Test Report

FCC Part15 Subpart E

Product Name	:	Wi-Fi Module
Model No.	:	LW100
FCC ID	:	Y2SLW100
IC	:	9452A-LW100

Applicant	:	LIBRATONE A/S
Address	:	Marielundvej 43A, DK-2730 Herlev, Denmark

Date of Receipt	:	Jun. 23, 2015
Test Date	:	Jun. 23, 2015~ Aug. 11, 2015
Issued Date	:	Aug. 11, 2015
Report No.	:	1560632R-RF-US-P09V01
Report Version	:	V1.0

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 any agency of the government.
The test report shall not be reproduced without the written approval of QuieTek Corporation.

Test Report Certification

Issued Date : Aug. 11, 2015
Report No. : 1560632R-RF-US-P09V01

QuieTek a DEKRA company

Product Name	:	Wi-Fi Module
Applicant	:	LIBRATONE A/S
Address	:	Marielundvej 43A, DK-2730 Herlev, Denmark
Manufacturer	:	Goertek Inc
Address	:	No 268 Dongfang Rd., New&high-tech Industry Development Zone Weifang Shandong Province 261031, PRC.
Model No.	:	LW100
FCC ID	:	Y2SLW100
IC	:	9452A-LW100
EUT Voltage	:	3.8V DC
Brand Name	:	LIBRATONE
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart E: 2015 ANSI C63.4:2014; ANSI C63.10:2013; 789033 D02 General UNII Test Procedures New Rules v01 Industry Canada RSS-Gen Issue 4 Industry Canada RSS-247 Issue 1
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	:	Elaine Wang Elaine Wang Senior Engineer
Reviewed By	:	Harry Zhao RF Engineering Manager
Approved By	:	Dream Cao Dream Cao Director

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:

Taiwan R.O.C.	**:**	**BSMI, NCC**
USA	**:**	**FCC**
Japan	**:**	**VCCI**
China	**:**	**CNAS**

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/
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TABLE OF CONTENTS

Description Page

1. General Information 8
1.1. EUT Description 8
1.2. Mode of Operation 12
1.3. Tested System Details 13
1.4. Configuration of Tested System 14
1.5. EUT Exercise Software 15
2. Technical Test 16
2.1. Summary of Test Result 16
2.2. Test Environment 17
3. Conducted Emission 18
3.1. Test Equipment 18
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 23
4.1. Test Equipment 23
4.2. Test Setup 24
4.3. Limit 25
4.4. Test Procedure 25
4.5. Uncertainty 26
4.6. Test Result 27
5. Occupied Bandwidth 35
5.1. Test Equipment 35
5.2. Test Setup 35
5.3. Limit 35

5.4. Test Procedure 36
5.5. Uncertainty 37
5.6. Test Result 38
6. 6dB Occupied Bandwidth 57
6.1. Test Equipment 57
6.2. Test Setup 57
6.3. Limit 57
6.4. Test Procedure 58
6.5. Uncertainty 58
6.6. Test Result 59
7. Power Output 70
7.1. Test Equipment 70
7.2. Test Setup 70
7.3. Limit 70
7.4. Test Procedure 72
7.5. Uncertainty 72
7.6. Test Result 73
8. Peak Power Spectral Density 77
8.1. Test Equipment 77
8.2. Test Setup 77
8.3. Limit 77
8.4. Test Procedure 80
8.5. Uncertainty 80
8.6. Test Result 81
9. Radiated Emission Band Edge 100
9.1. Test Equipment 100
9.2. Test Setup 100
9.3. Limit 100
9.4. Test Procedure 103

9.5. Uncertainty 103

9.6. Test Result 104

10. Frequency Stability 152

10.1. Test Equipment 152

10.2. Test Setup 152

10.3. Limit 152

10.4. Test Procedure 153

10.5. Uncertainty 153

10.6. Test Result 154

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
1560632R-RF-US-P09V01	V1.0	Initial Issued Report	Aug. 11, 2015

1. General Information

1.1. EUT Description

Product Name	Wi-Fi Module
Brand Name	LIBRATONE
Model No.	LW100
EUT Voltage	3.8V DC
Frequency Range	**For 2.4GHz Band** 802.11b/g/n(20MHz): 2412~2462MHz 802.11n(40MHz): 2422~2452MHz **For 5GHz Band** 802.11a/n(20MHz):5180~5240MHz, 5745~5825MHz 802.11n(40MHz):5190MHz, 5755~5795MHz
Channel Number	**For 2.4GHz Band** 802.11b/g/n(20MHz): 11 802.11n(40MHz): 9 **For 5GHz Band** 802.11a/n(20MHz): 9 802.11n(40MHz): 4
Type of Modulation	802.11b: DSSS
	802.11a/g/n: 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 150 Mbps
Channel Control	Auto
Antenna Delivery	2*Tx + 2*Rx
Antenna Type	Reference to Antenna List
Peak Antenna Gain	Reference to Antenna List

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	44	5220 MHz	48	5240 MHz
149	5745 MHz	153	5765 MHz	157	5785 MHz	161	5805 MHz
165	5825MHz	N/A	N/A	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	151	5755 MHz	159	5795 MHz

Antenna List

Antenna	Manufacturer	Model No.	Peak Gain
PIFA Antenna	Suzhou Walsin Technology Electronics Co.,Ltd	Z_2.4/5G_R_R4; Z_2.4/5G_L_R4	2.4GHz Band: 3.5 dBi 5GHz Band: 2 dBi

Power Parameter Value of the test software

Test Mode	Test Channel	Ant 0	Ant1	MIMO MODE(Ant1+2)
802.11a	5180	14	14	×
	5220	14	14	×
	5240	14	14	×
	5745	14	14	×
	5785	14	14	×
	5825	14	14	×
802.11n(20MHz)	5180	13	13	×
	5220	13	13	×
	5240	13	13	×
	5745	13	13	×
	5785	13	13	×
	5825	13	13	×
802.11n(40MHz)	5190	11	11	×
	5230	11	11	×
	5755	11	11	×
	5795	11	11	×

The test mode of the test software can support.

Test Mode	Ant 0	Ant 1	MIMO MODE(Ant1+2)
802.11a	√	√	×
802.11n(20MHz)	√	√	×
802.11n(40MHz	√	√	×

Duty Cycle

Test Mode	Duty Cycle
802.11a	98.2%
802.11n(20MHz)	87.6%
802.11n(40MHz)	85.7%

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 802.11a
Mode 2: Transmit by 802.11n(20MHz)
Mode 3: Transmit by 802.11n(40MHz)

Note:

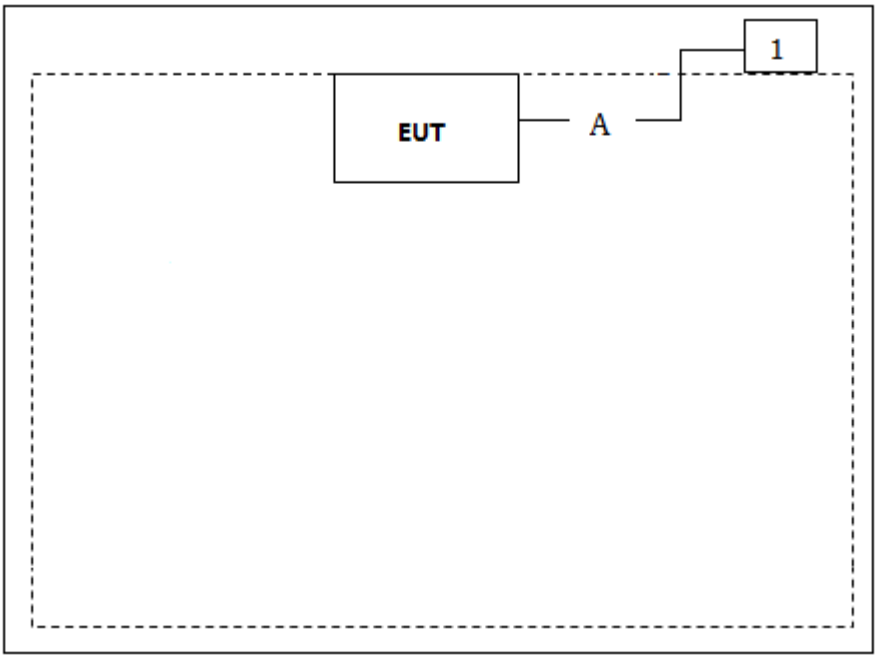
1. Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.
2. The radiation measure measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

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	Asus	N80V	8BN0AS226971468	N/A

1.4. Configuration of Tested System

Connection Diagram		
		
Signal Cable Type		Signal cable Description
A	Serial Cable	Control cable via test jig board

1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of equipment.
3	Run the RF test software, and set the test mode and channel, then press OK to start to continue transmit or receive.

2. Technical Test

2.1. Summary of Test Result

☒ No deviations from the test standards
☐ Deviations from the test standards as below description:

For FCC

Performed Test Item	Normative References	Test Performed	Deviation
Conducted Emission	FCC CFR Title 47 Part 15 Subpart E: 2015 Section 15.207	Yes	No
Radiated Emission	FCC CFR Title 47 Part 15 Subpart E: 2015 Section 15.209	Yes	No
26dB Occupied Bandwidth	FCC CFR Title 47 Part 15 Subpart E: 2015 Section 15.407(a)	Yes	No
6dB Occupied Bandwidth	FCC CFR Title 47 Part 15 Subpart E:2015 Section 15.407(e)	Yes	No
Power Output	FCC CFR Title 47 Part 15 Subpart E: 2015 Section 15.407(a)	Yes	No
Peak Power Spectral Density	FCC CFR Title 47 Part 15 Subpart E: 2015 Section 15.407(a)	Yes	No
Radiated Emission Band Edge	FCC CFR Title 47 Part 15 Subpart E: 2015 Section 15.205, 15.407(b)	Yes	No
Frequency Stability	FCC CFR Title 47 Part 15 Subpart E: 2015 Section 15.407(g)	Yes	No

For IC

Performed Test Item	Normative References	Test Performed	Deviation
Conducted Emission	RSS-Gen Issue 4 November 2014 Section 8.8	Yes	No
Radiated Emission	RSS-247 Issue 1 May 2015 Section 5.5	Yes	No
99% Occupied Bandwidth	RSS-Gen Issue 4 November 2014 Section 6.6	Yes	No
6dB Occupied Bandwidth	RSS-247 Issue 1 May 2015 Section 6.2	Yes	No
Power Output	RSS-247 Issue 1 May 2015 Section 6.2	Yes	No
Peak Power Spectral Density	RSS-247 Issue 1 May 2015 Section 6.2	Yes	No
Radiated Emission Band Edge	RSS-Gen Issue 4 November 2014 Section 8.10	Yes	No
Frequency Stability	RSS-Gen Issue 4 November 2014 Section 8.11	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. Conducted Emission

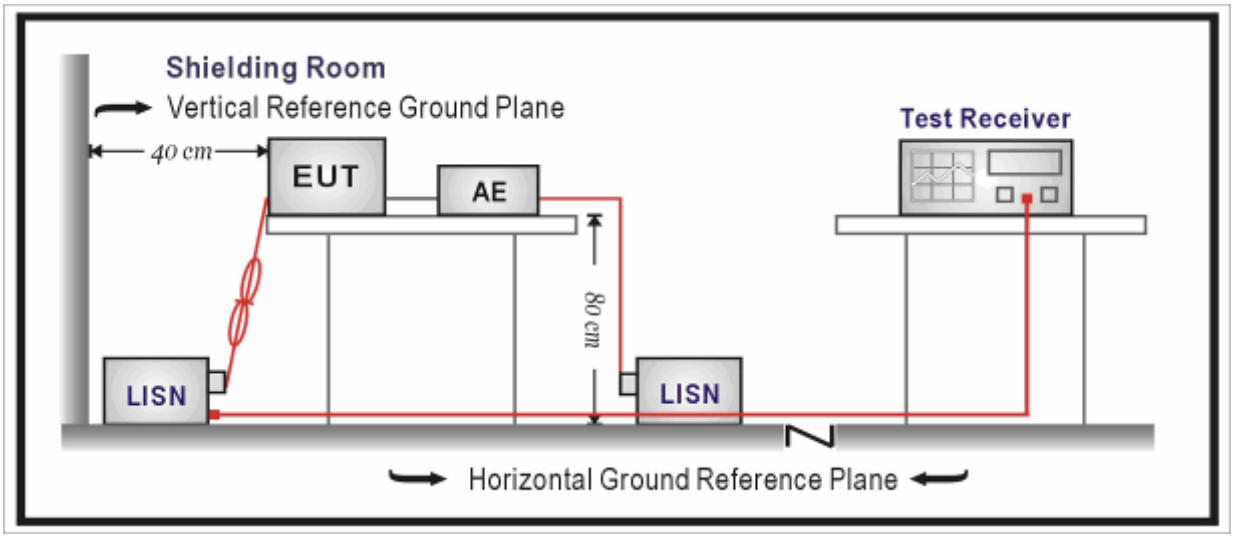
3.1. Test Equipment

Conducted Emission / TR-1

Instrument	Manufacturer	Type No.	Serial No.	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100726	2016.03.28
Two-Line V-Network	R&S	ENV216	100043	2016.03.28
Two-Line V-Network	R&S	ENV216	100044	2015.09.16
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2016.03.01
50ohm Termination	SHX	TF2	07081401	2015.09.16
Temperature/Humidity Meter	zhicheng	ZC1-2	TR1-TH	2016.01.08

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

3.2. Test Setup



3.3. Limit

For FCC&IC

FCC Part 15 Subpart C Paragraph 15.207 Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

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

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

3.4. Test Procedure

according to ANSI C63.4:2014& ANSI C63.10:2013&789033 D02 General UNII Test Procedures New Rules v01& FCC CFR Title 47 Part 15 Subpart E: 2014& Industry Canada RSS-Gen Issue 4 Industry Canada RSS-247 Issue 1

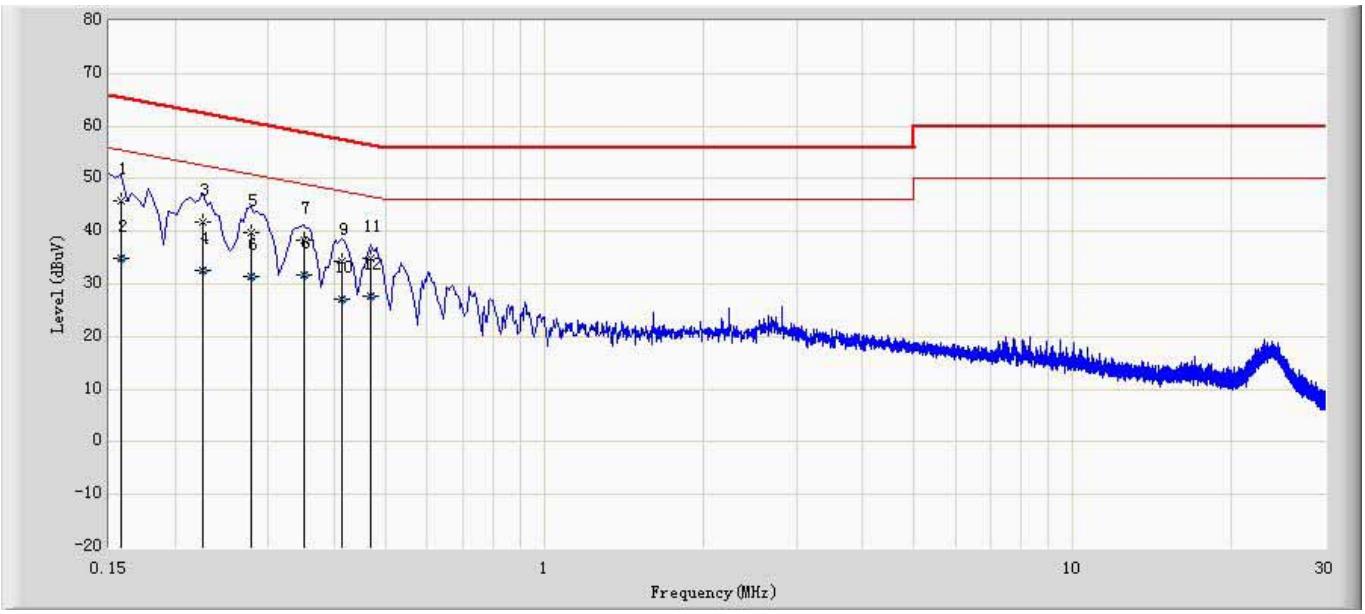
The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

3.5. Uncertainty

The measurement uncertainty is defined as ± 2.02 dB

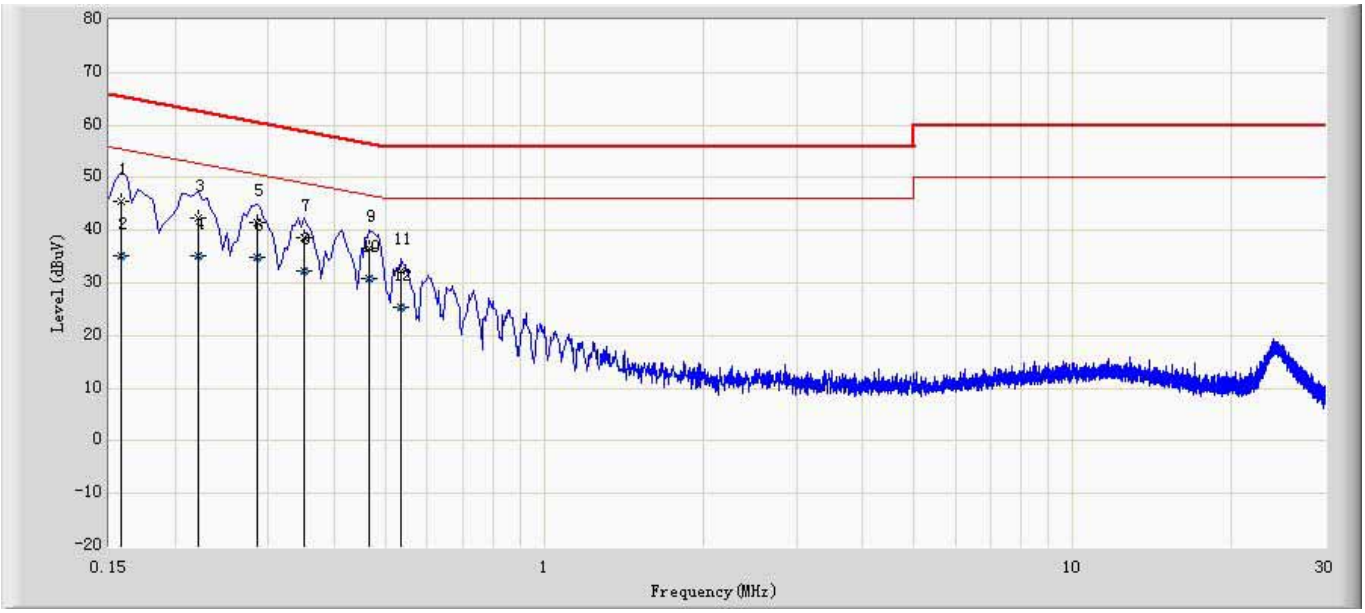
3.6. Test Result

Engineer: Scott	
Site: TR5	Time: 2015/07/30 - 13:21
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Line
EUT: WiFi Module	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11 a	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.158	45.878	36.147	-19.690	65.568	9.731	QP
2		0.158	35.026	25.295	-20.542	55.568	9.731	AV
3		0.226	41.807	32.097	-20.788	62.595	9.710	QP
4		0.226	32.474	22.764	-20.121	52.595	9.710	AV
5	*	0.278	39.742	30.042	-21.133	60.875	9.700	QP
6		0.278	31.413	21.713	-19.462	50.875	9.700	AV
7		0.350	38.360	28.660	-20.602	58.962	9.700	QP
8		0.350	31.843	22.143	-17.119	48.962	9.700	AV
9		0.414	34.291	24.588	-23.277	57.568	9.703	QP
10		0.414	27.224	17.521	-20.344	47.568	9.703	AV
11		0.470	34.744	25.044	-21.770	56.514	9.700	QP
12		0.470	27.797	18.097	-18.717	46.514	9.700	AV

Engineer: Scott	
Site: TR5	Time: 2015/07/30 - 13:29
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Neutral
EUT: WiFi Module	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11 a	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.158	45.637	35.906	-19.931	65.568	9.731	QP
2		0.158	35.275	25.544	-20.293	55.568	9.731	AV
3		0.222	42.216	32.496	-20.528	62.744	9.720	QP
4		0.222	35.195	25.475	-17.549	52.744	9.720	AV
5	*	0.286	41.441	31.731	-19.199	60.640	9.710	QP
6		0.286	34.955	25.245	-15.685	50.640	9.710	AV
7		0.350	38.602	28.896	-20.360	58.962	9.706	QP
8		0.350	32.237	22.531	-16.725	48.962	9.706	AV
9		0.466	36.704	27.004	-19.881	56.585	9.700	QP
10		0.466	30.764	21.064	-15.821	46.585	9.700	AV
11		0.534	32.360	22.660	-23.640	56.000	9.700	QP
12		0.534	25.341	15.641	-20.659	46.000	9.700	AV

Note: All the test modes are pretested and mode 1 802.11b mode was found to be the worst mode, so the data of this test mode was recorded.

4. Radiated Emission

4.1. Test Equipment

Radiated Emission / AC-2

Instrument	Manufacturer	Type No.	Serial No.	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100573	2016.03.28
Loop Antenna	R&S	HFH2-Z2	833799/003	2015.11.17
Bilog Chainenna	Teseq GmbH	CBL6112D	27611	2015.10.15
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2016.03.01
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC2-TH	2016.01.08

Radiated Emission / AC-5

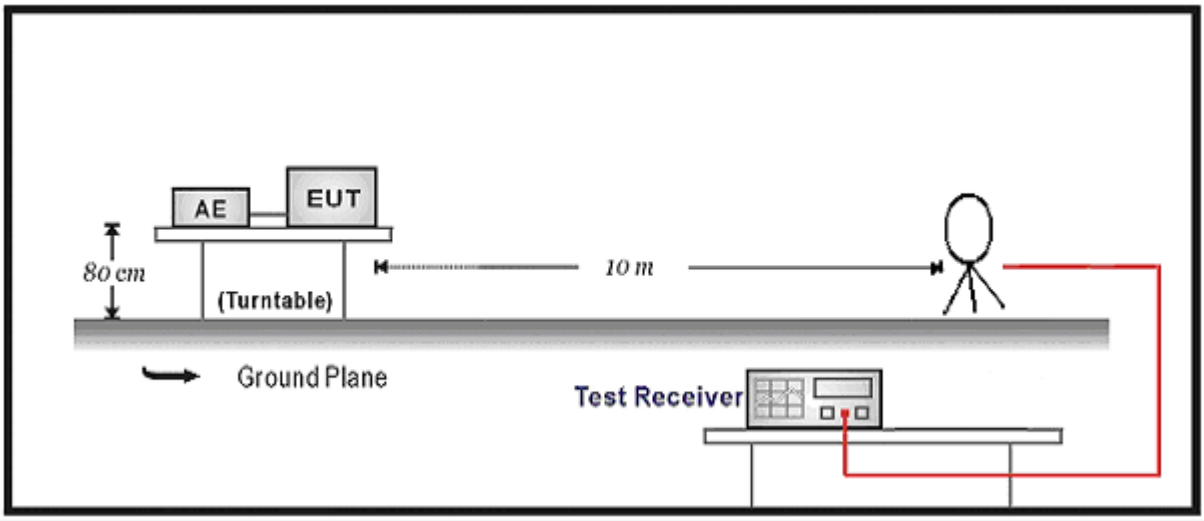
Instrument	Manufacturer	Type No.	Serial No.	Cal. Due Date
Spectrum Analyzer	Agilent	N9020A	MY49100159	2016.03.28
Spectrum Analyzer	Agilent	E4446A	MY45300103	2016.01.07
Preamplifier	Miteq	NSP1800-25	1364185	2016.05.05
Preamplifier	QuieTek	AP-040G	CHM-0906001	2016.05.05
DRG Horn	ETS-Lindgren	3117	00123988	2016.01.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2015.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2016.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2016.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2016.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2016.06.09
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2016.01.08

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

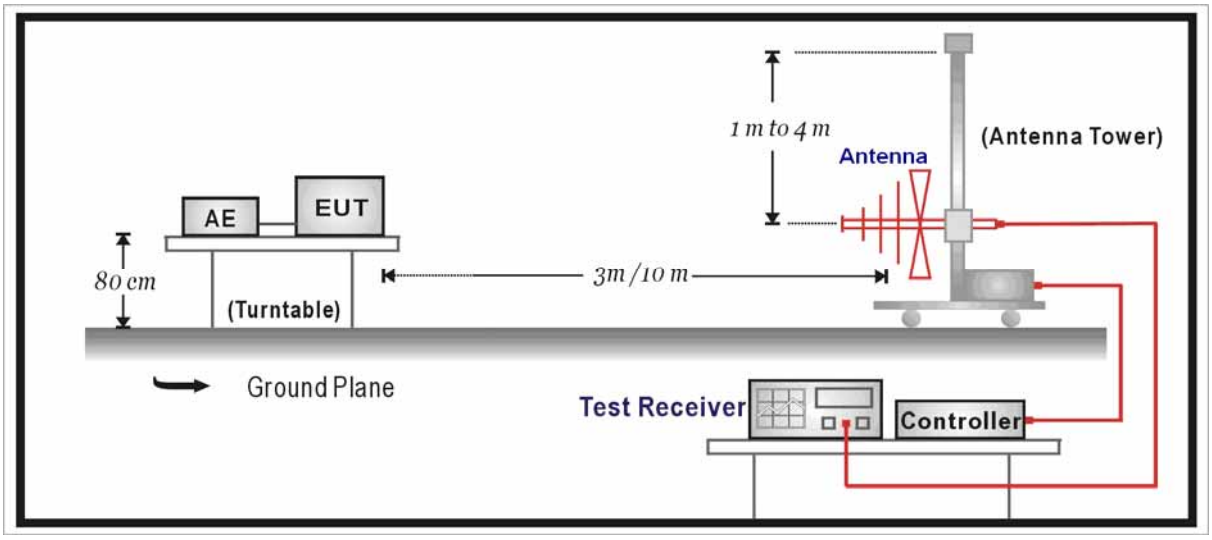
4.2. Test Setup

For FCC&IC

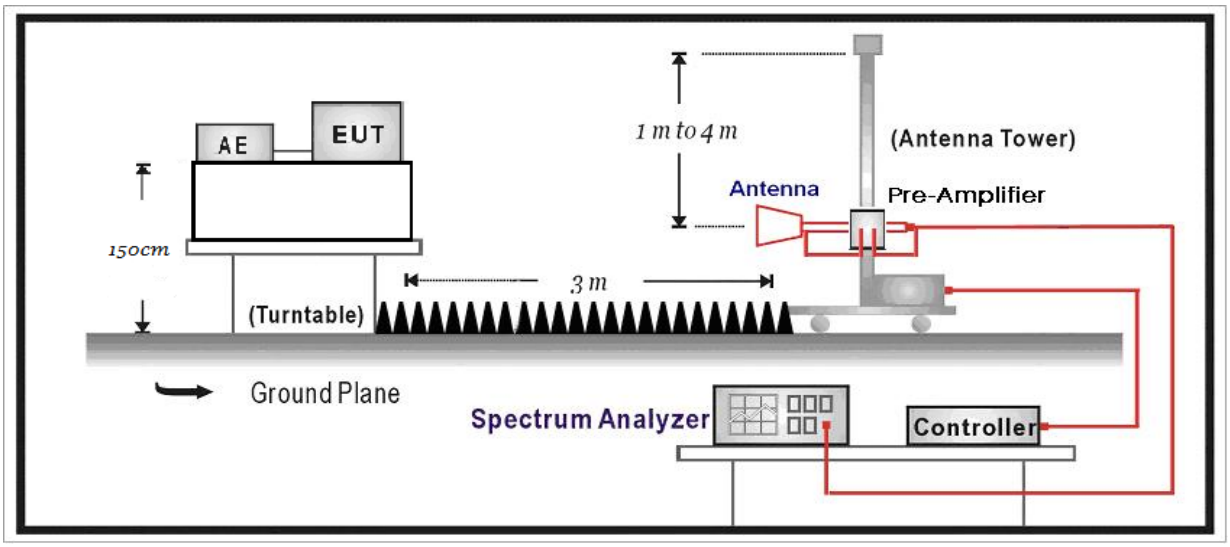
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. 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)

4.4. Test Procedure

According to ANSI C63.4:2014& ANSI C63.10:2013&789033 D02 General UNII Test Procedures New Rules v01& FCC CFR Title 47 Part 15 Subpart E: 2014& Industry Canada RSS-Gen Issue 4 Industry Canada RSS-247 Issue 1

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 Chainenna to the EUT was 3 meters.
The Chainenna 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 Chainenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2014 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 Chainenna will be bended down a little (as horn antenna has the narrow beamwidth) in order to keeping the Chainenna in the “cone of radiation” of EUT. The 3dB beamwidth is 60~10 degrees for H-plane and 90~10 degrees for E-plane.

4.5. Uncertainty

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

4.6. 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.

Mode1: Transmit by 802.11a Ant 0

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
36	H	10360.0	31.8	17.3	49.1	54(Note3)	-4.9	PK
	H	15540.0	23.1	23.8	46.9	54(Note3)	-7.1	PK
	V	10360.0	32.0	17.3	49.3	54(Note3)	-4.7	PK
	V	15540.0	22.7	23.8	46.5	54(Note3)	-7.5	PK
40	H	10400.0	31.3	18.7	50.0	54(Note3)	-4.0	PK
	H	15600.0	19.9	27.5	47.4	54(Note3)	-6.6	PK
	V	10400.0	31.3	18.7	50.0	54(Note3)	-4.0	PK
	V	15600.0	19.6	27.5	47.1	54(Note3)	-6.9	PK
48	H	10480.0	31.8	17.2	49.0	54(Note3)	-5.0	PK
	H	15720.0	19.5	26.4	45.9	54(Note3)	-8.1	PK
	V	10480.0	32.0	17.2	49.2	54(Note3)	-4.8	PK
	V	15720.0	19.7	26.4	46.1	54(Note3)	-7.9	PK
149	H	11490.0	29.0	21.7	50.7	54(Note3)	-3.3	PK
	H	17235.0	23.7	26.1	49.8	54(Note3)	-4.2	PK
	V	11490.0	32.8	21.7	54.5	54(Note3)	-19.5	PK
	V	11492.4	19.8	21.7	41.5	54(Note3)	-12.5	PK
157	H	11570.0	32.6	22.4	55.0	54(Note3)	-19.0	PK
	H	17355.0	22.6	25.8	48.4	54(Note3)	-5.6	PK
	V	11570.0	32.3	22.4	54.7	54(Note3)	-19.3	PK
	V	17355.0	23.1	25.8	48.9	54(Note3)	-5.1	PK
165	H	11650.0	26.7	23.2	49.9	54(Note3)	-4.1	PK
	H	17475.0	22.5	25.9	48.4	54(Note3)	-5.6	PK
	V	11650.0	31.3	23.2	54.5	54(Note3)	-19.5	PK
	V	17475.0	22.3	25.9	48.2	54(Note3)	-5.8	PK

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

2. The test frequency range, 9kHz~30MHz, 18GHz~25GHz, both of the worst case are at least 6dB below the limits, 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.

Mode1: Transmit by 802.11a Ant 1

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
36	H	10360.0	31.8	17.3	49.1	54(Note3)	-4.9	PK
	H	15540.0	23.1	23.8	46.9	54(Note3)	-7.1	PK
	V	10360.0	32.0	17.3	49.3	54(Note3)	-4.7	PK
	V	15540.0	22.7	23.8	46.5	54(Note3)	-7.5	PK
40	H	10400.0	31.3	18.7	50.0	54(Note3)	-4.0	PK
	H	15600.0	19.9	27.5	47.4	54(Note3)	-6.6	PK
	V	10400.0	31.3	18.7	50.0	54(Note3)	-4.0	PK
	V	15600.0	19.6	27.5	47.1	54(Note3)	-6.9	PK
48	H	10480.0	31.8	17.2	49.0	54(Note3)	-5.0	PK
	H	15720.0	19.5	26.4	45.9	54(Note3)	-8.1	PK
	V	10480.0	32.0	17.2	49.2	54(Note3)	-4.8	PK
	V	15720.0	19.7	26.4	46.1	54(Note3)	-7.9	PK
149	H	11490.0	32.0	21.7	53.7	54(Note3)	-0.3	PK
	H	17235.0	23.7	26.1	49.8	54(Note3)	-4.2	PK
	V	11490.0	32.8	21.7	54.5	54(Note3)	-19.5	PK
	V	11492.4	19.8	21.7	41.5	54(Note3)	-12.5	PK
157	H	11570.0	32.6	22.4	55.0	54(Note3)	-19.0	PK
	H	17355.0	22.6	25.8	48.4	54(Note3)	-5.6	PK
	V	11570.0	32.3	22.4	54.7	54(Note3)	-19.3	PK
	V	17355.0	23.1	25.8	48.9	54(Note3)	-5.1	PK
165	H	11650.0	26.7	23.2	49.9	54(Note3)	-4.1	PK
	H	17475.0	22.5	25.9	48.4	54(Note3)	-5.6	PK
	V	11650.0	31.3	23.2	54.5	54(Note3)	-19.5	PK
	V	17475.0	22.3	25.9	48.2	54(Note3)	-5.8	PK

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

2. The test frequency range, 9kHz~30MHz, 18GHz~25GHz, both of the worst case are at least 6dB below the limits, 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 802.11n(20MHz) Ant 0

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
36	H	10360.0	31.4	17.3	48.7	54(Note3)	-5.3	PK
	H	15540.0	21.2	23.8	45.0	54(Note3)	-9.0	PK
	V	10360.0	31.8	17.3	49.1	54(Note3)	-4.9	PK
	V	15540.0	21.7	23.8	45.5	54(Note3)	-8.5	PK
40	H	10400.0	30.0	18.7	48.7	54(Note3)	-5.3	PK
	H	15600.0	19.9	27.5	47.4	54(Note3)	-6.6	PK
	V	10400.0	32.0	18.7	50.7	54(Note3)	-3.3	PK
	V	15600.0	19.1	27.5	46.6	54(Note3)	-7.4	PK
48	H	10480.0	32.4	17.2	49.6	54(Note3)	-4.4	PK
	H	15720.0	19.7	26.4	46.1	54(Note3)	-7.9	PK
	V	10480.0	32.4	17.2	49.6	54(Note3)	-4.4	PK
	V	15720.0	20.6	26.4	47.0	54(Note3)	-7.0	PK
149	H	11490.0	31.3	21.7	53.0	54(Note3)	-1.0	PK
	H	17235.0	23.2	26.1	49.3	54(Note3)	-4.7	PK
	V	11490.0	27.7	21.7	49.4	54(Note3)	-4.6	PK
	V	17235.0	23.8	26.1	49.9	54(Note3)	-4.1	PK
157	H	11570.0	31.8	22.4	54.2	54(Note3)	-19.8	PK
	H	17355.0	22.7	25.8	48.5	54(Note3)	-5.5	PK
	V	11570.0	32.0	22.4	54.4	54(Note3)	-19.6	PK
	V	17355.0	22.3	25.8	48.1	54(Note3)	-5.9	PK
165	H	11650.0	25.1	23.2	48.3	54(Note3)	-5.7	PK
	H	17475.0	22.1	25.9	48.0	54(Note3)	-6.0	PK
	V	11650.0	31.1	23.2	54.3	54(Note3)	-19.7	PK
	V	17475.0	22.9	25.9	48.8	54(Note3)	-5.2	PK

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

2. The test frequency range, 9kHz~30MHz, 18GHz~25GHz, both of the worst case are at least 6dB below the limits, 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 802.11n(20MHz) Ant 1

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
36	H	10360.0	31.4	17.3	48.7	54(Note3)	-5.3	PK
	H	15540.0	21.2	23.8	45.0	54(Note3)	-9.0	PK
	V	10360.0	31.8	17.3	49.1	54(Note3)	-4.9	PK
	V	15540.0	21.7	23.8	45.5	54(Note3)	-8.5	PK
40	H	10400.0	30.0	18.7	48.7	54(Note3)	-5.3	PK
	H	15600.0	19.9	27.5	47.4	54(Note3)	-6.6	PK
	V	10400.0	32.0	18.7	50.7	54(Note3)	-3.3	PK
	V	15600.0	19.1	27.5	46.6	54(Note3)	-7.4	PK
48	H	10480.0	32.4	17.2	49.6	54(Note3)	-4.4	PK
	H	15720.0	19.7	26.4	46.1	54(Note3)	-7.9	PK
	V	10480.0	32.4	17.2	49.6	54(Note3)	-4.4	PK
	V	15720.0	20.6	26.4	47.0	54(Note3)	-7.0	PK
149	H	11490.0	31.3	21.7	53.0	54(Note3)	-1.0	PK
	H	17235.0	23.2	26.1	49.3	54(Note3)	-4.7	PK
	V	11490.0	28.7	21.7	50.4	54(Note3)	-3.6	PK
	V	17235.0	23.8	26.1	49.9	54(Note3)	-4.1	PK
157	H	11570.0	31.8	22.4	54.2	54(Note3)	-19.8	PK
	H	17355.0	22.7	25.8	48.5	54(Note3)	-5.5	PK
	V	11570.0	32.0	22.4	54.4	54(Note3)	-19.6	PK
	V	17355.0	22.3	25.8	48.1	54(Note3)	-5.9	PK
165	H	11650.0	27.1	23.2	50.3	54(Note3)	-3.7	PK
	H	17475.0	22.1	25.9	48.0	54(Note3)	-6.0	PK
	V	11650.0	31.1	23.2	54.3	54(Note3)	-19.7	PK
	V	17475.0	22.9	25.9	48.8	54(Note3)	-5.2	PK

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

2. The test frequency range, 9kHz~30MHz, 18GHz~25GHz, both of the worst case are at least 6dB below the limits, 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 802.11n(40MHz) Ant0

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
38	H	10380.0	44.5	3.9	48.4	54(Note3)	-5.6	PK
	H	15570.0	37.1	14.0	51.1	54(Note3)	-2.9	PK
	V	10380.0	44.5	3.9	48.4	54(Note3)	-5.6	PK
	V	15570.0	37.1	14.0	51.1	54(Note3)	-2.9	PK
46	H	10460.0	44.9	3.0	47.9	54(Note3)	-6.1	PK
	H	15690.0	40.3	10.3	50.6	54(Note3)	-3.4	PK
	V	10460.0	44.9	3.0	47.9	54(Note3)	-6.1	PK
	V	15690.0	40.3	10.3	50.6	54(Note3)	-3.4	PK
151	H	11510.0	43.9	6.9	50.8	54(Note3)	-3.2	PK
	H	17265.0	39.8	11.7	51.5	54(Note3)	-2.5	PK
	V	11510.0	43.9	6.9	50.8	54(Note3)	-3.2	PK
	V	17265.0	39.8	11.7	51.5	54(Note3)	-2.5	PK
159	H	11590.0	44.8	6.5	51.3	54(Note3)	-2.7	PK
	H	17385.0	38.8	13.3	52.1	54(Note3)	-1.9	PK
	V	11590.0	44.8	6.5	51.3	54(Note3)	-2.7	PK
	V	17385.0	38.8	13.3	52.1	54(Note3)	-1.9	PK

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

2. The test frequency range, 9kHz~30MHz, 18GHz~25GHz, both of the worst case are at least 6dB below the limits, 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 802.11n(40MHz) Ant 1

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
38	H	10380.0	44.5	3.9	48.4	54(Note3)	-5.6	PK
	H	15570.0	37.1	14.0	51.1	54(Note3)	-2.9	PK
	V	10380.0	44.5	3.9	48.4	54(Note3)	-5.6	PK
	V	15570.0	37.1	14.0	51.1	54(Note3)	-2.9	PK
46	H	10460.0	44.9	3.0	47.9	54(Note3)	-6.1	PK
	H	15690.0	40.3	10.3	50.6	54(Note3)	-3.4	PK
	V	10460.0	44.9	3.0	47.9	54(Note3)	-6.1	PK
	V	15690.0	40.3	10.3	50.6	54(Note3)	-3.4	PK
151	H	11510.0	43.9	6.9	50.8	54(Note3)	-3.2	PK
	H	17265.0	39.8	11.7	51.5	54(Note3)	-2.5	PK
	V	11510.0	43.9	6.9	50.8	54(Note3)	-3.2	PK
	V	17265.0	39.8	11.7	51.5	54(Note3)	-2.5	PK
159	H	11590.0	44.8	6.5	51.3	54(Note3)	-2.7	PK
	H	17385.0	38.8	13.3	52.1	54(Note3)	-1.9	PK
	V	11590.0	44.8	6.5	51.3	54(Note3)	-2.7	PK
	V	17385.0	38.8	13.3	52.1	54(Note3)	-1.9	PK

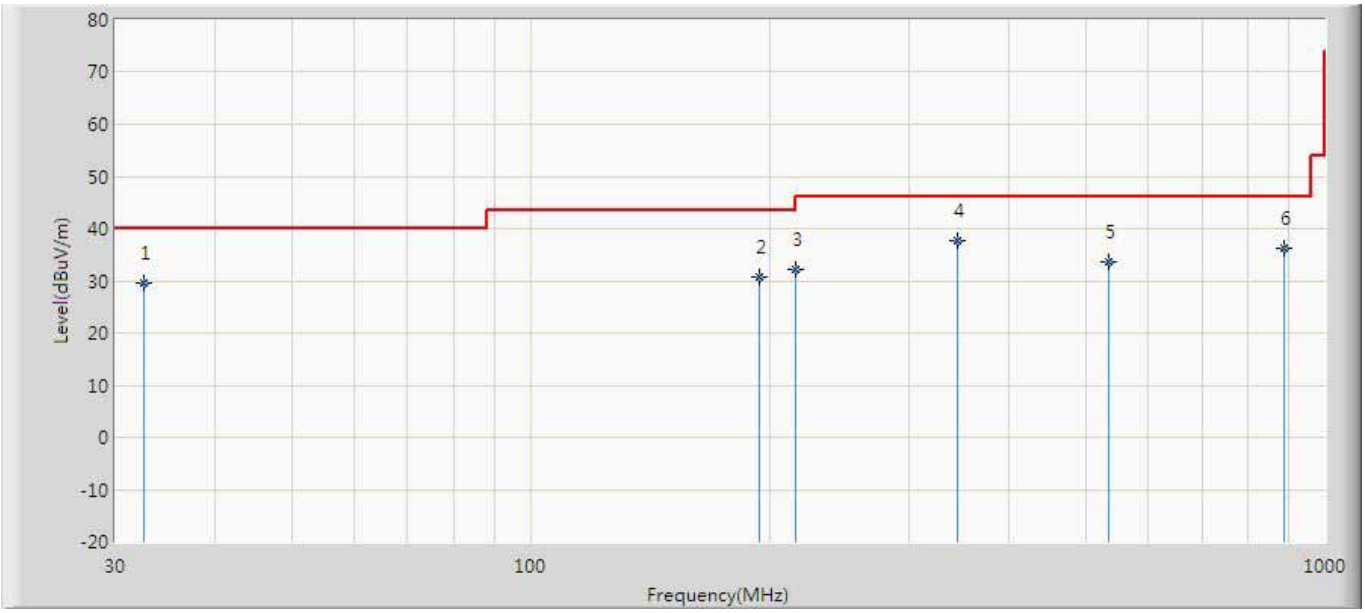
Note: 1. Measure Level = Reading Level + Factor.

2. The test frequency range, 9kHz~30MHz, 18GHz~25GHz, both of the worst case are at least 6dB below the limits, 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.

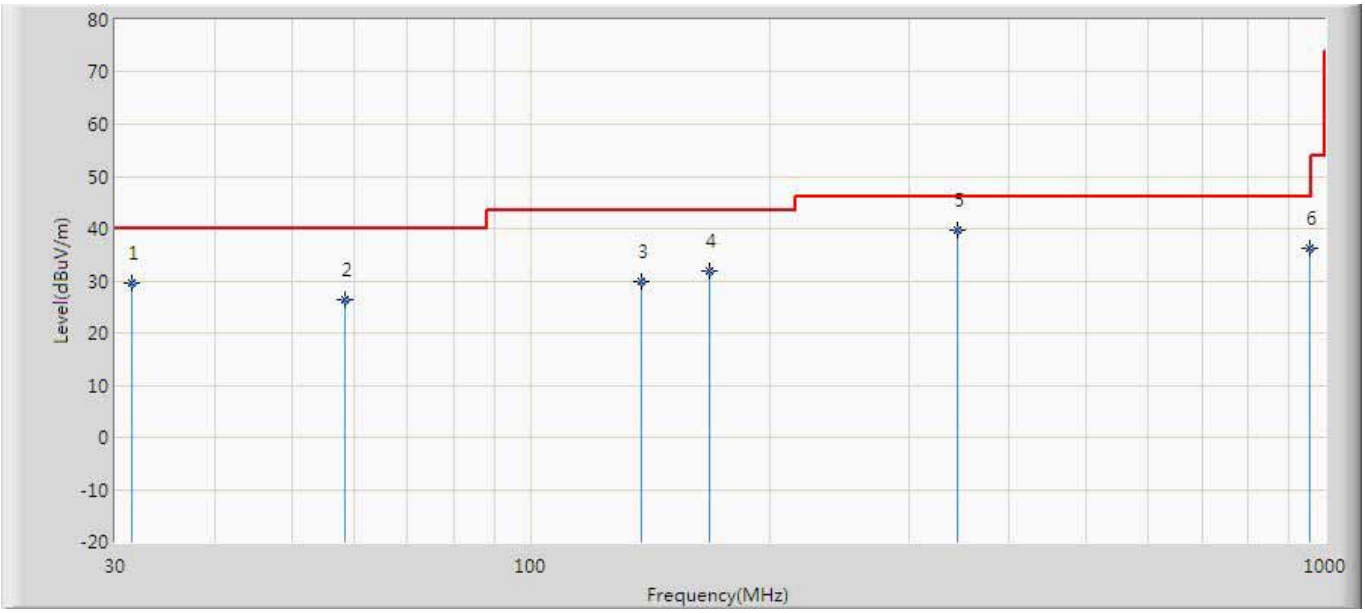
The worst case of Radiated Emission below 1GHz:

Engineer: Scott	
Site: AC2	Time: 2015/07/31 - 09:57
Limit: FCC_Part15.209_RE(3m)_ClassB	Margin: 0
Probe: AC2_10M(30-1000M)20150408	Polarity: Horizontal
EUT: WiFi Module	Power: AC 120V/60Hz
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		32.545	29.489	2.300	-10.511	40.000	27.189	QP
2		194.352	30.687	13.200	-12.813	43.500	17.487	QP
3		215.625	32.169	15.100	-11.331	43.500	17.069	QP
4	*	345.124	37.789	15.800	-8.211	46.000	21.989	QP
5		533.241	33.674	5.600	-12.326	46.000	28.074	QP
6		887.968	36.362	4.200	-9.638	46.000	32.162	QP

Engineer: Scott	
Site: AC2	Time: 2015/07/31 - 09:57
Limit: FCC_Part15.209_RE(3m)_ClassB	Margin: 0
Probe: AC2_10M(30-1000M)20150408	Polarity: Vertical
EUT: WiFi Module	Power: AC 120V/60Hz
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		31.425	29.564	5.900	-10.436	40.000	23.664	QP
2		58.285	26.463	9.800	-13.537	40.000	16.663	QP
3		137.865	29.857	11.100	-13.643	43.500	18.757	QP
4		168.325	31.795	12.600	-11.705	43.500	19.195	QP
5	*	345.236	39.815	15.800	-6.185	46.000	24.015	QP
6		956.758	36.114	3.200	-9.886	46.000	32.914	QP

5. Occupied Bandwidth

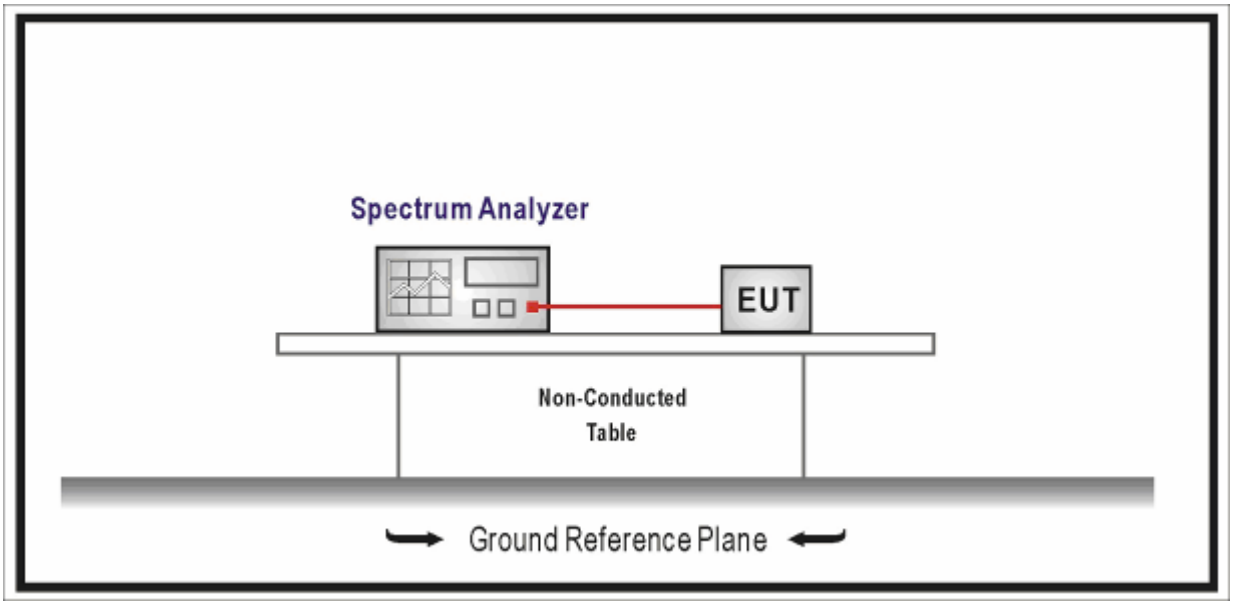
5.1. Test Equipment

Occupied Bandwidth / TR-8

Instrument	Manufacturer	Type No.	Serial No.	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2016.03.10
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2016.04.09

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

N/A

5.4. Test Procedure

According to ANSI C63.4:2014& ANSI C63.10:2013&789033 D02 General UNII Test Procedures New Rules v01& FCC CFR Title 47 Part 15 Subpart E: 2014& Industry Canada RSS-Gen Issue 4 Industry Canada RSS-247 Issue 1

Emission Bandwidth

a) Set RBW = approximately 1% of the emission bandwidth.

b) Set the VBW > RBW.

c) Detector = Peak.

d) Trace mode = max hold.

e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

99% Occupied Bandwidth

a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.

b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.

c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.

d) Step a) through step c) might require iteration to adjust within the specified range.

e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.

f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.

g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.

h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

5.5. Uncertainty

The measurement uncertainty is defined as ± 1 kHz

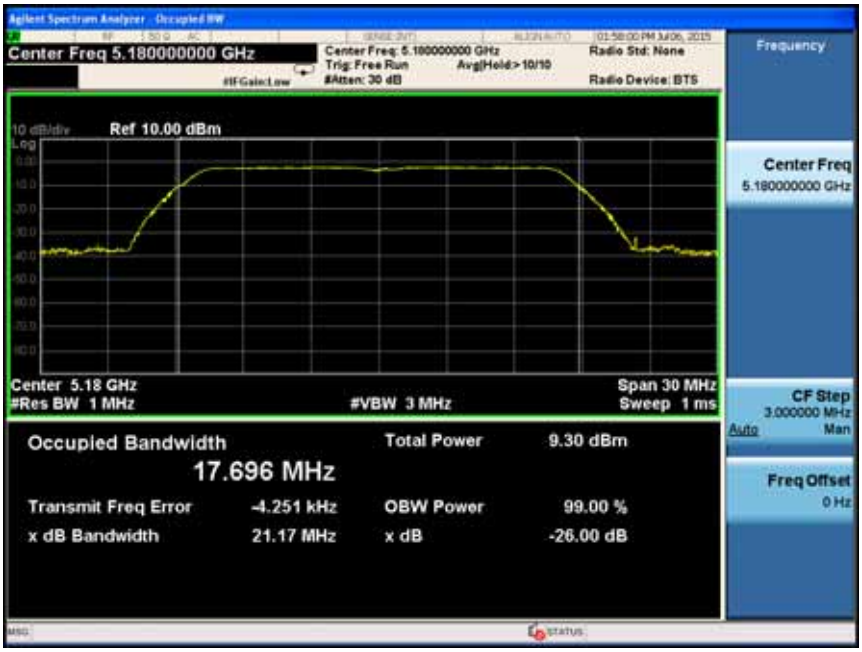
5.6. Test Result

Product	:	WiFi Module
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11a

Channel No.	Frequency (MHz)	Ant 0 99% Occupied Bandwidth (MHz)	Ant 1 99% Occupied Bandwidth (MHz)	Ant 0 26dB Occupied Bandwidth (MHz)	Ant1 26dB Occupied Bandwidth (MHz)
36	5180	17.696	17.445	21.17	20.98
44	5220	17.489	18.442	27.83	30.00
48	5240	17.562	17.748	29.40	29.87
149	5745	17.088	17.781	30.00	30.00
157	5785	17.155	17.398	29.55	29.96
165	5825	17.186	17.709	30.00	30.00

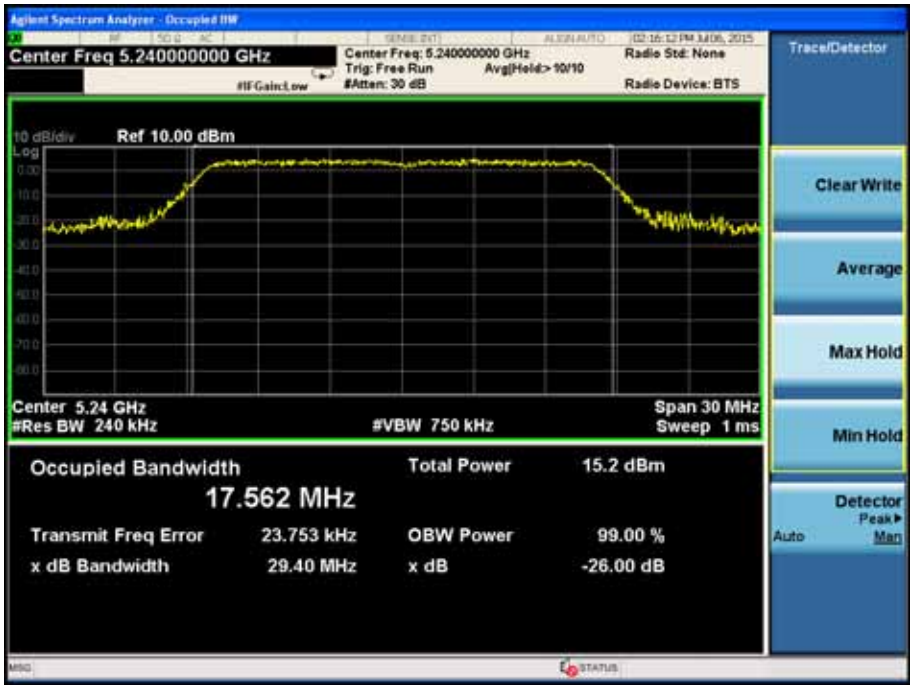
Ant 0

Channel 36 (5180MHz)



Channel 44 (5220MHz)

Channel 48 (5240MHz)



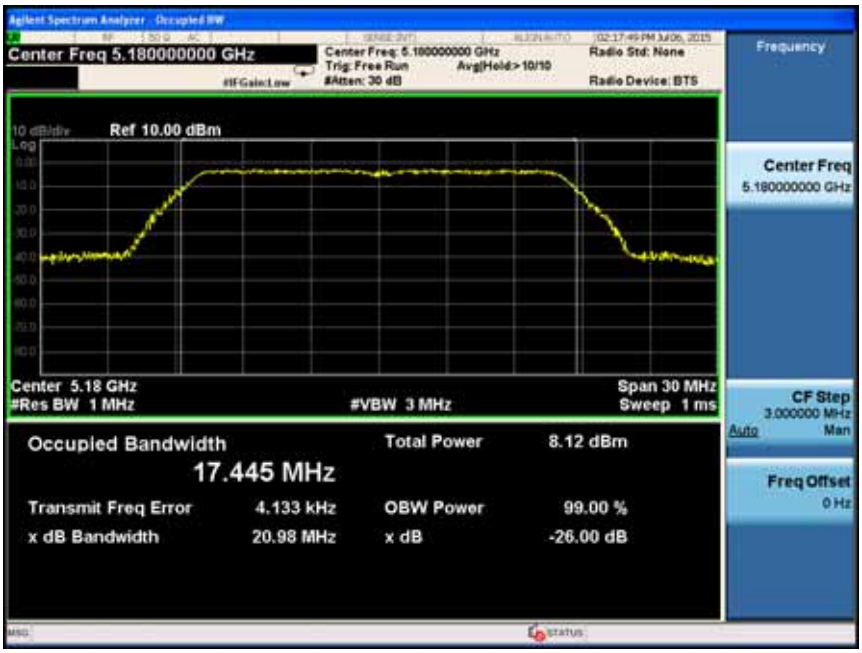
Channel 149 (5745MHz)

Channel 157(5785MHz)

Channel 165 (5825MHz)

Ant 1

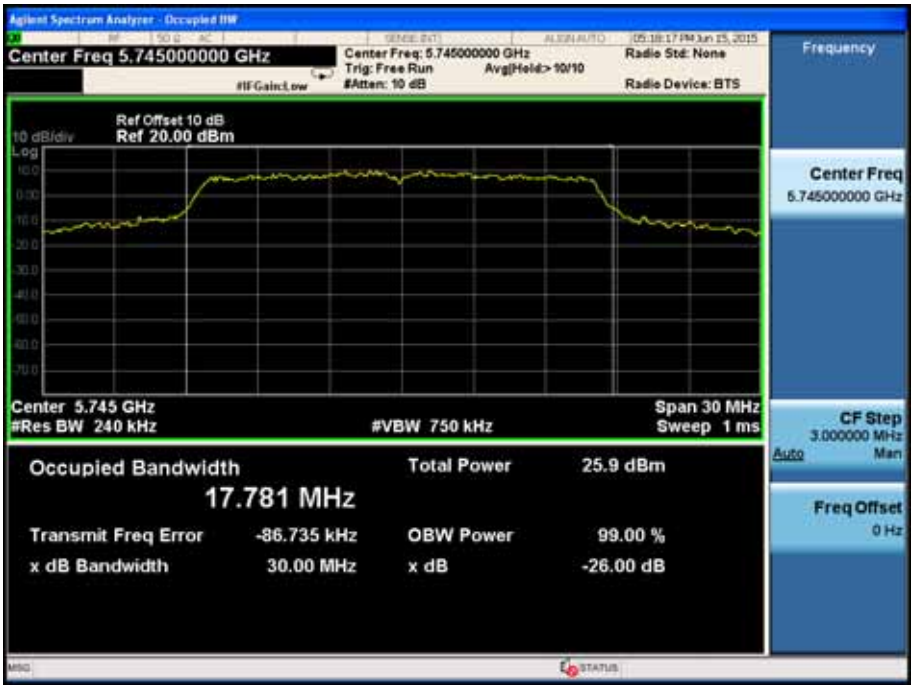
Channel 36 (5180MHz)



Channel 44 (5220MHz)

Channel 48 (5240MHz)

Channel 149 (5745MHz)



Channel 157(5785MHz)

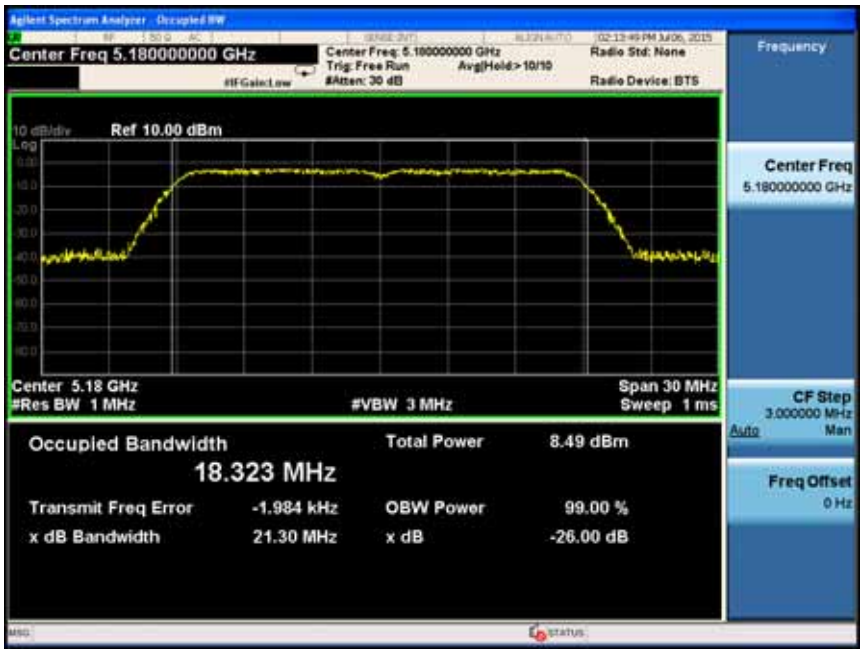
Channel 165 (5825MHz)

Product	:	WiFi Module
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz)

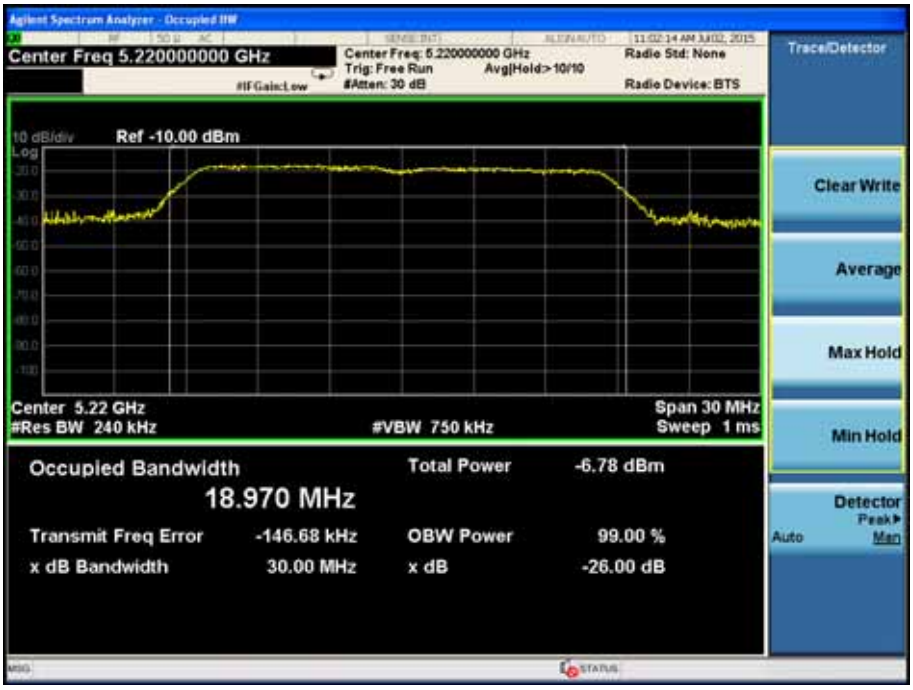
Channel No.	Frequency (MHz)	Ant 0 99% Occupied Bandwidth (MHz)	Ant 1 99% Occupied Bandwidth (MHz)	Ant 0 26dB Occupied Bandwidth (MHz)	Ant1 26dB Occupied Bandwidth (MHz)
36	5180	18.323	18.308	21.30	21.15
44	5220	18.970	19.051	30.00	30.00
48	5240	18.561	18.600	30.00	30.00
149	5745	18.241	18.166	30.00	30.00
157	5785	18.100	18.291	30.00	30.00
165	5825	18.254	18.874	30.00	30.00

Ant 0

Channel 36 (5180MHz)



Channel 44 (5220MHz)



Channel 48 (5240MHz)

Channel 149 (5745MHz)

Channel 157(5785MHz)

Channel 165 (5825MHz)

Ant 1

Channel 36 (5180MHz)

Channel 44 (5220MHz)

Channel 48 (5240MHz)

Channel 149 (5745MHz)

Channel 157(5785MHz)

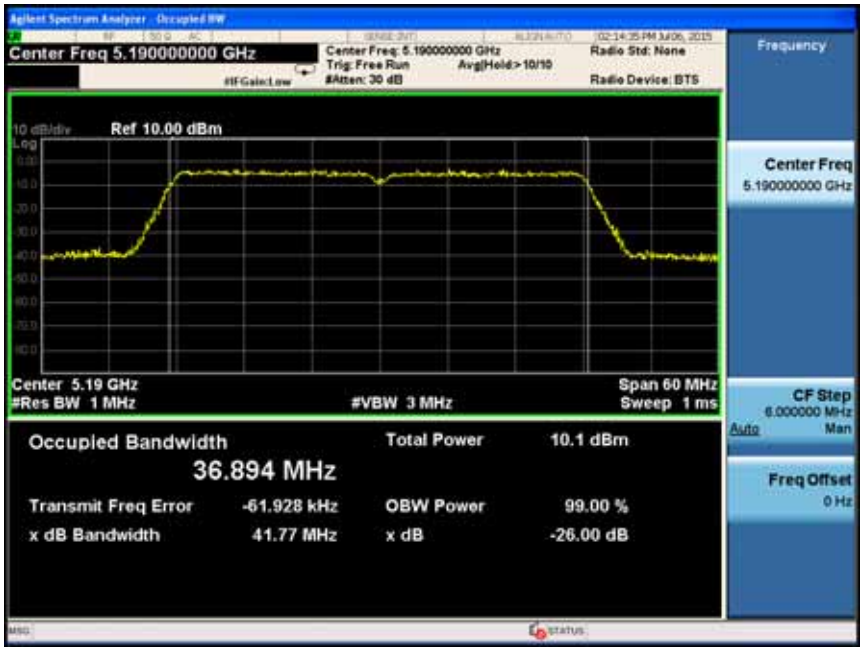
Channel 165 (5825MHz)

Product	:	WiFi Module
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmit by 802.11n(40MHz)

Channel No.	Frequency (MHz)	Ant 0 99% Occupied Bandwidth (MHz)	Ant 1 99% Occupied Bandwidth (MHz)	Ant 0 26dB Occupied Bandwidth (MHz)	Ant1 26dB Occupied Bandwidth (MHz)
38	5190	36.894	36.688	41.77	41.35
46	5230	37.661	37.325	60.00	60.00
151	5755	36.832	36.988	60.00	60.00
159	5795	36.902	36.733	60.00	59.99

Ant 0

Channel 38 (5190MHz)



Channel 42 (5230MHz)

Channel 151 (5755MHz)

Channel 159(5795MHz)

Ant 1

Channel 38 (5190MHz)

Channel 42 (5230MHz)

Channel 151 (5755MHz)

Channel 159(5795MHz)

6. 6dB Occupied Bandwidth

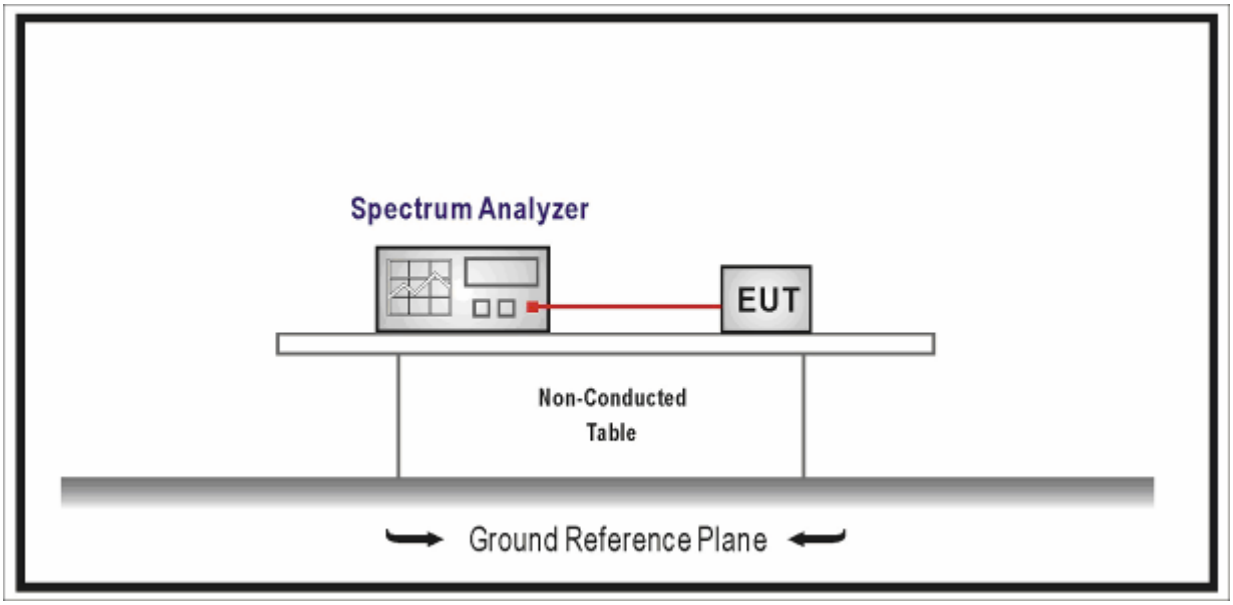
6.1. Test Equipment

Occupied Bandwidth / TR-8

Instrument	Manufacturer	Type No.	Serial No.	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2016.03.10
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2016.04.09

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

6.2. Test Setup



6.3. Limit

For FCC&IC

The minimum 6 dB bandwidth shall be 500 kHz.

6.4. Test Procedure

According to ANSI C63.4:2014& ANSI C63.10:2013&789033 D02 General UNII Test Procedures New Rules v01& FCC CFR Title 47 Part 15 Subpart E: 2014& Industry Canada RSS-Gen Issue 4 Industry Canada RSS-247 Issue 1

a) Set RBW = in the range of 1% to 5% of the OBW.
b) Set the video bandwidth (VBW) ⩾ 3 × RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Use the -6dBm function of the instrument (if available) and report the measured bandwidth.

6.5. Uncertainty

The measurement uncertainty is defined as ± 1 kHz

6.6. Test Result

Product	:	WiFi Module
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11a

Channel No.	Frequency (MHz)	Ant 0 6dB Occupied Bandwidth (MHz)	Ant 1 6dB Occupied Bandwidth (MHz)
149	5745	16.09	16.29
157	5785	16.39	16.13
165	5825	15.23	15.17

Ant 0

Channel 149 (5745MHz)

Channel 157(5785MHz)

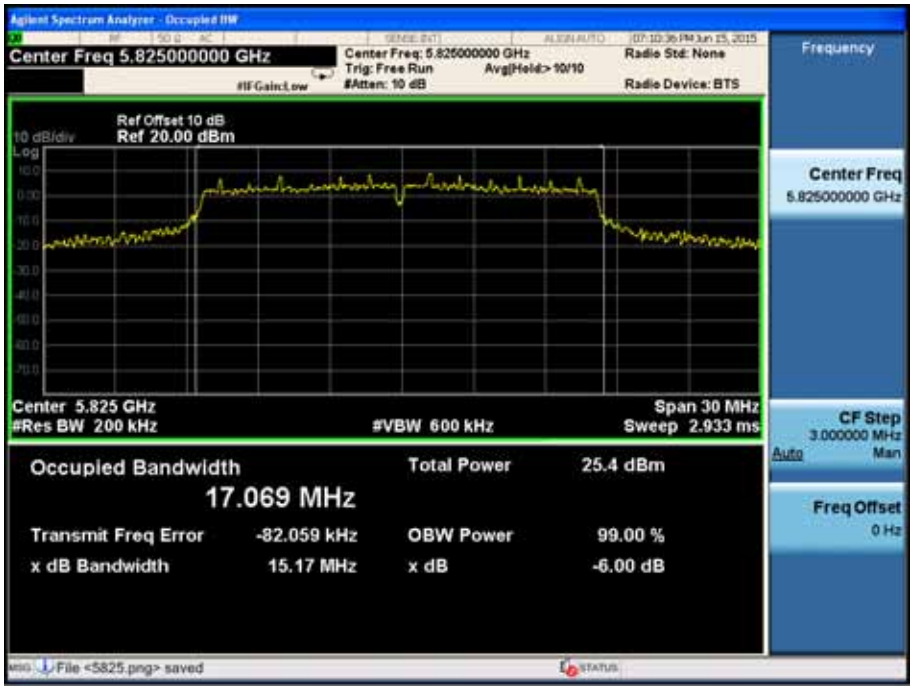
Channel 165 (5825MHz)

Ant 1

Channel 149 (5745MHz)

Channel 157(5785MHz)

Channel 165 (5825MHz)

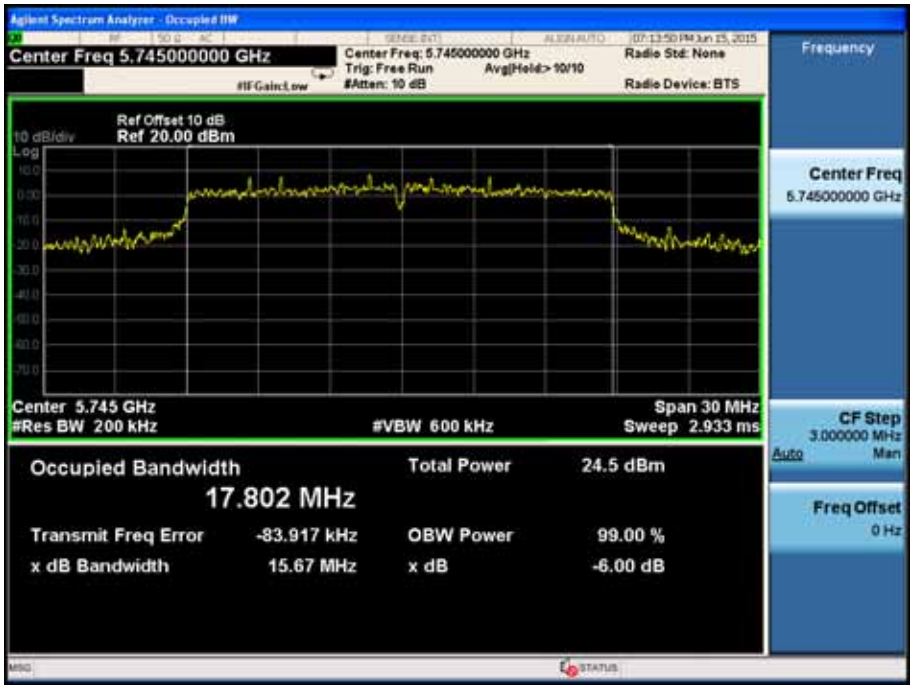


Product	:	WiFi Module
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz)

Channel No.	Frequency (MHz)	Ant 0 6dB Occupied Bandwidth (MHz)	Ant 1 6dB Occupied Bandwidth (MHz)
149	5745	15.67	17.04
157	5785	17.57	16.59
165	5825	17.56	16.23

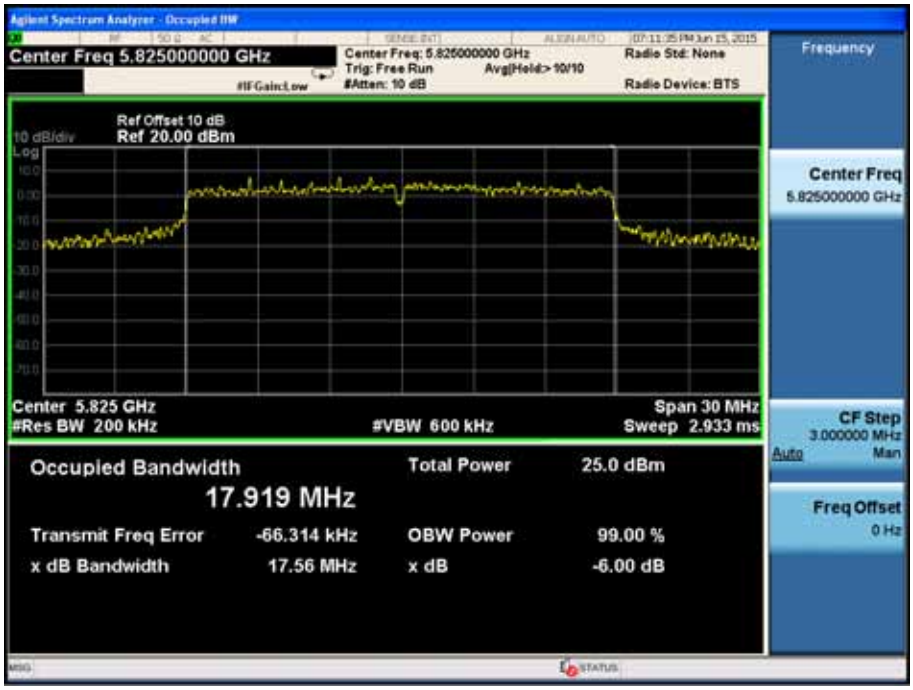
Ant 0

Channel 149 (5745MHz)



Channel 157(5785MHz)

Channel 165 (5825MHz)



Ant 1

Channel 149 (5745MHz)

Channel 157(5785MHz)

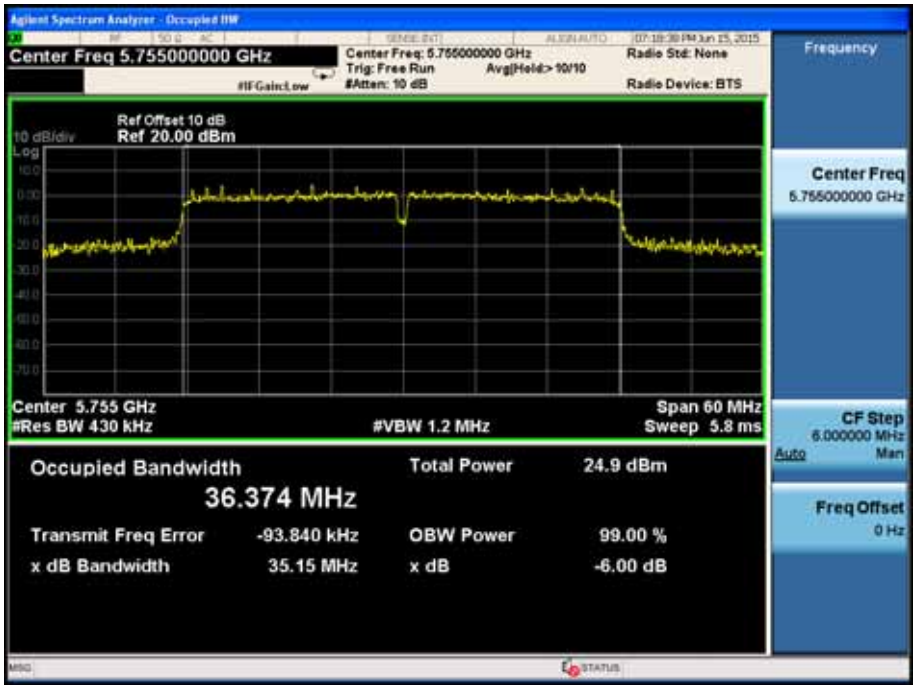
Channel 165 (5825MHz)

Product	:	WiFi Module
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmit by 802.11n(40MHz)

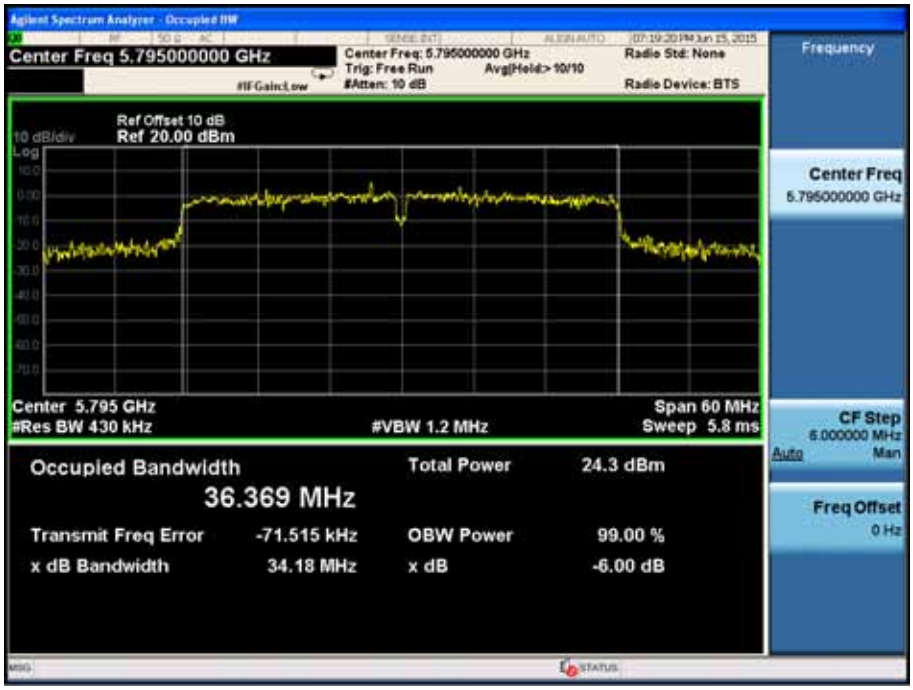
Channel No.	Frequency (MHz)	Ant 0 6dB Occupied Bandwidth (MHz)	Ant 1 6dB Occupied Bandwidth (MHz)
151	5775	35.15	34.42
159	5795	34.18	34.53

Ant 0

Channel 151 (5755MHz)



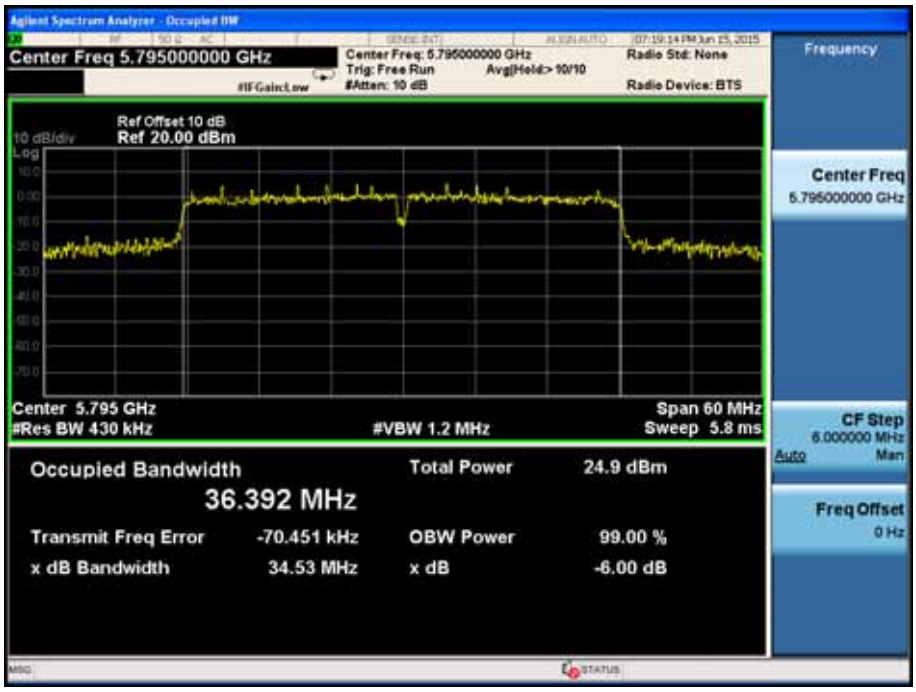
Channel 159(5795MHz)



Ant 1

Channel 151 (5755MHz)

Channel 159(5795MHz)



7. Power Output

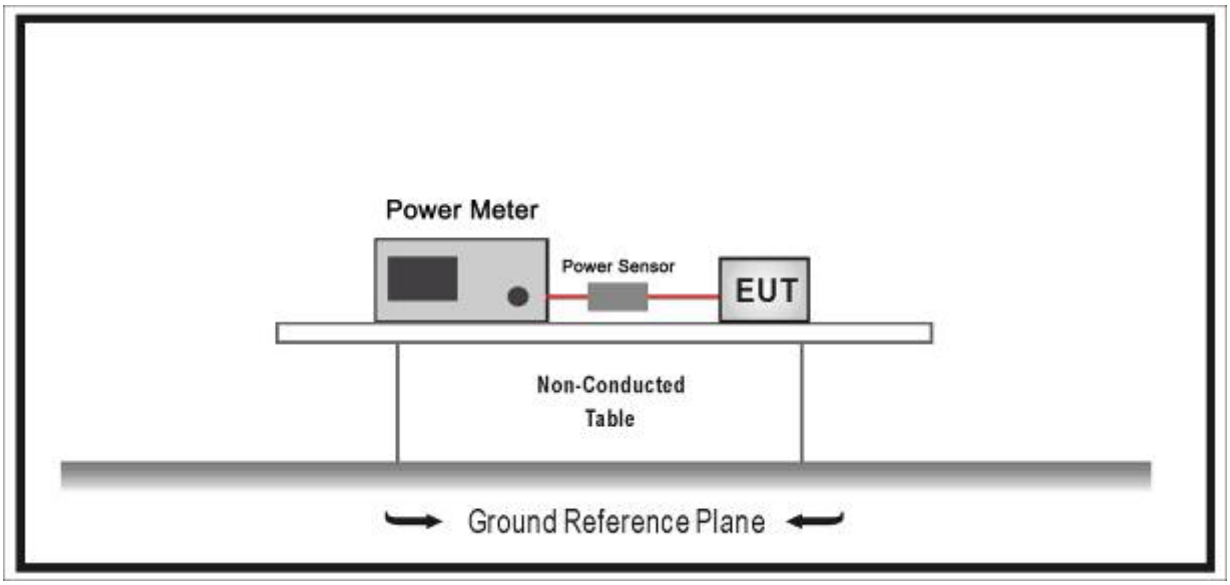
7.1. Test Equipment

Power Output / TR-8

Instrument	Manufacturer	Type No.	Serial No.	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2016.03.10
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2016.04.09

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

7.2. Test Setup



7.3. Limit

For FCC

- For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm +

10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

- For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

For IC

- For the Frequency Band 5150-5250MHz, the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10B, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band..
- For the Frequency Band 5250-5350MHz, the maximum conducted output power shall not exceed 250 mW or 11 + 10 log10B, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
  The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

- For the Frequency Band 5470-5600, 5650-5725MHz, The maximum conducted output power shall not exceed 250 mW or 11 + 10 log10B, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
  The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

- For the Frequency Band 5725-5850MHz,The maximum conducted output power shall not exceed 1 W. The power spectral density shall not exceed 30 dBm in any 500 kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed point-to-point operations exclude the use of point-to-multipointFootnote3 systems, omnidirectional applications and multiple collocated transmitters transmitting the same information.

7.4. Test Procedure

According to ANSI C63.4:2014& ANSI C63.10:2013&789033 D02 General UNII Test Procedures New Rules v01& FCC CFR Title 47 Part 15 Subpart E: 2014& Industry Canada RSS-Gen Issue 4 Industry Canada RSS-247 Issue 1

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

7.5. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB

7.6. 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.

Power output at various data rates:

Test Mode	Bandwidth	Frequency (MHz)	Channel	Data Rate	Average Power (dBm)
802.11a	20	5180	36	6	21.79
				24	21.44
				54	21.39
802.11n(20MHz)	20	5180	36	MCS0	21.31
				MCS4	21.00
				MCS7	21.64
802.11n(40MHz)	40	5190	38	MCS0	21.35
				MCS4	21.03
				MCS7	21.90

Product	:	WiFi Module
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11a

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)		IC Limit (dBm)	FCC Limit (dBm)
		Ant 1	Ant 2		
36	5180	21.79	21.90	23	24
44	5220	21.70	21.70	23	24
48	5240	21.85	21.95	23	24
149	5745	26.93	26.05	30	30
157	5785	26.76	26.26	30	30
165	5825	27.26	26.26	30	30

Product	:	WiFi Module
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)		IC Limit (dBm)	FCC Limit (dBm)
		Ant 1	Ant 2		
36	5180	21.42	21.31	24	23
44	5220	21.47	21.43	24	23
48	5240	21.86	21.80	24	23
149	5745	26.00	25.27	30	30
157	5785	26.02	25.39	30	30
165	5825	25.68	25.30	30	30

Product	:	WiFi Module
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmit by 802.11n(40MHz)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)		IC Limit (dBm)	FCC Limit (dBm)
		Ant 1	Ant 2		
38	5190	21.35	21.28	24	23
46	5230	21.47	21.33	24	23
151	5755	25.69	25.62	30	30
159	5795	25.34	25.31	30	30

8. Peak Power Spectral Density

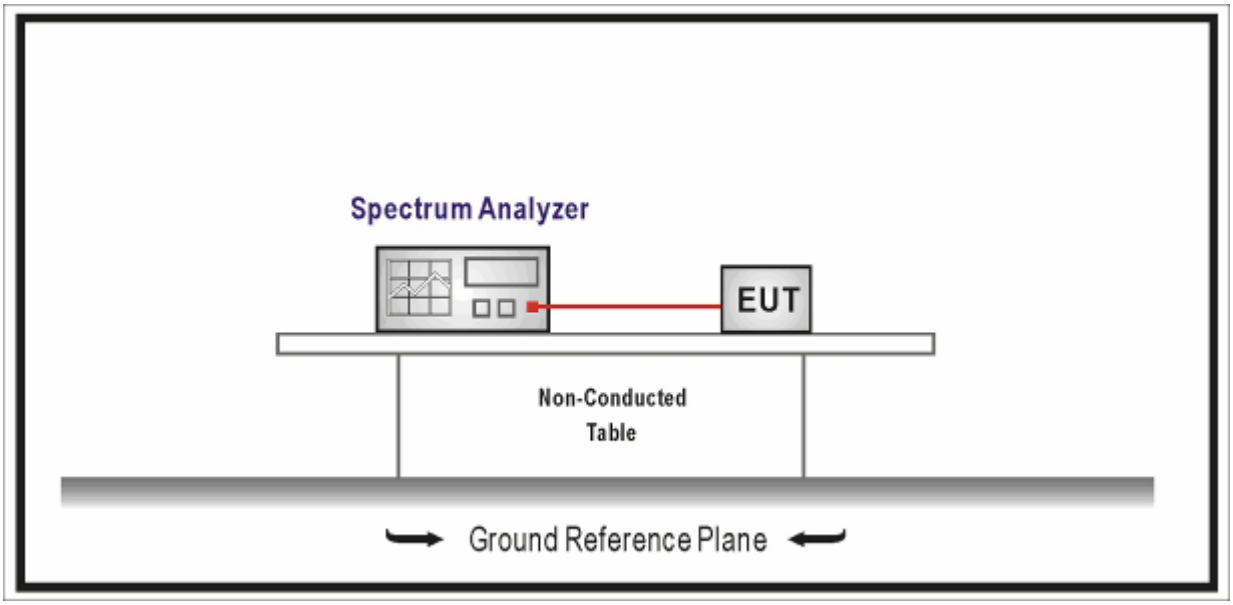
8.1. Test Equipment

Peak Power Spectral Density / TR-8

Instrument	Manufacturer	Type No.	Serial No.	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2016.03.10
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2016.04.09

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

8.2. Test Setup



8.3. Limit

For FCC

- For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

  (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the

maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

- For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

For IC

- For the Frequency Band 5150-5250MHz, the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10B, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band..
- For the Frequency Band 5250-5350MHz, the maximum conducted output power shall not exceed 250 mW or 11 + 10 log10B, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

  The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at

least 6 dB below the maximum permitted e.i.r.p. of 1 W.

- For the Frequency Band 5470-5600, 5650-5725MHz, The maximum conducted output power shall not exceed 250 mW or 11 + 10 log10B, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
  The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.
- For the Frequency Band 5725-5850MHz,The maximum conducted output power shall not exceed 1 W. The power spectral density shall not exceed 30 dBm in any 500 kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However,
  fixed point-to-pointdevices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed point-to-point operations exclude the use of point-to-multipointFootnote3 systems, omnidirectional applications and multiple collocated transmitters transmitting the same information.

8.4. Test Procedure

According to ANSI C63.4:2014& ANSI C63.10:2013&789033 D02 General UNII Test Procedures New Rules v01& FCC CFR Title 47 Part 15 Subpart E: 2014& Industry Canada RSS-Gen Issue 4 Industry Canada RSS-247 Issue 1.

Set span to encompass the entire emission bandwidth (EBW) of the signal.

For 5150-5725MHz

a) Set RBW = 1 MHz.
b) Set VBW ≥ 3 MHz.
c) Sweep time = auto.
d) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.

For 5725-5875MHz

e) Set RBW=510KHz
f) VBW≥3RBW
g) Sweep time=auto
h) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.

8.5. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB

8.6. Test Result

Product	:	WiFi Module
Test Item	:	Peak Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11a

	Channel No.	Frequency (MHz)	Reading Value (dBm/MHz)	Duty Cycle (%)	Total PPSD (dBm/MHz)	FCC/ IC Limit (dBm/MHz)
Ant0	36	5180	-5.245	98.2	-5.166	11 /10
	44	5220	-5.374	98.2	-5.295	11 /10
	48	5240	-4.835	98.2	-4.756	11 /10

	Channel No.	Frequency (MHz)	Reading Value (dBm/MHz)	Duty Cycle (%)	Total PPSD (dBm/MHz)	FCC/ IC Limit (dBm/MHz)
Ant1	36	5180	-5.039	98.2	-4.960	11 /10
	44	5220	-4.800	98.2	-4.721	11 /10
	48	5240	-4.361	98.2	-4.282	11 /10

Note1: When EUT duty cycle < 98%, the total PSD = Reading Level + 10*log(1/duty cycle)

	Channel No.	Frequency (MHz)	Reading Value (dBm/MHz)	Duty Cycle (%)	Total PPSD (dBm/MHz)	FCC/IC Limit (dBm/MHz)
Ant0	149	5745	-4.956	98.2	-4.877	30
	157	5785	-5.242	98.2	-5.163	30
	165	5825	-5.025	98.2	-4.946	30

	Channel No.	Frequency (MHz)	Reading Value (dBm/MHz)	Duty Cycle (%)	Total PPSD (dBm/MHz)	FCC/IC Limit (dBm/MHz)
Ant1	149	5745	-3.915	98.2	-3.836	30
	157	5785	-3.928	98.2	-3.849	30
	165	5825	-4.905	98.2	-4.826	30

Note: When EUT duty cycle < 98%, the total PSD = Reading Level + 10*log(1/duty cycle)

Ant 0

Channel 36 (5180MHz)

Channel 44 (5220MHz)

Channel 48 (5240MHz)

Channel 149 (5745MHz)

Channel 157(5785MHz)

Channel 165 (5825MHz)

Ant 1

Channel 36 (5180MHz)

Channel 44 (5220MHz)

Channel 48 (5240MHz)

Channel 149 (5745MHz)

Channel 157(5785MHz)

Channel 165 (5825MHz)

Product	:	WiFi Module
Test Item	:	Peak Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz)

	Channel No.	Frequency (MHz)	Reading Value (dBm/MHz)	Duty Cycle (%)	Total PPSD (dBm/MHz)	FCC/ IC Limit (dBm/MHz)
Ant0	36	5180	-5.087	87.6	-4.512	11 /10
	44	5220	-3.706	87.6	-3.131	11 /10
	48	5240	-2.343	87.6	-1.768	11 /10

	Channel No.	Frequency (MHz)	Reading Value (dBm/MHz)	Duty Cycle (%)	Total PPSD (dBm/MHz)	FCC/ IC Limit (dBm/MHz)
Ant1	36	5180	-1.689	87.6	-1.114	11 /10
	44	5220	-3.066	87.6	-2.491	11 /10
	48	5240	-1.980	87.6	-1.405	11 /10

Note1: When EUT duty cycle < 98%, the total PSD = Reading Level + 10*log(1/duty cycle)
Note2: The IC limit is less than FCC, so the stricter limit is used for testing.

	Channel No.	Frequency (MHz)	Reading Value (dBm/MHz)	Duty Cycle (%)	Total PPSD (dBm/MHz)	FCC/IC Limit (dBm/MHz)
Ant0	149	5745	-6.875	87.6	-6.300	30
	157	5785	-6.867	87.6	-6.292	30
	165	5825	-6.952	87.6	-6.377	30

	Channel No.	Frequency (MHz)	Reading Value (dBm/MHz)	Duty Cycle (%)	Total PPSD (dBm/MHz)	FCC/IC Limit (dBm/MHz)
Ant1	149	5745	-4.264	87.6	-3.689	30
	157	5785	-3.894	87.6	-3.319	30
	165	5825	-4.414	87.6	-3.839	30

Note: When EUT duty cycle < 98%, the total PSD = Reading Level + 10*log(1/duty cycle)

Ant 0

Channel 36 (5180MHz)

Channel 44 (5220MHz)

Channel 48 (5240MHz)

Channel 149 (5745MHz)

Channel 157(5785MHz)

Channel 165 (5825MHz)

Ant 1

Channel 36 (5180MHz)

Channel 44 (5220MHz)

Channel 48 (5240MHz)

Channel 149 (5745MHz)

Channel 157(5785MHz)

Channel 165 (5825MHz)

Product	:	WiFi Module
Test Item	:	Peak Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmit by 802.11n(40MHz)

Ant0	Channel No.	Frequency (MHz)	Reading Value (dBm/MHz)	Duty Cycle (%)	Total PPSD (dBm/MHz)	FCC/ IC Limit (dBm/MHz)
	38	5190	-6.375	85.7	-5.705	11/10
	46	5230	-6.098	85.7	-5.428	11/10

Ant1	Channel No.	Frequency (MHz)	Reading Value (dBm/MHz)	Duty Cycle (%)	Total PPSD (dBm/MHz)	FCC/ IC Limit (dBm/MHz)
	38	5190	-5.682	85.7	-5.012	11/10
	46	5230	-5.210	85.7	-4.540	11/10

Note1: When EUT duty cycle < 98%, the total PSD = Reading Level + 10*log(1/duty cycle)

Ant0	Channel No.	Frequency (MHz)	Reading Value (dBm/MHz)	Duty Cycle (%)	Total PPSD (dBm/MHz)	FCC/IC Limit (dBm/MHz)
	151	5755	-7.215	85.7	-6.545	30
	159	5795	-7.614	85.7	-6.944	30

Ant1	Channel No.	Frequency (MHz)	Reading Value (dBm/MHz)	Duty Cycle (%)	Total PPSD (dBm/MHz)	FCC/ ICLimit (dBm/MHz)
	151	5755	-5.298	85.7	-4.628	30
	159	5795	-5.116	85.7	-4.446	30

Note: When EUT duty cycle < 98%, the total PSD = Reading Level + 10*log(1/duty cycle)

Ant 0

Channel 38 (5190MHz)

Channel 42 (5230MHz)

Channel 151 (5755MHz)

Channel 159(5795MHz)

Ant 1

Channel 38 (5190MHz)

Channel 42 (5230MHz)

Channel 151 (5755MHz)

Channel 159(5795MHz)

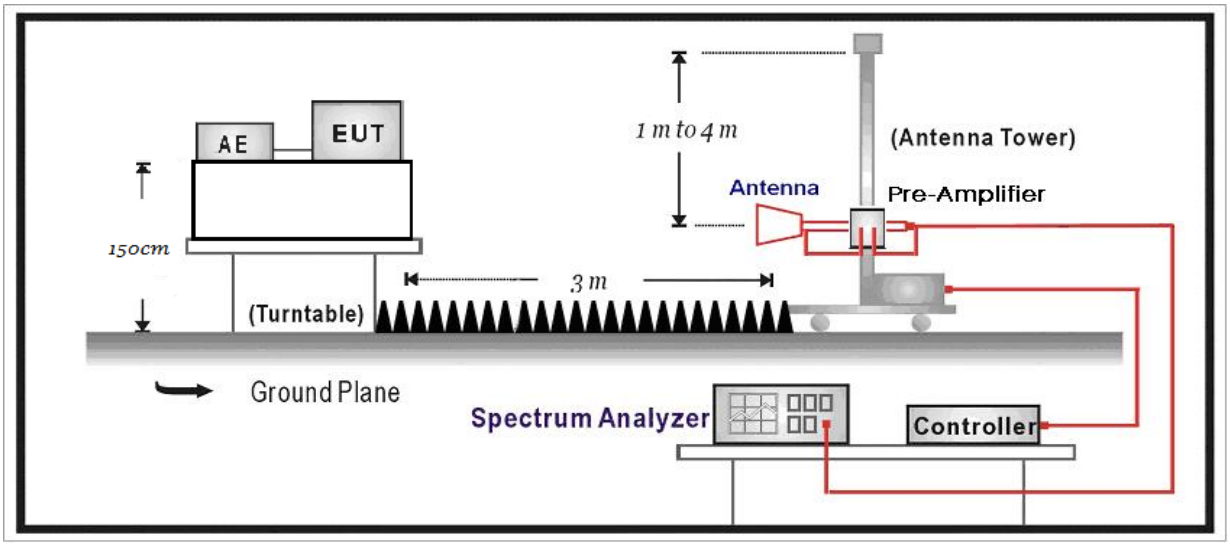
9. Radiated Emission Band Edge

9.1. Test Equipment

☒Radiated Emission Band Edge / AC-5

Instrument	Manufacturer	Type No.	Serial No.	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2016.03.10
Preamplifier	Miteq	NSP1800-25	1364185	2016.05.03
Preamplifier	QuieTek	AP-040G	CHM-0906001	2016.05.03
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2015.10.15
DRG Horn	ETS-Lindgren	3117	00123988	2016.01.07
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2016.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2016.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2016.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2016.06.09
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2016.01.08

9.2. Test Setup



9.3. Limit

For IC

<u>For RSS Gen requirement:</u>

Radiated emissions which fall in the restricted bands, as defined in Section 8.10 of RSS Gen, must also comply with the radiated emission limits specified in Section 8.10.

MHz
0.090-0.110
2.1735-2.1905
3.020-3.026
4.125-4.128
4.17725-4.17775
4.20725-4.20775
5.677-5.683
6.215-6.218
6.26775-6.26825
6.31175-6.31225
8.291-8.294
8.362-8.366
8.37625-8.38675
8.41425-8.41475
12.29-12.293
12.51975-12.52025
12.57675-12.57725
13.36-13.41
16.42-16.423
16.69475-16.69525
16.80425-16.80475
25.5-25.67
37.5-38.25
73-74.6

MHz
74.8-75.2
108-138
156.52475-156.52525
156.7-156.9
240-285
322-335.4
399.9-410
608-614
960-1427
1435-1626.5
1645.5-1646.5
1660-1710
1718.8-1722.2
2200-2300
2310-2390
2655-2900
3260-3267
3332-3339
3345.8-3358
3500-4400
4500-5150
5350-5460
7250-7750
8025-8500

GHz
9.0-9.2
9.3-9.5
10.6-12.7
13.25-13.4
14.47-14.5
15.35-16.2
17.7-21.4
22.01-23.12
23.6-24.0
31.2-31.8
36.43-36.5
Above 38.6

For FCC

<u>For 15.205 requirement:</u>

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).

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])

For 15.407(b) requirement:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

Operating Frequency Band (MHz)	EIRP Limit (dBm/MHz)	Equivalent Field Strength at 3m (dBuV/m)
5150 - 5250	-27	68.3
5250 - 5350	-27	68.3
5470 - 5725	-27	68.3
5725 - 5825	-27 [Note(1)]	68.3
	-17 [Note(2)]	78.3

Note(1): Outside the frequency range 5715 - 5835MHz.
Note(2): Within the frequency range from the band edge to 10MHz below or above the band edge, 5715 – 5725MHz and 5825 - 5835MHz.

9.4. Test Procedure

According to ANSI C63.4:2014& ANSI C63.10:2013&789033 D02 General UNII Test Procedures New Rules v01& FCC CFR Title 47 Part 15 Subpart E: 2014& Industry Canada RSS-Gen Issue 4 Industry Canada RSS-247 Issue 1.

The EUT is placed on a turn table which is 1.5 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.
Note: When doing emission measurement above 1GHz, the horn Chainenna will be bended down a little (as horn Chainenna has the narrow beamwidth) in order to keeping the Chainenna in the “cone of radiation” of EUT. The 3dB beamwidth is 10~60 degrees for H-plane and 10~90 degrees for E-plane.

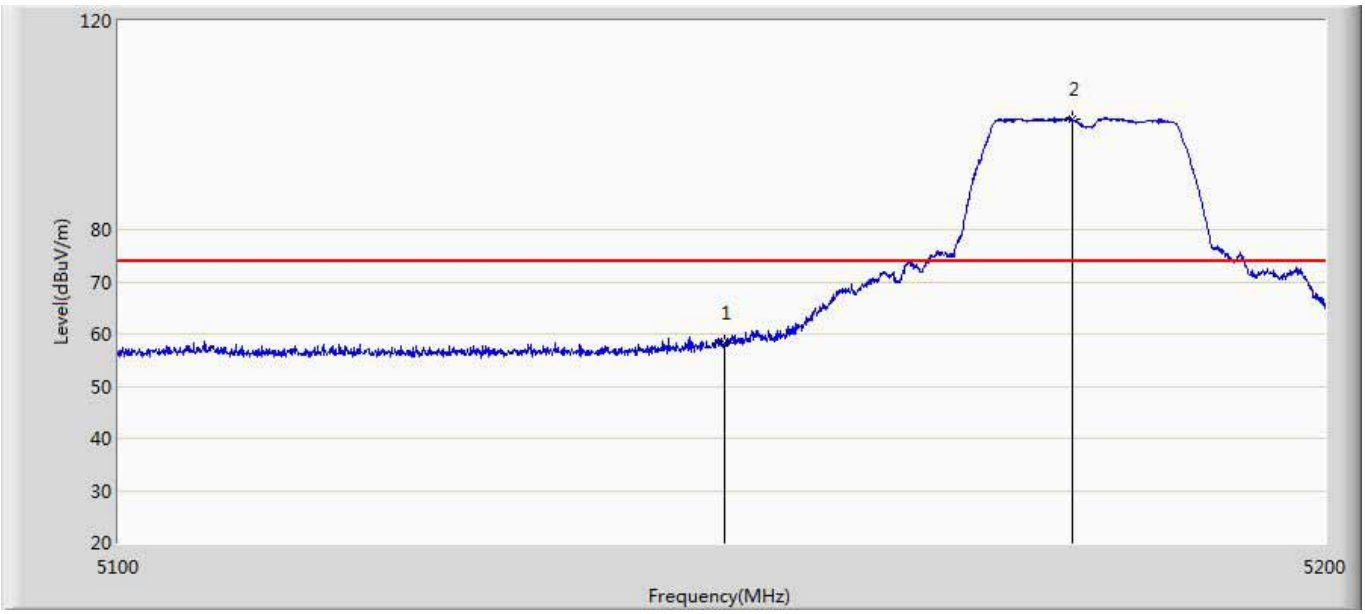
9.5. Uncertainty

The measurement uncertainty above 1GHz is defined as ± 3.9 dB

9.6. Test Result

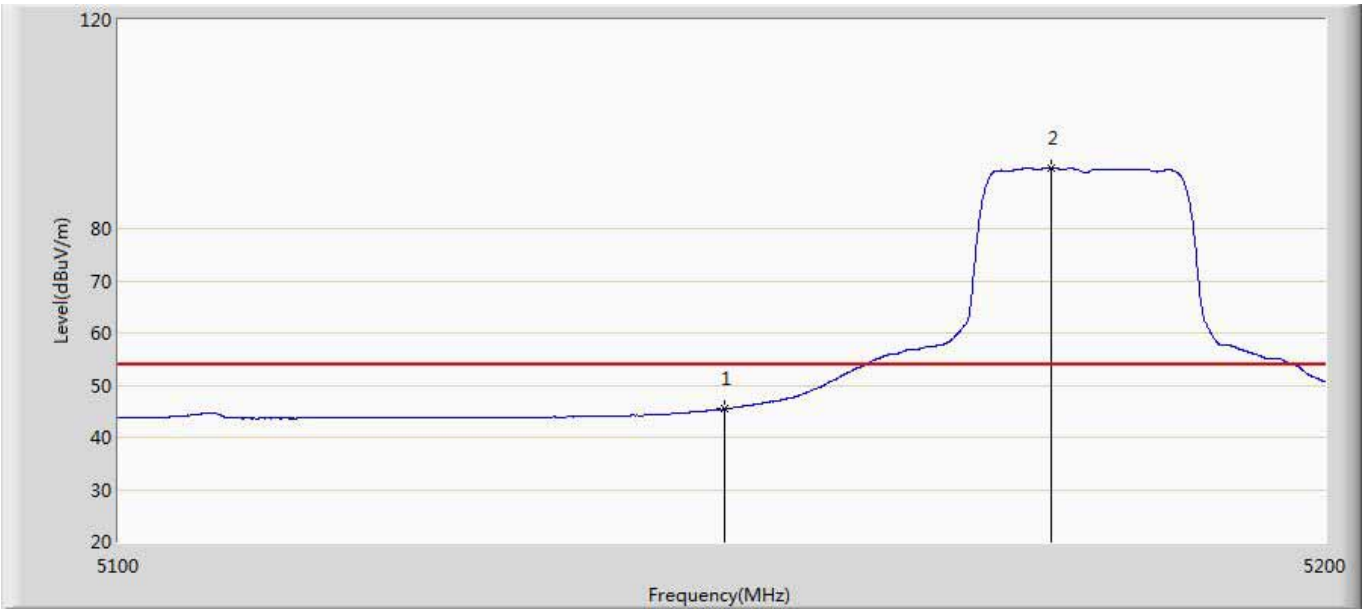
Peak detector: RBW = 1MHz, VBW = 3MHz, sweep time = 200ms;
Average detector: RBW = 1MHz, VBW = 10Hz, sweep time = auto.
Note: when the duty cycle is less than 98%, VBW should ≥1/T where T is the minimum duration of continue transmitting time.

Site: AC5	Time: 2015/06/24 - 17:21
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 1: Transmit at CH5180 by 802.11a ant0	



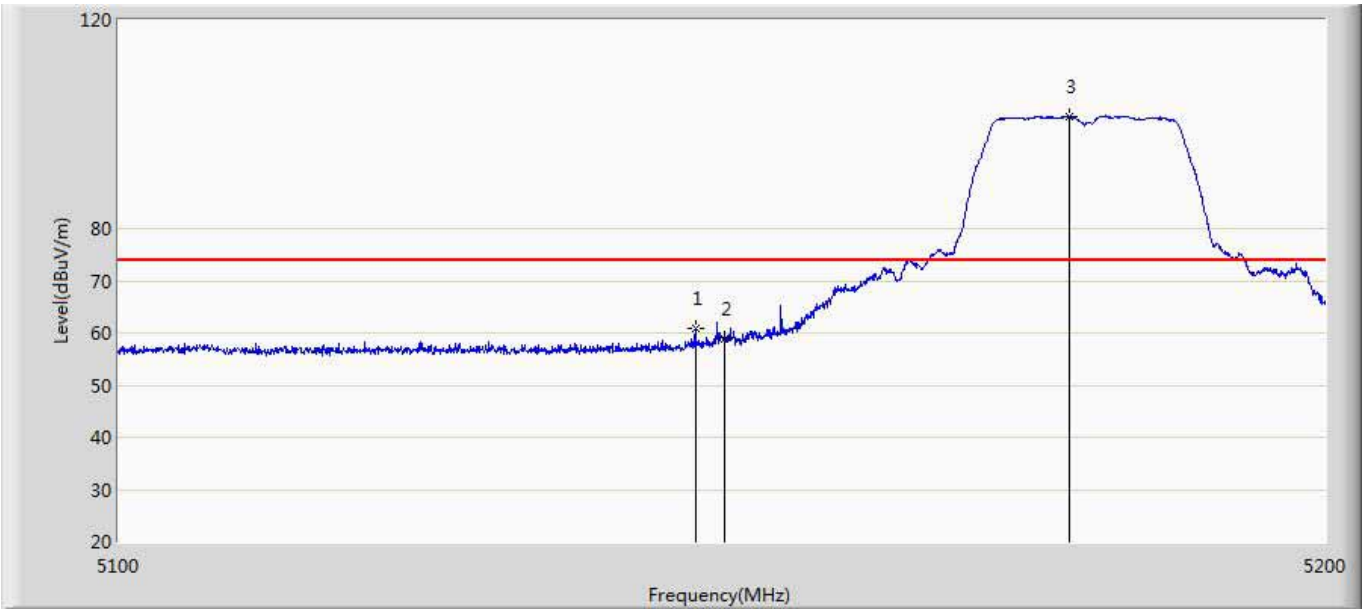
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	58.276	17.369	-15.724	74.000	40.907	PK
2	*	5178.850	101.250	60.281	27.250	74.000	40.969	PK

Site: AC5	Time: 2015/06/24 - 17:22
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 1: Transmit at CH5180 by 802.11a ant0	



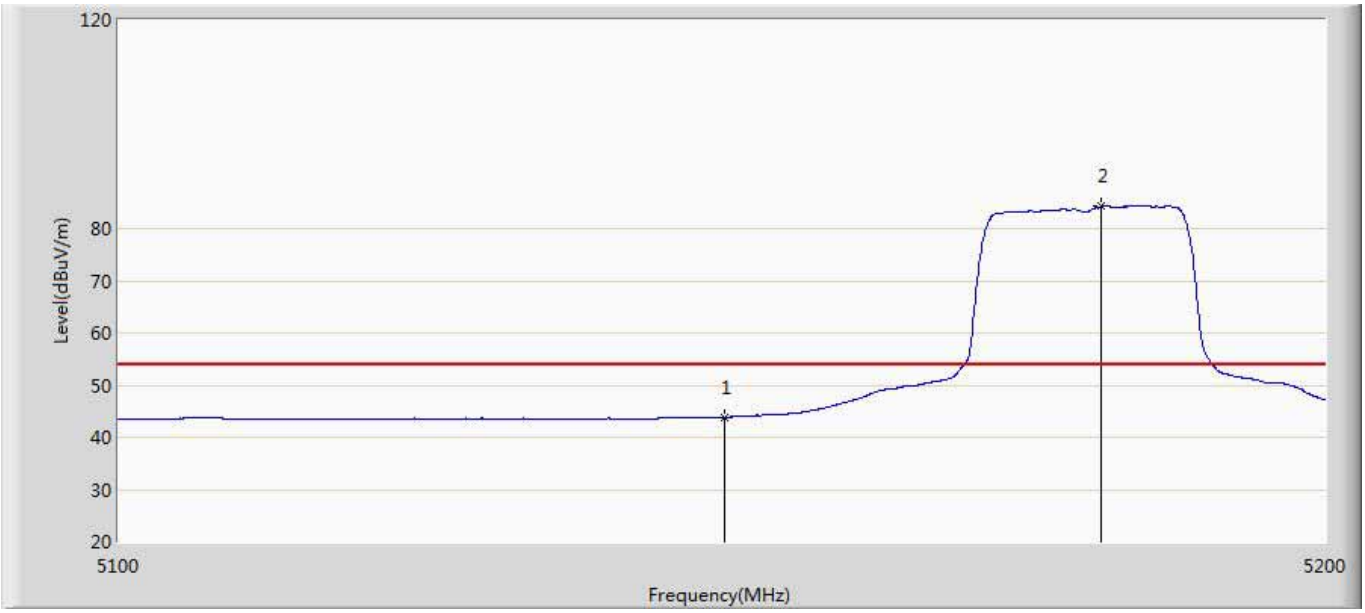
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	45.432	4.525	-8.568	54.000	40.907	AV
2	*	5177.150	91.590	50.625	37.590	54.000	40.964	AV

Site: AC5	Time: 2015/06/24 - 17:25
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 1: Transmit at CH5180 by 802.11a ant0	



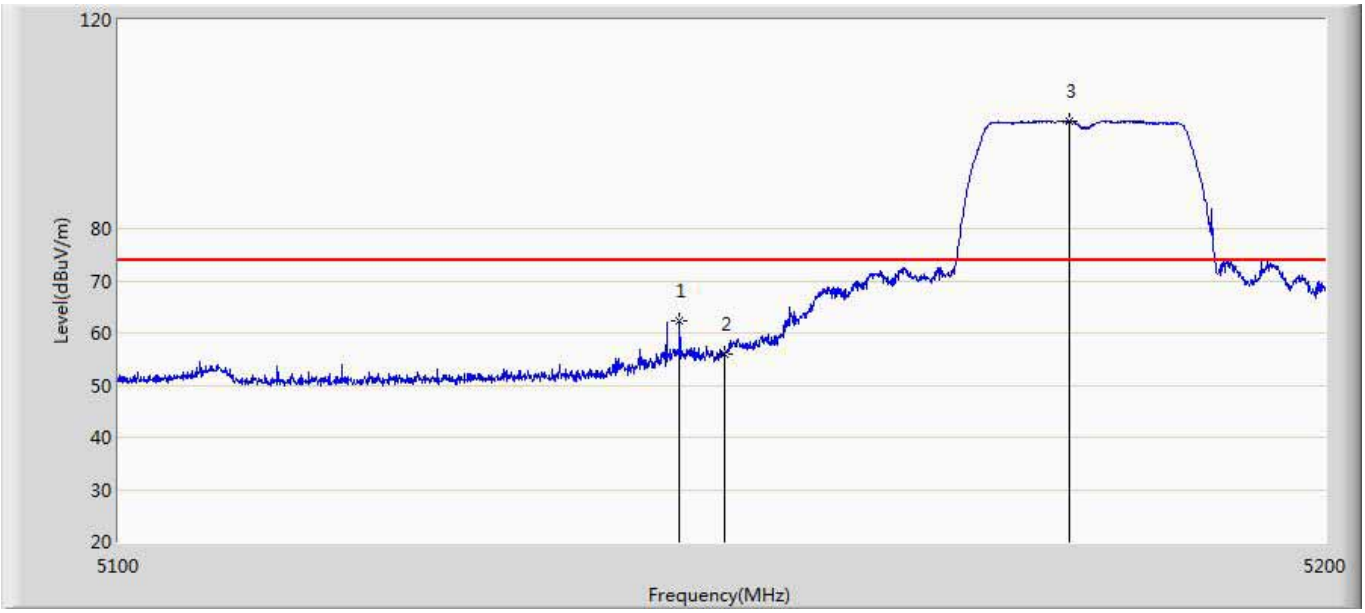
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5147.600	60.879	19.977	-13.121	74.000	40.902	PK
2		5150.000	58.819	17.912	-15.181	74.000	40.907	PK
3	*	5178.600	101.534	60.566	27.534	74.000	40.968	PK

Site: AC5	Time: 2015/06/24 - 17:25
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 1: Transmit at CH5180 by 802.11a ant0	



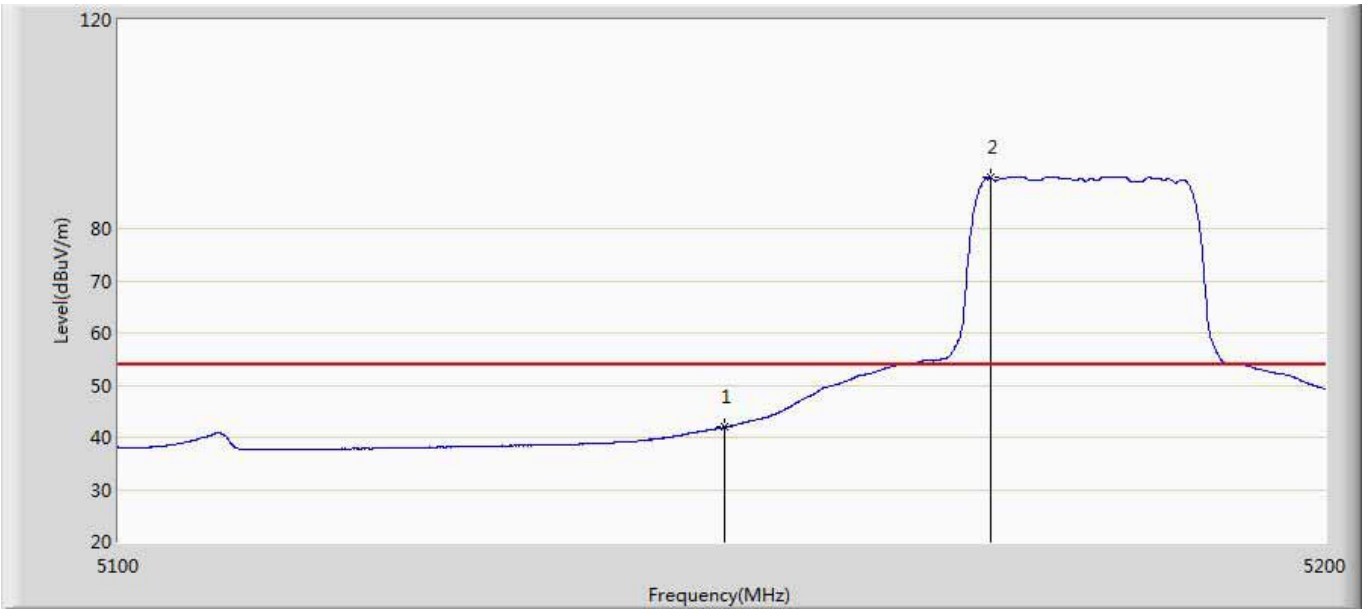
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	43.839	2.932	-10.161	54.000	40.907	AV
2	*	5181.350	84.270	43.296	30.270	54.000	40.974	AV

Site: AC5	Time: 2015/06/24 - 17:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 2: Transmit at CH5180 by 802.11n(20MHz) ant0	



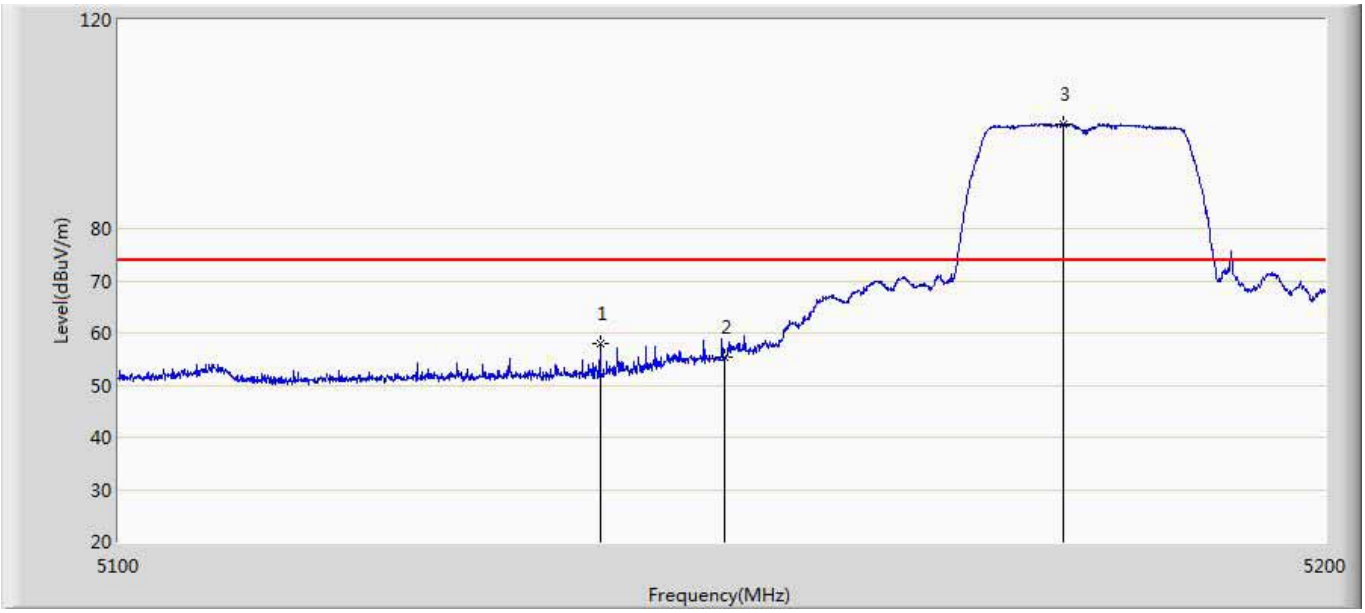
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5146.300	62.289	21.390	-11.711	74.000	40.899	PK
2		5150.000	55.866	14.959	-18.134	74.000	40.907	PK
3	*	5178.650	100.615	59.647	26.615	74.000	40.968	PK

Site: AC5	Time: 2015/06/24 - 17:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 2: Transmit at CH5180 by 802.11n(20MHz) ant0	



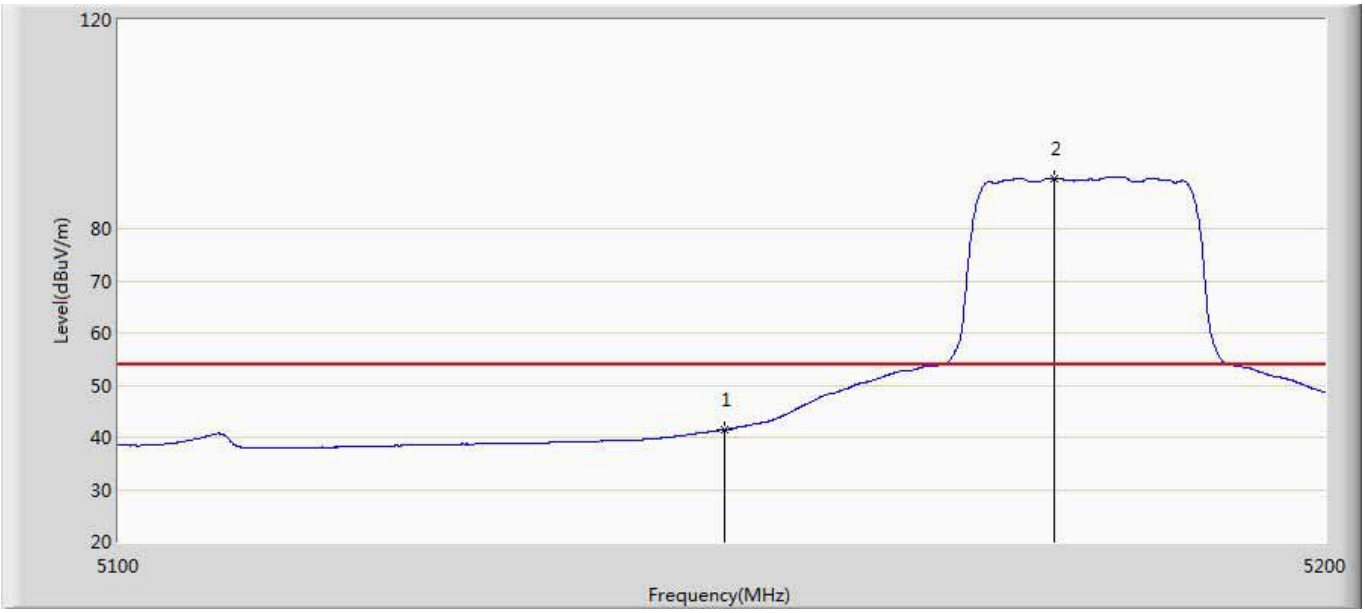
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	41.931	1.024	-12.069	54.000	40.907	AV
2	*	5172.050	89.767	48.814	35.767	54.000	40.953	AV

Site: AC5	Time: 2015/06/24 - 17:41
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 2: Transmit at CH5180 by 802.11n(20MHz) ant0	



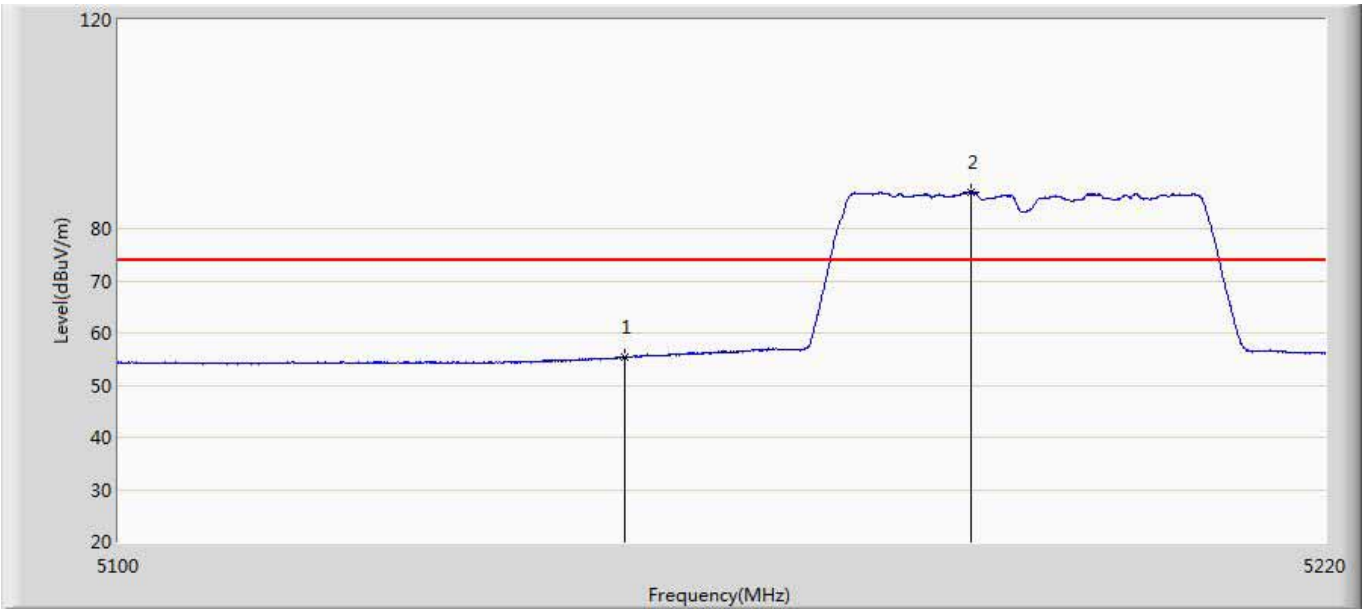
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5139.700	57.895	17.011	-16.105	74.000	40.884	PK
2		5150.000	55.257	14.350	-18.743	74.000	40.907	PK
3	*	5178.100	100.056	59.089	26.056	74.000	40.967	PK

Site: AC5	Time: 2015/06/24 - 17:42
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 2: Transmit at CH5180 by 802.11n(20MHz) ant0	



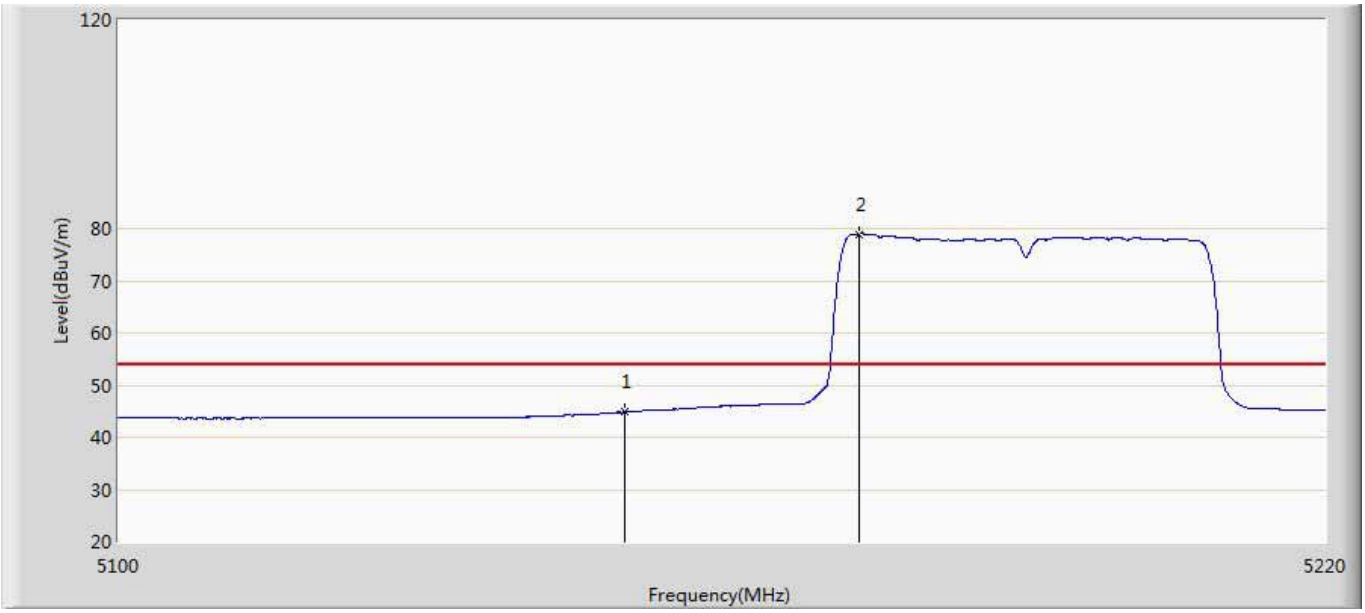
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	41.474	0.567	-12.526	54.000	40.907	AV
2	*	5177.400	89.654	48.689	35.654	54.000	40.966	AV

Site: AC5	Time: 2015/06/24 - 18:10
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 3: Transmit at CH5190 by 802.11n(40MHz) ant0	



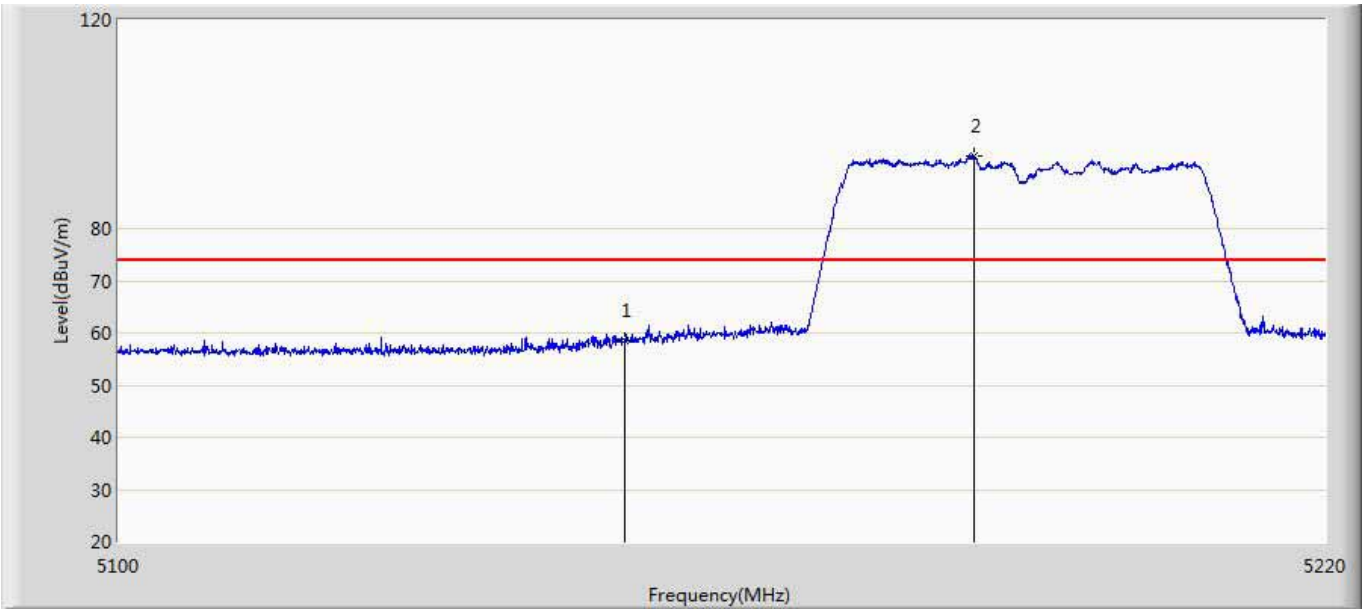
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	55.352	14.445	-18.648	74.000	40.907	PK
2	*	5184.540	86.972	45.990	12.972	74.000	40.982	PK

Site: AC5	Time: 2015/06/24 - 18:11
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 3: Transmit at CH5190 by 802.11n(40MHz) ant0	



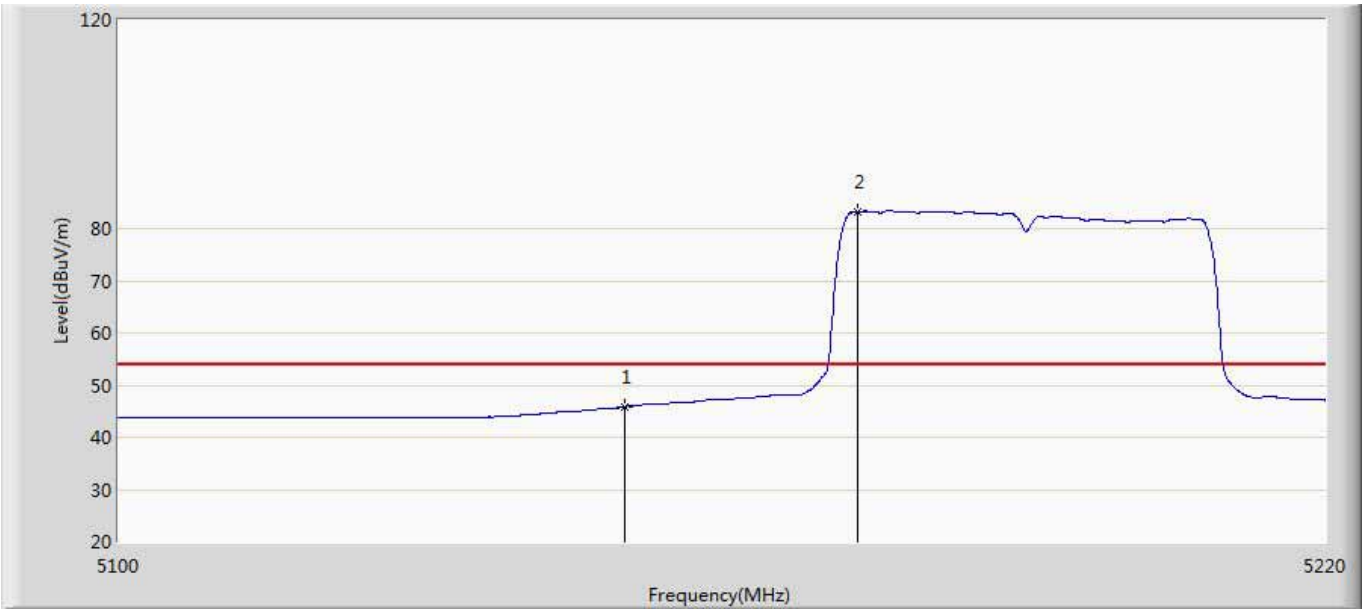
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	44.789	3.882	-9.211	54.000	40.907	AV
2	*	5173.380	78.985	38.029	24.985	54.000	40.956	AV

Site: AC5	Time: 2015/06/24 - 18:14
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 3: Transmit at CH5190 by 802.11n(40MHz) ant0	



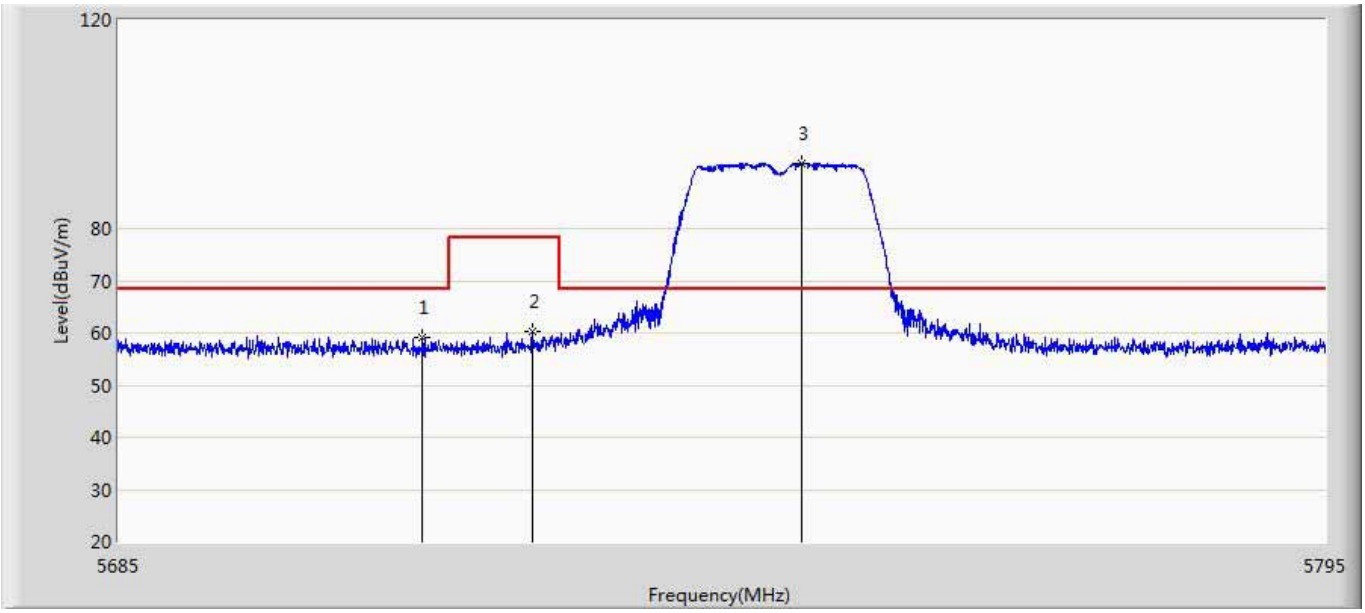
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	58.546	17.639	-15.454	74.000	40.907	PK
2	*	5184.840	93.899	52.917	19.899	74.000	40.983	PK

Site: AC5	Time: 2015/06/24 - 18:15
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 3: Transmit at CH5190 by 802.11n(40MHz) ant0	



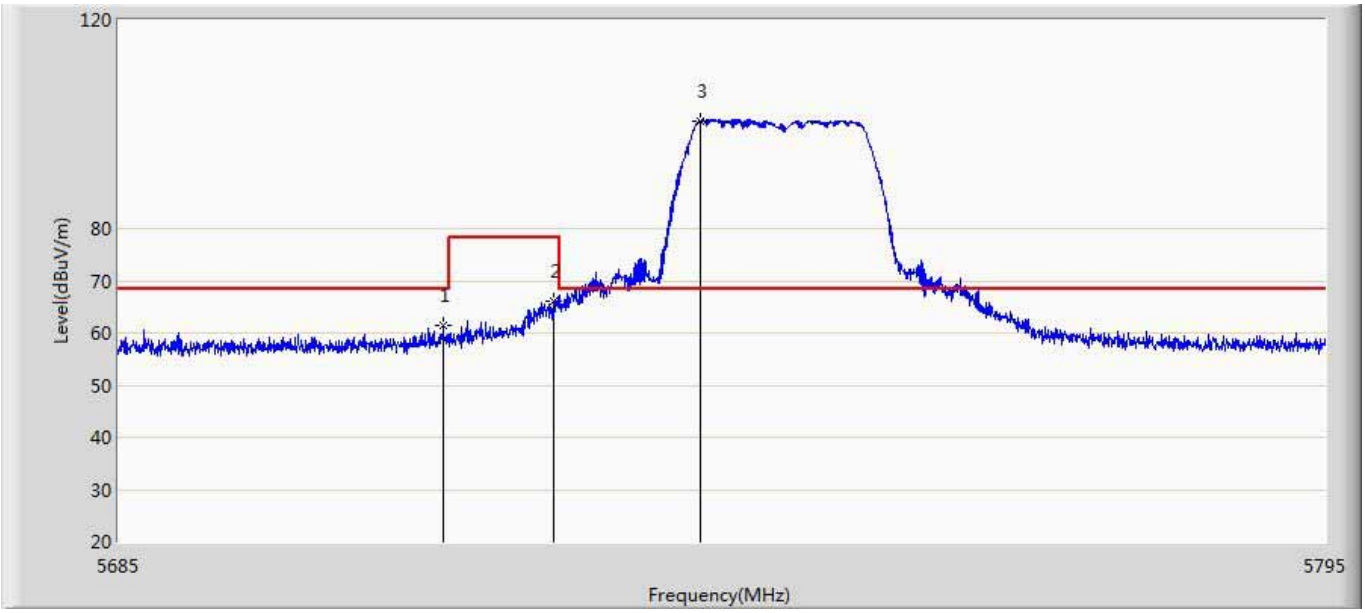
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	45.848	4.941	-8.152	54.000	40.907	AV
2	*	5173.140	83.200	42.244	29.200	54.000	40.956	AV

Site: AC5	Time: 2015/06/25 - 16:02
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 1: Transmit at CH5745 by 802.11a ant0	



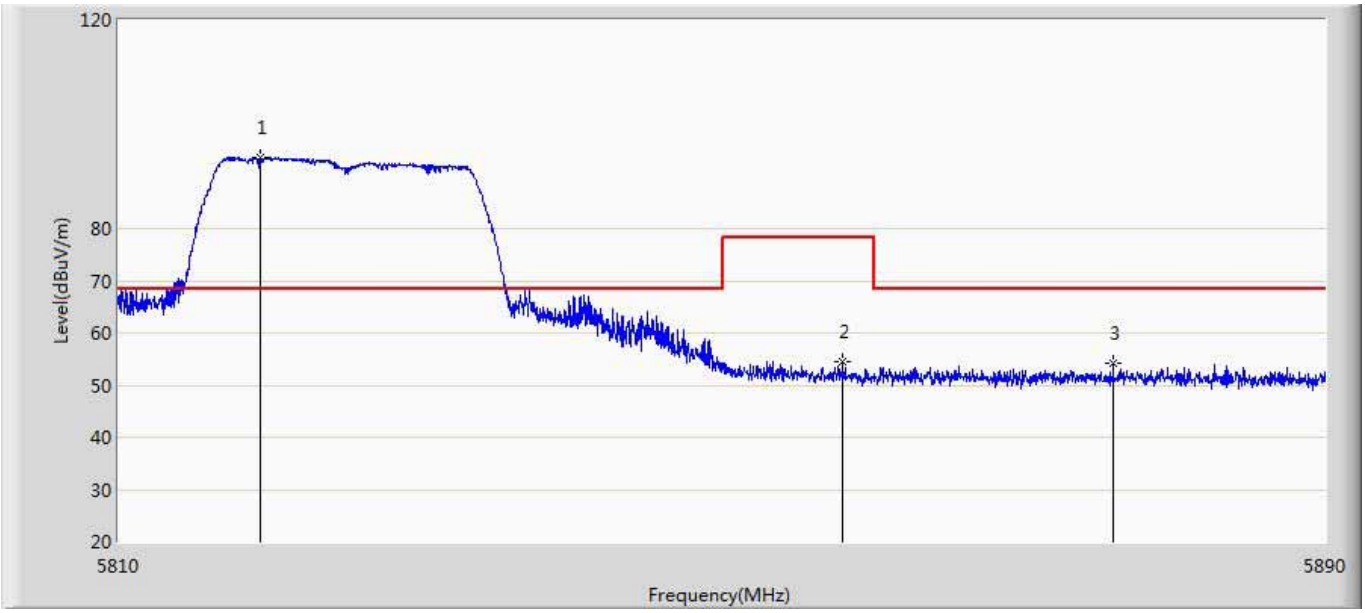
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5712.555	59.085	17.558	-9.215	68.300	41.527	PK
2		5722.565	60.176	18.636	-18.124	78.300	41.540	PK
3	*	5747.040	92.560	50.991	24.260	68.300	41.569	PK

Site: AC5	Time: 2015/06/25 - 16:04
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 1: Transmit at CH5745 by 802.11a ant0	



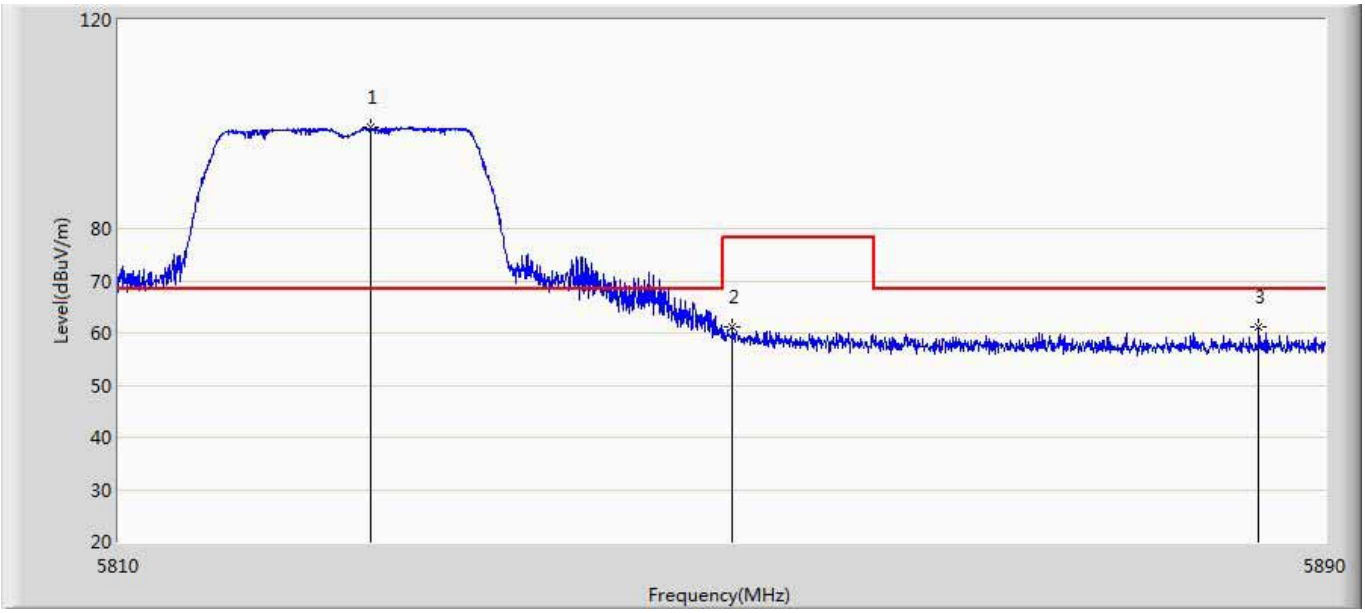
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5714.425	61.332	19.803	-6.968	68.300	41.529	PK
2		5724.435	66.190	24.648	-12.110	78.300	41.542	PK
3	*	5737.800	100.605	59.049	32.305	68.300	41.556	PK

Site: AC5	Time: 2015/06/25 - 16:19
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 1: Transmit at CH5825 by 802.11a ant0	



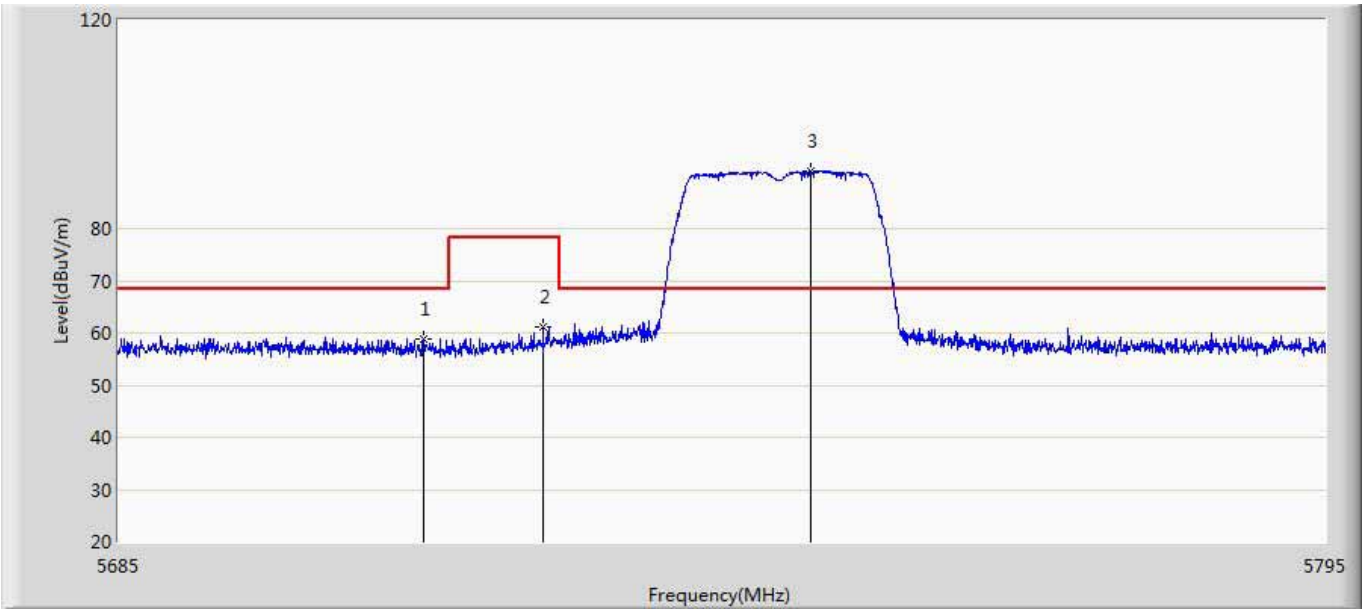
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5819.400	93.570	51.831	25.270	68.300	41.740	PK
2		5857.880	54.392	12.546	-23.908	78.300	41.847	PK
3		5875.880	54.071	12.177	-14.229	68.300	41.894	PK

Site: AC5	Time: 2015/06/25 - 16:21
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 1: Transmit at CH5825 by 802.11a ant0	



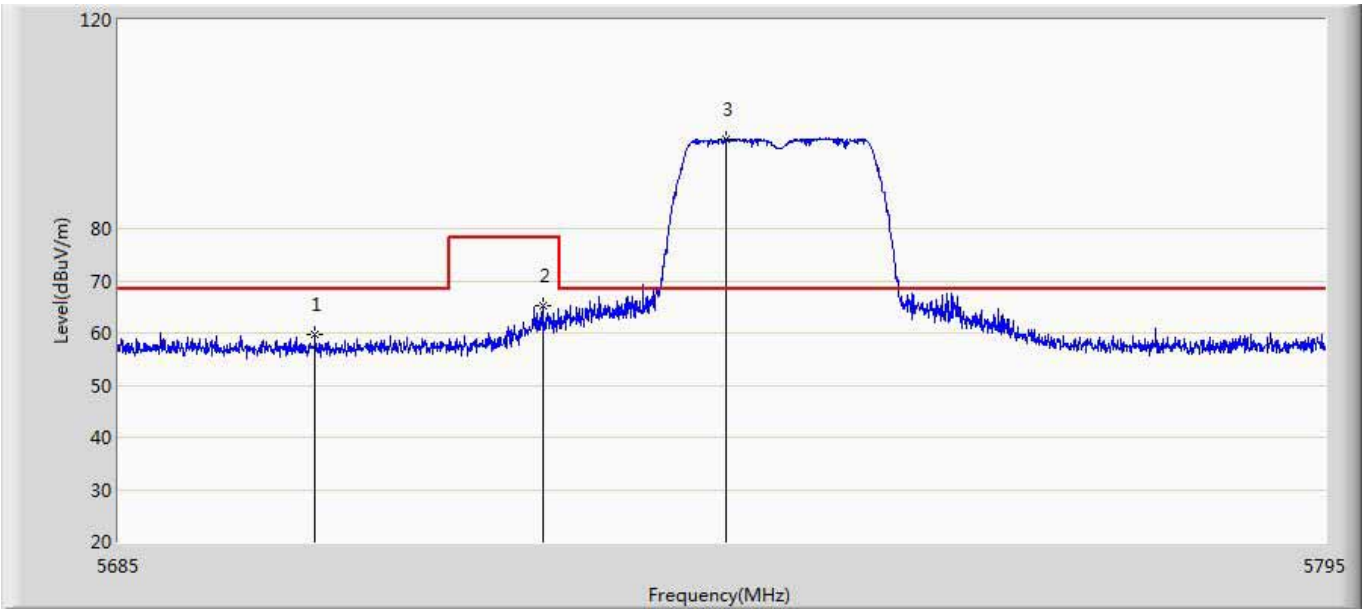
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5826.680	99.329	57.571	31.029	68.300	41.758	PK
2		5850.600	61.178	19.351	-17.122	78.300	41.827	PK
3		5885.600	61.024	19.106	-7.276	68.300	41.918	PK

Site: AC5	Time: 2015/06/25 - 16:26
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 2: Transmit at CH5745 by 802.11n(20MHz) ant0	



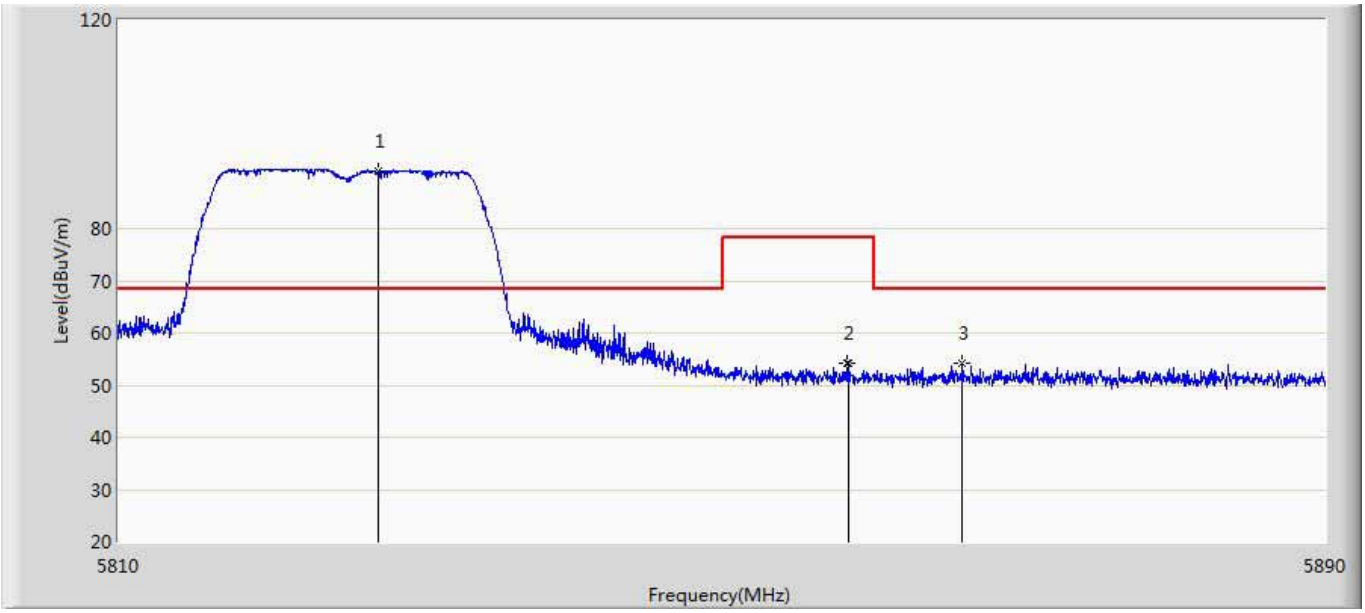
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5712.610	58.708	17.181	-9.592	68.300	41.527	PK
2		5723.500	61.170	19.629	-17.130	78.300	41.541	PK
3	*	5747.920	90.977	49.406	22.677	68.300	41.571	PK

Site: AC5	Time: 2015/06/25 - 16:32
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 2: Transmit at CH5745 by 802.11n(20MHz) ant0	



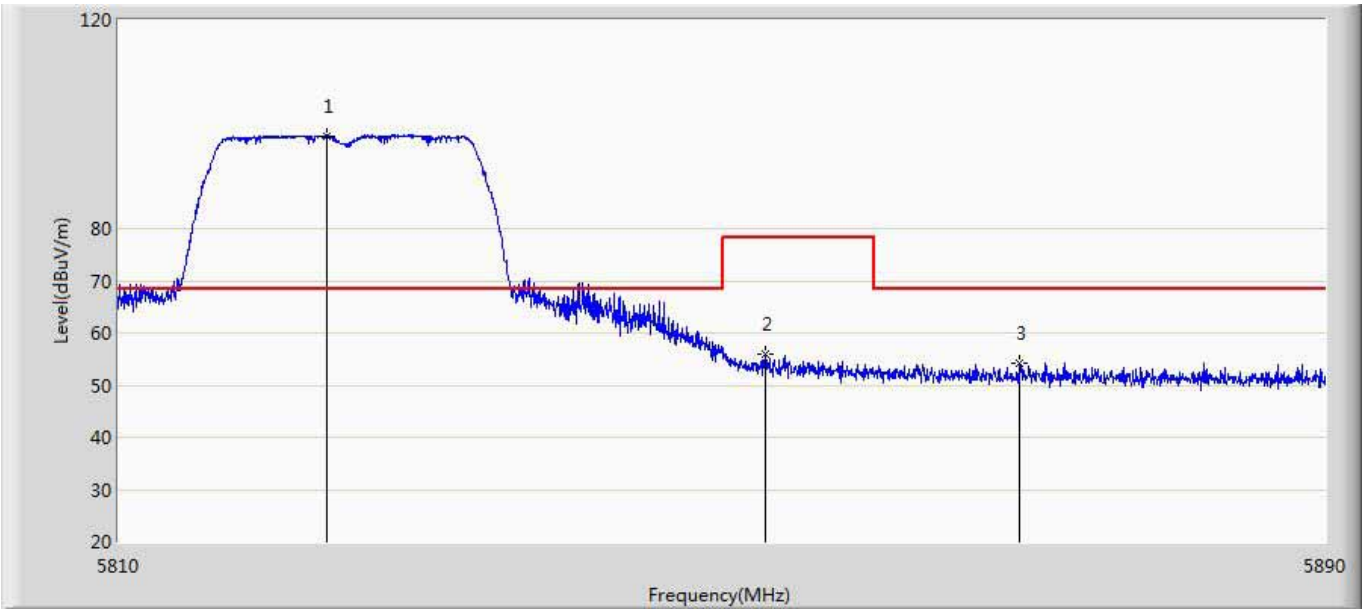
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5702.820	59.761	18.252	-8.539	68.300	41.509	PK
2		5723.445	65.273	23.732	-13.027	78.300	41.541	PK
3	*	5740.165	97.176	55.617	28.876	68.300	41.559	PK

Site: AC5	Time: 2015/06/25 - 16:35
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 2: Transmit at CH5825 by 802.11n(20MHz) ant0	



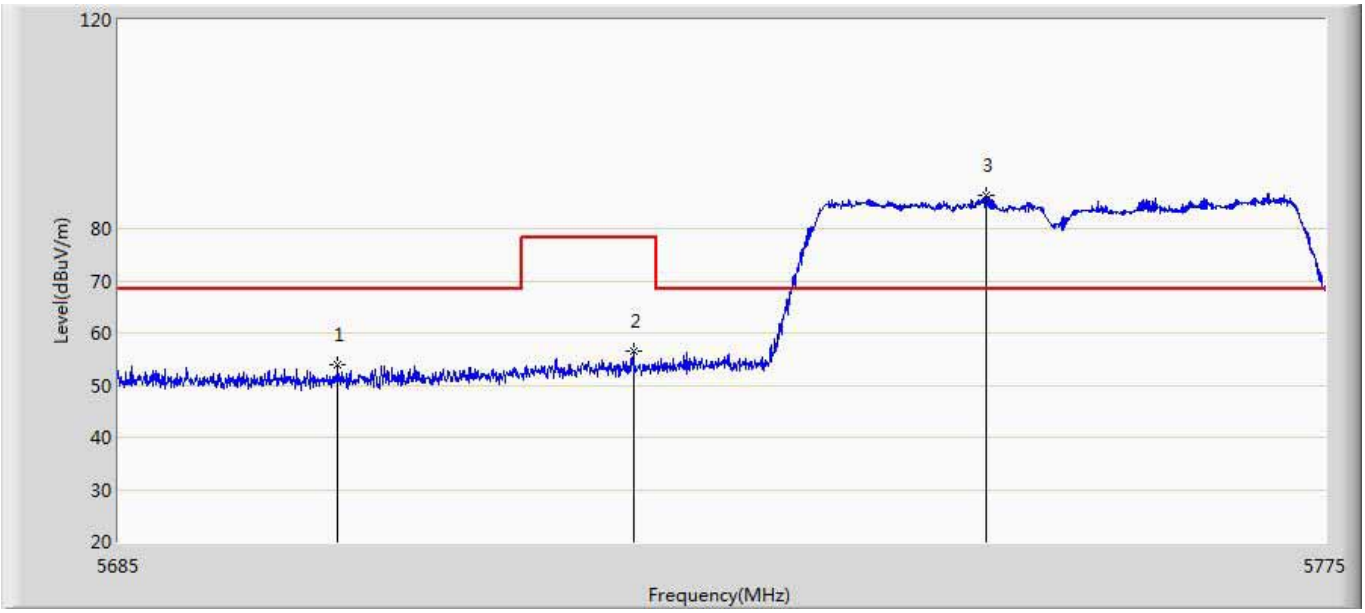
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5827.160	91.049	49.290	22.749	68.300	41.759	PK
2		5858.240	54.134	12.287	-24.166	78.300	41.847	PK
3		5865.840	54.066	12.198	-14.234	68.300	41.868	PK

Site: AC5	Time: 2015/06/25 - 16:37
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 2: Transmit at CH5825 by 802.11n(20MHz) ant0	



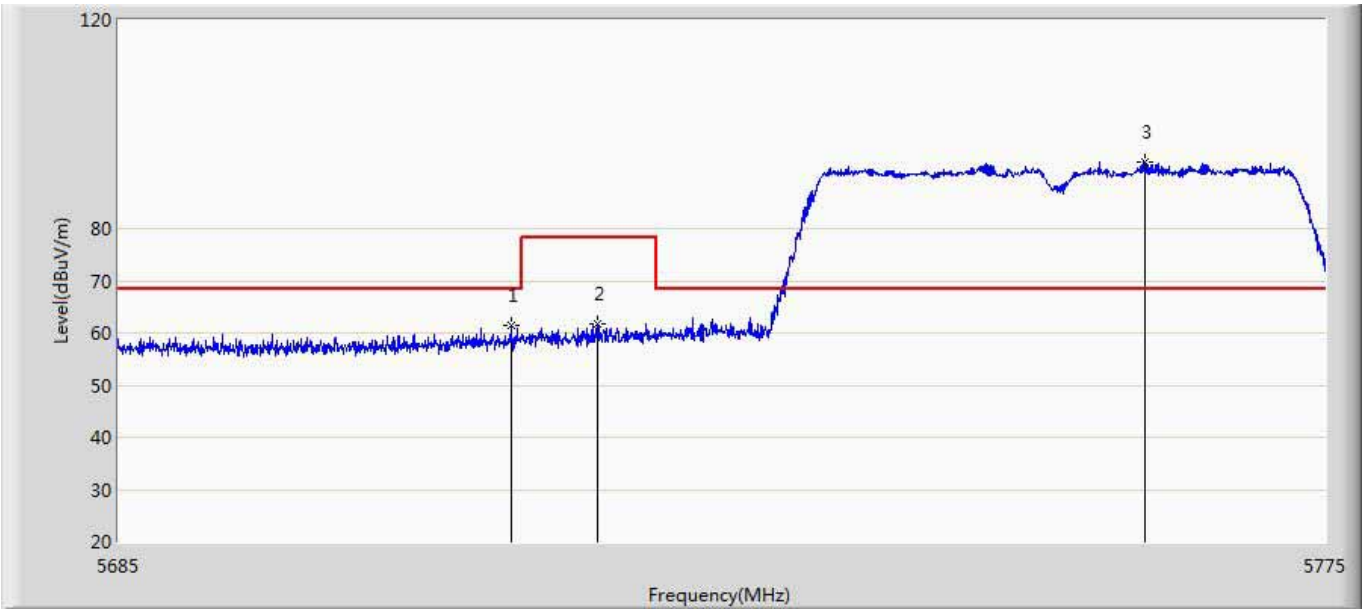
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5823.800	97.805	56.054	29.505	68.300	41.751	PK
2		5852.760	55.933	14.100	-22.367	78.300	41.833	PK
3		5869.640	54.155	12.277	-14.145	68.300	41.877	PK

Site: AC5	Time: 2015/06/25 - 16:46
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 3: Transmit at CH5755 by 802.11n(40MHz) ant0	



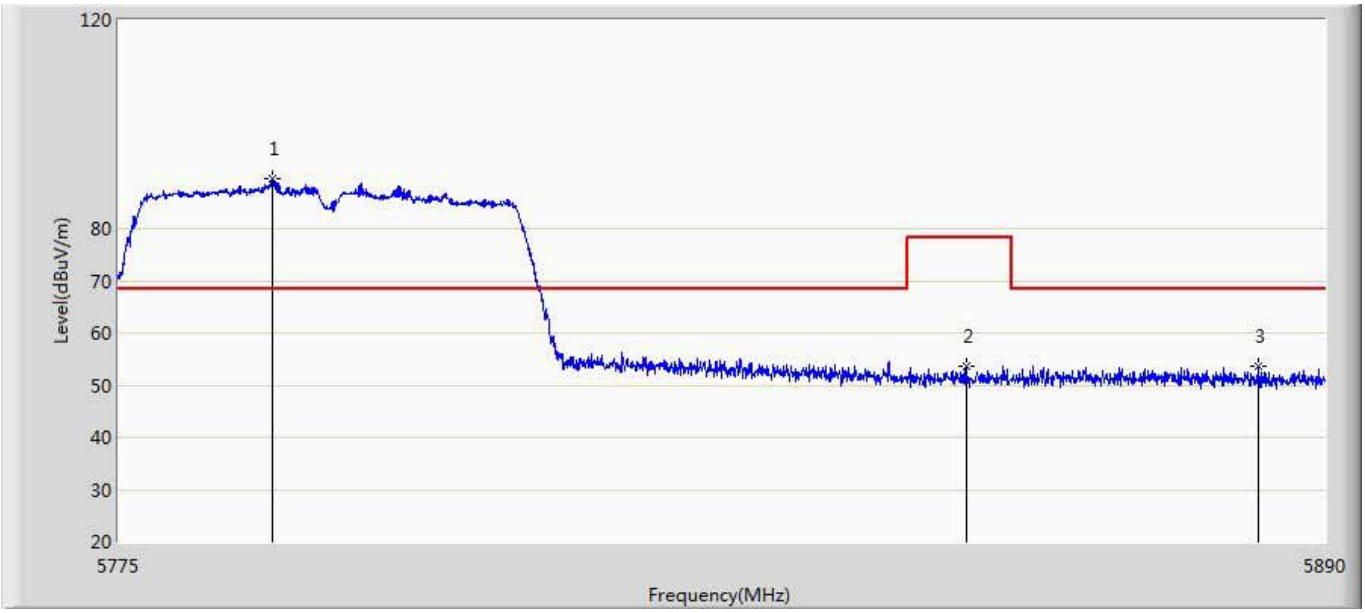
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5701.290	53.822	12.316	-14.478	68.300	41.506	PK
2		5723.250	56.399	14.858	-21.901	78.300	41.541	PK
3	*	5749.575	86.387	44.813	18.087	68.300	41.573	PK

Site: AC5	Time: 2015/06/25 - 16:48
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 3: Transmit at CH5755 by 802.11n(40MHz) ant0	



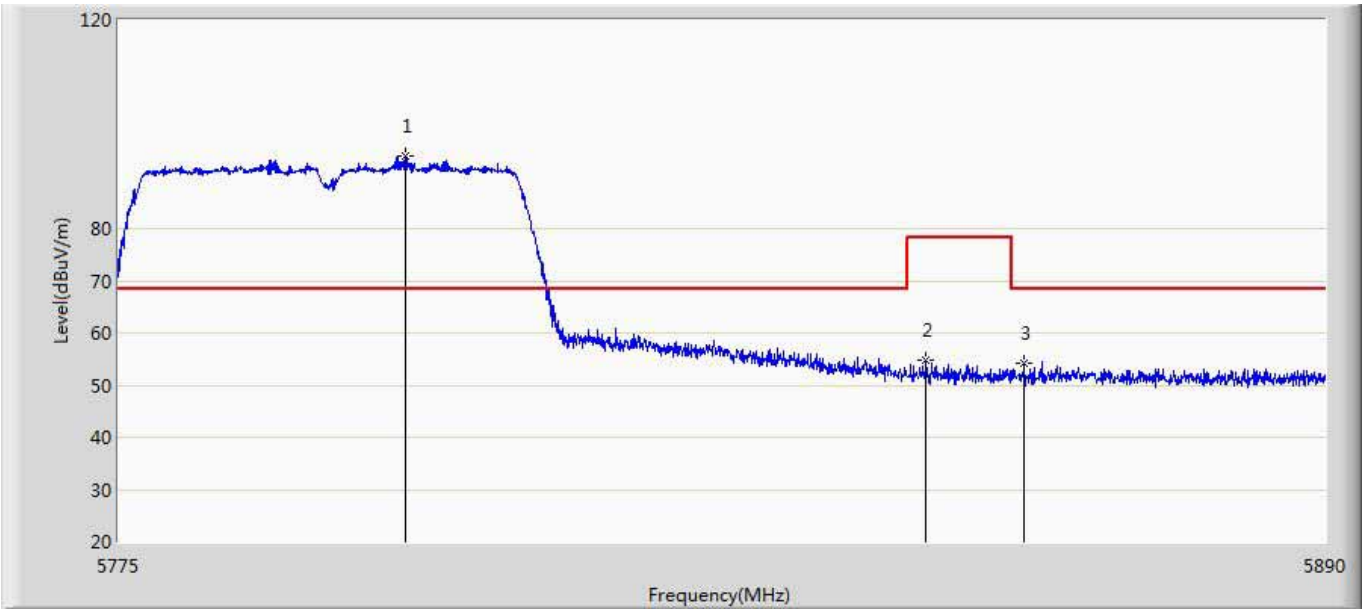
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5714.160	61.437	19.908	-6.863	68.300	41.529	PK
2		5720.550	61.814	20.277	-16.486	78.300	41.538	PK
3	*	5761.500	92.843	51.247	24.543	68.300	41.596	PK

Site: AC5	Time: 2015/06/25 - 16:52
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 3: Transmit at CH5795 by 802.11n(40MHz) ant0	



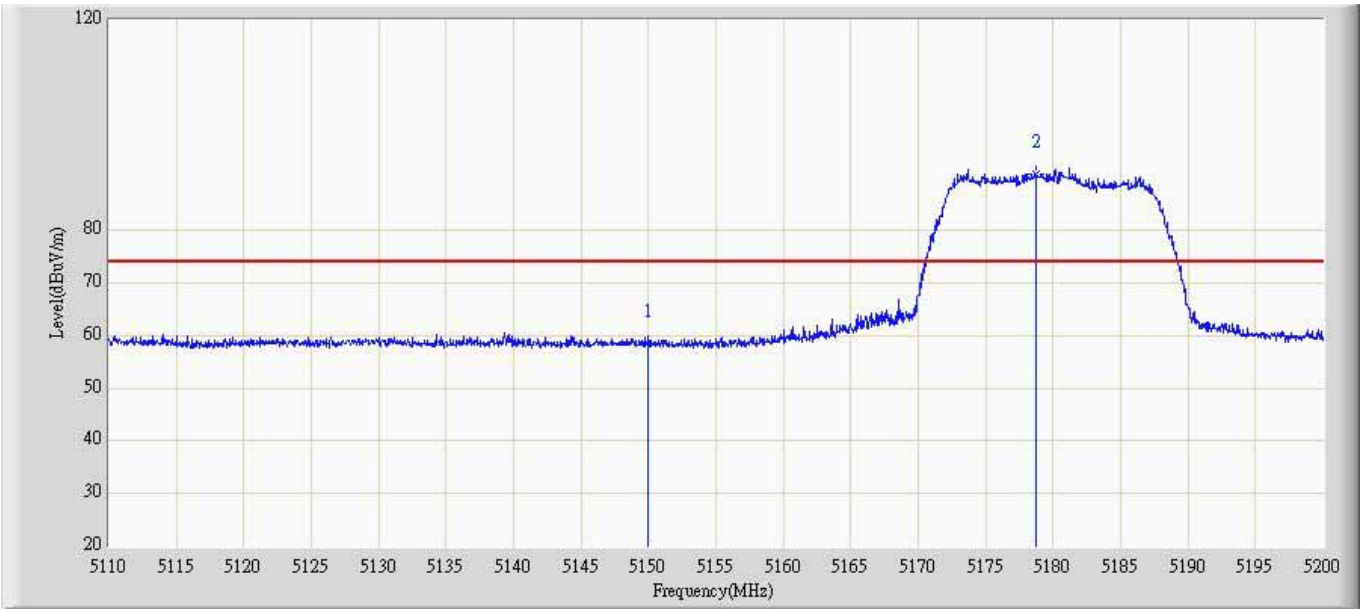
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5789.547	89.466	47.798	21.166	68.300	41.668	PK
2		5855.558	53.551	11.711	-24.749	78.300	41.840	PK
3		5883.560	53.655	11.742	-14.645	68.300	41.913	PK

Site: AC5	Time: 2015/06/25 - 16:53
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 3: Transmit at CH5795 by 802.11n(40MHz) ant0	



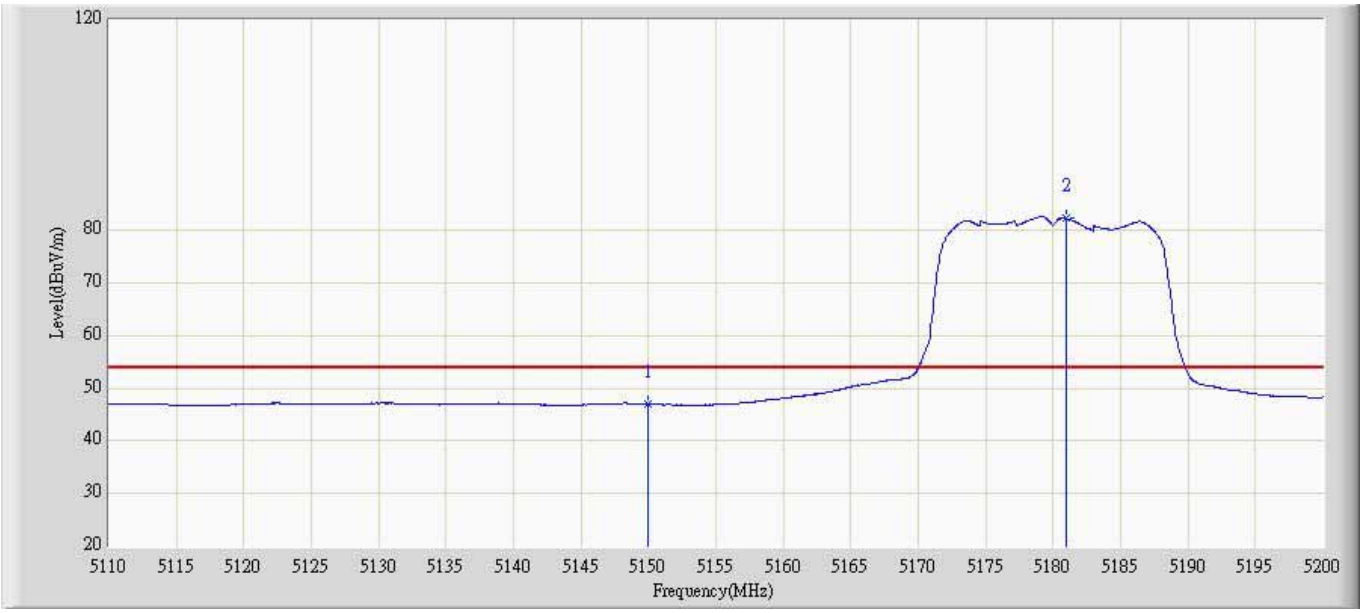
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5802.140	93.769	52.071	25.469	68.300	41.698	PK
2		5851.763	54.803	12.973	-23.497	78.300	41.831	PK
3		5861.135	54.073	12.218	-14.227	68.300	41.855	PK

Site: AC5	Time: 2015/06/25 - 18:21
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 1: Transmit at CH5180 by 802.11a ant1	



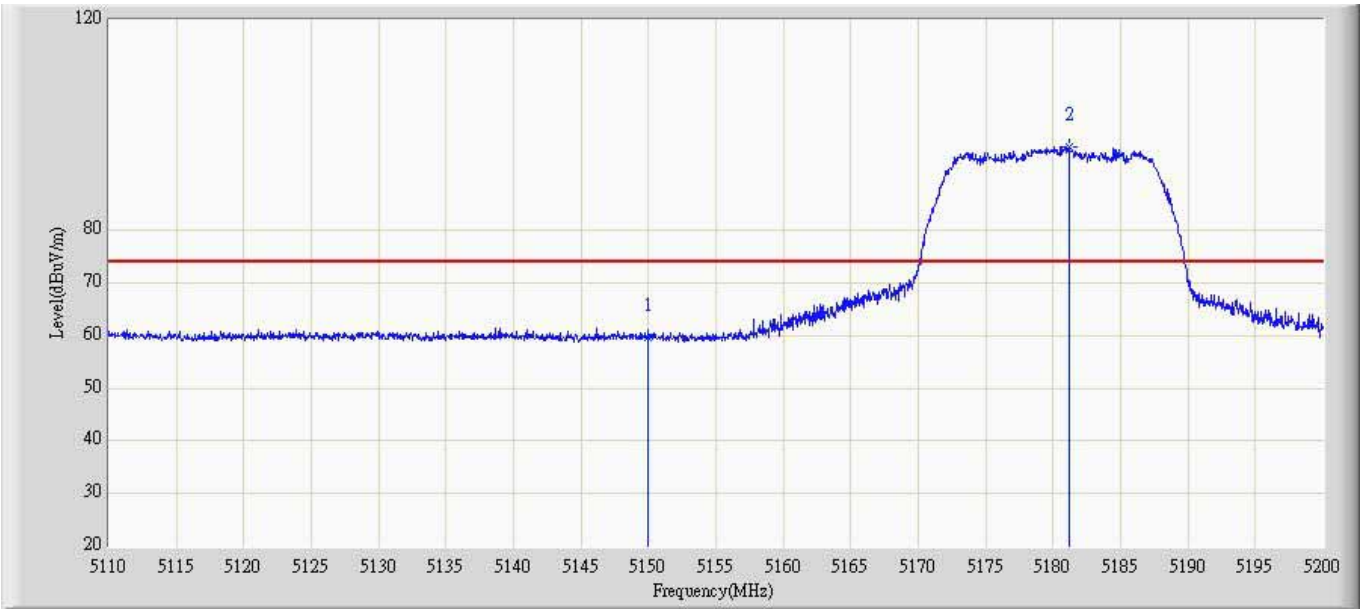
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150	58.125	66.345	-15.875	74	-8.22	PK
2	*	5178.234	91.208	100.656	N/A	N/A	-9.448	PK

Site: AC5	Time: 2015/06/25 - 18:23
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 1: Transmit at CH5180 by 802.11a ant1	



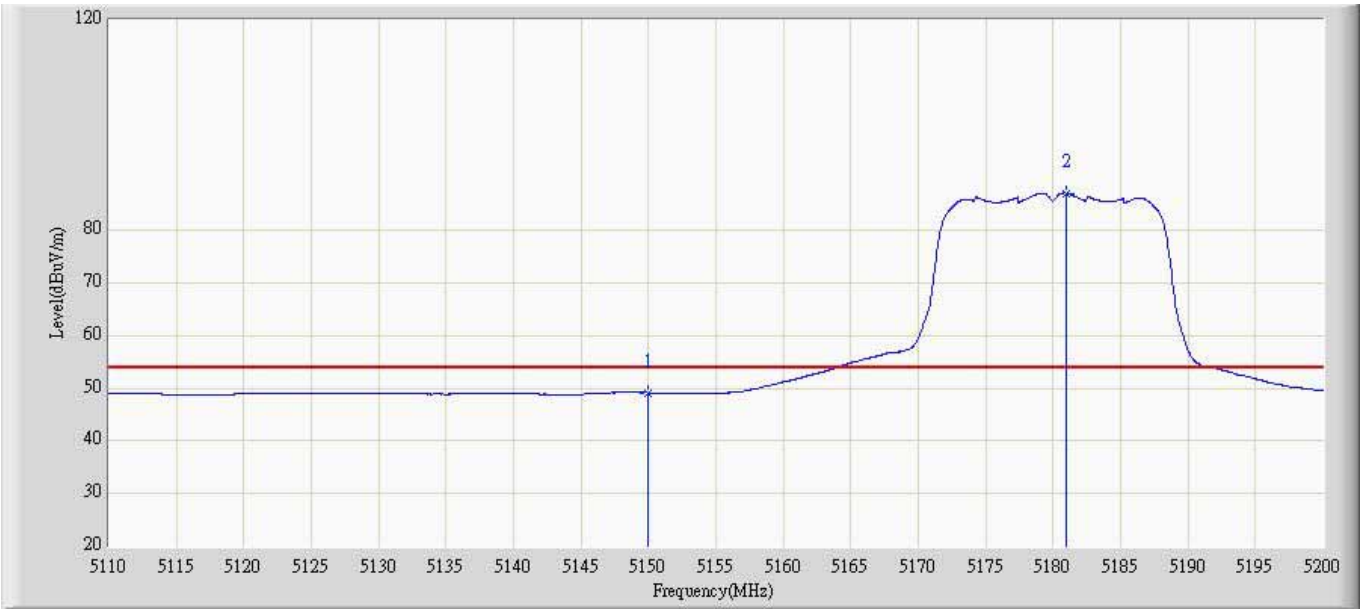
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150	46.903	55.123	-7.097	54	-8.22	AV
2	*	5180.451	82.100	91.563	N/A	N/A	-9.463	AV

Site: AC5	Time: 2015/06/25 - 18:24
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 1: Transmit at CH5180 by 802.11a ant1	



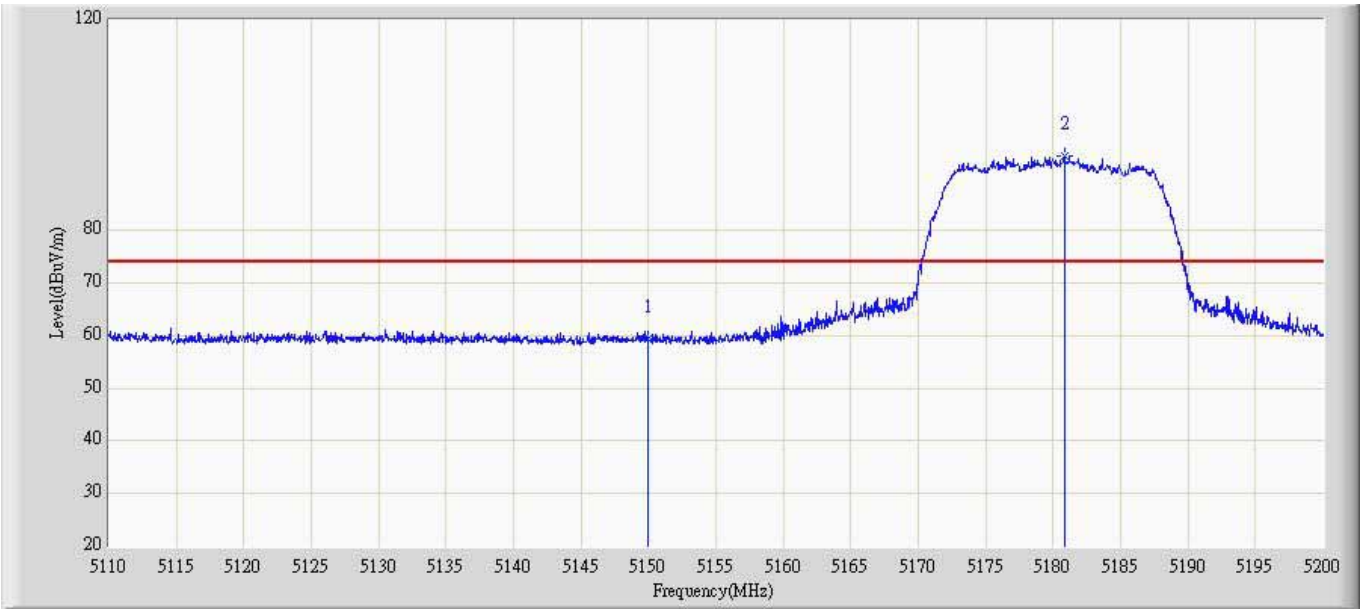
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150	58.344	66.564	-15.656	74	-8.22	PK
2	*	5181.178	94.933	104.397	N/A	N/A	-9.464	PK

Site: AC5	Time: 2015/06/25 - 18:25
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 1: Transmit at CH5180 by 802.11a ant1	



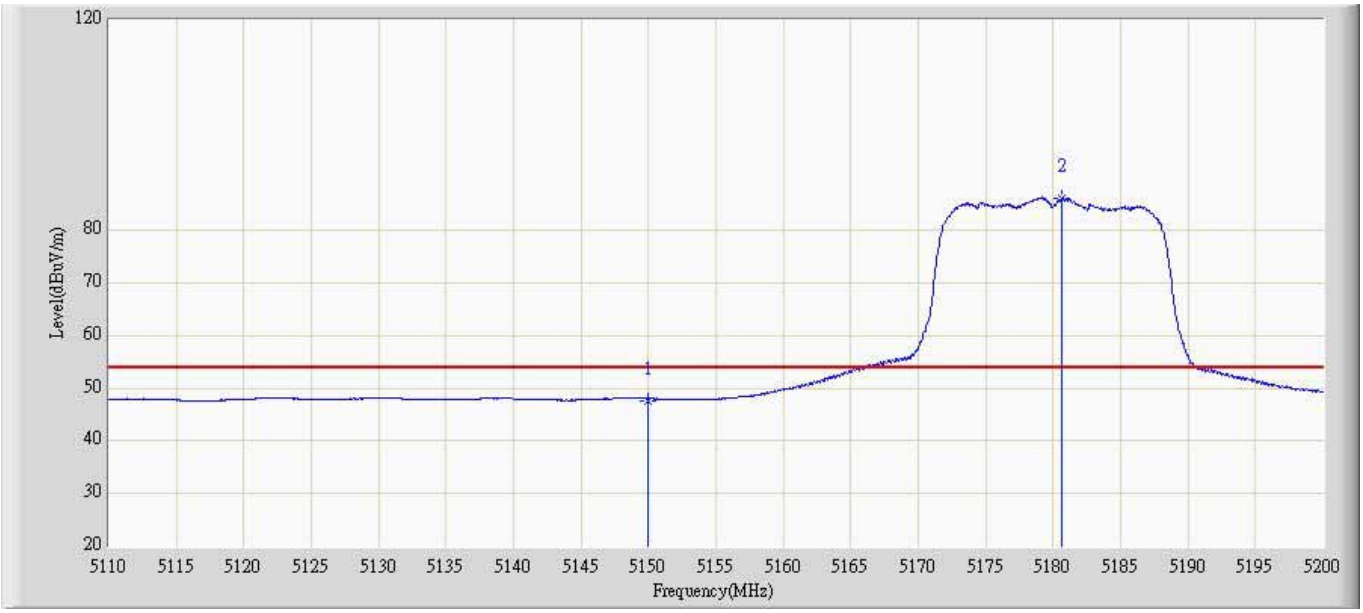
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150	48.234	56.454	-5.766	54	-8.22	AV
2	*	5180.454	86.792	96.255	N/A	N/A	-9.463	AV

Site: AC5	Time: 2015/06/25 - 18:27
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 2: Transmit at CH5180 by 802.11n(20MHz) ant1	



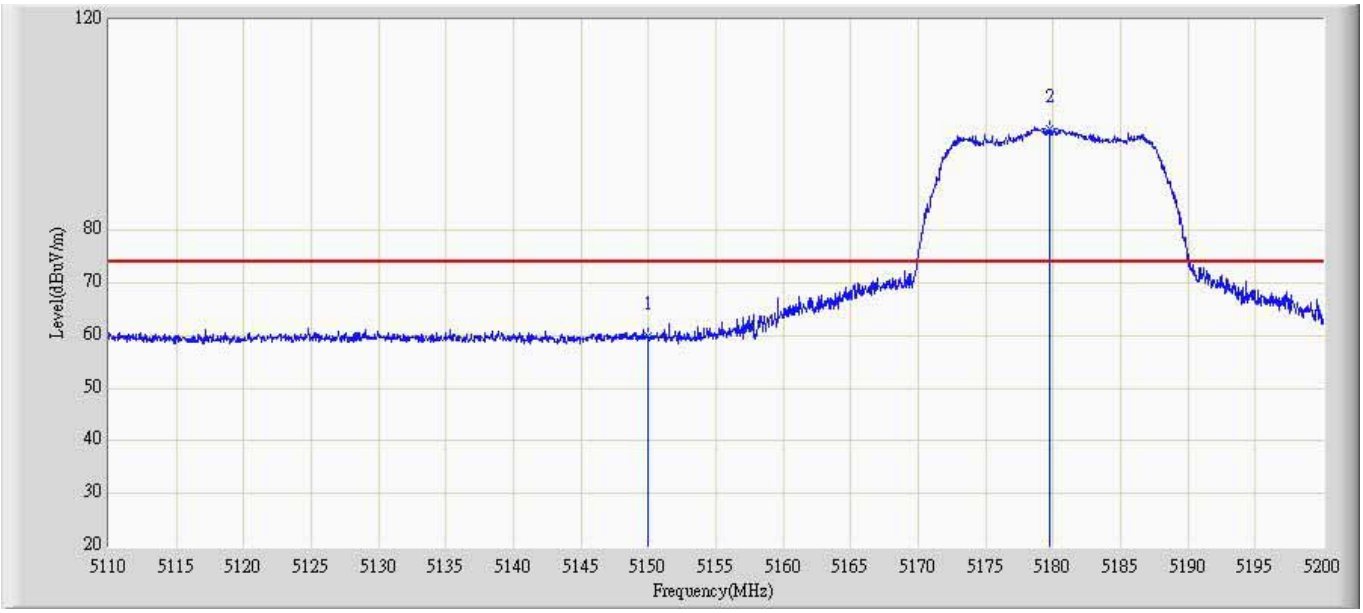
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150	58.932	67.152	-15.068	74	-8.22	PK
2	*	5180.857	93.990	103.452	N/A	N/A	-9.462	PK

Site: AC5	Time: 2015/06/25 - 18:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 2: Transmit at CH5180 by 802.11n(20MHz) ant1	



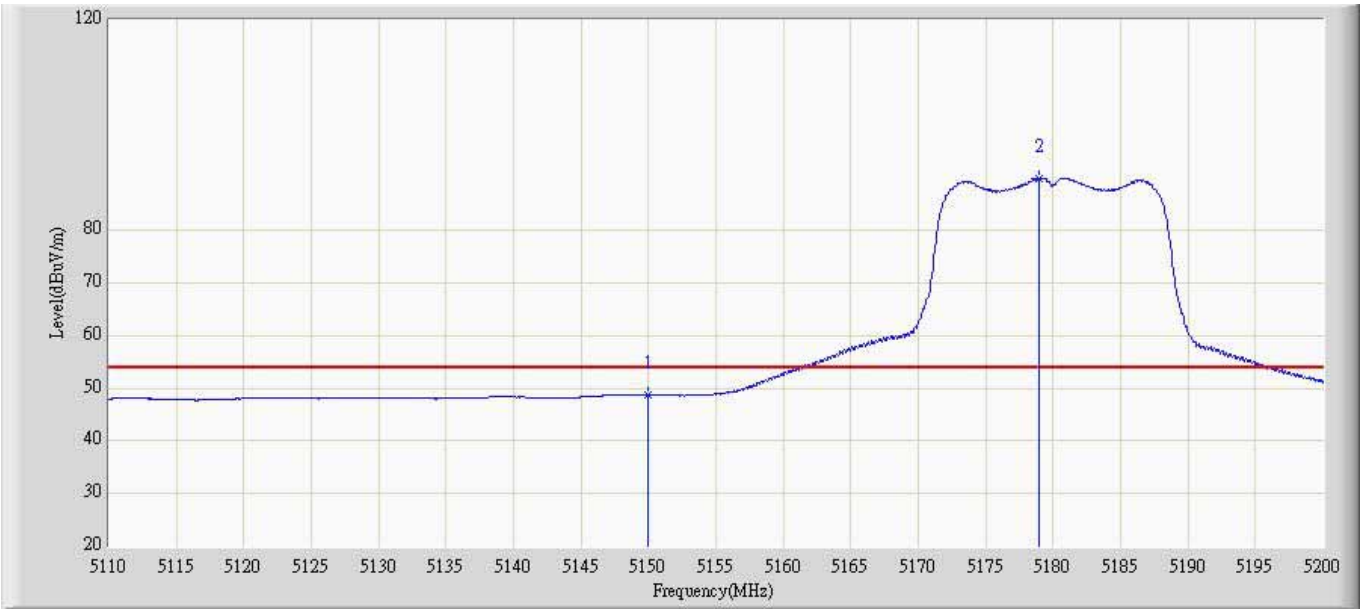
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150	45.995	54.215	-8.005	54	-8.22	AV
2	*	5180.871	85.996	95.457	N/A	N/A	-9.461	AV

Site: AC5	Time: 2015/06/25 - 18:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 2: Transmit at CH5180 by 802.11n(20MHz) ant1	



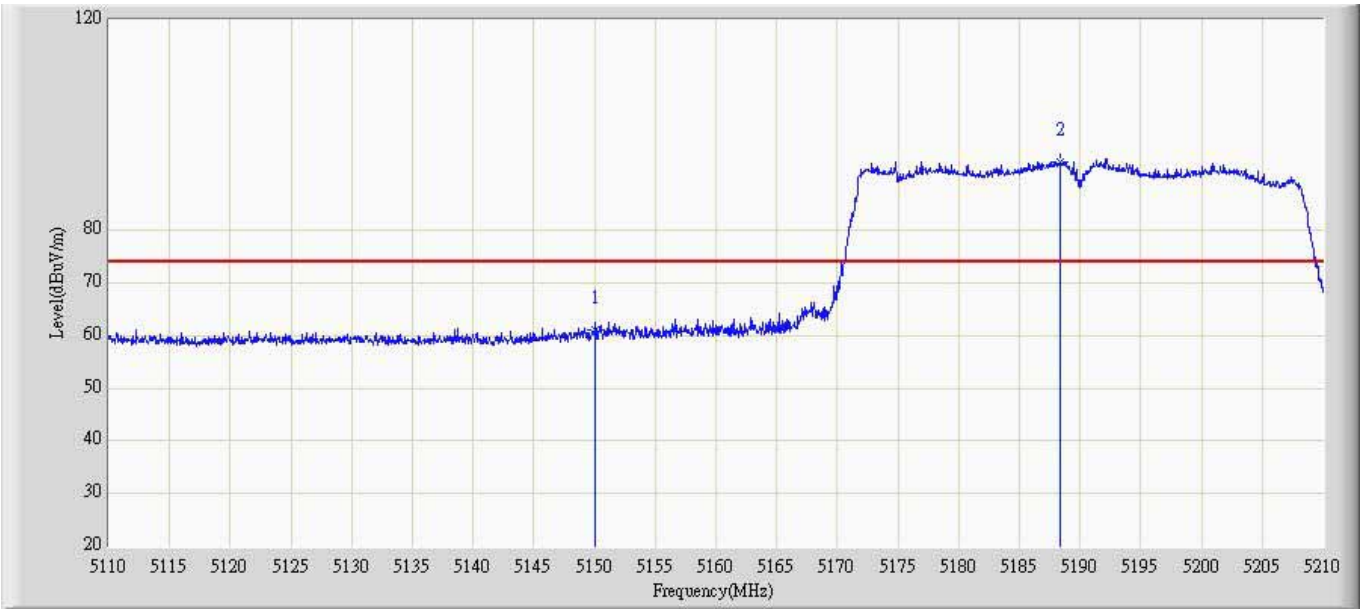
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150	59.037	67.257	-14.963	74	-8.22	PK
2	*	5179.785	98.233	107.687	N/A	N/A	-9.454	PK

Site: AC5	Time: 2015/06/25 - 18:33
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 2: Transmit at CH5180 by 802.11n(20MHz) ant1	



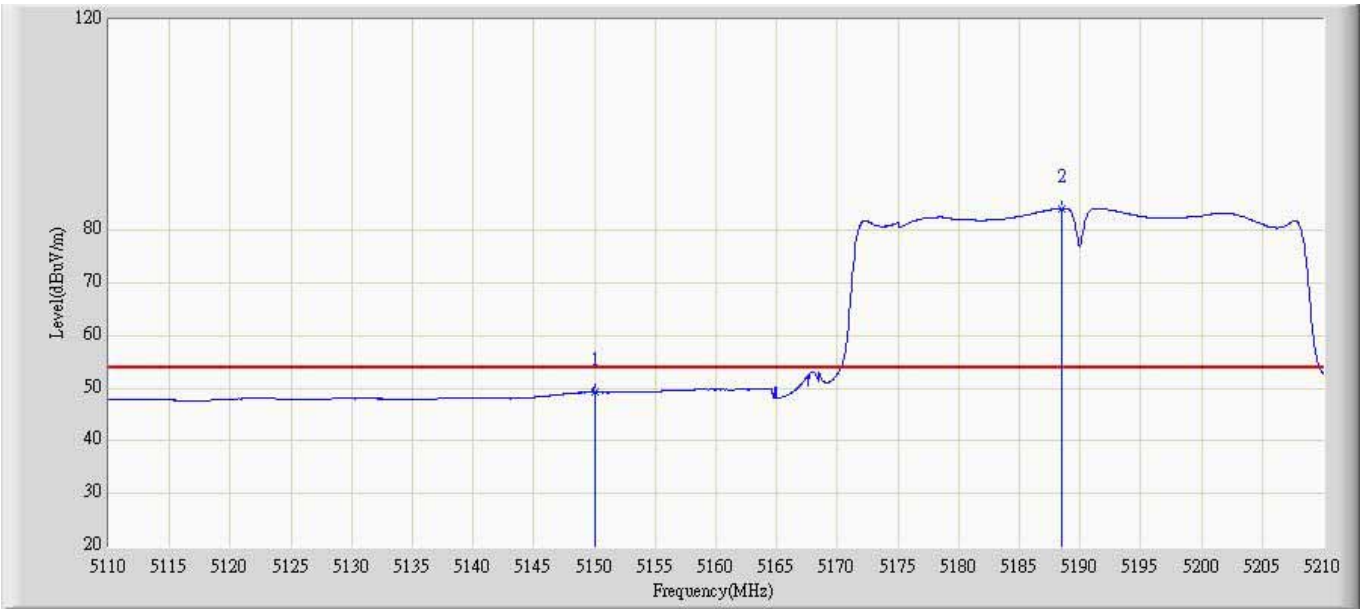
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150	49.024	57.244	-4.976	54	-8.22	AV
2	*	5178.315	88.928	97.156	N/A	N/A	-8.228	AV

Site: AC5	Time: 2015/06/25 - 18:35
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 3: Transmit at CH5190 by 802.11n(40MHz) ant1	



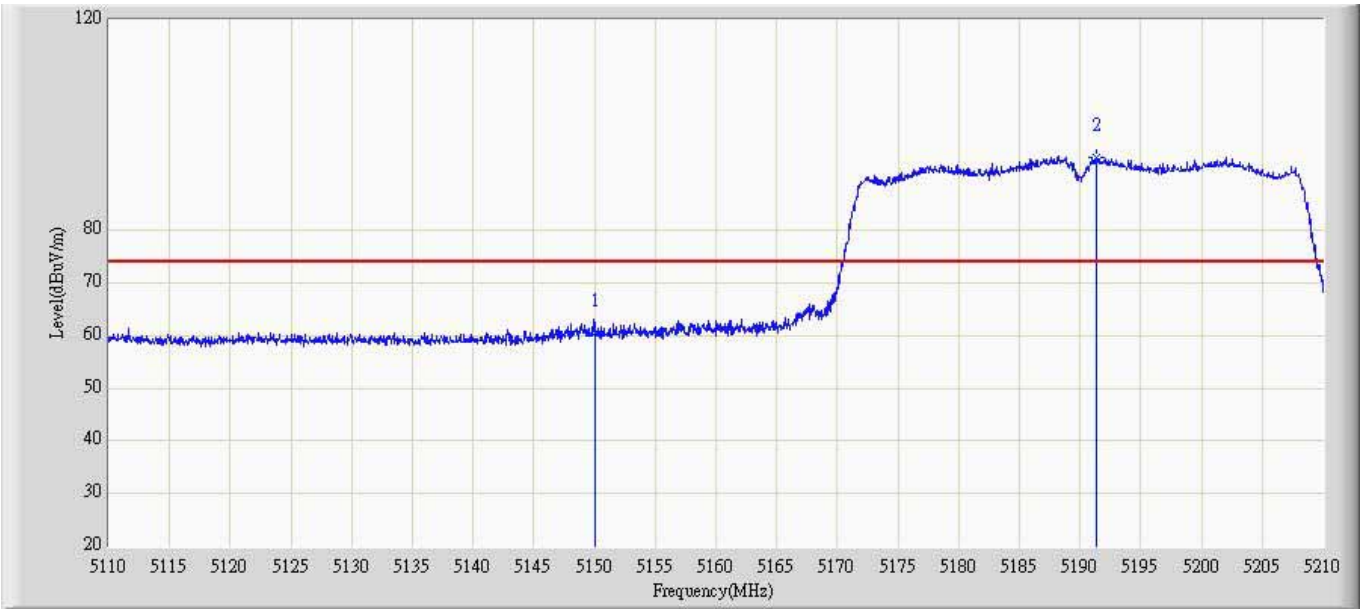
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150	61.569	69.789	-12.431	74	-8.22	PK
2	*	5188.157	92.680	102.129	N/A	N/A	-9.449	PK

Site: AC5	Time: 2015/06/25 - 18:37
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 3: Transmit at CH5190 by 802.11n(40MHz) ant1	



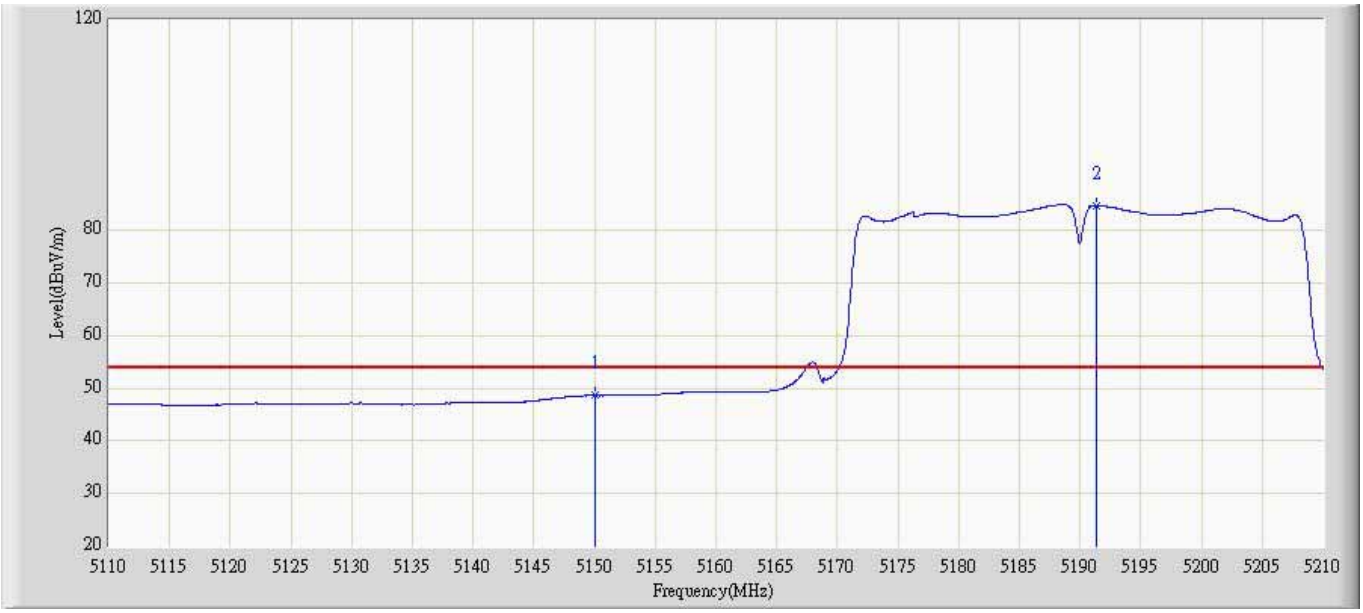
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150	49.201	57.421	-4.799	54	-8.22	AV
2	*	5188.453	84.183	93.632	N/A	N/A	-9.449	AV

Site: AC5	Time: 2015/06/25 - 18:38
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 3: Transmit at CH5190 by 802.11n(40MHz) ant1	



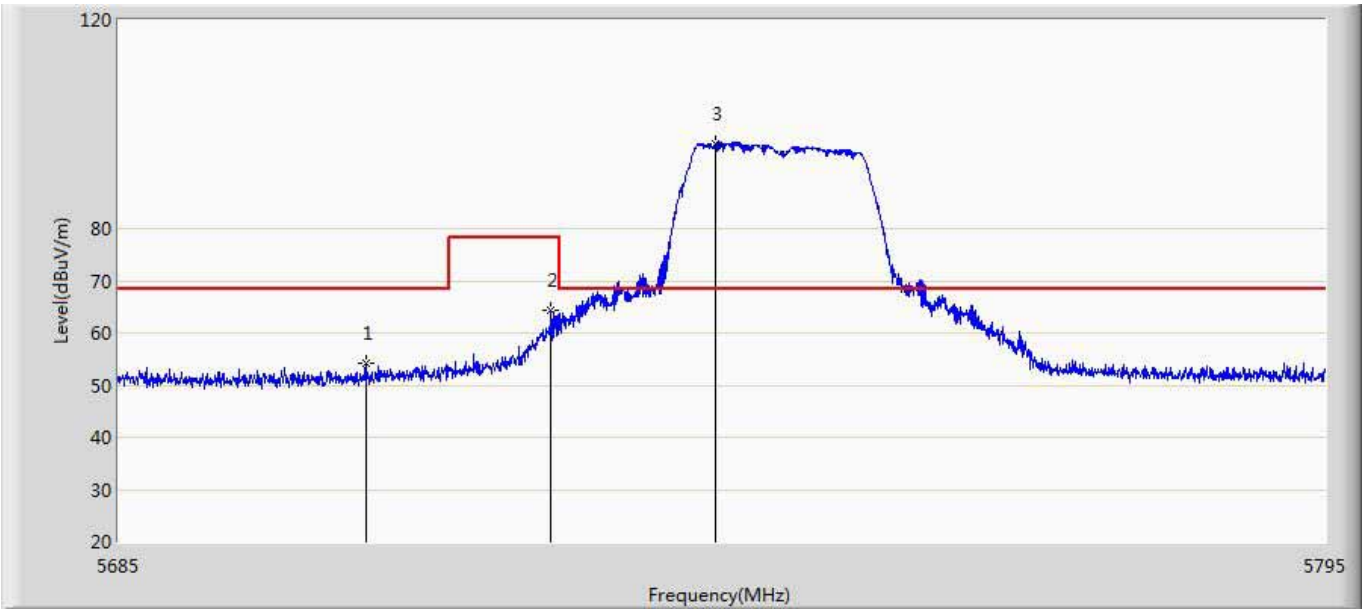
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150	60.125	68.345	-13.875	74	-8.22	PK
2	*	5190.485	94.384	103.823	N/A	N/A	-9.439	PK

Site: AC5	Time: 2015/06/25 - 18:39
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 3: Transmit at CH5190 by 802.11n(40MHz) ant1	



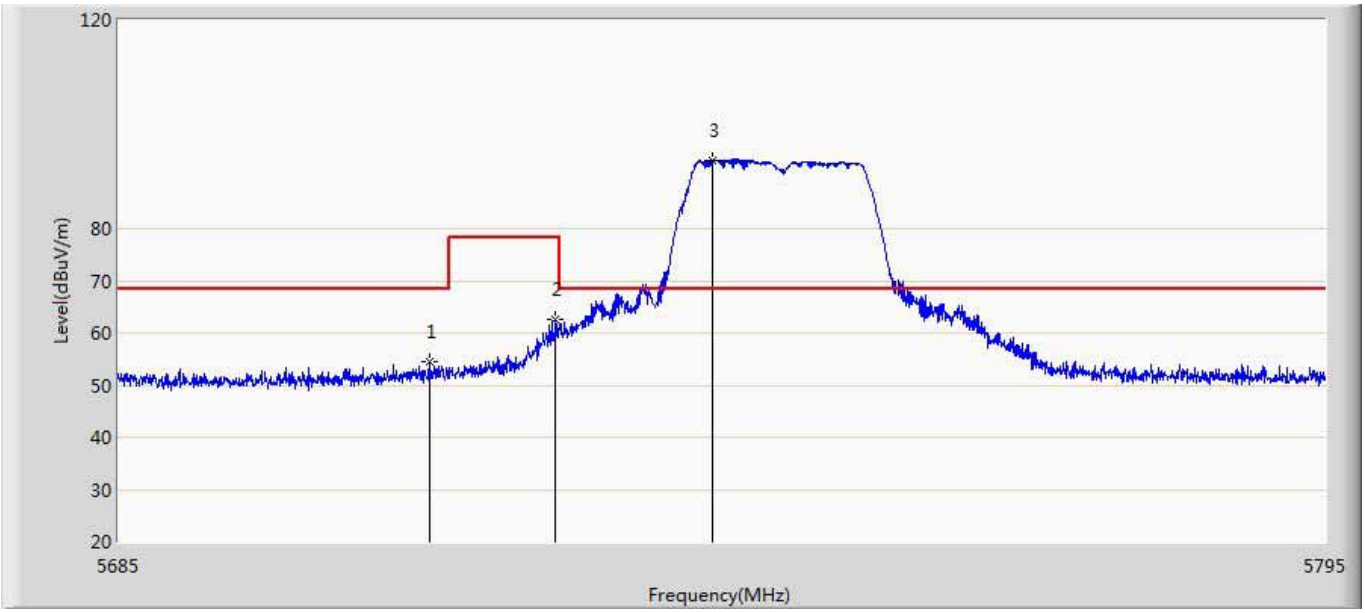
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150	48.034	56.254	-5.966	54	-8.22	AV
2	*	5191.475	85.350	94.789	N/A	N/A	-9.439	AV

Site: AC5	Time: 2015/06/25 - 16:57
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 1: Transmit at CH5745 by 802.11a ant1	



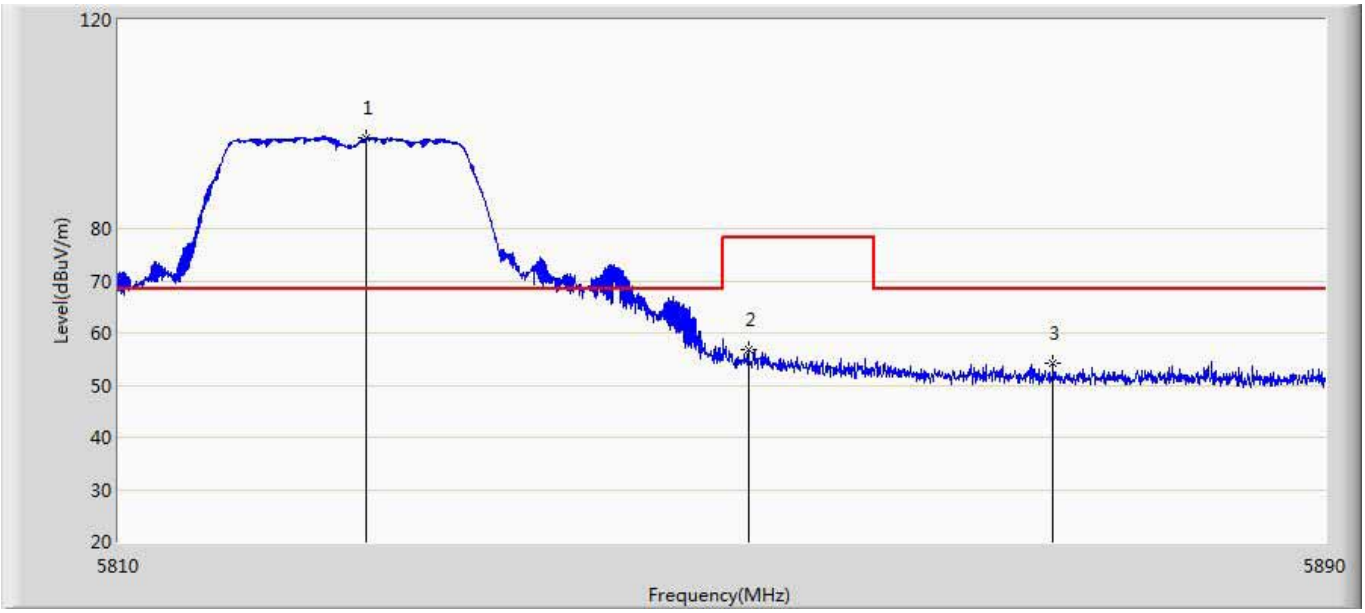
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5707.385	54.182	12.663	-14.118	68.300	41.519	PK
2		5724.215	64.225	22.683	-14.075	78.300	41.542	PK
3	*	5739.230	96.332	54.774	28.032	68.300	41.558	PK

Site: AC5	Time: 2015/06/25 - 16:59
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 1: Transmit at CH5745 by 802.11a ant1	



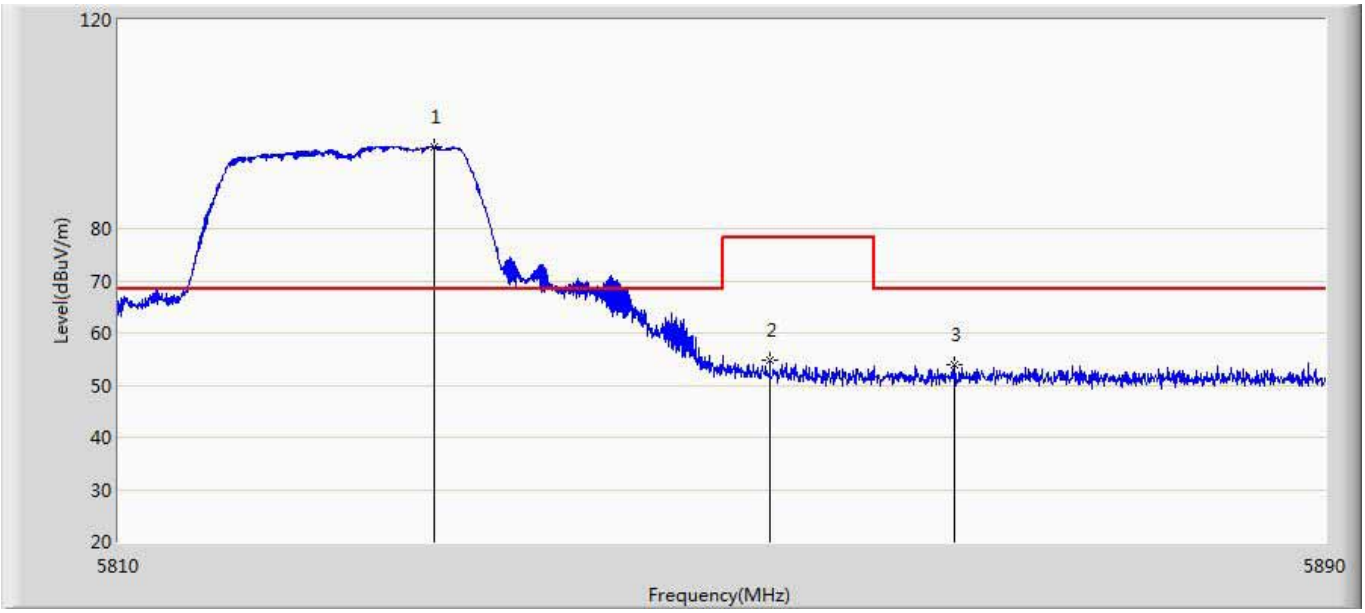
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5713.160	54.556	13.028	-13.744	68.300	41.527	PK
2		5724.655	62.677	21.135	-15.623	78.300	41.543	PK
3	*	5738.955	93.149	51.592	24.849	68.300	41.558	PK

Site: AC5	Time: 2015/06/25 - 17:02
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 1: Transmit at CH5825 by 802.11a ant1	



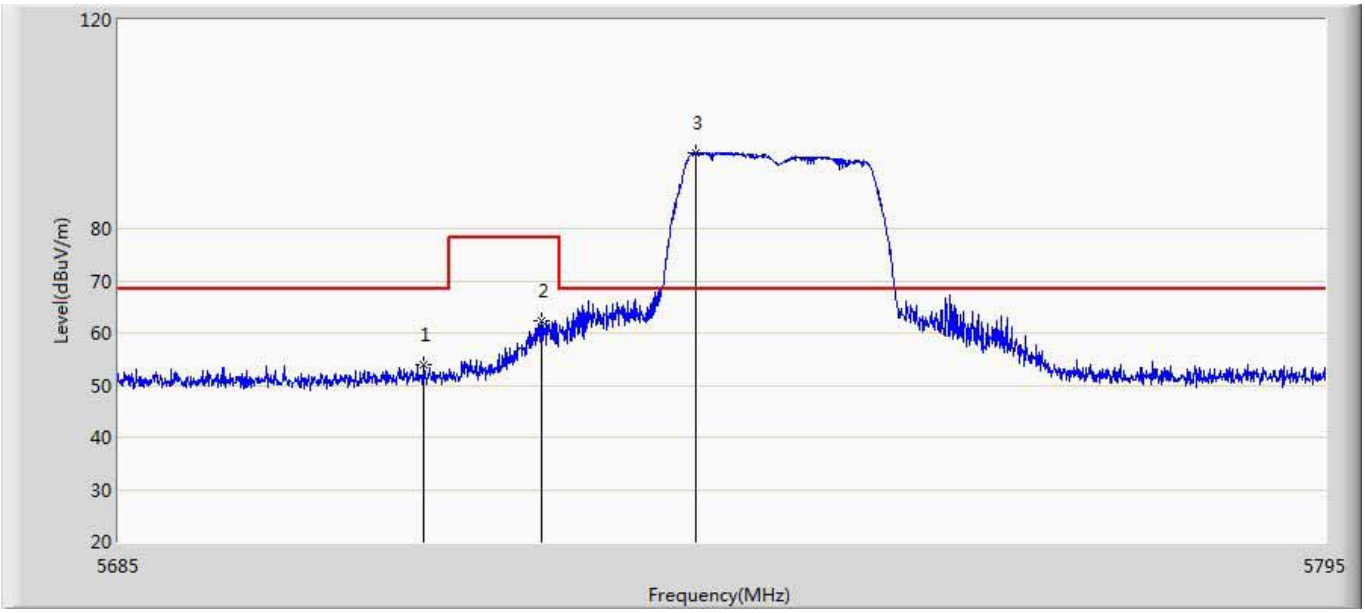
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5826.320	97.283	55.526	28.983	68.300	41.757	PK
2		5851.640	56.701	14.871	-21.599	78.300	41.830	PK
3		5871.880	54.163	12.279	-14.137	68.300	41.884	PK

Site: AC5	Time: 2015/06/25 - 17:05
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 1: Transmit at CH5825 by 802.11a ant1	



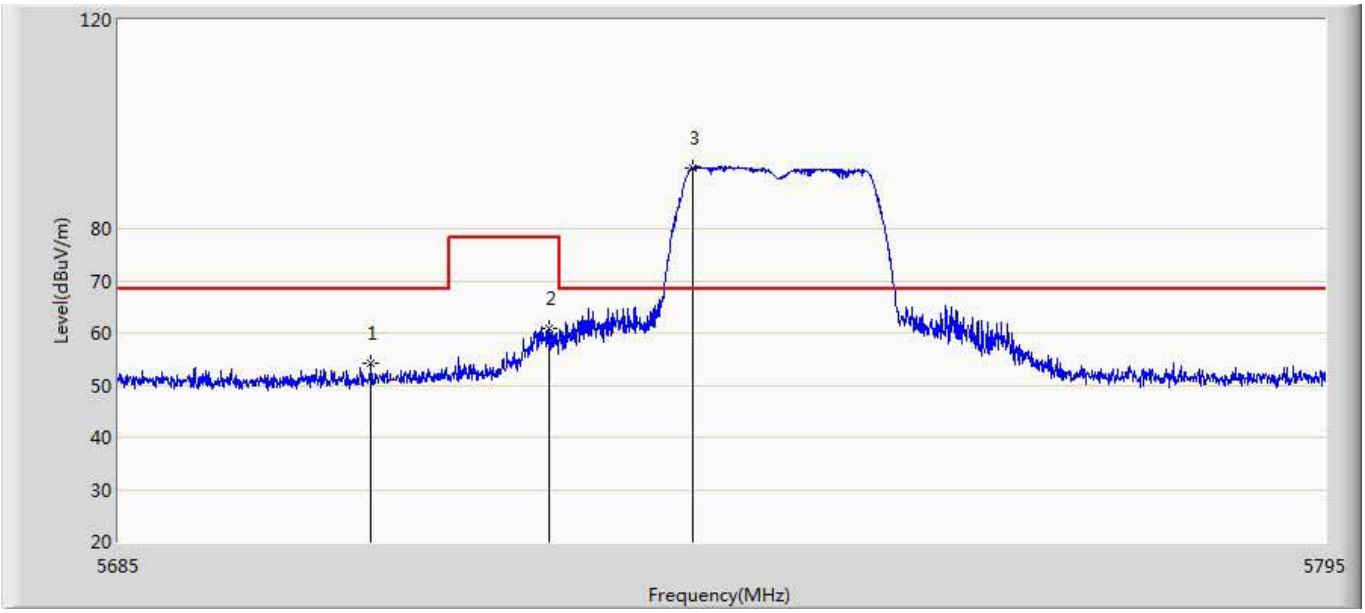
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5830.880	95.714	53.944	27.414	68.300	41.770	PK
2		5853.080	54.680	12.846	-23.620	78.300	41.834	PK
3		5865.320	53.794	11.928	-14.506	68.300	41.867	PK

Site: AC5	Time: 2015/06/25 - 17:08
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 2: Transmit at CH5745 by 802.11n(20MHz) ant1	



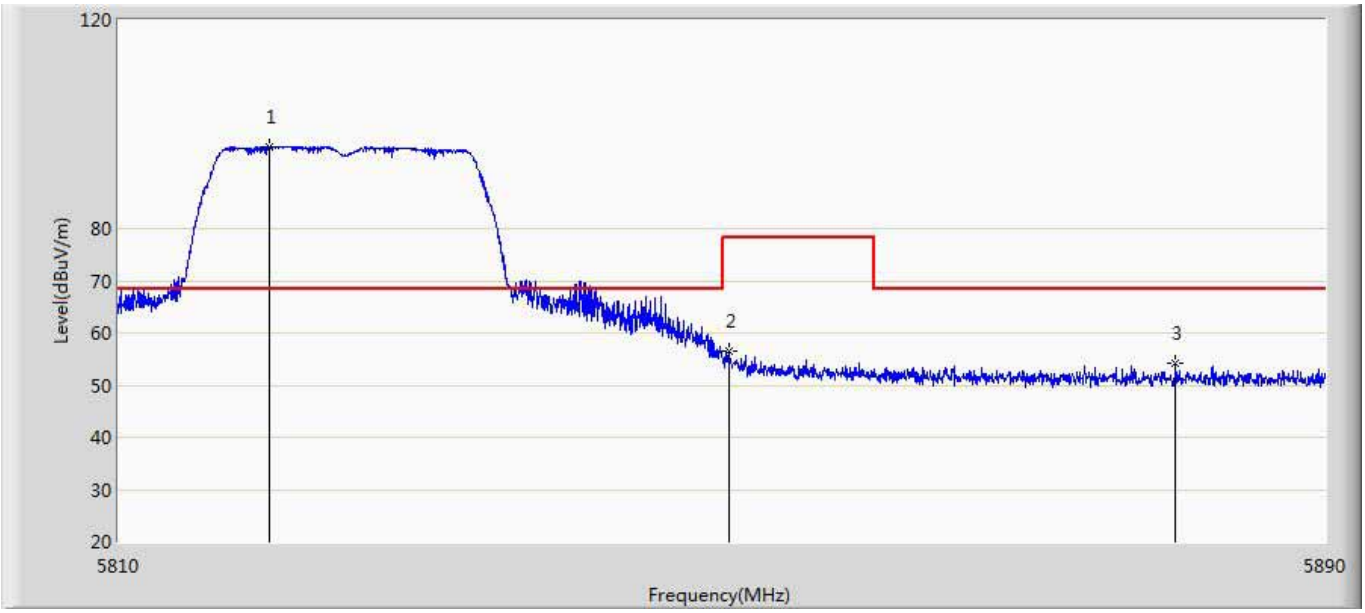
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5712.665	54.040	12.513	-14.260	68.300	41.527	PK
2		5723.335	62.262	20.721	-16.038	78.300	41.541	PK
3	*	5737.415	94.598	53.042	26.298	68.300	41.556	PK

Site: AC5	Time: 2015/06/25 - 17:09
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 2: Transmit at CH5745 by 802.11n(20MHz) ant1	



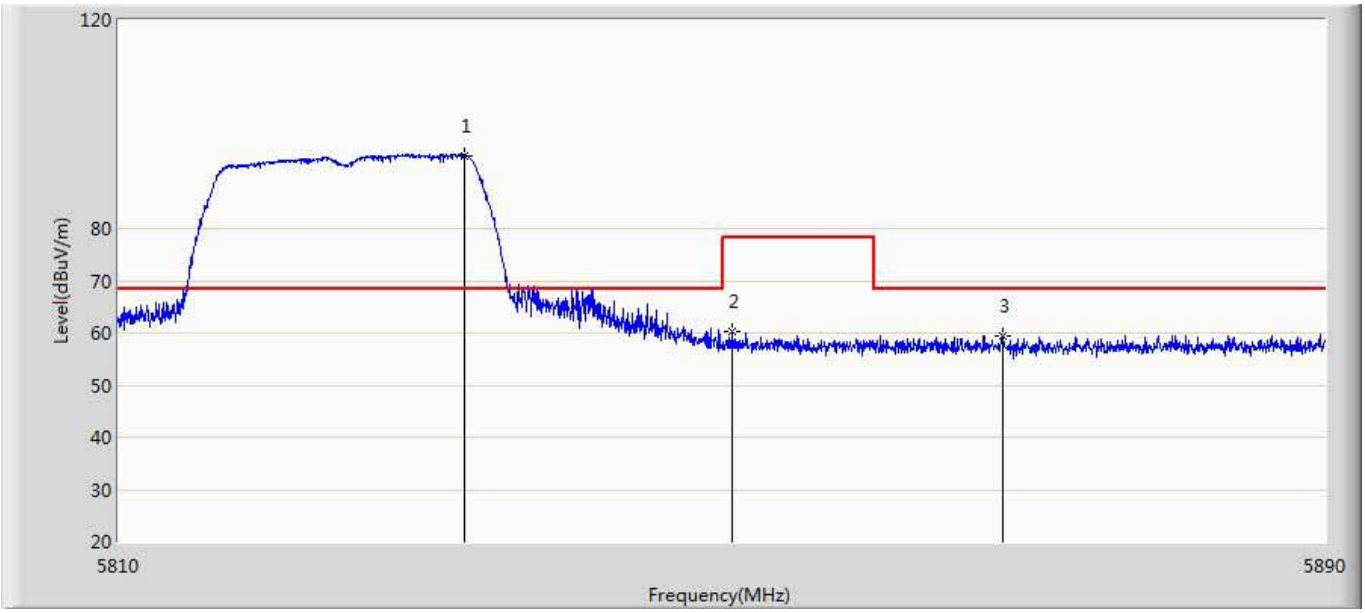
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5707.880	54.293	12.773	-14.007	68.300	41.520	PK
2		5724.050	60.829	19.287	-17.471	78.300	41.541	PK
3	*	5737.085	91.681	50.125	23.381	68.300	41.555	PK

Site: AC5	Time: 2015/06/25 - 17:12
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 2: Transmit at CH5825 by 802.11n(20MHz) ant1	



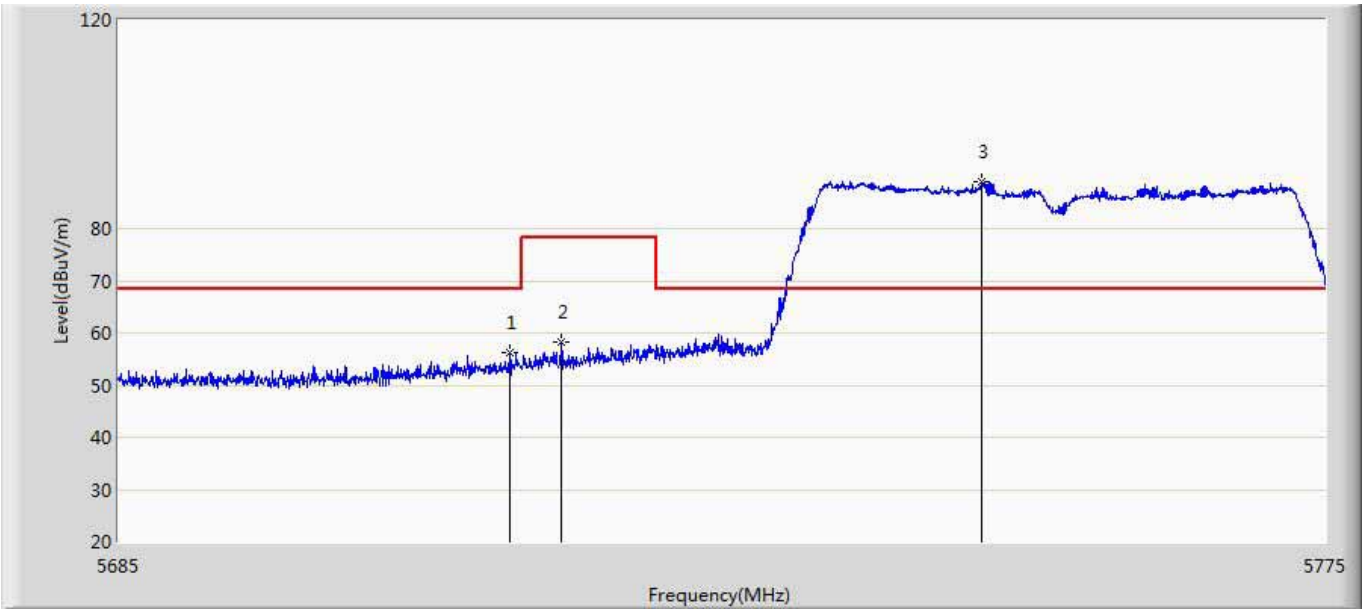
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5819.920	95.645	53.904	27.345	68.300	41.741	PK
2		5850.320	56.634	14.808	-21.666	78.300	41.827	PK
3		5880.040	54.244	12.339	-14.056	68.300	41.905	PK

Site: AC5	Time: 2015/06/25 - 17:13
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 2: Transmit at CH5825 by 802.11n(20MHz) ant1	



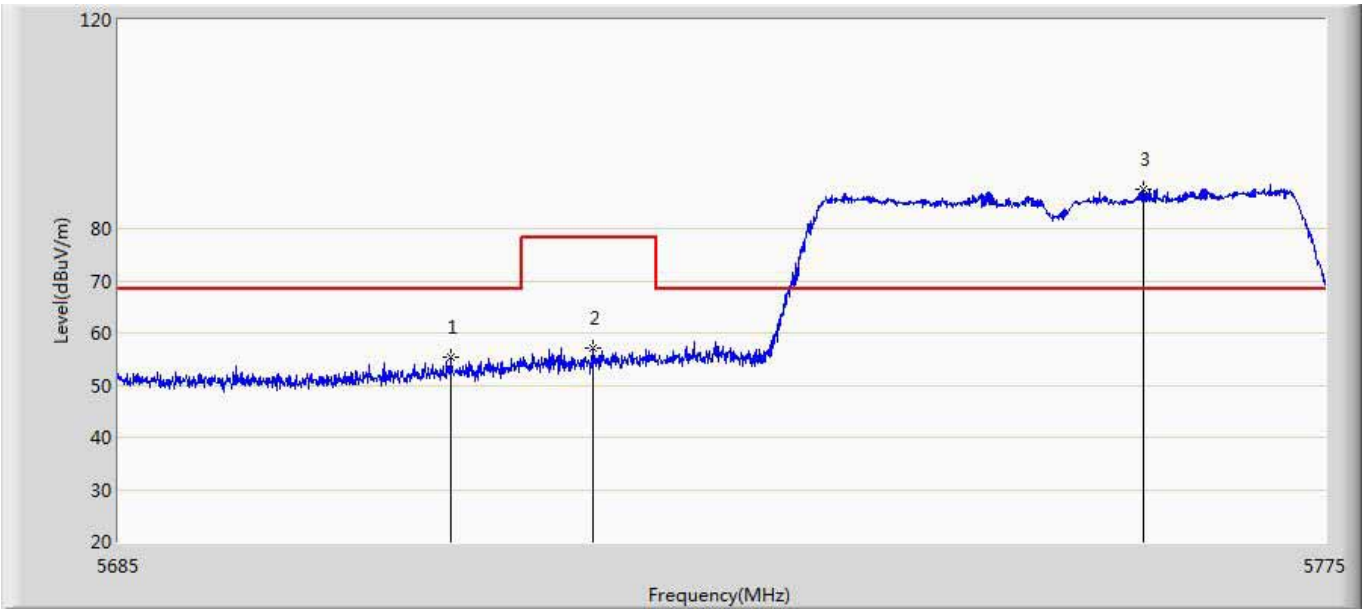
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5832.880	93.951	52.175	25.651	68.300	41.776	PK
2		5850.520	60.173	18.346	-18.127	78.300	41.827	PK
3		5868.560	59.288	17.413	-9.012	68.300	41.875	PK

Site: AC5	Time: 2015/06/25 - 17:17
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 3: Transmit at CH5755 by 802.11n(40MHz) ant1	



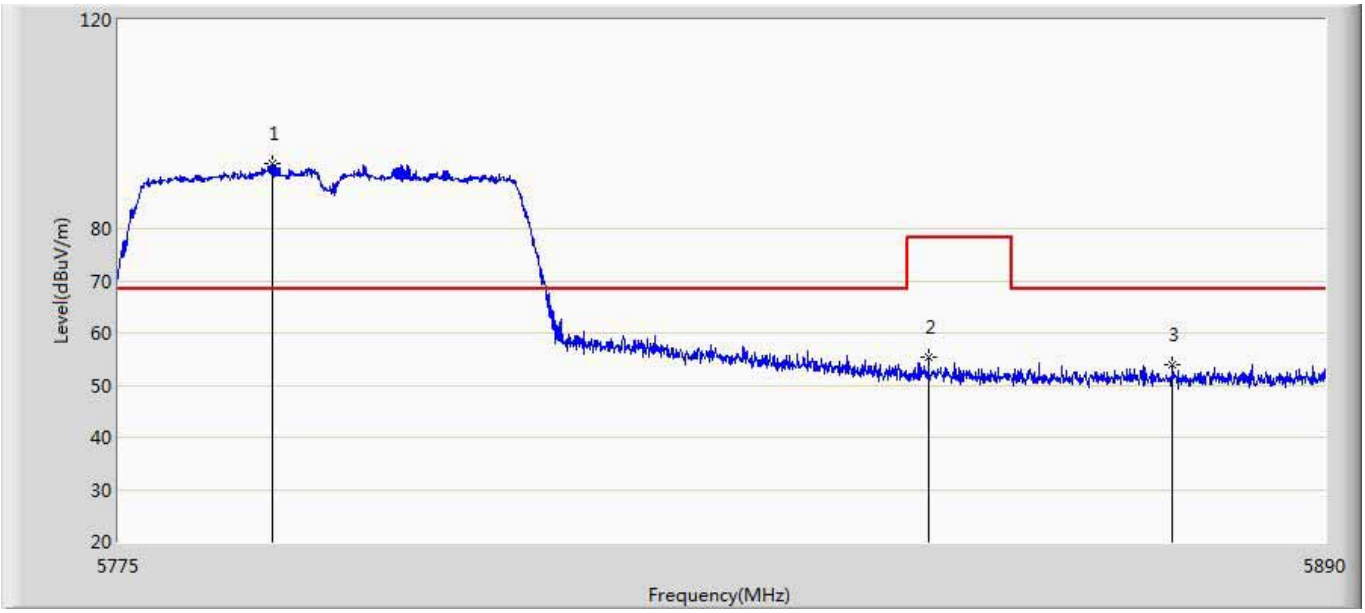
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5714.025	56.344	14.815	-11.956	68.300	41.529	PK
2		5717.895	58.227	16.693	-20.073	78.300	41.533	PK
3	*	5749.260	88.881	47.308	20.581	68.300	41.573	PK

Site: AC5	Time: 2015/06/25 - 17:19
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 3: Transmit at CH5755 by 802.11n(40MHz) ant1	



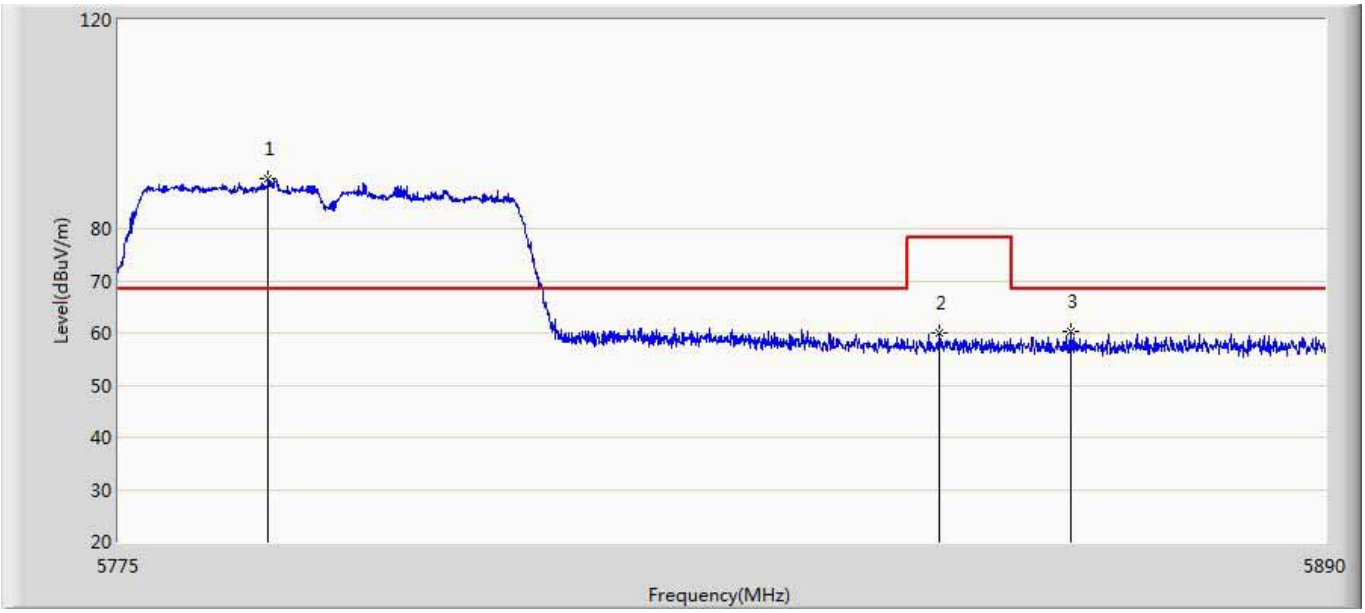
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5709.705	55.428	13.905	-12.872	68.300	41.524	PK
2		5720.280	56.972	15.435	-21.328	78.300	41.537	PK
3	*	5761.320	87.482	45.886	19.182	68.300	41.596	PK

Site: AC5	Time: 2015/06/25 - 17:22
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 3: Transmit at CH5795 by 802.11n(40MHz) ant1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5789.547	92.424	50.756	24.124	68.300	41.668	PK
2		5851.993	55.242	13.411	-23.058	78.300	41.831	PK
3		5875.337	53.836	11.943	-14.464	68.300	41.893	PK

Site: AC5	Time: 2015/06/25 - 17:24
Limit: FCC-15.407 new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Wi-Fi Module	Power: AC 120V/60Hz
Note: Mode 3: Transmit at CH5795 by 802.11n(40MHz) ant1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5789.203	89.534	47.867	21.234	68.300	41.667	PK
2		5852.970	59.913	18.080	-18.387	78.300	41.834	PK
3		5865.620	60.358	18.491	-7.942	68.300	41.867	PK

10. Frequency Stability

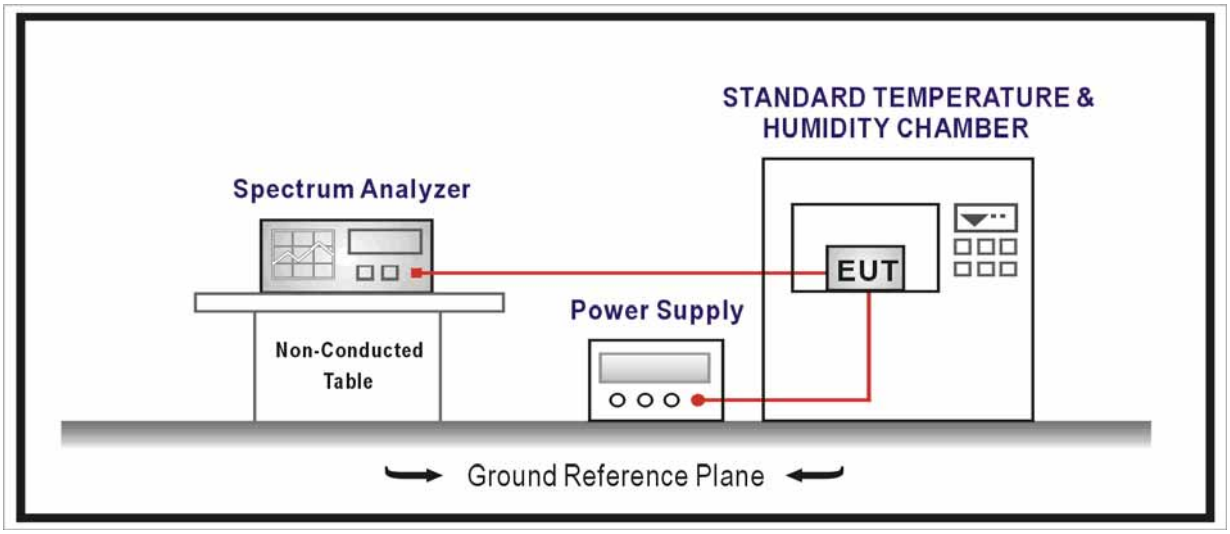
10.1. Test Equipment

Frequency Stability / TR-8

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2016.01.07
AC Power Supply	IDRC	CF-500TP	979422	2015.09.16
DC Power Supply	IDRC	CD-035-020PR	977272	2015.09.16
Programmable Temperature & Humidity Chamber	Gaoyu	TH-1P-B	WIT-05121302	2016.01.07
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2016.04.09

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

10.2. Test Setup



10.3. Limit

For FCC&IC

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

10.4. Test Procedure

Frequency Stability Under Temperature Variations:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20℃ operating frequency as reference frequency. Turn EUT off and set the chamber temperature to highest. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10℃ decreased per stage until the lowest temperature reached.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20℃. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.
Reduce the input voltage to specify extreme voltage variation (±15%) and endpoint, record the maximum frequency change.

10.5. Uncertainty

The measurement uncertainty is defined as ± 100 Hz

10.6. Test Result

Product	:	Wi-Fi Module
Test Item	:	Frequency Stability
Test Site	:	TR-8
Test Mode	:	Carrier Transmit

Frequency Stability under Temperature

Temperature Interval (℃)	Test Frequency (MHz)	Deviation (Hz)
-30	5220.000	-189
-20	5220.000	179
-10	5220.000	-251
0	5220.000	-321
10	5220.000	148
20	5220.000	-177
30	5220.000	165
40	5220.000	164
50	5220.000	-163

Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)
3.3	836.40	154
3.6	836.40	132
4.3	836.40	142

Frequency Stability under Temperature

Temperature Interval (℃)	Test Frequency (MHz)	Deviation (Hz)
-30	5300.000	-144
-20	5300.000	136
-10	5300.000	-145
0	5300.000	-111
10	5300.000	136
20	5300.000	142
30	5300.000	143
40	5300.000	152
50	5300.000	-112

Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)
3.3	5300.000	147
3.6	5300.000	-120
4.3	5300.000	98

Frequency Stability under Temperature

Temperature Interval (℃)	Test Frequency (MHz)	Deviation (Hz)
-30	5600.000	-139
-20	5600.000	142
-10	5600.000	-112
0	5600.000	-135
10	5600.000	121
20	5600.000	125
30	5600.000	136
40	5600.000	147
50	5600.000	-113

Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)
3.3	5600.000	142
3.6	5600.000	-139
4.3	5600.000	151

Frequency Stability under Temperature

Temperature Interval (℃)	Test Frequency (MHz)	Deviation (Hz)
-30	5805.000	-132
-20	5805.000	135
-10	5805.000	-106
0	5805.000	-128
10	5805.000	115
20	5805.000	119
30	5805.000	129
40	5805.000	140
50	5805.000	-107

Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)
3.3	5805.000	98
3.6	5805.000	-109
4.3	5805.000	111

The End