

FCC REPORT (WIFI)

Applicant: CELUMAX MOBILE S.A.S

Address of Applicant: Cra 20#13-61 ofc 201 Bogota-Colombia

Equipment Under Test (EUT)

Product Name: Smart phone

Model No.: Ultra

FCC ID: 2AEXB-12ULTRA

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

Date of sample receipt: 12 May 2015

Date of Test: 12 May to 05 Jun., 2015

Date of report issued: 05 Jun., 2015

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	05 Jun., 2015	Original

Prepared by:

Date:

05 Jun., 2015

Report Clerk

Reviewed by:

Date:

05 Jun., 2015

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
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:	CELUMAX MOBILE S.A.S
Address of Applicant:	Cra 20#13-61 ofc 201 Bogota-Colombia
Manufacturer:	Shenzhen kleadtone technology co. ltd.
Address of Manufacturer:	Room B201, Garden City Cyber Port, No. 1079 Nanhai Road, Nanshan District, Shenzhen, China

5.2 General Description of E.U.T.

Product Name:	Smart phone
Model No.:	Ultra
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:	-1.67 dBi
AC adapter:	Model: HNFL050100UU Input:100-240V AC,50/60Hz, 0.2A Output:5V DC, 1A
Power supply:	Rechargeable Li-ion Battery DC3.8V-1900mAh

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.										
<table border="1"> <thead> <tr> <th>Mode</th><th>Data rate</th></tr> </thead> <tbody> <tr> <td>802.11b</td><td>1Mbps</td></tr> <tr> <td>802.11g</td><td>6Mbps</td></tr> <tr> <td>802.11n(H20)</td><td>6.5Mbps</td></tr> <tr> <td>802.11n(H40)</td><td>13.5Mbps</td></tr> </tbody> </table>	Mode	Data rate	802.11b	1Mbps	802.11g	6Mbps	802.11n(H20)	6.5Mbps	802.11n(H40)	13.5Mbps
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	08-23-2014	08-22-2017
2	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	CCIS0005	03-28-2015	03-28-2016
3	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	CCIS0006	03-28-2015	03-28-2016
4	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
5	Amplifier (10kHz-1.3GHz)	HP	8447D	CCIS0003	04-01-2015	03-31-2016
6	Amplifier (1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	04-01-2015	03-31-2016
7	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	04-01-2015	03-31-2016
8	Horn Antenna	ETS-LINDGREN	3160	GTS217	04-01-2015	03-31-2016
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	03-28-2015	03-28-2016
12	EMI Test Receiver	Rohde & Schwarz	ESPI	CCIS0022	03-28-2015	03-28-2016
13	Loop antenna	Laplace instrument	RF300	EMC0701	04-01-2015	03-31-2016
14	Universal radio communication tester	Rhode & Schwarz	CMU200	CCIS0069	03-28-2015	03-28-2016
15	Signal Analyzer	Rohde & Schwarz	FSIQ3	CCIS0088	04-08-2015	04-08-2016

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	11-10-2012	11-09-2015
2	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	03-28-2015	03-28-2016
3	LISN	CHASE	MN2050D	CCIS0074	03-28-2015	03-28-2016
4	Coaxial Cable	CCIS	N/A	CCIS0086	04-01-2015	03-31-2016
5	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

6 Test results and Measurement Data

6.1 Antenna requirement:

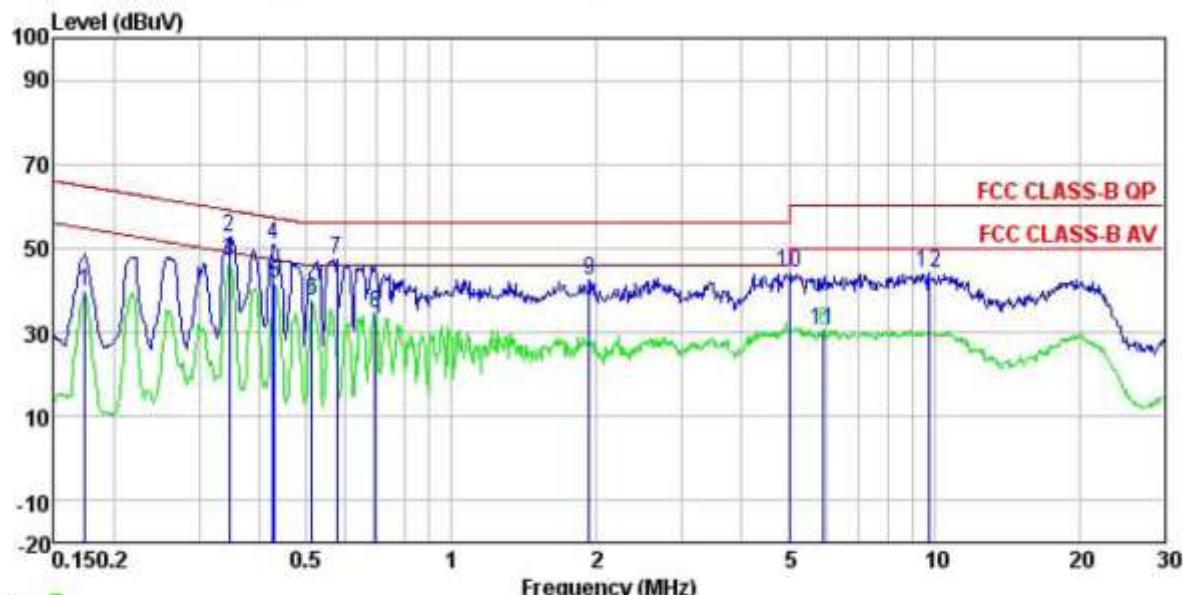
Standard requirement:	FCC Part 15 C Section 15.203 /247(c)
<p>15.203 requirement: <i>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses 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></p>	
<p>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></p>	
E.U.T Antenna:	
<p>The WiFi antenna is an internal antenna which cannot replace by end-user, the best case gain of the antenna is -1.67 dBi.</p>	
	

6.2 Conducted Emission

Test Requirement:	FCC Part 15 C Section 15.207																
Test Method:	ANSI C63.4: 2009																
Test Frequency Range:	150 kHz to 30 MHz																
Class / Severity:	Class B																
Receiver setup:	RBW=9 kHz, VBW=30 kHz																
Limit:	<table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th> <th colspan="2">Limit (dBuV)</th> </tr> <tr> <th>Quasi-peak</th> <th>Average</th> </tr> </thead> <tbody> <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> </tbody> </table>			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															
	* Decreases with the logarithm of the frequency.																
Test procedure	<ol style="list-style-type: none"> 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. 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). 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:	<p style="text-align: center;">Reference Plane</p> <p><i>Remark</i> E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p>																
Test Instruments:	Refer to section 5.6 for details																
Test mode:	Refer to section 5.3 for details																
Test results:	Passed																

Measurement Data

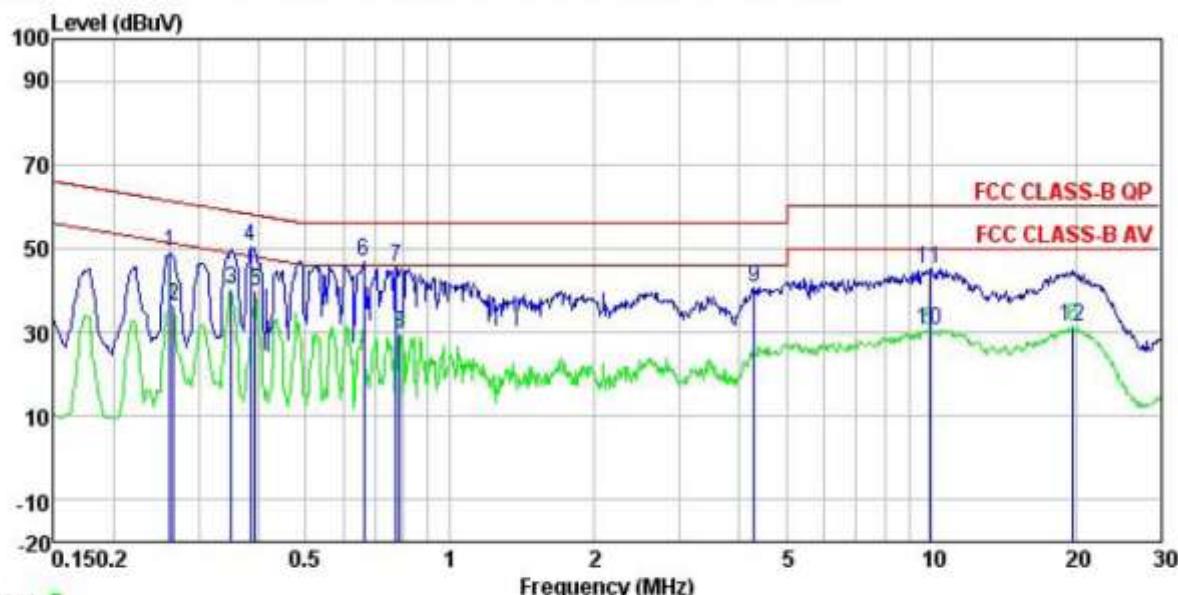
Neutral:



Trace: 7
 Site : CCIS Shielding Room
 Condition : FCC CLASS-B QP LISN NEUTRAL
 EUT : Smart phone
 Model : Ultra
 Test Mode : WIFI mode
 Power Rating : AC120/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: Colin
 Remark :

Freq	Read	LISN	Cable	Limit	Over	Remark
	Level	Factor	Loss			
MHz	dBuV	dB	dB	dBuV	dBuV	dB
1	0.174	28.80	0.25	10.77	39.82	-14.95 Average
2	0.346	41.75	0.25	10.73	52.73	-6.32 QP
3	0.346	35.90	0.25	10.73	46.88	-2.17 Average
4	0.426	39.96	0.26	10.73	50.95	-6.38 QP
5	0.431	30.56	0.26	10.73	41.55	-5.69 Average
6	0.513	26.68	0.28	10.76	37.72	-8.28 Average
7	0.579	36.47	0.24	10.77	47.48	-8.52 QP
8	0.694	23.48	0.18	10.77	34.43	-11.57 Average
9	1.928	31.35	0.29	10.96	42.60	-13.40 QP
10	5.031	33.09	0.28	10.85	44.22	-15.78 QP
11	5.898	19.43	0.27	10.82	30.52	-19.48 Average
12	9.757	32.85	0.25	10.93	44.03	-15.97 QP

Line:



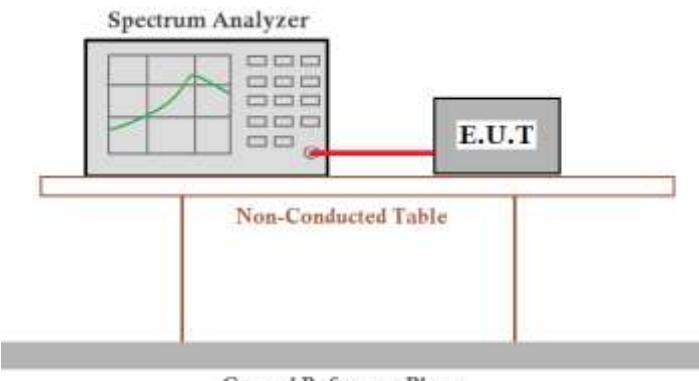
Trace: 5
 Site : CCIS Shielding Room
 Condition : FCC CLASS-B QP LISN LINE
 EUT : Smart phone
 Model : Ultra
 Test Mode : WIFI mode
 Power Rating : AC120/60Hz
 Environment : Temp: 23 °C Hurni:56% Atmos:101KPa
 Test Engineer: Colin
 Remark :

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.262	37.98	0.27	10.75	49.00	61.38	-12.38	QP
2	0.266	25.27	0.27	10.75	36.29	51.25	-14.96	Average
3	0.350	29.34	0.27	10.73	40.34	48.96	-8.62	Average
4	0.385	39.45	0.28	10.72	50.45	58.17	-7.72	QP
5	0.393	28.67	0.28	10.72	39.67	47.99	-8.32	Average
6	0.661	35.84	0.23	10.77	46.84	56.00	-9.16	QP
7	0.771	34.44	0.23	10.80	45.47	56.00	-10.53	QP
8	0.788	18.66	0.23	10.81	29.70	46.00	-16.30	Average
9	4.292	29.40	0.28	10.88	40.56	56.00	-15.44	QP
10	9.913	19.40	0.31	10.93	30.64	50.00	-19.36	Average
11	9.966	33.94	0.31	10.94	45.19	60.00	-14.81	QP
12	19.740	19.88	0.34	10.93	31.15	50.00	-18.85	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

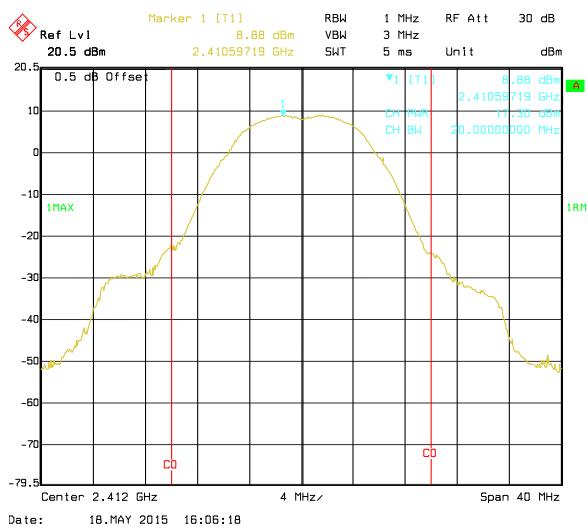
Test Requirement:	FCC Part 15 C Section 15.247 (b)(3)
Test Method:	ANSI C63.4:2009 and KDB558074
Limit:	30dBm
Test setup:	 <p>The diagram illustrates the test setup for conducted output power. A Spectrum Analyzer is positioned above a Non-Conducted Table. A red cable connects the Spectrum Analyzer to the Equipment Under Test (E.U.T), which is placed on the table. The entire setup rests on a horizontal ground reference plane.</p>
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

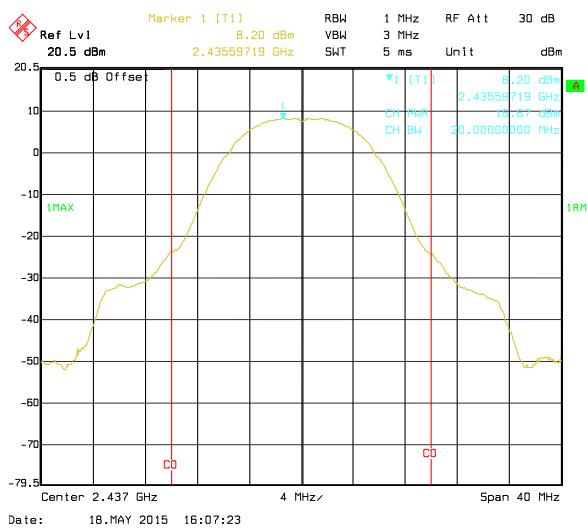
Test CH	Maximum Conducted Output Power (dBm)				Limit(dBm)	Result
	802.11b	802.11g	802.11n(H20)	802.11n(H40)		
Lowest	17.30	13.50	13.56	11.74		
Middle	16.67	14.74	14.70	13.80	30.00	Pass
Highest	16.95	14.07	14.02	12.05		

Test plot as follows:

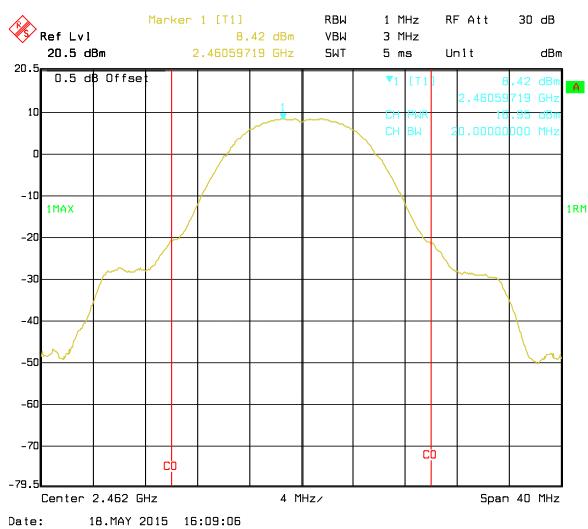
Test mode: 802.11b



Lowest channel

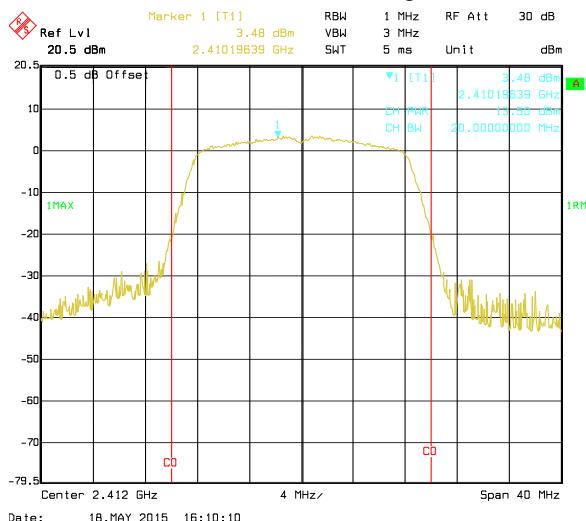


Middle channel

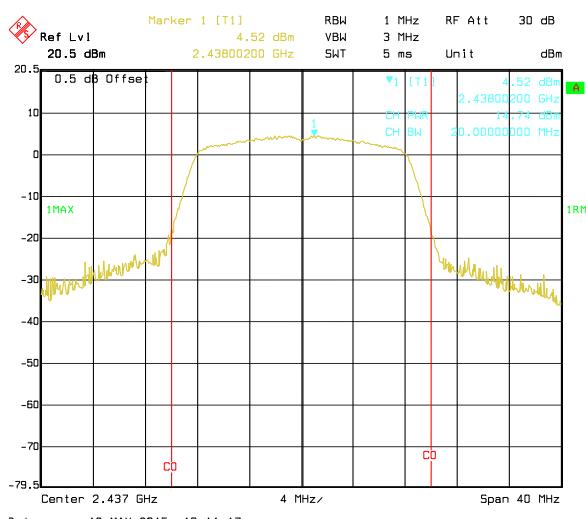


Highest channel

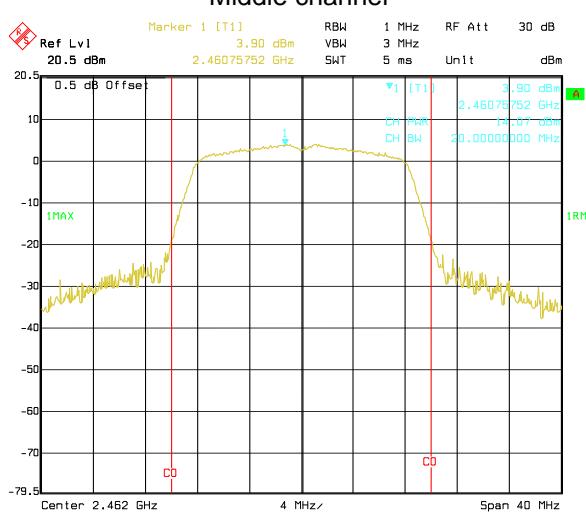
Test mode: 802.11g



Lowest channel

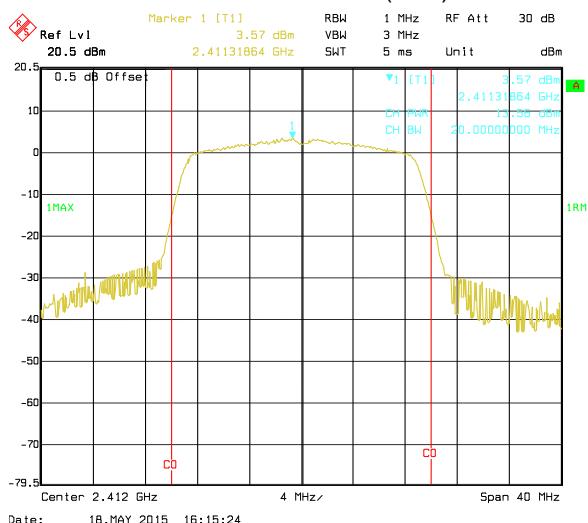


Middle channel

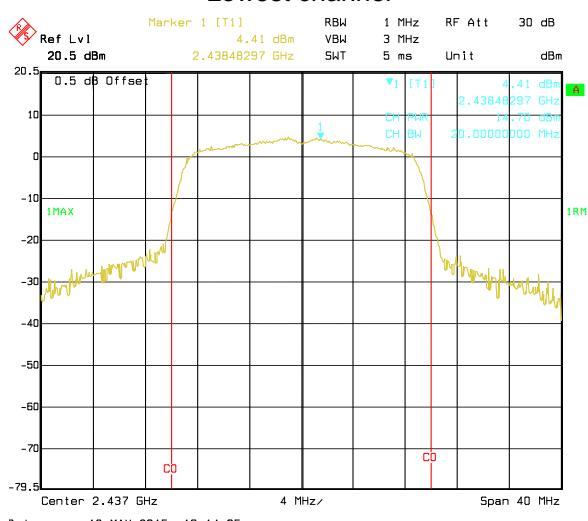


Highest channel

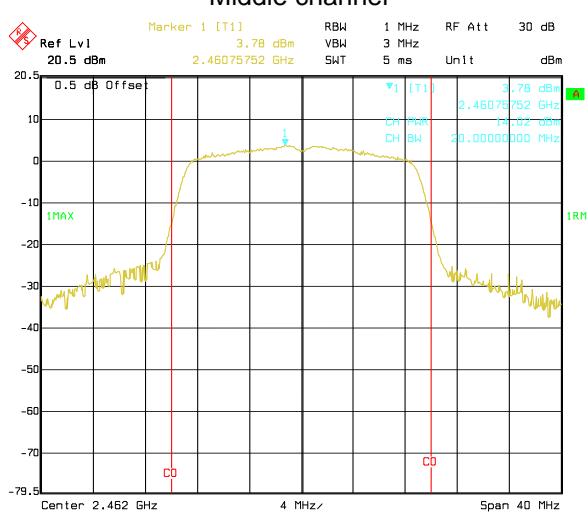
Test mode: 802.11n(H20)



Lowest channel

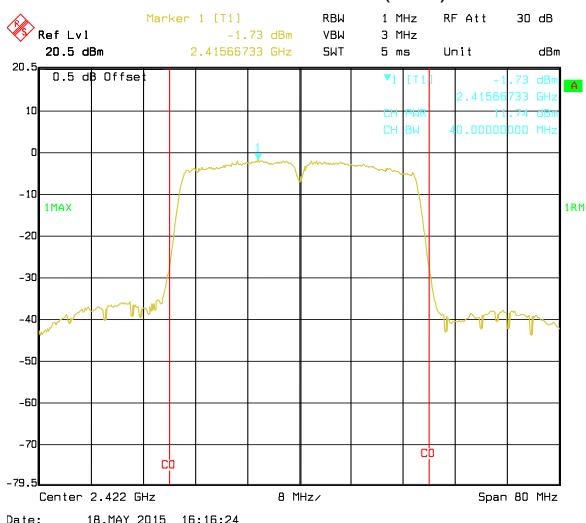


Middle channel

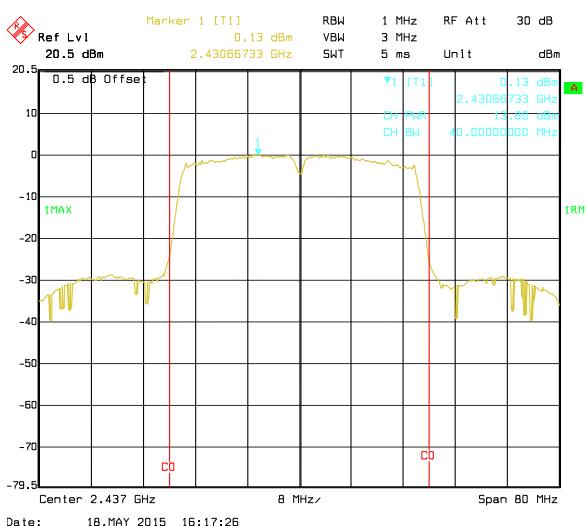


Highest channel

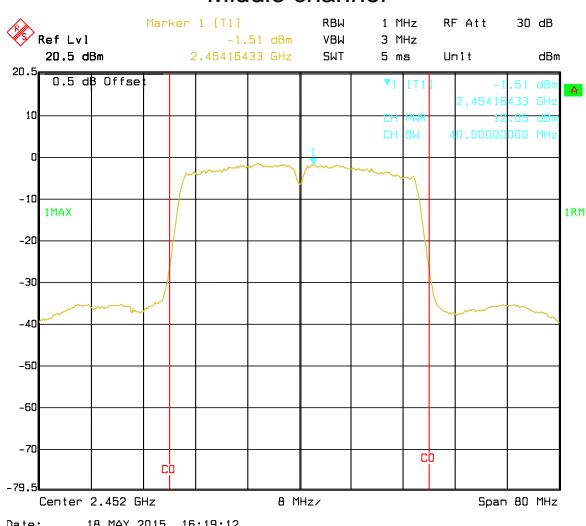
Test mode: 802.11n(H40)



Lowest channel

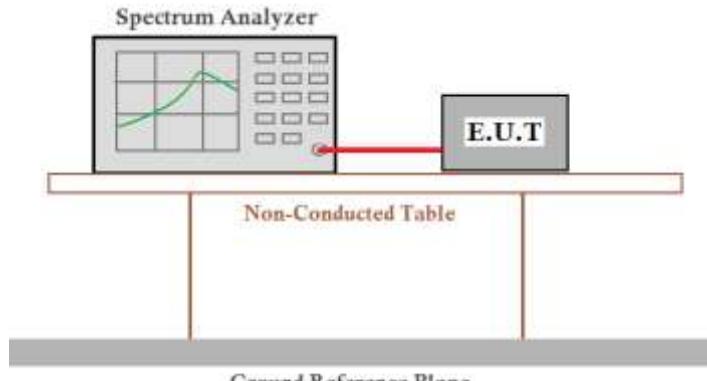


Middle channel



Highest channel

6.4 Occupy Bandwidth

Test Requirement:	FCC Part 15 C Section 15.247 (a)(2)
Test Method:	ANSI C63.4:2003 and KDB558074
Limit:	>500kHz
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to the E.U.T (Equipment Under Test) via a cable. The setup is placed on a Non-Conducted Table, which sits above a Ground Reference Plane.</p>
Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data

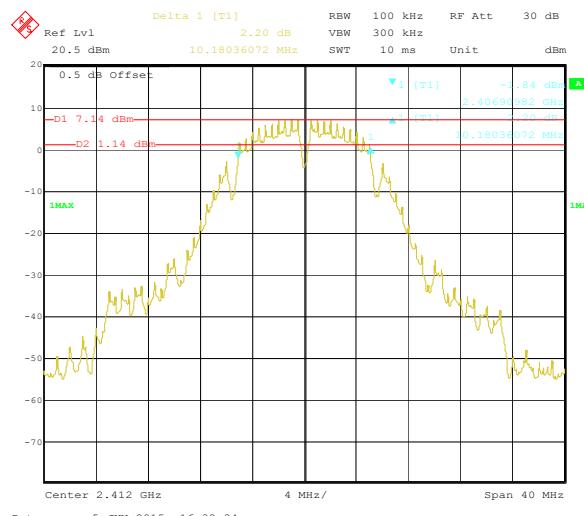
Test CH	6dB Emission Bandwidth (MHz)				Limit(kHz)	Result
	802.11b	802.11g	802.11n(H20)	802.11n(H40)		
Lowest	10.18	16.03	17.31	35.75	>500	Pass
Middle	10.26	16.11	17.31	36.07		
Highest	10.26	15.79	17.23	35.91		

Test CH	99% Occupy Bandwidth (MHz)				Limit(kHz)	Result
	802.11b	802.11g	802.11n(H20)	802.11n(H40)		
Lowest	12.75	16.35	17.64	35.75	N/A	N/A
Middle	12.91	16.43	17.64	35.91		
Highest	12.99	16.43	17.64	35.75		

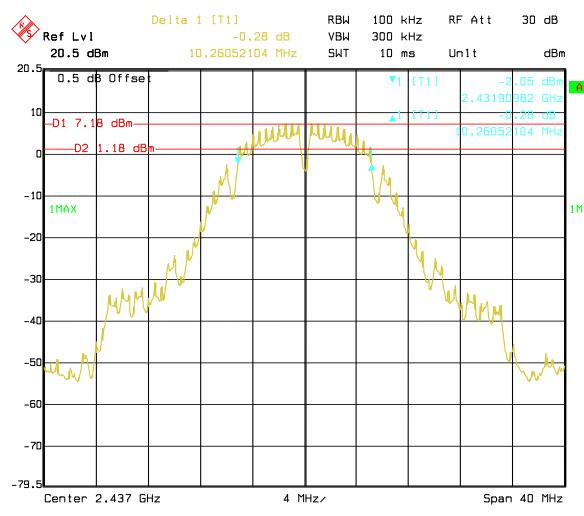
Test plot as follows:

6dB EBW

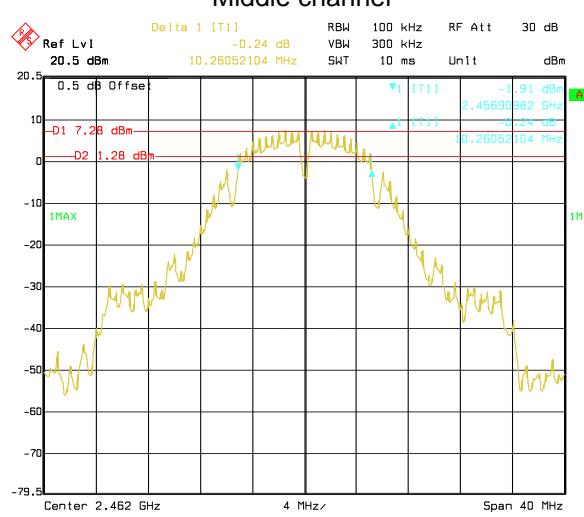
Test mode: 802.11b



Lowest channel

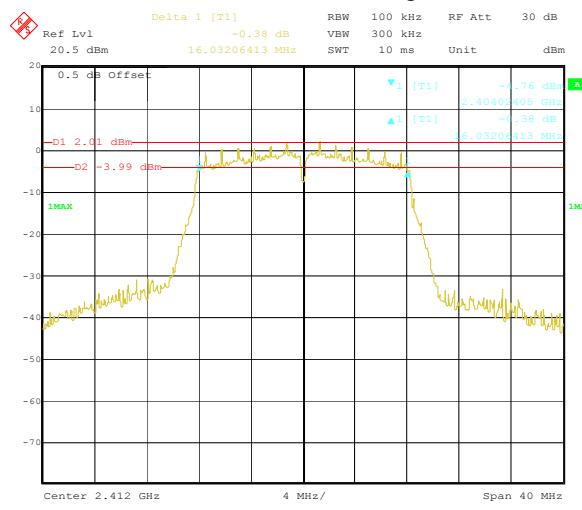


Middle channel

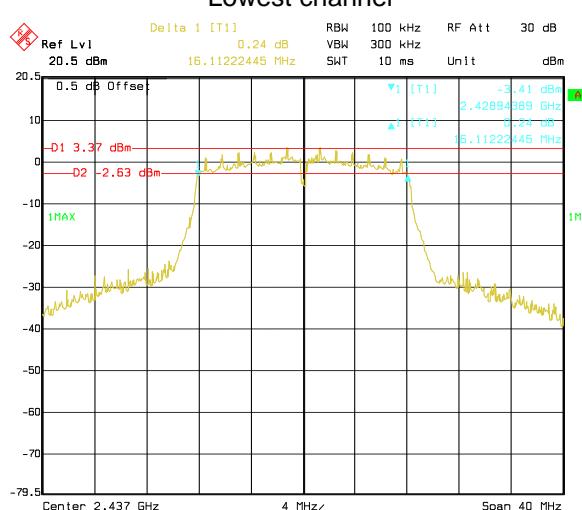


Highest channel

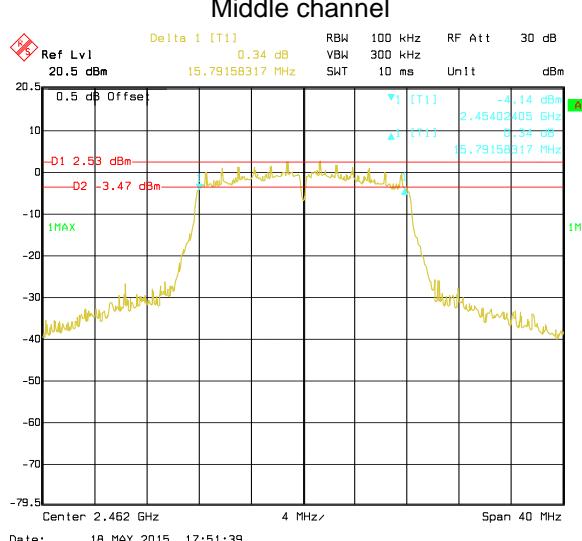
Test mode: 802.11g



Lowest channel

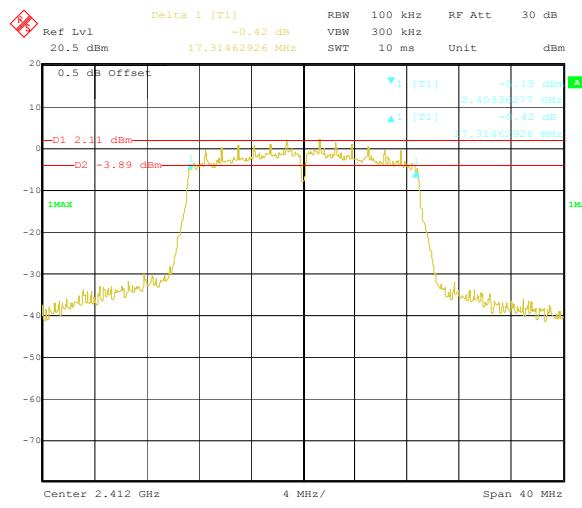


Middle channel

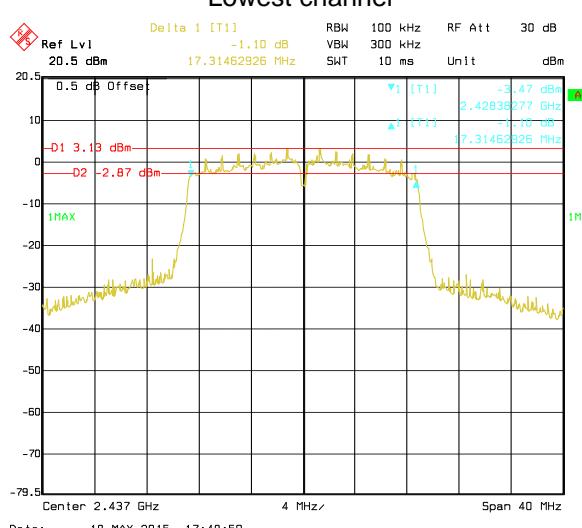


Highest channel

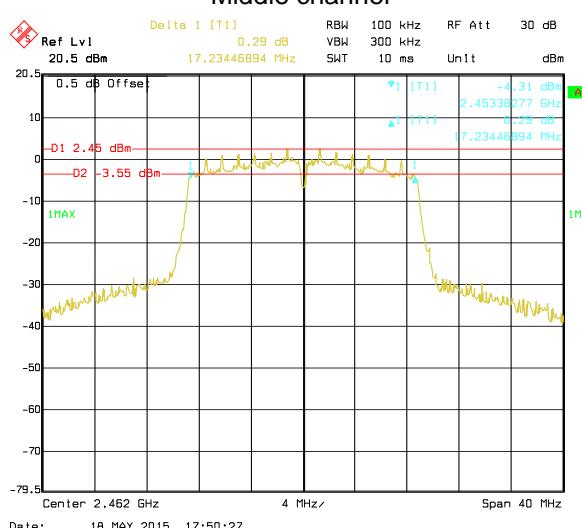
Test mode: 802.11n(H20)



Lowest channel

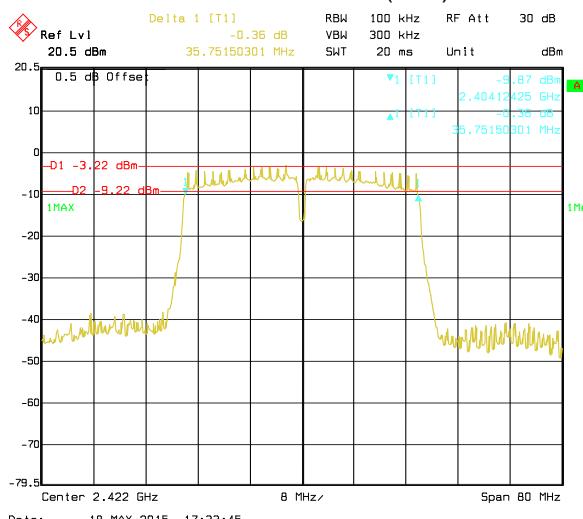


Middle channel

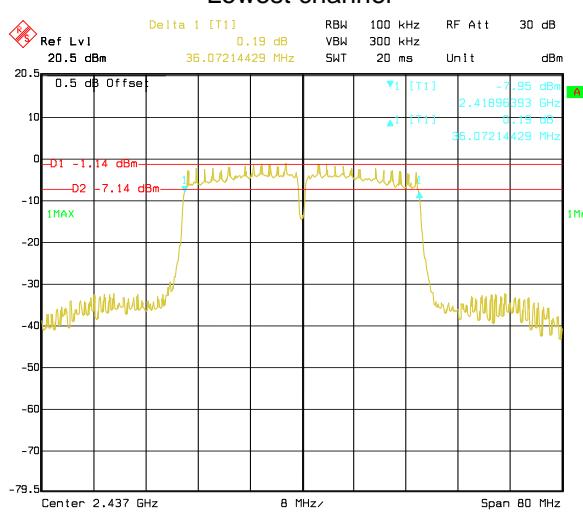


Highest channel

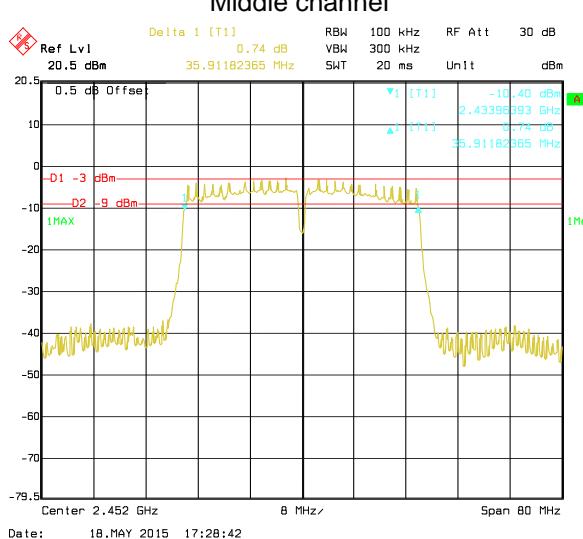
Test mode: 802.11n(H40)



Lowest channel



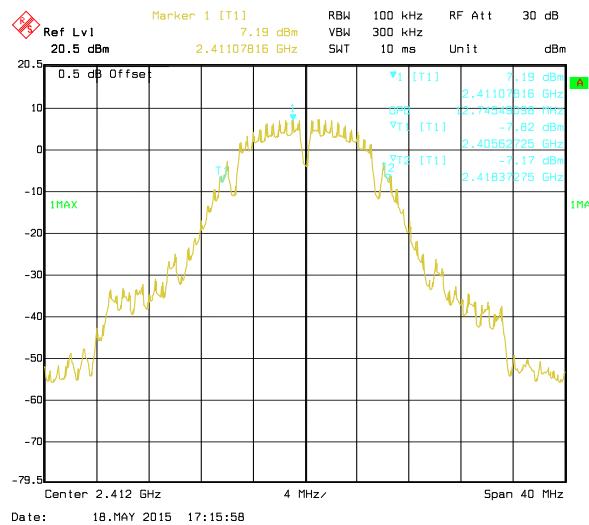
Middle channel



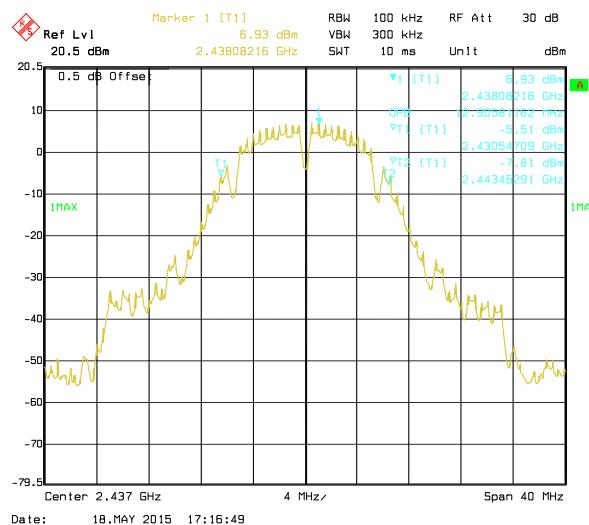
Highest channel

99% OBW

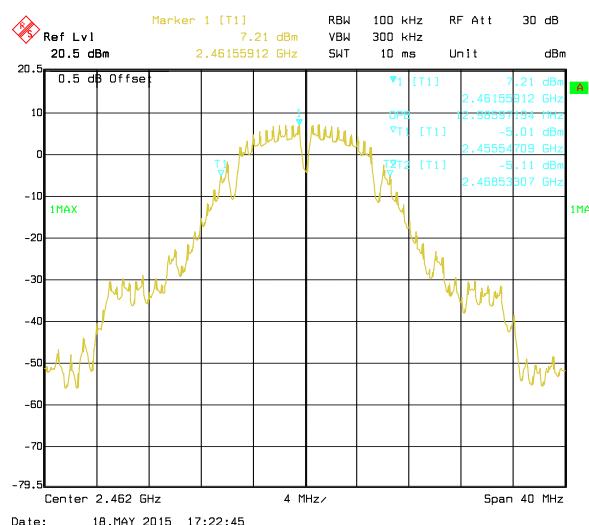
Test mode: 802.11b



Lowest channel

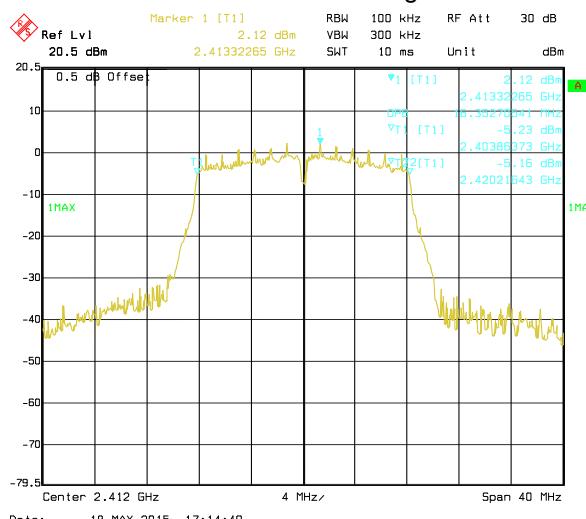


Middle channel

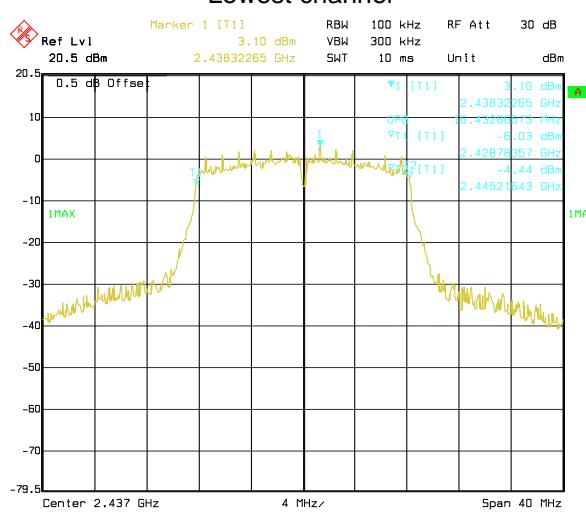


Highest channel

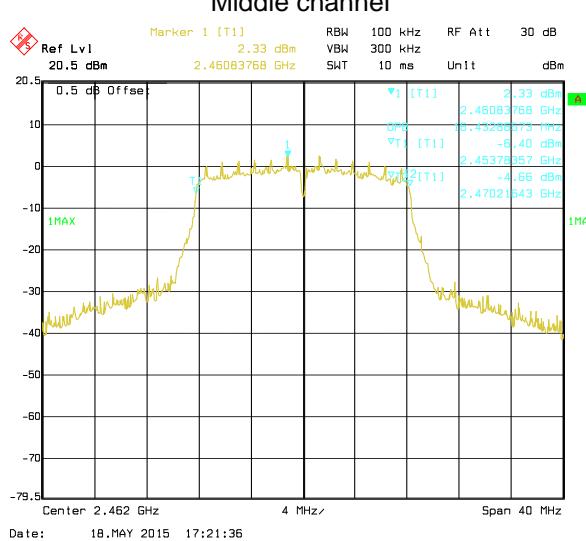
Test mode: 802.11g



Lowest channel

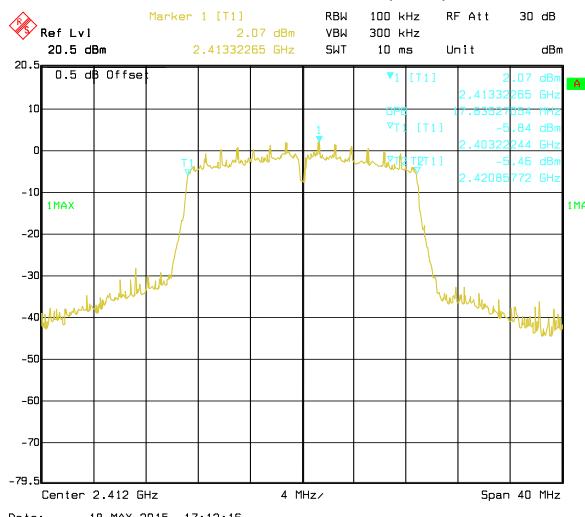


Middle channel

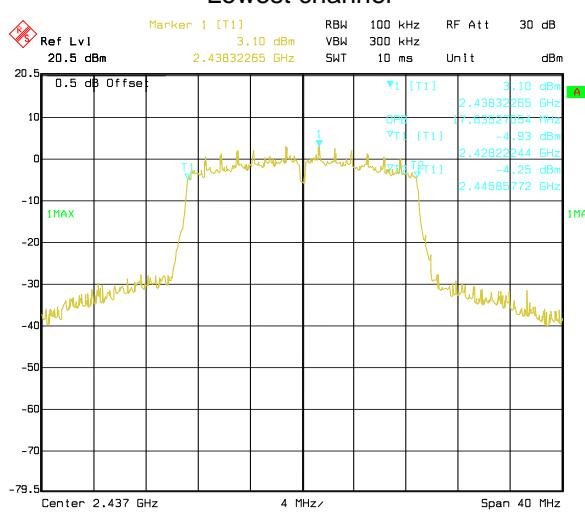


Highest channel

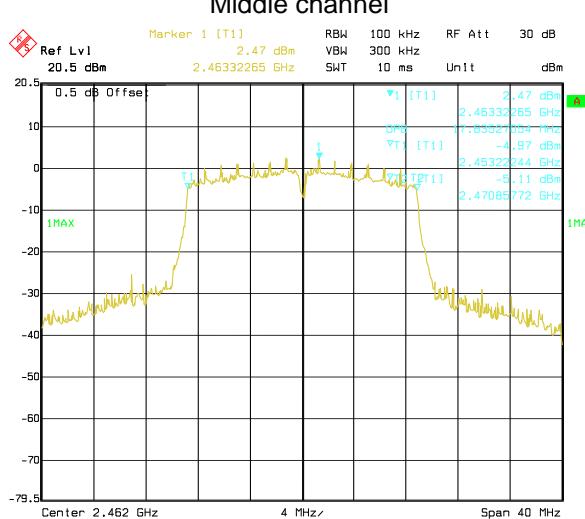
Test mode: 802.11n(H20)



Lowest channel

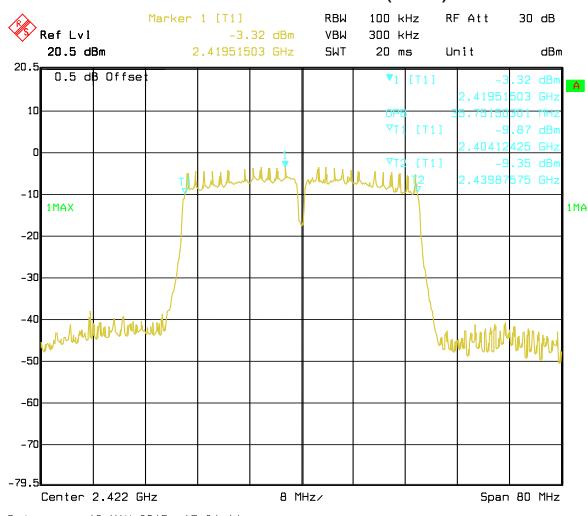


Middle channel

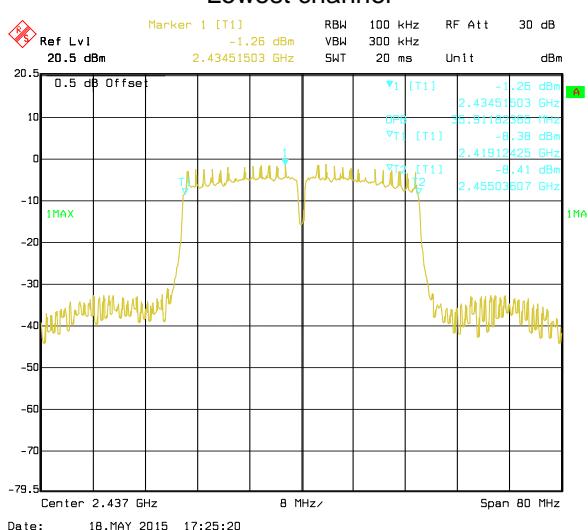


Highest channel

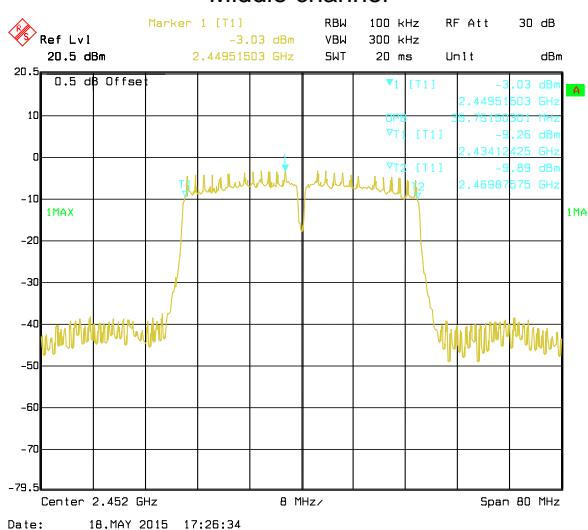
Test mode: 802.11n(H40)



Lowest channel

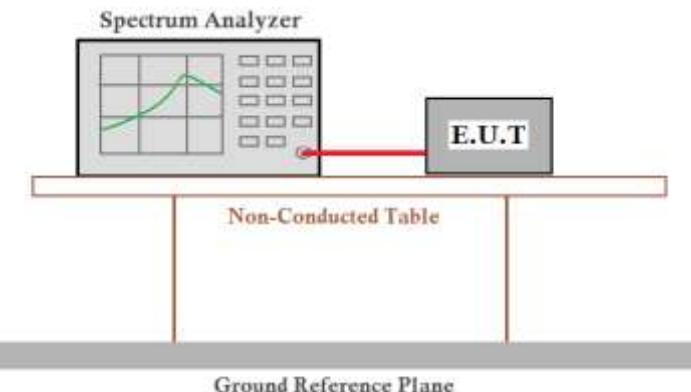


Middle channel



Highest channel

6.5 Power Spectral Density

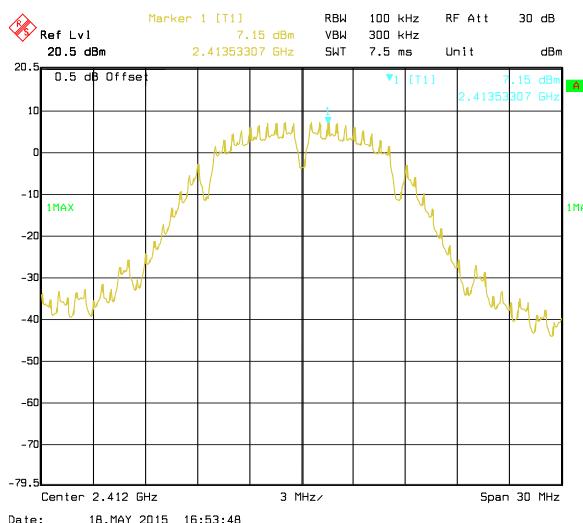
Test Requirement:	FCC Part 15 C Section 15.247 (e)
Test Method:	ANSI C63.4:2009 and KDB558074
Limit:	8dBm
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is positioned at the top left, displaying a graph with a green curve. A red cable connects it to a gray rectangular box labeled 'E.U.T'. This 'E.U.T' box is placed on a light-colored rectangular table labeled 'Non-Conducted Table'. Below the table is a thick gray horizontal bar labeled 'Ground Reference Plane'.</p>
Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data

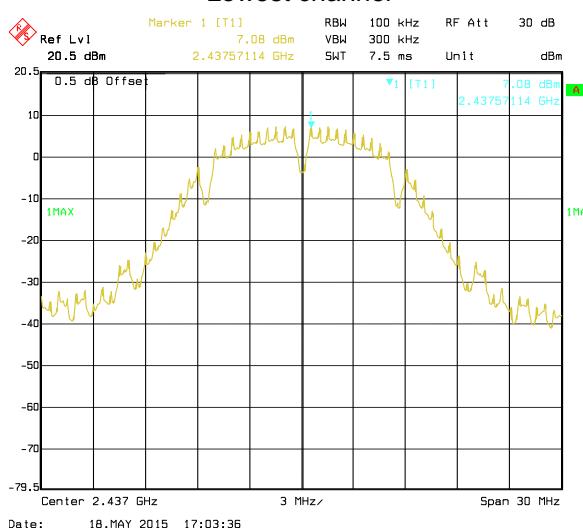
Test CH	Power Spectral Density (dBm)				Limit(dBm)	Result
	802.11b	802.11g	802.11n(H20)	802.11n(H40)		
Lowest	7.15	2.10	2.03	-3.32	8.00	Pass
Middle	7.08	3.17	3.19	-1.23		
Highest	7.06	2.18	2.46	-3.03		

Test plot as follows:

Test mode: 802.11b



Lowest channel

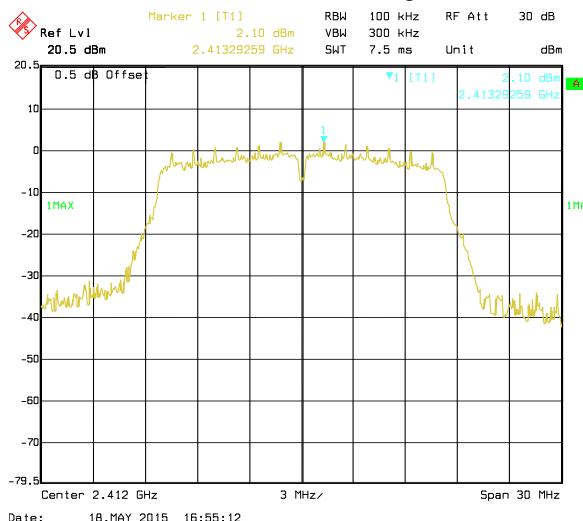


Middle channel

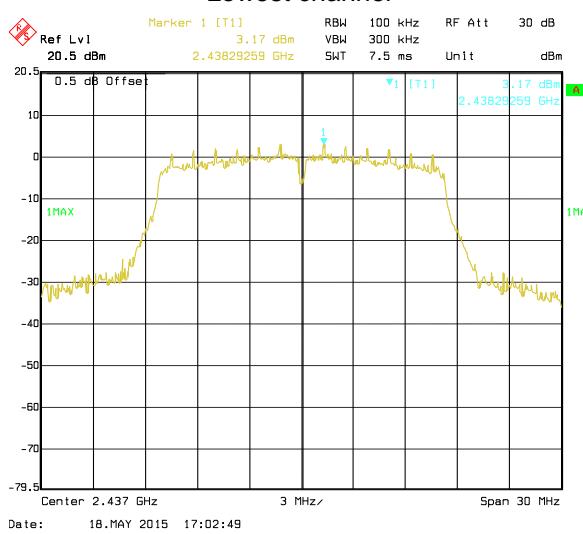


Highest channel

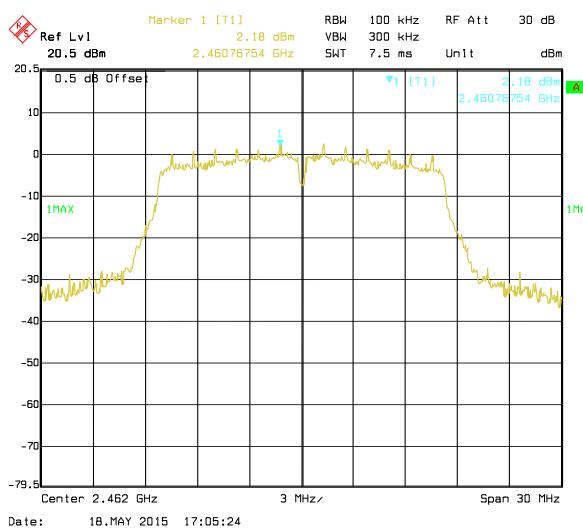
Test mode: 802.11g



Lowest channel

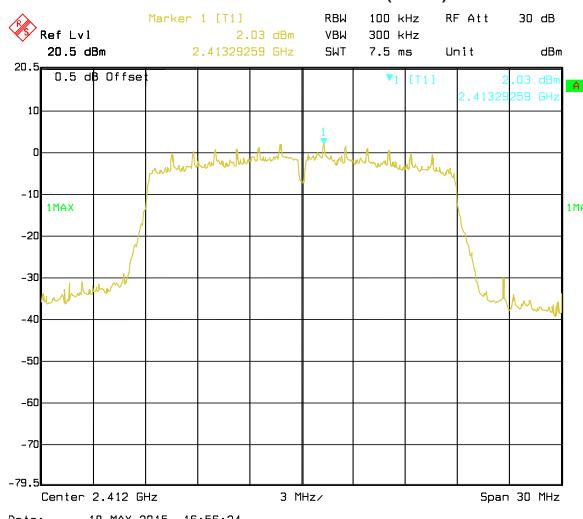


Middle channel

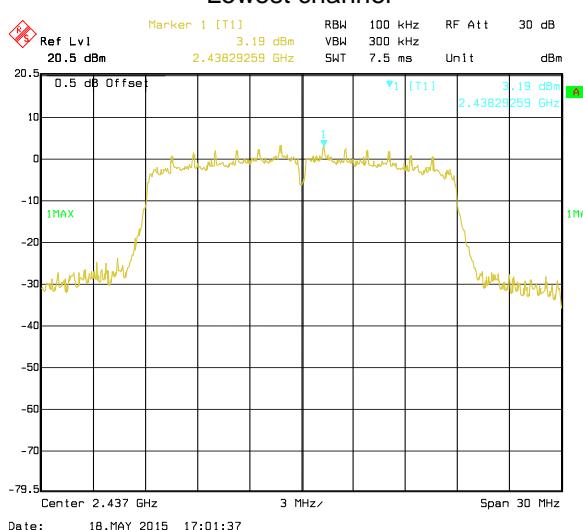


Highest channel

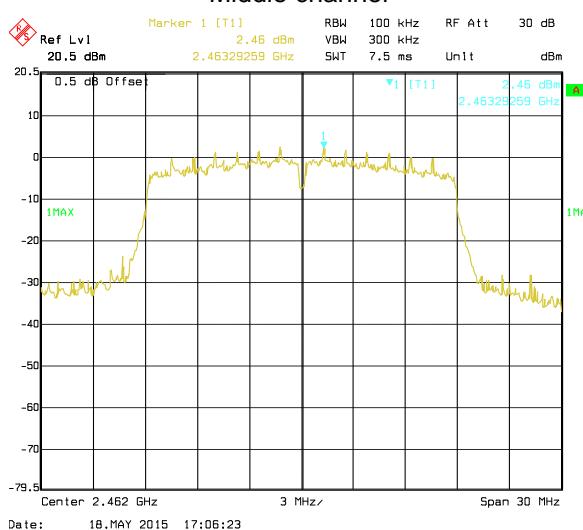
Test mode: 802.11n(H20)



Lowest channel

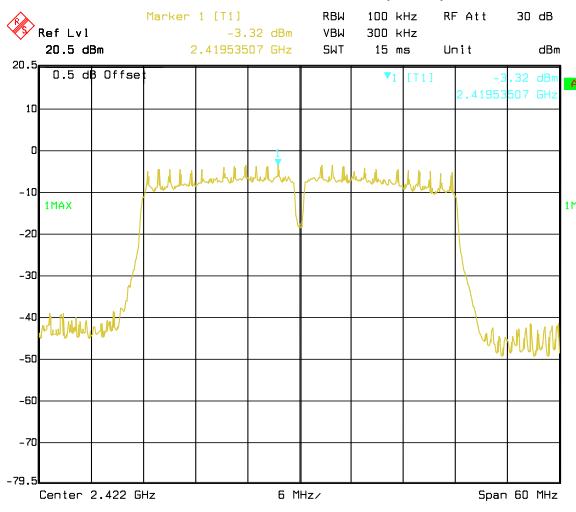


Middle channel

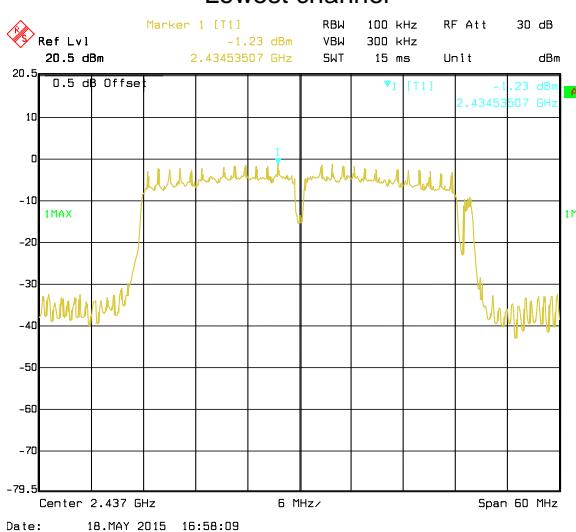


Highest channel

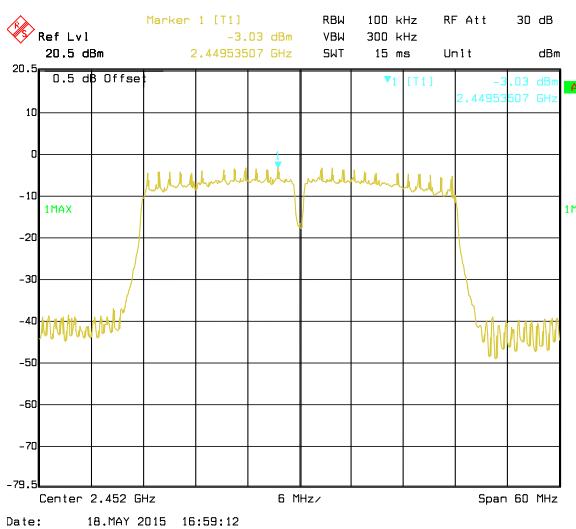
Test mode: 802.11n(H40)



Lowest channel



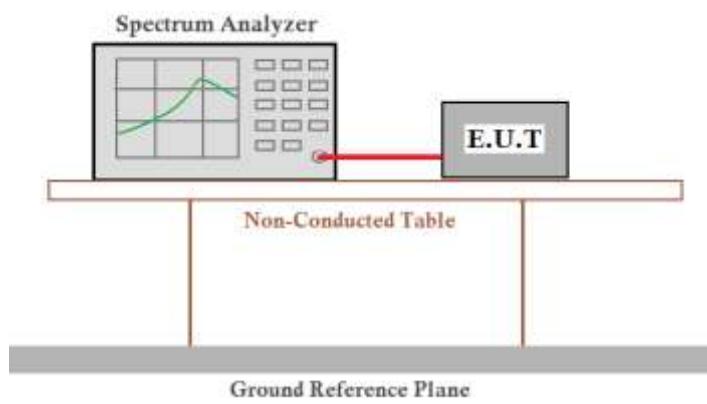
Middle channel



Highest channel

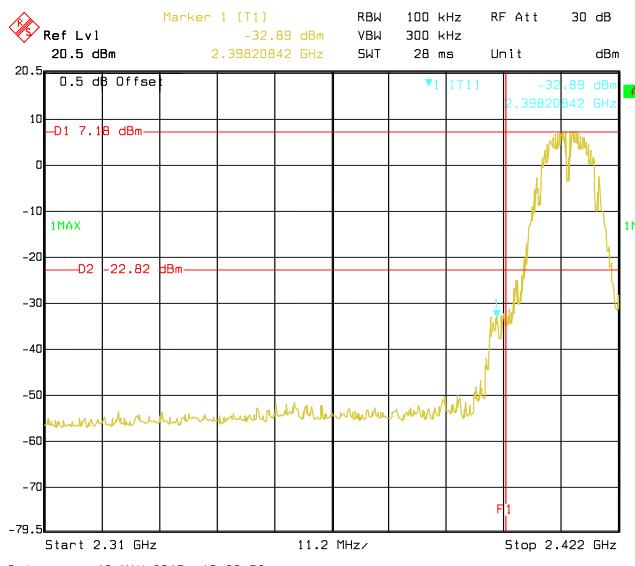
6.6 Band Edge

6.6.1 Conducted Emission Method

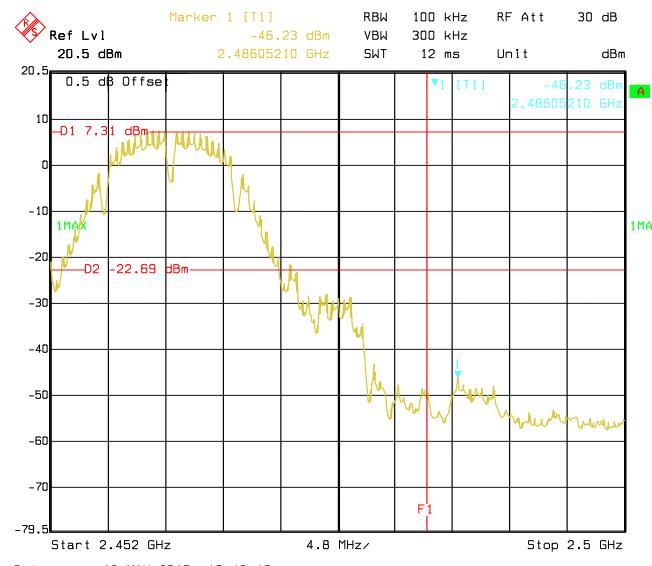
Test Requirement:	FCC Part 15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2009 and KDB558074
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 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:	
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:

802.11b

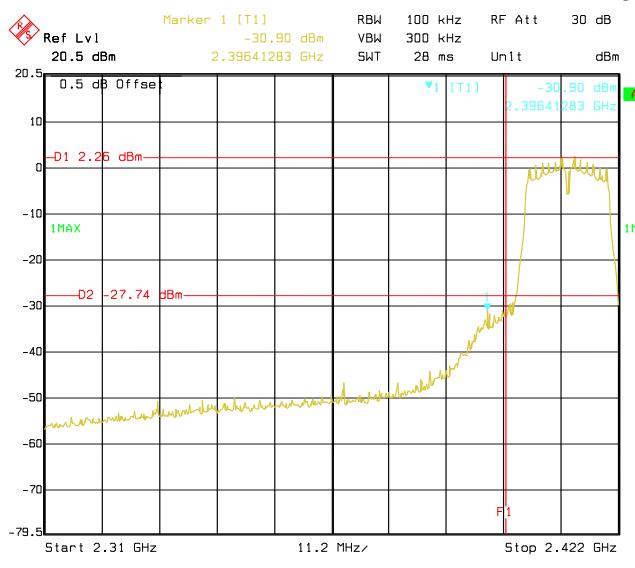


Lowest channel

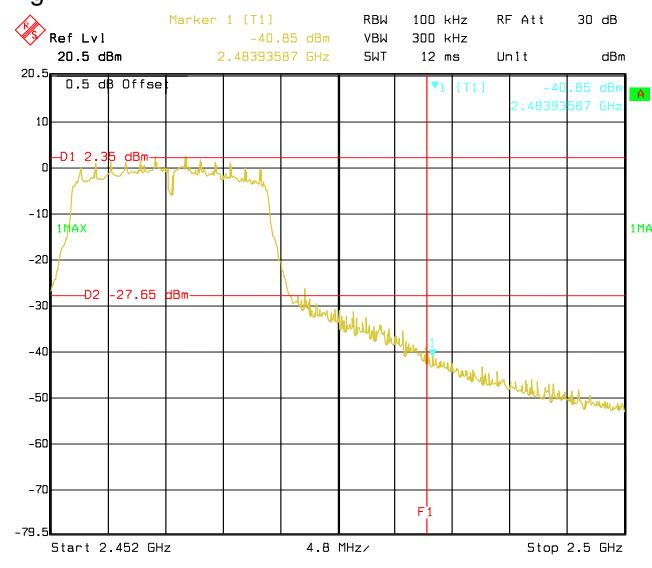


Highest channel

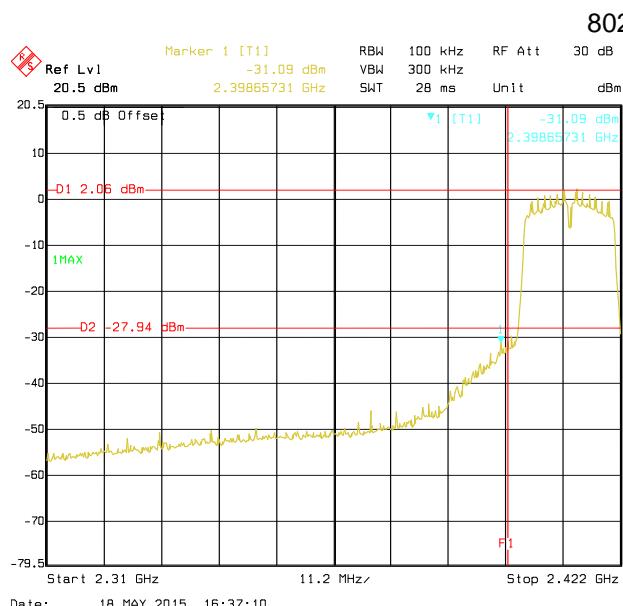
802.11g



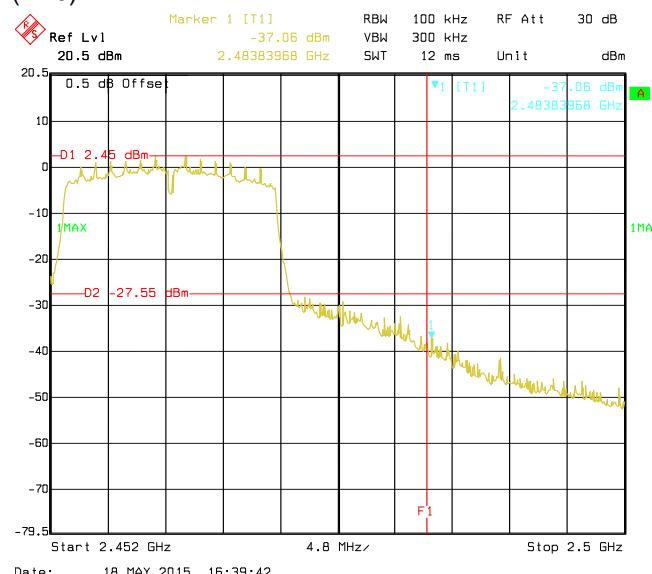
Lowest channel



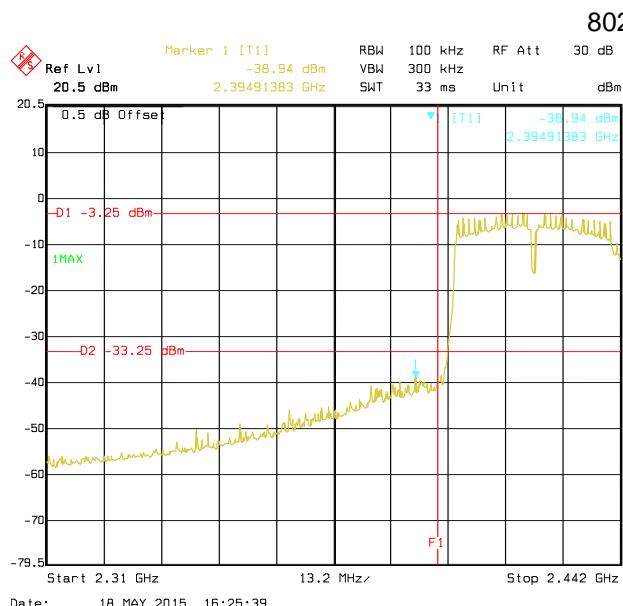
Highest channel



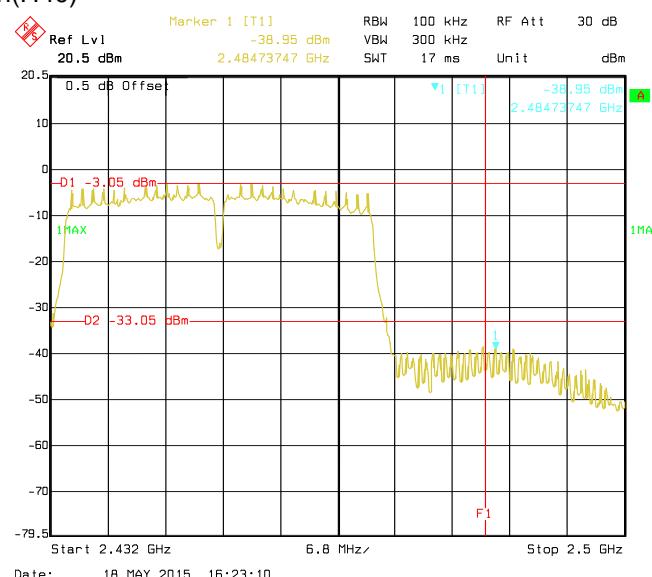
Lowest channel



Highest channel



Lowest channel



Highest channel

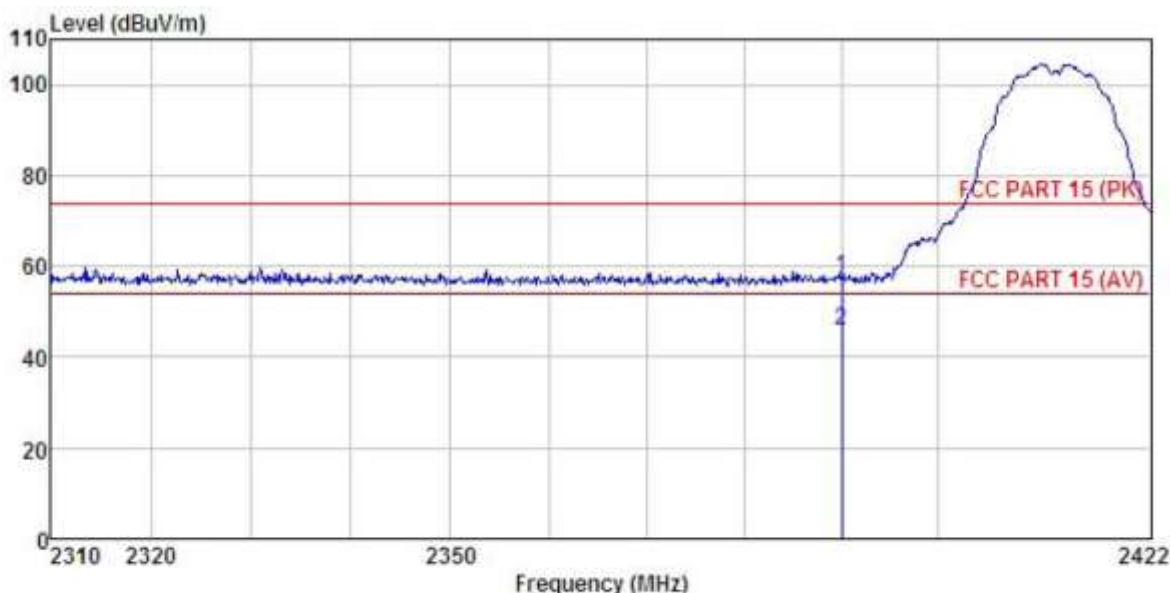
6.6.2 Radiated Emission Method

Test Requirement:	FCC Part 15 C Section 15.209 and 15.205																			
Test Method:	ANSI C63.4: 2009																			
Test Frequency Range:	2.3GHz to 2.5GHz																			
Test site:	Measurement Distance: 3m																			
Receiver setup:	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Detector</th> <th>RBW</th> <th>VBW</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>Above 1GHz</td> <td>Peak</td> <td>1MHz</td> <td>3MHz</td> <td>Peak Value</td> </tr> <tr> <td></td> <td>Peak</td> <td>1MHz</td> <td>10Hz</td> <td>Average Value</td> </tr> </tbody> </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 border="1"> <thead> <tr> <th>Frequency</th> <th>Limit (dBuV/m @3m)</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>Above 1GHz</td> <td>54.00</td> <td>Average Value</td> </tr> <tr> <td></td> <td>74.00</td> <td>Peak Value</td> </tr> </tbody> </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:	<ol style="list-style-type: none"> 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. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 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. 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. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 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:	<p>The diagram illustrates the test setup for radiated emission. An EUT is positioned on a Turn Table, which is 0.8m off the ground. The Turn Table is at a 3m camber from the base of an Antenna Tower. The Antenna Tower holds a Horn Antenna at a height of 4m above the ground. A Spectrum Analyzer is connected to the Horn Antenna through an Amplifier. The distance between the EUT and the Horn Antenna is 3m.</p>																			
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:



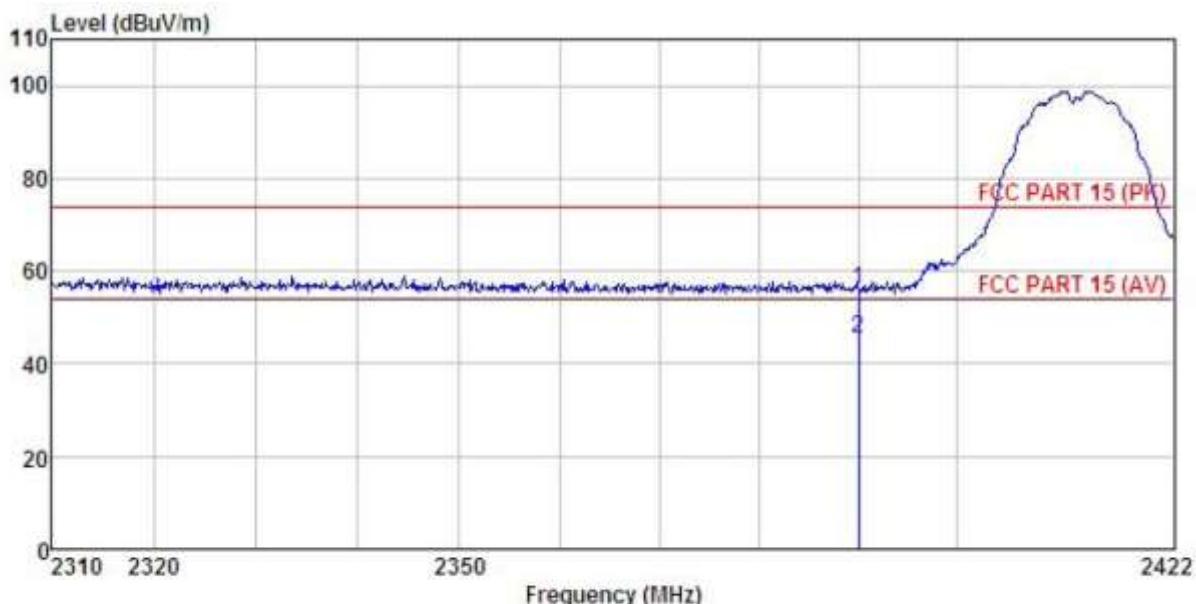
Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
EUT : Smart phone
Model : Ultra
Test mode : B-L
Power Rating : AC120W/60Hz
Environment : Temp:25.5°C Humi:55%
Test Engineer: Colin
REMARK :

Freq	ReadAntenna	Cable	Preamp	Limit	Over	Remark
	Freq	Level Factor	Loss Factor			
MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	2390.000	23.32	27.58	6.63	0.00	57.53
2	2390.000	11.68	27.58	6.63	0.00	45.89
				74.00	-16.47	Peak
				54.00	-8.11	Average

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.

Vertical:



Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
EUT : Smart phone
Model : Ultra
Test mode : B-L
Power Rating : AC120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Colin
REMARK :

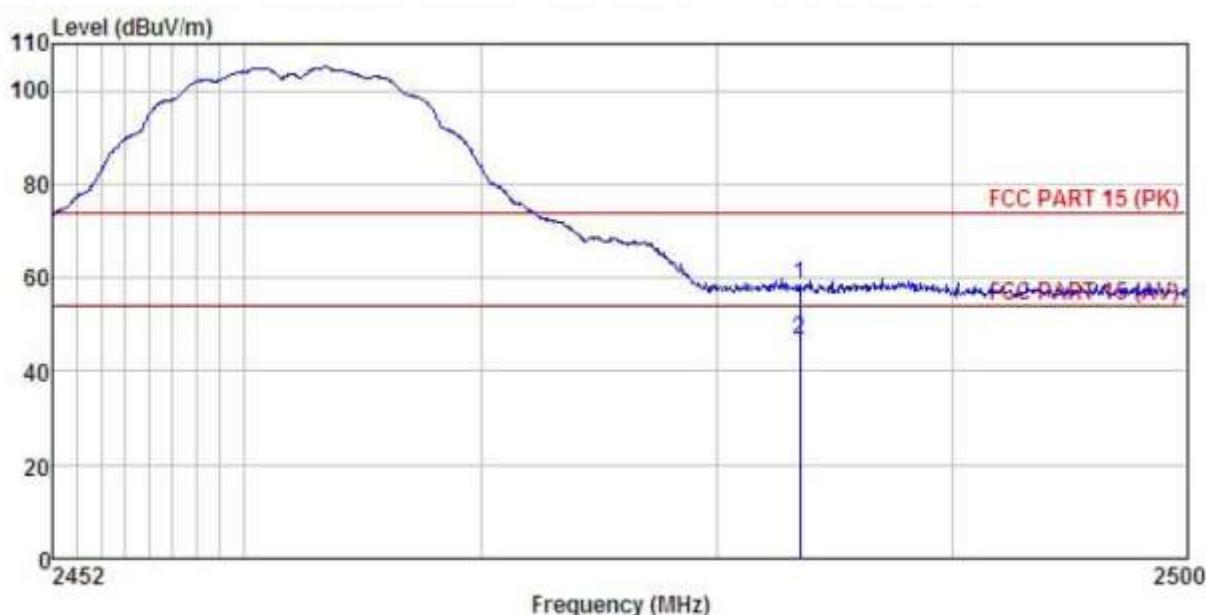
	Freq	Read	Antenna	Cable	Preamp	Limit	Over	
	MHz	dBuV	Level	Factor	Loss Factor	Level	Line	Limit Remark
1	2390.000	21.90	27.58	6.63	0.00	56.11	74.00	-17.89 Peak
2	2390.000	11.08	27.58	6.63	0.00	45.29	54.00	-8.71 Average

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 channel: Highest

Horizontal:



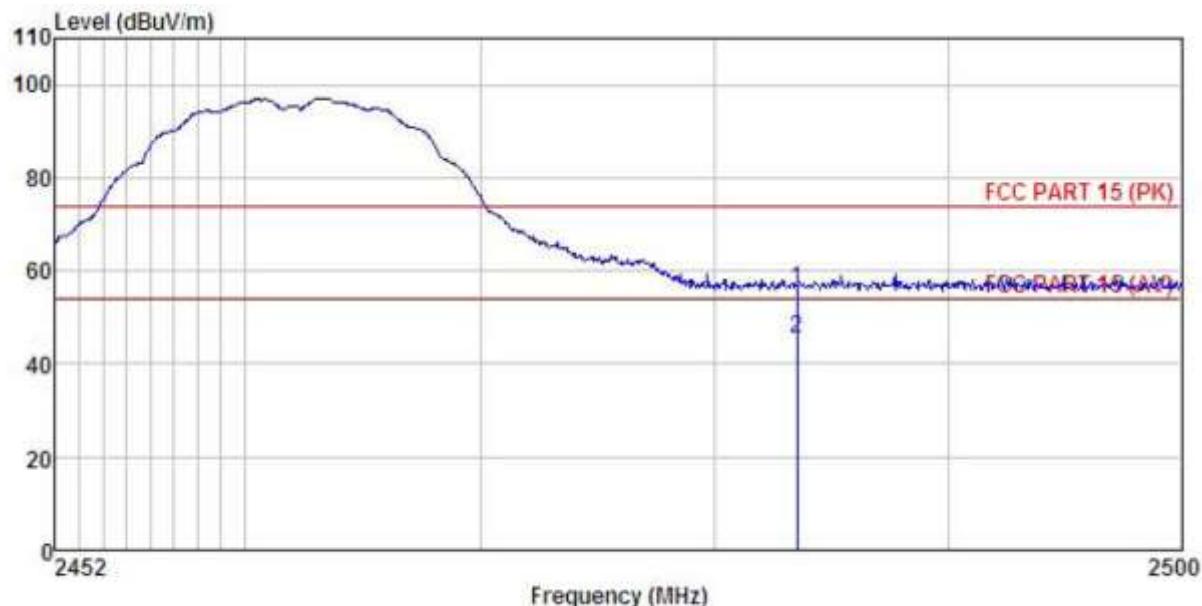
Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
EUT : Smart phone
Model : Ultra
Test mode : B-H
Power Rating : AC120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Colin
REMARK :

	Read	Antenna	Cable	Preamp	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m
1	2483.500	24.18	27.52	6.85	0.00	58.55	74.00 -15.45 Peak
2	2483.500	12.12	27.52	6.85	0.00	46.49	54.00 -7.51 Average

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.

Vertical:



Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
EUT : Smart phone
Model : Ultra
Test mode : B-H
Power Rating : AC120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Colin
REMARK :

	Read	Antenna	Cable	Preamp	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m
1	2483.500	21.71	27.52	6.85	0.00	56.08	74.00 -17.92 Peak
2	2483.500	10.92	27.52	6.85	0.00	45.29	54.00 -8.71 Average

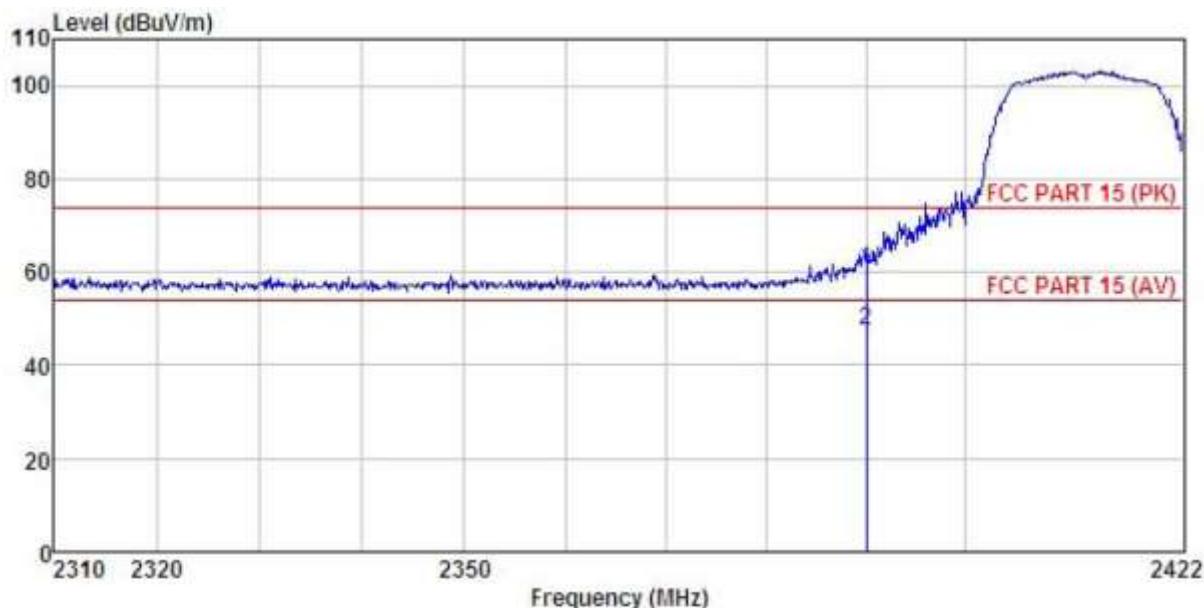
Remark:

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.

802.11g

Test channel: Lowest

Horizontal:



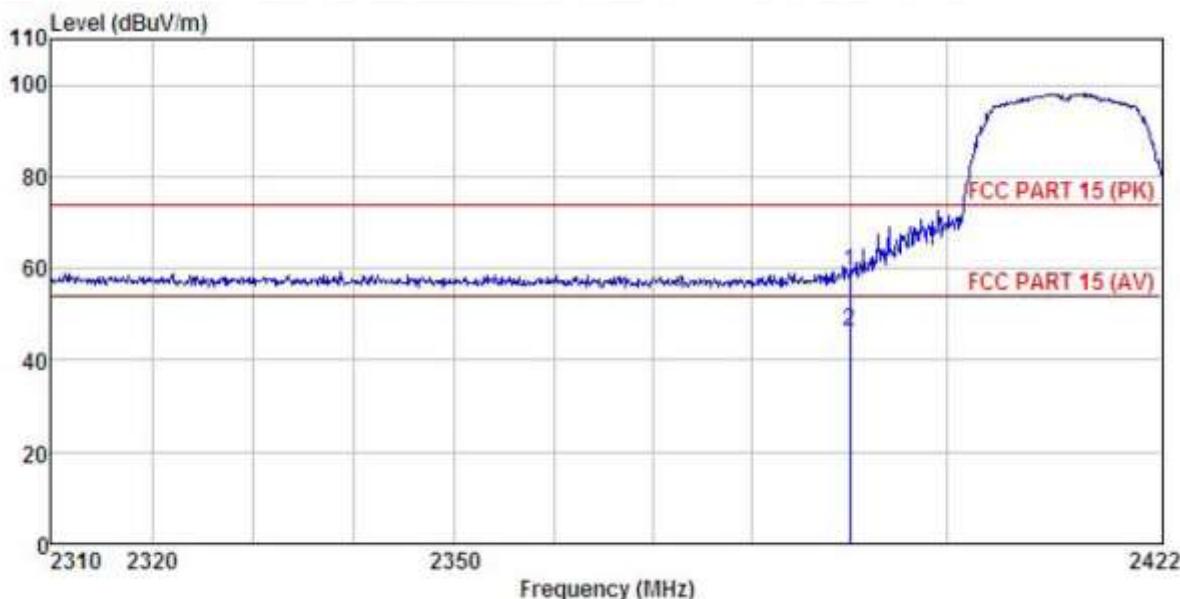
Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
EUT : Smart phone
Model : Ultra
Test mode : G-L
Power Rating : AC120V/60Hz
Environment : Temp:25.5°C Humi:55%
Test Engineer: Colin
REMARK :

Freq	ReadAntenna	Cable	Preamp	Limit	Over	Remark	
	Level	Factor	Loss				
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1 2390.000	26.47	27.58	6.63	0.00	60.68	74.00	-13.32 Peak
2 2390.000	13.47	27.58	6.63	0.00	47.68	54.00	-6.32 Average

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.

Vertical:



Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
EUT : Smart phone
Model : Ultra
Test mode : G-L
Power Rating : AC120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Colin
REMARK :

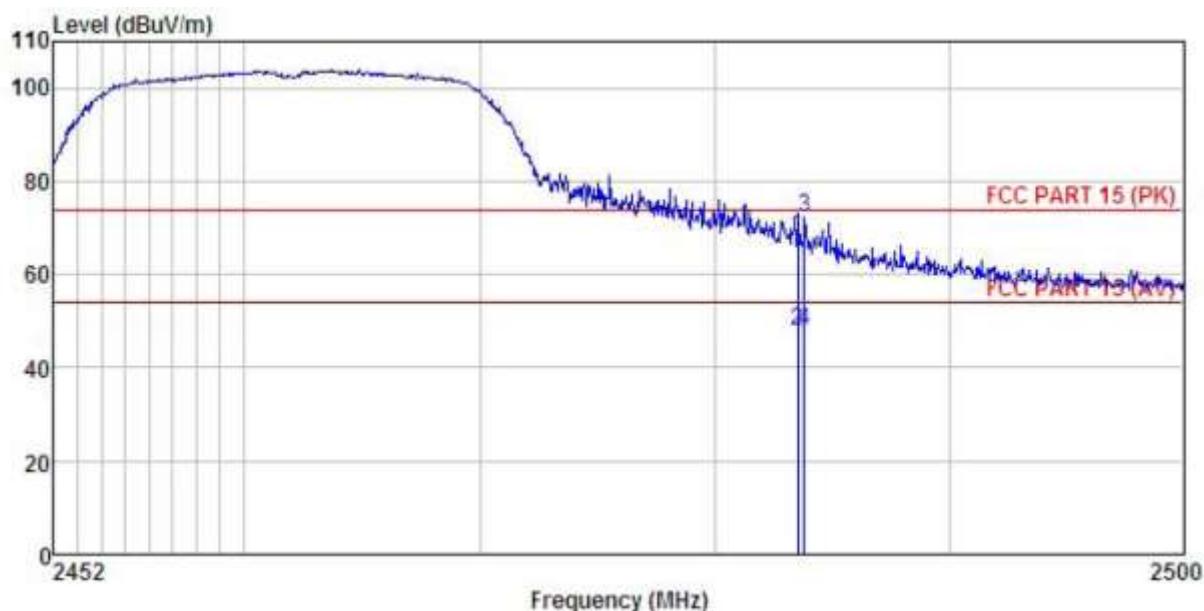
Freq	ReadAntenna	Cable	Preamp	Limit	Over	Remark	
	Level	Factor	Loss Factor	Level	Line	Limit	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1 2390.000	25.17	27.58	6.63	0.00	59.38	74.00	-14.62 Peak
2 2390.000	11.89	27.58	6.63	0.00	46.10	54.00	-7.90 Average

Remark:

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

Test channel: Highest

Horizontal:



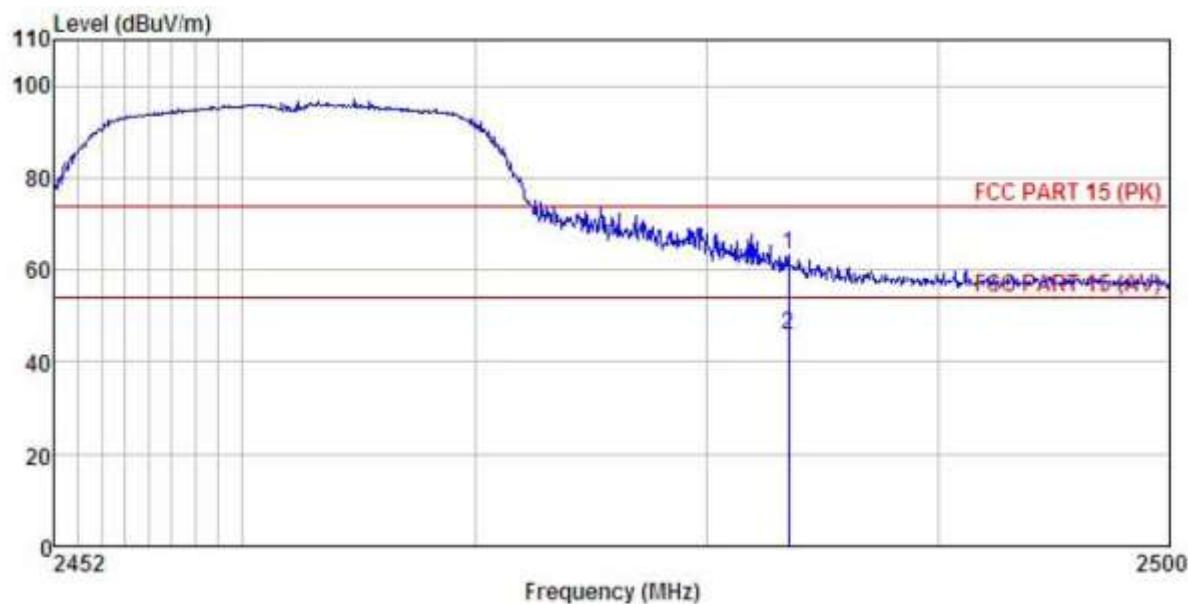
Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
EUT : Smart phone
Model : Ultra
Test mode : G-H
Power Rating : AC120V/60Hz
Environment : Temp:25.5°C Humi:55%
Test Engineer: Colin
REMARK :

	Read	Antenna	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	33.78	27.52	6.85	0.00	68.15	74.00 -5.85 Peak
2	2483.500	13.50	27.52	6.85	0.00	47.87	54.00 -6.13 Average
3	2483.816	37.71	27.52	6.85	0.00	72.08	74.00 -1.92 Peak
4	2483.816	13.46	27.52	6.85	0.00	47.83	54.00 -6.17 Average

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.

Vertical:



Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
EUT : Smart phone
Model : Ultra
Test mode : G-H
Power Rating : AC120V/60Hz
Environment : Temp:25.5°C Humi:55%
Test Engineer: Colin
REMARK :

Freq	ReadAntenna	Cable	Preamp	Limit	Over	Remark	
	Level	Factor	Loss	Level	Line		
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2483.500	28.78	27.52	6.85	0.00	63.15	74.00 -10.85 Peak
2	2483.500	11.38	27.52	6.85	0.00	45.75	54.00 -8.25 Average

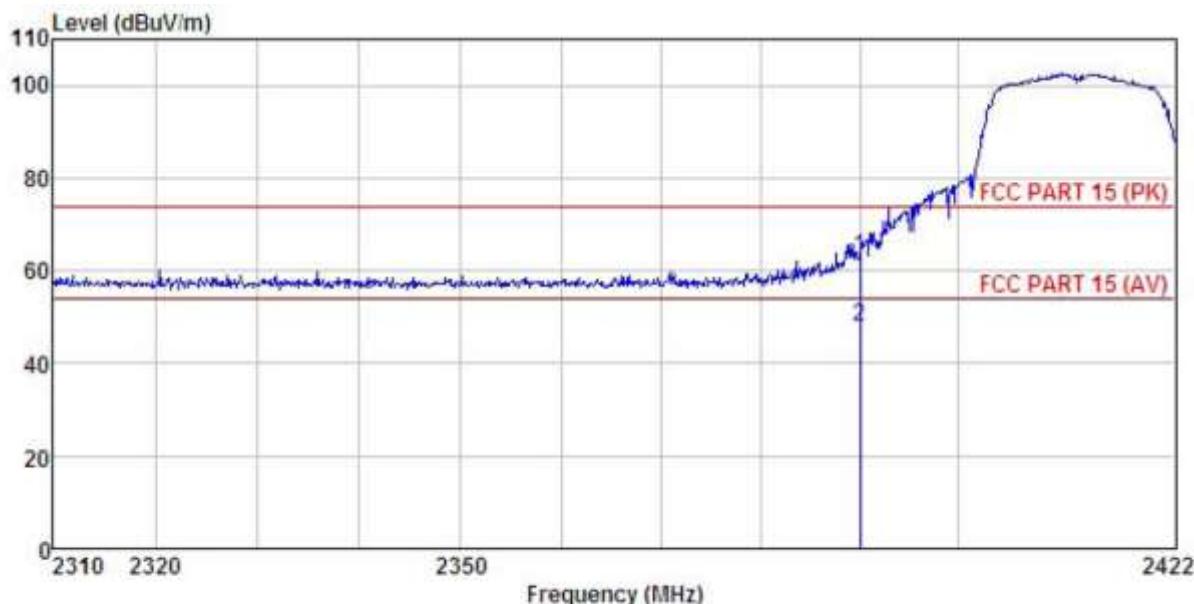
Remark:

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.

802.11n (H20)

Test channel: Lowest

Horizontal:



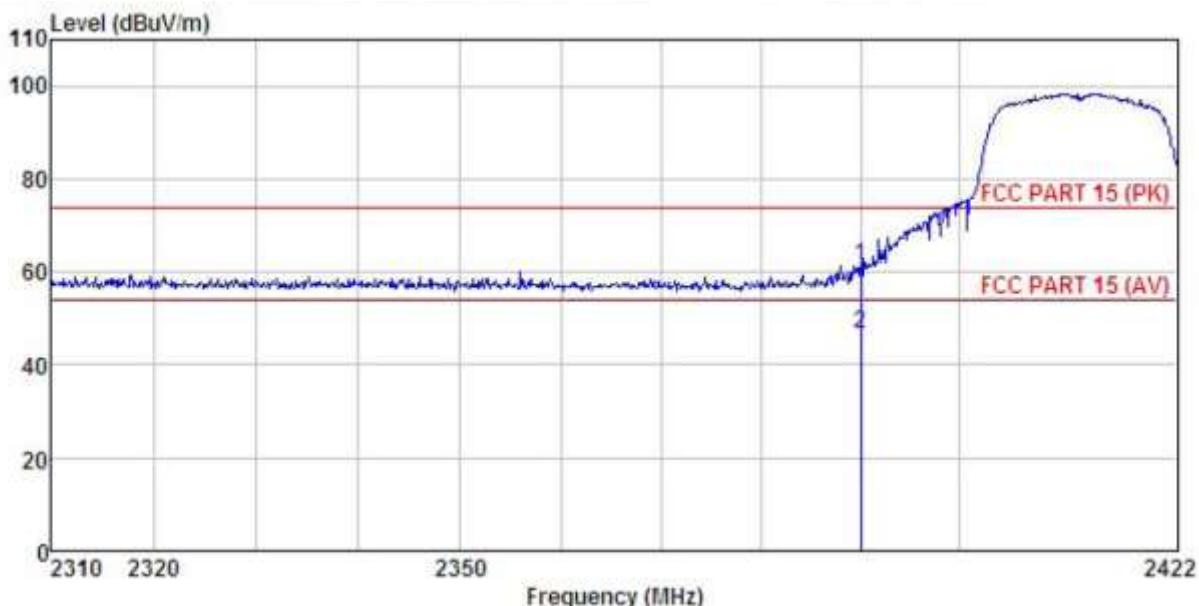
Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
EUT : Smart phone
Model : Ultra
Test mode : N20-L
Power Rating : AC120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Colin
REMARK :

Freq	ReadAntenna Level		Cable Loss		Preamp Factor		Limit Level	Line Limit	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m			
1	2390.000	28.67	27.58	6.63	0.00	62.88	74.00	-11.12	Peak	
2	2390.000	13.87	27.58	6.63	0.00	48.08	54.00	-5.92	Average	

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.

Vertical:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 EUT : Smart phone
 Model : Ultra
 Test mode : N20-L
 Power Rating : AC120V/60Hz
 Environment : Temp:25.5°C Huni:55%
 Test Engineer: Colin
 REMARK :

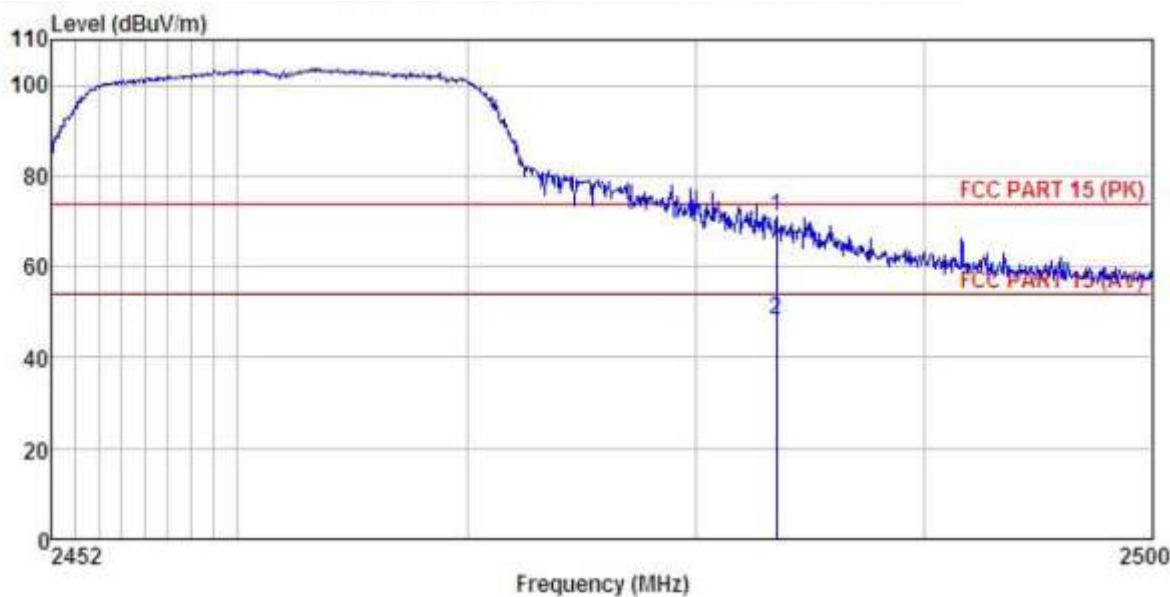
Freq	ReadAntenna Level		Cable Loss	Preamp Factor	Limit Level	Line Limit	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	
1	2390.000	27.11	27.58	6.63	0.00	61.32	74.00	-12.68 Peak
2	2390.000	12.27	27.58	6.63	0.00	46.48	54.00	-7.52 Average

Remark:

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

Test channel: Highest

Horizontal:



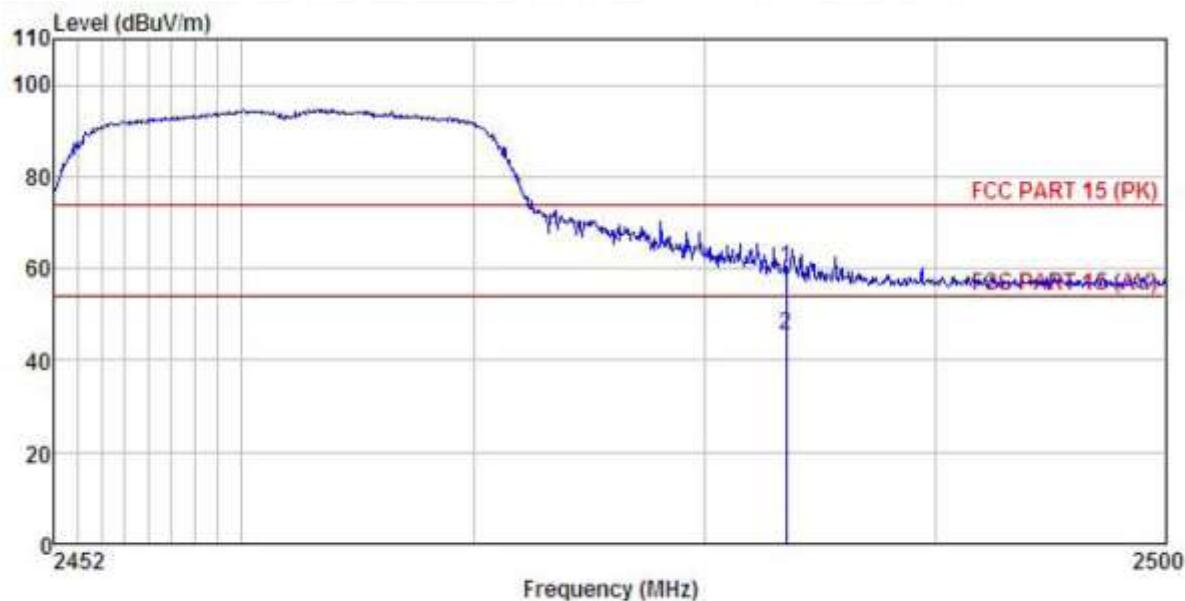
Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
EUT : Smart phone
Model : Ultra
Test mode : N20-H
Power Rating : AC120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Colin
REMARK :

	ReadAntenna	Cable	Preamp	Limit	Over	Remark
Freq	Level	Factor	Loss Factor	Level	Line	Limit
MHz	dBuV	dB/m	dB	dB	dBuV/m	dB
1	2483.500	36.47	27.52	6.85	0.00	70.84
2	2483.500	13.75	27.52	6.85	0.00	48.12
					74.00	-3.16 Peak
					54.00	-5.88 Average

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.

Vertical:



Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL

EUT : Smart phone

Model : Ultra

Test mode : N20-H

Power Rating : AC120V/60Hz

Environment : Temp:25.5°C Huni:55%

Test Engineer: Colin

REMARK :

Freq	ReadAntenna	Cable	Preamp	Limit	Over	Remark	
	Level	Factor	Loss Factor				
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2483.500	25.62	27.52	6.85	0.00	59.99	74.00 -14.01 Peak
2	2483.500	11.29	27.52	6.85	0.00	45.66	54.00 -8.34 Average

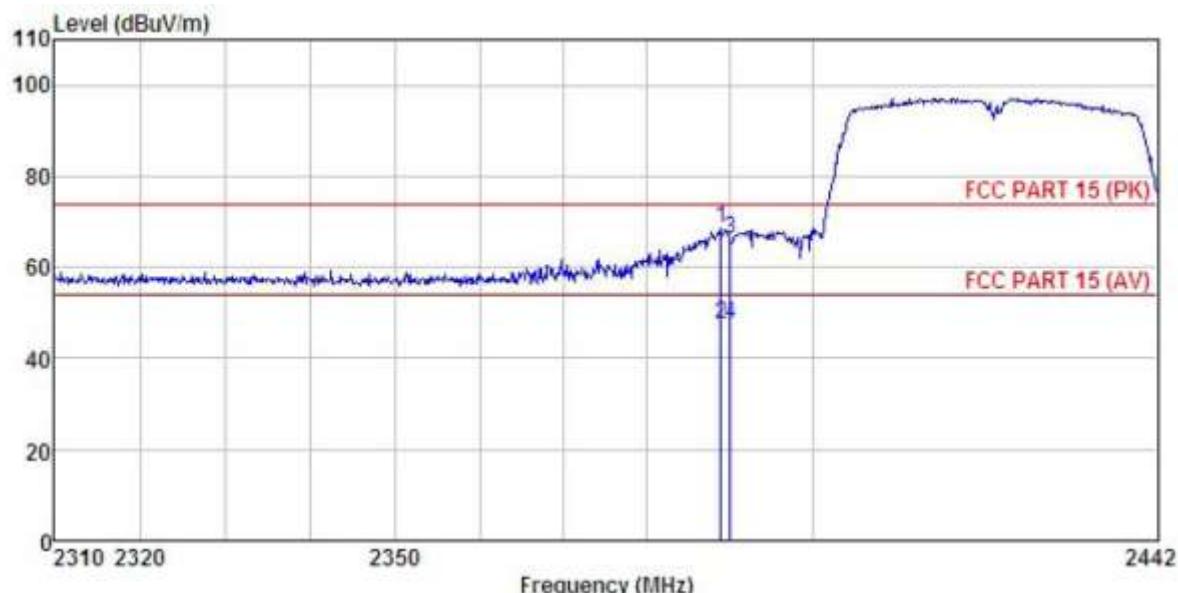
Remark:

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.

802.11n (H40)

Test channel: Lowest

Horizontal:



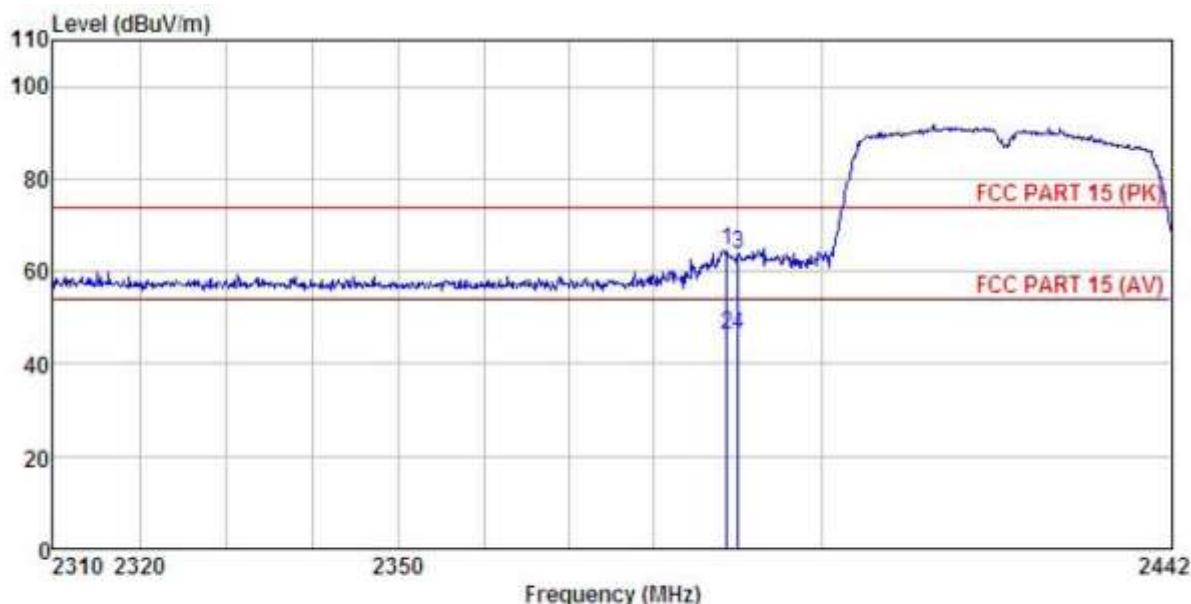
Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL.
 EUT : Smart phone
 Model : Ultra
 Test mode : N40-L
 Power Rating : AC120V/60Hz
 Environment : Temp:25.5°C Huni:55%
 Test Engineer: Colin
 REMARK :

Freq	ReadAntenna		Cable Preamp		Limit Line	Over Limit	Remark
	Freq	Level Factor	Cable Loss	Preamp Factor			
MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB	
1 2388.849	34.25	27.58	6.63	0.00	68.46	74.00	-5.54 Peak
2 2388.849	13.19	27.58	6.63	0.00	47.40	54.00	-6.60 Average
3 2390.000	32.01	27.58	6.63	0.00	66.22	74.00	-7.78 Peak
4 2390.000	13.38	27.58	6.63	0.00	47.59	54.00	-6.41 Average

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.

Vertical:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL

EUT : Smart phone

Model : Ultra

Test mode : N40-L

Power Rating : AC120V/60Hz

Environment : Temp:25.5°C Huni:55%

Test Engineer: Colin

REMARK :

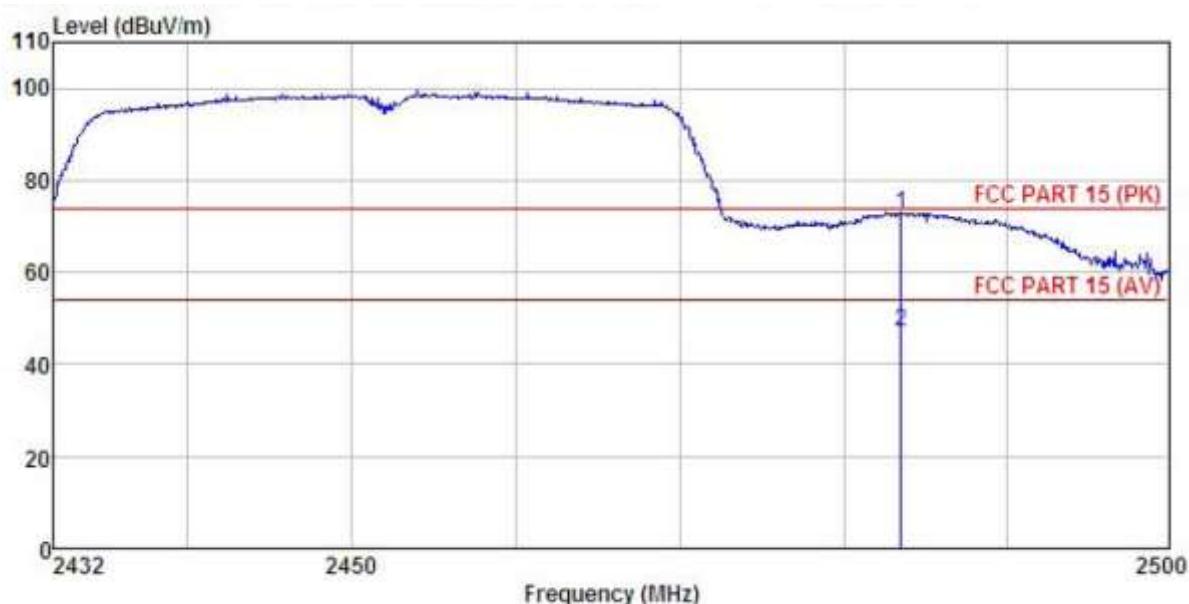
Freq	ReadAntenna		Cable	Preamp	Limit	Over	Remark
	MHz	Level	Factor	Loss Factor			
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	2388.716	30.48	27.58	6.63	0.00	64.69	74.00 -9.31 Peak
2	2388.716	11.94	27.58	6.63	0.00	46.15	54.00 -7.85 Average
3	2390.000	29.37	27.58	6.63	0.00	63.58	74.00 -10.42 Peak
4	2390.000	12.05	27.58	6.63	0.00	46.26	54.00 -7.74 Average

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 channel: Highest

Horizontal:



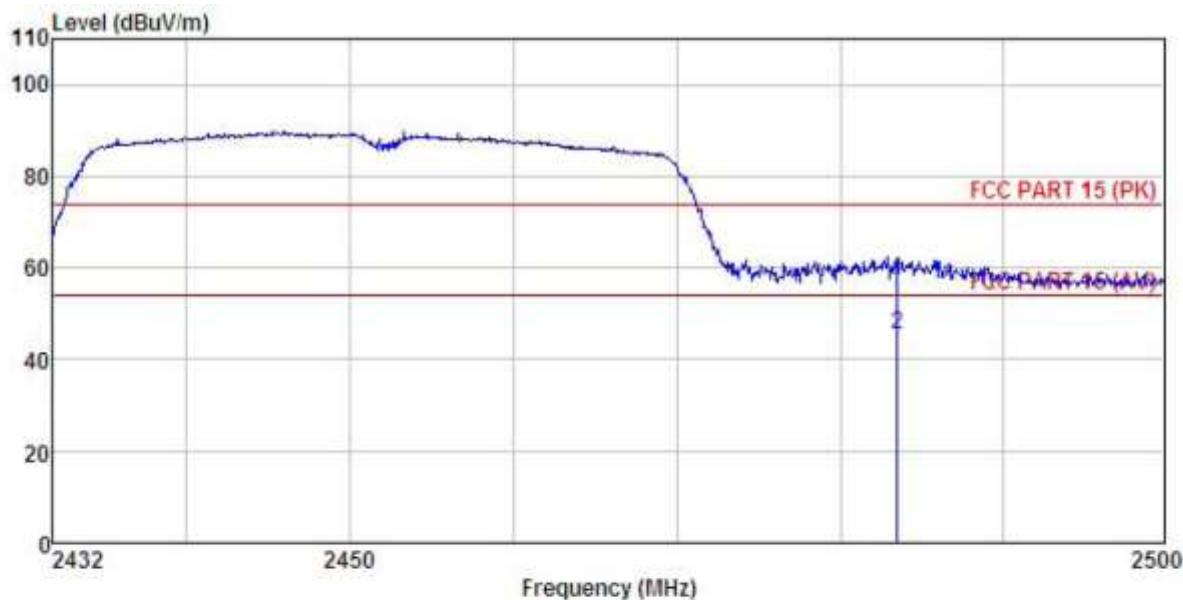
Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL.
EUT : Smart phone
Model : Ultra
Test mode : N40-H
Power Rating : AC120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Colin
REMARK :

Freq	Read	Antenna	Cable	Preamp	Limit	Over	Remark
	Level	Factor	Loss	Factor			
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2483.500	38.18	27.52	6.85	0.00	72.55	74.00 -1.45 Peak
2	2483.500	12.63	27.52	6.85	0.00	47.00	54.00 -7.00 Average

Remark:

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

Vertical:



Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
EUT : Smart phone
Model : Ultra
Test mode : N40-H
Power Rating : AC120V/60Hz
Environment : Temp:25.5°C Humi:55%
Test Engineer: Colin
REMARK :

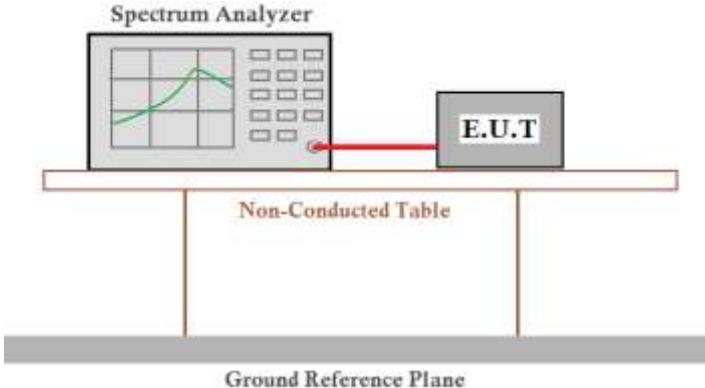
Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Remark
	Level	Factor	Loss	Factor			
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2483.500	22.76	27.52	6.85	0.00	57.13	74.00 -16.87 Peak
2	2483.500	10.91	27.52	6.85	0.00	45.28	54.00 -8.72 Average

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

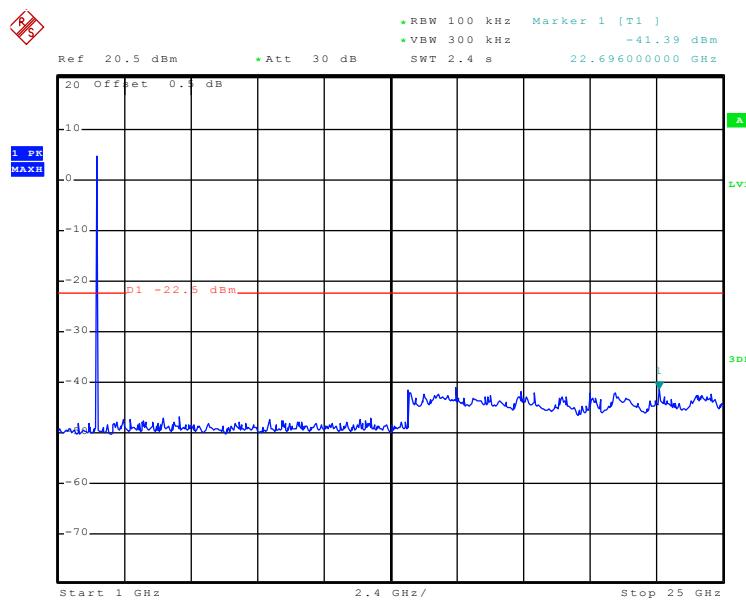
6.7.1 Conducted Emission Method

Test Requirement:	FCC Part 15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2009 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:	
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

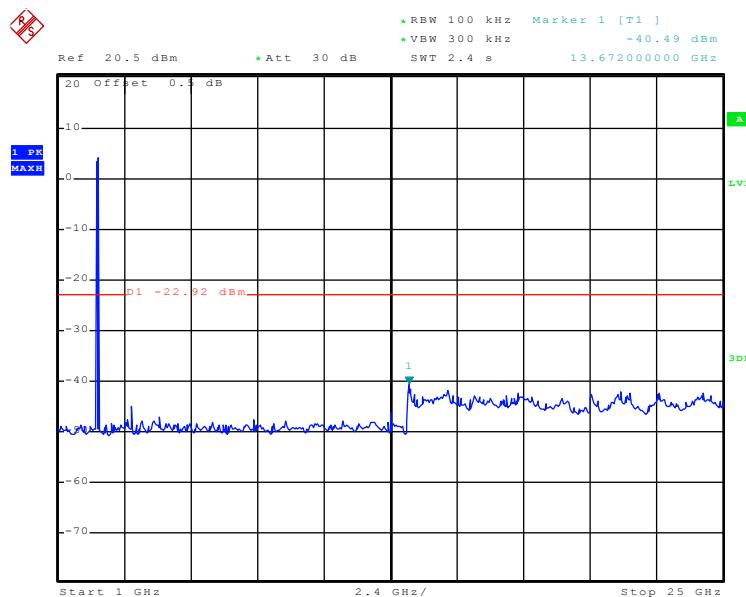
Lowest channel



Date: 25.MAY.2015 16:48:21

30MHz~25GHz

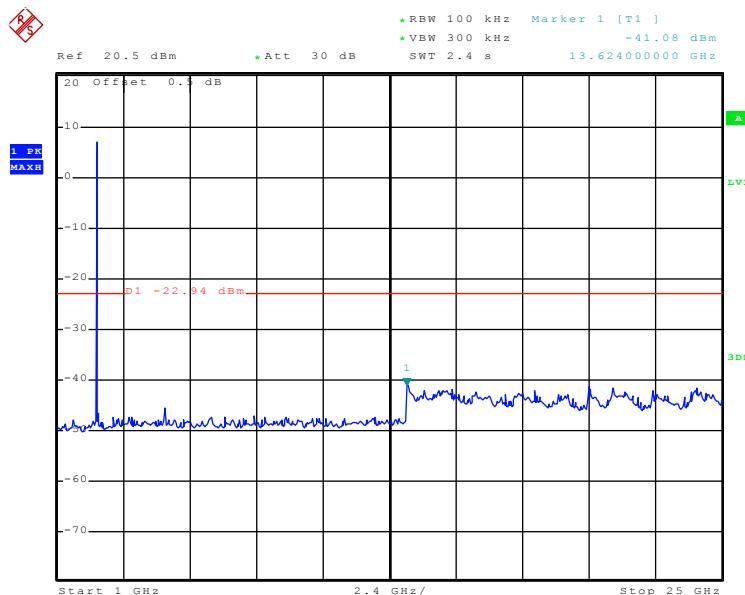
Middle channel



Date: 25.MAY.2015 16:49:01

30MHz~25GHz

Highest channel

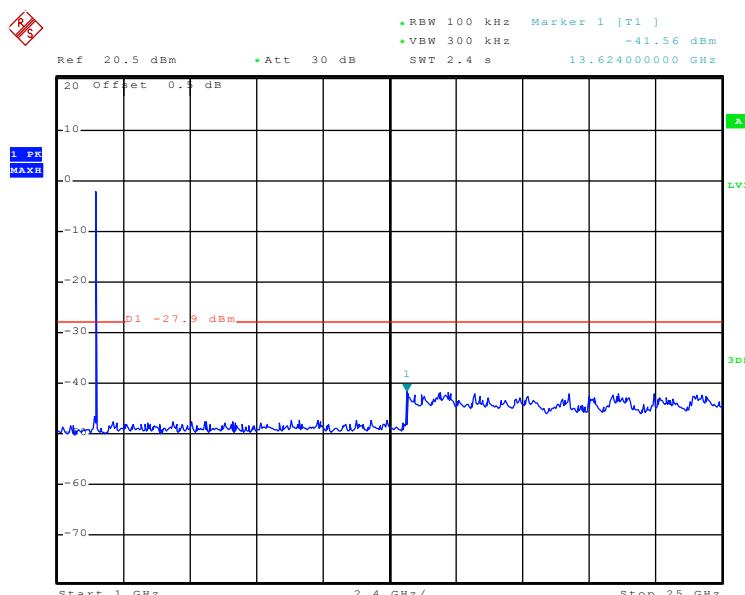


Date: 25.MAY.2015 16:50:10

30MHz~25GHz

Test mode: 802.11g

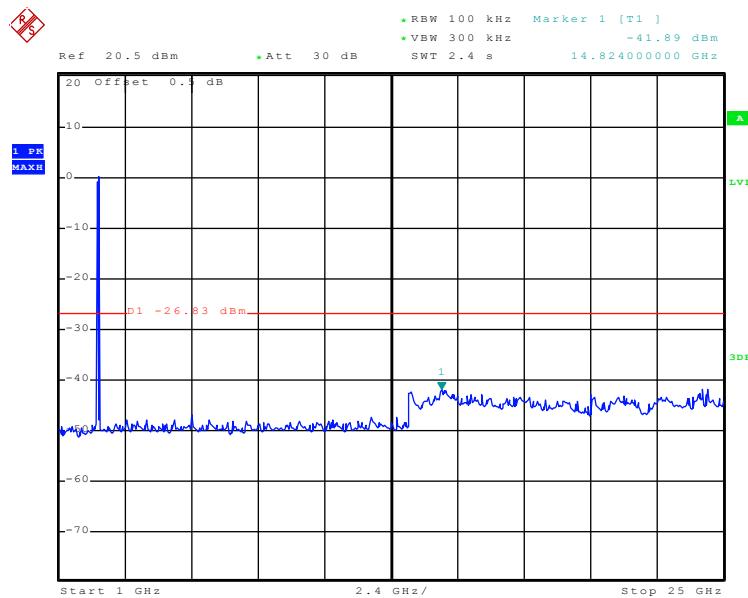
Lowest channel



Date: 25.MAY.2015 16:51:06

30MHz~25GHz

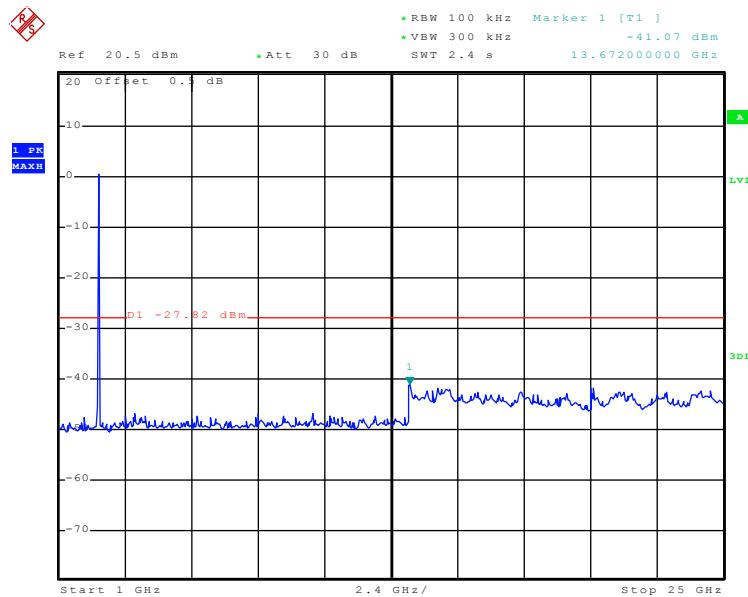
Middle channel



Date: 25.MAY.2015 16:51:52

30MHz~25GHz

Highest channel

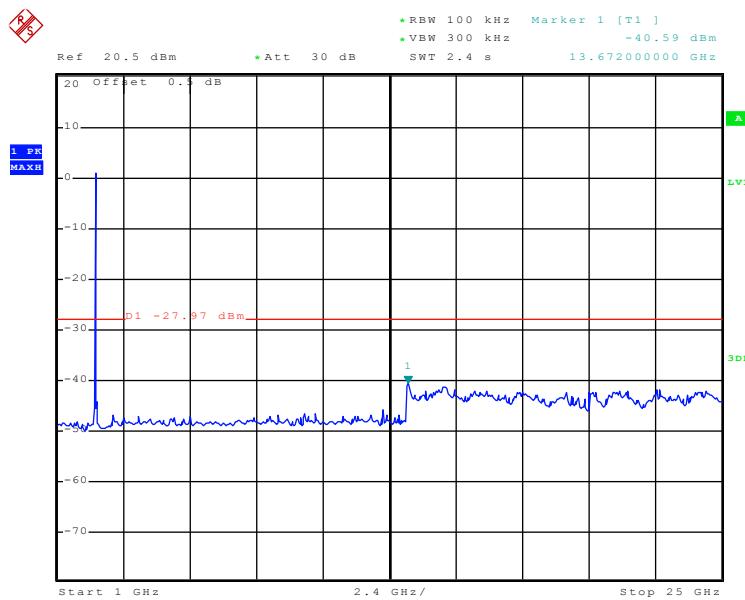


Date: 25.MAY.2015 16:52:35

30MHz~25GHz

Test mode: 802.11n(H20)

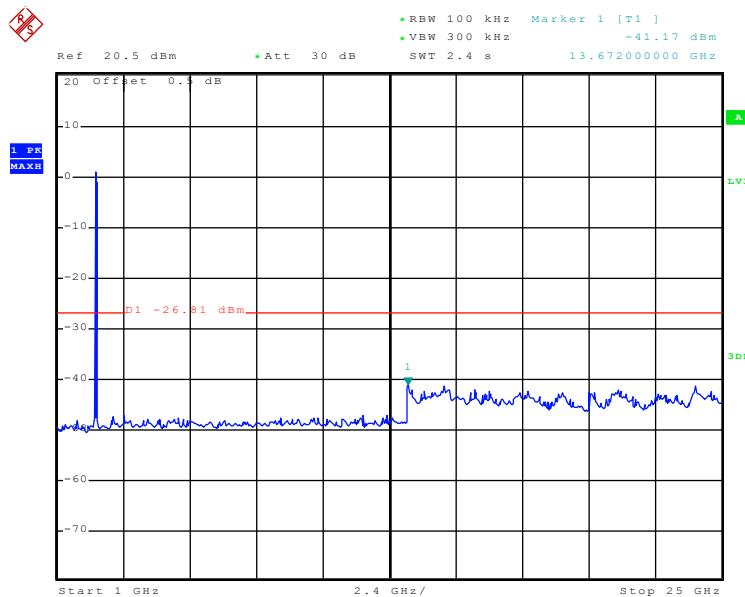
Lowest channel



Date: 25.MAY.2015 16:55:22

30MHz~25GHz

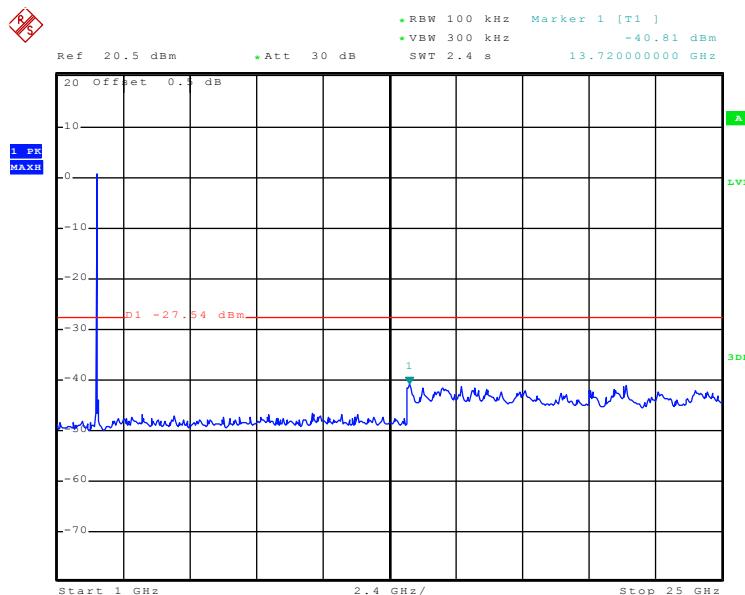
Middle channel



Date: 25.MAY.2015 16:56:15

30MHz~25GHz

Highest channel

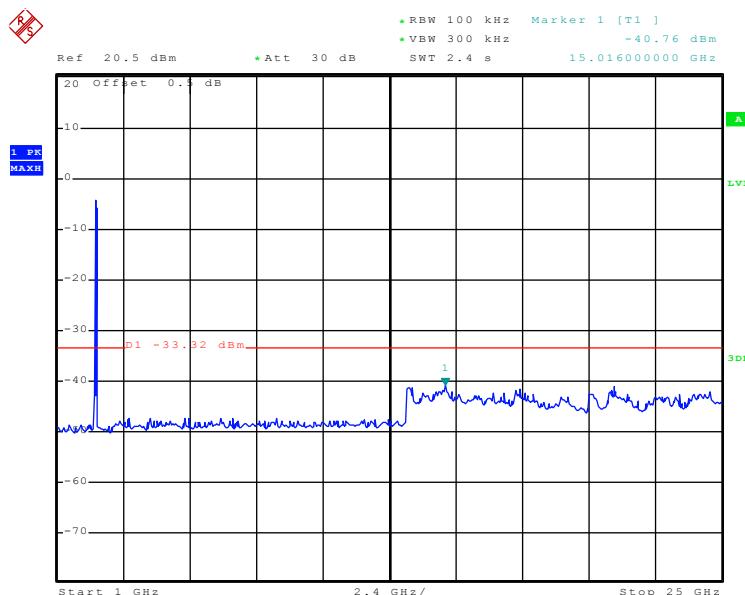


Date: 25.MAY.2015 16:58:00

30MHz~25GHz

Test mode: 802.11n(H40)

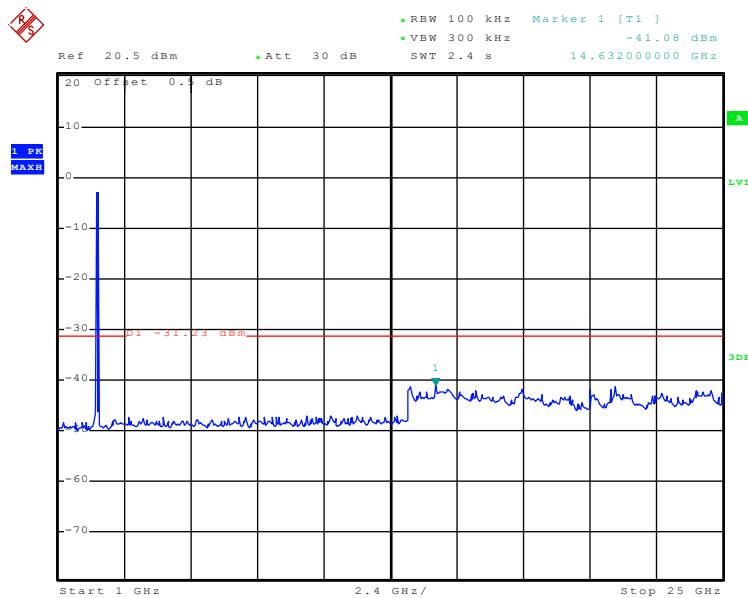
Lowest channel



Date: 25.MAY.2015 16:59:02

30MHz~25GHz

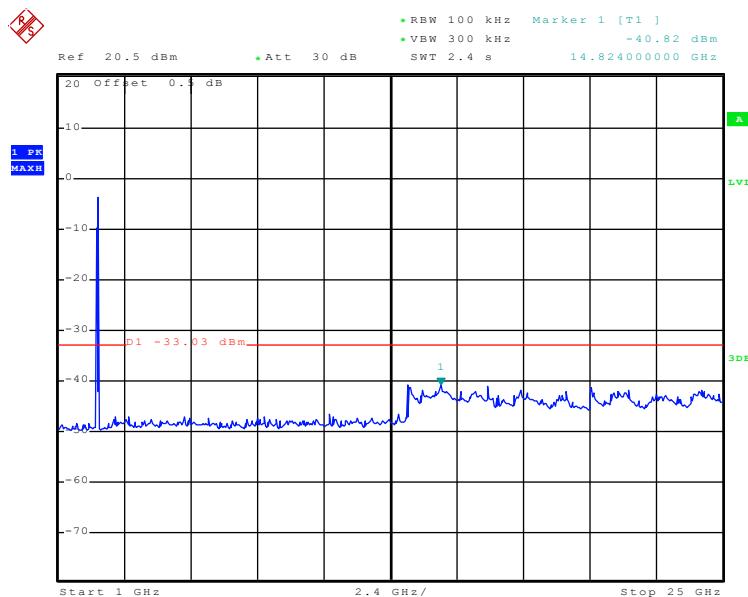
Middle channel



Date: 25.MAY.2015 17:01:50

30MHz~25GHz

Highest channel



Date: 25.MAY.2015 17:03:28

30MHz~25GHz

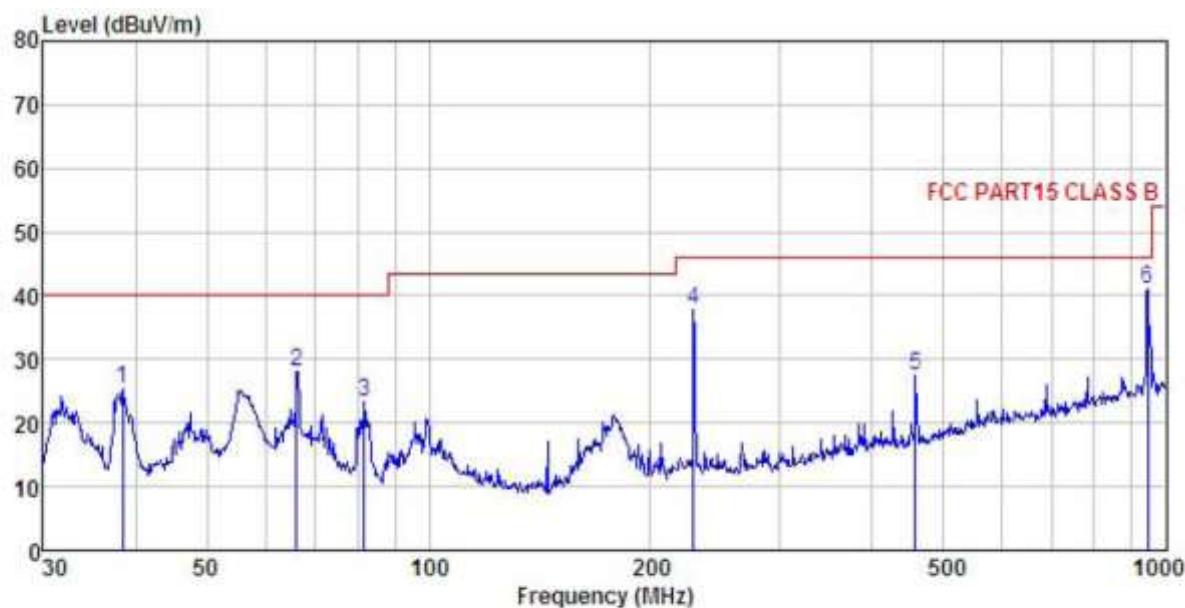
6.7.2 Radiated Emission Method

Test Requirement:	FCC Part 15 C Section 15.209 and 15.205				
Test Method:	ANSI C63.4:2009				
Test Frequency Range:	9KHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	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:	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:	<ol style="list-style-type: none"> 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. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 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. 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. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 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:	<p>Below 1GHz</p> <p>Above 1GHz</p>
Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Remark:	<ol style="list-style-type: none"> 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

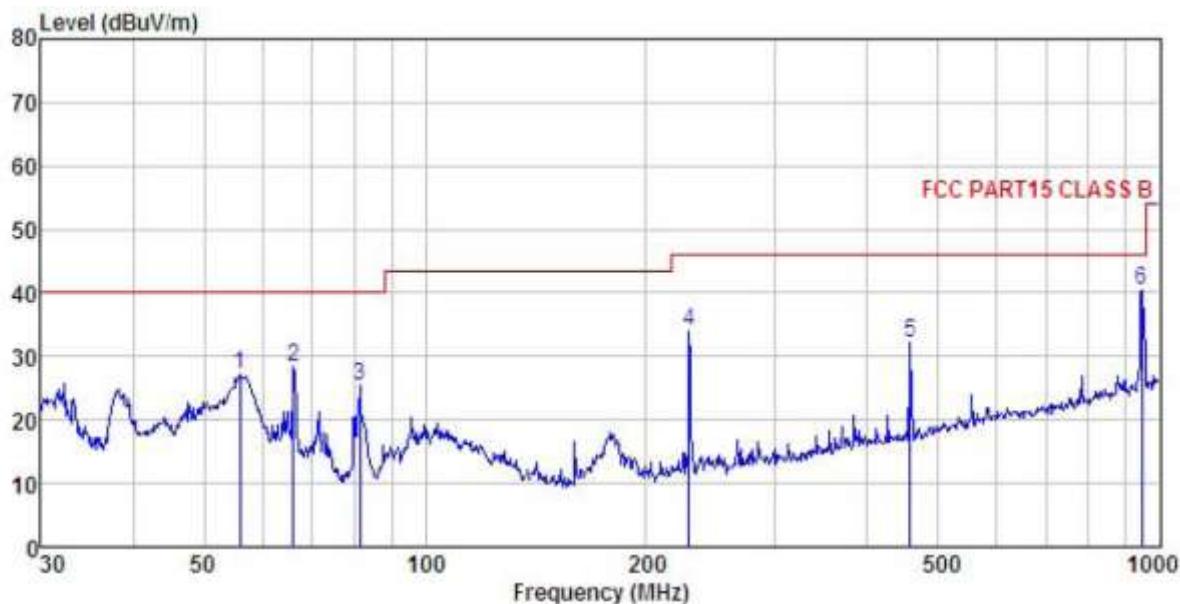
Horizontal :



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) HORIZONTAL
EUT : Smart phone
Model : Ultra
Test mode : WIFI
Power Rating : AC120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Colin
REMARK :

Freq	Read	Antenna	Cable	Preamp	Limit	Over	Remark
	MHz	Level	Factor	Loss	Level	Line	Limit
1	38.481	41.62	13.20	0.51	29.91	25.42	40.00 -14.58 QP
2	66.266	46.99	10.16	0.76	29.75	28.16	40.00 -11.84 QP
3	81.783	42.73	9.28	0.86	29.63	23.24	40.00 -16.76 QP
4	228.490	53.23	11.57	1.52	28.66	37.66	46.00 -8.34 QP
5	457.507	38.55	15.59	2.28	28.88	27.54	46.00 -18.46 QP
6	945.440	43.94	21.40	3.44	27.74	41.04	46.00 -4.96 QP

Vertical :



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) VERTICAL
EUT : Smart phone
Model : Ultra
Test mode : WIFI
Power Rating : AC120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Colin

REMARK :

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over	Remark
	MHz	dBuV	dB/m	dB	dBuV/m			
1	56.001	43.33	12.97	0.66	29.79	27.17	40.00	-12.83 QP
2	66.266	47.16	10.16	0.76	29.75	28.33	40.00	-11.67 QP
3	81.497	44.97	9.13	0.86	29.63	25.33	40.00	-14.67 QP
4	228.490	49.62	11.57	1.52	28.66	34.05	46.00	-11.95 QP
5	457.507	43.25	15.59	2.28	28.88	32.24	46.00	-13.76 QP
6	945.440	43.20	21.40	3.44	27.74	40.30	46.00	-5.70 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)	Polar.
4824.00	46.98	31.53	8.90	40.24	47.17	74.00	-26.83	Vertical
4824.00	47.84	31.53	8.90	40.24	48.03	74.00	-25.97	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)	Polar.
4824.00	37.92	31.53	8.90	40.24	38.11	54.00	-15.89	Vertical
4824.00	38.95	31.53	8.90	40.24	39.14	54.00	-14.86	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)	Polar.
4874.00	51.51	31.58	8.98	40.15	51.92	74.00	-22.08	Vertical
4874.00	49.88	31.58	8.98	40.15	50.29	74.00	-23.71	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)	Polar.
4874.00	42.85	31.58	8.98	40.15	43.26	54.00	-10.74	Vertical
4874.00	40.73	31.58	8.98	40.15	41.14	54.00	-12.86	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)	Polar.
4924.00	54.21	31.69	9.08	40.03	54.95	74.00	-19.05	Vertical
4924.00	55.20	31.69	9.08	40.03	55.94	74.00	-18.06	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)	Polar.
4924.00	52.15	31.69	9.08	40.03	52.50	54.00	-1.11	Vertical
4924.00	52.07	31.69	9.08	40.03	48.91	54.00	-1.19	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/)	Limit Line (dBuV/m)	Over Limit (dB)	Polar.
4824.00	46.11	31.53	8.90	40.24	46.30	74.00	-27.70	Vertical
4824.00	46.20	31.53	8.90	40.24	46.39	74.00	-27.61	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/)	Limit Line (dBuV/m)	Over Limit (dB)	Polar.
4824.00	37.69	31.53	8.90	40.24	37.88	54.00	-16.12	Vertical
4824.00	37.60	31.53	8.90	40.24	37.79	54.00	-16.21	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/)	Limit Line (dBuV/m)	Over Limit (dB)	Polar.
4874.00	50.96	31.58	8.98	40.15	51.37	74.00	-22.63	Vertical
4874.00	46.57	31.58	8.98	40.15	46.98	74.00	-27.02	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/)	Limit Line (dBuV/m)	Over Limit (dB)	Polar.
4874.00	40.58	31.58	8.98	40.15	40.99	54.00	-13.01	Vertical
4874.00	37.58	31.58	8.98	40.15	37.99	54.00	-16.01	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)	Polar.
4924.00	49.02	31.69	9.08	40.03	49.76	74.00	-24.24	Vertical
4924.00	46.57	31.69	9.08	40.03	47.31	74.00	-26.69	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)	Polar.
4924.00	39.24	31.69	9.08	40.03	39.98	54.00	-14.02	Vertical
4924.00	37.07	31.69	9.08	40.03	37.81	54.00	-16.19	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)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polar.
4824.00	46.24	31.53	8.90	40.24	46.43	74.00	-27.57	Vertical
4824.00	46.67	31.53	8.90	40.24	46.86	74.00	-27.14	Horizontal
Test mode: 802.11n(H20)			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)	Polar.
4824.00	37.98	31.53	8.90	40.24	38.17	54.00	-15.83	Vertical
4824.00	37.54	31.53	8.90	40.24	37.73	54.00	-16.27	Horizontal

Test mode: 802.11n(H20)			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)	Polar.
4874.00	50.24	31.58	8.98	40.15	50.65	74.00	-23.35	Vertical
4874.00	47.54	31.58	8.98	40.15	47.95	74.00	-26.05	Horizontal
Test mode: 802.11n(H20)			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)	Polar.
4874.00	40.24	31.58	8.98	40.15	40.65	54.00	-13.35	Vertical
4874.00	38.97	31.58	8.98	40.15	39.38	54.00	-14.62	Horizontal

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)	Polar.
4924.00	49.09	31.69	9.08	40.03	49.83	74.00	-24.17	Vertical
4924.00	46.55	31.69	9.08	40.03	47.29	74.00	-26.71	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)	Polar.
4924.00	39.74	31.69	9.08	40.03	40.48	54.00	-13.52	Vertical
4924.00	37.20	31.69	9.08	40.03	37.94	54.00	-16.06	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(H40)			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)	Polar.
4844.00	46.44	31.53	8.90	40.24	46.63	74.00	-27.37	Vertical
4844.00	46.67	31.53	8.90	40.24	46.86	74.00	-27.14	Horizontal
Test mode: 802.11n(H40)			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)	Polar.
4844.00	37.24	31.53	8.90	40.24	37.43	54.00	-16.57	Vertical
4844.00	37.68	31.53	8.90	40.24	37.87	54.00	-16.13	Horizontal

Test mode: 802.11n(H40)			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)	Polar.
4874.00	50.55	31.58	8.98	40.15	50.96	74.00	-23.04	Vertical
4874.00	47.34	31.58	8.98	40.15	47.75	74.00	-26.25	Horizontal
Test mode: 802.11n(H40)			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)	Polar.
4874.00	40.11	31.58	8.98	40.15	40.52	54.00	-13.48	Vertical
4874.00	38.24	31.58	8.98	40.15	38.65	54.00	-15.35	Horizontal

Test mode: 802.11n(H40)			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)	Polar.
4904.00	49.24	31.69	9.08	40.03	49.98	74.00	-24.02	Vertical
4904.00	46.24	31.69	9.08	40.03	46.98	74.00	-27.02	Horizontal
Test mode: 802.11n(H40)			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)	Polar.
4904.00	39.24	31.69	9.08	40.03	39.98	54.00	-14.02	Vertical
4904.00	37.02	31.69	9.08	40.03	37.76	54.00	-16.24	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.