

FCC REPORT (WIFI)

Applicant: HUNG WAI PRODUCTS LIMITED

Address of Applicant: Unit 11, 12/F., New Commerce Centre, 19 On Sum Street,
Shatin, Hong Kong

Equipment Under Test (EUT)

Product Name: Wireless Module - Android

Model No.: DTCOMM-DL, 410-BWRTL87000

FCC ID: 2AB6Z-DTCOMM-DL

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

Date of sample receipt: 29 Jul., 2014

Date of Test: 29 Jul., to 11 Aug., 2014

Date of report issued: 11 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.

This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

2 Version

Version No.	Date	Description
00	11 Aug., 2014	Original

Prepared by:

Luna Gao

Date:

11 Aug., 2014

Report Clerk

Reviewed by:

Wimer Zhang

Date:

11 Aug., 2014

Project Engineer

3 Contents

	Page
1 COVER PAGE	1
2 VERSION	2
3 CONTENTS	3
4 TEST SUMMARY	4
5 GENERAL INFORMATION	5
5.1 CLIENT INFORMATION.....	5
5.2 GENERAL DESCRIPTION OF E.U.T.....	5
5.3 TEST ENVIRONMENT AND MODE	7
5.4 LABORATORY FACILITY.....	7
5.5 LABORATORY LOCATION	7
5.6 TEST INSTRUMENTS LIST.....	8
6 TEST RESULTS AND MEASUREMENT DATA	9
6.1 ANTENNA REQUIREMENT:	9
6.2 CONDUCTED EMISSION	10
6.3 CONDUCTED OUTPUT POWER	13
6.4 OCCUPY BANDWIDTH	18
6.5 POWER SPECTRAL DENSITY	27
6.6 BAND EDGE	32
6.6.1 Conducted Emission Method	32
6.6.2 Radiated Emission Method.....	35
6.7 SPURIOUS EMISSION	52
6.7.1 Conducted Emission Method	52
6.7.2 Radiated Emission Method.....	57
7 TEST SETUP PHOTO.....	65
8 EUT CONSTRUCTIONAL DETAILS.....	66

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
6dB Emission Bandwidth 99% Occupied 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:	HUNG WAI PRODUCTS LIMITED
Address of Applicant:	Unit 11, 12/F., New Commerce Centre, 19 On Sum Street, Shatin, Hong Kong
Manufacturer / Factory:	HUNG WAI ELECTRONICS (HUIZHOU) LTD.
Address of Manufacturer/ Factory:	3 rd floor, NO. 3, Minfeng Road, Huinan High and New Technology Industry Park, Huiao Avenue, Huizhou City, Guangdong, China

5.2 General Description of E.U.T.

Product Name:	Wireless Module - Android
Model No.:	DTCOMM-DL, 410-BWRTL87000
Operation Frequency:	2412MHz~2462MHz (802.11b/802.11g/802.11n(H20)) 2422MHz~2452MHz (802.11n(H40))
Channel numbers:	11 for 802.11b/802.11g/802.11(H20) 7 for 802.11n(H40)
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:	DC 5V by USB port
Remark:	The Model: DTCOMM-DL and 410-BWRTL87000 were identical inside, the electrical circuit design, layout, components used and internal wiring, with only difference being different Model Number for customer and for HUNG WAI.

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		

Operation Frequency each of channel For 802.11n(H40)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
		4	2427MHz	7	2442MHz		
		5	2432MHz	8	2447MHz		
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

802.11n (H40)

Channel	Frequency
The lowest channel	2422MHz
The middle channel	2437MHz
The Highest channel	2452MHz

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
802.11n(H40)	13.5Mbps

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) and 13.5 Mbps for 802.11n(H40). Duty cycle setting during the transmission is 100% with maximum power setting for all modulations.

5.4 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 out 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.

5.5 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: +86-755-23118282
Fax: +86-755-23116366

5.6 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	July 09 2014	July 08 2015
2	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	CCIS0005	Jun., 25 2014	Jun., 24 2015
3	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	CCIS0006	Jun., 25 2014	Jun., 24 2015
4	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
5	Amplifier (10kHz-1.3GHz)	HP	8447D	CCIS0003	Apr. 01 2014	Mar. 31 2015
6	Amplifier (1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	July 09 2014	July 08 2015
7	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	Apr. 01 2014	Mar. 31 2015
8	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 30 2014	Mar. 29 2015
9	Printer	HP	HP LaserJet P1007	N/A	N/A	N/A
10	Positioning Controller	UC	UC3000	CCIS0015	N/A	N/A
11	Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP	CCIS0023	Jun., 25 2014	Jun., 24 2015
12	EMI Test Receiver	Rohde & Schwarz	ESPI	CCIS0022	Apr 01 2014	Mar. 31 2015
13	Loop antenna	Laplace instrument	RF300	EMC0701	Aug 12 2013	Aug 12 2014
14	Universal radio communication tester	Rhode & Schwarz	CMU200	CCIS0069	Jun., 25 2014	Jun., 24 2015
15	Signal Analyzer	Rohde & Schwarz	FSIQ3	CCIS0088	Jun., 25 2014	Jun., 24 2015

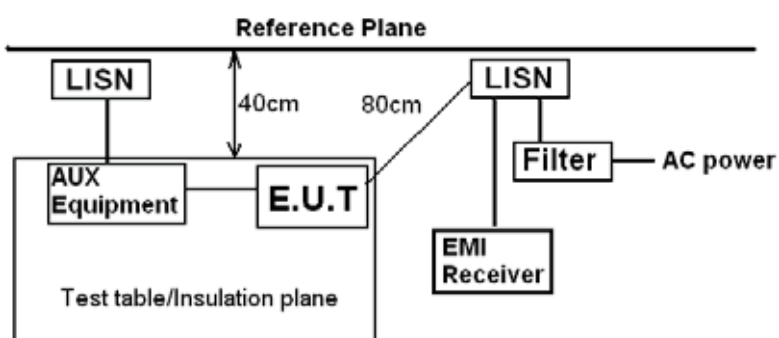
Conducted Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
1	Shielding Room	ZhongShuo Electron	11.0(L)x4.0(W)x3.0(H)	CCIS0061	July 09 2014	July 08 2015
2	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	Jun., 25 2014	Jun., 24 2015
3	LISN	CHASE	MN2050D	CCIS0074	Apr 01 2014	Mar. 31 2015
4	Coaxial Cable	CCIS	N/A	CCIS0086	Apr. 01 2014	Mar. 31 2015
5	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

6 Test results and Measurement Data

6.1 Antenna requirement:

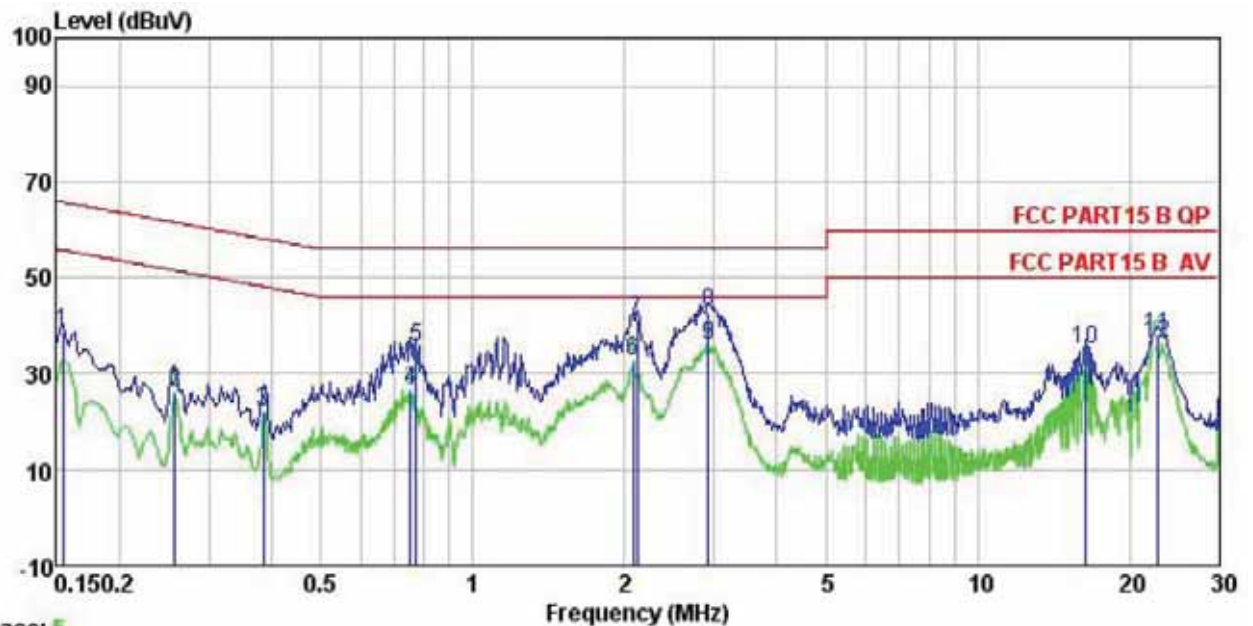
Standard requirement:	FCC Part15 C Section 15.203 /247(c)
15.203 requirement: <i>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a 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> 15.247(c) (1)(i) requirement: <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:	
The antenna is an internal antenna which cannot replace by end-user, the best case gain of the antenna is 3 dBi.	
	

6.2 Conducted Emission

Test Requirement:	FCC Part15 C Section 15.207		
Test Method:	ANSI C63.4: 2003		
Test Frequency Range:	150 kHz to 30 MHz		
Class / Severity:	Class B		
Receiver setup:	RBW=9 kHz, VBW=30 kHz		
Limit:	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
	* Decreases with the logarithm of the frequency.		
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.), which provides 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 refer 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:	 Remark E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m		
Test Instruments:	Refer to section 5.6 for details		
Test mode:	Refer to section 5.3 for details		
Test results:	Passed		

Measurement Data

Neutral:

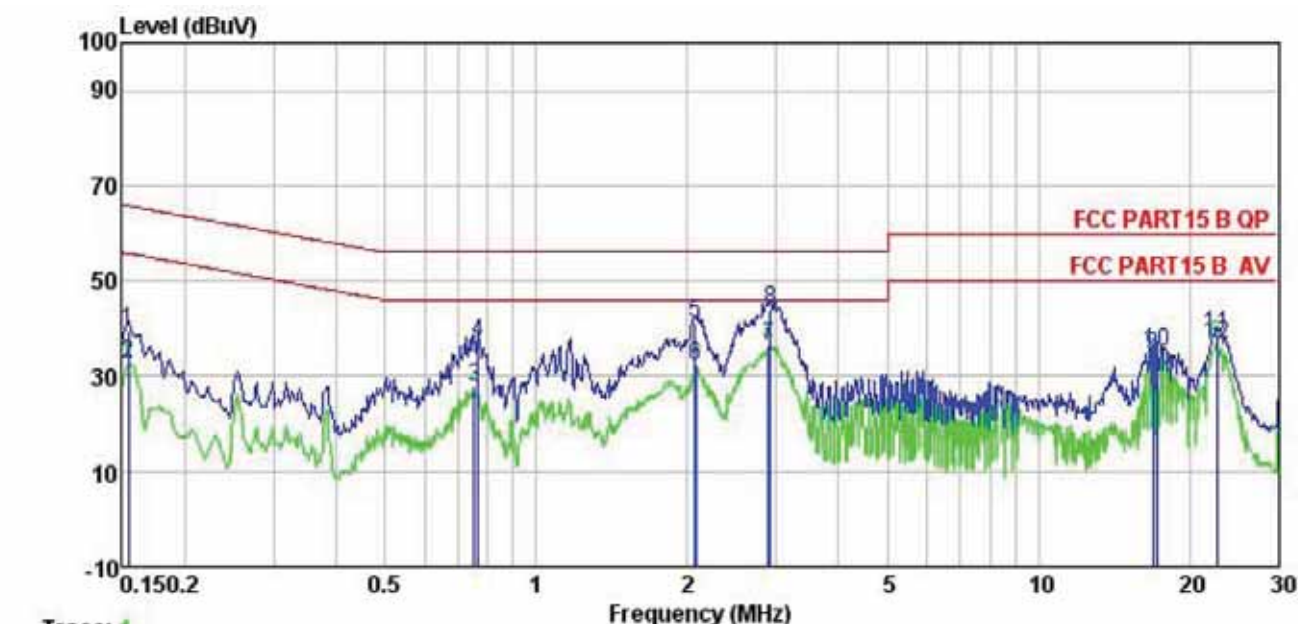


Trace: 5

Site : CCIS Shielding Room
 Condition : FCC PART15 B QP LISN NEUTRAL
 EUT : Wireless Module
 Model : DTCOMM-DL
 Test Mode : WIFI Mode
 Power Rating : AC 120V/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: Garen
 Remark :

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.154	27.48	0.25	10.78	38.51	65.78	-27.27	QP
2	0.258	14.92	0.26	10.75	25.93	51.51	-25.58	Average
3	0.385	11.29	0.25	10.72	22.26	48.17	-25.91	Average
4	0.751	15.69	0.19	10.79	26.67	46.00	-19.33	Average
5	0.771	24.64	0.19	10.80	35.63	56.00	-20.37	QP
6	2.077	21.52	0.29	10.96	32.77	46.00	-13.23	Average
7	2.121	29.93	0.29	10.95	41.17	56.00	-14.83	QP
8	2.931	31.60	0.29	10.92	42.81	56.00	-13.19	QP
9	2.931	24.79	0.29	10.92	36.00	46.00	-10.00	Average
10	16.398	23.73	0.25	10.91	34.89	60.00	-25.11	QP
11	22.775	26.62	0.39	10.89	37.90	60.00	-22.10	QP
12	22.775	25.15	0.39	10.89	36.43	50.00	-13.57	Average

Line:



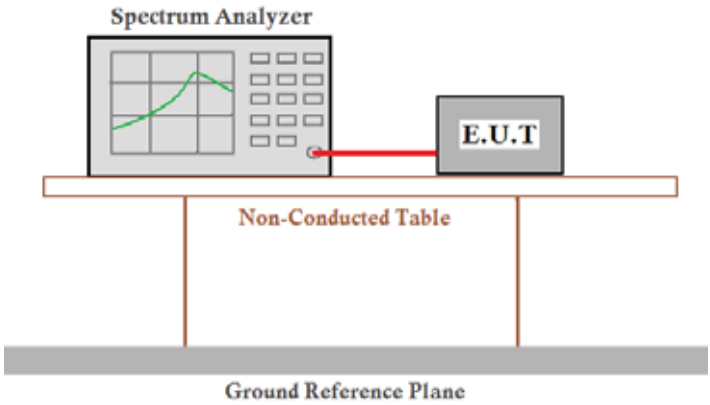
Trace: 1
 Site : CCIS Shielding Room
 Condition : FCC PART15 B QP LISN LINE
 EUT : Wireless Module
 Model : DTCOMM-DL
 Test Mode : WIFI Mode
 Power Rating : AC 120V/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: Garen
 Remark :

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.154	28.62	0.27	10.78	39.67	65.78	-26.11	QP
2	0.154	21.72	0.27	10.78	32.77	55.78	-23.01	Average
3	0.751	16.76	0.23	10.79	27.78	46.00	-18.22	Average
4	0.767	25.96	0.23	10.80	36.99	56.00	-19.01	QP
5	2.066	29.75	0.26	10.96	40.97	56.00	-15.03	QP
6	2.077	20.84	0.26	10.96	32.06	46.00	-13.94	Average
7	2.900	25.23	0.27	10.92	36.42	46.00	-9.58	Average
8	2.931	32.91	0.27	10.92	44.10	56.00	-11.90	QP
9	16.928	23.15	0.33	10.91	34.39	50.00	-15.61	Average
10	17.199	23.78	0.33	10.91	35.02	60.00	-24.98	QP
11	22.655	27.20	0.44	10.89	38.53	60.00	-21.47	QP
12	22.655	25.54	0.44	10.89	36.87	50.00	-13.13	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 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Remark:	Test method refer to KDB558074 (DTS Measure Guidance) section 8.2, option 1.

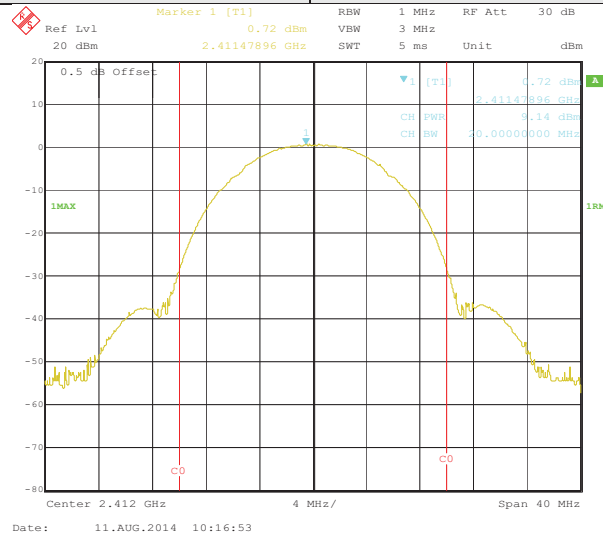
Measurement Data

Test CH	Maximum Conducted Output Power (dBm)				Limit(dBm)	Result
	802.11b	802.11g	802.11n(H20)	802.11n(H40)		
Lowest	9.14	8.44	8.08	8.05	30.00	Pass
Middle	9.21	8.87	8.46	8.13		
Highest	9.05	8.75	8.51	8.13		

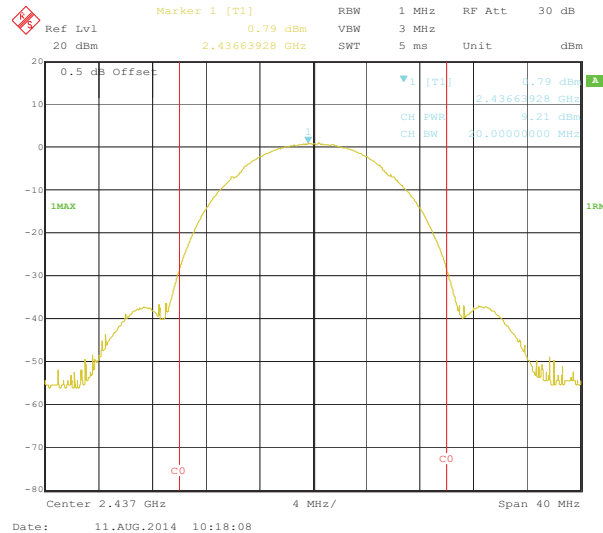
Test plot as follows:

Test mode:

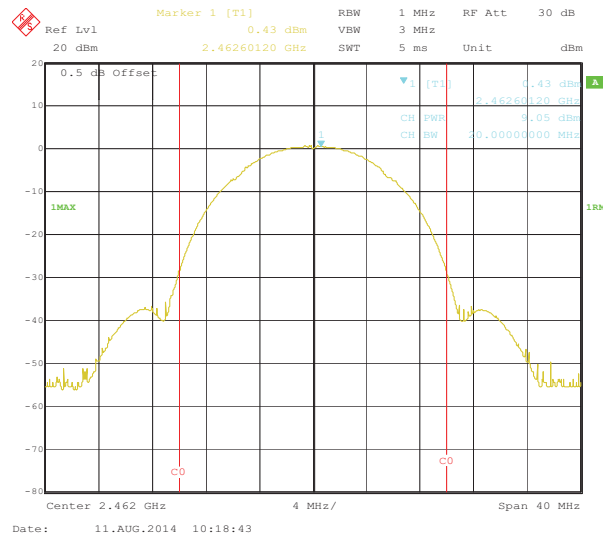
802.11b



Lowest channel



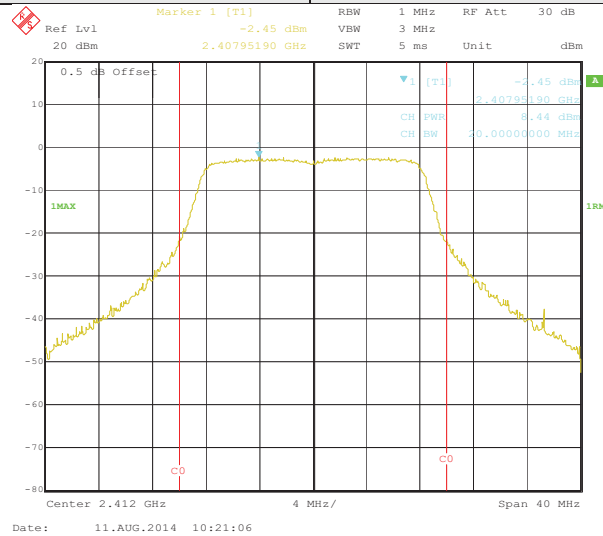
Middle channel



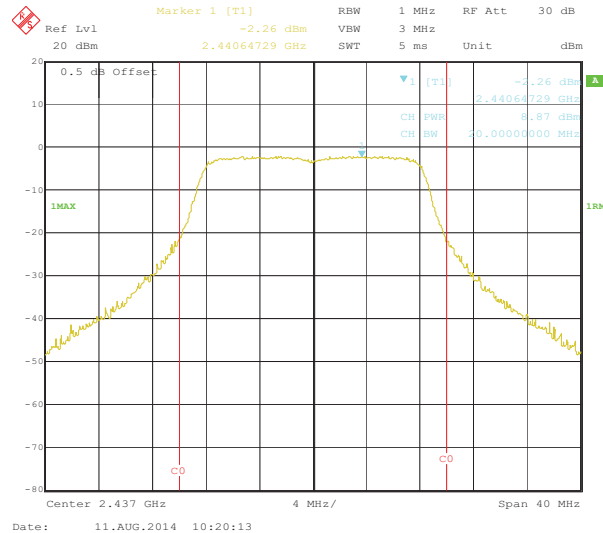
Highest channel

Test mode:

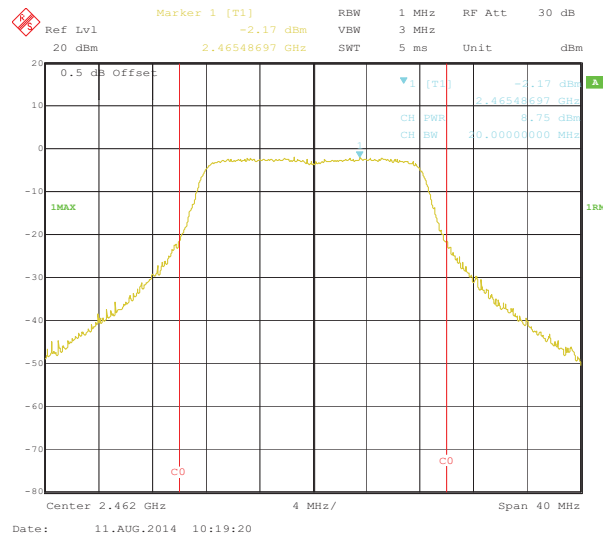
802.11g



Lowest channel



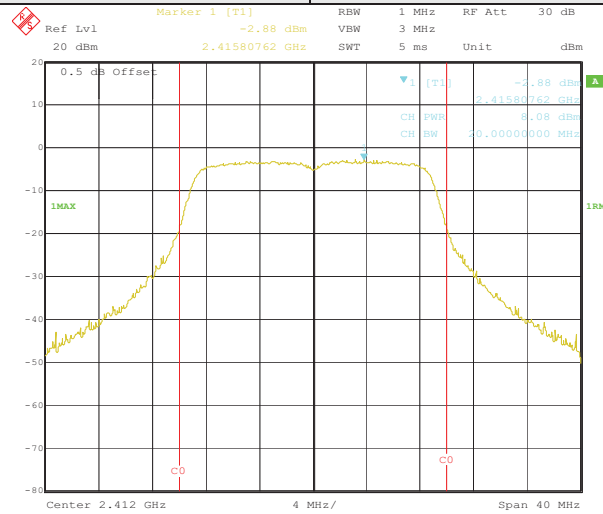
Middle channel



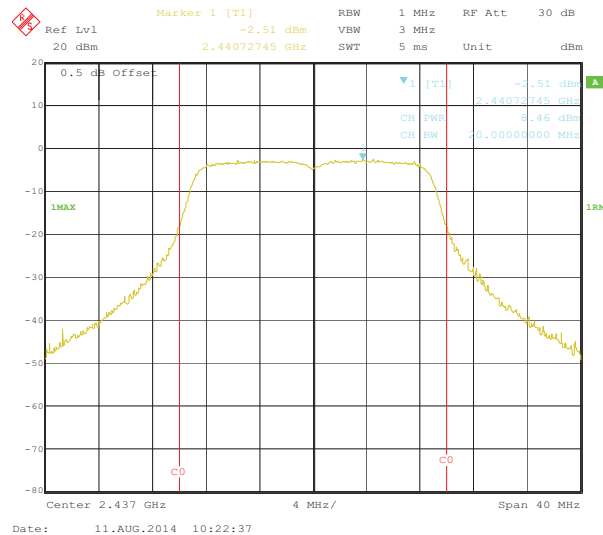
Highest channel

Test mode:

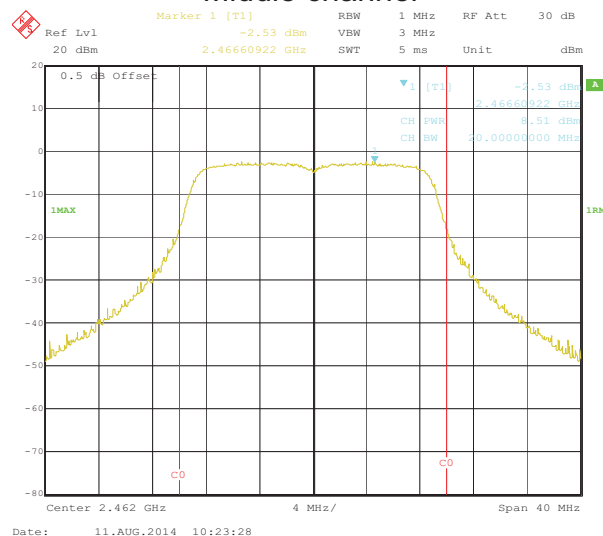
802.11n(H20)



Lowest channel



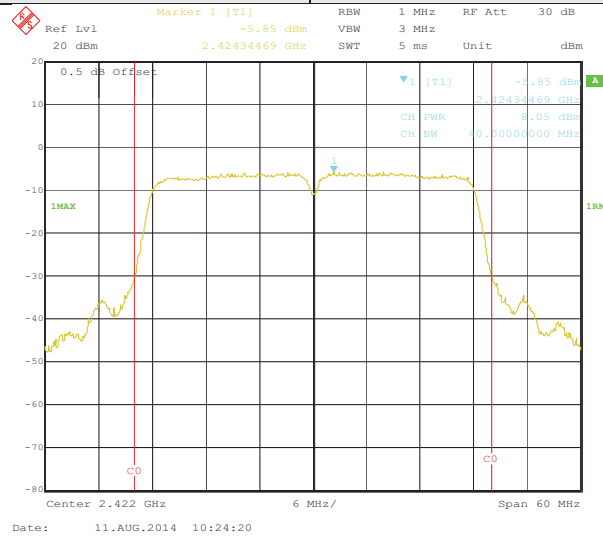
Middle channel



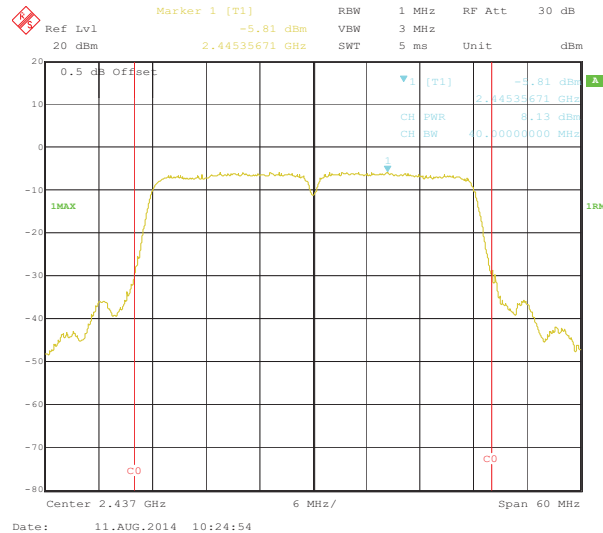
Highest channel

Test mode:

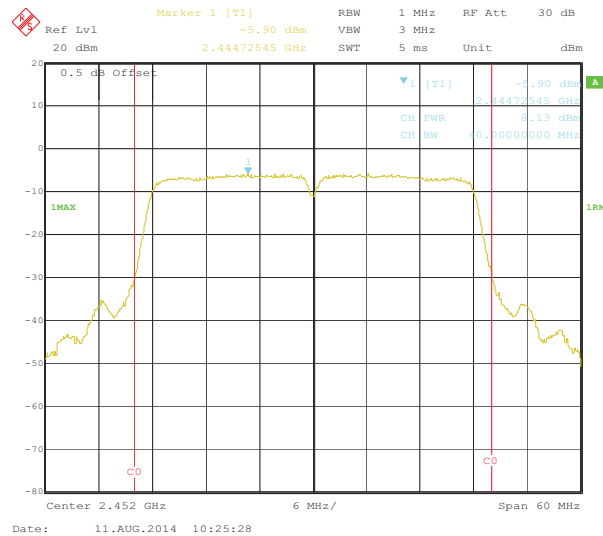
802.11n(H40)



Lowest channel

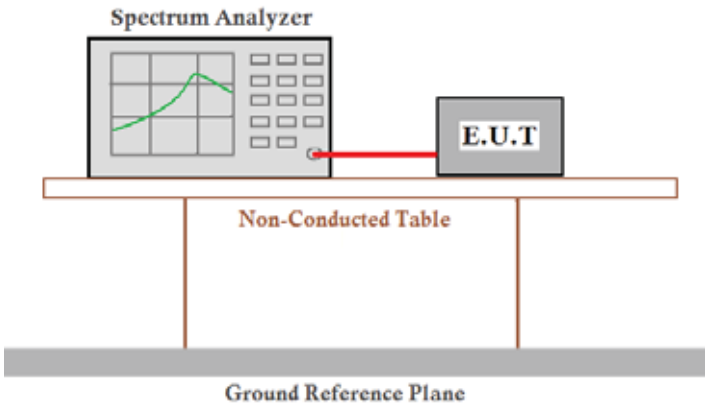


Middle channel



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 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data

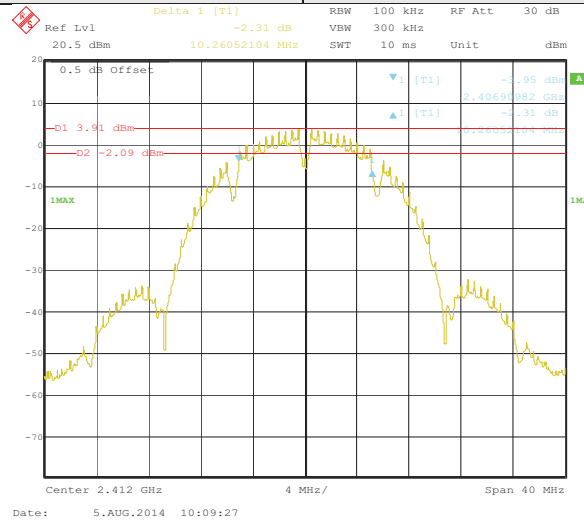
Test CH	6dB Emission Bandwidth (MHz)				Limit(kHz)	Result
	802.11b	802.11g	802.11n(H20)	802.11n(H40)		
Lowest	10.26	16.51	17.88	36.07	>500	Pass
Middle	10.26	16.51	17.80	36.27		
Highest	10.26	16.67	17.80	36.07		

Test CH	99% Occupy Bandwidth (MHz)				Limit(kHz)	Result
	802.11b	802.11g	802.11n(H20)	802.11n(H40)		
Lowest	15.07	16.51	17.72	35.87	N/A	N/A
Middle	14.99	16.59	17.72	35.97		
Highest	14.99	16.51	17.72	35.97		

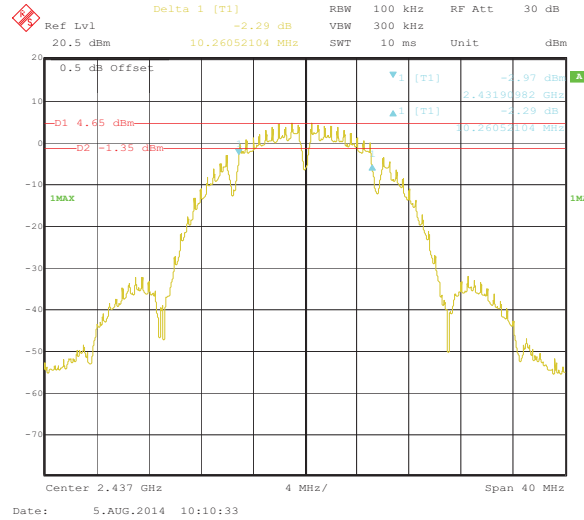
Test plot as follows:

Test mode: 6dB OBW

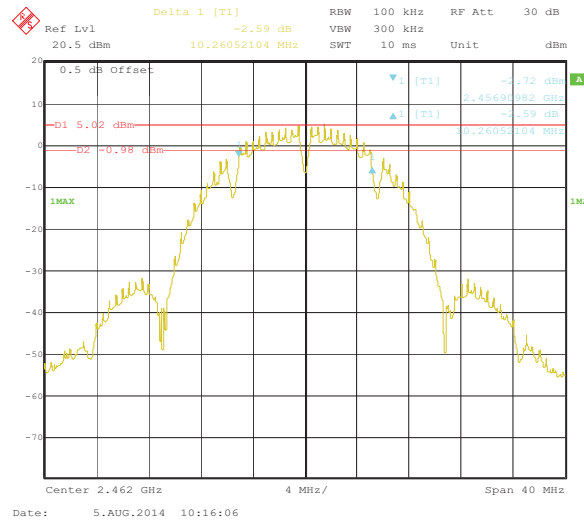
802.11b



Lowest channel



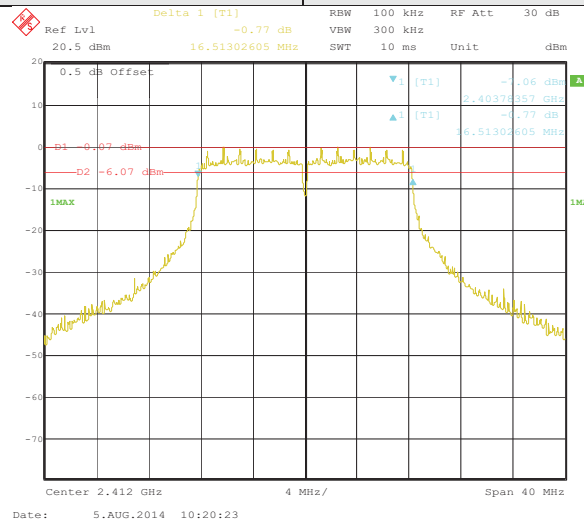
Middle channel



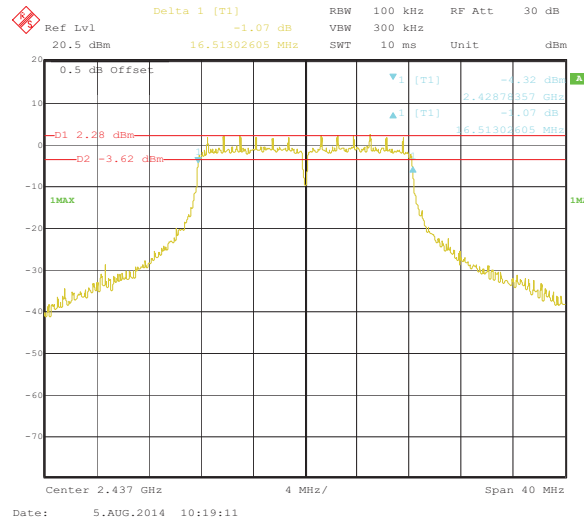
Highest channel

Test mode: 6dB OBW

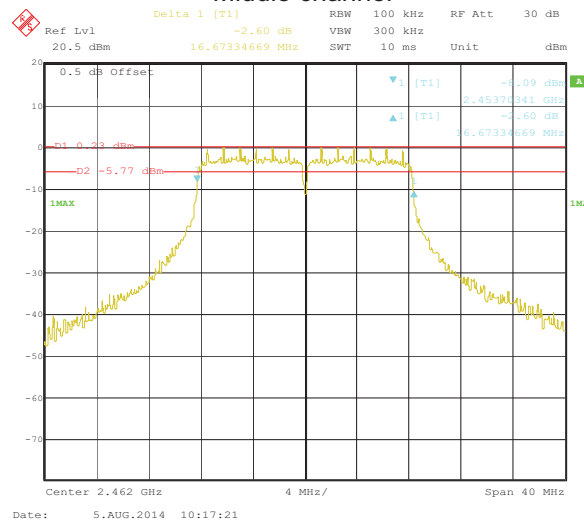
802.11g



Lowest channel



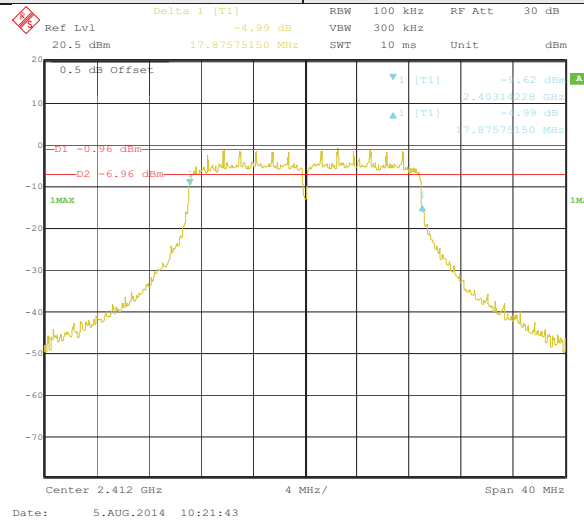
Middle channel



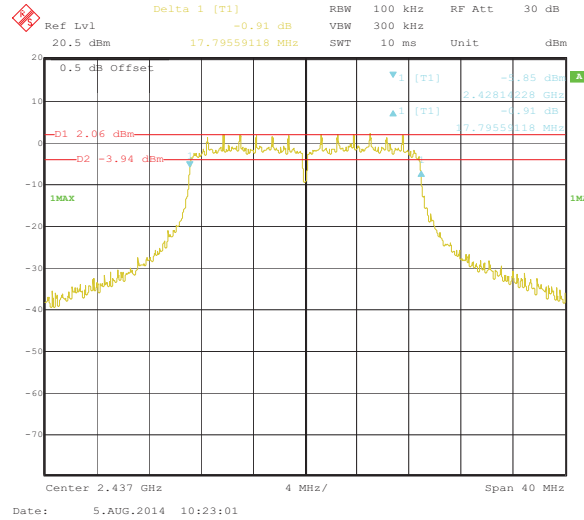
Highest channel

Test mode: 6dB OBW

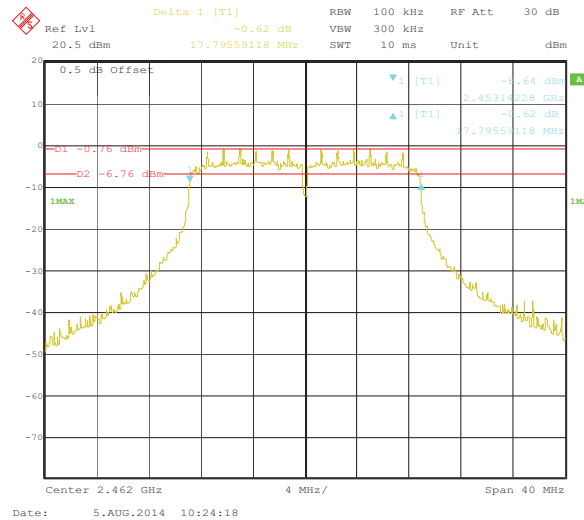
802.11n(H20)



Lowest channel



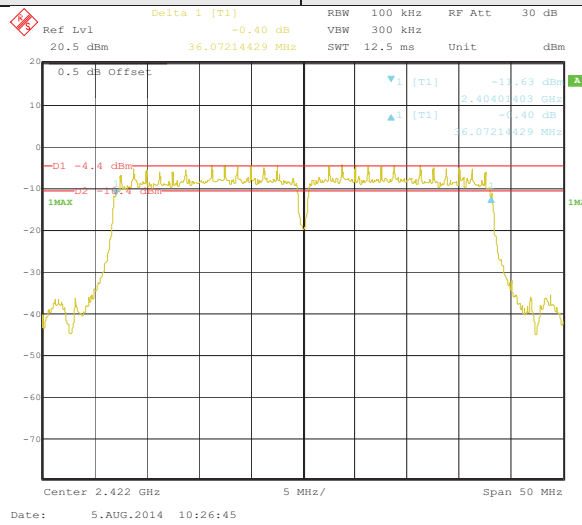
Middle channel



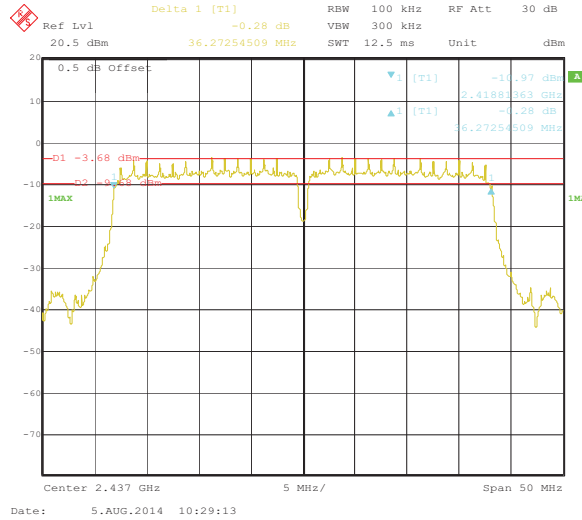
Highest channel

Test mode: 6dB OBW

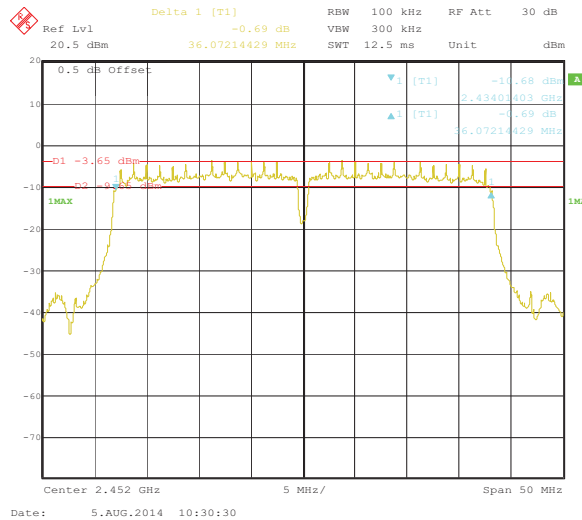
802.11n(H40)



Lowest channel



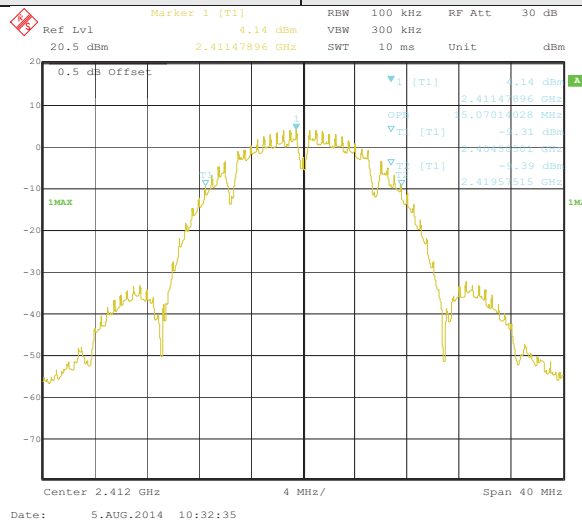
Middle channel



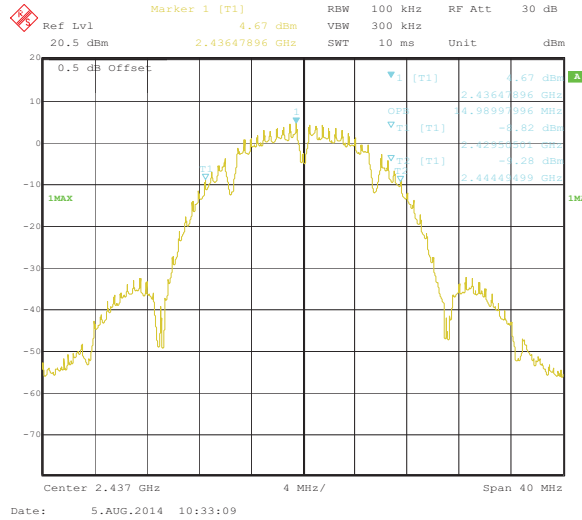
Highest channel

Test mode:99% OBW

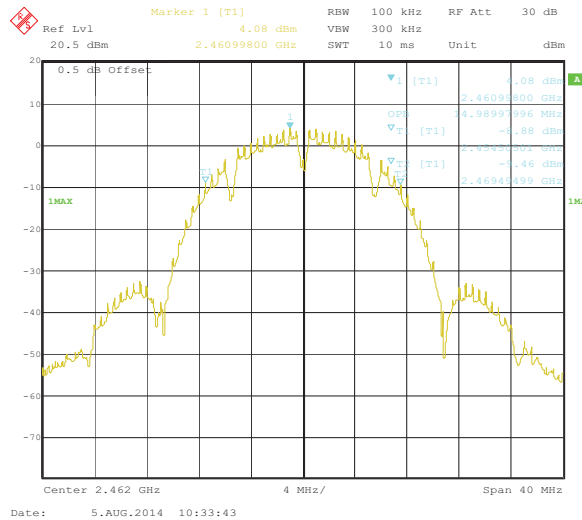
802.11b



Lowest channel



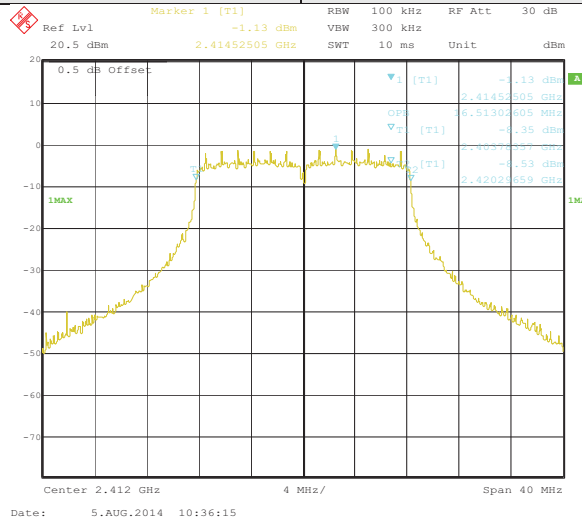
Middle channel



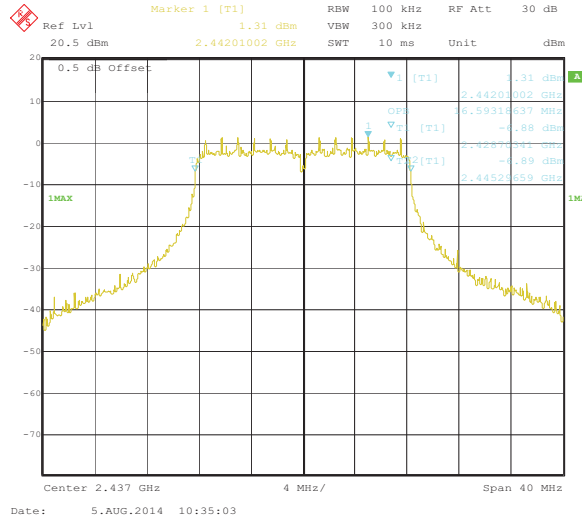
Highest channel

Test mode: 99% OBW

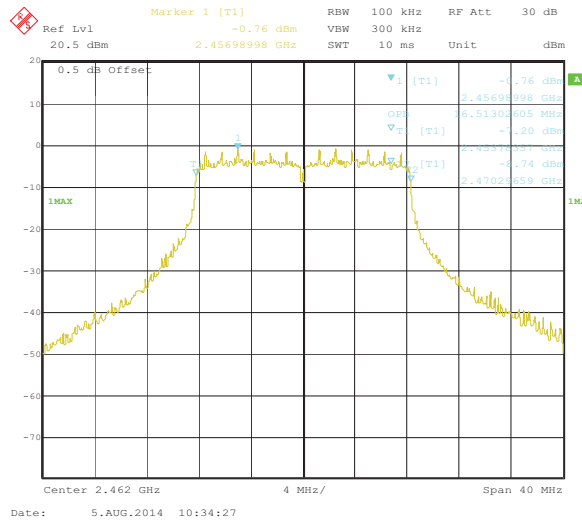
802.11g



Lowest channel



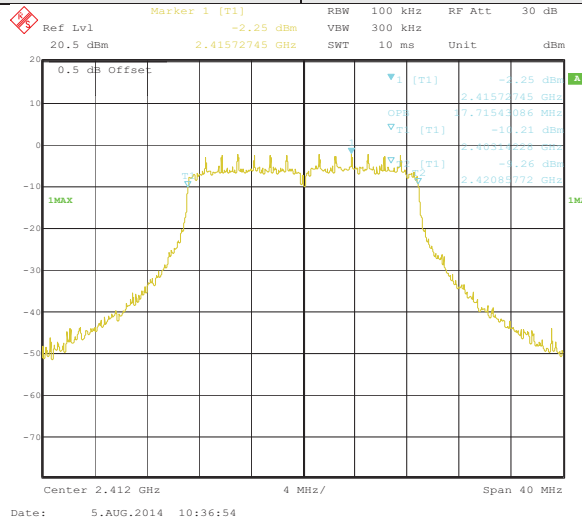
Middle channel



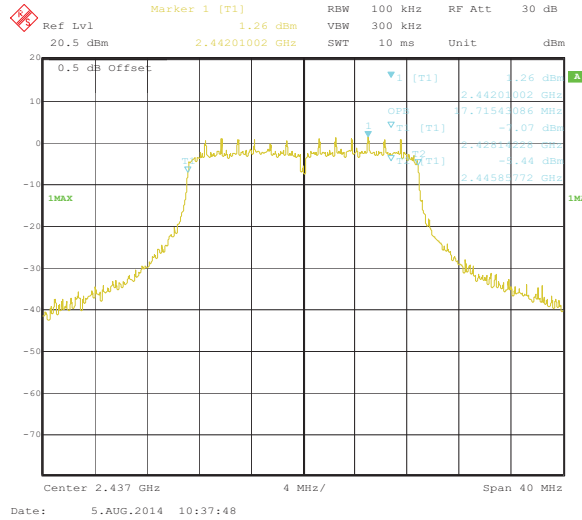
Highest channel

Test mode: 99% OBW

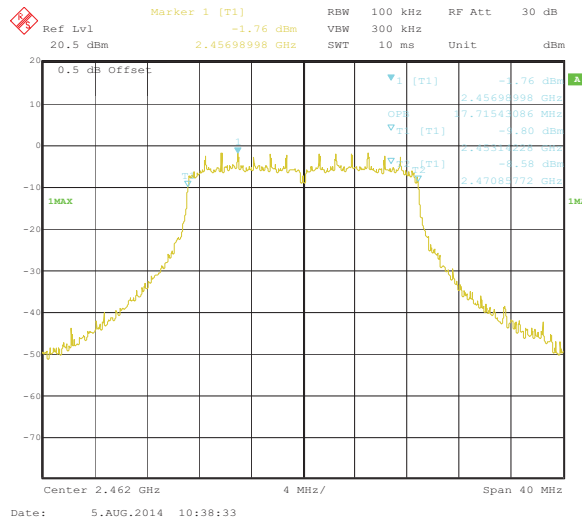
802.11n(H20)



Lowest channel



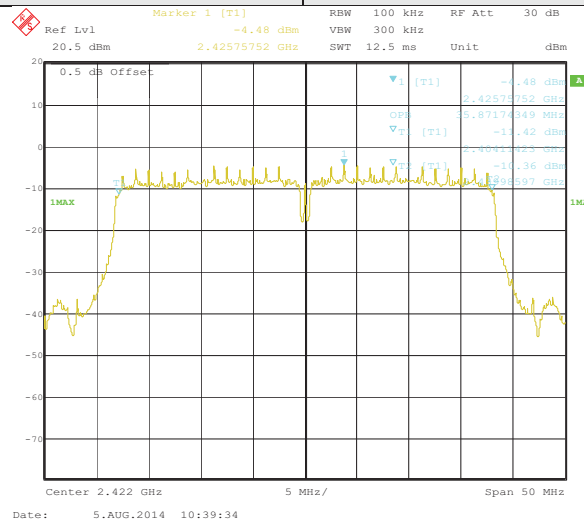
Middle channel



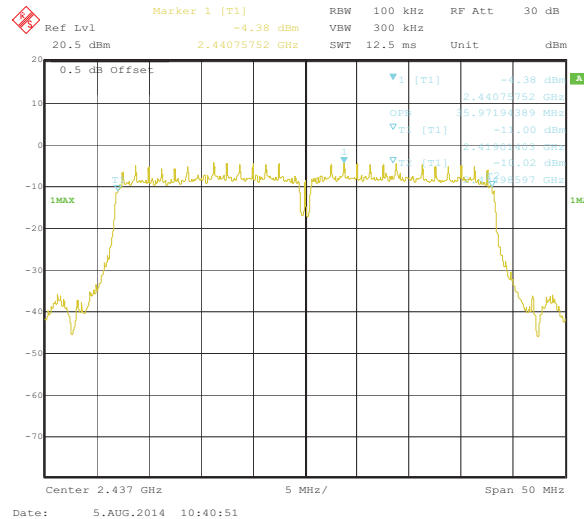
Highest channel

Test mode: 99% OBW

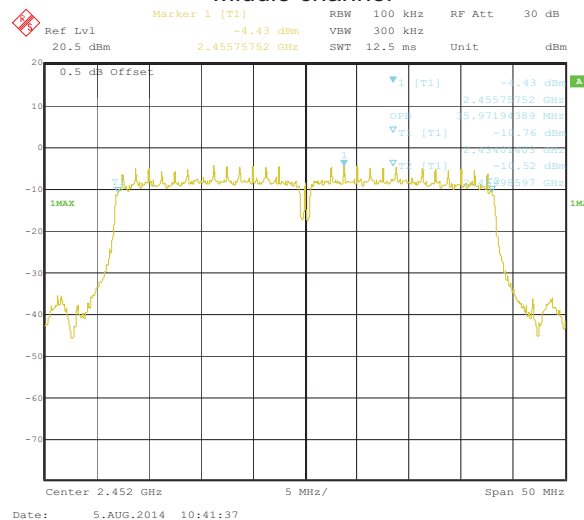
802.11n(H40)



Lowest channel

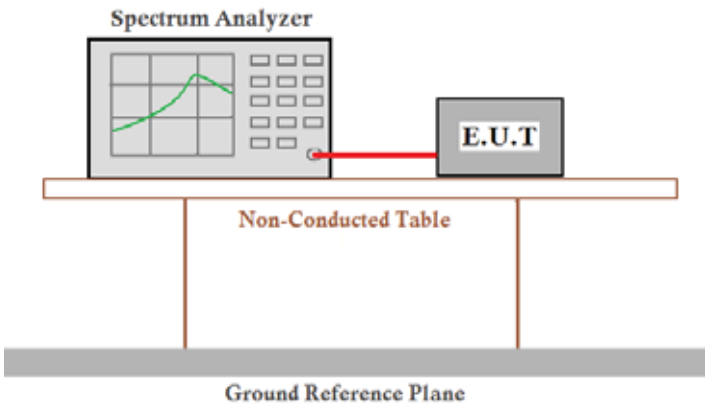


Middle channel



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 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

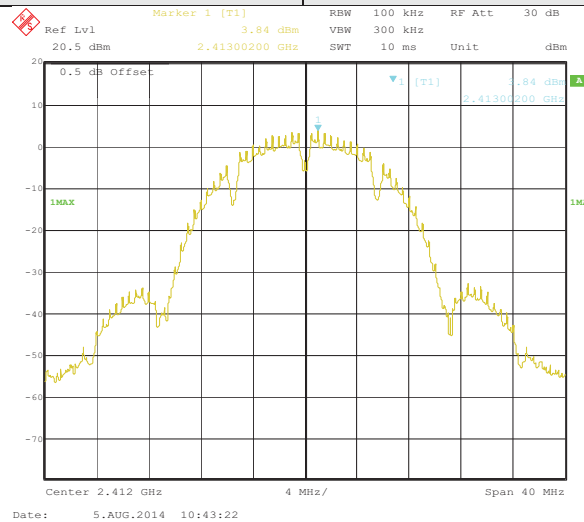
Measurement Data

Test CH	Power Spectral Density (dBm)				Limit(dBm)	Result
	802.11b	802.11g	802.11n(H20)	802.11n(H40)		
Lowest	3.84	-1.08	-2.01	-4.65	8.00	Pass
Middle	3.73	1.19	1.31	-4.47		
Highest	3.55	-1.18	-1.83	-4.39		

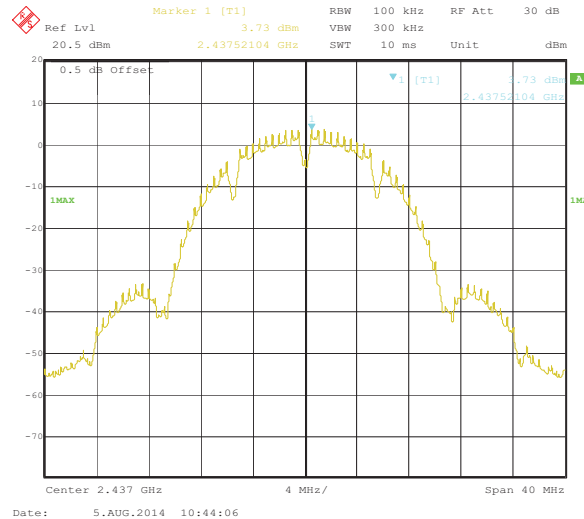
Test plot as follows:

Test mode:

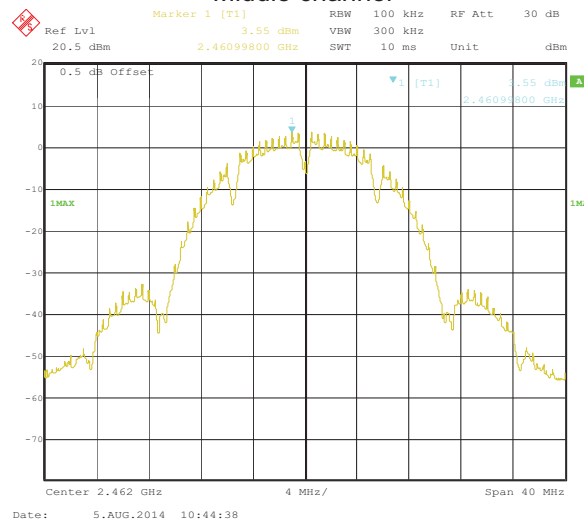
802.11b



Lowest channel



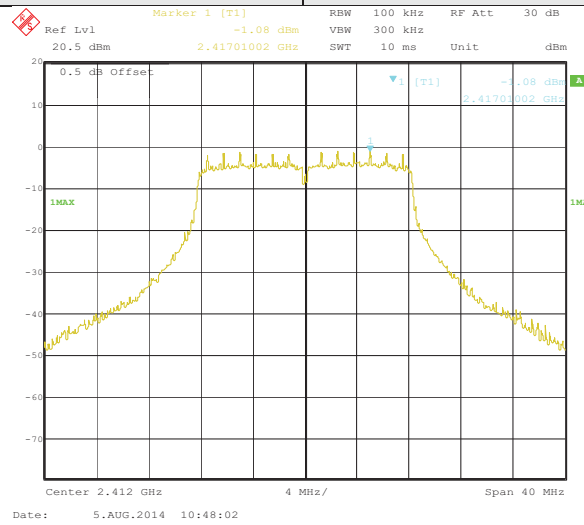
Middle channel



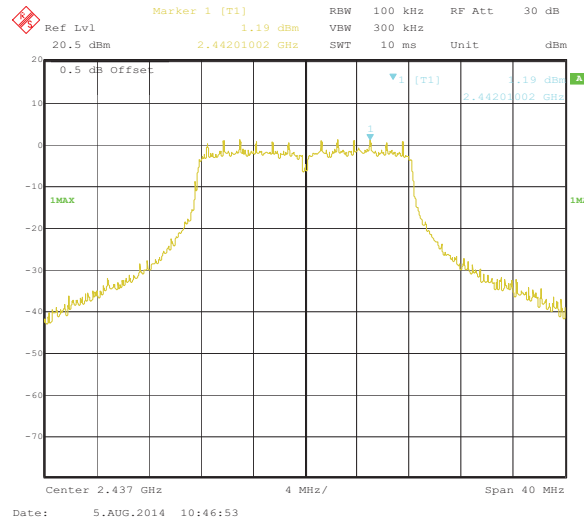
Highest channel

Test mode:

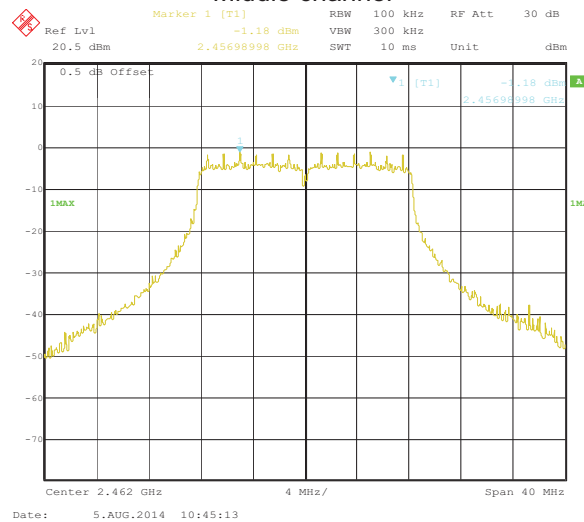
802.11g



Lowest channel



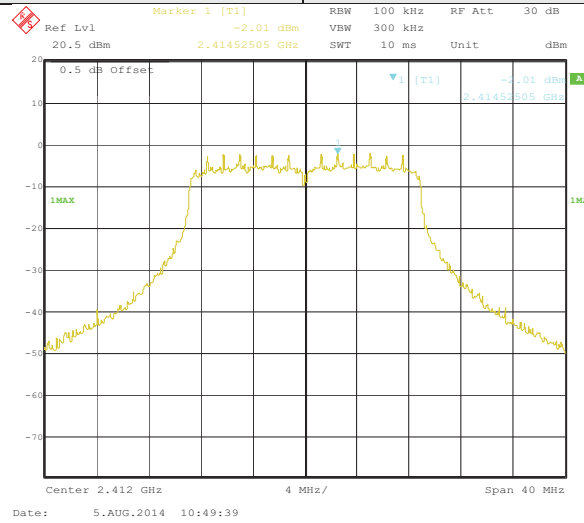
Middle channel



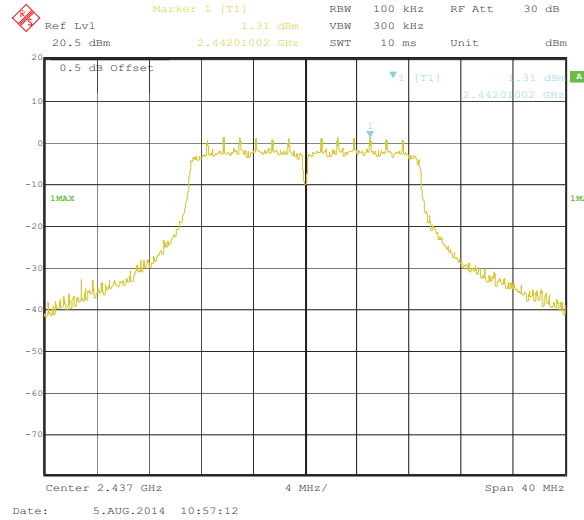
Highest channel

Test mode:

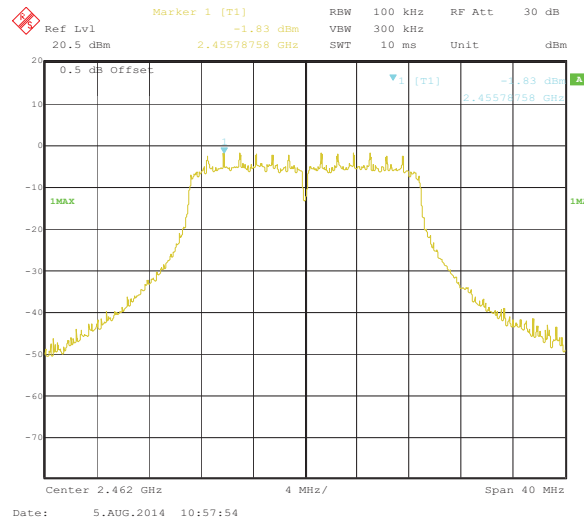
802.11n(H20)



Lowest channel



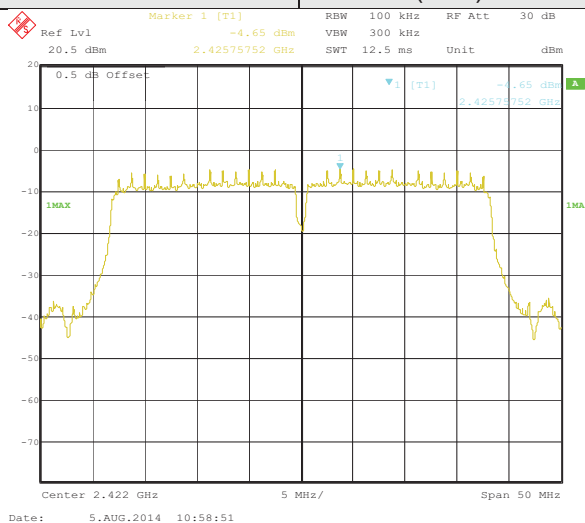
Middle channel



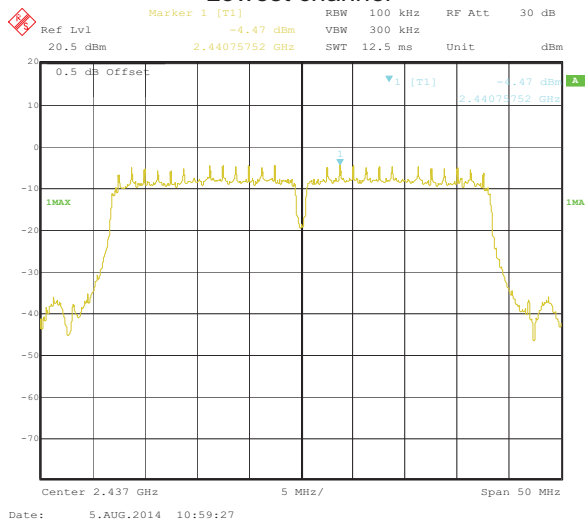
Highest channel

Test mode:

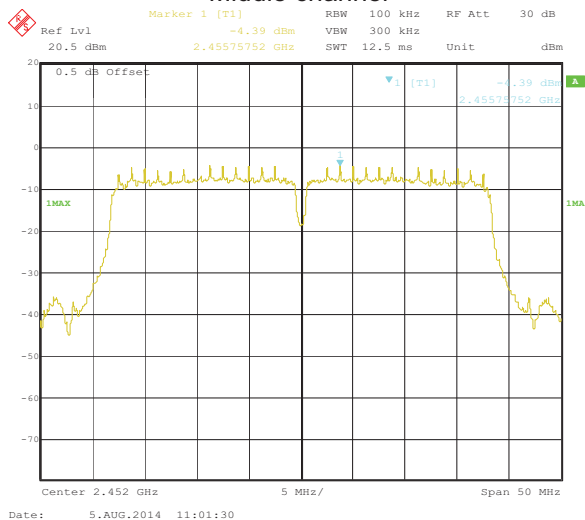
802.11n(H40)



Lowest channel



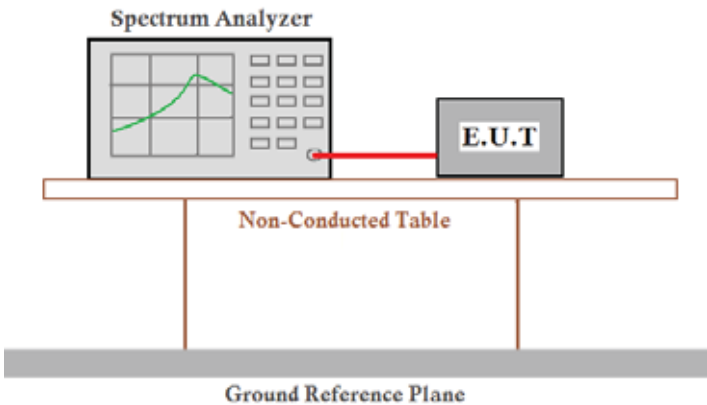
Middle channel



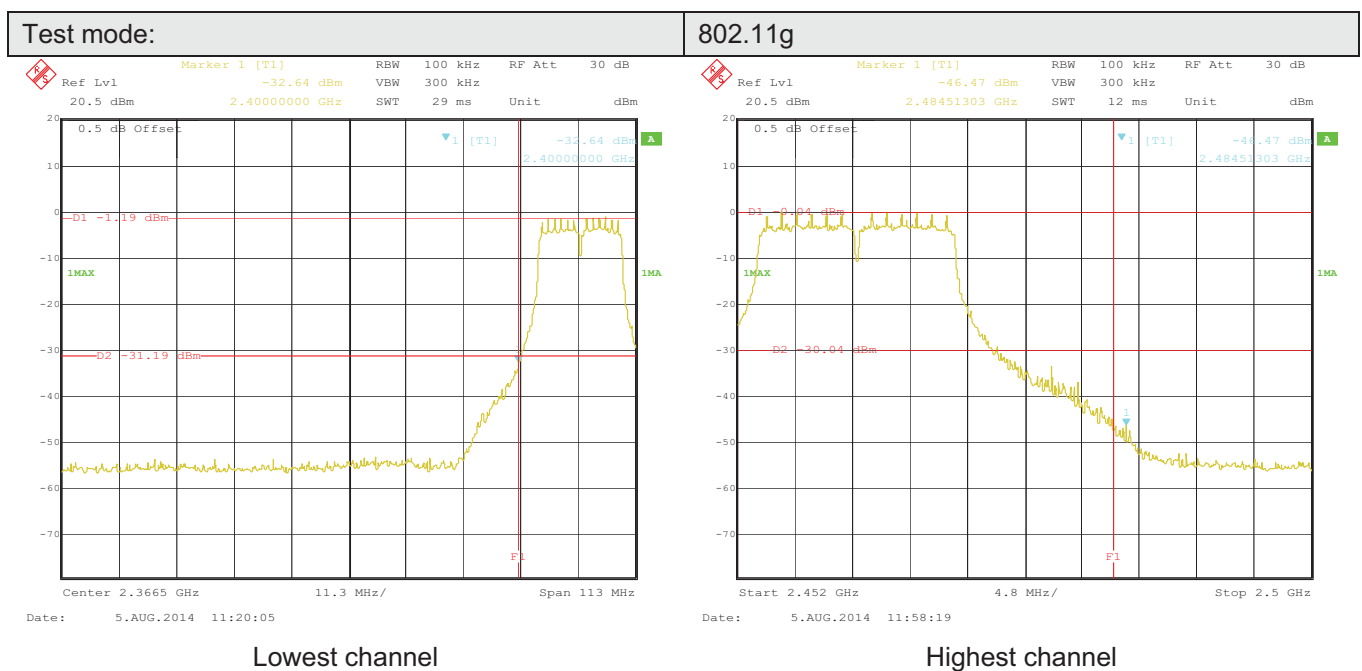
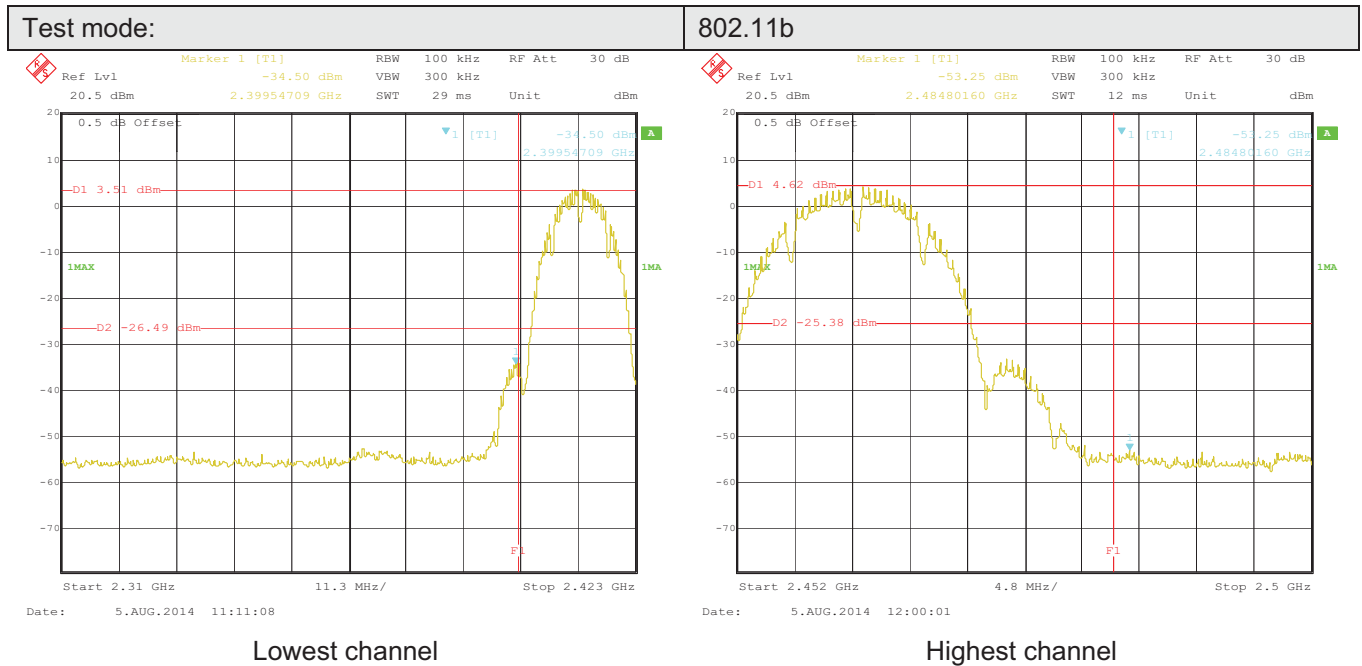
Highest channel

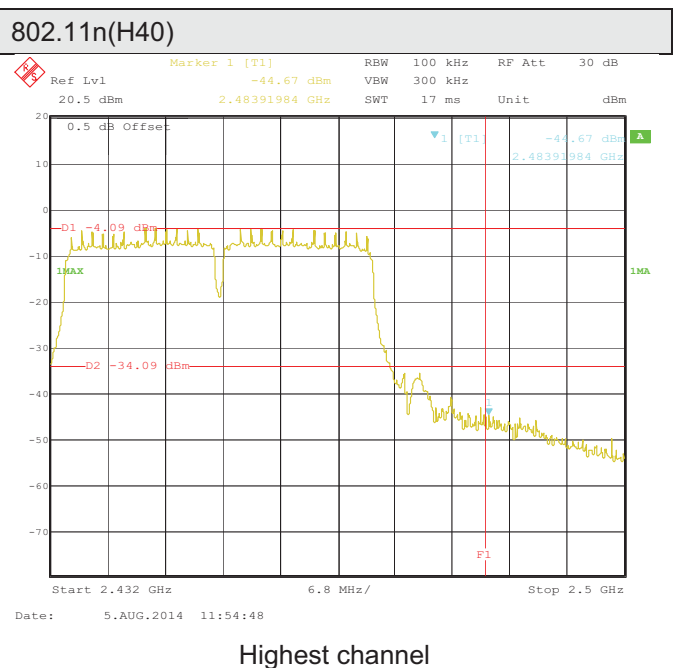
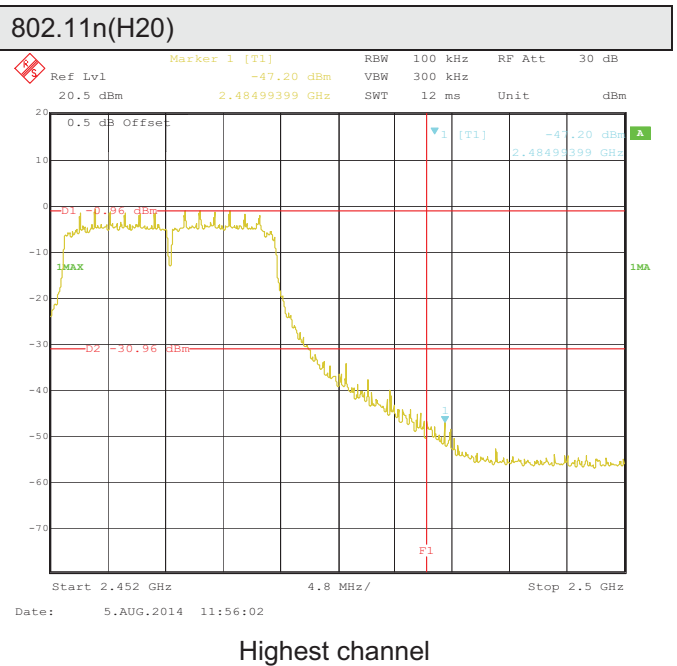
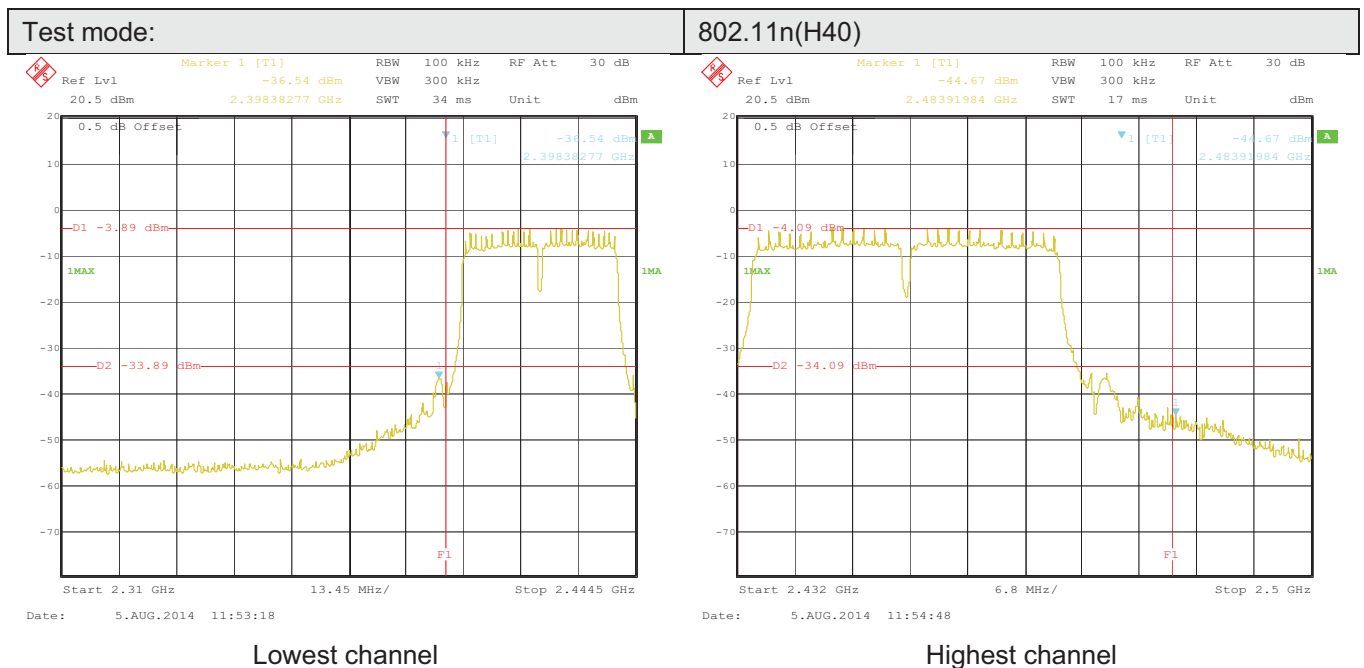
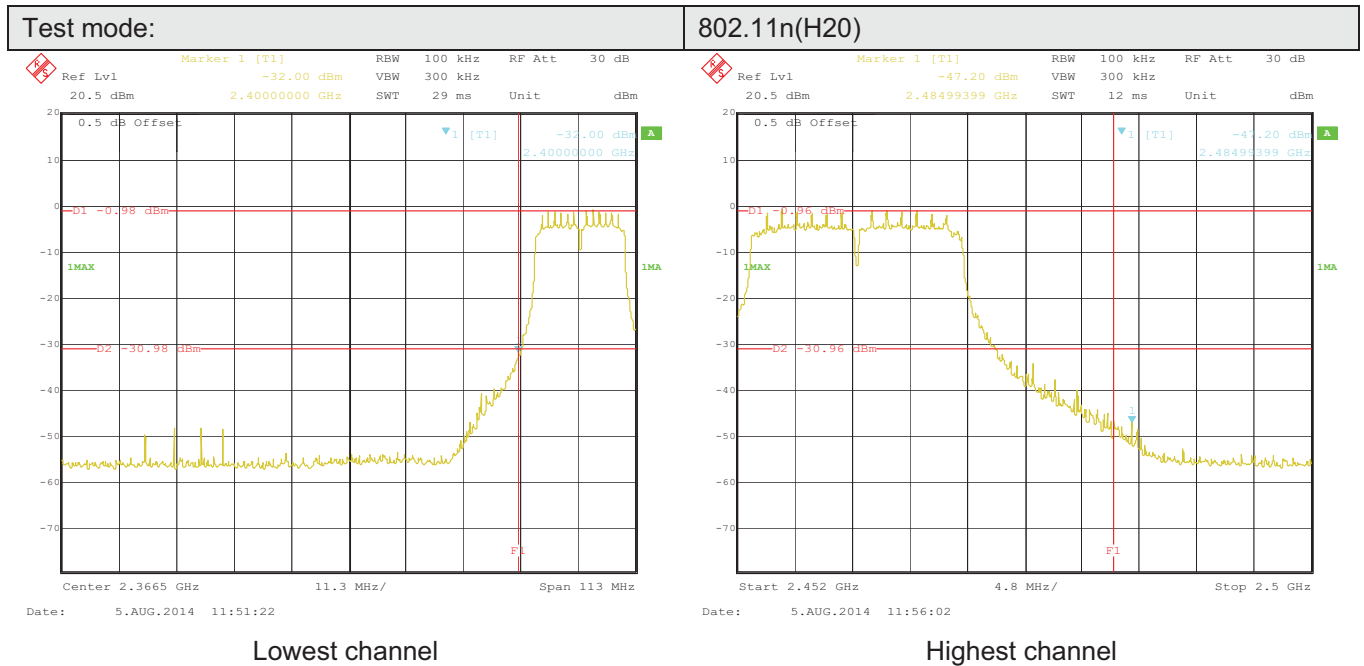
6.6 Band Edge

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 for conducted emission measurement. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.
Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Test plot as follows:





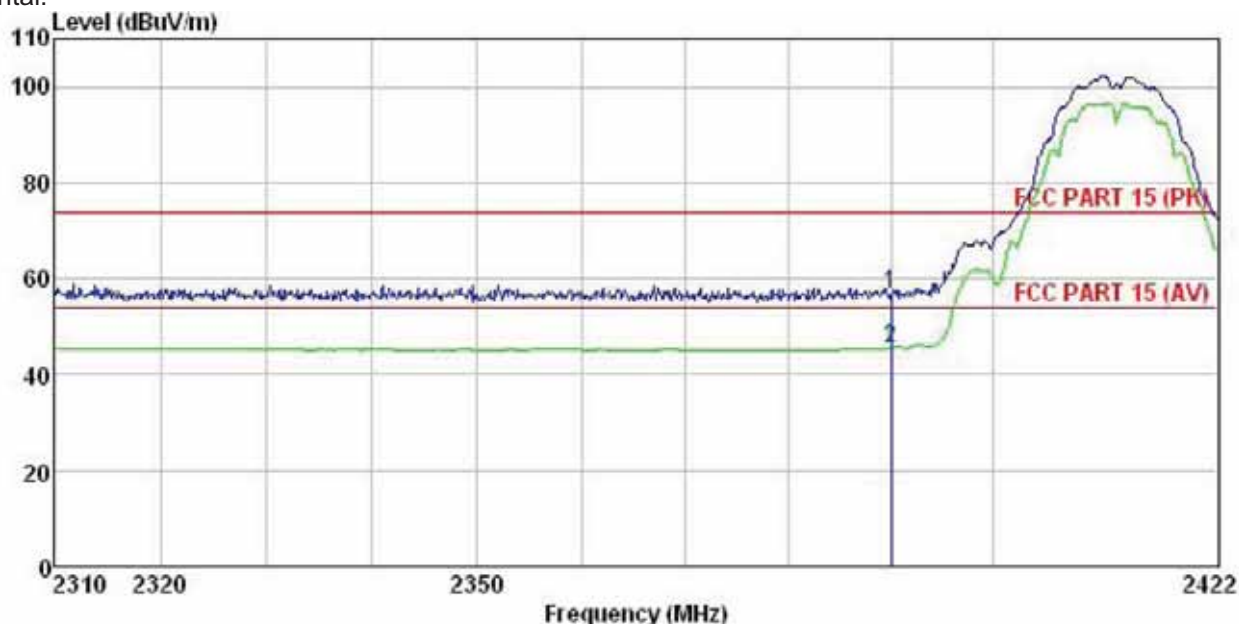
6.6.2 Radiated Emission Method

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:	EUT Turn Table 0.8m 3m 4m 1m Antenna Tower Horn Antenna Spectrum Analyzer Amplifier																		
Test Instruments:	Refer to section 5.6 for details																		
Test mode:	Refer to section 5.3 for details																		
Test results:	Passed																		

802.11b

Test channel: Lowest

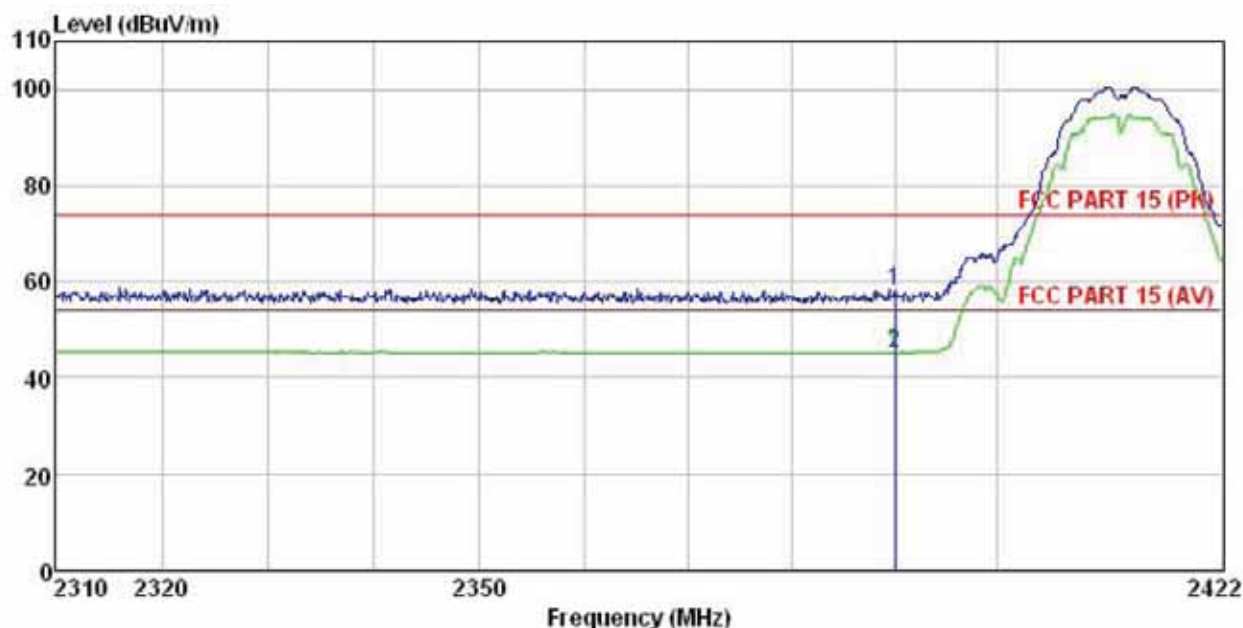
Horizontal:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
 EUT : Wireless Module
 Model : DTCOMM-D
 Test mode : WIFI-B-L
 Power Rating : AC120V/60HZ
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Garen
 Remark :

	Freq	ReadAntenna Level	Cable Factor	Preamp Loss Factor	Limit Level	Over Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2390.000	23.56	27.58	5.67	0.00	56.81	74.00	-17.19 Peak
2	2390.000	12.35	27.58	5.67	0.00	45.60	54.00	-8.40 Average

Vertical :

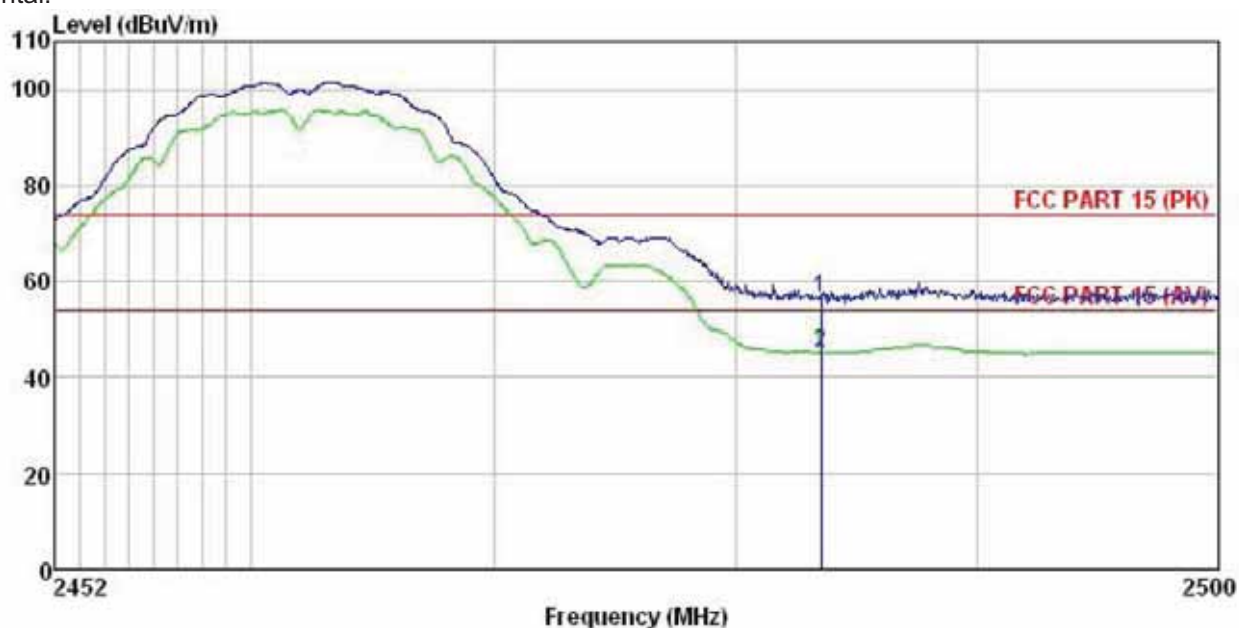


Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 EUT : Wireless Module
 Model : DTCOMM-D
 Test mode : WIFI-B-L
 Power Rating : AC120V/60HZ
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Garen
 Remark :

	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	24.60	27.58	5.67	0.00	57.85	74.00	-16.15	Peak
2	2390.000	11.92	27.58	5.67	0.00	45.17	54.00	-8.83	Average

Test channel: Highest

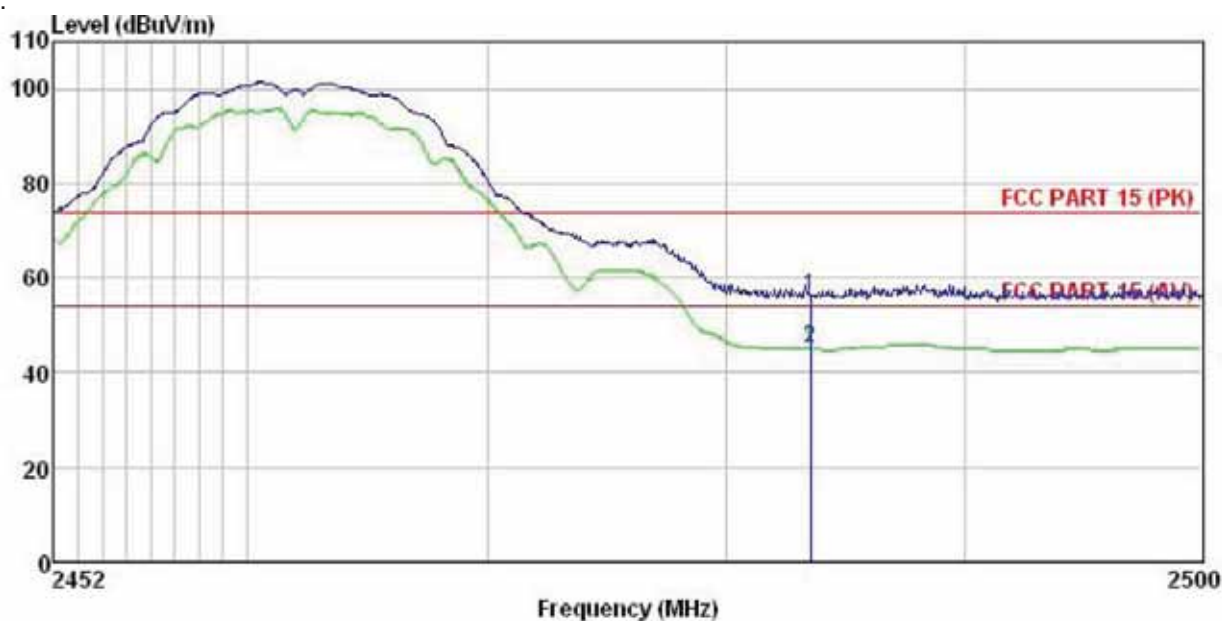
Horizontal:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
 EUT : Wireless Module
 Model : DTCOMM-D
 Test mode : WIFI-B-H
 Power Rating : AC120V/60HZ
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Garen
 Remark :

	Freq	Read	Antenna	Cable	Preamp	Level	Limit	Over	
	MHz	Level	Factor	Loss	Factor	dBuV/m	dBuV/m	Limit	Remark
		dBuV	dB/m	dB	dB			dB	
1	2483.500	23.04	27.52	5.70	0.00	56.26	74.00	-17.74	Peak
2	2483.500	11.88	27.52	5.70	0.00	45.10	54.00	-8.90	Average

Vertical :



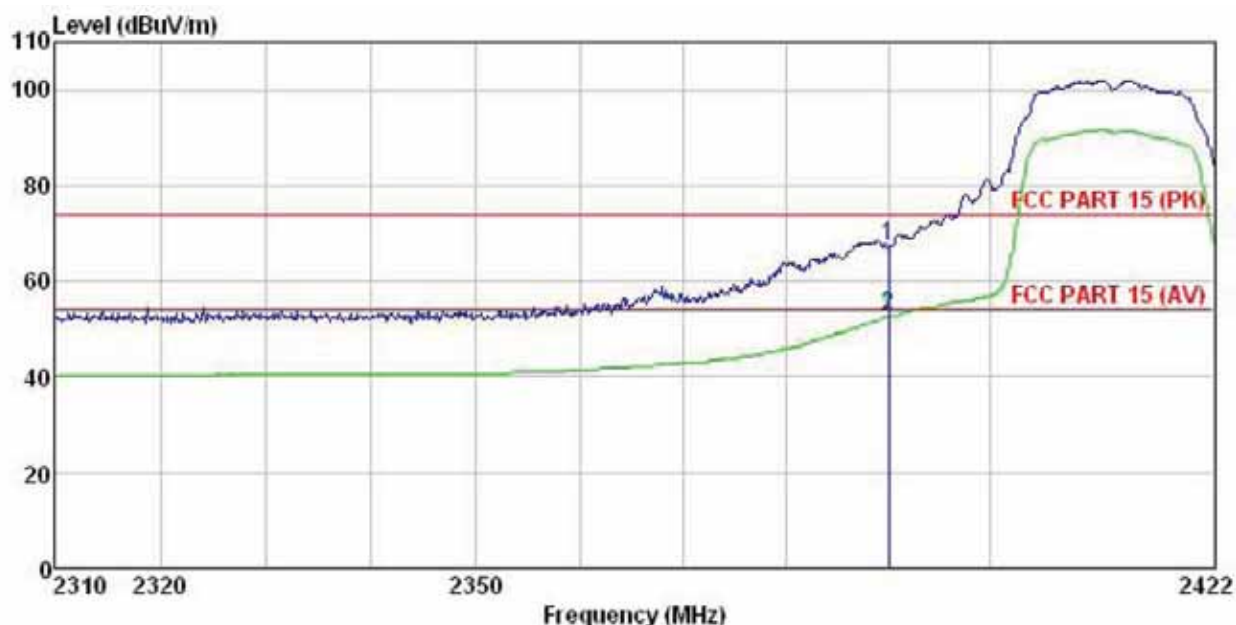
Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 EUT : Wireless Module
 Model : DTCOMM-D
 Test mode : WIFI-B-H
 Power Rating : AC120V/60HZ
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Garen
 Remark :

	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	2483.500	22.96	27.52	5.70	0.00	56.18	74.00	-17.82 Peak
2	2483.500	11.72	27.52	5.70	0.00	44.94	54.00	-9.06 Average

802.11g

Test channel: Lowest

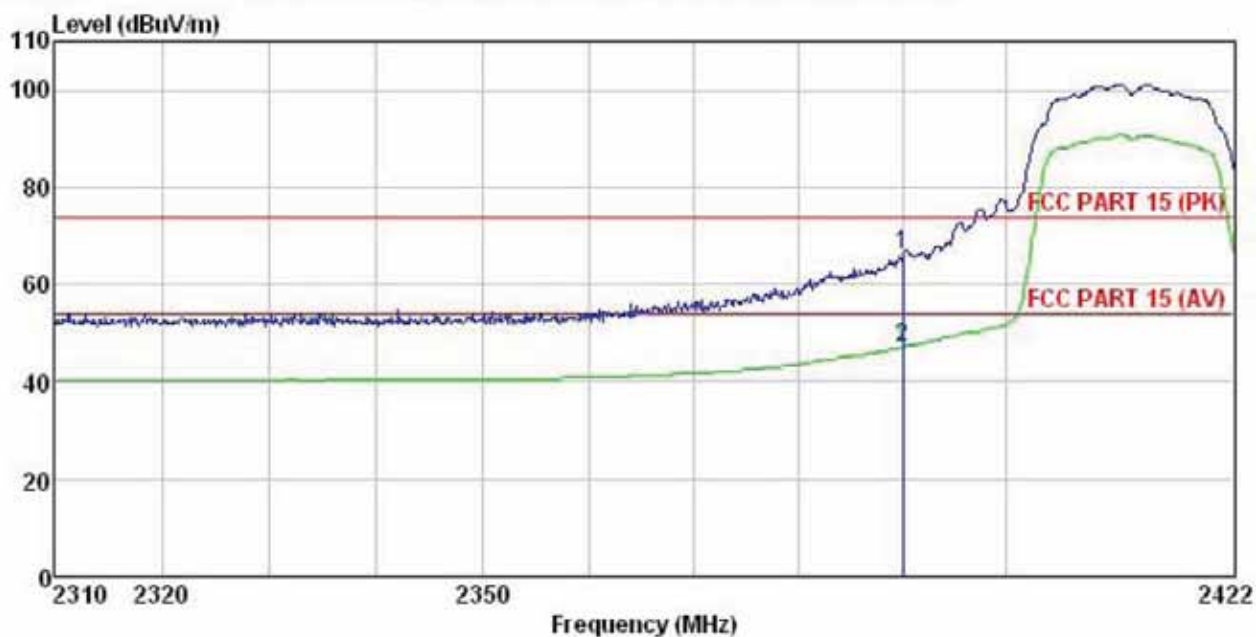
Horizontal :



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
 EUT : Wireless Module
 Model : DTCOMM-D
 Test mode : WIFI mode G-L
 Power Rating : AC 120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Garen
 REMARK :

	Freq	ReadLevel	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2390.000	34.14	27.58	5.67	0.00	67.39	74.00	-6.61	Peak
2	2390.000	19.32	27.58	5.67	0.00	52.57	54.00	-1.43	Average

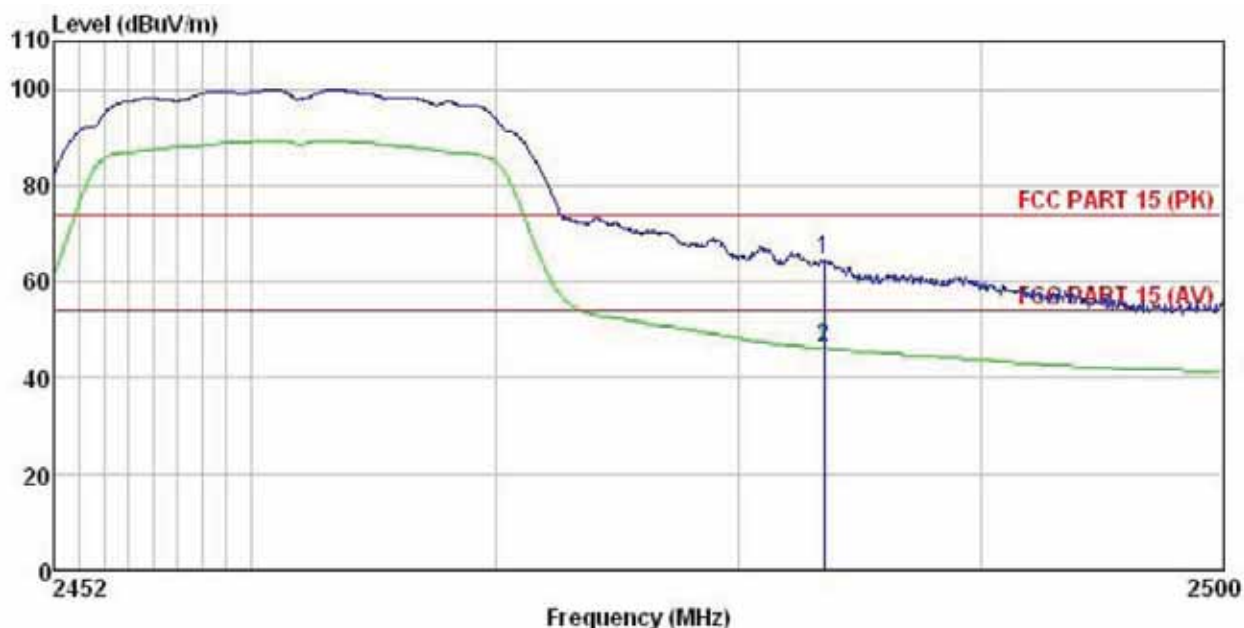
Vertical:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 EUT : Wireless Module
 Model : DTCOMM-D
 Test mode : WIFI mode G-L
 Power Rating : AC 120V/60Hz
 Environment : Temp:25.5'C Humi:55%
 Test Engineer: Garen
 REMARK :

	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over	
	MHz	Level	Factor	Loss	Factor	Line	Limit	Remark
		dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2390.000	33.10	27.58	5.67	0.00	66.35	74.00	-7.65 Peak
2	2390.000	13.97	27.58	5.67	0.00	47.22	54.00	-6.78 Average

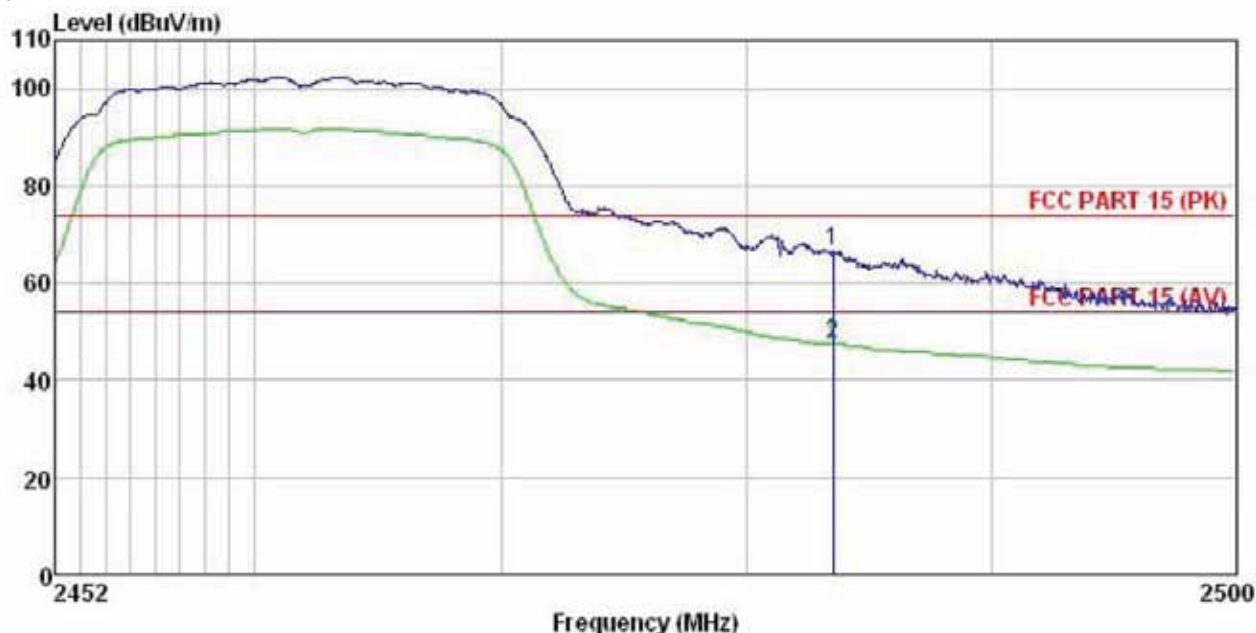
Test channel: Highest
Horizontal:



Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
EUT : Wireless Module
Model : DTCOMM-D
Test mode : WIFI mode G-H
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Humi:55%
Test Engineer: Garen
REMARK :

	Freq	Read	Antenna	Cable	Preamp	Level	Limit	Over	
	MHz	Level	Factor	Loss	Factor	dBuV/m	Line	Limit	Remark
		dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.500	31.14	27.52	5.70	0.00	64.36	74.00	-9.64	Peak
2	2483.500	12.93	27.52	5.70	0.00	46.15	54.00	-7.85	Average

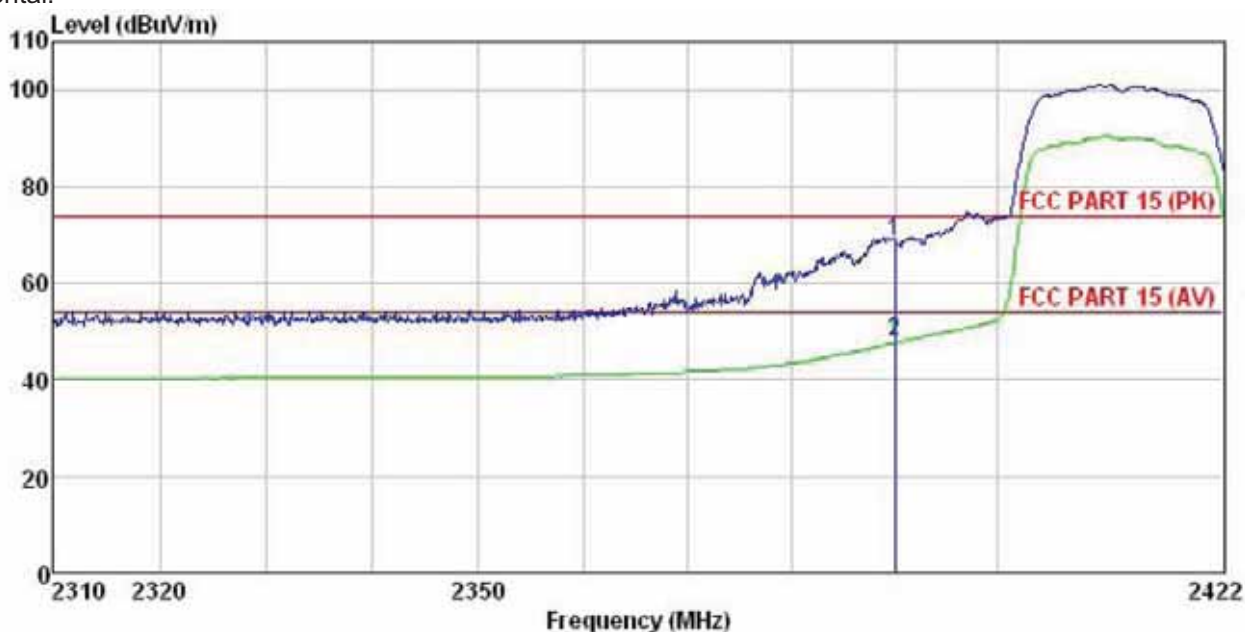
Vertical:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 EUT : Wireless Module
 Model : DTCOMM-D
 Test mode : WIFI mode G-H
 Power Rating : AC 120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Garen
 REMARK :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.500	33.15	27.52	5.70	0.00	66.37	74.00	-7.63	Peak
2	2483.500	14.18	27.52	5.70	0.00	47.40	54.00	-6.60	Average

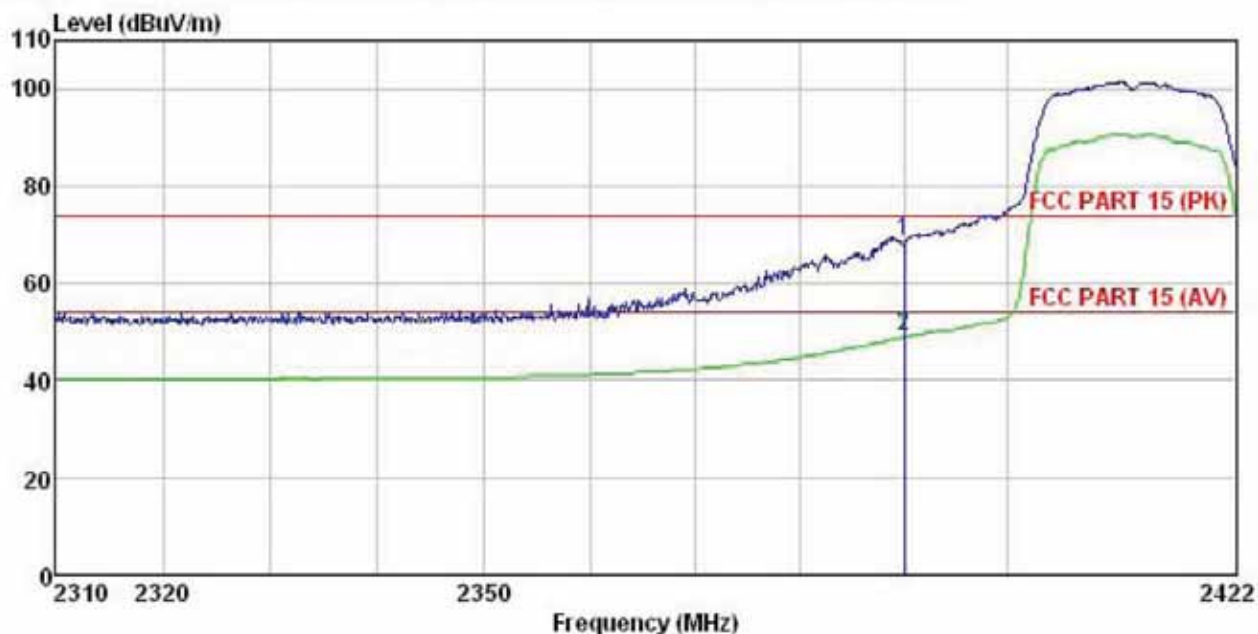
802.11n (H20)
Test channel: Lowest
Horizontal:



Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
EUT : Wireless Module
Model : DTCOMM-D
Test mode : WIFI mode N20-L
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Humi:55%
Test Engineer: Garen
REMARK :

	Freq	Read	Antenna	Cable	Preamp	Level	Limit	Over	
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2390.000	35.46	27.58	5.67	0.00	68.71	74.00	-5.29	Peak
2	2390.000	14.51	27.58	5.67	0.00	47.76	54.00	-6.24	Average

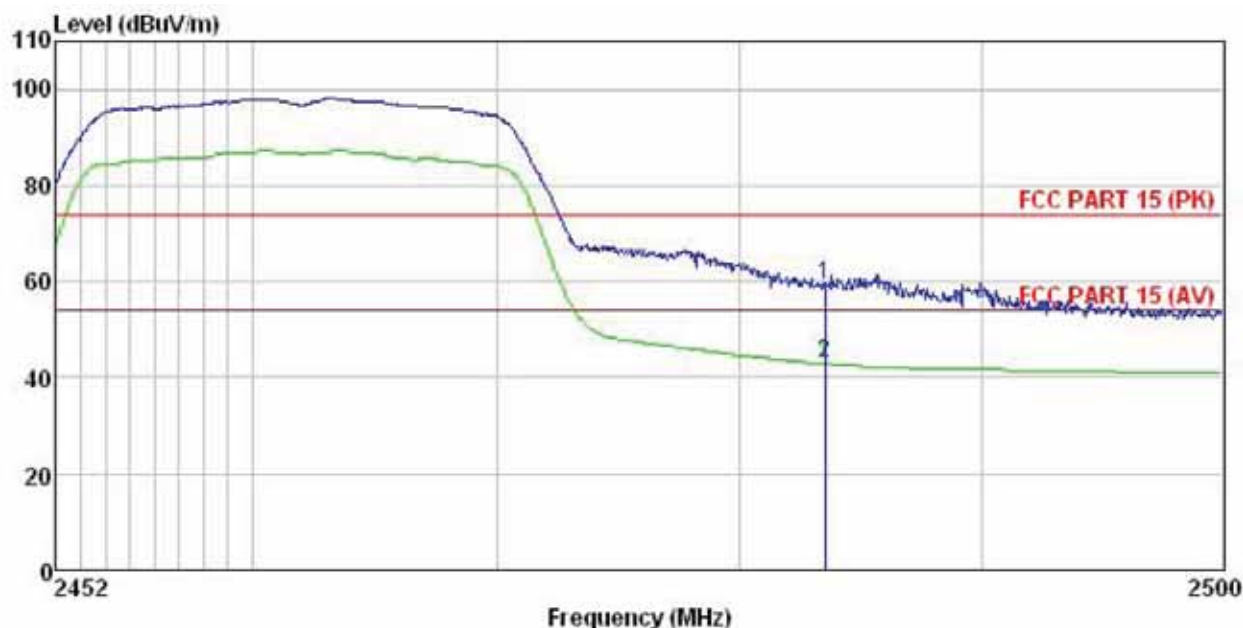
Vertical:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 EUT : Wireless Module
 Model : DTCOMM-D
 Test mode : WIFI mode N20-L
 Power Rating : AC 120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Garen
 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	2390.000	35.20	27.58	5.67	0.00	68.45	74.00	-5.55 Peak
2	2390.000	15.75	27.58	5.67	0.00	49.00	54.00	-5.00 Average

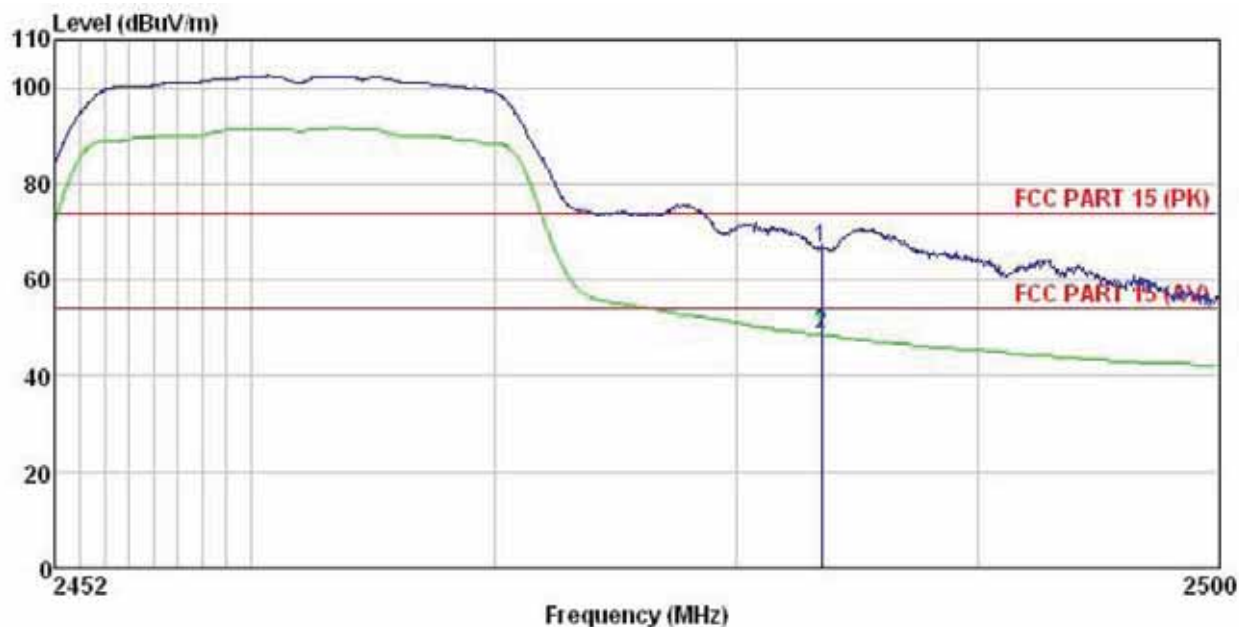
Test channel: Highest
Horizontal:



Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
EUT : Wireless Module
Model : DTCOMM-D
Test mode : WIFI mode N20-H
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Humi:55%
Test Engineer: Garen
REMARK :

	ReadAntenna	Cable	Preamp		Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2483.500	25.93	27.52	5.70	0.00	59.15	74.00 -14.85 Peak
2	2483.500	9.66	27.52	5.70	0.00	42.88	54.00 -11.12 Average

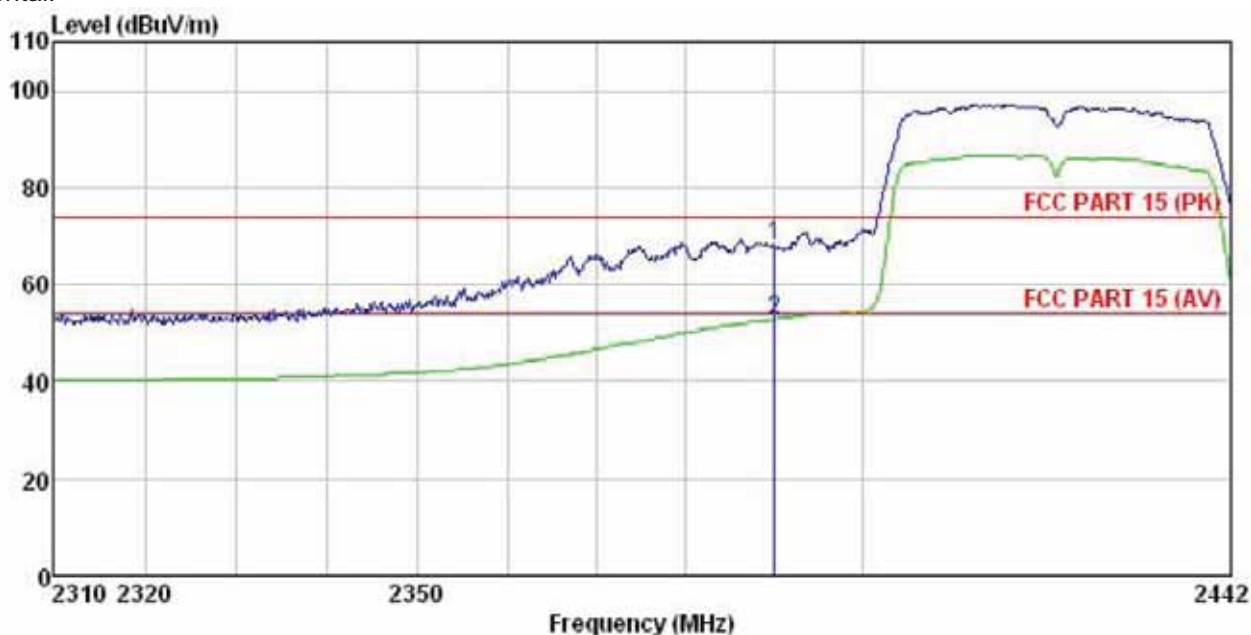
Vertical:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 EUT : Wireless Module
 Model : DTCOMM-D
 Test mode : WIFI mode N20-H
 Power Rating : AC 120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Garen
 REMARK :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.500	33.28	27.52	5.70	0.00	66.50	74.00	-7.50	Peak
2	2483.500	15.33	27.52	5.70	0.00	48.55	54.00	-5.45	Average

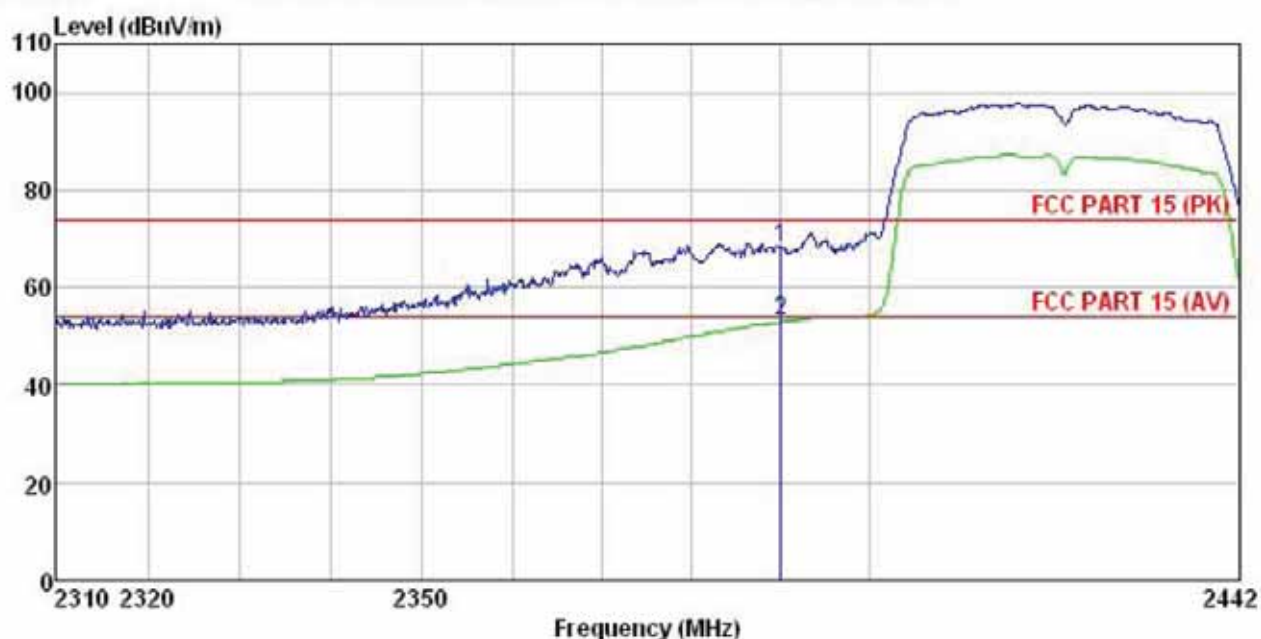
802.11n (H40)
Test channel: Lowest
Horizontal:



Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
EUT : Wireless Module
Model : DTCOMM-D
Test mode : WIFI mode N40-L
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Humi:55%
Test Engineer: Garen
REMARK :

		ReadAntenna	Cable	Preamp		Limit	Over	
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2390.000	35.13	27.58	5.67	0.00	68.38	74.00	-5.62 Peak
2	2390.000	19.66	27.58	5.67	0.00	52.91	54.00	-1.09 Average

Vertical:

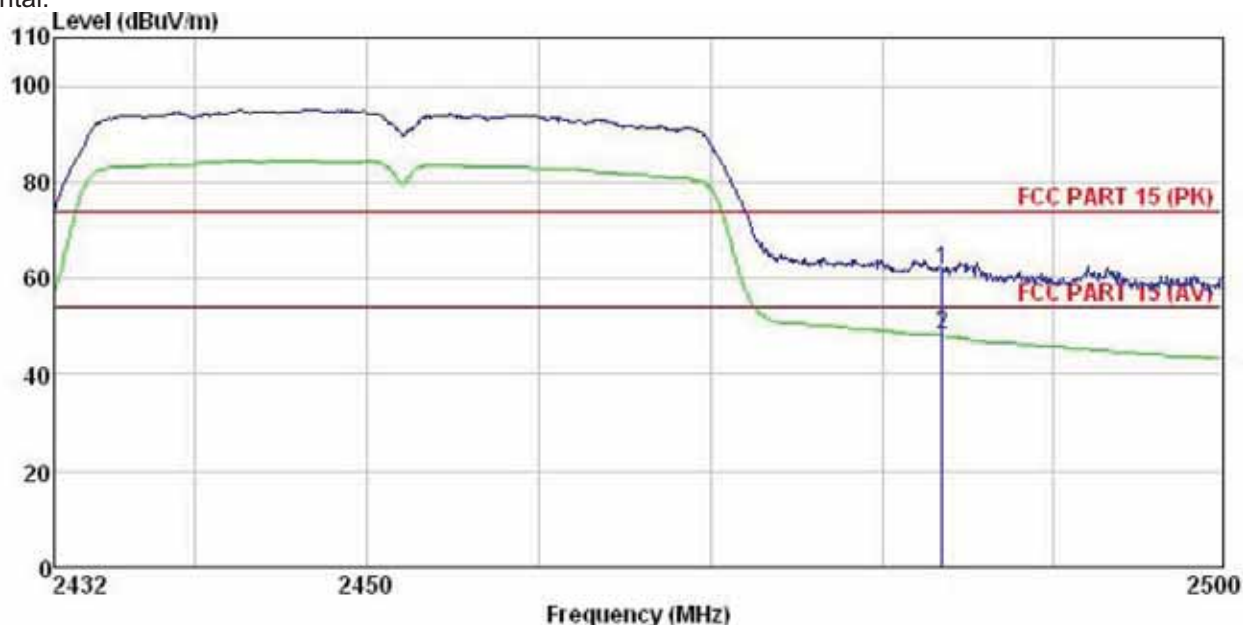


Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 EUT : Wireless Module
 Model : DTICOMM-D
 Test mode : WIFI mode N40-L
 Power Rating : AC 120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Garen
 REMARK :

	Freq	ReadAntenna	Cable Preamp		Limit	Over	
	Level	Factor	Loss Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	2390.000	34.78	27.58	5.67	0.00	68.03	74.00 -5.97 Peak
2	2390.000	19.75	27.58	5.67	0.00	53.00	54.00 -1.00 Average

Test channel: Highest

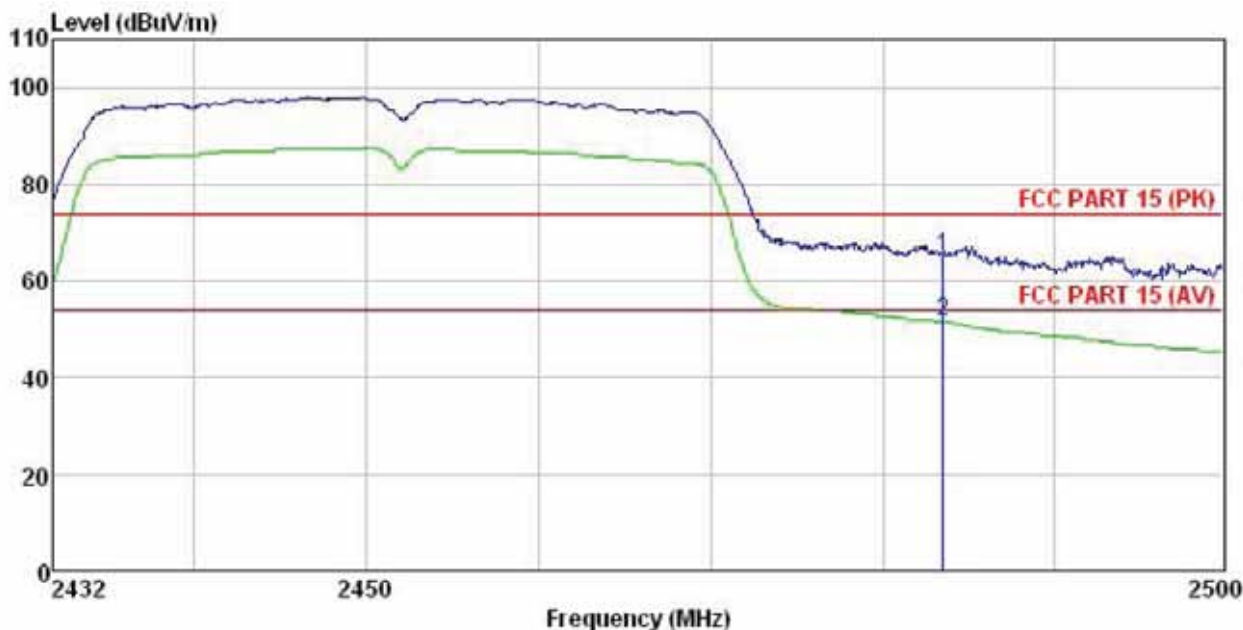
Horizontal:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
 EUT : Wireless Module
 Model : DTCOMM-D
 Test mode : WIFI mode N40-H
 Power Rating : AC 120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Garen
 REMARK :

	Freq	ReadAntenna	Cable Preamp	Limit	Over	
	Level	Factor	Loss Factor	Line	Limit	Remark
	dBuV	dB/m	dB	dB	dBuV/m	dB
	MHz	dBuV	dB/m	dB	dBuV/m	dB
1	2483.500	28.44	27.52	5.70	0.00	61.66 74.00 -12.34 Peak
2	2483.500	14.90	27.52	5.70	0.00	48.12 54.00 -5.88 Average

Vertical:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 EUT : Wireless Module
 Model : DTICOMM-D
 Test mode : WIFI mode N40-H
 Power Rating : AC 120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Garen
 REMARK :

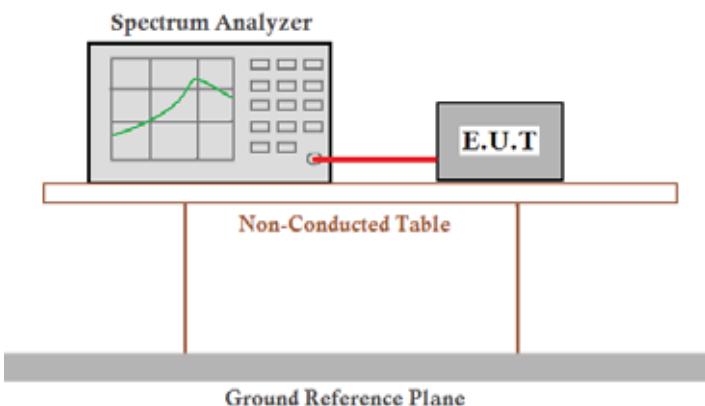
		ReadAntenna	Cable Preamp		Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2483.500	31.89	27.52	5.70	0.00	65.11	74.00
2	2483.500	18.36	27.52	5.70	0.00	51.58	54.00

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.

6.7 Spurious Emission

6.7.1 Conducted Emission Method

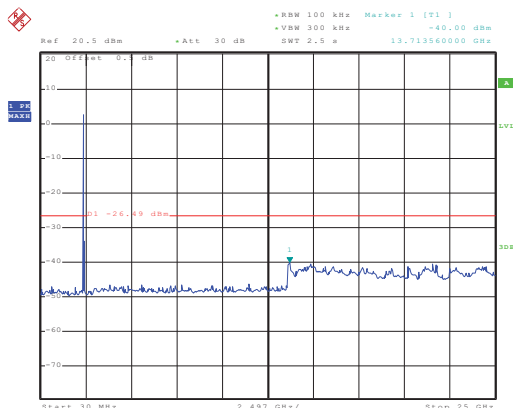
Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2003 and KDB558074
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 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 for conducted emission testing. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table, which sits on a Ground Reference Plane.
Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Test plot as follows:

Test mode:

802.11b

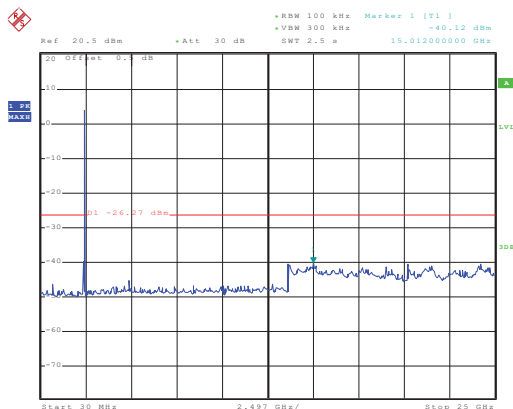
Lowest channel



Date: 8.AUG.2014 16:12:43

30MHz~25GHz

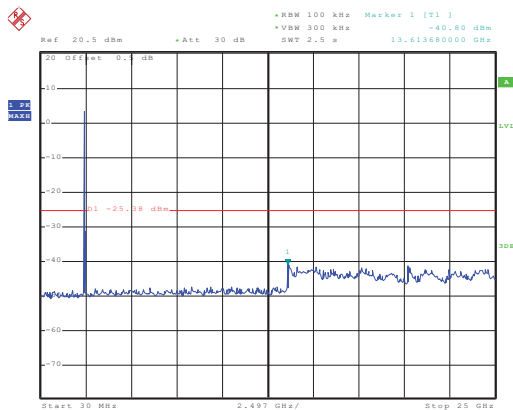
Middle channel



Date: 8.AUG.2014 16:14:32

30MHz~25GHz

Highest channel



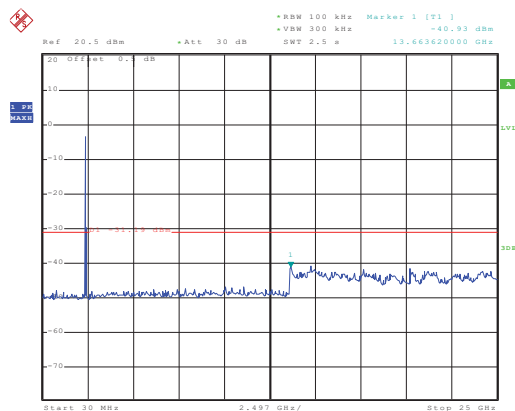
Date: 8.AUG.2014 16:15:17

30MHz~25GHz

Test mode:

802.11g

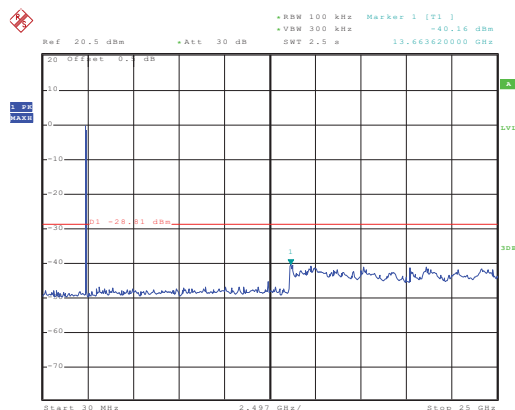
Lowest channel



Date: 8.AUG.2014 16:15:58

30MHz~25GHz

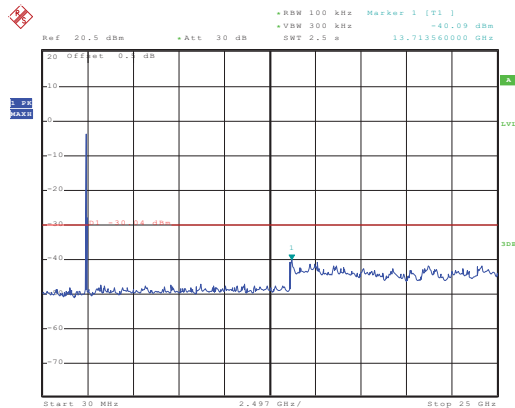
Middle channel



Date: 8.AUG.2014 16:16:53

30MHz~25GHz

Highest channel



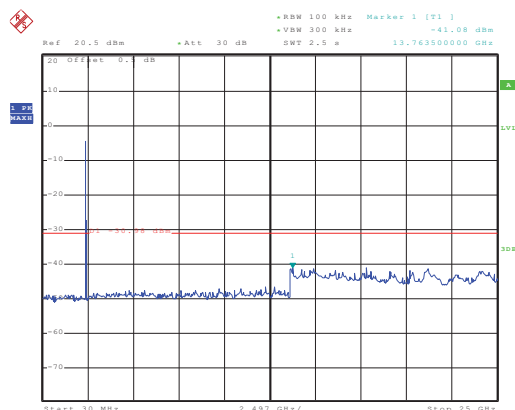
Date: 8.AUG.2014 16:17:44

30MHz~25GHz

Test mode:

802.11n(H20)

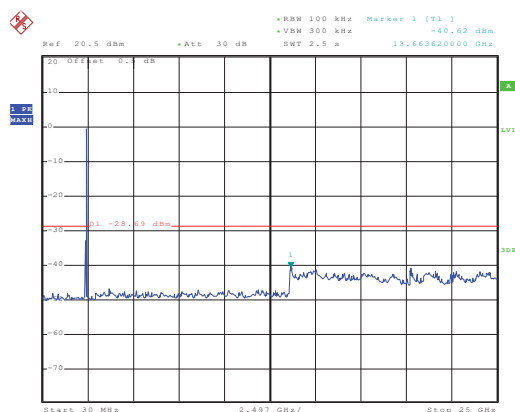
Lowest channel



Date: 8.AUG.2014 16:19:10

30MHz~25GHz

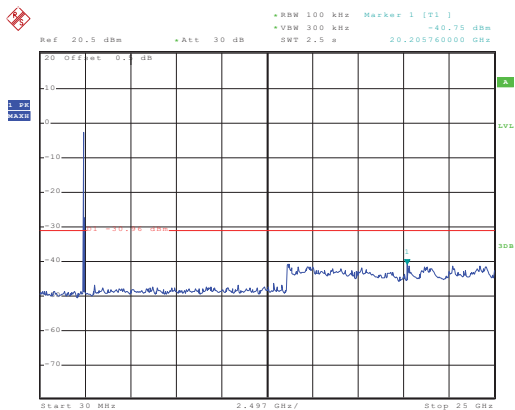
Middle channel



Date: 8.AUG.2014 16:20:03

30MHz~25GHz

Highest channel



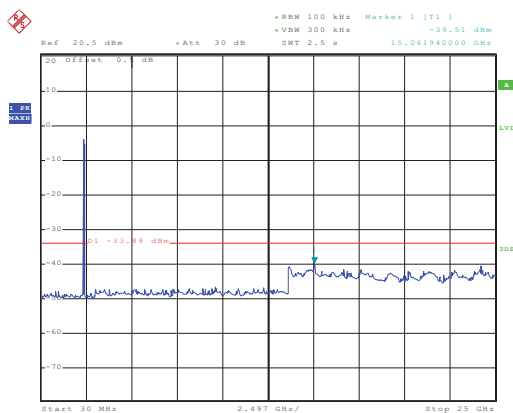
Date: 8.AUG.2014 16:21:01

30MHz~25GHz

Test mode:

802.11n(H40)

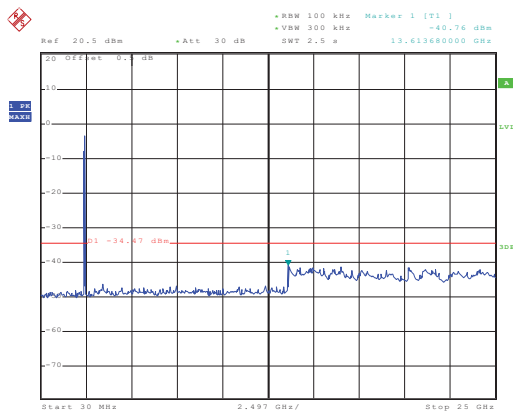
Lowest channel



Date: 8.AUG.2014 16:23:16

30MHz~25GHz

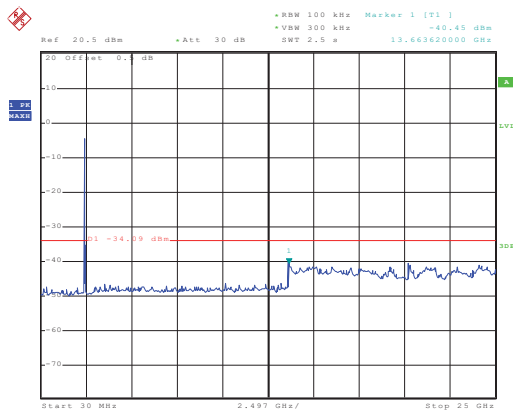
Middle channel



Date: 8.AUG.2014 16:24:15

30MHz~25GHz

Highest channel

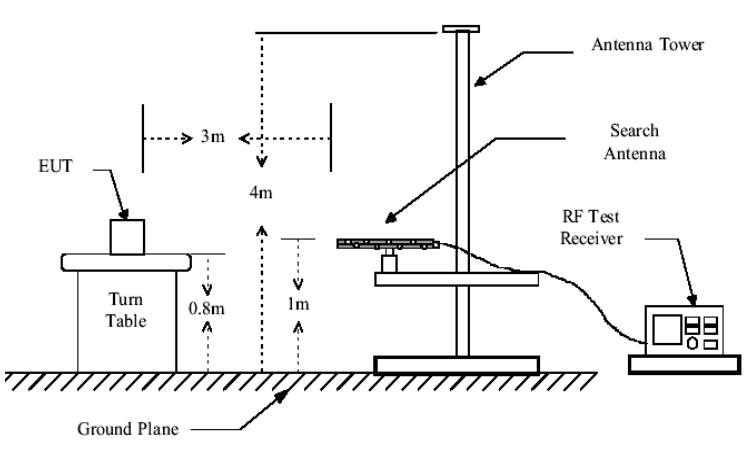
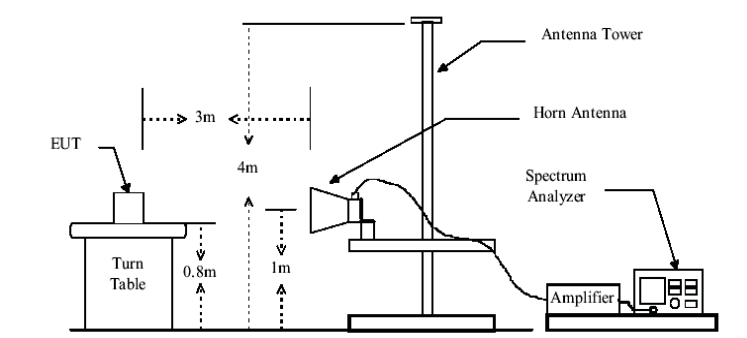


Date: 8.AUG.2014 16:26:20

30MHz~25GHz

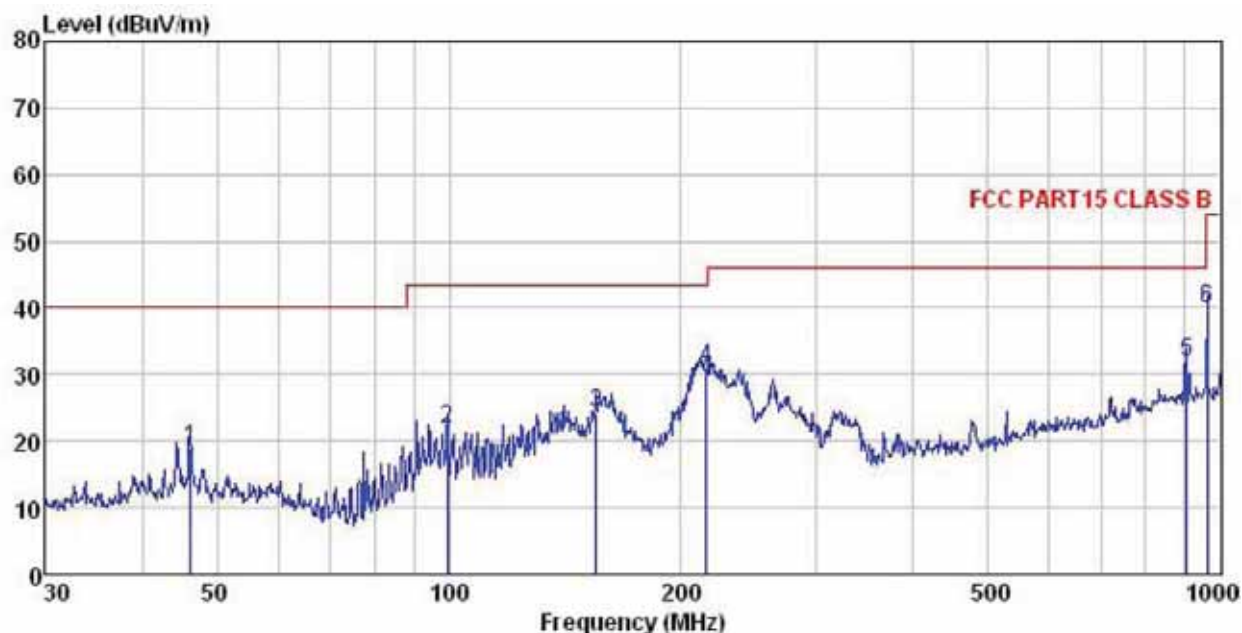
6.7.2 Radiated Emission Method

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:	<table><tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr><tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>120KHz</td><td>300KHz</td><td>Quasi-peak Value</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	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value	Above 1GHz	Peak	1MHz	3MHz	Peak Value	Peak	1MHz	10Hz	Average Value	
Frequency	Detector	RBW	VBW	Remark																					
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value																					
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>30MHz-88MHz</td><td>40.0</td><td>Quasi-peak Value</td></tr><tr><td>88MHz-216MHz</td><td>43.5</td><td>Quasi-peak Value</td></tr><tr><td>216MHz-960MHz</td><td>46.0</td><td>Quasi-peak Value</td></tr><tr><td>960MHz-1GHz</td><td>54.0</td><td>Quasi-peak Value</td></tr><tr><td rowspan="2">Above 1GHz</td><td>54.0</td><td>Average Value</td></tr><tr><td>74.0</td><td>Peak Value</td></tr></table>					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
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 5.6 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 just noise floor, so only shows the data of above 30MHz in this report.

Below 1GHz

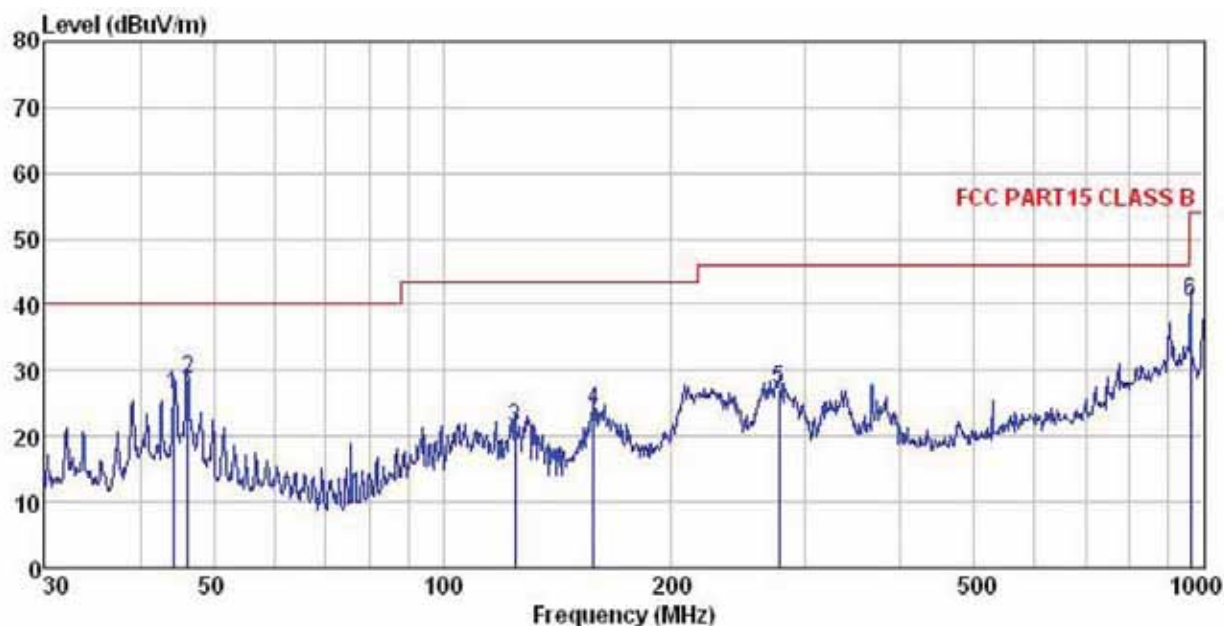
Horizontal:



Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) HORIZONTAL
 EUT : Wireless Module - Android
 Model : DTICOMM-D
 Test mode : WIFI Mode
 Power Rating : AC120V / 50Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Garen
 REMARK :

	Freq	ReadAntenna	Cable Preamp		Limit	Over	
	Level Factor	Loss Factor	Level	Line	Limit	Remark	
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	46.178	34.74	13.48	0.57	29.85	18.94	40.00 -21.06 QP
2	99.528	37.14	13.13	0.96	29.53	21.70	43.50 -21.80 QP
3	155.364	43.64	8.48	1.33	29.17	24.28	43.50 -19.22 QP
4	215.268	47.10	11.03	1.46	28.73	30.86	43.50 -12.64 QP
5	903.309	35.33	21.12	3.36	27.87	31.94	46.00 -14.06 QP
6	962.162	42.60	21.49	3.47	27.65	39.91	54.00 -14.09 QP

Vertical :



Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) VERTICAL
 EUT : Wireless Module - Android
 Model : DTCOMM-D
 Test mode : WIFI Mode
 Power Rating : AC120V / 50Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Garen
 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	44.275	42.12	13.55	0.55	29.87	26.35	40.00 -13.65 QP
2	46.178	44.33	13.48	0.57	29.85	28.53	40.00 -11.47 QP
3	124.569	39.69	9.80	1.16	29.36	21.29	43.50 -22.21 QP
4	158.112	43.09	8.58	1.33	29.15	23.85	43.50 -19.65 QP
5	277.094	41.41	12.59	1.70	28.49	27.21	46.00 -18.79 QP
6	962.162	43.02	21.49	3.47	27.65	40.33	54.00 -13.67 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)	Pol.
4824.00	47.95	31.53	8.90	40.24	49.58	74.00	-24.42	Vertical
4824.00	46.85	31.53	8.90	40.24	48.04	74.00	-25.96	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)	Pol.
4824.00	37.69	31.53	8.90	40.24	37.88	54.00	-16.12	Vertical
4824.00	36.15	31.53	8.90	40.24	36.34	54.00	-17.66	Horizontal

Test mode: 802.11b			Test channel: Middle			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)	Pol.
4874.00	45.34	31.58	8.98	40.15	45.75	74.00	-28.25	Vertical
4874.00	45.75	31.58	8.98	40.15	46.16	74.00	-27.84	Horizontal
Test mode: 802.11b			Test channel: Middle			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)	Pol.
4874.00	35.10	31.58	8.98	40.15	35.51	54.00	-18.49	Vertical
4874.00	35.82	31.58	8.98	40.15	36.23	54.00	-17.77	Horizontal

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)	Pol.
4924.00	46.45	31.69	9.08	40.03	47.19	74.00	-26.81	Vertical
4924.00	45.22	31.69	9.08	40.03	45.96	74.00	-28.04	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)	Pol.
4924.00	35.65	31.69	9.08	40.03	36.39	54.00	-17.61	Vertical
4924.00	34.69	31.69	9.08	40.03	35.43	54.00	-18.57	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means this data is the too weak instrument of signal is unable to test.
3. 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)	Pol.
4824.00	46.60	31.53	8.90	40.24	46.79	74.00	-27.21	Vertical
4824.00	46.37	31.53	8.90	40.24	46.56	74.00	-27.44	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)	Pol.
4824.00	36.49	31.53	8.90	40.24	36.68	54.00	-17.32	Vertical
4824.00	36.17	31.53	8.90	40.24	36.36	54.00	-17.64	Horizontal

Test mode: 802.11g			Test channel: Middle			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)	Pol.
4874.00	45.39	31.58	8.98	40.15	45.80	74.00	-28.20	Vertical
4874.00	47.36	31.58	8.98	40.15	47.77	74.00	-26.23	Horizontal
Test mode: 802.11g			Test channel: Middle			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)	Pol.
4874.00	35.68	31.58	8.98	40.15	36.09	54.00	-17.91	Vertical
4874.00	36.97	31.58	8.98	40.15	37.38	54.00	-16.62	Horizontal

Test mode: 802.11g			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)	Pol.
4924.00	46.46	31.69	9.08	40.03	47.20	74.00	-26.80	Vertical
4924.00	45.22	31.69	9.08	40.03	45.96	74.00	-28.04	Horizontal
Test mode: 802.11g			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)	Pol.
4924.00	36.36	31.69	9.08	40.03	37.10	54.00	-16.90	Vertical
4924.00	35.06	31.69	9.08	40.03	35.80	54.00	-18.20	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “**”, means this data is the too weak instrument of signal is unable to test.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test mode: 802.11(n20)			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)	Pol.
4824.00	45.55	31.53	8.90	40.24	45.74	74.00	-28.26	Vertical
4824.00	45.72	31.53	8.90	40.24	45.91	74.00	-28.09	Horizontal
Test mode: 802.11(n20)			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)	Pol.
4824.00	35.19	31.53	8.90	40.24	35.38	54.00	-18.62	Vertical
4824.00	35.14	31.53	8.90	40.24	35.33	54.00	-18.67	Horizontal

Test mode: 802.11(n20)			Test channel: Middle			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)	Pol.
4874.00	46.30	31.58	8.98	40.15	46.71	74.00	-27.29	Vertical
4874.00	45.63	31.58	8.98	40.15	46.04	74.00	-27.96	Horizontal
Test mode: 802.11(n20)			Test channel: Middle			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)	Pol.
4874.00	35.78	31.58	8.98	40.15	36.19	54.00	-17.81	Vertical
4874.00	35.26	31.58	8.98	40.15	35.67	54.00	-18.33	Horizontal

Test mode: 802.11(n20)			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)	Pol.
4924.00	45.50	31.69	9.08	40.03	46.24	74.00	-27.76	Vertical
4924.00	44.16	31.69	9.08	40.03	44.90	74.00	-29.10	Horizontal
Test mode: 802.11(n20)			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)	Pol.
4924.00	34.55	31.69	9.08	40.03	35.29	54.00	-18.71	Vertical
4924.00	33.32	31.69	9.08	40.03	34.06	54.00	-19.94	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means this data is the too weak instrument of signal is unable to test.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test mode: 802.11(n40)			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)	Pol.
4844.00	46.83	31.53	8.90	40.24	47.02	74.00	-26.98	Vertical
4844.00	45.57	31.53	8.90	40.24	45.76	74.00	-28.24	Horizontal
Test mode: 802.11(n40)			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)	Pol.
4844.00	35.94	31.53	8.90	40.24	36.13	54.00	-17.87	Vertical
4844.00	34.96	31.53	8.90	40.24	35.15	54.00	-18.85	Horizontal

Test mode: 802.11(n40)			Test channel: Middle			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)	Pol.
4874.00	45.49	31.58	8.98	40.15	45.90	74.00	-28.10	Vertical
4874.00	46.30	31.58	8.98	40.15	46.71	74.00	-27.29	Horizontal
Test mode: 802.11(n40)			Test channel: Middle			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)	Pol.
4874.00	36.35	31.58	8.98	40.15	36.76	54.00	-17.24	Vertical
4874.00	35.68	31.58	8.98	40.15	36.09	54.00	-17.91	Horizontal

Test mode: 802.11(n40)			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)	Pol.
4904.00	46.31	31.69	9.08	40.03	47.05	74.00	-26.95	Vertical
4904.00	47.08	31.69	9.08	40.03	47.82	74.00	-26.18	Horizontal
Test mode: 802.11(n40)			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)	Pol.
4904.00	35.09	31.69	9.08	40.03	35.83	54.00	-18.17	Vertical
4904.00	36.96	31.69	9.08	40.03	37.70	54.00	-16.30	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means this data is the too weak instrument of signal is unable to test.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.

7 Test Setup Photo

Radiated Spurious Emission



Conducted Emission



8 EUT Constructional Details

Reference to the test report No. CCIS14070062001

-----End of report-----