

FCC REPORT

Applicant: Skyroam Technology Company limited

Address of Applicant: BLK F, Room 710-717 Xihaimingzhu Building, Taoyuan Road
Nanshan District, Shenzhen Guangdong 518000 China

Equipment Under Test (EUT)

Product Name: 3Gmate+

Model No.: W20

Trade mark: 

FCC ID: GVQ3GMATES

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247:2011

Date of sample receipt: 25 Apr., 2014

Date of Test: 26 Apr., to 27 Aug., 2014

Date of report issued: 27 Aug., 2014

Test Result : PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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2 Version

Version No.	Date	Description
00	27 Aug., 2014	Original

Prepared by:

Yoyo Luo

Date:

27 Aug., 2014

Report Clerk

Reviewed by:

Wimer Zhang

Date:

27 Aug., 2014

Project Engineer

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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.247 (b)(3)	Pass
99%/6dB Emission Bandwidth	15.247 (a)(2)	Pass
Power Spectral Density	15.247 (e)	Pass
Band Edge	15.247(d)	Pass
Spurious Emission	15.205/15.209	Pass

Pass: The EUT complies with the essential requirements in the standard.

5 General Information

5.1 Client Information

Applicant:	Skyroam Technology Company limited
Address of Applicant:	BLK F, Room 710-717 Xihaimingzhu Building, Taoyuan Road Nanshan District, Shenzhen Guangdong 518000 China
Manufacturer:	Qingdao Haier Telecom Co.,Ltd
Address of Manufacturer:	Building S, No.1, Haier Road, Laoshan District, Qingdao City, Shandong Prov. China
Factory:	Shenzhen Leaguer Telecom Co.,Ltd
Address of Factory:	1F, Block Tsinghua Information Noeth Zone Of Hi-tech Industrial Nanshan Distric. Shenzhen, P.R.C

5.2 General Description of E.U.T.

Product Name:	3Gmate+
Model No.:	W20
Trade mark:	
Operation Frequency:	2412MHz~2462MHz (802.11b/802.11g/802.11n(H20))
Channel numbers:	11 for 802.11b/802.11g/802.11n(H20)
Channel separation:	5MHz
Modulation technology: (IEEE 802.11b)	Direct Sequence Spread Spectrum (DSSS)
Modulation technology: (IEEE 802.11g/802.11n)	Orthogonal Frequency Division Multiplexing (OFDM)
Data speed (IEEE 802.11b):	1Mbps, 2Mbps, 5.5Mbps, 11Mbps
Data speed (IEEE 802.11g):	6Mbps, 9Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps, 54Mbps
Data speed (IEEE 802.11n):	Up to 150Mbps
Antenna Type:	Internal Antenna
Antenna gain:	-3 dBi
Power supply:	Rechargeable Li-ion Battery DC3.7V/2900mAh

Operation Frequency each of channel For 802.11b/g/n(H20)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

802.11b/802.11g/802.11n (H20)

Channel	Frequency
The lowest channel	2412MHz
The middle channel	2437MHz
The Highest channel	2462MHz

5.3 Test environment and mode

Operating Environment:	
Temperature:	24.0 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar
Test mode:	
Operation mode	Keep the EUT in continuous transmitting with modulation
The sample was placed 0.8m above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.	

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

Mode	Data rate
802.11b	1Mbps
802.11g	6Mbps
802.11n(H20)	6.5Mbps

Final Test Mode:

According to ANSI C63.4 standards, the test results are both the “worst case” and “worst setup” 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11n(H20). Duty cycle setting during the transmission is 100% with maximum power setting for all modulations.

5.4 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
DELL	PC	OPTIPLEX745	N/A	DoC
DELL	MONITOR	E178FPC	N/A	DoC
DELL	KEYBOARD	SK-8115	N/A	DoC
DELL	MOUSE	MOC5UO	N/A	DoC

5.5 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC - Registration No.: 817957**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 817957, February 27, 2012.

● **IC - Registration No.: 10106A-1**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

● **CNAS - Registration No.: CNAS L6048**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

5.6 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.
Address: No.B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,
Bao'an District, Shenzhen, Guangdong, China
Tel: 0755-23118282
Fax: 0755-23116366

5.7 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (dd-mm-yy)	Cal. Due date (dd-mm-yy)
1	3m Semi- Anechoic Chamber	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	June 09 2013	June 08 2014
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	CCIS0002	N/A	N/A
3	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	CCIS0005	June 04 2013	June 03 2014
4	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	CCIS0006	May 30 2013	May 29 2014
5	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
6	Coaxial Cable	CCIS	N/A	CCIS0016	Apr. 01 2014	Mar. 31 2015
7	Coaxial Cable	CCIS	N/A	CCIS0017	Apr. 01 2014	Mar. 31 2015
8	Coaxial cable	CCIS	N/A	CCIS0018	Apr. 01 2014	Mar. 31 2015
9	Coaxial Cable	CCIS	N/A	CCIS0019	Apr. 01 2014	Mar. 31 2015
10	Coaxial Cable	CCIS	N/A	CCIS0087	Apr. 01 2014	Mar. 31 2015
11	Amplifier(10kHz-1.3GHz)	HP	8447D	CCIS0003	Apr. 01 2014	Mar. 31 2015
12	Amplifier(1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	June 09 2013	June 08 2014
13	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	Apr. 01 2014	Mar. 31 2015
14	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 30 2014	Mar. 29 2015
15	Printer	HP	HP LaserJet P1007	N/A	N/A	N/A
16	Positioning Controller	UC	UC3000	CCIS0015	N/A	N/A
17	Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP	CCIS0023	May. 29 2014	May. 28 2015
18	Loop antenna	Laplace instrument	RF300	EMC0701	Aug. 12 2013	Aug. 11 2014
19	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	May 25 2013	May 24 2014
20	Signal Analyzer	Rohde & Schwarz	FSIQ3	CCIS0088	May 29 2013	May 28 2014

Conducted Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (dd-mm-yy)	Cal. Due date (dd-mm-yy)
1	Shielding Room	ZhongShuo Electron	11.0(L)x4.0(W)x3.0(H)	CCIS0061	June 09 2013	June 08 2014
2	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	May 25 2013	May. 24 2014
3	LISN	CHASE	MN2050D	CCIS0074	Apr. 01 2014	Mar. 31 2015
4	Coaxial Cable	CCIS	N/A	CCIS0086	Apr. 01 2014	Mar. 31 2015

6 Test results and Measurement Data

6.1 Antenna requirement:

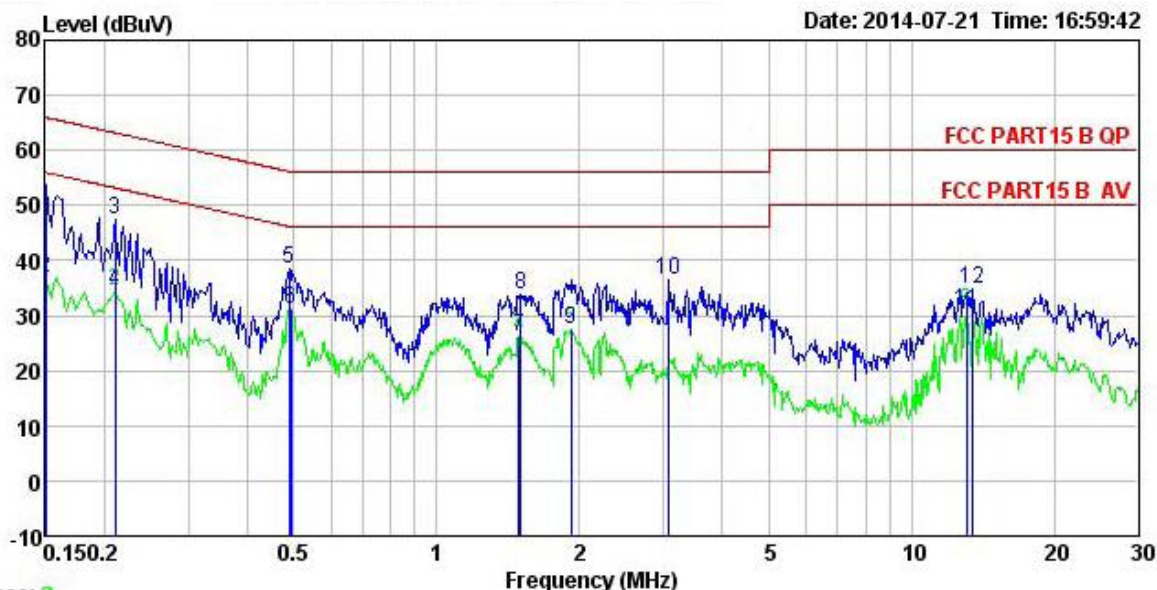
Standard requirement:	FCC Part15 C Section 15.203 /247(c)
<i>15.203 requirement:</i> <i>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</i> <i>15.247(c) (1)(i) requirement:</i> <i>(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.</i>	
E.U.T Antenna:	
<i>The antenna is an internal antenna which cannot replace by end-user, the best case gain of the WiFi antenna is -3 dBi.</i>	
	

6.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207																
Test Method:	ANSI C63.4: 2003																
Test Frequency Range:	150kHz to 30MHz																
Class / Severity:	Class B																
Receiver setup:	RBW=9kHz, VBW=30kHz																
Limit:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>5-30</td><td>60</td><td>50</td></tr></table> * Decreases with the logarithm of the frequency.			Frequency range (MHz)	Limit (dBuV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dBuV)																
	Quasi-peak	Average															
0.15-0.5	66 to 56*	56 to 46*															
0.5-5	56	46															
5-30	60	50															
Test procedure	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.																
Test setup:	Reference Plane Test table/Insulation plane <i>Remark</i> E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m																
Test Instruments:	Refer to section 5.7 for details																
Test mode:	Refer to section 5.3 for details																
Test results:	Passed																

Measurement Data

Neutral:

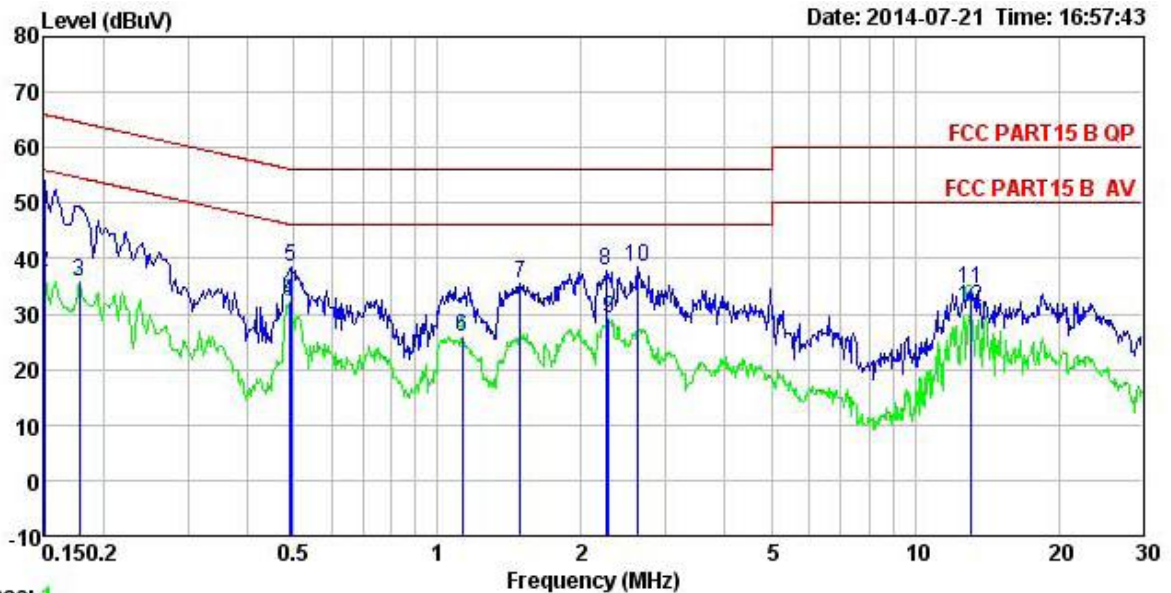


Trace: 3

Site : CCIS Conducted test Site
 Condition : FCC PART15 B QP LISN NEUTRAL
 Job. no : 256RF
 EUT : 4Gmate
 Model : W20
 Test Mode : WIFI TX mode
 Power Rating : AC 120V/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: Winner
 Remark :

	Freq	Read	LISN	Cable	Level	Limit	Over	
	MHz	Level	Factor	Loss	dBuV	Line	Limit	Remark
		dBuV	dB	dB		dBuV	dB	
1	0.150	42.76	0.25	10.78	53.79	66.00	-12.21	QP
2	0.150	25.78	0.25	10.78	36.81	56.00	-19.19	Average
3	0.211	36.46	0.25	10.76	47.47	63.18	-15.71	QP
4	0.211	23.49	0.25	10.76	34.50	53.18	-18.68	Average
5	0.489	27.37	0.29	10.76	38.42	56.19	-17.77	QP
6	0.494	19.99	0.29	10.76	31.04	46.10	-15.06	Average
7	1.487	14.89	0.26	10.92	26.07	46.00	-19.93	Average
8	1.503	22.61	0.26	10.92	33.79	56.00	-22.21	QP
9	1.918	16.17	0.29	10.95	27.41	46.00	-18.59	Average
10	3.074	25.12	0.29	10.92	36.33	56.00	-19.67	QP
11	13.057	19.58	0.25	10.91	30.74	50.00	-19.26	Average
12	13.408	23.65	0.25	10.91	34.81	60.00	-25.19	QP

Line:



Trace: 1

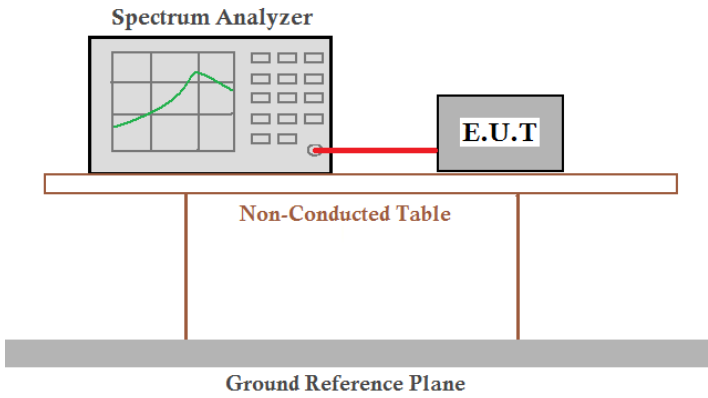
Site : CCIS Conducted test Site
 Condition : FCC PART15 B QP LISN LINE
 Job. no : 256RF
 EUT : 4Gmate
 Model : W20
 Test Mode : WIFI TX mode
 Power Rating : AC 120V/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: Winner
 Remark :

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.150	43.11	0.27	10.78	54.16	66.00	-11.84	QP
2	0.150	26.56	0.27	10.78	37.61	56.00	-18.39	Average
3	0.178	24.86	0.28	10.77	35.91	54.59	-18.68	Average
4	0.489	21.17	0.29	10.76	32.22	46.19	-13.97	Average
5	0.494	27.34	0.29	10.76	38.39	56.10	-17.71	QP
6	1.129	14.82	0.25	10.89	25.96	46.00	-20.04	Average
7	1.487	24.21	0.26	10.92	35.39	56.00	-20.61	QP
8	2.249	26.67	0.26	10.95	37.88	56.00	-18.12	QP
9	2.285	17.97	0.26	10.95	29.18	46.00	-16.82	Average
10	2.622	27.39	0.27	10.93	38.59	56.00	-17.41	QP
11	13.057	23.25	0.32	10.91	34.48	60.00	-25.52	QP
12	13.057	19.89	0.32	10.91	31.12	50.00	-18.88	Average

Notes:

1. An initial pre-scan was performed on the live and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss

6.3 Conducted Output Power

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	ANSI C63.4:2003 and KDB558074
Limit:	30dBm
Test setup:	
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Remark:	Test method refers to KDB558074 (DTS Measure Guidance). AVGSA-1 method was used.

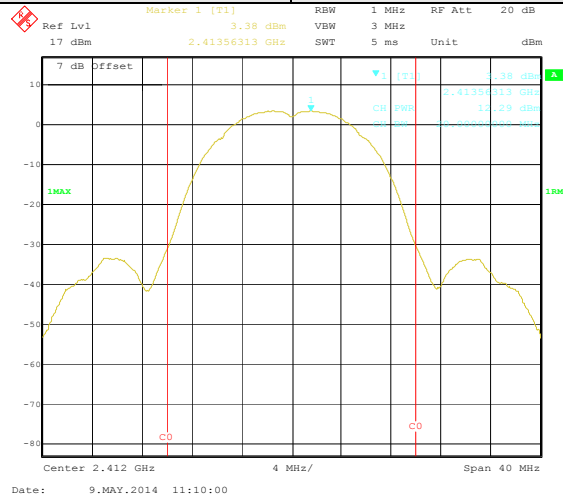
Measurement Data

Test CH	Maximum Conducted Output Power (dBm)			Limit(dBm)	Result
	802.11b	802.11g	802.11n(H20)		
Lowest	12.29	11.63	11.77	30.00	Pass
Middle	11.50	11.00	11.29		
Highest	11.19	10.85	10.94		

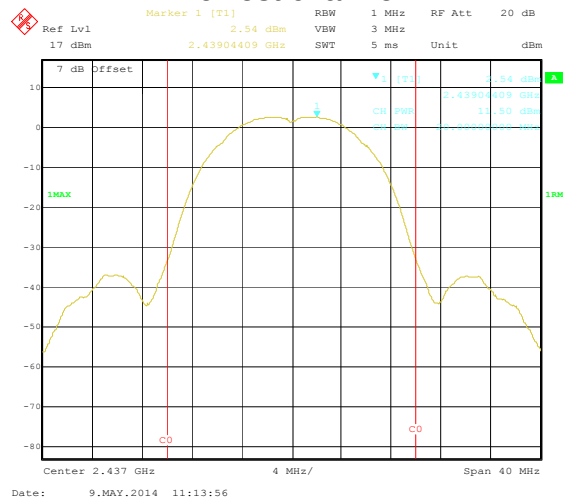
Test plot as follows:

Test mode:

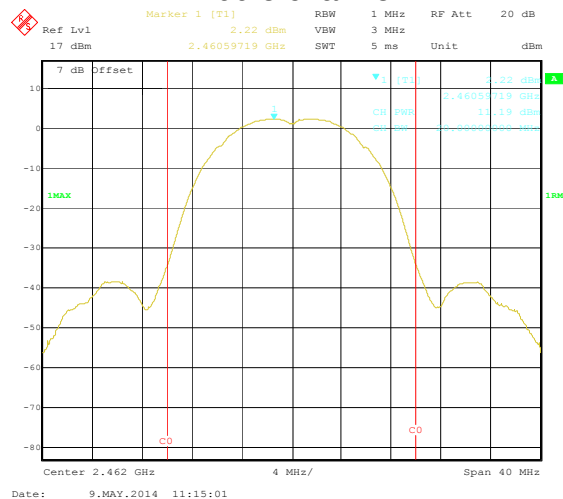
802.11b



Lowest channel



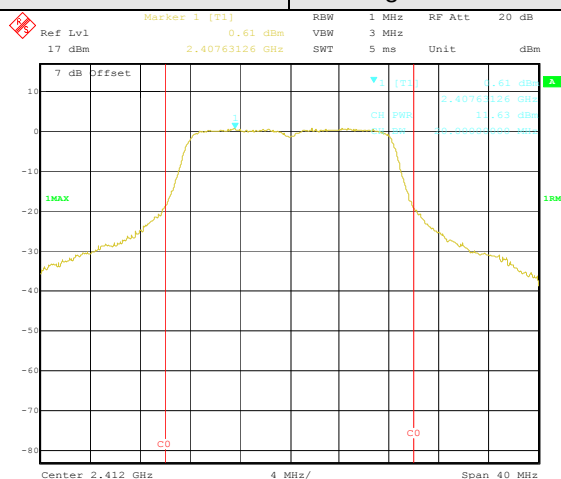
Middle channel



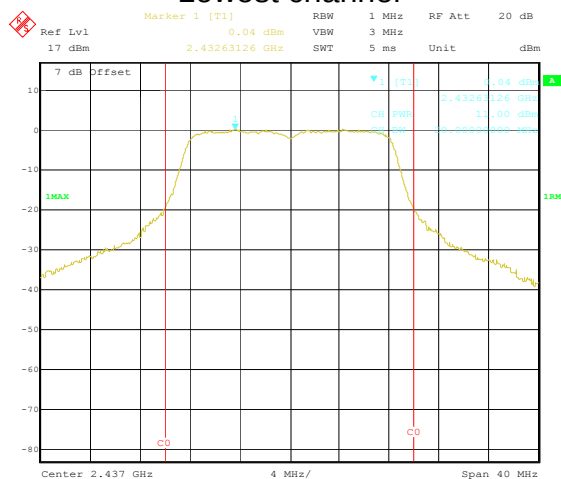
Highest channel

Test mode:

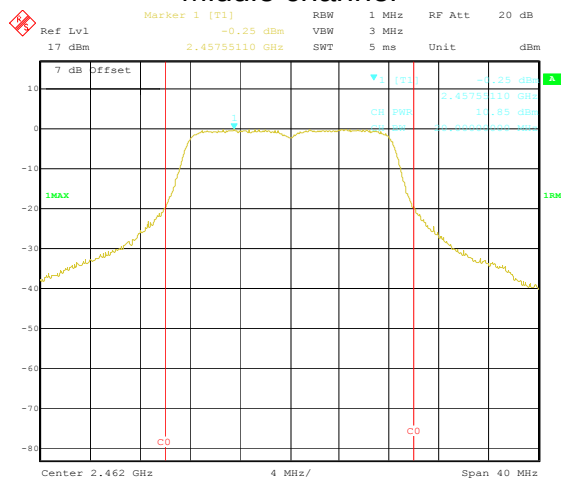
802.11g



Lowest channel



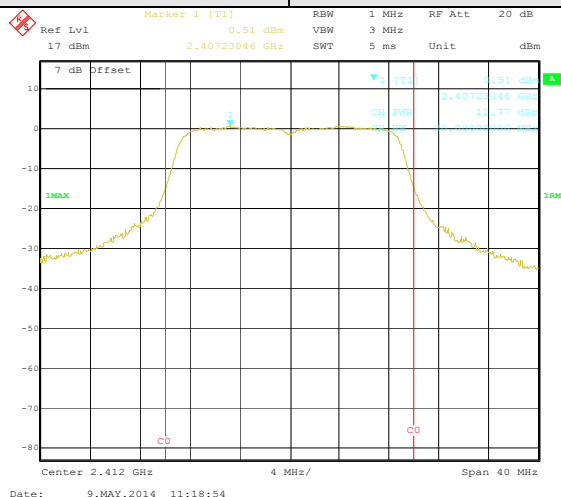
Middle channel



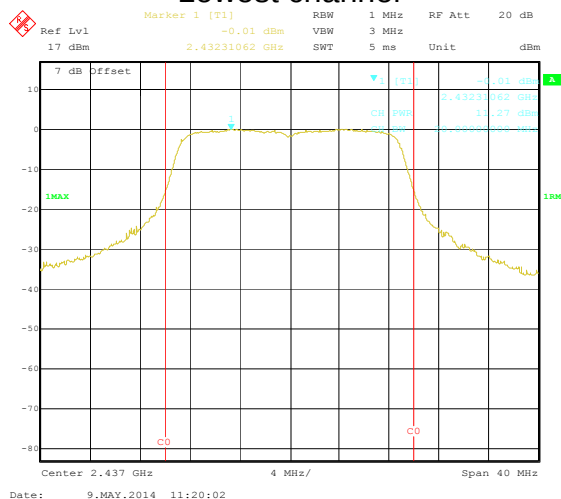
Highest channel

Test mode:

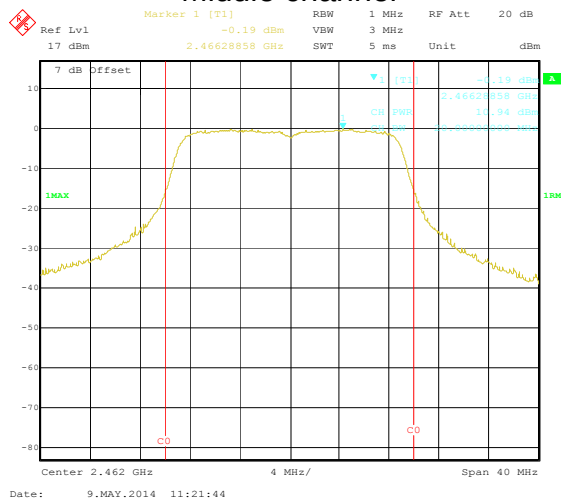
802.11n(H20)



Lowest channel

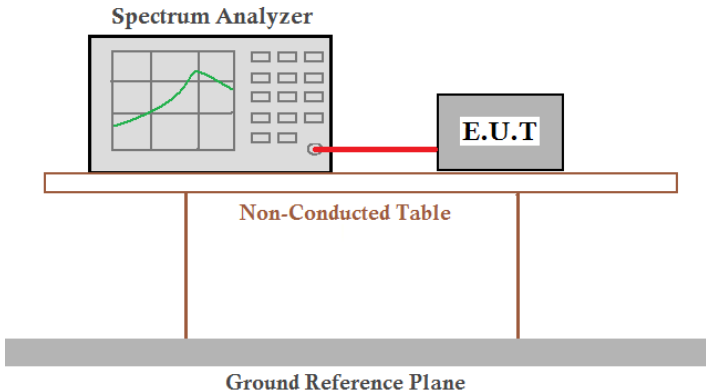


Middle channel



Highest channel

6.4 Occupy Bandwidth

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	ANSI C63.4:2003 and KDB558074
Limit:	>500kHz
Test setup:	
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data

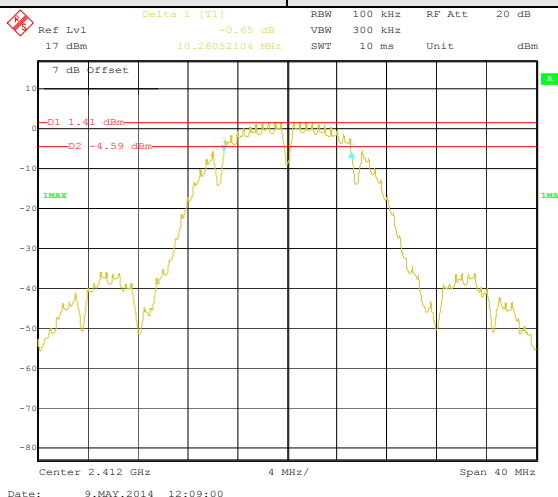
Test CH	6dB Occupy Bandwidth (MHz)			Limit(kHz)	Result
	802.11b	802.11g	802.11n(H20)		
Lowest	10.26	16.51	17.80	>500	Pass
Middle	10.26	16.51	17.80		
Highest	10.26	16.51	17.80		

Test CH	99%dB Occupy Bandwidth (MHz)			Limit(kHz)	Result
	802.11b	802.11g	802.11n(H20)		
Lowest	14.11	16.59	17.80	N/A	N/A
Middle	14.03	16.51	17.72		
Highest	13.95	16.51	17.80		

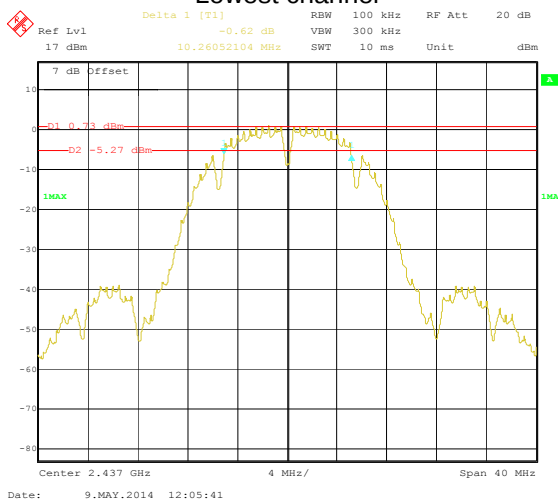
Test plot as follows:

Test mode:6dB BW

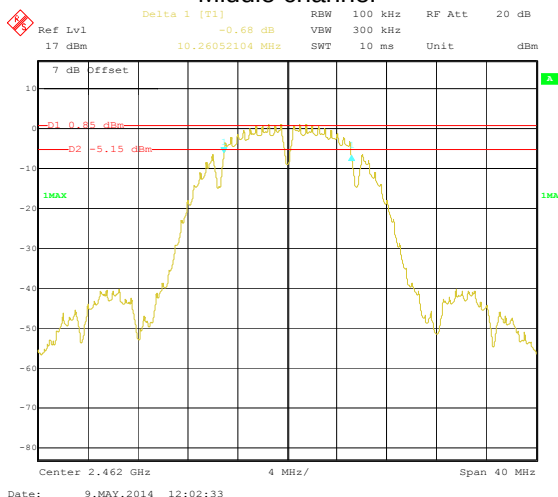
802.11b



Lowest channel



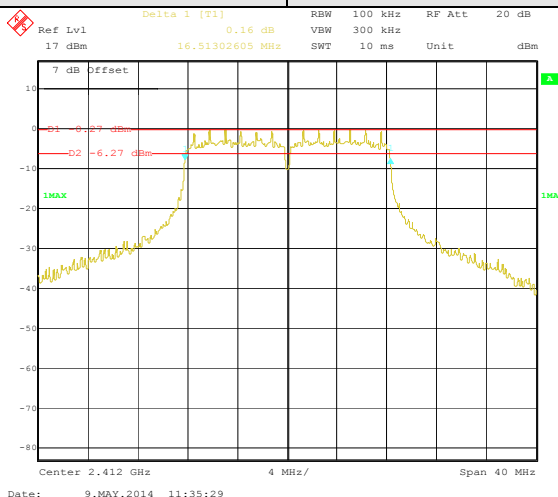
Middle channel



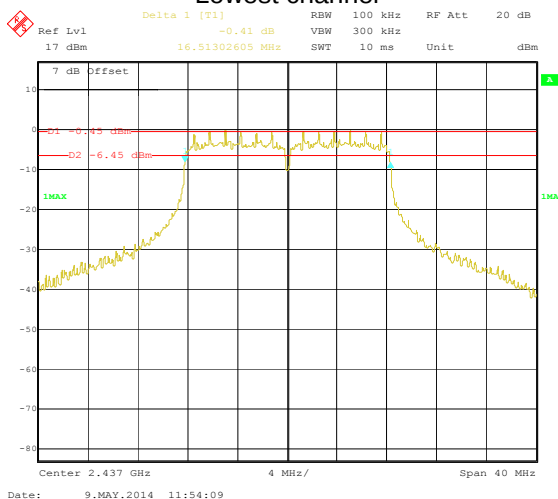
Highest channel

Test mode:6dB BW

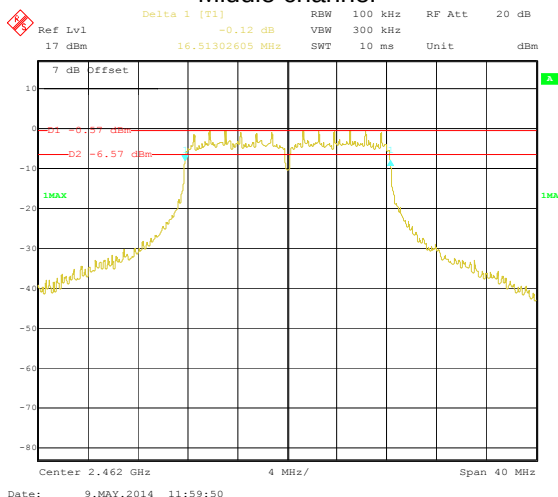
802.11g



Lowest channel



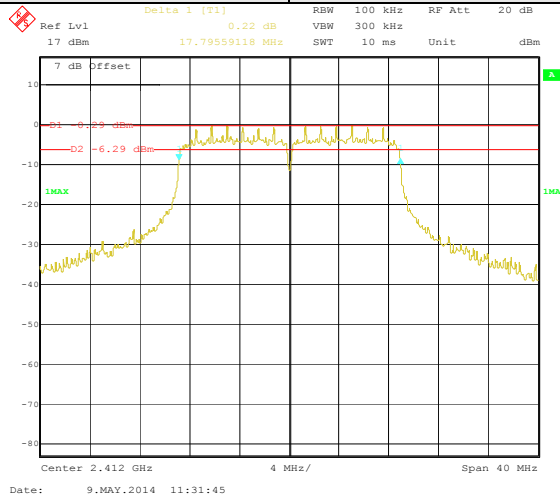
Middle channel



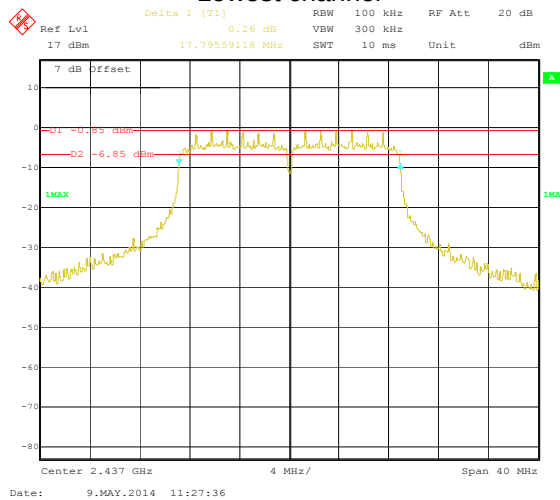
Highest channel

Test mode:6dB BW

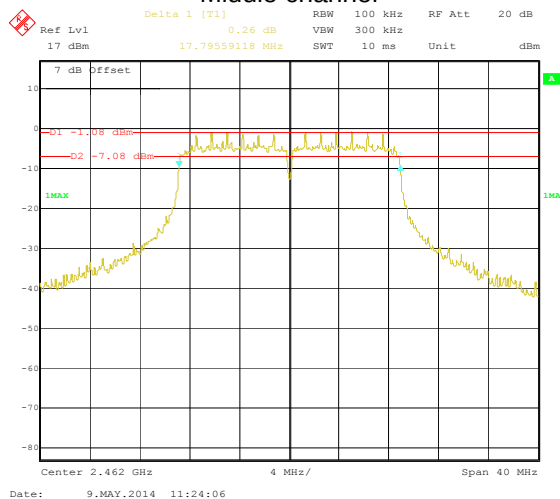
802.11n(H20)



Lowest channel



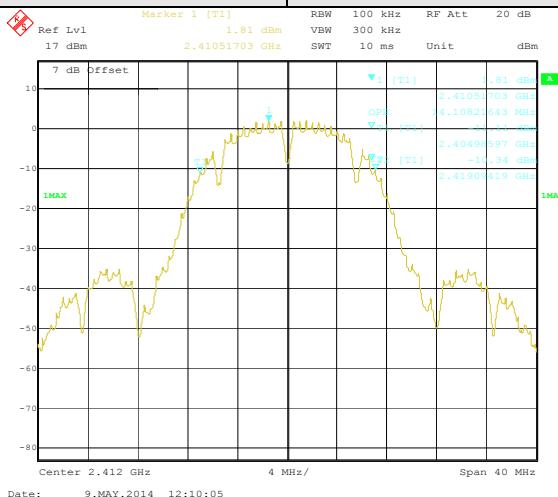
Middle channel



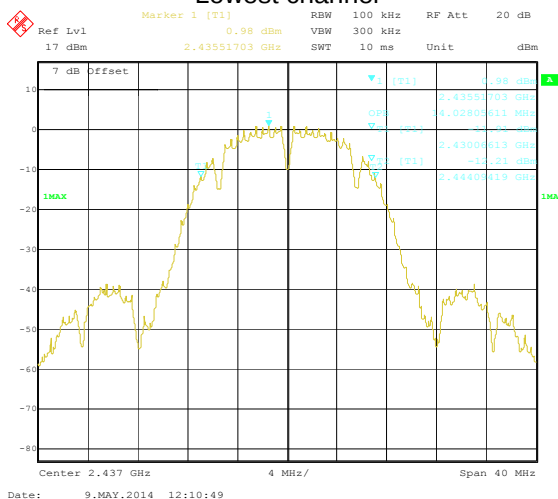
Highest channel

Test mode: 99%dB Occupy Bandwidth

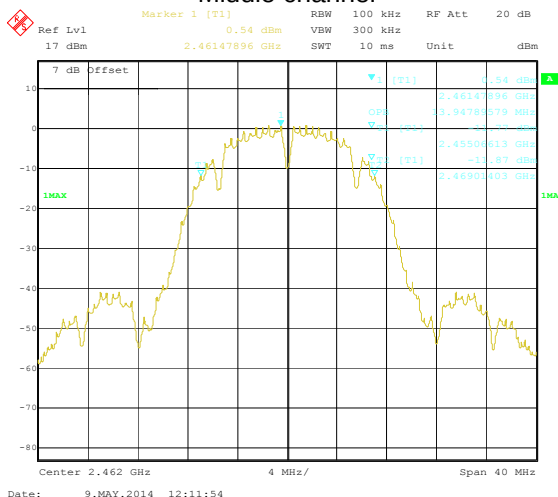
802.11b



Lowest channel



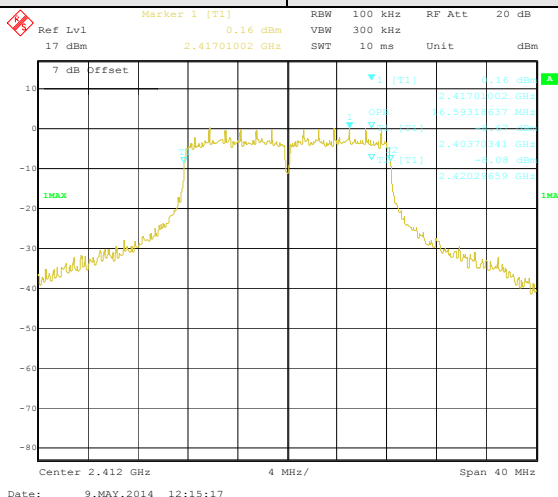
Middle channel



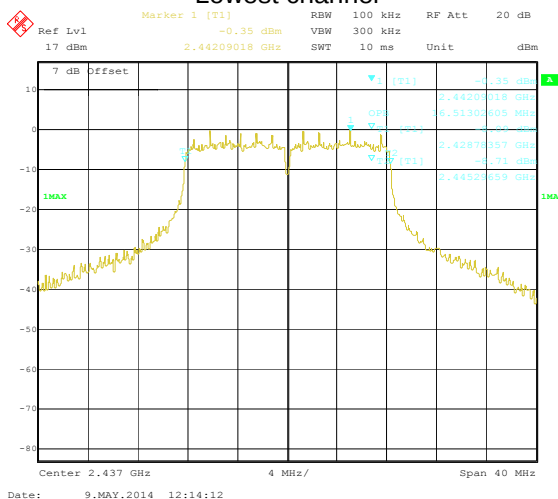
Highest channel

Test mode: 99%dB Occupy Bandwidth

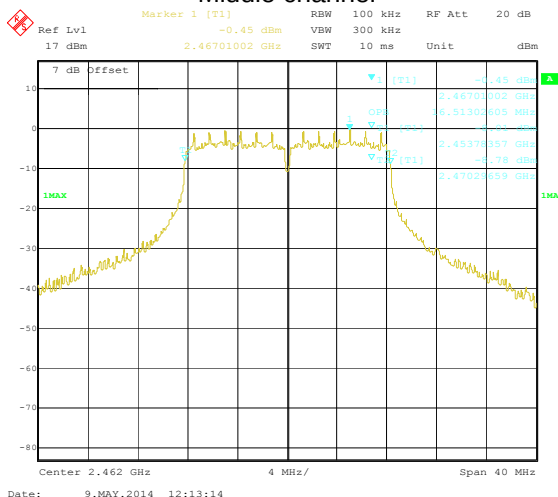
802.11g



Lowest channel



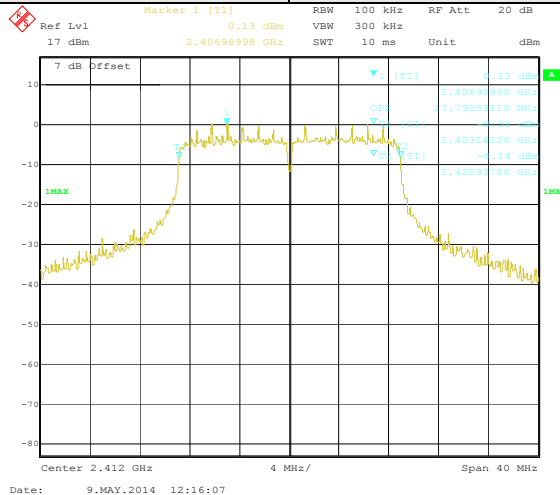
Middle channel



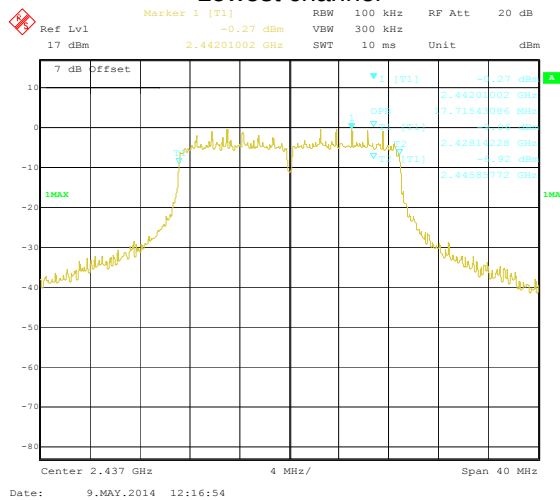
Highest channel

Test mode: 99%dB Occupy Bandwidth

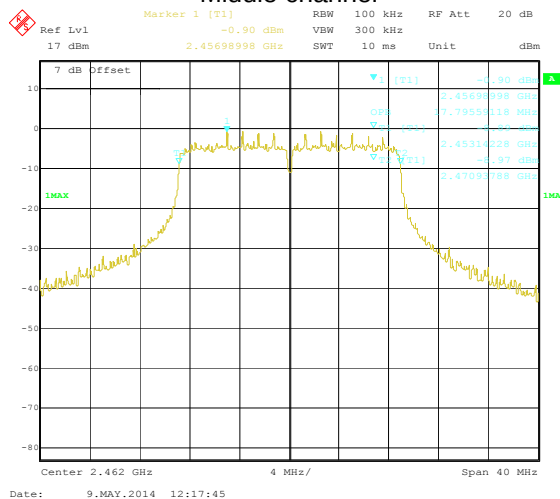
802.11n(H20)



Lowest channel

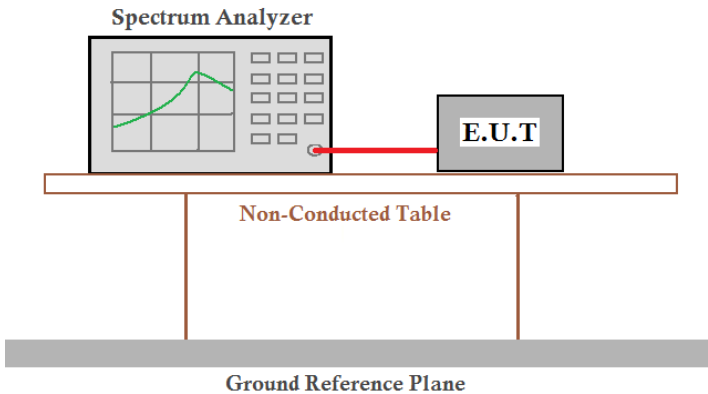


Middle channel



Highest channel

6.5 Power Spectral Density

Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	ANSI C63.4:2003 and KDB558074
Limit:	8dBm
Test setup:	
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

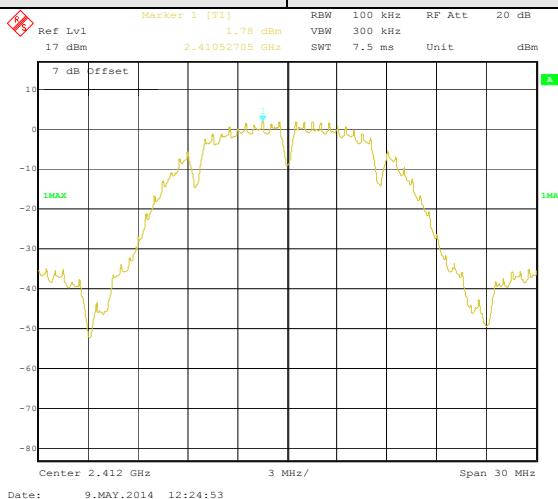
Measurement Data

Test CH	Power Spectral Density (dBm)			Limit(dBm)	Result
	802.11b	802.11g	802.11n(H20)		
Lowest	1.78	0.16	0.26	8.00	Pass
Middle	0.59	-0.27	-0.21		
Highest	0.65	-0.35	-0.50		

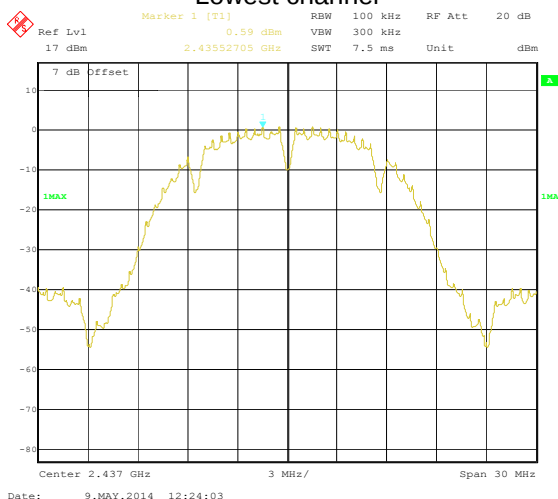
Test plot as follows:

Test mode:

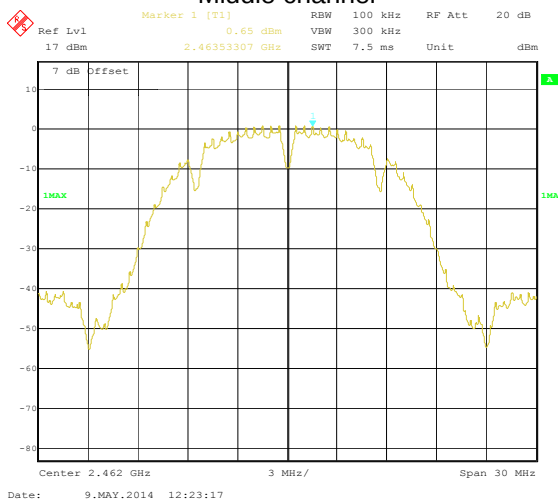
802.11b



Lowest channel

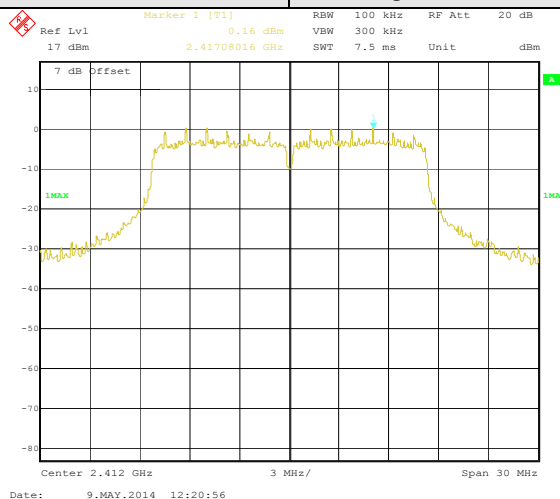


Middle channel

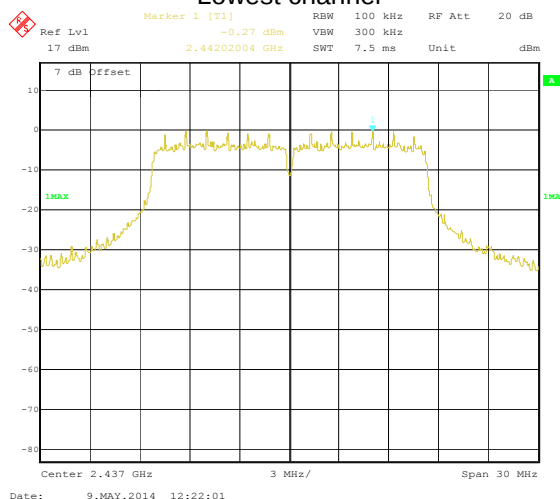


Highest channel

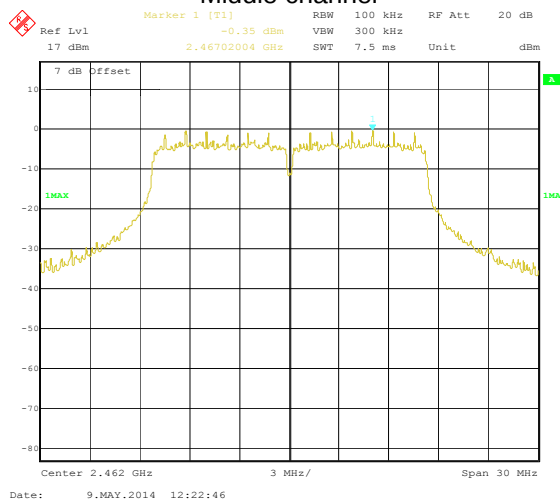
Test mode:	802.11g
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Lowest channel

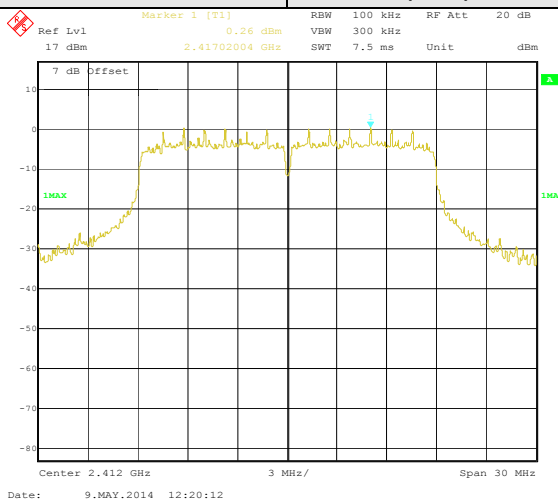


Middle channel

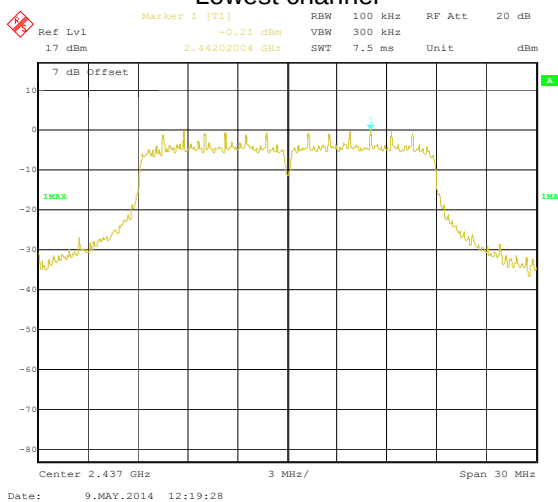


Highest channel

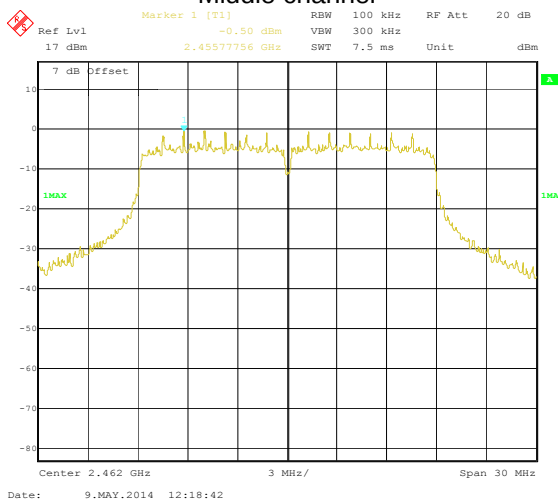
Test mode:	802.11n(H20)
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Lowest channel



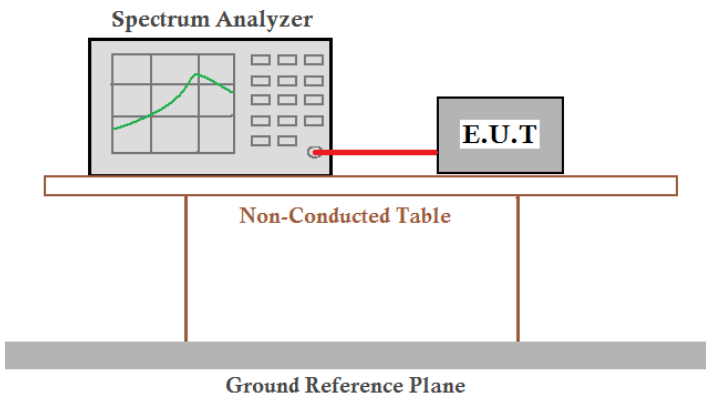
Middle channel



Highest channel

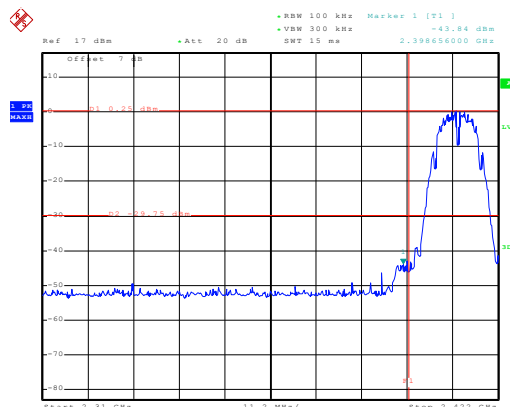
6.6 Band Edge

6.6.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2003 and KDB558074
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by two vertical legs. Below the table is a Ground Reference Plane, represented by a thick grey bar.
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

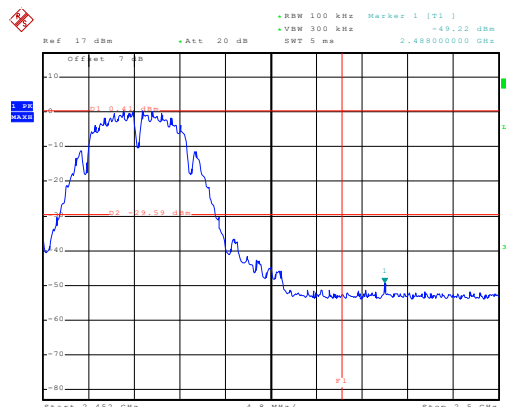
Test plot as follows:

Test mode:	802.11b
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Date: 27.AUG.2014 14:16:51

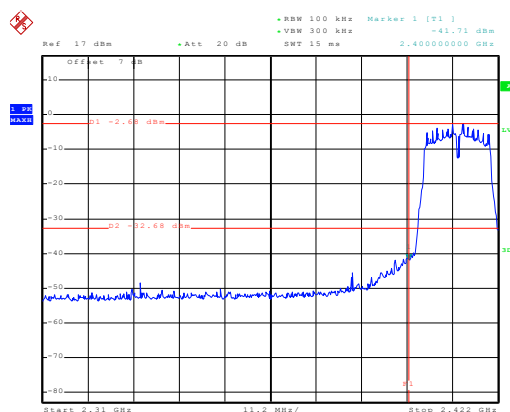
Lowest channel



Date: 27.AUG.2014 14:20:29

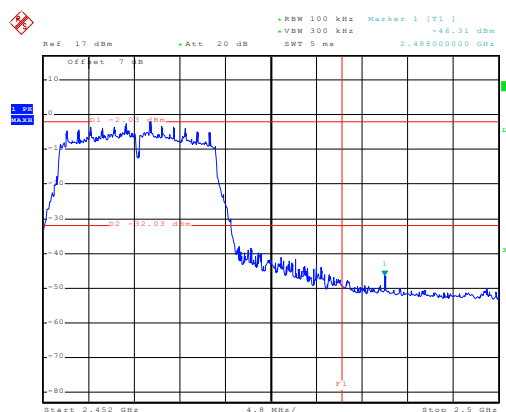
Highest channel

Test mode:	802.11g
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Date: 27.AUG.2014 14:28:56

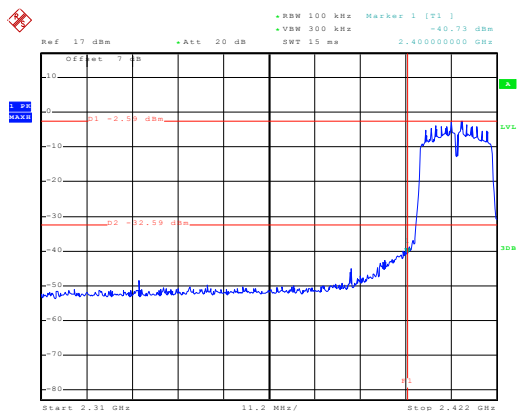
Lowest channel



Date: 27.AUG.2014 14:24:25

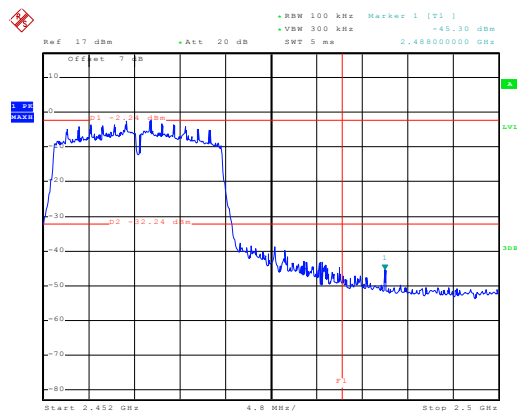
Highest channel

Test mode:	802.11n(H20)
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Date: 27.AUG.2014 14:27:45

Lowest channel



Date: 27.AUG.2014 14:26:04

Highest channel

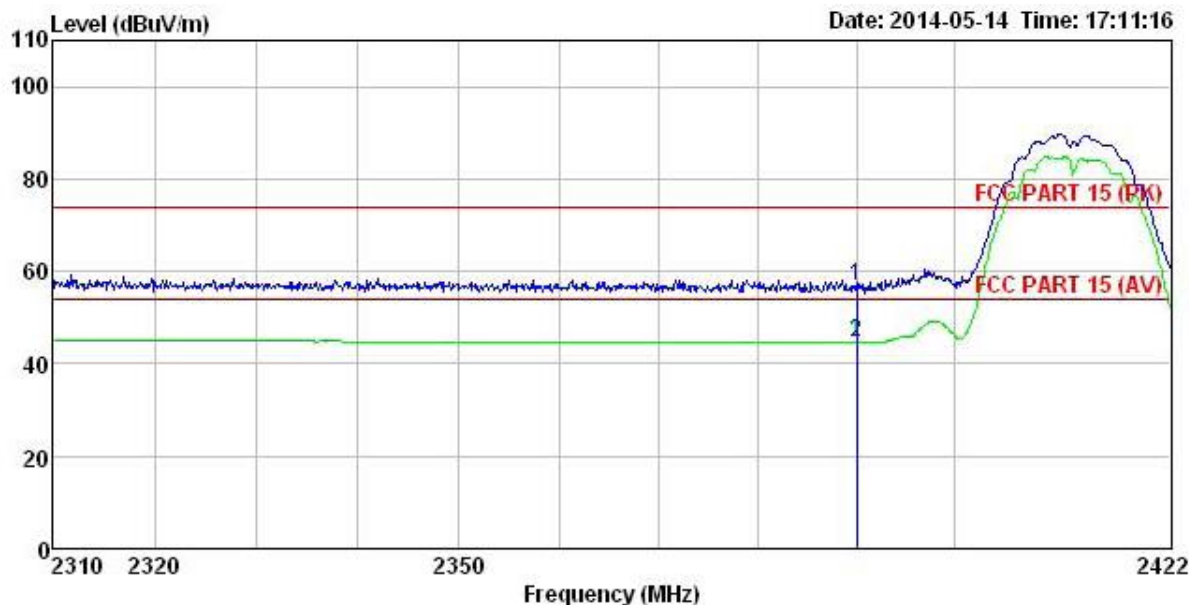
6.6.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205																		
Test Method:	ANSI C63.4: 2003																		
Test Frequency Range:	2.3GHz to 2.5GHz																		
Test site:	Measurement Distance: 3m																		
Receiver setup:	<table><tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr><tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr><tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average Value</td></tr></table>					Frequency	Detector	RBW	VBW	Remark	Above 1GHz	Peak	1MHz	3MHz	Peak Value	Peak	1MHz	10Hz	Average Value
Frequency	Detector	RBW	VBW	Remark															
Above 1GHz	Peak	1MHz	3MHz	Peak Value															
	Peak	1MHz	10Hz	Average Value															
Limit:	<table><tr><td>Frequency</td><td>Limit (dBuV/m @3m)</td><td>Remark</td></tr><tr><td rowspan="2">Above 1GHz</td><td>54.00</td><td>Average Value</td></tr><tr><td>74.00</td><td>Peak Value</td></tr></table>					Frequency	Limit (dBuV/m @3m)	Remark	Above 1GHz	54.00	Average Value	74.00	Peak Value						
Frequency	Limit (dBuV/m @3m)	Remark																	
Above 1GHz	54.00	Average Value																	
	74.00	Peak Value																	
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.																		
Test setup:																			
Test Instruments:	Refer to section 5.7 for details																		
Test mode:	Refer to section 5.3 for details																		
Test results:	Passed																		

802.11b

Test channel: Lowest

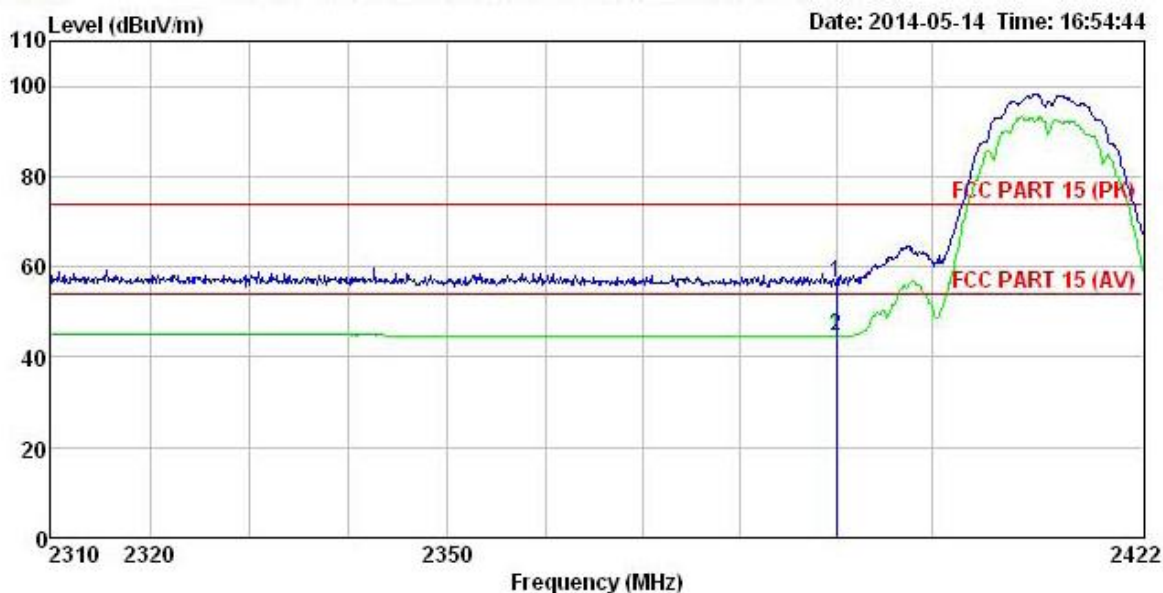
Horizontal:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
 Job No. : 254RF
 EUT : 4Gmate
 Model : W20
 Test mode : Wifi TX(b low channel) mode
 Power Rating : DC3.7V
 Environment : Temp:25.5'C Humi:55%
 Test Engineer: Winner
 Remark :

	ReadAntenna	Cable	Preamp		Limit	Over	
Freq	Level	Factor	Loss	Factor	Line	Limit	Remark
MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB
1 2390.000	23.71	27.58	5.67	0.00	56.96	74.00	-17.04 Peak
2 2390.000	11.31	27.58	5.67	0.00	44.56	54.00	-9.44 Average

Vertical:

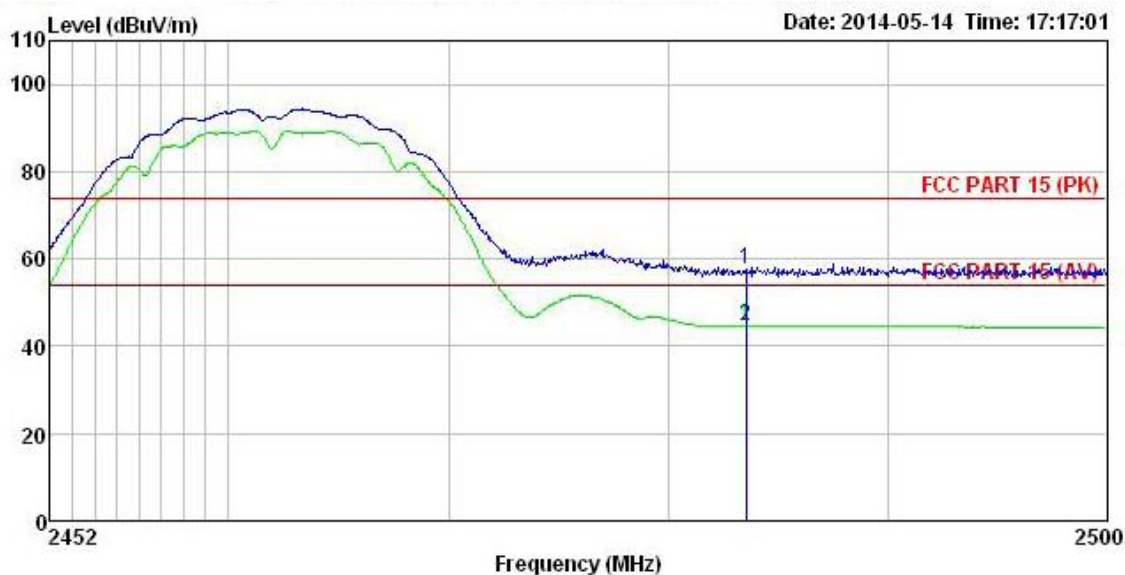


Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 Job No. : 254RF
 EUT : 4Gmate
 Model : W20
 Test mode : Wifi TX(b low channel) mode
 Power Rating : DC3.7V
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Winner
 Remark :

	Freq	ReadAntenna	Cable	Preamp	Limit	Over	
	Level	Factor	Loss	Factor	Line	Limit	Remark
	MHz	dBm	dB/m	dB	dB	dBm/m	dB
1	2390.000	23.28	27.58	5.67	0.00	56.53	74.00 -17.47 Peak
2	2390.000	11.40	27.58	5.67	0.00	44.65	54.00 -9.35 Average

Test channel: Highest

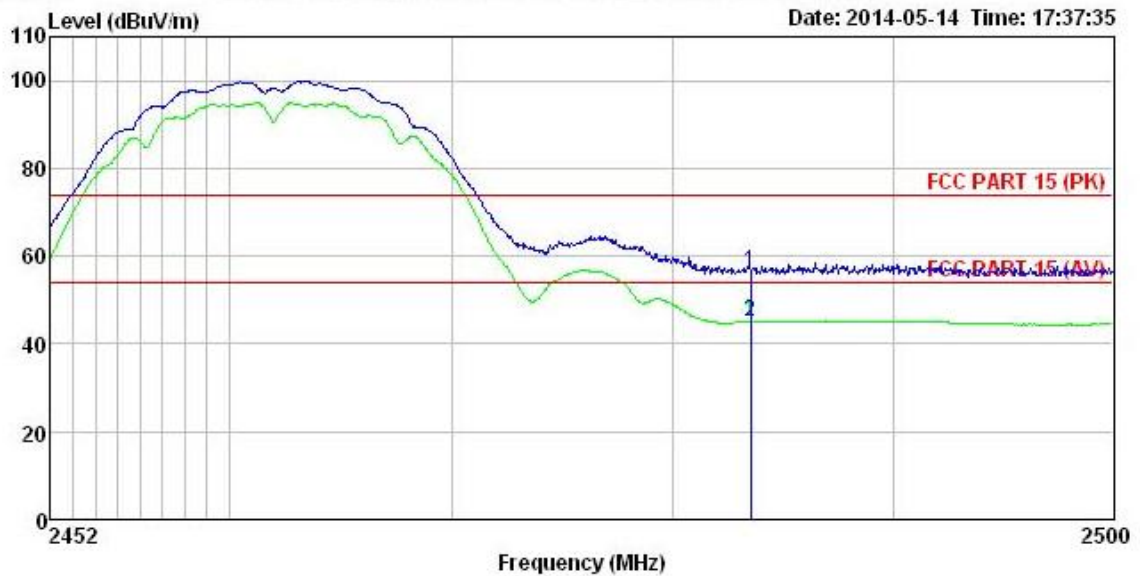
Horizontal:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
 Job No. : 254RF
 EUT : 4Gmate
 Model : W20
 Test mode : Wifi TX(b high channel) mode
 Power Rating : DC3.7V
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Winner
 Remark :

	ReadAntenna	Cable	Preamp		Limit	Over	
Freq	Level	Factor	Loss	Factor	Line	Limit	Remark
-----	-----	-----	-----	-----	-----	-----	-----
MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB
1 2483.500	24.25	27.52	5.70	0.00	57.47	74.00	-16.53 Peak
2 2483.500	11.34	27.52	5.70	0.00	44.56	54.00	-9.44 Average

Vertical:



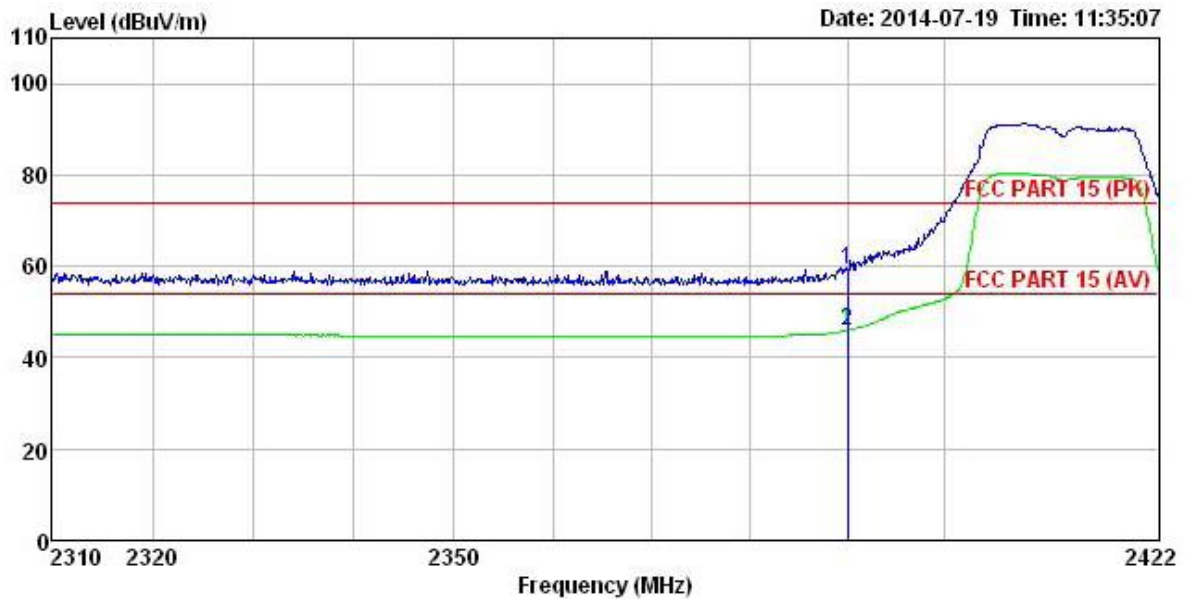
Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 Job No. : 254RF
 EUT : 4Gmate
 Model : W20
 Test mode : Wifi TX(b high channel) mode
 Power Rating : DC3.7V
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Winner
 Remark :

	Freq	Read	Antenna	Cable	Preamp	Level	Limit	Over	
	MHz	Level	Factor	Loss	Factor	dBm/m	dBm/m	Limit	Remark
		dBm	dB/m	dB	dB			dB	
1	2483.500	23.33	27.52	5.70	0.00	56.55	74.00	-17.45	Peak
2	2483.500	11.83	27.52	5.70	0.00	45.05	54.00	-8.95	Average

802.11g

Test channel: Lowest

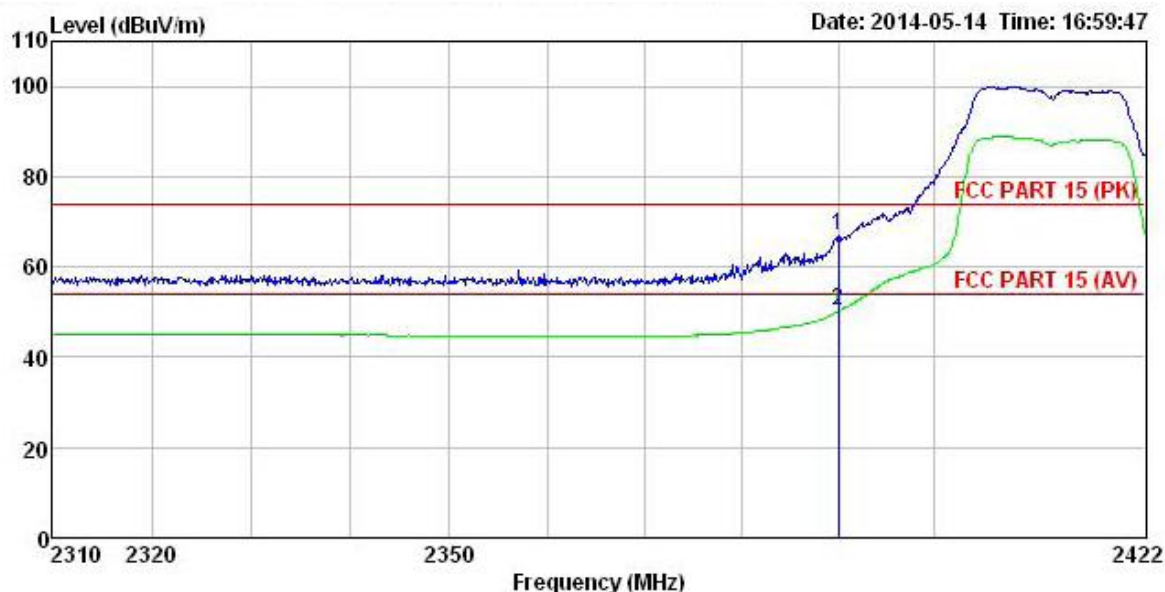
Horizontal:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
 Job No. : 254RF
 EUT : 4Gmate
 Model : W20
 Test mode : Wifi TX(g low channel) mode
 Power Rating : DC3.7V
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Winner
 Remark :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2390.000	26.10	27.58	5.67	0.00	59.35	74.00	-14.65	Peak
2	2390.000	12.80	27.58	5.67	0.00	46.05	54.00	-7.95	Average

Vertical:

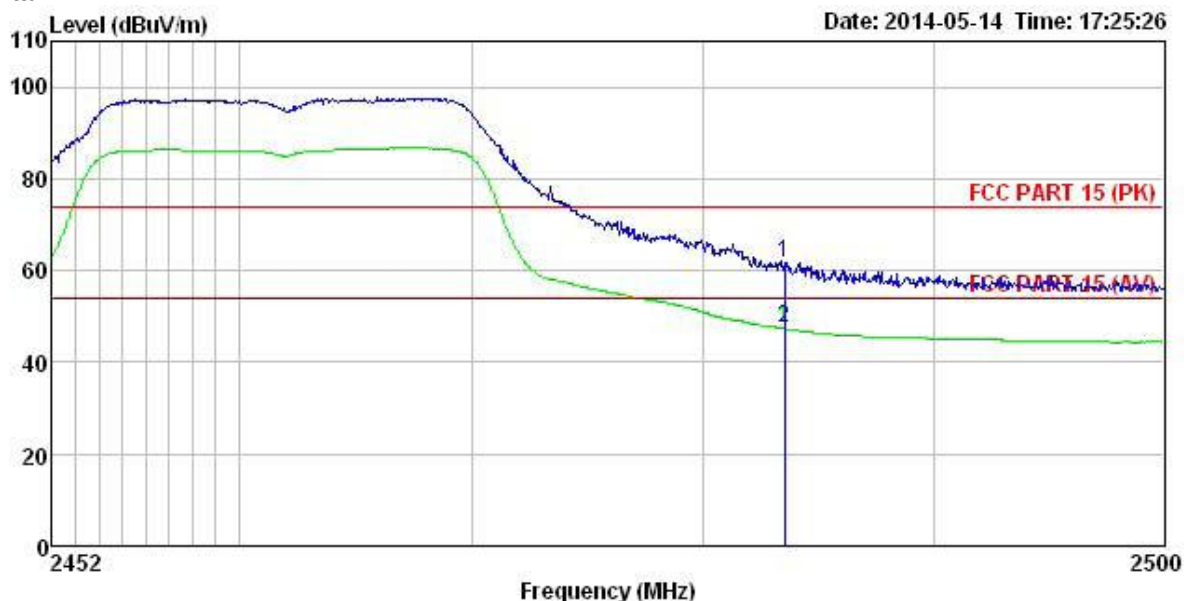


Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 Job No. : 254RF
 EUT : 4Gmate
 Model : W20
 Test mode : Wifi TX(g low channel) mode
 Power Rating : DC3.7V
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Winner
 Remark :

	Freq	ReadAntenna	Cable Preamp		Limit	Over	
		Level Factor	Loss Factor	Level	Line	Limit	Remark
	MHz	dBm	dB/m	dB	dBm/m	dBm/m	dB
1	2390.000	33.75	27.58	5.67	0.00	67.00	74.00 -7.00 Peak
2	2390.000	17.05	27.58	5.67	0.00	50.30	54.00 -3.70 Average

Test channel: Highest

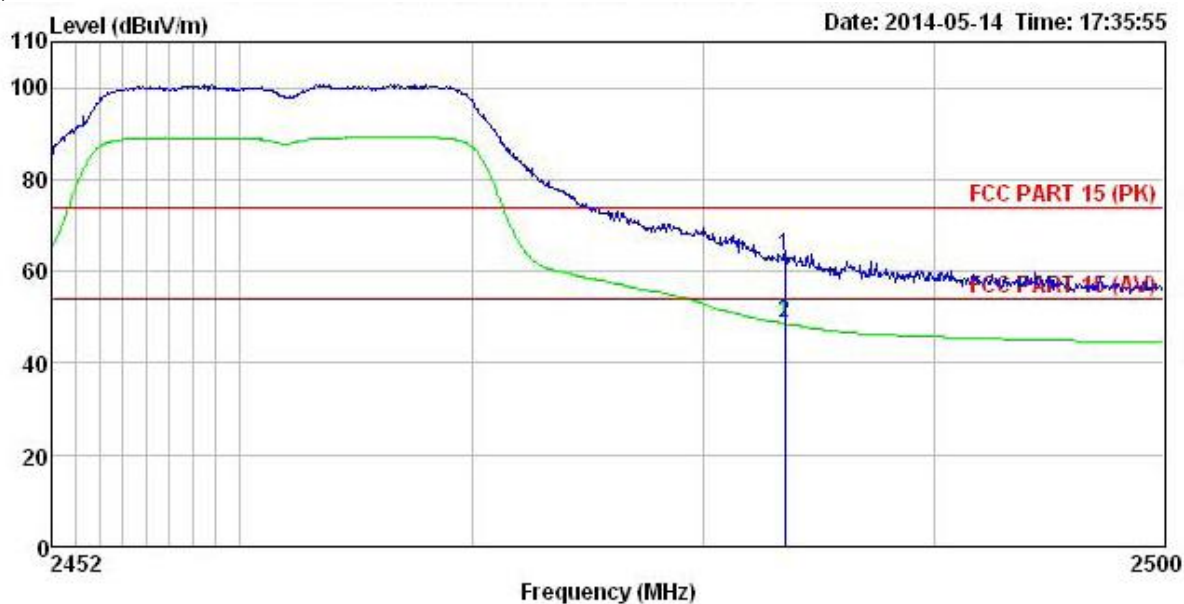
Horizontal:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
 Job No. : 254RF
 EUT : 4Gmate
 Model : W20
 Test mode : Wifi TX(g high channel) mode
 Power Rating : DC3.7V
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Winner
 Remark :

		ReadAntenna	Cable	Preamp		Limit	Over	
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB
1	2483.500	28.68	27.52	5.70	0.00	61.90	74.00	-12.10 Peak
2	2483.500	14.10	27.52	5.70	0.00	47.32	54.00	-6.68 Average

Vertical;



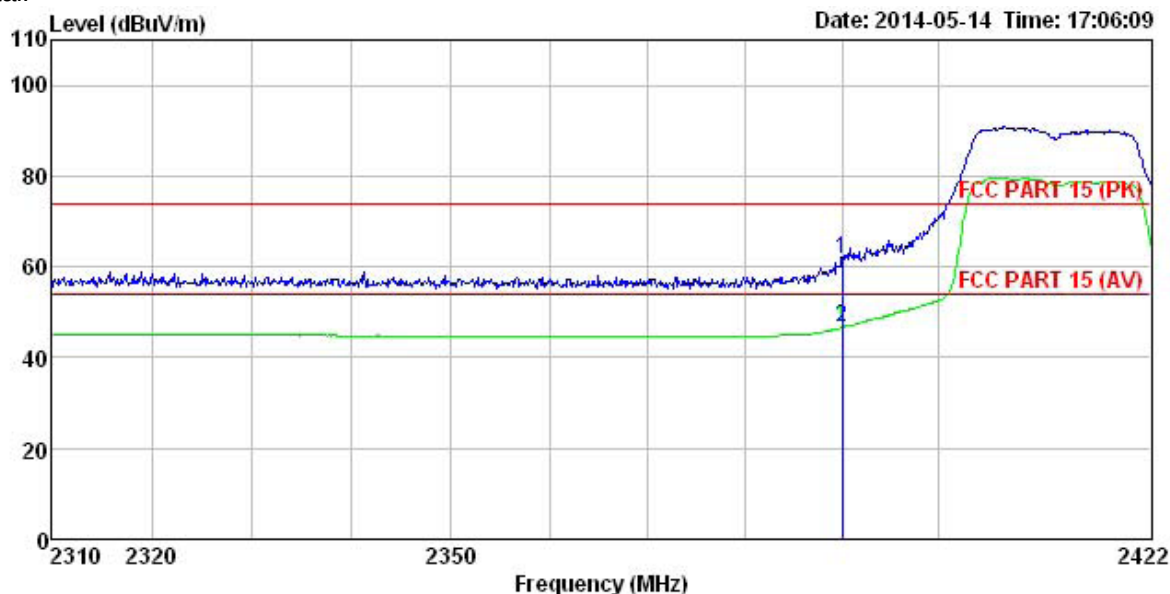
Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 Job No. : 254RF
 EUT : 4Gmate
 Model : W20
 Test mode : Wifi TX(g high channel) mode
 Power Rating : DC3.7V
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Winner
 Remark :

	Freq	ReadAntenna	Cable Preamp		Limit	Over	
	Level	Factor	Loss	Factor	Level	Line	Limit
	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB
	MHz	dBm	dB/m	dB	dBm/m	dBm/m	dB
1	2483.500	29.95	27.52	5.70	0.00	63.17	74.00 -10.83 Peak
2	2483.500	15.37	27.52	5.70	0.00	48.59	54.00 -5.41 Average

802.11n (H20)

Test channel: Lowest

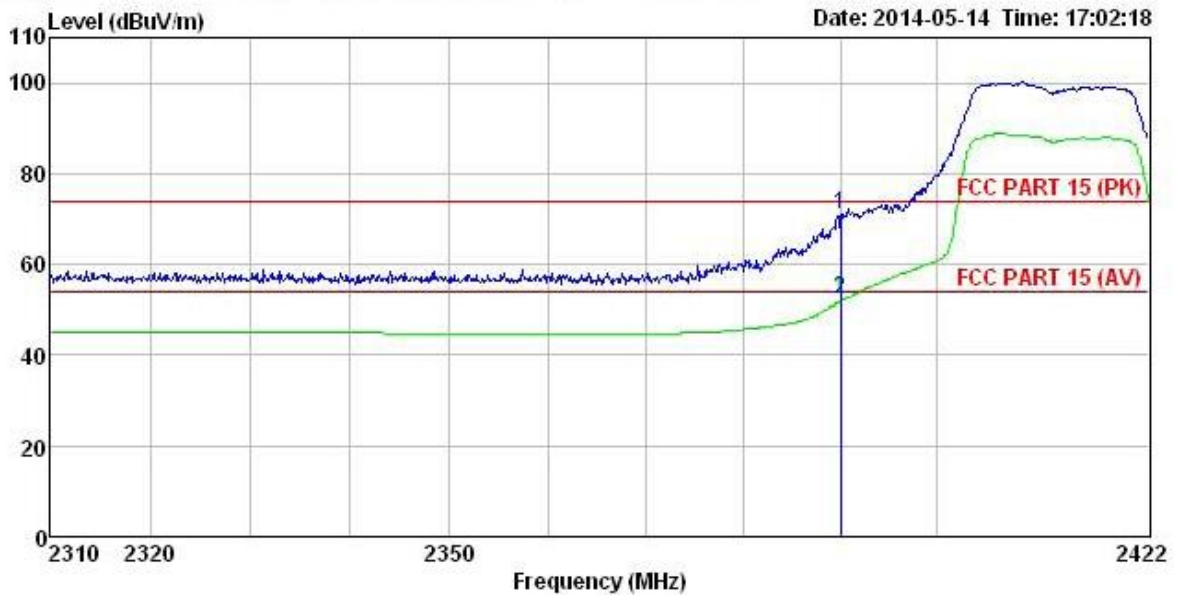
Horizontal:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
 Job No. : 254RF
 EUT : 4Gmate
 Model : W20
 Test mode : Wifi TX(n20 low channel) mode
 Power Rating : DC3.7W
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Winner
 Remark :

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB	
1	2390.000	28.49	27.58	5.67	0.00	61.74	74.00	-12.26	Peak
2	2390.000	13.54	27.58	5.67	0.00	46.79	54.00	-7.21	Average

Vertical:

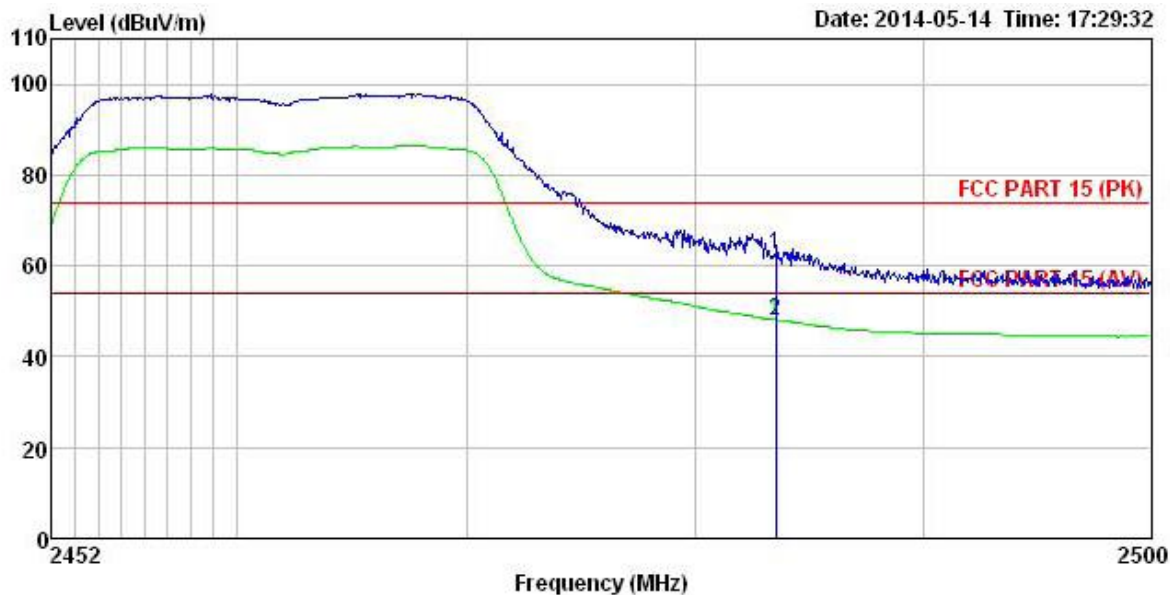


Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 Job No. : 254RF
 EUT : 4Gmate
 Model : W20
 Test mode : Wifi TX(n20 low channel) mode
 Power Rating : DC3.7V
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Winner
 Remark :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit	Over Limit	Remark
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB	
1	2390.000	37.71	27.58	5.67	0.00	70.96	74.00	-3.04	Peak
2	2390.000	18.94	27.58	5.67	0.00	52.19	54.00	-1.81	Average

Test channel: Highest

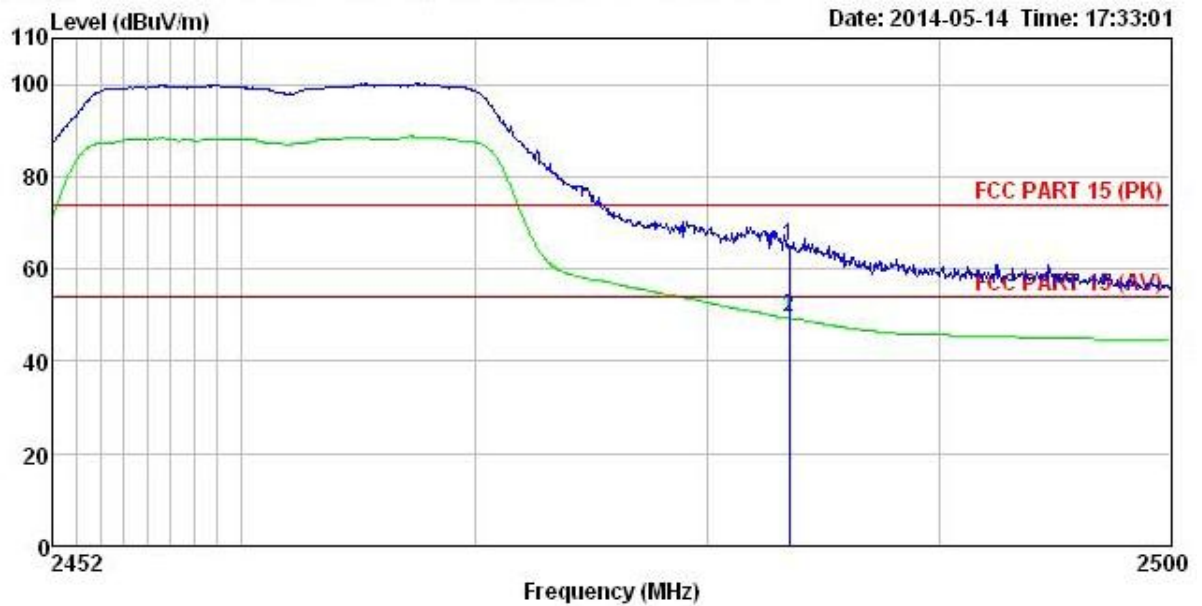
Horizontal:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
 Job No. : 254RF
 EUT : 4Gmate
 Model : W20
 Test mode : Wifi TX(n20 high channel) mode
 Power Rating : DC3.7V
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Winner
 Remark :

	Freq	Read	Antenna	Cable	Preamp	Level	Limit	Over	
	MHz	Level	Factor	Loss	Factor	dBm/m	Line	Limit	Remark
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB	
1	2483.500	29.21	27.52	5.70	0.00	62.43	74.00	-11.57	Peak
2	2483.500	14.85	27.52	5.70	0.00	48.07	54.00	-5.93	Average

Vertical:

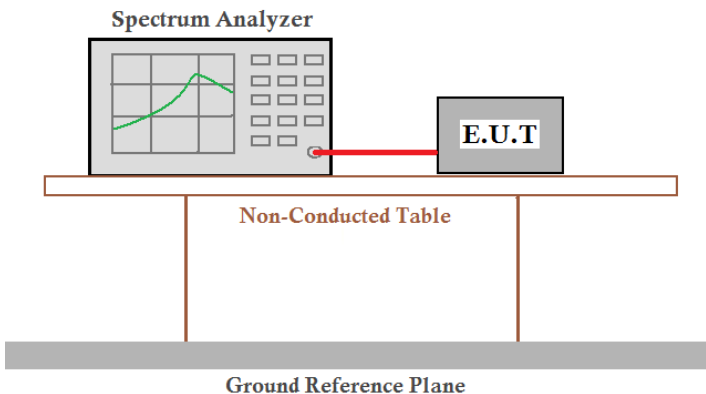


Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 Job No. : 254RF
 EUT : 4Gmate
 Model : W20
 Test mode : Wifi TX(n20 high channel) mode
 Power Rating : DC3.7V
 Environment : Temp:25.5'C Humi:55%
 Test Engineer: Winner
 Remark :

	Freq	ReadAntenna	Cable	Preamp		Limit	Over	
		Level	Factor	Loss	Factor	Line	Limit	Remark
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB
1	2483.500	31.91	27.52	5.70	0.00	65.13	74.00	-8.87 Peak
2	2483.500	16.11	27.52	5.70	0.00	49.33	54.00	-4.67 Average

6.7 Spurious Emission

6.7.1 Conducted Emission Method

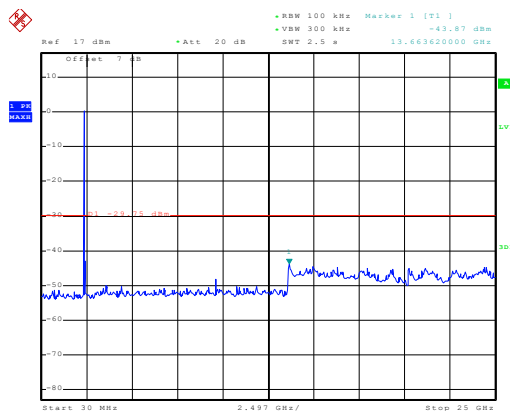
Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2003 and KDB558074
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Test plot as follows:

Test mode:

802.11b

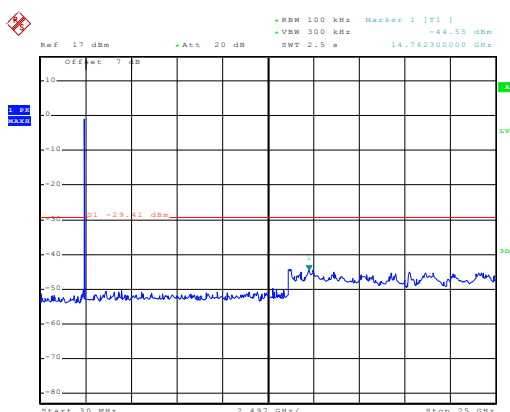
Lowest channel



Date: 27.AUG.2014 14:35:44

30MHz~25GHz

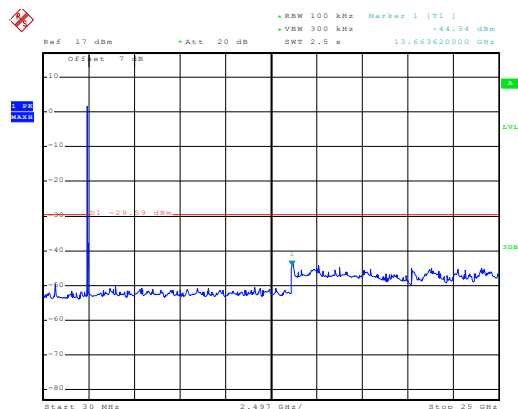
Middle channel



Date: 27.AUG.2014 14:36:26

30MHz~25GHz

Highest channel



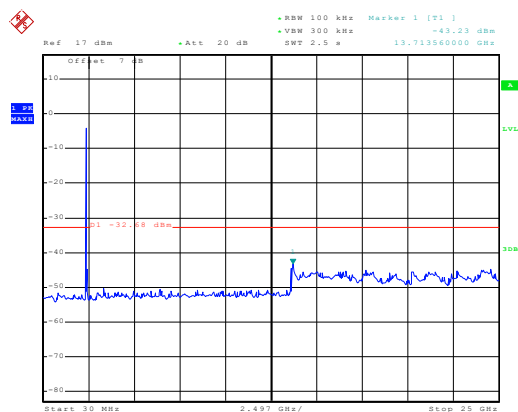
Date: 27.AUG.2014 14:37:05

30MHz~25GHz

Test mode:

802.11g

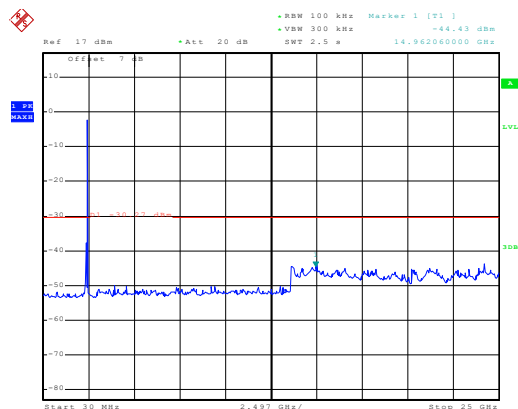
Lowest channel



Date: 27.AUG.2014 14:40:55

30MHz~25GHz

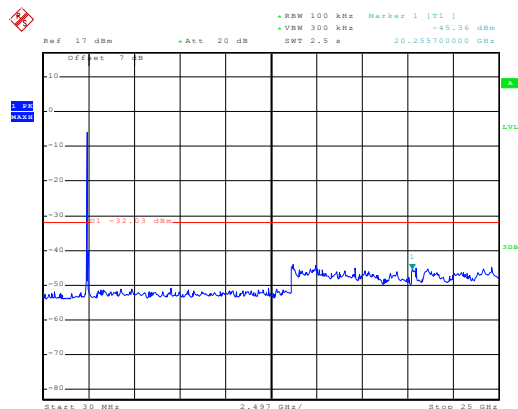
Middle channel



Date: 27.AUG.2014 14:39:43

30MHz~25GHz

Highest channel



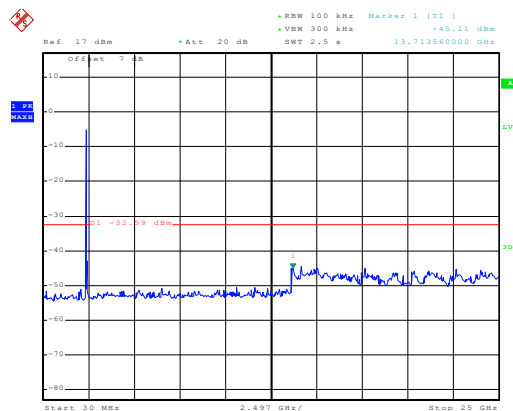
Date: 27.AUG.2014 14:40:18

30MHz~25GHz

Test mode:

802.11n(H20)

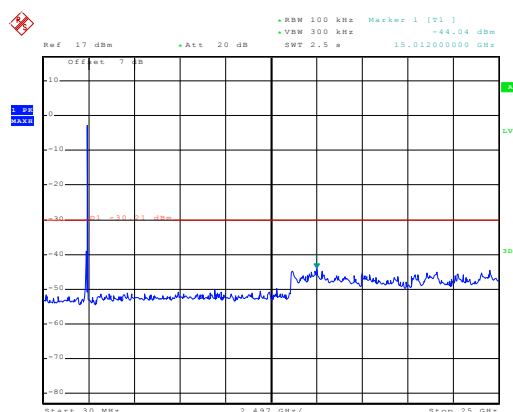
Lowest channel



Date: 27.AUG.2014 14:41:24

30MHz~25GHz

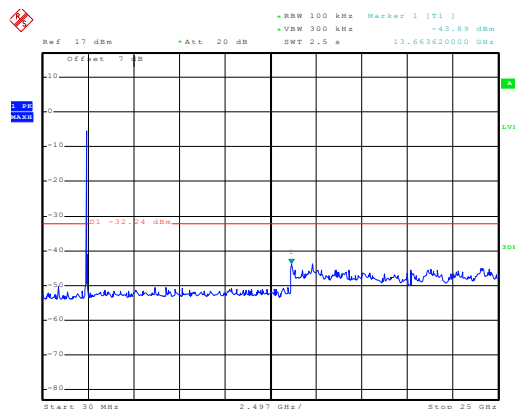
Middle channel



Date: 27.AUG.2014 14:41:52

30MHz~25GHz

Highest channel

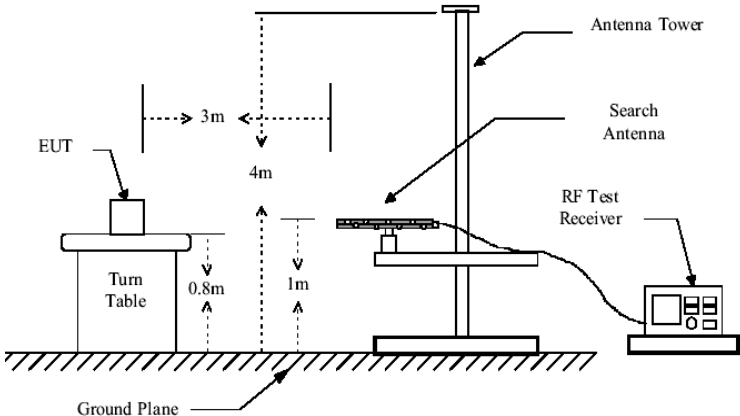
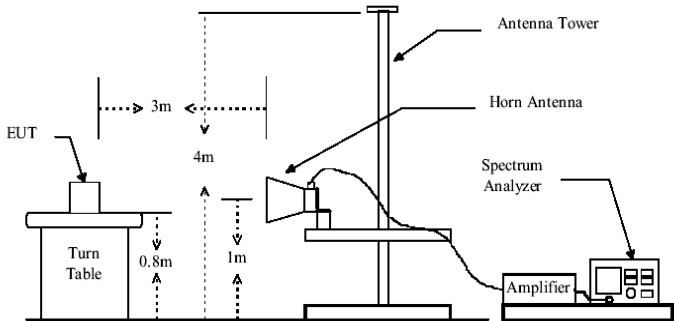


Date: 27.AUG.2014 14:42:19

30MHz~25GHz

6.7.2 Radiated Emission Method

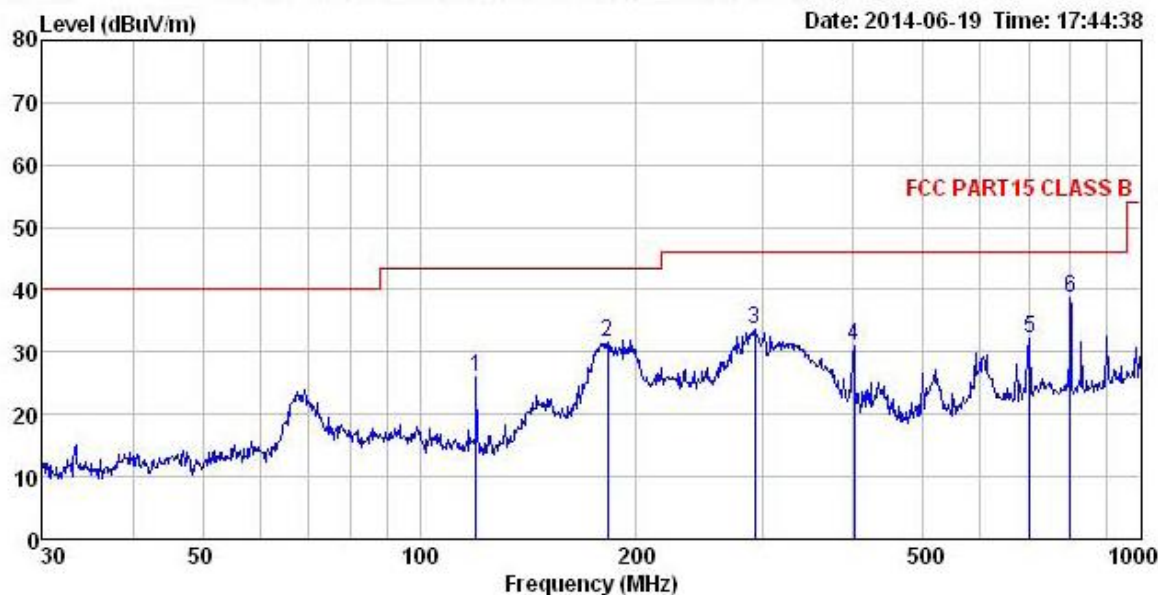
Test Requirement:	FCC Part15 C Section 15.209 and 15.205				
Test Method:	ANSI C63.4:2003				
Test Frequency Range:	9KHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:					
	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
Peak		1MHz	10Hz	Average Value	
Limit:					
	Frequency		Limit (dBuV/m @3m)		Remark
	30MHz-88MHz		40.0		Quasi-peak Value
	88MHz-216MHz		43.5		Quasi-peak Value
	216MHz-960MHz		46.0		Quasi-peak Value
	960MHz-1GHz		54.0		Quasi-peak Value
	Above 1GHz	54.0		Average Value	
74.0		Peak Value			
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.				

Test setup:	Below 1GHz  Above 1GHz 
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Remark:	1. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis is the worst case. 2. 9 kHz to 30MHz is too low, so only shows the data of above 30MHz in this report.

Below 1GHz

Measurement Data

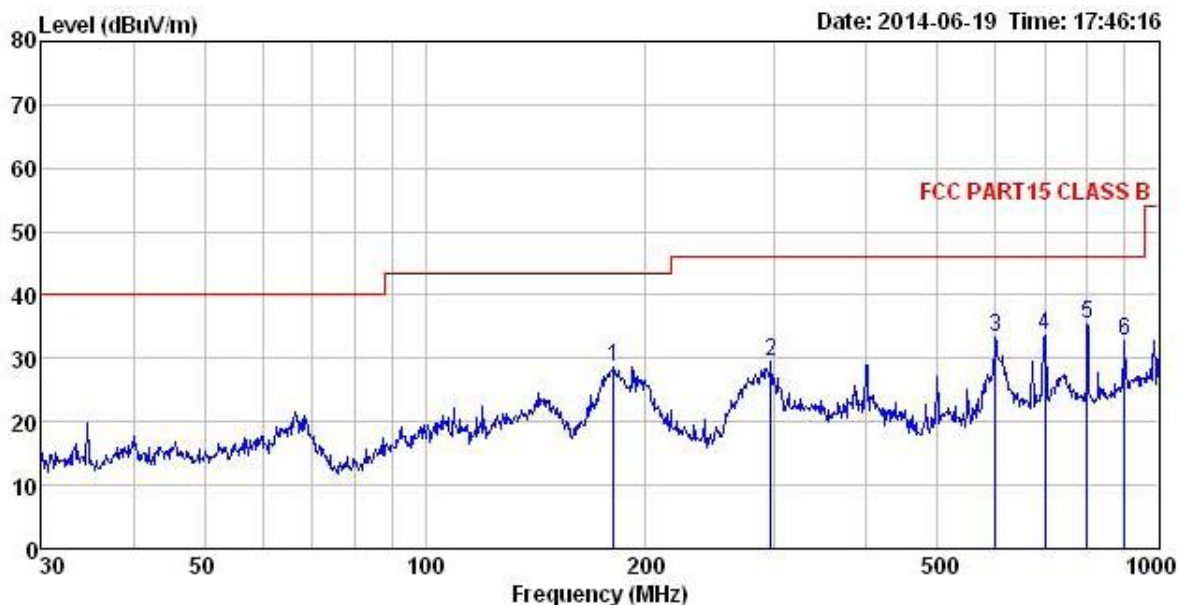
Horizontal:



Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) HORIZONTAL
 Job No. : 256RF
 EUT : 4Gmate
 Model : W20
 Test mode : Wifi TX mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Winner
 Remark :

	Freq	ReadAntenna	Cable Preamp		Limit	Over	
	Level	Factor	Loss Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dB
1	119.856	43.68	10.48	1.12	29.39	25.89	43.50 -17.61 QP
2	182.559	49.40	9.92	1.36	28.95	31.73	43.50 -11.77 QP
3	292.058	47.49	12.89	1.75	28.46	33.67	46.00 -12.33 QP
4	400.432	42.50	15.10	2.12	28.78	30.94	46.00 -15.06 QP
5	701.761	38.99	18.81	2.92	28.66	32.06	46.00 -13.94 QP
6	798.980	43.70	20.06	3.17	28.20	38.73	46.00 -7.27 QP

Vertical:



Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) VERTICAL
 Job No. : 256RF
 EUT : 4Gmate
 Model : W20
 Test mode : Wifi TX mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Winner
 Remark :

	Freq	ReadAntenna	Cable	Preamp		Limit	Over	
	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	180.649	46.38	9.76	1.36	28.97	28.53	43.50	-14.97 QP
2	296.184	43.32	12.98	1.76	28.46	29.60	46.00	-16.40 QP
3	599.321	41.17	18.45	2.62	28.94	33.30	46.00	-12.70 QP
4	699.305	40.64	18.80	2.91	28.67	33.68	46.00	-12.32 QP
5	798.980	40.45	20.06	3.17	28.20	35.48	46.00	-10.52 QP
6	900.147	36.16	21.09	3.35	27.88	32.72	46.00	-13.28 QP

Above 1GHz

Test mode:	802.11b		Test channel:	Lowest		Remark:	Peak	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
3216.00	58.74	28.62	5.95	40.55	52.76	74.00	-21.24	Vertical
4824.00	55.25	31.53	8.90	40.24	55.44	74.00	-18.56	Vertical
3216.00	58.32	28.62	5.95	40.55	52.34	74.00	-21.66	Horizontal
4824.00	55.25	31.53	8.90	40.24	55.44	74.00	-18.56	Horizontal

Test mode:	802.11b		Test channel:	Lowest		Remark:	Average	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
3216.00	47.58	28.62	5.95	40.55	41.60	54.00	-12.40	Vertical
4824.00	43.62	31.53	8.90	40.24	43.81	54.00	-10.19	Vertical
3216.00	47.54	28.62	5.95	40.55	41.56	54.00	-12.44	Horizontal
4824.00	43.54	31.53	8.90	40.24	43.73	54.00	-10.27	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test mode:	802.11b		Test channel:	Middle		Remark:	Peak	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
3249.00	58.62	28.54	6.04	40.24	52.96	74.00	-21.04	Vertical
4874.00	55.54	31.58	8.98	40.15	55.95	74.00	-18.05	Vertical
3249.00	58.65	28.54	6.04	40.24	52.99	74.00	-21.01	Horizontal
4874.00	55.45	31.58	8.98	40.15	55.86	74.00	-18.14	Horizontal

Test mode:	802.11b		Test channel:	Middle		Remark:	Average	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
3249.00	47.21	28.54	6.04	40.24	41.55	54.00	-12.45	Vertical
4874.00	42.36	31.58	8.98	40.15	42.77	54.00	-11.23	Vertical
3249.00	47.51	28.54	6.04	40.24	41.85	54.00	-12.15	Horizontal
4874.00	42.17	31.58	8.98	40.15	42.58	54.00	-11.42	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test mode:	802.11b		Test channel:	Highest		Remark:	Peak	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
3283.00	58.58	28.41	6.13	39.93	53.19	74.00	-20.81	Vertical
4924.00	55.21	31.69	9.08	40.03	55.95	74.00	-18.05	Vertical
3283.00	58.32	28.41	6.13	39.93	52.93	74.00	-21.07	Horizontal
4924.00	55.44	31.69	9.08	40.03	56.18	74.00	-17.82	Horizontal

Test mode:	802.11b		Test channel:	Highest		Remark:	Average	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
3283.00	46.87	28.41	6.13	39.93	41.48	54.00	-12.52	Vertical
4924.00	42.32	31.69	9.08	40.03	43.06	54.00	-10.94	Vertical
3283.00	46.44	28.41	6.13	39.93	41.05	54.00	-12.95	Horizontal
4924.00	42.41	31.69	9.08	40.03	43.15	54.00	-10.85	Horizontal

Remark:

1. Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test mode:	802.11g		Test channel:	Lowest		Remark:		Peak
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
3216.00	58.65	28.62	5.95	40.55	52.67	74.00	-21.33	Vertical
4824.00	55.12	31.53	8.90	40.24	55.31	74.00	-18.69	Vertical
3216.00	58.33	28.62	5.95	40.55	52.35	74.00	-21.65	Horizontal
4824.00	55.25	31.53	8.90	40.24	55.44	74.00	-18.56	Horizontal

Test mode:	802.11g		Test channel:	Lowest		Remark:		Average
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
3216.00	47.21	28.62	5.95	40.55	41.23	54.00	-12.77	Vertical
4824.00	43.25	31.53	8.90	40.24	43.44	54.00	-10.56	Vertical
3216.00	47.63	28.62	5.95	40.55	41.65	54.00	-12.35	Horizontal
4824.00	43.11	31.53	8.90	40.24	43.30	54.00	-10.70	Horizontal

Remark:

1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

Test mode:	802.11g		Test channel:	Middle		Remark:		Peak
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
3249.00	58.33	28.54	6.04	40.24	52.67	74.00	-21.33	Vertical
4874.00	55.35	31.58	8.98	40.15	55.76	74.00	-18.24	Vertical
3249.00	58.45	28.54	6.04	40.24	52.79	74.00	-21.21	Horizontal
4874.00	55.44	31.58	8.98	40.15	55.85	74.00	-18.15	Horizontal

Test mode:	802.11g		Test channel:	Middle		Remark:		Average
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
3249.00	47.25	28.54	6.04	40.24	41.59	54.00	-12.41	Vertical
4874.00	43.36	31.58	8.98	40.15	43.77	54.00	-10.23	Vertical
3249.00	47.15	28.54	6.04	40.24	41.49	54.00	-12.51	Horizontal
4874.00	43.55	31.58	8.98	40.15	43.96	54.00	-10.04	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test mode:	802.11g		Test channel:	Highest		Remark:	Peak	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
3283.00	58.32	28.41	6.13	39.93	52.93	74.00	-21.07	Vertical
4924.00	55.24	31.69	9.08	40.03	55.98	74.00	-18.02	Vertical
3283.00	58.14	28.41	6.13	39.93	52.75	74.00	-21.25	Horizontal
4924.00	55.05	31.69	9.08	40.03	55.79	74.00	-18.21	Horizontal

Test mode:	802.11g		Test channel:	Highest		Remark:	Average	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
3283.00	47.25	28.41	6.13	39.93	41.86	54.00	-12.14	Vertical
4924.00	43.25	31.69	9.08	40.03	43.99	54.00	-10.01	Vertical
3283.00	47.21	28.41	6.13	39.93	41.82	54.00	-12.18	Horizontal
4924.00	42.98	31.69	9.08	40.03	43.72	54.00	-10.28	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test mode:	802.11n(H20)		Test channel:	Lowest		Remark:	Peak	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
3216.00	58.20	28.62	5.95	40.55	52.22	74.00	-21.78	Vertical
4824.00	55.35	31.53	8.90	40.24	55.54	74.00	-18.46	Vertical
3216.00	58.41	28.62	5.95	40.55	52.43	74.00	-21.57	Horizontal
4824.00	55.36	31.53	8.90	40.24	55.55	74.00	-18.45	Horizontal

Test mode:	802.11n(H20)		Test channel:	Lowest		Remark:	Average	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
3216.00	47.52	28.62	5.95	40.55	41.54	54.00	-12.46	Vertical
4824.00	43.25	31.53	8.90	40.24	43.44	54.00	-10.56	Vertical
3216.00	47.21	28.62	5.95	40.55	41.23	54.00	-12.77	Horizontal
4824.00	43.66	31.53	8.90	40.24	43.85	54.00	-10.15	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test mode:	802.11n(H20)		Test channel:	Middle		Remark:	Peak	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
3249.00	58.65	28.54	6.04	40.24	52.99	74.00	-21.01	Vertical
4874.00	55.21	31.58	8.98	40.15	55.62	74.00	-18.38	Vertical
3249.00	58.63	28.54	6.04	40.24	52.97	74.00	-21.03	Horizontal
4874.00	55.32	31.58	8.98	40.15	55.73	74.00	-18.27	Horizontal

Test mode:	802.11n(H20)		Test channel:	Middle		Remark:	Average	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
3249.00	47.52	28.54	6.04	40.24	41.86	54.00	-12.14	Vertical
4874.00	42.14	31.58	8.98	40.15	42.55	54.00	-11.45	Vertical
3249.00	47.63	28.54	6.04	40.24	41.97	54.00	-12.03	Horizontal
4874.00	42.36	31.58	8.98	40.15	42.77	54.00	-11.23	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test mode:	802.11n(H20)		Test channel:	Highest		Remark:	Peak	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
3283.00	57.47	28.41	6.13	39.93	52.08	74.00	-21.92	Vertical
4924.00	55.63	31.69	9.08	40.03	56.37	74.00	-17.63	Vertical
3283.00	57.52	28.41	6.13	39.93	52.13	74.00	-21.87	Horizontal
4924.00	55.63	31.69	9.08	40.03	56.37	74.00	-17.63	Horizontal

Test mode:	802.11n(H20)		Test channel:	Highest		Remark:	Average	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
3283.00	47.66	28.41	6.13	39.93	42.27	54.00	-11.73	Vertical
4924.00	42.56	31.69	9.08	40.03	43.30	54.00	-10.70	Vertical
3283.00	47.55	28.41	6.13	39.93	42.16	54.00	-11.84	Horizontal
4924.00	43.25	31.69	9.08	40.03	43.99	54.00	-10.01	Horizontal

Remark:

1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*