

FCC & IC REPORT (WIFI)

Applicant: Punkt Tronics AG

Address of Applicant: Via Losanna 4, CH6900 Lugano, Switzerland

Equipment Under Test (EUT)

Product Name: feature phone

Model No.: MP 02

Trade mark: Punkt.

FCC ID: Z3PMP02

Canada ID: 20683-MP02

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247
RSS-Gen Issue 5, April 2018
RSS-247 Issue 2, February 2017

Date of sample receipt: 26 Jun., 2018

Date of Test: 26 Jun., to 11 Oct., 2018

Date of report issued: 12 Oct., 2018

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	12 Oct., 2018	Original

Tested by:**Date:**

12 Oct., 2018

Test Engineer**Reviewed by:****Date:**

12 Oct., 2018

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 TEST MODE	6
5.4 DESCRIPTION OF SUPPORT UNITS.....	6
5.5 MEASUREMENT UNCERTAINTY.....	6
5.6 LABORATORY FACILITY.....	7
5.7 LABORATORY LOCATION	7
5.8 TEST INSTRUMENTS LIST.....	7
6 TEST RESULTS AND MEASUREMENT DATA.....	8
6.1 ANTENNA REQUIREMENT	8
6.2 CONDUCTED EMISSION	9
6.3 CONDUCTED OUTPUT POWER	14
6.4 OCCUPY BANDWIDTH	17
6.5 POWER SPECTRAL DENSITY	22
6.6 BAND EDGE	25
6.6.1 Conducted Emission Method.....	25
6.6.2 Radiated Emission Method.....	28
6.7 SPURIOUS EMISSION	45
6.7.1 Conducted Emission Method.....	45
6.7.2 Radiated Emission Method.....	48
7 TEST SETUP PHOTO	58
8 EUT CONSTRUCTIONAL DETAILS	59

4 Test Summary

Test Items	Section		Result
	FCC	IC	
Antenna Requirement	15.203/15.247 (c)	/	Pass
AC Power Line Conducted Emission	15.207	RSS-GEN Section 8.8	Pass
Conducted Peak Output Power	15.247 (b)(3)	RSS-247 Section 5.4 (d)	Pass
6dB Emission Bandwidth 99% Occupied Bandwidth	15.247 (a)(2)	RSS-247 Section 5.2 (a)	Pass
Power Spectral Density	15.247 (e)	RSS-247 Section 5.2 (b)	Pass
Band Edge	15.247(d)	RSS-GEN Section 8.10 RSS-247 Section 5.5	Pass
Conducted and Radiated Spurious Emission	15.205/15.209	RSS-GEN Section 6.13 RSS-247 Section 5.5	Pass

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

5 General Information

5.1 Client Information

Applicant:	Punkt Tronics AG
Address:	Via Losanna 4, CH6900 Lugano, Switzerland
Manufacturer:	Punkt Tronics AG
Address:	Via Losanna 4, CH6900 Lugano, Switzerland
Factory:	Dongguan Yuanchang Electronic Co., Ltd.
Address:	No.15, Zhuangyuanbi Street, Matigang Village, Dalingshan Town, Dongguan City, Guangdong Province, China.

5.2 General Description of E.U.T.

Product Name:	feature phone
Model No.:	MP 02
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:	0.8 dBi
Power supply:	Rechargeable Li-ion Battery DC3.8V-1280mAh
AC adapter with two plugs :	Adapter 1: Model: YJC005Z-0501000U Input: AC100-240V, 50/60Hz, 200mA Output: DC 5.0V, 1000mA Adapter 2: Model: APP524-050200U-1 Input: AC100-240V, 50/60Hz, 0.45A Output: DC 5.0V, 2A
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

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

Note:

- For 802.11n-HT40 mode, the channel number is from 3 to 9;
- Channel 1, 6 & 11 selected for 802.11b/g/n-HT20 as Lowest, Middle and Highest channel, Channel; 3, 6 & 9 selected for 802.11n-HT40 as Lowest, Middle and Highest channel.

5.3 Test environment and test mode

Operating Environment:	
Temperature:	24.0 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar
Test mode:	
Transmitting mode	Keep the EUT in continuous transmitting with modulation
<p>The sample was placed 0.8m (below 1GHz)/1.5m (above 1GHz) 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.</p> <p>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:</p>	
Per-scan all kind of data rate, the follow list were the worst case.	
Mode	Data rate
802.11b	1Mbps
802.11g	6Mbps
802.11n(H20)	6.5Mbps
802.11n(H40)	13.5Mbps

5.4 Description of Support Units

The EUT has been tested as an independent unit.

5.5 Measurement Uncertainty

Parameters	Expanded Uncertainty
Conducted Emission (9kHz ~ 30MHz)	±2.22 dB (k=2)
Radiated Emission (9kHz ~ 30MHz)	±2.76 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	±4.28 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	±5.72 dB (k=2)
Radiated Emission (18GHz ~ 40GHz)	±2.88 dB (k=2)

5.6 Laboratory Facility

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

- **FCC - Registration No.: 727551**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The Registration No. is 727551.

- **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.

- **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/4346-01.pdf>

5.7 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

Email: info@ccis-cb.com, Website: http://www.ccis-cb.com

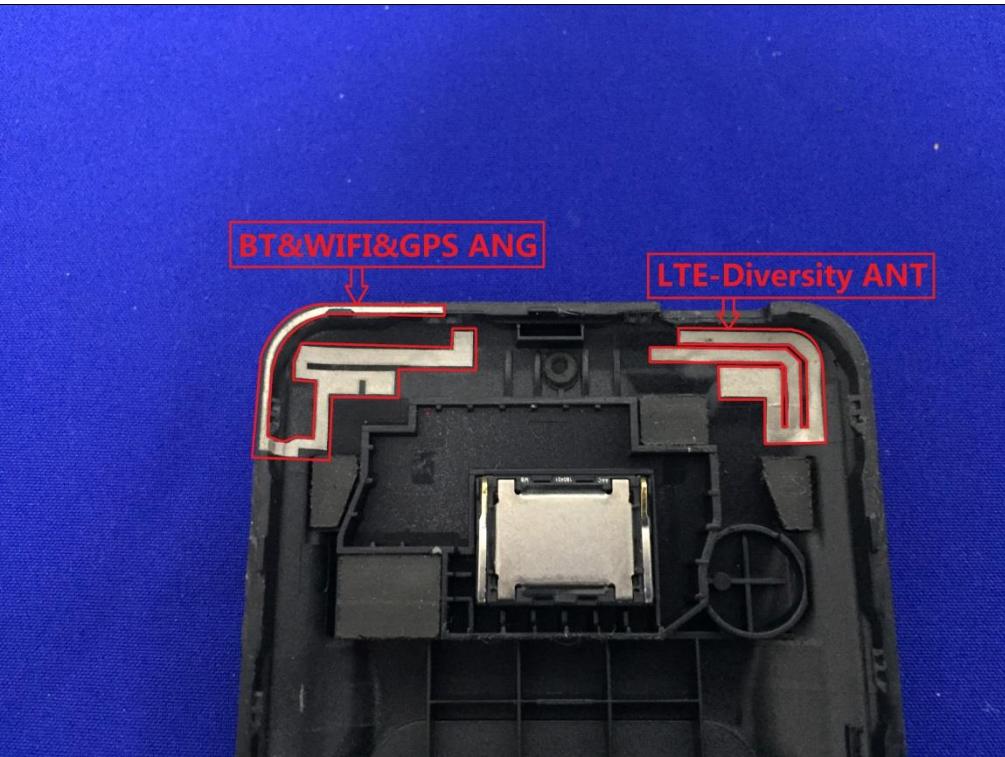
5.8 Test Instruments list

Radiated Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	SAEMC	9m*6m*6m	966	07-22-2017	07-21-2020
Loop Antenna	SCHWARZBECK	FMZB1519B	00044	03-16-2018	03-15-2019
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	03-16-2018	03-15-2019
Horn Antenna	SCHWARZBECK	BBHA9120D	916	03-16-2018	03-15-2019
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170582	11-21-2017	11-20-2018
EMI Test Software	AUDIX	E3	6.110919b	N/A	N/A
Pre-amplifier	HP	8447D	2944A09358	03-07-2018	03-06-2019
Pre-amplifier	CD	PAP-1G18	11804	03-07-2018	03-06-2019
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-07-2018	03-06-2019
Spectrum analyzer	Rohde & Schwarz	FSP40	100363	11-21-2017	11-20-2018
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-07-2018	03-06-2019
Cable	ZDECL	Z108-NJ-NJ-81	1608458	03-07-2018	03-06-2019
Cable	MICRO-COAX	MFR64639	K10742-5	03-07-2018	03-06-2019
Cable	SUHNER	SUCOFLEX100	58193/4PE	03-07-2018	03-06-2019

Conducted Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
EMI Test Receiver	Rohde & Schwarz	ESCI	101189	03-07-2018	03-06-2019
Pulse Limiter	SCHWARZBECK	OSRAM 2306	9731	03-07-2018	03-06-2019
LISN	CHASE	MN2050D	1447	03-19-2018	03-18-2019
LISN	Rohde & Schwarz	ESH3-Z5	8438621/010	07-21-2018	07-20-2019
Cable	HP	10503A	N/A	03-07-2018	03-06-2019
EMI Test Software	AUDIX	E3	6.110919b	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)
15.203 requirement:	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.
15.247(c) (1)(i) requirement:	(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.
E.U.T Antenna:	The WiFi antenna is an internal antenna which cannot replace by end-user, the best case gain of the antenna is 0.8 dBi.
	

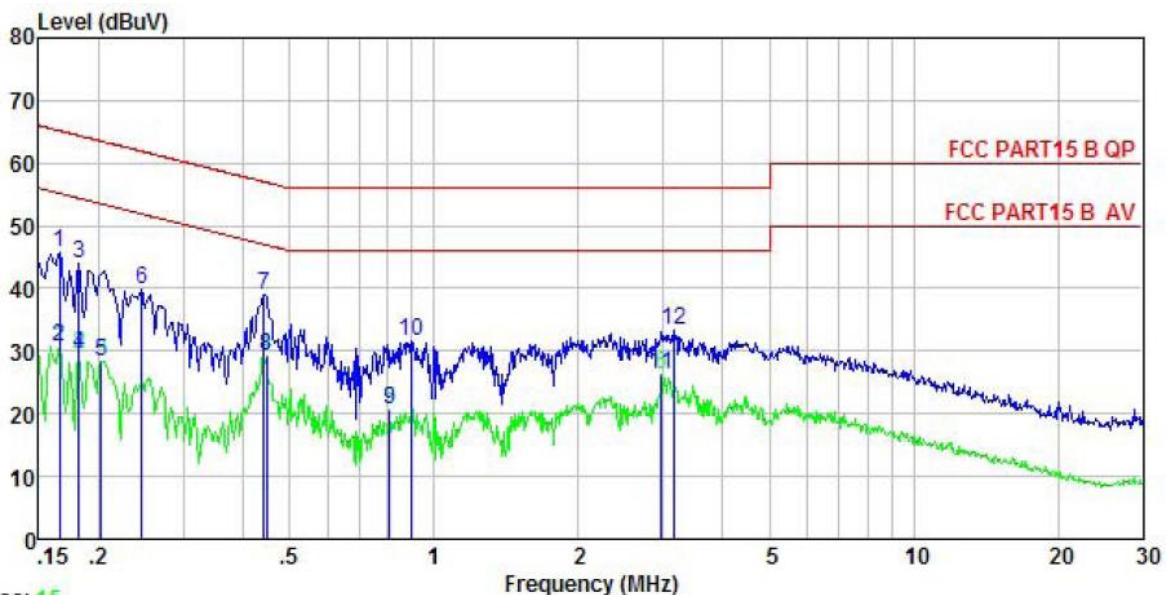
6.2 Conducted Emission

Test Requirement:	FCC Part 15 C Section 15.207 RSS-GEN Section 8.8		
Test Method:	ANSI C63.10: 2013		
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	<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: 2014 on conducted measurement. 		
Test setup:	<p>Reference Plane</p> <p>LISN</p> <p>AUX Equipment</p> <p>E.U.T</p> <p>Test table/Insulation plane</p> <p>EMI Receiver</p> <p>Filter</p> <p>AC power</p> <p>40cm</p> <p>80cm</p> <p>Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p>		
Test Instruments:	Refer to section 5.8 for details		
Test mode:	Refer to section 5.3 for details		
Test results:	Passed		

Measurement Data:

Adapter 1:

Neutral:

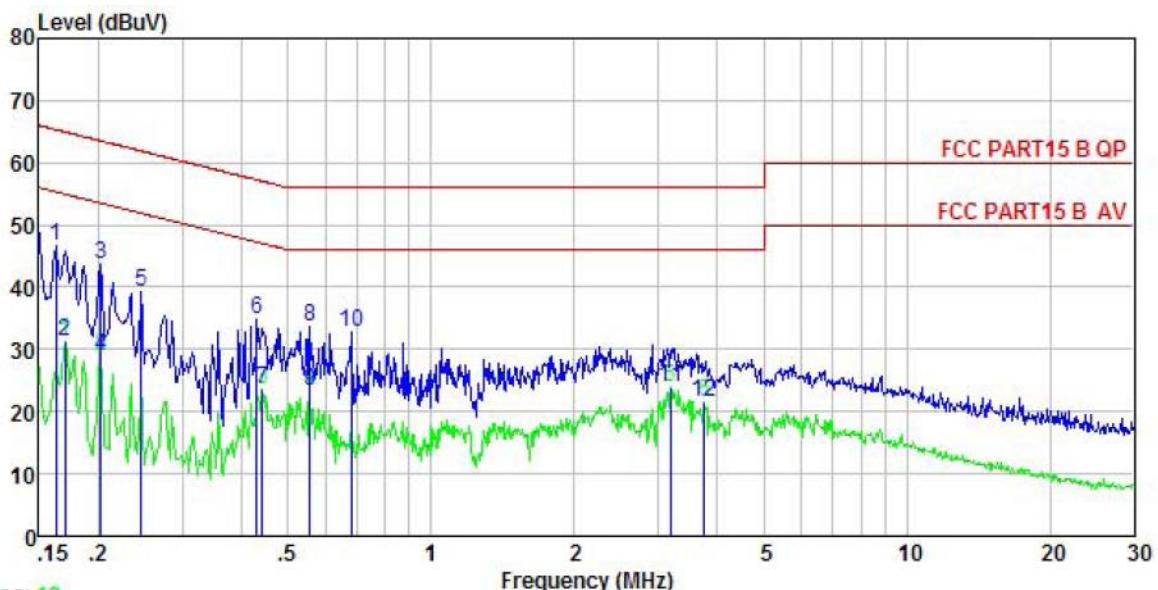


Freq	Read	LISN	Cable	Limit	Over	Remark	
	Level	Factor	Loss				
	MHz	dBuV	dB	dB	dBuV	dB	
1	0.166	34.10	0.97	10.77	45.84	65.16	-19.32 QP
2	0.166	19.08	0.97	10.77	30.82	55.16	-24.34 Average
3	0.182	32.18	0.94	10.77	43.89	64.42	-20.53 QP
4	0.182	17.87	0.94	10.77	29.58	54.42	-24.84 Average
5	0.202	16.68	0.92	10.76	28.36	53.54	-25.18 Average
6	0.246	28.25	0.95	10.75	39.95	61.91	-21.96 QP
7	0.442	27.33	0.97	10.74	39.04	57.02	-17.98 QP
8	0.447	17.58	0.97	10.74	29.29	46.93	-17.64 Average
9	0.809	8.96	0.97	10.81	20.74	46.00	-25.26 Average
10	0.894	19.77	0.97	10.84	31.58	56.00	-24.42 QP
11	2.978	14.33	0.99	10.92	26.24	46.00	-19.76 Average
12	3.173	21.36	0.99	10.91	33.26	56.00	-22.74 QP

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.

Line:



Site : CCIS Shielding Room
 Condition : FCC PART15 B QP LISN LINE
 EUT : feature phone
 Model : MP02
 Test Mode : WIFI mode
 Power Rating : AC 120V/60Hz
 Environment : Temp: 23 °C Huni:56% Atmos:101KPa
 Test Engineer: Yaro
 Remark :

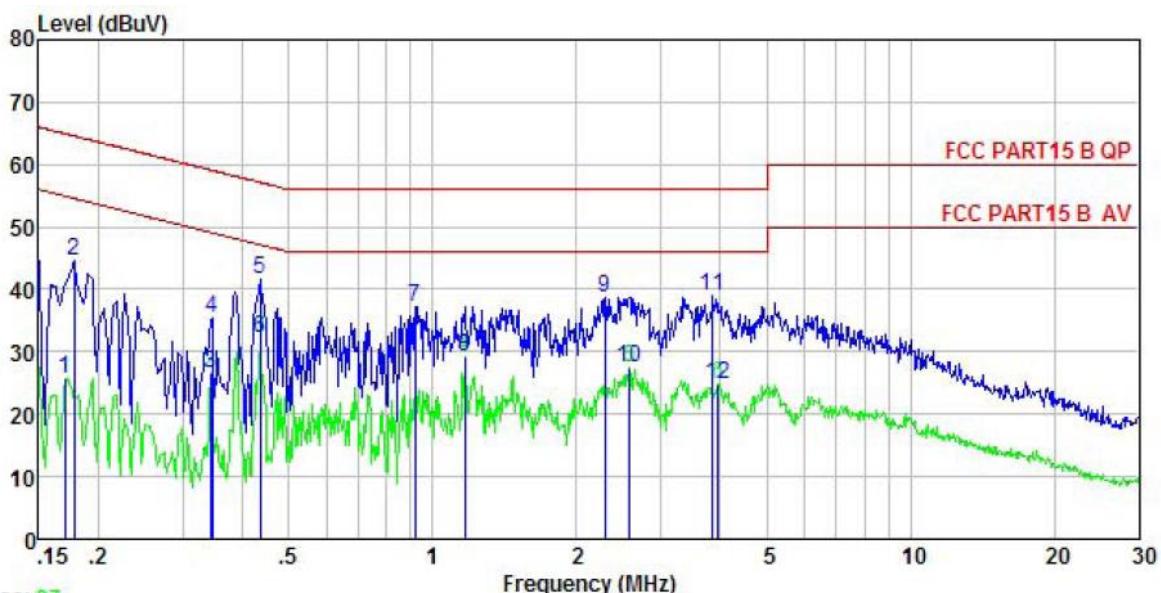
	Read Freq	LISN Level	Cable Factor	Limit Loss	Over Line Level	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB
1	0.162	35.72	0.17	10.77	46.66	65.34	-18.68 QP
2	0.170	20.44	0.17	10.77	31.38	54.94	-23.56 Average
3	0.202	32.82	0.15	10.76	43.73	63.54	-19.81 QP
4	0.202	18.00	0.15	10.76	28.91	53.54	-24.63 Average
5	0.246	28.46	0.14	10.75	39.35	61.91	-22.56 QP
6	0.431	23.98	0.12	10.73	34.83	57.24	-22.41 QP
7	0.442	12.62	0.12	10.74	23.48	47.02	-23.54 Average
8	0.555	22.67	0.12	10.76	33.55	56.00	-22.45 QP
9	0.555	12.39	0.12	10.76	23.27	46.00	-22.73 Average
10	0.679	22.00	0.13	10.77	32.90	56.00	-23.10 QP
11	3.190	12.77	0.17	10.91	23.85	46.00	-22.15 Average
12	3.759	10.52	0.18	10.90	21.60	46.00	-24.40 Average

Notes:

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

Adapter 2:

Neutral:



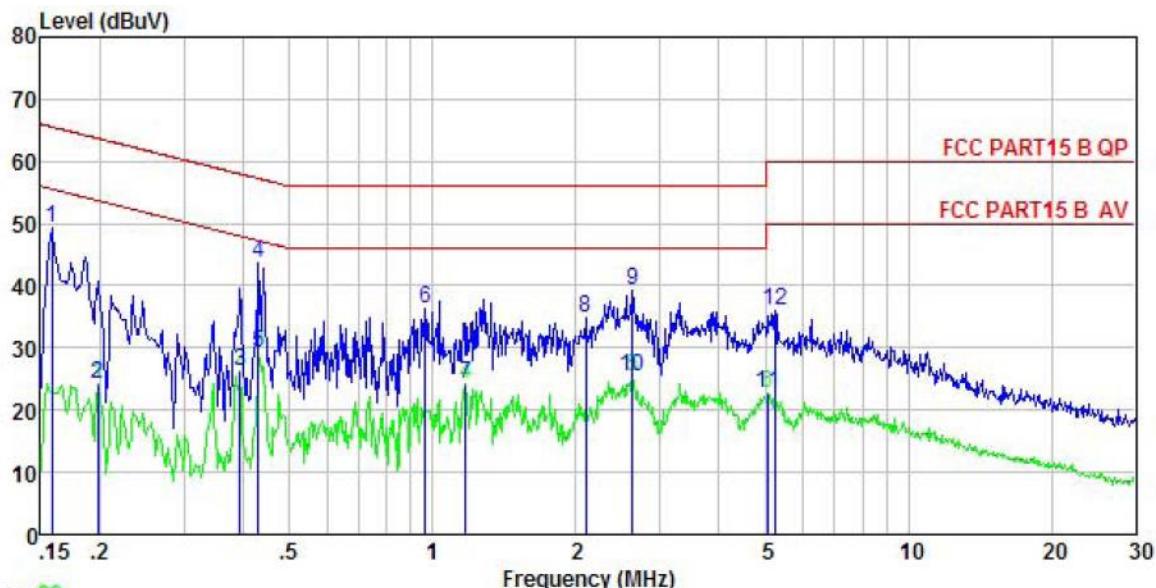
Site : CCIS Shielding Room
 Condition : FCC PART15 B QP LISN NEUTRAL
 EUT : feature phone
 Model : MP02
 Test Mode : WIFI mode
 Power Rating : AC 120V/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: Carey
 Remark : APP524-050200U-1

	Read Freq	LISN Level	Cable Factor	Line Loss	Limit Level	Over Line Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dB	
1	0.170	14.08	0.96	10.77	25.81	54.94	-29.13 Average
2	0.178	32.93	0.95	10.77	44.65	64.59	-19.94 QP
3	0.343	14.98	0.97	10.73	26.68	49.13	-22.45 Average
4	0.346	23.70	0.97	10.73	35.40	59.05	-23.65 QP
5	0.435	29.96	0.97	10.73	41.66	57.15	-15.49 QP
6	0.435	20.40	0.97	10.73	32.10	47.15	-15.05 Average
7	0.918	25.48	0.97	10.84	37.29	56.00	-18.71 QP
8	1.166	17.37	0.97	10.89	29.23	46.00	-16.77 Average
9	2.297	26.89	0.98	10.95	38.82	56.00	-17.18 QP
10	2.581	15.47	0.99	10.93	27.39	46.00	-18.61 Average
11	3.860	27.12	1.00	10.89	39.01	56.00	-16.99 QP
12	3.964	13.04	1.00	10.89	24.93	46.00	-21.07 Average

Notes:

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

Line:



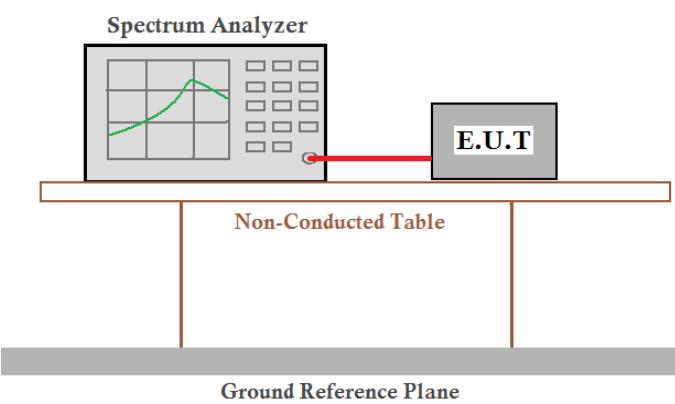
Trace: 39
 Site : CCIS Shielding Room
 Condition : FCC PART15 B QP LISN LINE
 EUT : feature phone
 Model : MP02
 Test Mode : WIFI mode
 Power Rating : AC 120V/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: Carey
 Remark : APP524-050200U-1

	Freq	Read Level	LISN Factor	Cable Loss	Limit Level	Over Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.158	38.23	0.17	10.77	49.17	65.56	-16.39	QP
2	0.198	13.37	0.15	10.76	24.28	53.71	-29.43	Average
3	0.393	15.44	0.12	10.72	26.28	47.99	-21.71	Average
4	0.431	32.72	0.12	10.73	43.57	57.24	-13.67	QP
5	0.431	18.46	0.12	10.73	29.31	47.24	-17.93	Average
6	0.963	25.32	0.13	10.86	36.31	56.00	-19.69	QP
7	1.172	13.20	0.13	10.89	24.22	46.00	-21.78	Average
8	2.099	23.72	0.14	10.96	34.82	56.00	-21.18	QP
9	2.636	28.26	0.16	10.93	39.35	56.00	-16.65	QP
10	2.636	14.15	0.16	10.93	25.24	46.00	-20.76	Average
11	5.058	11.64	0.21	10.85	22.70	50.00	-27.30	Average
12	5.249	25.01	0.21	10.84	36.06	60.00	-23.94	QP

Notes:

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

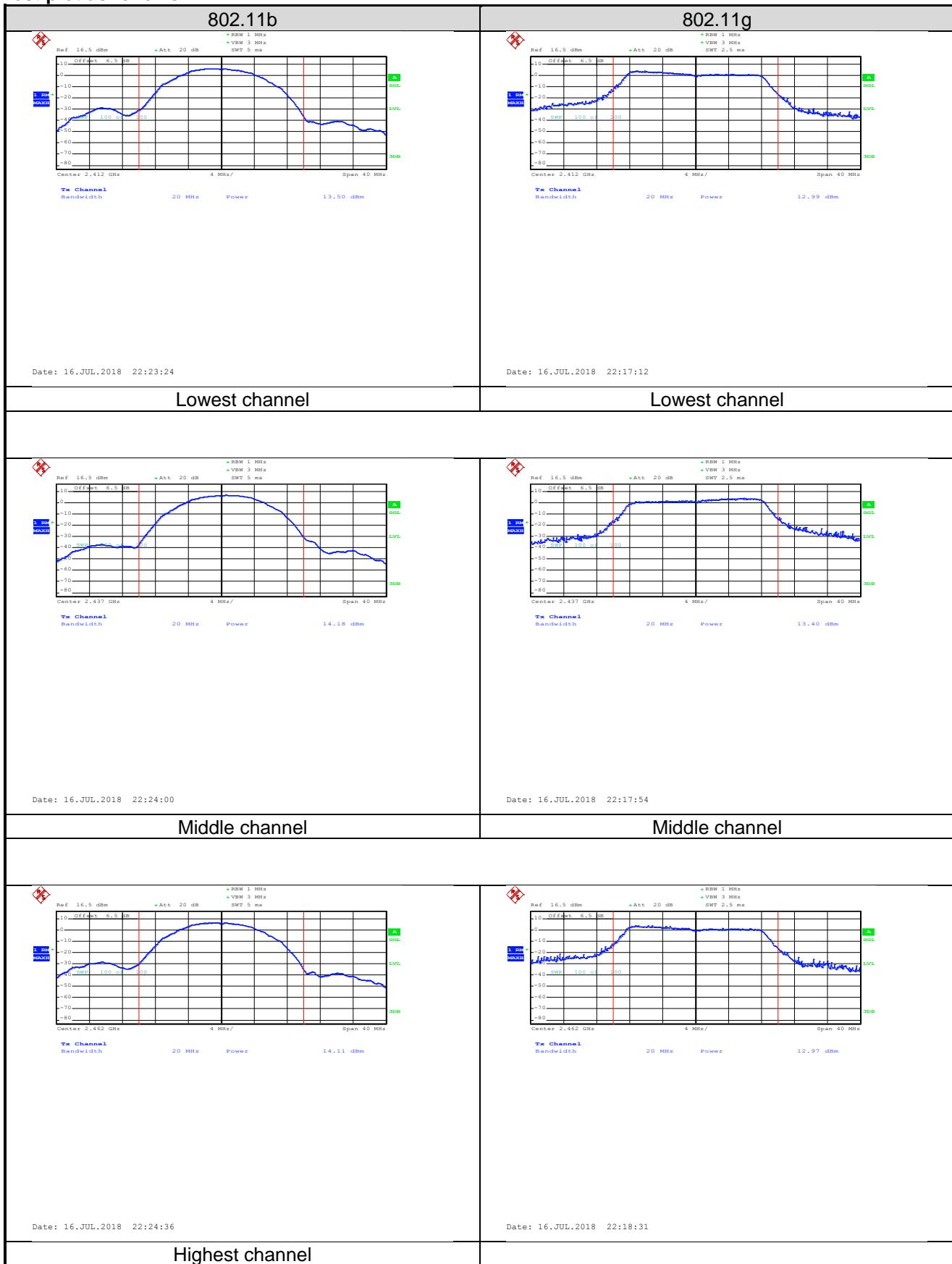
6.3 Conducted Output Power

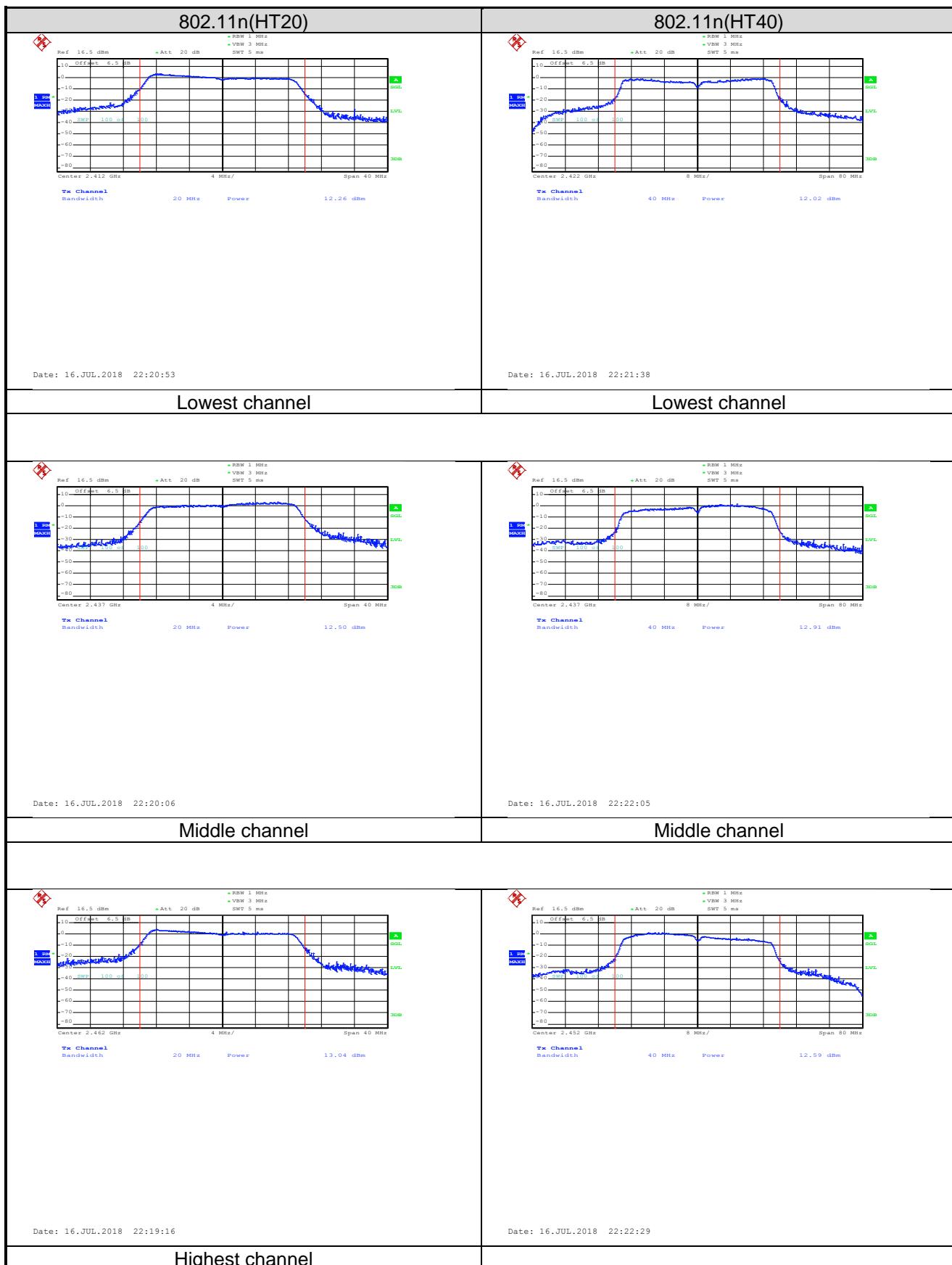
Test Requirement:	FCC Part 15 C Section 15.247 (b)(3) RSS-247 section 5.4(d)
Test Method:	ANSI C63.10:2013 and KDB558074
Limit:	30dBm
Test setup:	 <p>The diagram illustrates the test setup for conducted output power. A Spectrum Analyzer is positioned at the top left, displaying a green waveform on its screen. A red cable connects it to the Equipment Under Test (E.U.T), which is a gray rectangular box. The E.U.T is placed on a light-colored rectangular table labeled "Non-Conducted Table". This table rests on a dark horizontal bar labeled "Ground Reference Plane".</p>
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

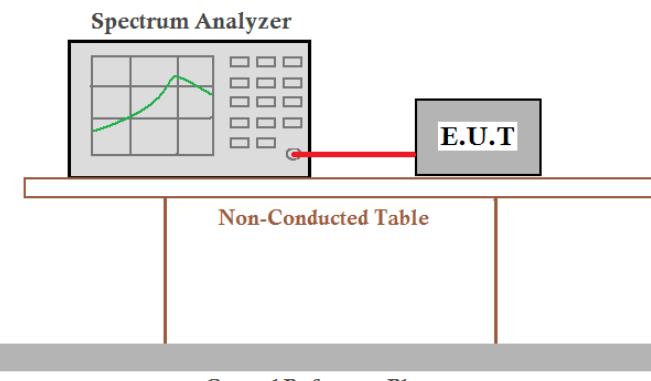
Test CH	Maximum Conducted Output Power (dBm)				Limit(dBm)	Result
	802.11b	802.11g	802.11n(H20)	802.11n(H40)		
Lowest	13.50	12.99	12.26	12.02	30.00	Pass
Middle	14.18	13.40	12.50	12.91		
Highest	14.11	12.97	13.04	12.59		

Test plot as follows:





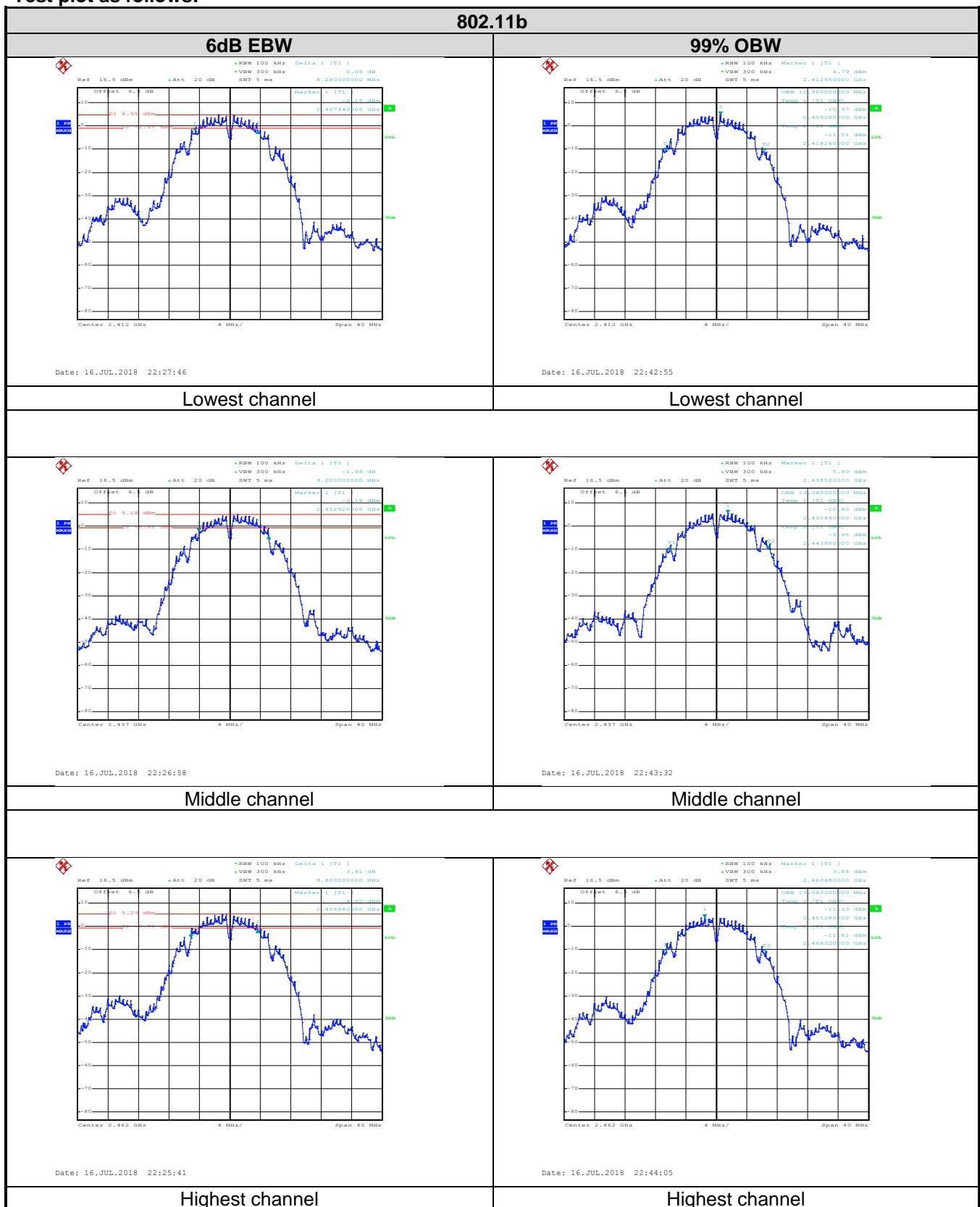
6.4 Occupy Bandwidth

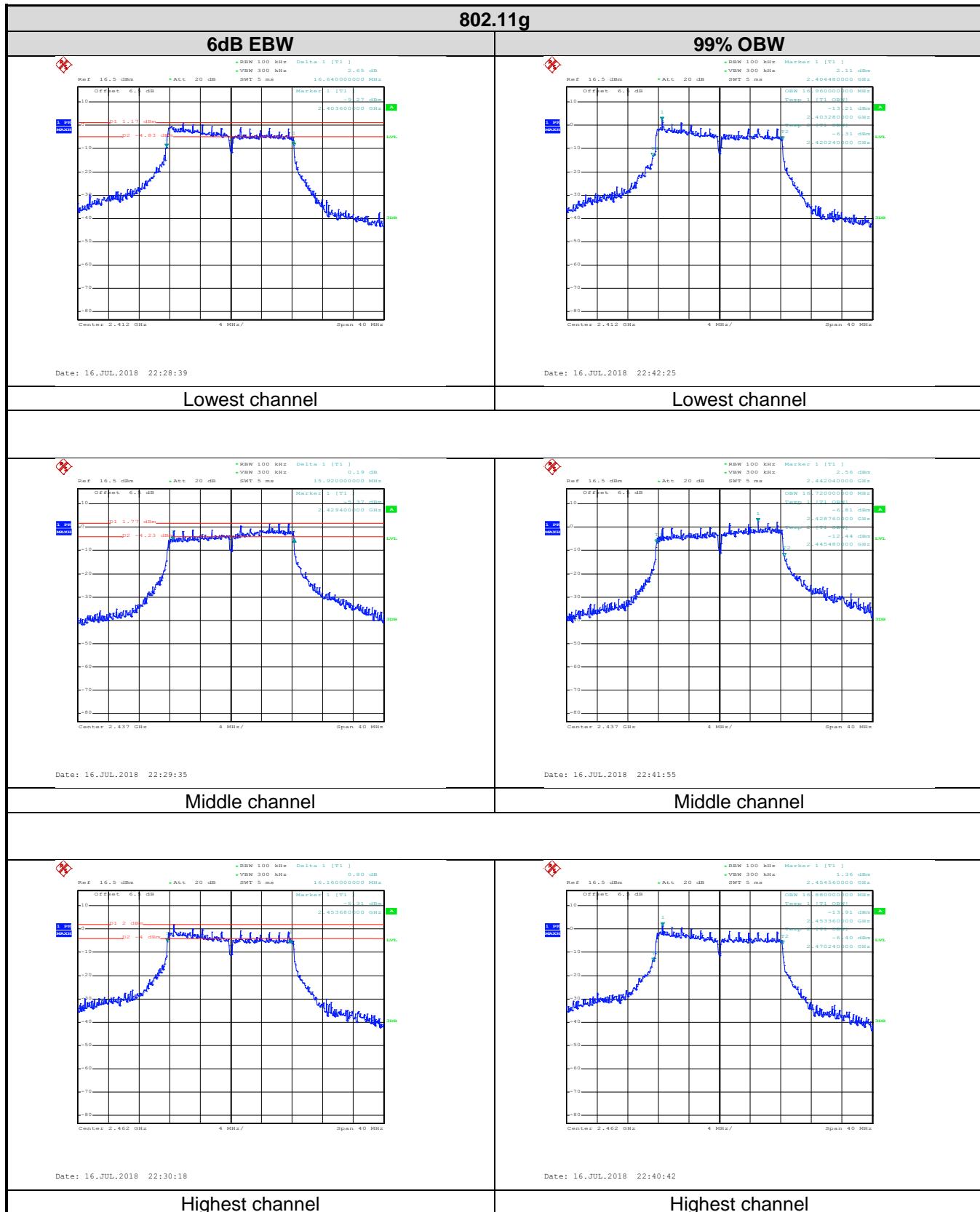
Test Requirement:	FCC Part 15 C Section 15.247 (a)(2) RSS-247 section 5.2(a)
Test Method:	ANSI C63.10:2013 and KDB558074
Limit:	>500kHz
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is positioned at the top left, displaying a green waveform on its screen. A red line extends from the analyzer's output port to a grey rectangular box labeled 'E.U.T' located on the right. This assembly sits on a light-colored rectangular table labeled 'Non-Conducted Table'. Below the table is a dark grey horizontal bar labeled 'Ground Reference Plane'.</p>
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

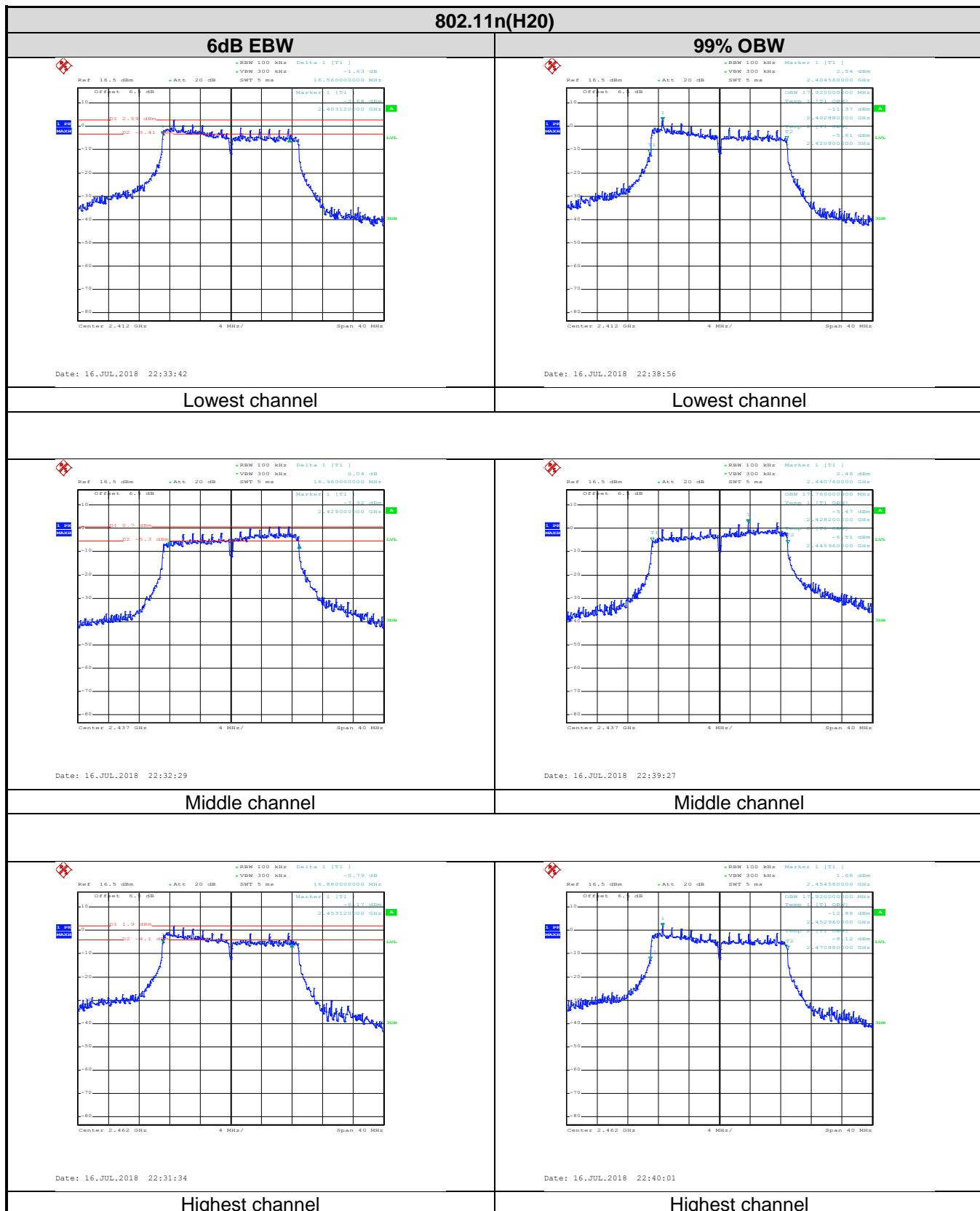
Measurement Data:

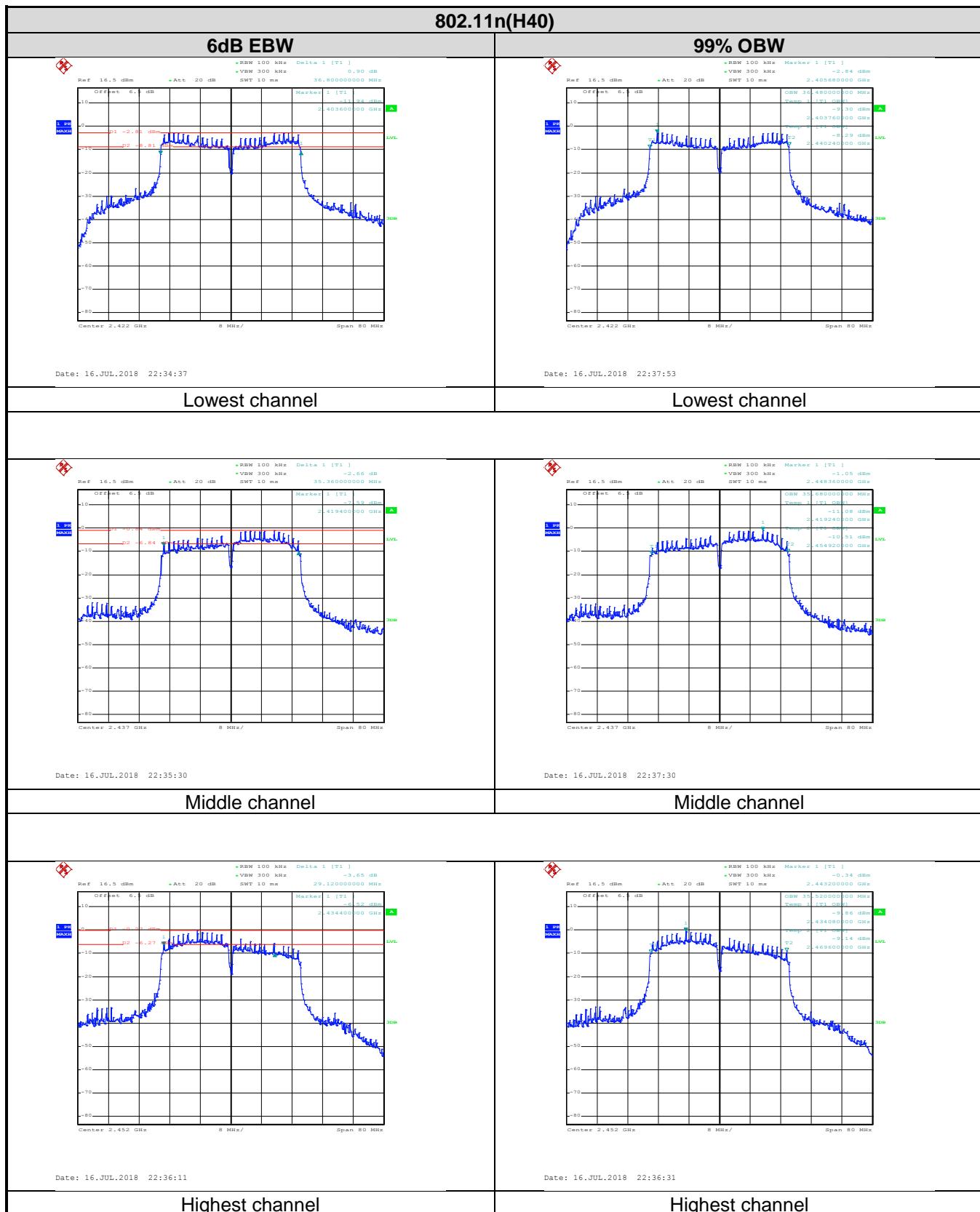
Test CH	6dB Emission Bandwidth (MHz)				Limit(kHz)	Result
	802.11b	802.11g	802.11n(H20)	802.11n(H40)		
Lowest	8.24	16.64	16.56	36.80	>500	Pass
Middle	9.20	15.92	16.96	35.36		
Highest	8.80	16.16	16.88	29.12		
Test CH	99% Occupy Bandwidth (MHz)				N/A	N/A
	802.11b	802.11g	802.11n(H20)	802.11n(H40)		
Lowest	12.96	16.96	17.92	36.48		
12.48	13.04	16.72	17.76	35.88		
Highest	13.04	16.88	17.92	35.52		

Test plot as follows:

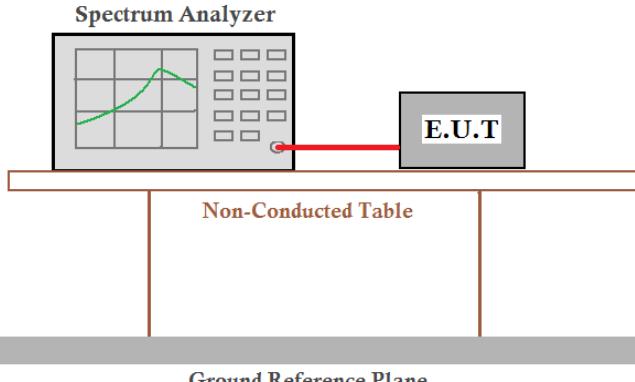








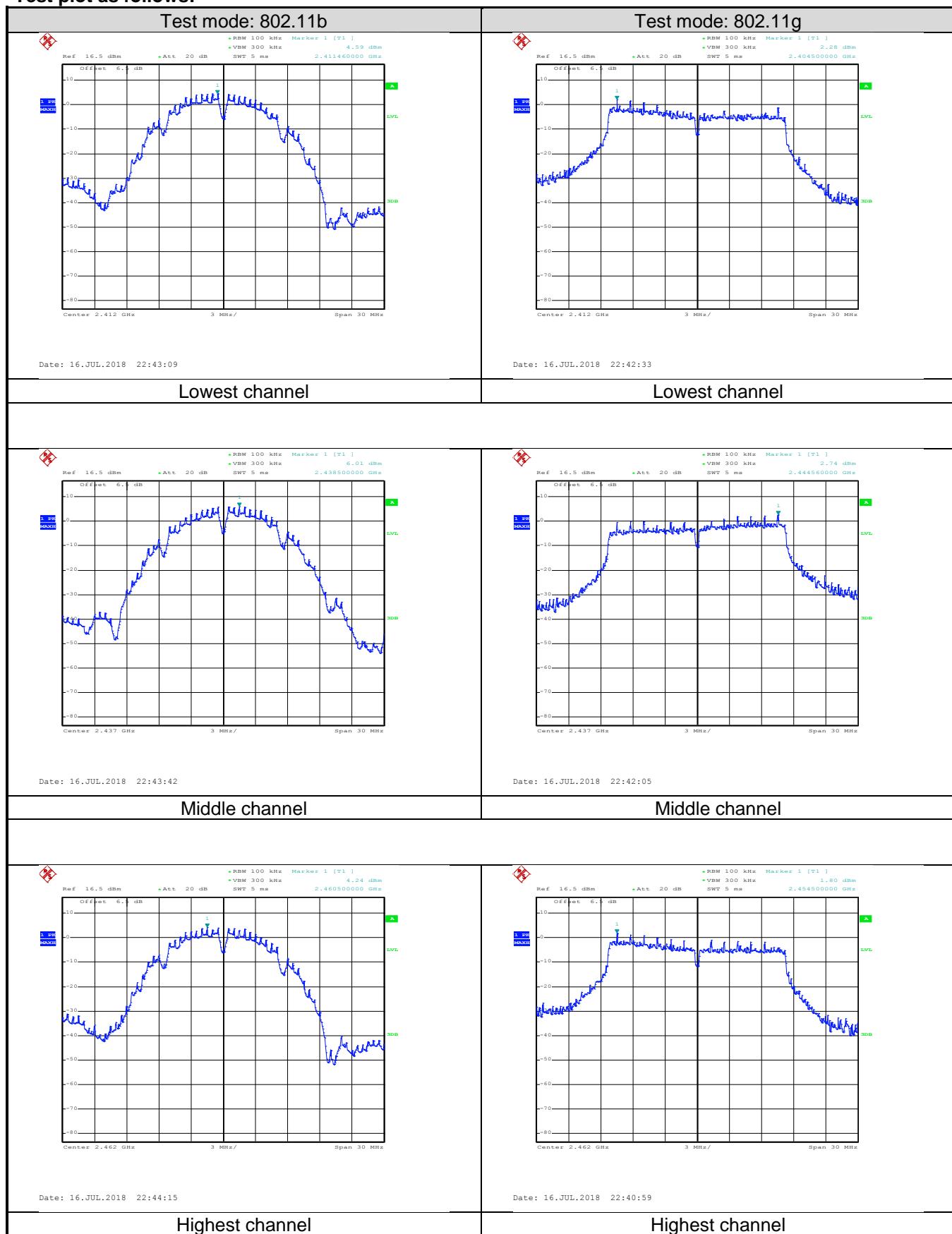
6.5 Power Spectral Density

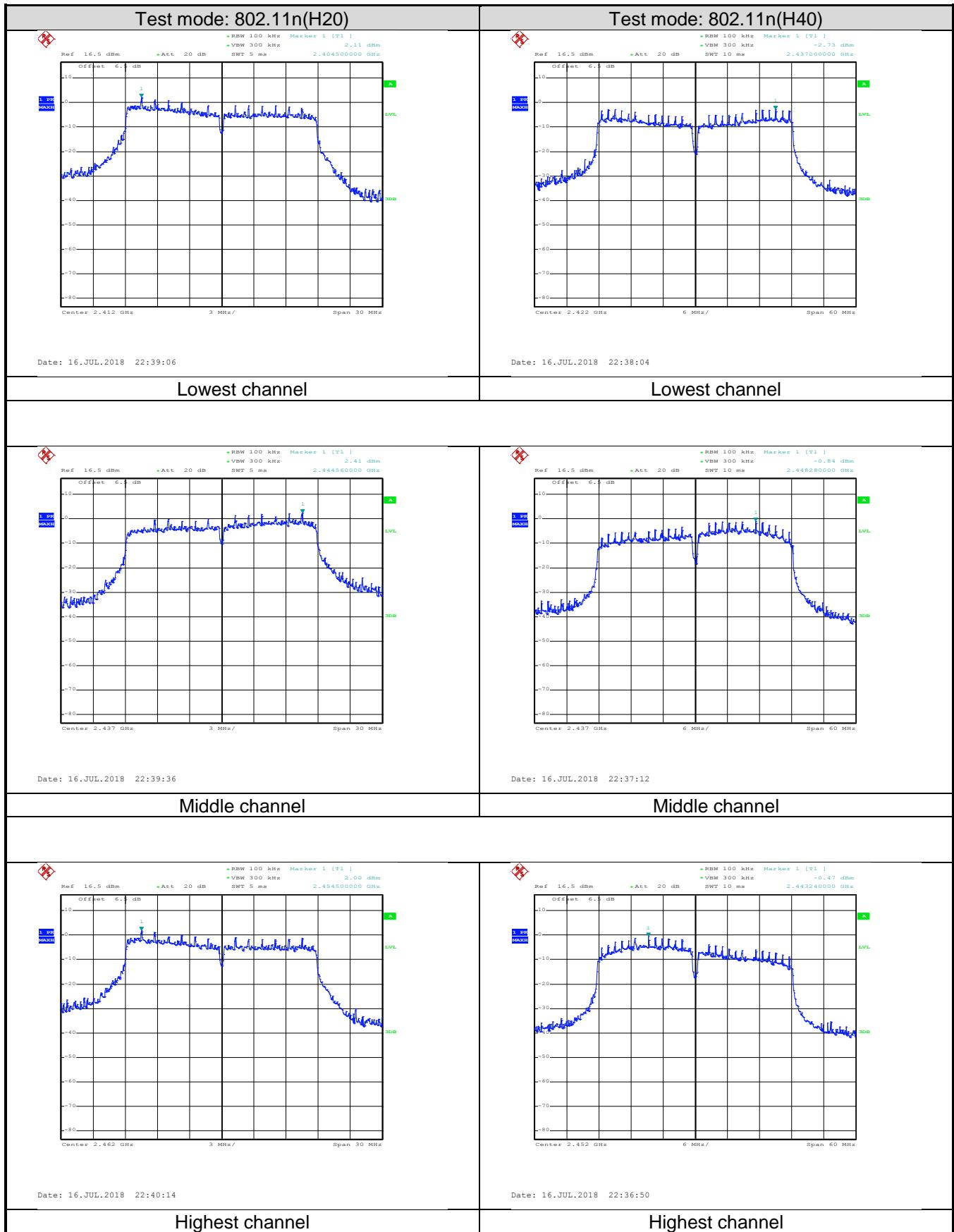
Test Requirement:	FCC Part 15 C Section 15.247 (e) RSS-247 section 5.2(b)
Test Method:	ANSI C63.10:2013 and KDB558074
Limit:	8dBm
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is positioned at the top left, displaying a green waveform on its screen. A red line extends from the analyzer's output port to a grey rectangular box labeled "E.U.T". This "E.U.T" box rests on a white rectangular platform labeled "Non-Conducted Table". The entire table is situated above a thick grey horizontal bar labeled "Ground Reference Plane".</p>
Test Instruments:	Refer to section 5.8 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	4.59	2.28	2.11	-2.73	8.00	Pass
Middle	6.01	2.74	2.41	-0.84		
Highest	4.24	1.80	2.00	-0.47		

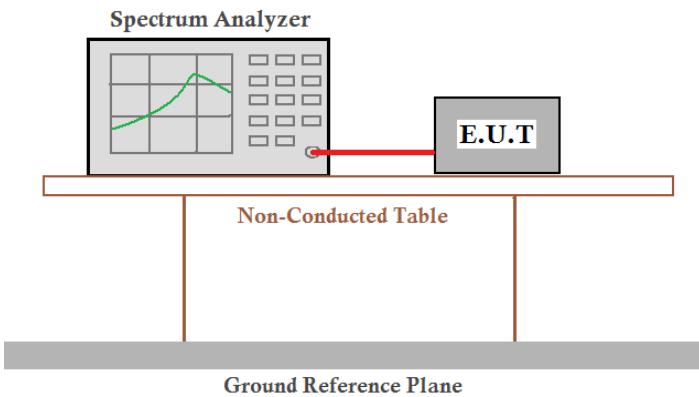
Test plot as follows:



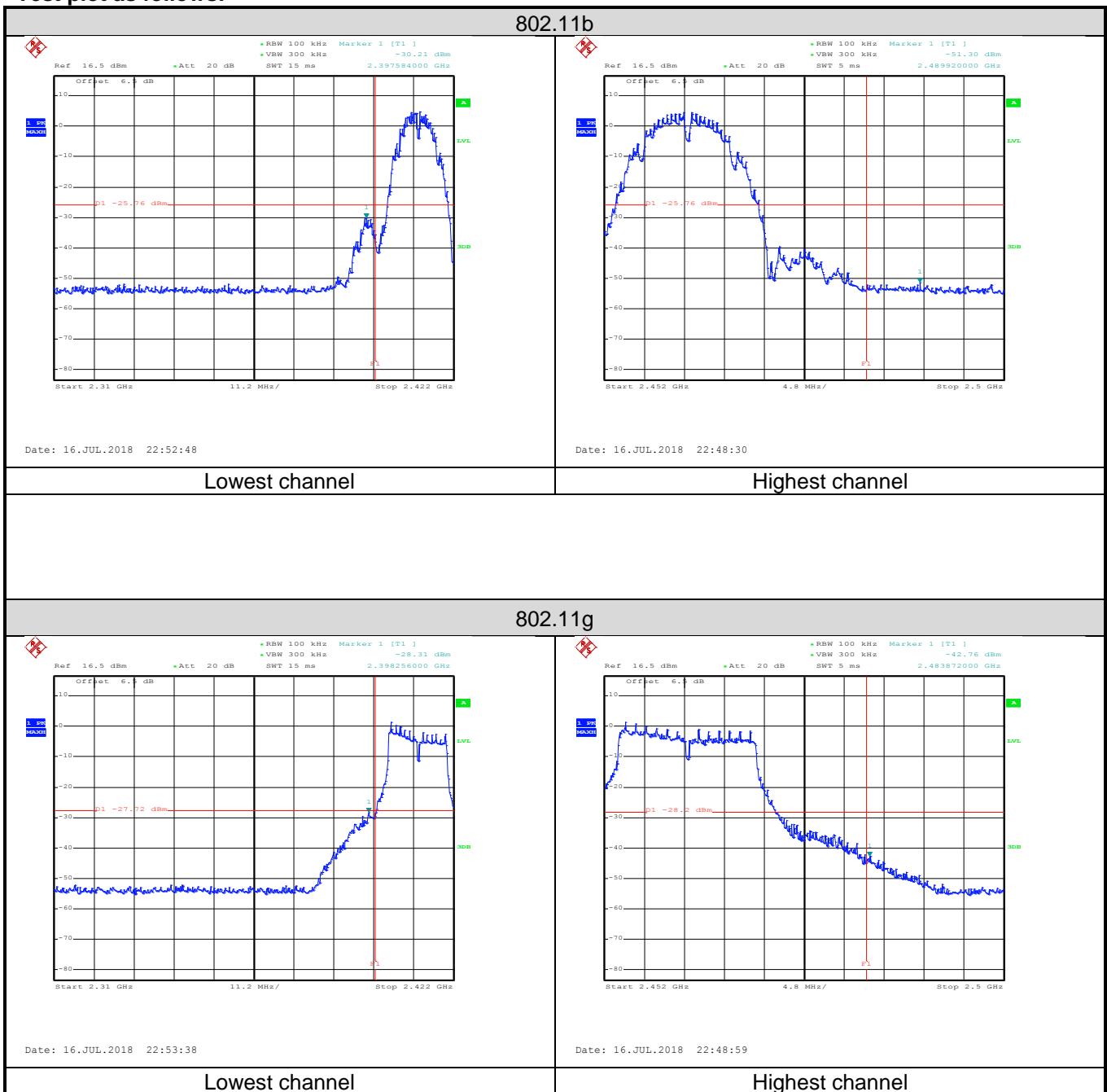


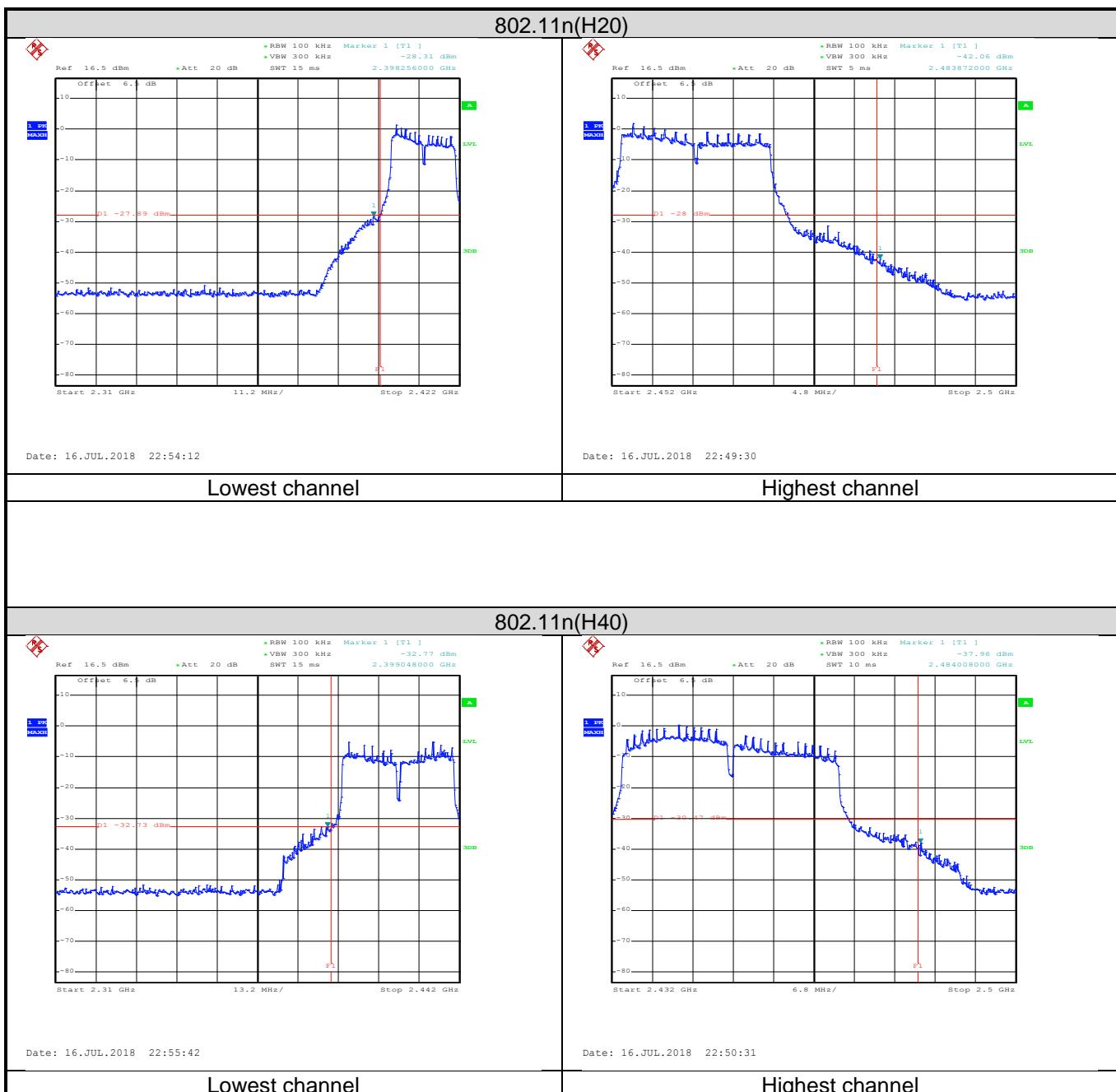
6.6 Band Edge

6.6.1 Conducted Emission Method

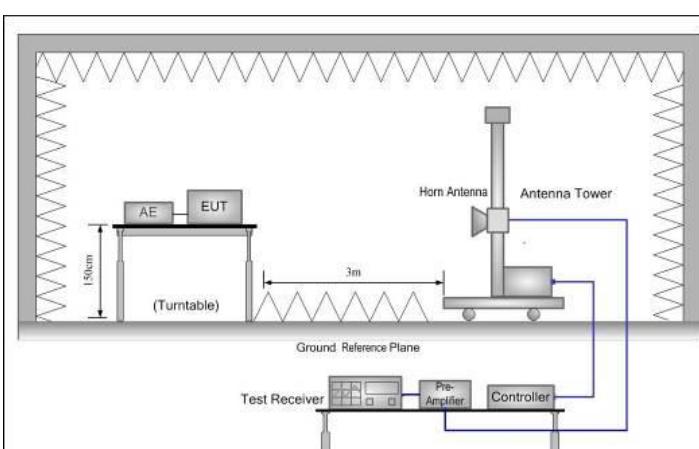
Test Requirement:	FCC Part 15 C Section 15.247 (d) RSS-247 section 5.5
Test Method:	ANSI C63.10:2013 and KDB558074
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator 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 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Test plot as follows:



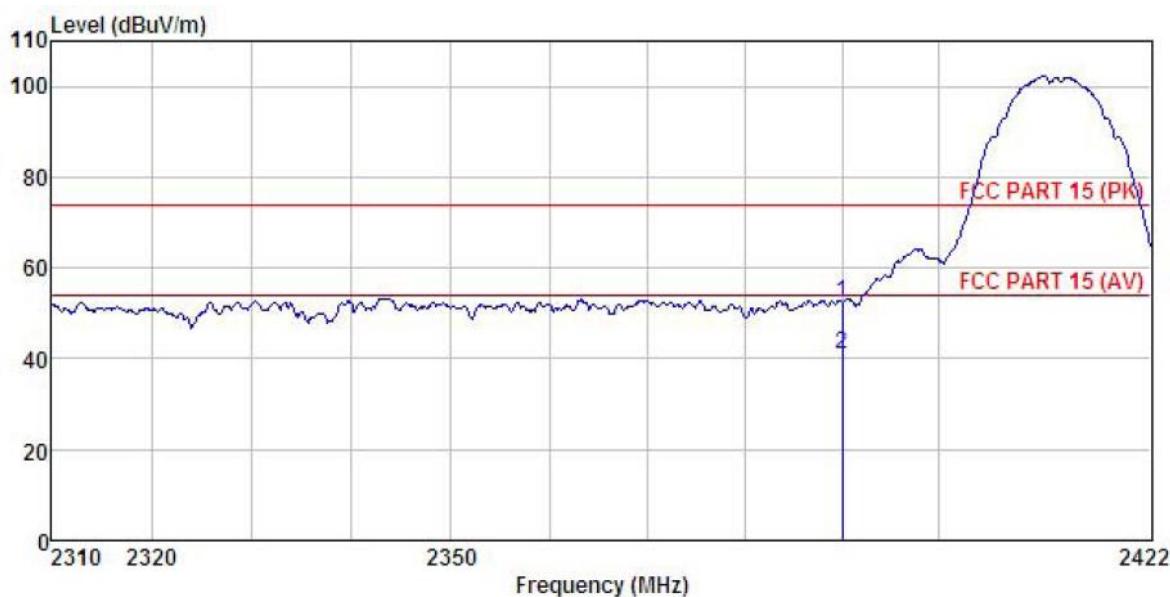


6.6.2 Radiated Emission Method

Test Requirement:	FCC Part 15 C Section 15.209 and 15.205 RSS-GEN section 8.10								
Test Method:	ANSI C63.10: 2013 and KDB558074								
Test Frequency Range:	2.3GHz to 2.5GHz								
Test Distance:	3m								
Receiver setup:	Frequency	Detector	RBW	VBW	Remark				
	Above 1GHz	Peak	1MHz	3MHz	Peak Value				
		RMS	1MHz	3MHz	Average Value				
Limit:	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 1.5 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:									
Test Instruments:	Refer to section 5.8 for details								
Test mode:	Refer to section 5.3 for details								
Test results:	Passed								

802.11b**Test channel: Lowest**

Horizontal:



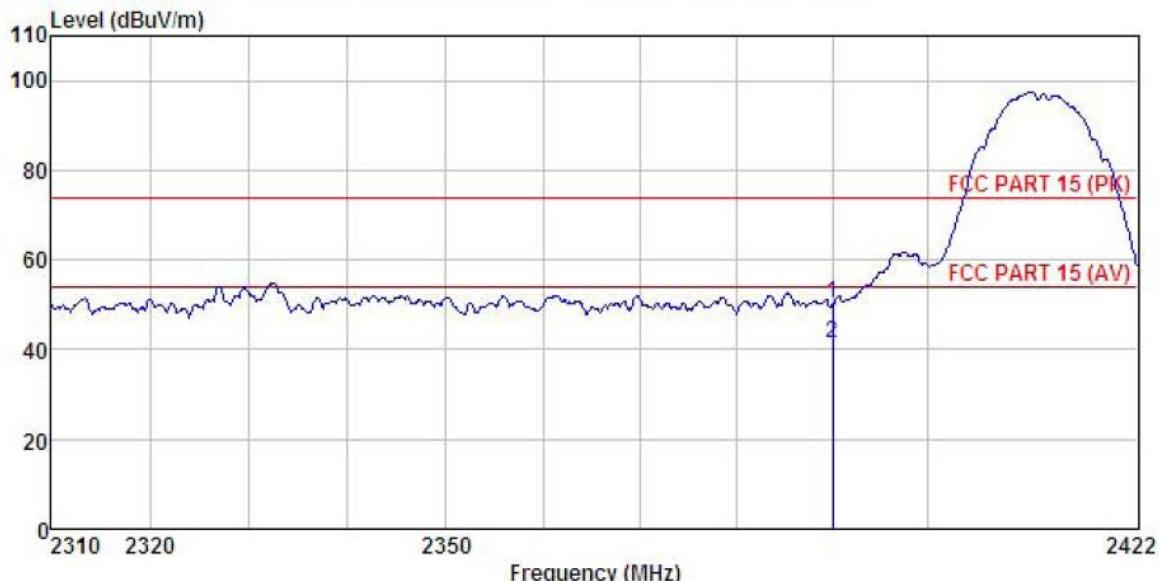
Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18G) HORIZONTAL
EUT : feature phone
Model : MP02
Test mode : 802.11b-L mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Carey
Remark :

	Read	Antenna	Cable	Preampl	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit
MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB
1	2390.000	20.18	27.37	4.69	0.00	52.24	74.00 -21.76 Peak
2	2390.000	9.02	27.37	4.69	0.00	41.08	54.00 -12.92 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(1G18G) VERTICAL

EUT : feature phone

Model : MP02

Test mode : 802.11b-L mode

Power Rating : AC 120V/60Hz

Environment : Temp:25.5°C Huni:55%

Test Engineer: Carey

Remark :

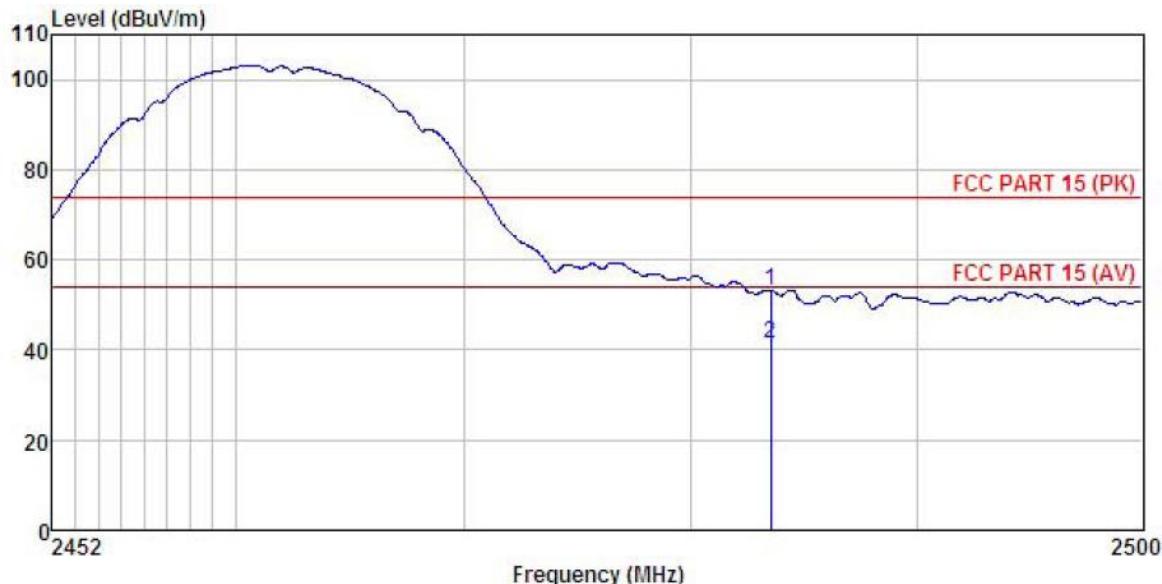
Freq	ReadAntenna Level		Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBm	dB	dB	dBm/m	dBm/m	dB	
1	2390.000	18.27	27.37	4.69	0.00	50.33	74.00	-23.67 Peak
2	2390.000	9.14	27.37	4.69	0.00	41.20	54.00	-12.80 Average

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:



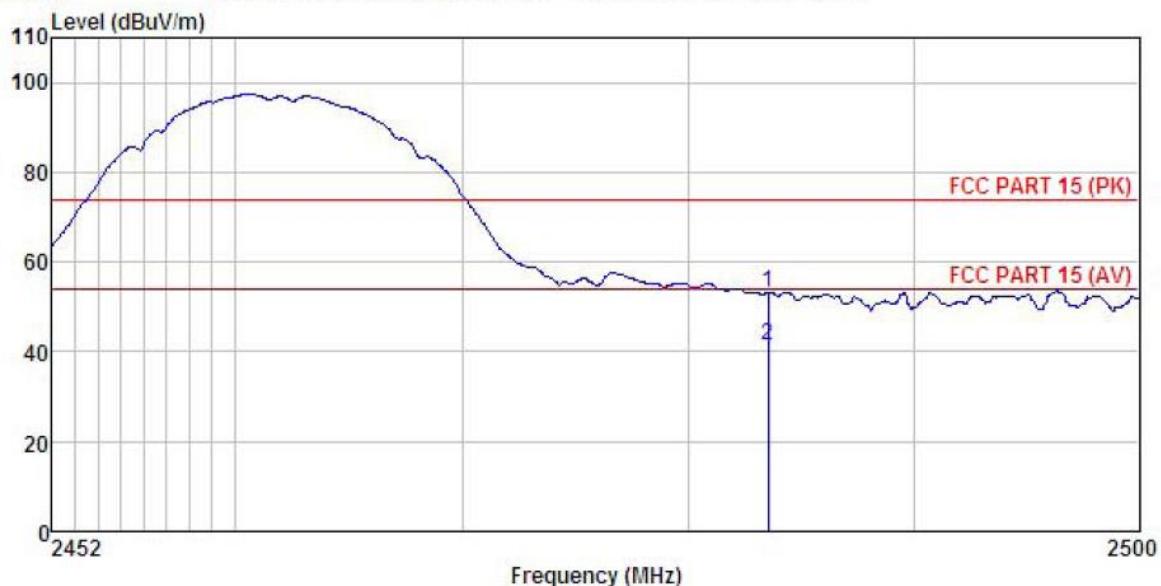
Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18G) HORIZONTAL
 EUT : feature phone
 Model : MP02
 Test mode : 802.11b-H mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Carey
 Remark :

Freq	ReadAntenna	Cable	Preamp	Limit	Over	Remark	
	Level	Factor	Loss Factor				
MHz	dBm	dB/m	dB	dB	dBm/m	dB	-----
1 2483.500	20.88	27.57	4.81	0.00	53.26	74.00	-20.74 Peak
2 2483.500	8.92	27.57	4.81	0.00	41.30	54.00	-12.70 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(1G18G) VERTICAL
EUT : feature phone
Model : MP02
Test mode : 802.11b-H mode
Power Rating : AC 120W/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Carey
Remark :

Freq	ReadAntenna Level		Cable Preamp		Limit Line	Over Limit	Remark
	MHz	dBm	dB/m	dB	dBm/m		
1	2483.500	20.89	27.57	4.81	0.00	53.27	74.00 -20.73 Peak
2	2483.500	9.17	27.57	4.81	0.00	41.55	54.00 -12.45 Average

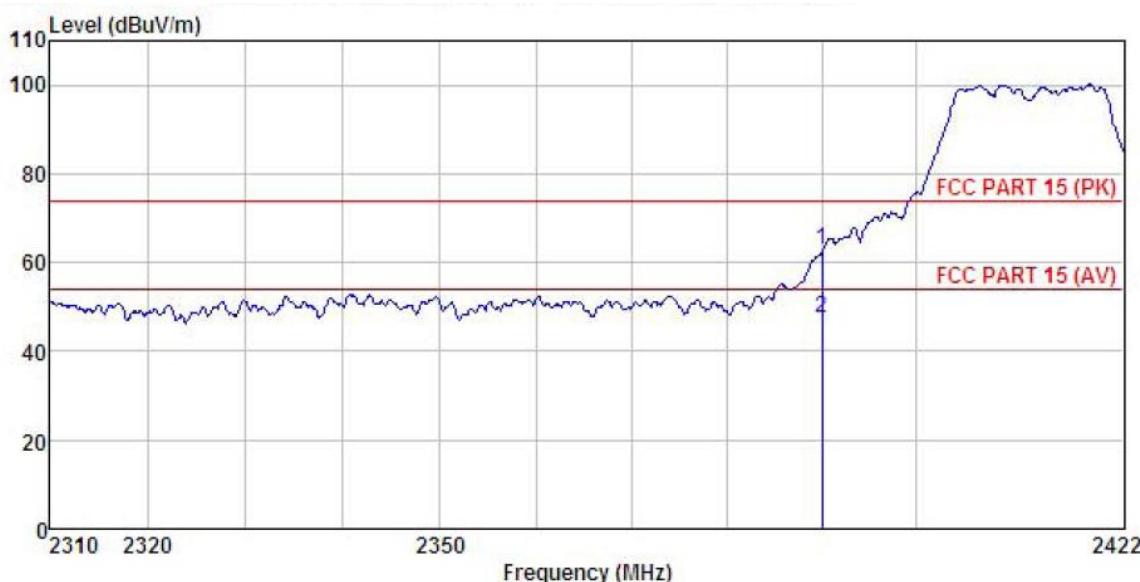
Remark:

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:



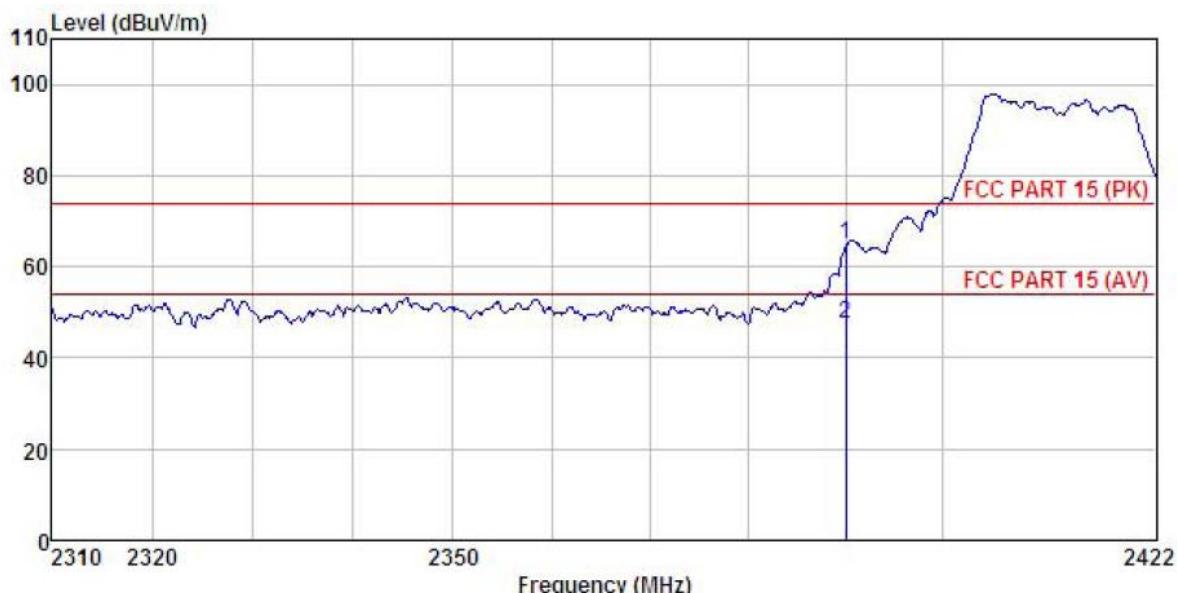
Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18G) HORIZONTAL
 EUT : feature phone
 Model : MP02
 Test mode : 802.11g-L mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25.5°C Huni:55%
 Test Engineer: Carey
 Remark :

Freq	ReadAntenna		Cable	Preampl	Limit	Over	Remark	
	Level	Factor	Loss	Factor				
	MHz	dBm	dB/m	dB	dB	dB/m	dB	-----
1	2390.000	30.81	27.37	4.69	0.00	62.87	74.00	-11.13 Peak
2	2390.000	15.41	27.37	4.69	0.00	47.47	54.00	-6.53 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(1G18G) VERTICAL

EUT : feature phone

Model : MP02

Test mode : 802.11g-L mode

Power Rating : AC 120V/60Hz

Environment : Temp:25.5°C Huni:55%

Test Engineer: Carey

Remark :

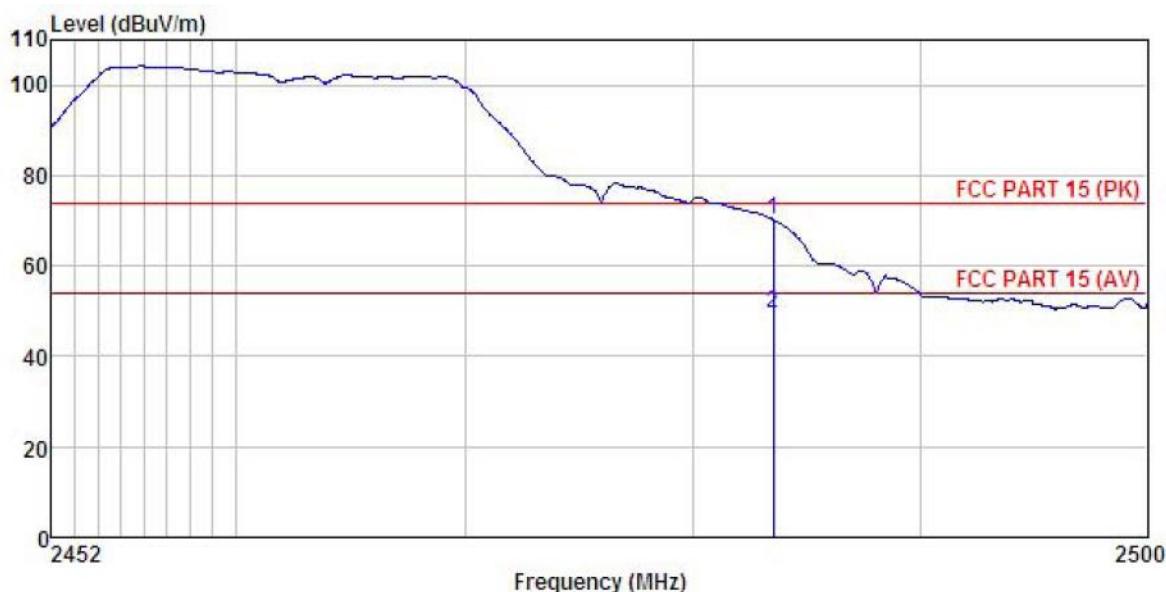
Freq	ReadAntenna	Cable	Preamp	Limit	Over	Remark
	Level	Factor	Loss			
MHz	dBm	dB/m	dB	dBm/m	dBm/m	dB
1	2390.000	32.74	27.37	4.69	0.00	64.80
2	2390.000	15.29	27.37	4.69	0.00	47.35
				74.00	54.00	-9.20 Peak -6.65 Average

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:



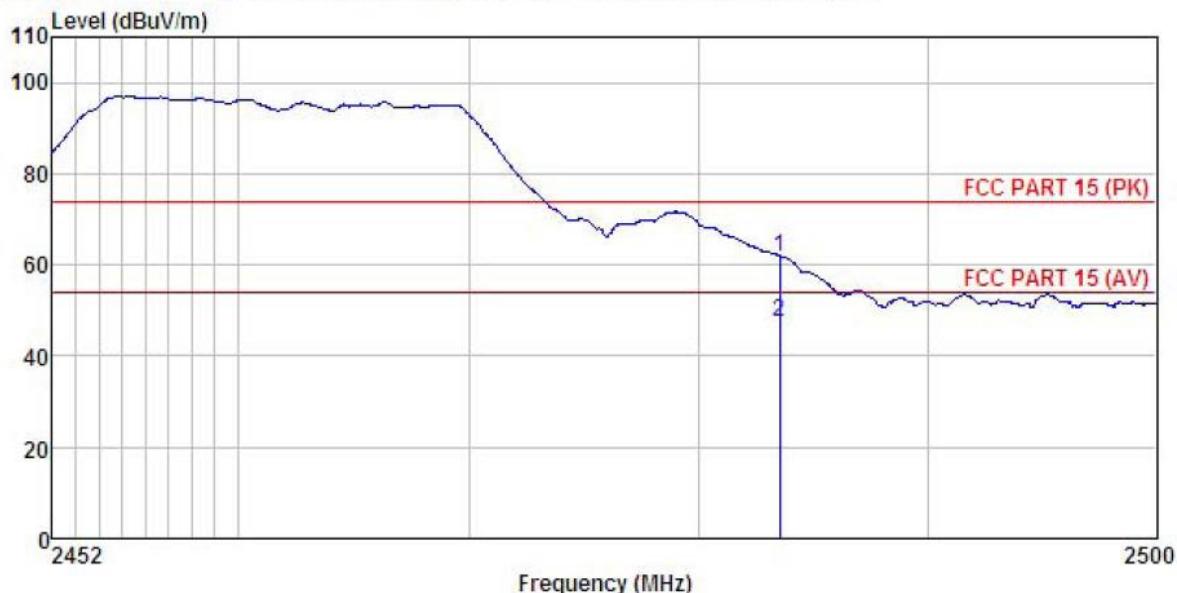
Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18G) HORIZONTAL
EUT : feature phone
Model : MP02
Test mode : 802.11g-H mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Carey
Remark :

Freq	Read	Antenna	Cable	Preamp	Limit	Over	Remark
	Level	Factor	Loss	Level			
MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB
1	2483.500	37.74	27.57	4.81	0.00	70.12	-3.88 Peak
2	2483.500	16.97	27.57	4.81	0.00	49.35	-4.65 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(1G18G) VERTICAL
EUT : feature phone
Model : MP02
Test mode : 802.11g-H mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Carey
Remark :

	Read	Antenna	Cable	Preamp	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit
MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB
1	2483.500	29.52	27.57	4.81	0.00	61.90	74.00 -12.10 Peak
2	2483.500	15.29	27.57	4.81	0.00	47.67	54.00 -6.33 Average

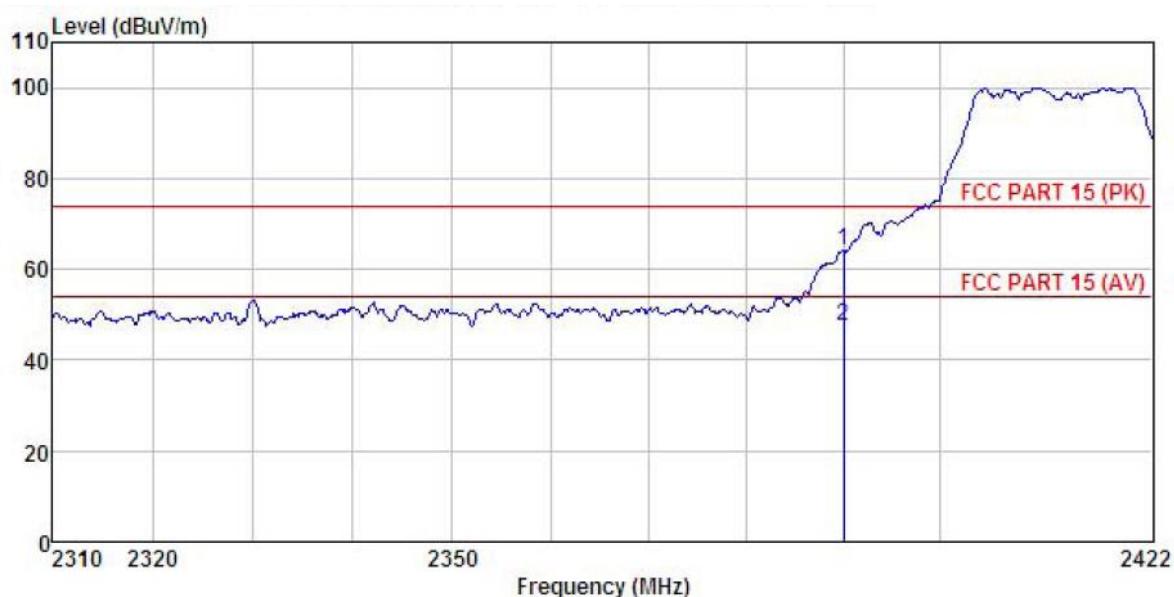
Remark:

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:



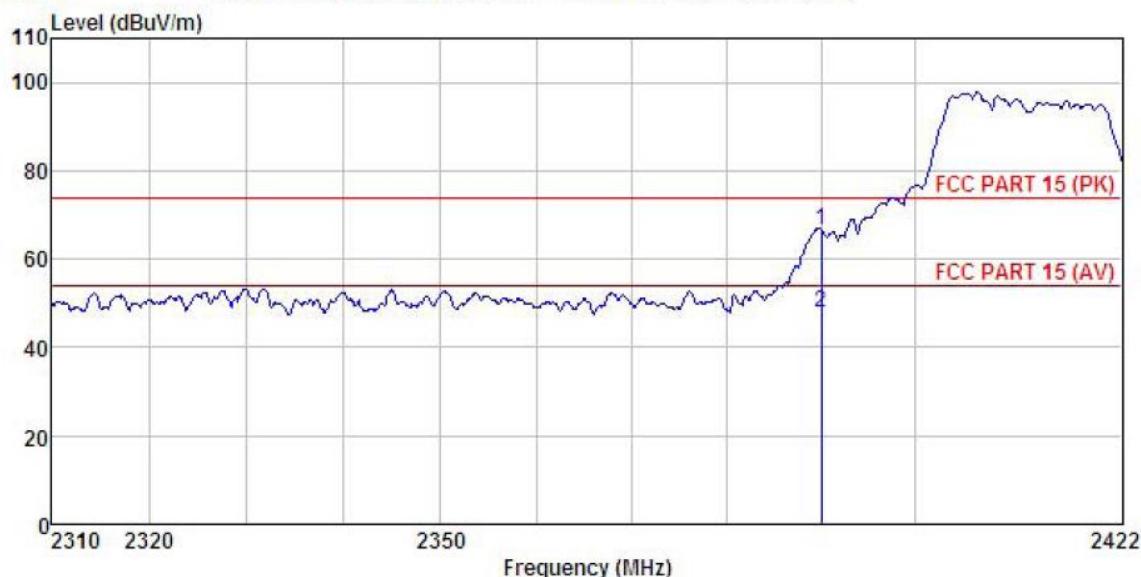
Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18G) HORIZONTAL
EUT : feature phone
Model : MP02
Test mode : 802.11n20-L mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Carey
Remark :

Freq	ReadAntenna	Cable	Preampl	Limit	Over	Remark
	Level	Factor	Loss	Level	Line	
MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1 2390.000	31.98	27.37	4.69	0.00	64.04	74.00 -9.96 Peak
2 2390.000	15.46	27.37	4.69	0.00	47.52	54.00 -6.48 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(1G18G) VERTICAL
EUT : feature phone
Model : MP02
Test mode : 802.11n20-L mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Carey
Remark :

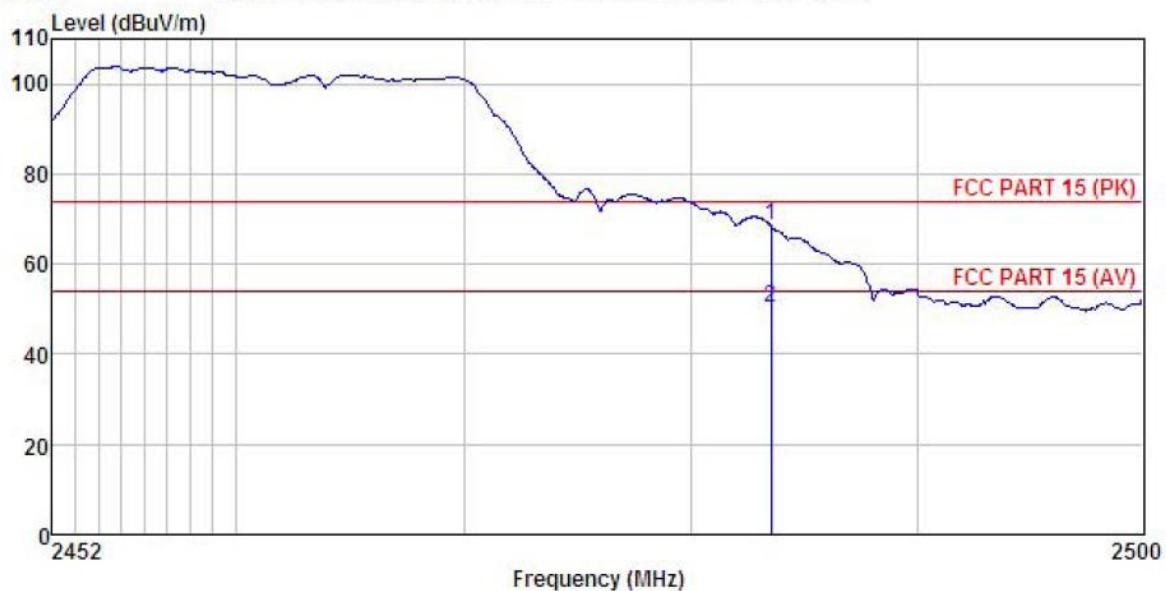
Freq	ReadAntenna Level	Cable Factor	Preamp Loss	Level Factor	Limit Level	Line Limit	Over Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2390.000	34.40	27.37	4.69	0.00	66.46	74.00 -7.54 Peak
2	2390.000	15.93	27.37	4.69	0.00	47.99	54.00 -6.01 Average

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:



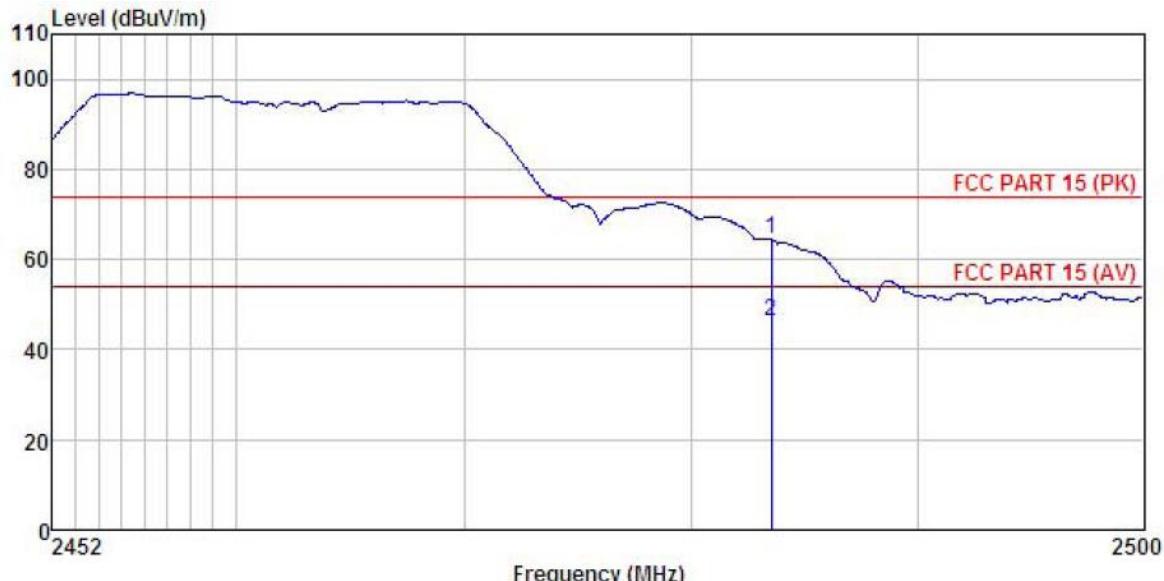
Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18G) HORIZONTAL
EUT : feature phone
Model : MP02
Test mode : 802.11n20-H mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Carey
Remark :

	ReadAntenna Freq	Cable Level Factor	Preamp Loss Factor	Limit Level	Over Line	Over Limit	Remark
1	2483.500	36.08	27.57	4.81	0.00	68.46	74.00 -5.54 Peak
2	2483.500	17.95	27.57	4.81	0.00	50.33	54.00 -3.67 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(1G18G) VERTICAL
EUT : feature phone
Model : MP02
Test mode : 802.11n20-H mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Carey
Remark :

Freq	Read	Antenna	Cable	Preamp	Limit	Over	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2483.500	32.14	27.57	4.81	0.00	64.52	74.00 -9.48 Peak
2	2483.500	14.08	27.57	4.81	0.00	46.46	54.00 -7.54 Average

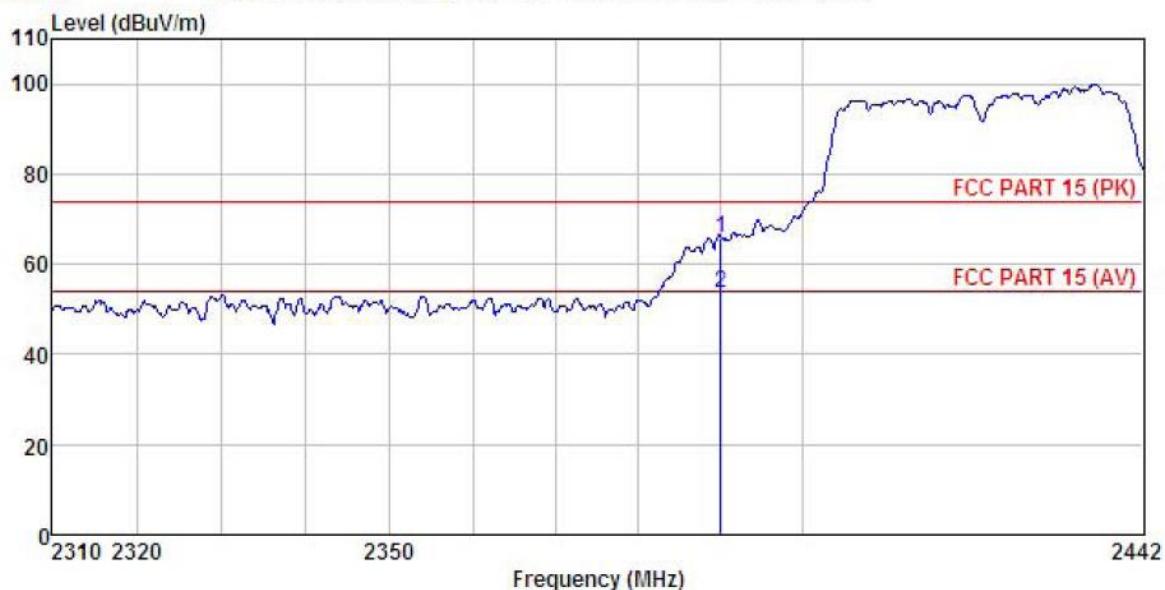
Remark:

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:



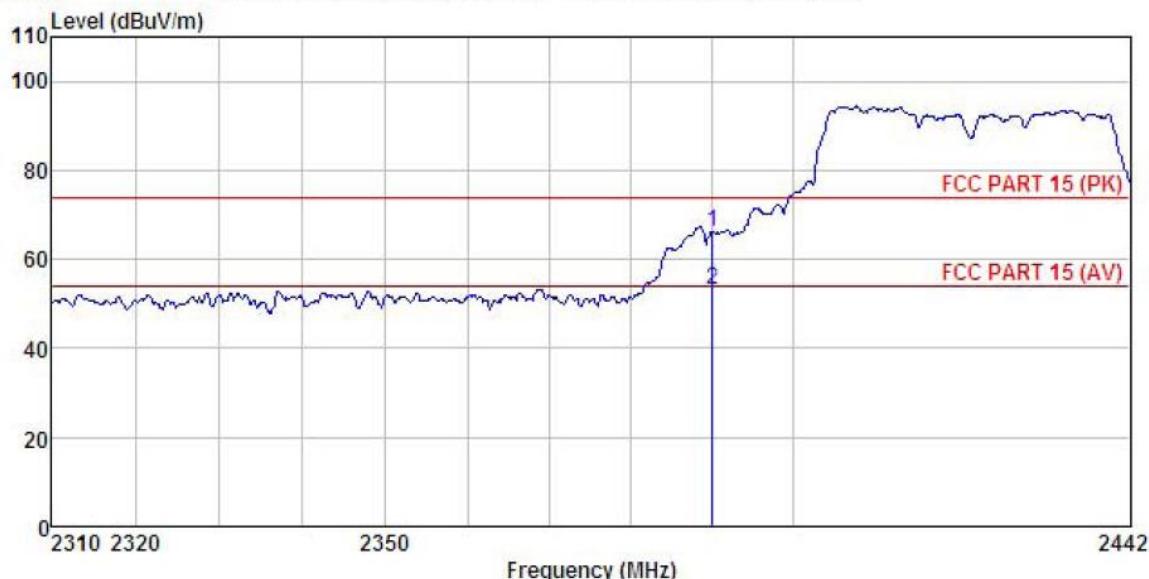
Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18G) HORIZONTAL
EUT : feature phone
Model : MP02
Test mode : 802.11n40-L mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Carey
Remark :

	ReadAntenna Level	Cable Factor	Preamp Loss	Limit Factor	Line Level	Over Limit	Remark
Freq	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	2390.000	33.71	27.37	4.69	0.00	65.77	74.00 -8.23 Peak
2	2390.000	21.32	27.37	4.69	0.00	53.38	54.00 -0.62 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(1G18G) VERTICAL
EUT : feature phone
Model : MP02
Test mode : 802.11n40-L mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Carey
Remark :

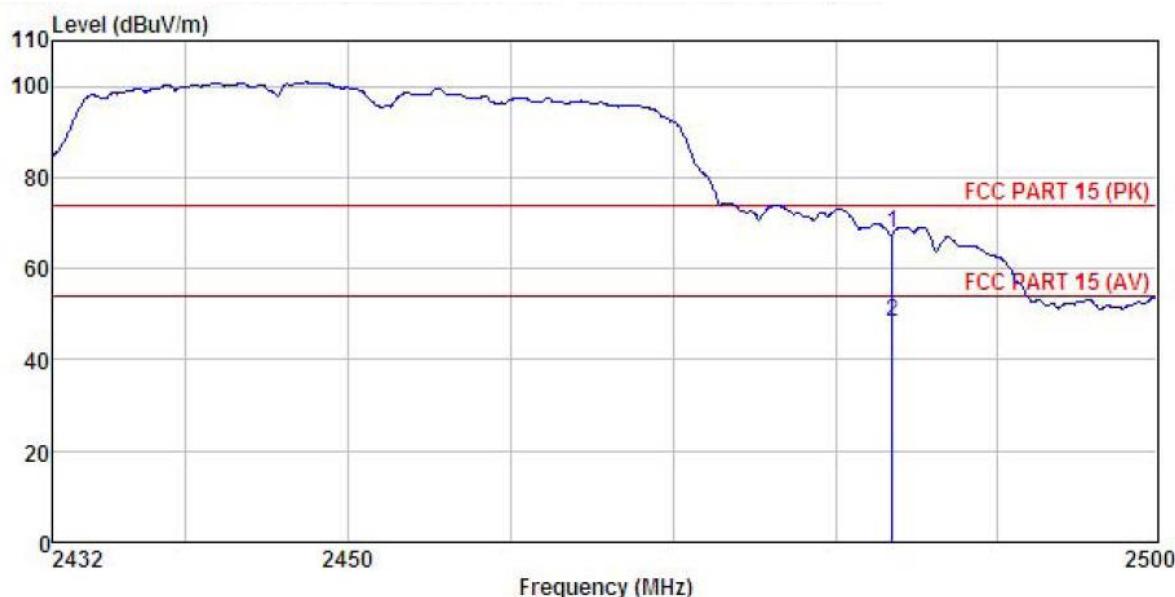
Freq	ReadAntenna	Cable	Preamp	Limit	Over	Remark	
	Level	Factor	Loss Factor				
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2390.000	34.21	27.37	4.69	0.00	66.27	74.00 -7.73 Peak
2	2390.000	21.24	27.37	4.69	0.00	53.30	54.00 -0.70 Average

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:



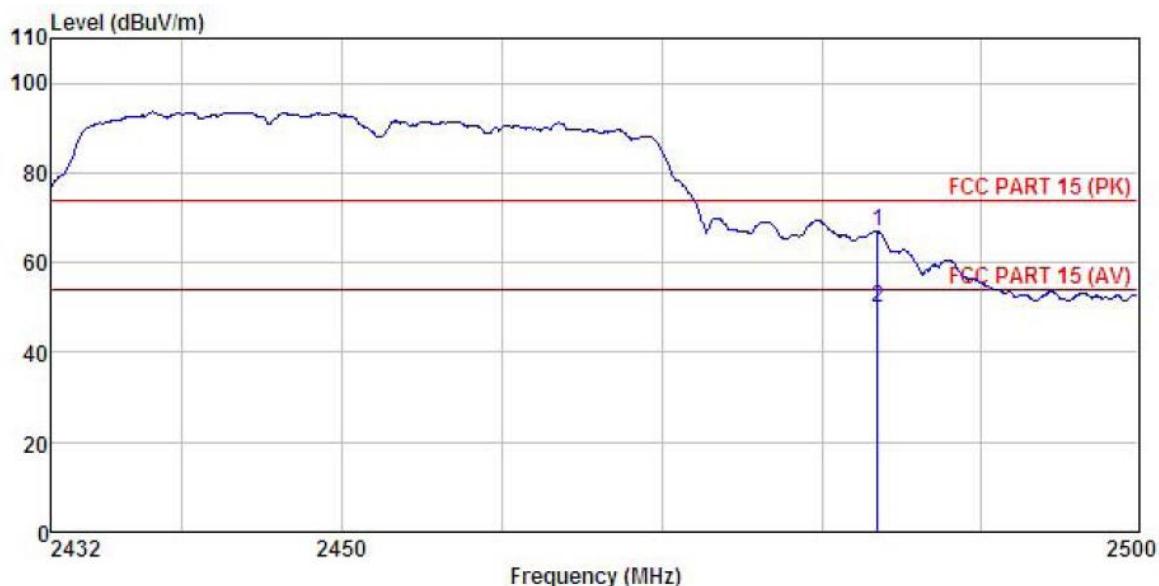
Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18G) HORIZONTAL
EUT : feature phone
Model : MP02
Test mode : 802.11n40-H mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Humi:55%
Test Engineer: Carey
Remark :

Freq	Read		Antenna		Cable	Preamp	Limit	Over	Remark
	Level	Factor	Loss	Factor	Level	Line			
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2483.500	35.39	27.57	4.81	0.00	67.77	74.00	-6.23	Peak
2	2483.500	15.93	27.57	4.81	0.00	48.31	54.00	-5.69	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(1G18G) VERTICAL
EUT : feature phone
Model : MP02
Test mode : 802.11n40-H mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Carey
Remark :

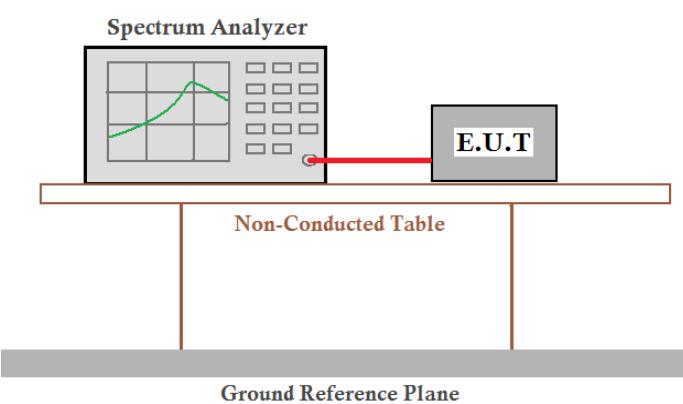
Freq	ReadAntenna	Cable	Preamp	Limit	Over	Remark
	Level	Factor	Loss Factor	Level	Line Limit	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dB
1	2483.500	34.41	27.57	4.81	0.00	66.79
2	2483.500	17.38	27.57	4.81	0.00	49.76
					74.00	-7.21 Peak
					54.00	-4.24 Average

Remark:

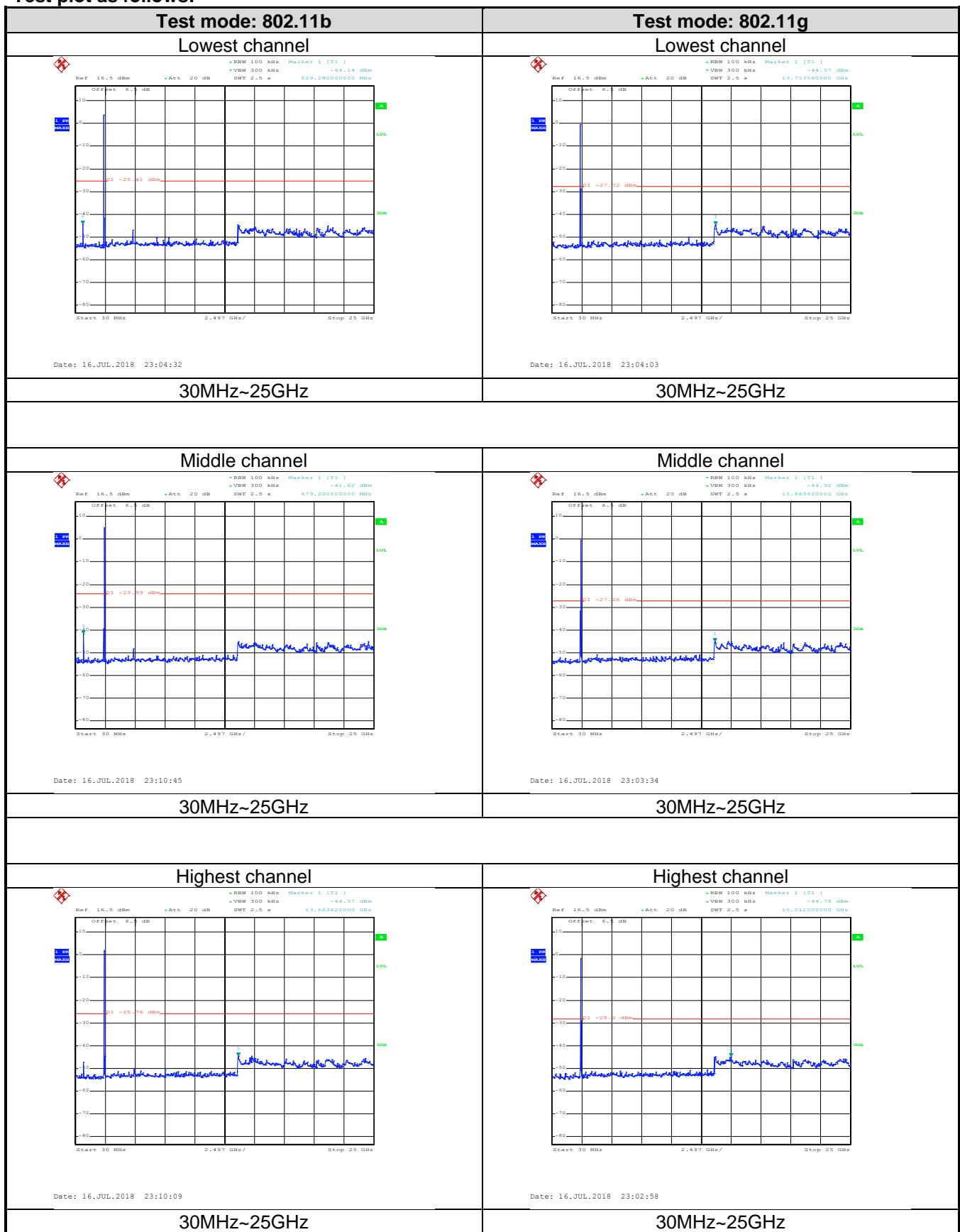
1. Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

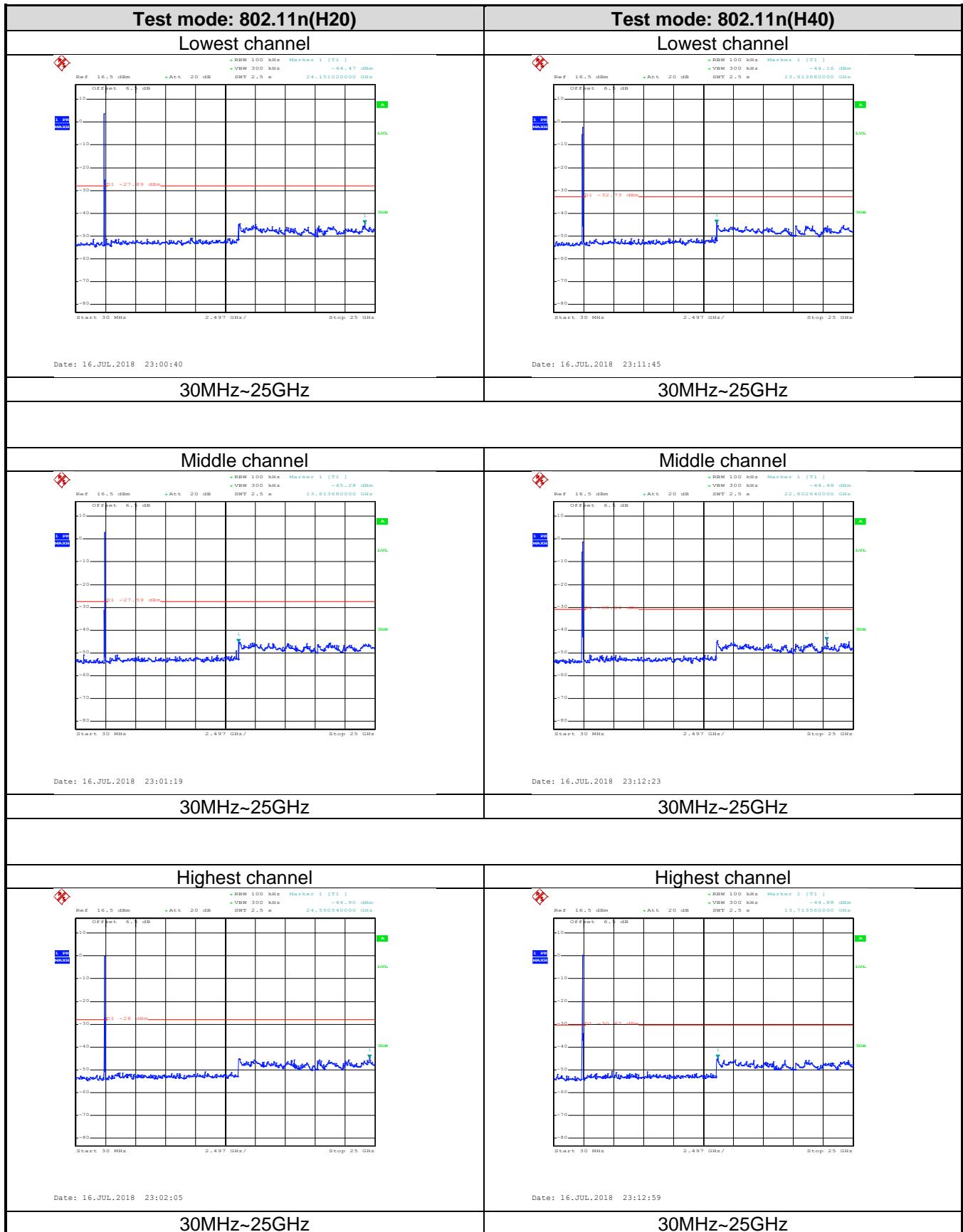
6.7 Spurious Emission

6.7.1 Conducted Emission Method

Test Requirement:	FCC Part 15 C Section 15.247 (d) RSS-247 section 5.5
Test Method:	ANSI C63.10:2013 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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph(b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
Test setup:	<p style="text-align: center;">  Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane </p>
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

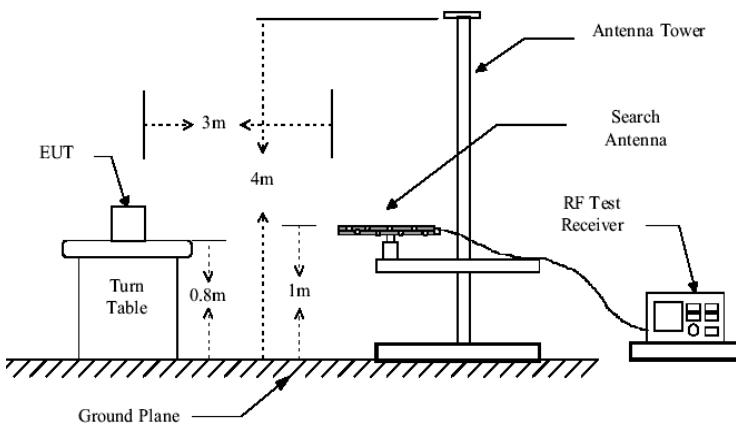
Test plot as follows:



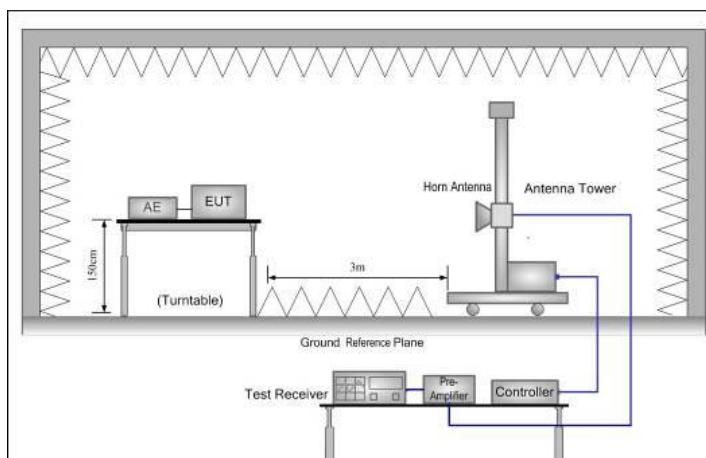


6.7.2 Radiated Emission Method

Test Requirement:	FCC Part 15 C Section 15.209 and 15.205 RSS-Gen section 6.13				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	9kHz to 25GHz				
Test 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
Limit:	RMS	1MHz	3MHz	Average	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	
Test Procedure:	Above 1GHz	54.0		Average Value	
		74.0		Peak Value	
Test setup:	Below 1GHz				



Above 1GHz

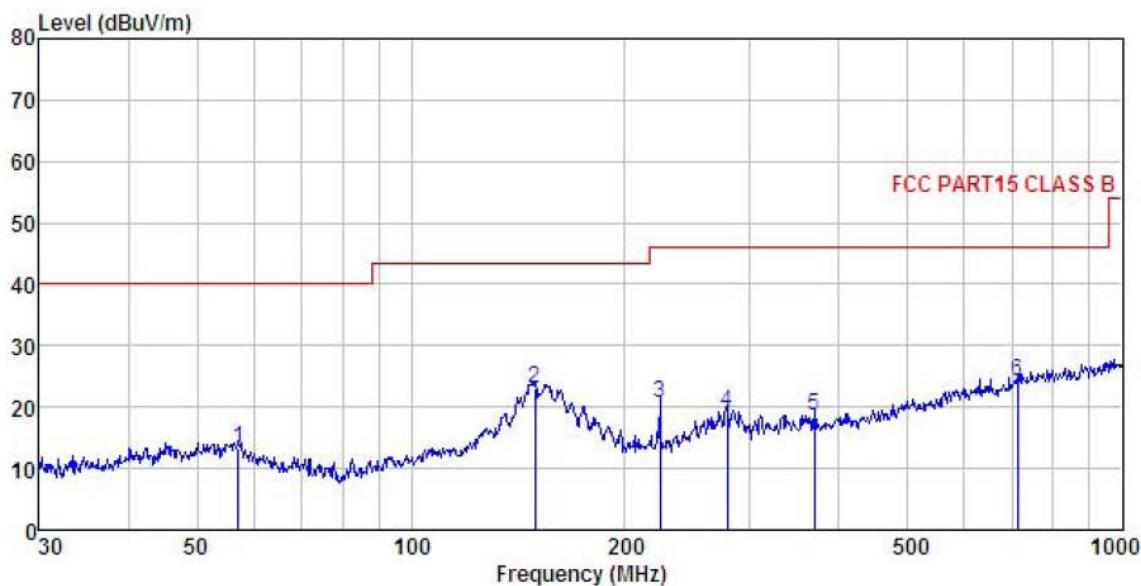


Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Remark:	<ol style="list-style-type: none"> Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis is the worst case. 9 kHz to 30MHz is too low, so only shows the data of above 30MHz in this report.

Adapter 1:

Below 1GHz

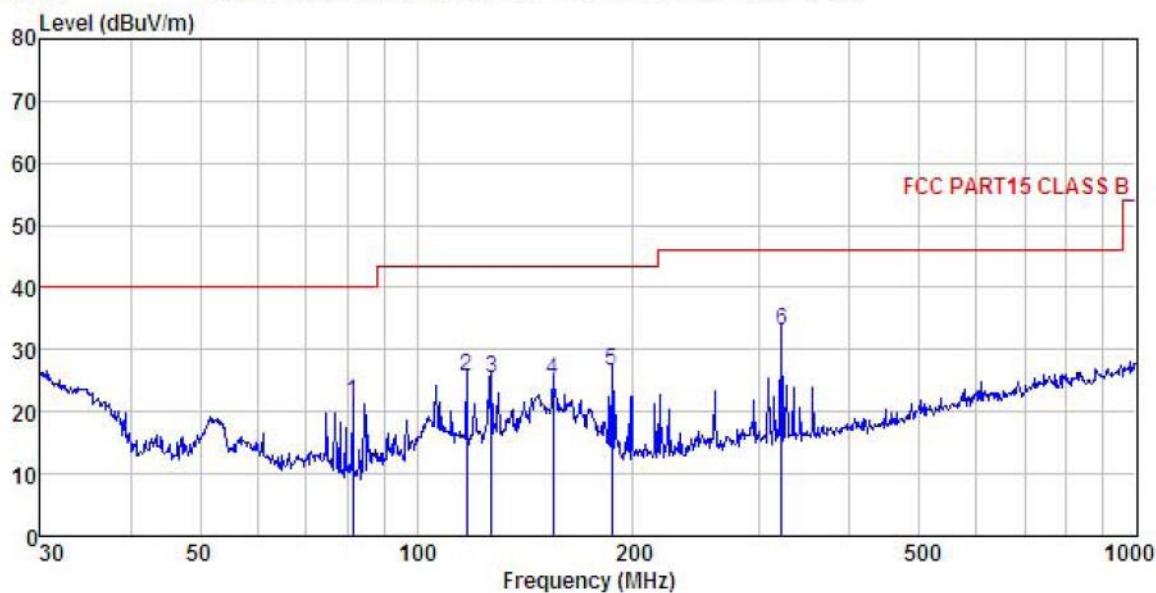
Horizontal:



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163(30M2G) HORIZONTAL
EUT : feature phone
Model : MP02
Test mode : WIFI Mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Carey
REMARK :

	ReadAntenna	Cable	Preamp	Limit	Over		
Freq	Level	Factor	Loss	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	57.191	28.93	12.85	1.37	29.79	13.36	40.00 -26.64 QP
2	149.486	41.17	8.58	2.51	29.22	23.04	43.50 -20.46 QP
3	223.733	34.17	12.40	2.84	28.69	20.72	46.00 -25.28 QP
4	278.067	31.41	13.48	2.88	28.49	19.28	46.00 -26.72 QP
5	369.405	29.21	14.96	3.09	28.65	18.61	46.00 -27.39 QP
6	711.674	28.44	20.09	4.22	28.62	24.13	46.00 -21.87 QP

Vertical:



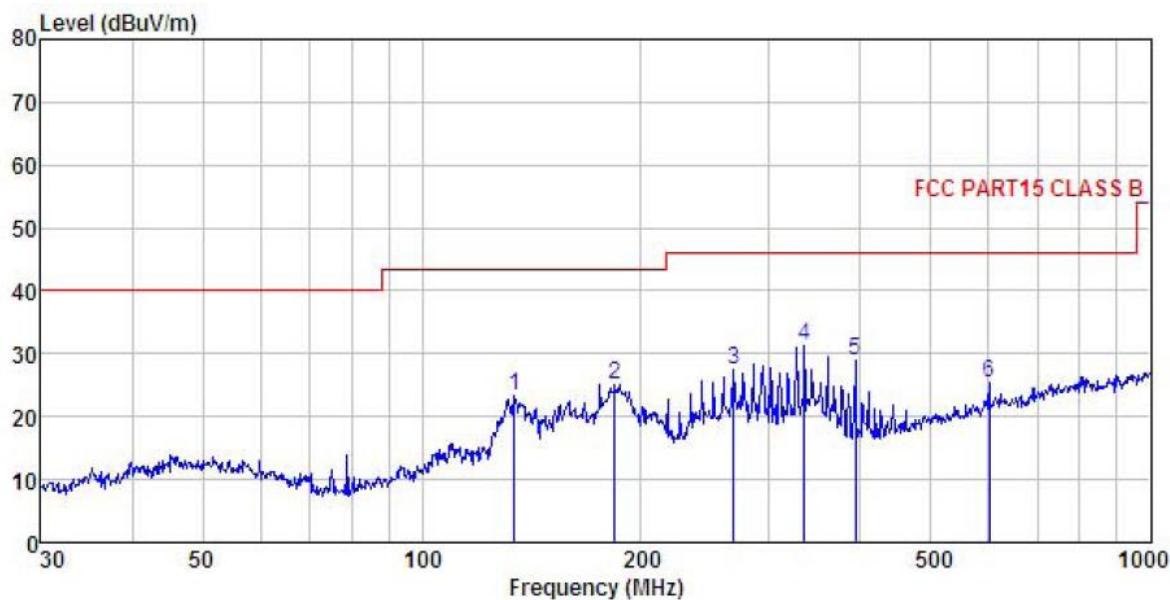
Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163(30M2G) VERTICAL
EUT : feature phone
Model : MP02
Test mode : WIFI Mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Carey
REMARK :

Freq	Read	Antenna	Cable	Preamp	Limit	Over	Remark
	MHz	Level	Factor	Loss	Level	Line	
1	81.497	41.00	8.40	1.72	29.63	21.49	40.00 -18.51 QP
2	117.360	42.17	10.74	2.13	29.41	25.63	43.50 -17.87 QP
3	127.218	43.48	9.11	2.25	29.35	25.49	43.50 -18.01 QP
4	154.821	42.80	8.85	2.55	29.18	25.02	43.50 -18.48 QP
5	186.441	41.92	10.71	2.77	28.93	26.47	43.50 -17.03 QP
6	321.061	44.37	14.04	3.01	28.50	32.92	46.00 -13.08 QP

Adapter 2:

Below 1GHz

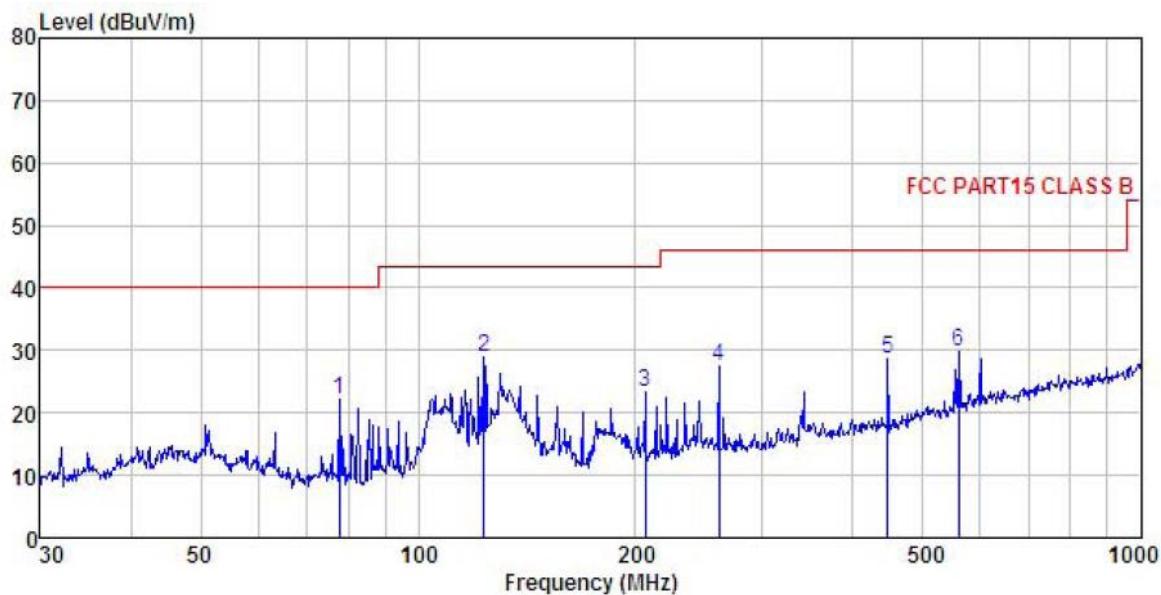
Horizontal:



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163 (30M2G) HORIZONTAL
EUT : feature phone
Model : MP02
Test mode : WIFI Mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Carey
REMARK : APP524-050200U-1

Freq	ReadAntenna		Cable		Preamp		Limit	Over	Remark
	Level	Factor	Loss	Factor	Level	dBuV/m	dBuV/m	dB	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	134.088	41.73	8.45	2.33	29.31	23.20	43.50	-20.30	QP
2	183.844	41.01	10.35	2.75	28.94	25.17	43.50	-18.33	QP
3	267.546	39.74	13.41	2.86	28.51	27.50	46.00	-18.50	QP
4	334.859	42.43	14.31	3.05	28.53	31.26	46.00	-14.74	QP
5	393.472	39.10	15.39	3.08	28.75	28.82	46.00	-17.18	QP
6	601.427	31.21	19.22	3.94	28.93	25.44	46.00	-20.56	QP

Vertical:



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163(30M2G) VERTICAL
EUT : feature phone
Model : MP02
Test mode : WIFI Mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Humi:55%
Test Engineer: Carey
REMARK : APP524-050200U-1

Freq	ReadAntenna	Cable	Preamp	Limit	Over	Remark	
	Level	Factor	Loss Factor	Level	Line		
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	77.865	41.78	8.30	1.64	29.66	22.06	40.00 -17.94 QP
2	123.266	46.34	9.70	2.20	29.37	28.87	43.50 -14.63 QP
3	206.398	37.50	11.75	2.86	28.79	23.32	43.50 -20.18 QP
4	261.058	39.77	13.37	2.84	28.52	27.46	46.00 -18.54 QP
5	446.414	38.21	16.06	3.19	28.86	28.60	46.00 -17.40 QP
6	560.693	36.68	18.27	3.90	29.07	29.78	46.00 -16.22 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	47.64	36.06	6.81	41.82	48.69	74.00	-25.31	Vertical
4824.00	46.93	36.06	6.81	41.82	47.98	74.00	-26.02	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	37.78	36.06	6.81	41.82	38.83	54.00	-15.17	Vertical
4824.00	36.82	36.06	6.81	41.82	37.87	54.00	-16.13	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	46.64	36.32	6.85	41.84	47.97	74.00	-26.03	Vertical
4874.00	45.95	36.32	6.85	41.84	47.28	74.00	-26.72	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	36.31	36.32	6.85	41.84	37.64	54.00	-16.36	Vertical
4874.00	35.87	36.32	6.85	41.84	37.20	54.00	-16.80	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	46.94	36.58	6.89	41.86	48.55	74.00	-25.45	Vertical
4924.00	46.97	36.58	6.89	41.86	48.58	74.00	-25.42	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	36.21	36.58	6.89	41.86	37.82	54.00	-16.18	Vertical
4924.00	36.88	36.58	6.89	41.86	38.49	54.00	-15.51	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	47.25	36.06	6.81	41.82	48.30	74.00	-25.70	Vertical
4824.00	47.24	36.06	6.81	41.82	48.29	74.00	-25.71	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	36.64	36.06	6.81	41.82	37.69	54.00	-16.31	Vertical
4824.00	36.28	36.06	6.81	41.82	37.33	54.00	-16.67	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	46.85	36.32	6.85	41.84	48.18	74.00	-25.82	Vertical
4874.00	46.74	36.32	6.85	41.84	48.07	74.00	-25.93	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	36.37	36.32	6.85	41.84	37.70	54.00	-16.30	Vertical
4874.00	36.85	36.32	6.85	41.84	38.18	54.00	-15.82	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	46.49	36.58	6.89	41.86	48.10	74.00	-25.90	Vertical
4924.00	46.41	36.58	6.89	41.86	48.02	74.00	-25.98	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	36.24	36.58	6.89	41.86	37.85	54.00	-16.15	Vertical
4924.00	36.51	36.58	6.89	41.86	38.12	54.00	-15.88	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	47.36	36.06	6.81	41.82	48.41	74.00	-25.59	Vertical
4824.00	47.54	36.06	6.81	41.82	48.59	74.00	-25.41	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	37.82	36.06	6.81	41.82	38.87	54.00	-15.13	Vertical
4824.00	37.54	36.06	6.81	41.82	38.59	54.00	-15.41	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	47.74	36.32	6.85	41.84	49.07	74.00	-24.93	Vertical
4874.00	47.25	36.32	6.85	41.84	48.58	74.00	-25.42	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	37.18	36.32	6.85	41.84	38.51	54.00	-15.49	Vertical
4874.00	37.82	36.32	6.85	41.84	39.15	54.00	-14.85	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	46.25	36.58	6.89	41.86	47.86	74.00	-26.14	Vertical
4924.00	46.22	36.58	6.89	41.86	47.83	74.00	-26.17	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	36.24	36.58	6.89	41.86	37.85	54.00	-16.15	Vertical
4924.00	36.54	36.58	6.89	41.86	38.15	54.00	-15.85	Horizontal

Remark:

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

Test mode: 802.11n(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	46.25	36.06	6.81	41.82	47.30	74.00	-26.70	Vertical
4844.00	46.59	36.06	6.81	41.82	47.64	74.00	-26.36	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	36.58	36.06	6.81	41.82	37.63	54.00	-16.37	Vertical
4844.00	36.74	36.06	6.81	41.82	37.79	54.00	-16.21	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	46.74	36.32	6.85	41.84	48.07	74.00	-25.93	Vertical
4874.00	46.42	36.32	6.85	41.84	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	36.25	36.32	6.85	41.84	37.58	54.00	-16.42	Vertical
4874.00	36.85	36.32	6.85	41.84	38.18	54.00	-15.82	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	46.86	36.45	6.87	41.85	48.33	74.00	-25.67	Vertical
4904.00	46.14	36.45	6.87	41.85	47.61	74.00	-26.39	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	36.15	36.45	6.87	41.85	37.62	54.00	-16.38	Vertical
4904.00	36.54	36.45	6.87	41.85	38.01	54.00	-15.99	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.