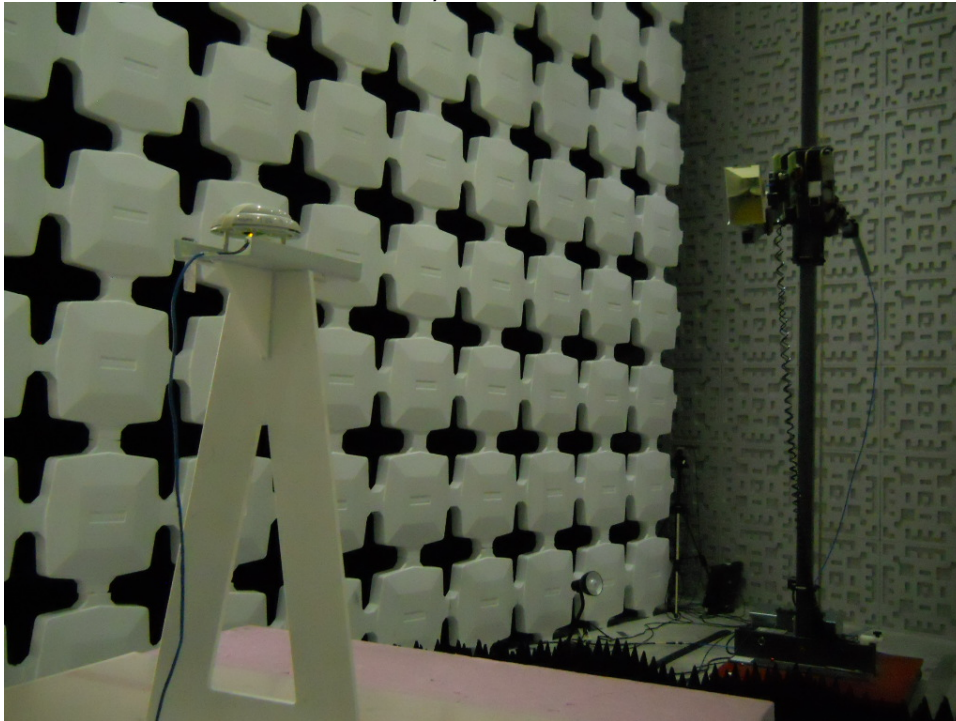
Test Axis 2 – On side



Test Axis 3 – On side rotated 90 deg



Test Position 4 – Elevated to 1.5m; Found to be worst case.



Date:	October 11, 2012	Result: Pass
Standard:	Part 95.635/15.109	
Tested by:	Michael Kanda	
Test Point:	Enclosure	
Operation mode:	See Page 7	
Note:	Substitution measurements	

Table 1 – Radiated Harmonics

FREQ	LEVEL	DET	CABLE	ANT	PREAMP	ATTEN	FINAL	POL	HGT	AZ	DELTA1	DELTA2	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	(DEG)	15.209 <1GHz	15.209 >1GHz	(MHz)

Determine worst case position

Mid Channel - Ch 28

High Power

Axis 1 - Flat

216.51	71.65	Qp	0.98	10.49	0.00	0.00	83.12	H	1.00	138.7			0.120
216.51	68.83	Qp	0.98	10.49	0.00	0.00	80.30	V	1.00	311.2			0.120

Axis 2 - On side

216.51	64.23	Qp	0.98	10.49	0.00	0.00	75.70	H	2.57	0.0			0.120
216.51	67.32	Qp	0.98	10.49	0.00	0.00	78.79	V	1.00	306.8			0.120

Axis 3 - On side rotated 90 deg

216.51	61.58	Qp	0.98	10.49	0.00	0.00	73.05	H	2.69	187.1			0.120
216.51	68.45	Qp	0.98	10.49	0.00	0.00	79.92	V	1.00	308.6			0.120

Elevated to 1.5m Axis 1 - Determined to be worst case.

216.51	70.19	Qp	0.98	10.49	0.00	0.00	81.66	H	1.00	77.4			0.120
216.51	73.47	Qp	0.98	10.49	0.00	0.00	84.94	V	1.60	0.9			0.120

Measurement of Harmonics

Elevated to 1.5m Axis 1 - Determined to be worst case.

433.01	44.20	Pk	1.42	16.66	28.03	0.00	34.25	H	1.00	85.0	- 11.77		0.120
433.01	43.27	Qp	1.42	16.66	28.03	0.00	33.32	H	1.00	85.0	- 12.70		0.120
433.01	42.92	Av	1.42	16.66	28.03	0.00	32.97	H	1.00	85.0	NA		0.120
433.03	48.98	Pk	1.42	16.66	28.03	0.00	39.03	V	1.40	0.0	- 6.99		0.120
433.03	48.32	Qp	1.42	16.66	28.03	0.00	38.37	V	1.40	0.0	- 7.65		0.120
433.03	48.18	Av	1.42	16.66	28.03	0.00	38.23	V	1.40	0.0	NA		0.120
649.51	39.41	Pk	1.78	19.30	28.31	0.00	32.17	H	1.62	285.7	- 13.85		0.120
649.51	37.48	Qp	1.78	19.30	28.31	0.00	30.24	H	1.62	285.7	- 15.78		0.120
649.51	36.35	Av	1.78	19.30	28.31	0.00	29.11	H	1.62	285.7	NA		0.120
649.51	37.68	Pk	1.78	19.30	28.31	0.00	30.44	V	1.56	280.0	- 15.58		0.120
649.51	35.47	Qp	1.78	19.30	28.31	0.00	28.23	V	1.56	280.0	- 17.79		0.120

649.51	34.01	Av	1.78	19.30	28.31	0.00	26.77	V	1.56	280.0	NA		0.120
866.05	43.42	Pk	2.05	21.60	27.75	0.00	39.32	H	1.00	326.6	- 6.70		0.120
866.05	42.29	Qp	2.05	21.60	27.75	0.00	38.19	H	1.00	326.6	- 7.83		0.120
866.05	41.85	Av	2.05	21.60	27.75	0.00	37.75	H	1.00	326.6	NA		0.120
866.05	46.14	Pk	2.05	21.60	27.75	0.00	42.04	V	1.37	28.0	- 3.98		0.120
866.05	45.36	Qp	2.05	21.60	27.75	0.00	41.26	V	1.37	28.0	- 4.76		0.120
866.05	45.13	Av	2.05	21.60	27.75	0.00	41.03	V	1.37	28.0	NA		0.120
1082.57	67.66	Pk	2.31	24.33	37.18	0.00	57.12	H	3.45	359.9	- 16.88		1.000
1082.57	48.48	Av	2.31	24.33	37.18	0.00	37.94	H	3.45	359.9	- 16.06		1.000
1082.57	53.29	Pk	2.31	24.33	37.18	0.00	42.75	V	2.83	77.1	- 31.25		1.000
1082.57	46.92	Av	2.31	24.33	37.18	0.00	36.38	V	2.83	77.1	- 17.62		1.000
1299.05	76.19	Pk	2.53	25.17	36.97	0.00	66.93	H	2.88	0.5	- 7.07		1.000
1299.05	54.38	Av	2.53	25.17	36.97	0.00	45.12	H	2.88	0.5	- 8.88		1.000
1299.02	74.77	Pk	2.53	25.17	36.97	0.00	65.51	V	2.93	85.7	- 8.49		1.000
1299.02	54.19	Av	2.53	25.17	36.97	0.00	44.93	V	2.93	85.7	- 9.07		1.000
1515.59	68.85	Pk	2.74	25.45	36.63	0.00	60.41	H	3.88	182.9	- 13.59		1.000
1515.59	45.62	Av	2.74	25.45	36.63	0.00	37.18	H	3.88	182.9	- 16.82		1.000
1515.59	69.19	Pk	2.74	25.45	36.63	0.00	60.75	V	3.59	104.9	- 13.25		1.000
1515.59	46.26	Av	2.74	25.45	36.63	0.00	37.82	V	3.59	104.9	- 16.18		1.000
1732.11	56.49	Pk	2.95	26.73	36.79	0.00	49.38	H	2.98	206.2	- 24.62		1.000
1732.11	35.82	Av	2.95	26.73	36.79	0.00	28.71	H	2.98	206.2	- 25.29		1.000
1732.11	71.12	Pk	2.95	26.73	36.79	0.00	64.01	V	3.69	269.2	- 9.99		1.000
1732.11	35.48	Av	2.95	26.73	36.79	0.00	28.37	V	3.69	269.2	- 25.63		1.000
1948.53	69.99	Pk	3.15	27.65	37.05	0.00	63.74	H	3.51	359.9	- 10.26		1.000
1948.53	34.80	Av	3.15	27.65	37.05	0.00	28.55	H	3.51	359.9	- 25.45		1.000
1948.53	74.96	Pk	3.15	27.65	37.05	0.00	68.71	V	3.86	0.0	- 5.29		1.000
1948.53	34.80	Av	3.15	27.65	37.05	0.00	28.55	V	3.86	0.0	- 25.45		1.000
2165.03	66.65	Pk	3.32	27.82	37.14	0.00	60.65	H	3.08	359.9	- 13.35		1.000
2165.03	34.86	Av	3.32	27.82	37.14	0.00	28.86	H	3.08	359.9	- 25.14		1.000
2165.03	48.64	Pk	3.32	27.82	37.14	0.00	42.64	V	3.45	131.3	- 31.36		1.000
2165.03	34.84	Av	3.32	27.82	37.14	0.00	28.84	V	3.45	131.3	- 25.16		1.000

Table 1 – Other Radiated Spurious

FREQ	LEVEL	DET	CABLE	ANT	PREAMP	ATTEN	FINAL	POL	HGT	AZ	DELTA1	DELTA2	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	(DEG)	15.209 <1GHz	15.209 >1GHz	(MHz)
50.10	35.41	Qp	0.77	7.87	28.20	0.00	15.85	H	1.81	340.1	- 24.15	NA	0.120
106.70	42.59	Qp	0.77	11.84	27.93	0.00	27.27	H	2.99	274.3	- 16.25	NA	0.120
503.50	26.12	Qp	1.54	17.57	28.32	0.00	16.91	H	1.36	224.8	- 29.11	NA	0.120

50.00	48.59	Qp	0.77	7.90	28.20	0.00	29.06	V	1.00	188.7	- 10.94	NA	0.120
62.43	36.56	Qp	0.77	7.54	28.14	0.00	16.73	V	1.00	116.4	- 23.27	NA	0.120
95.68	52.32	Qp	0.77	9.20	27.98	0.00	34.31	V	1.00	153.4	- 9.21	NA	0.120
106.71	55.37	Qp	0.77	11.84	27.93	0.00	40.05	V	2.86	259.8	- 3.47	NA	0.120
502.60	29.83	Qp	1.54	17.55	28.31	0.00	20.60	V	1.92	27.7	- 25.42	NA	0.120

Signal Substitution Worksheet							
Frequency	Signal Generator	Cable Loss	Antenna Gain	Final Measurement	Limit(dB)	Margin	Polarity
433.01	-61	-3.3	6.1	-58.2	-13.00	-45.20	V
433.03	-68.3	-3.3	6.1	-65.5	-13.00	-52.5	H
649.51	-70	-4.2	6.8	-67.4	-13.00	-54.4	V
649.51	-67.9	-4.2	6.8	-65.3	-13.00	-52.3	H
866.05	-56.5	-5.1	7	-54.6	-13.00	-41.6	V
866.05	-60.9	-5.1	7	-59	-13.00	-46	H
1082.57	-38.9	-5.9	6.8	-38	-13.00	-25	H
1082.57	-58.1	-5.9	6.8	-57.2	-13.00	-44.2	V
1299.05	-30.6	-6.5	7.5	-29.6	-13.00	-16.6	H
1299.02	-29.5	-6.5	7.5	-28.5	-13.00	-15.5	V
1515.59	-36.9	-7.4	8.4	-35.9	-13.00	-22.9	H
1515.59	-36.1	-7.4	8.4	-35.1	-13.00	-22.10	V
1948.53	-32.5	-8.2	8.4	-32.3	-13.00	-19.3	H
1948.53	-26.7	-8.2	8.4	-26.5	-13.00	-13.5	V
106.7	-69.4	-1.5	-1.2	-72.1	-13.00	-59.1	H
50	-58	-0.9	-4.2	-63.1	-13.00	-50.1	H
95.68	-60.1	-1.4	0.5	-61	-13.00	-48	V
106.71	-47.9	-1.5	-1.2	-50.6	-13.00	-37.6	V

4.6 Modulation Characteristics

Date:	October 10, 2012/November 5, 2013	Result: Pass
Standard:	Part 2.1047	
Tested by:	Yuriy Litvinov/Michael Spataro	
Test Point:	Antenna Port	
Operation mode:	An audio signal at 1KHz was adjusted for 100% rated FM deviation by 270mW.	
Note:	The input frequency and amplitude were varied and the detected FM deviation has been recorded	

Table 2

F Mod (kHz)	Audio Voltage (mV)	Peak Deviation Ch 1 SBC (kHz)	Peak Deviation Ch 41 EBC (kHz)		F Mod (kHz)	Audio Voltage (mV)	Peak Deviation Ch 1 SBC (kHz)	Peak Deviation Ch 41 EBC (kHz)
0.1	50	11.9	11.9		4	50	15.6	16
	100	16.2	16.3			100	20.7	21.8
	200	22.1	22.3			200	26.9	29.8
	300	26.5	26.8			300	28.3	35.7
	400	30.2	30.4			400	27.9	40.7
0.2	50	9.75	9.9		5	50	17.8	17.92
	100	13.2	13.2			100	23.7	24.6
	200	17.8	18.1			200	30.9	33.7
	300	21.2	21.4			300	33.1	40.4
	400	23.9	24.2			400	32.8	45.9
0.3	50	9.1	9.2		6	50	19.5	19.4
	100	12.3	12.4			100	26.1	26.7
	200	16.6	16.8			200	34.2	36.6
	300	19.8	20			300	37.2	44.1
	400	22.38	22.6			400	37.4	49.8
0.4	50	8.9	9		7	50	20.8	20.4
	100	12.1	12.2			100	28	28.1
	200	16.3	16.5			200	36.8	38.7
	300	19.3	19.6			300	41.2	46.6
	400	21.8	22			400	40.9	52.9
0.5	50	8.2	8.9		8	50	21.7	21.1
	100	10	12.1			100	29.2	29.1
	200	13.5	16.6			200	38.6	40.2
	300	13.8	19.5			300	44.2	48.3
	400	13.5	21.9			400	43.9	54.9
1	50	8.3	9.3		9	50	22.3	21.4
	100	11	12.5			100	29.9	29.6
	200	14	17			200	39.4	40.8
	300	14.4	20.3			300	45.6	49
	400	13.8	22.8			400	46	55.7
2	50	10.5	11.3		10	50	22.3	21.5

F Mod (kHz)	Audio Voltage (mV)	Peak Deviation Ch 1 SBC (kHz)	Peak Deviation Ch 41 EBC (kHz)		F Mod (kHz)	Audio Voltage (mV)	Peak Deviation Ch 1 SBC (kHz)	Peak Deviation Ch 41 EBC (kHz)
	100	13.7	15.3			100	29.9	29.6
	200	17.5	20.7			200	39.6	40.9
	300	17.8	24.8			300	46.1	49.2
	400	17.5	27.9			400	47	56
3	50	13	13.7					
	100	17.3	18.6					
	200	22.3	25.4					
	300	23.1	30.4					
	400	22.8	34.3					

4.7 AC Conducted Emissions

Test location: ☐ OATS ☒ Anechoic Chamber

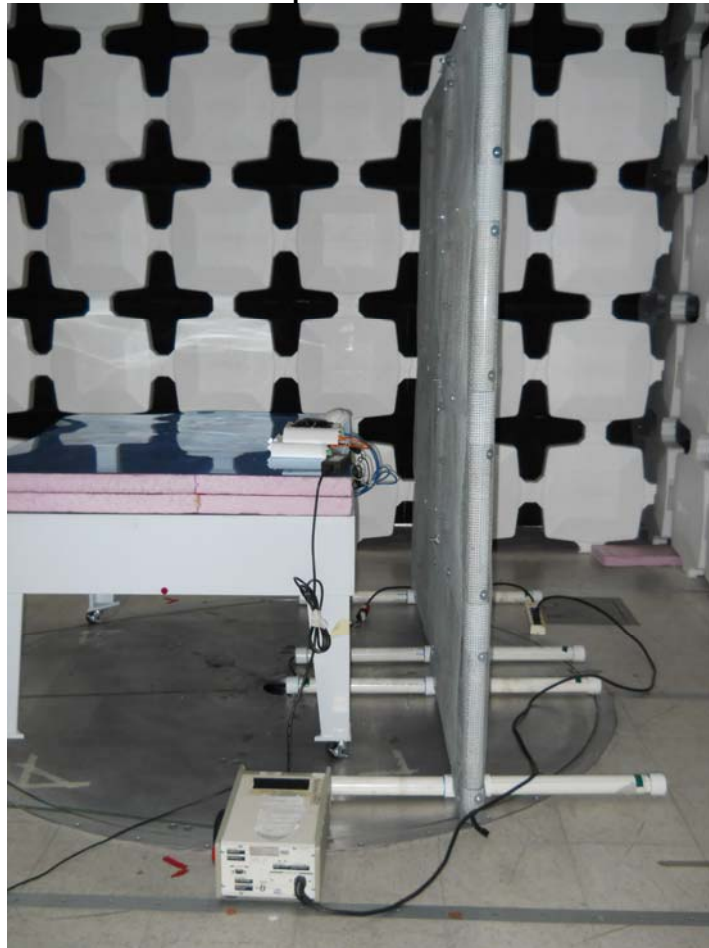
Test result: Pass

Frequency range: 0.15 to 30 MHz

Max. Emissions margin: -10.5 dB below the limit at 0.249 MHz

Notes: AC conducted emissions performed per RSS-GEN section 7.2.4.

Test Setup Photos: Side View



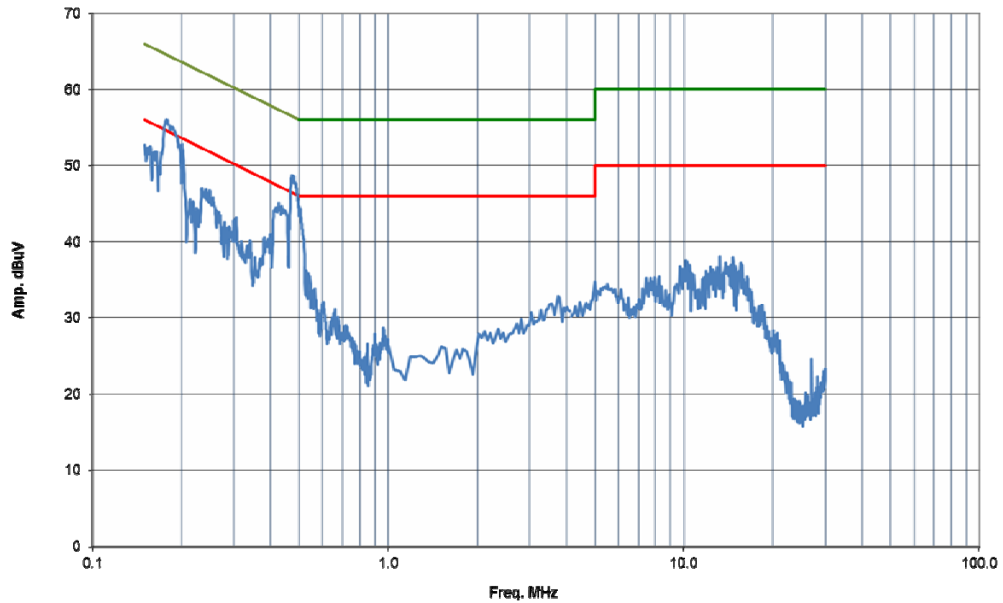
Test Setup Photos: Front View



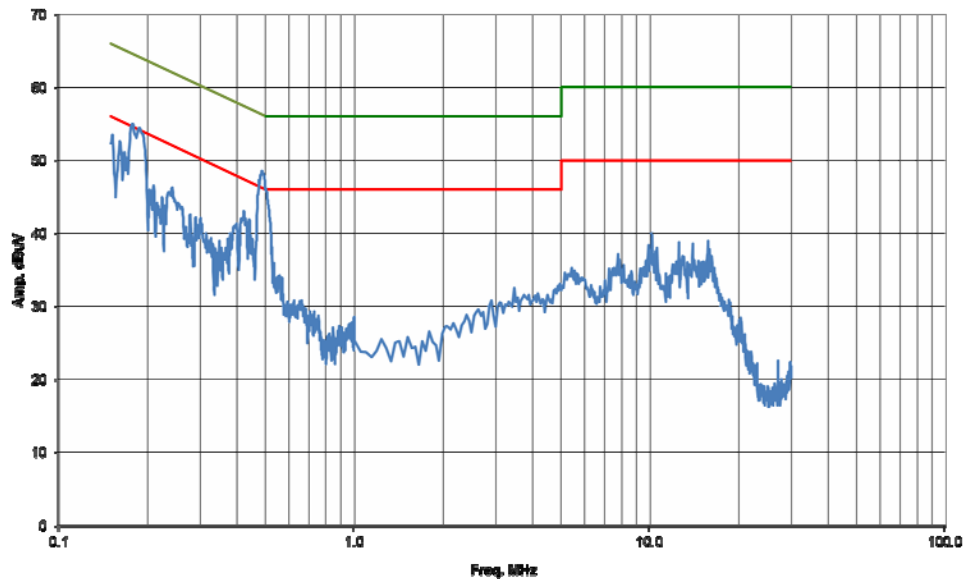
Date:	November 5, 2013	Result: Pass
Standard:	RSS-GEN sec. 7.2.4	
Tested by:	Michael Spataro	
Test Point:	Line and Neutral	
Operation mode:	See Page 7	
Note:	NA	

Plots

Line



Neutral



FREQ	LEVEL	DET	CABLE	LISN	PREAMP	ATTEN	FINAL	TEST POINT	DELTA1	DELTA2	RBW
------	-------	-----	-------	------	--------	-------	-------	------------	--------	--------	-----

MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	Other - N - L1 - L2 - L3	RSS- GEN QP	RSS- GEN AV	(MHz)
<u>120VAC 60Hz</u>											
0.187	41.65	Qp	0.10	0.03	0.00	10.30	52.09	Line	- 12.08	NA	0.009
0.187	26.03	Av	0.10	0.03	0.00	10.30	36.47	Line	NA	- 17.70	0.009
0.249	31.79	Qp	0.10	0.03	0.00	10.30	42.22	Line	- 10.94	NA	0.009
0.249	14.18	Av	0.10	0.03	0.00	10.30	24.61	Line	NA	- 18.46	0.009
0.441	28.49	Qp	0.10	0.03	0.00	10.31	38.93	Line	- 18.11	NA	0.009
0.441	11.80	Av	0.10	0.03	0.00	10.31	22.24	Line	NA	- 24.80	0.009
0.488	34.82	Qp	0.10	0.03	0.00	10.31	45.26	Line	- 29.47	NA	0.009
0.488	17.30	Av	0.10	0.03	0.00	10.31	27.74	Line	NA	- 27.48	0.009
10.434	19.59	Qp	0.61	0.11	0.00	10.34	30.66	Line	- 29.34	NA	0.009
10.434	10.28	Av	0.61	0.11	0.00	10.34	21.35	Line	NA	- 28.65	0.009
14.896	19.04	Qp	1.00	0.14	0.00	10.35	30.53	Line	- 19.56	NA	0.009
14.896	11.03	Av	1.00	0.14	0.00	10.35	22.52	Line	NA	- 27.17	0.009
0.181	42.02	Qp	0.10	0.03	0.00	10.30	52.45	Neutral	- 11.97	NA	0.009
0.181	24.77	Av	0.10	0.03	0.00	10.30	35.20	Neutral	NA	- 19.22	0.009
0.194	39.01	Qp	0.10	0.03	0.00	10.30	49.44	Neutral	- 14.41	NA	0.009
0.194	18.55	Av	0.10	0.03	0.00	10.30	28.98	Neutral	NA	- 24.87	0.009
0.441	26.90	Qp	0.10	0.02	0.00	10.31	37.33	Neutral	- 11.59	NA	0.009
0.441	10.30	Av	0.10	0.02	0.00	10.31	20.73	Neutral	NA	- 19.57	0.009
0.497	34.03	Qp	0.10	0.02	0.00	10.31	44.46	Neutral	- 19.71	NA	0.009
0.497	16.05	Av	0.10	0.02	0.00	10.31	26.48	Neutral	NA	- 26.31	0.009
10.155	20.22	Qp	0.60	0.12	0.00	10.34	31.28	Neutral	- 28.72	NA	0.009
10.155	12.40	Av	0.60	0.12	0.00	10.34	23.46	Neutral	NA	- 26.54	0.009
15.872	20.30	Qp	1.03	0.16	0.00	10.35	31.84	Neutral	- 28.16	NA	0.009
15.872	12.82	Av	1.03	0.16	0.00	10.35	24.36	Neutral	NA	- 25.64	0.009

5.0 TEST EQUIPMENT

DESCRIPTION	MANUFACTURER	MODEL	SERIAL NO.	INTERTEK ID	CAL DUE	USED
Spectrum Analyzer	Hewlett-Packard	E7405A	My44211889	18913	7/16/2013	☒
EMI Receiver	RHODE & SCHWARZ	ESU 26	100265	DEN-073	1/10/2013	☒
Bilog Antenna 30MHz - 6GHz	Sunol Sciences	JB6	A050707-1	19936	11/14/2012	☒
Horn Antenna 1-18GHz	EMCO	3115	9205-3886	18887	2/27/2013	☒
9 kHz- 1.3GHz Pre Amp	Hewlett-Packard	8447F	3113A05545	18912	6/6/2013	☒
Amplifier (1-4 GHz)	Mini-Circuits Lab	ZHL-42	N052792-2	18906	6/7/2013	☒
Software for Radiated and Conducted emissions.	Intertek	OATS vba	V. 3.0	SW-6	VBV	☒
						☐
Modulation Analyzer	Agilent	8901A	2026A00862	Rental	10/9/2013	☒
Humidity and Temperature Oven	ENVIRONTRONICS	System Plus	None	18648	VBV	☒
Wireless Temp and humidity sensor	Omega	zED-THP	0180793	LAB-013	10/10/2013	☒
						☐

Equipment list from October and November 2013

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
18694	Signal Generator	MARCONI INSTRUMENTS	2024	112113/020	08/09/2013	08/09/2014
18886	Ridged Guide Antenna 1-18GHz	TENSOR	4105	2020	12/11/2012	12/11/2013
18887	Horn Antenna 1-18GHz	EMCO	3115	9205-3886	03/19/2013	03/19/2014
18906	Amplifier	Mini-Circuits Lab	ZHL-42	N052792-2	06/10/2013	06/10/2014
18912	9 kHz- 1.3GHz Pre Amp	Hewlett-Packard	8447F	3113A05545	06/07/2013	06/07/2014
19937	Bilog Antenna 30 MHz - 6GHz	Sunol Sciences	JB6	A050707-2	03/20/2013	03/20/2014
19936	Bilog Antenna 30MHz - 6GHz	Sunol Sciences	JB6	A050707-1	11/15/2012	11/15/2013
DEN-073	EMI Receiver	ROHDE & SCHWARZ	ESU 26	100265	01/23/2013	01/23/2014
18914	Single Phase LISN	EMCO	3816/NM	9408-1003	04/11/2013	04/11/2014
18730	Transient Limiter	Hewlett-Packard	11947A	2820A00277	06/07/2013	06/07/2014
18648	Humidity and Temperature Oven	ENVIRONTRONICS	System Plus	none	VBV	VBV
LAB-006	Temp/Humidity Probe	Omega	ZED-THP	180786	02/13/2013	02/13/2014
18715	Digital Multi Meter	Fluke	87	56130297	08/20/2013	08/20/2014
DEN-137	Power Supply	PACIFIC POWER	112-AMX	1097	VBV	VBV
200145	Modulation Analyzer	HP	8901B	2912A01990	5/8/2013	5/8/2014