



FCC PART 15E



IC RSS-210, ISSUE 7, JUNE 2007 TEST AND MEASUREMENT REPORT

For

Fortinet, Inc.

1090 Kifer Road,
Sunnyvale, CA 94086, USA

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

Report Type: Original Report	Product Type: Dual Band Wi-Fi Module
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Report Number: <u>R1005072-15E</u>	
Report Date: <u>2010-06-09</u>	
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* This report may contain data that are not covered by the NVLAP accreditation and are marked with an asterisk “*” Rev.12

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1005072-15E	Original Report	2010-06-09

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 FCC ID: TVE-0600101, IC: 7280B-0600101 model: *WPEA-111N/W*, or the “EUT” as referred in this report is a dual band wireless Module. It supports IEEE 802.11 b/g/n modes in ISM Frequency Bands 2.4 GHz and 802.11a/n modes in 5 GHz band.

1.2 Mechanical Description of EUT

The “EUT” measures approximately 30mm (L) x 25mm (W) x 5mm (H), and weighs approximately 4.5g.

The test data gathered are from typical production sample, Serial number: 10135K1000-150 assigned by the Manufacturer.

1.3 EUT Photo



Please refer to Exhibit C for more EUT photographs

1.4 Objective

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

The objective is to determine compliance with FCC/IC rules for Maximum Output Power, Antenna Requirements, 26 dB Bandwidth, peak power spectral density, peak excursion, Band Edges Measurement, Conducted and Radiated Spurious Emissions.

1.5 Related Submittal(s)/Grant(s)

FCC ID: PPD-AR5BHB92 and IC: 4104A-AR5BHB92

1.6 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.

1.7 Measurement Uncertainty

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

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the values range from +2.0 for Conducted Emissions tests and +4.0 dB for Radiated Emissions tests are the most accurate estimates pertaining to uncertainty of EMC measurements at BACL.

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

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

1.8 Test Facility

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

The test sites at BACL have been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports has been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997, and Article 8 of the VCCI regulations on December 25, 1997. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

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

Additionally, BACL is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200167-0). The current scope of accreditations can be found at <http://ts.nist.gov/Standards/scopes/2001670.htm>

2 System Test Configuration

2.1 Justification

The 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.

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

2.2 EUT Exercise Software

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

5150~5250 MHz Band (W52):

Radio Mode	Bandwidth (MHz)	Frequency/Data rate		
		Low CH (MHz/Mbps)	Mid CH (MHz/Mbps)	High CH (MHz)
802.11a	20	5180/6	5220/6	5240/6
802.11n	20	5180/6.5	5220/6.5	5240/6.5
802.11n	40	5190/13.5	-	5230/13.5

2.3 Equipment Modifications

No modifications were made to the EUT.

2.4 Special Accessories

N/A

2.5 Local Support Equipment

Manufacturer	Description	Model No.	Serial No.
PCI Express Card	N/A	N/A	N/A
OCZ	Laptop	FL92	EJ04K0001000

2.6 Interface Ports and Cabling

Cable Description	Length (m)	From	To
Control Cable	< 0.5	EUT	Express Card

2.7 EUT Internal Configurations

Manufacturers	Description	Model No.	Serial No.
Fortinet, Inc.	PCB Assembly	WPEA 111N/W	10135K1000-150

3 Summary of Test Results

Results reported relate only to the product tested.

FCC/IC Rules	Description of Test	Results
FCC §15.407(f), §2.1091 IC RSS-102	RF Exposure	Compliant
FCC §15.203 IC RSS-Gen 7.1.4	Antenna Requirement	Compliant
FCC §15.207(a) IC RSS-Gen §7.2.2	Conducted Emissions	N/A*
FCC §15.407(b) IC RSS-210 §A9.3	Spurious Emissions at Antenna Port	N/A*
FCC §15.205 IC RSS-210 §2.2	Restricted Bands	Compliant
FCC §15.407(b), §15.209 IC RSS-210 §A9.3, §2.6	Radiated Spurious Emissions	Compliant
FCC §15.407(a) IC RSS-210 §A9.2	26 dB & 99% Occupied Bandwidth	N/A*
FCC §15.407(a) IC RSS-210 §A9.2	Maximum Peak Output Power	N/A*
FCC §15.407(a)	Peak Excursion	N/A*
FCC §15.407(h) IC RSS-10 §A9.4	DFS	N/A**
FCC §15.407(a) IC RSS-210 §A9.2	Power Spectral Density	N/A*
IC RSS-210 §2.6 & RSS-Gen § 4.10	Receiver Spurious Emission	Compliant

Note: N/A* Please refer to: FCC ID: PPD-AR5BHB92 and IC: 4104A-AR5BHB92, Report Number: 08U11571-1
N/A**: No DSF Frequency band.

4 FCC §15.407(f), § 2.1091 & IC RSS-102 – RF Exposure

4.1 Applicable Standard

According to FCC §15.407(f) 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

¹ = 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 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 x 10 -4 f ^{0.5}	6.67 x 10 ⁻⁵ f	616000 / f ^{1.2}

Note: f is frequency in MHz

¹ = 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

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

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

5150– 5250 MHz (W52)

<u>Maximum peak output power at antenna input terminal (dBm):</u>	<u>16.70</u>
<u>Maximum peak output power at antenna input terminal (mW):</u>	<u>46.77</u>
<u>Prediction distance (cm):</u>	<u>20</u>
<u>Prediction frequency (MHz):</u>	<u>5230</u>
<u>Maximum Antenna Gain, typical (dBi):</u>	<u>5.0</u>
<u>Maximum Antenna Gain (numeric):</u>	<u>3.16</u>
<u>Power density of prediction frequency at 20.0 cm (mW/cm²):</u>	<u>0.029</u>
<u>Power density of prediction frequency at 20.0 cm (W/m²):</u>	<u>0.29</u>
<u>MPE limit for uncontrolled exposure at prediction frequency (mW/cm²):</u>	<u>1.0</u>
<u>MPE limit for uncontrolled exposure at prediction frequency (W/m²):</u>	<u>10</u>

The device is compliant with the requirement MPE limit for uncontrolled exposure. The maximum power density at the distance of 20 cm is 0.029mW/cm² (0.29W/m²). Limit is 1 mW/cm² (10W/m²).

5 FCC §15.203 & IC RSS-Gen §7.1.4 – Antenna Requirement

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.

As per IC RSS-Gen §7.1.4: Transmitter Antenna

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

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 Gain

EUT has one Two Transmitter/Receiver antenna which is external antenna, and its maximum antenna gain is 5 dBi which fulfills the requirements of FCC rule 15.203 and IC RSS-Gen §7.1.4

Frequency Band	Antenna Gain (dBi)
2400-2483.5 MHz	2.5
5725MHz – 5850 MHz	5.0

6 FCC §15.207 & IC RSS-Gen 7.2.2- Conducted Emissions

6.1 Applicable Standards

As per FCC §15.207 & IC RSS-Gen §7.2.2 Conducted limits:

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 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 Results

Refer to following test report for test results:

FCC ID: PPD-AR5BHB92 and IC: 4104A-AR5BHB92
Report Number: 08U11571-1

7 FCC §15.407(b) & IC RSS-210 §A9.3- Spurious Emissions at Antenna Terminals

7.1 Applicable Standard

For FCC §15.407 (b)(1) & (b) (2) and IC RSS-210 §A9.3, transmitters operating in the 5.15-5.35 GHz band: all emissions outside 5.15 – 5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in §2.1057.

7.2 Test Results

Refer to following test report for test results:

FCC ID: PPD-AR5BHB92 and IC: 4104A-AR5BHB92
Report Number: 08U11571-1

8 FCC §15.205, §15.209, §15.407(b) & IC RSS-210 §2.6, §A9.3 – Spurious Radiated Emissions

8.1 Applicable Standard

FCC §15.407(b) & IC RSS-210 §A9.3

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 ²	3
88 - 216	150 ²	3
216 - 960	200 ²	3
Above 960	500	3

² 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 –	2690 – 2900	15.35 – 16.2
8.362 – 8.366	156.52525	3260 – 3267	17.7 – 21.4
8.37625 – 8.38675	156.7 – 156.9	3332 – 3339	22.01 – 23.12
8.41425 – 8.41475	162.0125 – 167.17	3345.8 – 3358	23.6 – 24.0
12.29 – 12.293	167.72 – 173.2	3600 – 4400	31.2 – 31.8
12.51975 – 12.52025	240 – 285		36.43 – 36.5
12.57675 – 12.57725	322 – 335.4		Above 38.6
13.36 – 13.41	399.9 – 410		
	608 – 614		

IC RSS-210 §2.6 General Field Strength Limits

Tables 2 and 3 show the general field strength limits of unwanted emissions, where applicable, for transmitters and receivers operating in accordance with the provisions specified in this RSS. Transmitters whose wanted emissions are also within the limits shown in Tables 2 and 3 may operate in any of the frequency bands of Tables 2 and 3, other than the restricted bands of Table 1 and the TV bands, and shall be certified under RSS-210. (Note: Devices operating below 490 kHz all of whose emissions are at least 40 dB below the limit given in Table 3 are Category II devices subject to RSS-310.) Unwanted emissions of transmitters and receivers are permitted to fall into Table 1 and TV frequencies but intentional emissions are prohibited. See the note of Table 2 for further details.

8.2 Test Setup

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

8.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date
Agilent	Analyzer, Spectrum	E4446A	US44300386	2009-06-29
Rohde & Schwarz	EMI Test Receiver	1166.5950K03	100337	2010-03-24
Sunol Science Corp	System Controller	SC99V	122303-1	N/R
Sunol Science Corp	Combination Antenna	JB3	A0020106-2	2009-08-20
HP	Amplifier, Pre	1-26.5GHz	3147A00400	2010-01-29
A. H. Systems	Antenna, Horn, DRG	SAS-200/571	261	2009-09-23

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

8.4 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:

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

Above 1000 MHz:

- (1) Peak: $\text{RBW} = 1 \text{ MHz} / \text{VBW} = 1 \text{ MHz} / \text{Sweep} = \text{Auto}$
- (2) Average: $\text{RBW} = 1 \text{ MHz} / \text{VBW} = 10 \text{ Hz} / \text{Sweep} = \text{Auto}$

8.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Cable Loss, and Attenuator Factor adding to the Indicated Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Indicated Reading} + \text{Cable Loss} + \text{Attenuator Factor}$$

For example, a Corrected Amplitude of 34.08 dBuV/m = Indicated Reading (23.85 dBuV) + Cable Factor (0.22 dB) + Attenuator Factor (10dB)

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:

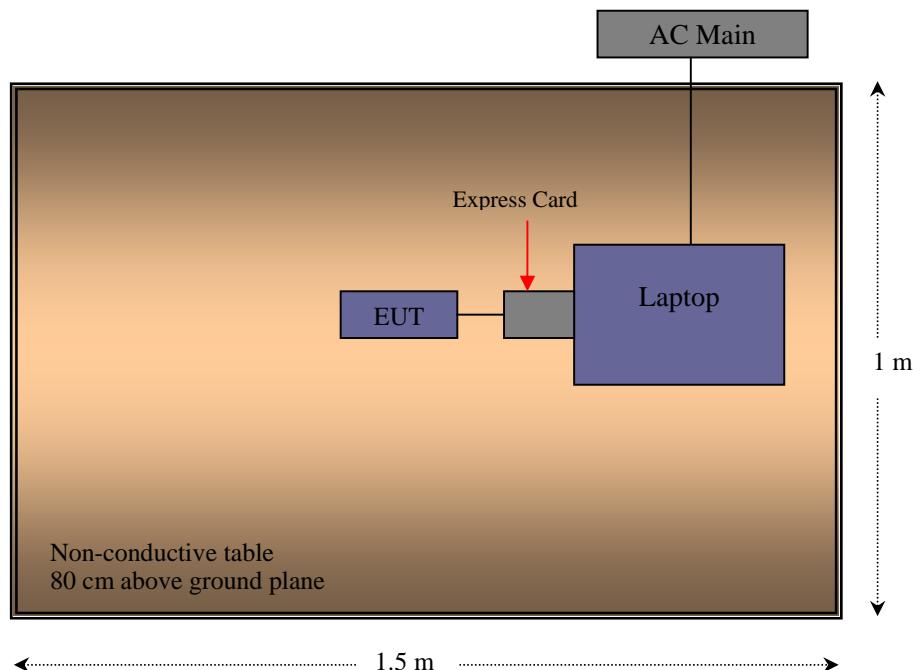
$$\text{Margin} = \text{Corrected Amplitude} - \text{Limit}$$

8.6 Test Environmental Conditions

Temperature:	20~23 °C
Relative Humidity:	50~55 %
ATM Pressure:	99~102.2kPa

The testing was performed by Jerry Huang from 2010-05-17 to 2010-05-19.

8.7 Test Setup Diagram



8.8 Radiated Emissions Test Result Data:

Radiated Emission at 3 meters, 30 MHz – 1 GHz

5150-5250 MHz Band (W52) -Worst Case

Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dB μ V/m)	Margin (dB)
85.88852	37.52	184	H	209	40	-2.48
432.011	43.82	100	V	293	46.5	-2.68
199.1445	40.36	163	H	350	43.5	-3.14
699.5836	42.54	129	H	300	46.5	-3.96
402.7965	41.48	100	H	302	46.5	-5.02
415.7665	40.58	98	H	221	46.5	-5.92

5150-5250 MHZ (W52) Band, Radiated Emission at 3 meters, 1 – 25 GHz

802.11a Mode:

Frequency (MHz)	S.A. Reading (dB μ V)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dB μ V/m)	FCC/IC		Comments
			Height (m)	Polarity (H/V)	Factor (dB)				Limit (dB μ V/m)	Margin (dB)	
802.11a mode, Low Channel 5180 MHz											
5547	45.37	360	1	V	34.8	4.64	34.81	50	54	-4	Ave
1096	56.19	254	1.23	V	23.7	2.02	37.09	44.82	54	-9.18	Ave
5547	59.85	360	1	V	34.8	4.64	34.81	64.48	74	-9.52	Peak
1096	55.24	236	1	H	23.7	2.02	37.09	43.87	54	-10.13	Ave
2493.9	64.21	350	1	V	28.6	3.21	35.5	60.52	74	-13.48	Peak
2493.9	43.99	350	1	V	28.6	3.21	35.5	40.3	54	-13.7	Ave
5547	34.63	360	1	H	34.8	4.64	34.81	39.26	54	-14.74	Ave
1096	69.39	254	1.23	V	23.7	2.02	37.09	58.02	74	-15.98	Peak
1096	68.72	236	1	H	23.7	2.02	37.09	57.35	74	-16.65	Peak
2493.9	40.35	354	1	H	28.6	3.21	35.5	36.66	54	-17.34	Ave
2493.9	58.58	354	1	H	28.6	3.21	35.5	54.89	74	-19.11	Peak
5547	48.43	360	1	H	34.8	4.64	34.81	53.06	74	-20.94	Peak
802.11a mode, Middle channel 5220 MHz											
5547	45.33	344	1.3	V	34.8	4.64	34.81	49.96	54	-4.04	Ave
1096	56.15	254	1.18	V	23.7	2.02	37.09	44.78	54	-9.22	Ave
1096	55.29	238	1	H	23.7	2.02	37.09	43.92	54	-10.08	Ave
5547	58.72	344	1.3	V	34.8	4.64	34.81	63.35	74	-10.65	Peak
2493.9	64.73	350	1	V	28.6	3.21	35.5	61.04	74	-12.96	Peak
2493.9	43.89	350	1	V	28.6	3.21	35.5	40.2	54	-13.8	Ave
5547	35.06	360	1	H	34.8	4.64	34.81	39.69	54	-14.31	Ave
1096	69.94	238	1	H	23.7	2.02	37.09	58.57	74	-15.43	Peak
1096	69.13	254	1.18	V	23.7	2.02	37.09	57.76	74	-16.24	Peak
2493.9	40.51	354	1	H	28.6	3.21	35.5	36.82	54	-17.18	Ave
2493.9	59.48	354	1	H	28.6	3.21	35.5	55.79	74	-18.21	Peak
5547	47.96	360	1	H	34.8	4.64	34.81	52.59	74	-21.41	Peak
802.11a mode, High channel 5240 MHz											
5547	45.15	360	1	V	34.8	4.64	34.81	49.78	54	-4.22	Ave
1096	55.13	256	115	V	23.7	2.02	37.09	43.76	54	-10.24	Ave
5547	59.02	360	1	V	34.8	4.64	34.81	63.65	74	-10.35	Peak
1096	54.65	235	1	H	23.7	2.02	37.09	43.28	54	-10.72	Ave
2493.9	65.26	350	1	V	28.6	3.21	35.5	61.57	74	-12.43	Peak
2493.9	43.63	350	1	V	28.6	3.21	35.5	39.94	54	-14.06	Ave
5547	34.62	360	1	H	34.8	4.64	34.81	39.25	54	-14.75	Ave
1096	69.77	235	1	H	23.7	2.02	37.09	58.4	74	-15.6	Peak
1096	69.22	256	115	V	23.7	2.02	37.09	57.85	74	-16.15	Peak
2493.9	40.29	354	1	H	28.6	3.21	35.5	36.6	54	-17.4	Ave
2493.9	59.49	354	1	H	28.6	3.21	35.5	55.8	74	-18.2	Peak
5547	47.96	360	1	H	34.8	4.64	34.81	52.59	74	-21.41	Peak

802.11n HT20 Mode:

Frequency (MHz)	S.A. Reading (dB μ V)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dB μ V/m)	FCC/IC		Comments
			Height (m)	Polarity (H/V)	Factor (dB)				Limit (dB μ V/m)	Margin (dB)	
802.11n HT20 mode, Low Channel 5180 MHz											
5547	45.37	360	1	V	34.8	4.64	34.81	50	54	-4	Ave
1096	56.19	254	1.23	V	23.7	2.02	37.09	44.82	54	-9.18	Ave
5547	59.85	360	1	V	34.8	4.64	34.81	64.48	74	-9.52	Peak
1096	55.24	236	1	H	23.7	2.02	37.09	43.87	54	-10.13	Ave
2493.9	64.21	350	1	V	28.6	3.21	35.5	60.52	74	-13.48	Peak
2493.9	43.99	350	1	V	28.6	3.21	35.5	40.3	54	-13.7	Ave
5547	34.63	360	1	H	34.8	4.64	34.81	39.26	54	-14.74	Ave
1096	69.39	254	1.23	V	23.7	2.02	37.09	58.02	74	-15.98	Peak
1096	68.72	236	1	H	23.7	2.02	37.09	57.35	74	-16.65	Peak
2493.9	40.35	354	1	H	28.6	3.21	35.5	36.66	54	-17.34	Ave
2493.9	58.58	354	1	H	28.6	3.21	35.5	54.89	74	-19.11	Peak
5547	48.43	360	1	H	34.8	4.64	34.81	53.06	74	-20.94	Peak
802.11n HT20 mode, Middle channel 5220 MHz											
4807	46.45	125	1.24	V	34.8	4.64	34.81	51.08	54	-2.92	Ave
1480	55.13	75	1	V	25	3.21	35.5	47.84	54	-6.16	Ave
2480	62.58	214	1	V	34.8	4.64	34.81	67.21	74	-6.79	Peak
1096	57.86	265	1.51	V	23.7	2.02	37.09	46.49	54	-7.51	Ave
1096	57.7	226	1.06	H	23.7	2.02	37.09	46.33	54	-7.67	Ave
2480	41.57	214	1	V	34.8	4.64	34.81	46.2	54	-7.8	Ave
1480	51.68	75	1	H	25	3.21	35.5	44.39	54	-9.61	Ave
4807	58.2	125	1.24	V	34.8	4.64	34.81	62.83	74	-11.17	Peak
2480	57.68	137	1	H	34.8	4.64	34.81	62.31	74	-11.69	Peak
2480	37.64	137	1	H	34.8	4.64	34.81	42.27	54	-11.73	Ave
4807	36.43	272	1	H	34.8	4.64	34.81	41.06	54	-12.94	Ave
1480	68.12	75	1	V	25	3.21	35.5	60.83	74	-13.17	Peak
1096	71.34	265	1.51	V	23.7	2.02	37.09	59.97	74	-14.03	Peak
1096	70.21	226	1.06	H	23.7	2.02	37.09	58.84	74	-15.16	Peak
1480	63.68	195	1	H	25	3.21	35.5	56.39	74	-17.61	Peak
4807	49.34	272	1	H	34.8	4.64	34.81	53.97	74	-20.03	Peak
802.11n HT20 mode, High channel 5240 MHz											
5547	45.15	360	1	V	34.8	4.64	34.81	49.78	54	-4.22	Ave
1096	55.13	256	115	V	23.7	2.02	37.09	43.76	54	-10.24	Ave
5547	59.02	360	1	V	34.8	4.64	34.81	63.65	74	-10.35	Peak
1096	54.65	235	1	H	23.7	2.02	37.09	43.28	54	-10.72	Ave
2493.9	65.26	350	1	V	28.6	3.21	35.5	61.57	74	-12.43	Peak
2493.9	43.63	350	1	V	28.6	3.21	35.5	39.94	54	-14.06	Ave
5547	34.62	360	1	H	34.8	4.64	34.81	39.25	54	-14.75	Ave
1096	69.77	235	1	H	23.7	2.02	37.09	58.4	74	-15.6	Peak
1096	69.22	256	115	V	23.7	2.02	37.09	57.85	74	-16.15	Peak
2493.9	40.29	354	1	H	28.6	3.21	35.5	36.6	54	-17.4	Ave
2493.9	59.49	354	1	H	28.6	3.21	35.5	55.8	74	-18.2	Peak
5547	47.96	360	1	H	34.8	4.64	34.81	52.59	74	-21.41	Peak

802.11n HT40 Mode:

Frequency (MHz)	S.A. Reading (dB μ V)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dB μ V/m)	FCC/IC		Comments
			Height (m)	Polarity (H/V)	Factor (dB)				Limit (dB μ V/m)	Margin (dB)	
802.11n HT40 mode, Low Channel 5190 MHz											
4840	46.31	127	1.38	V	34.8	4.64	34.81	50.94	54	-3.06	Ave
4840	59.46	127	1.38	V	34.8	4.64	34.81	64.09	74	-9.91	Peak
1420	54.32	75	1	V	23.7	2.02	37.09	42.95	54	-11.05	Ave
4840	37.37	274	1	H	34.8	4.64	34.81	42	54	-12	Ave
1420	51.6	195	1	H	23.7	2.02	37.09	40.23	54	-13.77	Ave
2500	59.96	285	1	V	28.6	3.21	35.5	56.27	74	-17.73	Peak
2500	59.91	6	1.59	H	28.6	3.21	35.5	56.22	74	-17.78	Peak
2500	39.9	285	1	V	28.6	3.21	35.5	36.21	54	-17.79	Ave
2500	39.65	6	1.59	H	28.6	3.21	35.5	35.96	54	-18.04	Ave
4840	50.56	274	1	H	34.8	4.64	34.81	55.19	74	-18.81	Peak
1420	66.51	75	1	V	23.7	2.02	37.09	55.14	74	-18.86	Peak
1420	63.54	195	1	H	23.7	2.02	37.09	52.17	74	-21.83	Peak
802.11n HT40 mode, Middle channel 5230 MHz											
1000	58.86	112	1	H	23.7	2.02	37.09	47.49	54	-6.51	Ave
2500	62.35	212	1	V	34.8	4.64	34.81	66.98	74	-7.02	Peak
1420	54.18	80	1	V	25	3.21	35.5	46.89	54	-7.11	Ave
2500	41.58	212	1	V	34.8	4.64	34.81	46.21	54	-7.79	Ave
1000	56.72	270	1.54	V	23.7	2.02	37.09	45.35	54	-8.65	Ave
2500	60.27	7	1.64	H	34.8	4.64	34.81	64.9	74	-9.1	Peak
2500	39.81	7	1.64	H	34.8	4.64	34.81	44.44	54	-9.56	Ave
1420	51.03	199	1	H	25	3.21	35.5	43.74	54	-10.26	Ave
1000	70.46	112	1	H	23.7	2.02	37.09	59.09	74	-14.91	Peak
1420	66.22	80	1	V	25	3.21	35.5	58.93	74	-15.07	Peak
1000	69.65	270	1.54	V	23.7	2.02	37.09	58.28	74	-15.72	Peak
1420	63.47	199	1	H	25	3.21	35.5	56.18	74	-17.82	Peak
1960	59.93	76	1	V	26.4	3.02	35.48	53.87	74	-20.13	Peak
1960	36.41	76	1	V	26.4	3.02	35.48	30.35	54	-23.65	Ave
1960	35.42	110	1.37	H	26.4	3.02	35.48	29.36	54	-24.64	Ave
1960	54.89	110	1.37	H	26.4	3.02	35.48	48.83	74	-25.17	Peak

Restricted Band Emissions

802.11a Mode:

Frequency (MHz)	S.A. Reading (dB μ V)	Test Antenna		Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dB μ V/m)	FCC/IC		Comments
		Polarity (H/V)	Factor (dB)				Limit (dB μ V/m)	Margin (dB)	
5150	34.03	V	34	4.46	35.97	36.52	54	-17.48	Ave
5150	34.02	H	34	4.46	35.97	36.51	54	-17.49	Ave
5350	32.24	H	34	4.62	35.86	35	54	-19	Ave
5350	32.03	V	34	4.62	35.86	34.79	54	-19.21	Ave
5150	48.82	V	34	4.46	35.97	51.31	74	-22.69	Peak
5150	48.24	H	34	4.46	35.97	50.73	74	-23.27	Peak
5350	47.14	H	34	4.62	35.86	49.9	74	-24.1	Peak
5350	46.68	V	34	4.62	35.86	49.44	74	-24.56	Peak

802.11n HT20 Mode:

Frequency (MHz)	S.A. Reading (dB μ V)	Test Antenna		Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dB μ V/m)	FCC/IC		Comments
		Polarity (H/V)	Factor (dB)				Limit (dB μ V/m)	Margin (dB)	
5150	55.46	H	34	4.46	35.97	57.95	74	-16.05	Peak
5150	64.23	V	34	4.46	35.97	66.72	74	-7.28	Peak
5150	35.53	H	34	4.46	35.97	38.02	54	-15.98	Ave
5150	41.34	V	34	4.46	35.97	43.83	54	-10.17	Ave
5350	47.3	H	34	4.62	35.86	50.06	74	-23.94	Peak
5350	53.03	V	34	4.62	35.86	55.79	74	-18.21	Peak
5350	32.6	H	34	4.62	35.86	35.36	54	-18.64	Ave
5350	38.86	V	34	4.62	35.86	41.62	54	-12.38	Ave

802.11n HT40 Mode:

Frequency (MHz)	S.A. Reading (dB μ V)	Test Antenna		Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dB μ V/m)	FCC/IC		Comments
		Polarity (H/V)	Factor (dB)				Limit (dB μ V/m)	Margin (dB)	
5150	47.74	H	34	4.46	35.97	50.23	74	-23.77	Peak
5150	60.11	V	34	4.46	35.97	62.6	74	-11.4	Peak
5150	35.22	H	34	4.46	35.97	37.71	54	-16.29	Ave
5150	41.34	V	34	4.46	35.97	43.83	54	-10.17	Ave
5350	47.36	H	34	4.62	35.86	50.12	74	-23.88	Peak
5350	54.16	V	34	4.62	35.86	56.92	74	-17.08	Peak
5350	33.03	H	34	4.62	35.86	35.79	54	-18.21	Ave
5350	39.62	V	34	4.62	35.86	42.38	54	-11.62	Ave

9 FCC §15.407(a)(2) & IC RSS-210 §A9.2 – 26 dB & 99% Occupied Bandwidth

9.1 Applicable Standard

None, for power limit determination only.

9.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 6 dB from the reference level. Record the frequency difference as the emissions bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

9.3 Test Results

Refer to following test report for test results:

FCC ID: PPD-AR5BHB92 and IC: 4104A-AR5BHB92
Report Number: 08U11571-1

10 FCC §15.407(a) & IC RSS 210 §A9.2 - Peak Output Power Measurement

10.1 Applicable Standard

FCC §15.407 (a)(1) For the band 5.15 – 5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or $4 \text{ dBm} + 10 \log_{10} B$, where B is the 26 dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

FCC §15.407 (a)(2) For the band 5.25 – 5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log_{10} B$, where B is the 26 dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 §A9.2 Transmitter Power and e.i.r.p. Limits

- (1) For the band 5150-5250 MHz, the maximum equivalent isotropically radiated power (e.i.r.p.) shall not exceed 200 mW or $10 + 10 \log_{10} B$, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.
- (2) For the bands 5250-5350 MHz and 5470-5725 MHz, the maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$, dBm, whichever power is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band. The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

10.2 Test Results

Refer to following test report for test results:

FCC ID: PPD-AR5BHB92 and IC: 4104A-AR5BHB92
Report Number: 08U11571-1

11 FCC §407(a) & IC RSS-210 §A9.2 – Peak Power Spectral Density

11.1 Applicable Standard

FCC §15.407 (a)(1) For the band 5.15 – 5.25 GHz, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

FCC §15.407 (a)(2) For the band 5.25 – 5.35 GHz, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 §A9.2

(1) For the band 5150-5250 MHz, the maximum equivalent isotropically radiated power (e.i.r.p.) shall not exceed 200 mW or $10 + 10 \log_{10} B$, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

(2) For the bands 5250-5350 MHz and 5470-5725 MHz, the maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$, dBm, whichever power is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band. The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

11.2 Test Results

Refer to following test report for test results:

FCC ID: PPD-AR5BHB92 and IC: 4104A-AR5BHB92
Report Number: 08U11571-1

12 FCC §15.407(a)(6) – Peak Excursion

12.1 Applicable Standard

According to FCC §15.407 (a)(6), the ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

12.2 Test Results

Refer to following test report for test results:

FCC ID: PPD-AR5BHB92 and IC: 4104A-AR5BHB92
Report Number: 08U11571-1

13 IC RSS-210 § 2.6 & RSS-Gen §4.10-Receiver Spurious Radiated Emissions

13.1 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-210 §2.6, Tables 2 and 3 show the general field strength limits of unwanted emissions, where applicable, for transmitters and receivers operating in accordance with the provisions specified in this RSS. Transmitters whose wanted emissions are also within the limits shown in Tables 2 and 3 may operate in any of the frequency bands of Tables 2 and 3, other than the restricted bands of Table 1 and the TV bands, and shall be certified under RSS-210.

Table 2: General Field Strength Limits for Transmitters and Receivers at Frequencies above 30 MHz ^(Note)

Frequency (MHz)	Field Strength Microvolts/m at 3 meters (watts, e.i.r.p.)	
	Transmitters	Receivers
30-88	100 (3 nW)	100 (3 nW)
88-216	150 (6.8 nW)	150 (6.8 nW)
216-960	200 (12 nW)	200 (12 nW)
Above 960	500 (75 nW)	500 (75 nW)

Note: Transmitting devices are not permitted in Table 1 bands or in TV bands (54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz, and 614-806 MHz). Prohibition of operation in TV bands does not apply to momentary devices, or to medical telemetry devices in the band 174-216 MHz, and to perimeter protection systems in the bands 54-72 and 76-88 MHz. The perimeter protection devices are to meet Table 3 field strengths limits.

Table 3: General Field Strength Limits for Transmitters at Frequencies below 30 MHz (Transmit)

Frequency (fundamental or spurious)	Field Strength (microvolt/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/377F (F in kHz)	300
490-1,705 kHz	24,000/F (F in kHz)	24,000/377F (F in kHz)	30
1.705-30 MHz	30	N/A	30

Note: The emission limits for the bands 9-90 kHz and 110-490 kHz are based on measurements employing an average detector.

13.2 Test Procedure

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

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.

13.3 Corrected Amplitude & Margin Calculation

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

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

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

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

13.4 Test Equipment Lists and Details

Manufacturer	Description	Model Number	Serial Number	Calibration Date
Agilent	Analyzer, Spectrum	E4446A	US44300386	2009-06-29
Rohde & Schwarz	EMI Test Receiver	1166.5950K03	100337	2010-03-24
Sunol Science Corp	System Controller	SC99V	122303-1	N/R
Sunol Science Corp	Combination Antenna	JB3	A0020106-2	2009-08-20
HP	Amplifier, Pre	1-26.5GHz	3147A00400	2010-01-29
A. H. Systems	Antenna, Horn, DRG	SAS-200/571	261	2009-09-23

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

13.5 Test Environmental Conditions

Temperature:	20~23 °C
Relative Humidity:	50~55 %
ATM Pressure:	99-102.2kPa

The testing was performed by Jerry Huang from 2010-05-17 to 2010-05-19.

13.6 Summary of Test Results

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

Mode: Receiving			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Range (MHz)
-8.02	993.7579	Horizontal	30 MHz to 1000 MHz
-5.82	1000	Horizontal	1000 MHz to 25000 MHz

Radiated Emission at 3 meters, 30 MHz -1GHz

Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dB μ V/m)	Margin (dB)
993.7579	45.98	91	H	293	54.0	-8.02
265.8022	29.19	92	H	326	46.5	-17.31
239.8768	25.86	158	H	254	46.5	-20.64

Radiated Emission at 3 meters, 1 – 25 GHz

Frequency (MHz)	S.A. Reading (dB μ V)	Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dB μ V/m)	IC		Comments
			Height (m)	Polarity (H/V)	Factor (dB)				Limit (dB μ V/m)	Margin (dB)	
1000	59.55	113	1	H	23.7	2.02	37.09	48.18	54	-5.82	Ave
1000	52.65	214	1	V	23.7	2.02	37.09	41.28	54	-12.72	Ave
1000	71.44	113	1	H	23.7	2.02	37.09	60.07	74	-13.93	Peak
2500	62.33	215	1.03	V	26.4	3.02	35.48	56.27	74	-17.73	Peak
1000	67.03	214	1	V	23.7	2.02	37.09	55.66	74	-18.34	Peak
2500	40.16	212	1.03	V	26.4	3.02	35.48	34.10	54	-19.90	Ave
2500	39.4	31	1.77	V	26.4	3.02	35.48	33.34	54	-20.66	Ave
2500	58.99	31	1.77	V	26.4	3.02	35.48	52.93	74	-21.07	Peak

* All other Restricted Band Frequencies were below the noise level and/or more than 20 dB below the margin

8 FCC §15.407(h) & RSS 210 §A9.4– Dynamic Frequency Selection

8.1 Applicable Standard

FCC §15.407 (h) and FCC 06-96 and IC RSS-210 §A9.4

13.7 Test Results

N/A, No DFS Frequency Band