

FCC PART 15.247
INDUSTRY CANADA RSS-210, ISSUE 7, JUNE 2007

MEASUREMENT AND TEST REPORT

For

Psion Teklogix Inc.

2100 Meadowvale Blvd.
Mississauga, Ontario, Canada L5N 7J9

**FCC ID: GM37527CG23,
IC ID: 2739D-7527CG23**

Report Type: ☒ Original Report		Product Type: Hand-Held Computing	
Test Engineer:	Jack Liu 		
Report Number:	R0804256-DTS		
Testing Date(s):	2008-05-11, 2008-05-20		
Report Date:	2008-05-30		
Reviewed By:	Boni Baniqued 		
Prepared By: (12)	Bay Area Compliance Laboratories Corp. 1274 Anvilwood Ave. Sunnyvale, CA 94089, USA Tel: (408) 732-9162 Fax: (408) 732-9164		

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP*, NIST, or any agency of the Federal Government.

* This report may contain data that are not covered by the NVLAP accreditation and are marked with an asterisk “*”

TABLE OF CONTENTS

1	GENERAL INFORMATION	4
1.1	PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	4
1.2	MECHANICAL DESCRIPTION OF EUT	4
1.3	ANTENNA DESCRIPTION.....	4
1.4	EUT PHOTO.....	4
1.5	OBJECTIVE	5
1.6	RELATED SUBMITTAL(S)/GRANT(S).....	5
1.7	TEST METHODOLOGY	5
1.8	MEASUREMENT UNCERTAINTY	5
1.9	TEST FACILITY	5
2	SYSTEM TEST CONFIGURATION	7
2.1	JUSTIFICATION	7
2.2	EUT EXERCISE SOFTWARE	7
2.3	SPECIAL ACCESSORIES.....	7
2.4	EQUIPMENT MODIFICATIONS	7
2.5	LOCAL SUPPORT EQUIPMENT LIST AND DETAILS	7
2.6	INTERFACE PORTS AND CABLING.....	7
2.7	TEST SETUP BLOCK DIAGRAMS	8
3	SUMMARY OF TEST RESULTS	10
4	FCC §15.203 & IC RSS-Gen §7.1.4- ANTENNA REQUIREMENT.....	11
4.1	APPLICABLE STANDARD	11
4.2	ANTENNA CONNECTED CONSTRUCTION	11
5	FCC §15.107, IC RSS-Gen - CONDUCTED EMISSIONS	12
5.1	SECTION 15.107 & RSS-GEN CONDUCTED LIMITS:	12
5.2	TEST SETUP	12
5.3	TEST EQUIPMENT LIST AND DETAILS.....	12
5.4	TEST PROCEDURE	13
5.5	ENVIRONMENTAL CONDITIONS.....	13
5.6	SUMMARY OF TEST RESULTS.....	13
6	FCC §15.205, §15.209 & §15.247(d), IC RSS-210 - RADIATED SPURIOUS EMISSIONS.....	16
6.1	APPLICABLE STANDARD	16
6.2	TEST SETUP	17
6.3	EUT SETUP.....	17
6.4	TEST EQUIPMENT LIST AND DETAILS.....	17
6.5	TEST PROCEDURE	18
6.6	CORRECTED AMPLITUDE & MARGIN CALCULATION	18
6.7	ENVIRONMENTAL CONDITIONS.....	19
6.8	SUMMARY OF TEST RESULTS.....	19
6.9	RADIATED EMISSIONS TEST PLOT & DATA:.....	21
7	FCC §15.109, RSS-GEN – UNWANTED SPURIOUS EMISSIONS AND RECEIVER SPURIOUS EMISSIONS.....	36
7.1	APPLICABLE STANDARD	36
7.2	EQUIPMENT LIST.....	36
7.3	ENVIRONMENTAL CONDITIONS.....	37
7.4	SUMMARY OF TEST RESULTS.....	37
7.5	RADIATED EMISSIONS TEST PLOT & DATA:.....	39

8	EXHIBIT A – FCC & IC EQUIPMENT LABELING REQUIREMENTS.....	42
8.1	FCC § 2.925 IDENTIFICATION OF EQUIPMENT	42
8.2	FCC ID LABELING REQUIREMENTS AS PER FCC § 15.19.....	42
8.3	SPECIFICATIONS: AS PER RSS GEN 5.2 EQUIPMENT LABELING:	43
9	EXHIBIT B - TEST SETUP PHOTOGRAPHS	44
9.1	CONDUCTED EMISSIONS –FRONT VIEW	44
9.2	CONDUCTED EMISSIONS – SIDE VIEW.....	44
9.3	RADIATED EMISSIONS – FRONT VIEW.....	45
9.4	RADIATED EMISSIONS (30 TO 1 GHz) – REAR VIEW	45
9.5	RADIATED EMISSIONS (ABOVE 1 GHz) – REAR VIEW	46
10	EXHIBIT C - EUT PHOTOGRAPHS.....	47
10.1	EUT - FRONT VIEW	47
10.2	EUT - BACK VIEW	47
10.3	EUT – SIDE VIEW	48
10.4	EUT – TOP SIDE VIEW	48
10.5	EUT – COVER OFF VIEW (1)	49
10.6	EUT – COVER OFF VIEW (2)	49
10.7	EUT- MAIN BOARD ASSEMBLY TOP COMPONENTS VIEW.....	50
10.8	EUT- MAIN BOARD ASSEMBLY BOTTOM COMPONENTS VIEW	50
10.9	EUT- RF MODULE (Wi-Fi) TOP VIEW	51
10.10	EUT- RF MODULE (Wi-Fi) BOTTOM VIEW	51
10.11	EUT- LCD ASSEMBLY TOP VIEW	52
10.12	EUT- LCD ASSEMBLY BOTTOM VIEW.....	52
10.13	EUT- AC/DC ADAPTER VIEW.....	53

1 GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

The Psion Teklogix Inc. Product, FCC ID: GM37527CG23, IC: 2739D-7527CG23, model: 7527C G2 or the “EUT” as referred to this report is a Benchmark in Hand-Held Computing. It was engineered to meet the performance and durability requirements for data collection in some of the harshest environments. It has been ergonomically crafted with the user in mind in order to combine usability with performance.

* Testing was performed on a post production sample provided by Psion Teklogix.

1.2 Mechanical Description of EUT

The Psion Teklogix Inc. product, FCC ID: GM37527CG23, IC: 2739D-7527CG23, model: 7527C G2 is of plastic construction and measures approximately 223 mm (L) x 75/100 mm (W) x 31/42mm (H), weighing approximately 455 g.

1.3 Antenna Description

Item Number	Model/Type	
Antenna	Model number:	C802-510001-A
	Manufacturer:	Symbol
	Frequency Range:	2400-2500 MHz, 5150-5850 MHz
	Connector Type	Soldered to PCB
	Antenna Type	PCB Dual Band Antenna (3dBi for 2.4 GHz; 4 dBi for 5 GHz)

1.4 EUT Photo



Please refer to Exhibit C for addition EUT photographs.

1.5 Objective

This report is prepared on behalf of *Psion Teklogix* in accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communication Commissions rules and Industry Canada RSS-210 Issue 7, June 2007.

The objective is to determine compliance with FCC and IC standards, rules and limits for this device including:

- Output Power
- Power Spectral Density
- 6 dB (99%) Bandwidth
- Radiated Spurious Emission [Restricted bands, Harmonics & Spurious]
- Band Edge
- Dwell Time
- AC line Conducted Emission
- Unwanted Spurious Emission & Receiving Spurious Emission

1.6 Related Submittal(s)/Grant(s)

No related submittals.

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 ± 2.0 for Conducted Emissions tests and ± 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 sites at BACL have been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports has 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 facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission, Industry Canada, and Voluntary Control Council for Interference has the reports on file and is listed under FCC registration number: 90464, IC registration number: 3062A, and VCCI Registration Number: C-2463 and R-2698. The test site has been approved by the FCC, IC, and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL 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/Standards/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.

2.2 EUT Exercise Software

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

Type	Frequency (MHz)		
	Low	Middle	High
WI-FI (802.11 a)	5745	5785	5825
WI-FI (802.11 b)	2412	2437	2462
WI-FI (802.11 g)	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

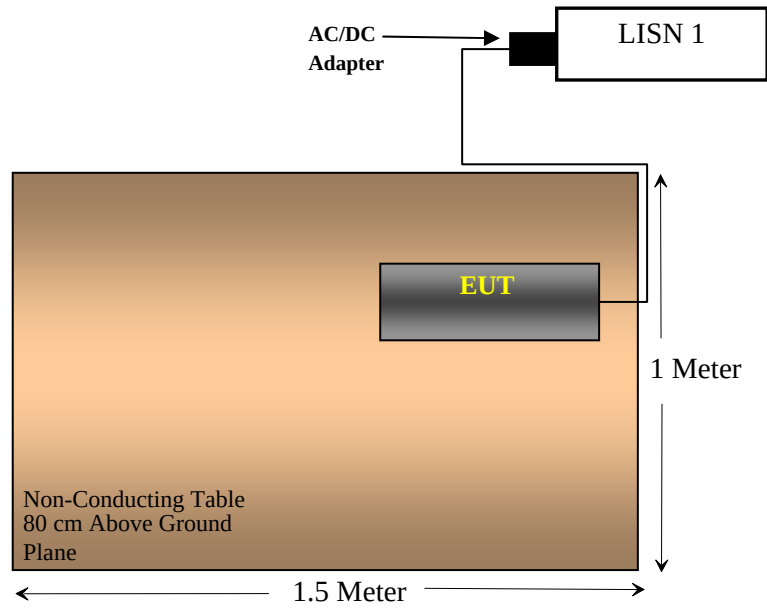
Manufacturer	Description	Model	Serial Number
TOSHIBA	Laptop	Satellite Pro 4200 Series	20016067J

2.6 Interface Ports and Cabling

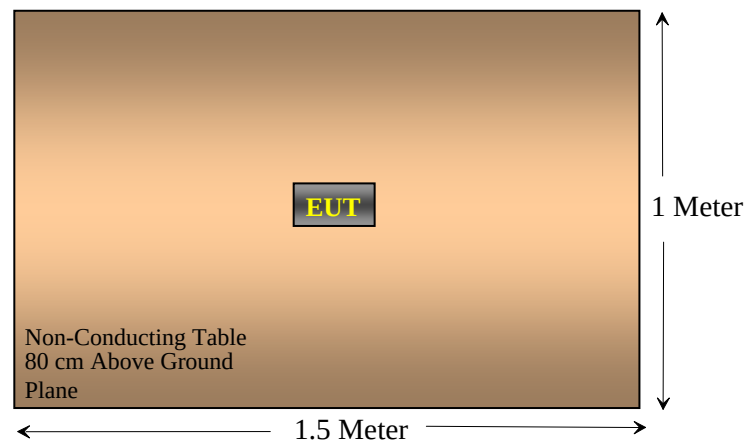
Cable Description	Length (m)	From	To
N/A	N/A	N/A	N/A

2.7 Test Setup Block Diagrams

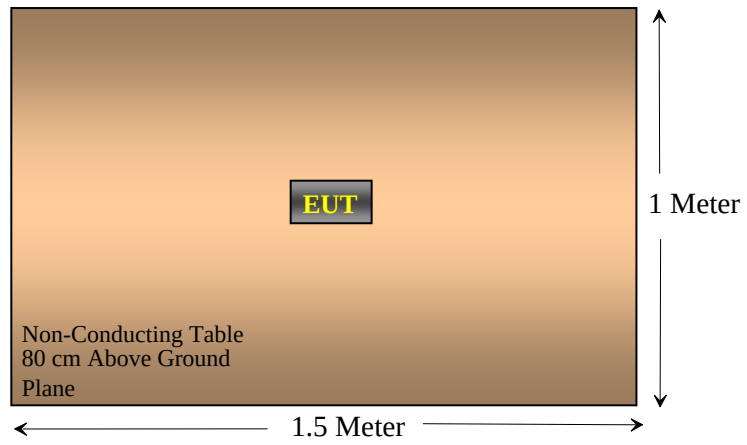
Conducted Emissions



Receiver Radiated Emissions



Transmitter Spurious Radiated Emissions



3 SUMMARY OF TEST RESULTS

Results reported relate only to the product tested.

FCC & RSS-210 Rules	Description of Test	Result	Note
§ 15.247 (b)(3); RSS-210 A8.2 (a)	6 dB (99%) Bandwidth	N/A	Refer to FCC ID H9PLA5137A2/IC: 1549D-LA5137A2 reports
§ 15.247 (b); RSS-210 A8.4	Output Power	N/A	Refer to FCC ID H9PLA5137A2/IC: 1549D-LA5137A2 reports
§ 15.247 (e); RSS-210 A8.2 (b)	Power Spectral Density	N/A	Refer to FCC ID H9PLA5137A2/IC: 1549D-LA5137A2 reports
§ 15.247 (d), §15.205, §15.209 RSS-210 A8.5	Radiated Spurious Emission [Restricted bands, Harmonics & Spurious]	Compliant	
§ 15.247 (d), §15.209 RSS-210	Band Edge	N/A	Refer to FCC ID H9PLA5137A2/IC: 1549D-LA5137A2 reports
§15.107; RSS-Gen	AC Line conducted emission	Compliant	
§15.109; RSS-Gen	Unwanted spurious emission Receiver spurious emission	Compliant	

4 FCC §15.203 & IC RSS-Gen §7.1.4- ANTENNA REQUIREMENT

4.1 Applicable Standard

According to § 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 § 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.

According to RSS-Gen§7.1.4, 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 Antenna Connected Construction

The integral antenna is permanently mounted on the printed circuit board and located inside the enclosure, please refer to the EUT internal photos.



5 FCC §15.107, IC RSS-Gen - CONDUCTED EMISSIONS

5.1 Section 15.107 & RSS-Gen Conducted limits:

For a Class A digital device 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 μ H/50 ohms 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	79	66
0.55-30	73	60

* Decreases with the logarithm of the frequency.

5.2 Test Setup

The measurement was performed at shield room, using the setup per ANSI C63.4 – 2003 measurement procedure. The specification used was FCC/IC consumer device limits.

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

The EUT is gang charger connected to 120 V/60 Hz provided by LISN-1.

5.3 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 1166.5950K03	100337	2008-04-12

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

5.4 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”.

5.5 Environmental Conditions

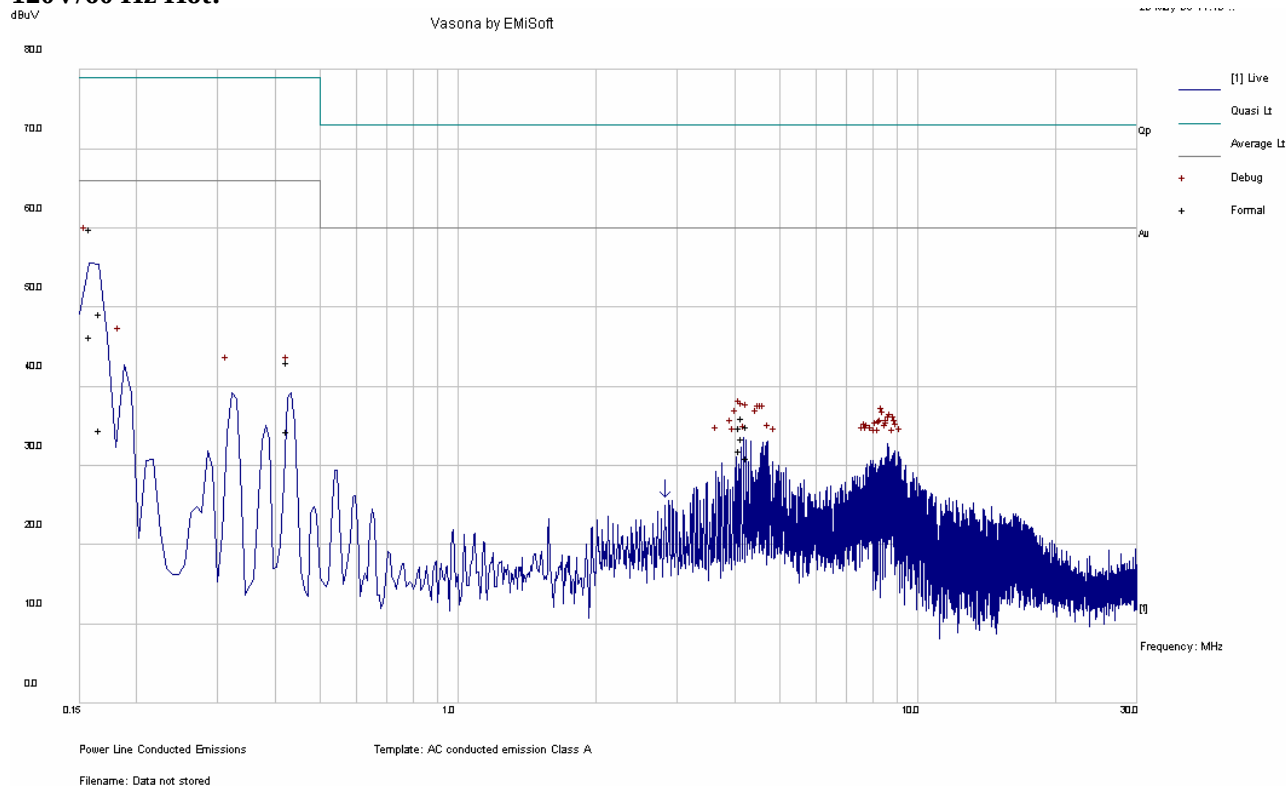
Temperature:	20 °C
Relative Humidity:	40 %
ATM Pressure:	102.0 kPa

**The testing was performed by Jack Liu from 2008-05-11 to 2008-05-20*

5.6 Summary of Test Results

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

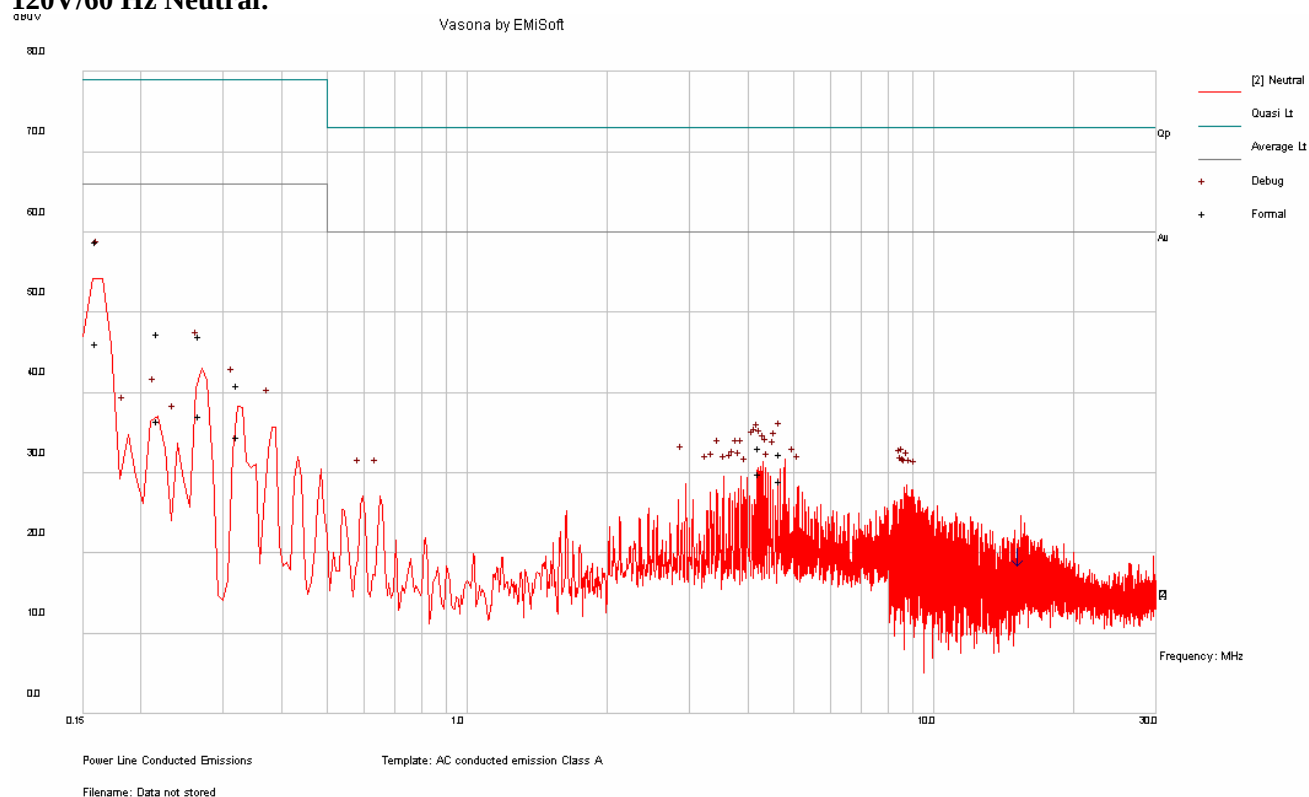
Connection: 5 VDC from AC/DC adapter connected to 120 V/ 60 Hz			
Margin (dB)	Frequency (MHz)	Conductor (Hot/Neutral)	Range (MHz)
-23.79	0.162	Hot	0.150 MHz to 30 MHz
-24.59	0.163	Neutral	0.150 MHz to 30 MHz

120V/60 Hz Hot:**Final Measurement Quasi-Peak Detector**

Frequency (MHz)	Quasi-Peak (dB μ V)	Conductor (Hot/Neutral)	Limit (dB μ V)	Margin (dB)
0.162	55.21	H	79	-23.79
0.17	44.47	H	79	-34.53
0.435	38.38	H	79	-40.62
4.184	30.08	H	73	-42.92
4.241	31.32	H	73	-41.68
4.351	30.25	H	73	-42.75

Final Measurement Average Detector

Frequency (MHz)	Average (dB μ V)	Conductor (Hot/Neutral)	Limit (dB μ V)	Margin (dB)
0.162	41.56	H	66	-24.44
4.241	28.73	H	60	-31.27
4.184	27.17	H	60	-32.83
4.351	26.23	H	60	-33.77
0.17	29.7	H	66	-36.3
0.435	29.6	H	66	-36.4

120V/60 Hz Neutral:**Final Measurement Quasi-Peak Detector**

Frequency (MHz)	Quasi-Peak (dBμV)	Conductor (Hot/Neutral)	Limit (dBμV)	Margin (dB)
0.163	54.13	N	79	-24.87
0.222	42.63	N	79	-36.37
0.273	42.24	N	79	-36.76
0.329	36.18	N	79	-42.82
4.306	28.32	N	73	-44.68
4.796	27.62	N	73	-45.38

Final Measurement Average Detector

Frequency (MHz)	Average (dBμV)	Conductor (Hot/Neutral)	Limit (dBμV)	Margin (dB)
0.163	41.41	N	66	-24.59
0.273	32.36	N	66	-33.64
0.222	31.69	N	66	-34.31
4.306	25.15	N	60	-34.85
4.796	24.31	N	60	-35.69
0.329	29.8	H	66	-36.2

6 FCC §15.205, §15.209 & §15.247(d), IC RSS-210 - RADIATED SPURIOUS 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	16.42 – 16.423	960 – 1240	4.5 – 5.15
0.495 – 0.505	16.69475 – 16.69525	1300 – 1427	5.35 – 5.46
2.1735 – 2.1905	25.5 – 25.67	1435 – 1626.5	7.25 – 7.75
4.125 – 4.128	37.5 – 38.25	1645.5 – 1646.5	8.025 – 8.5
4.17725 – 4.17775	73 – 74.6	1660 – 1710	9.0 – 9.2
4.20725 – 4.20775	74.8 – 75.2	1718.8 – 1722.2	9.3 – 9.5
6.215 – 6.218	108 – 121.94	2200 – 2300	10.6 – 12.7
6.26775 – 6.26825	123 – 138	2310 – 2390	13.25 – 13.4
6.31175 – 6.31225	149.9 – 150.05	2483.5 – 2500	14.47 – 14.5
8.291 – 8.294	156.52475 – 156.52525	2690 – 2900	15.35 – 16.2
8.362 – 8.366	156.7 – 156.9	3260 – 3267	17.7 – 21.4
8.37625 – 8.38675	162.0125 – 167.17	3.332 – 3.339	22.01 – 23.12
8.41425 – 8.41475	167.72 – 173.2	3.3458 – 3.358	23.6 – 24.0
12.29 – 12.293	240 – 285	3.600 – 4.400	31.2 – 31.8
12.51975 – 12.52025	322 – 335.4		36.43 – 36.5
12.57675 – 12.57725	399.9 – 410		Above 38.6
13.36 – 13.41	608 – 614		

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-210 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.

6.2 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.

6.3 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 bundle when necessary.

6.4 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	2007-06-07
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.

6.5 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:

$$\text{RBW} = 100 \text{ kHz} / \text{VBW} = 300 \text{ kHz} / \text{Sweep} = \text{Auto}$$

Above 1000MHz:

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

6.6 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:

$$\text{Corrected Amplitude} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

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:

$$\text{Margin} = \text{Corrected Amplitude} - \text{Limit}$$

6.7 Environmental Conditions

Temperature:	20 °C
Relative Humidity:	40 %
ATM Pressure:	102.0 kPa

**The testing was performed by Jack Liu from 2008-05-12 to 2008-05-20*

6.8 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:

WI-FI 802.11a

Harmonics & Spurious, (30-1000 MHz):

Mode: Transmitting			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Channel, Range
-13.81	413.458	Vertical	Low, 30 MHz – 1GHz
-10.04	413.437	Vertical	Mid, 30 MHz – 1GHz
-10.57	403.017	Vertical	High, 30 MHz – 1GHz

Harmonics & Spurious, (Above 1GHz)

Mode: Transmitting			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Channel, Range
-0.05	17235	Horizontal	Low, 1GHz – 40GHz
-0.25	11570	Horizontal	Mid, 1GHz – 40GHz
-0.42	11650	Horizontal	High, 1GHz – 40GHz

WI-FI 802.11b Harmonics & Spurious**30-1000 MHz:**

Mode: Transmitting			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Channel, Range
-18.75	387.438	Vertical	Low, 30 MHz – 1GHz
-20.69	408.21	Vertical	Mid, 30 MHz – 1GHz
-20.81	455.018	Vertical	High, 30 MHz – 1GHz

Above 1GHz:

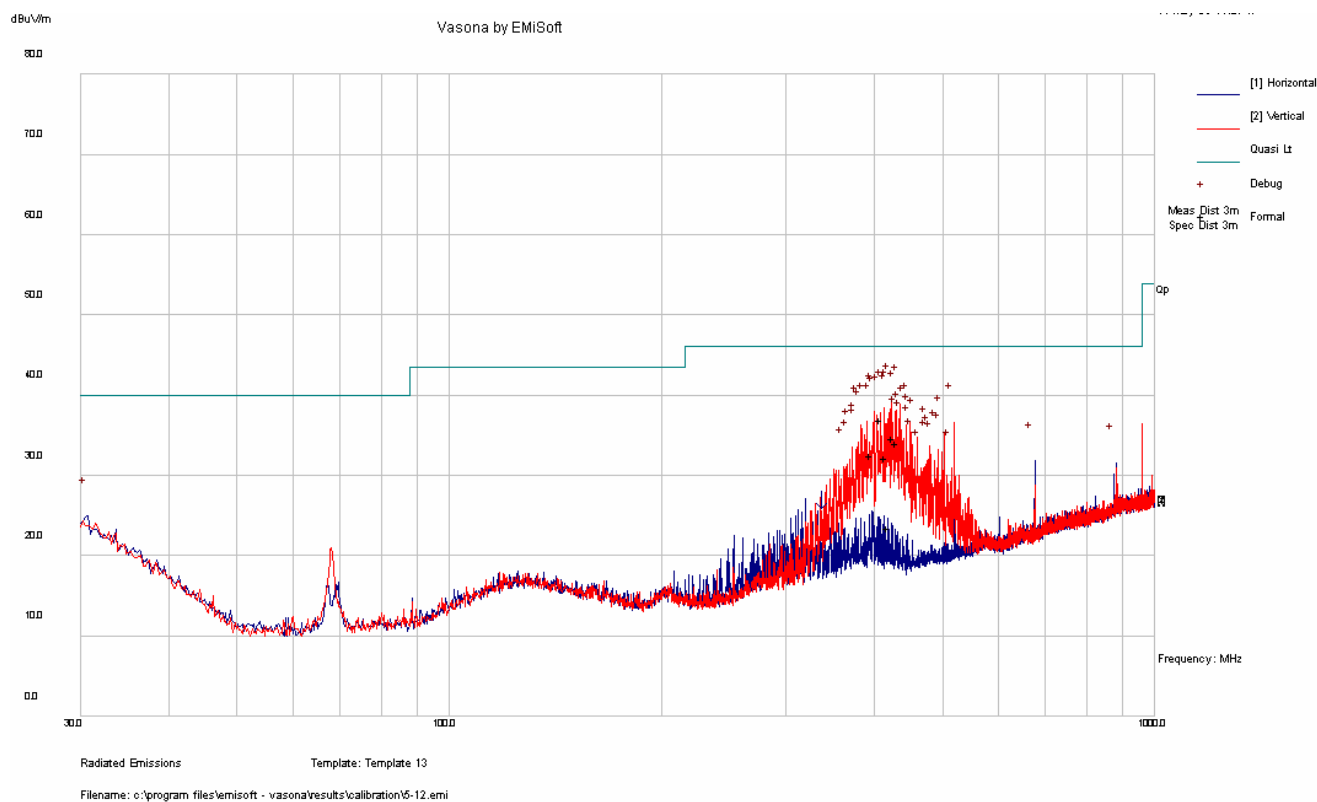
Mode: Transmitting			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Channel, Range
-5.15	4820	Vertical	Low, 1GHz – 25GHz
-7.61	7311	Vertical	Mid, 1GHz – 25GHz
-17.81	4924	Vertical	High, 1GHz – 25GHz

WI-FI 802.11g Harmonics & Spurious**30-1000 MHz:**

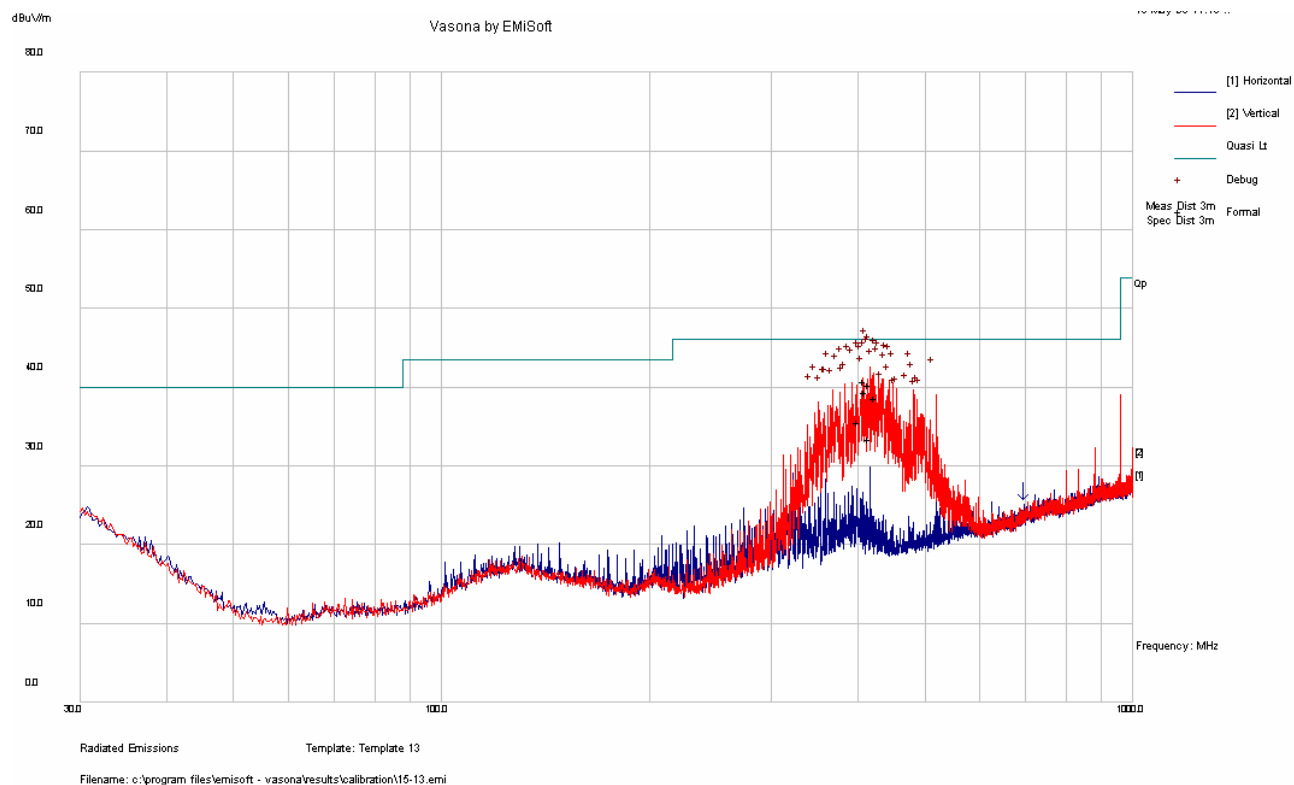
Mode: Transmitting			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Channel, Range
-10.86	520.029	Vertical	Low, 30 MHz – 1GHz
-10.38	428.997	Vertical	Mid, 30 MHz – 1GHz
-11.7	439.384	Vertical	High, 30 MHz – 1GHz

Above 1GHz:

Mode: Transmitting			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Channel, Range
-12.5	4820	Vertical	Low, 1GHz – 25GHz
-15.93	4874	Vertical	Mid, 1GHz – 25GHz
-13.59	4924	Vertical	High, 1GHz – 25GHz

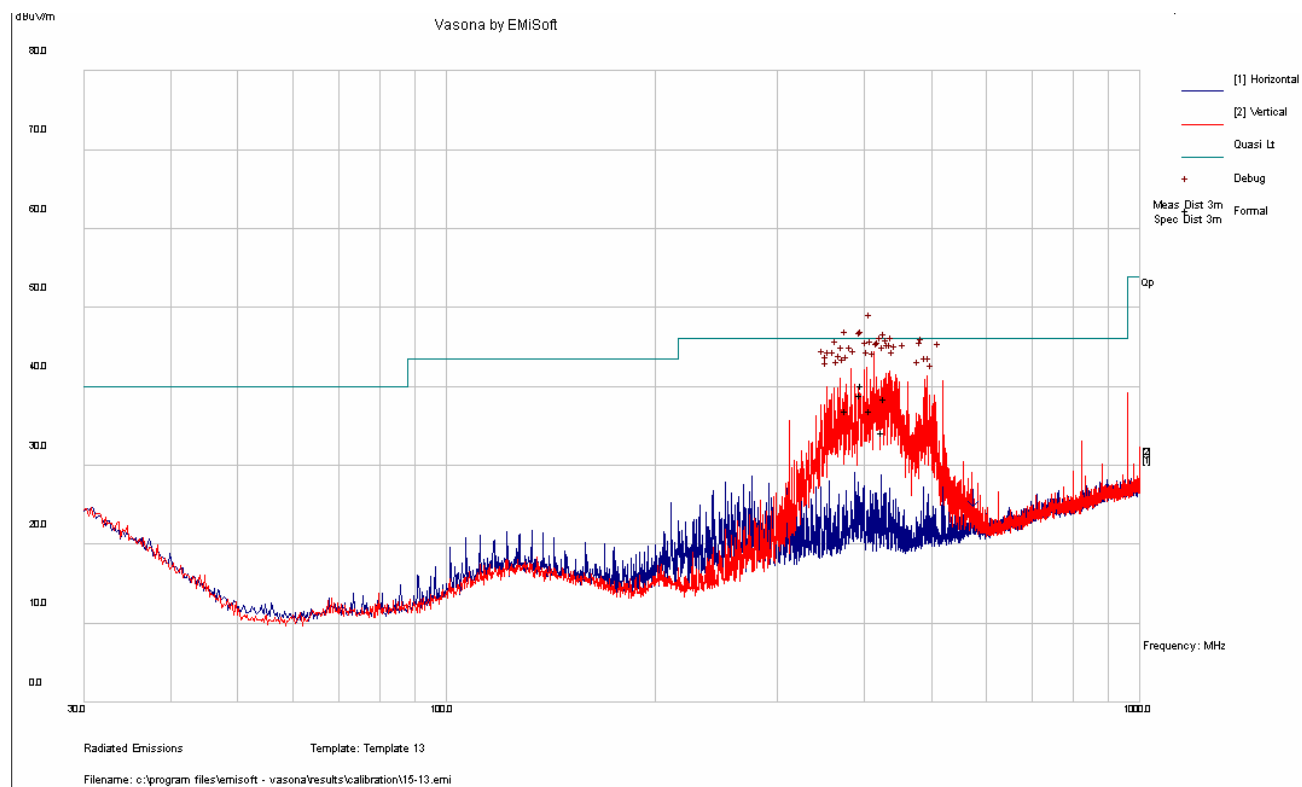
6.9 Radiated Emissions Test plot & data:**WI-FI 802.11a****30 MHz -1GHz****Low Channel 5745 MHz**

Frequency (MHz)	Quasi-Peak (dBμV/m)	Antenna Height (cm)	Correction Factor (dB)	Ant. Polarity (H/V)	Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)
413.458	32.19	105	-13.25	V	0	46	-13.81
430.002	29.84	99	-13.06	V	321	46	-16.16
435.497	29.28	108	-13.06	V	323	46	-16.72
400.422	27.72	232	-13.51	V	0	46	-18.28
421.231	27.45	187	-13.12	V	349	46	-18.55
424.092	18.72	301	-13.07	V	99	46	-27.28

Middle Channel 5785 MHz

Frequency (MHz)	Quasi-Peak (dB μ V/m)	Antenna Height (cm)	Correction Factor (dB)	Ant. Polarity (H/V)	Azimuth (degrees)	Limit (dB μ V/m)	Margin (dB)
413.437	35.96	98	-13.25	V	10	46	-10.04
421.234	35.56	110	-13.12	V	5	46	-10.44
416.025	34.7	112	-13.2	V	80	46	-11.3
429.061	33.86	128	-13.06	V	40	46	-12.14
405.647	30.79	100	-13.4	V	211	46	-15.21
419.903	28.75	125	-13.14	V	168	46	-17.25

High Channel 5825 MHz



Frequency (MHz)	Quasi-Peak (dBμV/m)	Antenna Height (cm)	Correction Factor (dB)	Ant. Polarity (H/V)	Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)
403.017	35.43	123	-13.45	V	36	46	-10.57
400.426	34.24	136	-13.51	V	19	46	-11.76
434.25	33.78	104	-13.06	V	127	46	-12.22
413.435	32.15	149	-13.25	V	349	46	-13.85
382.248	32.14	128	-13.44	V	296	46	-13.86
429.994	29.44	101	-13.06	V	182	46	-16.56

Wi-Fi 802.11a Measured at 3 meters, 1 GHz – 40 GHz**Low Channel 5745 MHz**

Frequency (MHz)	Receiver Reading (dBμV)	Azimuth Degrees	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
5745	57.72	104	1.5	V	34.7	8.68	0	101.1			Fund/Peak
5745	56.56	104	1.5	V	34.7	8.68	0	99.94			Fund/Ave.
5745	61.61	164	1.7	H	34.7	8.68	0	104.99			Fund/Peak
5745	60.53	164	1.7	H	34.7	8.68	0	103.91			Fund/Ave.
17235	36.29	118	1.93	H	43	10.52	35.86	53.95	54	-0.05	Ave
11490	39.41	195	2.02	V	41.2	8.33	35.58	53.36	54	-0.64	Ave
11490	50.11	195	2.02	V	41.2	8.33	35.58	64.06	74	-9.94	Peak
17235	43.58	118	1.93	H	43	10.52	35.86	61.24	74	-12.76	Peak

Middle Channel 5785 MHz

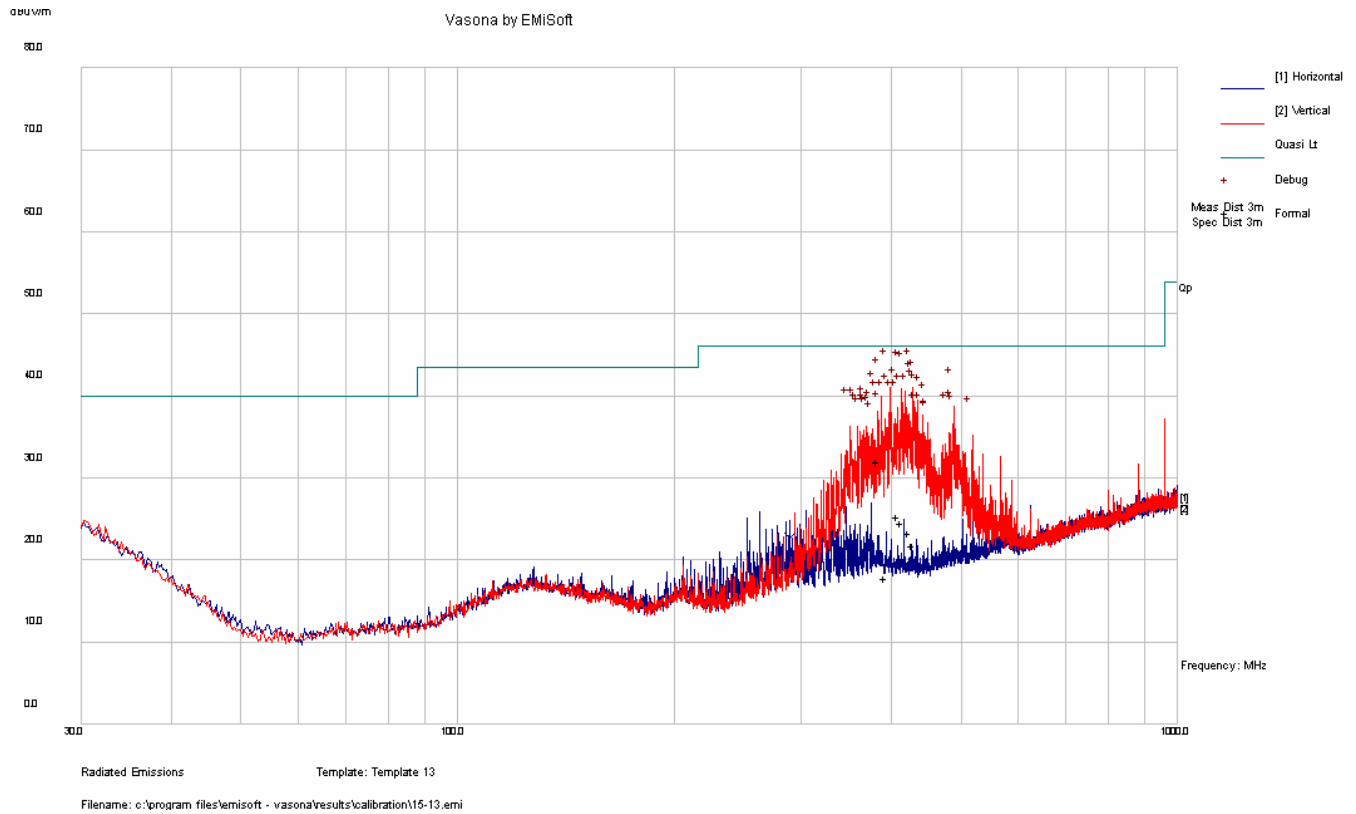
Frequency (MHz)	Receiver Reading (dBμV)	Azimuth Degrees	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Comments
5785	59.1	145	1.15	V	34.7	8.7	0	102.5			Fund/Peak
5785	57.36	145	1.15	V	34.7	8.7	0	100.76			Fund/Ave.
5785	62.1	170	1.45	H	34.7	8.7	0	105.5			Fund/Peak
5785	60.4	170	1.45	H	34.7	8.7	0	103.8			Fund/Ave.
11570	39.8	234	1.28	H	41.2	8.35	35.6	53.75	54	-0.25	Ave
17355	35.92	157	1.73	H	43	10.71	35.89	53.74	54	-0.26	Ave
11570	51.27	234	1.28	H	41.2	8.35	35.6	65.22	74	-8.87	Peak
17355	41.76	157	1.73	H	43	10.71	35.89	59.58	74	-14.42	Peak

High Channel 5825 MHz

Frequency (MHz)	Receiver Reading (dBμV)	Azimuth Degrees	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
5825	59.42	50	1.1	V	34.7	8.72	0	102.84			5825
5825	57.37	50	1.1	V	34.7	8.72	0	100.79			5825
5825	57.31	90	1.17	H	34.7	8.72	0	100.73			5825
5825	55.03	90	1.17	H	34.7	8.72	0	98.45			5825
11650	39.54	238	1.24	H	41.2	8.43	35.59	53.58	54	-0.42	11650
17475	30.99	304	1.93	H	46.1	10.93	35.93	52.09	54	-1.91	17475
11650	52.13	238	1.24	H	41.2	8.43	35.59	66.17	74	-7.83	11650
17475	40.51	304	1.93	H	46.1	10.93	35.93	61.61	74	-12.39	17475

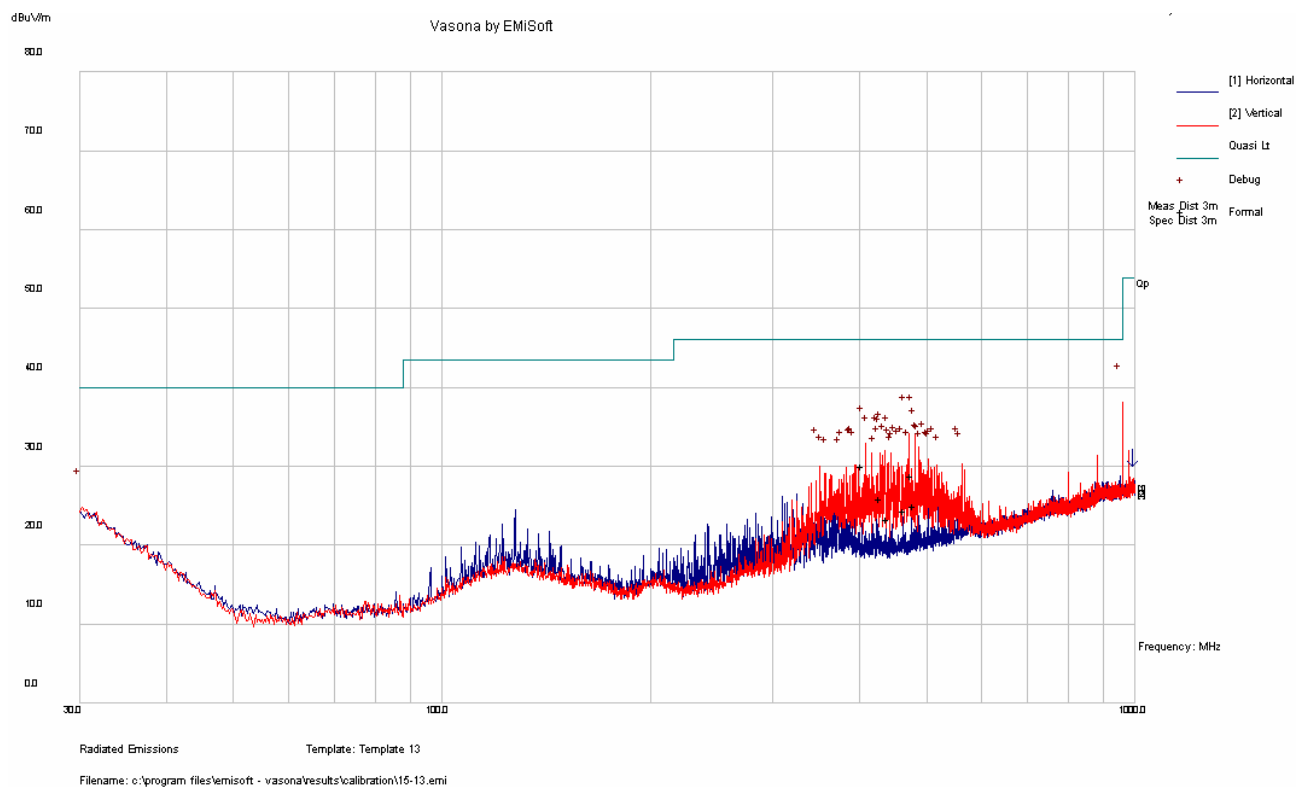
Restricted Band Edge (Near Band Edge): Low channel

Frequency (MHz)	Receiver Reading (dBμV)	Azimuth Degrees	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
5445.154	42.12	150	1.11	V	34.6	5.4	37.6	46.06	54	-7.94	Ave
5445.628	40.22	60	1.02	H	34.6	5.4	37.6	43.47	54	-10.53	Ave
5445.154	47.15	150	1.113	V	34.6	5.4	37.6	49.55	74	-24.45	Peak
5445.628	44.98	60	1.02	H	34.6	5.4	37.6	47.38	74	-26.62	Peak

WI-FI 802.11b**30MHz -1GHz****Low Channel 2410 MHz**

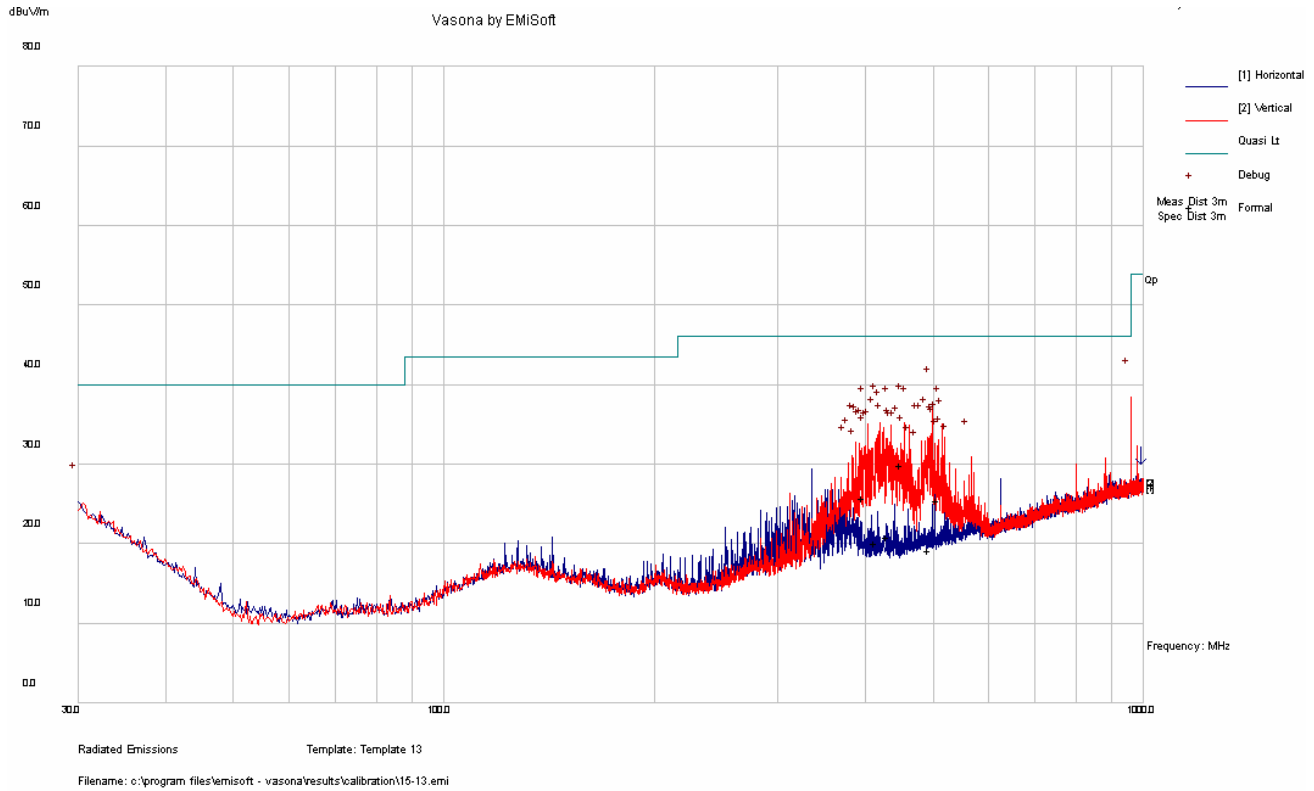
Frequency (MHz)	Quasi-Peak (dBμV/m)	Antenna Height (cm)	Correction Factor (dB)	Ant. Polarity (H/V)	Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)
387.438	27.25	108	-13.42	V	13	46	-18.75
413.423	20.55	238	-13.25	V	33	46	-25.45
418.64	19.83	265	-13.16	V	41	46	-26.17
429.049	18.5	260	-13.06	V	287	46	-27.5
434.707	17.01	202	-13.06	V	48	46	-28.99
397.818	13.05	278	-13.5	V	155	46	-32.95

Middle Channel 2437 MHz



Frequency (MHz)	Quasi-Peak (dBμV/m)	Antenna Height (cm)	Correction Factor (dB)	Ant. Polarity (H/V)	Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)
408.21	25.31	100	-13.34	V	35	46	-20.69
481.072	24.15	115	-12.43	V	5	46	-21.85
434.718	21.1	115	-13.06	V	37	40	-24.9
486.219	20.23	121	-12.35	V	320	46	-25.77
471.065	19.69	115	-12.61	V	66	46	-26.31
444.571	18.52	164	-13.05	V	62	46	-27.48

High Channel 2462 MHz



Frequency (MHz)	Quasi-Peak (dB μ V/m)	Antenna Height (cm)	Correction Factor (dB)	Ant. Polarity (H/V)	Azimuth (degrees)	Limit (dB μ V/m)	Margin (dB)
455.018	25.19	127	-12.92	V	0	46	-20.81
403.013	20.97	98	-13.45	V	140	46	-25.03
514.846	20.74	175	-12.28	V	0	46	-25.26
435.578	16.08	263	-13.06	V	37	46	-29.92
419.668	15.39	266	-13.14	V	41	46	-30.61
499.247	14.5	215	-12.21	V	246	46	-31.5

Wi-Fi 802.11b Measured at 3 meters, 1 GHz – 25 GHz**Low Channel 2412 MHz**

Frequency (MHz)	Receiver Reading (dBμV)	Azimuth Degrees	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	62.42	100	1.25	V	29.1	5.66	0	97.18			Fund/Peak
2412	60.3	100	1.25	V	29.1	5.66	0	95.06			Fund/Ave.
2412	68.11	105	1.04	H	29.1	5.66	0	102.87			Fund/Peak
2412	66.04	105	1.04	H	29.1	5.66	0	100.8			Fund/Ave.
4820	48.9	90	1	V	33.5	4.99	38.54	48.85	54	-5.15	Ave.
4820	38.64	110	1.2	H	33.5	4.99	38.54	38.59	54	-15.41	Ave
4820	51.66	90	1	V	33.5	4.99	38.54	51.61	74	-22.39	Peak
4820	42.59	110	1.2	H	33.5	4.99	38.54	42.54	74	-31.46	Peak

Middle Channel 2437 MHz

Frequency (MHz)	Receiver Reading (dBμV)	Azimuth Degrees	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	61.4	120	1	V	29.2	5.68	0	96.28			2437
2437	60.1	120	1	V	29.2	5.68	0	94.98			2437
2437	67.33	100	1.2	H	29.2	5.68	0	102.21			2437
2437	66.15	100	1.2	H	29.2	5.68	0	101.03			2437
7311	38.12	200	1	V	38	6.44	36.17	46.39	54	-7.61	7311
4871	30	243	1	H	33.4	4.92	38.4	29.92	54	-24.08	4871
7311	41.33	200	1	V	38	6.44	36.17	49.6	74	-24.4	7311
4871	41.87	243	1	H	33.4	4.92	38.4	41.79	74	-32.21	4871

High Channel 2462 MHz

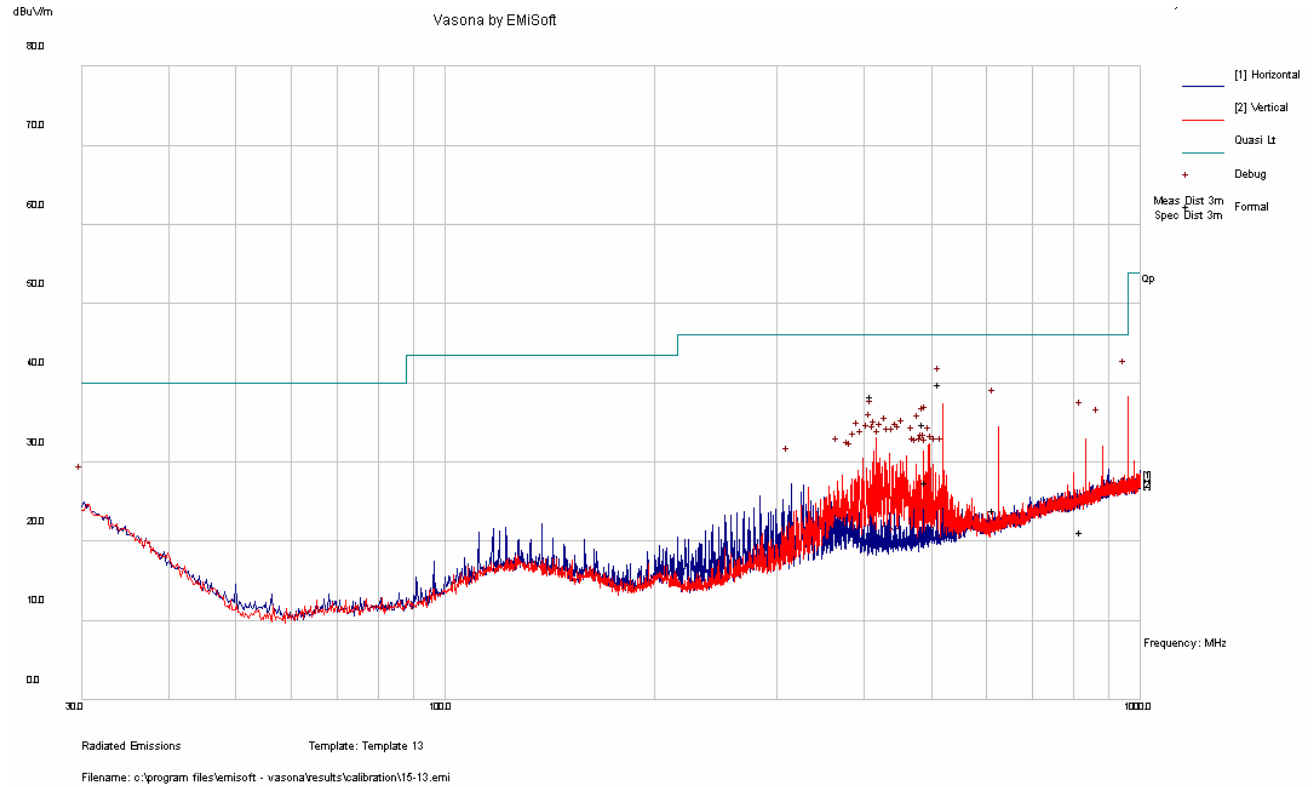
Frequency (MHz)	Receiver Reading (dBμV)	Azimuth Degrees	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Comments
2462	61.79	99	1.2	V	29.2	5.7	0	96.69			Fund/Peak
2462	60.56	99	1.2	V	29.2	5.7	0	95.46			Fund/Ave.
2462	66.42	115	1	H	29.2	5.7	0	101.32			Fund/Peak
2462	65.27	115	1	H	29.2	5.7	0	100.17			Fund/Ave.
4924	36.07	224	1	V	33.6	4.92	38.4	36.19	54	-17.81	Ave.
4924	35.22	150	1	H	33.6	4.92	38.4	35.34	54	-18.66	Ave
4924	41.56	224	1	V	33.6	4.92	38.4	41.68	74	-32.32	Peak
4924	40.26	150	1	H	33.6	4.92	38.4	40.38	74	-33.62	Peak

Restricted Band Edge (Near Band Edge): Low channel

Frequency (MHz)	Receiver Reading (dBμV)	Azimuth Degrees	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
2389.75	40.22	200	1.3	V	29	3.68	39.02	33.88	54	-20.12	Ave
2389.03	38.35	156	1.1	H	29	3.68	39.02	32.01	54	-21.99	Ave
2389.75	43.21	200	1.3	V	29	3.68	39.02	36.87	74	-37.13	Peak
2389.03	40.35	156	1.1	H	29	3.68	39.02	34.01	74	-39.99	Peak

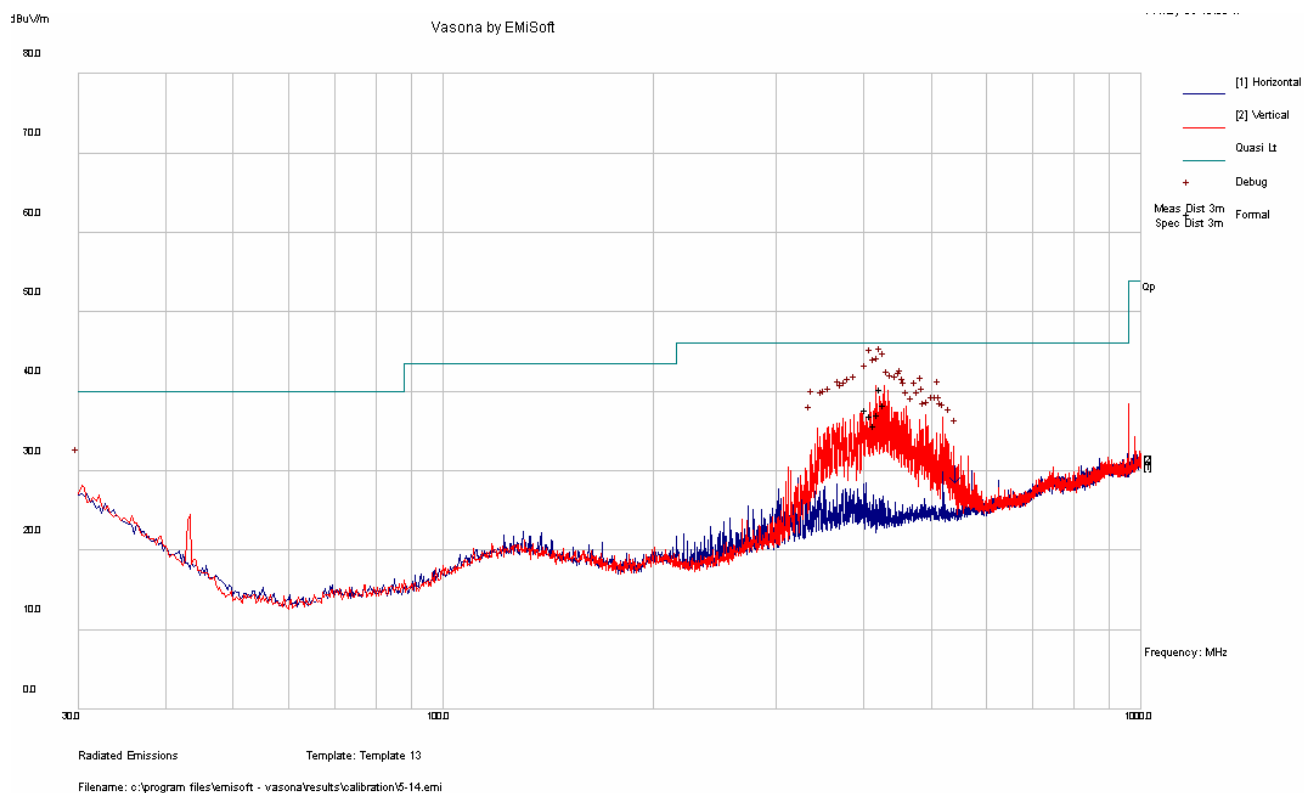
Restricted Band Edge (Near Band Edge): High channel

Frequency (MHz)	Receiver Reading (dBμV)	Azimuth Degrees	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	39.89	208	1	V	29.2	3.72	39.25	33.56	54	-20.44	Ave
2488.69	39.78	243	1.3	H	29.2	3.72	39.25	33.45	54	-20.55	Ave
2489.73	44.11	208	1	V	29.2	3.72	39.25	37.78	74	-36.22	Peak
2488.69	42.75	243	1.3	H	29.2	3.72	39.25	36.42	74	-37.58	Peak

WI-FI 802.11g**30MHz -1GHz****Low Channel 2410 MHz**

Frequency (MHz)	Quasi-Peak (dBuV/m)	Antenna Height (cm)	Correction Factor (dB)	Ant. Polarity (H/V)	Azimuth (degrees)	Limit (dBuV/m)	Margin (dB)
520.029	35.14	100	-12.3	V	59	46	-10.86
416.05	33.54	99	-13.2	V	40	46	-12.46
494.028	30.13	199	-12.26	V	313	46	-15.87
497.971	22.72	108	-12.22	V	119	46	-23.28
623.998	19.22	176	-11.1	V	39	46	-26.78
833.11	16.45	252	-8.05	V	65	46	-29.55

Middle Channel 2437 MHz



Frequency (MHz)	Quasi-Peak (dBuV/m)	Antenna Height (cm)	Correction Factor (dB)	Ant. Polarity (H/V)	Azimuth (degrees)	Limit (dBuV/m)	Margin (dB)
428.997	35.62	122	-13.06	V	0	46	-10.38
434.238	33.59	121	-13.06	V	196	46	-12.41
408.202	32.9	104	-13.34	V	152	46	-13.1
426.414	32.42	132	-13.06	V	246	46	-13.58
416.016	32.17	105	-13.2	V	51	46	-13.83
421.239	30.98	98	-13.12	V	336	46	-15.02

Frequency (MHz)	Quasi-Peak (dBμV/m)	Antenna Height (cm)	Correction Factor (dB)	Ant. Polarity (H/V)	Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)
439.384	34.3	111	-13.07	V	208	46	-11.7
423.835	33.15	145	-13.08	V	137	46	-12.85
486.213	32.83	107	-12.35	V	208	46	-13.17
473.224	29.96	129	-12.56	V	235	46	-16.04
430.361	29.7	113	-13.06	V	332	46	-16.3
413.716	29.43	114	-13.24	V	265	46	-16.57

WI-FI 802.11g, Measured at 3 meters, 1 GHz – 25 GHz**Low Channel 2412 MHz**

Frequency (MHz)	Receiver Reading (dBμV)	Azimuth Degrees	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	66.45	120	1.04	V	29.1	5.66	0	101.21			Fund/Peak
2412	64.14	120	1.04	V	29.1	5.66	0	98.9			Fund/Ave.
2412	61.88	105	1.24	H	29.1	5.66	0	96.64			Fund/Peak
2412	59.54	105	1.24	H	29.1	5.66	0	94.3			Fund/Ave.
4820	41.55	289	1.6	V	33.5	4.99	38.54	41.5	54	-12.5	Ave.
4820	38.74	318	1.5	H	33.5	4.99	38.54	38.69	54	-15.31	Ave
4820	44.64	289	1.6	V	33.5	4.99	38.54	44.59	74	-29.41	Peak
4820	40.94	318	1.5	H	33.5	4.99	38.54	40.89	74	-33.11	Peak

Middle channel 2437 MHz

Frequency (MHz)	Receiver Reading (dBμV)	Azimuth Degrees	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	68.85	120	1	V	29.2	5.68	0	103.73			Fund/Peak
2437	67.06	120	1	V	29.2	5.68	0	101.94			Fund/Ave.
2437	62.72	100	1.2	H	29.2	5.68	0	97.6			Fund/Peak
2437	60.95	100	1.2	H	29.2	5.68	0	95.83			Fund/Ave.
4874	38.15	120	1.2	V	33.4	4.92	38.4	38.07	54	-15.93	Ave.
4874	35.83	37	1	H	33.4	4.92	38.4	35.75	54	-18.25	Ave
4874	41.11	37	1	V	33.4	4.92	38.4	41.03	74	-32.97	Peak
4874	40.87	12	1.2	H	33.4	4.92	38.4	40.79	74	-33.21	Peak

High channel 2462 MHz

Frequency (MHz)	Receiver Reading (dBμV)	Azimuth Degrees	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	64.17	119	1	V	29.2	5.7	0	99.07			Fund/Peak
2462	61.99	119	1	V	29.2	5.7	0	96.89			Fund/Ave.
2462	59.06	94	1.3	H	29.2	5.7	0	93.96			Fund/Peak
2462	56.71	94	1.3	H	29.2	5.7	0	91.61			Fund/Ave.
4924	40.29	202	1.46	V	33.6	4.92	38.4	40.41	54	-13.59	Ave.
4924	35.27	304	1.33	H	33.6	4.92	38.4	35.39	54	-18.61	Ave
4924	45.24	202	1.46	V	33.6	4.92	38.4	45.36	74	-28.64	Peak
4924	44.84	304	1.33	H	33.6	4.92	38.4	44.96	74	-29.04	Peak

Restricted Band Edge (Near Band Edge): Low channel

Frequency (MHz)	Receiver Reading (dBμV)	Azimuth Degrees	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
2390.55	40.87	200	1.2	V	29	3.68	39.02	34.53	54	-19.47	Ave
2389.42	38.14	265	1.4	H	29	3.68	39.02	31.8	54	-22.2	Ave
2390.55	43.25	200	1.2	V	29	3.68	39.02	36.91	74	-37.09	Peak
2389.42	42.56	265	1.4	H	29	3.68	39.02	36.22	74	-37.78	Peak

Restricted Band Edge (Near Band Edge): High channel

Frequency (MHz)	Receiver Reading (dBμV)	Azimuth Degrees	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
2488.05	40.97	174	1.3	V	29.2	3.72	39.25	34.64	54	-19.36	Ave
2488.8	38.77	202	1.1	H	29.2	3.72	39.25	32.44	54	-21.56	Ave
2488.8	42.61	202	1.1	H	29.2	3.72	39.25	36.28	74	-37.72	Peak
2488.05	42.55	174	1.3	V	29.2	3.72	39.25	36.22	74	-37.78	Peak

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

7.1 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

7.2 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	2007-06-07
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.

7.3 Environmental Conditions

Temperature:	20 °C
Relative Humidity:	40 %
ATM Pressure:	102.0 kPa

**The testing was performed by Jack Liu on 2008-05-12.*

7.4 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:

WI-FI 802.11a Unwanted Emissions and Receiving Spurious Emission

30-1000 MHz:

Mode: Receiving			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Range (MHz)
-15.79	519.984	Vertical	30 MHz to 1000 MHz

Above 1GHz:

Mode: Receiving			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Channel, Range
-14.08	8538.794	Horizontal	1GHz – 40GHz

WI-FI 802.11b Unwanted Emissions and Receiving Spurious Emission**30-1000 MHz:**

Mode: Receiving			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Range (MHz)
-14.17	421.202	Vertical	30 MHz to 1000 MHz

Above 1GHz:

Mode: Receiving			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Channel, Range
-14.92	6933.981	Horizontal	1GHz – 25GHz

WI-FI 802.11g Unwanted Emissions and Receiving Spurious Emission**30-1000 MHz:**

Mode: Receiving			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Range (MHz)
-11.33	421.215	Vertical	30 MHz to 1000 MHz

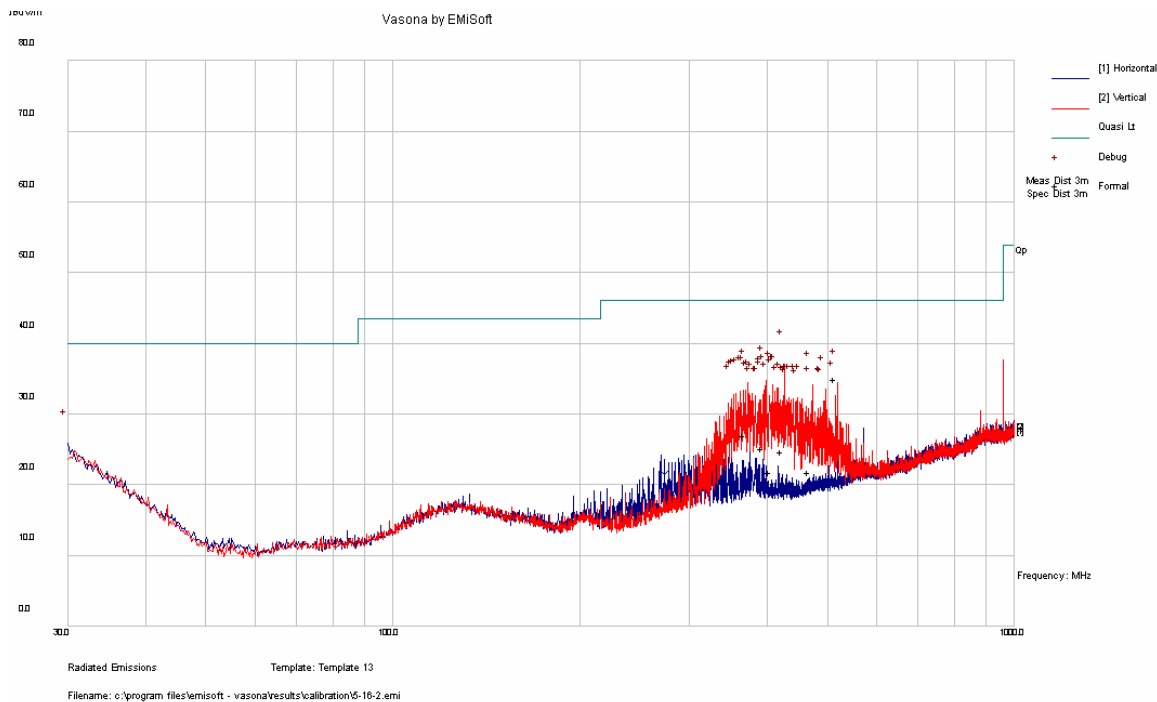
Above 1GHz:

Mode: Receiving			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Channel, Range
-19.25	1120.03	Vertical	1GHz – 25GHz

7.5 Radiated Emissions Test plot & data:

WI-FI 802.11a

30 MHz -1GHz

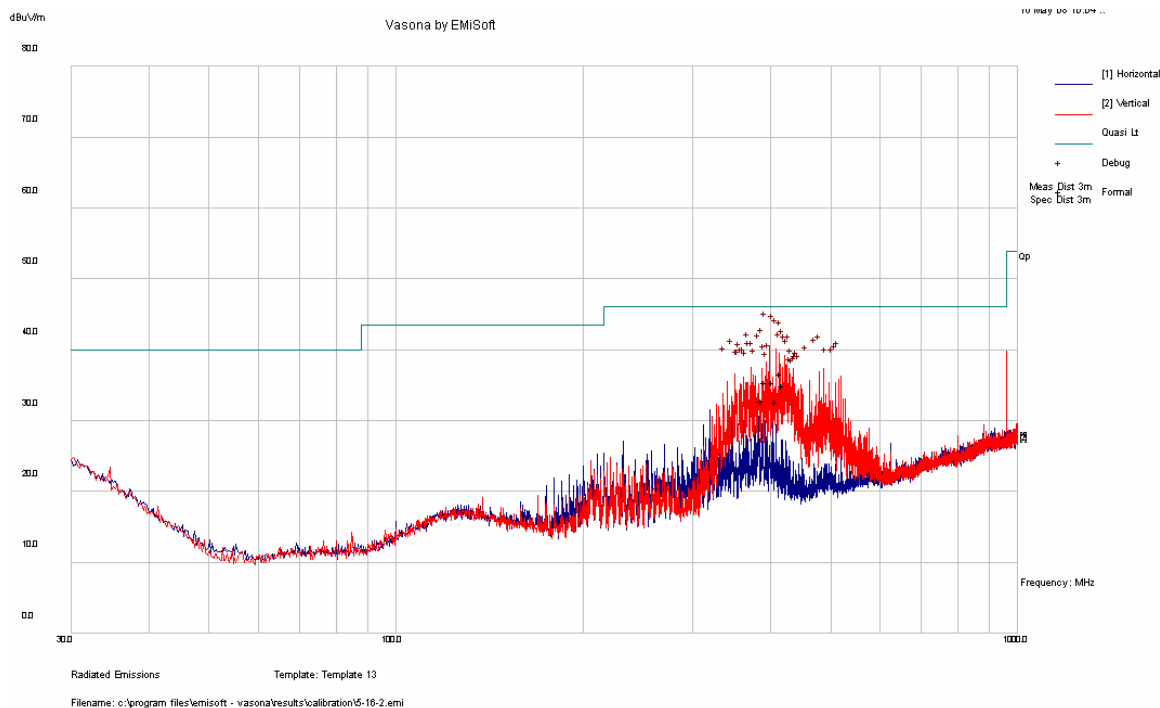


Frequency (MHz)	Quasi-Peak (dBμV/m)	Antenna Height (cm)	Correction Factor (dB)	Ant. Polarity (H/V)	Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)
519.984	30.21	95	-12.3	V	5	46	-15.79
371.813	22.22	146	-13.48	V	321	46	-23.78
397.797	20.43	98	-13.5	V	119	46	-25.57
426.715	19.96	116	-13.06	V	329	46	-26.04
473.21	17.09	161	-12.57	V	78	46	-28.91
408.222	17.07	246	-13.34	V	54	46	-28.93

WI-FI 802.11a, Measured at 3 meters, 1 GHz – 40 GHz

Receiving Mode (Middle Channel)

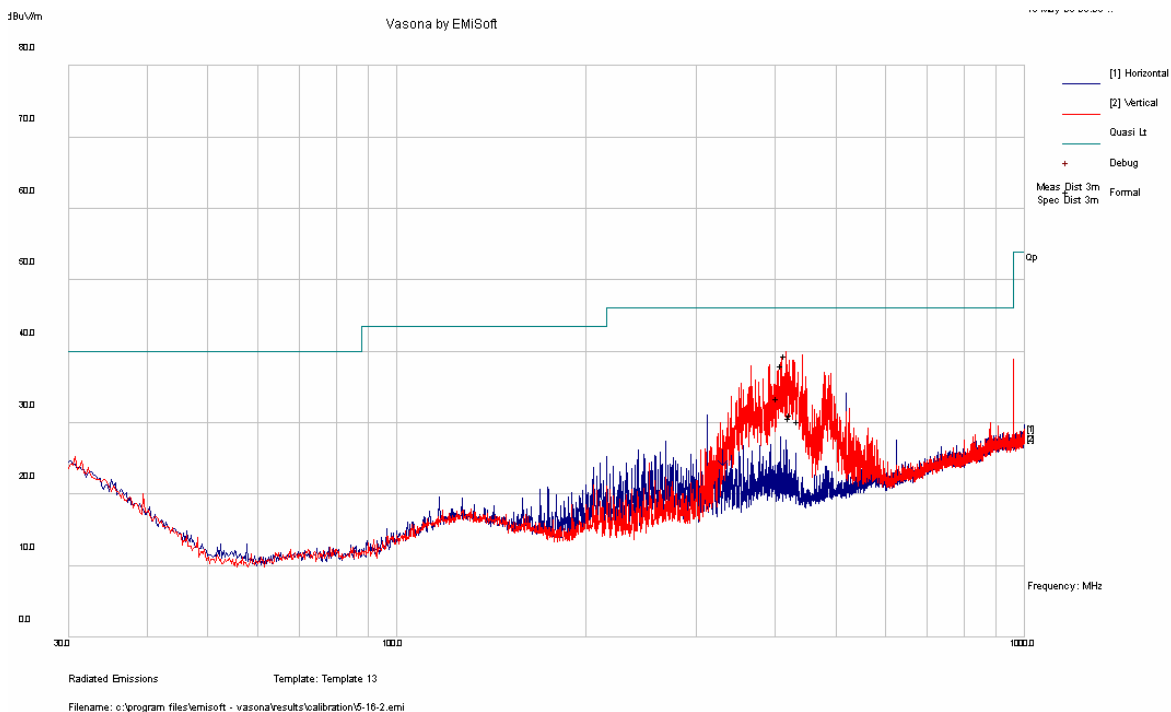
Frequency (MHz)	Receiver Reading (dBμV)	Azimuth Degrees	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Comments
8538.794	30.31	192	1.67	H	38.1	7.12	35.61	39.92	54	-14.08	Ave
8538.794	39.67	192	1.67	H	38.1	7.12	35.61	49.28	74	-24.72	Peak

WI-FI 802.11b**30 MHz -1GHz**

Frequency (MHz)	Quasi-Peak (dB μ V/m)	Antenna Height (cm)	Correction Factor (dB)	Ant. Polarity (H/V)	Azimuth (degrees)	Limit (dB μ V/m)	Margin (dB)
421.202	31.83	117	-13.12	V	155	46	-14.17
408.204	30.63	105	-13.34	V	349	46	-15.37
397.818	30.59	111	-13.5	V	9	46	-15.41
424.419	30.17	102	-13.07	V	295	46	-15.83
393.29	28.12	104	-13.45	V	305	46	-17.88
413.727	27.87	133	-13.24	V	314	46	-18.13

WI-FI 802.11b, Measured at 3 meters, 1 GHz – 25 GHz**Receiving Mode (Middle Channel)**

Frequency (MHz)	Receiver Reading (dB μ V)	Azimuth Degrees	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Comments
6933.981	32.1	223	1.83	H	37.4	6.18	36.6	39.08	54	-14.92	Ave
3397.694	35.14	80	1.09	H	30.3	4.73	40.16	30.01	54	-23.99	Ave
6933.981	39.59	223	1.83	H	37.4	6.18	36.6	46.57	74	-27.43	Peak
3397.694	44.55	80	1.09	H	30.3	4.73	40.16	39.42	74	-34.58	Peak

WI-FI 802.11g**30 MHz -1GHz**

Frequency (MHz)	Quasi-Peak (dBμV/m)	Antenna Height (cm)	Correction Factor (dB)	Ant. Polarity (H/V)	Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)
421.215	34.67	98	-13.12	V	310	46	-11.33
416.034	33.32	99	-13.2	V	5	46	-12.68
409.517	28.74	162	-13.32	V	37	46	-17.26
429.006	26.36	203	-13.06	V	78	46	-19.64
426.728	25.97	148	-13.06	V	43	46	-20.03
442.012	25.46	268	-13.06	V	53	46	-20.54

WI-FI 802.11g, Measured at 3 meters, 1 GHz – 25 GHz**Receiving Mode (Middle Channel)**

Frequency (MHz)	Receiver Reading (dBμV)	Azimuth Degrees	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
1120.03	42.75	199	1.07	V	24.5	1.9	34.4	34.75	54	-19.25	Ave
1279.986	40.66	156	1.45	V	24.5	2.3	35.2	32.26	54	-21.74	Ave
1120.03	43.13	199	1.07	V	24.5	1.9	34.4	35.13	74	-38.87	Peak
1279.986	42.91	156	1.45	V	24.5	2.3	35.2	34.75	74	-39.49	Peak