

# FCC Part15 Subpart C Test Report

FCC Class II Permsion Change Application

Product Name : 54Mbps Wireless ADSL2+ Modem Router,  
Model No. : DG834GU v5, DG834GU2 v5, DG834G v5,  
DG834G2 v5, MBR624GU, MBR624GU2,  
DG834GUM2 v5, DG834GUSP v5,  
DG834GUS2 v5, DG834GUM v5  
FCC ID : PY308200087

Applicant : NETGEAR INC.

Address : 350 East Plumeria Drive, San Jose, CA 95134 USA

Date of Receipt : Nov. 13, 2009  
Test Date : Dec. 18, 2009 ~ Dec. 21, 2009  
Issued Date : Dec. 22, 2009  
Report No. : 09BS062R-RF-US-P05V01  
Report Version : V1.0

This file was based on report number 086S018-RF-US-P05V0.

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by CNLA, NVLAP or any agency of the Government. The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

# Test Report Certification

Issued Date: Dec. 22, 2009  
 Report No. : 09BS062R-RF-US-P05V01



Product Name : 54Mbps Wireless ADSL2+ Modem Router,  
 Applicant : NETGEAR INC.  
 Address : 350 East Plumeria Drive, San Jose, CA 95134 USA  
 Manufacturer : Ambit Microsystems (Shanghai) Ltd.  
 Address : No 1925, Nanle Road, Songjiang Export Processing  
 Zone, Shanghai, China 201613  
 Model No. : DG834GU v5, DG834GU2 v5, DG834G v5, DG834G2  
 v5, MBR624GU, MBR624GU2, DG834GUM2 v5,  
 DG834GUSP v5, DG834GUS2 v5, DG834GUM v5  
 FCC ID : PY308200087  
 EUT Voltage : 12Vdc  
 Brand Name : NETGEAR  
 Applicable Standard : FCC CFR Title 47 Part 15 Subpart C: 2008  
 ANSI C63.4: 2003  
 Test Result : Complied  
 Performed Location : SuZhou EMC laboratory  
 No.99 Hongye Rd., Suzhou Industrial Park Loufeng  
 Hi-Tech Development Zone., SuZhou, China  
 TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098  
 FCC Registration Number: 800392

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## Laboratory Information

We , **Quietek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited by the following accreditation Bodies in compliance with ISO 17025, EN 45001 and Guide 25:

Taiwan R.O.C.	: BSMI, DGT, CNLA
Germany	: TUV Rheinland
Norway	: Nemko, DNV
USA	: FCC, NVLAP
Japan	: VCCI

The related certificate for our laboratories about the test site and management system can be downloaded from Quietek Corporation's Web Site : <http://tw.quietek.com/modules/myalbum/>  
 The address and introduction of Quietek Corporation's laboratories can be founded in our Web site : <http://www.quietek.com/>  
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## 1. General Information

### 1.1. EUT Description

Product Name	54Mbps Wireless ADSL2+ Modem Router
Brand Name	NETGEAR
Model No.	DG834GU v5, DG834GU2 v5, DG834G v5, DG834G2 v5, MBR624GU, MBR624GU2, DG834GUM2 v5, DG834GUSP v5, DG834GUS2 v5, DG834GUM v5
EUT Voltage	12Vdc
Frequency Range	802.11b/g: 2412~2462MHz
Channel Number	802.11b/g: 11
Tech. of Modulation	802.11b: DSSS
	802.11g: OFDM
Data Rate	802.11g: 6/9/12/18/24/36/48/54 Mbps
	802.11b: 1/2/5.5/11 Mbps
Channel Control	Auto
Antenna Delivery	1*Tx + 1*Rx
Antenna Type	Dipole
Peak Antenna Gain	2dBi for 2.4GHz band

Note: DG834G v5 was used for testing with number 1 adapter listed as follows.

Component	
AC Adapter #1	Manufacturer: NETGEAR P/N: 332-10166-01 M/N: T012LF1209 Input: 100-120V~50/60Hz 0.5A Output: 12V 1A
AC Adapter #2	Manufacturer: NETGEAR P/N: 332-10190-01 M/N: MT12-Y120100-A1 Input: 100-120V~60Hz 0.3A Output: 12V 1.0A

Note: The EUT includes ten models. The different of them is for different marketing requirement.

**Channel List**

802.11b/g Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
01	2412 MHz	02	2417 MHz	03	2422 MHz	04	2427 MHz
05	2432 MHz	06	2437 MHz	07	2442 MHz	08	2447 MHz
09	2452 MHz	10	2457 MHz	11	2462 MHz	N/A	N/A

**For 802.11b/g Antenna List**

Antenna	Manufacturer	Model No.	Antenna Gain(dBi)
RF Antenna Cable Assembly	Foxconn	C107-510554-A	2dBi

**1.2. Mode of Operation**

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: Transmit by 802.11b
Mode 2: Transmit by 802.11g

Note:

1. Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.
2. This device is a composite device in accordance with Part 15 Subpart B regulations. The function for the receiver was measured and made a test report that the report number is 09BS062R-RF-US-P01V02. Part15B test report number is 09BS061WF.

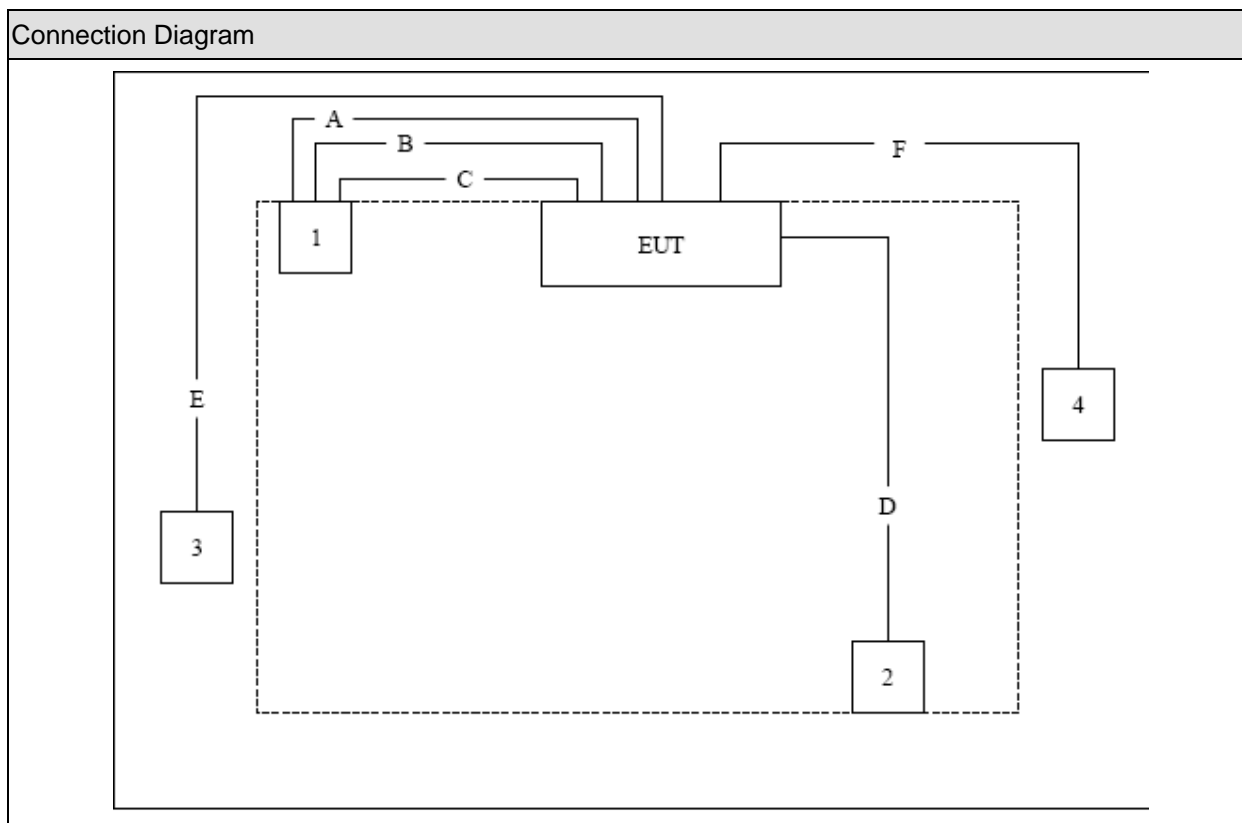


### 1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	Power Cord
1   Hub	D-Link	DIR-623	F33M383000011	Non-Shielded, 1.8m
2   iPod	Apple	A1199	6U715YSVVQ5	Power by PC
3   Notebook	DELL	PP19L	JH097 A01	Power by adapter
4   IP Express	ZyXEL	les-1248-71	S523825530	Non-Shielded, 1.8m

### 1.4. Configuration of Tested System



Signal Cable Type		Signal cable Description
A	LAN Cable	Non-Shielded, 1.8m
B	LAN Cable	Non-Shielded, 1.8m
C	LAN Cable	Non-Shielded, 1.8m
D	Ipod USB Cable	Shielded, 1.0m
E	LAN Cable	Non-Shielded, >10m
F	Telecom Cable	Non-Shielded, >10m

**1.5. EUT Exercise Software**

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of equipment.
3	Open the software "Prism Engineering Tool", then select the channel and start test.

## 2. Technical Test

### 2.1. Summary of Test Result

- No deviations from the test standards  
 Deviations from the test standards as below description:

Performed Test Item	Normative References	Test Performed	Deviation
Conducted Emission	FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.207	N/P	No
Radiated Emission	FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.209	Yes	No
RF Antenna Conducted Spurious	FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.247(d)	N/P	No
Radiated Emission Band Edge	FCC CFR Title 47 Part 15 Subpart C: 2008 15.247(d)	Yes	No
Operation Frequency Range of 20dB Bandwidth	FCC CFR Title 47 Part 15 Subpart C: 2008 15.215(c)	N/P	No
Occupied Bandwidth	FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.247(a)(2)	N/P	No
Power Output	FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.247(b)(3)	Yes	No
Power Spectral Density	FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.247(e)	N/P	No

Note: N/P means not performed.

**2.2. Test Environment**

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	21
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950-1000

### 3. Radiated Emission

#### 3.1. Test Equipment

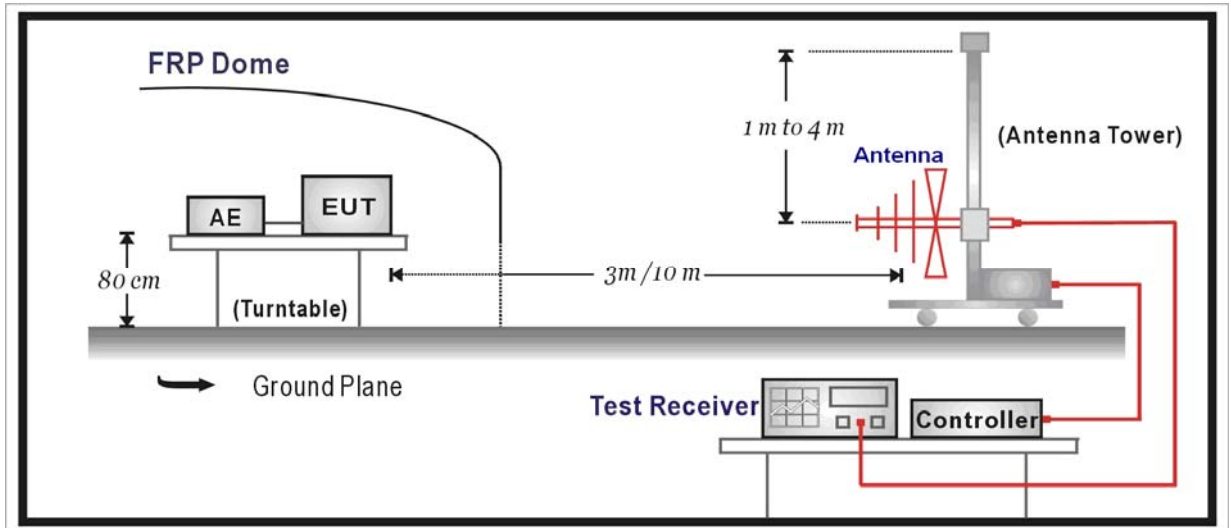
Radiated Emission / AC-5

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2009.04.23
EMI Test Receiver	R&S	ESCI	100906	2009.02.16
Preamplifier	Quietek	AP-180C	CHM-0602013	2009.05.25
Preamplifier	Quietek	AP-040G	CHM-0906001	2009.06.18
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2009.02.25
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	499	2009.06.11
High-Pass Filter	Wainwright	WHKX2.8/18G-12SS	SN1	2009.03.03
High-Pass Filter	Wainwright	WHKX7.0/18G-8SS	SN16	2009.03.03
Lowpass Filter	Wainwright	WLKS4500-9SS	SN2	2009.03.03
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC5-TH	2009.03.31

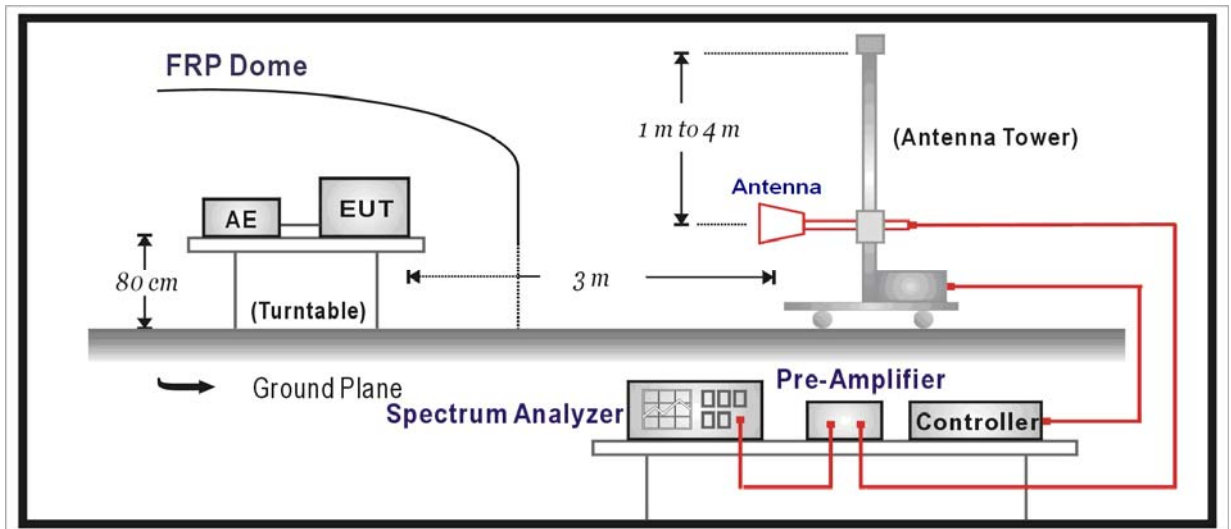
Note 1: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

### 3.2. Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



**3.3. Limit**

FCC Part 15 Subpart C Paragraph 15.209		
Frequency (MHz)	Distance (m)	Level (dBuV/m)
30 - 88	3	40
88 - 216	3	43.5
216 - 960	3	46
Above 960	3	54

Note 1: The lower limit shall apply at the transition frequency.

Note 2: Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

Note 3: E field strength (dBuV/m) = 20 log E field strength (uV/m)

**3.4. Test Procedure**

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2003 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

The frequency range from 30MHz to 10th harmonic is checked.

Note: When doing emission measurement above 1GHz, the horn antenna will be bended down a little (as horn antenna has the narrow beamwidth) in order to keeping the antenna in the “cone of radiation” of EUT. The 3dB beamwidth is 10~60 degrees for H-plane and 10~90 degrees for E-plane.

**3.5. Uncertainty**

The measurement uncertainty above 1G is defined as ± 3.9 dB  
 below 1G is defined as ± 3.8 dB



3.6. Test Result

All of the test result shown indicates the worst case, and spectrum analyzer parameters setting as shown below:

Peak detector: RBW = 1MHz, VBW = 3MHz, sweep time = 200ms;

Average detector: RBW = 1MHz, VBW = 10Hz, sweep time = auto.

Measure Level = Reading Level + Cable Loss + Antenna Factor - Preamp Gain  
802.11b

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	V	2413.3	75.8	31.2	107.0	Fundamental	/	PK
	V	47.8	29.2	9.0	38.2	40	-1.8	QP
	H	396.0	18.6	17.1	35.7	46	-10.3	QP
	H	480.0	20.3	18.8	39.1	46	-6.9	QP
	V	791.0	15.5	21.8	37.3	46	-8.7	QP
	V	6542.0	45.2	5.8	51.0	54(Note)	-3.0	PK
	H	3347.0	51.5	-4.4	47.1	54(Note)	-6.9	PK
	V	4824.0	54.6	0.7	55.3	74	-18.7	PK
	V	4824.0	50.1	0.7	50.8	54	-3.2	AV
	H	7236.0	49.2	8.3	57.5	74	-16.5	PK
	H	7236.0	43.8	8.3	52.1	54	-1.9	AV
	V	14470.8	29.6	16.8	46.4	54(Note)	-7.6	PK
	V	24000.0	59.1	-8.9	50.2	54(Note)	-3.8	PK
6	V	2439.5	74.6	31.2	105.8	Fundamental	/	PK
	V	47.8	27.9	9.0	36.9	40	-3.1	QP
	H	396.0	19.3	17.1	36.4	46	-9.6	QP
	H	480.0	21.9	18.8	40.7	46	-5.3	QP
	V	791.0	16.4	21.8	38.2	46	-7.8	QP
	V	6542.0	45.2	5.8	51.0	54(Note)	-3.0	PK
	V	3185.0	51.0	-4.2	46.8	54(Note)	-7.2	PK
	V	4874.0	55.3	0.9	56.2	74	-17.8	PK
	V	4874.0	50.2	0.9	51.1	54	-2.9	AV
	V	7311.0	49.6	8.3	57.9	74	-16.1	PK
	V	7311.0	43.3	8.3	51.6	54	-2.4	AV
	V	14470.8	29.6	16.8	46.4	54(Note)	-7.6	PK
	V	24000.0	59.1	-8.9	50.2	54(Note)	-3.8	PK
11	V	2460.6	78.3	31.2	109.5	Fundamental	/	PK

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	V	47.8	28.4	9.0	37.4	40	-2.6	QP
	H	396.0	19.5	17.1	36.6	46	-9.4	QP
	H	480.0	22.0	18.8	40.8	46	-5.2	QP
	V	791.0	16.2	21.8	38.0	46	-8.0	QP
	V	6542.0	45.2	5.8	51.0	54(Note)	-3.0	PK
	V	3202.6	49.6	-4.3	45.3	54(Note)	-8.7	PK
	V	4924.0	55.1	0.9	56.0	74	-18.0	PK
	V	4924.0	51.3	0.9	52.2	54	-1.8	AV
	V	7416.0	48.2	8.5	56.7	74	-17.3	PK
	V	7416.0	41.7	8.5	50.2	54	-3.8	AV
	V	14470.8	29.6	16.8	46.4	54(Note)	-7.6	PK
	V	24000.0	59.1	-8.9	50.2	54(Note)	-3.8	PK

Note : This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

802.11g

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	V	2413.3	75.8	31.2	107.0	Fundamental	/	PK
	V	47.8	29.2	9.0	38.2	40	-1.8	QP
	H	396.0	18.6	17.1	35.7	46	-10.3	QP
	H	480.0	20.3	18.8	39.1	46	-6.9	QP
	V	791.0	15.5	21.8	37.3	46	-8.7	QP
	V	6542.0	45.2	5.8	51.0	54(Note)	-3.0	PK
	H	3347.0	51.5	-4.4	47.1	54(Note)	-6.9	PK
	V	4824.0	54.6	0.7	55.3	74	-18.7	PK
	V	4824.0	50.1	0.7	50.8	54	-3.2	AV
	H	7236.0	43.8	8.3	52.1	54	-1.9	AV
	V	14470.8	29.6	16.8	46.4	54(Note)	-7.6	PK
	V	24000.0	59.1	-8.9	50.2	54(Note)	-3.8	PK
6	V	2439.5	74.6	31.2	105.8	Fundamental	/	PK
	V	47.8	27.9	9.0	36.9	40	-3.1	QP
	H	396.0	19.3	17.1	36.4	46	-9.6	QP
	V	791.0	16.4	21.8	38.2	46	-7.8	QP
	V	6542.0	45.2	5.8	51.0	54(Note)	-3.0	PK
	V	3185.0	51.0	-4.2	46.8	54(Note)	-7.2	PK
	V	4874.0	55.3	0.9	56.2	74	-17.8	PK
	V	4874.0	50.2	0.9	51.1	54	-2.9	AV
	V	7311.0	49.6	8.3	57.9	74	-16.1	PK
	V	7311.0	43.3	8.3	51.6	54	-2.4	AV
	V	14470.8	29.6	16.8	46.4	54(Note)	-7.6	PK
	V	24000.0	59.1	-8.9	50.2	54(Note)	-3.8	PK
11	V	2460.6	78.3	31.2	109.5	Fundamental	/	PK
	V	47.8	28.4	9.0	37.4	40	-2.6	QP
	H	396.0	19.5	17.1	36.6	46	-9.4	QP
	V	791.0	16.2	21.8	38.0	46	-8.0	QP
	V	6542.0	45.2	5.8	51.0	54(Note)	-3.0	PK
	V	3202.6	49.6	-4.3	45.3	54(Note)	-8.7	PK
	V	4924.0	55.1	0.9	56.0	74	-18.0	PK
	V	4924.0	51.3	0.9	52.2	54	-1.8	AV
	V	7416.0	48.2	8.5	56.7	74	-17.3	PK

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	V	7416.0	41.7	8.5	50.2	54	-3.8	AV
	V	14470.8	29.6	16.8	46.4	54(Note)	-7.6	PK
	V	24000.0	59.1	-8.9	50.2	54(Note)	-3.8	PK

Note : This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

**4. Radiated Emission Band Edge**

**4.1. Test Equipment**

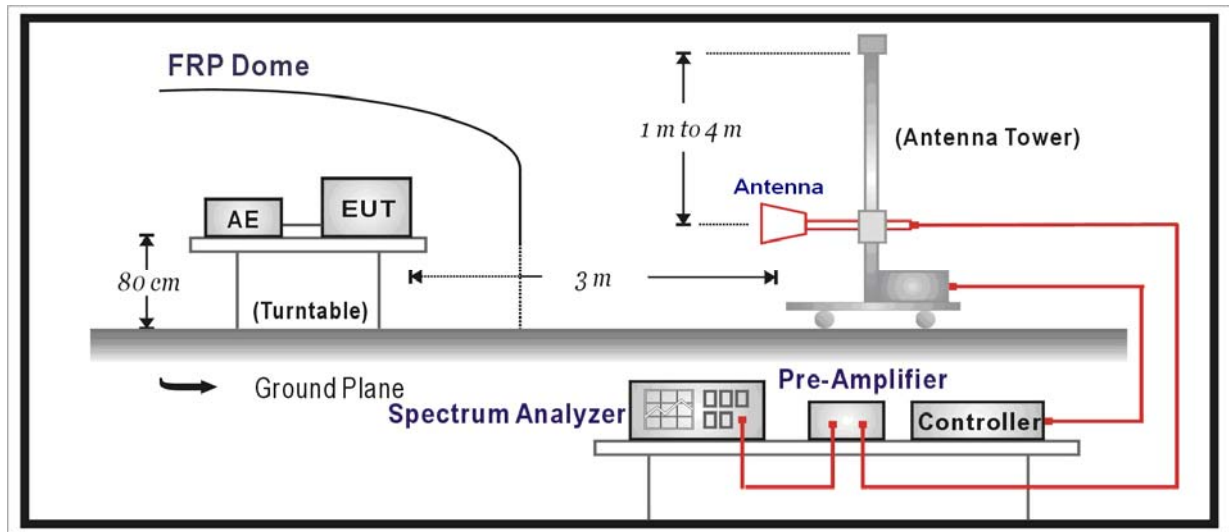
Radiated Emission / AC-5

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2009.04.23
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	499	2009.06.11
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC5-TH	2009.03.31

Note 1: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

Note 2: The test instruments marked with "X" are used to measure the final test results.

**4.2. Test Setup**



**4.3. Limit**

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

**4.4. Test Procedure**

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements. The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2003 on radiated measurement.

**4.5. Uncertainty**

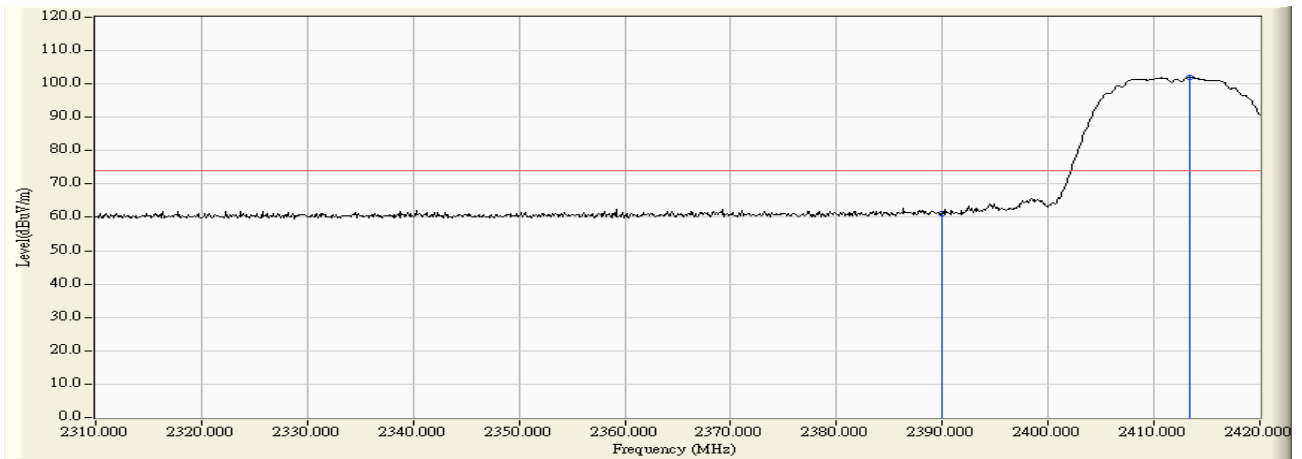
The measurement uncertainty above 1G is defined as  $\pm 3.9$  dB

4.6. Test Result

Peak detector: RBW = 1MHz, VBW = 3MHz, sweep time = 200ms;

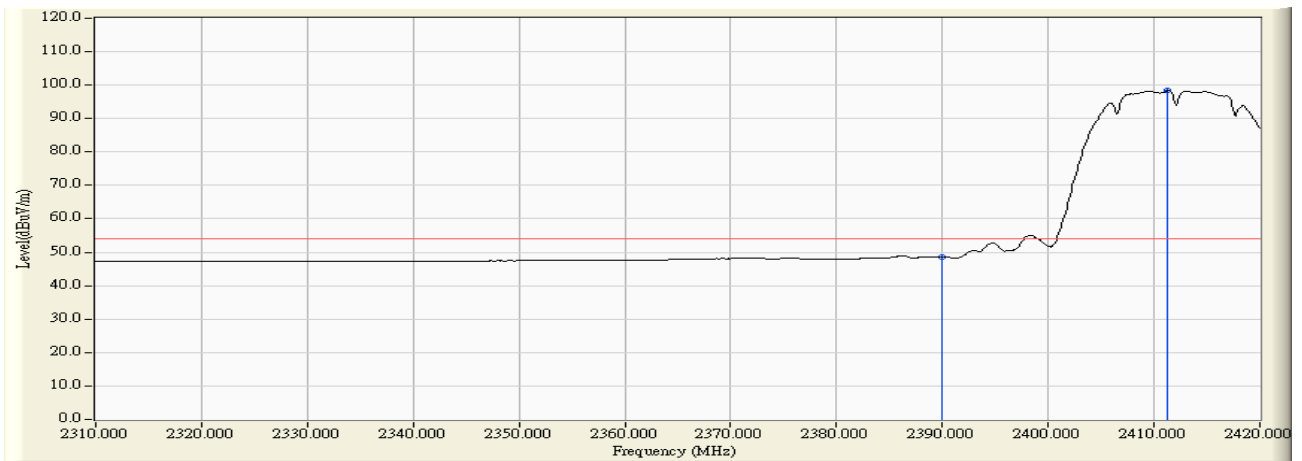
Average detector: RBW = 1MHz, VBW = 10Hz, sweep time = auto.

Engineer : Jame	
Site : AC-5 (3m Semi-Anechoic Chamber)	Time : 2009/12/20 - 09:51
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
Probe : 9120D_499(1-18GHz) - HORIZONTAL	Power : AC 120V/60Hz
EUT : 54Mbps Wireless ADSL2+ Modem Router	Note : Mode 1 :Transmit at channel 2412MHz By 802.11b



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	31.184	29.924	61.108	-12.862	73.970	PEAK
2	*	2413.400	31.192	70.738	101.930	N/A	N/A	PEAK

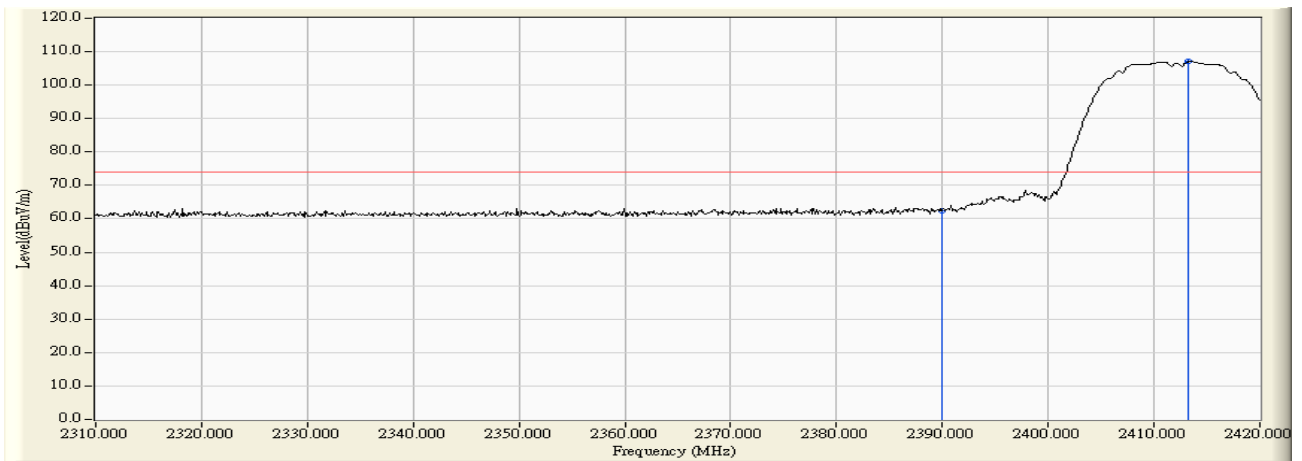
Engineer : Jame	
Site : AC-5 (3m Semi-Anechoic Chamber)	Time : 2009/12/20 - 09:51
Limit : FCC_SpartC_15.209_03M_AV	Margin : 0
Probe : 9120D_499(1-18GHz) - HORIZONTAL	Power : AC 120V/60Hz
EUT : 54Mbps Wireless ADSL2+ Modem Router	Note : Mode 1 :Transmit at channel 2412MHz By 802.11b



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	31.184	17.501	48.685	-5.285	53.970	AVERAGE
2	*	2411.310	31.190	67.134	98.324	N/A	N/A	AVERAGE

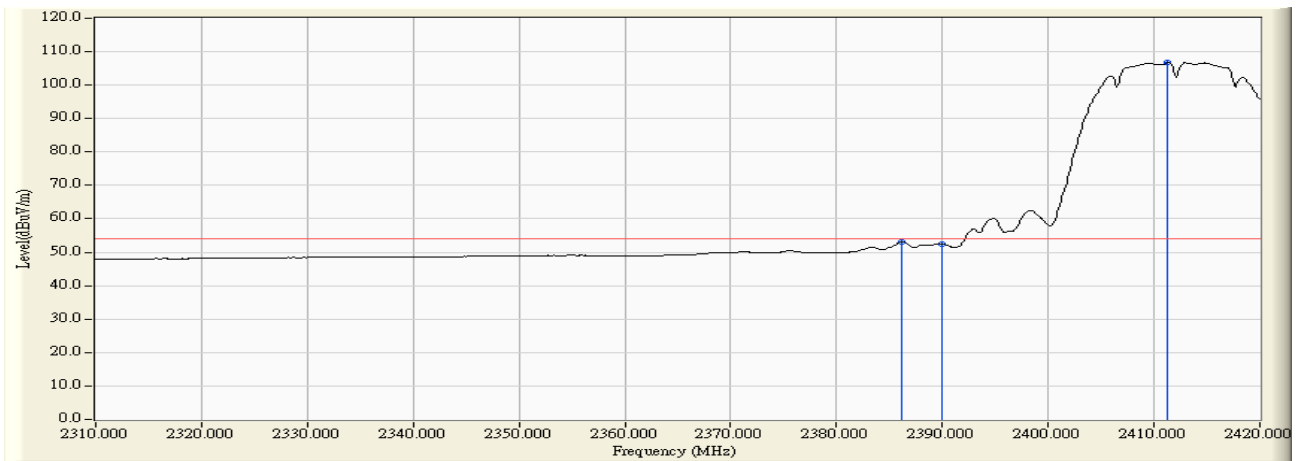


Engineer : Jame	
Site : AC-5 (3m Semi-Anechoic Chamber)	Time : 2009/12/20 - 09:54
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
Probe : 9120D_499(1-18GHz) - VERTICAL	Power : AC 120V/60Hz
EUT : 54Mbps Wireless ADSL2+ Modem Router	Note : Mode 1 :Transmit at channel 2412MHz By 802.11b



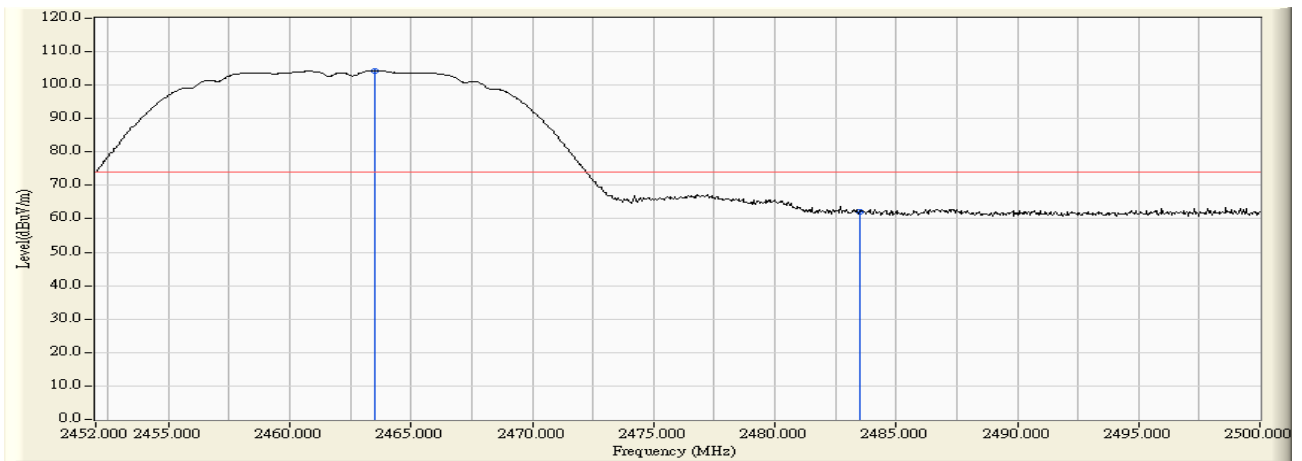
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	31.184	31.384	62.568	-11.402	73.970	PEAK
2	*	2413.290	31.192	75.833	107.024	N/A	N/A	PEAK

Engineer : Jame	
Site : AC-5 (3m Semi-Anechoic Chamber)	Time : 2009/12/20 - 09:54
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : 9120D_499(1-18GHz) - VERTICAL	Power : AC 120V/60Hz
EUT : 54Mbps Wireless ADSL2+ Modem Router	Note : Mode 1 :Transmit at channel 2412MHz By 802.11b



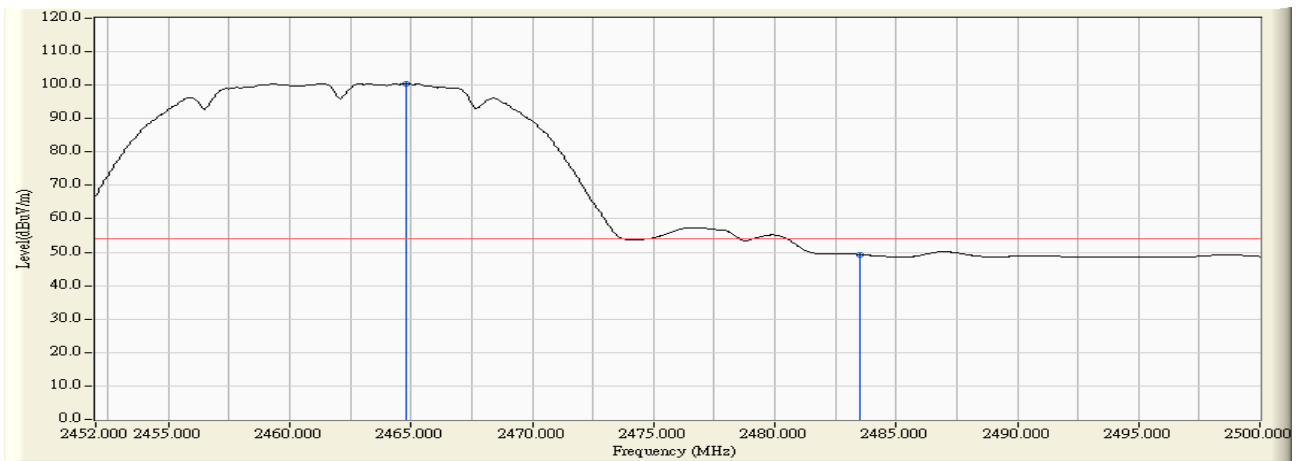
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2386.120	31.189	21.852	53.041	-0.929	53.970	AVERAGE
2		2390.000	31.184	21.355	52.539	-1.431	53.970	AVERAGE
3	*	2411.310	31.190	75.595	106.785	N/A	N/A	AVERAGE

<b>Engineer : Jame</b>	
<b>Site : AC-5 (3m Semi-Anechoic Chamber)</b>	<b>Time : 2009/12/20 - 09:58</b>
<b>Limit : FCC_SpartC_15.209_03M_PK</b>	<b>Margin : 0</b>
<b>Probe : 9120D_499(1-18GHz) - HORIZONTAL</b>	<b>Power : AC 120V/60Hz</b>
<b>EUT : 54Mbps Wireless ADSL2+ Modem Router</b>	<b>Note : Mode 1 :Transmit at channel 2462MHz By 802.11b</b>



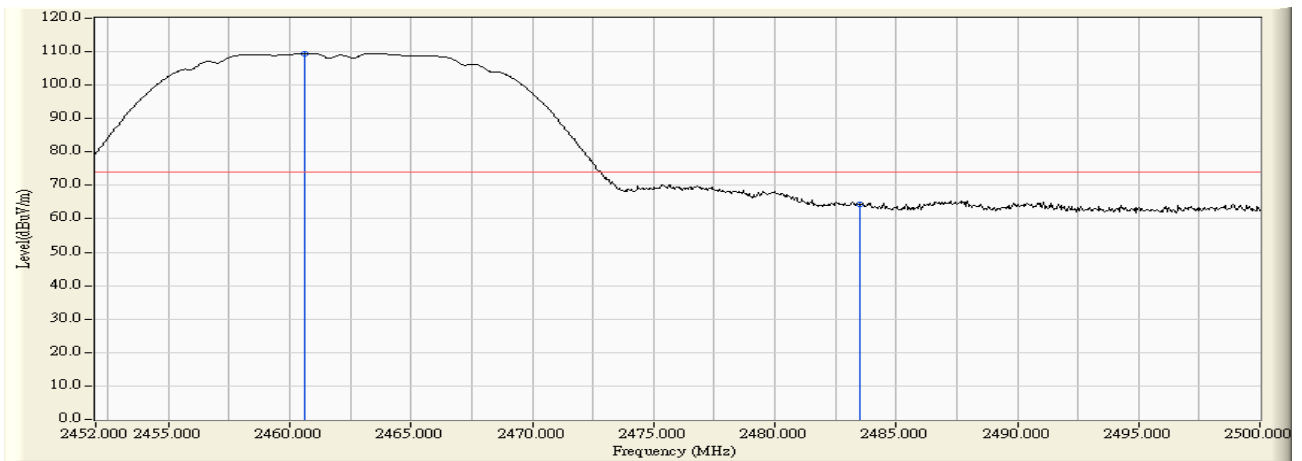
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2463.520	31.224	72.997	104.221	N/A	N/A	PEAK
2		2483.500	31.212	30.857	62.069	-11.901	73.970	PEAK

Engineer : Jame	
Site : AC-5 (3m Semi-Anechoic Chamber)	Time : 2009/12/20 - 09:58
Limit : FCC_SpartC_15.209_03M_AV	Margin : 0
Probe : 9120D_499(1-18GHz) - HORIZONTAL	Power : AC 120V/60Hz
EUT : 54Mbps Wireless ADSL2+ Modem Router	Note : Mode 1 :Transmit at channel 2462MHz By 802.11b



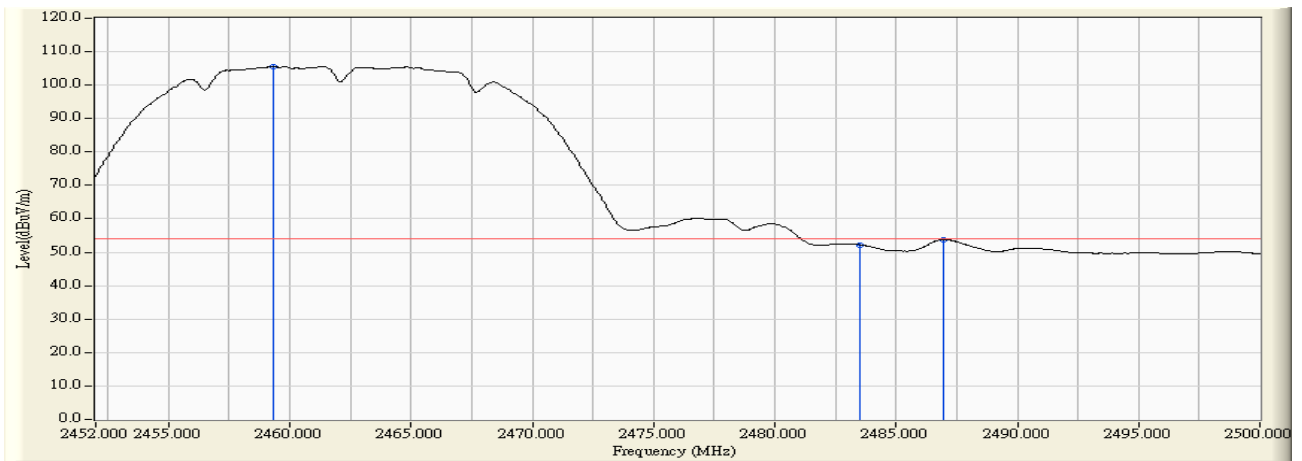
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2464.816	31.223	69.287	100.511	N/A	N/A	AVERAGE
2		2483.500	31.212	18.113	49.325	-4.645	53.970	AVERAGE

Engineer : Jame	
Site : AC-5 (3m Semi-Anechoic Chamber)	Time : 2009/12/20 - 10:03
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
Probe : 9120D_499(1-18GHz) - VERTICAL	Power : AC 120V/60Hz
EUT : 54Mbps Wireless ADSL2+ Modem Router	Note : Mode 1 :Transmit at channel 2462MHz By 802.11b



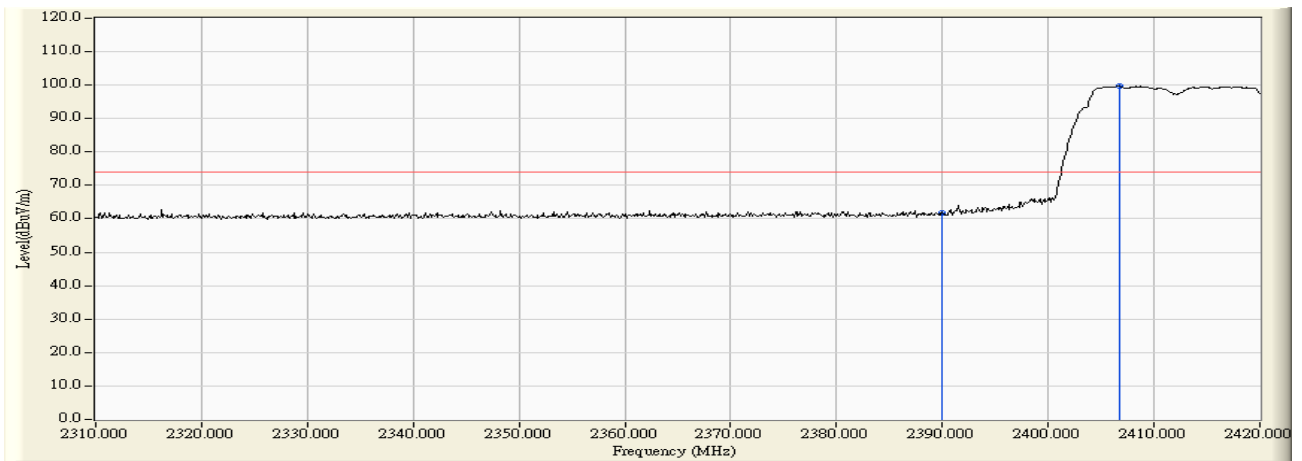
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2460.592	31.225	78.256	109.481	N/A	N/A	PEAK
2		2483.500	31.212	32.972	64.184	-9.786	73.970	PEAK

Engineer : Jame	
Site : AC-5 (3m Semi-Anechoic Chamber)	Time : 2009/12/20 - 10:03
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : 9120D_499(1-18GHz) - VERTICAL	Power : AC 120V/60Hz
EUT : 54Mbps Wireless ADSL2+ Modem Router	Note : Mode 1 :Transmit at channel 2462MHz By 802.11b



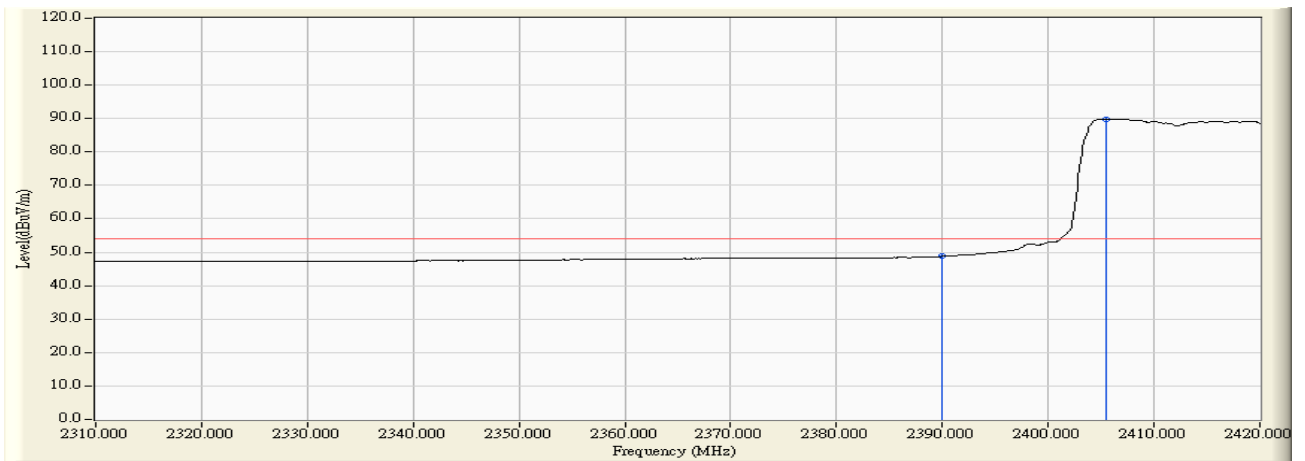
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2459.344	31.224	74.377	105.601	N/A	N/A	AVERAGE
2		2483.500	31.212	21.051	52.263	-1.707	53.970	AVERAGE
3		2486.944	31.210	22.536	53.746	-0.224	53.970	AVERAGE

Engineer : Jame	
Site : AC-5 (3m Semi-Anechoic Chamber)	Time : 2009/12/20 - 10:05
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
Probe : 9120D_499(1-18GHz) - HORIZONTAL	Power : AC 120V/60Hz
EUT : 54Mbps Wireless ADSL2+ Modem Router	Note : Mode 2 :Transmit at channel 2412MHz By 802.11g



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	31.184	30.714	61.898	-12.072	73.970	PEAK
2	*	2406.800	31.187	68.428	99.615	N/A	N/A	PEAK

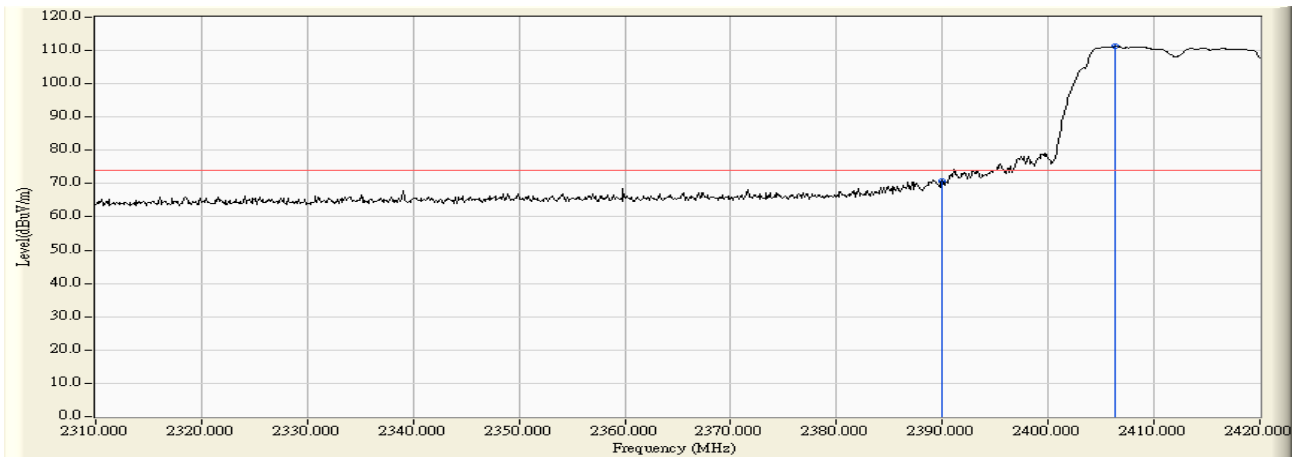
Engineer : Jame	
Site : AC-5 (3m Semi-Anechoic Chamber)	Time : 2009/12/20 - 10:06
Limit : FCC_SpartC_15.209_03M_AV	Margin : 0
Probe : 9120D_499(1-18GHz) - HORIZONTAL	Power : AC 120V/60Hz
EUT : 54Mbps Wireless ADSL2+ Modem Router	Note : Mode 2 :Transmit at channel 2412MHz By 802.11g



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	31.184	17.571	48.755	-5.215	53.970	AVERAGE
2	*	2405.480	31.186	58.680	89.866	N/A	N/A	AVERAGE

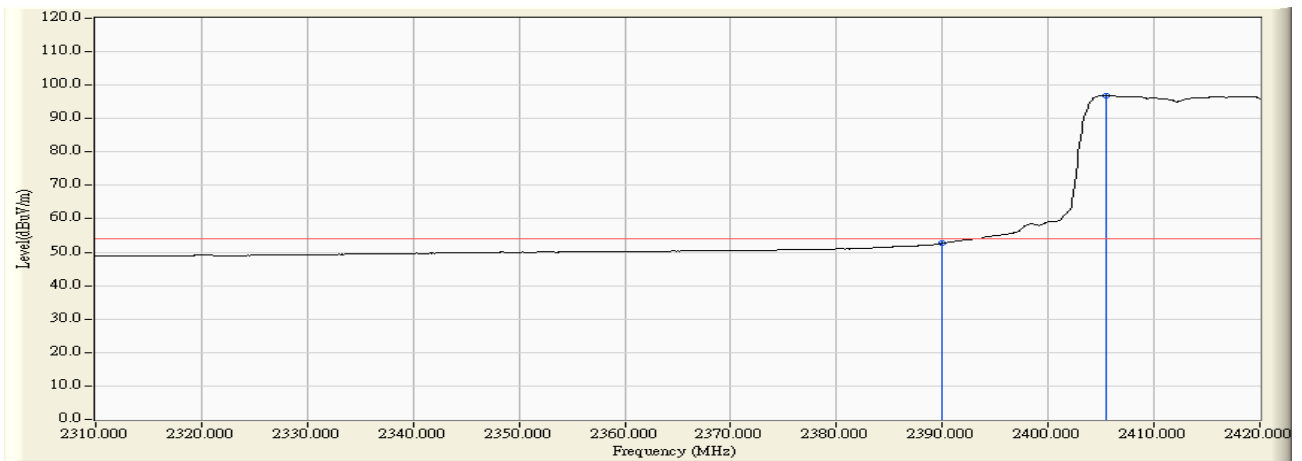


Engineer : Jame	
Site : AC-5 (3m Semi-Anechoic Chamber)	Time : 2009/12/20 - 10:10
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
Probe : 9120D_499(1-18GHz) - VERTICAL	Power : AC 120V/60Hz
EUT : 54Mbps Wireless ADSL2+ Modem Router	Note : Mode 2 :Transmit at channel 2412MHz By 802.11g



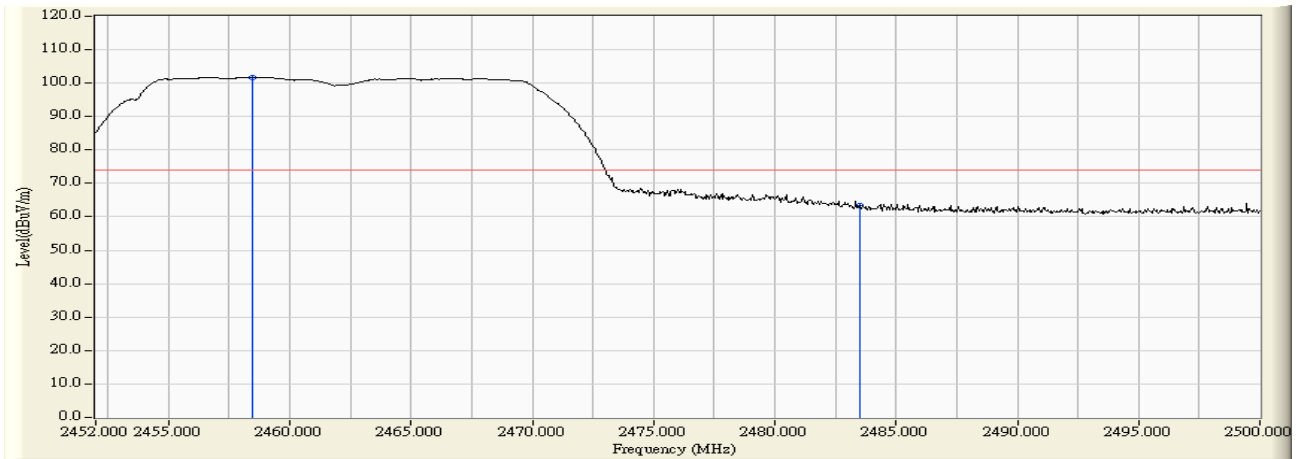
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	31.184	39.647	70.831	-3.139	73.970	PEAK
2	*	2406.360	31.187	80.063	111.250	N/A	N/A	PEAK

Engineer : Jame	
Site : AC-5 (3m Semi-Anechoic Chamber)	Time : 2009/12/20 - 10:11
Limit : FCC_SpartC_15.209_03M_AV	Margin : 0
Probe : 9120D_499(1-18GHz) - VERTICAL	Power : AC 120V/60Hz
EUT : 54Mbps Wireless ADSL2+ Modem Router	Note : Mode 2 :Transmit at channel 2412MHz By 802.11g



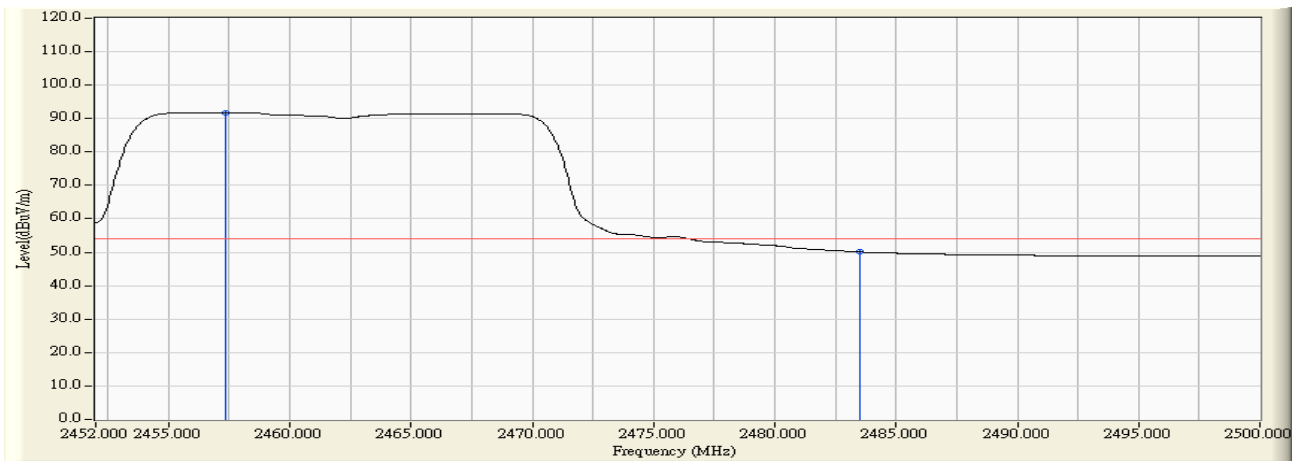
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	31.184	21.481	52.665	-1.305	53.970	AVERAGE
2	*	2405.480	31.186	65.690	96.876	N/A	N/A	AVERAGE

Engineer : Jame	
Site : AC-5 (3m Semi-Anechoic Chamber)	Time : 2009/12/20 - 10:16
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
Probe : 9120D_499(1-18GHz) - HORIZONTAL	Power : AC 120V/60Hz
EUT : 54Mbps Wireless ADSL2+ Modem Router	Note : Mode 2 :Transmit at channel 2462MHz By 802.11g



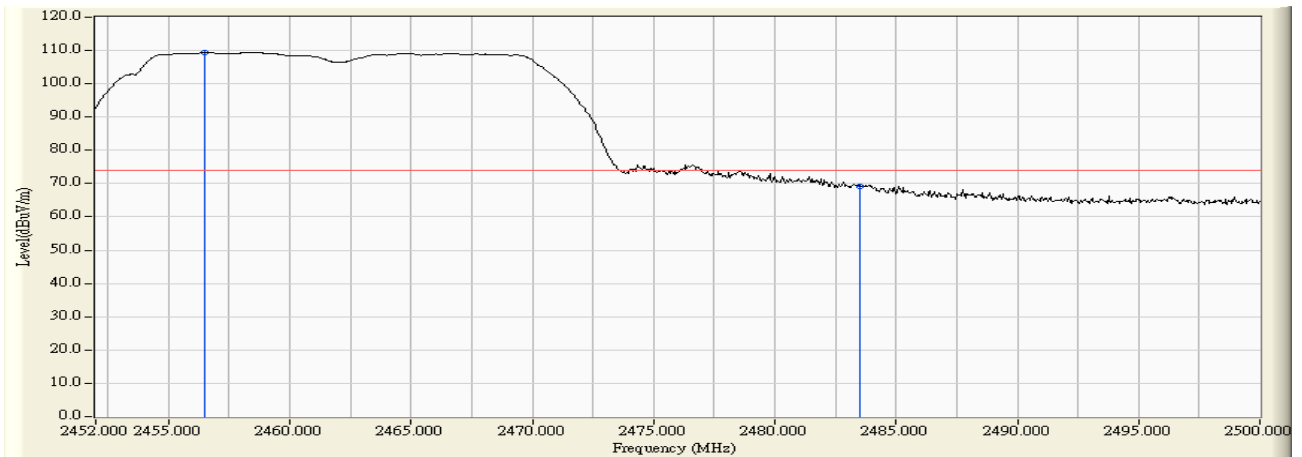
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2458.432	31.224	70.599	101.823	N/A	N/A	PEAK
2		2483.500	31.212	32.088	63.300	-10.670	73.970	PEAK

<b>Engineer : Jame</b>	
<b>Site : AC-5 (3m Semi-Anechoic Chamber)</b>	<b>Time : 2009/12/20 - 10:18</b>
<b>Limit : FCC_SpartC_15.209_03M_AV</b>	<b>Margin : 0</b>
<b>Probe : 9120D_499(1-18GHz) - HORIZONTAL</b>	<b>Power : AC 120V/60Hz</b>
<b>EUT : 54Mbps Wireless ADSL2+ Modem Router</b>	<b>Note : Mode 2 :Transmit at channel 2462MHz By 802.11g</b>



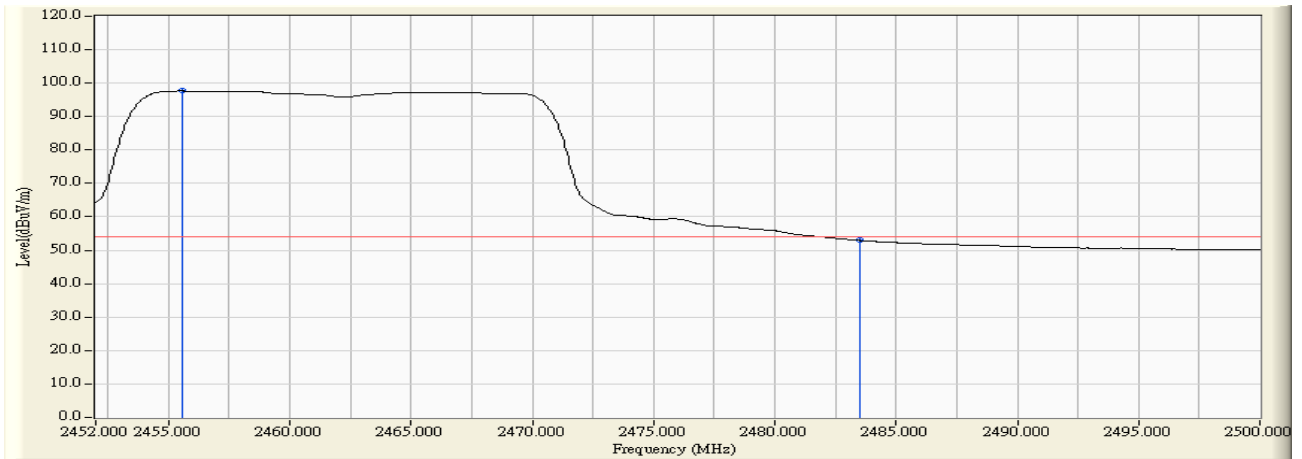
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2457.376	31.223	60.495	91.718	N/A	N/A	AVERAGE
2		2483.500	31.212	18.883	50.095	-3.875	53.970	AVERAGE

Engineer : Jame	
Site : AC-5 (3m Semi-Anechoic Chamber)	Time : 2009/12/20 - 10:26
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
Probe : 9120D_499(1-18GHz) - VERTICAL	Power : AC 120V/60Hz
EUT : 54Mbps Wireless ADSL2+ Modem Router	Note : Mode 2: Transmit at 2462MHz By 802.11g



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2456.464	31.223	78.139	109.362	N/A	N/A	PEAK
2		2483.500	31.212	37.997	69.209	-4.761	73.970	PEAK

Engineer : Jame	
Site : AC-5 (3m Semi-Anechoic Chamber)	Time : 2009/12/20 - 10:26
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : 9120D_499(1-18GHz) - VERTICAL	Power : AC 120V/60Hz
EUT : 54Mbps Wireless ADSL2+ Modem Router	Note : Mode 2 :Transmit at channel 2462MHz By 802.11g



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2455.552	31.223	66.437	97.660	N/A	N/A	AVERAGE
2		2483.500	31.212	21.721	52.933	-1.037	53.970	AVERAGE

## 5. Power Output

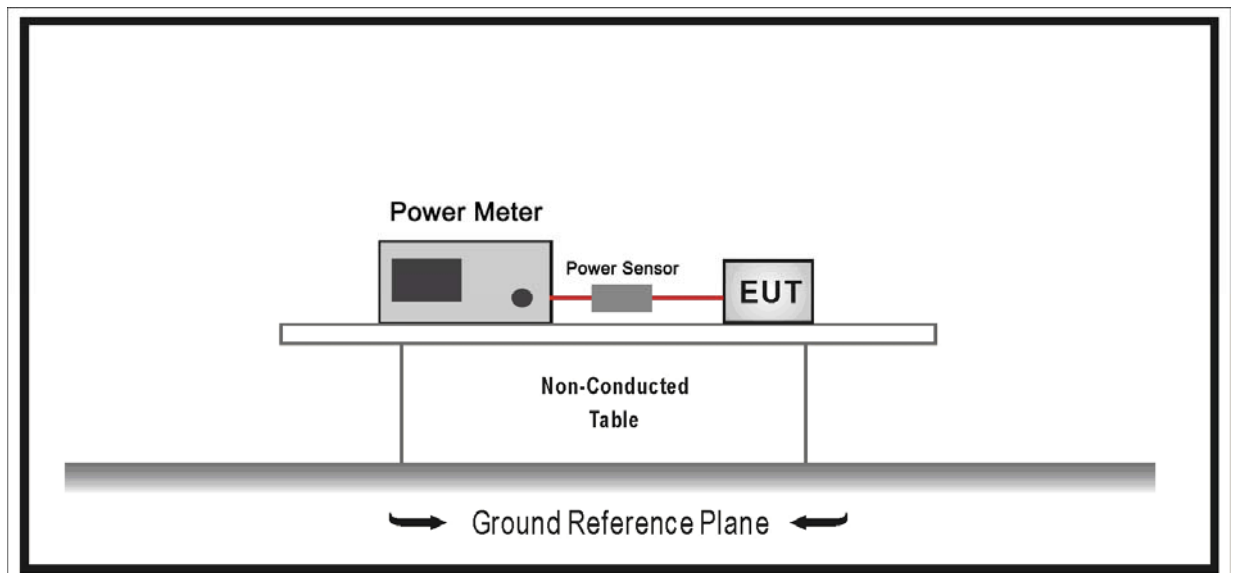
### 5.1. Test Equipment

Power Output / AC-6

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Wideband Peak Power Meter	Anritsu	ML2495A	0905006	2009/02/12
Power Sensor	Anritsu	MA2411B	0846014	2009/01/12
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH007	2009/03/09

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

### 5.2. Test Setup



### 5.3. Limit

The maximum peak power shall be less 1 Watt (30dBm).

Note: the conducted output power limit specified above is based on the use the antennas with directional gains that do not exceed 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values above, as appropriate, by the amount in dB that the directional gain of antenna exceeds 6 dBi.

**5.4. Test Procedure**

The EUT was tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Use the wideband power meter to test peak power and record the result.

**5.5. Uncertainty**

The measurement uncertainty is defined as  $\pm 1.27$  dB



**5.6. Test Result**

Power output test was verified over all data rates of each mode shown as below, and then choose the maximum power output (blue marker) for final test of each channel.

Test Mode	Frequency (MHz)	Channel	Data Rate	Peak Power (dBm)		
802.11b	2437	6	1	20.53		
			2	20.32		
			5.5	20.14		
			11	19.82		
802.11g	2437	6	6	20.44		
			9	20.28		
			12	20.13		
			18	20.02		
			24	19.82		
			36	19.34		
			48	19.01		
			54	18.66		

Product	:	54Mbps Wireless ADSL2+ Modem Router
Test Item	:	Power Output

Test Mode	Channel No.	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Result
802.11b	01	2412	<b>20.85</b>	30	Pass
	06	2437	20.53	30	Pass
	11	2462	20.32	30	Pass
802.11g	01	2412	<b>20.95</b>	30	Pass
	06	2437	20.44	30	Pass
	11	2462	19.90	30	Pass