FCC PART 15.247

INDUSTRY CANADA RSS-210, ISSUE 7, JUNE 2007

MEASUREMENT AND TEST REPORT

For

Darim Vision Corp.

4511 Willow Rd. Suite 4
Pleasanton, CA 94588, USA

FCC ID: QTF-PVE400
IC: 7271A-PVE400
Model: PVE400

Report Type:	**Product Type:**
Original Report	Portable Wireless 802.11b/g Video Transmitter Device

Test Engineers:	Victor Zhang
Report Number:	R0806193-247
Report Date:	2008-07-11
Reviewed By:	Boni Baniqued Sr. RF Test Engineer
Prepared By: (21)	Bay Area Compliance Laboratories Corp. 1274 Anvilwood Ave Sunnyvale, CA 94089, USA Tel: (408) 732-9162 Fax: (408) 732 9164

TABLE OF CONTENTS

1 GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

The *Darim Vision Corp.* product, *FCC ID: QTF-PVE400, IC: 7271A-PVE400, model: PVE400* or the "EUT" as referred to in this report is a portable wireless 802.11b/g video transmitter. There are three main connectors on the PVE400. Antenna connector cabled directly to RF module (WLM54G) not shown on schematic. J2 connector used to connect external video camera. And12V DC power source for camera generated by circuits is on U13. Composite video signal coming trough J2 decoded by U4.J1 connector is used for initial configuration, debugging and for battery charging. During normal operation covered by protective cap EUT is powered by Li-Ion 3.7V battery or 12.0 V DC Adapter

1.2 Mechanical Description of EUT

The *Darim Vision Corp.* product, *model: PVE400*, measures approximately 135mm (L) x 113mm (W) x 37mm (H), and weighs approximately *750g.*

**The test data gathered are from production sample provided by the manufacturer.*

1.3 Antenna Description

The antenna used is a dual band straight RPSMA compact, portable, center fed, whip antenna. It has a linear, vertical polarization.

Number	Model/Type	
Antenna	Part number:	GCP 24549-30-10S
	Manufacturer:	GC Protronics Inc.
	Frequency Range:	2.4-2.5 GHz; 4.9-5.35 GHz
	Connector Type / Maximum Gain	Reverse Polarity SMA Plug / 2.0 dBi
	Antenna Type / Pattern:	Monopole / Omni-directional
	Measurement:	Length: 7.8 mm x 76 mm; Weight: 20g

1.4 EUT Photograph

Please refer to Exhibit C for more EUT photographs.

1.5 Objective

This type approval report is prepared on behalf of *Darim Vision Corp.* in accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC rules for Output Power, Antenna Requirements, 6 dB Bandwidth, and power spectral density, 100 kHz Bandwidth of Band Edges Measurement, Spurious Emissions, Conducted and Radiated Spurious Emissions.

1.6 Related Submittal(s)/Grant(s)

EUT included certified Modular Mini PCI Card, FCC ID: MK8CPX-05-WLM54G. Please refer to Max Light Technology Co., Ltd. test report: MLT0504P15006.

1.7 Test Methodology

All measurements contained in this report were conducted in accordance with ANSI C63.4-2003, 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.

1.8 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in 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 NIS 81, The Treatment of Uncertainty in EMC Measurements, the values range from $\pm$2.0 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.

Detailed instrumentation measurement uncertainties can be found in BACL report QAP-018.

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.

1.9 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, 1997 and December 10, 1997 and Article 8 of the VCCI regulations on December 25, 1997. The facility also complies with the test methods and procedures set forth in ANSI C63.4-2003 & TIA/EIA-603.

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.: R-2463 and C-2698. 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 a National Institute of Standards and Technology (NIST) accredited laboratory under the National Voluntary Laboratory Accredited Program (Lab Code 200167-0). The current scope of accreditations can be found at http://ts.nist.gov/ts/htdocs/210/214/scopes/2001670.htm.

2 SYSTEM TEST CONFIGURATION

2.1 Justification

The host system was configured for testing according to ANSI C63.4-2003.

The EUT was tested in the testing mode to represent *worst*-case results during the final qualification test.

The worst-case data rates are determined to be as follows for each mode based upon investigation by measuring the average power, peak power and PPSD across all data rates bandwidths, and modulations.

2.2 EUT Exercise Software

The EUT is programmed with the following data rate settings that were used during testing:

Channel	Low	Middle	High
Frequency (MHz)	2412	2437	2462

2.3 Special Accessories

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 List and Details

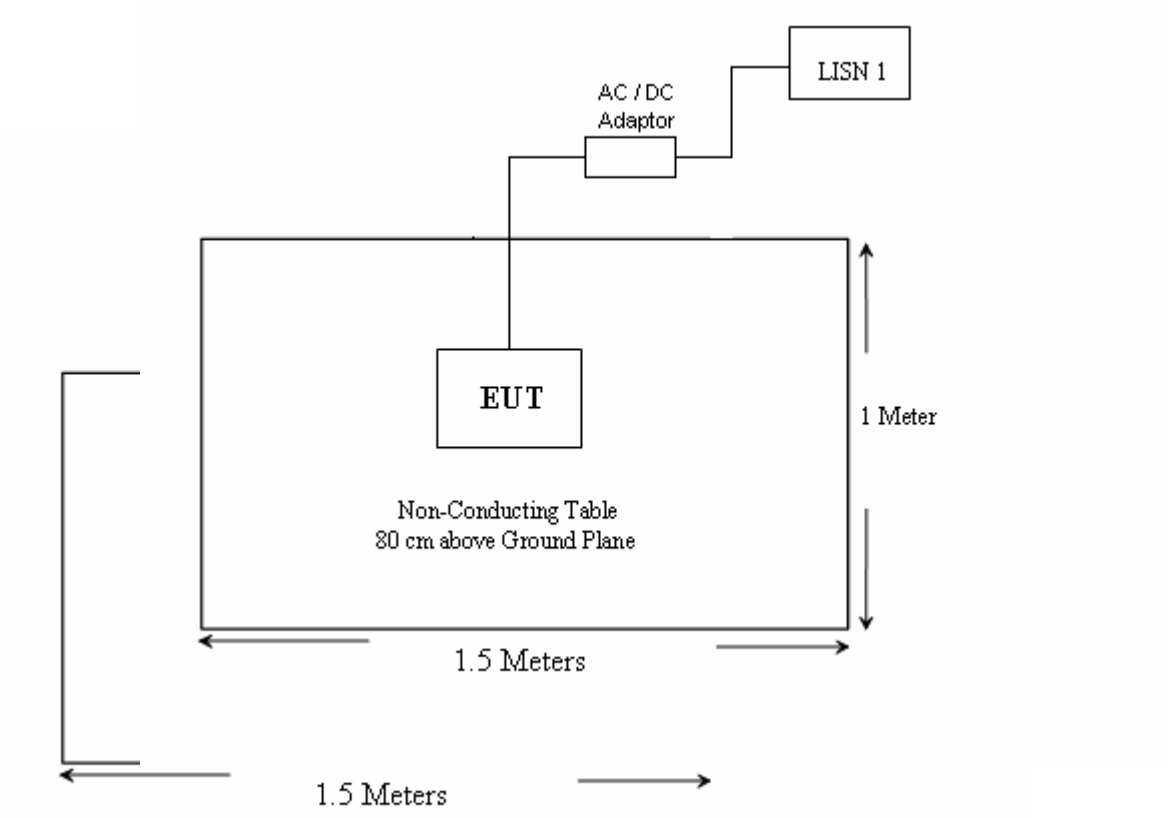
Manufacturer	Description	Model	Serial Number
Dell	Laptop	Inspiron 1300	CN0RJ272-70166-69A-03TC

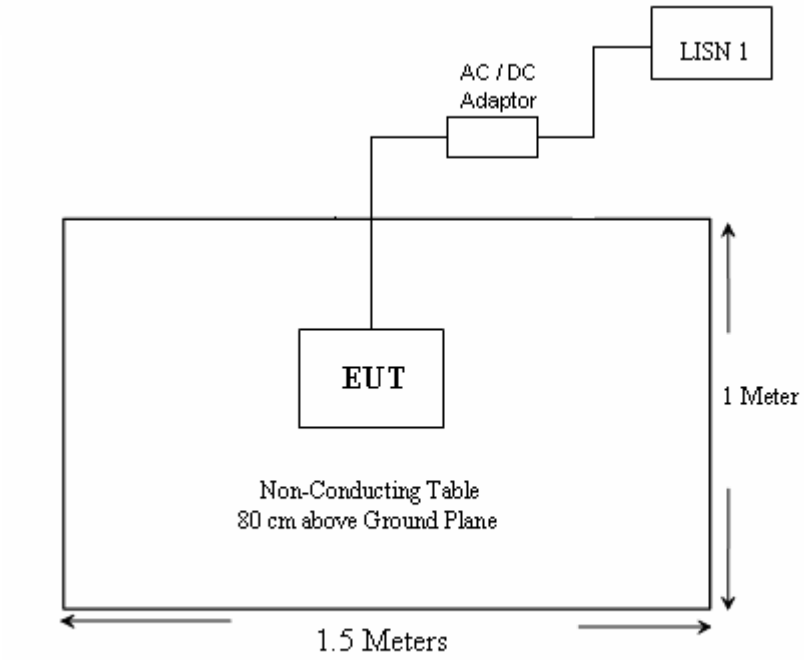
2.6 EUT Power Supply

Manufacturer	Description	Model	Serial Number
HJC HUA JUNG COM. CO.	Switching Power Supply	HASU11FB	N/A

2.7 Test Setup Block Diagrams

Conducted Emissions





3 SUMMARY OF TEST RESULTS

Results reported relate only to the product tested.

FCC 15C & RSS-210 Rules	Description of Test	Result	Note
FCC §15.203, IC RSS-Gen §7.1.4	Antenna Requirement	Compliant	-
FCC §15.247 (i) & §2.1093, IC RSS-Gen 5.5 & RSS-102	RF Exposure	Compliant	Refer to R0806193-SAR Report
§15.247 (a)(2), RSS210 § A8.4	Maximum Peak Output Power	-	Refer to FCC ID: MK8CPX-05-WLM54G Report
§15.247 (e), RSS-210 §A8.2	6 dB Bandwidth & Occupied Bandwidth	-	Refer to FCC ID: MK8CPX-05-WLM54G Report
FCC §15.207, IC RSS-Gen §7.2.2	Conducted Emissions	Compliant	-
FCC §15.205, §15.209 & §15.247(d), IC RSS-A8.5	Radiated Spurious Emissions	Compliant	-
RSS-Gen §6(a)	Receiver Spurious Emissions	Compliant	-
FCC §2.1051 & §15.247(d), RSS210 § A8.5 § RSS-Gen §7.2	Spurious Emissions at Antenna Port	-	Refer to FCC ID: MK8CPX-05-WLM54G Report
§ 15.247 (d), RSS210 § A8.5	100 kHz Bandwidth of Frequency Band Edge	-	Refer to FCC ID: MK8CPX-05-WLM54G Report
§15.247 (e), RSS-210 §A8.2 (b)	Power Spectral Density	-	Refer to FCC ID: MK8CPX-05-WLM54G Report

4 FCC §15.203, IC RSS-GEN §7.1.4 – ANTENNA REQUIREMENT

4.1 Applicable Standard

According to FCC §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

And according to FCC §15.247 (b) (4), if transmitting antennas of directional gain greater than 6 dBi are used the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

As per IC RSS-Gen §7.1.4: Transmitter Antenna, a transmitter can only be sold or operated with antennas with which it was certified. A transmitter may be 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.

4.2 Result

The antenna, part number: GCP 24549-30-10S for this device is a center fed monopole whip antennae with a maximum gain of 2 dBi that will only provided by Darim Vision Corporation. It features a reverse polarity connection type to ensure that non-OEM antennae cannot be implemented by the end user.

☒ **Compliant** ☐ **N/A**

Please refer to the following antenna photo for details.

Antenna photo

5 FCC §15.247 (i) & §2.1093, IC RSS-Gen 5.5 & RSS-102 - RF EXPOSURE

Please refer to the SAR report R0806193-SAR.

6 FCC §15.207, IC RSS-GEN §7.2.2 - CONDUCTED EMISSIONS

6.1 Section 15.207 & RSS-Gen 7.2.2 Conducted limits:

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequencies ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

** Decreases with the logarithm of the frequency.*

6.2 Test Setup

The measurement was performed at shielded room, using the setup per ANSI C63.4 – 2003 measurement procedure. The specification used was FCC Class B limits.

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

The EUT was powered via connection to AC/DC adapter which was plugged into the LISN.

6.3 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
Solar Electronics	LISN	9252-R-24-BNC	511205	2007-07-07
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.595 0K03	100338	2008-05-07

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

6.4 Test Procedure

During the conducted emissions test, the power cord of the system was connected to the main outlet of the LISN-1.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the peak detection mode, quasi-peak and average. Quasi-Peak readings are distinguished with a "QP". Average readings are distinguished with an "Ave".

6.5 Environmental Conditions

Temperature:	16 °C
Relative Humidity:	40 %
ATM Pressure:	102.0 kPa

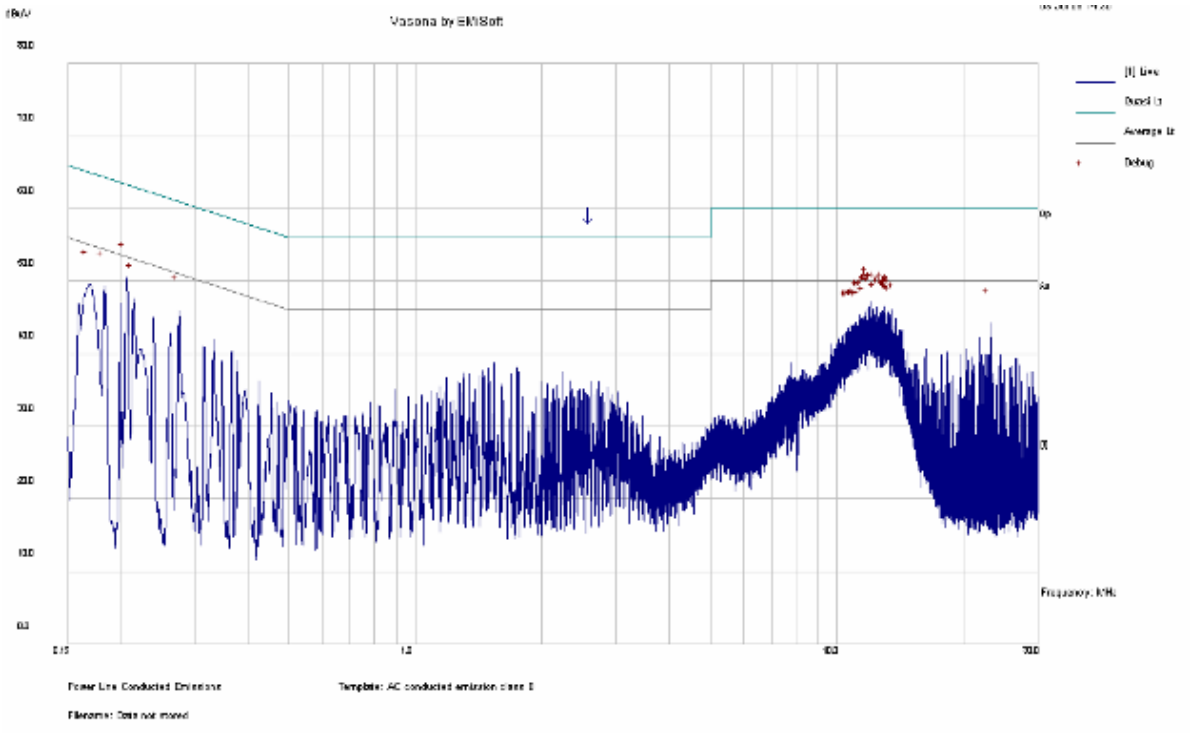
**The testing was performed by Victor Zhang from 2008-07-02 to 2008-07-11*

6.6 Summary of Test Results

According to the recorded data in following table, the EUT complied with the FCC & IC standard's conducted emissions limits, with the *worst* margin reading of:

Connection: AC/DC Adapter			
Margin (dB)	**Frequency (MHz)**	**Conductor Mode (Live / Neutral)**	**Range (MHz)**
-8.21	23.128	Live	0.150 to 30 MHz

120V/60 Hz Live:



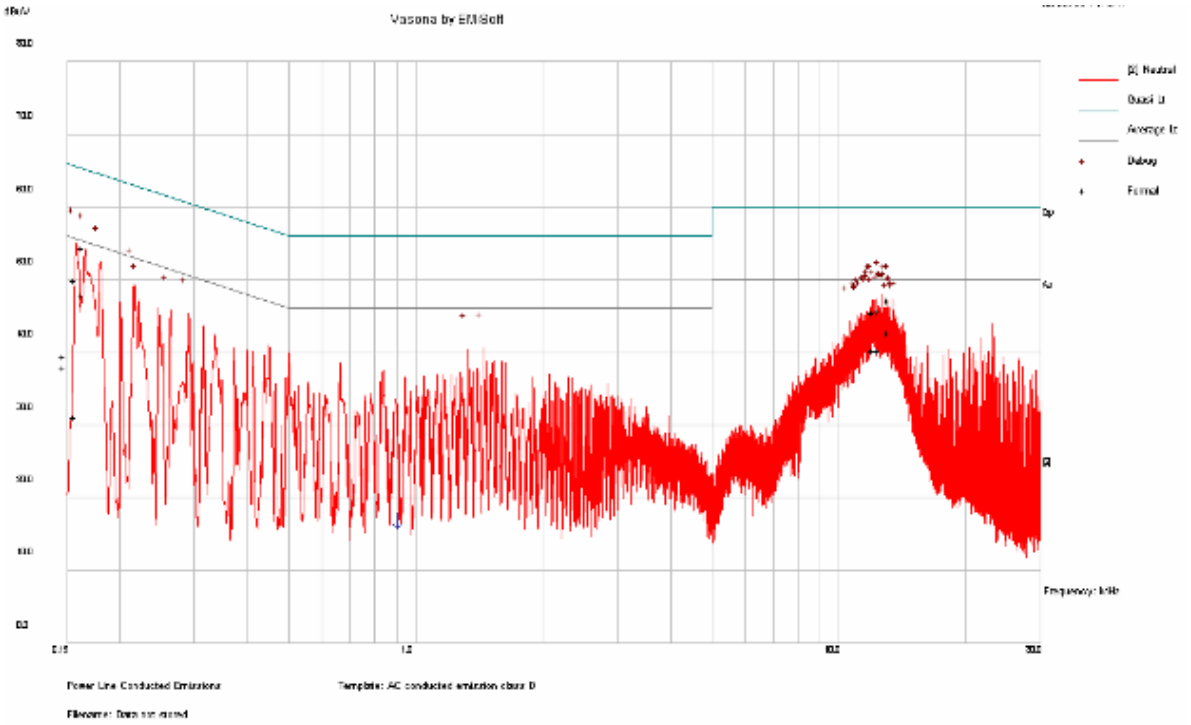
Final Measurement Quasi-Peak Detector

Frequency (MHz)	Quasi-Peak (dBµV)	Conductor (Live/Neutral)	Corrected Reading (dB)	Limit (dBµV)	Margin (dB)
13.419	43.66	Live	10.5	60	-16.34
23.128	43.5	Live	10.57	60	-16.50
11.935	40.46	Live	10.4	60	-19.54
11.946	40.42	Live	10.4	60	-19.58
12.986	39.82	Live	10.4	60	-20.18
0.2000	40.55	Live	10.2	63.61	-23.06

Final Measurement Average Detector

Frequency (MHz)	Average (dBµV)	Conductor (Live/Neutral)	Corrected Reading (dB)	Limit (dBµV)	Margin (dB)
23.128	41.79	Live	10.57	50	-8.21
13.419	39.52	Live	10.5	50	-10.48
11.946	35.04	Live	10.4	50	-14.96
11.935	34.98	Live	10.4	50	-15.02
12.986	34.36	Live	10.4	50	-15.64
0.2	15.59	Live	10.2	53.61	-38.02

120V/60 Hz Neutral:



Final Measurement Quasi-Peak Detector

Frequency (MHz)	Quasi-Peak (dBµV)	Conductor (Hot/Neutral)	Corrected Reading (dB)	Limit (dBµV)	Margin (dB)
0.166	49.71	Neutral	10.14	65.15	-15.44
13.361	42.49	Neutral	10.50	60.00	-17.51
12.590	40.97	Neutral	10.40	60.00	-19.03
12.203	40.78	Neutral	10.40	60.00	-19.22
0.159	45.25	Neutral	10.12	65.50	-20.24
0.150	33.28	Neutral	10.10	66.00	-32.72

Final Measurement Average Detector

Frequency (MHz)	Average (dBµV)	Conductor (Hot/Neutral)	Corrected Reading (dB)	Limit (dBµV)	Margin (dB)
0.166	43.21	Neutral	10.14	55.15	-11.94
13.361	38.02	Neutral	10.50	50.00	-11.98
12.203	35.62	Neutral	10.40	50.00	-14.38
12.590	35.55	Neutral	10.40	50.00	-14.45
0.150	34.73	Neutral	10.10	56.00	-21.27
0.159	26.32	Neutral	10.12	55.50	-29.18

7 FCC §15.205, §15.209 & §15.247(c), IC RSS-210 A8.5 - SPURIOUS RADIATED EMISSIONS

7.1 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 §15.247(c)(1)(i): Systems operating in the 2400-2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

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:

f (MHz)	f (MHz)	f (MHz)	f (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)).

IC RSS-201 the measurement method shall be described in the test report. The same parameter, peak power or average power, used for the transmitter output power measurement shall be used for unwanted emission measurements. The search for unwanted emissions shall be from the lowest frequency internally generated or used in the device (local oscillator, intermediate or carrier frequency), or from 30 MHz, whichever is the lower, to the 5th harmonic of the highest frequency generated without exceeding 40 GHz.

7.2 Test Setup

The radiated emissions tests were performed in the 3-meter open area test site, using the setup in accordance with ANSI C63.4-2003. The specification used was the FCC 15 Subpart C limits.

7.3 EUT Setup

The radiated emissions tests were performed using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC 15C limits.

The spacing between the peripherals was 10 centimeters.

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

7.4 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
Mini-Circuits	Pre amplifier	ZKL-2	7786100643	2008-01-02
HP	Pre amplifier	8449B	3147A00400	2007-11-02
Sunol Science Corp	Combination Antenna	JB1 Antenna	A103105-3	2008-03-25
A. H. Systems	Antenna, Horn, DRG	SAS-200/571	261	2008-07-01
Agilent	Spectrum Analyzer	E4440A	MY44303352	2008-04-28

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

7.5 Test Procedure

For the radiated emissions test, the EUT, 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 meters away from the testing antenna, which is varied from 1-4 meters, 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 1000MHz:

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

Above 1000MHz:

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

7.6 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corrected Amplitude = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

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

Margin = Corrected Amplitude - Limit

7.7 Environmental Conditions

Temperature:	16 °C
Relative Humidity:	40 %
ATM Pressure:	102.0 kPa

**The testing was performed by Victor Zhang from 2008-07-02 to 2008-07-11*

7.8 Summary of Test Results

According to the data hereinafter, the EUT complied with the FCC and IC requirements, and had the worst margin readings of:

802.11b mode:

30 - 1000 MHz:

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Range (MHz)**
-5.49	329.99	Horizontal	30 to 1000 MHz

1 - 25 GHz:

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Channel, Range (GHz)**
-23.85	4824	Vertical	Low, 1 GHz – 25GHz
-24.22	4874	Vertical	Middle, 1 GHz – 25GHz
-23.54	4924	Vertical	High, 1 GHz – 25GHz

802.11g mode:

30 - 1000 MHz:

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Range (MHz)**
-5.09	329.998	Horizontal	30 to 1000 MHz

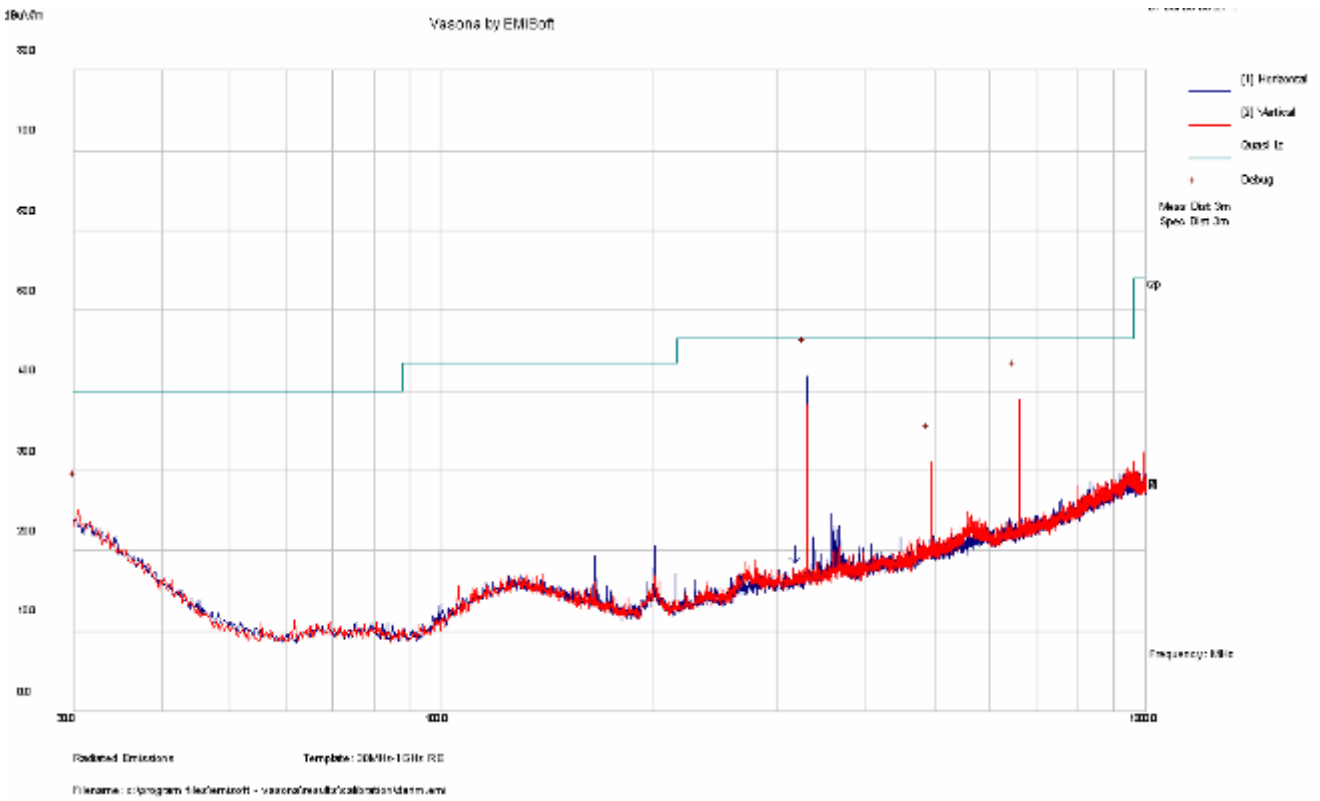
1 - 25 GHz:

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Channel, Range (GHz)**
-6.23	4824	Vertical	Low, 1 GHz – 25GHz
-16.5	4874	Vertical	Middle, 1 GHz – 25GHz
-23.6	4924	Vertical	High, 1 GHz – 25GHz

7.9 Radiated Emissions Test plot & data:

802.11 b mode:

30MHz -1GHz (Worst channel)



Frequency (MHz)	Quasi-Peak (dBµV/m)	Ant. Height (cm)	Ant. Polarity (H/V)	Turntable Position (degree)	Corrected Reading (dB)	Limit (dBµV/m)	Margin (dB)
329.990	41.01	100	H	329	-3.48	46.5	-5.49
659.999	38.32	100	V	229	1.71	46.5	-8.18
495.124	21.74	100	V	126	-0.70	46.5	-24.76
538.702	15.57	178	H	306	-0.33	46.5	-30.93
165.060	11.80	119	H	218	-6.60	43.5	-31.70
360.458	13.82	117	H	169	-2.77	46.5	-32.68

1GHz – 25 GHz

Low Channel 2412 MHz

Frequency (MHz)	Receiver Reading (dBµV)	Azimuth (Degree)	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
2412	64.73	209	1.22	V	29.1	5.66	0	99.49			Fund/Peak
2412	57.25	209	1.22	V	29.1	5.66	0	92.01			Fund/Ave.
2412	60.08	211	1.26	H	29.1	5.66	0	94.84			Fund/Peak
2412	53.43	211	1.26	H	29.1	5.66	0	88.19			Fund/Ave.
4824	30.2	335	1.07	V	33.5	4.99	38.54	30.15	54	-23.85	Ave
4824	29.28	310	1.03	H	33.5	4.99	38.54	29.23	54	-24.77	Ave
4824	47.28	335	1.07	V	33.5	4.99	38.54	47.23	74	-26.77	Peak
4824	43.17	310	1.03	H	33.5	4.99	38.54	43.12	74	-30.88	Peak

Middle channel 2437 MHz

Frequency (MHz)	Receiver Reading (dBµV)	Azimuth (Degree)	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
2437	63.09	202	1.11	V	29.2	5.68	0	97.97			Fund/Peak
2437	57.02	202	1.11	V	29.2	5.68	0	91.9			Fund/Ave.
2437	61.86	204	1.25	H	29.2	5.68	0	96.74			Fund/Peak
2437	54.75	204	1.25	H	29.2	5.68	0	89.63			Fund/Ave.
4874	29.86	310	1.35	V	33.4	4.92	38.4	29.78	54	-24.22	Ave
4874	29.84	333	1.29	H	33.4	4.92	38.4	29.76	54	-24.24	Ave
4874	43.32	310	1.35	V	33.4	4.92	38.4	43.24	74	-30.76	Peak
4874	42.66	333	1.29	H	33.4	4.92	38.4	42.58	74	-31.42	Peak

High channel 2462 MHz

Frequency (MHz)	Receiver Reading (dBµV)	Azimuth (Degree)	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
2462	63.73	220	1.11	V	29.2	5.7	0	98.63			Fund/Peak
2462	57.68	220	1.11	V	29.2	5.7	0	92.58			Fund/Ave.
2462	62.31	212	1.3	H	29.2	5.7	0	97.21			Fund/Peak
2462	56.29	212	1.3	H	29.2	5.7	0	91.19			Fund/Ave.
4924	30.34	33	1.16	V	33.6	4.92	38.4	30.46	54	-23.54	Ave
4924	29.36	174	1.54	H	33.6	4.92	38.4	29.48	54	-24.52	Ave
4924	43.83	33	1.16	V	33.6	4.92	38.4	43.95	74	-30.05	Peak
4924	42.43	174	1.54	H	33.6	4.92	38.4	42.55	74	-31.45	Peak

Restricted Band Edge (Near Band Edge): Low channel

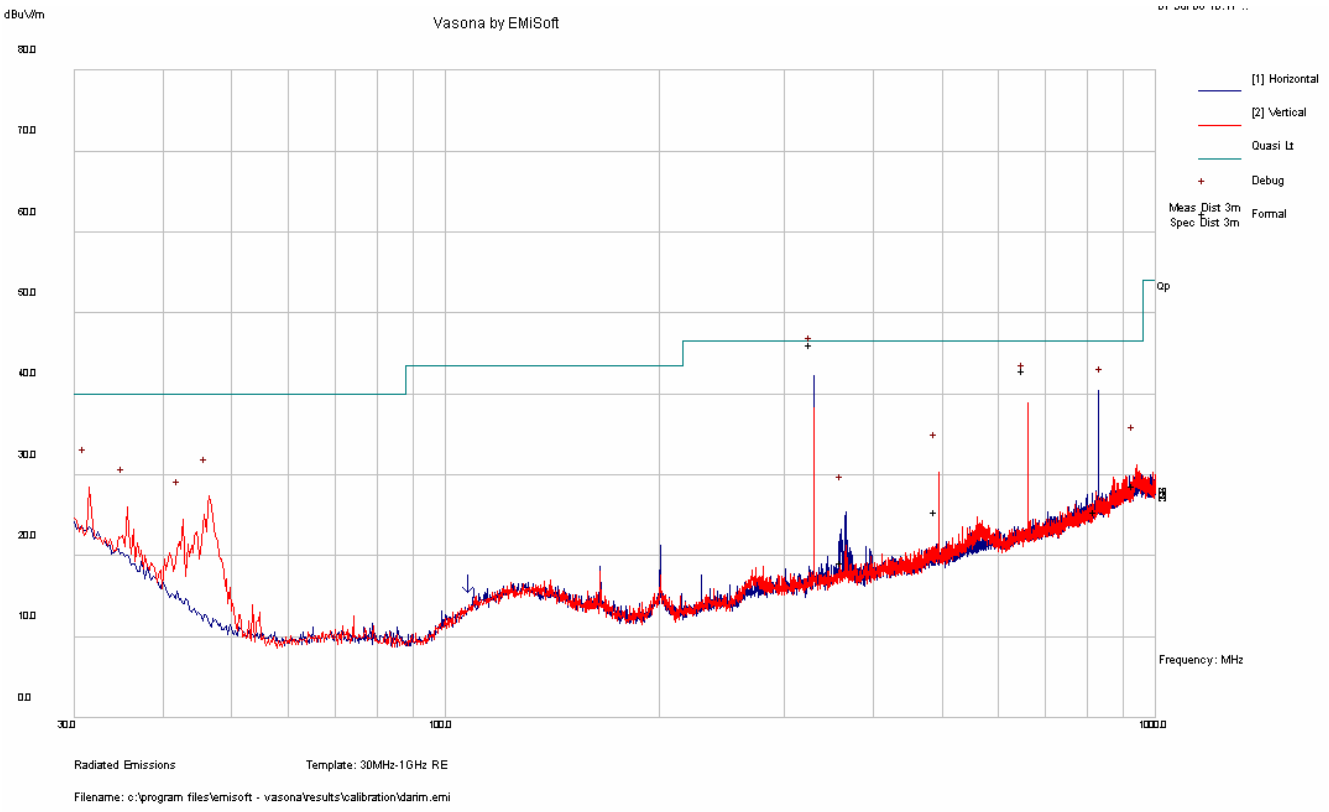
Frequency (MHz)	Receiver Reading (dBµV)	Azimuth (Degree)	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
2389.05	28.88	302	1.35	V	29	3.68	39.02	22.54	54	-31.46	Ave
2389.42	27.53	175	1.08	H	29	3.68	39.02	21.19	54	-32.81	Ave
2389.05	36.51	302	1.35	V	29	3.68	39.02	30.17	74	-43.83	Peak
2389.42	35.98	175	1.08	H	29	3.68	39.02	29.64	74	-44.36	Peak

Restricted Band Edge (Near Band Edge): High channel

Frequency (MHz)	Receiver Reading (dBµV)	Azimuth (Degree)	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
2489.73	36.44	333	1.55	V	29.2	3.72	39.25	30.11	54	-23.89	Ave
2488.75	32.57	305	1.36	H	29.2	3.72	39.25	26.24	54	-27.76	Ave
2489.73	42.56	333	1.55	V	29.2	3.72	39.25	36.23	74	-37.77	Peak
2488.75	37.44	305	1.36	H	29.2	3.72	39.25	31.11	74	-42.89	Peak

802.11 g mode:

30MHz -1GHz (Worst channel)



Frequency (MHz)	Quasi-Peak (dBµV/m)	Ant. Height (cm)	Ant. Polarity (H/V)	Turntable Position (deg)	Corrected Reading (dB)	Limit (dBµV/m)	Margin (dB)
329.998	41.41	101	H	329	-3.48	46.5	-5.09
659.999	38.16	100	V	226	1.71	46.5	-8.34
940.850	23.99	100	V	303	6.04	46.5	-22.51
830.099	20.78	193	H	125	4.63	46.5	-25.72
495.118	20.77	111	V	59	-0.70	46.5	-25.73
366.021	14.49	109	H	266	-2.62	46.5	-32.01

1GHz – 25 GHz

Low Channel 2412 MHz

Frequency (MHz)	Receiver Reading (dBµV)	Azimuth (Degree)	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
2412	65.87	205	1.3	V	29.1	5.66	0	100.63			Fund/Peak
2412	59.02	205	1.3	V	29.1	5.66	0	93.78			Fund/Ave.
2412	62.49	212	1.25	H	29.1	5.66	0	97.25			Fund/Peak
2412	57.08	212	1.25	H	29.1	5.66	0	91.84			Fund/Ave.
4824	47.82	168	1	V	33.5	4.99	38.54	47.77	54	-6.23	Ave
4824	43.92	331	1.52	H	33.5	4.99	38.54	43.87	54	-10.13	Ave
4824	54.07	168	1	V	33.5	4.99	38.54	54.02	74	-19.98	Peak
4824	50.51	331	1.52	H	33.5	4.99	38.54	50.46	74	-23.54	Peak

Middle channel 2437 MHz

Frequency (MHz)	Receiver Reading (dBµV)	Azimuth (Degree)	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
2437	61.88	208	1.17	V	29.2	5.68	0	96.76			Fund/Peak
2437	56.72	208	1.17	V	29.2	5.68	0	91.6			Fund/Ave.
2437	59.62	175	1.14	H	29.2	5.68	0	94.5			Fund/Peak
2437	54.28	175	1.14	H	29.2	5.68	0	89.16			Fund/Ave.
4874	37.58	214	1.19	V	33.4	4.92	38.4	37.5	54	-16.5	Ave
4874	37.37	327	1.21	H	33.4	4.92	38.4	37.29	54	-16.71	Ave
4874	43.81	327	1.21	H	33.4	4.92	38.4	43.73	74	-30.27	Peak
4874	42.67	214	1.19	V	33.4	4.92	38.4	42.59	74	-31.41	Peak

High channel 2462 MHz

Frequency (MHz)	Receiver Reading (dBµV)	Azimuth (Degree)	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
2462	62.04	220	1.34	V	29.2	5.7	0	96.94			Fund/Peak
2462	58.12	220	1.34	V	29.2	5.7	0	93.02			Fund/Ave.
2462	58.43	170	1.04	H	29.2	5.7	0	93.33			Fund/Peak
2462	53.38	170	1.04	H	29.2	5.7	0	88.28			Fund/Ave.
4924	30.28	175	1.26	V	33.6	4.92	38.4	30.4	54	-23.6	Ave
4924	29.25	178	1.2	H	33.6	4.92	38.4	29.37	54	-24.63	Ave
4924	45.04	175	1.26	V	33.6	4.92	38.4	45.16	74	-28.84	Peak
4924	43.81	178	1.2	H	33.6	4.92	38.4	43.93	74	-30.07	Peak

Restricted Band Edge (Near Band Edge): Low channel

Frequency (MHz)	Receiver Reading (dBµV)	Azimuth (Degree)	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
2390.45	36.58	217	1.24	V	29	3.68	39.02	30.24	54	-23.76	Ave
2389.17	36.01	265	1.32	H	29	3.68	39.02	29.67	54	-24.33	Ave
2390.45	43.12	217	1.24	V	29	3.68	39.02	36.78	74	-37.22	Peak
2389.17	42.53	265	1.32	H	29	3.68	39.02	36.19	74	-37.81	Peak

Restricted Band Edge (Near Band Edge): High channel

Frequency (MHz)	Receiver Reading (dBµV)	Azimuth (Degree)	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
2487.13	38.97	174	1.33	V	29.2	3.72	39.25	32.64	54	-21.36	Ave
2488.52	37.24	202	1.08	H	29.2	3.72	39.25	30.91	54	-23.09	Ave
2487.13	44.26	174	1.33	V	29.2	3.72	39.25	37.93	74	-36.07	Peak
2488.52	44.02	202	1.08	H	29.2	3.72	39.25	37.69	74	-36.31	Peak

8 FCC §15.109, RSS-GEN – UNWANTED SPURIOUS EMISSIONS, RECEIVER SPURIOUS EMISSIONS

8.1 Applicable Standard

According to §15.247(a)(2), Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency of Emission (MHz)	Field strength (microvolt/meter)
30-88	100
88-216	150
216-960	200
Above 960	500

8.2 Equipment List

Manufacturer	Description	Model	Serial Number	Calibration Date
Mini-Circuits	Pre amplifier	ZKL-2	7786100643	2008-01-02
HP	Pre amplifier	8449B	3147A00400	2007-11-02
Sunol Science Corp	Combination Antenna	JB1 Antenna	A103105-3	2008-03-25
A. H. Systems	Antenna, Horn, DRG	SAS-200/571	261	2008-07-01
Agilent	Spectrum Analyzer	E4440A	MY44303352	2008-04-28

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

8.3 Environmental Conditions

Temperature:	16 °C
Relative Humidity:	40 %
ATM Pressure:	102.0 kPa

**The testing was performed by Victor Zhang from 2008-07-02 to 2008-07-11.*

8.4 Summary of Test Results

According to the data hereinafter, the EUT complied with the FCC and IC requirements, and had the worst margin readings of:

Unwanted Emissions and Receiving Spurious Emission, (30-1000 MHz):

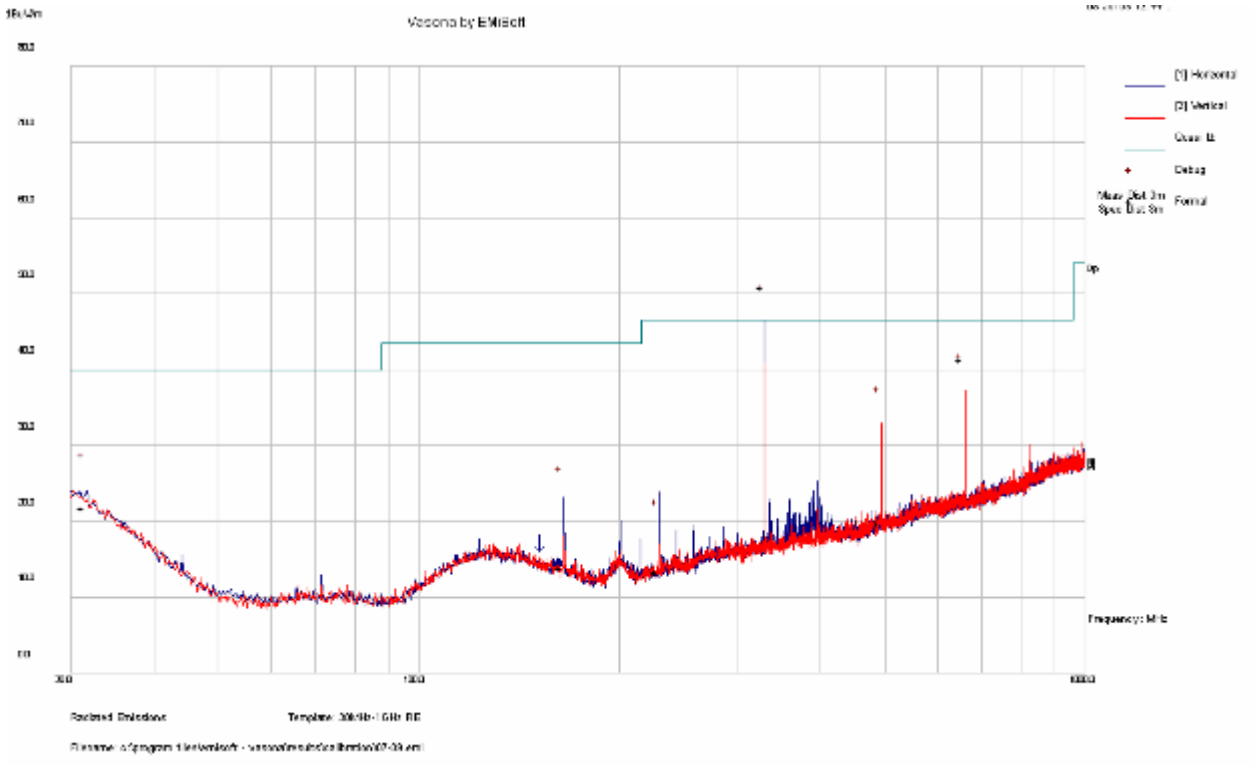
Mode: Receiving			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Range (MHz)**
-0.45	330.003	Horizontal	30 MHz to 1000 MHz

Unwanted Emissions and Receiving Spurious Emission, (Above 1GHz):

Mode: Receiving			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Channel, Range**
-13.93	4874.59	Vertical	1GHz – 25GHz

8.5 Radiated Emissions Test plot & data:

Receiving: 30MHz -1GHz



Frequency (MHz)	Quasi-Peak (dBµV/m)	Ant. Height (cm)	Correction Factor (dB)	Ant. Polarity (H/V)	Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
330.003	46.05	100	-3.48	H	283	46.5	-0.45
660.005	36.57	100	1.71	V	225	46.5	-9.93
31.625	17.11	368	1.25	H	239	40	-22.89
495.131	15.02	100	-0.7	V	130	46.5	-31.48
164.914	9.13	214	-6.61	H	278	43.5	-34.37
229.448	8.61	235	-6.5	H	72	46.5	-37.89

Radiated Emission at 3 meters, 1 GHz – 25 GHz

Receiving Mode

Frequency (MHz)	Receiver Reading (dBµV)	Azimuth (Degree)	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
4874.59	40.15	208	1.5	V	33.4	4.92	38.4	40.07	54	-13.93	Ave
4874.32	38.99	205	1.73	H	33.4	4.92	38.4	38.91	54	-15.09	Ave
4874.59	45.37	208	1.5	V	33.4	4.92	38.4	45.29	74	-28.71	Peak
4874.32	44.98	205	1.73	H	33.4	4.92	38.4	44.9	74	-29.1	Peak