



FCC PART 15 SUBPART C
IC RSS-210, ISSUE 8, DECEMBER 2010
TEST AND MEASUREMENT REPORT

For

Motion Computing, Inc.

8601 Ranch Road 2222 Building II,
Austin, TX 78730, USA

FCC ID: Q3QIHW6235ANH
IC: 4857A-IM6235AN

Report Type: CIIPC	Product Type: WLAN/Bluetooth Combo Module
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Report Number: R1212071-247	
Report Date: 2013-01-28	
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* This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk “*” (Rev. 2)

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1212071-247	Original Report	2013-01-28

1 General Description

1.1 Product Description for Equipment Under Test (EUT)

This test and measurement report was prepared on behalf of *Motion Computing, Inc.*, and their product, FCC ID: Q3QIHW6235ANH, IC: 4587A-IM6235AN, model: N6235, or the "EUT" as referred to in this report, is a WLAN/Bluetooth combo module which built into Motion Tablet PC with WWAN and GPS Functionalities. Based on the declaration by the manufacture, there're no simultaneous transmissions between WWAN and WLAN + BT radios.

The current Motion Tablet PC J3600, model: T008 is an update version from previous motion tablet PC J3500. The changes made to the current J3600 from the previous J3500 were the WLAN+BT combo card with new antenna type. The WWAN portion remains the same.

1.2 Mechanical Description of EUT

The EUT measures 32cm (L) x 23cm (W) x 2cm (H) and weighs 1750g.

The data gathered are from a production sample provided by the manufacturer, serial number: R1212071-01 (Serial number assigned by BACL)

1.3 Objective

This report is prepared on behalf of *Motion Computing, 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.

The objective is to determine compliance with FCC Part 15.247 and IC RSS-210 rules for Output Power, Antenna Requirements, Radiated Spurious Emissions, AC Line Conducted Emissions.

1.4 Related Submittal(s)/Grant(s)

FCC Part 15.407 NII with FCC ID: Q3QIHW6235ANH
FCC Part 15.247 DSS with FCC ID: Q3QIHW6235ANH

1.5 Test Methodology

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

1.6 Measurement Uncertainty

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

Based on CISPR16-4-2:2003, The Treatment of Uncertainty in EMC Measurements, the values ranging from ± 2.0 dB 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 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 C63.4-2009.

2.2 EUT Exercise Software

The test utility used was DRTU was provided by Motion Computing., and was verified by Bo Li to comply with the standard requirements being tested against.

2.3 Special Equipment

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

2.4 Equipment Modifications

No modifications were made to the EUT.

2.5 Local Support Equipment

N/A

2.6 Power Supply and Line Filters

Manufacturer	Description	Model	Serial Number
Delta Electronics Inc	AC/DC Adapter	ADP-50HH REV.B	KOW0819013520

2.7 Interface Ports and Cabling

Cable Description	Length (m)	From	To
RF Cable	< 1	EUT	Spectrum Analyzer

2.8 Internal Parts List and Details

Manufacturer	Description	Model	Serial Number
Motion	Main Board	VCX00 L02T	4619IE36L02
Motion	Cellular Board	MC8355	20VM173P4
Intel	Wireless Board	6235ANH	-
Sandisk	SSD	SDSA5DK-256G	124226400059
Samsung	Memory(x2)	M471B1G73BH0-YK0	-
Motion	I/O Borad	VCX00LS9501P	483CAM
Toshiba	FAN	MCF-J15AM05	-
Motion	Battery(x2)	BATKEX00L4	-

3 Summary of Test Results

Results reported relate only to the product tested.

FCC & IC Rules	Description of Test	Results
FCC §15.247(i), §2.1093 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	AC Line Conducted Emissions	Compliant
FCC §15.247 (d) IC RSS-210 §A8.5	Spurious Emissions at Antenna Port	Note
FCC §15.205 IC RSS-210 §2.2	Restricted Bands	Compliant
FCC §15.209, §15.247 (d) IC RSS-210 §A8.5	Radiated Spurious Emissions	Compliant
FCC §15.247(a)(2) IC RSS-210 §A8.2	6 dB Emission Bandwidth	Note
FCC §15.247(b)(3) IC RSS-210 §A8.4	Maximum Peak Output Power	Compliant
FCC §15.247(d) IC RSS-210 §A8.5	100 kHz Bandwidth of Frequency Band Edge	Note
FCC §15.247(e) IC RSS-210 §A8.2(b)	Power Spectral Density	Note
IC RSS-210 §2.3 & RSS-Gen §6	Receiver Spurious Emissions	Compliant

Note: please Module report with FCC ID: PD96235ANH

4 FCC §15.247 (i), §2.1093 & 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.

4.2 Test Result

Compliant: please refer to the SAR report: R1212071-FCC-SAR

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

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 mW or less. For devices of output powers greater than 10 mW, 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 List

Manufacturers	Models/Name	Antenna Gain (dBi) @ 2.4 GHz
Ethertronics	CP001_1_ASM	1.64
Ethertronics	CP001_2_ASM	3.47

	Models/Name	Antenna Gain (dBi) @ 5725-5850 MHz
Ethertronics	CP001_1_ASM	5.1
Ethertronics	CP001_2_ASM	5.81

Note: The power setting was controlled by manufacture with different antenna configuration. The power setting of the different antenna will be set with the corresponded value and no more then the level reported.

The antenna consists of non-standard (UFL) connectors with less 6 dBi gain; therefore, it complies with the antenna requirement. Please refer to the internal photos.

6 FCC §15.207 & IC RSS-Gen §7.2.4 – AC Line Conducted Emissions

6.1 Applicable Standards

As per FCC §15.207 and IC RSS-Gen §7.2.4 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 μ H/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 shield room, using the setup per ANSI C63.4-2009 measurement procedure. The specification used was FCC §15.207 and IC RSS-Gen §7.2.4 limits.

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

The AC/DC power adapter of the EUT was connected with LISN-1 which provided 120 V/60 Hz AC power.

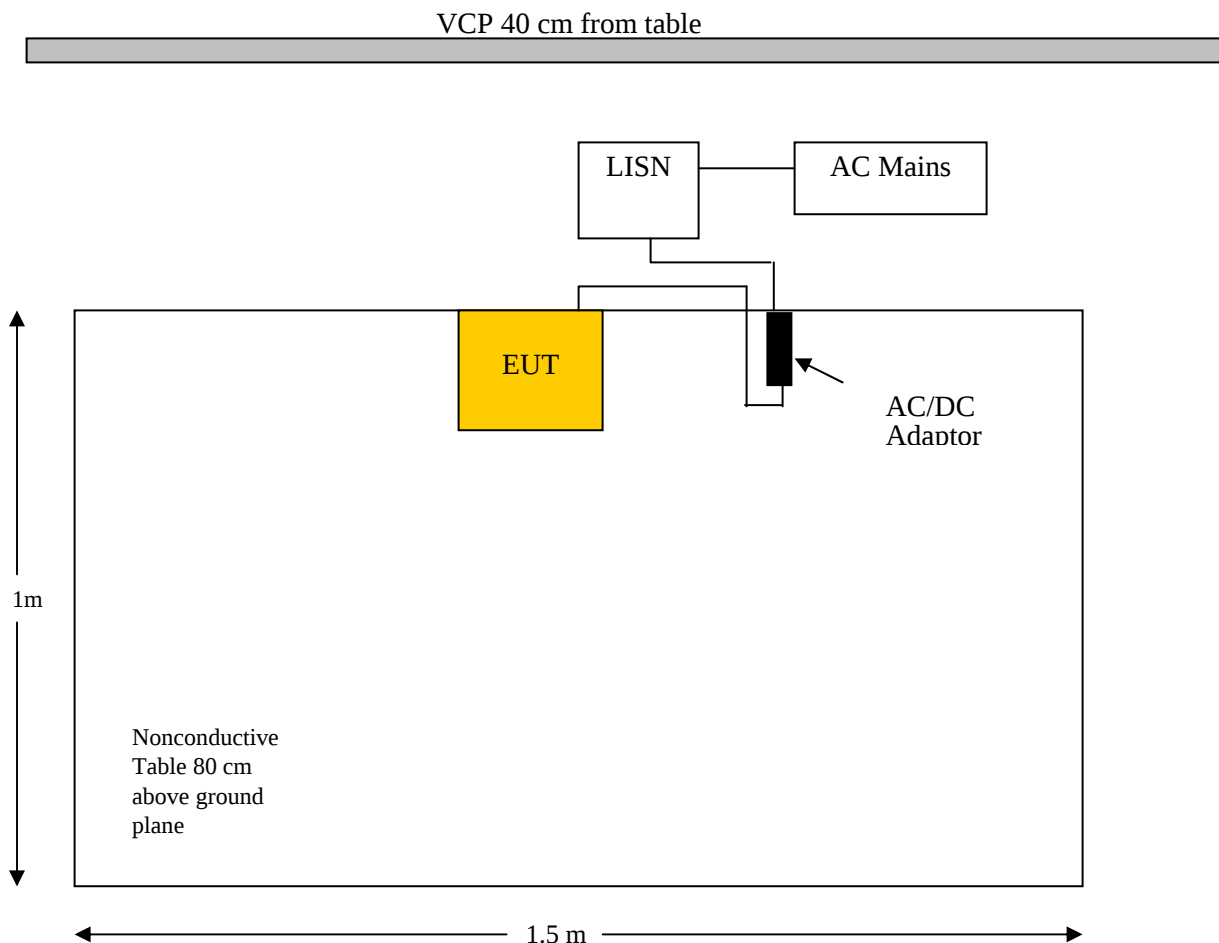
6.3 Test Procedure

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”.

6.4 Test Setup Block Diagram

AC



6.5 Corrected Amplitude & Margin Calculation

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

$$CA = Ai + CL + Atten$$

For example, a corrected amplitude of 46.2 dBuV = Indicated Reading (32.5 dBuV) + Cable Loss (3.7 dB) + Attenuator (10 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:

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

6.6 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100044	2012-04-18	1 year
Solar Electronics	LISN	9252-R-24-BNC	511205	2012-06-25	1 year
TTE	Filter, High Pass	H9962-150K-50-21378	K7133	2012-05-30	1 year

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

6.7 Test Environmental Conditions

Temperature:	20 °C
Relative Humidity:	54%
ATM Pressure:	102.58 kPa

The testing was performed by BO LI on 2012-12-28 and 2013-01-15 in 5 m chamber 3.

6.8 Summary of Test Results

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

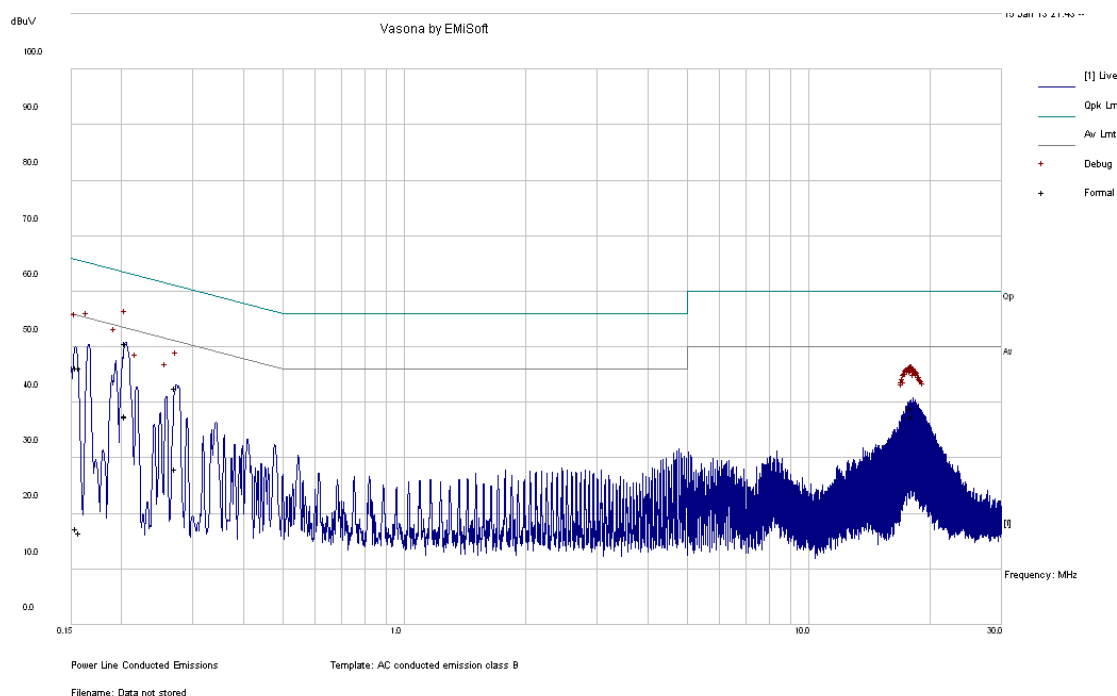
Transmitting Mode:

Connection: AC/DC adapter connected to 120 V/60 Hz, 5G			
Margin (dB)	Frequency (MHz)	Conductor Mode (Line/Neutral)	Range (MHz)
-6.04	21.089858	Line	0.15-30

6.9 Conducted Emissions Test Plots and Data

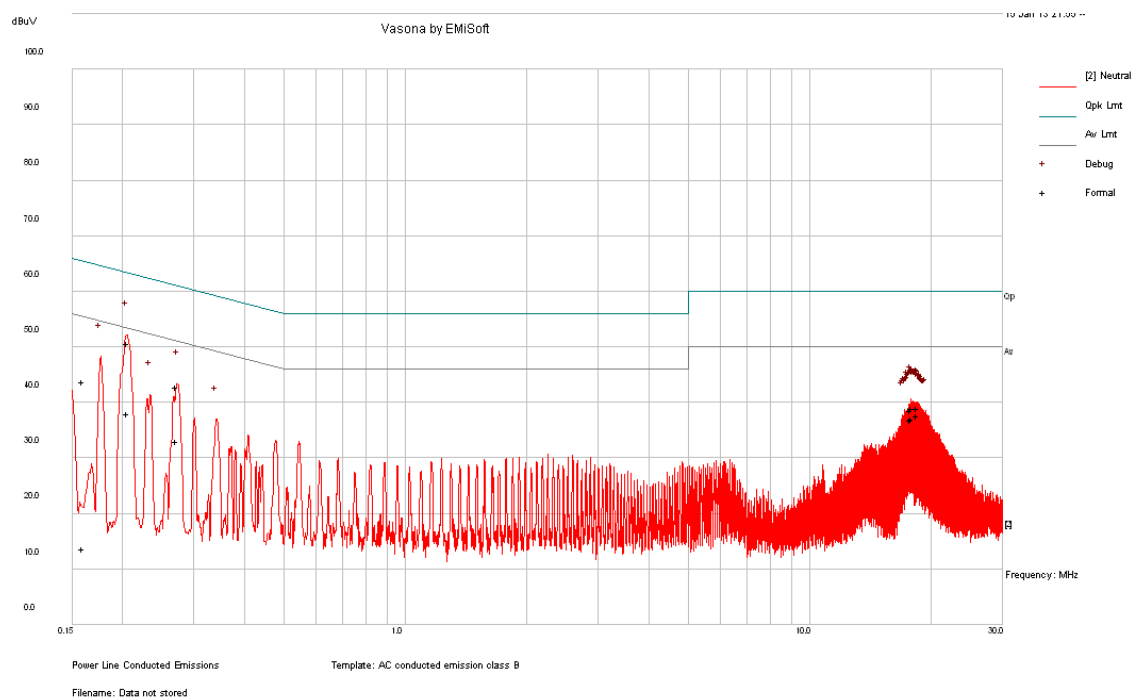
2400–2483.5 MHz: BLE (Worst Case)

120 V, 60 Hz – Line, AC/DC Adaptor



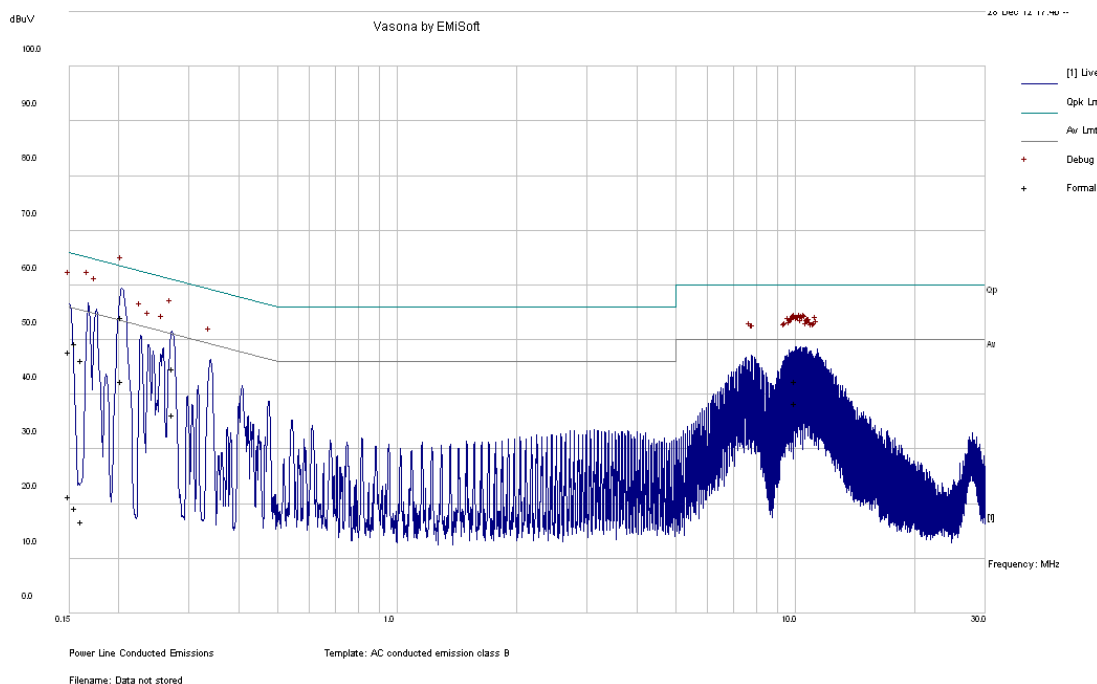
Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
0.205155	50.59	Line	63.4	-12.81	QP
0.15483	46.26	Line	65.74	-19.48	QP
0.157836	46.29	Line	65.58	-19.28	QP
0.204348	50.66	Line	63.43	-12.77	QP
0.272598	42.68	Line	61.04	-18.36	QP
18.074196	38.97	Line	60	-21.03	QP

Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
0.205155	37.51	Line	53.4	-15.89	Ave.
0.15483	17.37	Line	55.74	-38.37	Ave.
0.157836	16.55	Line	55.58	-39.03	Ave.
0.204348	37.58	Line	53.43	-15.85	Ave.
0.272598	28.14	Line	51.04	-22.9	Ave.
18.074196	37.44	Line	50	-12.56	Ave.

2400–2483.5 MHz: BLE (Worst Case)**120 V, 60 Hz – Neutral, AC/DC Adaptor**

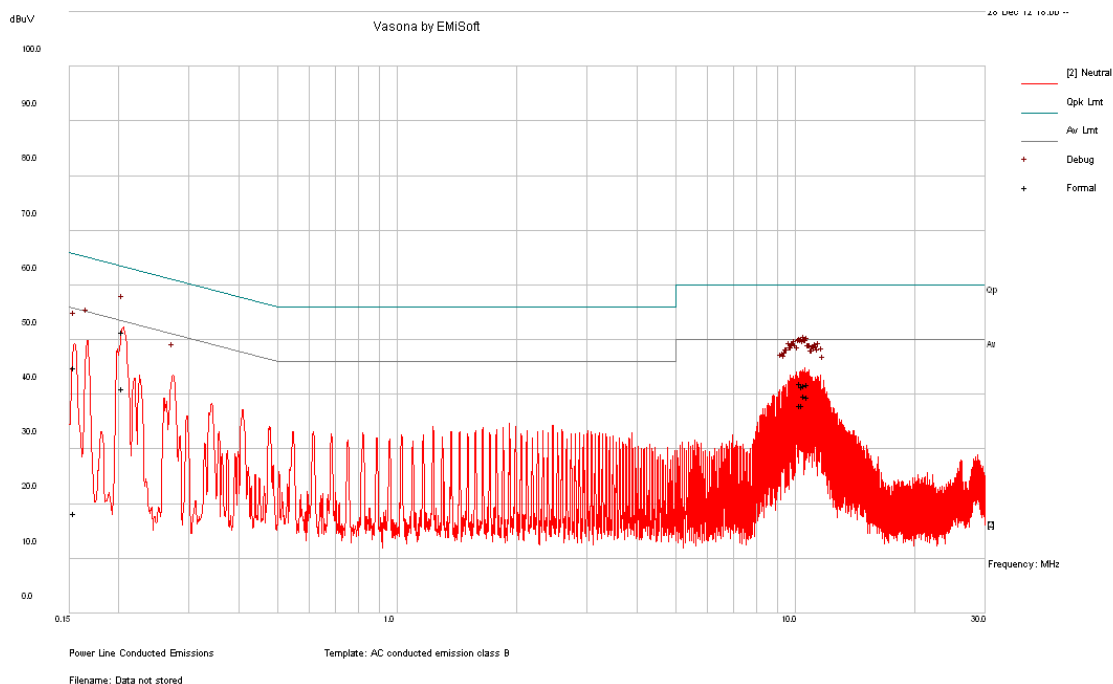
Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
0.205659	50.72	Neutral	63.38	-12.66	QP
0.15969	43.84	Neutral	65.48	-21.64	QP
0.27249	42.88	Neutral	61.04	-18.16	QP
17.798541	38.58	Neutral	60	-21.42	QP
17.937825	39.04	Neutral	60	-20.96	QP
18.480461	38.92	Neutral	60	-21.08	QP

Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
0.205659	38.03	Neutral	53.38	-15.35	Ave.
0.15969	13.78	Neutral	55.48	-41.7	Ave.
0.27249	33.11	Neutral	51.04	-17.93	Ave.
17.798541	36.8	Neutral	50	-13.2	Ave.
17.937825	37.15	Neutral	50	-12.85	Ave.
18.480461	37.71	Neutral	50	-12.29	Ave.

2400– 483.5 MHz: WLAN (Worst Case)**120 V, 60 Hz – Line, AC/DC Adaptor**

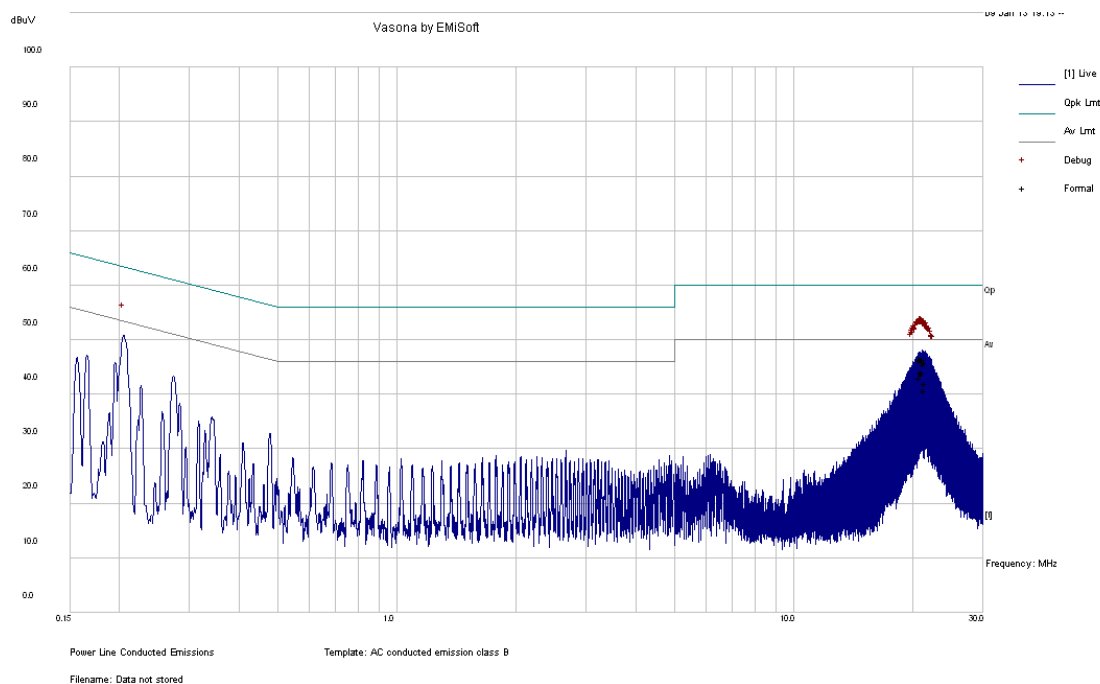
Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
0.203757	54.16	Line	63.46	-9.3	QP
0.155613	49.3	Line	65.69	-16.39	QP
0.161421	46.27	Line	65.39	-19.12	QP
0.150157	47.73	Line	65.99	-18.26	QP
0.273108	44.78	Line	61.02	-16.24	QP
10.035166	42.36	Line	60	-17.64	QP

Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
0.203757	42.36	Line	53.46	-11.09	Ave.
0.155613	19.27	Line	55.69	-36.42	Ave.
0.161421	16.8	Line	55.39	-38.6	Ave.
0.150157	21.43	Line	55.99	-34.56	Ave.
0.273108	36.38	Line	51.02	-14.64	Ave.
10.035166	38.48	Line	50	-11.52	Ave.

2400–2483.5 MHz: WLAN (Worst Case)**120 V, 60 Hz – Neutral, AC/DC Adaptor**

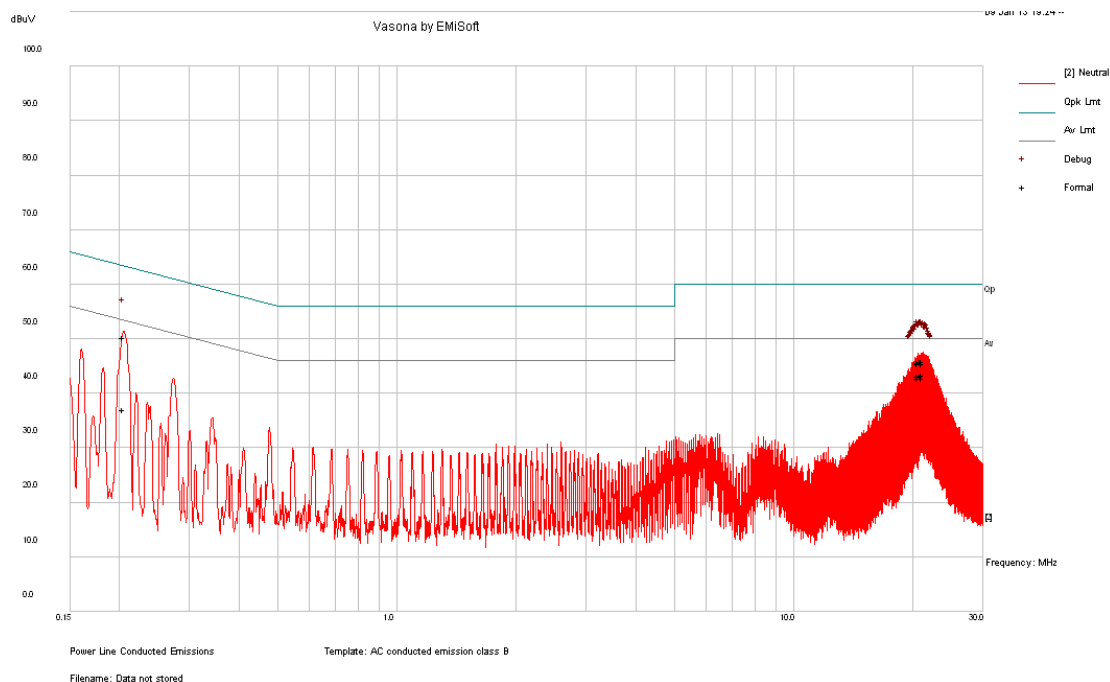
Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
0.204201	51.42	Neutral	63.44	-12.02	QP
10.576864	41.66	Neutral	60	-18.34	QP
0.154644	45.01	Neutral	65.75	-20.74	QP
10.779928	41.85	Neutral	60	-18.15	QP
10.440289	41.52	Neutral	60	-18.48	QP
10.301245	42.13	Neutral	60	-17.87	QP

Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
0.204201	41.05	Neutral	53.44	-12.39	Ave.
10.576864	39.78	Neutral	50	-10.22	Ave.
0.154644	18.22	Neutral	55.75	-37.52	Ave.
10.779928	39.52	Neutral	50	-10.48	Ave.
10.440289	37.98	Neutral	50	-12.02	Ave.
10.301245	38.01	Neutral	50	-11.99	Ave.

5725– 5850 MHz: WLAN (Worst Case)**120 V, 60 Hz – Line, AC/DC Adaptor**

Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
21.024188	46.5	Line	60	-13.5	QP
21.089858	46.47	Line	60	-13.53	QP
21.226907	46.54	Line	60	-13.46	QP
21.496874	45.9	Line	60	-14.1	QP
21.299627	45.6	Line	60	-14.4	QP
20.814632	46.28	Line	60	-13.72	QP

Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
21.024188	43.93	Line	50	-6.07	Ave.
21.089858	43.96	Line	50	-6.04	Ave.
21.226907	43.96	Line	50	-6.04	Ave.
21.496874	42.13	Line	50	-7.87	Ave.
21.299627	40.63	Line	50	-9.37	Ave.
20.814632	43.02	Line	50	-6.98	Ave.

5725–5850 MHz: WLAN (Worst Case)**120 V, 60 Hz – Neutral, AC/DC Adaptor**

Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
0.204975	50.24	Neutral	63.41	-13.17	QP
21.162176	45.57	Neutral	60	-14.43	QP
21.021881	45.91	Neutral	60	-14.09	QP
20.613179	45.78	Neutral	60	-14.22	QP
21.091313	45.89	Neutral	60	-14.11	QP
20.544566	45.59	Neutral	60	-14.41	QP

Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
0.204975	37.06	Neutral	53.41	-16.34	Ave.
21.162176	42.89	Neutral	50	-7.11	Ave.
21.021881	43.2	Neutral	50	-6.8	Ave.
20.613179	43.2	Neutral	50	-6.8	Ave.
21.091313	43.39	Neutral	50	-6.61	Ave.
20.544566	42.81	Neutral	50	-7.19	Ave.

7 FCC §15.205, §15.209 & §15.247(d) & 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) 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 A8.5 Out-of-band Emissions, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square 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 field strength limits specified in RSS-Gen is not required.

7.2 Test Setup

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

The spacing between the peripherals was 3 centimeters.

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

7.3 Test Procedure

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

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

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

The spectrum analyzer or receiver is set as:

Below 1000 MHz:

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

Above 1000 MHz:

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

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:

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

7.5 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Sunol Science Corp	System Controller	SC99V	122303-1	N/R	N/R
Sunol Science Corp	Combination Antenna	JB3	A020106-2	2012-08-15	1 year
Hewlett Packard	Pre-amplifier	8447D	2944A06639	2012-06-09	1 year
Mini-Circuits	Pre-amplifier	ZVA-183-S	570400946	2012-05-09	1 year
Agilent	Spectrum Analyzer	E4440A	US42221851	2012-02-28	1 year
EMCO	Horn Antenna	3315	9511-4627	2012-10-17	1 year
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100337	2012-03-22	1 year

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

7.6 Test Environmental Conditions

Temperature:	21-24°C
Relative Humidity:	43-47%
ATM Pressure:	101-103kPa

The testing was performed by Bo Li on 2013-01-02 to 2013-01-07 and 2013-01-17 at 5 meter 3.

7.7 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 the worst margin of:

30-1000 MHz:

2400 – 2483.5 MHz: BLE

Mode: Transmitting			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Mode, Channel
-17.4	266.111	Horizontal	High Channel

2400 – 2483.5 MHz: WLAN

Mode: Transmitting			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Mode, Channel
-13.38	267.258	Horizontal	802.11 HT40 mode Low Channel

5725 – 5850 MHz: WLAN

Mode: Transmitting			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Mode, Channel
-13.38	259.67	Horizontal	802.11n HT20 mode Middle Channel

1 – 25 GHz:

2400 – 2483.5 MHz: BLE

Mode: Transmitting			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Mode, Channel
-2.848	2483.5	Horizontal	BLE High Channel

2400 – 2483.5 MHz: WLAN

Mode: Transmitting			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Mode, Channel
-0.053	4874	Horizontal	802.11 b mode Middle Channel

1-40 GHz:

5725 – 5850 MHz: WLAN

Mode: Transmitting			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Mode, Channel
-6.02	22980	Vertical	802.11 HT20 mode Low Channel- MIMO
-6.02	23020	Vertical	802.11 HT40 mode Low Channel

Please refer to the following table for specific test result details

Note: pre-scans were performed; radiated emissions were performed on Aux antenna (worst case) for single chain

7.8 Radiated Emissions Test Data

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

2400-2483.5 MHz: BLE

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (PK/QP)
BLE, Low Channel							
268.07675	28.22	110	H	215	46	-17.78	QP
972.68725	22.59	224	V	-10	54	-31.41	QP
BLE, Middle Channel							
269.196	25.08	147	H	337	46	-20.92	QP
271.17	27.67	128	H	190	46	-18.33	QP
999.912	22.81	257	H	340	54	-31.19	QP
BLE, High Channel							
947.04625	22.68	327	H	349	46	-23.32	QP
266.111	28.6	96	H	352	46	-17.4	QP

2400-2483.5 MHz: WLAN

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (PK/QP)
802.11b, Low Channel							
258.15075	30.41	98	H	26	46	-15.59	QP
249.25575	29.75	100	H	20	46	-16.25	QP
802.11b, Middle Channel							
266.123	28.56	121	H	0	46	-17.44	QP
245.336	26.42	112	H	239	46	-19.58	QP
802.11b, High Channel							
253.12325	29.31	104	H	216	46	-16.69	QP
987.5865	22.98	233	V	308	54	-31.02	QP

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (PK/QP)
802.11g, Low Channel							
257.25	31.41	114	H	187	46	-14.59	QP
274.147	28.45	211	H	129	46	-17.55	QP
802.11g, Middle Channel							
256.76	31.47	99	H	199	46	-14.53	QP
986.33	22.54	99	H	157	54	-31.46	QP
802.11g, High Channel							
267.174	28.57	101	H	177	46	-17.43	QP
991.081	23.18	107	V	195	54	-30.82	QP

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (PK/QP)
802.11n HT20, Low Channel							
257.2655	31.62	99	H	178	46	-14.38	QP
274.147	28.23	98	H	168	46	-17.77	QP
802.11n HT20, Middle Channel							
257.36	30.6	107	H	192	46	-15.4	QP
976.33	22.54	105	H	190	54	-31.46	QP
802.11n HT20, High Channel							
269.23375	28.88	115	H	190	46	-17.12	QP
990.0815	22.93	216	V	130	54	-31.07	QP

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (PK/QP)
802.11n HT40, Low Channel							
267.258	32.62	98	H	3	46	-13.38	QP
963.02875	22.93	107	V	54	54	-31.07	QP
802.11n HT40, Middle Channel							
254.15	30.34	114	H	174	46	-15.66	QP
977.415	22.78	202	V	50	54	-31.22	QP
802.11n HT40, High Channel							
274.245	31.11	247	H	27	46	-14.89	QP
985.491	23.17	104	V	87	54	-30.83	QP

2400–2483.5 MHz: WLAN, MIMO

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (PK/QP)
802.11n HT20, Low Channel							
253.174	29.68	99	H	154	46	-16.32	QP
276.114	28.57	104	H	170	46	-17.43	QP
802.11n HT20, Middle Channel							
259.37	30.71	99	H	177	46	-15.29	QP
981.77	23.43	99	V	69	54	-31.46	QP
802.11n HT20, High Channel							
269.744	28.97	105	H	166	46	-17.03	QP
990.051	22.74	107	V	124	54	-31.26	QP

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (PK/QP)
802.11n HT40, Low Channel							
267.1442	31.88	98	H	37	46	-14.12	QP
965.189	22.87	105	V	48	54	-31.13	QP
802.11n HT40, Middle Channel							
268.16	30.33	105	H	166	46	-15.67	QP
979.946	22.39	222	V	80	54	-31.61	QP
802.11n HT40, High Channel							
274.27	30.86	204	H	42	46	-15.14	QP
980.417	23.09	118	V	179	54	-30.91	QP

5725– 5850 MHz: WLAN

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (PK/QP)
802.11a, Low Channel							
261.15075	30.57	98	H	0	46	-15.43	QP
248.275	29.75	101	H	176	46	-16.25	QP
802.11a, Middle Channel							
268.117	28.49	112	H	15	46	-17.51	QP
247.247	26.32	100	H	201	46	-19.68	QP
802.11a, High Channel							
255.047	29.18	104	H	104	46	-16.82	QP
977.51	22.68	147	V	256	54	-31.32	QP

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (PK/QP)
802.11n HT20, Low Channel							
257.2741	31.21	103	H	125	46	-14.79	QP
275.173	28.44	100	H	113	46	-17.56	QP
802.11n HT20, Middle Channel							
259.67	32.62	98	H	144	46	-13.38	QP
986.31	22.33	99	H	198	54	-31.67	QP
802.11n HT20, High Channel							
267.755	28.72	104	H	178	46	-17.28	QP
992.051	22.85	140	V	147	54	-31.15	QP

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (PK/QP)
802.11n HT40, Low Channel							
267.278	32.48	98	H	50	46	-13.52	QP
964.751	22.89	115	V	196	54	-31.11	QP
802.11n HT40, High Channel							
277.278	30.91	157	H	40	46	-15.09	QP
986.452	23.04	133	V	78	54	-30.96	QP

5725 – 5850 MHz: WLAN, MIMO

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (PK/QP)
802.11n HT20, Low Channel							
255.45	29.78	99	H	124	46	-16.22	QP
279.112	28.37	106	H	196	46	-17.63	QP
802.11n HT20, Middle Channel							
257.378	30.54	99	H	103	46	-15.46	QP
988.76	23.27	99	V	88	54	-30.73	QP
802.11n HT20, High Channel							
271.72	28.57	103	H	154	46	-17.43	QP
992.574	22.61	108	V	103	54	-31.39	QP

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (PK/QP)
802.11n HT40, Low Channel							
267.185	31.48	99	H	54	46	-14.52	QP
966.19	22.19	99	V	91	54	-31.81	QP
802.11n HT40, High Channel							
276.2	30.58	200	H	56	46	-15.42	QP
980.411	23.73	109	V	177	54	-30.27	QP

2) 1–25 GHz, Measured at 3 meters

2400–2483.5 MHz: BLE

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)	
Low Channel 2402 MHz, measured at 3 meters											
2402	71.4	75	100	V	28.98	3.12	0	103.5	-	-	Peak
2402	74.69	117	100	H	28.98	3.12	0	106.79	-	-	Peak
2402	49.23	75	100	V	28.98	3.12	0	81.33	-	-	Ave
2402	51.34	117	100	H	28.98	3.12	0	83.44	-	-	Ave
2322	27.82	87	100	V	28.98	3.12	0	59.92	74	-14.08	Peak
2322	28.64	119	100	H	28.055	3.12	0	59.815	74	-14.185	Peak
2322	14.09	87	100	V	28.055	3.12	0	45.265	54	-8.735	Ave
2322	15.27	119	100	H	28.055	3.12	0	46.445	54	-7.555	Ave
4804	35.19	315	100	V	32.711	4.56	27.78	44.681	74	-29.319	Peak
4804	36.02	156	172	H	32.711	4.56	27.78	45.511	74	-28.489	Peak
4804	22.79	315	100	V	32.711	4.56	27.78	32.281	54	-21.719	Ave
4804	24	156	172	H	32.711	4.56	27.78	33.491	54	-20.509	Ave
7206	35.37	9	100	V	36.523	5.49	27.59	49.793	83.5	-33.707	Peak
7206	35.23	10	100	H	36.523	5.49	27.59	49.653	86.79	-37.137	Peak
7206	21.34	9	100	V	36.523	5.49	27.59	35.763	61.33	-25.567	Ave
7206	21.76	10	100	H	36.523	5.49	27.59	36.183	63.44	-27.257	Ave
9608	31.73	0	100	V	37.355	6.54	27.05	48.575	83.5	-34.925	Peak
9608	31.33	0	100	H	37.355	6.54	27.05	48.175	86.79	-38.615	Peak
9608	16.8	0	100	V	37.355	6.54	27.05	33.645	61.33	-27.685	Ave
9608	16.79	0	100	H	37.355	6.54	27.05	33.635	63.44	-29.805	Ave
Middle Channel 2440 MHz, measured at 3 meters											
2440	70.35	85	100	V	28.98	3.25	0	102.58	-	-	Peak
2440	74.28	115	118	H	28.98	3.25	0	106.51	-	-	Peak
2440	48.48	85	100	V	28.98	3.25	0	80.71	-	-	Ave
2440	51.26	115	118	H	28.98	3.25	0	83.49	-	-	Ave
4880	34.73	32	132	V	32.858	4.54	27.67	44.458	74	-29.542	Peak
4880	35.95	173	100	H	32.858	4.54	27.67	45.678	74	-28.322	Peak
4880	22.2	32	132	V	32.858	4.54	27.67	31.928	54	-22.072	Ave
4880	22.79	173	100	H	32.858	4.54	27.67	32.518	54	-21.482	Ave
7320	33.68	348	100	V	36.523	5.57	27.51	48.263	74	-25.737	Peak
7320	34.86	9	105	H	36.523	5.57	27.51	49.443	74	-24.557	Peak
7320	20.12	348	100	V	36.523	5.57	27.51	34.703	54	-19.297	Ave
7320	20.82	9	105	H	36.523	5.57	27.51	35.403	54	-18.597	Ave
9760	31.23	0	100	V	37.394	6.62	26.98	48.264	82.58	-34.316	Peak
9760	31.65	0	100	H	37.394	6.62	26.98	48.684	86.51	-37.826	Peak
9760	16.52	0	100	V	37.394	6.62	26.98	33.554	60.71	-27.156	Ave
9760	16.51	0	100	H	37.394	6.62	26.98	33.544	63.49	-29.946	Ave

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)	
High Channel 2480 MHz, measured at 3 meters											
2480	71.78	84	100	V	29.122	3.25	0	104.152	-	-	Peak
2480	75.69	115	110	H	29.122	3.25	0	108.062	-	-	Peak
2480	49.71	84	100	V	29.122	3.25	0	82.082	-	-	Ave
2480	52.27	115	110	H	29.122	3.25	0	84.642	-	-	Ave
2483.5	32.81	87	100	V	29.122	3.25	0	65.182	74	-8.818	Peak
2483.5	35	112	111	H	29.122	3.25	0	67.372	74	-6.628	Peak
2483.5	16.82	87	100	V	29.122	3.25	0	49.192	54	-4.808	Ave
2483.5	18.78	112	111	H	29.122	3.25	0	51.152	54	-2.848	Ave
4960	33.71	185	100	V	33.097	4.52	27.7	43.627	74	-30.373	Peak
4960	34.43	172	164	H	33.097	4.52	27.7	44.347	74	-29.653	Peak
4960	20.05	182	100	V	33.097	4.52	27.7	29.967	54	-24.033	Ave
4960	21.94	172	164	H	33.097	4.52	27.7	31.857	54	-22.143	Ave
7440	34.48	343	100	V	36.433	5.66	27.53	49.043	74	-24.957	Peak
7440	34.82	10	100	H	36.433	5.66	27.53	49.383	74	-24.617	Peak
7440	20.59	343	100	V	36.433	5.66	27.53	35.153	54	-18.847	Ave
7440	20.86	10	100	H	36.433	5.66	27.53	35.423	54	-18.577	Ave
9920	31.36	0	100	V	37.557	6.67	27.01	48.577	84.152	-35.575	Peak
9920	30.98	0	100	H	37.557	6.67	27.01	48.197	88.062	-39.865	Peak
9920	16.51	0	100	V	37.557	6.67	27.01	33.727	62.082	-28.355	Ave
9920	16.53	0	100	H	37.557	6.67	27.01	33.747	64.642	-30.895	Ave

2400 – 2483.5 MHz: WLAN

802.11b 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)	
Low Channel 2412 MHz, measured at 3 meters											
2412	76.54	76	100	V	28.956	3.12	0	108.616	-	-	Peak
2412	80.06	116	115	H	28.956	3.12	0	112.136	-	-	Peak
2412	71.99	76	100	V	28.956	3.12	0	104.066	-	-	Ave
2412	75.77	116	115	H	28.956	3.12	0	107.846	-	-	Ave
2390	31.05	89	100	V	28.956	3.12	0	63.126	74	-10.874	Peak
2390	32.33	117	100	H	28.956	3.12	0	64.406	74	-9.594	Peak
2390	18.93	89	100	V	28.956	3.12	0	51.006	54	-2.994	Ave
2390	20.21	117	100	H	28.956	3.12	0	52.286	54	-1.714	Ave
4824	40.47	207	100	V	33.097	4.56	27.7	50.427	74	-23.573	Peak
4824	44.08	162	162	H	33.097	4.56	27.7	54.037	74	-19.963	Peak
4824	36.48	207	100	V	33.097	4.56	27.7	46.437	54	-7.563	Ave
4824	40.75	162	162	H	33.097	4.56	27.7	50.707	54	-3.293	Ave
7236	38.54	197	100	V	35.928	5.49	27.58	52.378	88.616	-36.238	Peak
7236	41.83	327	112	H	35.928	5.49	27.58	55.668	92.136	-36.468	Peak
7236	30.39	197	100	V	35.928	5.49	27.58	44.228	84.066	-39.838	Ave
7236	35.21	327	112	H	35.928	5.49	27.58	49.048	87.846	-38.798	Ave
9648	31.05	0	100	V	37.954	6.54	27.06	48.484	88.616	-40.132	Peak
9648	31.99	0	100	H	37.954	6.54	27.06	49.424	92.136	-42.712	Peak
9648	16.49	0	100	V	37.954	6.54	27.06	33.924	84.066	-50.142	Ave
9648	16.53	0	100	H	37.954	6.54	27.06	33.964	87.846	-53.882	Ave
Middle Channel 2437 MHz, measured at 3 meters											
2437	75.7	76	100	V	28.956	3.12	0	107.776	-	-	Peak
2437	78.98	118	114	H	28.956	3.12	0	111.056	-	-	Peak
2437	71.04	76	100	V	28.956	3.12	0	103.116	-	-	Ave
2437	74.58	118	114	H	28.956	3.12	0	106.656	-	-	Ave
4874	43.15	197	100	V	33.327	4.54	27.76	53.257	74	-20.743	Peak
4874	46.65	166	162	H	33.327	4.54	27.76	56.757	74	-17.243	Peak
4874	40.71	197	100	V	33.327	4.54	27.76	50.817	54	-3.183	Ave
4874	43.84	166	162	H	33.327	4.54	27.76	53.947	54	-0.053	Ave
7311	37.46	196	100	V	36.369	5.57	27.51	51.889	74	-22.111	Peak
7311	39.71	328	144	H	36.369	5.57	27.51	54.139	74	-19.861	Peak
7311	28.12	196	100	V	36.369	5.57	27.51	42.549	54	-11.451	Ave
7311	33.38	328	144	H	36.369	5.57	27.51	47.809	54	-6.191	Ave
9748	31.38	0	100	V	38.087	6.62	26.98	49.107	87.776	-38.669	Peak
9748	31.03	0	100	H	38.087	6.62	26.98	48.757	91.056	-42.299	Peak
9748	16.51	0	100	V	38.087	6.62	26.98	34.237	83.116	-48.879	Ave
9748	16.5	0	100	H	38.087	6.62	26.98	34.227	86.656	-52.429	Ave

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)	
High Channel 2462 MHz, measured at 3 meters											
2462	77.56	80	100	V	29.155	3.25	0	109.965	-	-	Peak
2462	81.18	115	115	H	29.155	3.25	0	113.585	-	-	Peak
2462	73.1	80	100	V	29.155	3.25	0	105.505	-	-	Ave
2462	76.83	115	115	H	29.155	3.25	0	109.235	-	-	Ave
2483.5	30.25	89	100	V	29.155	3.25	0	62.655	74	-11.345	Peak
2483.5	31.97	119	100	H	29.155	3.25	0	64.375	74	-9.625	Peak
2483.5	18.5	89	100	V	29.155	3.25	0	50.905	54	-3.095	Ave
2483.5	21.49	119	100	H	29.155	3.25	0	53.895	54	-0.105	Ave
4924	43.34	205	100	V	33.327	4.52	27.75	53.437	74	-20.563	Peak
4924	44.73	167	163	H	33.327	4.52	27.75	54.827	74	-19.173	Peak
4924	40.68	205	100	V	33.327	4.52	27.75	50.777	54	-3.223	Ave
4924	42.58	167	163	H	33.327	4.52	27.75	52.677	54	-1.323	Ave
7386	35.75	357	100	V	36.565	5.62	27.51	50.425	74	-23.575	Peak
7386	37.96	329	110	H	36.565	5.62	27.51	52.635	74	-21.365	Peak
7386	26.44	357	100	V	36.565	5.62	27.51	41.115	54	-12.885	Ave
7386	30.39	329	110	H	36.565	5.62	27.51	45.065	54	-8.935	Ave
9848	31.1	0	100	V	38.287	6.55	26.98	48.957	88.225	-39.268	Peak
9848	30.75	0	100	H	38.287	6.55	26.98	48.607	90.605	-41.998	Peak
9848	16.37	0	100	V	38.287	6.55	26.98	34.227	85.235	-51.008	Ave
9848	16.41	0	100	H	38.287	6.55	26.98	34.267	87.905	-53.638	Ave

802.11g 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)	
Low Channel 2412 MHz, measured at 3 meters											
2412	75	75	100	V	28.956	3.12	0	107.076	-	-	Peak
2412	77.09	123	100	H	28.956	3.12	0	109.166	-	-	Peak
2412	63.88	75	100	V	28.956	3.12	0	95.956	-	-	Ave
2412	66.569	123	100	H	28.956	3.12	0	98.645	-	-	Ave
2390	40.09	85	100	V	28.956	3.12	0	72.166	74	-1.834	Peak
2390	40.2	116	100	H	28.956	3.12	0	72.276	74	-1.724	Peak
2390	18.16	85	100	V	28.956	3.12	0	50.236	54	-3.764	Ave
2390	20.43	116	100	H	28.956	3.12	0	52.506	54	-1.494	Ave
4824	36.81	208	100	V	33.097	4.56	27.7	46.767	74	-27.233	Peak
4824	39.66	163	137	H	33.097	4.56	27.7	49.617	74	-24.383	Peak
4824	19.51	208	100	V	33.097	4.56	27.7	29.467	54	-24.533	Ave
4824	20.849	163	137	H	33.097	4.56	27.7	30.806	54	-23.194	Ave
7236	38.36	193	100	V	35.928	5.49	27.58	52.198	87.076	-34.878	Peak
7236	42.56	326	114	H	35.928	5.49	27.58	56.398	89.166	-32.768	Peak
7236	21.01	193	100	V	35.928	5.49	27.58	34.848	75.956	-41.108	Ave
7236	23.35	326	114	H	35.928	5.49	27.58	37.188	78.645	-41.457	Ave
9648	31.42	0	100	V	37.954	6.54	27.06	48.854	87.076	-38.222	Peak
9648	31.14	0	100	H	37.954	6.54	27.06	48.574	89.166	-40.592	Peak
9648	16.77	0	100	V	37.954	6.54	27.06	34.204	75.956	-41.752	Ave
9648	16.87	0	100	H	37.954	6.54	27.06	34.304	78.645	-44.341	Ave
Middle Channel 2437 MHz, measured at 3 meters											
2437	78.38	83	100	V	28.956	3.12	0	110.456	-	-	Peak
2437	81.96	114	115	H	28.956	3.12	0	114.036	-	-	Peak
2437	66.94	83	100	V	28.956	3.12	0	99.016	-	-	Ave
2437	71.33	114	115	H	28.956	3.12	0	103.406	-	-	Ave
4874	44.21	193	100	V	33.327	4.54	27.76	54.317	74	-19.683	Peak
4874	44.61	163	100	H	33.327	4.54	27.76	54.717	74	-19.283	Peak
4874	28.72	193	100	V	33.327	4.54	27.76	38.827	54	-15.173	Ave
4874	28.667	163	100	H	33.327	4.54	27.76	38.774	54	-15.226	Ave
7311	39.92	195	100	V	36.369	5.57	27.51	54.349	74	-19.651	Peak
7311	44.87	324	145	H	36.369	5.57	27.51	59.299	74	-14.701	Peak
7311	23.7	195	100	V	36.369	5.57	27.51	38.129	54	-15.871	Ave
7311	28.49	324	145	H	36.369	5.57	27.51	42.919	54	-11.081	Ave
9748	31.6	0	100	V	38.087	6.62	26.98	49.327	90.456	-41.129	Peak
9748	31.24	0	100	H	38.087	6.62	26.98	48.967	94.036	-45.069	Peak
9748	16.51	0	100	V	38.087	6.62	26.98	34.237	79.016	-44.779	Ave
9748	16.524	0	100	H	38.087	6.62	26.98	34.251	83.406	-49.155	Ave

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)	
High Channel 2462 MHz, measured at 3 meters											
2462	74.24	82	100	V	29.155	3.25	0	106.645	-	-	Peak
2462	78.61	118	115	H	29.155	3.25	0	111.015	-	-	Peak
2462	63.25	82	100	V	29.155	3.25	0	95.655	-	-	Ave
2462	67.33	118	115	H	29.155	3.25	0	99.735	-	-	Ave
2483.5	39.02	81	100	V	29.155	3.25	0	71.425	74	-2.575	Peak
2483.5	41.21	113	100	H	29.155	3.25	0	73.615	74	-0.385	Peak
2483.5	18.65	81	100	V	29.155	3.25	0	51.055	54	-2.945	Ave
2483.5	19.46	113	100	H	29.155	3.25	0	51.865	54	-2.135	Ave
4924	37.64	205	100	V	33.327	4.52	27.75	47.737	74	-26.263	Peak
4924	38.43	165	100	H	33.327	4.52	27.75	48.527	74	-25.473	Peak
4924	21.35	205	100	V	33.327	4.52	27.75	31.447	54	-22.553	Ave
4924	21.3	165	100	H	33.327	4.52	27.75	31.397	54	-22.603	Ave
7386	33.26	0	100	V	36.565	5.62	27.51	47.935	74	-26.065	Peak
7386	33.63	0	100	H	36.565	5.62	27.51	48.305	74	-25.695	Peak
7386	18.6	0	100	V	36.565	5.62	27.51	33.275	54	-20.725	Ave
7386	18.6	0	100	H	36.565	5.62	27.51	33.275	54	-20.725	Ave
9848	31.35	0	100	V	38.287	6.55	26.98	49.207	86.645	-37.438	Peak
9848	31.73	0	100	H	38.287	6.55	26.98	49.587	91.015	-41.428	Peak
9848	16.35	0	100	V	38.287	6.55	26.98	34.207	75.655	-41.448	Ave
9848	16.38	0	100	H	38.287	6.55	26.98	34.237	79.735	-45.498	Ave

802.11n HT20 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)	
Low Channel 2412 MHz, measured at 3 meters											
2412	73.31	76	100	V	28.956	3.12	0	105.386	-	-	Peak
2412	76.32	116	116	H	28.956	3.12	0	108.396	-	-	Peak
2412	61.56	76	100	V	28.956	3.12	0	93.636	-	-	Ave
2412	65.323	116	116	H	28.956	3.12	0	97.399	-	-	Ave
2390	38.15	88	100	V	28.956	3.12	0	70.226	74	-3.774	Peak
2390	40.42	111	100	H	28.956	3.12	0	72.496	74	-1.504	Peak
2390	16.63	88	100	V	28.956	3.12	0	48.706	54	-5.294	Ave
2390	18.5	111	100	H	28.956	3.12	0	50.576	54	-3.424	Ave
4824	32.19	0	100	V	33.097	4.56	27.7	42.147	74	-31.853	Peak
4824	35.5	161	100	H	33.097	4.56	27.7	45.457	74	-28.543	Peak
4824	17.96	0	100	V	33.097	4.56	27.7	27.917	54	-26.083	Ave
4824	18.6	161	100	H	33.097	4.56	27.7	28.557	54	-25.443	Ave
7236	35.59	194	100	V	35.928	5.49	27.58	49.428	85.386	-35.958	Peak
7236	37.64	15	100	H	35.928	5.49	27.58	51.478	88.396	-36.918	Peak
7236	18.85	194	100	V	35.928	5.49	27.58	32.688	73.636	-40.948	Ave
7236	19.28	15	100	H	35.928	5.49	27.58	33.118	77.399	-44.281	Ave
9648	31.19	0	100	V	37.954	6.54	27.06	48.624	85.386	-36.762	Peak
9648	31.26	0	100	H	37.954	6.54	27.06	48.694	88.396	-39.702	Peak
9648	16.87	0	100	V	37.954	6.54	27.06	34.304	73.636	-39.332	Ave
9648	16.88	0	100	H	37.954	6.54	27.06	34.314	77.399	-43.085	Ave
Middle Channel 2437 MHz, measured at 3 meters											
2437	77.67	84	100	V	28.956	3.12	0	109.746	-	-	Peak
2437	81.3	114	113	H	28.956	3.12	0	113.376	-	-	Peak
2437	66.951	84	100	V	28.956	3.12	0	99.027	-	-	Ave
2437	70.9	114	113	H	28.956	3.12	0	102.976	-	-	Ave
4874	42.44	187	100	V	33.327	4.54	27.76	52.547	74	-21.453	Peak
4874	45.6	165	158	H	33.327	4.54	27.76	55.707	74	-18.293	Peak
4874	25.3	187	100	V	33.327	4.54	27.76	35.407	54	-18.593	Ave
4874	28.07	165	158	H	33.327	4.54	27.76	38.177	54	-15.823	Ave
7311	40.99	357	100	V	36.369	5.57	27.51	55.419	74	-18.581	Peak
7311	43.09	15	100	H	36.369	5.57	27.51	57.519	74	-16.481	Peak
7311	24.2	357	100	V	36.369	5.57	27.51	38.629	54	-15.371	Ave
7311	25.6	15	100	H	36.369	5.57	27.51	40.029	54	-13.971	Ave
9748	31.26	0	100	V	38.087	6.62	26.98	48.987	89.746	-40.759	Peak
9748	31.47	0	100	H	38.087	6.62	26.98	49.197	93.376	-44.179	Peak
9748	16.8	0	100	V	38.087	6.62	26.98	34.527	79.027	-44.5	Ave
9748	16.816	0	100	H	38.087	6.62	26.98	34.543	82.976	-48.433	Ave

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)	
High Channel 2462 MHz, measured at 3 meters											
2462	71.05	79	100	V	29.155	3.25	0	103.455	-	-	Peak
2462	74.43	121	110	H	29.155	3.25	0	106.835	-	-	Peak
2462	59.87	79	100	V	29.155	3.25	0	92.275	-	-	Ave
2462	63.43	121	110	H	29.155	3.25	0	95.835	-	-	Ave
2483.5	34.43	82	100	V	29.155	3.25	0	66.835	74	-7.165	Peak
2483.5	37.33	119	100	H	29.155	3.25	0	69.735	74	-4.265	Peak
2483.5	14.71	82	100	V	29.155	3.25	0	47.115	54	-6.885	Ave
2483.5	15.77	119	100	H	29.155	3.25	0	48.175	54	-5.825	Ave
4924	33.51	0	100	V	33.327	4.52	27.75	43.607	74	-30.393	Peak
4924	34.15	0	100	H	33.327	4.52	27.75	44.247	74	-29.753	Peak
4924	18.46	0	100	V	33.327	4.52	27.75	28.557	54	-25.443	Ave
4924	18.57	0	100	H	33.327	4.52	27.75	28.667	54	-25.333	Ave
7386	33.29	0	100	V	36.565	5.62	27.51	47.965	74	-26.035	Peak
7386	32.56	0	100	H	36.565	5.62	27.51	47.235	74	-26.765	Peak
7386	18.3	0	100	V	36.565	5.62	27.51	32.975	54	-21.025	Ave
7386	18.25	0	100	H	36.565	5.62	27.51	32.925	54	-21.075	Ave
9848	30.84	0	100	V	38.287	6.55	26.98	48.697	83.455	-34.758	Peak
9848	31.18	0	100	H	38.287	6.55	26.98	49.037	86.835	-37.798	Peak
9848	16.67	0	100	V	38.287	6.55	26.98	34.527	72.275	-37.748	Ave
9848	16.71	0	100	H	38.287	6.55	26.98	34.567	75.835	-41.268	Ave

802.11n HT40 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)	
Low Channel 2422 MHz, measured at 3 meters											
2422	66.75	76	100	V	28.956	3.12	0	98.826	-	-	Peak
2422	70.5	115	116	H	28.956	3.12	0	102.576	-	-	Peak
2422	55.4	76	100	V	28.956	3.12	0	87.476	-	-	Ave
2422	59.11	115	116	H	28.956	3.12	0	91.186	-	-	Ave
2390	35.69	91	100	V	28.956	3.12	0	67.766	74	-6.234	Peak
2390	38.86	115	100	H	28.956	3.12	0	70.936	74	-3.064	Peak
2390	16.92	91	100	V	28.956	3.12	0	48.996	54	-5.004	Ave
2390	19.17	115	100	H	28.956	3.12	0	51.246	54	-2.754	Ave
4844	33.06	0	100	V	33.097	4.56	27.7	43.017	74	-30.983	Peak
4844	32.38	0	100	H	33.097	4.56	27.7	42.337	74	-31.663	Peak
4844	17.82	0	100	V	33.097	4.56	27.7	27.777	54	-26.223	Ave
4844	17.73	0	100	H	33.097	4.56	27.7	27.687	54	-26.313	Ave
7266	32.77	0	100	V	35.928	5.49	27.56	46.628	74	-27.372	Peak
7266	32.93	0	100	H	35.928	5.49	27.56	46.788	74	-27.212	Peak
7266	18.42	0	100	V	35.928	5.49	27.56	32.278	54	-21.722	Ave
7266	18.45	0	100	H	35.928	5.49	27.56	32.308	54	-21.692	Ave
9688	31.53	0	100	V	37.954	6.54	26.98	49.044	78.826	-29.782	Peak
9688	31.64	0	100	H	37.954	6.54	26.98	49.154	82.576	-33.422	Peak
9688	17.03	0	100	V	37.954	6.54	26.98	34.544	67.476	-32.932	Ave
9688	17.03	0	100	H	37.954	6.54	26.98	34.544	71.186	-36.642	Ave
Middle Channel 2437 MHz, measured at 3 meters											
2437	71.6	85	100	V	28.956	3.12	0	103.676	-	-	Peak
2437	74.49	114	116	H	28.956	3.12	0	106.566	-	-	Peak
2437	58.96	85	100	V	28.956	3.12	0	91.036	-	-	Ave
2437	62.99	114	116	H	28.956	3.12	0	95.066	-	-	Ave
4874	32.82	0	100	V	33.327	4.54	27.76	42.927	74	-31.073	Peak
4874	33.88	0	100	H	33.327	4.54	27.76	43.987	74	-30.013	Peak
4874	18.04	0	100	V	33.327	4.54	27.76	28.147	54	-25.853	Ave
4874	18.32	0	100	H	33.327	4.54	27.76	28.427	54	-25.573	Ave
7311	33.93	0	100	V	36.369	5.57	27.51	48.359	74	-25.641	Peak
7311	33.81	0	100	H	36.369	5.57	27.51	48.239	74	-25.761	Peak
7311	19.3	0	100	V	36.369	5.57	27.51	33.729	54	-20.271	Ave
7311	19.22	0	100	H	36.369	5.57	27.51	33.649	54	-20.351	Ave
9748	31.34	0	100	V	38.087	6.62	26.98	49.067	83.676	-34.609	Peak
9748	32.15	0	100	H	38.087	6.62	26.98	49.877	86.566	-36.689	Peak
9748	16.81	0	100	V	38.087	6.62	26.98	34.537	71.036	-36.499	Ave
9748	16.75	0	100	H	38.087	6.62	26.98	34.477	75.066	-40.589	Ave

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)	
High Channel 2452 MHz, measured at 3 meters											
2452	66.87	81	100	V	29.155	3.25	0	99.275	-	-	Peak
2452	70.37	121	112	H	29.155	3.25	0	102.775	-	-	Peak
2452	55.31	81	100	V	29.155	3.25	0	87.715	-	-	Ave
2452	59.28	121	112	H	29.155	3.25	0	91.685	-	-	Ave
2483.5	36.51	83	100	V	29.155	3.25	0	68.915	74	-5.085	Peak
2483.5	38.64	114	114	H	29.155	3.25	0	71.045	74	-2.955	Peak
2483.5	18.49	83	100	V	29.155	3.25	0	50.895	54	-3.105	Ave
2483.5	21.16	114	114	H	29.155	3.25	0	53.565	54	-0.435	Ave
4904	32.84	0	100	V	33.327	4.52	27.67	43.017	74	-30.983	Peak
4904	32.61	0	100	H	33.327	4.52	27.67	42.787	74	-31.213	Peak
4904	18.39	0	100	V	33.327	4.52	27.67	28.567	54	-25.433	Ave
4904	18.44	0	100	H	33.327	4.52	27.67	28.617	54	-25.383	Ave
7356	33.03	0	100	V	36.565	5.62	27.57	47.645	74	-26.355	Peak
7356	32.55	0	100	H	36.565	5.62	27.57	47.165	74	-26.835	Peak
7356	18.5	0	100	V	36.565	5.62	27.57	33.115	54	-20.885	Ave
7356	18.48	0	100	H	36.565	5.62	27.57	33.095	54	-20.905	Ave
9808	31.55	0	100	V	38.287	6.55	27.02	49.367	79.275	-29.908	Peak
9808	31.11	0	100	H	38.287	6.55	27.02	48.927	82.775	-33.848	Peak
9808	16.93	0	100	V	38.287	6.55	27.02	34.747	67.715	-32.968	Ave
9808	16.99	0	100	H	38.287	6.55	27.02	34.807	71.685	-36.878	Ave

802.11n HT20 mode-MIMO

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)	
Low Channel 2412 MHz, measured at 3 meters											
2412	76.7	288	100	V	28.956	3.12	0	108.776	-	-	Peak
2412	80.17	124	100	H	28.956	3.12	0	112.246	-	-	Peak
2412	63.61	288	100	V	28.956	3.12	0	95.686	-	-	Ave
2412	66.92	124	100	H	28.956	3.12	0	98.996	-	-	Ave
2390	37.19	288	100	V	28.956	3.12	0	69.266	74	-4.734	Peak
2390	39.99	252	100	H	28.956	3.12	0	72.066	74	-1.934	Peak
2390	18.92	288	100	V	28.956	3.12	0	50.996	54	-3.004	Ave
2390	21.52	252	100	H	28.956	3.12	0	53.596	54	-0.404	Ave
4824	34.82	200	100	V	33.097	4.56	27.7	44.777	74	-29.223	Peak
4824	37.65	161	100	H	33.097	4.56	27.7	47.607	74	-26.393	Peak
4824	19.7	200	100	V	33.097	4.56	27.7	29.657	54	-24.343	Ave
4824	21.83	161	100	H	33.097	4.56	27.7	31.787	54	-22.213	Ave
7236	34.22	0	100	V	35.928	5.49	27.58	48.058	88.776	-40.718	Peak
7236	36.34	322	158	H	35.928	5.49	27.58	50.178	92.246	-42.068	Peak
7236	19.04	0	100	V	35.928	5.49	27.58	32.878	75.686	-42.808	Ave
7236	20.06	322	158	H	35.928	5.49	27.58	33.898	78.996	-45.098	Ave
9648	30.95	0	100	V	37.954	6.54	27.06	48.384	88.776	-40.392	Peak
9648	31.67	0	100	H	37.954	6.54	27.06	49.104	92.246	-43.142	Peak
9648	16.51	0	100	V	37.954	6.54	27.06	33.944	75.686	-41.742	Ave
9648	16.42	0	100	H	37.954	6.54	27.06	33.854	78.996	-45.142	Ave
Middle Channel 2437 MHz, measured at 3 meters											
2437	79.19	296	100	V	28.956	3.12	0	111.266	-	-	Peak
2437	82.14	123	100	H	28.956	3.12	0	114.216	-	-	Peak
2437	66.16	296	100	V	28.956	3.12	0	98.236	-	-	Ave
2437	68.92	123	100	H	28.956	3.12	0	100.996	-	-	Ave
4874	40.94	202	100	V	33.327	4.54	27.76	51.047	74	-22.953	Peak
4874	43.24	148	100	H	33.327	4.54	27.76	53.347	74	-20.653	Peak
4874	25.21	202	100	V	33.327	4.54	27.76	35.317	54	-18.683	Ave
4874	27.53	148	100	H	33.327	4.54	27.76	37.637	54	-16.363	Ave
7311	36.94	0	100	V	36.369	5.57	27.51	51.369	74	-22.631	Peak
7311	40.18	326	116	H	36.369	5.57	27.51	54.609	74	-19.391	Peak
7311	21.44	0	100	V	36.369	5.57	27.51	35.869	54	-18.131	Ave
7311	23.89	326	116	H	36.369	5.57	27.51	38.319	54	-15.681	Ave
9748	31.69	0	100	V	38.087	6.62	26.98	49.417	91.266	-41.849	Peak
9748	31.39	0	100	H	38.087	6.62	26.98	49.117	94.216	-45.099	Peak
9748	16.68	0	100	V	38.087	6.62	26.98	34.407	78.236	-43.829	Ave
9748	16.6	0	100	H	38.087	6.62	26.98	34.327	80.996	-46.669	Ave

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)	
High Channel 2462 MHz, measured at 3 meters											
2462	77.38	90	100	V	29.155	3.25	0	109.785	-	-	Peak
2462	80.21	131	100	H	29.155	3.25	0	112.615	-	-	Peak
2462	64.57	90	100	V	29.155	3.25	0	96.975	-	-	Ave
2462	67.13	131	100	H	29.155	3.25	0	99.535	-	-	Ave
2483.5	38.15	91	100	V	29.155	3.25	0	70.555	74	-3.445	Peak
2483.5	40.19	124	100	H	29.155	3.25	0	72.595	74	-1.405	Peak
2483.5	19.6	91	100	V	29.155	3.25	0	52.005	54	-1.995	Ave
2483.5	21.47	124	100	H	29.155	3.25	0	53.875	54	-0.125	Ave
4924	37.25	197	100	V	33.327	4.52	27.75	47.347	74	-26.653	Peak
4924	38.23	165	100	H	33.327	4.52	27.75	48.327	74	-25.673	Peak
4924	20.88	197	100	V	33.327	4.52	27.75	30.977	54	-23.023	Ave
4924	22	165	100	H	33.327	4.52	27.75	32.097	54	-21.903	Ave
7386	33.89	0	100	V	36.565	5.62	27.51	48.565	74	-25.435	Peak
7386	34.03	0	100	H	36.565	5.62	27.51	48.705	74	-25.295	Peak
7386	18.834	0	100	V	36.565	5.62	27.51	33.509	54	-20.491	Ave
7386	18.62	0	100	H	36.565	5.62	27.51	33.295	54	-20.705	Ave
9848	31.43	0	100	V	38.287	6.55	26.98	49.287	89.785	-40.498	Peak
9848	32.6	0	100	H	38.287	6.55	26.98	50.457	92.615	-42.158	Peak
9848	16.48	0	100	V	38.287	6.55	26.98	34.337	76.975	-42.638	Ave
9848	16.52	0	100	H	38.287	6.55	26.98	34.377	79.535	-45.158	Ave

802.11n HT40 mode-MIMO

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)	
Low Channel 2422 MHz, measured at 3 meters											
2422	68	86	100	V	28.956	3.12	0	100.076	-	-	Peak
2422	71.76	124	100	H	28.956	3.12	0	103.836	-	-	Peak
2422	54.32	86	100	V	28.956	3.12	0	86.396	-	-	Ave
2422	57.88	124	100	H	28.956	3.12	0	89.956	-	-	Ave
2390	37.77	86	100	V	28.956	3.12	0	69.846	74	-4.154	Peak
2390	41.4	120	100	H	28.956	3.12	0	73.476	74	-0.524	Peak
2390	17.13	86	100	V	28.956	3.12	0	49.206	54	-4.794	Ave
2390	20.18	120	100	H	28.956	3.12	0	52.256	54	-1.744	Ave
4844	33.18	0	100	V	33.097	4.56	27.7	43.137	74	-30.863	Peak
4844	33.33	0	100	H	33.097	4.56	27.7	43.287	74	-30.713	Peak
4844	18.77	0	100	V	33.097	4.56	27.7	28.727	54	-25.273	Ave
4844	18.74	0	100	H	33.097	4.56	27.7	28.697	54	-25.303	Ave
7266	32.91	0	100	V	35.928	5.49	27.56	46.768	74	-27.232	Peak
7266	33.56	0	100	H	35.928	5.49	27.56	47.418	74	-26.582	Peak
7266	18.32	0	100	V	35.928	5.49	27.56	32.178	54	-21.822	Ave
7266	18.35	0	100	H	35.928	5.49	27.56	32.208	54	-21.792	Ave
9688	31.32	0	100	V	37.954	6.54	26.98	48.834	80.076	-31.242	Peak
9688	31.43	0	100	H	37.954	6.54	26.98	48.944	83.836	-34.892	Peak
9688	16.75	0	100	V	37.954	6.54	26.98	34.264	66.396	-32.132	Ave
9688	16.74	0	100	H	37.954	6.54	26.98	34.254	69.956	-35.702	Ave
Middle Channel 2437 MHz, measured at 3 meters											
2437	75.1	86	100	V	28.956	3.12	0	107.176	-	-	Peak
2437	78.2	122	100	H	28.956	3.12	0	110.276	-	-	Peak
2437	59.9	86	100	V	28.956	3.12	0	91.976	-	-	Ave
2437	63.74	122	100	H	28.956	3.12	0	95.816	-	-	Ave
4874	37.07	189	100	V	33.327	4.54	27.76	47.177	74	-26.823	Peak
4874	40.52	164	100	H	33.327	4.54	27.76	50.627	74	-23.373	Peak
4874	20.95	189	100	V	33.327	4.54	27.76	31.057	54	-22.943	Ave
4874	22.94	164	100	H	33.327	4.54	27.76	33.047	54	-20.953	Ave
7311	33.2	0	100	V	36.369	5.57	27.51	47.629	74	-26.371	Peak
7311	34.38	0	100	H	36.369	5.57	27.51	48.809	74	-25.191	Peak
7311	18.35	0	100	V	36.369	5.57	27.51	32.779	54	-21.221	Ave
7311	19.1	0	100	H	36.369	5.57	27.51	33.529	54	-20.471	Ave
9748	31.74	0	100	V	38.087	6.62	26.98	49.467	87.176	-37.709	Peak
9748	31.42	0	100	H	38.087	6.62	26.98	49.147	90.276	-41.129	Peak
9748	16.67	0	100	V	38.087	6.62	26.98	34.397	71.976	-37.579	Ave
9748	16.42	0	100	H	38.087	6.62	26.98	34.147	75.816	-41.669	Ave

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)	
High Channel 2452 MHz, measured at 3 meters											
2452	68.32	91	100	V	29.155	3.25	0	100.725	-	-	Peak
2452	72.3	124	100	H	29.155	3.25	0	104.705	-	-	Peak
2452	54.23	91	100	V	29.155	3.25	0	86.635	-	-	Ave
2452	57.89	124	100	H	29.155	3.25	0	90.295	-	-	Ave
2483.5	35.51	86	100	V	29.155	3.25	0	67.915	74	-6.085	Peak
2483.5	38.45	124	100	H	29.155	3.25	0	70.855	74	-3.145	Peak
2483.5	16.83	86	100	V	29.155	3.25	0	49.235	54	-4.765	Ave
2483.5	19.17	124	100	H	29.155	3.25	0	51.575	54	-2.425	Ave
4904	32.84	0	100	V	33.327	4.52	27.67	43.017	74	-30.983	Peak
4904	33.31	0	100	H	33.327	4.52	27.67	43.487	74	-30.513	Peak
4904	17.94	0	100	V	33.327	4.52	27.67	28.117	54	-25.883	Ave
4904	17.93	0	100	H	33.327	4.52	27.67	28.107	54	-25.893	Ave
7356	33.75	0	100	V	36.565	5.62	27.57	48.365	74	-25.635	Peak
7356	33.02	0	100	H	36.565	5.62	27.57	47.635	74	-26.365	Peak
7356	18.25	0	100	V	36.565	5.62	27.57	32.865	54	-21.135	Ave
7356	18.29	0	100	H	36.565	5.62	27.57	32.905	54	-21.095	Ave
9808	31.42	0	100	V	38.287	6.55	27.02	49.237	80.725	-31.488	Peak
9808	31.93	0	100	H	38.287	6.55	27.02	49.747	84.705	-34.958	Peak
9808	16.6	0	100	V	38.287	6.55	27.02	34.417	66.635	-32.218	Ave
9808	16.59	0	100	H	38.287	6.55	27.02	34.407	70.295	-35.888	Ave

3) 1–40 GHz, Measured at 3 meters

5725 – 5850 MHz: WLAN

802.11a mode, Low Channel

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)	
Low Channel 5745 MHz, measured at 3 meters											
5745	72.69	192	100	V	34.392	4.85	0	111.932	-	-	Peak
5745	67.15	181	100	H	34.392	4.85	0	106.392	-	-	Peak
5745	61.73	192	100	V	34.392	4.85	0	100.972	-	-	Ave
5745	56.4	181	100	H	34.392	4.85	0	95.642	-	-	Ave
11490	31.69	0	100	V	39.047	7.6	26.94	51.397	74	-22.603	Peak
11490	31.53	0	100	H	39.047	7.6	26.94	51.237	74	-22.763	Peak
11490	16.54	0	100	V	39.047	7.6	26.94	36.247	54	-17.753	Ave
11490	16.6	0	100	H	39.047	7.6	26.94	36.307	54	-17.693	Ave
17235	31.9	0	100	V	43.239	8.63	25.93	57.839	91.932	-34.093	Peak
17235	32.1	0	100	H	43.239	8.63	25.93	58.039	86.392	-28.353	Peak
17235	17.04	0	100	V	43.239	8.63	25.93	42.979	80.972	-37.993	Ave
17235	17.05	0	100	H	43.239	8.63	25.93	42.989	75.642	-32.653	Ave
22980	31.81	0	100	V	49.9	10.07	28.9	62.88	74	-11.12	Peak
22980	31.62	0	100	H	49.9	10.07	28.9	62.69	74	-11.31	Peak
22980	16.9	0	100	V	49.9	10.07	28.9	47.97	54	-6.03	Ave
22980	16.88	0	100	H	49.9	10.07	28.9	47.95	54	-6.05	Ave

802.11a mode, Middle Channel

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)	
Middle Channel 5785 MHz, measured at 3 meters											
5785	73.1	192	117	V	34.349	4.82	0	112.269	-	-	Peak
5785	68.09	182	100	H	34.349	4.82	0	107.259	-	-	Peak
5785	62.39	192	117	V	34.349	4.82	0	101.559	-	-	Ave
5785	57.13	182	100	H	34.349	4.82	0	96.299	-	-	Ave
11570	31.02	0	100	V	39.203	7.69	26.99	50.923	74	-23.077	Peak
11570	31.42	0	100	H	39.203	7.69	26.99	51.323	74	-22.677	Peak
11570	16.76	0	100	V	39.203	7.69	26.99	36.663	54	-17.337	Ave
11570	16.77	0	100	H	39.203	7.69	26.99	36.673	54	-17.327	Ave
17355	32.22	0	100	V	45.311	8.64	25.84	60.331	92.269	-31.938	Peak
17355	31.37	0	100	H	45.311	8.64	25.84	59.481	87.259	-27.778	Peak
17355	16.59	0	100	V	45.311	8.64	25.84	44.701	81.559	-36.858	Ave
17355	16.58	0	100	H	45.311	8.64	25.84	44.691	76.299	-31.608	Ave
23140	31.98	0	100	V	49.9	10.23	28.8	63.31	92.269	-28.959	Peak
23140	31.94	0	100	H	49.9	10.23	28.8	63.27	87.259	-23.989	Peak
23140	17.36	0	100	V	49.9	10.23	28.8	48.69	81.559	-32.869	Ave
23140	17.38	0	100	H	49.9	10.23	28.8	48.71	76.299	-27.589	Ave

802.11a mode, High Channel

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)	
High Channel 5825 MHz, measured at 3 meters											
5825	73.42	193	113	V	34.349	4.87	0	112.639	-	-	Peak
5825	68.64	181	109	H	34.349	4.87	0	107.859	-	-	Peak
5825	62.56	193	113	V	34.349	4.87	0	101.779	-	-	Ave
5825	57.62	181	109	H	34.349	4.87	0	96.839	-	-	Ave
11650	32.14	0	100	V	39.203	7.78	27	52.123	74	-21.877	Peak
11650	31.61	0	100	H	39.203	7.78	27	51.593	74	-22.407	Peak
11650	16.93	0	100	V	39.203	7.78	27	36.913	54	-17.087	Ave
11650	16.81	0	100	H	39.203	7.78	27	36.793	54	-17.207	Ave
17475	31.48	0	100	V	46.782	8.74	25.79	61.212	92.639	-31.427	Peak
17475	31.08	0	100	H	46.782	8.74	25.79	60.812	87.859	-27.047	Peak
17475	16.57	0	100	V	46.782	8.74	25.79	46.302	81.779	-35.477	Ave
17475	16.55	0	100	H	46.782	8.74	25.79	46.282	76.839	-30.557	Ave
23300	32.58	0	100	V	49.9	10.13	28.6	64.01	92.639	-28.629	Peak
23300	32.63	0	100	H	49.9	10.13	28.6	64.06	87.859	-23.799	Peak
23300	17.58	0	100	V	49.9	10.13	28.6	49.01	81.779	-32.769	Ave
23300	17.61	0	100	H	49.9	10.13	28.6	49.04	76.839	-27.799	Ave

802.11 HT20 mode, Low Channel

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)	
Low Channel 5745 MHz, measured at 3 meters											
5745	72.36	193	100	V	34.392	4.85	0	111.602	-	-	Peak
5745	66.6	187	114	H	34.392	4.85	0	105.842	-	-	Peak
5745	61.39	193	100	V	34.392	4.85	0	100.632	-	-	Ave
5745	56.05	187	114	H	34.392	4.85	0	95.292	-	-	Ave
11490	31.56	0	100	V	39.047	7.6	26.94	51.267	74	-22.733	Peak
11490	31.51	0	100	H	39.047	7.6	26.94	51.217	74	-22.783	Peak
11490	16.54	0	100	V	39.047	7.6	26.94	36.247	54	-17.753	Ave
11490	16.55	0	100	H	39.047	7.6	26.94	36.257	54	-17.743	Ave
17235	31.97	0	100	V	43.239	8.63	25.93	57.909	91.602	-33.693	Peak
17235	32.13	0	100	H	43.239	8.63	25.93	58.069	85.842	-27.773	Peak
17235	17.01	0	100	V	43.239	8.63	25.93	42.949	80.632	-37.683	Ave
17235	17.01	0	100	H	43.239	8.63	25.93	42.949	75.292	-32.343	Ave
22980	31.76	0	100	V	49.9	10.07	28.9	62.83	74	-11.17	Peak
22980	31.66	0	100	H	49.9	10.07	28.9	62.73	74	-11.27	Peak
22980	16.9	0	100	V	49.9	10.07	28.9	47.97	54	-6.03	Ave
22980	16.87	0	100	H	49.9	10.07	28.9	47.94	54	-6.06	Ave

802.11 HT20 mode, Middle Channel

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)	
Middle Channel 5785 MHz, measured at 3 meters											
5785	72.4	194	160	V	34.349	4.82	0	111.569	-	-	Peak
5785	68.33	184	117	H	34.349	4.82	0	107.499	-	-	Peak
5785	61.43	194	160	V	34.349	4.82	0	100.599	-	-	Ave
5785	57.23	184	117	H	34.349	4.82	0	96.399	-	-	Ave
11570	31.19	0	100	V	39.203	7.69	26.99	51.093	74	-22.907	Peak
11570	31.32	0	100	H	39.203	7.69	26.99	51.223	74	-22.777	Peak
11570	16.8	0	100	V	39.203	7.69	26.99	36.703	54	-17.297	Ave
11570	16.79	0	100	H	39.203	7.69	26.99	36.693	54	-17.307	Ave
17355	32.31	0	100	V	45.311	8.64	25.84	60.421	91.569	-31.148	Peak
17355	32.14	0	100	H	45.311	8.64	25.84	60.251	87.499	-27.248	Peak
17355	16.54	0	100	V	45.311	8.64	25.84	44.651	80.599	-35.948	Ave
17355	16.58	0	100	H	45.311	8.64	25.84	44.691	76.399	-31.708	Ave
23140	31.99	0	100	V	49.9	10.23	28.8	63.32	91.569	-28.249	Peak
23140	31.93	0	100	H	49.9	10.23	28.8	63.26	87.499	-24.239	Peak
23140	17.37	0	100	V	49.9	10.23	28.8	48.7	80.599	-31.899	Ave
23140	17.37	0	100	H	49.9	10.23	28.8	48.7	76.399	-27.699	Ave

802.11 HT20 mode, High Channel

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)	
High Channel 5825 MHz, measured at 3 meters											
5825	72.48	193	123	V	34.349	4.87	0	111.699	-	-	Peak
5825	68.55	184	115	H	34.349	4.87	0	107.769	-	-	Peak
5825	61.9	193	123	V	34.349	4.87	0	101.119	-	-	Ave
5825	57.98	184	115	H	34.349	4.87	0	97.199	-	-	Ave
11650	32.08	0	100	V	39.203	7.78	27	52.063	74	-21.937	Peak
11650	31.79	0	100	H	39.203	7.78	27	51.773	74	-22.227	Peak
11650	16.91	0	100	V	39.203	7.78	27	36.893	54	-17.107	Ave
11650	16.87	0	100	H	39.203	7.78	27	36.853	54	-17.147	Ave
17475	31.54	0	100	V	46.782	8.74	25.79	61.272	91.699	-30.427	Peak
17475	31.31	0	100	H	46.782	8.74	25.79	61.042	87.769	-26.727	Peak
17475	16.59	0	100	V	46.782	8.74	25.79	46.322	81.119	-34.797	Ave
17475	16.58	0	100	H	46.782	8.74	25.79	46.312	77.199	-30.887	Ave
23300	32.66	0	100	V	49.9	10.13	28.6	64.09	91.699	-27.609	Peak
23300	32.61	0	100	H	49.9	10.13	28.6	64.04	87.769	-23.729	Peak
23300	17.53	0	100	V	49.9	10.13	28.6	48.96	81.119	-32.159	Ave
23300	17.6	0	100	H	49.9	10.13	28.6	49.03	77.199	-28.169	Ave

802.11 HT40 mode, Low Channel

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)	
Middle Channel 5755 MHz, measured at 3 meters											
5755	71.6	196	126	V	34.349	4.82	0	110.769	-	-	Peak
5755	65.47	185	120	H	34.349	4.82	0	104.639	-	-	Peak
5755	59.86	196	126	V	34.349	4.82	0	99.029	-	-	Ave
5755	54.08	185	120	H	34.349	4.82	0	93.249	-	-	Ave
11510	31.63	0	100	V	39.047	7.6	26.99	51.287	74	-22.713	Peak
11510	31.54	0	100	H	39.047	7.6	26.99	51.197	74	-22.803	Peak
11510	16.49	0	100	V	39.047	7.6	26.99	36.147	54	-17.853	Ave
11510	16.34	0	100	H	39.047	7.6	26.99	35.997	54	-18.003	Ave
17265	32.5	0	100	V	43.239	8.63	25.94	58.429	90.769	-32.34	Peak
17265	32.69	0	100	H	43.239	8.63	25.94	58.619	84.639	-26.02	Peak
17265	17	0	100	V	43.239	8.63	25.94	42.929	79.029	-36.1	Ave
17265	17	0	100	H	43.239	8.63	25.94	42.929	73.249	-30.32	Ave
23020	32.35	0	100	V	49.9	10.07	28.9	63.42	74	-10.58	Peak
23020	32.4	0	100	H	49.9	10.07	28.9	63.47	74	-10.53	Peak
23020	16.91	0	100	V	49.9	10.07	28.9	47.98	54	-6.02	Ave
23020	16.9	0	100	H	49.9	10.07	28.9	47.97	54	-6.03	Ave

802.11 HT40 mode, High Channel

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)	
High Channel 5795 MHz, measured at 3 meters											
5795	71.34	193	114	V	34.349	4.82	0	110.509	-	-	Peak
5795	66.97	186	115	H	34.349	4.82	0	106.139	-	-	Peak
5795	59.53	193	114	V	34.349	4.82	0	98.699	-	-	Ave
5795	55.34	186	115	H	34.349	4.82	0	94.509	-	-	Ave
11590	31.89	0	100	V	39.203	7.69	26.99	51.793	74	-22.207	Peak
11590	31.11	0	100	H	39.203	7.69	26.99	51.013	74	-22.987	Peak
11590	16.79	0	100	V	39.203	7.69	26.99	36.693	54	-17.307	Ave
11590	16.68	0	100	H	39.203	7.69	26.99	36.583	54	-17.417	Ave
17385	31.34	0	100	V	45.311	8.64	25.86	59.431	90.509	-31.078	Peak
17385	31.17	0	100	H	45.311	8.64	25.86	59.261	86.139	-26.878	Peak
17385	16.44	0	100	V	45.311	8.64	25.86	44.531	78.699	-34.168	Ave
17385	16.43	0	100	H	45.311	8.64	25.86	44.521	74.509	-29.988	Ave
23180	32.42	0	100	V	49.9	10.23	28.7	63.85	90.509	-26.659	Peak
23180	32.32	0	100	H	49.9	10.23	28.7	63.75	86.139	-22.389	Peak
23180	17.61	0	100	V	49.9	10.23	28.7	49.04	78.699	-29.659	Ave
23180	17.62	0	100	H	49.9	10.23	28.7	49.05	74.509	-25.459	Ave

802.11 HT20 mode, Low Channel -MIMO

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)	
Low Channel 5745 MHz, measured at 3 meters											
5745	70.06	196	100	V	34.392	4.85	0	109.302	-	-	Peak
5745	64.32	186	126	H	34.392	4.85	0	103.562	-	-	Peak
5745	56.04	196	100	V	34.392	4.85	0	95.282	-	-	Ave
5745	51.53	186	126	H	34.392	4.85	0	90.772	-	-	Ave
11490	31.48	0	100	V	39.047	7.6	26.94	51.187	74	-22.813	Peak
11490	31.42	0	100	H	39.047	7.6	26.94	51.127	74	-22.873	Peak
11490	16.49	0	100	V	39.047	7.6	26.94	36.197	54	-17.803	Ave
11490	16.43	0	100	H	39.047	7.6	26.94	36.137	54	-17.863	Ave
17235	31.99	0	100	V	43.239	8.63	25.93	57.929	89.302	-31.373	Peak
17235	31.87	0	100	H	43.239	8.63	25.93	57.809	83.562	-25.753	Peak
17235	17.02	0	100	V	43.239	8.63	25.93	42.959	75.282	-32.323	Ave
17235	17	0	100	H	43.239	8.63	25.93	42.939	70.772	-27.833	Ave
22980	31.77	0	100	V	49.9	10.07	28.9	62.84	74	-11.16	Peak
22980	31.73	0	100	H	49.9	10.07	28.9	62.8	74	-11.2	Peak
22980	16.91	0	100	V	49.9	10.07	28.9	47.98	54	-6.02	Ave
22980	16.88	0	100	H	49.9	10.07	28.9	47.95	54	-6.05	Ave

802.11 HT20 mode, Middle Channel -MIMO

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)	
Middle Channel 5785 MHz, measured at 3 meters											
5785	70.2	181	158	V	34.349	4.82	0	109.369	-	-	Peak
5785	65.08	185	118	H	34.349	4.82	0	104.249	-	-	Peak
5785	57.29	181	158	V	34.349	4.82	0	96.459	-	-	Ave
5785	52.73	185	118	H	34.349	4.82	0	91.899	-	-	Ave
11570	31.22	0	100	V	39.203	7.69	26.99	51.123	74	-22.877	Peak
11570	31.37	0	100	H	39.203	7.69	26.99	51.273	74	-22.727	Peak
11570	16.9	0	100	V	39.203	7.69	26.99	36.803	54	-17.197	Ave
11570	16.82	0	100	H	39.203	7.69	26.99	36.723	54	-17.277	Ave
17355	32.43	0	100	V	45.311	8.64	25.84	60.541	89.369	-28.828	Peak
17355	32.32	0	100	H	45.311	8.64	25.84	60.431	84.249	-23.818	Peak
17355	16.58	0	100	V	45.311	8.64	25.84	44.691	76.459	-31.768	Ave
17355	16.58	0	100	H	45.311	8.64	25.84	44.691	71.899	-27.208	Ave
23140	32.03	0	100	V	49.9	10.23	28.8	63.36	89.369	-26.009	Peak
23140	32.12	0	100	H	49.9	10.23	28.8	63.45	84.249	-20.799	Peak
23140	17.4	0	100	V	49.9	10.23	28.8	48.73	76.459	-27.729	Ave
23140	17.39	0	100	H	49.9	10.23	28.8	48.72	71.899	-23.179	Ave

802.11 HT20 mode, High Channel -MIMO

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)	
High Channel 5825 MHz, measured at 3 meters											
5825	70.24	194	131	V	34.349	4.87	0	109.459	-	-	Peak
5825	65.99	183	117	H	34.349	4.87	0	105.209	-	-	Peak
5825	57.33	194	131	V	34.349	4.87	0	96.549	-	-	Ave
5825	53.29	183	117	H	34.349	4.87	0	92.509	-	-	Ave
11650	32.11	0	100	V	39.203	7.78	27	52.093	74	-21.907	Peak
11650	31.86	0	100	H	39.203	7.78	27	51.843	74	-22.157	Peak
11650	16.87	0	100	V	39.203	7.78	27	36.853	54	-17.147	Ave
11650	16.88	0	100	H	39.203	7.78	27	36.863	54	-17.137	Ave
17475	31.61	0	100	V	46.782	8.74	25.79	61.342	89.459	-28.117	Peak
17475	31.43	0	100	H	46.782	8.74	25.79	61.162	85.209	-24.047	Peak
17475	16.55	0	100	V	46.782	8.74	25.79	46.282	76.549	-30.267	Ave
17475	16.57	0	100	H	46.782	8.74	25.79	46.302	72.509	-26.207	Ave
23300	32.6	0	100	V	49.9	10.13	28.6	64.03	89.459	-25.429	Peak
23300	32.32	0	100	H	49.9	10.13	28.6	63.75	85.209	-21.459	Peak
23300	17.5	0	100	V	49.9	10.13	28.6	48.93	76.549	-27.619	Ave
23300	17.5	0	100	H	49.9	10.13	28.6	48.93	72.509	-23.579	Ave

802.11 HT40 mode, Low Channel -MIMO

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)	
Middle Channel 5755 MHz, measured at 3 meters											
5755	70.8	177	117	V	34.349	4.82	0	109.969	-	-	Peak
5755	64.46	176	125	H	34.349	4.82	0	103.629	-	-	Peak
5755	56.74	177	117	V	34.349	4.82	0	95.909	-	-	Ave
5755	50.32	176	125	H	34.349	4.82	0	89.489	-	-	Ave
11510	31.41	0	100	V	39.047	7.6	26.99	51.067	74	-22.933	Peak
11510	31.33	0	100	H	39.047	7.6	26.99	50.987	74	-23.013	Peak
11510	16.41	0	100	V	39.047	7.6	26.99	36.067	54	-17.933	Ave
11510	16.36	0	100	H	39.047	7.6	26.99	36.017	54	-17.983	Ave
17265	32.58	0	100	V	43.239	8.63	25.94	58.509	89.969	-31.46	Peak
17265	32.74	0	100	H	43.239	8.63	25.94	58.669	83.629	-24.96	Peak
17265	17.53	0	100	V	43.239	8.63	25.94	43.459	75.909	-32.45	Ave
17265	17.5	0	100	H	43.239	8.63	25.94	43.429	69.489	-26.06	Ave
23020	32.35	0	100	V	49.9	10.07	28.9	63.42	74	-10.58	Peak
23020	32.3	0	100	H	49.9	10.07	28.9	63.37	74	-10.63	Peak
23020	16.81	0	100	V	49.9	10.07	28.9	47.88	54	-6.12	Ave
23020	16.8	0	100	H	49.9	10.07	28.9	47.87	54	-6.13	Ave

802.11 HT40 mode, High Channel-MIMO

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)	
High Channel 5795 MHz, measured at 3 meters											
5795	71.28	172	123	V	34.349	4.82	0	110.449	-	-	Peak
5795	66.37	184	115	H	34.349	4.82	0	105.539	-	-	Peak
5795	57.03	172	123	V	34.349	4.82	0	96.199	-	-	Ave
5795	52.74	184	115	H	34.349	4.82	0	91.909	-	-	Ave
11590	31.76	0	100	V	39.203	7.69	26.99	51.663	74	-22.337	Peak
11590	31.59	0	100	H	39.203	7.69	26.99	51.493	74	-22.507	Peak
11590	16.69	0	100	V	39.203	7.69	26.99	36.593	54	-17.407	Peak
11590	16.67	0	100	H	39.203	7.69	26.99	36.573	54	-17.427	Peak
17385	31.24	0	100	V	45.311	8.64	25.86	59.331	90.449	-31.118	Peak
17385	31.19	0	100	H	45.311	8.64	25.86	59.281	85.539	-26.258	Peak
17385	16.42	0	100	V	45.311	8.64	25.86	44.511	76.199	-31.688	Ave
17385	16.42	0	100	H	45.311	8.64	25.86	44.511	71.909	-27.398	Ave
23180	31.39	0	100	V	49.9	10.23	28.7	62.82	90.449	-27.629	Peak
23180	31.43	0	100	H	49.9	10.23	28.7	62.86	85.539	-22.679	Peak
23180	16.55	0	100	V	49.9	10.23	28.7	47.98	76.199	-28.219	Ave
23180	16.53	0	100	H	49.9	10.23	28.7	47.96	71.909	-23.949	Ave

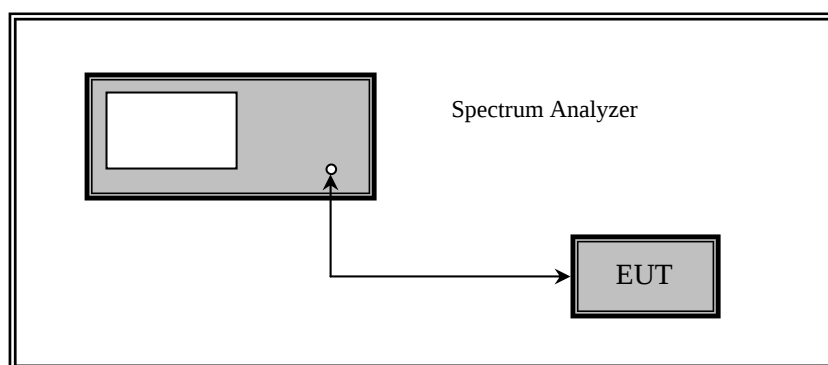
8 FCC §15.247(b) & IC RSS-210 §A8.4 – Peak Output Power Measurement

8.1 Applicable Standard

According to FCC §15.247(b) and IC RSS-210 §A8.4 (4) for systems using digital modulation in the 902~928 MHz, 2400~2483.5 MHz, and 5725~5850 MHz bands: 1 Watt.

8.2 Measurement Procedure

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to a spectrum analyzer.
3. Add a correction factor to the display.



8.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Agilent	Spectrum Analyzer	E4440A	US42221851	2012-02-28	1 year

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

8.4 Test Environmental Conditions

Temperature:	22-25 °C
Relative Humidity:	41-45 %
ATM Pressure:	101-102kPa

The testing was performed by Bo Li from 2012-12-20 to 2012-12-27 and 2013-01-10 at RF site.

8.5 Test Results

2400–2483.5 MHz

BLE

Channel	Frequency (MHz)	TX Chain B (BT Ant) Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	6.32	30	-23.68
Middle	2440	6.66	30	-23.34
High	2480	6.74	30	-23.26

802.11b mode

Channel	Frequency (MHz)	TX Chain A Power (dBm)	TX Chain B Power (dBm)	Worst Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	16.8	16.2	16.8	30	-13.2
Middle	2437	16.91	14.6	16.91	30	-13.09
High	2462	16.87	15.4	16.87	30	-13.13

802.11g mode

Channel	Frequency (MHz)	TX Chain A Power (dBm)	TX Chain B Power (dBm)	Worst Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	12.94	12.3	12.94	30	-17.06
Middle	2437	15.6	15.6	15.60	30	-14.4
High	2462	13.34	12.4	13.34	30	-16.66

802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain A Power (dBm)	TX Chain B Power (dBm)	Worst Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	12.12	11.1	12.12	30	-17.88
Middle	2437	15.63	15.64	15.64	30	-14.36
High	2462	11.5	11.24	11.50	30	-18.5

802.11n HT40 mode

Channel	Frequency (MHz)	TX Chain A Power (dBm)	TX Chain B Power (dBm)	Worst Power (dBm)	Limit (dBm)	Margin (dB)
Low	2422	9.16	8.37	9.16	30	-20.84
Middle	2437	12	12	12	30	-18
High	2452	9	9.1	9.10	30	-20.9

802.11n HT20 mode- MIMO

Channel	Frequency (MHz)	TX Chain A Power (dBm)	TX Chain B Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	11.89	11.84	14.88	30	-15.12
Middle	2437	13.32	13.45	16.40	30	-13.6
High	2462	10.78	10.68	13.74	30	-16.26

802.11n HT40 mode - MIMO

Channel	Frequency (MHz)	TX Chain A Power (dBm)	TX Chain B Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2422	6.88	7.32	9.89	30	-20.11
Middle	2437	11.99	12.64	15.34	30	-14.66
High	2452	6.78	7.14	9.97	30	-20.03

5725 MHz - 5850 MHz

802.11a mode

Channel	Frequency (MHz)	TX Chain A Power (dBm)	TX Chain B Power (dBm)	Worst Power (dBm)	Limit (dBm)	Margin (dB)
Low	5745	14.68	16.16	16.16	30	-13.84
Middle	5785	14.21	15.95	15.95	30	-14.05
High	5825	14.23	16.03	16.03	30	-13.97

802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain A Power (dBm)	TX Chain B Power (dBm)	Worst Power (dBm)	Limit (dBm)	Margin (dB)
Low	5745	14.87	16.03	16.03	30	-13.97
Middle	5785	14.42	16.17	16.17	30	-13.83
High	5825	14.41	15.91	15.91	30	-14.09

802.11n HT40 mode

Channel	Frequency (MHz)	TX Chain A Power (dBm)	TX Chain B Power (dBm)	Worst Power (dBm)	Limit (dBm)	Margin (dB)
Low	5755	19.9	20	20	30	-10
High	5795	19.8	20	20	30	-10

802.11n HT20 mode- MIMO

Channel	Frequency (MHz)	TX Chain A Power (dBm)	TX Chain B Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	5745	10.25	10.48	13.38	30	-16.62
Middle	5785	10.66	10.48	13.58	30	-16.42
High	5825	10.31	10.66	13.50	30	-16.50

802.11n HT40 mode - MIMO

Channel	Frequency (MHz)	TX Chain A Power (dBm)	TX Chain B Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	5755	20.86	20.98	23.93	30	-6.07
High	5795	20.77	20.65	23.72	30	-6.28

9 IC RSS-210 §2.3 & RSS-Gen §6 – Receiver Spurious Emissions

9.1 Applicable Standard

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

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

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

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

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

According to RSS-Gen §6.1, Tables 2 show the general field strength limits of receiver spurious emissions

Table 2: Radiated Limits of Receiver Spurious Emissions

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

9.2 EUT Setup

The radiated emissions tests were performed in the 3 meter chamber, using the setup in accordance with ANSI C63.4-2009.

9.3 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.

9.4 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:

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

9.5 Test Equipment Lists and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Sunol Science Corp	System Controller	SC99V	122303-1	N/R	N/R
Sunol Science Corp	Combination Antenna	JB3	A020106-2	2012-08-15	1 year
Hewlett Packard	Pre-amplifier	8447D	2944A06639	2012-06-09	1 year
Mini-Circuits	Pre-amplifier	ZVA-183-S	570400946	2012-05-09	1 year
Agilent	Spectrum Analyzer	E4440A	US42221851	2012-02-28	1 year
EMCO	Horn Antenna	3315	9511-4627	2012-10-17	1 year
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100337	2012-03-22	1 year

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

9.6 Test Environmental Conditions

Temperature:	21°C
Relative Humidity:	45%
ATM Pressure:	102.2kPa

The testing was performed by Bo Li on 2013-01-08 at 5 meter 3.

9.7 Summary of Test Results

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

2400–2483.5 MHz

Mode: Receiving			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Range (MHz)
-1.96	25280	Horizontal	1-26

BLE

Mode: Receiving			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Range (MHz)
-1.8	25573	Horizontal/Vertical	30-26000

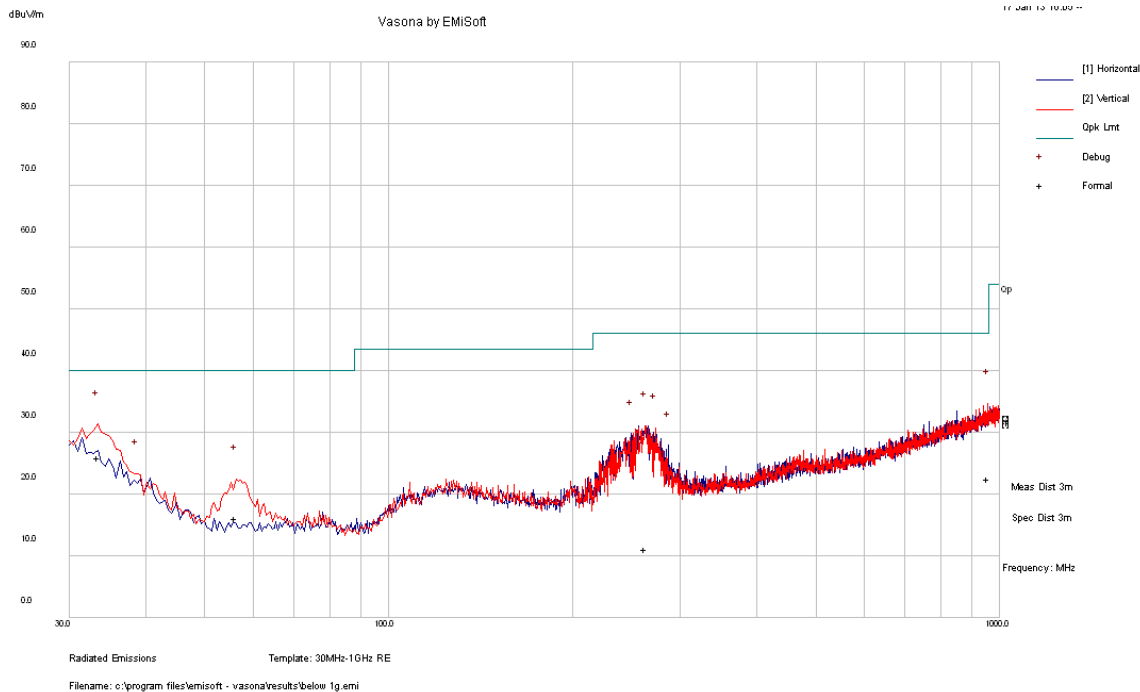
5725-5850 MHz

Mode: Receiving			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Range (MHz)
-1.63	25653.33	Horizontal	30-40000

9.8 Test Results and Plots

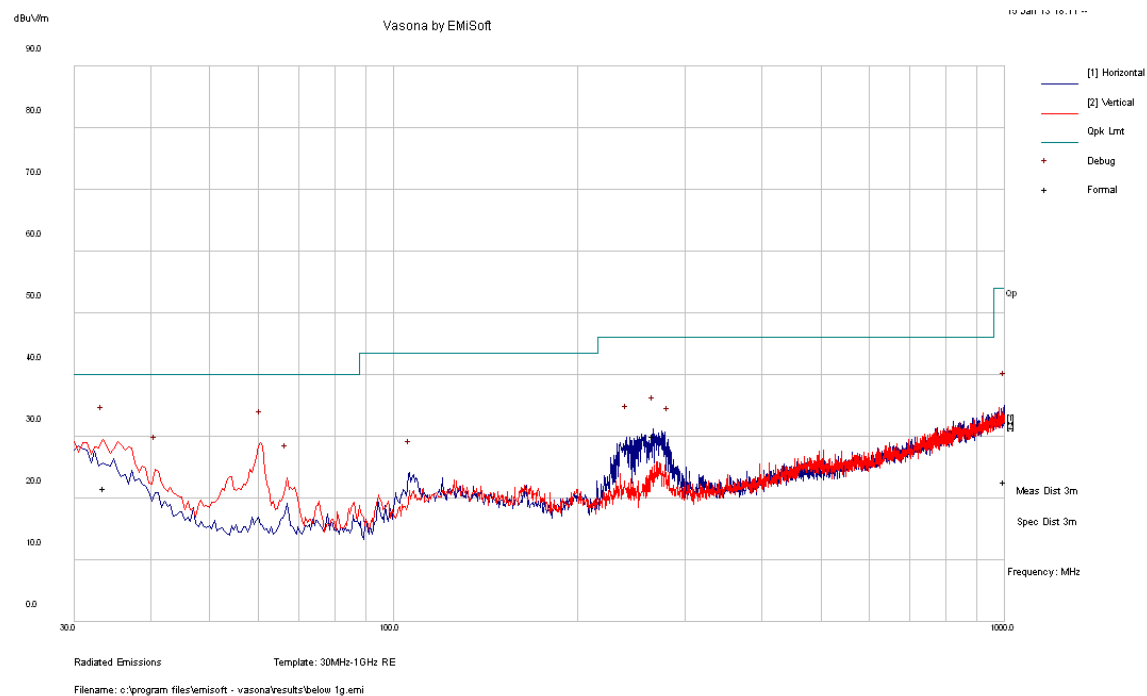
1) 30-1000 MHz, Measured at 3 meters

2400–2483.5 MHz: BLE



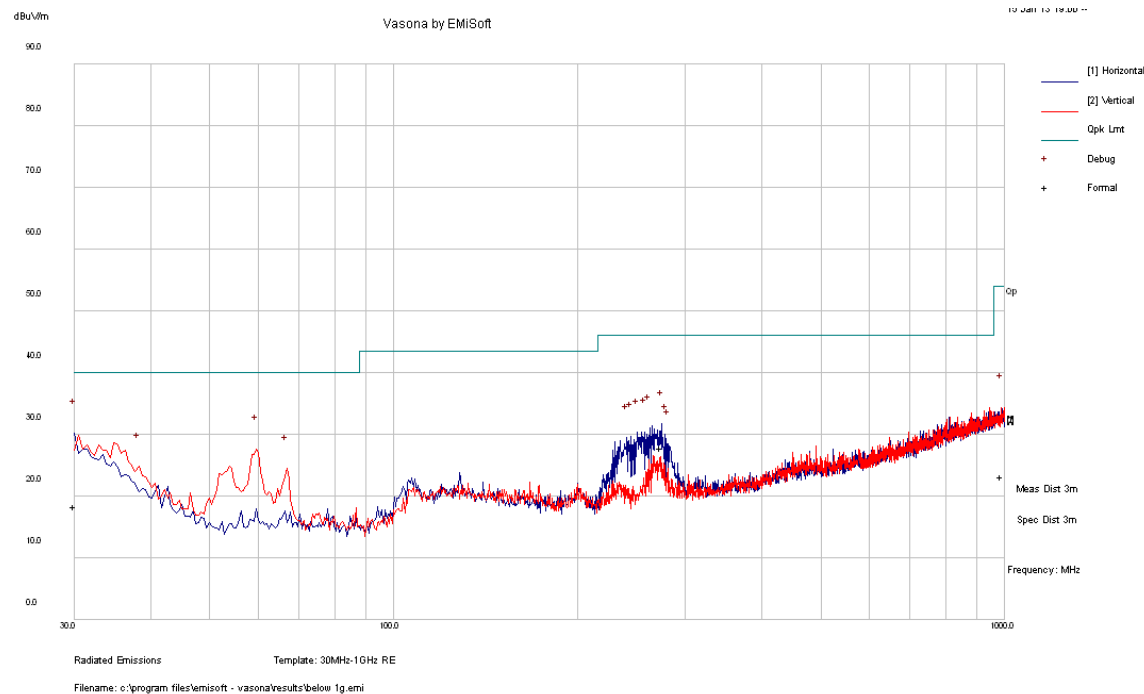
Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (PK/QP/Ave.)
33.44	25.97	101	V	294	40	-14.03	QP
956.1185	22.45	297	V	244	46	-23.55	QP
263.34075	11.21	208	V	294	46	-34.79	QP
56.25275	16.1	133	V	47	40	-23.9	QP

2400–2483.5 MHz: WLAN



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (PK/QP/Ave.)
33.586	21.73	98	V	111	40	-18.27	QP
266.3303	30.04	91	H	326	46	-15.96	QP
998.178	22.7	97	H	226	54	-31.3	QP

5725-5850 MHz: WLAN



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (PK/QP/Ave.)
30	18.35	231	H	252	40	-21.65	QP
274.3095	27.81	106	H	203	46	-18.19	QP
987.77025	23.12	176	V	300	54	-30.88	QP

2) Above 1 GHz Measured at 3 meters

2400–2483.5 MHz: BLE

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Comment
1143.6	41.670	166	V	360	74	-32.33	Peak
1143.6	42.590	151	H	143	74	-31.41	Peak
1143.6	21.580	166	V	360	54	-32.42	Ave
1143.6	21.660	151	H	143	54	-32.34	Ave
2835.23	44.671	100	V	5	74	-29.329	Peak
2835.23	43.761	100	H	334	74	-30.239	Peak
2835.23	32.221	100	V	5	54	-21.779	Ave
2835.23	29.661	100	H	334	54	-24.339	Ave
25573	66.710	100	V	0	74	-7.29	Peak
25573	66.720	100	H	0	74	-7.28	Peak
25573	52.200	100	V	0	54	-1.8	Ave
25573	52.200	100	H	0	54	-1.8	Ave

2400–2483.5 MHz: WLAN

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Comment
1105	41.822	100	V	0	74	-32.178	Peak
1105	40.322	100	H	173	74	-33.678	Peak
1105	21.362	100	V	0	54	-32.638	Ave
1105	21.312	100	H	173	54	-32.688	Ave
2455	54.552	100	V	284	74	-19.448	Peak
2455	52.282	100	H	179	74	-21.718	Peak
2455	29.772	100	V	284	54	-24.228	Ave
2455	26.612	100	H	179	54	-27.388	Ave
25280	66.570	100	V	0	74	-7.430	Peak
25280	66.790	100	H	0	74	-7.210	Peak
25280	52.020	100	V	0	54	-1.980	Ave
25280	52.040	100	H	0	54	-1.960	Ave

5725-5850 MHz: WLAN

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Comment
1105	42.682	100	V	0	74	-31.318	Peak
1105	42.182	100	H	140	74	-31.818	Peak
1105	21.242	100	V	0	54	-32.758	Ave
1105	21.162	100	H	140	54	-32.838	Ave
2460	54.062	100	V	306	74	-19.938	Peak
2460	52.202	100	H	97	74	-21.798	Peak
2460	26.772	100	V	306	54	-27.228	Ave
2460	26.072	100	H	97	54	-27.928	Ave
25653.33	67.670	100	V	0	74	-6.330	Peak
25653.33	67.050	100	H	0	74	-6.950	Peak
25653.33	52.340	100	V	0	54	-1.660	Ave
25653.33	52.370	100	H	0	54	-1.630	Ave