FCC PART 15.247
IC RSS-210, ISSUE 8, DECEMBER 2010
TEST AND MEASUREMENT REPORT

For

LUMO BodyTech, Inc.

3340 Hilview Palo Alto, CA 94304, USA

FCC ID: OS7LB0100
IC: 10507A-LB0100

Report Type:	**Product Type:**
CIIPC	Bluetooth Low Energy Wireless Device

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Report Number:	R1303062-247
Report Date:	2013-03-26
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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1303062-247	Original Report	2013-03-26

1 General Description

1.1 Product Description for Equipment Under Test (EUT)

This test and measurement report was prepared on behalf of LUMO BodyTech, Inc, and their product FCC ID: OS7LB0100, IC: 10507A-LB0100, model: LB0100-001 or the "EUT" as referred on this report is a Mobile Solution for back health product with Bluetooth 4.0 (LE) technology.

1.2 Mechanical Description of EUT

The "EUT" measures approximately *193 mm (L) x 42 mm (W) x 9mm (H)*, and weighs approximately *35*g.

The test data gathered are from typical production sample, serial number: 201022-02 assigned by the manufacturer.

1.3 Objective

This report is prepared on behalf of LUMO BodyTech, Inc. in accordance with Part 2, Subpart J, and Part 15, Subparts B and C of the Federal Communication Commissions rules and IC RSS-210 Issue 8, Dec 2010.

This is class II permissive change report is based on antenna type and location change on EUT.

The objective is to determine compliance with FCC Part 15.247 and IC RSS-210 rules for Transmitter and Receiver Spurious Emissions.

1.4 Related Submittal(s)/Grant(s)

N/A

1.5 Test Methodology

All measurements contained in this report were conducted in accordance with ANSI C63.4-2009, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

1.6 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR16-4-2:2007, The Treatment of Uncertainty in EMC Measurements, the values ranging from $\pm$2.0 dB for Conducted Emissions tests and $\pm$4.0 dB for Radiated Emissions tests are the most accurate estimates pertaining to uncertainty of EMC measurements at BACL Corp.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory, Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

1.7 Test Facility

The test site used by BACL Corp. to collect radiated and conducted emissions measurement data is located at its facility in Sunnyvale, California, USA.

The test site at BACL Corp. has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997, and Article 8 of the VCCI regulations on December 25, 1997. The test site also complies with the test methods and procedures set forth in CISPR 22:2008 §10.4 for measurements below 1 GHz and §10.6 for measurements above 1 GHz as well as ANSI C63.4-2003, ANSI C63.4-2009, TIA/EIA-603 & CISPR 24:2010.

The Federal Communications Commission and Voluntary Control Council for Interference have the reports on file and they are listed under FCC registration number: 90464 and VCCI Registration No.: A-0027. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL Corp. is an American Association for Laboratory Accreditation (A2LA) accredited laboratory (Lab Code 3297-02). The current scope of accreditations can be found at

http://www.a2la.org/scopepdf/3297-02.pdf?CFID=1132286&CFTOKEN=e42a3240dac3f6ba-6DE17DCB-1851-9E57-477422F667031258&jsessionid=8430d44f1f47cf2996124343c704b367816b

2 System Test Configuration

2.1 Justification

The EUT was configured for testing according to ANSI C63.4-2009.

2.2 EUT Exercise Software

The test utility used was LUMOback test, provided by LUMO BodyTech, Inc. and was verified by Wei Sun to comply with the standard requirements being tested against.

2.3 Special Equipment

There were no special accessories were required, included, or intended for use with EUT during these tests.

2.4 Equipment Modifications

No modifications were made to the EUT.

2.5 Local Support Equipment

Manufacturer	Description	Model No.	Serial No.
Apple,inc	Ipad	IPad 4	DMPHCRUHDJ87

2.6 EUT Internal Configuration Details

Manufacturers	Descriptions	Models	Serial Numbers
LUMO BodyTech, Inc.	Main PCB Board	Lumoback	201022-02

2.7 Interface Ports and Cabling

N/A

2.8 Power Supply List and Details

N/A

3 Summary of Test Results

Results reported relate only to the product tested.

FCC & IC Rules	Description of Test	Results
FCC §2.1093 IC RSS-102	RF Exposure	Note[1]
FCC §15.203 IC RSS-Gen §7.1.2	Antenna Requirement	Note[1]
FCC §15.207(a) IC RSS-Gen §7.2.4	AC Line Conducted Emissions	Note[1]
FCC §15.209 IC RSS-210 §A8.5	Spurious Emissions at Antenna Port	Note[1]
FCC §15.205 IC RSS-210 §2.2	Restricted Bands	Compliant
FCC §15.209, §15.247(d) IC RSS-210 §A8.5	Radiated Spurious Emissions	Compliant
FCC §15.247(b)(3) IC RSS-210 §A8.4	Maximum Peak Output Power	Note[1]
FCC §15.247(a) (2) IC RSS-210 §A8.2(a)	6 dB Bandwidth & 99% Bandwidth	Note[1]
FCC §15.247(d) IC RSS-210 §A8.5	100 kHz Bandwidth of Frequency Band Edge	Note[1]
FCC §15.247 (e) IC RSS-210 §A8.2(b)	Power Spectral Density	Note[1]
IC RSS-Gen §4.10, §6	Receiver Spurious Emission	Compliant

N/A[1]: Please refer to original report with FCC ID: OS7LB0100 and IC: 10507A-LB0100.

4 FCC §2.1093 & IC RSS-102 RF Exposure

4.1 Applicable Standard

FCC §2.1093, §15.247(i) and IC RSS-102

4.2 SAR Exemption Guild lines

According to FCC KDB 447498 D01, Appendix A:

SAR Test Exclusion Thresholds for 100 MHz-6 GHz and ≤ 50 mm

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distance are illustrated in the following Table:

MHz	5	10	15	20	25	mm
150	39	77	116	155	194	SAR Test Exclusion Threshold (mW)
300	27	55	82	110	137	
450	22	45	67	89	112	
835	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	

According to IC RSS-102 §2.5.1: Exemption from Routine Evaluation Limits-SAR evaluation

SAR evaluation is required if the separation distance between the user and the radiated element of the device is less than or equal to 20 cm, except when the device operates as follows.

- Above 2.2 GHz and up to 3GHz inclusively, and with output power (i.e. the higher of the conducted or radiated(e.i.r.p.) source-based, time-average output power) that is less than or equal to 20 mW for general public use and 100 mW for controlled used;

4.3 Evaluation Result

The maximum conducted output power of this device is -2.03 dBm, the antenna gain is 0.2 dBi, the maximum e.i.r.p. is -2.03+0.2 = -1.83 dBm, i.e. 0.656 mW which is less than the SAR threshold of 10 mw (FCC KDB 447498 D01 Appendix A), and 20 mw (IC RSS-102 §2.5.1). SAR evaluation is not required.

5 FCC §15.203 & IC RSS-Gen §7.1.2 – Antenna Requirements

5.1 Applicable Standard

or intentional device, according to FCC Part §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used.

Per IC RSS-Gen §7.1.2, A transmitter can only be sold or operated with antennas with which it was certified. A transmitter maybe certified with multiple antenna types. An antenna type comprises antennas having similar in-band and out-of-band radiation patterns. Testing shall be performed using the highest-gain antenna of each combination of transmitter and antenna type for which certification is being sought, with the transmitter output power set at the maximum level. Any antenna of the same type and having equal or lesser gain as an antenna that had been successfully tested for certification with the transmitter, will also be considered certified with the transmitter, and may be used and marketed with the transmitter. The manufacturer shall include with the application for certification a list of acceptable antenna types to be used with the transmitter.

When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on measurement or on data from the antenna manufacturer. Any antenna gain in excess of 6 dBi (6 dB above isotropic gain) shall be added to the measured RF output power before using the power limits specified in IC RSS-210 or RSS-310 for devices of RF output powers of 10 milliwatts or less. For devices of output powers greater than 10 milliwatts, except devices subject to IC RSS-210 Annex 8 or RSS-210 Annex 9, the total antenna gain shall be added to the measured RF output power before using the specified power limits. For devices subject to IC RSS-210 Annex 8 or Annex 9, the antenna gain shall not be added.

5.2 Result

The EUT has a PCB antenna with maximum gain of 0.2 dBi, which in accordance to sections FCC Part 15.203 and IC RSS-Gen §7.1.2, is considered sufficient to comply with the provisions of these sections.

6 FCC §15.205, §15.209, §15.247(d) & IC RSS-210 §2.2, §2.6, §A8.5 – Spurious Radiated Emissions

6.1 Applicable Standard

As per FCC §15.35(d): Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz.

As per FCC §15.209(a): Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table

Frequency (MHz)	Field Strength (micro volts/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

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

As Per FCC §15.205(a) except as show in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 – 0.110 0.495 – 0.505 2.1735 – 2.1905 4.125 – 4.128 4.17725 – 4.17775 4.20725 – 4.20775 6.215 – 6.218 6.26775 – 6.26825 6.31175 – 6.31225 8.291 – 8.294 8.362 – 8.366 8.37625 – 8.38675 8.41425 – 8.41475 12.29 – 12.293 12.51975 – 12.52025 12.57675 – 12.57725 13.36 – 13.41	16.42 – 16.423 16.69475 – 16.69525 25.5 – 25.67 37.5 – 38.25 73 – 74.6 74.8 – 75.2 108 – 121.94 123 – 138 149.9 – 150.05 156.52475 – 156.52525 156.7 – 156.9 162.0125 –167.17 167.72 – 173.2 240 – 285 322 – 335.4 399.9 – 410 608 – 614	960 – 1240 1300 – 1427 1435 – 1626.5 1645.5 – 1646.5 1660 – 1710 1718.8 – 1722.2 2200 – 2300 2310 – 2390 2483.5 – 2500 2690 – 2900 3260 – 3267 3.332 – 3.339 3 3458 – 3 358 3.600 – 4.400	4. 5 – 5. 15 5. 35 – 5. 46 7.25 – 7.75 8.025 – 8.5 9.0 – 9.2 9.3 – 9.5 10.6 – 12.7 13.25 – 13.4 14.47 – 14.5 15.35 – 16.2 17.7 – 21.4 22.01 – 23.12 23.6 – 24.0 31.2 – 31.8 36.43 – 36.5 Above 38.6

As per FCC §15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c).

As per IC RSS-210 §A8.5 in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

6.2 Test Setup

The radiated emissions tests were performed in the 5-meter Chamber, using the setup in accordance with ANSI C63.4-2009. The specification used was the FCC 15C and IC RSS-210 limits.

The spacing between the peripherals was 10 centimeters.

External I/O cables were draped along the edge of the test table and bundle when necessary.

6.3 Test Procedure

For the radiated emissions test, the EUT host, and all support equipment power cords was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The EUT is set 3 meter away from the testing antenna, which is varied from 1-4 meter, and the EUT is placed on a turntable, which is 0.8 meter above ground plane, the table shall be rotated for 360 degrees to find out the highest emission. The receiving antenna should be changed the polarization both of horizontal and vertical.

The spectrum analyzer or receiver is set as:

Below 1000 MHz:

RBW = 100 kHz / VBW = 300 kHz / Sweep = Auto

Above 1000 MHz:

(1) Peak: RBW = 1MHz / VBW = 1MHz / Sweep = Auto
(2) Average: RBW = 1MHz / VBW = 10Hz / Sweep = Auto

6.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude (CA) is calculated by adding the Antenna Factor (AF), the Cable Loss (CL), the Attenuator Factor (Atten) and subtracting the Amplifier Gain (Ga) to the indicated Amplitude (Ai) reading. The basic equation is as follows:

CA = Ai + AF + CL + Atten – Ga

For example, the Corrected Amplitude (CA) of 40.3 dBuV/m = indicated Amplitude reading (Ai) 32.5 dBuV + Antenna Factor (AF) 23.5dB + Cable Loss (CL) 3.7 dB + Attenuator (Atten) 10 dB - Amplifier Gain (Ga) 29.4 dB

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the maximum limit. The equation for margin calculation is as follows:

Margin (dB) = Corrected Amplitude (dBuV/m) - Limit (dBuV/m)

6.5 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Cycle
Agilent	Spectrum Analyzer	E4446A	US44300386	2012-09-29	1 year
Sunol Science Corp	System Controller	SC99V	122303-1	N/R	N/R
Sunol Science Corp	Combination Antenna	JB3	A020106-3	2012-06-18	1 Year
Hewlett Packard	Pre-amplifier	8447D	2944A10187	2012-03-08	1 Year
EMCO	Horn antenna	3115	9511-4627	2012-10-17	1 Year
Mini-Circuits	Pre-amplifier	ZVA-183-S	667400960	2012-05-08	1 Year

Statement of Traceability: BACL attests that all calibrations have been performed per the A2LA requirements, traceable to NIST.

6.6 Test Environmental Conditions

Temperature:	24 °C
Relative Humidity:	52%
ATM Pressure:	101.99kPa

The testing was performed by Wei Sun on 2013-03-06 at 5 meter chamber #2.

6.7 Summary of Test Results

According to the data hereinafter, the EUT complied with the FCC Part 15C and IC RSS-210 standard's radiated emissions limits, and had the worst margin of:

Bluetooth Worst mode: Low Channel

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Channel, Range**
-10.15	9608	Horizontal	30MHz – 25GHz

Please refer to the following table for specific test result details

6.8 Radiated Emissions Test Result Data

Radiated Emission at 3 meters, 30 MHz – 25 GHz

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	Part 15C / RSS 210		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2402 MHz, measured at 3 meters											
2402	64.31	263	100	V	28.84	3.12	0	96.27	-	-	Fund/Peak
2402	37.71	263	100	V	28.84	3.12	0	69.67	-	-	Fund/Ave
2402	56.01	33	100	H	28.84	3.12	0	87.97	-	-	Fund/Peak
2402	33.63	33	100	H	28.84	3.12	0	65.59	-	-	Fund/Ave
4804	34.73	273	103	V	33.1	4.56	27.78	44.61	74	-29.39	Harm/Peak
4804	21.93	273	103	V	33.1	4.56	27.78	31.81	54	-22.19	Harm/Ave
4804	34.78	216	100	H	33.1	4.56	27.78	44.66	74	-29.34	Harm/Peak
4804	21.43	216	100	H	33.1	4.56	27.78	31.31	54	-22.69	Harm/Ave
7206	30	0	100	V	33.89	5.49	27.59	41.79	76.27	-34.48	Harm/Peak
7206	18	0	100	V	33.89	5.49	27.59	29.79	49.67	-19.88	Harm/Ave
7206	30	0	100	H	33.89	5.49	27.59	41.79	67.67	-25.88	Harm/Peak
7206	18	0	100	H	33.89	5.49	27.59	29.79	45.59	-15.8	Harm/Ave
9608	30	0	100	V	37.95	6.54	27.05	47.44	76.27	-28.83	Harm/Peak
9608	18	0	100	V	37.95	6.54	27.05	35.44	49.67	-14.23	Harm/Ave
9608	30	0	100	H	37.95	6.54	27.05	47.44	67.67	-20.23	Harm/Peak
9608	18	0	100	H	37.95	6.54	27.05	35.44	45.59	-10.15	Harm/Ave
2390	20	0	100	V	28.84	3.12	27.78	24.18	74	-49.82	Spur/Peak
2390	12	0	100	H	28.84	3.12	27.78	16.18	74	-57.82	Spur/Peak
2390	20	0	100	V	28.84	3.12	27.78	24.18	54	-29.82	Spur/Ave
2390	12	0	100	H	28.84	3.12	27.78	16.18	54	-37.82	Spur/Ave
30.935	16.91	58	299	H	21.9	0.02	20.76	18.07	40	-21.93	Spur/QP

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	Part 15C / RSS 210		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle channel 2440 MHz measured at 3 meters											
2440	63.32	88	100	V	28.84	3.25	0	95.41	-	-	Fund/Peak
2440	37.3	88	100	V	28.84	3.25	0	69.39	-	-	Fund/Ave
2440	57.31	31	110	H	28.84	3.25	0	89.4	-	-	Fund/Peak
2440	34.38	31	110	H	28.84	3.25	0	66.47	-	-	Fund/Ave
4880	34.75	61	100	V	33.27	4.54	27.67	44.89	74	-29.11	Harm/Peak
4880	21.34	61	100	V	33.27	4.54	27.67	31.48	54	-22.52	Harm/Ave
4880	33.3	203	126	H	33.27	4.54	27.67	43.44	74	-30.56	Harm/Peak
4880	20.29	203	126	H	33.27	4.54	27.67	30.43	54	-23.57	Harm/Ave
7320	30	0	100	V	36.37	5.57	27.51	44.43	74	-29.57	Harm/Peak
7320	18	0	100	V	36.37	5.57	27.51	32.43	54	-21.57	Harm/Ave
7320	30	0	100	H	36.37	5.57	27.51	44.43	74	-29.57	Harm/Peak
7320	18	0	100	H	36.37	5.57	27.51	32.43	54	-21.57	Harm/Ave
9760	30	0	100	V	38.25	6.58	26.98	47.85	75.41	-27.56	Harm/Peak
9760	18	0	100	V	38.25	6.58	26.98	35.85	49.39	-13.54	Harm/Ave
9760	30	0	100	H	38.25	6.58	26.98	47.85	69.4	-21.55	Harm/Peak
9760	18	0	100	H	38.25	6.58	26.98	35.85	46.47	-10.62	Harm/Ave
30.935	17.19	51	287	H	21.9	0.02	20.76	18.35	40	-21.65	Spur/QP
High channel 2480 MHz measured at 3 meters											
2480	62.51	81	114	V	29.07	3.25	0	94.83	-	-	Fund/Peak
2480	37.25	81	114	V	29.07	3.25	0	69.57	-	-	Fund/Ave
2480	58.7	31	113	H	29.07	3.25	0	91.02	-	-	Fund/Peak
2480	35.28	31	113	H	29.07	3.25	0	67.6	-	-	Fund/Ave
4960	34.88	63	119	V	33.51	4.52	27.67	45.24	74	-28.76	Harm/Peak
4960	21.68	63	199	V	33.51	4.52	27.67	32.04	54	-21.96	Harm/Ave
4960	33.42	211	100	H	33.51	4.52	27.67	43.78	74	-30.22	Harm/Peak
4960	20.97	211	100	H	33.51	4.52	27.67	31.33	54	-22.67	Harm/Ave
7440	30	0	100	V	36.57	5.66	27.51	44.72	74	-29.28	Harm/Peak
7440	18	0	100	V	36.57	5.66	27.51	32.72	54	-21.28	Harm/Ave
7440	30	0	100	H	36.57	5.66	27.51	44.72	74	-29.28	Harm/Peak
7440	18	0	100	H	36.57	5.66	27.51	32.72	54	-21.28	Harm/Ave
9920	30	0	100	V	38.46	6.67	26.98	48.15	74.83	-26.68	Harm/Peak
9920	18	0	100	V	38.46	6.67	26.98	36.15	49.57	-13.42	Harm/Ave
9920	30	0	100	H	38.46	6.67	26.98	48.15	71.02	-22.87	Harm/Peak
9920	18	0	100	H	38.46	6.67	26.98	36.15	47.6	-11.45	Harm/Ave
2483.5	20	0	100	V	29.07	3.25	27.8	24.52	74	-49.48	Spur/Peak
2483.5	12	0	100	H	29.07	3.25	27.8	16.52	74	-57.48	Spur/Peak
2483.5	20	0	100	V	29.07	3.25	27.8	24.52	54	-29.48	Spur/Ave
2483.5	12	0	100	H	29.07	3.25	27.8	16.52	54	-37.48	Spur/Ave
30.935	16.81	56	297	H	21.9	0.02	20.76	17.97	40	-22.03	Spur/QP

7 IC RSS-210 §2.6 & RSS-Gen §6 – Receiver Spurious Radiated Emissions

7.1 Applicable Standard

According to IC RSS-Gen §4.10, the receiver shall be operated in the normal receive mode near the mid-point of the band over which the receiver is designed to operate.

Unless otherwise specified in the applicable RSS, the radiated emission measurement is the standard measurement method (with the device's antenna in place) to measure receiver spurious emissions.

Radiated emission measurements are to be performed using a calibrated open-area test site.

For either method, the search for spurious emissions shall be from the lowest frequency internally generated or used in the receiver (e.g. local oscillator, intermediate or carrier frequency), or 30 MHz, whichever is the higher, to at least 3 times the highest tuneable or local oscillator frequency, whichever is the higher, without exceeding 40 GHz.

For emissions below 1 GHz, measurements shall be performed using a CISPR quasi-peak detector and the related measurement bandwidth. As an alternative to CISPR quasi-peak measurement, compliance with the emission limit can be demonstrated using measuring equipment employing a peak detector with the same measurement bandwidth as that for CISPR quasi-peak measurements. Above 1 GHz, measurements shall be performed using an average detector and a resolution bandwidth of 300 kHz to 1 MHz.

According to RSS-Gen §6, Tables 2 show the general field strength limits of receiver spurious emissions.

Table 2: Radiated Limits of Receiver Spurious Emissions

Frequency (MHz)	**Field Strength (Microvolts/m at 3 meters)**
30-88	100
88-216	150
216-960	200
Above 960	500

7.2 Measurement Procedure

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations.

All data were recorded in the peak detection mode. Quasi-peak readings was performed only when an emissions was found to be marginal (within -4 dB of specification limits), and are distinguished with a "**QP**" in the data table.

7.3 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Cycle
Agilent	Spectrum Analyzer	E4446A	US44300386	2012-09-29	1 year
Sunol Science Corp	System Controller	SC99V	122303-1	N/R	N/R
Sunol Science Corp	Combination Antenna	JB3	A020106-3	2012-06-18	1 Year
Hewlett Packard	Pre-amplifier	8447D	2944A10187	2012-03-08	1 Year
EMCO	Horn antenna	3115	9511-4627	2012-10-17	1 Year
Mini-Circuits	Pre-amplifier	ZVA-183-S	667400960	2012-05-08	1 Year

Statement of Traceability: BACL Corp. attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST.

7.4 Test Environmental Conditions

Temperature:	24 °C
Relative Humidity:	52%
ATM Pressure:	101.99kPa

The testing was performed by Wei Sun on 2012-03-06 in 5 meters chamber 2.

7.5 Summary of Test Results

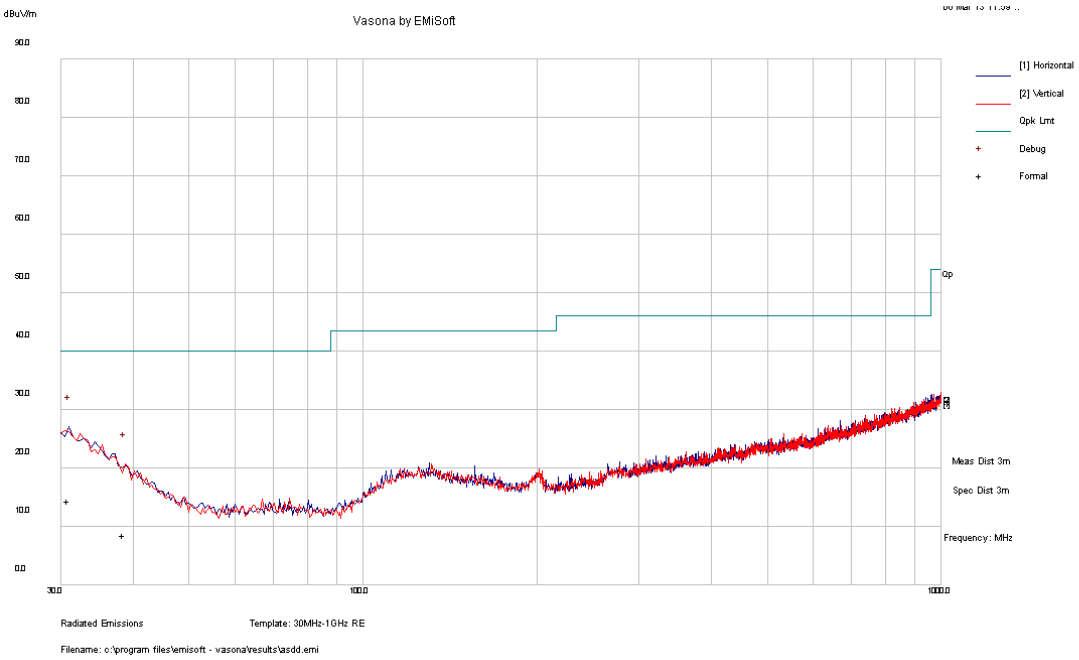
According to the test data, the EUT complied with IC RSS-210/RSS-Gen, with the closest margins from the limit listed below:

Mode: Receiving			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Range (MHz)**
-10.46	2747.5	Vertical	30 to 25000

7.6 Receiver Spurious Emissions Test Data and Plots

1) 30-1000 MHz, Measured at 3 meters

Receiving Mode



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Detector (PK/QP/Ave.)
30.935	14.44	291	H	54	40	-25.56	QP
38.52675	8.59	130	V	190	40	-31.41	QP

2) Above 1 GHz Measured at 3 meters

Receiving Mode

Frequency (MHz)	S.A. Reading (dBµV)	Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre Amp. (dB)	Cord. Reading (dBµV/m)	IC		Detector (PK/QP/Ave.)
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
2747.5	38.9	172	100	V	29.21	3.27	27.84	43.54	54	-10.46	Ave
2747.5	38.08	340	100	H	29.21	3.27	27.84	42.72	54	-11.28	Ave