

**MEASUREMENT REPORT**  
**of**  
*Broad Range Wireless Family Router*  
*for*  
*Class II permissive change*

**Applicant** : ASUSTek Computer Inc.  
**EUT** : Broad Range Wireless Family Router  
**Model No.** : WL-520gU  
**FCC ID** : MSQWL520GUGC

Tested by :

*Training Research Co., Ltd.*

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# CERTIFICATION

**We here by verify that:**

The test data, data evaluation, test procedures and equipment configurations shown in this report were made mainly in accordance with the procedures given in ANSI C63.4 (2003) as a reference. All test were conducted by *Training Research Co., Ltd.*, 255 Nanyang Street, Shijr, Taipei Hsien 221, Taiwan, R.O.C. Also, we attest to the accuracy of each.

We further submit that the energy emitted by the sample EUT tested as described in the report is **in compliance with** the technical requirements set forth in the FCC Rules Part 15 Subpart C Section 15.247.

**Applicant** : ASUSTek Computer Inc.  
**Applicant Address** : 4F, No. 150, Li-Te Rd., Peitou, Taipei, Taiwan, R.O.C.  
**Product Name** : Broad Range Wireless Family Router  
**Model** : WL-520gU  
**Report No.** : A5415090089  
**Test Date** : April 27, 2009

Prepared by:   
Jack Tsai

Approved by:   
Frank Tsai

**Conditions of issue :**

- (1) **This test report shall not be reproduced except in full, without written approval of TRC. And the test result contained within this report only relate to the sample submitted for testing.**
- (2) **This report must not be used by the client to claim product endorsement by NVLAP or any agency of U.S. Government.**
- (3) **This test report, measurements made by TRC are traceable to the NIST only Conducted and Radiated Method.**



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## **I . GENERAL**

### **1.1 Introduction**

The following measurement report is submitted on behalf of applicant in support that the certification in accordance with Part 2 Subpart J and Part 15 Subpart A and C of the Commission's Rules and Regulations.

### **1.2 Description of EUT**

<b>FCC ID</b>	:	MSQWL520GUGC
<b>Product Name</b>	:	Broad Range Wireless Family Router
<b>Model Name</b>	:	WL-520gU
<b>Frequency Range</b>	:	2.412GHz ~ 2.462GHz
<b>Support Channel</b>	:	11 Channels
<b>Modulation Skill</b>	:	DBPSK, DQPSK, CCK, OFDM
<b>Power Type</b>	:	Powered by the switching adapter, Manufacture: ENERTRONIX Model: EXA0802UA1 I/P: 100 - 240VAC ~ 50-60Hz 0.5A O/P: 5VDC 2.0A. 186cm length, non-shielded, without ferrite core
<b>Data Cable</b>	:	RJ45 cable x 1, 1.5m length, non-shielded, without ferrite core RJ45 cable x 3, 2.0m length, non-shielded, without ferrite core RJ45 cable x 1, 10m length, non-shielded, without ferrite core USB cable x 1, 1.04length, shielded, without ferrite core

### **1.3 Test method**

- 1.3.1 The DC-In connected to AC mains supply by switching adapter.
- 1.3.2 The USB-downstream port connected with a USB flash drive.
- 1.3.3 The LAN4 port of EUT connected to far LAN card.
- 1.3.4 The LAN1 to LAN3 ports are termination by RJ45 cables.
- 1.3.5 Connected the WAN port of EUT with the LAN of PC. Using PC and software provided by the manufacturer to control EUT, the test is performed under the specific conditions.
- 1.3.6 Set different data rate and channel (CH01/CH06/CH11) being tested
  - (a) Conducted test and Radiated:
    - making EUT to the mode of continuous transmission

### 1.4 Description of Support Equipment

In order to construct the minimum testing, following equipment were used as the support units.

**PC** : **HP Compaq dx5750 Microtower**  
Model No. : dx5750 MT  
Serial No. : SGH72200Q6  
FCC ID : Doc Approved  
BSMI : R33001  
Power type : 100 ~ 127VAC/200 ~ 240VAC, 8A/4A, 50 ~ 60Hz, Switching  
Power cord : Non-shielded, 1.8m long, Plastic hood, No ferrite core

**17' LCD Monitor** : **HP**  
Model No. : L1760  
Serial No. : CND71008M6  
FCC ID : Doc Approved  
BSMI : R43346  
Data cable : Shielded, 1.80 m length, Plastic hood, two ferrite cores  
Power type : 100 ~ 240VAC, 1.5A, 50/60Hz, Switching  
Power cord : Non-shielded, 1.80 m length, Plastic hood, without ferrite core

**Printer** : **EPSON**  
Model No. : B241A  
Serial No. : FAPY155090  
FCC ID : N/A, DoC Approved  
BSMI : R33126  
Power type : Switching adaptor  
Power cord : Non-shielded, 198cm length, No ferrite core  
Data cable : Shielded, 1.50m length, No ferrite core

**USB Mouse** : **DELL**  
Model No. : M056V0A  
Serial No. : F1D051Y6  
FCC ID : DoC Approved  
BSMI : R41108  
Power type : By PC  
Power cord : Shielded, 1.82m length, Plastic hood, No ferrite core

**USB Keyboard : DELL DIMENSION E520**  
Model No. : SK-8115  
Serial No. : MY-0DJ325-71619-6CQ-0512  
FCC ID : Doc Approved  
BSMI : T3A002  
Power type : By PC  
Data cable : Shielded, 2.02m length, Plastic hood, with ferrite core

**Modem : ACEEX**  
Model No. : DM-1414  
Serial No. : 9010583  
FCC ID : IFAXDM1414  
Power type : Linear  
Power cord : Non-shielded, 1.9m length, No ferrite cord  
Data cable : RS232, Shielded, 1.2m length, No ferrite core  
RJ11C x 2, 7' length non-shielded, No ferrite core

**USB Game pad : Logitech**  
Model No. : G-UC3B  
Serial No. : AE3500500  
FCC ID : DoC Approved  
BSMI : 4902A047  
Power type : Powered by PC  
Power Cable : Shielded, 187cm length, Plastic hood, No ferrite core.

**LAN Card : D-Link**  
Model No. : DFE-530TX  
Serial No. : 0050BAE32FF3  
FCC ID : N/A, DoC Approved

**WLAN Card : Gemtek Technology Co., Ltd.**  
Model No. : C911003  
FCC ID : MXF-C911003

**USB Flash Drive : City-Netek Inc.**

Model No. : CN-2108  
FCC ID : DoC Approved  
Power cord : Shielded, 1.0m length, no ferrite core

**Notebook PC : IBM**

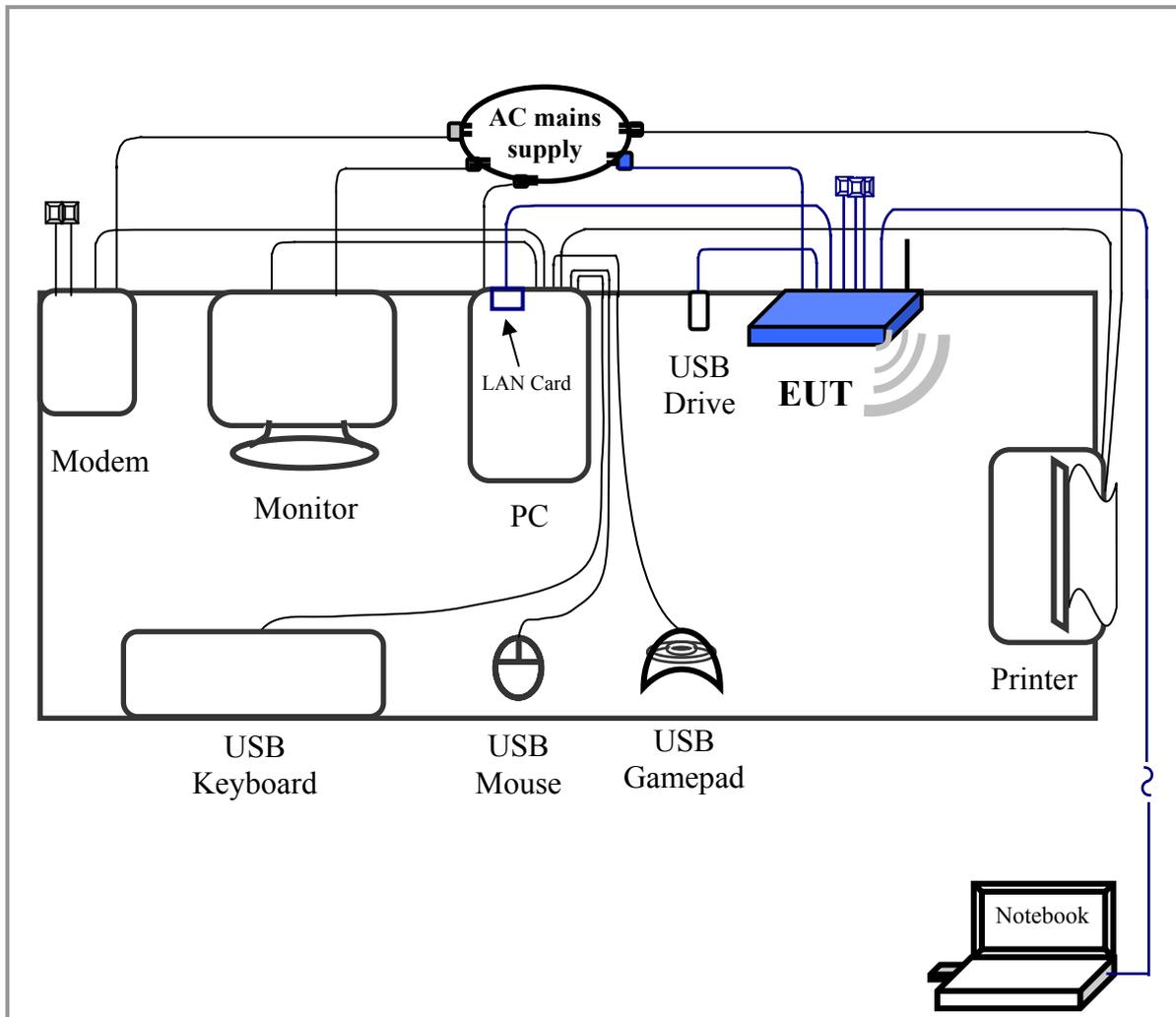
Model No. : 2373-IMV  
Serial No. : 99R3H1H  
FCC ID : N/A, DoC (Declaration of Confirmation) Approved  
BSMI : R33026  
DGT : 92LP0137

**Power adaptor : IBM**

Part No. : 08K8202  
Serial No. : 11S08K8202Z1Z6LR459001A REV 06  
BSMI : D33190  
Power type : 100 ~ 240VAC / 50 ~ 60Hz, 1.5 ~ 0.5A, Switching  
Power cord : Primary: Non-shielded, 1.0m length, Plastic hood, No ferrite core  
Secondary: Shielded, 1.84m length, Plastic hood, ferrite core

### 1.5 Configuration of System Under Test

#### 1.5.1 Conducted and Radiated



#### Connections of Equipment

- PC:**
- \*Parallel Port ..... a printer
  - \*VGA Port ..... a monitor
  - \*Serial Port ..... an external modem
  - \*USB#1 Port ..... a USB gamepad
  - \*USB#2 keyboard Port ... a USB keyboard
  - \*USB#3 mouse a USB mouse
  - Port .....
  - \*LAN Port ..... **EUT**

The tests below are carried with the EUT transmitter set at high power in TDD mode. The EUT is forced to select of output power level and channel number by LAN port.

The setting up procedure was recorded in 1.3 test method.

**1.6 Verify the Frequency and Channel**

Channel	Frequency (GHz)
1	2.412
2	2.417
3	2.422
4	2.427
5	2.432
6	2.437
7	2.442
8	2.447
9	2.452
10	2.457
11	2.462

Note:

1. This is for confirming that all frequencies are in 2.412GHz to 2.462GHz.
2. Section 15.31(m): Measurements on intentional radiators or receivers shall be performed at three frequencies for operating frequency range over 10 MHz  
(The locations of these frequencies one near the top, one near the middle and one near the bottom.)
3. After test, the EUT operating frequencies are in 2.412GHz to 2.462GHz. So all the items as followed in testing report are need to test these three frequencies:  
Top: Channel – 1; Middle: Channel – 6; Bottom: Channel – 11.

### **1.7 Test Procedure**

All measurements contained in this report were performed mainly according to the techniques described in ANSI C63.4 (2003) and the pre-setup was written on 1.3 test method, the detail setup was written on each test item.

### **1.8 Location of the Test Site**

The radiated emissions measurements required by the rules were performed on the **three-meter, Semi-anechoic Chamber (FCC Registration Number: 93906)** maintained by *Training Research Co., Ltd.* 1F, No. 255 Nanyang Street, Shijr, Taipei Hsien 221, Taiwan, R.O.C. Complete description and measurement data have been placed on file with the commission. The conducted power line emissions tests and other test items were performed in a semi-anechoic chamber also located at Training Research Co., Ltd.

No. 255 Nanyang Street, Shijr, Taipei Hsien 221, Taiwan, R.O.C. *Training Research Co., Ltd.* is listed by the FCC as a facility available to do measurement work for others on a contract basis.

### **1.9 General Test Condition**

The conditions under which the EUT operates were varied to determine their effect on the equipment's emission characteristics. The final configuration of the test system and the mode of operation used during these tests were chosen as that which produced the highest emission levels. However, only those conditions, which the EUT was considered likely to encounter in normal use were investigated.

In test, they were set in high power and continuously transmitting mode that controlled by computer. The ch01, ch06 and ch11 of EUT were all tested. The setting up procedure is recorded on 1.3 test method.

## II. Section 15.203: Antenna requirement

The EUT can be equipped with detachable antenna. The external antenna is affixed to the EUT using a unique connector, which allows for replacement of a broken antenna, but does not use a standard antenna jack or electrical connector. The antenna requirement stated in Section 15.203 is inapplicable to this EUT.

The custom antenna specification of list as below:

<b>Antenna No.</b>	<b>Antenna Manufacturer</b>	<b>Model</b>	<b>Antenna Type</b>	<b>Antenna Gain (Max.)</b>
<b>Antenna#1</b>	WHA YU INDUSTRIAL CO., LTD.	C660-510103-A	Dipole	1.80dBi
<b>Antenna#2</b>	ARISTOTLE ENTERPRISES	RFA-02-C15M 3-01	Dipole	2.00dBi

1. There antenna is selected for the final test: 2.0dBi
2. For more detailed features description, please reference to the Antenna Specifications (Please see attached, RF Exposure Information)

### **III. Section 15.207: Power Line Conducted Emissions for AC Powered Units**

#### **3.1 Test Condition & Setup**

The power line conducted emission measurements were performed in an semi-anechoic chamber. The EUT was assembled on a wooden table, which is 80 centimeters high, was placed 40 centimeters from the backwall and at least 1 meter from the sidewall.

Power was fed to the EUT from the public utility power grid through a line filter and Line Impedance Stabilization Networks (LISNs). The LISN housing, measuring instrumentation case, ground plane, etc., were electrically bonded together at the same RF potential. The Spectrum analyzer (or EMI receiver) was connected to the AC line through an isolation transformer. The 50-ohm output of the LISN was connected to the spectrum analyzer directly. Conducted emission levels were in the CISPR quasi-peak and average detection mode. The analyzer's 6 dB bandwidth was set to 9 KHz. No post-detector video filter was used.

The spectrum was scanned from 150 KHz to 30 MHz. The physical arrangement of the test system and associated cabling was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude and frequency. All spurious emission frequencies were observed. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in paragraph 4.3

There is a test condition apply in this test item, the test procedure description as <1.3>. Three channels were tested, one in the top (CH01), one in the middle (CH06) and the other in bottom (CH11).

**3.2 List of Test Instruments**

Instrument Name	Model	Brand	Serial No.	Calibration Date
				Next time
EMI Receiver	8546A	HP	3520A00242	07/15/09
RF Filter Section	85460A	HP	3448A00217	07/15/09
LISN (EUT)	LISN-01	TRC	99-05	05/10/09
LISN (Support E.)	LISN-01	TRC	9912-03, 04	06/22/09
Pre-amplifier	15542 ZFL-500	Mini – Circuits	0 0117	07/10/09
6dB Attenuator	MCL BW-S6W2	Mini – Circuits	9915 – Conducted	07/10/09
10dB Attenuator	A5542 VAT010	Mini – Circuits	0215 – Conducted	07/10/09
Coaxial Cable (2.0 meter)	A30A30-0058-50FS-2M	Jyebao	SMA-08	07/10/09
Coaxial Cable (1.1 meter)	A30A30-0058-50FS-1M	Jyebao	SMA-09	07/10/09
Coaxial Cable (20 meter)	RG-214/U	Jyebao	NP-01	07/10/09
Coaxial Cable (20 meter)	RG-214/U	Jyebao	NP-02	07/10/09
Auto Switch Box (< 30MHz)	ASB-01	TRC	9904-01	07/10/09

**3.3 Test Result of Power Line Conducted Emissions**

The following table shows a summary of the highest emissions of power line conducted emissions on the LIVE and NETURAL conductors of the EUT power cord. Show as follows.

Test Conditions: Temperature : 25 °C Humidity : 73 % RH

Test mode: IEEE 802.11b Channel 1

<i>Power Connected Emissions</i>					<i>Class B</i>		
<i>Conductor</i>	<i>Frequency (KHz)</i>	<i>Peak (dBµV)</i>	<i>QP (dBµV)</i>	<i>Average (dBµV)</i>	<i>QP-limit (dBµV)</i>	<i>AVG-limit (dBµV)</i>	<i>Margin (dB)</i>
Line 1	189.500	56.46	54.01	41.80	65.00	55.00	-10.99
	248.000	49.01	---	---	63.20	53.20	-4.19
	308.000	42.91	---	---	61.49	51.49	-8.58
	625.605	36.44	36.44	22.98	56.00	46.00	-19.56
	654.330	52.40	18.37	5.87	56.00	46.00	-37.63
	27600.000	41.57	---	---	60.00	50.00	-8.43
Line 2	168.675	71.92	49.85	28.42	65.23	55.23	-15.38
	178.525	56.13	50.34	28.71	65.46	55.46	-15.12
	246.065	72.85	50.00	36.90	63.20	53.20	-13.20
	308.000	46.18	---	---	61.49	51.49	-5.31
	738.000	40.18	---	---	56.00	46.00	-5.82
	27600.000	46.63	---	---	60.00	50.00	-3.37

NOTE:

- (1)Margin = Peak Amplitude – Limit, *The reading amplitudes are all under limit.*
- (2)A "+" sign in the margin column means the emission is OVER the Class B Limit and "-" sign of means UNDER the Class B limit

*Test mode: IEEE 802.11b Channel 6*

<i>Power Connected Emissions</i>					<i>Class B</i>		
<i>Conductor</i>	<i>Frequency (KHz)</i>	<i>Peak (dBµV)</i>	<i>QP (dBµV)</i>	<i>Average (dBµV)</i>	<i>QP-limit (dBµV)</i>	<i>AVG-limit (dBµV)</i>	<i>Margin (dB)</i>
Line 1	175.775	54.50	44.03	18.45	65.74	55.74	-21.71
	178.015	56.01	55.11	43.90	65.54	55.54	-10.43
	189.050	56.07	54.00	43.60	65.00	55.00	-11.00
	242.295	72.82	45.17	20.50	63.43	53.43	-18.26
	368.360	39.67	40.98	23.37	59.51	49.51	-18.53
	462.180	66.87	30.52	10.09	56.83	46.83	-26.31
Line 2	180.205	72.33	52.12	27.82	64.94	54.94	-12.82
	192.810	71.33	48.03	32.55	64.54	54.54	-16.51
	238.445	50.86	43.34	14.90	63.63	53.63	-20.29
	247.435	50.95	50.76	37.95	63.14	53.14	-12.38
	311.000	45.29	---	---	61.40	51.40	-6.11
	27600.000	44.51	---	---	60.00	50.00	-5.49

*Test mode: IEEE 802.11b Channel 11*

<i>Power Connected Emissions</i>					<i>Class B</i>		
<i>Conductor</i>	<i>Frequency (KHz)</i>	<i>Peak (dBµV)</i>	<i>QP (dBµV)</i>	<i>Average (dBµV)</i>	<i>QP-limit (dBµV)</i>	<i>AVG-limit (dBµV)</i>	<i>Margin (dB)</i>
Line 1	189.030	55.90	56.64	41.94	65.06	55.06	-8.42
	239.465	72.99	41.04	24.00	63.29	53.29	-22.25
	308.000	45.85	---	---	61.49	51.49	-5.64
	370.000	38.63	---	---	59.71	49.71	-11.08
	499.000	37.70	---	---	56.03	46.03	-8.33
	27600.000	45.18	---	---	60.00	50.00	-4.82
Line 2	181.850	73.99	52.43	35.78	65.00	55.00	-12.57
	250.000	48.23	---	---	63.14	53.14	-4.91
	311.000	45.18	---	---	61.40	51.40	-6.22
	370.000	38.43	---	---	59.71	49.71	-11.28
	494.000	37.03	---	---	56.17	46.17	-9.14
	27600.000	44.91	---	---	60.00	50.00	-5.09

**Test mode: IEEE 802.11g Channel 1**

<b>Power Connected Emissions</b>					<b>Class B</b>		
<b>Conductor</b>	<b>Frequency (KHz)</b>	<b>Peak (dBμV)</b>	<b>QP (dBμV)</b>	<b>Average (dBμV)</b>	<b>QP-limit (dBμV)</b>	<b>AVG-limit (dBμV)</b>	<b>Margin (dB)</b>
Line 1	181.830	75.78	54.43	37.07	65.06	55.06	-10.63
	243.335	52.18	52.49	34.70	63.29	53.29	-10.80
	287.520	67.74	44.67	6.54	62.14	52.14	-17.47
	311.000	46.56	---	---	61.40	51.40	-4.84
	499.000	38.21	---	---	56.03	46.03	-7.82
	27600.000	46.26	---	---	60.00	50.00	-3.74
Line 2	184.215	56.73	55.75	43.31	65.06	55.06	-9.31
	230.005	72.91	41.97	11.79	63.83	53.83	-21.86
	248.845	51.72	50.43	35.16	63.20	53.20	-12.77
	305.000	47.17	---	---	61.57	51.57	-4.40
	479.910	37.03	27.28	0.19	56.83	46.83	-29.55
	1405.825	33.94	21.42	0.25	56.00	46.00	-34.58

**Test mode: IEEE 802.11g Channel 6**

<b>Power Connected Emissions</b>					<b>Class B</b>		
<b>Conductor</b>	<b>Frequency (KHz)</b>	<b>Peak (dBμV)</b>	<b>QP (dBμV)</b>	<b>Average (dBμV)</b>	<b>QP-limit (dBμV)</b>	<b>AVG-limit (dBμV)</b>	<b>Margin (dB)</b>
Line 1	193.280	74.18	48.94	32.34	65.00	55.00	-16.06
	246.620	53.35	54.74	39.29	63.29	53.29	-8.54
	306.200	61.27	45.92	27.54	61.49	51.49	-15.57
	494.000	38.59	---	---	56.17	46.17	-7.58
	6460.000	39.20	---	---	60.00	50.00	-10.80
	27600.000	46.28	---	---	60.00	50.00	-3.72
Line 2	189.430	74.91	55.80	42.14	64.94	54.94	-9.14
	244.800	52.74	52.09	36.05	63.34	53.34	-11.25
	270.160	71.04	30.50	15.21	62.37	52.37	-31.87
	295.425	47.34	45.85	29.57	62.06	52.06	-16.21
	370.000	40.99	---	---	59.71	49.71	-8.72
	541.775	55.78	25.24	9.88	56.00	46.00	-30.76

*Test mode: IEEE 802.11g Channel 11*

<i>Power Connected Emissions</i>					<i>FCC Class B</i>		
<i>Conductor</i>	<i>Frequency (KHz)</i>	<i>Peak (dBμV)</i>	<i>QP (dBμV)</i>	<i>Average (dBμV)</i>	<i>QP-limit (dBμV)</i>	<i>AVG-limit (dBμV)</i>	<i>Margin (dB)</i>
Line 1	173.910	61.20	49.36	22.91	65.86	55.86	-16.50
	177.375	62.09	50.96	31.22	65.60	55.60	-14.64
	183.900	61.79	60.58	47.00	65.06	55.06	-4.48
	246.920	56.40	55.36	42.04	63.20	53.20	-7.84
	305.975	50.78	48.83	32.94	61.49	51.49	-12.66
	366.810	44.20	41.52	22.39	59.83	49.83	-18.31
Line 2	175.865	59.27	49.43	27.13	65.74	55.74	-16.31
	184.115	59.99	58.87	46.44	65.09	55.09	-6.22
	246.395	54.65	53.68	41.22	63.29	53.29	-9.61
	307.565	49.24	47.86	34.04	61.57	51.57	-13.71
	370.000	45.30	---	---	59.71	49.71	-4.41
	490.000	41.38	---	---	56.29	46.29	-4.91

#### **IV. Section 15.247 (a): Technical description of the EUT**

*Direct Sequence System* is a spread spectrum system in which the carrier has been modulated by a high speed spreading code and an information data stream. The high speed code sequence dominates the “modulating function” and is the direct cause of the wide spreading of the transmitted signal. In the operational description demonstrates the operation principles of the Baseband processor employed by the EUT, shows that which is a complete DSSS baseband processor and meets the definition of the direct sequence spread spectrum system.

## **V. Section 15.247 (C): Spurious Emissions (Radiated)**

### **5.1 Test Condition & Setup**

We'd performed the test by the *radiated emission* skill: The EUT was placed in an semi-anechoic chamber, and set the EUT transmitting continuously and scanned at 3-meter distance to determine its emission characteristics. The physical arrangement of the EUT was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude, directivity, and frequency. The exact system configuration, which produced the highest emissions was noted so it could be reproduced later during the final tests. For the measurement above 1GHz, according to the guidance we'd set the spectrum analyzer's 6dB bandwidth RBW to 1MHz.

This was done to ensure that the final measurements would demonstrate the worst-case interference potential of the EUT.

Final radiation measurements were made on a three-meter, semi-anechoic chamber. The EUT system was placed on a nonconductive turntable, which is 0.8 meters height, top surface 1.0 x 1.5 meter.

The spectrum was examined from 30MHz to 1000MHz using an Hewlett Packard 85460A EMI Receiver, SCHWARZECK whole range Small Biconical Antenna (Model No.: UBAA9114 & BBVU9135) is used to measure frequency from 30 MHz to 1GHz. The final test is used the HP 85460A spectrum and 8564E spectrum was examined from 1GHz to 25GHz using an Hewlett Packard Spectrum Analyzer, EMCO/HP Horn Antenna (Model 3115 / 84125-80008) for 1G - 25GHz.

At each frequency, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. There are two spectrum analyzers use on this testing, HP 85460A for frequency 30MHz to 1000MHz, and 8564E for frequency 1GHz to 25GHz. No post-detector video filters were used in the test. The spectrum analyzer's 6dB bandwidth was set to 120KHz (spectrum was examined from 30 MHz to 1000 MHz), the spectrum analyzer's 6 dB bandwidth was set to 1 MHz (spectrum was examined from 1GHz to 25GHz) and the analyzer was operated in the maximum hold mode. There is a test condition applies in this test item, the test procedure description as the following:

Three channels were tested, one in the top (CH01), one in the middle (CH06) and the other in bottom (CH11). The setting up procedure is recorded on <1.3>

With the transmitter operating from a AC source and using the internal of EUT, radiates spurious emissions falling within the restricted bands of 15.209 were measured at operating frequencies corresponding to upper, middle and bottom channels in the 2400 ~ 2483.5 MHz band.

The actual field intensity in decibels referenced to 1 microvolt per meter (dB $\mu$ V/m) is determined by algebraically adding the measured reading in dB $\mu$ V, the antenna factor (dB), and cable loss (dB) at the appropriate frequency. Since the EUT was set to transmit continuously, no *duty cycle* is present.

**For frequency between 30MHz to 1000MHz**

$$F_{Ia} \text{ (dBuV/m)} = F_{Ir} \text{ (dB}\mu\text{V)} + \text{Correction Factors}$$

F<sub>Ia</sub> : Actual Field Intensity

F<sub>Ir</sub> : Reading of the Field Intensity

Correction Factors = Antenna Factor + (Cable Loss – Amplifier Gain) + Switching Box Loss

**For frequency between 1GHz to 25GHz**

$$F_{Ia} \text{ (dB}\mu\text{V/m)} = F_{Ir} \text{ (dB}\mu\text{V)} + \text{Correction Factor}$$

F<sub>Ia</sub> : Actual Field Intensity

F<sub>Ir</sub> : Reading of the Field Intensity

Correction Factors = Antenna Factor + (Cable Loss – Amplifier Gain) + Switching Box Loss

**5.2 List of Test Instruments**

<b>Instrument Name</b>	<b>Model</b>	<b>Brand</b>	<b>Serial No.</b>	<b>Calibration Date</b>
				<b>Next time</b>
EMI Receiver	8546A	HP	3520A00242	07/15/09
RF Filter Section	85460A	HP	3448A00217	07/15/09
Small Biconical Antenna	UBAA9114 & BBVU9135	SCHWARZECK	127	07/10/09
Pre-amplifier	PA1F	TRC	1FAC	07/10/09
Coaxial Cable (Double shielded, 15 meter)	A30A30-0058-50FS-15M	JYEBAO	SMA-01	07/10/09
Coaxial Cable (1.1 meter)	A30A30-0058-50FS-1M	JYEBAO	SMA-02	07/10/09
Spectrum Analyzer	8564E	HP	3720A00840	06/17/09
Microwave Preamplifier	84125C	HP	US36433002	05/05/09
Horn Antenna	3115	EMCO	9104-3668	08/06/09
Standard Guide Horn Antenna	84125-80008	HP	18-26.5GHz	06/14/09
Standard Guide Horn Antenna	84125-80001	HP	26.5-40GHz	05/12/09
Horn Antenna	1196E (3115)	HP (EMCO)	9704-5178	08/13/09
Pre-amplifier	PA2F	TRC	2F1GZ	07/10/09
Coaxial Cable (3 miter)	A30A30-0058-50FST118	JYEBAO	MSA-05	07/10/09
Coaxial Cable (1 meter)	A30A30-0058-50FST118	JYEBAO	MSA-04	07/10/09

### 5.3 Test Result of Spurious Radiated Emissions

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarizations, EUT orientation, etc. are recorded on the following.

Test Conditions: Temperature : 25 °C Humidity : 73 % RH

*Test mode: IEEE 802.11b CH01 for 30MHz to 1GHz [Horizontal]*

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dBμV/m)	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table ( )			Limit (dBμV/m)	Margin (dB)
125.79	39.12	1.00	276	-2.76	36.36	43.50	-7.14
253.10	42.47	1.00	225	-3.38	39.09	46.00	-6.91
302.81	41.79	1.00	215	-2.86	38.93	46.00	-7.07
451.95	40.67	1.00	199	1.21	41.88	46.00	-4.12
502.87	37.51	1.00	10	1.93	39.44	46.00	-6.56
548.95	35.75	1.00	332	4.99	40.74	46.00	-5.26

*Test mode: IEEE 802.11b CH01 for 30MHz to 1GHz [Vertical]*

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dBμV/m)	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table ( )			Limit (dBμV/m)	Margin (dB)
127.00	37.34	1.00	316	-2.84	34.50	43.50	-9.00
197.32	35.49	1.00	7	-3.42	32.07	43.50	-11.43
250.67	42.99	1.00	195	-3.20	39.79	46.00	-6.21
501.66	34.64	1.00	202	1.85	36.49	46.00	-9.51
550.16	31.43	1.00	104	5.06	36.49	46.00	-9.51
700.51	29.86	1.00	208	9.54	39.40	46.00	-6.60

Note:

1. Margin = Amplitude – limit, if margin is minus means under limit.
2. Corrected Amplitude = Reading Amplitude + Correction Factors
3. Correction factor = Antenna factor + (Cable Loss – Amplitude gain) + Switching Box Loss

**Test mode: IEEE 802.11b CH01 for 1GHz to 25GHz [Horizontal]**

Frequency	Ant. H.	Table	Amplitude		Correction Factor	Corrected Amplitude		Limit		Margin
			Peak / Ave.			Peak / Ave.		Peak / Ave.		
MHz	m	degree	dBµV		dB/m	dBµV/m		dBµV/m		dB
2171.39	1.00	356	46.26	34.93	8.57	54.83	43.50	73.96	53.96	-10.46
2294.26	1.00	43	48.90	36.72	8.91	57.81	45.63	73.96	53.96	-8.33
2530.50	1.00	34	48.69	35.40	9.55	58.24	44.95	73.96	53.96	-9.01
9650.42	1.00	227	37.04	---	11.47	48.51	---	73.96	53.96	-5.45
19296.25	1.00	49	47.56	---	1.60	49.16	---	73.96	53.96	-4.80
21708.12	1.00	95	47.28	---	2.87	50.15	---	73.96	53.96	-3.81

**Test mode: IEEE 802.11b CH01 for 1GHz to 25GHz [Vertical]**

Frequency	Ant. H.	Table	Amplitude		Correction Factor	Corrected Amplitude		Limit		Margin
			Peak / Ave.			Peak / Ave.		Peak / Ave.		
MHz	m	degree	dBµV		dB/m	dBµV/m		dBµV/m		dB
2175.33	1.00	113	51.06	38.59	8.58	59.64	47.17	73.96	53.96	-6.79
2290.46	1.00	41	56.84	42.53	8.90	65.74	51.43	73.96	53.96	-2.53
2532.36	1.00	128	55.23	41.07	9.55	64.78	50.62	73.96	53.96	-3.34
2640.01	1.00	161	49.90	38.83	9.75	59.65	48.58	73.96	53.96	-5.38
7233.75	1.00	196	40.11	---	10.07	50.18	---	73.96	53.96	-3.78
21708.12	1.00	113	47.11	---	2.87	49.98	---	73.96	53.96	-3.98

Note:

1. Margin = Corrected - Limit.
2. The EUT utilizes a *permanently attached antenna*. In addition the spurious RF radiated emissions levels do comply with the *20dBc limit* both at its bandedges and other spurious emissions.
3. As stated in Section 15.35(b), for any frequencies above 1000MHz, radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. As the results of our test, the peak amplitudes are already below the FCC limit. Thus the average amplitudes of the rest are omitted.

*Test mode: IEEE 802.11b CH06 for 30MHz to 1GHz [Horizontal]*

<b>Radiated Emission</b>				<b>Correction Factors</b>	<b>Corrected Amplitude</b>	<b>Class B (3 m)</b>	
<b>Frequency (MHz)</b>	<b>Amplitude (dBμV)</b>	<b>Ant. H. (m)</b>	<b>Table ( )</b>			<b>Limit (dBμV/m)</b>	<b>Margin (dB)</b>
127.00	39.13	1.00	273	-2.84	36.29	43.50	-7.21
251.89	42.55	1.00	232	-3.29	39.26	46.00	-6.74
351.31	40.79	1.00	54	-2.24	38.55	46.00	-7.45
450.74	40.18	1.00	34	1.20	41.38	46.00	-4.62
504.09	38.84	1.00	10	2.01	40.85	46.00	-5.15
550.16	36.54	1.00	35	5.06	41.60	46.00	-4.40

*Test mode: IEEE 802.11b CH06 for 30MHz to 1GHz [Vertical]*

<b>Radiated Emission</b>				<b>Correction Factors</b>	<b>Corrected Amplitude</b>	<b>Class B (3 m)</b>	
<b>Frequency (MHz)</b>	<b>Amplitude (dBμV)</b>	<b>Ant. H. (m)</b>	<b>Table ( )</b>			<b>Limit (dBμV/m)</b>	<b>Margin (dB)</b>
125.79	36.54	1.00	300	-2.76	33.78	43.50	-9.72
251.89	41.58	1.00	190	-3.29	38.29	46.00	-7.71
450.74	33.77	1.00	133	1.20	34.97	46.00	-11.03
501.66	35.16	1.00	207	1.85	37.01	46.00	-8.99
548.95	32.04	1.00	100	4.99	37.03	46.00	-8.97
700.51	30.07	1.00	208	9.54	39.61	46.00	-6.39

**Test mode: IEEE 802.11b CH06 for 1GHz to 25GHz [Horizontal]**

Frequency	Ant. H.	Table	Amplitude		Correction Factor	Corrected Amplitude		Limit		Margin
			Peak / Ave.			Peak / Ave.		Peak / Ave.		
MHz	m	degree	dBμV		dB/m	dBμV/m		dBμV/m		dB
2197.02	1.00	97	45.38	35.45	8.64	54.02	44.09	73.96	53.96	-9.87
2320.02	1.00	97	49.30	38.34	8.99	58.29	47.33	73.96	53.96	-6.63
2526.54	1.00	287	45.50	33.40	9.54	55.04	42.94	73.96	53.96	-11.02
4871.46	1.00	228	45.94	---	3.95	49.89	---	73.96	53.96	-4.07
21934.79	1.00	156	46.62	---	3.09	49.71	---	73.96	53.96	-4.25
24371.46	1.00	330	46.83	---	3.26	50.09	---	73.96	53.96	-3.87

**Test mode: IEEE 802.11b CH06 for 1GHz to 25GHz [Vertical]**

Frequency	Ant. H.	Table	Amplitude		Correction Factor	Corrected Amplitude		Limit		Margin
			Peak / Ave.			Peak / Ave.		Peak / Ave.		
MHz	m	degree	dBμV		dB/m	dBμV/m		dBμV/m		dB
2195.79	1.00	296	51.16	39.55	8.64	59.80	48.19	73.96	53.96	-5.77
2314.28	1.00	21	58.44	43.90	8.97	67.41	52.87	73.96	53.96	-1.09
2560.35	1.00	8	53.20	41.01	9.60	62.80	50.61	73.96	53.96	-3.35
2679.45	1.00	43	49.62	37.76	9.83	59.45	47.59	73.96	53.96	-6.37
12181.87	1.00	266	41.46	---	9.72	51.18	---	73.96	53.96	-2.78
24371.46	1.00	213	46.43	---	3.26	49.69	---	73.96	53.96	-4.27

*Test mode: IEEE 802.11b CH11 for 30MHz to 1GHz [Horizontal]*

<b>Radiated Emission</b>				<b>Correction Factors</b>	<b>Corrected Amplitude</b>	<b>Class B (3 m)</b>	
<b>Frequency (MHz)</b>	<b>Amplitude (dBμV)</b>	<b>Ant. H. (m)</b>	<b>Table ( )</b>			<b>Limit (dBμV/m)</b>	<b>Margin (dB)</b>
127.00	39.87	1.00	278	-2.84	37.03	43.50	-6.47
254.31	40.30	1.00	217	-3.46	36.84	46.00	-9.16
301.60	41.02	1.00	207	-2.88	38.14	46.00	-7.86
350.10	40.61	1.00	37	-2.27	38.34	46.00	-7.66
453.16	40.34	1.00	37	1.22	41.56	46.00	-4.44
548.95	37.08	1.00	38	4.99	42.07	46.00	-3.93

*Test mode: IEEE 802.11b CH11 for 30MHz to 1GHz [Vertical]*

<b>Radiated Emission</b>				<b>Correction Factors</b>	<b>Corrected Amplitude</b>	<b>Class B (3 m)</b>	
<b>Frequency (MHz)</b>	<b>Amplitude (dBμV)</b>	<b>Ant. H. (m)</b>	<b>Table ( )</b>			<b>Limit (dBμV/m)</b>	<b>Margin (dB)</b>
125.79	36.54	1.00	293	-2.76	33.78	43.50	-9.72
154.89	46.62	1.00	343	-4.22	42.40	43.50	-1.10
250.67	42.39	1.00	183	-3.20	39.19	46.00	-6.81
502.87	33.93	1.00	200	1.93	35.86	46.00	-10.14
649.59	28.60	1.00	201	8.00	36.60	46.00	-9.40
700.51	29.14	1.00	208	9.54	38.68	46.00	-7.32

*Test mode: IEEE 802.11b CH11 for 1GHz to 25GHz [Horizontal]*

Frequency	Ant. H.	Table	Amplitude		Correction Factor	Corrected Amplitude		Limit		Margin
			Peak / Ave.			Peak / Ave.		Peak / Ave.		
MHz	m	degree	dBμV		dB/m	dBμV/m		dBμV/m		dB
2338.56	1.00	98	50.35	38.15	9.04	59.39	47.19	73.96	53.96	-6.77
2691.05	1.00	25	45.36	32.20	9.85	55.21	42.05	73.96	53.96	-11.91
4925.83	1.00	117	45.38	---	4.13	49.51	---	73.96	53.96	-4.45
12308.75	1.00	335	38.59	---	9.56	48.15	---	73.96	53.96	-5.81
22157.92	1.00	152	46.28	---	3.25	49.53	---	73.96	53.96	-4.43
24619.37	1.00	115	46.77	---	3.01	49.78	---	73.96	53.96	-4.18

*Test mode: IEEE 802.11b CH11 for 1GHz to 25GHz [Vertical]*

Frequency	Ant. H.	Table	Amplitude		Correction Factor	Corrected Amplitude		Limit		Margin
			Peak / Ave.			Peak / Ave.		Peak / Ave.		
MHz	m	degree	dBμV		dB/m	dBμV/m		dBμV/m		dB
2222.51	1.00	105	51.11	39.11	8.71	59.82	47.82	73.96	53.96	-6.14
2339.99	1.00	38	59.03	43.51	9.04	68.07	52.55	73.96	53.96	-1.41
2583.00	1.00	350	53.71	41.58	9.65	63.36	51.23	73.96	53.96	-2.73
2698.47	1.00	279	46.58	36.40	9.86	56.44	46.26	73.96	53.96	-7.70
4924.02	1.00	177	48.51	37.49	4.12	52.63	41.61	73.96	53.96	-12.35
24619.37	1.00	155	47.58	---	3.01	50.59	---	73.96	53.96	-3.37

*Test mode: IEEE 802.11g CH01 for 30MHz to 1GHz [Horizontal]*

<b>Radiated Emission</b>				<b>Correction Factors</b>	<b>Corrected Amplitude</b>	<b>Class B (3 m)</b>	
<b>Frequency (MHz)</b>	<b>Amplitude (dBμV)</b>	<b>Ant. H. (m)</b>	<b>Table ( )</b>			<b>Limit (dBμV/m)</b>	<b>Margin (dB)</b>
250.67	41.05	1.00	215	-3.20	37.85	46.00	-8.15
335.55	41.13	1.00	229	-2.45	38.68	46.00	-7.32
453.16	38.39	1.00	47	1.22	39.61	46.00	-6.39
502.87	37.53	1.00	20	1.93	39.46	46.00	-6.54
548.95	34.15	1.00	28	4.99	39.14	46.00	-6.86
601.09	30.87	1.00	49	6.49	37.36	46.00	-8.64

*Test mode: IEEE 802.11g CH01 for 30MHz to 1GHz [Vertical]*

<b>Radiated Emission</b>				<b>Correction Factors</b>	<b>Corrected Amplitude</b>	<b>Class B (3 m)</b>	
<b>Frequency (MHz)</b>	<b>Amplitude (dBμV)</b>	<b>Ant. H. (m)</b>	<b>Table ( )</b>			<b>Limit (dBμV/m)</b>	<b>Margin (dB)</b>
125.79	38.16	1.00	326	-2.76	35.40	43.50	-8.10
250.67	39.68	1.00	175	-3.20	36.48	46.00	-9.52
450.74	33.63	1.00	249	1.20	34.83	46.00	-11.17
502.87	34.60	1.00	202	1.93	36.53	46.00	-9.47
548.95	31.27	1.00	105	4.99	36.26	46.00	-9.74
700.51	30.41	1.00	203	9.54	39.95	46.00	-6.05

**Test mode: IEEE 802.11g CH01 for 1GHz to 25GHz [Horizontal]**

Frequency	Ant. H.	Table	Amplitude		Correction Factor	Corrected Amplitude		Limit		Margin
			Peak / Ave.			Peak / Ave.		Peak / Ave.		
MHz	m	degree	dBµV		dB/m	dBµV/m		dBµV/m		dB
2289.58	1.00	135	40.45	---	8.90	49.35	---	73.96	53.96	-4.61
3216.03	1.00	227	41.61	40.89	11.47	53.08	52.36	73.96	53.96	-1.60
12061.04	1.00	335	38.31	---	9.81	48.12	---	73.96	53.96	-5.84
19296.25	1.00	51	47.58	---	1.60	49.18	---	73.96	53.96	-4.78
21708.12	1.00	92	46.89	---	2.87	49.76	---	73.96	53.96	-4.20
24120.00	1.00	160	45.75	---	3.40	49.15	---	73.96	53.96	-4.81

**Test mode: IEEE 802.11g CH01 for 1GHz to 25GHz [Vertical]**

Frequency	Ant. H.	Table	Amplitude		Correction Factor	Corrected Amplitude		Limit		Margin
			Peak / Ave.			Peak / Ave.		Peak / Ave.		
MHz	m	degree	dBµV		dB/m	dBµV/m		dBµV/m		dB
2287.96	1.00	105	49.29	31.09	8.90	58.19	39.99	73.96	53.96	-13.97
2537.96	1.00	351	45.01	29.40	9.56	54.57	38.96	73.96	53.96	-15.00
2652.08	1.00	14	40.38	---	9.78	50.16	---	73.96	53.96	-3.80
3216.67	1.00	40	40.65	---	11.47	52.12	---	73.96	53.96	-1.84
12061.04	1.00	202	38.94	---	9.81	48.75	---	73.96	53.96	-5.21
21708.12	1.00	105	46.72	---	2.87	49.59	---	73.96	53.96	-4.37

*Test mode: IEEE 802.11g CH06 for 30MHz to 1GHz [Horizontal]*

<b>Radiated Emission</b>				<b>Correction Factors</b>	<b>Corrected Amplitude</b>	<b>Class B (3 m)</b>	
<b>Frequency (MHz)</b>	<b>Amplitude (dBμV)</b>	<b>Ant. H. (m)</b>	<b>Table ( )</b>			<b>Limit (dBμV/m)</b>	<b>Margin (dB)</b>
127.00	39.89	1.00	277	-2.84	37.05	43.50	-6.45
251.89	40.77	1.00	217	-3.29	37.48	46.00	-8.52
302.81	42.83	1.00	207	-2.86	39.97	46.00	-6.03
450.74	39.61	1.00	190	1.20	40.81	46.00	-5.19
501.66	38.79	1.00	33	1.85	40.64	46.00	-5.36
551.37	35.32	1.00	38	5.10	40.42	46.00	-5.58

*Test mode: IEEE 802.11g CH06 for 30MHz to 1GHz [Vertical]*

<b>Radiated Emission</b>				<b>Correction Factors</b>	<b>Corrected Amplitude</b>	<b>Class B (3 m)</b>	
<b>Frequency (MHz)</b>	<b>Amplitude (dBμV)</b>	<b>Ant. H. (m)</b>	<b>Table ( )</b>			<b>Limit (dBμV/m)</b>	<b>Margin (dB)</b>
125.79	36.91	1.00	203	-2.76	34.15	43.50	-9.35
251.89	42.41	1.00	173	-3.29	39.12	46.00	-6.88
334.34	38.69	1.00	7	-2.47	36.22	46.00	-9.78
504.09	35.13	1.00	200	2.01	37.14	46.00	-8.86
548.95	30.63	1.00	211	4.99	35.62	46.00	-10.38
700.51	29.88	1.00	197	9.54	39.42	46.00	-6.58

*Test mode: IEEE 802.11g CH06 for 1GHz to 25GHz [Horizontal]*

<i>Frequency</i>	<i>Ant. H.</i>	<i>Table</i>	<i>Amplitude</i>		<i>Correction Factor</i>	<i>Corrected Amplitude</i>		<i>Limit</i>		<i>Margin</i>
			<i>Peak / Ave.</i>			<i>Peak / Ave.</i>		<i>Peak / Ave.</i>		
<i>MHz</i>	<i>m</i>	<i>degree</i>	<i>dBμV</i>		<i>dB/m</i>	<i>dBμV/m</i>		<i>dBμV/m</i>		<i>dB</i>
2310.42	1.00	148	43.34	---	8.96	52.30	---	73.96	53.96	-1.66
3249.36	1.00	246	43.04	41.71	11.63	54.67	53.34	73.96	53.96	-0.62
12187.92	1.00	355	39.88	---	9.74	49.62	---	73.96	53.96	-4.34
19494.58	1.00	305	47.75	---	1.69	49.44	---	73.96	53.96	-4.52
21934.79	1.00	148	46.25	---	3.09	49.34	---	73.96	53.96	-4.62
24371.46	1.00	342	46.88	---	3.26	50.14	---	73.96	53.96	-3.82

*Test mode: IEEE 802.11g CH06 for 1GHz to 25GHz [Vertical]*

<i>Frequency</i>	<i>Ant. H.</i>	<i>Table</i>	<i>Amplitude</i>		<i>Correction Factor</i>	<i>Corrected Amplitude</i>		<i>Limit</i>		<i>Margin</i>
			<i>Peak / Ave.</i>			<i>Peak / Ave.</i>		<i>Peak / Ave.</i>		
<i>MHz</i>	<i>m</i>	<i>degree</i>	<i>dBμV</i>		<i>dB/m</i>	<i>dBμV/m</i>		<i>dBμV/m</i>		<i>dB</i>
2200.00	1.00	142	43.07	---	8.65	51.72	---	73.96	53.96	-2.24
2324.83	1.00	97	49.38	31.27	9.00	58.38	40.27	73.96	53.96	-13.69
2557.37	1.00	24	46.63	28.68	9.60	56.23	38.28	73.96	53.96	-15.68
3250.00	1.00	11	40.17	---	11.63	51.80	---	73.96	53.96	-2.16
12187.92	1.00	96	39.82	---	9.74	49.56	---	73.96	53.96	-4.40
24371.46	1.00	220	46.52	---	3.26	49.78	---	73.96	53.96	-4.18

*Test mode: IEEE 802.11g CH11 for 30MHz to 1GHz [Horizontal]*

<b>Radiated Emission</b>				<b>Correction Factors</b>	<b>Corrected Amplitude</b>	<b>Class B (3 m)</b>	
<b>Frequency (MHz)</b>	<b>Amplitude (dBμV)</b>	<b>Ant. H. (m)</b>	<b>Table ( )</b>			<b>Limit (dBμV/m)</b>	<b>Margin (dB)</b>
127.00	39.13	1.00	296	-2.84	36.29	43.50	-7.21
302.81	41.79	1.00	205	-2.86	38.93	46.00	-7.07
334.34	41.73	1.00	219	-2.47	39.26	46.00	-6.74
450.74	38.77	1.00	188	1.20	39.97	46.00	-6.03
502.87	38.04	1.00	61	1.93	39.97	46.00	-6.03
548.95	35.45	1.00	7	4.99	40.44	46.00	-5.56

*Test mode: IEEE 802.11g CH11 for 30MHz to 1GHz [Vertical]*

<b>Radiated Emission</b>				<b>Correction Factors</b>	<b>Corrected Amplitude</b>	<b>Class B (3 m)</b>	
<b>Frequency (MHz)</b>	<b>Amplitude (dBμV)</b>	<b>Ant. H. (m)</b>	<b>Table ( )</b>			<b>Limit (dBμV/m)</b>	<b>Margin (dB)</b>
125.79	38.28	1.00	333	-2.76	35.52	43.50	-7.98
251.89	40.01	1.00	193	-3.29	36.72	46.00	-9.28
449.52	33.67	1.00	227	1.17	34.84	46.00	-11.16
502.87	36.01	1.00	200	1.93	37.94	46.00	-8.06
550.16	31.41	1.00	91	5.06	36.47	46.00	-9.53
700.51	29.62	1.00	213	9.54	39.16	46.00	-6.84

**Test mode: IEEE 802.11g CH11 for 1GHz to 25GHz [Horizontal]**

Frequency	Ant. H.	Table	Amplitude		Correction Factor	Corrected Amplitude		Limit		Margin
			Peak / Ave.			Peak / Ave.		Peak / Ave.		
MHz	m	degree	dBµV		dB/m	dBµV/m		dBµV/m		dB
2337.50	1.00	105	42.88	---	9.03	51.91	---	73.96	53.96	-2.05
2585.42	1.00	41	40.94	---	9.65	50.59	---	73.96	53.96	-3.37
3282.67	1.00	251	43.04	40.96	11.79	54.83	52.75	73.96	53.96	-1.21
9849.79	1.00	182	36.26	---	11.93	48.19	---	73.96	53.96	-5.77
19696.46	1.00	135	47.87	---	1.81	49.68	---	73.96	53.96	-4.28
24619.37	1.00	160	47.62	---	3.01	50.63	---	73.96	53.96	-3.33

**Test mode: IEEE 802.11g CH11 for 1GHz to 25GHz [Vertical]**

Frequency	Ant. H.	Table	Amplitude		Correction Factor	Corrected Amplitude		Limit		Margin
			Peak / Ave.			Peak / Ave.		Peak / Ave.		
MHz	m	degree	dBµV		dB/m	dBµV/m		dBµV/m		dB
2221.41	1.00	209	46.56	28.67	8.71	55.27	37.38	73.96	53.96	-16.58
2342.99	1.00	327	52.79	32.18	9.05	61.84	41.23	73.96	53.96	-12.12
2582.91	1.00	280	47.00	29.56	9.65	56.65	39.21	73.96	53.96	-14.74
3283.33	1.00	307	39.26	---	11.79	51.05	---	73.96	53.96	-2.91
9849.79	1.00	223	36.66	---	11.93	48.59	---	73.96	53.96	-5.37
24619.37	1.00	116	46.40	---	3.01	49.41	---	73.96	53.96	-4.55

#### **5.4 Test Result of the Bandedge**

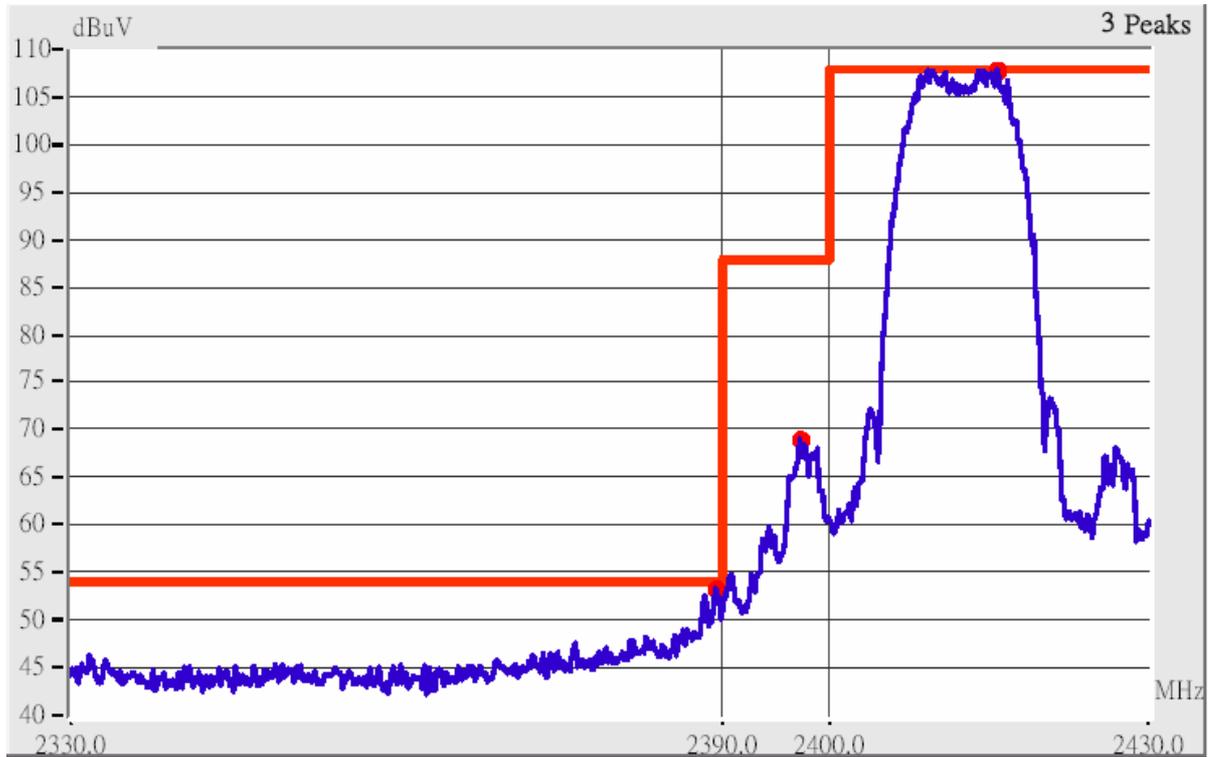
If any 100 kHz bandwidth outside these frequency bands, the radio frequency power that is produced by the modulation products of the spreading sequence, the information sequence and the carrier frequency shall be either *at least 20 dB below that in any 100 kHz bandwidth within the band that contains the highest level of the desired power or shall not exceed the general levels specified in §15.209(a)*,

We perform this section by the *radiated manner*, the RBW is set to 100kHz and VBW>RBW. We'd made the observation *up to 10<sup>th</sup> harmonics and the criterion is all the harmonic/spurious emissions must be 20dB below the highest emission level measured*. If the emissions fall in the restricted bands stated in the Part15.205(a) must also *comply with the radiated emission limits specified in Part15.209(a)*. (*Peak mode: RBW=VBW=1MHz, Average mode: RBW=1MHz; VBW=10Hz*)

The following pages show our observations referring to the channel 1 and 11 respectively.

Test Condition & Setup: same as < 8.1 >

Channel 1 of IEEE 802.11b

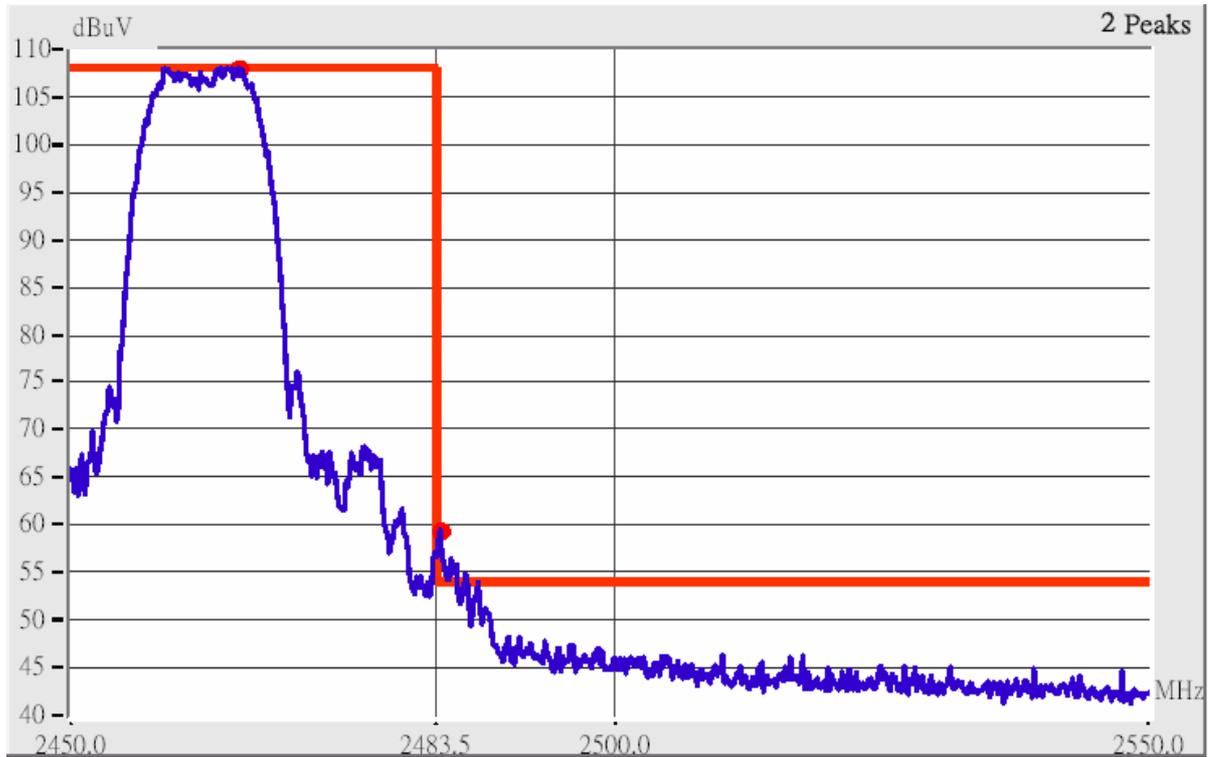


This is the hard copy of our bandedge measurement generated by our bandedge testing program. The plot shown above is the bandedge of channel 1.

1. The lobe left by the fundamental side is already 20dB below the highest emission level.
2. The emissions recorded in the restricted band is do comply with the Part 15.209(a) – as below.

<i>Radiated Emission</i>					<i>Corrected Amplitude</i>		<i>Class B ( 3m )</i>		
<i>Frequency (MHz)</i>	<i>Ant. P.</i>	<i>Ant. H. (m)</i>	<i>Table ( ° )</i>	<i>Factors (dB)</i>	<i>(dBµV/m)</i>		<i>Limit (dBµV/m)</i>		<i>Margin (dB)</i>
					<i>Peak</i>	<i>Average</i>	<i>Peak</i>	<i>Ave.</i>	
2363.75	Hor	1.00	249	9.11	50.51	---	73.96	53.96	-3.45
2390.45	Hor	1.00	269	9.18	55.90	45.85	73.96	53.96	-8.11
2371.92	Ver	1.00	21	9.13	60.00	46.47	73.96	53.96	-7.49
2390.46	Ver	1.00	292	9.18	64.09	52.33	73.96	53.96	-1.63

**Channel 11 of IEEE 802.11b**

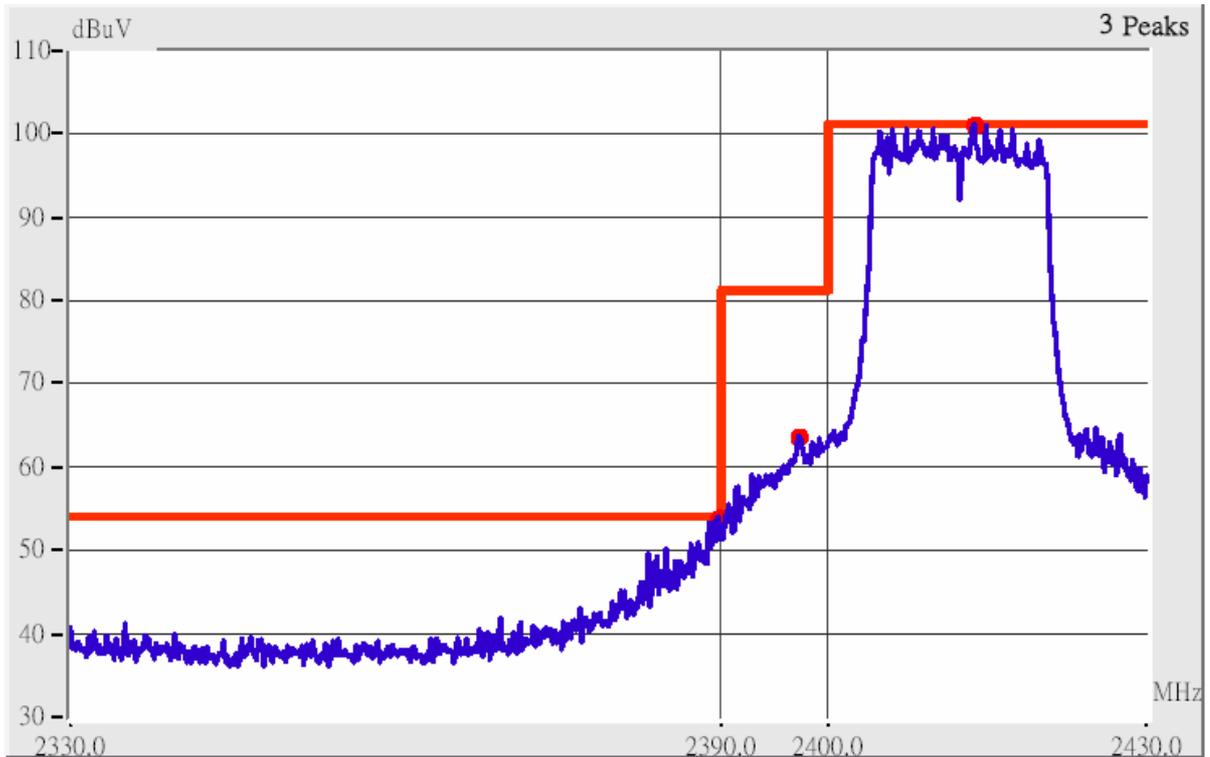


This is the hard copy of our bandedge measurement generated by our bandedge testing program. The plot shown above is the bandedge of channel 11.

- 3. The lobe right by the fundamental side is already 20dB below the highest emission level.
- 4. The emissions recorded in the restricted band is do comply with the Part 15.209(a) – as below

<i>Radiated Emission</i>					<i>Corrected Amplitude</i>		<i>Class B ( 3m )</i>		
<i>Frequency (MHz)</i>	<i>Ant. P.</i>	<i>Ant. H. (m)</i>	<i>Table ( ° )</i>	<i>Factors (dB)</i>	<i>(dBµV/m)</i>		<i>Limit (dBµV/m)</i>		<i>Margin (dB)</i>
					<i>Peak</i>	<i>Average</i>	<i>Peak</i>	<i>Ave.</i>	
2483.59	Hor	1.00	165	9.44	57.05	45.36	73.96	53.96	-8.60
2486.80	Hor	1.00	198	9.45	54.17	42.29	73.96	53.96	-11.67
2500.01	Hor	1.00	219	9.49	48.43	---	73.96	53.96	-5.53
2512.14	Hor	1.00	137	9.51	49.69	---	73.96	53.96	-4.27
2483.50	Ver	1.00	347	9.44	66.23	51.97	73.96	53.96	-1.99
2487.05	Ver	1.00	340	9.45	63.04	49.39	73.96	53.96	-4.57
2499.48	Ver	1.00	344	9.49	56.62	45.66	73.96	53.96	-8.30
2508.51	Ver	1.00	339	9.51	58.26	44.46	73.96	53.96	-9.50

Channel 1 of IEEE 802.11g

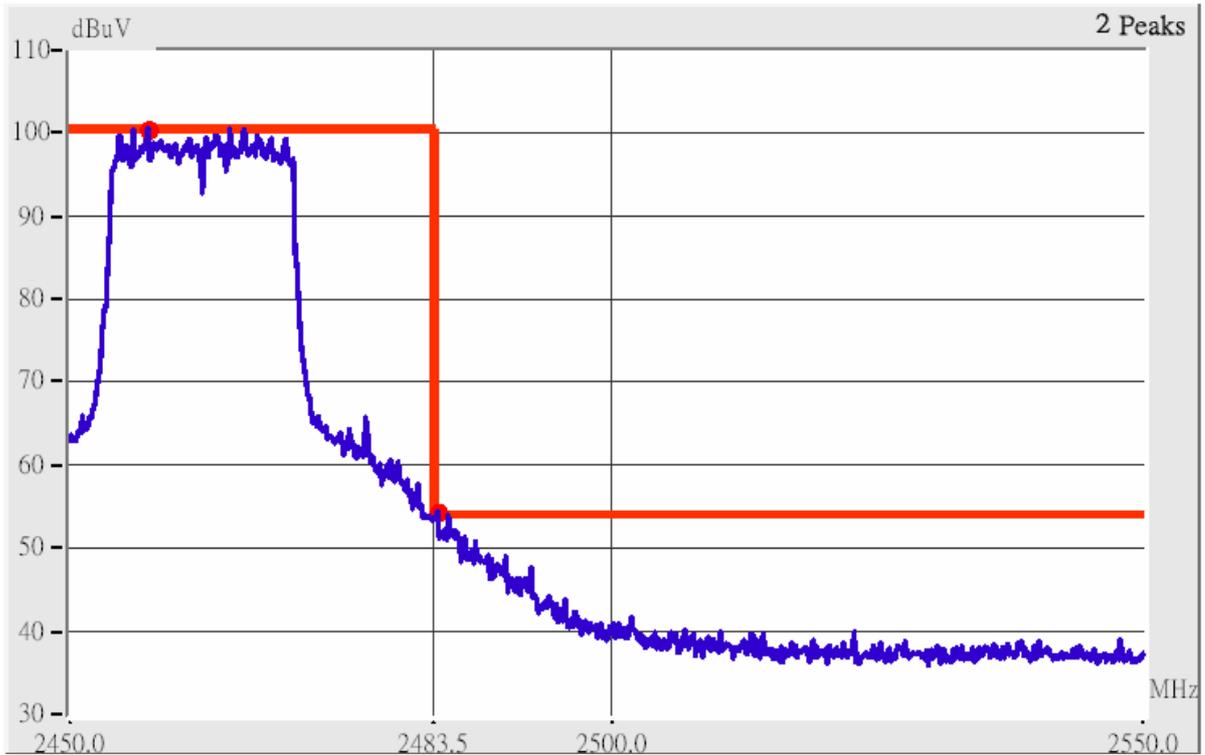


This is the hard copy of our bandedge measurement generated by our bandedge testing program. The plot shown above is the bandedge of channel 1.

- 5. The lobe left by the fundamental side is already 20dB below the highest emission level.
- 6. The emissions recorded in the restricted band is do comply with the Part 15.209(a) – as below.

<i>Radiated Emission</i>					<i>Corrected Amplitude</i>		<i>Class B ( 3m )</i>		
<i>Frequency (MHz)</i>	<i>Ant. P.</i>	<i>Ant. H. (m)</i>	<i>Table ( ° )</i>	<i>Factors (dB)</i>	<i>(dBµV/m)</i>		<i>Limit (dBµV/m)</i>		<i>Margin (dB)</i>
					<i>Peak</i>	<i>Average</i>	<i>Peak</i>	<i>Ave.</i>	
2383.25	Hor	1.00	176	9.16	52.72	---	73.96	53.96	-1.24
2389.48	Hor	1.00	159	9.18	56.23	39.10	73.96	53.96	-14.86
2384.13	Ver	1.00	87	9.17	63.48	40.24	73.96	53.96	-10.48
2390.12	Ver	1.00	109	9.18	67.54	44.63	73.96	53.96	-6.42

**Channel 11 of IEEE 802.11g**



This is the hard copy of our bandedge measurement generated by our bandedge testing program. The plot shown above is the bandedge of channel 11.

- 7. The lobe right by the fundamental side is already 20dB below the highest emission level.
- 8. The emissions recorded in the restricted band is do comply with the Part 15.209(a) – as below

<i>Radiated Emission</i>					<i>Corrected Amplitude</i>		<i>Class B ( 3m )</i>		
<i>Frequency (MHz)</i>	<i>Ant. P.</i>	<i>Ant. H. (m)</i>	<i>Table ( ° )</i>	<i>Factors (dB)</i>	<i>(dBµV/m)</i>		<i>Limit (dBµV/m)</i>		<i>Margin (dB)</i>
					<i>Peak</i>	<i>Average</i>	<i>Peak</i>	<i>Ave.</i>	
2482.99	Hor	1.00	277	9.44	59.05	40.71	73.96	53.96	-13.25
2488.22	Hor	1.00	359	9.46	50.21	---	73.96	53.96	-3.75
2483.30	Ver	1.00	216	9.44	65.85	45.03	73.96	53.96	-8.11
2486.05	Ver	1.00	109	9.45	64.54	42.10	73.96	53.96	-9.42