NVLAP LAB CODE 200707-0

FCC PART 15.247

MEASUREMENT AND TEST REPORT

For

Azalea Networks USA, Inc.

673 S.Milpitas Blvd., Suite 105.

Milpitas, CA95035, USA

FCC ID: URP-MSR2K49

Report Type:	**Product Type:**
Original Report	Outdoor Wireless Mesh Router

Test Engineer: Alvin Huang

Report Number: RSZ08101004-247

Report Date: 2008-10-22

Simon Mo

Reviewed By: EMC Engineer

Prepared By: Bay Area Compliance Laboratories Corp. (Shenzhen)
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Azalea Networks USA, Inc's* product, model number: *MSR2000* or the "EUT" as referred to in this report is an *Outdoor wireless mesh router*. The EUT is measured approximately 23 cm L x 23 cmW x 10 cmH, rated input voltage: 120 VAC/60 Hz.

Operation Frequency Band: 802.11 a: 5745-5825 MHz
802.11 b/g: 2400-2483.5 MHz

Modulation: DSSS, OFDM

For 802.11 a mode:

Channel	Central Frequency (MHz)
145	5745
153	5765
157	5785
161	5805

For 802.11 b/g

Channel	Central Frequency (MHz)
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462

** All measurement and test data in this report was gathered from production sample serial number: 0810026 (Assigned by BACL, Shenzhen). The EUT was received on 2008-05-19.*

Objective

This Type approval report is prepared on behalf of *Azalea Networks USA, Inc* in accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

One 4.9 GHz radio module is replaced 2.4/5.8 GHz module of the previous certificed product (i.e. FCC ID: URP-MSR2000) which was certified on December 22, 2006.

Related Submittal(s)/Grant(s)

The original product was tested in Intertek Testing Services Limited Shanghai with FCC ID: URP-MSR2000.

Test Methodology

All measurements contained in this report were conducted 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.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 04, 2004. 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 has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0).

NVLAP LAB CODE 200707-0

The current scope of accreditations can be found at http://ts.nist.gov/ts/htdocs/210/214/scopes/2007070.htm.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a typical fashion (as normally used by a typical user).

Within this test report, EUT was tested under 120V/60Hz. For 802.11 a test, channel 145, 157 and 161 as the lowest, middle and highest channel were chosen to perform test; For 802.11 b/g test, channel 1, 6 and 11 as the lowest, middle and highest channel were chosen to perform test;

Special Accessories

The special accessories were supplied by Bay Area Compliance Laboratories Corp. (Shenzhen).

Equipment Modifications

No modifications were made to the unit tested.

Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
IBM	PC	ThinkCentre A50	99Y5469	DoC
Logitech	Keyboard	Y-SM48	SY513U22305	DoC
Logitech	Mouse	M-SAW83A	HCA33800404	DoC
IBM	CRT Monitor	6737-66W	23-P3229	BEJT17HD
ProMOS	Memory	V826616J24SATG-C0	D61A2605H	N/A
Intel	CPU	Pentium4 2800MHz	N/A	N/A
HP	Laser Jet5L	C3941A	JPTVOB2337	DoC
ECOM	Modem	EM-56DEV	6588D51200013	DoC

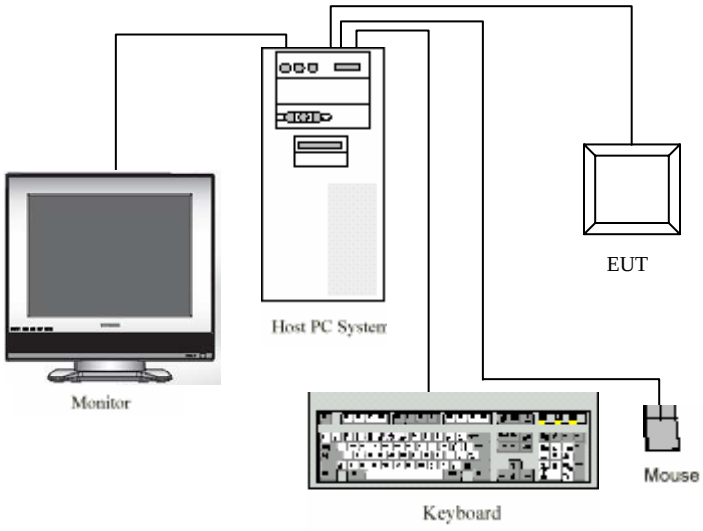
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
Intel	Motherboard	D865GKD	11S19R1949ZJ1WCB46J1K8	DoC
IBM	Power	HIPRO-A2307F3T	11S49P2191ZJ1TAR472225	DoC
Maxtor	Hard Disk	6Y080L0	Y23QNXTE	DoC
ALPS	3.5' Floppy	06P5226	11S06P5226ZJ1W25373957	DoC
Lite-ON	CD-Rom	LTN-489S	11S71P7366ZJ1SYC130015	DoC
Intel	Ethernet	PRO 10/100 VE	N/A	DoC

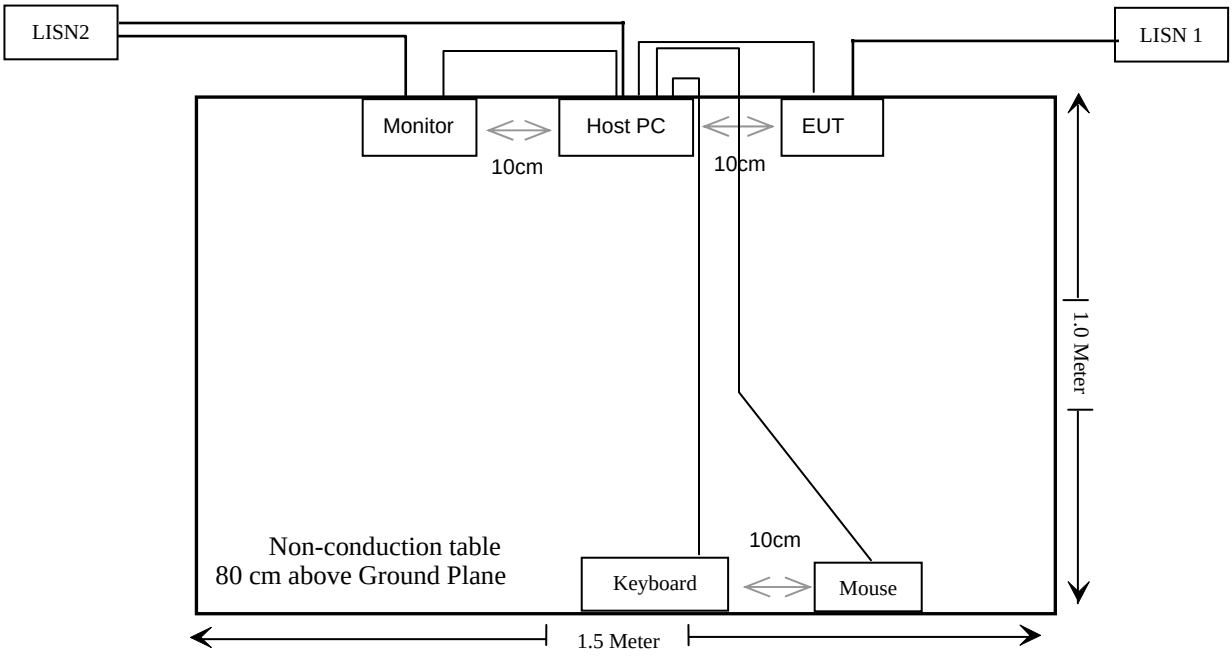
External I/O Cable

Cable Description	Length (m)	From/Port	To
Shielded Detachable K/B Cable	1.5	K/B Port	K/B
Shielded Detachable Mouse Cable	1.5	Mouse Port	Mouse
Shielded Detachable VGA Cable	1.5	VGA Port	Monitor
Unshielded Detachable RJ45 Cable	1.5	EUT	PC
Unshielded Detachable AC Cable	5.0	EUT	LISN

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (i), §1.1310	Maximun Permissible Exposure (MPE)	Compliant
§ 15.203/15.247 (c)	Antenna Requirement	Compliant
§15.207	Conducted Emissions	Compliant
§ 15.247 (d), §15.205, §15.209	Radiated Emissions and Band edges	Compliant
§ 15.247 (a) (2) and §15.403 (c)	6dB Bandwidth Testing	Compliant *
§ 15.247 (b) (3)	Peak output Power Measurement	Compliant *
§15.247(e)	Power Spectral Density	Compliant *

Note1: * Original submission FCC ID: URP-MSR2000 filed December 22, 2006, Report No.: EMCS20963-FCC.

Note2: The conducted output power keeps the same as the original certified product.

§15.247 (i), § 1.1310 - MAXIMUN PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to §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.

Radio frequency radiation exposure was calculated based on § 1.1310 limits.

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
Limits for General Polulation/Uncontrolled Exposures				
0.3 - 1.34	614	1.63	*(100)	30
1.34 - 30	842/f	2.19/f	*(180/ f^2)	30
30 - 300	27.5	0.073	0.2	30
300 - 1500	/	/	f/1500	30
1500 - 100,000	/	/	1.0	30

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

Test Data

Prediction of MPE limit at a given distance

$S = PG/4\pi R^2$
S = power density (in appropriate units, e.g. mW/cm2)
P = power input to the antenna (in appropriate units, e.g., mW).
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally ***numeric*** gain.
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

The max gain of 2.4 GHz antenna is 15 dBi, the max gain of 5.8 GHz antenn is 17 dBi.

802.11a Mode

Maximum peak output power at antenna input terminal: 19.78 (dBm)
Maximum peak output power at antenna input terminal: 95.06 (mW)
Prediction distance: 20 (cm)
Predication frequency: 5785 (MHz)
Antenna Gain (typical): 17 (dBi)
Antenna Gain (typical): 50.12 (numeric)
The worst case is power density at predication frequency at 20 cm: 0.948 (mW/cm^2)
MPE limit for general polulation/uncontrolled exposure at prediction frequency: 1.0 (mW/cm^2)

802.11b Mode

Maximum peak output power at antenna input terminal: 19.59 (dBm)
Maximum peak output power at antenna input terminal: 90.99 (mW)
Prediction distance: 20 (cm)
Predication frequency: 2412 (MHz)
Antenna Gain (typical): 15 (dBi)
Antenna Gain (typical):31.62 (numeric)
The worst case is power density at predication frequency at 20 cm: 0.573(mW/cm^2)
MPE limit for general polulation/uncontrolled exposure at prediction frequency: 1.0 (mW/cm^2)

802.11g Mode

Maximum peak output power at antenna input terminal: 20.00 (dBm)
Maximum peak output power at antenna input terminal: 100 (mW)
Prediction distance: 20 (cm)
Predication frequency: 2462 (MHz)
Antenna Gain (typical): 15 (dBi)
Antenna Gain (typical):31.62(numeric)
The worst case is power density at predication frequency at 20 cm: 0.629 (mW/cm^2)
MPE limit for general polulation/uncontrolled exposure at prediction frequency: 1.0 (mW/cm^2)

Result: This MPE level is below the 1 mW/cm^2 MPE at 20 cm distance for General Population / Uncontrolled Exposure as stated in OET BULLETIN 65 Edition 97-01. The precautions are outlined in the User's Manual to prevent exposure to high levels of RF energy.

§ 15.203/15.247 (c) - ANTENNA REQUIREMENT

Applicable standard

As per FCC Part15.203, 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.

The structure and application of the EUT were analyzed to determine compliance with Section 15.20 3 state that the subject device must meet at least one of the following criteria:

a.) Antenna must be permanently attached to the unit.
b.) Antenna must use a unique type of connector to attach to the EUT.
c.) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

Result: Replaceable antenna using N-K reverse connector to connect to the EUT. As a result, warning information is included in the User Manual as “The installation should be done by experienced antenna installer”.

Four antennas are certified with the EUT; two antennas are availavle for 2.4 GHz band, one is Omni direction with 9 dBi Gain, the other is directional antenna with 15 dBi Gain. Two antennas are available for 5.8 GHz band, both of them are directional antenna, the Gain are 15 dBi and 17 dBi.

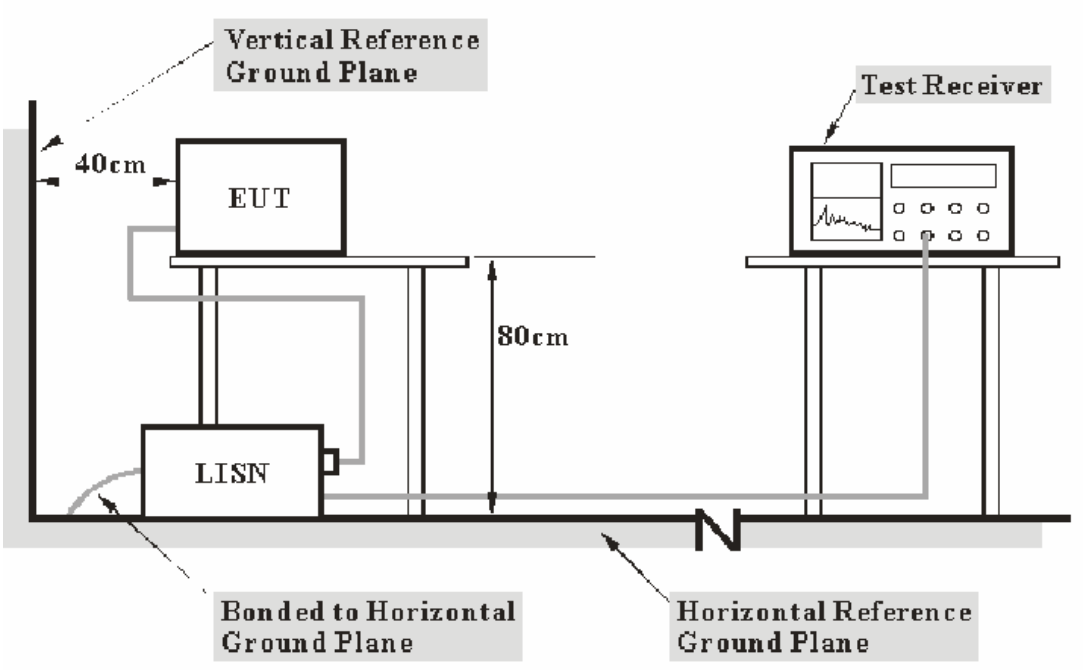
§15.207 - CONDUCTED EMISSIONS

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratory Corp. (Shenzhen) is ±2.4 dB.

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The EUT was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	***IF B/W***
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Com-Power	L.I.S.N.	LI-200	12005	N/A	N/A
Com-Power	L.I.S.N.	LI-200	12008	N/A	N/A
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2007-10-16	2008-10-16
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2008-03-26	2009-03-26

***** Com-Power's LISN were used as the supporting equipment.
*** Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

During the conducted emission test, the host EUT connected to the outlet of the LISN.

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

All data was recorded in the Quasi-peak and average detection mode.

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207 with the worst margin reading of:

1.00 dB at **4.305 MHz** in the **Line** conductor mode

Test Data

Environmental Conditions

Temperature:	22 ° C
Relative Humidity:	55%
ATM Pressure:	100.0 kPa

The testing was performed by Alvin Huang on 2008-10-10

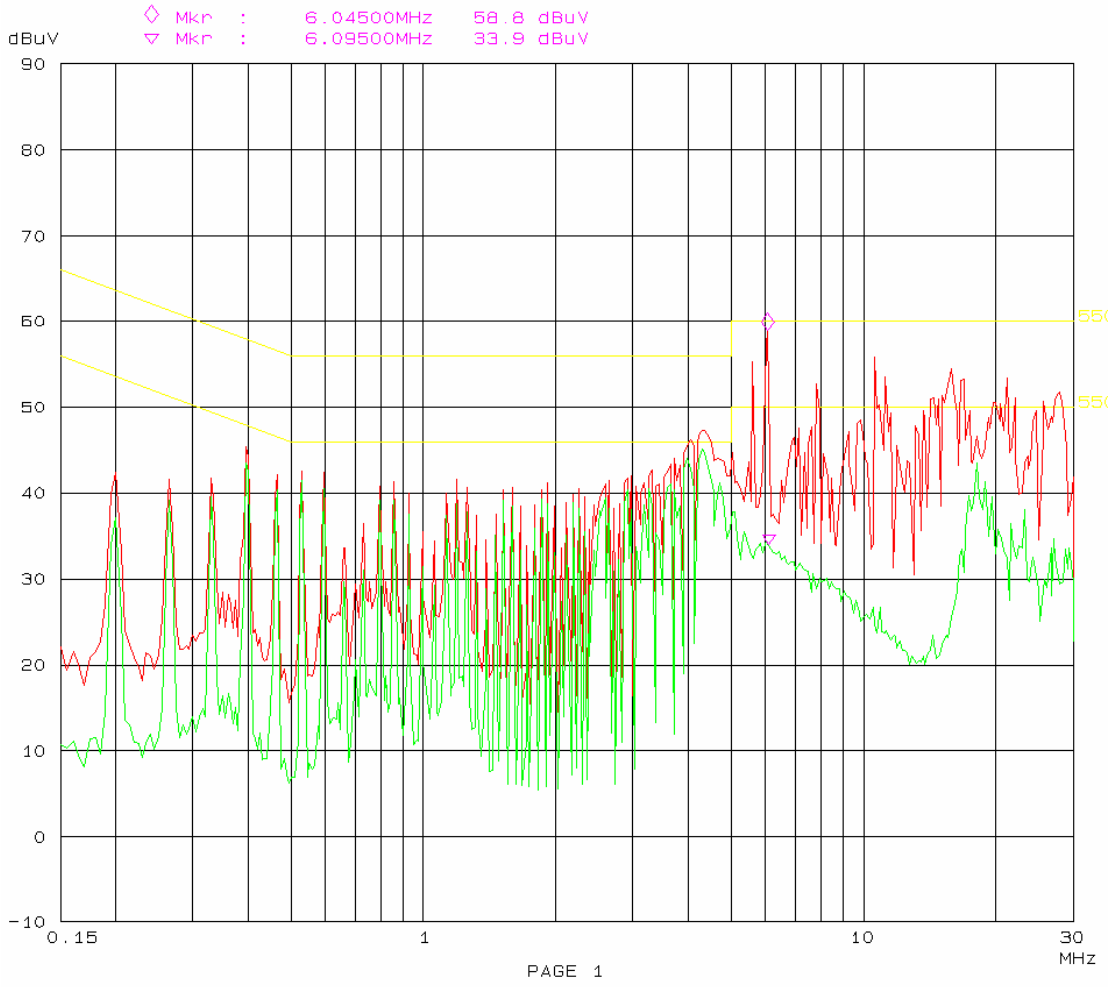
Test Mode: Operating.

Line Conducted Emissions				FCC Part15 .207	
Frequency (MHz)	**Amplitude (dBµV)**	**Detector (QP/AV)**	**Phase (Line/Neutral)**	**Limit dBµV**	**Margin (dB)**
4.305	45.00	AV	Neutral	46.00	1.00
4.305	45.00	AV	Live	46.00	1.00
6.045	58.80	QP	Live	60.00	1.20
4.040	43.50	AV	Neutral	46.00	2.50
4.040	42.80	AV	Live	46.00	3.20
0.530	42.20	AV	Neutral	46.00	3.80
0.395	44.00	AV	Neutral	47.96	3.96
10.590	55.90	QP	Live	60.00	4.10
16.425	55.60	QP	Neutral	60.00	4.40
0.395	43.50	AV	Live	47.96	4.46
0.530	41.40	AV	Live	46.00	4.60
10.785	54.40	QP	Neutral	60.00	5.60
4.305	47.50	QP	Neutral	56.00	8.50
4.305	47.30	QP	Live	56.00	8.70
4.040	46.80	QP	Neutral	56.00	9.20
4.040	46.20	QP	Live	56.00	9.80
0.395	45.90	QP	Neutral	57.96	12.06
0.395	45.50	QP	Live	57.96	12.46
0.530	43.20	QP	Neutral	56.00	12.80
0.530	42.50	QP	Live	56.00	13.50
6.095	33.90	AV	Live	50.00	16.10
16.485	31.60	AV	Neutral	50.00	18.40
10.840	24.90	AV	Neutral	50.00	25.10
10.595	24.80	AV	Live	50.00	25.20

Please refer to the following plots.

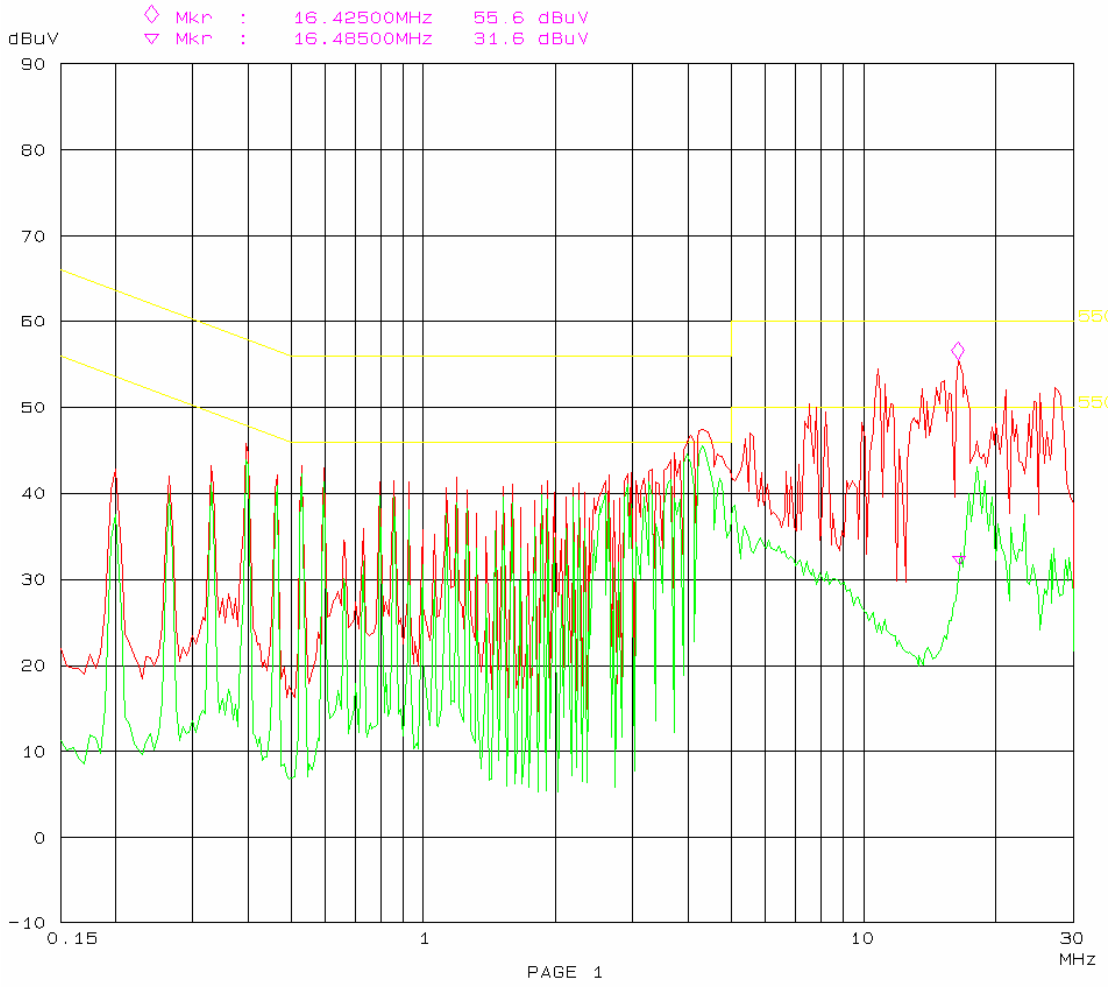
Conducted Emission Test
FCC Part15

Test Spec: AC 120V/60Hz L
Comment: Oemp: 25 Humi 56%



Conducted Emission Test
FCC Part15

Test Spec: AC 120V/60Hz N
Comment: Oemp: 25 Humi 56%



§15.247 (d), §15.205, §15.209 - RADIATED EMISSIONS AND BAND EDGES

Applicable Standard

According to FCC §15.247 (d)

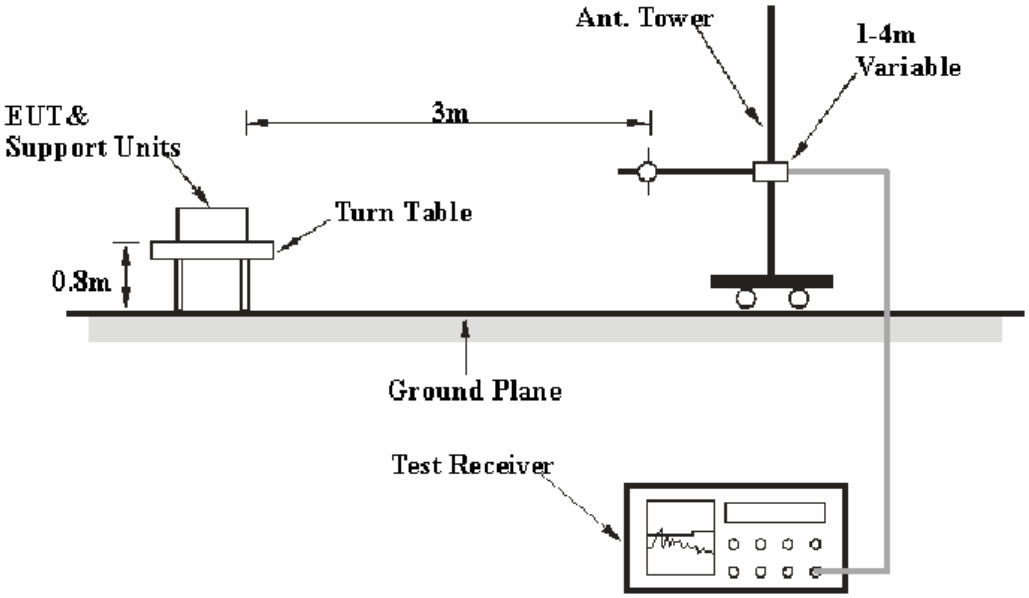
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the 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)).

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 best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratory Corp. (Shenzhen) is ±4.0 dB.

EUT Setup



The radiated emission tests were performed in the 3 meters chamber B test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the Part 15.205, Part15.209 and Part15.247 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The EUT was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 40 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Below 1000MHz:

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

Above 1000MHz:

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447D	2944A09795	2007-11-15	2008-11-15
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2007-10-16	2008-10-16
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2008-08-14	2009-08-14
HP	Amplifier	8449B	3008A00277	2008-09-29	2009-09-29
Sunol Sciences	Horn Antenna	DRH-118	A052604	2008-09-25	2009-09-25
Agilent	Spectrum Analyzer	8564E	3943A01781	2007-11-22	2008-11-22

*** Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

For the radiated emissions test, the host PC 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.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1GHz and peak and Average detection modes for frequencies above 1GHz.

Corrected Amplitude & Margin Calculation

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

Corr. Amp. = Meter Reading + Antenna Loss + Cable Loss- Amplifier Gain

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

Margin = Limit - Corr. Amp.

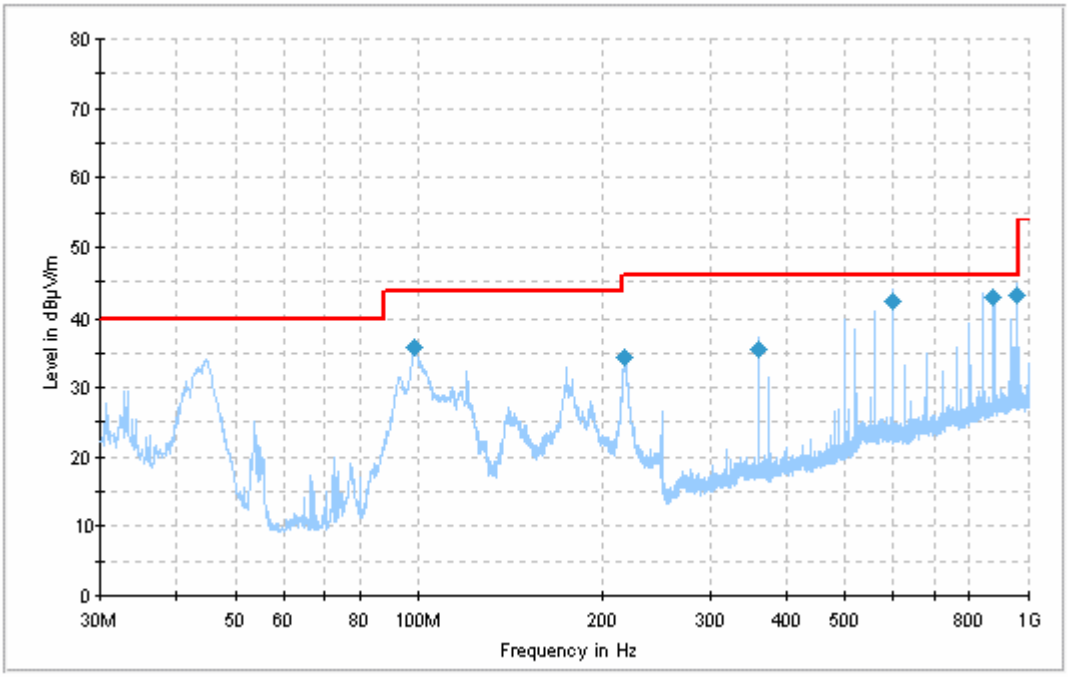
Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	52%
ATM Pressure:	1009mbar

The testing was performed by Alvin Huang on 2008-10-11.

Worst-case below 1 GHz:



Frequency (MHz)	Quasi-Peak (dBµV/m)	Ant. Height (cm)	Ant. Polarity (H/V)	Turntable Position (deg)	Corr. (dB)	Limit (dBµV/m)	Margin (dB)
958.190250	43.0	101.0	V	206.0	-14.3	46.0	3.0
875.012625	42.7	114.0	V	263.0	-17.7	46.0	3.3
599.992800	42.2	161.0	V	36.0	-8.7	46.0	3.8
98.021250	35.8	100.0	V	55.0	-7.6	43.5	7.7
359.921250	35.6	128.0	V	198.0	-17.2	46.0	10.4
217.210000	34.4	101.0	V	123.0	-16.5	46.0	11.6

Radiated (802.11a mode), 17 dBi Direction Antenna

Lower Channel (5745 MHz)									
Freq. (MHz)	**Ant. Polarity (H/V)**	**S.A. Reading (dBuV/m)**	**Pre-Amp. (dB)**	**Ant. Factor (dB/m)**	**Cable Loss (dB)**	**Cord. Reading (dBuV/m)**	**Limits (dBuV/m)**	**Margin (dB)**	**Meas. Type**
11490.0	V	29.48	34.10	40.40	6.39	42.17	54.0	11.8	AV
17235.0	V	21.70	34.10	45.00	9.00	41.60	54.0	12.4	AV
17235.0	V	31.93	34.10	45.00	9.00	51.83	74.0	22.2	PK
11490.0	V	38.85	34.10	40.40	6.39	51.54	74.0	22.5	PK
Middle Channel (5785 MHz)									
Freq. (MHz)	**Ant. Polarity (H/V)**	**S.A. Reading (dBuV/m)**	**Pre-Amp. (dB)**	**Ant. Factor (dB/m)**	**Cable Loss (dB)**	**Cord. Reading (dBuV/m)**	**Limits (dBuV/m)**	**Margin (dB)**	**Meas. Type**
17355.0	V	22.60	34.10	45.00	9.00	42.5	54.0	11.5*	AV
11570.0	V	28.94	34.10	40.40	6.45	41.69	54.0	12.3*	AV
17355.0	V	37.95	34.10	45.00	9.00	57.85	74.0	16.1	PK
11570.0	V	40.67	34.10	40.40	6.45	53.42	74.0	20.6	PK
Higher Channel (5805 MHz)									
Freq. (MHz)	**Ant. Polarity (H/V)**	**S.A. Reading (dBuV/m)**	**Pre-Amp. (dB)**	**Ant. Factor (dB/m)**	**Cable Loss (dB)**	**Cord. Reading (dBuV/m)**	**Limits (dBuV/m)**	**Margin (dB)**	**Meas. Type**
11610.0	V	29.05	34.10	41.00	6.40	42.35	54.0	11.7*	AV
17415.0	V	21.13	34.10	46.30	8.90	42.23	54.0	11.8*	AV
17415.0	V	35.55	34.10	46.30	8.90	56.65	74.0	17.3	PK
11610.0	V	38.23	34.10	41.00	6.40	51.53	74.0	22.5	PK

Radiated (802.11b mode), 9 dBi Omni-Directional Antenna

Lower Channel (2412 MHz)									
Freq. (MHz)	**Ant. Polarity (H/V)**	**S.A. Reading (dBuV/m)**	**Pre-Amp. (dB)**	**Ant. Factor (dB/m)**	**Cable Loss (dB)**	**Cord. Reading (dBuV/m)**	**Limits (dBuV/m)**	**Margin (dB)**	**Meas. Type**
4824.0	V	31.45	33.40	35.40	4.64	38.09	54.0	15.9	AV
7236.0	V	27.99	33.70	37.80	4.51	36.60	54.0	17.4	AV
4824.0	V	34.11	33.40	35.40	4.64	40.75	74.0	33.3	PK
7236.0	V	30.25	33.70	37.80	4.51	38.86	74.0	35.1	PK
Middle Channel (2437 MHz)									
Freq. (MHz)	**Ant. Polarity (H/V)**	**S.A. Reading (dBuV/m)**	**Pre-Amp. (dB)**	**Ant. Factor (dB/m)**	**Cable Loss (dB)**	**Cord. Reading (dBuV/m)**	**Limits (dBuV/m)**	**Margin (dB)**	**Meas. Type**
4874.0	V	48.51	33.40	35.40	4.60	55.11	74.0	18.9	PK
7311.0	V	26.03	33.70	37.80	4.60	34.73	54.0	19.3	AV
4874.0	V	23.69	33.40	35.40	4.60	30.29	54.0	23.7	AV
7311.0	V	28.79	33.70	37.80	4.60	37.49	74.0	36.5	PK
Higher Channel (2462 MHz)									
Freq. (MHz)	**Ant. Polarity (H/V)**	**S.A. Reading (dBuV/m)**	**Pre-Amp. (dB)**	**Ant. Factor (dB/m)**	**Cable Loss (dB)**	**Cord. Reading (dBuV/m)**	**Limits (dBuV/m)**	**Margin (dB)**	**Meas. Type**
7386.0	V	32.43	33.70	37.80	4.75	41.28	54.0	12.7	AV
4924.0	V	28.00	33.40	35.40	4.55	34.55	54.0	19.5	AV
7386.0	V	37.56	33.70	37.80	4.75	46.41	74.0	27.6	PK
4924.0	V	33.27	33.40	35.40	4.55	39.85	74.0	34.2	PK

Radiated (802.11g mode), 9 dBi Omni-Directional Antenna

Lower Channel (2412 MHz)									
Freq. (MHz)	**Ant. Polarity (H/V)**	**S.A. Reading (dBuV/m)**	**Pre-Amp. (dB)**	**Ant. Factor (dB/m)**	**Cable Loss (dB)**	**Cord. Reading (dBuV/m)**	**Limits (dBuV/m)**	**Margin (dB)**	**Meas. Type**
4824.0	V	31.45	33.40	35.40	4.64	38.09	54.0	15.9	AV
7236.0	V	27.99	33.70	37.80	4.51	36.60	54.0	17.4	AV
4824.0	V	34.11	33.40	35.40	4.64	40.75	74.0	33.3	PK
7236.0	V	30.25	33.70	37.80	4.51	38.86	74.0	35.1	PK
Middle Channel (2437 MHz)									
Freq. (MHz)	**Ant. Polarity (H/V)**	**S.A. Reading (dBuV/m)**	**Pre-Amp. (dB)**	**Ant. Factor (dB/m)**	**Cable Loss (dB)**	**Cord. Reading (dBuV/m)**	**Limits (dBuV/m)**	**Margin (dB)**	**Meas. Type**
4874.0	V	48.51	33.40	35.40	4.60	55.11	74.0	18.9	PK
7311.0	V	26.03	33.70	37.80	4.60	34.73	54.0	19.3	AV
4874.0	V	23.69	33.40	35.40	4.60	30.29	54.0	23.7	AV
7311.0	V	28.79	33.70	37.80	4.60	37.49	74.0	36.5	PK
Higher Channel (2462 MHz)									
Freq. (MHz)	**Ant. Polarity (H/V)**	**S.A. Reading (dBuV/m)**	**Pre-Amp. (dB)**	**Ant. Factor (dB/m)**	**Cable Loss (dB)**	**Cord. Reading (dBuV/m)**	**Limits (dBuV/m)**	**Margin (dB)**	**Meas. Type**
7386.0	V	32.43	33.70	37.80	4.75	41.28	54.0	12.7	AV
4924.0	V	38.00	33.40	35.40	4.55	34.55	54.0	19.5	AV
7386.0	V	37.56	33.70	37.80	4.75	46.41	74.0	27.6	PK
4924.0	V	33.30	33.40	35.40	4.55	39.85	74.0	34.2	PK

Radiated (802.11b mode), 15 dBi Directional Antenna

Lower Channel (2412 MHz)									
Freq. (MHz)	**Ant. Polarity (H/V)**	**S.A. Reading (dBuV/m)**	**Pre-Amp. (dB)**	**Ant. Factor (dB/m)**	**Cable Loss (dB)**	**Cord. Reading (dBuV/m)**	**Limits (dBuV/m)**	**Margin (dB)**	**Meas. Type**
7236	V	31.99	34.00	37.80	4.51	40.3	54.0	13.7	AV
4824	V	33.64	33.40	34.40	4.64	39.28	54.0	14.7	AV
7236	V	36.64	34.00	37.80	4.51	44.95	74.0	29.1	PK
4824	V	37.66	33.40	34.40	4.64	43.30	74.0	30.7	PK
Middle Channel (2437 MHz)									
Freq. (MHz)	**Ant. Polarity (H/V)**	**S.A. Reading (dBuV/m)**	**Pre-Amp. (dB)**	**Ant. Factor (dB/m)**	**Cable Loss (dB)**	**Cord. Reading (dBuV/m)**	**Limits (dBuV/m)**	**Margin (dB)**	**Meas. Type**
7311	V	31.96	34.00	37.80	4.51	40.27	54.00	13.7	AV
4874	V	33.64	33.14	34.40	4.64	39.54	54.00	14.5	AV
7311	V	36.64	34.00	37.80	4.51	44.95	74.00	29.1	PK
4874	V	37.66	33.14	34.40	4.64	43.56	74.00	30.4	PK
Higher Channel (2462 MHz)									
Freq. (MHz)	**Ant. Polarity (H/V)**	**S.A. Reading (dBuV/m)**	**Pre-Amp. (dB)**	**Ant. Factor (dB/m)**	**Cable Loss (dB)**	**Cord. Reading (dBuV/m)**	**Limits (dBuV/m)**	**Margin (dB)**	**Meas. Type**
7386	V	31.31	34.00	37.80	4.51	39.62	54.0	14.4	AV
4924	V	33.63	33.40	34.40	4.64	39.27	54.0	14.7	AV
7386	V	35.88	34.00	37.80	4.51	44.19	74.0	29.8	PK
4924	V	37.33	33.40	34.40	4.64	42.97	74.0	31.0	PK

Radiated (802.11g mode), 15 dBi DIrectional Antenna

Lower Channel (2412 MHz)									
Freq. (MHz)	**Ant. Polarity (H/V)**	**S.A. Reading (dBuV/m)**	**Pre-Amp. (dB)**	**Ant. Factor (dB/m)**	**Cable Loss (dB)**	**Cord. Reading (dBuV/m)**	**Limits (dBuV/m)**	**Margin (dB)**	**Meas. Type**
7236	V	31.99	34.00	37.80	4.51	40.3	54.0	13.7	AV
4824	V	33.64	33.40	34.40	4.64	39.28	54.0	14.7	AV
7236	V	36.64	34.00	37.80	4.51	44.95	74.0	29.1	PK
4824	V	38.28	33.40	34.40	4.64	43.92	74.0	30.1	PK
Middle Channel (2437 MHz)									
Freq. (MHz)	**Ant. Polarity (H/V)**	**S.A. Reading (dBuV/m)**	**Pre-Amp. (dB)**	**Ant. Factor (dB/m)**	**Cable Loss (dB)**	**Cord. Reading (dBuV/m)**	**Limits (dBuV/m)**	**Margin (dB)**	**Meas. Type**
7311	V	31.96	34.00	37.80	4.51	40.27	54.00	13.7	AV
4874	V	33.64	33.14	34.40	4.64	39.54	54.00	14.5	AV
7311	V	35.88	34.00	37.80	4.51	44.19	74.00	29.8	PK
4874	V	37.66	33.14	34.40	4.64	43.56	74.00	30.4	PK
Higher Channel (2462 MHz)									
Freq. (MHz)	**Ant. Polarity (H/V)**	**S.A. Reading (dBuV/m)**	**Pre-Amp. (dB)**	**Ant. Factor (dB/m)**	**Cable Loss (dB)**	**Cord. Reading (dBuV/m)**	**Limits (dBuV/m)**	**Margin (dB)**	**Meas. Type**
7386	V	31.31	34.00	37.80	4.51	39.62	54.0	14.4	AV
4924	V	33.63	33.40	34.40	4.64	39.27	54.0	14.7	AV
7386	V	35.88	34.00	37.80	4.51	44.19	74.0	29.8	PK
4924	V	36.99	33.40	34.40	4.64	42.63	74.0	31.4	PK

RESTRICT BAND:

Frequency MHz	Reading dBuV/m	Detector PK/QP /AV	Direction Degree	Antenna			Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Reading (dBuV/m)	Part 15.209/247	
				Height (m)	Polar (H/V)	Factor (dB/m)				Limit dBuV/m	Margin dB
802.11b mode (2310MHz-2390MHz)											
2382.4	48.34	PK	360	1.2	V	27.4	3.61	30.6	48.75	54	5.25
2358.2	46.82	PK	45	1.2	H	27.4	3.61	30.6	47.23	54	6.77
2373.2	45.91	PK	200	1.5	V	27.4	3.61	30.6	46.32	54	7.68
2361.5	45.48	PK	180	1.4	V	27.4	3.61	30.6	45.89	54	8.11
2346.7	41.95	PK	120	1.5	H	27.4	3.61	30.6	42.36	54	11.64
802.11b mode (2483.5MHz-2500MHz)											
2489.1	48.17	PK	150	1.1	V	27.4	3.61	30.6	48.58	54	5.42
2494.6	45.96	PK	320	1.4	H	27.4	3.61	30.6	46.37	54	7.63
2496.4	44.15	PK	90	1.3	V	27.4	3.61	30.6	45.26	54	8.74
2492.5	44.08	PK	45	1.5	H	27.4	3.61	30.6	44.49	54	9.51
802.11g mode (2310MHz-2390MHz)											
2302.4	48.11	PK	115	1.4	V	27.4	3.61	30.6	48.52	54	5.48
2347.2	44.97	PK	225	1.3	V	27.4	3.61	30.6	45.38	54	8.62
2373.8	44.06	PK	360	1.2	H	27.4	3.61	30.6	44.47	54	9.53
2364.7	42.80	PK	300	1.1	H	27.4	3.61	30.6	43.21	54	10.79
802.11g mode (2483.5MHz-2500MHz)											
2492.1	45.90	PK	185	1.5	V	27.4	3.61	30.6	46.31	54	7.69
2489.2	45.50	PK	90	1.4	V	27.4	3.61	30.6	45.91	54	8.09
2496.3	44.40	PK	0	1.4	H	27.4	3.61	30.6	44.81	54	9.19
2495.5	41.80	PK	45	1.3	H	27.4	3.61	30.6	42.21	54	11.79

Note1: Above all spurious emission strength in PK detector is below the spurious emission limit (54dBuV/m) in AV detector.
Note2: All other emissions were measured at the noise floor of the spectrum analyzer
Note3: The test mode Spurious Emission is the best worse.

§15.247(a) (2) – 6dB BANDWIDTH TESTING

Applicable standard

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Test Data

Please refer to FCC ID: URP-MSR2000 certified on December 22, 2006, report No.:EMCS20963-FCC.

§15.247(b) (3) - PEAK OUTPUT POWER MEASUREMENT

Applicable Standard

According to §15.247(b) (3), for systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power deLinered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

Test Data

Please refer to FCC ID: URP-MSR2000 certified on December 22, 2006, report No.:EMCS20963-FCC.

§15.247(e) – POWER SPECTRAL DENSITY

Applicable Standard

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

Test Data

Please refer to FCC ID: URP-MSR2000 certified on December 22, 2006, report No.:EMCS20963-FCC.

******* END OF REPORT *******