



# Test Report

**Industry Canada RSS-Gen Issue 3/RSS-210 Issue 8  
FCC Part15 Subpart C**

Product Name : 802.11a/b/g/n/ac WLAN + Bluetooth  
PCI-E Mini Card  
Model No. : BCM94352HMB  
FCC ID : QDS-BRCM1068  
IC : 4324A-BRCM1068

Applicant : BROADCOM CORPORATION  
Address : 190 MATHILDA PLACE SUNNUVALE, CA 94086,  
U.S.A.

Date of Receipt : 11/03/2013  
Test Date : 12/03/2013~26/03/2013  
Issued Date : 10/04/2013  
Report No. : 133S021R-RF-US-P05V04  
Report Version : V1.2

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 TAF, CNAS 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 : 10/04/2013

Report No. : 133S021R-RF-US-P05V04



Product Name : 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card  
 Applicant : BROADCOM CORPORATION  
 Address : 190 MATHILDA PLACE SUNNUVALE, CA 94086, U.S.A.  
 Manufacturer : BROADCOM CORPORATION  
 Address : 190 MATHILDA PLACE SUNNUVALE, CA 94086, U.S.A.  
 Model No. : BCM94352HMB  
 FCC ID : QDS-BRCM1068  
 EUT Voltage : 3.3V  
 Brand Name : Broadcom  
 Applicable Standard : FCC CFR Title 47 Part 15 Subpart C: 2012  
 ANSI C63.4: 2009; KDB 558074  
 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; IC Lab Code: 4075B

Documented By : Alice Ni

Reviewed By : Jame Yuan

Approved By : Robin Wu

## 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/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

<b>Taiwan R.O.C.</b>	<b>:</b>	<b>BSMI, NCC, TAF</b>
<b>Germany</b>	<b>:</b>	<b>TUV Rheinland</b>
<b>Norway</b>	<b>:</b>	<b>Nemko, DNV</b>
<b>USA</b>	<b>:</b>	<b>FCC, NVLAP</b>
<b>Japan</b>	<b>:</b>	<b>VCCI</b>
<b>China</b>	<b>:</b>	<b>CNAS</b>

The related certificate for our laboratories about the test site and management system can be downloaded from Quietek Corporation's Web Site :<http://www.quietek.com/tw/ctg/cts/accreditations.htm>

The address and introduction of Quietek Corporation's laboratories can be founded in our Web site :  
<http://www.quietek.com/>

If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

### **HsinChu Testing Laboratory :**

No.75-2, 3rd Lin, Wangye Keng, Yongxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C.  
TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : [service@quietek.com](mailto:service@quietek.com)

### **Linkou Testing Laboratory :**

No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C.  
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : [service@quietek.com](mailto:service@quietek.com)

### **Suzhou Testing 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 E-Mail : [service@quietek.com](mailto:service@quietek.com)

**TABLE OF CONTENTS**

Description	Page
1. General Information.....	5
1.1. EUT Description .....	5
1.2. Mode of Operation.....	11
1.3. Tested System Details .....	12
1.4. Configuration of Tested System .....	13
1.5. EUT Exercise Software.....	14
2. Technical Test.....	15
2.1. Summary of Test Result.....	15
2.2. Test Environment.....	16
3. Radiated Emission.....	17
3.1. Test Equipment.....	17
3.2. Test Setup .....	18
3.3. Limit .....	19
3.4. Test Procedure .....	19
3.5. Uncertainty .....	20
3.6. Test Result .....	21
4. Radiated Emission Band Edge .....	30
4.1. Test Equipment.....	30
4.2. Test Setup .....	31
4.3. Limit .....	31
4.4. Test Procedure .....	31
4.5. Uncertainty .....	31
4.6. Test Result .....	32
5. Receiver Spurious Emission for Industry Canada RSS-Gen Requirement.....	88
5.1. Test Equipment.....	88
5.2. Test Setup .....	89
5.3. Limit .....	90
5.4. Test Procedure .....	91
5.5. Uncertainty .....	91
5.6. Test Result .....	92

## 1. General Information

### 1.1. EUT Description

Product Name	802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card
Brand Name	Broadcom
Model No.	BCM94352HMB
EUT Voltage	3.3V
Frequency Range	<p><b>For 2.4GHz Band</b></p> <p>802.11b/g/n(20MHz): 2412~2462MHz 802.11n(40MHz): 2422~2452MHz</p> <p><b>For 5.0GHz Band</b></p> <p>802.11a/n(20MHz): 5180~5320MHz,5500~5700MHz,5745~5850MHz 802.11n(40MHz): 5190~5310MHz,5510~5670MHz,5755~5795MHz 802.11ac(20MHz): 5720MHz 802.11ac(40MHz): 5710MHz 802.11ac(80MHz):5210MHz, 5775MHz</p>
Channel Number	<p>For 2.4GHz Band</p> <p>802.11b/g/n(20MHz): 11 802.11n(40MHz): 7</p> <p>For 5.0GHz Band</p> <p>802.11ac: 4 802.11a/n(20MHz): 14 802.11n(40MHz): 9</p>
Type of Modulation	802.11b: DSSS
	802.11a/g/n/ac: OFDM
Data Rate	802.11a/g: 6/9/12/18/24/36/48/54 Mbps
	802.11b: 1/2/5.5/11 Mbps
	802.11n: up to 300 Mbps
	802.11ac: up to 866.7 Mbps
Bluetooth Specification	3.0HS + Version 4.0
Bluetooth Frequency	2402~2480MHz
BT Channel Number	79 for 3.0HS; 40 for Version 4.0
BT Channel Separation	1MHz for 3.0HS; 2MHz for Version 4.0
BT Type of Modulation	FHSS
BT Data Rate	V3.0+HS: 1Mbps(GFSK), 2Mbps(Pi/4 DQPSK), 3Mbps (8DPSK) V4.0: 1Mbps(GFSK)
Channel Control	Auto
Antenna Delivery	2*Tx + 2*Rx
Antenna Type	Reference to Antenna List
Peak Antenna Gain	Reference to Antenna List

**For 2.4GHz Band**

802.11b/g/n(20MHz) 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

802.11n(40MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
03	2422 MHz	04	2427 MHz	05	2432 MHz	06	2437 MHz
07	2442 MHz	08	2447 MHz	09	2452 MHz	N/A	N/A

**For 5.0GHz Band**

802.11a/n(20MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180 MHz	40	5200 MHz	48	5240 MHz	52	5260 MHz
60	5300 MHz	64	5320 MHz	100	5500 MHz	116	5580 MHz
140	5700 MHz	149	5745 MHz	153	5765 MHz	157	5785 MHz
161	5805 MHz	165	5825 MHz	N/A	N/A	N/A	N/A

802.11n(40MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz	54	5270 MHz	62	5310 MHz
102	5510 MHz	110	5550 MHz	134	5670 MHz	151	5755 MHz
159	5795 MHz	N/A	N/A	N/A	N/A	N/A	N/A

802.11ac(20MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
144	5720 MHz	N/A	N/A	N/A	N/A	N/A	N/A

802.11ac(40MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
142	5710 MHz	N/A	N/A	N/A	N/A	N/A	N/A

802.11ac(80MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
42	5210 MHz	155	5775 MHz	N/A	N/A	N/A	N/A

## BT/WLAN Added Antenna List

Antenna	Manufacturer	Model No.	Peak Gain
Monopole Antenna(Main)	Luxshare corporation	L01RF031-DT-R	2.51dBi for 2.40~2.50GHz band
Monopole Antenna (Aux)			-0.12dBi for 5.15~5.85GHz band
PIFA Antenna 1#	Luxshare corporation	L01RF014-R	-0.14dBi for 2.40~2.50GHz band -1.56dBi for 5.15~5.85GHz band
PIFA Antenna 2#	Luxshare corporation	L01RF013-R	0.14dBi for 2.40~2.50GHz band -1.91dBi for 5.15~5.85GHz band
PIFA Antenna 3#	Luxshare corporation	L01RF022-DT-R	-0.04dBi for 2.40~2.50GHz band 1.48dBi for 5.15~5.85GHz band

Note1: We use the monopole antenna to do all testing for this report.

Note2: Added PIFA Antenna 1#, 2# and 3# needn't test again, because the max peak gain of PIFA antenna show in the original test report is 1.73dBi, and three PIFA antenna peak gain are lower.

BCM94352HMB FCC/IC approved power levels

Test Mode	Test Channel	Final Power Single Chain Powers
802.11b mode 2*2 CDD	1	19
	6	19
	11	19
802.11g mode (legacy)	1	16
	6	19
	11	16
802.11a mode (legacy)	36	14
	40	14
	48	14
	52	19
	60	19
	64	17
	100	16
	116	19
	140	16
	149-165	19
802.11n(20MHz) mode 2*2	1	15
	2-10	19
	11	15.5
	36 MCS 0-7 (CCD)	10.5
	40 MCS 0-7 (CCD)	10.5
	48 MCS 0-7 (CCD)	10.5
	36 MCS 0-7 (STBC)	12.5
	40 MCS 0-7 (STBC)	12.5
	48 MCS 0-7 (STBC)	12.5
	52 MCS 0 (CCD)	16
	60 MCS 0 (CCD)	16
	64 MCS 0 (CCD)	16
	100 MCS 0 (CCD)	17
	116 MCS 0 (CCD)	17.5
	140 MCS 0 (CCD)	16
144 MCS 0 (CCD)	15.5	



	149-165 MCS 0 (CCD)	19
--	------------------------	----

Test Mode	Test Channel	Final Power Single Chain Powers
802.11n(40MHz) (SISO)	3	13.5
	4	14
	6	16.5
	8	15
	9	13.5
	38 MCS0 (CDD)	10.5
	46 MCS0 (CDD)	10.5
	54 MCS0 (CDD)	17.5
	62 MCS0 (CDD)	14
	102 MCS0 (CDD)	12
	110 MCS0 (CDD)	17.5
	134 MCS0 (CDD)	16
	142 MCS0 (CDD)	16
	151 MCS0 (CDD)	16
159 MCS0 (CDD)	19	
802.11n(40MHz) (CCD/SDM)	3	13.5
	4	14
	6	16.5
	8	15
	9	13.5
	38 MCS0 (CDD)	10.5
	46 MCS0 (CDD)	10.5
	38 MCS0 (STBC)	13
	46 MCS0 (STBC)	14
	54 MCS0 (CDD)	17.5
	62 MCS0 (CDD)	14
	102 MCS0 (CDD)	12
	110 MCS0 (CDD)	17.5
	134 MCS0 (CDD)	16
142 MCS0 (CDD)	16	
151 MCS0 (CDD)	16	
159 MCS0 (CDD)	19	
Test Mode	Test Channel	Final Power Single Chain Powers

802.11ac(80MHz) (SISO)	42 MCS0 (CDD)	12
	155 MCS0 (CDD)	16
802.11ac(80MHz) (CCD)	42 MCS0 (CDD)	12
	155 MCS0 (CDD)	16

Note: The power levels shown are the single chain levels. For MIMO modes this will be the power on each chain (not the total summed power).

**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
Mode 3: Transmit by 802.11a
Mode 4: Transmit by 802.11n (20MHz)
Mode 5: Transmit by 802.11n (40MHz)
Mode 6: Transmit by 802.11ac
Mode 7: Receive by 802.11b

Note:

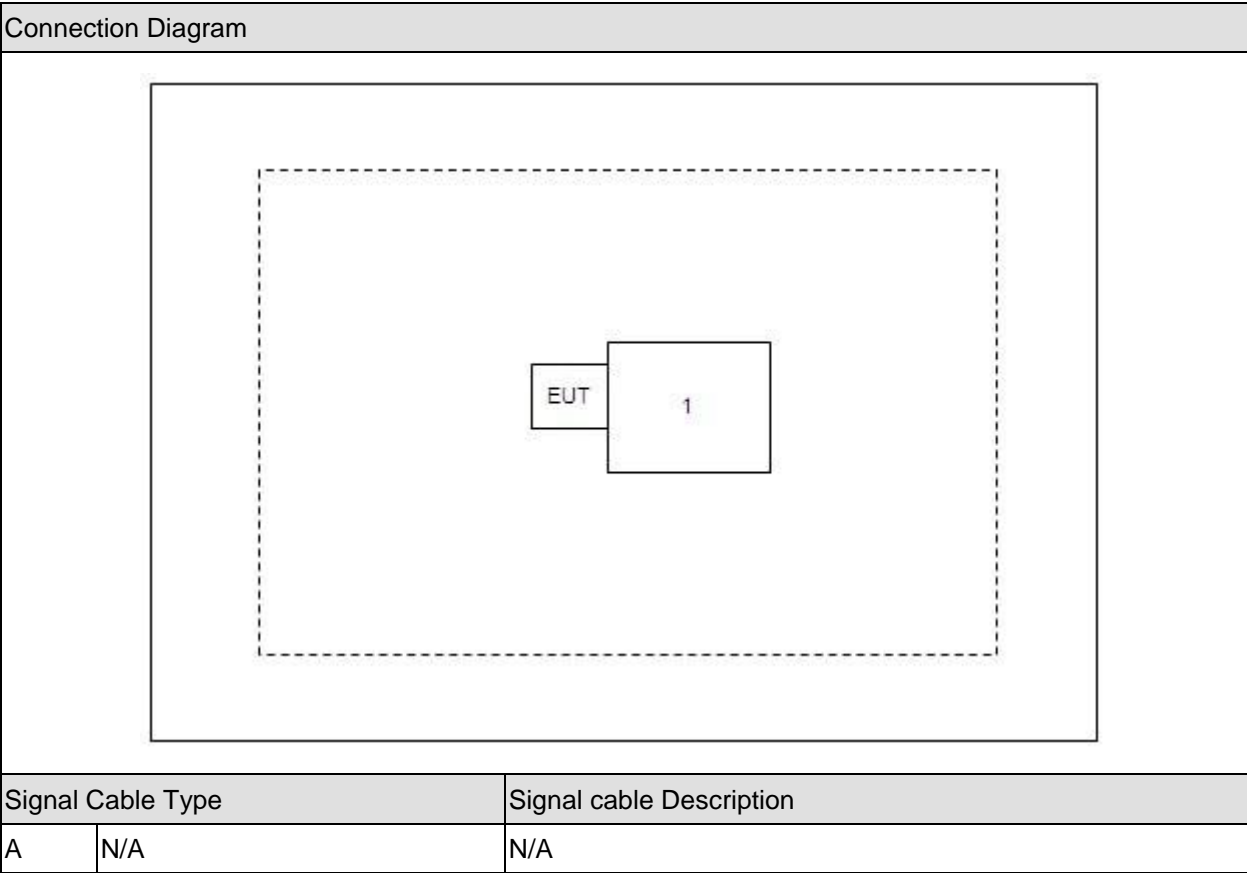
1. Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.

**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	Notebook	Dell	N80V	8BN0AS226971468	Non-Shielded, 1.8m

1.4. Configuration of Tested System



**1.5. EUT Exercise Software**

1	Setup the EUT and simulators as shown on above.
2	Execute the software "Mtool" on the PC provided by applicant.
3	Setup the test channel and the test mode press ok to start the continue transmit.

**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
Radiated Emission	FCC CFR Title 47 Part 15 Subpart C: 2012 Section 15.209 RSS-210 Issue 8 December 2010 Section 2.7 Table 2 and Table 3	Yes	No
Radiated Emission Band Edge	FCC CFR Title 47 Part 15 Subpart C: 2012 15.247(d) RSS-210 Issue 8 December 2010 Section A8.5	Yes	No

**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-2

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
EMI Test Receiver	R&S	ESCI	100573	2013.04.18
Loop Antenna	R&S	HFH2-Z2	833799/003	2013.11.22
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2013.10.15
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2014.03.01
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC2-TH	2013.05.07

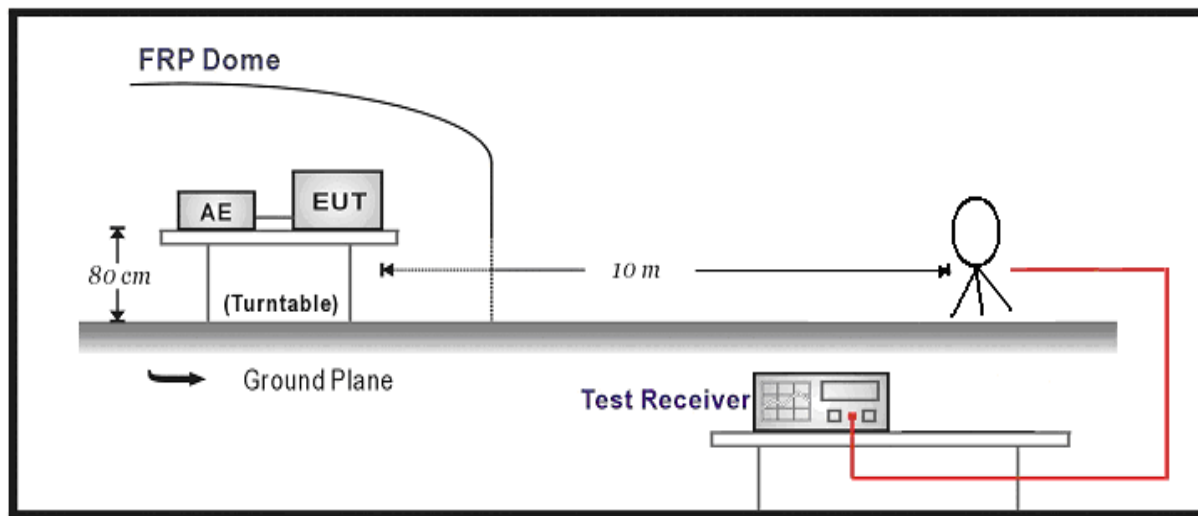
#### Radiated Emission / AC-5

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	N9020A	MY49100159	2014.03.30
Preamplifier	Miteq	NSP1800-25	1364185	2013.05.04
Preamplifier	Quietek	AP-040G	CHM-0906001	2013.05.04
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2013.10.15
DRG Horn	ETS-Lindgren	3117	00123988	2014.01.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2013.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2014.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2013.06.11
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2014.01.11

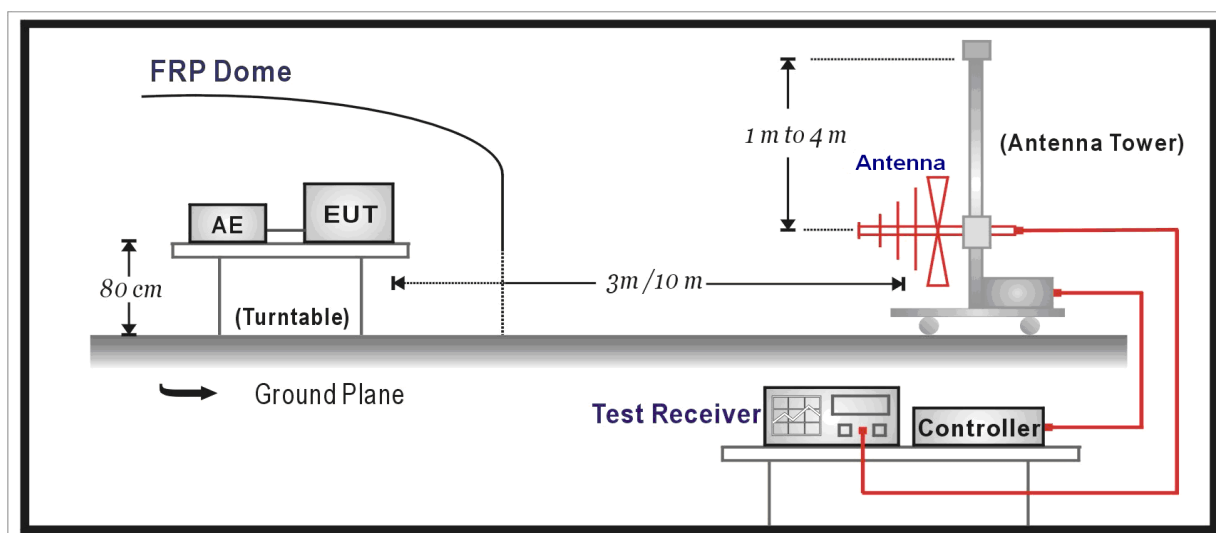
Note 1: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

### 3.2. Test Setup

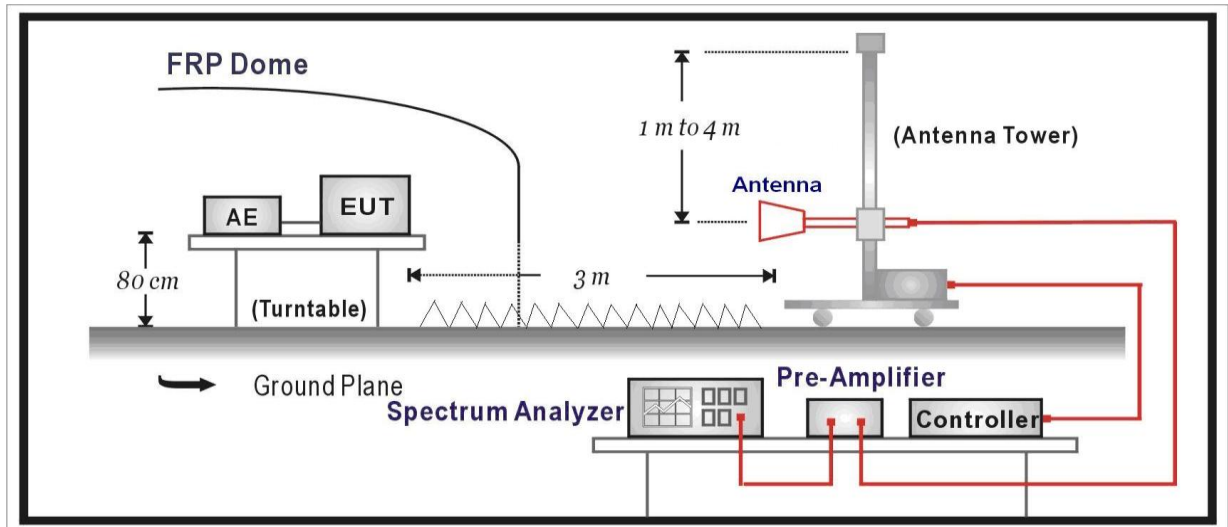
Below 30MHz Test Setup:



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: 2009 and tested according to KDB 558074 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: 2009 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 10<sup>th</sup> 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 60 degrees for H-plane and 90 degrees for E-plane.

### **3.5. Uncertainty**

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

below 1G is defined as  $\pm 3.8$  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 – Preamplifier Gain

Mode1: Transmit by 802.11b

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Chain 1+2	1	H	3031.5	50.2	-10.0	40.2	54(Note3)	-13.8	PK
		V	2946.5	50.4	-10.4	39.9	54(Note3)	-14.1	PK
		H	4824.0	48.4	-7.6	40.8	54(Note3)	-13.3	PK
		V	4825.0	54.2	-7.7	46.5	54(Note3)	-7.5	PK
		H	7236.0	43.9	-3.0	40.9	54(Note3)	-13.1	PK
		V	7236.0	43.9	-3.0	40.8	54(Note3)	-13.2	PK
		H	9648.0	39.6	3.1	42.7	54(Note3)	-11.3	PK
		V	9648.0	40.2	3.2	43.4	54(Note3)	-10.6	PK
	6	H	2904.0	51.0	-10.5	40.5	54(Note3)	-13.5	PK
		V	2929.5	52.9	-10.4	42.5	54(Note3)	-11.5	PK
		H	4876.0	50.2	-7.6	42.6	54(Note3)	-11.4	PK
		V	4876.0	52.3	-7.6	44.7	54(Note3)	-9.3	PK
		H	7311.0	44.4	-2.9	41.5	54(Note3)	-12.5	PK
		V	7311.0	44.0	-2.9	41.1	54(Note3)	-12.9	PK
		H	9748.0	39.4	3.2	42.6	54(Note3)	-11.4	PK
		V	9748.0	39.3	3.3	42.6	54(Note3)	-11.4	PK
	11	H	2921.0	50.4	-10.4	40.0	54(Note3)	-14.0	PK
		V	2929.5	51.5	-10.4	41.1	54(Note3)	-12.9	PK
		H	4927.0	53.8	-7.6	46.1	54(Note3)	-7.9	PK
		V	4927.0	53.9	-7.6	46.3	54(Note3)	-7.7	PK
		H	7386.0	44.0	-2.7	41.3	54(Note3)	-12.7	PK
		V	7386.0	44.7	-2.7	42.0	54(Note3)	-12.0	PK
		H	9848.0	39.8	3.4	43.2	54(Note3)	-10.8	PK
		V	9848.0	41.5	3.4	44.9	54(Note3)	-9.1	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz,

18GHz~25GHz), therefore no data appear in the report.

3. 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.

Mode2: Transmit by 802.11g

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Chain 1	1	H	2963.5	50.6	-10.2	40.4	54(Note3)	-13.6	PK
		V	2929.5	52.9	-10.4	42.4	54(Note3)	-11.6	PK
		H	4824.0	47.0	-7.6	39.4	54(Note3)	-14.6	PK
		V	4824.0	47.6	-7.7	39.9	54(Note3)	-14.1	PK
		H	7236.0	44.2	-3.0	41.1	54(Note3)	-12.9	PK
		V	7236.0	44.7	-3.0	41.7	54(Note3)	-12.3	PK
		H	9648.0	40.4	3.1	43.5	54(Note3)	-10.5	PK
		V	9648.0	39.7	3.2	42.9	54(Note3)	-11.1	PK
	6	H	2946.5	50.6	-10.3	40.3	54(Note3)	-13.7	PK
		V	2929.5	51.9	-10.4	41.5	54(Note3)	-12.5	PK
		H	4874.0	47.5	-7.6	39.9	54(Note3)	-14.1	PK
		V	4874.0	46.9	-7.6	39.2	54(Note3)	-14.8	PK
		H	7311.0	44.1	-2.9	41.2	54(Note3)	-12.8	PK
		V	7311.0	43.9	-2.9	41.0	54(Note3)	-13.0	PK
		H	9748.0	39.1	3.2	42.3	54(Note3)	-11.7	PK
		V	9748.0	39.3	3.3	42.7	54(Note3)	-11.3	PK
	11	H	3091.0	50.7	-9.8	40.8	54(Note3)	-13.2	PK
		V	2929.5	50.8	-10.4	40.4	54(Note3)	-13.6	PK
		H	4924.0	46.8	-7.6	39.1	54(Note3)	-14.9	PK
		V	4924.0	47.6	-7.6	40.0	54(Note3)	-14.0	PK
		H	7386.0	44.5	-2.7	41.8	54(Note3)	-12.2	PK
		V	7386.0	43.0	-2.7	40.3	54(Note3)	-13.7	PK
		H	9848.0	40.0	3.4	43.3	54(Note3)	-10.7	PK
		V	9848.0	40.0	3.4	43.4	54(Note3)	-10.6	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. 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.

Mode3: Transmit by 802.11a

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Chain 0	149	H	11490.0	-5.5	48.0	42.5	54(Note3)	-11.5	PK
		V	11490.0	-5.1	47.9	42.8	54(Note3)	-11.2	PK
		H	13000.0	-8.6	50.5	41.8	54(Note3)	-12.2	PK
		V	13000.0	-7.6	50.5	42.9	54(Note3)	-11.1	PK
		H	17235.0	-8.7	54.6	45.9	54(Note3)	-8.1	PK
		V	17235.0	-7.7	54.6	47.0	54(Note3)	-7.0	PK
		H	11490.0	-5.5	48.0	42.5	54(Note3)	-11.5	PK
		V	11490.0	-5.1	47.9	42.8	54(Note3)	-11.2	PK
	157	H	11570.0	-4.5	48.2	43.8	54(Note3)	-10.2	PK
		V	11570.0	-4.0	48.1	44.2	54(Note3)	-9.8	PK
		H	13000.0	-8.7	50.5	41.7	54(Note3)	-12.3	PK
		V	13000.0	-8.5	50.5	42.0	54(Note3)	-12.0	PK
		H	17355.0	-7.8	54.4	46.6	54(Note3)	-7.4	PK
		V	17355.0	-7.2	54.5	47.3	54(Note3)	-6.7	PK
		H	11570.0	-4.5	48.2	43.8	54(Note3)	-10.2	PK
		V	11570.0	-4.0	48.1	44.2	54(Note3)	-9.8	PK
	165	H	11650.0	-5.2	48.5	43.2	54(Note3)	-10.8	PK
		V	11650.0	-5.6	48.4	42.7	54(Note3)	-11.3	PK
		H	13000.0	-7.9	50.5	42.6	54(Note3)	-11.4	PK
		V	13000.0	-6.7	50.5	43.8	54(Note3)	-10.2	PK
		H	17475.0	-5.2	54.2	49.0	54(Note3)	-5.0	PK
		V	17475.0	-6.9	54.3	47.4	54(Note3)	-6.6	PK
		H	11650.0	-5.2	48.5	43.2	54(Note3)	-10.8	PK
		V	11650.0	-5.6	48.4	42.7	54(Note3)	-11.3	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. 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.

Mode4: Transmit by 802.11n(20MHz)

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Chain 1+2	1	H	3031.5	50.5	-10.0	40.5	54(Note3)	-13.5	PK
		V	2929.5	51.9	-10.4	41.4	54(Note3)	-12.6	PK
		H	4824.0	47.5	-7.6	39.8	54(Note3)	-14.2	PK
		V	4824.0	46.9	-7.7	39.2	54(Note3)	-14.8	PK
		H	7236.0	43.8	-3.0	40.7	54(Note3)	-13.3	PK
		V	7236.0	43.5	-3.0	40.5	54(Note3)	-13.5	PK
		H	9648.0	40.4	3.1	43.6	54(Note3)	-10.4	PK
		V	9648.0	39.5	3.2	42.7	54(Note3)	-11.3	PK
	6	H	3006.0	50.1	-10.0	40.1	54(Note3)	-13.9	PK
		V	2929.5	52.4	-10.4	42.0	54(Note3)	-12.0	PK
		H	4874.0	47.3	-7.6	39.6	54(Note3)	-14.4	PK
		V	4874.0	46.6	-7.6	39.0	54(Note3)	-15.0	PK
		H	7311.0	45.1	-2.9	42.1	54(Note3)	-11.9	PK
		V	7311.0	44.3	-2.9	41.4	54(Note3)	-12.6	PK
		H	9748.0	39.1	3.2	42.3	54(Note3)	-11.7	PK
		V	9748.0	39.8	3.3	43.1	54(Note3)	-10.9	PK
	11	H	3006.0	50.1	-10.0	40.1	54(Note3)	-13.9	PK
		V	2938.0	53.9	-10.4	43.4	54(Note3)	-10.6	PK
		H	4924.0	46.8	-7.6	39.2	54(Note3)	-14.8	PK
		V	4924.0	46.9	-7.6	39.3	54(Note3)	-14.7	PK
		H	7386.0	43.7	-2.7	41.0	54(Note3)	-13.0	PK
		V	7386.0	44.1	-2.7	41.4	54(Note3)	-12.6	PK
		H	9848.0	39.2	3.4	42.6	54(Note3)	-11.4	PK
		V	9848.0	41.1	3.4	44.5	54(Note3)	-9.5	PK
	149	H	11490.0	38.7	6.4	45.1	54(Note3)	-8.9	PK
		V	11490.0	37.0	6.3	43.3	54(Note3)	-10.7	PK
		H	13095.5	38.0	8.2	46.2	54(Note3)	-7.8	PK
		V	13189.0	36.6	8.2	44.8	54(Note3)	-9.2	PK
		H	17235.0	37.3	11.3	48.6	54(Note3)	-5.4	PK
		V	17235.0	36.9	11.4	48.3	54(Note3)	-5.7	PK
157	H	11570.0	37.9	6.7	44.6	54(Note3)	-9.4	PK	
	V	11570.0	36.6	6.6	43.2	54(Note3)	-10.8	PK	



		H	12917.0	37.5	8.3	45.8	54(Note3)	-8.2	PK	
		V	13061.5	36.2	8.1	44.4	54(Note3)	-9.6	PK	
		H	17355.0	37.4	11.2	48.6	54(Note3)	-5.4	PK	
		V	17355.0	37.4	11.3	48.7	54(Note3)	-5.3	PK	
	165		H	11650.0	36.8	7.0	43.8	54(Note3)	-10.2	PK
			V	11650.0	37.9	6.9	44.8	54(Note3)	-9.2	PK
			H	13095.5	36.5	8.2	44.7	54(Note3)	-9.3	PK
			V	13155.0	36.7	8.2	44.8	54(Note3)	-9.2	PK
			H	17475.0	36.7	11.0	47.8	54(Note3)	-6.2	PK
			V	17475.0	38.6	11.1	49.7	54(Note3)	-4.3	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. 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.

Mode5: Transmit by 802.11n(40MHz)

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Chain 1+2	3	H	2997.5	51.0	-10.1	41.0	54(Note3)	-13.1	PK
		V	2929.5	53.2	-10.4	42.8	54(Note3)	-11.2	PK
		H	4844.0	47.7	-7.6	40.1	54(Note3)	-13.9	PK
		V	4844.0	47.0	-7.7	39.4	54(Note3)	-14.6	PK
		H	7266.0	44.2	-3.0	41.2	54(Note3)	-12.8	PK
		V	7266.0	44.5	-3.0	41.5	54(Note3)	-12.5	PK
		H	9688.0	39.5	3.2	42.6	54(Note3)	-11.4	PK
		V	9688.0	39.5	3.2	42.7	54(Note3)	-11.3	PK
	6	H	2929.5	51.7	-10.4	41.3	54(Note3)	-12.7	PK
		V	2929.5	52.3	-10.4	41.9	54(Note3)	-12.1	PK
		H	4874.0	46.7	-7.6	39.1	54(Note3)	-14.9	PK
		V	4874.0	46.8	-7.6	39.2	54(Note3)	-14.8	PK
		H	7311.0	45.1	-2.9	42.2	54(Note3)	-11.8	PK
		V	7311.0	44.9	-2.9	42.0	54(Note3)	-12.0	PK
		H	9748.0	39.2	3.2	42.4	54(Note3)	-11.6	PK
		V	9748.0	40.1	3.3	43.4	54(Note3)	-10.6	PK

	9	H	3023.0	50.9	-10.0	40.9	54(Note3)	-13.1	PK
		V	2929.5	52.8	-10.4	42.3	54(Note3)	-11.7	PK
		H	4904.0	48.0	-7.6	40.4	54(Note3)	-13.6	PK
		V	4904.0	47.5	-7.6	39.9	54(Note3)	-14.1	PK
		H	7356.0	44.7	-2.8	41.9	54(Note3)	-12.1	PK
		V	7356.0	43.7	-2.8	41.0	54(Note3)	-13.1	PK
		H	9808.0	39.1	3.3	42.4	54(Note3)	-11.6	PK
		V	9808.0	38.6	3.4	42.0	54(Note3)	-12.0	PK
	151	H	11510.0	38.4	6.5	44.9	54(Note3)	-9.1	PK
		V	11510.0	38.9	6.4	45.4	54(Note3)	-8.6	PK
		H	13155.0	38.4	8.2	46.6	54(Note3)	-7.4	PK
		V	13155.0	38.4	8.2	46.5	54(Note3)	-7.5	PK
		H	17265.0	39.3	11.3	50.6	54(Note3)	-3.4	PK
		V	17265.0	39.6	11.4	51.0	54(Note3)	-3.0	PK
	159	H	11590.0	37.0	6.7	43.7	54(Note3)	-10.3	PK
		V	11590.0	36.6	6.6	43.2	54(Note3)	-10.8	PK
		H	13036.0	36.5	8.1	44.5	54(Note3)	-9.5	PK
		V	13104.0	36.3	8.2	44.5	54(Note3)	-9.5	PK
H		17385.0	35.5	11.2	46.6	54(Note3)	-7.4	PK	
V		17385.0	35.3	11.3	46.5	54(Note3)	-7.5	PK	

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. 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.

Mode6: Transmit by 802.11ac

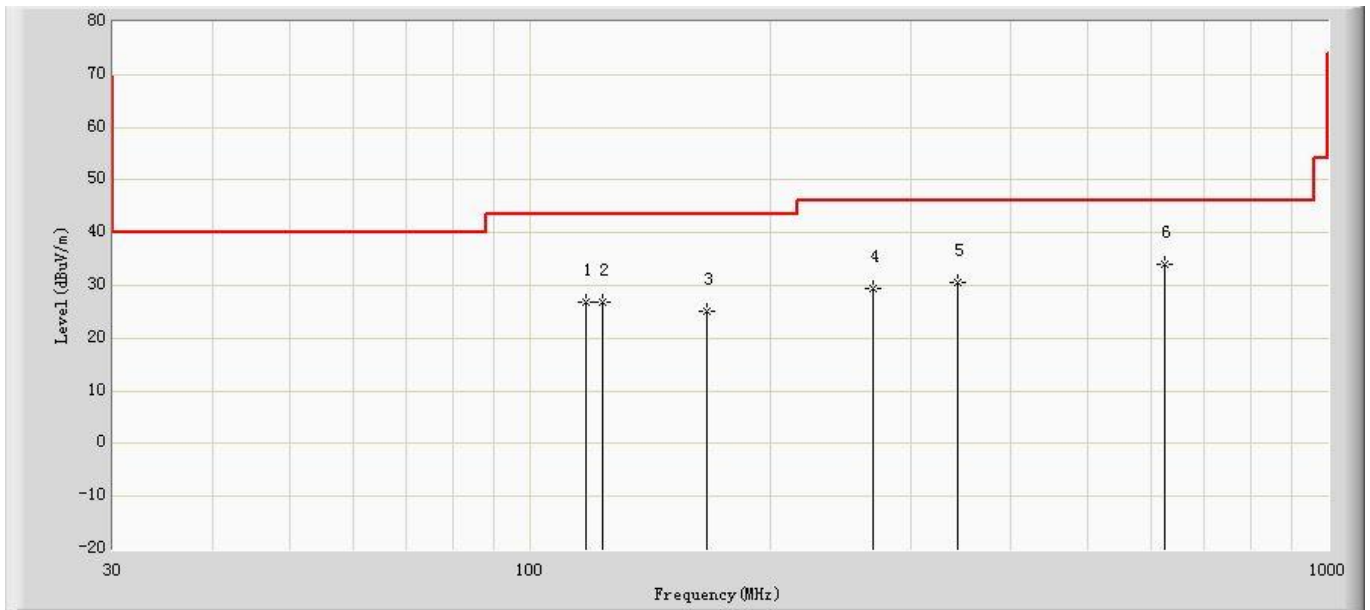
Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Chain 1+2	155	H	11550.0	35.3	6.7	42.0	54(Note3)	-12.0	PK
		V	11550.0	35.6	6.6	42.2	54(Note3)	-11.8	PK
		H	13044.5	35.3	8.1	43.4	54(Note3)	-10.6	PK
		V	13010.5	37.0	8.0	45.1	54(Note3)	-8.9	PK
		H	17325.0	36.0	11.3	47.3	54(Note3)	-6.7	PK
		V	17325.0	36.0	11.4	47.4	54(Note3)	-6.6	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.
3. 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.

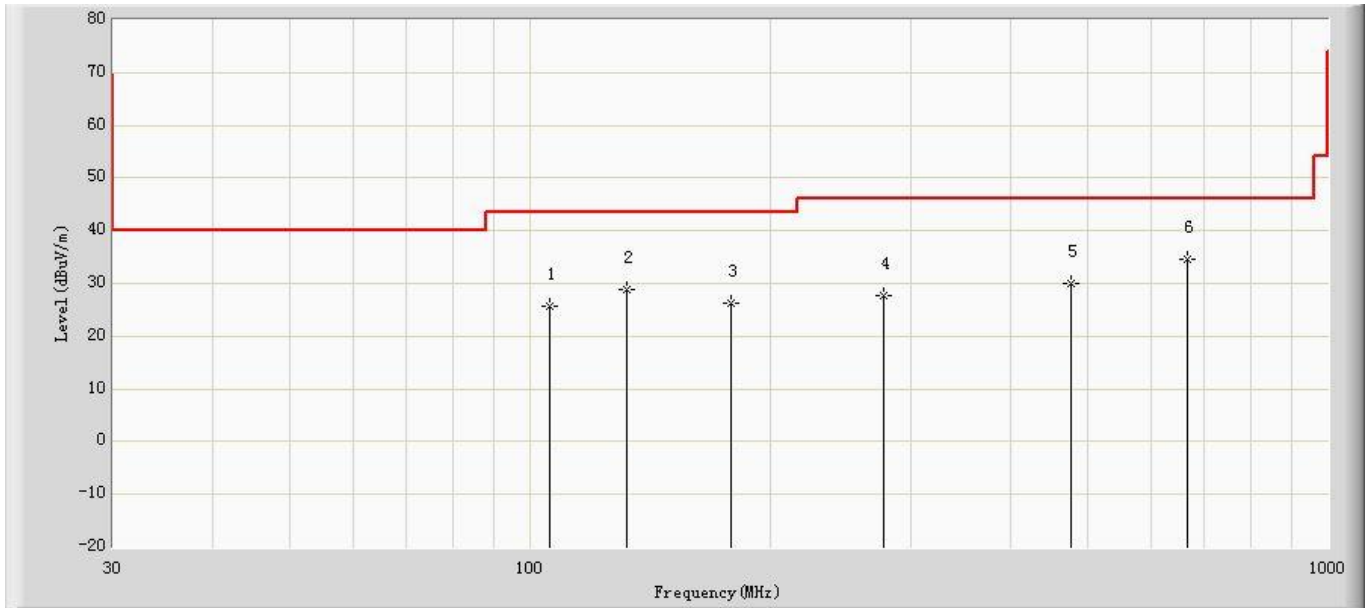
## The worst case of the Radiated Emission below 1GHz:

Engineer: Milo	
Site: AC2	Time: 2013/03/26 - 18:18
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: CBL6112D_27611(30-1000MHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2462MHz by 802.11b	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		117.421	26.925	8.376	-16.575	43.500	18.548	QP
2		123.484	26.923	8.303	-16.577	43.500	18.620	QP
3		166.285	25.160	8.851	-18.340	43.500	16.309	QP
4		268.862	29.335	9.453	-16.665	46.000	19.882	QP
5		343.552	30.645	8.808	-15.355	46.000	21.837	QP
6	*	624.610	34.039	6.780	-11.961	46.000	27.259	QP

Engineer: Milo	
Site: AC2	Time: 2013/03/26 - 18:19
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: CBL6112D_27611(30-1000MHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2462MHz by 802.11b	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		106.024	25.805	7.706	-17.695	43.500	18.099	QP
2		132.092	28.834	10.475	-14.666	43.500	18.359	QP
3		178.289	26.212	10.600	-17.288	43.500	15.612	QP
4		277.956	27.704	7.814	-18.296	46.000	19.889	QP
5		476.927	30.000	4.907	-16.000	46.000	25.092	QP
6	*	666.684	34.668	7.281	-11.332	46.000	27.387	QP

**4. Radiated Emission Band Edge**

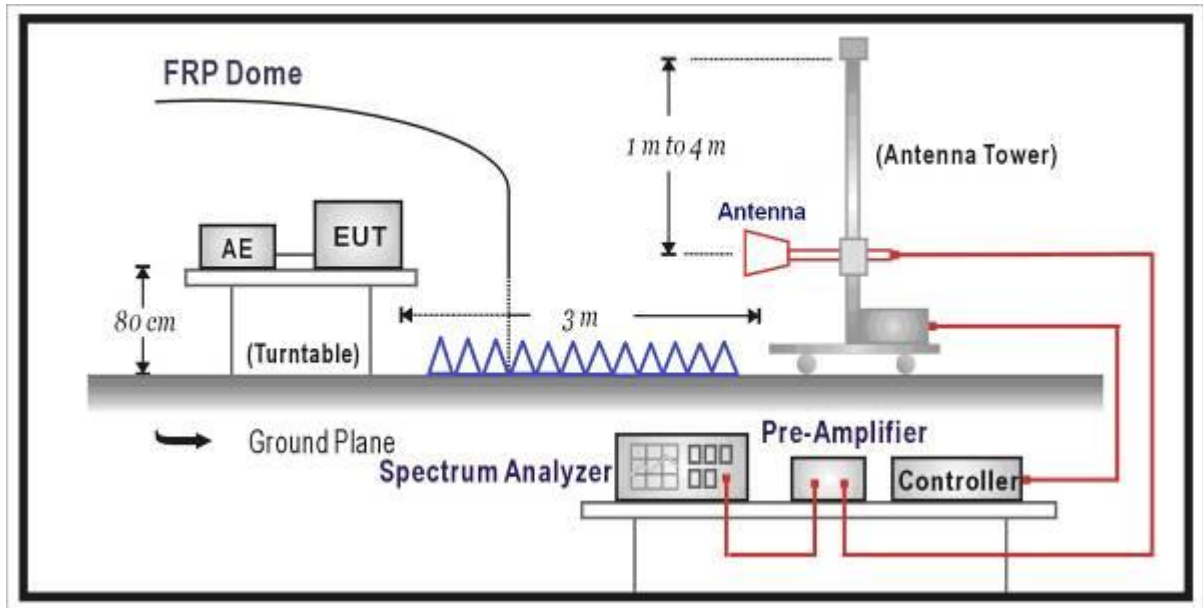
**4.1. Test Equipment**

Radiated Emission Band Edge / AC-5

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	N9020A	MY49100159	2014.03.30
Preamplifier	Miteq	NSP1800-25	1364185	2013.05.04
Preamplifier	Quietek	AP-040G	CHM-0906001	2013.05.04
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2013.10.15
DRG Horn	ETS-Lindgren	3117	00123988	2014.01.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2013.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2014.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2013.06.11
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2014.01.11

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

**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: 2009 and tested according to KDB 558074 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.

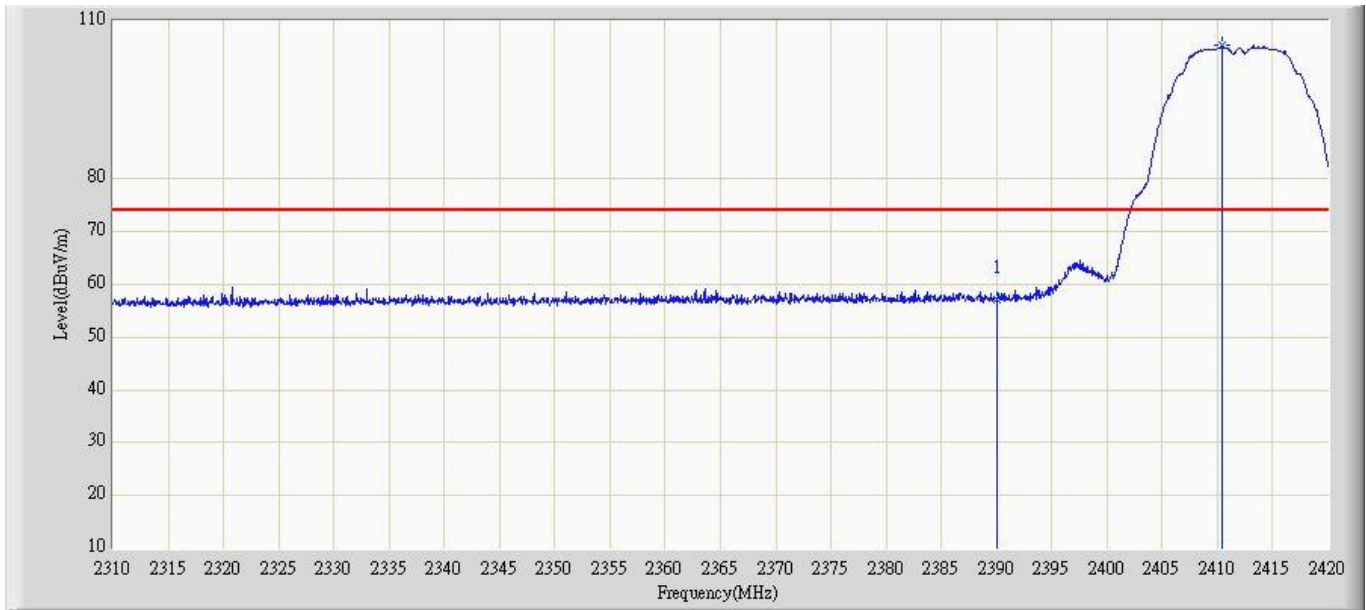
The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4: 2009 on radiated measurement.

**4.5. Uncertainty**

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

## 4.6. Test Result

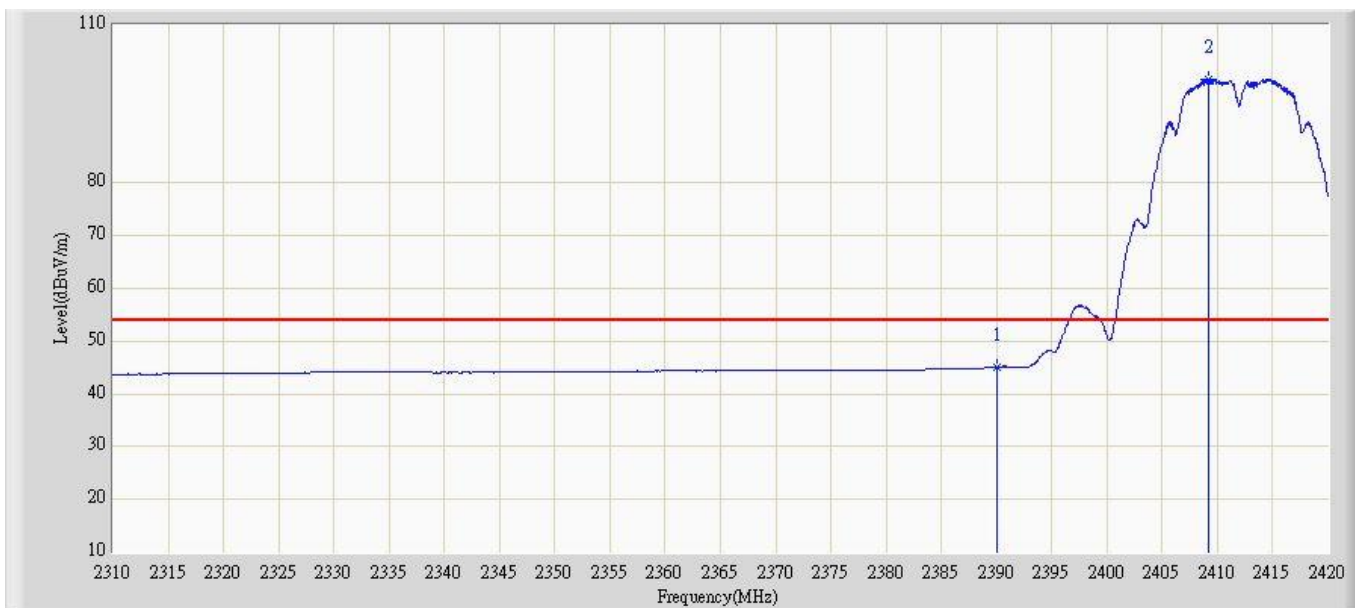
Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 10:54
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11b at 2412MHz Ant 0	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	57.270	20.969	-16.730	74.000	36.302	PK
2	*	2410.375	105.423	68.954	N/A	N/A	36.469	PK

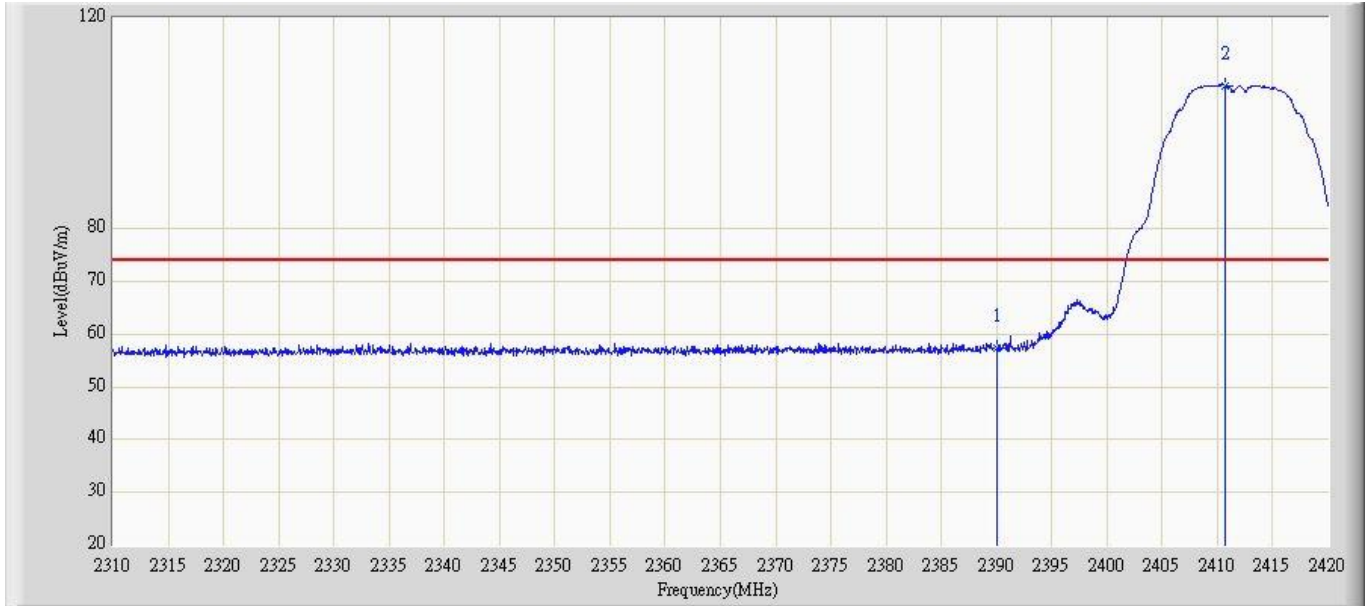


Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 13:44
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11b at 2412MHz Ant 0	



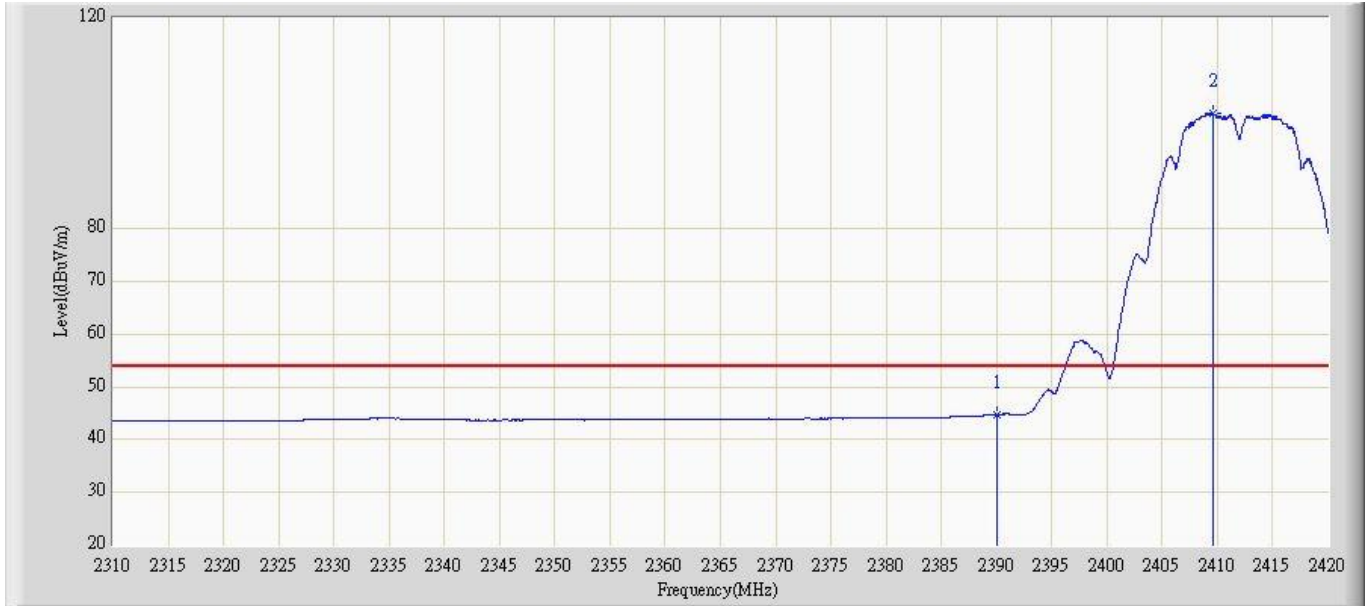
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	44.983	8.682	-9.017	54.000	36.302	AV
2	*	2409.220	99.646	63.187	N/A	N/A	36.459	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 13:46
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11b at 2412MHz Ant 0	



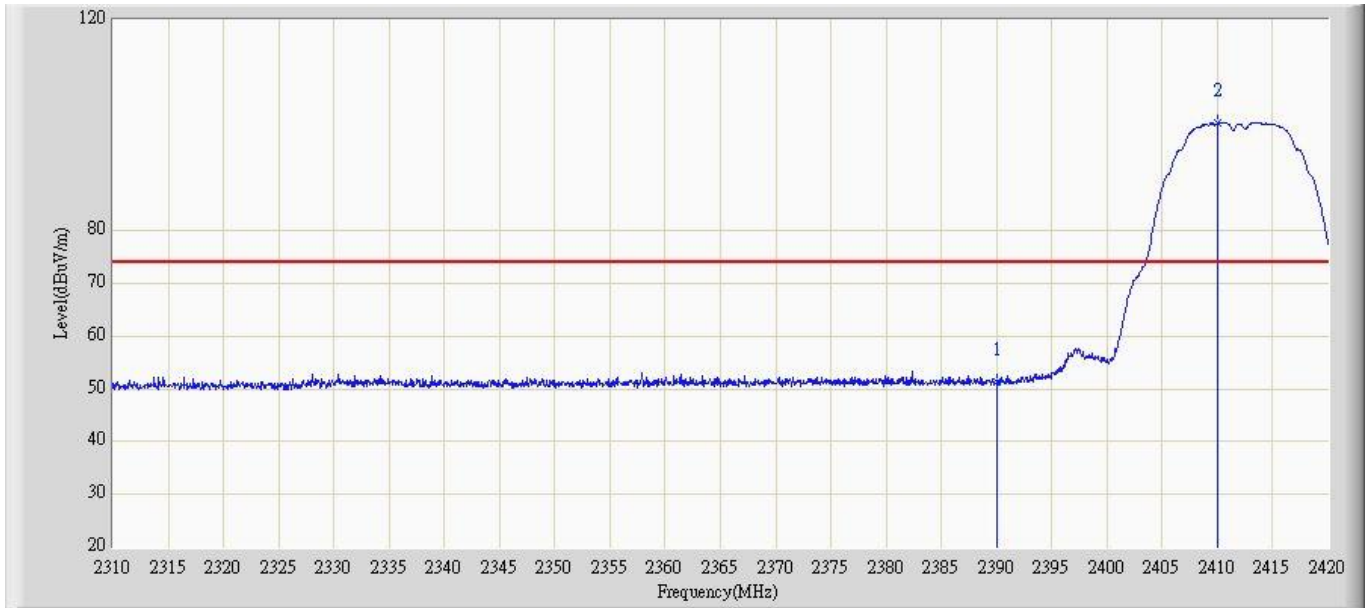
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	57.386	21.745	-16.614	74.000	35.642	PK
2	*	2410.705	107.180	71.451	N/A	N/A	35.729	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 13:50
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11b at 2412MHz Ant 0	



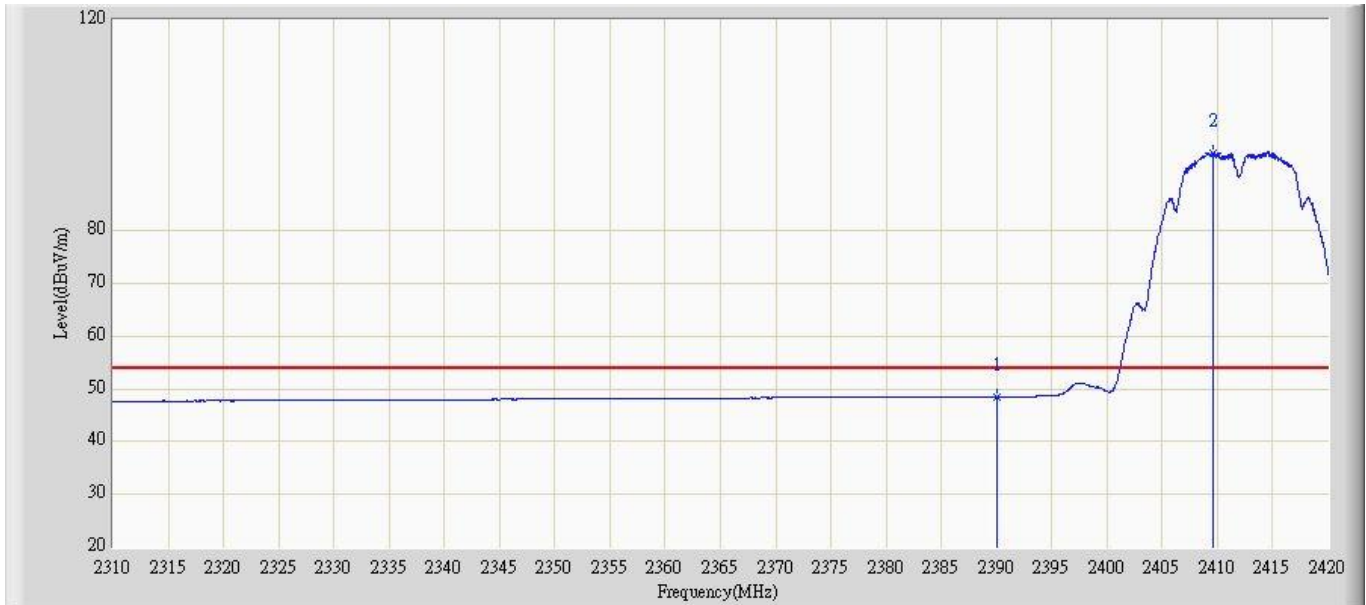
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	44.721	9.080	-9.279	54.000	35.642	AV
2	*	2409.660	101.847	66.123	N/A	N/A	35.724	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 13:53
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11b at 2412MHz Ant 1	



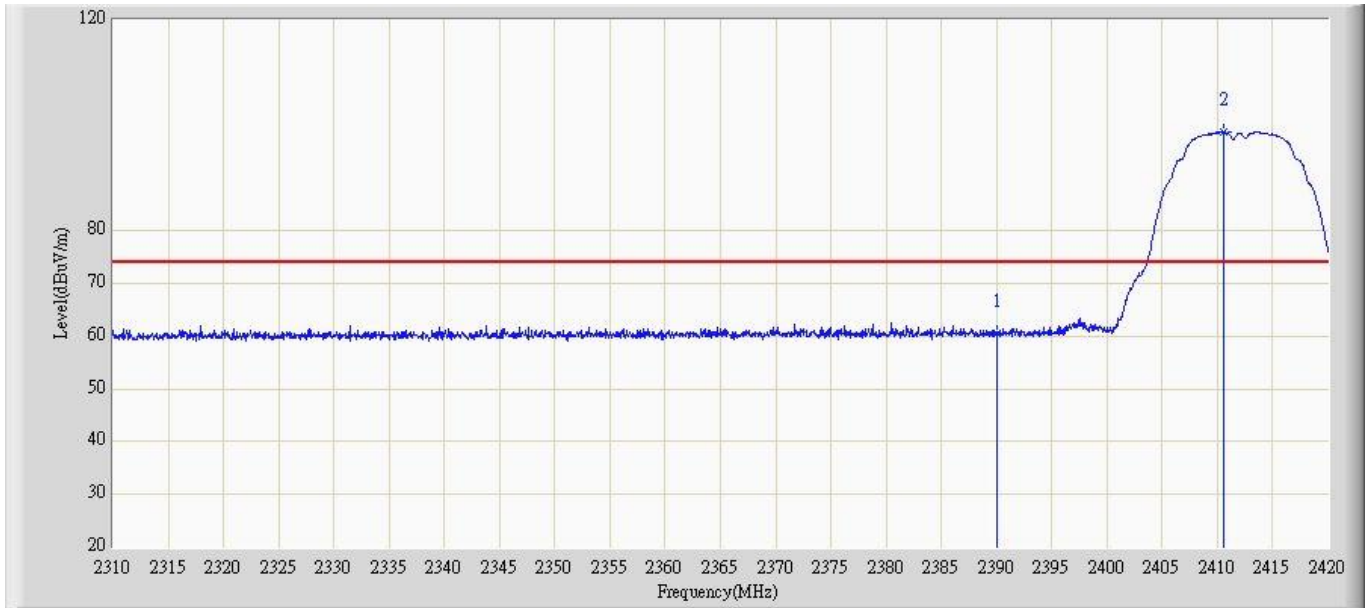
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	51.360	15.059	-22.640	74.000	36.302	PK
2	*	2409.990	100.333	63.867	N/A	N/A	36.465	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 13:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11b at 2412MHz Ant 1	



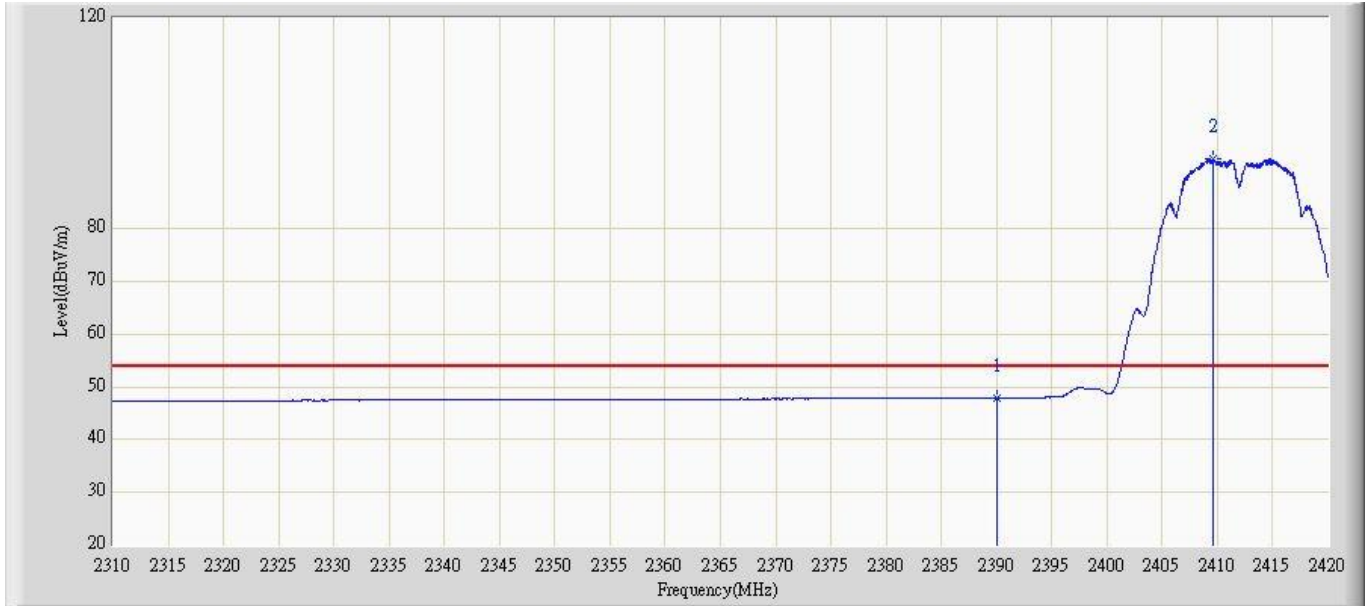
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	48.526	12.225	-5.474	54.000	36.302	AV
2	*	2409.660	94.699	58.236	N/A	N/A	36.463	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 13:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11b at 2412MHz Ant 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	60.504	24.863	-13.496	74.000	35.642	PK
2	*	2410.540	98.846	63.118	N/A	N/A	35.728	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 13:59
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11b at 2412MHz Ant 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	47.874	12.233	-6.126	54.000	35.642	AV
2	*	2409.605	93.165	57.441	N/A	N/A	35.724	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:03
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11b at 2462MHz Ant 0	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2460.352	105.023	68.126	N/A	N/A	36.896	PK
2		2483.500	62.632	25.542	-11.368	74.000	37.089	PK

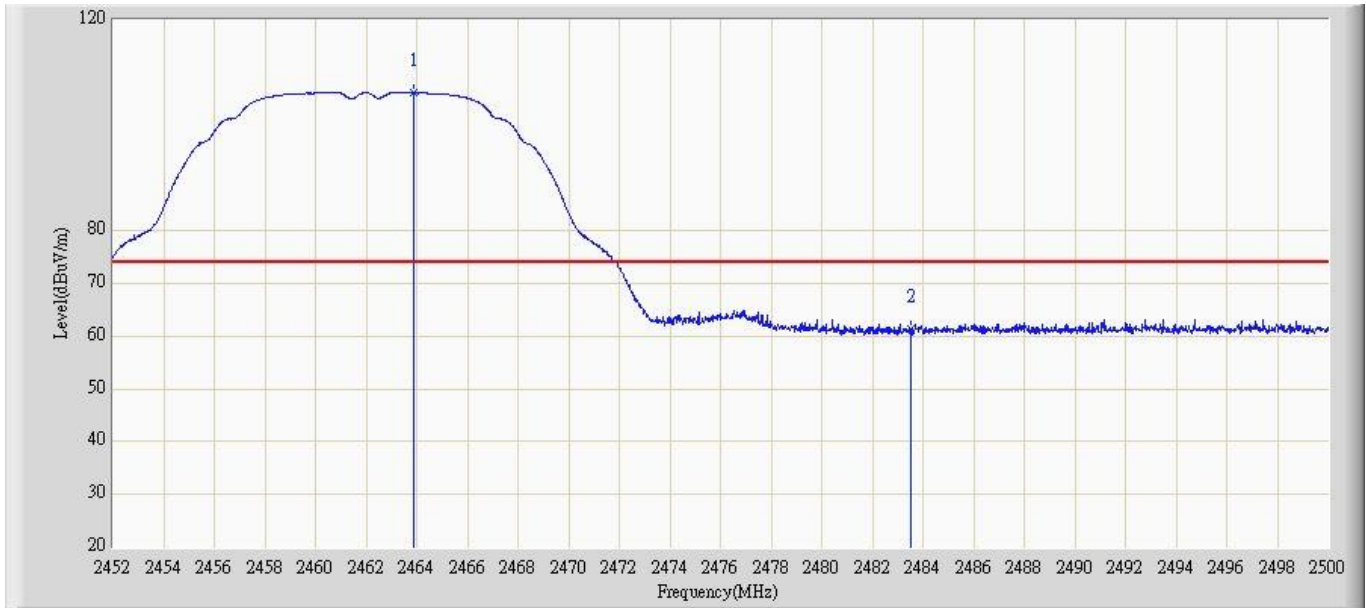


Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:07
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11b at 2462MHz Ant 0	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2462.728	99.170	62.253	N/A	N/A	36.917	AV
2		2483.500	49.430	12.340	-4.570	54.000	37.089	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:08
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11b at 2462MHz Ant 0	



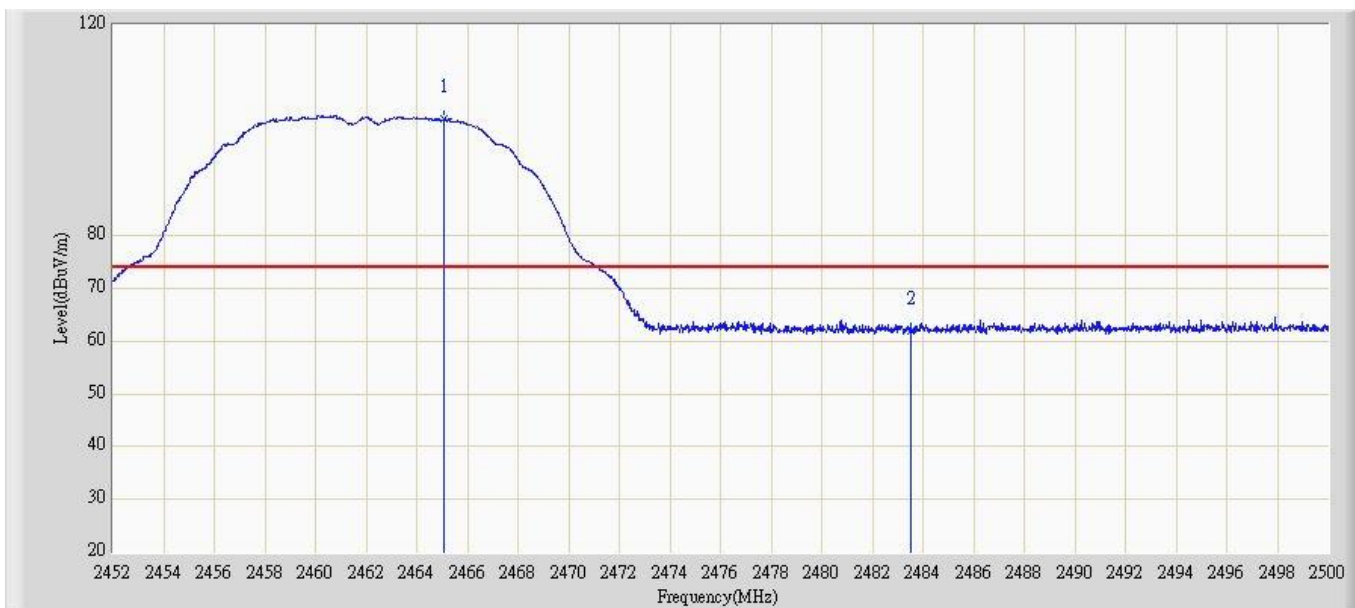
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2463.856	106.223	70.252	N/A	N/A	35.971	PK
2		2483.500	61.394	25.338	-12.606	74.000	36.055	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:09
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11b at 2462MHz Ant 0	



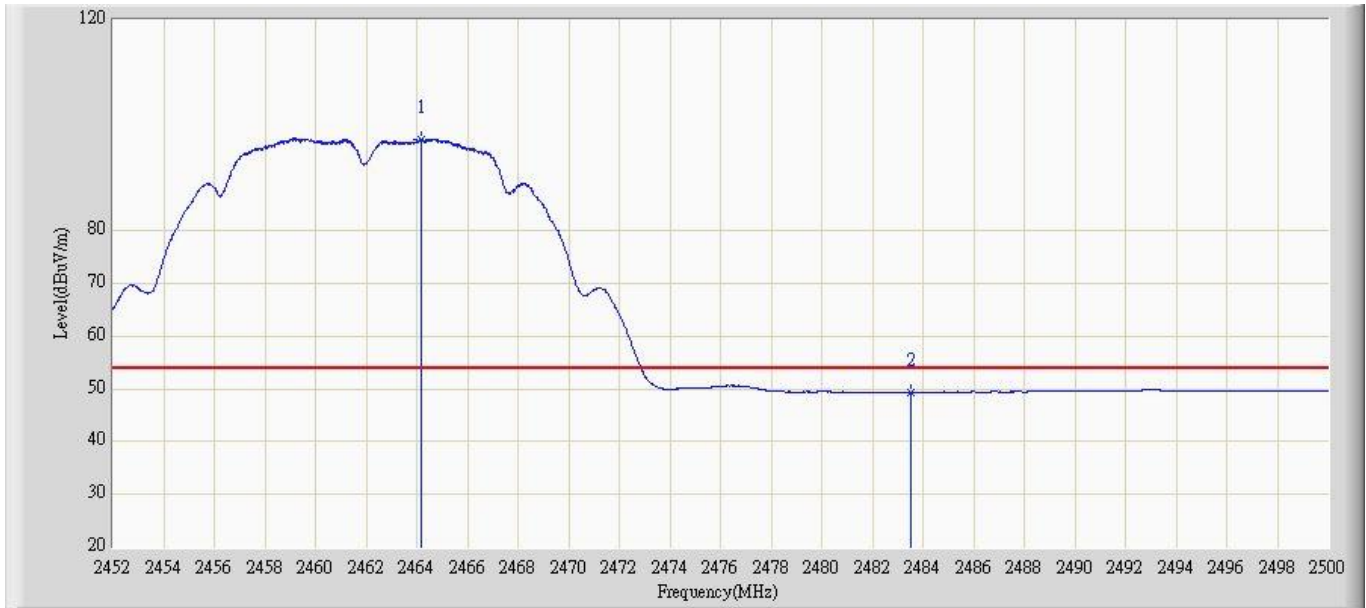
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2460.712	100.569	64.612	N/A	N/A	35.956	AV
2		2483.500	48.453	12.397	-5.547	54.000	36.055	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:10
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11b at 2462MHz Ant 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2465.104	102.149	65.213	N/A	N/A	36.937	PK
2		2483.500	62.095	25.005	-11.905	74.000	37.089	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:12
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11b at 2462MHz Ant 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2464.168	97.228	60.299	N/A	N/A	36.928	AV
2		2483.500	49.378	12.288	-4.622	54.000	37.089	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:13
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11b at 2462MHz Ant 1	



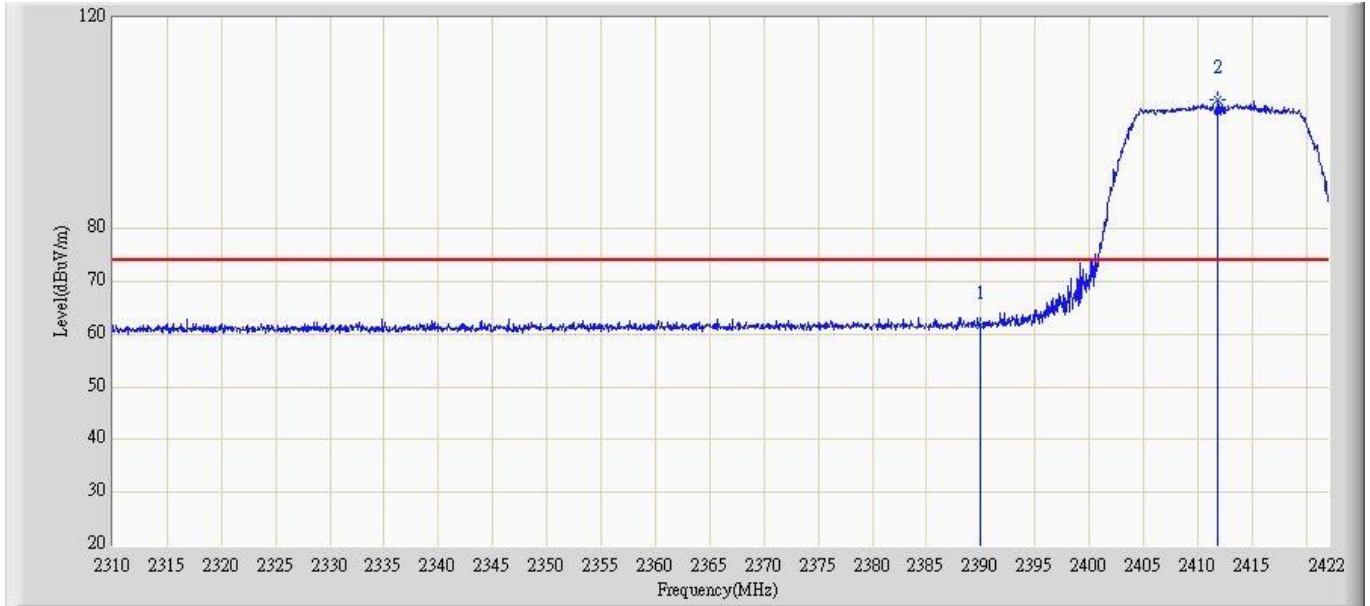
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2460.016	103.105	67.151	N/A	N/A	35.954	PK
2		2483.500	60.859	24.803	-13.141	74.000	36.055	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:15
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11b at 2462MHz Ant 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2461.000	96.870	60.912	N/A	N/A	35.958	AV
2		2483.500	48.417	12.361	-5.583	54.000	36.055	AV

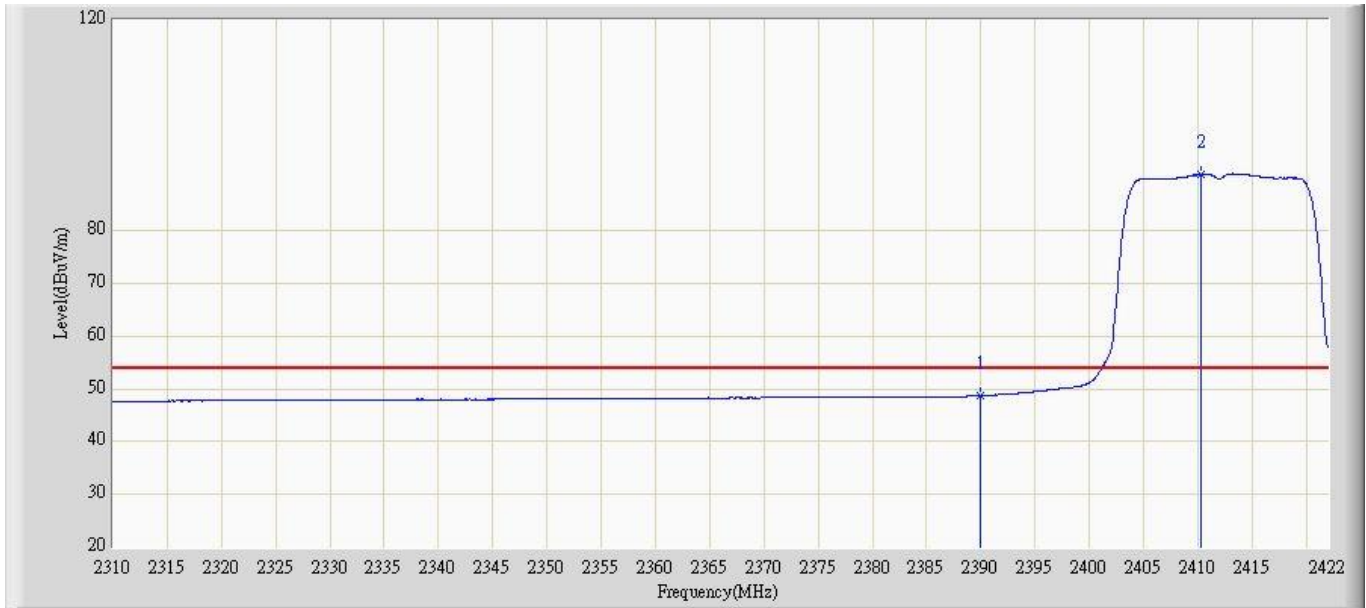
Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:16
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 2: Transmit by 802.11g at 2412MHz Ant 0	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	61.624	25.323	-12.376	74.000	36.302	PK
2	*	2411.864	104.417	67.935	N/A	N/A	36.482	PK

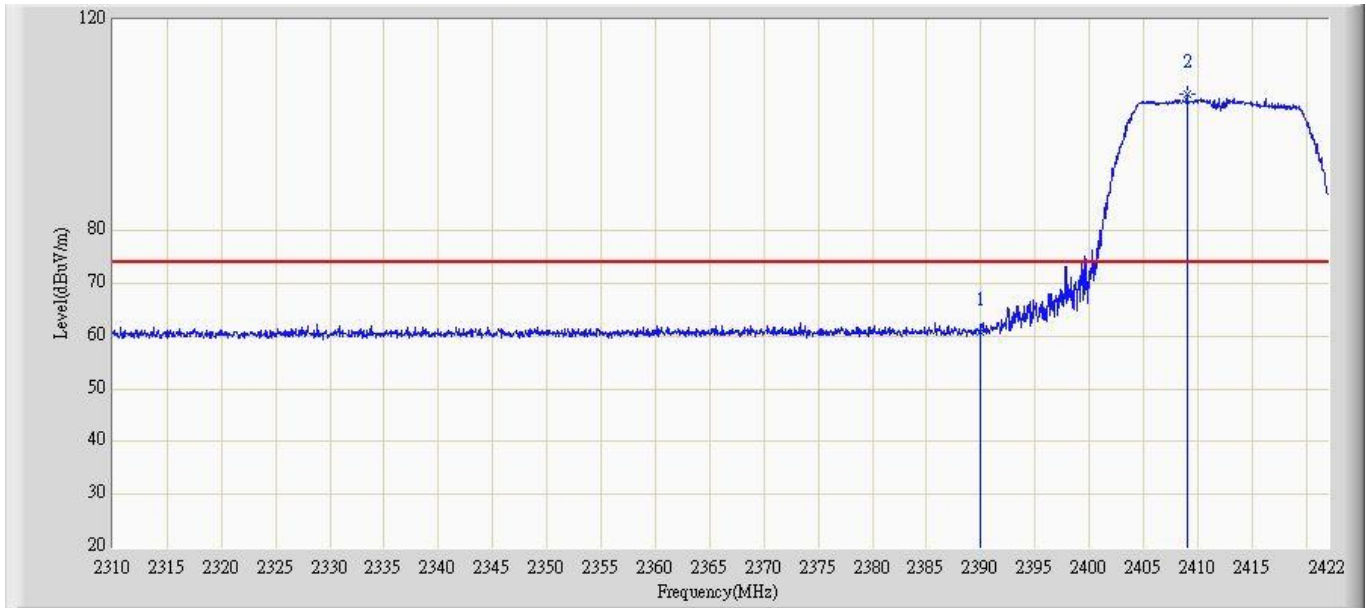


Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:22
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 2: Transmit by 802.11g at 2412MHz Ant 0	



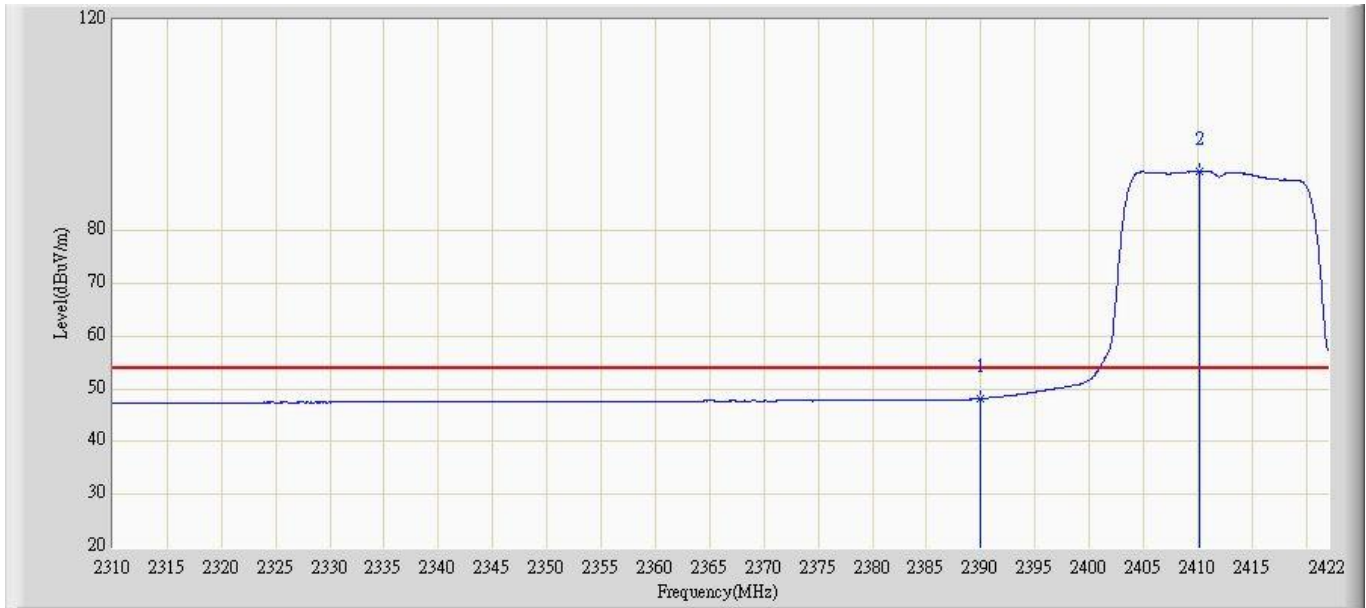
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	48.698	12.397	-5.302	54.000	36.302	AV
2	*	2410.296	90.653	54.185	N/A	N/A	36.469	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:23
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 2: Transmit by 802.11g at 2412MHz Ant 0	



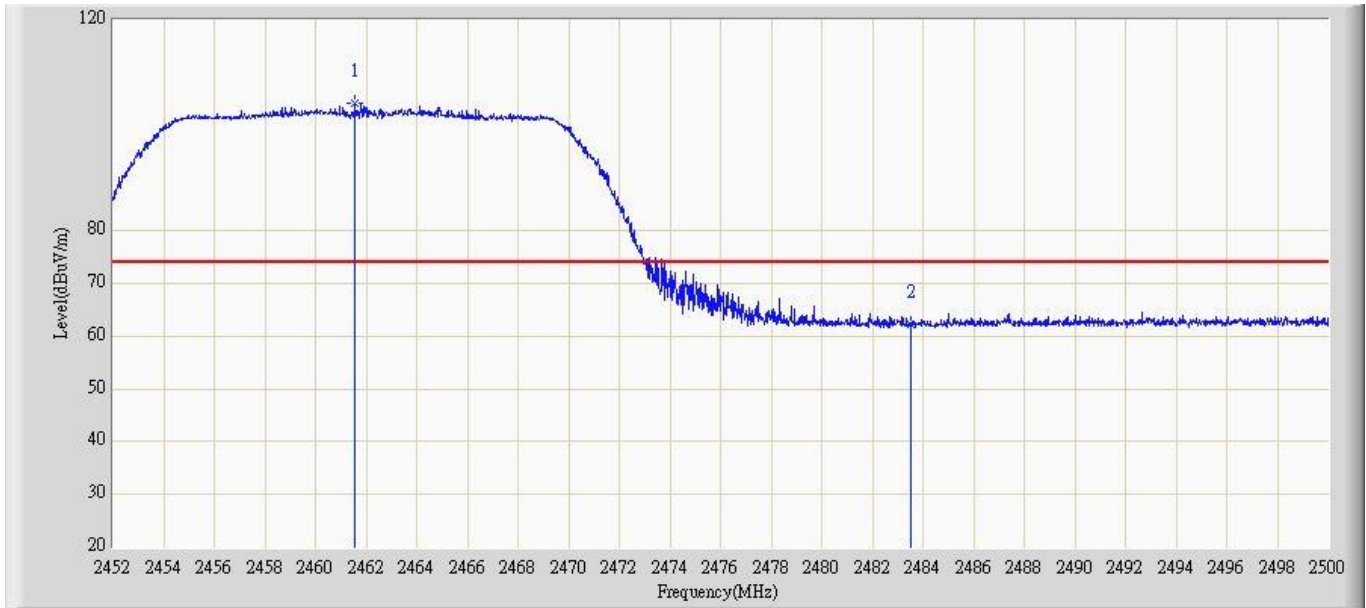
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	60.942	25.301	-13.058	74.000	35.642	PK
2	*	2409.008	106.034	70.312	N/A	N/A	35.722	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:25
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 2: Transmit by 802.11g at 2412MHz Ant 0	



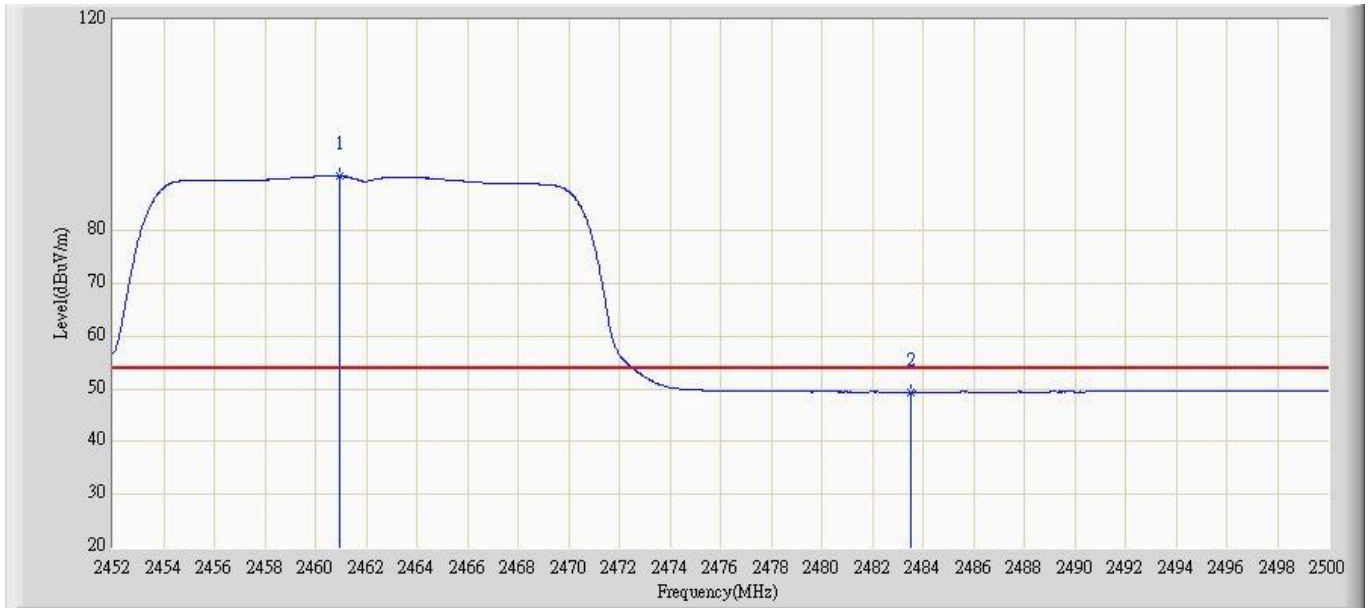
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	48.143	12.502	-5.857	54.000	35.642	AV
2	*	2410.184	91.286	55.559	N/A	N/A	35.727	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:26
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 2: Transmit by 802.11g at 2462MHz Ant 0	



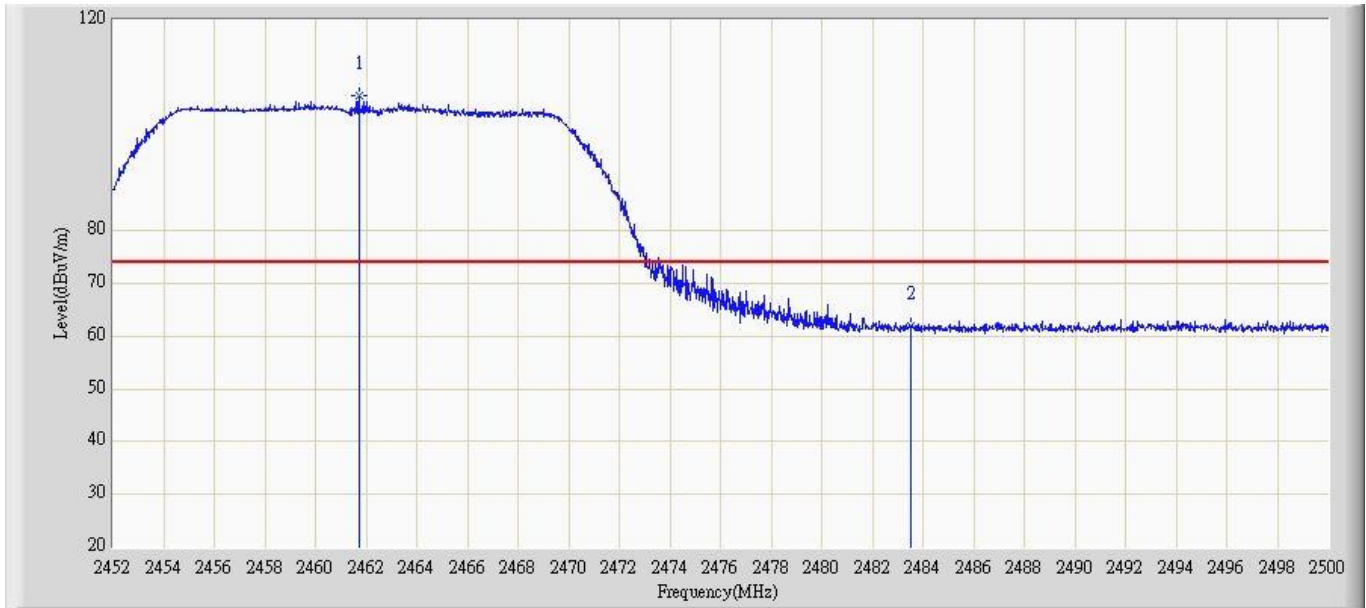
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2461.576	104.199	67.292	N/A	N/A	36.908	PK
2		2483.500	62.209	25.119	-11.791	74.000	37.089	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 2: Transmit by 802.11g at 2462MHz Ant 0	



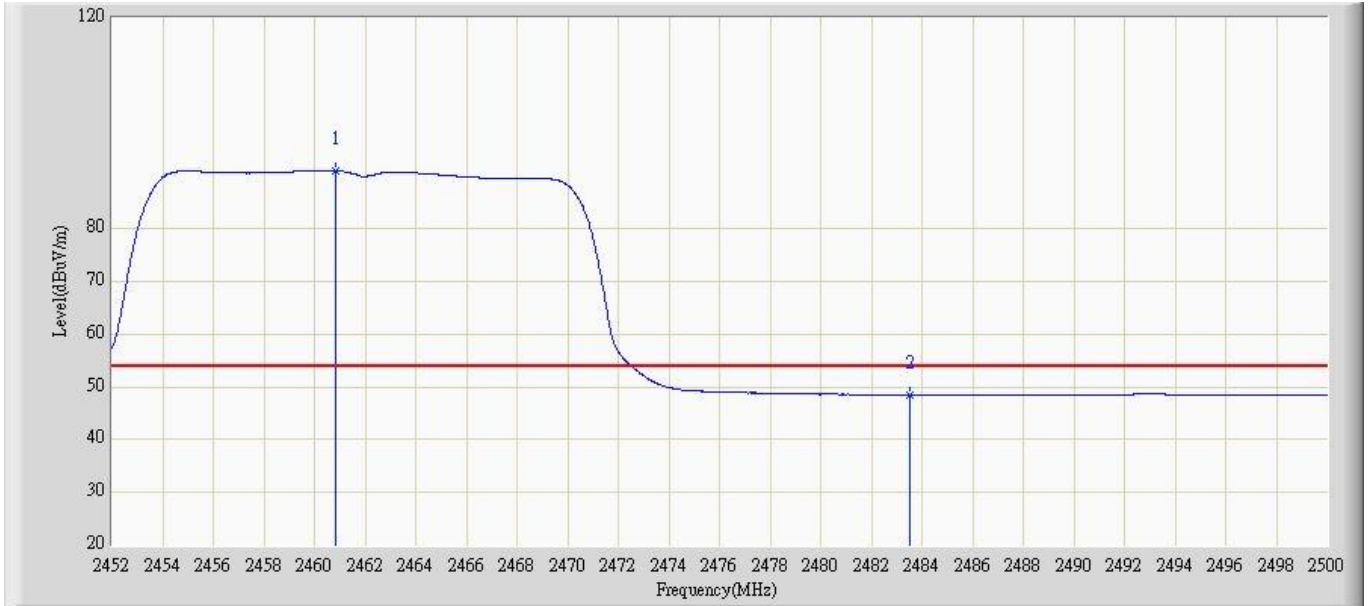
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2460.928	90.347	53.445	N/A	N/A	36.902	AV
2		2483.500	49.398	12.308	-4.602	54.000	37.089	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 2: Transmit by 802.11g at 2462MHz Ant 0	



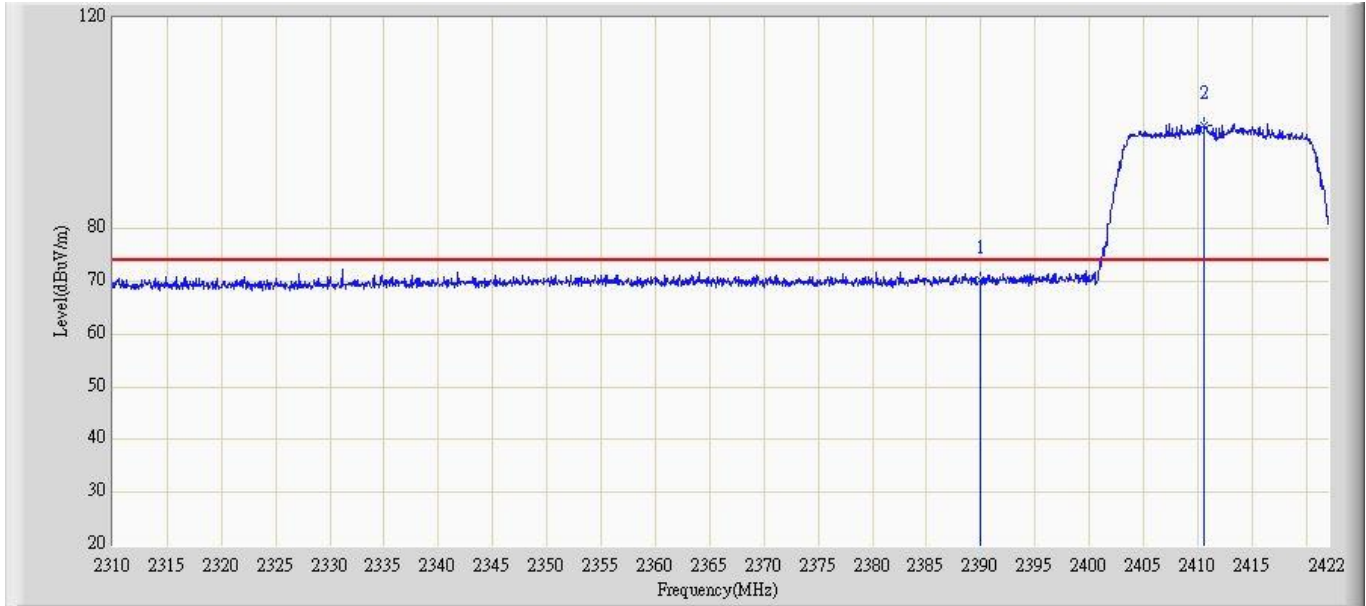
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2461.720	105.630	69.668	N/A	N/A	35.962	PK
2		2483.500	62.042	25.986	-11.958	74.000	36.055	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:33
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 2: Transmit by 802.11g at 2462MHz Ant 0	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2460.856	91.021	55.063	N/A	N/A	35.958	AV
2		2483.500	48.467	12.411	-5.533	54.000	36.055	AV

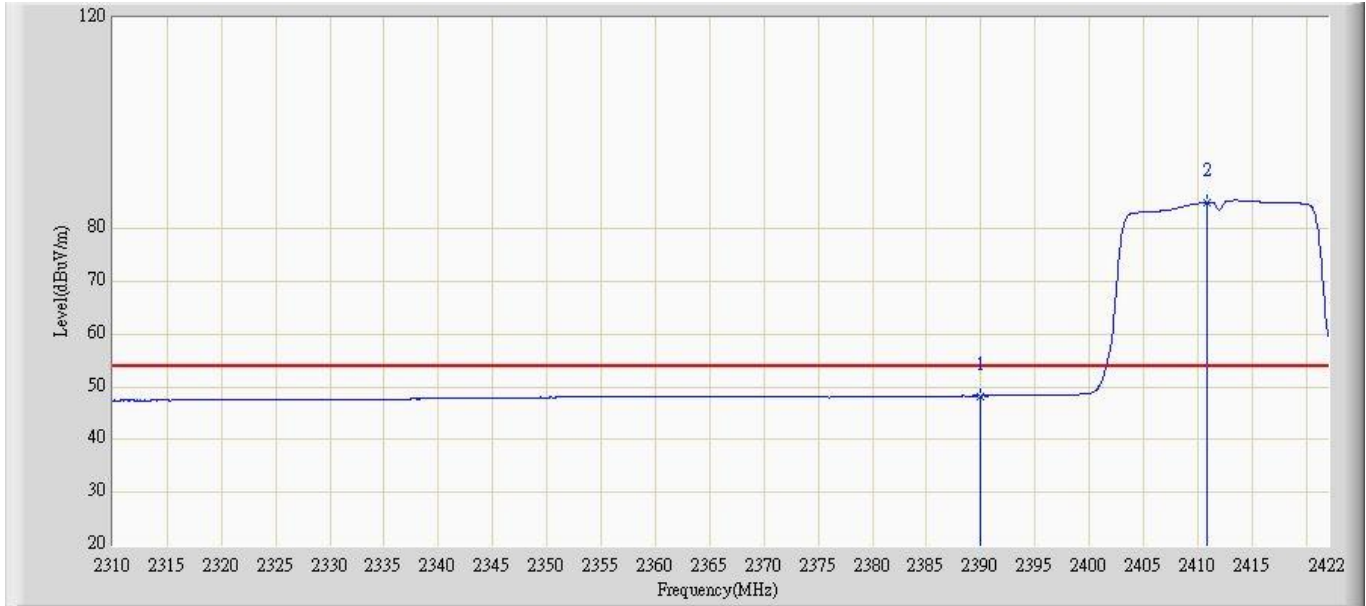
Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:35
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n20MHz at 2412MHz Ant 0	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	70.187	33.886	-3.813	74.000	36.302	PK
2	*	2410.632	99.726	63.255	N/A	N/A	36.471	PK

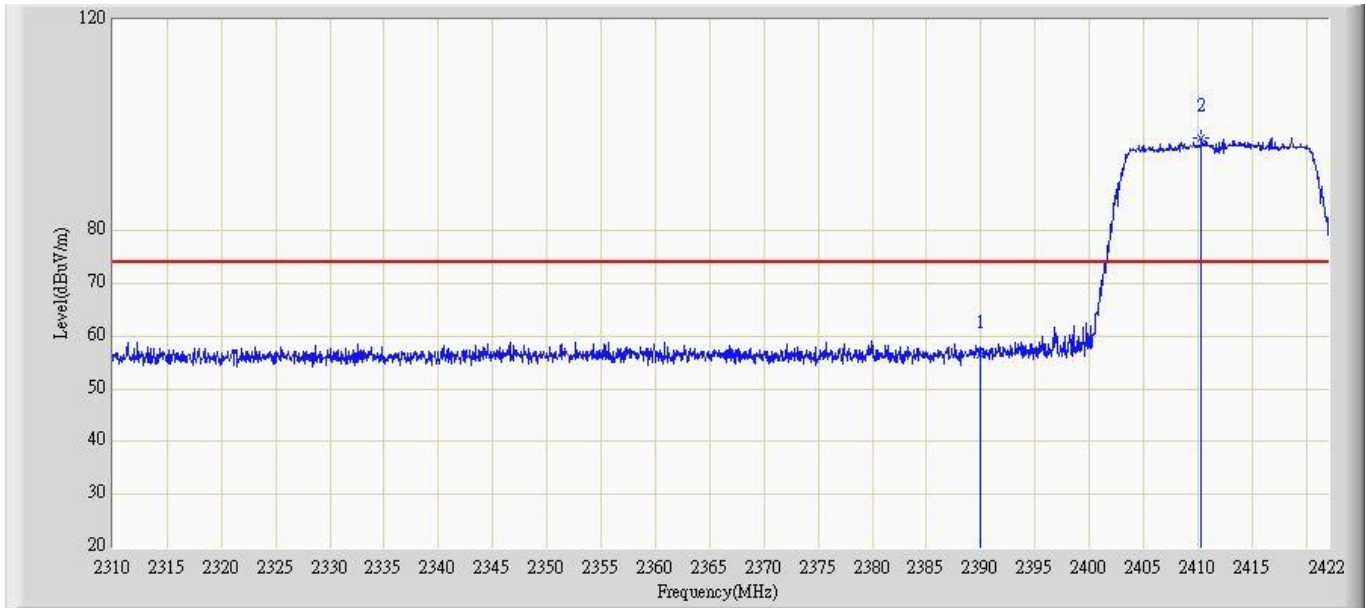


Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:40
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n20MHz at 2412MHz Ant 0	



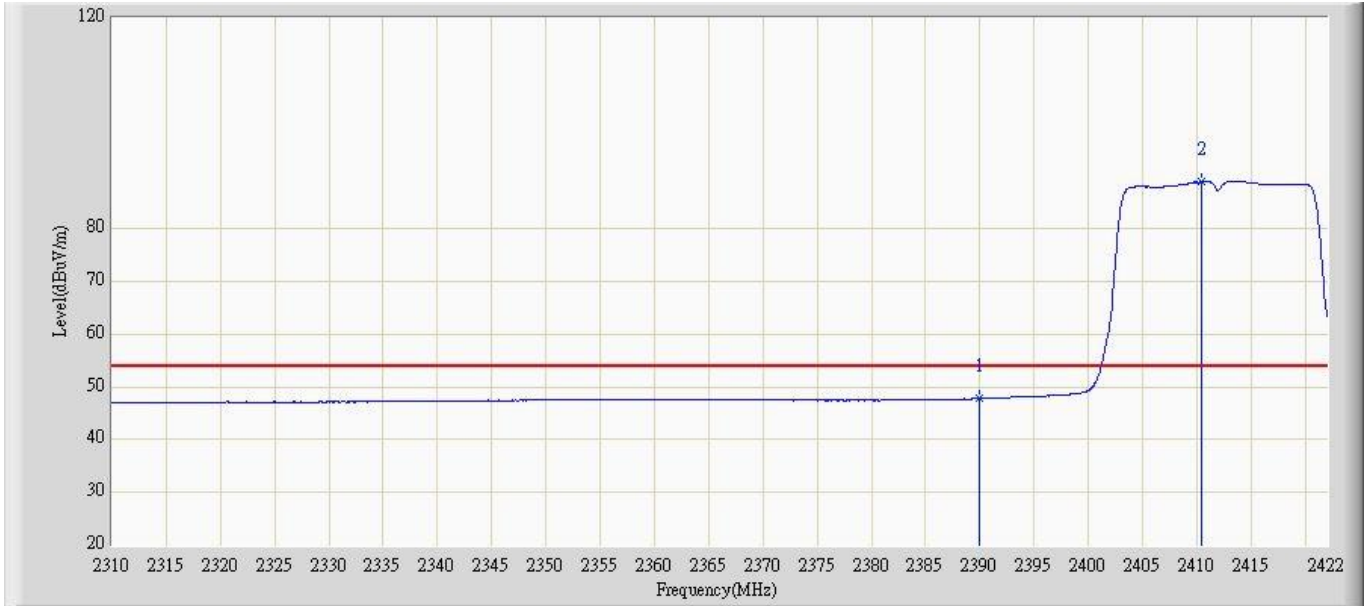
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	48.272	11.971	-5.728	54.000	36.302	AV
2	*	2410.912	85.085	48.612	N/A	N/A	36.473	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:41
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n20MHz at 2412MHz Ant 0	



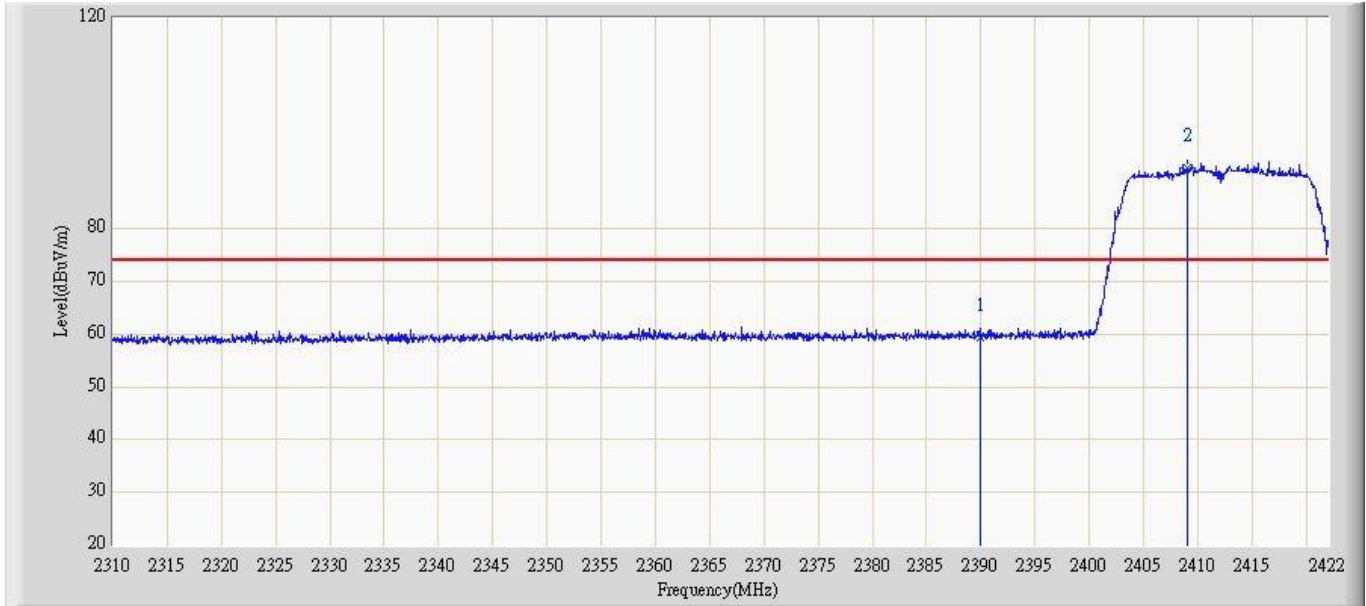
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	56.575	20.934	-17.425	74.000	35.642	PK
2	*	2410.352	97.625	61.898	N/A	N/A	35.728	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:44
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n20MHz at 2412MHz Ant 0	



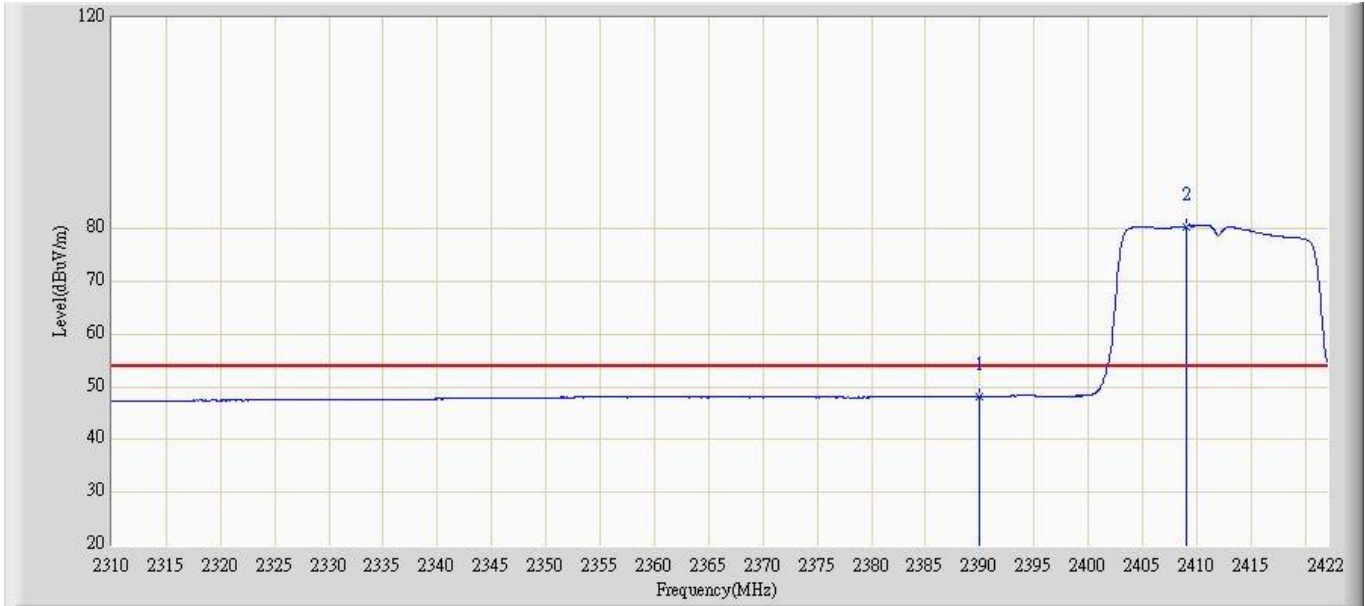
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	47.757	12.116	-6.243	54.000	35.642	AV
2	*	2410.464	88.858	53.130	N/A	N/A	35.728	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:46
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n20MHz at 2412MHz Ant 1	



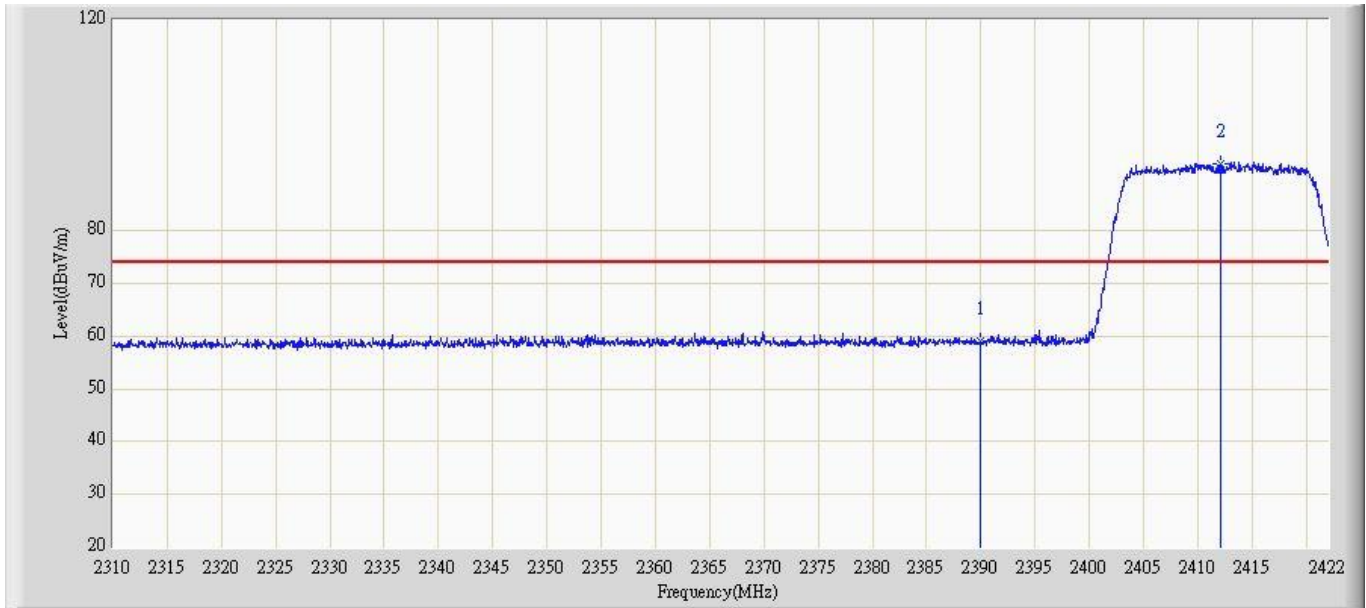
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	59.303	23.002	-14.697	74.000	36.302	PK
2	*	2409.064	91.424	54.966	N/A	N/A	36.458	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:49
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n20MHz at 2412MHz Ant 1	



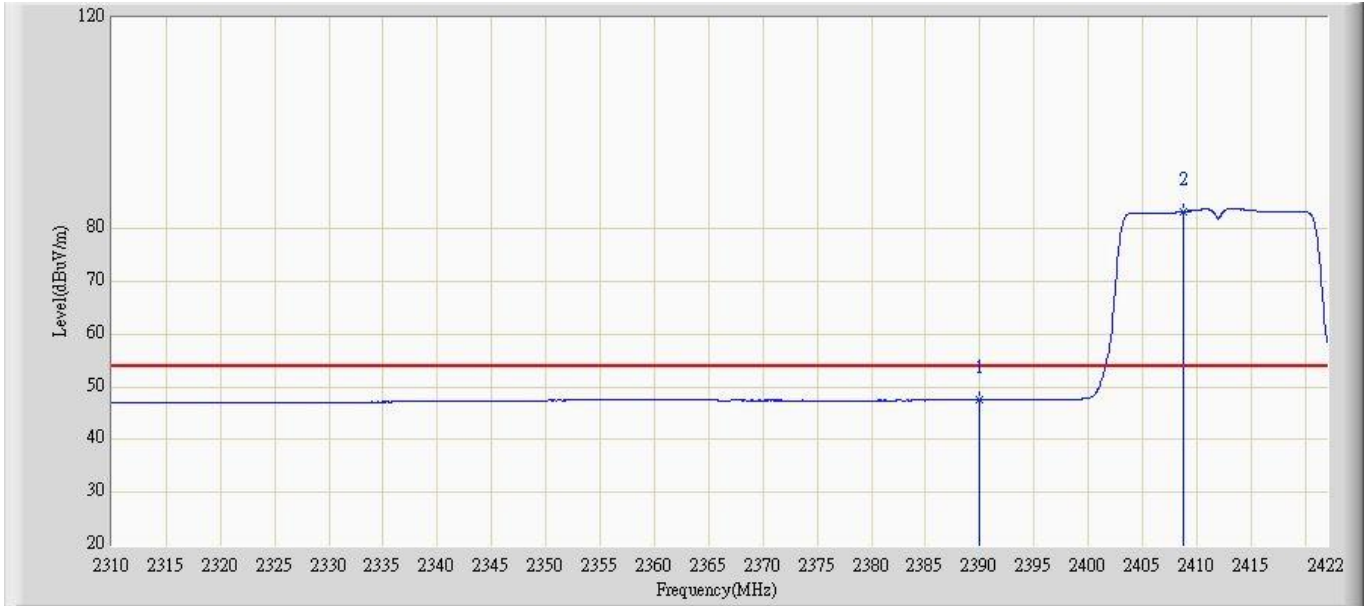
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	48.250	11.949	-5.750	54.000	36.302	AV
2	*	2409.064	80.488	44.030	N/A	N/A	36.458	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:50
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n20MHz at 2412MHz Ant 1	



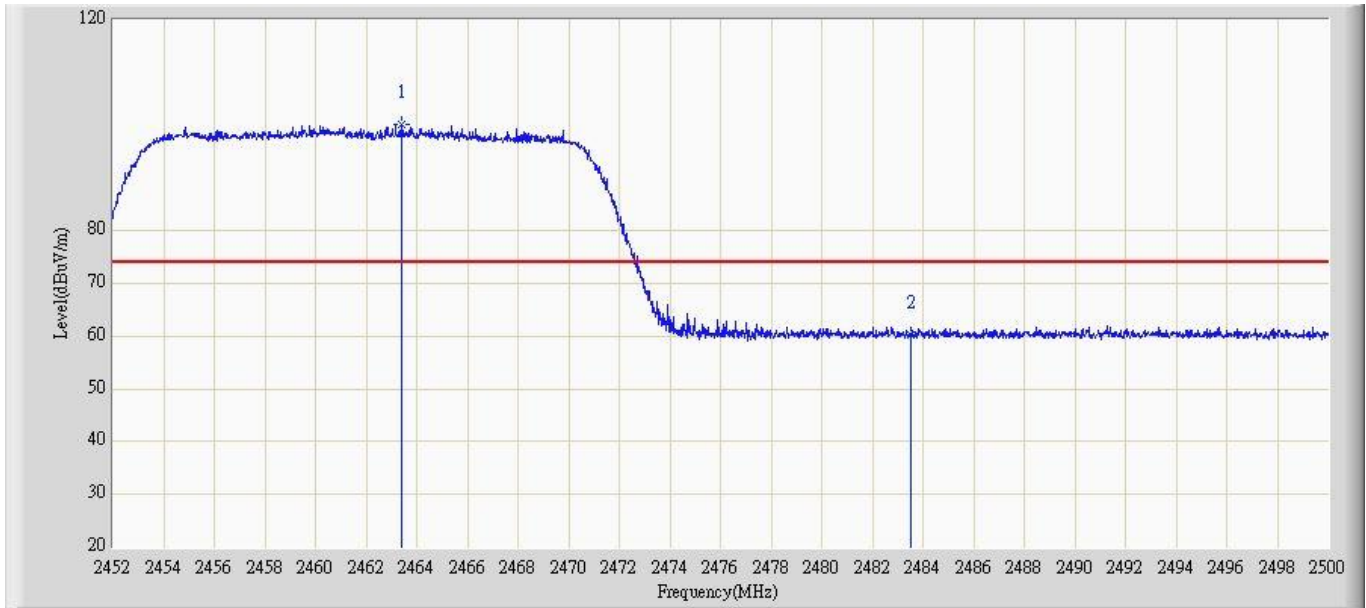
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	58.983	23.342	-15.017	74.000	35.642	PK
2	*	2412.144	92.819	57.084	N/A	N/A	35.735	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:51
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n20MHz at 2412MHz Ant 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	47.546	11.905	-6.454	54.000	35.642	AV
2	*	2408.784	83.208	47.487	N/A	N/A	35.721	AV

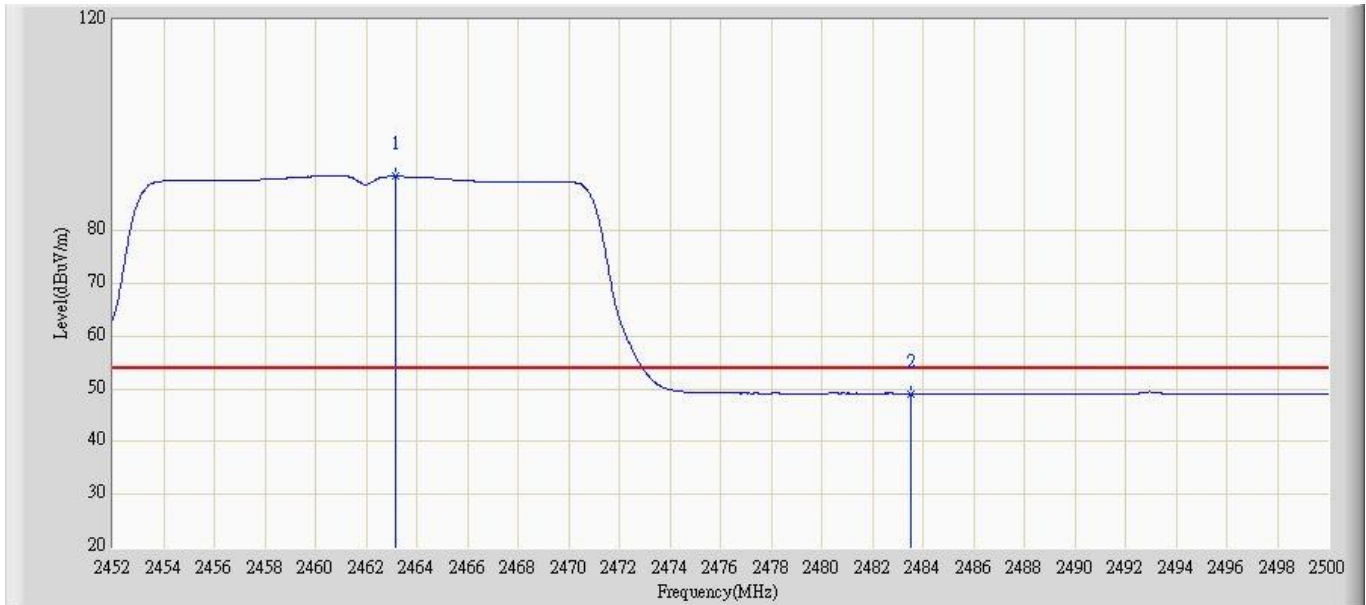
Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:53
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n20MHz at 2462MHz Ant 0	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2463.376	100.055	63.133	N/A	N/A	36.922	PK
2		2483.500	60.351	23.261	-13.649	74.000	37.089	PK

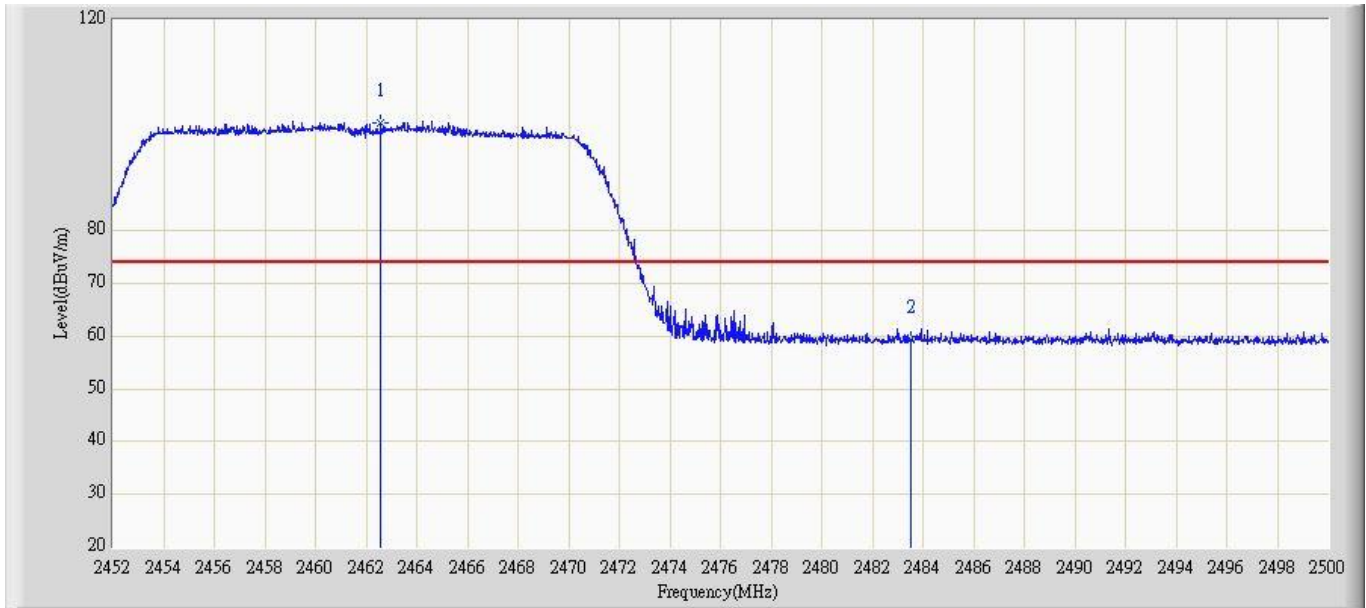


Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:55
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n20MHz at 2462MHz Ant 0	



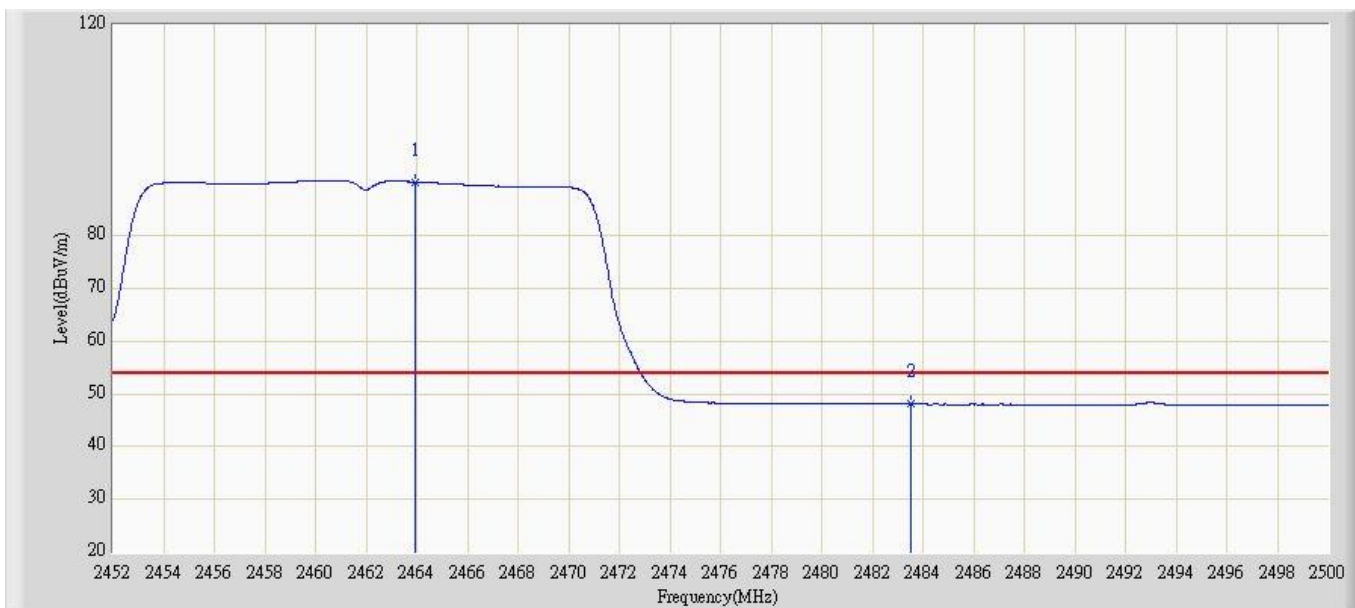
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2463.184	90.323	53.402	N/A	N/A	36.921	AV
2		2483.500	49.087	11.997	-4.913	54.000	37.089	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:55
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n20MHz at 2462MHz Ant 0	



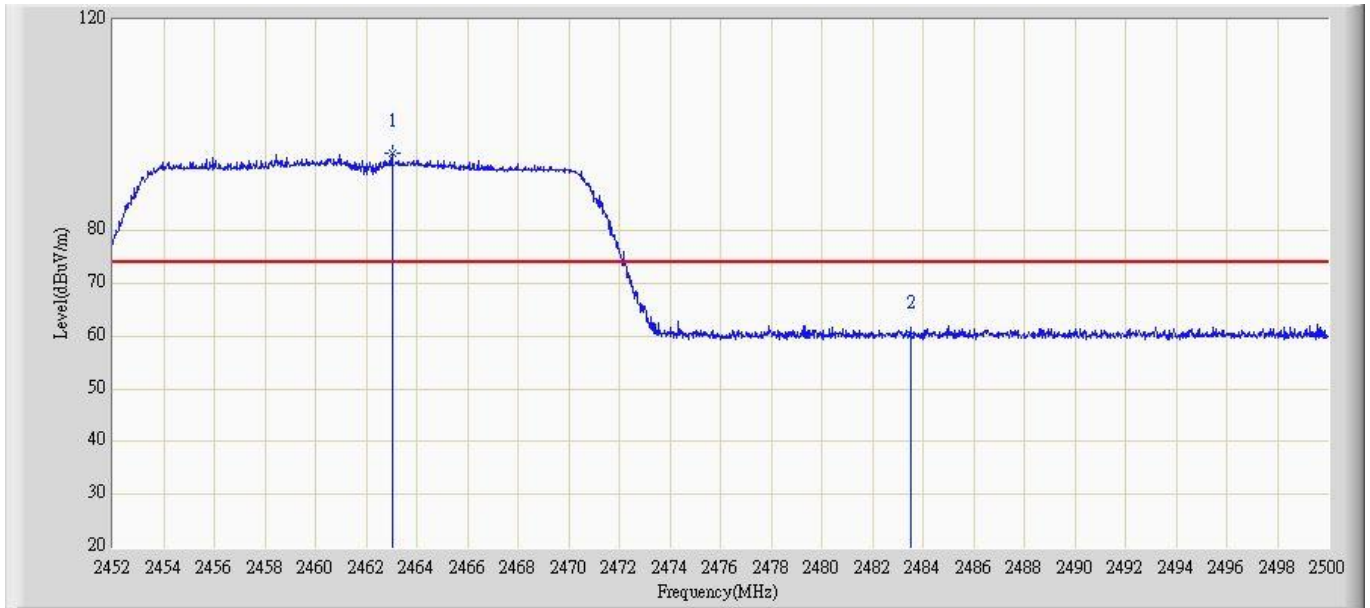
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2462.584	100.336	64.371	N/A	N/A	35.965	PK
2		2483.500	59.250	23.194	-14.750	74.000	36.055	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 14:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n20MHz at 2462MHz Ant 0	



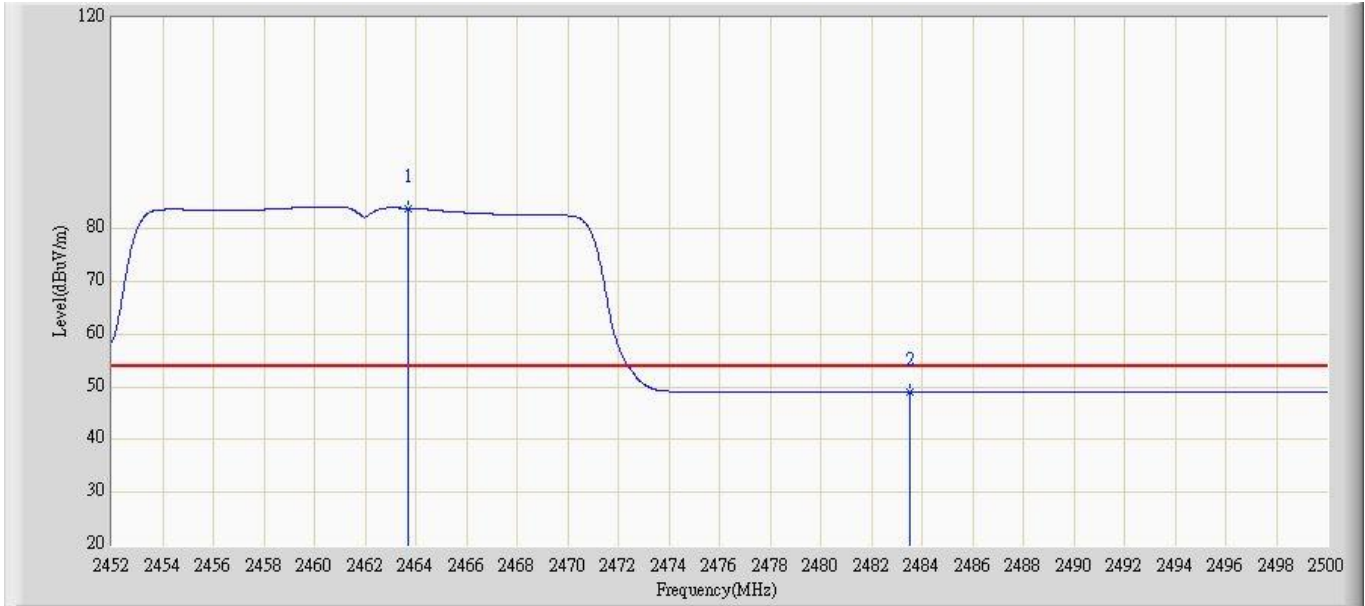
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2463.928	90.214	54.243	N/A	N/A	35.971	AV
2		2483.500	48.073	12.017	-5.927	54.000	36.055	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 15:01
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n20MHz at 2462MHz Ant 1	



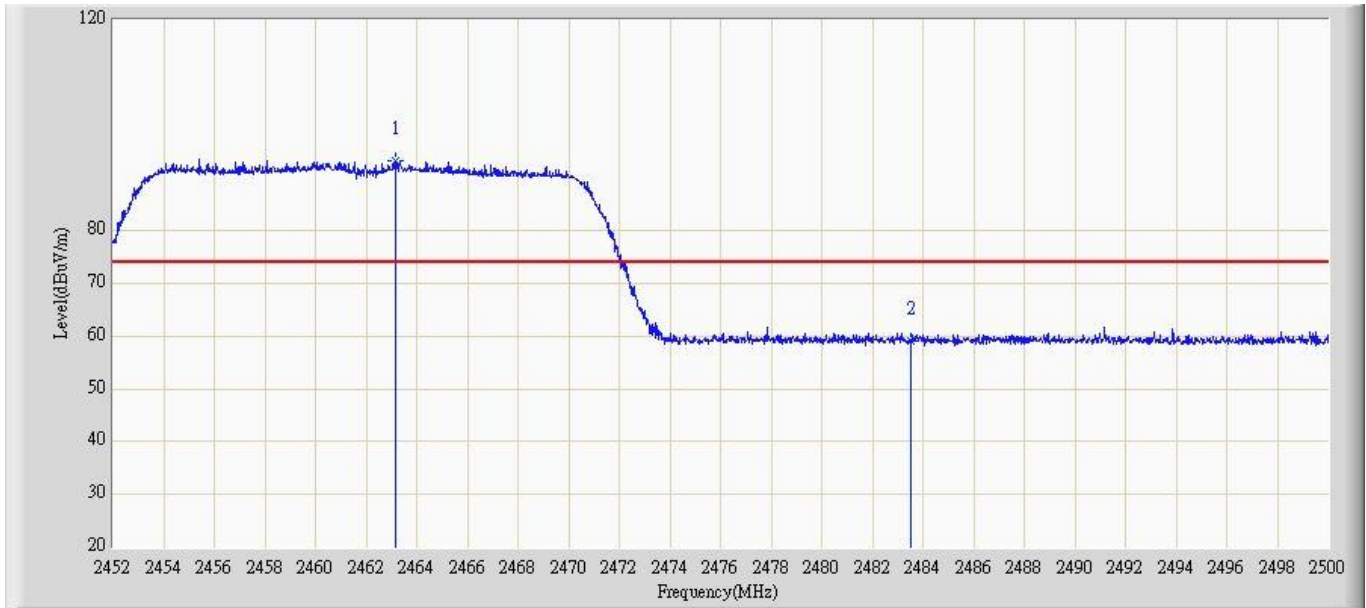
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2463.016	94.674	57.755	N/A	N/A	36.920	PK
2		2483.500	60.311	23.221	-13.689	74.000	37.089	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 15:46
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n20MHz at 2462MHz Ant 1	



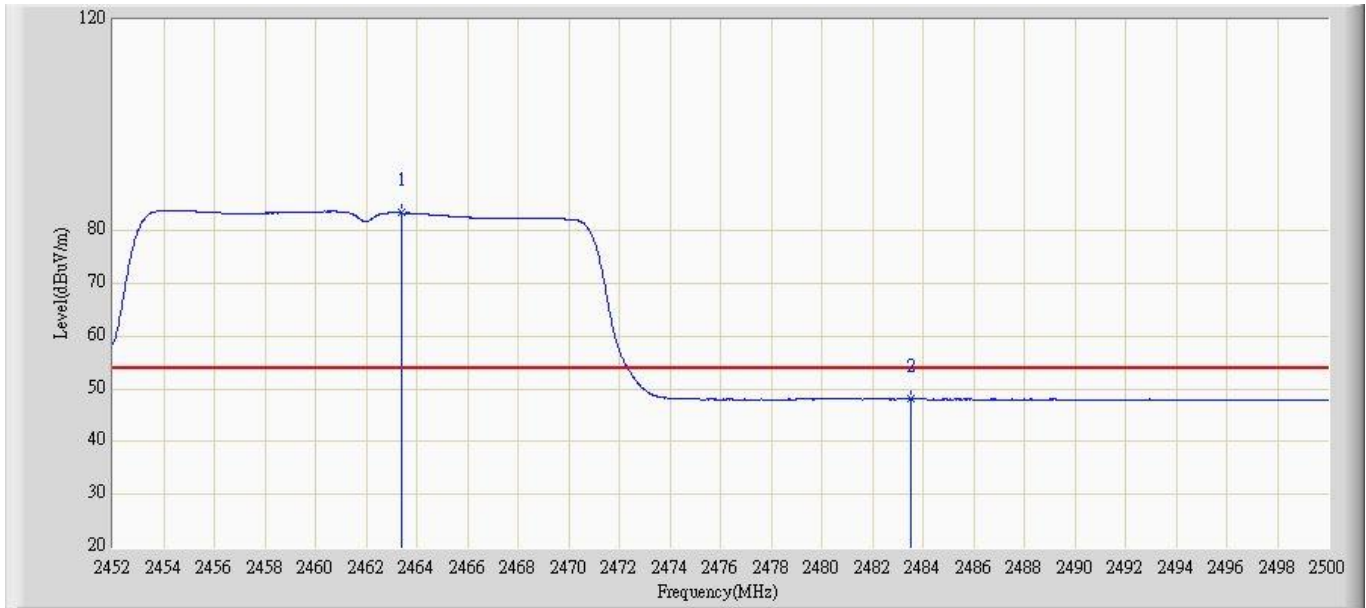
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2463.688	83.844	46.919	N/A	N/A	36.925	AV
2		2483.500	49.070	11.980	-4.930	54.000	37.089	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 15:46
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n20MHz at 2462MHz Ant 1	



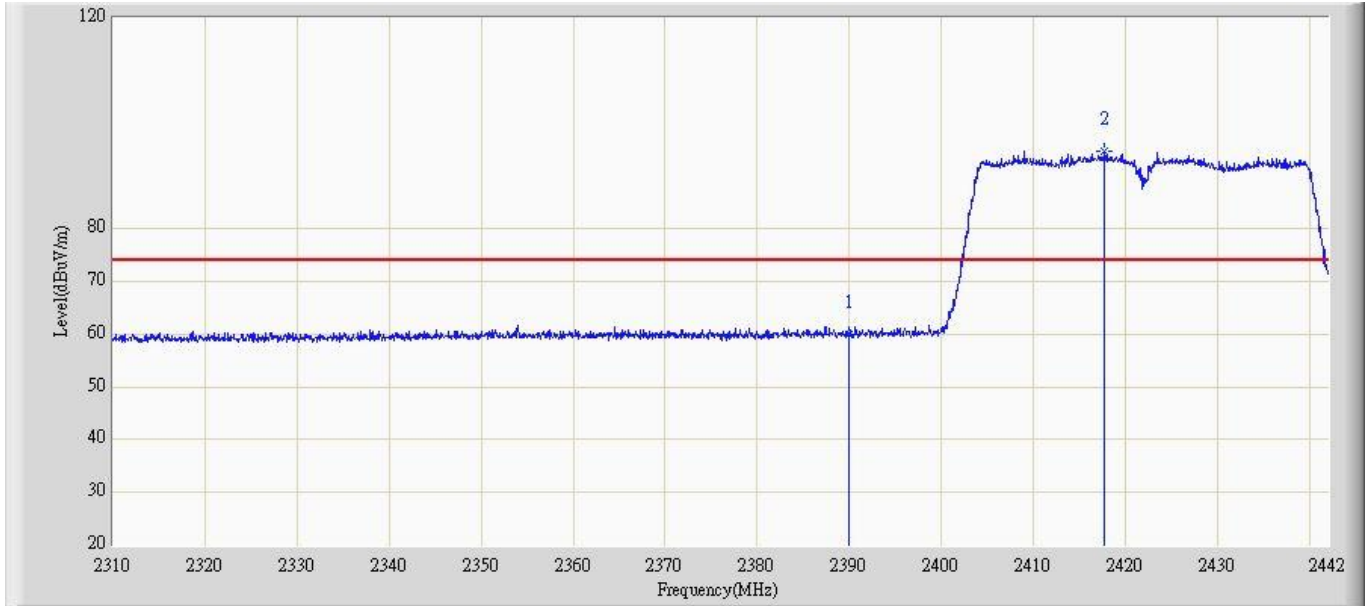
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2463.136	93.395	57.427	N/A	N/A	35.968	PK
2		2483.500	59.216	23.160	-14.784	74.000	36.055	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 15:48
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n20MHz at 2462MHz Ant 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2463.400	83.384	47.415	N/A	N/A	35.969	AV
2		2483.500	48.044	11.988	-5.956	54.000	36.055	AV

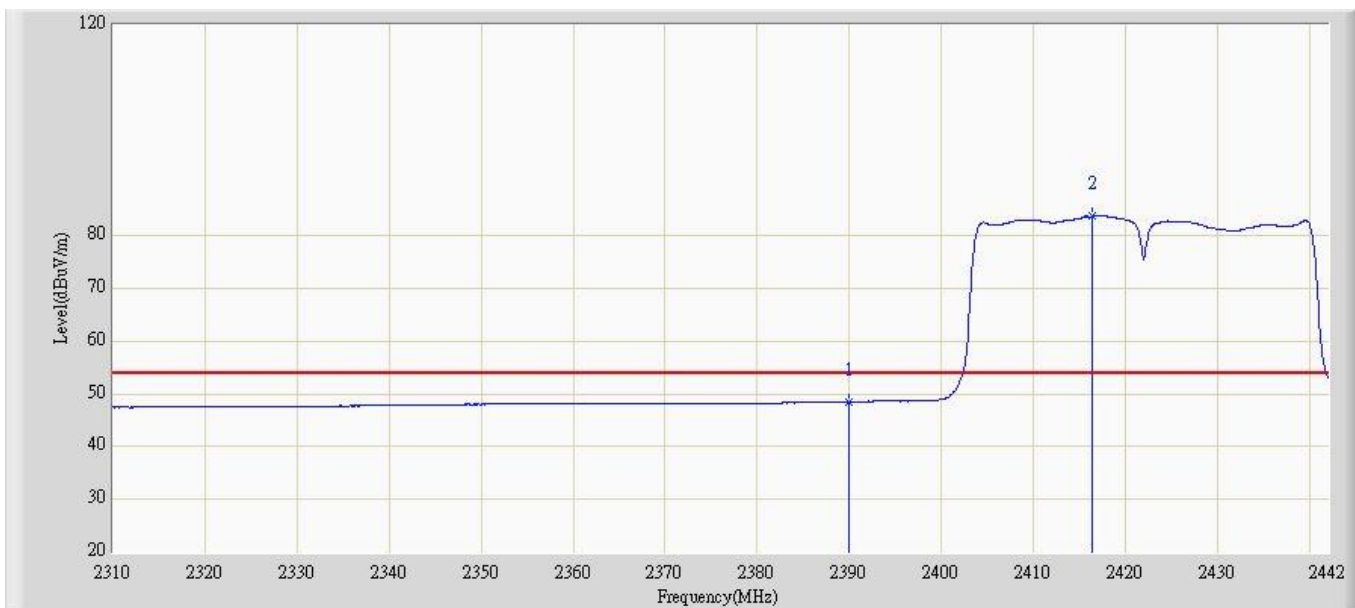
Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 15:50
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 4: Transmit by 802.11n40MHz at 2422MHz Ant 0	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	59.971	23.670	-14.029	74.000	36.302	PK
2	*	2417.712	94.757	58.224	N/A	N/A	36.533	PK

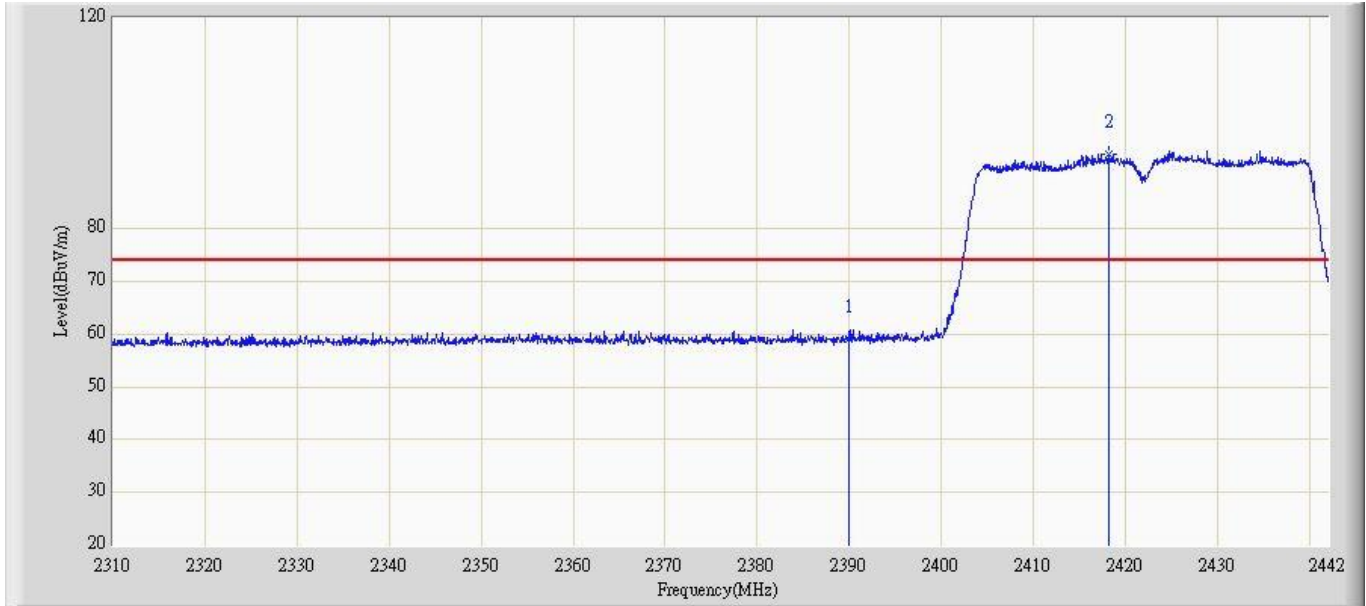


Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 15:55
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 4: Transmit by 802.11n40MHz at 2422MHz Ant 0	



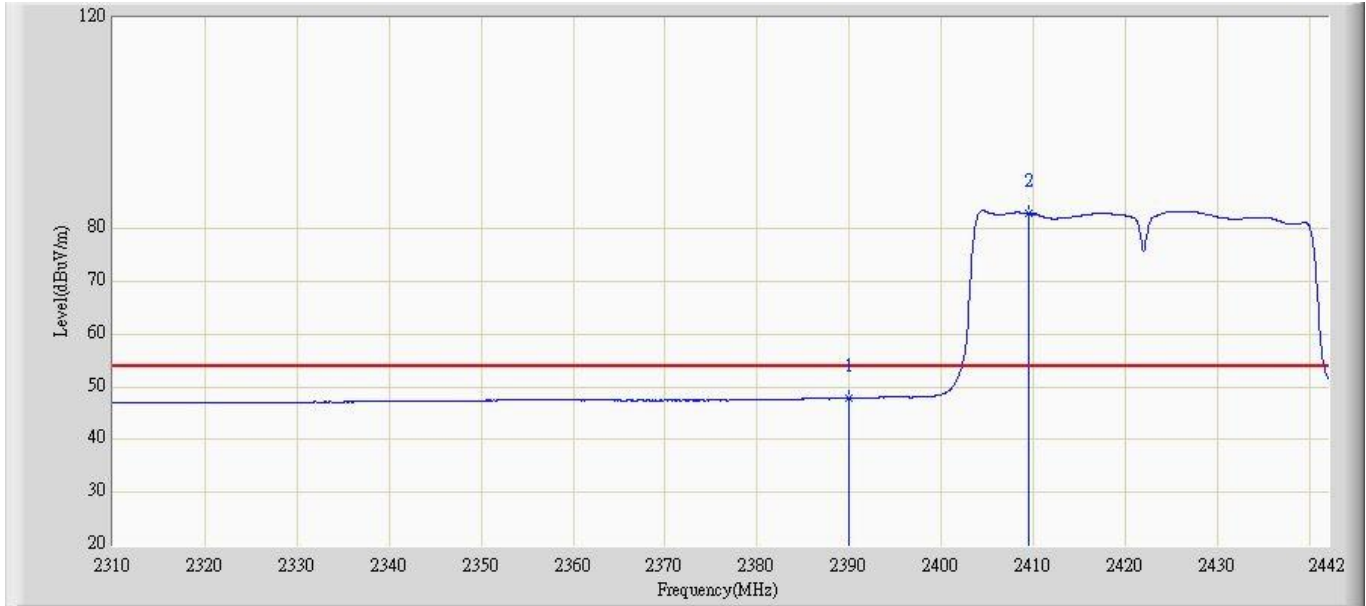
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	48.505	12.204	-5.495	54.000	36.302	AV
2	*	2416.458	83.682	47.160	N/A	N/A	36.521	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 15:56
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 4: Transmit by 802.11n40MHz at 2422MHz Ant 0	



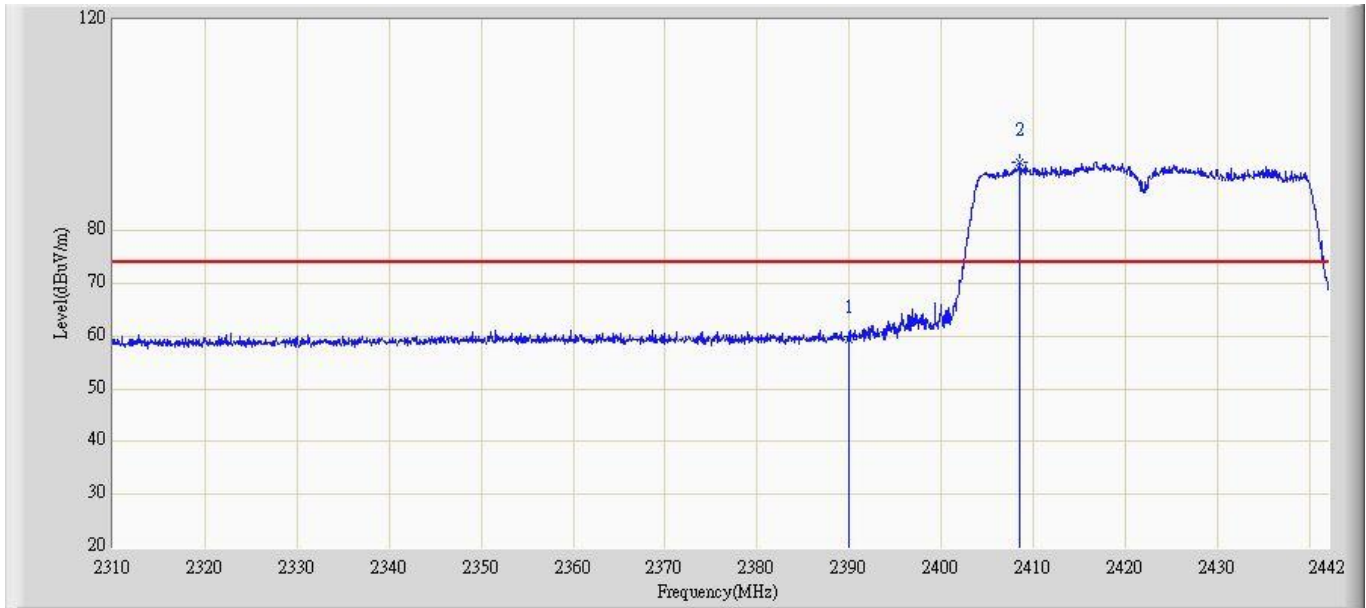
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	59.067	23.426	-14.933	74.000	35.642	PK
2	*	2418.174	94.079	58.315	N/A	N/A	35.764	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 15:58
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 4: Transmit by 802.11n40MHz at 2422MHz Ant 0	



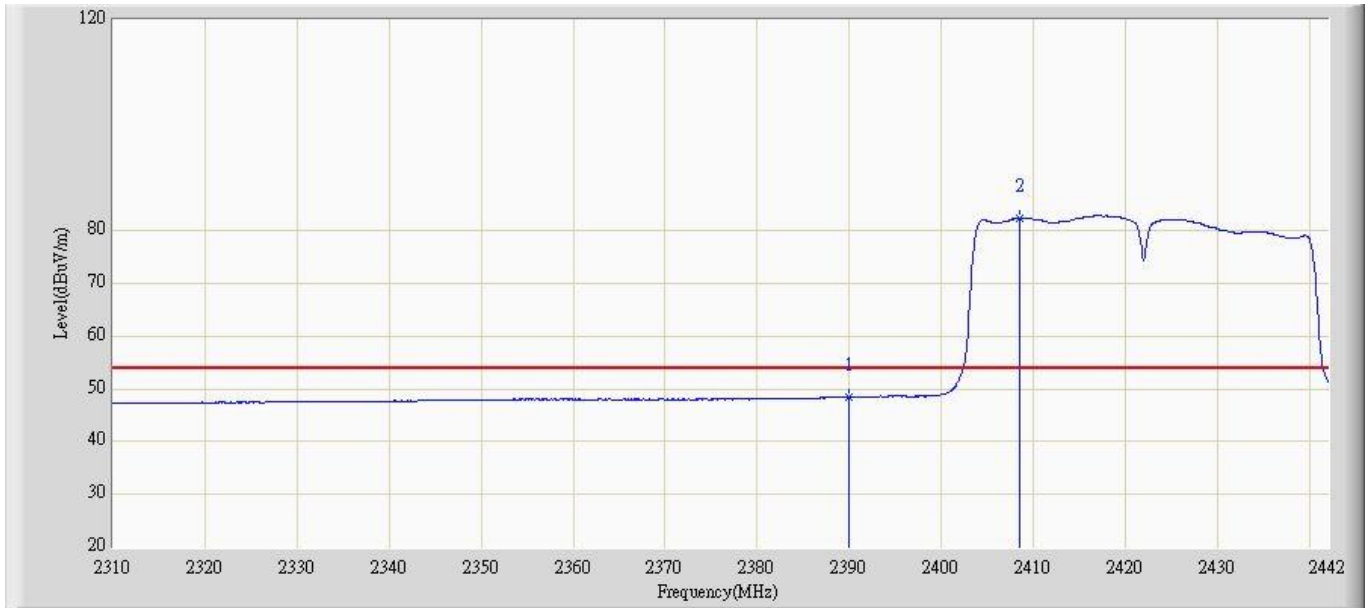
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	47.897	12.256	-6.103	54.000	35.642	AV
2	*	2409.462	82.942	47.219	N/A	N/A	35.723	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 15:59
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 4: Transmit by 802.11n40MHz at 2422MHz Ant 1	



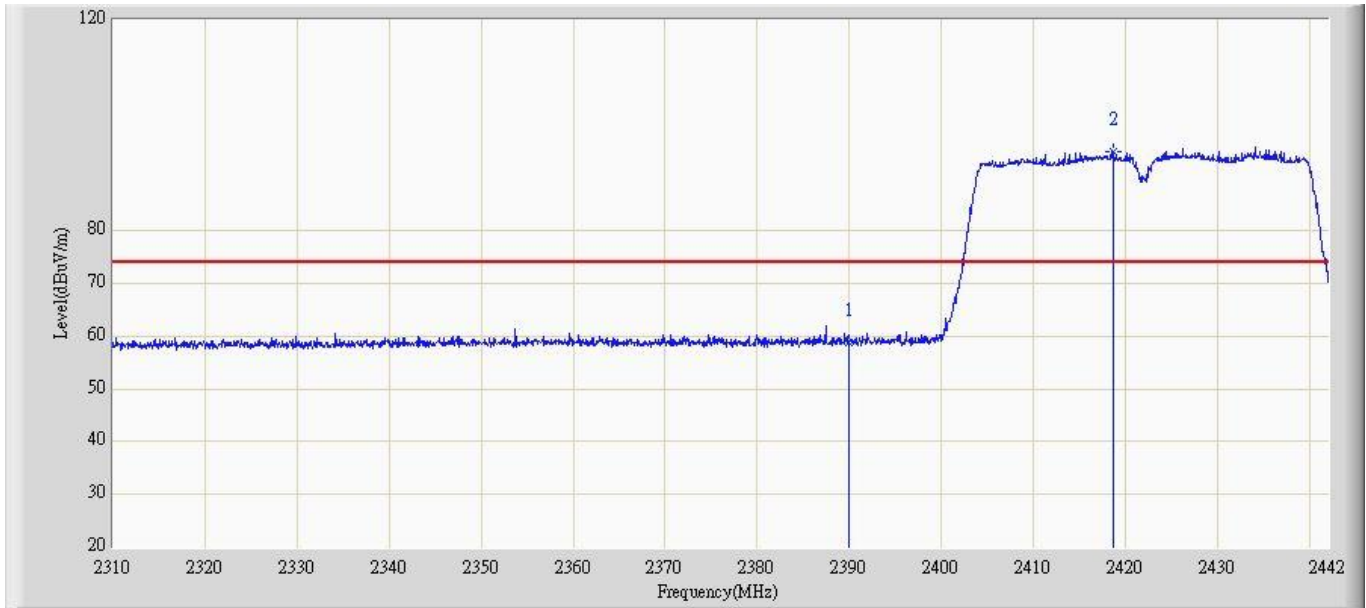
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	59.256	22.955	-14.744	74.000	36.302	PK
2	*	2408.472	93.094	56.641	N/A	N/A	36.454	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 16:39
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 4: Transmit by 802.11n40MHz at 2422MHz Ant 1	



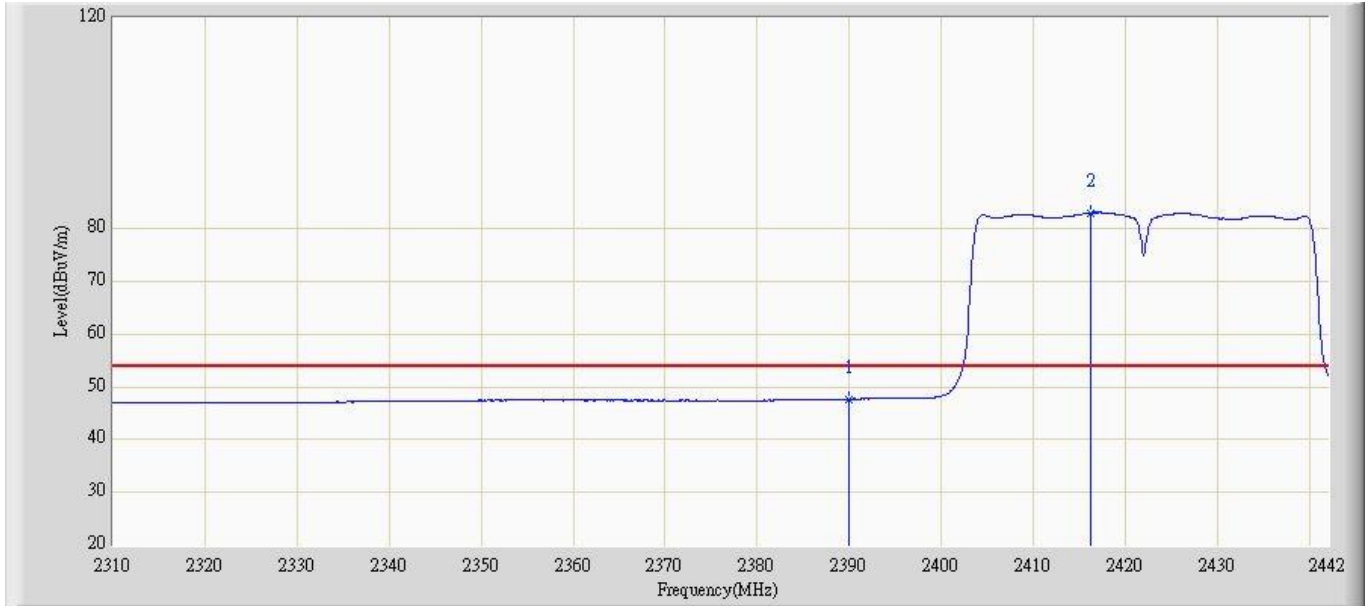
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	48.435	12.134	-5.565	54.000	36.302	AV
2	*	2408.472	82.394	45.941	N/A	N/A	36.454	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 16:40
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 4: Transmit by 802.11n40MHz at 2422MHz Ant 1	



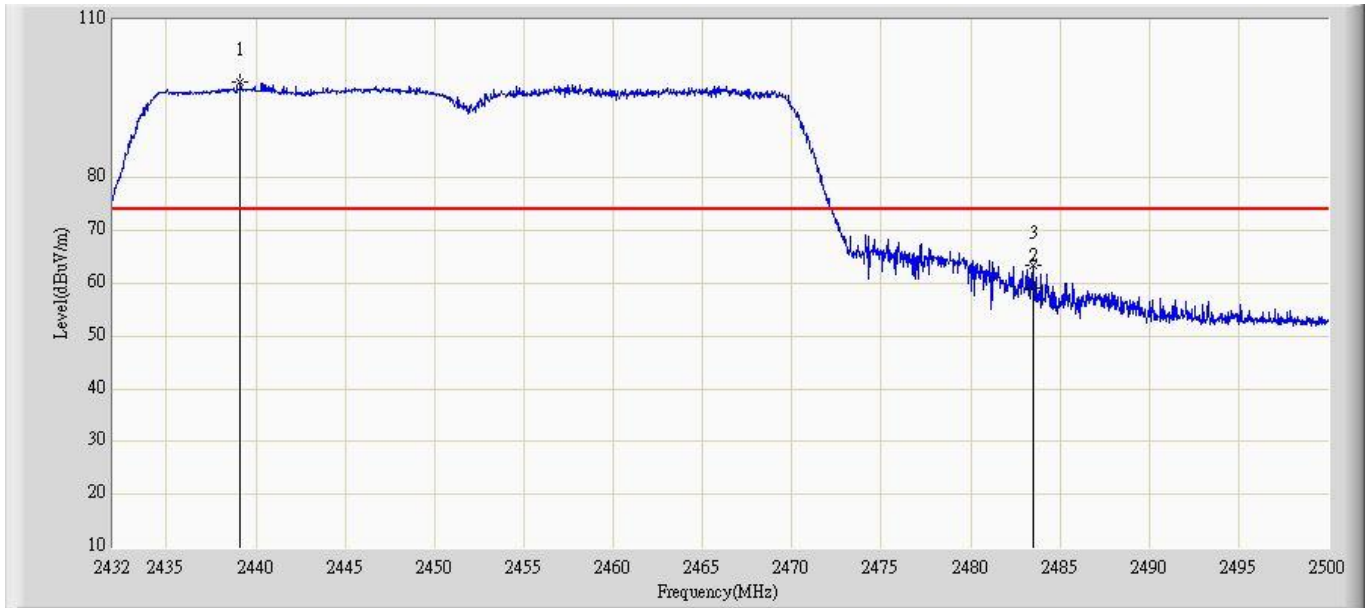
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	58.870	23.229	-15.130	74.000	35.642	PK
2	*	2418.702	94.981	59.214	N/A	N/A	35.767	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 16:42
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 4: Transmit by 802.11n40MHz at 2422MHz Ant 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	47.706	12.065	-6.294	54.000	35.642	AV
2	*	2416.260	83.003	47.248	N/A	N/A	35.755	AV

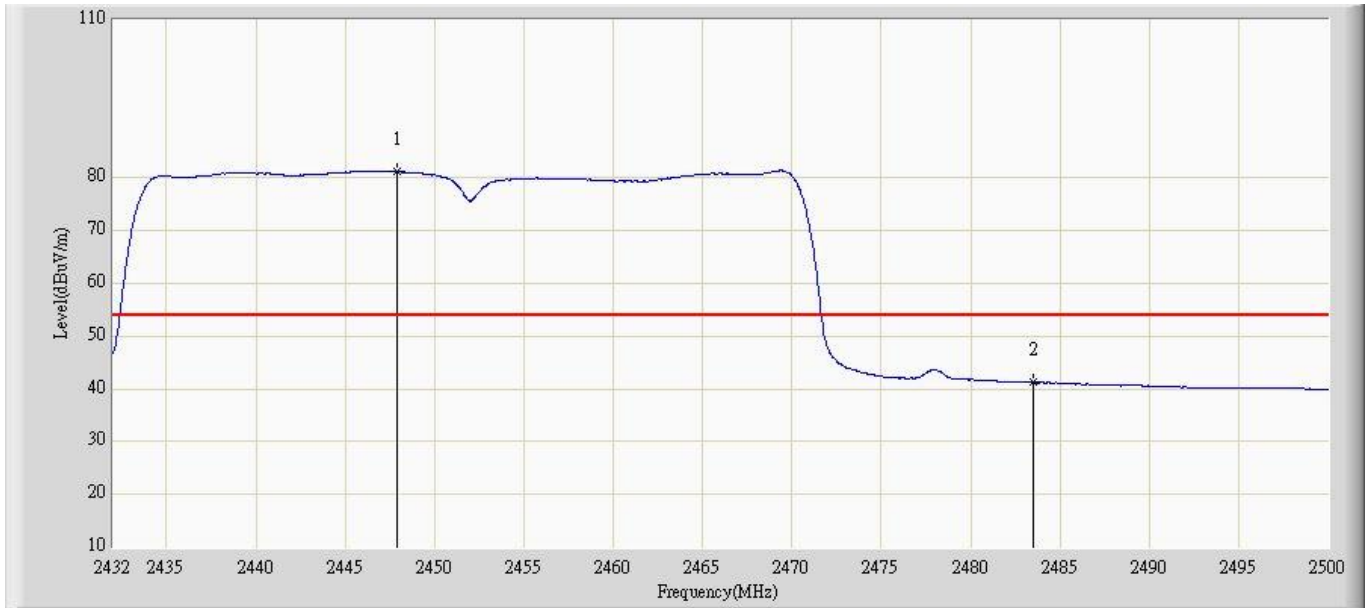
Engineer: Emin	
Site: AC5	Time: 2013/03/27 - 15:36
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 4: Transmit by 802.11n40MHz at 2452MHz Ant 0	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2439.140	98.291	61.577	N/A	N/A	36.715	PK
2			2483.500	59.038	21.948	-14.962	74.000	37.089	PK
3			2483.544	63.529	26.439	-10.471	74.000	37.090	PK

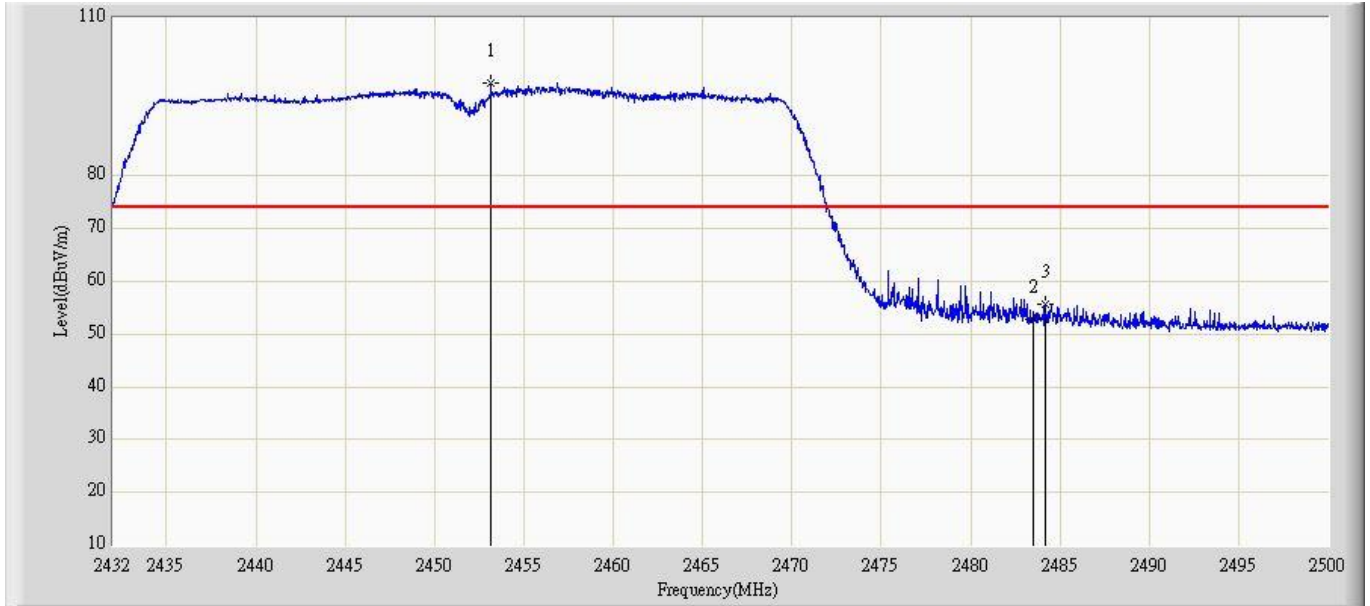


Engineer: Emin	
Site: AC5	Time: 2013/03/27 - 15:41
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 4: Transmit by 802.11n40MHz at 2452MHz Ant 0	



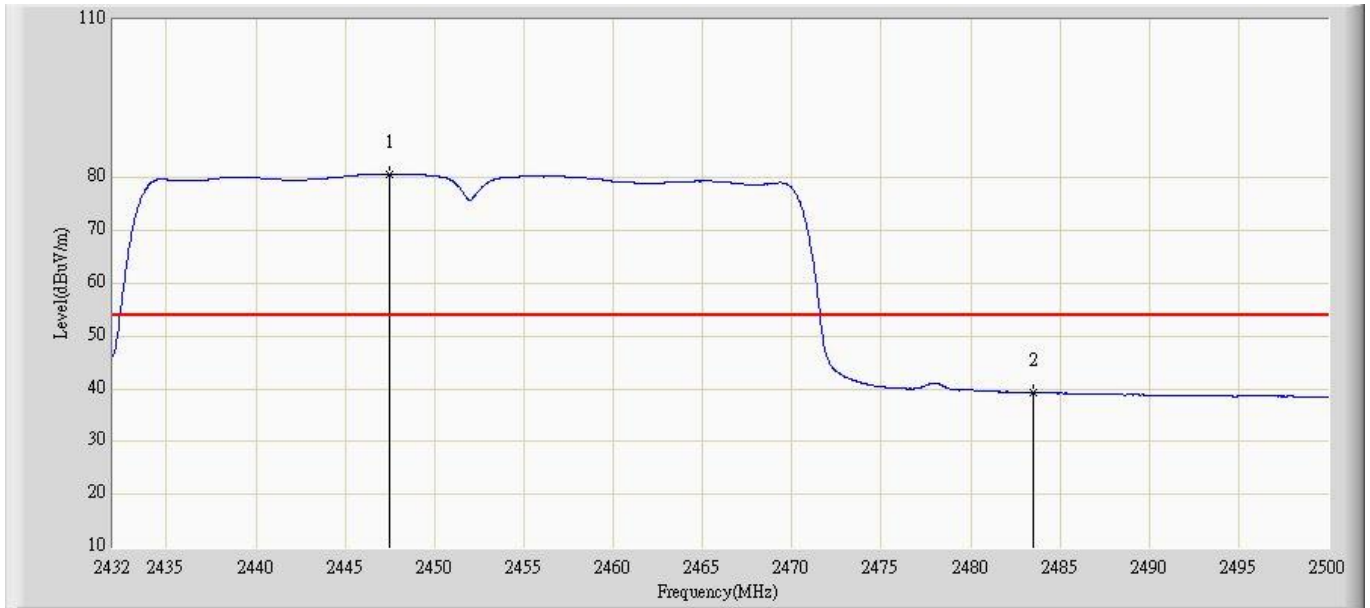
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2447.878	81.274	44.487	N/A	N/A	36.787	AV
2			2483.500	41.291	4.201	-12.709	54.000	37.089	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/27 - 15:42
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 4: Transmit by 802.11n40MHz at 2452MHz Ant 0	



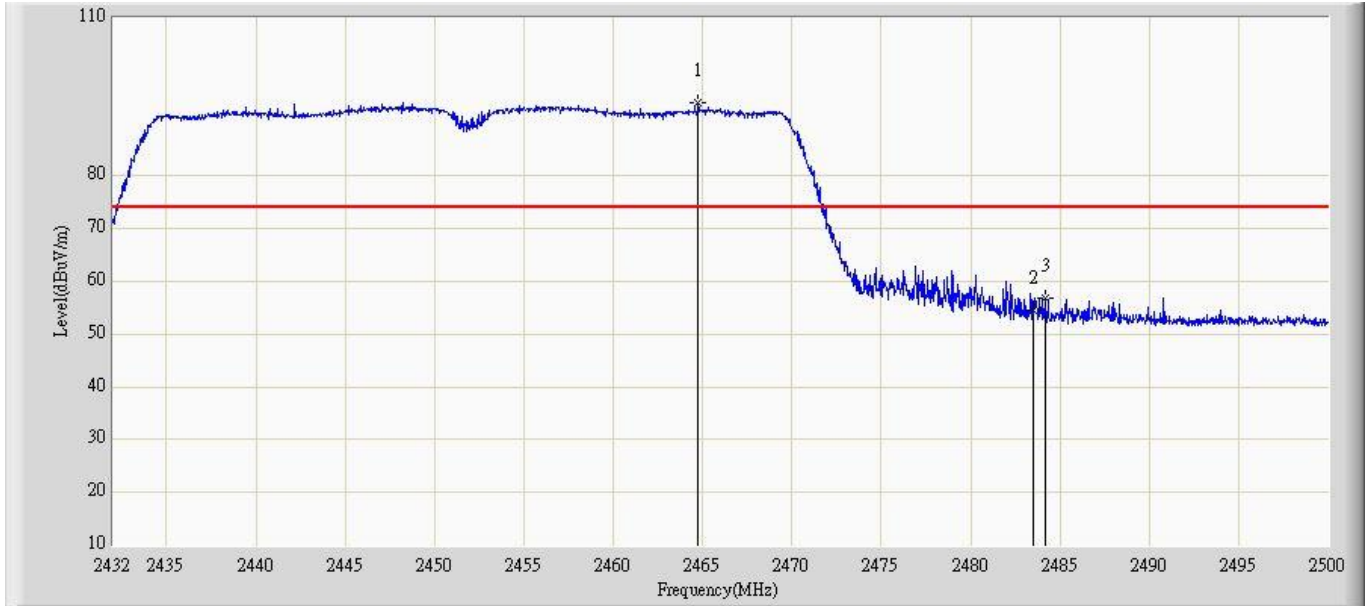
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2453.148	97.651	61.730	N/A	N/A	35.921	PK
2			2483.500	52.748	16.692	-21.252	74.000	36.055	PK
3			2484.190	55.668	19.609	-18.332	74.000	36.059	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/27 - 15:43
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 4: Transmit by 802.11n40MHz at 2452MHz Ant 0	



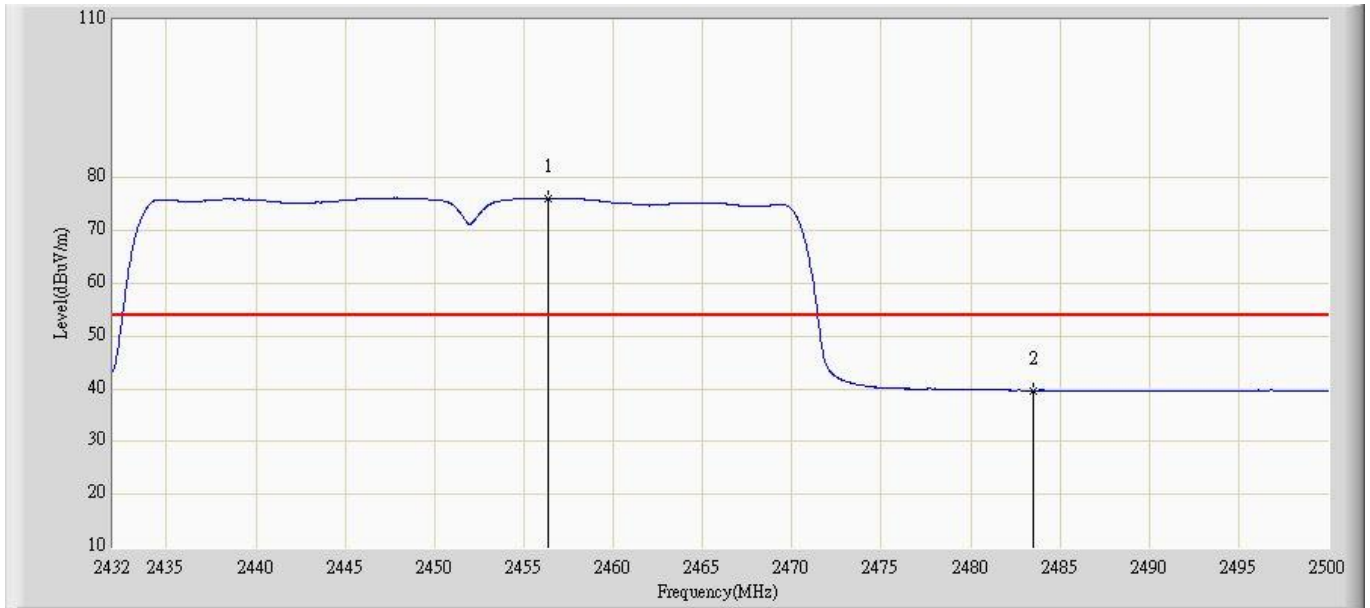
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2447.504	80.778	44.884	N/A	N/A	35.894	AV
2			2483.500	39.293	3.237	-14.707	54.000	36.055	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/27 - 15:44
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 4: Transmit by 802.11n40MHz at 2452MHz Ant 1	



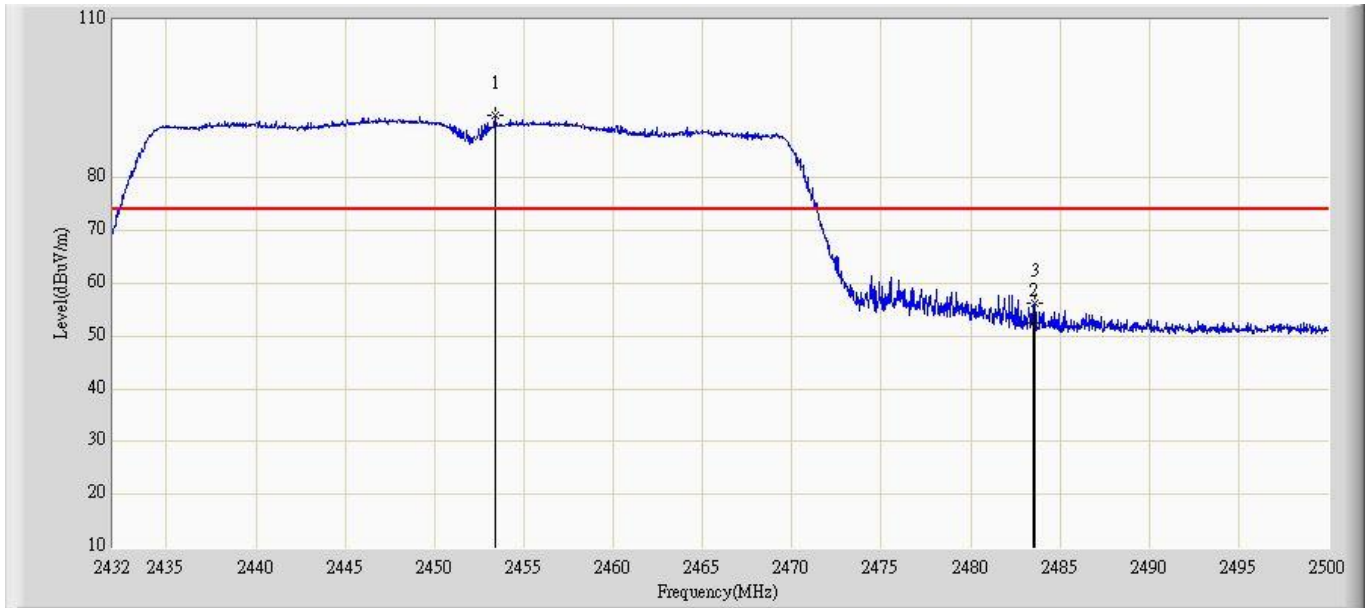
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2464.742	93.903	56.970	N/A	N/A	36.934	PK
2			2483.500	54.441	17.351	-19.559	74.000	37.089	PK
3			2484.190	56.752	19.656	-17.248	74.000	37.096	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/27 - 15:47
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 4: Transmit by 802.11n40MHz at 2452MHz Ant 1	



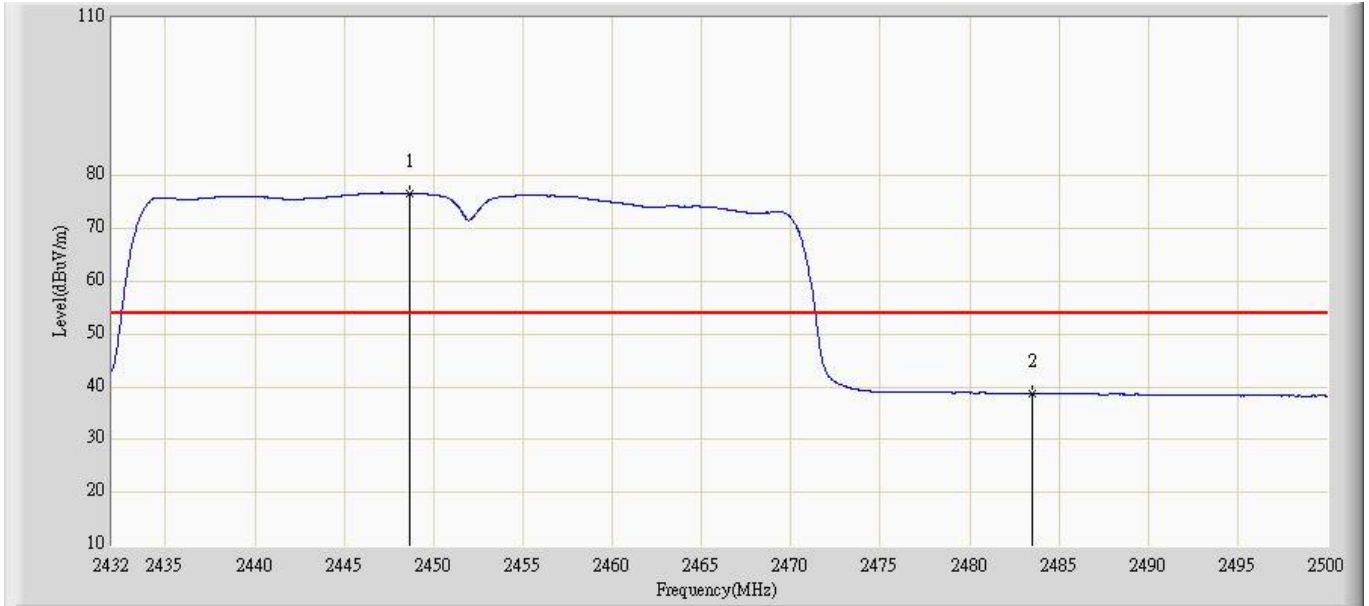
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2456.378	76.107	39.245	N/A	N/A	36.861	AV
2			2483.500	39.725	2.635	-14.275	54.000	37.089	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/27 - 15:48
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 4: Transmit by 802.11n40MHz at 2452MHz Ant 1	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2453.386	91.920	55.998	N/A	N/A	35.922	PK
2			2483.500	52.622	16.566	-21.378	74.000	36.055	PK
3			2483.578	56.186	20.130	-17.814	74.000	36.056	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/27 - 15:50
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 4: Transmit by 802.11n40MHz at 2452MHz Ant 1	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2448.660	76.672	40.773	N/A	N/A	35.899	AV
2			2483.500	38.782	2.726	-15.218	54.000	36.055	AV

**5. Receiver Spurious Emission for Industry Canada RSS-Gen Requirement**

**5.1. Test Equipment**

Radiated Emission / AC-2

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
EMI Test Receiver	R&S	ESCI	100573	2014.04.18
Loop Antenna	R&S	HFH2-Z2	833799/003	2013.11.22
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2013.10.15
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2014.03.01
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC2-TH	2014.05.07

Radiated Emission / AC-5

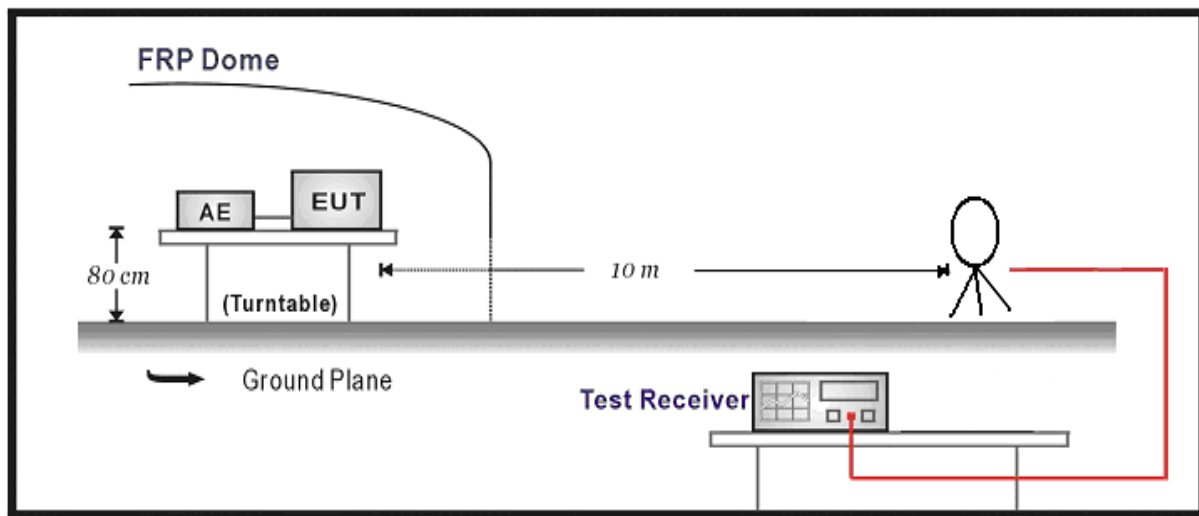
Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	N9020A	MY49100159	2014.03.30
Preamplifier	Miteq	NSP1800-25	1364185	2014.05.04
Preamplifier	QuieTek	AP-040G	CHM-0906001	2014.05.04
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2013.10.15
DRG Horn	ETS-Lindgren	3117	00123988	2014.01.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2013.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2014.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2013.06.11
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2014.01.11

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

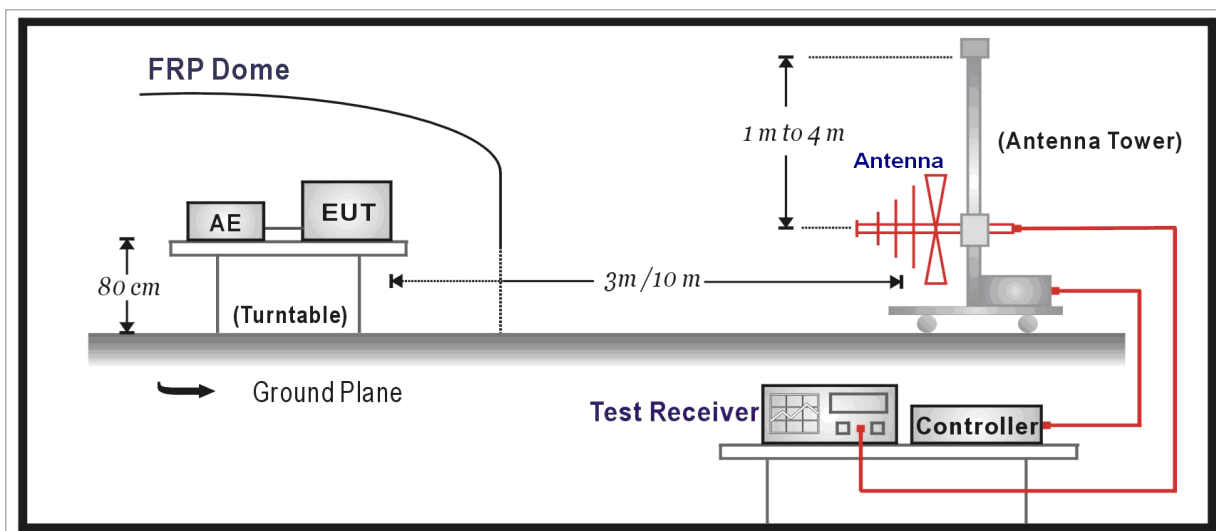


5.2. Test Setup

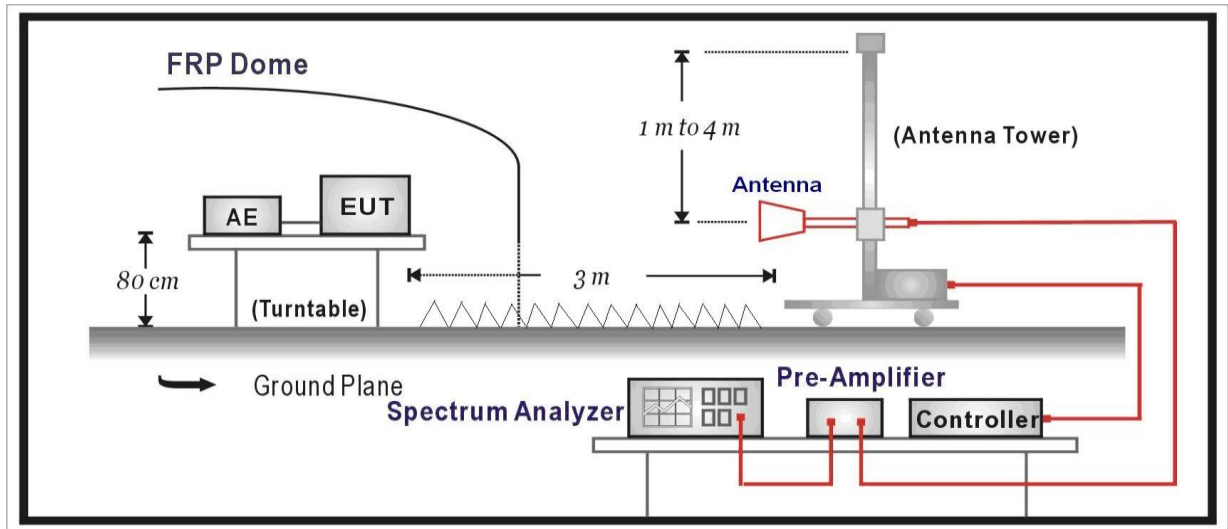
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:



5.3. Limit

FCC Part 15 Subpart B Paragraph 15.109		
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)

## 5.4. Test Procedure

According to ANSI C63.10: 2009.

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: 2009 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 9kHz 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 60~10 degrees for H-plane and 90~10 degrees for E-plane.

## 5.5. Uncertainty

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

below 1G is defined as  $\pm 3.8$  dB

**5.6. 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 - Preampifier Gain

Mode7: Receive by 802.11b (Worse Case)

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
6	H	468.9	14.3	19.1	33.4	46	-12.6	QP
	V	601.3	14.7	21.2	35.9	46	-10.1	QP
	H	645.5	13.6	21.3	34.9	46	-11.1	QP
	V	550.9	14.2	21.2	35.4	46	-10.6	QP
	H	2003	53.0	-17.5	35.5	54(Note1)	-18.5	PK
	V	2215.5	54.7	-16.9	37.8	54(Note1)	-16.2	PK
	H	1629.0	54.3	-18.5	35.8	54(Note1)	-18.2	PK
	V	2657.5	55.0	-15.4	39.6	54(Note1)	-14.4	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. 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.