FCC PART 15 SUBPART C
IC RSS-210, ISSUE 8, DEC 2010

TEST AND MEASUREMENT REPORT

For

Fortinet, Inc.

1090 Kifer Road,

Sunnyvale, CA 94086, USA

FCC ID: TVE-0600101
IC: 7280B-0600101

Report Type:	**Product Type:**
CIIPC Report	802.11 a/b/g/n Module

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Report Number: R1204233-247

Report Date: 2012-05-25

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1204233-247	CIIPC Report	2012-05-25

1 General Description

1.1 Product Description for Equipment Under Test (EUT)

This test and measurement report was prepared on behalf of *Fortinet, Inc.* and their product, *model: WPEA-111N/W, FCC ID: TVE-0600101, IC: 7280B-0600101* or the "EUT" as referred to this report. The EUT is 802.11a/b/g/n Wi-Fi module.

1.2 Mechanical Description of EUT

The EUT measures approximately 30 mm **(L)** x 30 mm **(W)** x 3 mm **(H)** and weighs approximately 3.5 g.

The data gathered are from a typical production sample provided by the manufacturer with serial 10535K1001055

1.3 Objective

This report is prepared on behalf of *Fortinet, 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 class II permissive change report is based on the use of a higher gain antenna compare to the original grant.

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

1.4 Related Submittal(s)/Grant(s)

FCC ID: TVE-0600101, IC: 7280B-0600101.

1.5 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.

1.6 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 CISPR16-4-2:2003, 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.

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 C63.4-2003.

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

2.2 EUT Exercise Software

The software is provided by the customer. The EUT exercise program used during radiated testing was designed to exercise the system components.

The EUT had been tested with the following data rate settings (worst case):

Radio Mode	Bandwidth (MHz)	Frequency/Data rate		
		Low CH (MHz/Mbps)	Mid CH (MHz/Mbps)	High CH (MHz)
802.11b	20	2412/1	2437/1	2462/1
802.11g	20	2412/6	2437/6	2462/6
802.11n HT20	20	2412/MCS0	2437/ MCS0	2462/MCS0
802.11n HT40	40	2422/MCS0	2437/MCS0	2452/MCS0

2.3 Special Accessories

N/A.

2.4 Equipment Modifications

No modifications were made to the EUT.

2.5 Local Support Equipment

Manufacturer	Description	Model No.	Serial No.
Lenovo	Laptop	Thinkpad T61	L3-B1515
-	Express Card Adapter	-	-

2.6 Host Internal Configuration and Details

Manufacturers	Descriptions	Models	Serial Numbers
-	Supporting PCB	-	PE3B Ver. 1.2
Fortinet, Inc.	WLAN module	WPEA-111N/W	10535K1001055

3 Summary of Test Results

FCC & IC Rules	Description of Test	Results
FCC §15.247(i), §2.1091 IC RSS-102	RF Exposure	Compliant
FCC §15.203 IC RSS-Gen §7.1.2	Antenna Requirement	Compliant
FCC §15.207(a) IC RSS-Gen §7.2.4	Conducted Emissions	N/A[1]
FCC §15.247(d) IC RSS-210 §A8.5	Spurious Emissions at Antenna Port	N/A[1]
FCC §15.209, §15.247 IC RSS-210 §2.2	Radiated Spurious Emissions including Restricted Band	Compliant
FCC §15.247(a)(2) IC RSS-210 §A8.2	6 dB Bandwidth	N/A[1]
FCC §15.247(b)(3) IC RSS-210 §A8.4	Maximum Peak Output Power	N/A[1]
FCC §15.247(d) IC RSS-210 §A8.5	100 kHz Bandwidth of Frequency Band Edge	N/A[1]
FCC §15.247(e) IC RSS-210 §A8.2(b)	Power Spectral Density	N/A[1]
IC RSS-210 §2.3 & RSS-Gen §6	Receiver Spurious Emission	Compliant

Note: N/A[1], Please refer to original FCC ID: TVE-0600101 and IC: 7280B-0600101.

4 FCC §15.247 (i), §2.1091 & IC RSS-102 - RF Exposure

4.1 Applicable Standard

According to FCC §15.247(i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minutes)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	* (100)	30
1.34-30	824/f	2.19/f	* ($180/f^2$)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density

Before equipment certification is granted, the procedure of IC RSS-102 must be followed concerning the exposure of humans to RF fields.

According to IC RSS-102 Issue 2 section 4.1, RF limits used for general public will be applied to the EUT.

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m^2)	Time Averaging (min)
0.003 - 1	280	2.19	-	6
1 - 10	280 / f	2.19 / f	-	6
10 - 30	28	2.19 / f	-	6
30 – 300	28	0.073	2*	6
300 – 1 500	$1.585\ f^{0.5}$	$0.0042\ f^{0.5}$	f / 150	6
1 500 – 15 000	61.4	0.163	10	6
15 000 – 150 000	61.4	0.163	10	$616000 / f^{1.2}$
150 000- 300 000	$0.158\ f^{0.5}$	$4.21 \times 10\ -4\ f^{0.5}$	$6.67 \times 10^{-5}\ f$	$616000 / f^{1.2}$

Note: *f* is frequency in MHz
* = Power density limit is applicable at frequencies greater than 100 MHz

4.2 MPE Prediction

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

$$S = PG/4 \quad R^2$$

Where: S = power density
P = power input to antenna
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna

4.3 MPE Results

2.4 GHz band:

Maximum peak output power at antenna input terminal (dBm):	29.58
Maximum peak output power at antenna input terminal (mW):	907.21
Prediction distance (cm):	20
Prediction frequency (MHz):	2437
Maximum Antenna Gain, typical (dBi):	3
Maximum Antenna Gain (numeric):	2.0
Power density of prediction frequency at 20.0 cm (mW/cm^2):	0.361
Power density of prediction frequency at 20.0 cm (W/m^2):	3.61
MPE limit for uncontrolled exposure at prediction frequency (mW/cm^2):	1.0
MPE limit for uncontrolled exposure at prediction frequency (W/m^2):	10

5.8 GHz band:

Maximum peak output power at antenna input terminal (dBm):	29.85
Maximum peak output power at antenna input terminal (mW):	965.15
Prediction distance (cm):	20
Prediction frequency (MHz):	5755
Maximum Antenna Gain, typical (dBi):	6
Maximum Antenna Gain (numeric):	3.98
Power density of prediction frequency at 20.0 cm (mW/cm^2):	0.764
Power density of prediction frequency at 20.0 cm (W/m^2):	7.64
MPE limit for uncontrolled exposure at prediction frequency (mW/cm^2):	1.0
MPE limit for uncontrolled exposure at prediction frequency (W/m^2):	10

The device meet FCC/IC MPE limits at 20 cm distance for uncontrolled exposure environment.

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

5.1 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.

According to IC RSS-Gen §7.1.2: 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.

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 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 RSS-210 Annex 8 (Frequency Hopping and Digital Modulation Systems Operating in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz Bands) or RSS-210 Annex 9 (Local Area Network Devices), the total antenna gain shall be added to the measured RF output power before using the specified power limits. For devices subject to RSS-210 Annex 8 or Annex 9, the antenna gain shall not be added.

5.2 Antenna Connector Construction

The EUT has two antennas for 802.11 a/b/g/n with 3 dBi max antenna gain for the 2.4 GHz band and 6 dBi for the 5 GHz band. This is 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. Please refer to the EUT photos. The EUT supports MIMO.

6 FCC §15.205, §15.209, §15.247(d) & IC RSS-210 §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) and RSS-210: 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).

As per IC RSS-210 §A 8.5. In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced 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 section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 2 and 3 is not required.

6.2 Test Setup

The radiated emissions tests were performed in the 5-meter Chamber, using the setup in accordance with ANSI C63.4-2003. The specification limits were in accordance with FCC 15 Subpart C and IC RSS-210.

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 placed on a turntable, 0.8 meter above ground plane. The turntable shall be rotated 360 degrees to determine the highest emission with the antenna in both horizontal and vertical polarizations.

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 indicated Amplitude (Ai) reading. The basic equation is as follows:

CA = Ai + AF + CL + Atten – Ga

For example, a corrected amplitude of 40.3 dBuV/m = Indicated Reading (32.5 dBuV) + Antenna Factor (+23.5dB) + Cable Loss (3.7 dB) + Attenuator (10 dB) - Amplifier Gain (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 = Corrected Amplitude - Limit

6.5 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100338	2011-09-14
Sunol Science Corp	Combination Antenna	JB3	A020106-2	2011-08-10
Hewlett Packard	Pre-amplifier	8447D	2944A06639	2011-06-09
Sunol Science Corp	System Controller	SC99V	122303-1	N/R
Agilent	Spectrum Analyzer	E4440A	MY44303352	2011-05-10
EMCO	Horn antenna	3115	9511-4627	2011-10-03
Mini-Circuits	Pre-amplifier	ZVA-183-S	667400960	2011-08-10

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

6.6 Test Environmental Conditions

Temperature:	20-23 °C
Relative Humidity:	38-45%
ATM Pressure:	101.1-101.4kPa

The testing was performed by Lionel Lara from 2012-05-08 to 2012-05-11 at 5 meter chamber 3.

6.7 Summary of Test Results

According to the data hereinafter, the EUT complied with the FCC Title 47, Part 15C and IC RSS-210 standard's radiated emissions limits, and had a worst case margin of:

30-1000 MHz:

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Channel, Range**
-5.08	166.9198	Horizontal	Worst Channel, 2.4GHz n HT40, 30-1000 MHz

Above 1 GHz:

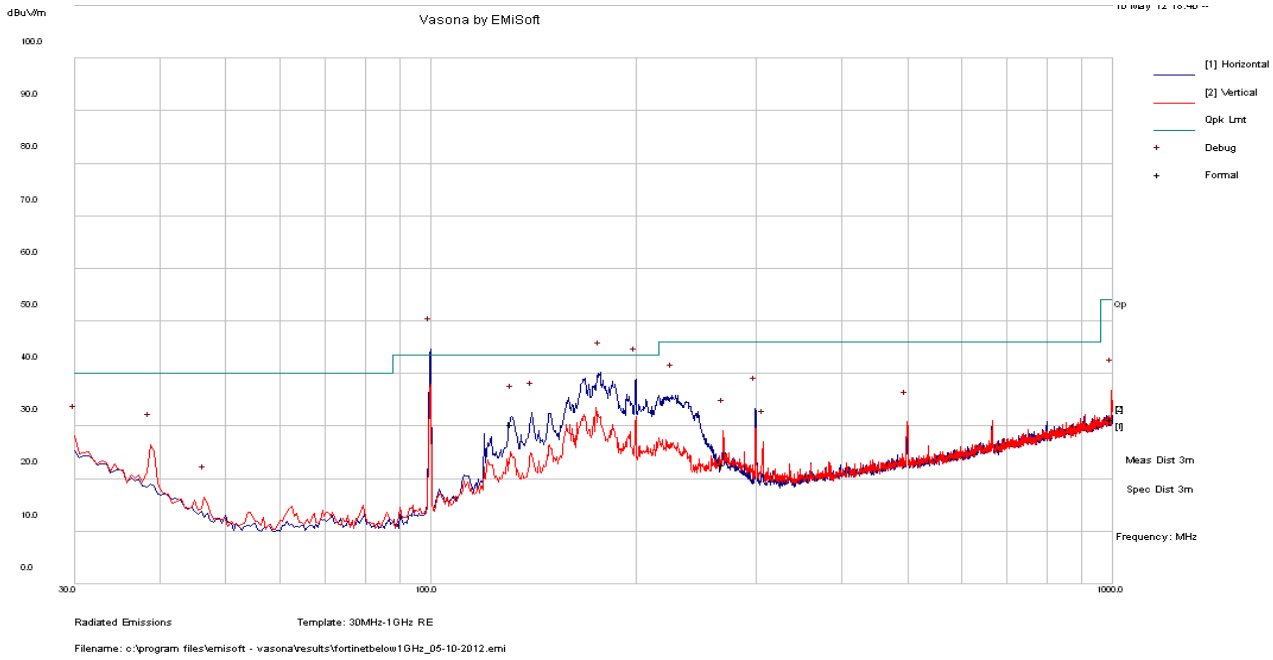
Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Channel, Range**
-0.16	2484	Vertical	High Channel, 2.4GHz n HT40, 1GHz – 25GHz

Please refer to the following tables for specific test result details

6.8 Radiated Emissions Test Data and Plots

1) 30 MHz – 1 GHz, Measured at 3 meters

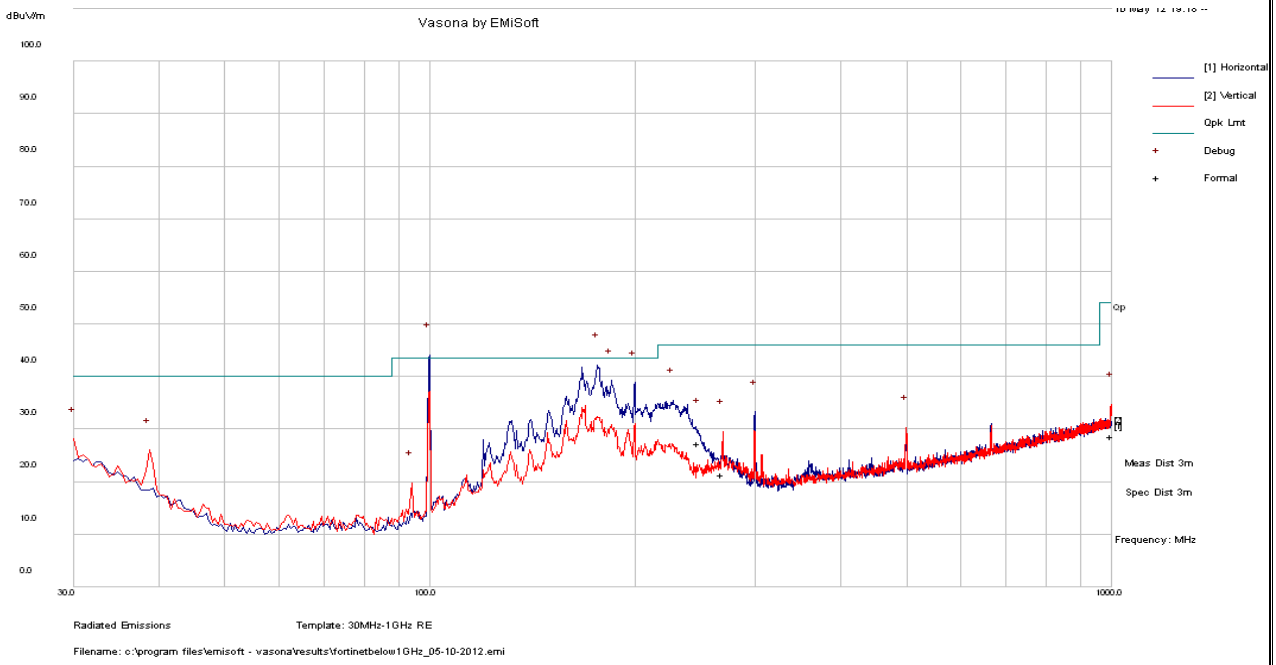
2.4 GHz, 802.11b Mode, Worst channel



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	FCC/IC Limit (dBµV/m)	Margin (dB)
131.4385	30.28	301	H	360	43.5	-13.22
996.2655	31.38	99	V	188	54	-22.62
268.012	22.8	198	V	198	46	-23.20

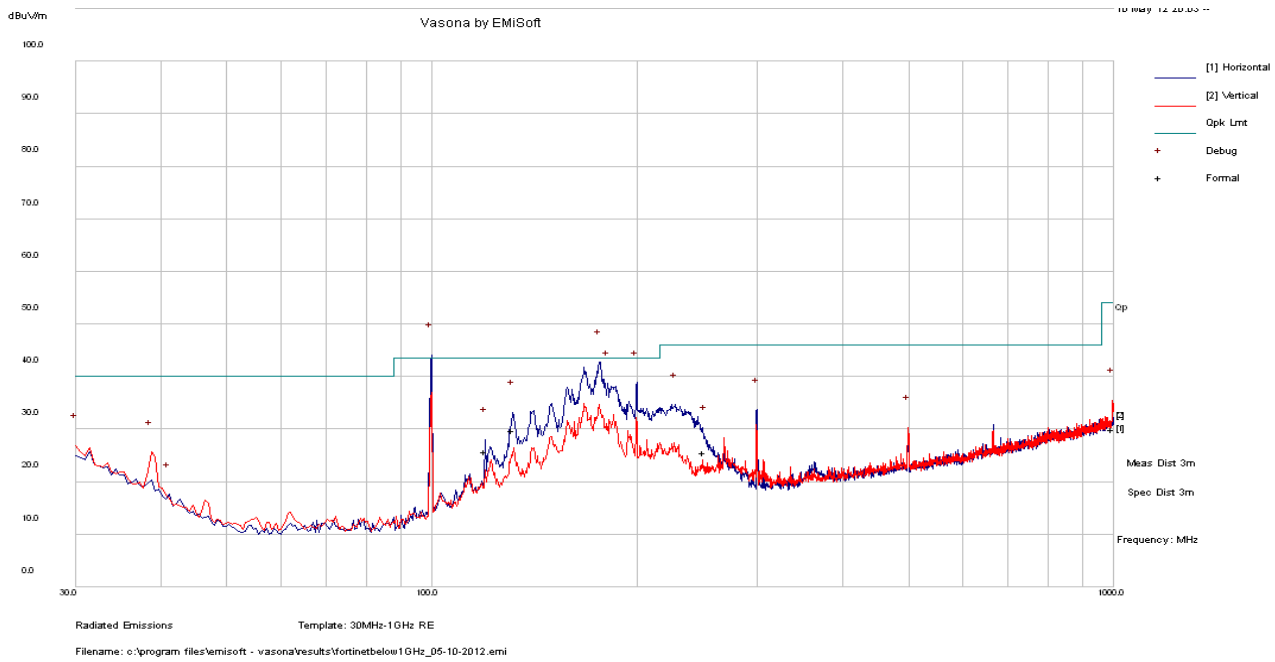
2.4 GHz, 802.11g Mode, Worst channel



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	FCC/IC Limit (dBµV/m)	Margin (dB)
247.3583	27.23	101	H	318	46	-18.77
268.4975	21.41	265	V	152	46	-24.59
998.6	28.68	100	V	170	54	-25.32

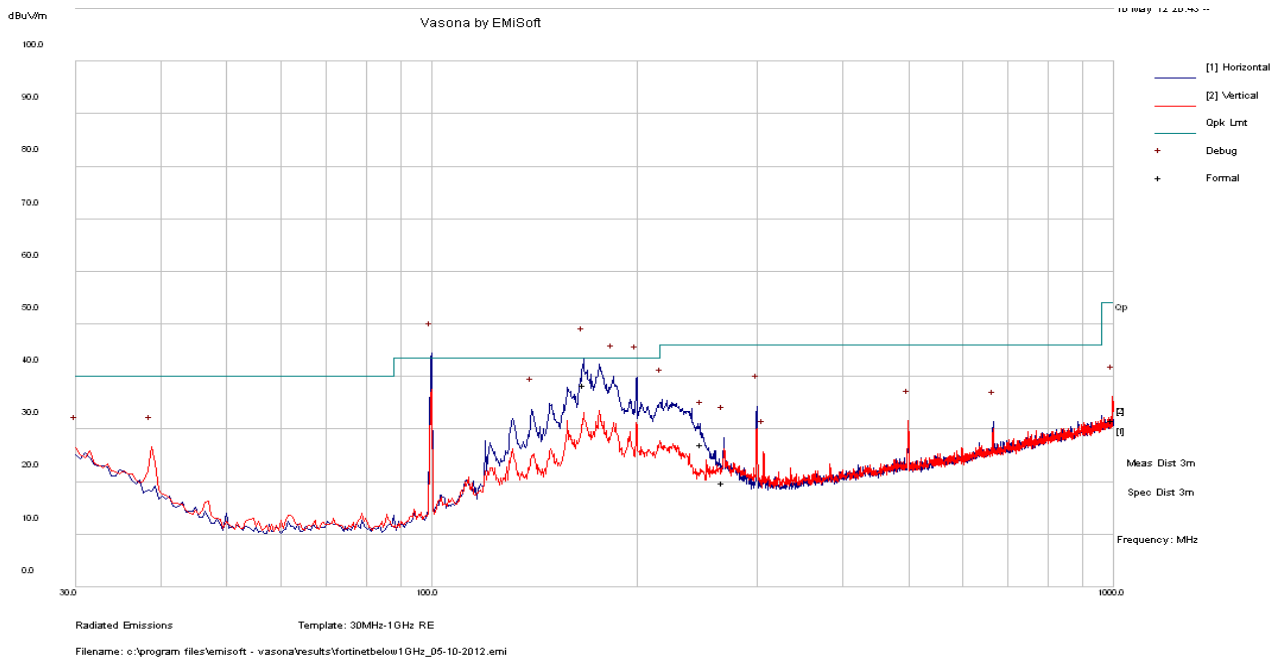
2.4 GHz, 802.11n HT20 Mode, Worst channel



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	FCC/IC Limit (dBµV/m)	Margin (dB)
131.404	29.83	280	H	3	43.5	-13.67
119.9715	25.74	287	H	207	43.5	-17.76
251.0545	25.5	148	H	360	46	-20.50
996.1595	30	108	V	195	54	-24.00

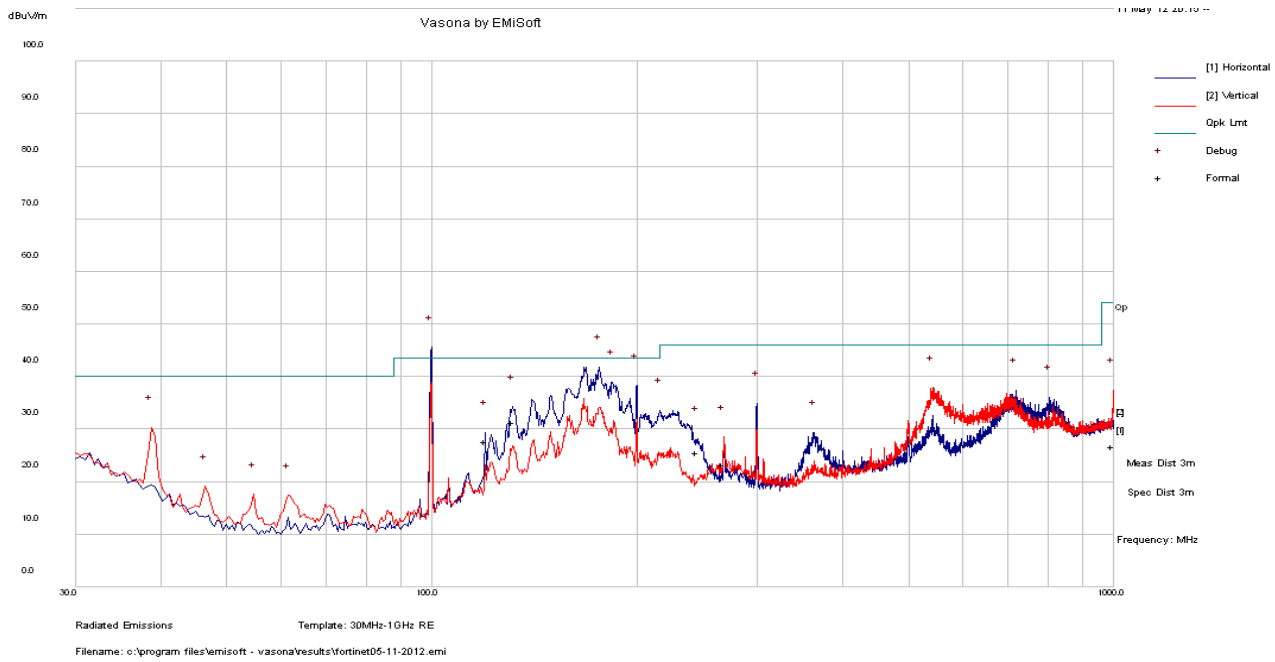
2.4 GHz, 802.11n HT40 Mode, Worst channel



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	FCC/IC Limit (dBµV/m)	Margin (dB)
166.9198	38.42	224	H	25	43.5	-5.08
248.3033	27.03	126	H	12	46	-18.97
996.1003	31.75	102	V	191	54	-22.25
267.7135	19.81	174	H	318	46	-26.19

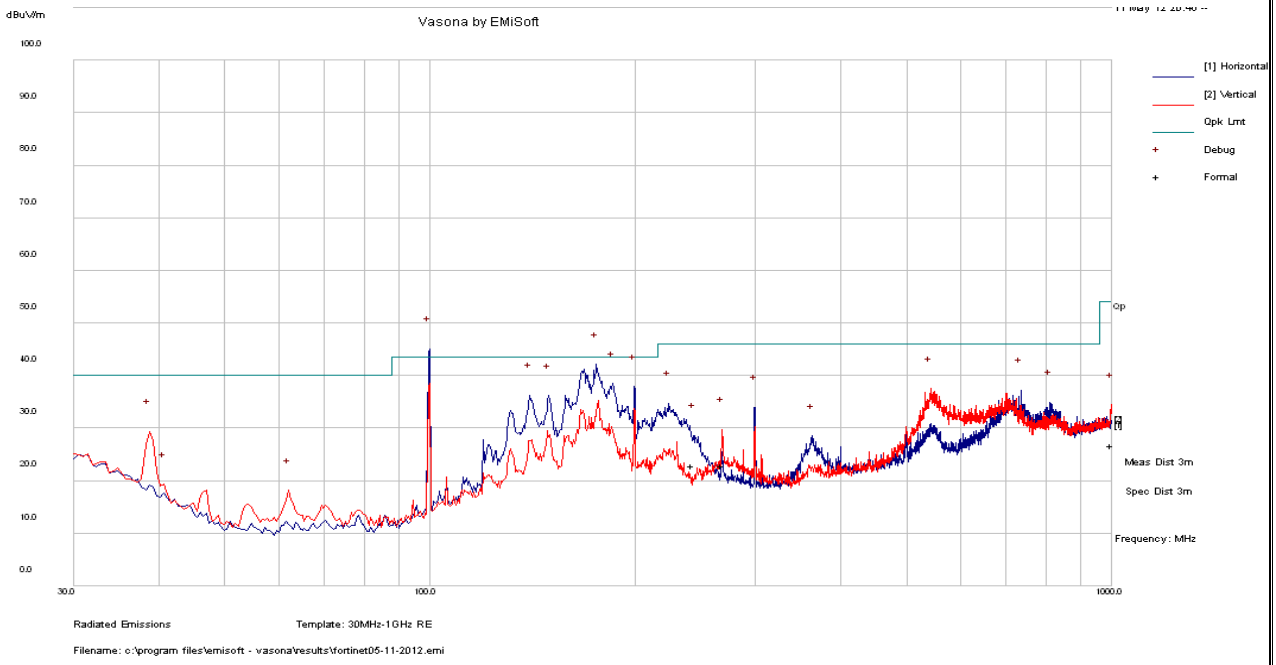
5.8 GHz 802.11a Mode, Worst channel



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	FCC/IC Limit (dBµV/m)	Margin (dB)
131.334	31.33	146	H	16	43.5	-12.17
119.9738	27.74	255	H	188	43.5	-15.76
244.6285	25.52	99	H	0	46	-20.48
267.653	23.3	198	V	179	46	-22.70
997.1555	26.69	160	V	179	54	-27.31

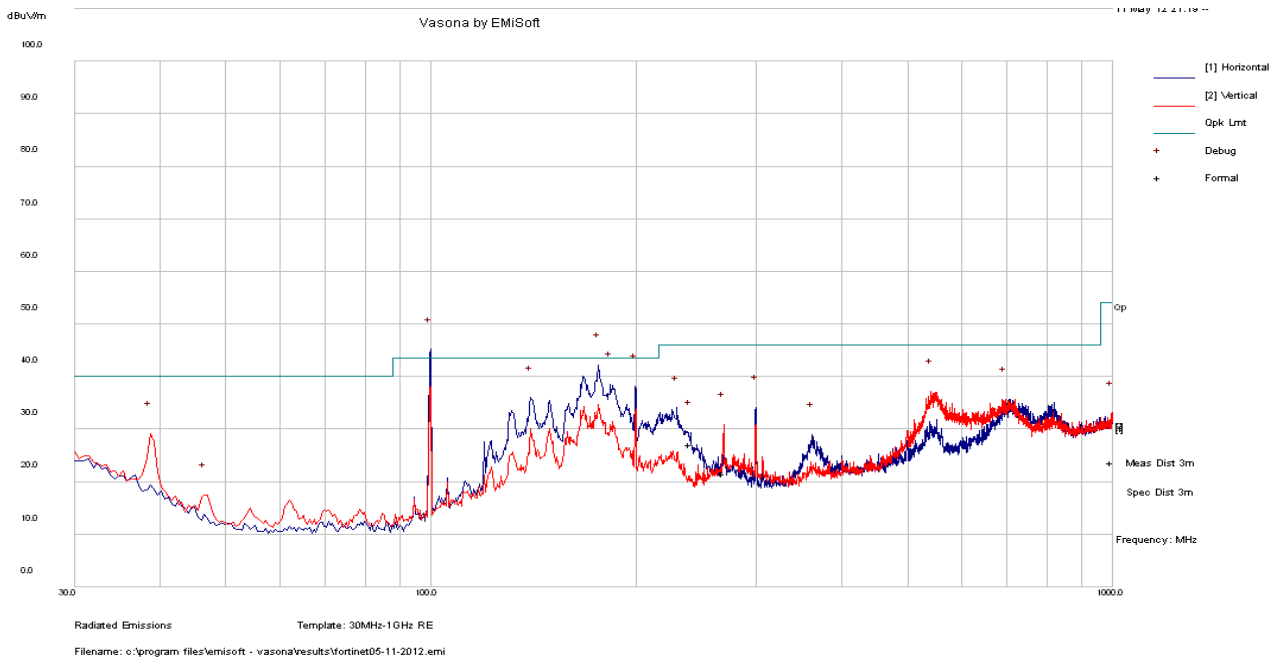
5.8 GHz, 802.11n HT20 Mode, Worst channel



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	FCC/IC Limit (dBµV/m)	Margin (dB)
268.013	22.98	186	V	194	46	-23.02
243.186	22.94	99	H	19	46	-23.06
999.03	26.75	149	V	188	54	-27.25

5.8 GHz, 802.11n HT40 Mode, Worst channel



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	FCC/IC Limit (dBµV/m)	Margin (dB)
239.9935	27.04	105	H	219	46	-18.96
268.5185	21.51	137	V	177	46	-24.49
997.1703	23.69	154	V	195	54	-30.31

2) 1–25 GHz, Measured at 3 meters

2.4 GHz 802.11b mode

Frequency (MHz)	S.A. Reading (dBµV)	Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2412 MHz, measured at 3 meters											
4824	39.66	143	100	H	32.63	4.56	27.77	49.08	74	-24.92	Peak
4824	46.87	41	100	V	32.6	4.56	27.77	56.26	74	-17.74	Peak
4824	30.39	143	100	H	32.63	4.56	27.77	39.81	54	-14.19	Ave
4824	43.84	41	100	V	32.6	4.56	27.77	53.23	54	-0.77	Ave
Middle Channel 2437 MHz, measured at 3 meters											
4874	39.88	244	100	H	32.8	4.54	27.81	49.41	74	-24.59	Peak
4874	46.21	0	100	V	32.73	4.54	27.81	55.67	74	-18.33	Peak
4874	30.22	244	100	H	32.8	4.54	27.81	39.75	54	-14.25	Ave
4874	43.24	0	100	V	32.73	4.54	27.81	52.7	54	-1.30	Ave
High Channel 2462 MHz, measured at 3 meters											
4924	39.15	156	100	H	32.8	4.54	27.81	48.68	74	-25.32	Peak
4924	45.53	4	100	V	32.73	4.54	27.81	54.99	74	-19.01	Peak
4924	30.14	156	100	H	32.8	4.54	27.81	39.67	54	-14.33	Ave
4924	42.91	4	100	V	32.73	4.54	27.81	52.37	54	-1.63	Ave

2.4 GHz 802.11g mode

Frequency (MHz)	S.A. Reading (dBµV)	Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2412 MHz, measured at 3 meters											
4824	45.54	0	100	V	32.6	4.56	27.77	54.93	74	-19.07	Peak
4824	31.85	0	100	V	32.6	4.56	27.77	41.24	54	-12.76	Ave
Middle Channel 2437 MHz, measured at 3 meters											
4874	39.91	0	100	H	32.8	4.54	27.81	49.44	74	-24.56	Peak
4874	45.08	1	100	V	32.73	4.54	27.81	54.54	74	-19.46	Peak
4874	26.08	0	100	H	32.8	4.54	27.81	35.61	54	-18.39	Ave
4874	31.5	1	100	V	32.73	4.54	27.81	40.96	54	-13.04	Ave
High Channel 2462 MHz, measured at 3 meters											
4924	40.59	0	100	V	32.73	4.54	27.81	50.05	74	-23.95	Peak
4924	26.32	0	100	V	32.73	4.54	27.81	35.78	54	-18.22	Ave

- Note: *All other spurious emissions are 20 dB below the limit or are on the noise floor level*

2.4 GHz 802.11n HT20 mode

Frequency (MHz)	S.A. Reading (dBµV)	Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2412 MHz, measured at 3 meters											
4824	44.66	0	100	V	32.6	4.56	27.77	54.05	74	-19.95	Peak
4824	29.32	0	100	V	32.6	4.56	27.77	38.71	54	-15.29	Ave
Middle Channel 2437 MHz, measured at 3 meters											
4874	39.64	1	101	H	32.8	4.54	27.81	49.17	74	-24.83	Peak
4874	44.83	0	100	V	32.73	4.54	27.81	54.29	74	-19.71	Peak
4874	26.37	1	101	H	32.8	4.54	27.81	35.9	54	-18.10	Ave
4874	30.55	0	100	V	32.73	4.54	27.81	40.01	54	-13.99	Ave
High Channel 2462 MHz, measured at 3 meters											
4924	39.24	0	100	V	32.73	4.54	27.81	48.7	74	-25.30	Peak
4924	27.2	0	100	V	32.73	4.54	27.81	36.66	54	-17.34	Ave

- Note: *All other spurious emissions are 20 dB below the limit or are on the noise floor level*

2.4 GHz 802.11n HT40 mode

Frequency (MHz)	S.A. Reading (dBµV)	Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2422 MHz, measured at 3 meters											
4844	38.87	0	100	V	32.6	4.56	27.77	48.26	74	-25.74	Peak
4844	26.91	0	100	V	32.6	4.56	27.77	36.3	54	-17.70	Ave
Middle Channel 2437 MHz, measured at 3 meters											
4874	40.97	0	100	V	32.73	4.54	27.81	50.43	74	-23.57	Peak
4874	29.37	0	100	V	32.73	4.54	27.81	38.83	54	-15.17	Ave
High Channel 2452 MHz, measured at 3 meters											
-[1]	-	-	-	-	-	-	-	-	-	-	-

- Note: [1]*All spurious emissions are 20 dB below the limit or are on the noise floor level*

5.8 GHz 802.11a mode

Frequency (MHz)	S.A. Reading (dBµV)	Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5745 MHz, measured at 3 meters											
2498	46.15	45	105	H	28.42	3.3	27.61	50.26	74	-23.74	Peak
2498	44.06	110	100	V	28.27	3.3	27.61	48.02	74	-25.98	Peak
2498	27.25	45	105	H	28.42	3.3	27.61	31.36	54	-22.64	Ave
2498	26.44	110	100	V	28.27	3.3	27.61	30.4	54	-23.60	Ave
5220	41.39	312	100	H	33.55	4.55	27.5	51.99	74	-22.01	Peak
5220	51.82	353	100	V	33.42	4.55	27.5	62.29	74	-11.71	Peak
5220	26.95	312	100	H	33.55	4.55	27.5	37.55	54	-16.45	Ave
5220	39.03	353	100	V	33.42	4.55	27.5	49.5	54	-4.50	Ave
Middle Channel 5785 MHz, measured at 3 meters											
2500	45.56	48	105	H	28.42	3.3	27.61	49.67	74	-24.33	Peak
2500	43.79	112	100	V	28.27	3.3	27.61	47.75	74	-26.25	Peak
2500	27.01	48	105	H	28.42	3.3	27.61	31.12	54	-22.88	Ave
2500	26.12	112	100	V	28.27	3.3	27.61	30.08	54	-23.92	Ave
5220	40.49	309	100	H	33.55	4.55	27.5	51.09	74	-22.91	Peak
5220	52.63	352	100	V	33.42	4.55	27.5	63.1	74	-10.90	Peak
5220	26.19	309	100	H	33.55	4.55	27.5	36.79	54	-17.21	Ave
5220	39.83	352	100	V	33.42	4.55	27.5	50.3	54	-3.70	Ave
High Channel 5825 MHz, measured at 3 meters											
2498	44.06	44	105	H	28.42	3.3	27.61	48.17	74	-25.83	Peak
2498	43.41	114	100	V	28.27	3.3	27.61	47.37	74	-26.63	Peak
2498	26.58	44	105	H	28.42	3.3	27.61	30.69	54	-23.31	Ave
2498	26.43	114	100	V	28.27	3.3	27.61	30.39	54	-23.61	Ave
5220	40.21	309	103	H	33.55	4.55	27.5	50.81	74	-23.19	Peak
5220	51.88	353	100	V	33.42	4.55	27.5	62.35	74	-11.65	Peak
5220	26.01	309	103	H	33.55	4.55	27.5	36.61	54	-17.39	Ave
5220	38.98	353	100	V	33.42	4.55	27.5	49.45	54	-4.55	Ave

5.8 GHz 802.11n HT20 mode

Frequency (MHz)	S.A. Reading (dBµV)	Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5745 MHz, measured at 3 meters											
2499	46.13	45	105	H	28.42	3.3	27.61	50.24	74	-23.76	Peak
2499	43.05	112	100	V	28.27	3.3	27.61	47.01	74	-26.99	Peak
2499	27.52	45	105	H	28.42	3.3	27.61	31.63	54	-22.37	Ave
2499	25.82	112	100	V	28.27	3.3	27.61	29.78	54	-24.22	Ave
5220	40.56	308	100	H	33.55	4.55	27.5	51.16	74	-22.84	Peak
5220	52.09	356	101	V	33.42	4.55	27.5	62.56	74	-11.44	Peak
5220	26.26	308	100	H	33.55	4.55	27.5	36.86	54	-17.14	Ave
5220	39.23	356	101	V	33.42	4.55	27.5	49.7	54	-4.30	Ave
Middle Channel 5785 MHz, measured at 3 meters											
2500	45.41	45	106	H	28.42	3.3	27.61	49.52	74	-24.48	Peak
2500	43.86	110	100	V	28.27	3.3	27.61	47.82	74	-26.18	Peak
2500	26.88	45	106	H	28.42	3.3	27.61	30.99	54	-23.01	Ave
2500	26.19	110	100	V	28.27	3.3	27.61	30.15	54	-23.85	Ave
5220	40.16	310	100	H	33.55	4.55	27.5	50.76	74	-23.24	Peak
5220	52.33	352	103	V	33.42	4.55	27.5	62.8	74	-11.20	Peak
5220	25.92	310	100	H	33.55	4.55	27.5	36.52	54	-17.48	Ave
5220	39.61	352	103	V	33.42	4.55	27.5	50.08	54	-3.92	Ave
High Channel 5825 MHz, measured at 3 meters											
2496	46.22	47	105	H	28.42	3.3	27.61	50.33	74	-23.67	Peak
2496	44.39	109	100	V	28.27	3.3	27.61	48.35	74	-25.65	Peak
2496	28.05	47	105	H	28.42	3.3	27.61	32.16	54	-21.84	Ave
2496	26.89	109	100	V	28.27	3.3	27.61	30.85	54	-23.15	Ave
5220	40.88	309	102	H	33.55	4.55	27.5	51.48	74	-22.52	Peak
5220	52.89	353	100	V	33.42	4.55	27.5	63.36	74	-10.64	Peak
5220	26.46	309	102	H	33.55	4.55	27.5	37.06	54	-16.94	Ave
5220	40.12	353	100	V	33.42	4.55	27.5	50.59	54	-3.41	Ave

5.8 GHz 802.11n HT40 mode

Frequency (MHz)	S.A. Reading (dBµV)	Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5755 MHz, measured at 3 meters											
2496	44.72	45	104	H	28.42	3.3	27.61	48.83	74	-25.17	Peak
2496	43.28	110	100	V	28.27	3.3	27.61	47.24	74	-26.76	Peak
2496	26.85	45	104	H	28.42	3.3	27.61	30.96	54	-23.04	Ave
2496	25.91	110	100	V	28.27	3.3	27.61	29.87	54	-24.13	Ave
5220	40.19	311	100	H	33.55	4.55	27.5	50.79	74	-23.21	Peak
5220	51.99	353	104	V	33.42	4.55	27.5	62.46	74	-11.54	Peak
5220	26.03	311	100	H	33.55	4.55	27.5	36.63	54	-17.37	Ave
5220	39.06	353	104	V	33.42	4.55	27.5	49.53	54	-4.47	Ave
High Channel 5795 MHz, measured at 3 meters											
2497	45.09	45	105	H	28.42	3.3	27.61	49.2	74	-24.8	Peak
2497	43.13	110	100	V	28.27	3.3	27.61	47.09	74	-26.91	Peak
2497	25.94	45	105	H	28.42	3.3	27.61	30.05	54	-23.95	Ave
2497	25.71	110	100	V	28.27	3.3	27.61	29.67	54	-24.33	Ave
5220	39.28	309	100	H	33.55	4.55	27.5	49.88	74	-24.12	Peak
5220	51.67	350	100	V	33.42	4.55	27.5	62.14	74	-11.86	Peak
5220	25.66	309	100	H	33.55	4.55	27.5	36.26	54	-17.74	Ave
5220	39.15	350	100	V	33.42	4.55	27.5	49.62	54	-4.38	Ave

3) Restricted Band Emissions

2.4 GHz 802.11b mode

Frequency (MHz)	S.A. Reading (dBµV)	Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2412 MHz, measured at 3 meters											
2386	28.34	299	100	H	28.16	3.12	0	59.62	74	-14.38	Peak
2386	31.21	71	106	V	28.12	3.12	0	62.45	74	-11.55	Peak
2386	16.08	299	100	H	28.16	3.12	0	47.36	54	-6.64	Ave
2386	20.06	71	106	V	28.12	3.12	0	51.3	54	-2.70	Ave
High Channel 2462 MHz, measured at 3 meters											
2489	28.46	296	104	H	28.42	3.3	0	60.18	74	-13.82	Peak
2488	31.19	73	131	V	28.27	3.3	0	62.76	74	-11.24	Peak
2489	16.13	296	104	H	28.42	3.3	0	47.85	54	-6.15	Ave
2488	20.17	73	131	V	28.27	3.3	0	51.74	54	-2.26	Ave

2.4 GHz 802.11g mode

Frequency (MHz)	S.A. Reading (dBµV)	Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2412 MHz, measured at 3 meters											
2389	27.54	320	102	H	28.16	3.12	0	58.82	74	-15.18	Peak
2390	38.51	71	100	V	28.12	3.12	0	69.75	74	-4.25	Peak
2389	13.34	320	102	H	28.16	3.12	0	44.62	54	-9.38	Ave
2390	20.58	71	100	V	28.12	3.12	0	51.82	54	-2.18	Ave
High Channel 2462 MHz, measured at 3 meters											
2484	28.28	320	100	H	28.42	3.3	0	60	74	-14.00	Peak
2484	40.37	73	132	V	28.27	3.3	0	71.94	74	-2.06	Peak
2484	13.32	320	100	H	28.42	3.3	0	45.04	54	-8.96	Ave
2484	21.63	73	132	V	28.27	3.3	0	53.2	54	-0.80	Ave

2.4 GHz 802.11n HT20 mode

Frequency (MHz)	S.A. Reading (dBµV)	Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2412 MHz, measured at 3 meters											
2390	32.64	286	100	H	28.16	3.12	0	63.92	74	-10.08	Peak
2390	41.48	74	133	V	28.12	3.12	0	72.72	74	-1.28	Peak
2390	15.69	286	100	H	28.16	3.12	0	46.97	54	-7.03	Ave
2390	21.56	74	133	V	28.12	3.12	0	52.8	54	-1.20	Ave
High Channel 2462 MHz, measured at 3 meters											
2484	27.9	249	229	H	28.42	3.3	0	59.62	74	-14.38	Peak
2484	39.33	73	131	V	28.27	3.3	0	70.9	74	-3.10	Peak
2484	13.65	249	229	H	28.42	3.3	0	45.37	54	-8.63	Ave
2484	20.66	73	131	V	28.27	3.3	0	52.23	54	-1.77	Ave

2.4 GHz 802.11n HT40 mode

Frequency (MHz)	S.A. Reading (dBµV)	Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2422 MHz, measured at 3 meters											
2389	26.92	287	100	H	28.16	3.12	0	58.2	74	-15.8	Peak
2390	41.04	74	133	V	28.12	3.12	0	72.28	74	-1.72	Peak
2389	13.09	287	100	H	28.16	3.12	0	44.37	54	-9.63	Ave
2390	22.28	74	133	V	28.12	3.12	0	53.52	54	-0.48	Ave
High Channel 2452 MHz, measured at 3 meters											
2484	29.13	248	229	H	28.42	3.3	0	60.85	74	-13.15	Peak
2484	42.21	73	133	V	28.27	3.3	0	73.78	74	-0.22	Peak
2484	13.74	248	229	H	28.42	3.3	0	45.46	54	-8.54	Ave
2484	22.27	73	133	V	28.27	3.3	0	53.84	54	-0.16	Ave

7 IC RSS-210 §2.3 & 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.

The receiver spurious emissions limits were specified in Table 2 of RSS-Gen §6.

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 EUT Setup

The radiated emissions tests were performed in the 3 meter chamber, using the setup in accordance with ANSI C63.4-2003.

7.3 Test 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.

7.4 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 indicated Amplitude (Ai) reading. The basic equation is as follows:

CA = Ai + AF + CL + Atten – Ga

For example, a corrected amplitude of 40.3 dBuV/m = Indicated Reading (32.5 dBuV) + Antenna Factor (+23.5dB) + Cable Loss (3.7 dB) + Attenuator (10 dB) - Amplifier Gain (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 = Corrected Amplitude - Limit

7.5 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100338	2011-09-14
Sunol Science Corp	Combination Antenna	JB3	A020106-2	2011-08-10
Hewlett Packard	Pre amplifier	8447D	2944A06639	2011-06-09
Sunol Science Corp	System Controller	SC99V	122303-1	N/R
Agilent	Spectrum Analyzer	E4440A	MY44303352	2011-05-10
EMCO	Horn antenna	3115	9511-4627	2011-10-03
Mini-Circuits	Pre Amplifier	ZVA-183-S	667400960	2011-08-10

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

7.6 Test Environmental Conditions

Temperature:	20-23 °C
Relative Humidity:	38-45%
ATM Pressure:	101.1-101.4kPa

The testing was performed by Lionel Lara from 2012-05-08 to 2012-05-11 at 5 meter chamber 3.

7.7 Summary of Test Results

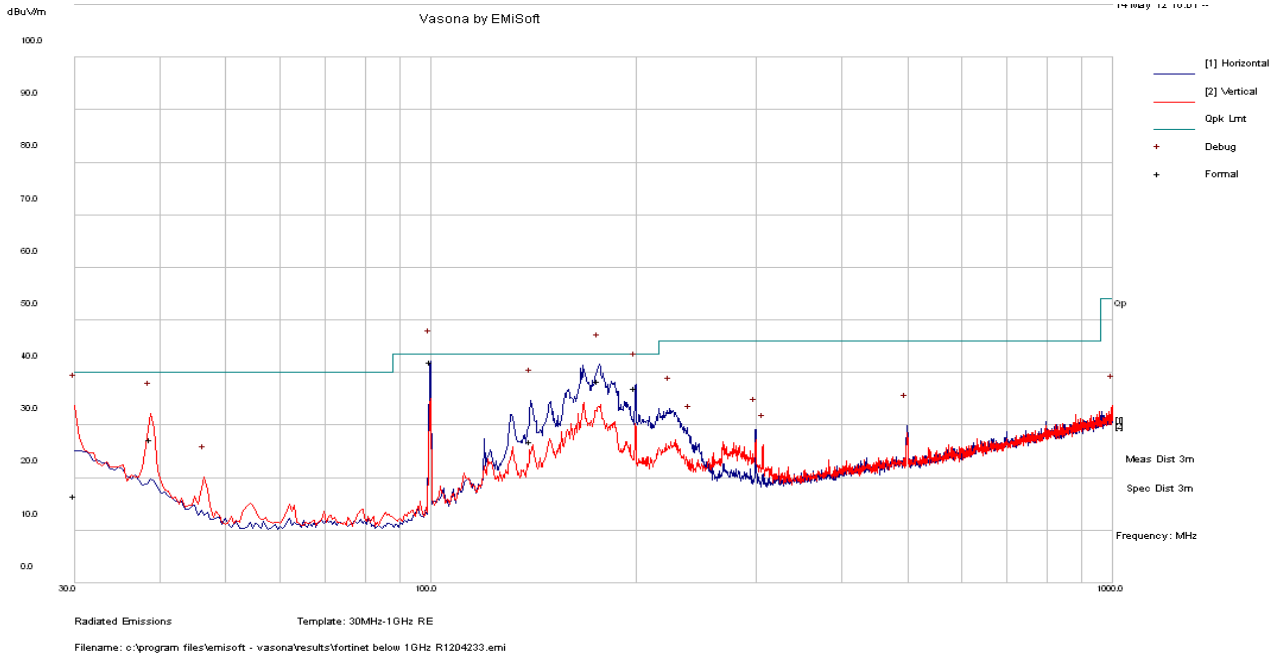
According to the test data, the EUT complied with IC RSS-210/RSS-Gen, with the closest margins from the limit listed below:

Mode: Receiving			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Range (MHz)**
-0.64	99.8955	Horizontal	30 to 25000

7.8 Radiated Emissions Test Data and Plots

1) 30-1000 MHz, Measured at 3 meters

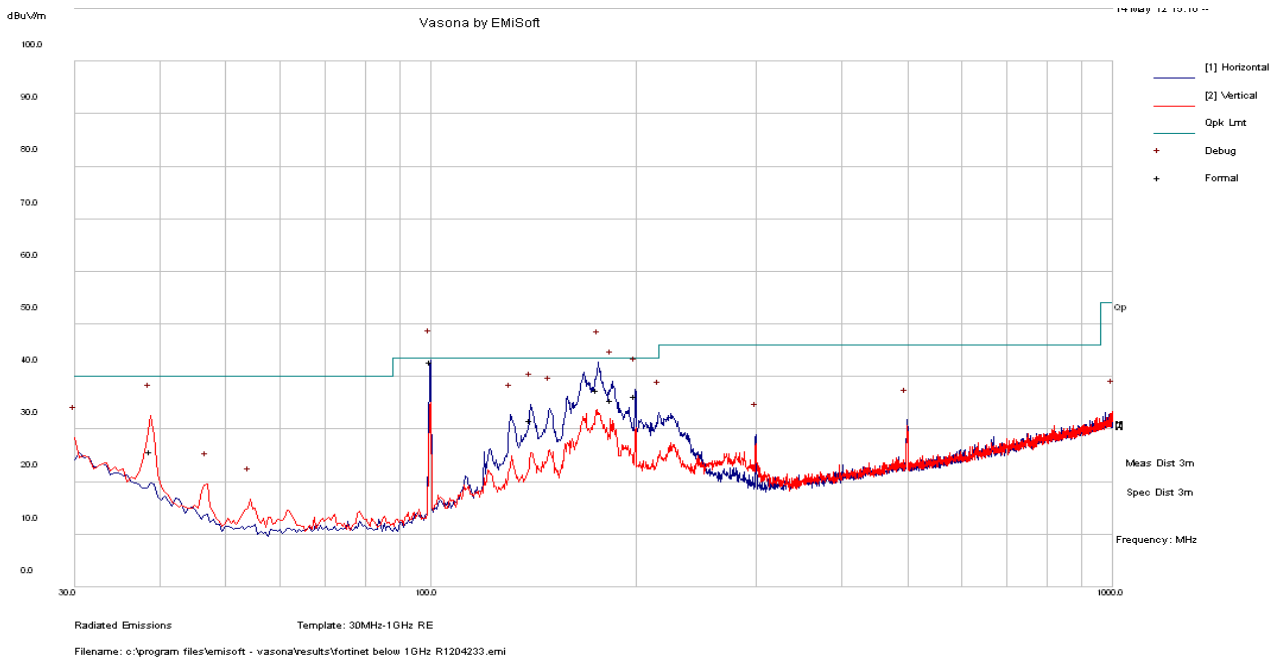
2.4 GHz Receiving mode



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
99.8995	42.09	249	H	188	43.5	-1.41
176.2538	38.34	154	H	216	43.5	-5.16
199.785	37.09	171	H	8	43.5	-6.41
38.904	27.23	117	V	20	40	-12.77
140.1553	26.99	233	H	208	43.5	-16.51
30.01782	16.63	261	V	24	40	-23.37

5 GHz Receiving mode



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
99.8955	42.86	301	H	181	43.5	-0.64
175.737	37.46	172	H	22	43.5	-6.04
199.2045	36.39	190	H	208	43.5	-7.11
184.2328	35.58	117	H	0	43.5	-7.92
140.0878	31.7	238	H	8	43.5	-11.8
38.897	25.79	176	V	17	40	-14.21

2) Above 1 GHz Measured at 3 meters

2.4 GHz receiving mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC & IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
2496	52.85	42	106	H	28.42	3.3	27.61	56.96	74	-17.04	Peak
2496	52.4	230	104	V	28.27	3.3	27.61	56.36	74	-17.64	Peak
2496	31.27	42	106	H	28.42	3.3	27.61	35.38	54	-18.62	Ave
2496	31.08	230	104	V	28.27	3.3	27.61	35.04	54	-18.96	Ave
4988	46.17	39	120	H	33.55	4.55	27.5	56.77	74	-17.23	Peak
4988	46.42	39	126	V	33.42	4.55	27.5	56.89	74	-17.11	Peak
4988	26.58	39	120	H	33.55	4.55	27.5	37.18	54	-16.82	Ave
4988	26.66	39	126	V	33.42	4.55	27.5	37.13	54	-16.87	Ave

5 GHz receiving mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC & IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
2489	55.09	42	104	H	28.42	3.3	27.61	59.2	74	-14.80	Peak
2489	51.85	111	100	V	28.27	3.3	27.61	55.81	74	-18.19	Peak
2489	32.73	42	104	H	28.42	3.3	27.61	36.84	54	-17.16	Ave
2489	30.73	111	100	V	28.27	3.3	27.61	34.69	54	-19.31	Ave
4996	45.94	43	100	H	33.55	4.55	27.5	56.54	74	-17.46	Peak
4996	47.28	39	122	V	33.42	4.55	27.5	57.75	74	-16.25	Peak
4996	26.45	43	100	H	33.55	4.55	27.5	37.05	54	-16.95	Ave
4996	26.95	39	122	V	33.42	4.55	27.5	37.42	54	-16.58	Ave
2489	55.09	42	104	H	28.42	3.3	27.61	59.2	74	-14.80	Peak