

# TEST REPORT

**Reference No.**..... : WTS16S0243054-2E  
**FCC ID** ..... : 2AC88-E1  
**Applicant**..... : HONGKONG UCLOUDLINK NETWORK TECHNOLOGY LIMITED  
**Address**..... : Unit D.16F.chenknang plaza 250 Hennessy Road,Wanchai  
Hongkong  
**Manufacturer** ..... : Shenzhen Ukelink New Technology Co.,Ltd  
**Address**..... : 3 Floor, Building A, Unit 1, the Software industry base, Xuefuroad,  
Nanshan district, Shenzhen, Guangdong, China  
**Product Name**..... : 4G Free Roaming Hotspot  
**Model No.**..... : E1  
**Brand**..... : GlocalMe  
**Standards**..... : FCC CFR47 Part 15C Section 15.247:2015  
**Date of Receipt sample** .... : Feb. 17, 2016  
**Date of Test** ..... : Feb. 18 – Apr. 07, 2016  
**Date of Issue**..... : Apr. 08, 2016  
**Test Result**..... : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

**Prepared By:**

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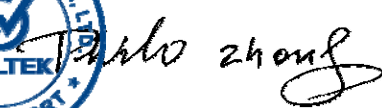
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Compiled by:



Zero Zhou / Test Engineer

Approved by:



Philo Zhong / Manager

## 2 Test Summary

Test Items	Test Requirement	Result
Radiated Spurious Emissions	15.247(d) 15.205(a) 15.209(a)	PASS
Conducted Spurious Emissions	15.247(d)	PASS
Conducted Emissions	15.207(a)	PASS
6dB Bandwidth	15.247(a)(2)	PASS
Maximum Peak Output Power	15.247(b)(3),(4)	PASS
Power Spectral Density	15.247(e)	PASS
Band Edge	15.247(d)	PASS
Antenna Requirement	15.203	PASS
Maximum Permissible Exposure (Exposure of Humans to RF Fields)	1.1307(b)(1)	PASS

### 3 Contents

	<b>Page</b>
<b>1 COVER PAGE</b> .....	<b>1</b>
<b>2 TEST SUMMARY</b> .....	<b>2</b>
<b>3 CONTENTS</b> .....	<b>3</b>
<b>4 GENERAL INFORMATION</b> .....	<b>4</b>
4.1 GENERAL DESCRIPTION OF E.U.T. ....	4
4.2 DETAILS OF E.U.T. ....	4
4.3 CHANNEL LIST.....	6
4.4 TEST MODE.....	7
4.5 TEST FACILITY.....	8
<b>5 EQUIPMENT USED DURING TEST</b> .....	<b>9</b>
5.1 EQUIPMENTS LIST .....	9
5.2 DESCRIPTION OF SUPPORT UNITS .....	10
5.3 MEASUREMENT UNCERTAINTY .....	10
5.4 TEST EQUIPMENT CALIBRATION .....	10
<b>6 CONDUCTED EMISSION</b> .....	<b>11</b>
6.1 E.U.T. OPERATION .....	11
6.2 EUT SETUP.....	11
6.3 MEASUREMENT DESCRIPTION .....	11
6.4 CONDUCTED EMISSION TEST RESULT .....	12
<b>7 RADIATED EMISSIONS</b> .....	<b>16</b>
7.1 EUT OPERATION.....	16
7.2 TEST SETUP .....	17
7.3 SPECTRUM ANALYZER SETUP .....	18
7.4 TEST PROCEDURE .....	19
7.5 CORRECTED AMPLITUDE & MARGIN CALCULATION .....	19
7.6 SUMMARY OF TEST RESULTS .....	20
<b>8 CONDUCTED SPURIOUS EMISSIONS</b> .....	<b>33</b>
2.1 TEST PROCEDURE .....	33
2.2 TEST RESULT .....	34
<b>9 BAND EDGE MEASUREMENT</b> .....	<b>41</b>
9.1 TEST PROCEDURE.....	41
9.2 TEST RESULT .....	42
<b>10 6 DB BANDWIDTH MEASUREMENT</b> .....	<b>46</b>
10.1 TEST PROCEDURE:.....	46
10.2 TEST RESULT: .....	46
<b>11 MAXIMUM PEAK OUTPUT POWER</b> .....	<b>53</b>
11.1 TEST PROCEDURE:.....	53
11.2 TEST RESULT: .....	54
<b>12 POWER SPECTRAL DENSITY</b> .....	<b>62</b>
12.1 TEST PROCEDURE:.....	62
12.2 TEST RESULT: .....	62
<b>13 ANTENNA REQUIREMENT</b> .....	<b>70</b>
<b>14 RF EXPOSURE</b> .....	<b>71</b>

## 4 General Information

### 4.1 General Description of E.U.T.

Product Name	: 4G Free Roaming Hotspot
Model No.	: E1
Model Description	: N/A
GSM Band(s)	: GSM 850/900/1800/1900MHz
GPRS/EDGE Class	: 12
CDMA	: 800/1900MHz
WCDMA Band(s)	: FDD Band I/II/IV/V/VIII
LTE Bnad(s)	: LTE Band 2/4/5/17/41
Wi-Fi Specification	: 2.4G: 802.11b/g/n HT20/n
Bluetooth Version	: Bluetooth v4.0 with BLE
GPS	: Support
NFC	: N/A
Hardware Version	LA0908 Ver.B
Software Version	E1_CTA_V01
storage location	: Internal Storage
Test Exercise	: The EUT was operated in a normal mode.
Note:	<p>Main board(Modem1): The EUT Main board support GSM850/900/DCS1800/PCS1900, CDMA 800/1900MHz,WCDMA Band 1/2/4/5/8, LTE Band 2/4/5/17/41 function. It is intended for speech, Multimedia Message Service (MMS) transmission and 4G free roaming hotspot. It is equipped with GPRS/EDGE class 12 for GSM850/900/DCS1800/PCS1900, GPS,Bluetooth and Wi-Fi functions. For more information see the following datasheet.</p> <p>Vice board(Modem2): The EUT Vice board support GSM850/900/DCS1800/PCS1900, CDMA 800/1900MHz, WCDMA Band 1/2/4/5/8. It is intended for system localization. It is equipped with GPRS/EDGE class 12 for GSM850/900/DCS1800/PCS1900</p>

### 4.2 Details of E.U.T.

Operation Frequency	: GSM/GPRS/EDGE 850: 824~849MHz PCS/GPRS/EDGE 1900: 1850~1910MHz CDMA800: 824.70~848.31MHz CDMA1900: 1851.25~1908.75MHz WCDMA Band II: 1850~1910MHz WCDMA Band IV: 1710~1755MHz WCDMA Band V: 824~849MHz
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	<p>LTE Band 2: 1850~1910MHz          LTE Band 4: 1710~1755MHz          LTE Band 5: 824~849MHz          LTE Band 17: 706~714MHz          LTE Band 41: 2498~2688MHz          WiFi:          802.11b/g/n HT20: 2412~2462MHz          Bluetooth: 2402~2480MHz</p>
Max. RF output power	<p>: Main Board:          GSM 850: 32.62dBm          PCS1900:29.68dBm          CDMA800:24.64dBm          CDMA1900:24.47dBm          WCDMA Band II: 22.30dBm          WCDMA Band V: 22.25dBm          WCDMA Band IV: 22.59dBm          LTE Band 2: 23.49dBm          LTE Band 4: 23.5dBm          LTE Band 5: 23.63dBm          LTE Band 17: 23.79dBm          LTE Band 41: 23.85dBm          Vice Board:          GSM 850: 32.75dBm          PCS1900:29.75dBm          CDMA800:24.81dBm          CDMA1900:24.44dBm          WCDMA Band II: 22.46dBm          WCDMA Band V: 22.55dBm          WCDMA Band IV: 22.68dBm          WiFi(2.4G): 9.28dBm          Bluetooth: -0.37dBm</p>
Type of Modulation	<p>: GSM,GPRS: GMSK          CDMA2000:QPSK          CDMA2000 1xEV-DO:QPSK,8PSK          WCDMA: BPSK          LTE: QPSK, 16QAM          WiFi: CCK, OFDM          Bluetooth: GFSK, Pi/4 DQPSK,8DPSK</p>
Antenna installation	<p>: GSM/CDMA/WCDMA/LTE: internal permanent antenna          WiFi/Bluetooth: internal permanent antenna</p>
Antenna Gain	<p>Main Board:          GSM 850: -0.95dBi          PCS1900: -1.9dBi          CDMA800: -0.95dBi          CDMA1900: -1.9dBi          WCDMA Band II: -1.9dBi</p>

WCDMA Band IV: -2.6dBi  
 WCDMA Band V: -0.95dBi  
 LTE Band 2: -1.8dBi  
 LTE Band 4: 0.05dBi  
 LTE Band 5: -0.95dBi  
 LTE Band 7: 0.9dBi  
 LTE Band 17: -4.5dBi  
 LTE Band 41: 1.5dBi  
 Vice Board:  
 GSM 850: -0.95dBi  
 PCS1900: -1.9dBi  
 CDMA800: -0.95dBi  
 CDMA1900: -1.9dBi  
 WCDMA Band II: -1.9dBi  
 WCDMA Band IV: -2.6dBi  
 WCDMA Band V: -0.95dBi  
 WiFi(2.4G): 0dBi  
 Bluetooth: 0dBi

Technical Data:

Battery DC 3.8V, 13.3Wh  
 DC 5V, 1.0A, charging from mini USB port

### 4.3 Channel List

#### WIFI

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	2412	2	2417	3	2422	4	2427
5	2432	6	2437	7	2442	8	2447
9	2452	10	2457	11	2462	12	-

#### BT BLE

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
0	2402	1	2404	2	2406	3	2408
4	2410	5	2412	6	2414	7	2416
8	2418	9	2420	10	2422	11	2424
12	2426	13	2428	14	2430	15	2432
16	2434	17	2436	18	2438	19	2440
20	2442	21	2444	22	2446	23	2448
24	2450	25	2452	26	2454	27	2456
28	2458	29	2460	30	2462	31	2464
32	2466	33	2468	34	2470	35	2472
36	2474	37	2476	38	2478	39	2480

#### 4.4 Test Mode

Table 1 Tests Carried Out Under FCC part 15.247

Test Items	Mode	Data Rate	Channel	TX/RX
Maximum Peak Output Power	802.11b	11 Mbps	1/6/11	TX
	802.11g	54 Mbps	1/6/11	TX
	802.11n HT20	108 Mbps	1/6/11	TX
Power Spectral Density	802.11b	11 Mbps	1/6/11	TX
	802.11g	54 Mbps	1/6/11	TX
	802.11n HT20	108 Mbps	1/6/11	TX
6dB Bandwidth	802.11b	11 Mbps	1/6/11	TX
	802.11g	54 Mbps	1/6/11	TX
	802.11n HT20	108 Mbps	1/6/11	TX
Band Edge	802.11b	11 Mbps	1/6/11	TX
	802.11g	54 Mbps	1/6/11	TX
	802.11n HT20	108 Mbps	1/6/11	TX
Transmitter Spurious Emissions	802.11b	11 Mbps	1/6/11	TX
	802.11g	54 Mbps	1/6/11	TX
	802.11n HT20	108 Mbps	1/6/11	TX

Table 2 Tests Carried Out Under FCC part 15.247

Test Items	Mode	Data Rate	Channel	TX/RX
Maximum Peak Output Power	BT BLE	1 Mbps	0/19/39	TX
Power Spectral Density	BT BLE	1 Mbps	0/19/39	TX
6dB Bandwidth	BT BLE	1 Mbps	0/19/39	TX
Band Edge	BT BLE	1 Mbps	0/19/39	TX
Transmitter Spurious Emissions	BT BLE	1 Mbps	0/19/39	TX

**Note** :Parameters set by test software during channel & power tests, the software provided by the customer was used to set the operating channels as well as the output power level. The RF output power set is the power expected by the manufacturer and is going to be fixed on the firmware of the final product .

#### 4.5 Test Facility

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: 7760A**

Waltek Services(Shenzhen) Co., Ltd. Has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration number 7760A, October 15, 2015.

- **FCC Test Site 1#– Registration No.: 880581**

Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory `has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 880581, April 29, 2014.

- **FCC Test Site 2#– Registration No.: 328995**

Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory `has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 328995, December 3, 2014.



## 5 Equipment Used during Test

### 5.1 Equipments List

Conducted Emissions at Mains Terminals Disturbance Voltage						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMI Test Receiver	R&S	ESCI	101155	Sep.15,2015	Sep.14,2016
2.	LISN	SCHWARZBECK	NSLK 8128	8128-289	Sep.15,2015	Sep.14,2016
3.	Limiter	York	MTS-IMP-136	261115-001-0024	Sep.15,2015	Sep.14,2016
4.	Cable	LARGE	RF300	-	Sep.15,2015	Sep.14,2016
3m Semi-anechoic Chamber for Radiation						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1	EMC Analyzer	Agilent	E7405A	MY45114943	Sep.15,2015	Sep.14,2016
2	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	Sep.15,2015	Sep.14,2016
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	Apr.18,2015	Apr.17,2016
4	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	Sep.15,2015	Sep.14,2016
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	Apr.18,2015	Apr.17,2016
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	669	Apr.18,2015	Apr.17,2016
7	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	Sep.15,2015	Sep.14,2016
8	Coaxial Cable (above 1GHz)	Top	1000MHz-25GHz	EW02014-7	Apr.10,2015	Apr.09,2016
9	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	Sep.15,2015	Sep.14,2016
10	Universal Radio Communication Tester	R&S	CMU 200	112461	Apr.10,2015	Apr.09,2016
11	Signal Generator	R&S	SMR20	100046	Sep.15,2015	Sep.14,2016
RF Conducted Testing						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMC Analyzer (9k~26.5GHz)	Agilent	E7405A	MY45114943	Aug. 15,2015	Aug.14,2016
2.	Spectrum Analyzer (9k-6GHz)	R&S	FSL6	100959	Aug. 15,2015	Aug.14,2016
3.	Humidity Chamber	GF	GTH-225-40-1P	IAA061213	Aug. 15,2015	Aug.14,2016

## 5.2 Description of Support Units

Equipment	Manufacturer	Model No.	Series No.
/	/	/	/

## 5.3 Measurement Uncertainty

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-6}$
RF Power	$\pm 1.0$ dB
RF Power Density	$\pm 2.2$ dB
Radiated Spurious Emissions test	$\pm 5.03$ dB (30M~1000MHz)
	$\pm 5.47$ dB (1000M~25000MHz)
Conducted Spurious Emissions test	$\pm 3.64$ dB (AC mains 150KHz~30MHz)

## 5.4 Test Equipment Calibration

All the test equipments used are valid and calibrated by CEPREI Certification Body that address is No.110 Dongguan Zhuang RD. Guangzhou, P.R.China.

## 6 Conducted Emission

Test Requirement:	FCC CFR 47 Part 15 Section 15.207
Test Method:	ANSI C63.10:2009
Test Result:	PASS
Frequency Range:	150kHz to 30MHz
Class/Severity:	Class B
Limit:	66-56 dB $\mu$ V between 0.15MHz & 0.5MHz 56 dB $\mu$ V between 0.5MHz & 5MHz 60 dB $\mu$ V between 5MHz & 30MHz
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth)

### 6.1 E.U.T. Operation

Operating Environment :

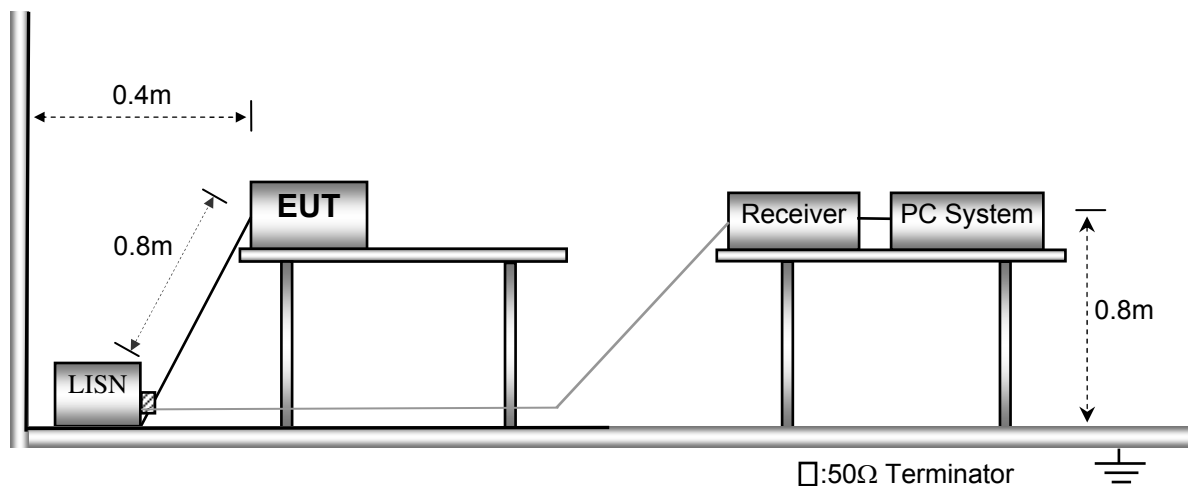
Temperature:	21.5 °C
Humidity:	51.9 % RH
Atmospheric Pressure:	101.2kPa

EUT Operation :

The test was performed in WIFI link mode(Wifi /BT BLE), the worst data were shown in the report.

### 6.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10.



### 6.3 Measurement Description

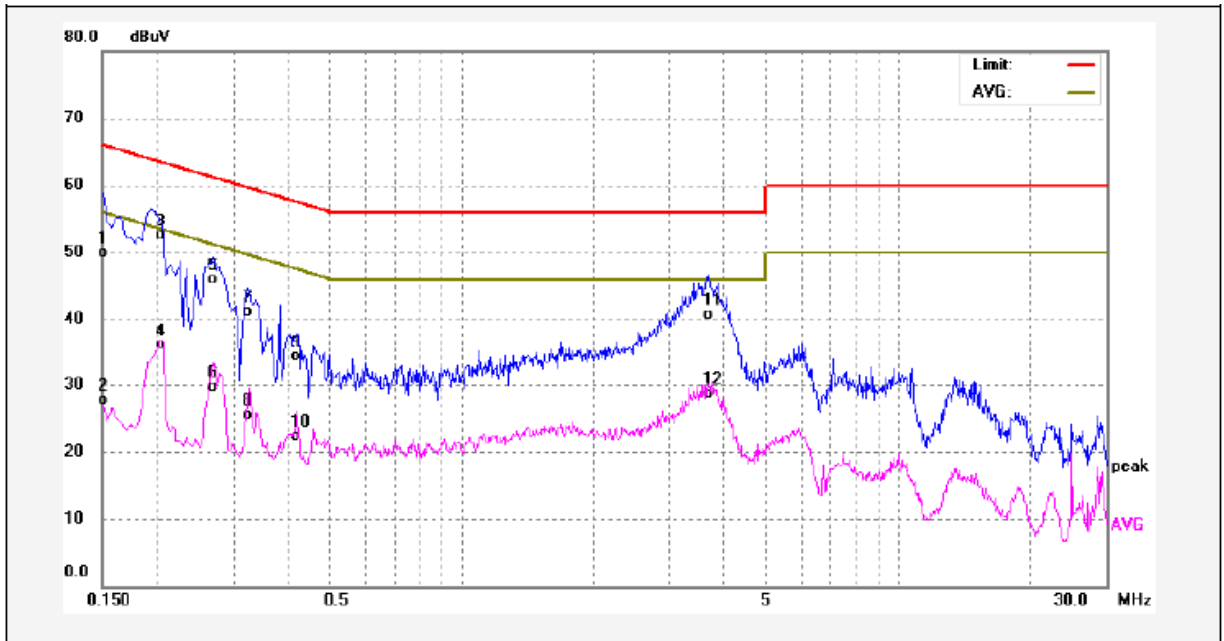
The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

### 6.4 Conducted Emission Test Result

An initial pre-scan was performed on the live and neutral lines.

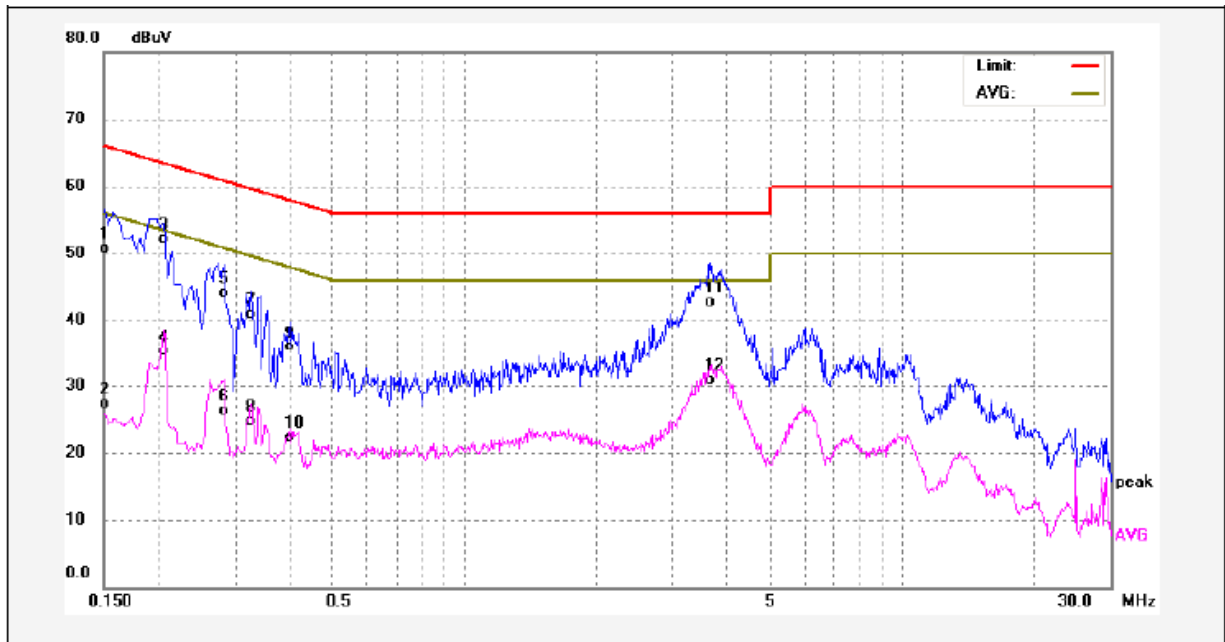
Worst Mode: WIFI mode

Live line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1500	39.83	10.10	49.93	65.99	-16.06	QP	
2	0.1500	17.68	10.10	27.78	55.99	-28.21	AVG	
3	0.2060	42.41	10.10	52.51	63.36	-10.85	QP	
4	0.2060	25.97	10.10	36.07	53.36	-17.29	AVG	
5	0.2700	35.89	10.10	45.99	61.12	-15.13	QP	
6	0.2700	19.64	10.10	29.74	51.12	-21.38	AVG	
7	0.3260	30.99	10.11	41.10	59.55	-18.45	QP	
8	0.3260	15.35	10.11	25.46	49.55	-24.09	AVG	
9	0.4180	24.11	10.11	34.22	57.49	-23.27	QP	
10	0.4180	12.11	10.11	22.22	47.49	-25.27	AVG	
11	3.6700	30.41	10.22	40.63	56.00	-15.37	QP	
12	3.6700	18.56	10.22	28.78	46.00	-17.22	AVG	

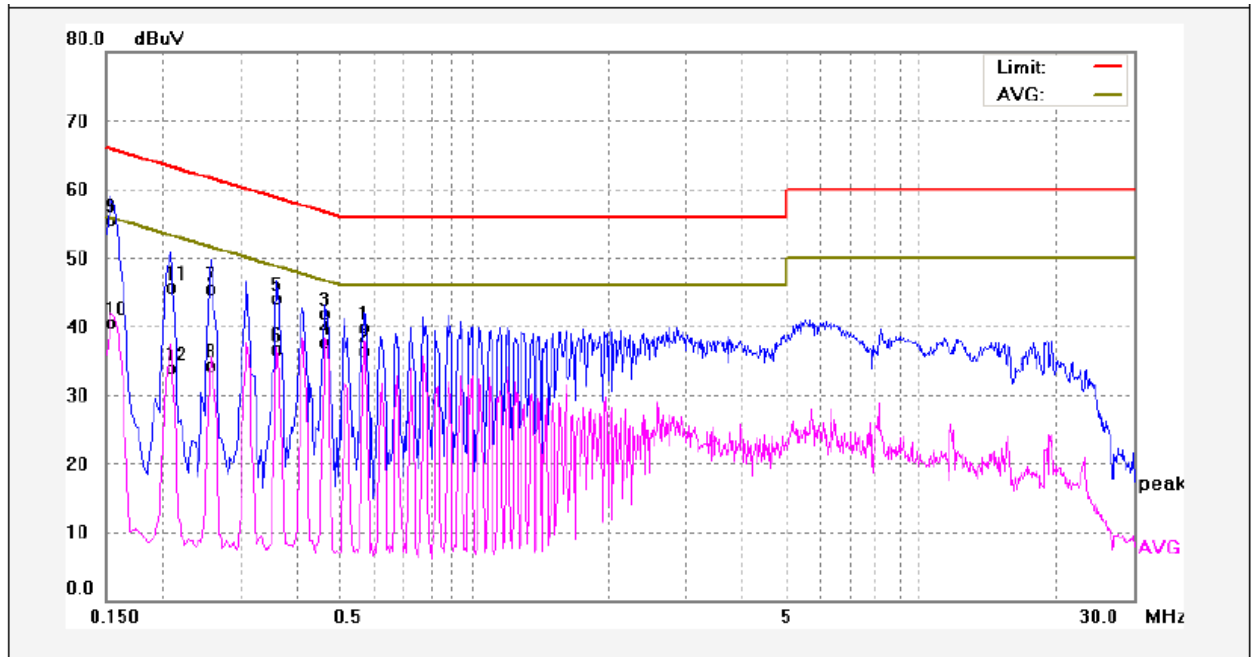
Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1500	40.51	10.10	50.61	65.99	-15.38	QP	
2	0.1500	17.15	10.10	27.25	55.99	-28.74	AVG	
3	0.2060	42.00	10.10	52.10	63.36	-11.26	QP	
4	0.2060	25.29	10.10	35.39	53.36	-17.97	AVG	
5	0.2819	33.98	10.11	44.09	60.76	-16.67	QP	
6	0.2819	16.13	10.11	26.24	50.76	-24.52	AVG	
7	0.3260	30.76	10.11	40.87	59.55	-18.68	QP	
8	0.3260	14.53	10.11	24.64	49.55	-24.91	AVG	
9	0.3980	25.71	10.11	35.82	57.89	-22.07	QP	
10	0.3980	12.23	10.11	22.34	47.89	-25.55	AVG	
11	3.6780	32.45	10.22	42.67	56.00	-13.33	QP	
12	3.6780	20.65	10.22	30.87	46.00	-15.13	AVG	

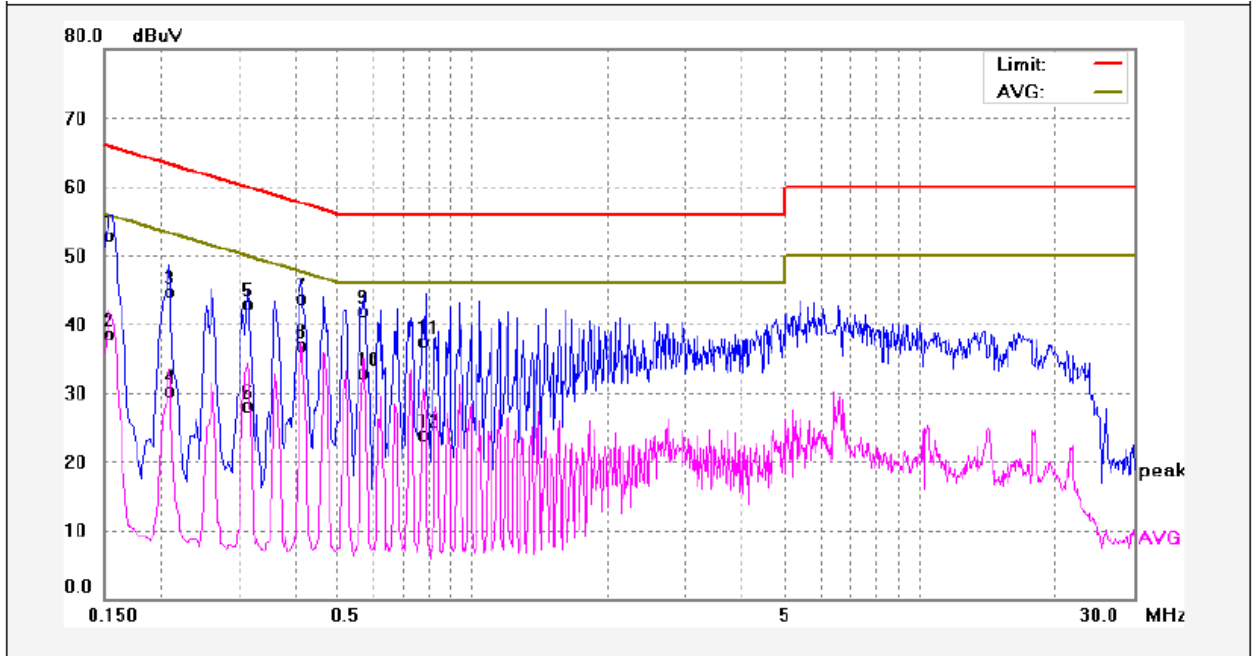
Worst Mode: BLE mode

Live Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.5700	29.61	10.20	39.81	56.00	-16.19	QP	
2	0.5700	26.21	10.20	36.41	46.00	-9.59	AVG	
3	0.4660	31.69	10.19	41.88	56.58	-14.70	QP	
4	0.4660	27.58	10.19	37.77	46.58	-8.81	AVG	
5	0.3620	34.00	10.17	44.17	58.68	-14.51	QP	
6	0.3620	26.52	10.17	36.69	48.68	-11.99	AVG	
7	0.2580	35.35	10.16	45.51	61.49	-15.98	QP	
8	0.2580	24.13	10.16	34.29	51.49	-17.20	AVG	
9	0.1539	45.40	10.13	55.53	65.78	-10.25	QP	
10	0.1539	30.41	10.13	40.54	55.78	-15.24	AVG	
11	0.2100	35.62	10.15	45.77	63.20	-17.43	QP	
12	0.2100	23.84	10.15	33.99	53.20	-19.21	AVG	

Neutral Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1539	42.87	10.13	53.00	65.78	-12.78	QP	
2	0.1539	28.37	10.13	38.50	55.78	-17.28	AVG	
3	0.2100	34.54	10.15	44.69	63.20	-18.51	QP	
4	0.2100	20.24	10.15	30.39	53.20	-22.81	AVG	
5	0.3140	32.68	10.17	42.85	59.86	-17.01	QP	
6	0.3140	17.92	10.17	28.09	49.86	-21.77	AVG	
7	0.4140	33.60	10.18	43.78	57.57	-13.79	QP	
8	0.4140	26.68	10.18	36.86	47.57	-10.71	AVG	
9	0.5740	31.73	10.20	41.93	56.00	-14.07	QP	
10	0.5740	22.79	10.20	32.99	46.00	-13.01	AVG	
11	0.7860	27.33	10.21	37.54	56.00	-18.46	QP	
12	0.7860	13.63	10.21	23.84	46.00	-22.16	AVG	

## 7 Radiated Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.209 & 15.247

Test Method: ANSI C63.10:2009

Test Result: PASS

Measurement Distance: 3m

Limit:

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	$2400/F(\text{kHz})$	300	$10000 * 2400/F(\text{kHz})$	$20\log^{(2400/F(\text{kHz}))} + 80$
0.490 ~ 1.705	$24000/F(\text{kHz})$	30	$100 * 24000/F(\text{kHz})$	$20\log^{(24000/F(\text{kHz}))} + 40$
1.705 ~ 30	30	30	$100 * 30$	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

### 7.1 EUT Operation

Operating Environment :

Temperature: 23.5 °C

Humidity: 52.1 % RH

Atmospheric Pressure: 101.2kPa

EUT Operation :

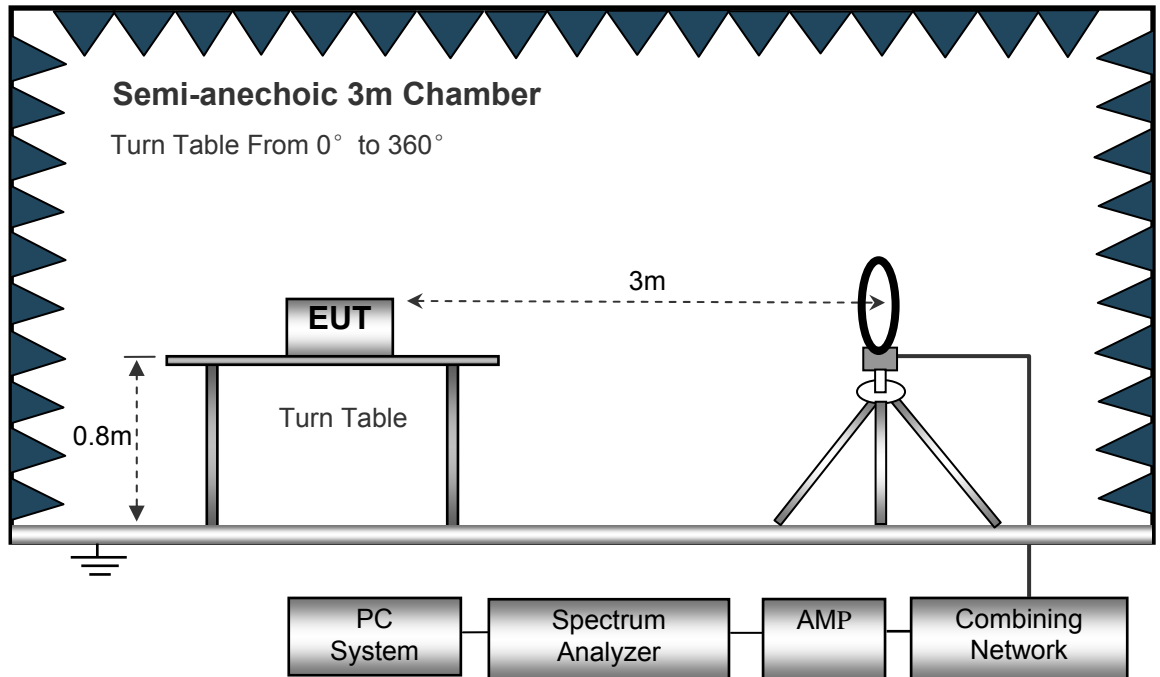
The test was performed in WIFI/BT BLE link mode, the test data were shown in the report.



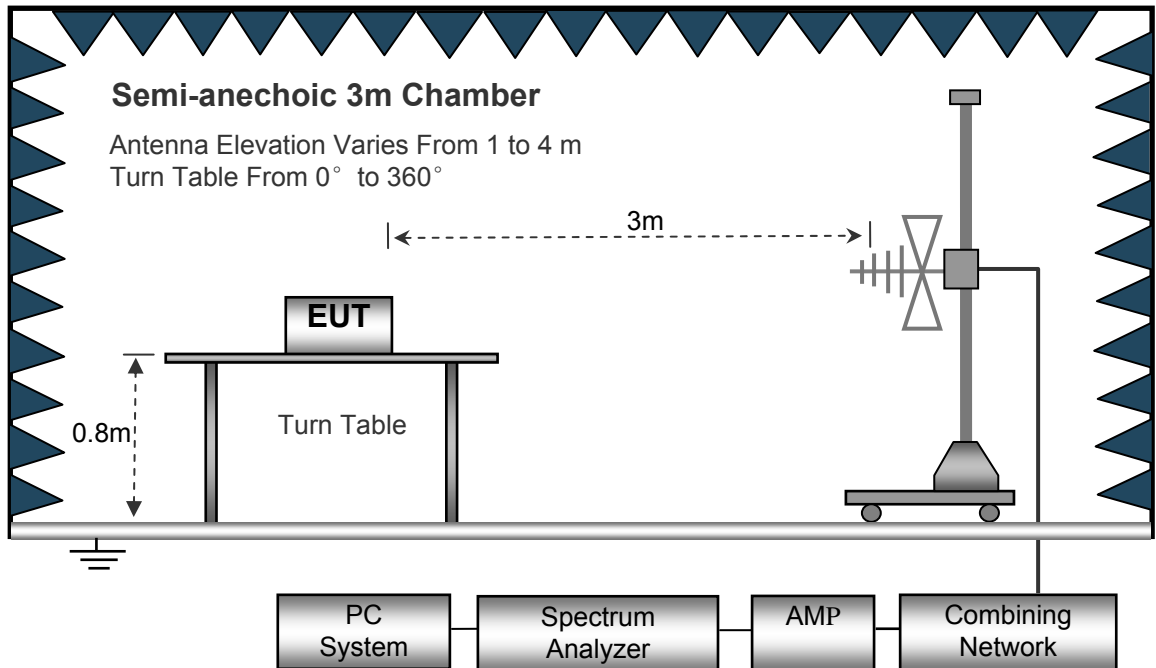
## 7.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.10.

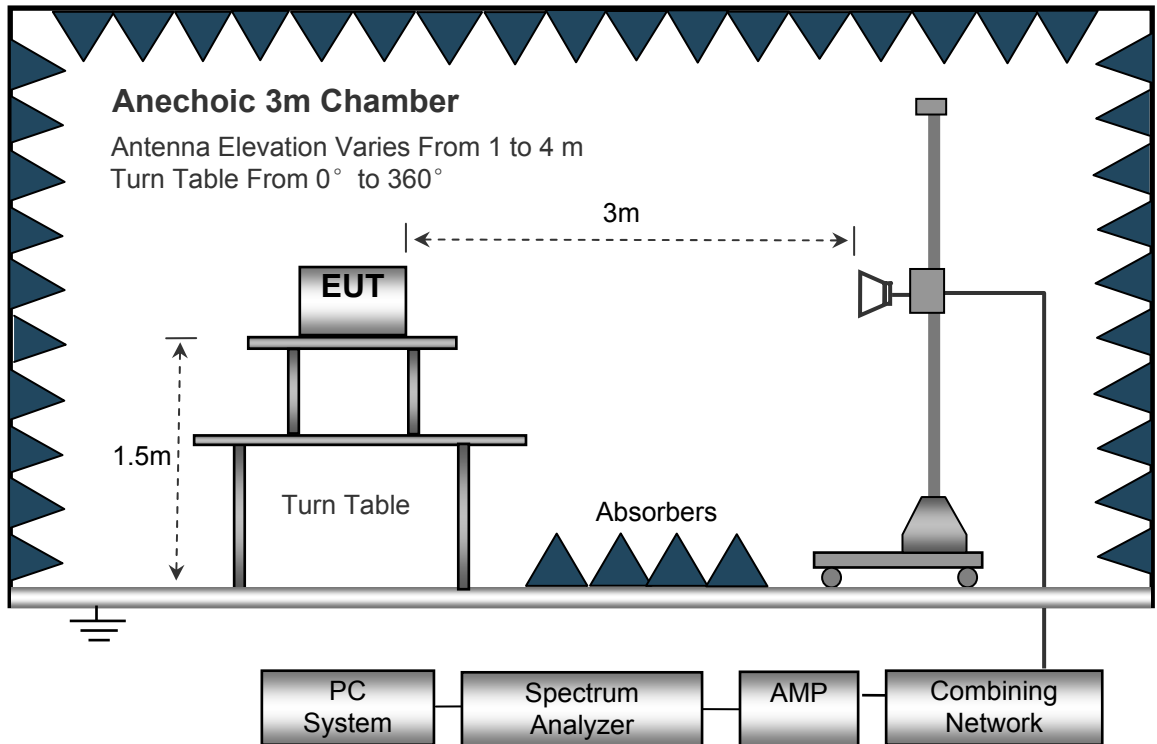
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



### 7.3 Spectrum Analyzer Setup

Below 30MHz

Sweep Speed ..... Auto  
 IF Bandwidth..... 10kHz  
 Video Bandwidth..... 10kHz  
 Resolution Bandwidth..... 10kHz

30MHz ~ 1GHz

Sweep Speed ..... Auto  
 Detector ..... PK  
 Resolution Bandwidth..... 100kHz  
 Video Bandwidth..... 300kHz

Above 1GHz

Sweep Speed ..... Auto  
 Detector ..... PK  
 Resolution Bandwidth..... 1MHz  
 Video Bandwidth..... 3MHz  
 Detector ..... Ave.  
 Resolution Bandwidth..... 1MHz  
 Video Bandwidth..... 10Hz

## 7.4 Test Procedure

1. The EUT is placed on a turntable, which is 1.5m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are performed in X,Y and Z axis positioning(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand),the worst condition was tested putting the eut in X axis,so the worst data were shown as follow.
8. A 2.4GHz high -pass filter is used during radiated emissions above 1GHz measurement.

## 7.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Limit}$$

## 7.6 Summary of Test Results

Wifi:

Test Frequency : 19.2 ~ 30MHzMHz

Frequency (MHz)	Measurement results		Detector	Correct factor	Extrapolation factor	Measurement results (calculated)	Limits	Margin
	dB $\mu$ V @3m		PK/QP	dB/m	dB	dB $\mu$ V/m @30m	dB $\mu$ V/m @30m	dB
25.65	24.76		QP	19.90	40.00	4.66	29.54	-24.88

Test Frequency : 30MHz ~ 18GHz

Frequency (MHz)	Receiver Reading (dB $\mu$ V)	Detector (PK/QP/Ave)	Turn table Angle (Degree)	RX Antenna		Corrected Factor (dB)	Corrected Amplitude (dB $\mu$ V/m)	FCC Part 15.247/209/205	
				Height (m)	Polar (H/V)			Limit (dB $\mu$ V/m)	Margin (dB)
11b: Low Channel 2412MHz									
223.45	41.05	QP	44	1.1	H	-11.62	29.43	46.00	-16.57
223.45	36.26	QP	324	1.1	V	-11.62	24.64	46.00	-21.36
4824.00	50.44	PK	303	1.9	V	-1.06	49.38	74.00	-24.62
4824.00	46.32	Ave	303	1.9	V	-1.06	45.26	54.00	-8.74
7236.00	41.08	PK	190	1.7	H	1.33	42.41	74.00	-31.59
7236.00	41.96	Ave	190	1.7	H	1.33	43.29	54.00	-10.71
2312.05	46.32	PK	92	1.9	V	-13.19	33.13	74.00	-40.87
2312.05	37.94	Ave	92	1.9	V	-13.19	24.75	54.00	-29.25
2379.51	42.57	PK	65	1.4	H	-13.14	29.43	74.00	-44.57
2379.51	36.72	Ave	65	1.4	H	-13.14	23.58	54.00	-30.42
2483.87	44.74	PK	120	1.6	V	-13.08	31.66	74.00	-42.34
2483.87	38.82	Ave	120	1.6	V	-13.08	25.74	54.00	-28.26

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dB $\mu$ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB)
11b: Middle Channel 2437MHz									
223.45	40.76	QP	24	1.8	H	-11.62	29.14	46.00	-16.86
223.45	37.64	QP	161	1.4	V	-11.62	26.02	46.00	-19.98
4874.00	51.65	PK	221	1.5	V	-0.62	51.03	74.00	-22.97
4874.00	46.68	Ave	221	1.5	V	-0.62	46.06	54.00	-7.94
7311.00	41.35	PK	18	1.4	H	2.21	43.56	74.00	-30.44
7311.00	41.93	Ave	18	1.4	H	2.21	44.14	54.00	-9.86
2343.57	45.88	PK	110	1.1	V	-13.19	32.69	74.00	-41.31
2343.57	39.24	Ave	110	1.1	V	-13.19	26.05	54.00	-27.95
2380.70	42.55	PK	18	1.7	H	-13.14	29.41	74.00	-44.59
2380.70	36.36	Ave	18	1.7	H	-13.14	23.22	54.00	-30.78
2488.03	44.46	PK	305	1.7	V	-13.08	31.38	74.00	-42.62
2488.03	37.26	Ave	305	1.7	V	-13.08	24.18	54.00	-29.82

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dB $\mu$ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB)
11b: High Channel 2462MHz									
223.45	39.52	QP	58	1.3	H	-11.62	27.90	46.00	-18.10
223.45	38.07	QP	128	1.3	V	-11.62	26.45	46.00	-19.55
4924.00	51.76	PK	105	1.5	V	-0.24	51.52	74.00	-22.48
4924.00	46.74	Ave	105	1.5	V	-0.24	46.50	54.00	-7.50
7386.00	41.47	PK	110	1.6	H	2.84	44.31	74.00	-29.69
7386.00	40.53	Ave	110	1.6	H	2.84	43.37	54.00	-10.63
2329.65	45.44	PK	182	1.6	V	-13.19	32.25	74.00	-41.75
2329.65	37.66	Ave	182	1.6	V	-13.19	24.47	54.00	-29.53
2388.13	43.14	PK	148	1.8	H	-13.14	30.00	74.00	-44.00
2388.13	37.15	Ave	148	1.8	H	-13.14	24.01	54.00	-29.99
2494.68	43.40	PK	47	1.1	V	-13.08	30.32	74.00	-43.68
2494.68	36.06	Ave	47	1.1	V	-13.08	22.98	54.00	-31.02

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dB $\mu$ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB)
11g: Low Channel 2412MHz									
223.45	39.90	QP	97	1.7	H	-11.62	28.28	46.00	-17.72
223.45	37.16	QP	145	1.5	V	-11.62	25.54	46.00	-20.46
4824.00	51.25	PK	158	1.3	V	-1.06	50.19	74.00	-23.81
4824.00	47.25	Ave	158	1.3	V	-1.06	46.19	54.00	-7.81
7236.00	40.87	PK	177	1.7	H	1.33	42.20	74.00	-31.80
7236.00	40.15	Ave	177	1.7	H	1.33	41.48	54.00	-12.52
2318.99	46.56	PK	77	1.1	V	-13.19	33.37	74.00	-40.63
2318.99	38.16	Ave	77	1.1	V	-13.19	24.97	54.00	-29.03
2387.37	42.95	PK	157	1.2	H	-13.14	29.81	74.00	-44.19
2387.37	36.81	Ave	157	1.2	H	-13.14	23.67	54.00	-30.33
2485.32	42.29	PK	86	1.7	V	-13.08	29.21	74.00	-44.79
2485.32	38.51	Ave	86	1.7	V	-13.08	25.43	54.00	-28.57

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dB $\mu$ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB)
11g: Middle Channel 2437MHz									
223.45	40.57	QP	274	1.4	H	-11.62	28.95	46.00	-17.05
223.45	38.39	QP	254	1.5	V	-11.62	26.77	46.00	-19.23
4874.00	50.00	PK	13	1.3	V	-0.62	49.38	74.00	-24.62
4874.00	47.17	Ave	13	1.3	V	-0.62	46.55	54.00	-7.45
7311.00	42.11	PK	37	1.1	H	2.21	44.32	74.00	-29.68
7311.00	40.86	Ave	37	1.1	H	2.21	43.07	54.00	-10.93
2322.27	46.27	PK	304	1.7	V	-13.19	33.08	74.00	-40.92
2322.27	38.06	Ave	304	1.7	V	-13.19	24.87	54.00	-29.13
2362.99	42.09	PK	250	1.8	H	-13.14	28.95	74.00	-45.05
2362.99	38.91	Ave	250	1.8	H	-13.14	25.77	54.00	-28.23
2498.13	43.58	PK	297	1.6	V	-13.08	30.50	74.00	-43.50
2498.13	38.49	Ave	297	1.6	V	-13.08	25.41	54.00	-28.59



Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dB $\mu$ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB)
11g: High Channel 2462MHz									
223.45	40.93	QP	343	1.7	H	-11.62	29.31	46.00	-16.69
223.45	38.55	QP	244	1.6	V	-11.62	26.93	46.00	-19.07
4924.00	51.09	PK	55	2.0	V	-0.24	50.85	74.00	-23.15
4924.00	45.91	Ave	55	2.0	V	-0.24	45.67	54.00	-8.33
7386.00	43.42	PK	221	1.2	H	2.84	46.26	74.00	-27.74
7386.00	41.62	Ave	221	1.2	H	2.84	44.46	54.00	-9.54
2331.75	45.31	PK	54	1.1	V	-13.19	32.12	74.00	-41.88
2331.75	39.75	Ave	54	1.1	V	-13.19	26.56	54.00	-27.44
2363.55	42.95	PK	67	1.5	H	-13.14	29.81	74.00	-44.19
2363.55	37.51	Ave	67	1.5	H	-13.14	24.37	54.00	-29.63
2494.72	43.92	PK	73	1.1	V	-13.08	30.84	74.00	-43.16
2494.72	37.85	Ave	73	1.1	V	-13.08	24.77	54.00	-29.23

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dB $\mu$ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB)
n20: Low Channel 2412MHz									
223.45	40.95	QP	38	2.0	H	-11.62	29.33	46.00	-16.67
223.45	39.08	QP	248	1.4	V	-11.62	27.46	46.00	-18.54
4824.00	50.45	PK	127	1.9	V	-1.06	49.39	74.00	-24.61
4824.00	45.47	Ave	127	1.9	V	-1.06	44.41	54.00	-9.59
7236.00	44.11	PK	212	1.1	H	1.33	45.44	74.00	-28.56
7236.00	40.59	Ave	212	1.1	H	1.33	41.92	54.00	-12.08
2342.32	45.41	PK	213	1.5	V	-13.19	32.22	74.00	-41.78
2342.32	38.60	Ave	213	1.5	V	-13.19	25.41	54.00	-28.59
2368.67	43.38	PK	239	1.2	H	-13.14	30.24	74.00	-43.76
2368.67	37.03	Ave	239	1.2	H	-13.14	23.89	54.00	-30.11
2495.37	42.73	PK	215	1.6	V	-13.08	29.65	74.00	-44.35
2495.37	38.80	Ave	215	1.6	V	-13.08	25.72	54.00	-28.28

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dB $\mu$ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB)
n20: Middle Channel 2437MHz									
223.45	40.64	QP	56	2.0	H	-11.62	29.02	46.00	-16.98
223.45	38.01	QP	37	1.3	V	-11.62	26.39	46.00	-19.61
4874.00	50.17	PK	52	1.1	V	-0.62	49.55	74.00	-24.45
4874.00	46.65	Ave	52	1.1	V	-0.62	46.03	54.00	-7.97
7311.00	45.54	PK	56	1.9	H	2.21	47.75	74.00	-26.25
7311.00	41.79	Ave	56	1.9	H	2.21	44.00	54.00	-10.00
2329.23	45.77	PK	64	2.0	V	-13.19	32.58	74.00	-41.42
2329.23	38.44	Ave	64	2.0	V	-13.19	25.25	54.00	-28.75
2387.92	43.15	PK	102	1.4	H	-13.14	30.01	74.00	-43.99
2387.92	38.64	Ave	102	1.4	H	-13.14	25.50	54.00	-28.50
2498.66	42.27	PK	222	1.6	V	-13.08	29.19	74.00	-44.81
2498.66	38.74	Ave	222	1.6	V	-13.08	25.66	54.00	-28.34

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dB $\mu$ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB)
n20: High Channel 2462MHz									
223.45	41.74	QP	15	2.0	H	-11.62	30.12	46.00	-15.88
223.45	37.79	QP	331	1.3	V	-11.62	26.17	46.00	-19.83
4924.00	51.41	PK	325	1.9	V	-0.24	51.17	74.00	-22.83
4924.00	47.47	Ave	325	1.9	V	-0.24	47.23	54.00	-6.77
7386.00	46.31	PK	210	1.5	H	2.84	49.15	74.00	-24.85
7386.00	43.18	Ave	210	1.5	H	2.84	46.02	54.00	-7.98
2338.88	45.26	PK	38	1.1	V	-13.19	32.07	74.00	-41.93
2338.88	39.44	Ave	38	1.1	V	-13.19	26.25	54.00	-27.75
2381.49	43.58	PK	278	1.9	H	-13.14	30.44	74.00	-43.56
2381.49	36.60	Ave	278	1.9	H	-13.14	23.46	54.00	-30.54
2487.91	44.06	PK	190	1.7	V	-13.08	30.98	74.00	-43.02
2487.91	38.13	Ave	190	1.7	V	-13.08	25.05	54.00	-28.95

**Test Frequency: 18GHz~25GHz**

The measurements were more than 20 dB below the limit and not reported.

**BT BLE:****Test Frequency : 19.2MHz ~ 30MHz**

Frequency (MHz)	Measurement results	Detector	Correct factor	Extrapolation factor	Measurement results (calculated)	Limits	Margin
	dB $\mu$ V @3m	PK/QP	dB/m	dB	dB $\mu$ V/m @30m	dB $\mu$ V/m @30m	dB
25.60	27.83	QP	19.90	40.00	7.73	29.54	-21.81

**Test Frequency : 30MHz ~ 18GHz**

Frequency (MHz)	Receiver Reading (dB $\mu$ V)	Detector (PK/QP/Ave)	Turn table Angle (Degree)	RX Antenna		Corrected Factor (dB)	Corrected Amplitude (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
				Height (m)	Polar (H/V)				
Low Channel 2402MHz									
268.32	36.89	QP	337	1.7	H	-13.35	23.54	46.00	-22.46
268.32	41.33	QP	88	1.8	V	-13.35	27.98	46.00	-18.02
4804.00	46.15	PK	6	2.0	V	-1.06	45.09	74.00	-28.91
4804.00	43.52	Ave	6	2.0	V	-1.06	42.46	54.00	-11.54
7206.00	40.62	PK	302	1.8	H	1.33	41.95	74.00	-32.05
7206.00	35.37	Ave	302	1.8	H	1.33	36.70	54.00	-17.30
2313.14	46.31	PK	27	1.6	V	-13.19	33.12	74.00	-40.88
2313.14	39.17	Ave	27	1.6	V	-13.19	25.98	54.00	-28.02
2364.88	44.63	PK	330	1.0	H	-13.14	31.49	74.00	-42.51
2364.88	37.95	Ave	330	1.0	H	-13.14	24.81	54.00	-29.19
2486.19	43.53	PK	100	1.0	V	-13.08	30.45	74.00	-43.55
2486.19	38.48	Ave	100	1.0	V	-13.08	25.40	54.00	-28.60

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dB $\mu$ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB)
Middle Channel 2440MHz									
268.32	36.20	QP	121	1.4	H	-13.35	22.85	46.00	-23.15
268.32	42.26	QP	72	2.0	V	-13.35	28.91	46.00	-17.09
4880.00	46.47	PK	266	1.5	V	-0.62	45.85	74.00	-28.15
4880.00	43.57	Ave	266	1.5	V	-0.62	42.95	54.00	-11.05
7320.00	40.90	PK	151	1.4	H	2.21	43.11	74.00	-30.89
7320.00	34.87	Ave	151	1.4	H	2.21	37.08	54.00	-16.92
2342.84	45.18	PK	259	2.0	V	-13.19	31.99	74.00	-42.01
2342.84	37.61	Ave	259	2.0	V	-13.19	24.42	54.00	-29.58
2357.09	43.05	PK	69	1.3	H	-13.14	29.91	74.00	-44.09
2357.09	36.72	Ave	69	1.3	H	-13.14	23.58	54.00	-30.42
2497.65	44.19	PK	213	1.6	V	-13.08	31.11	74.00	-42.89
2497.65	37.37	Ave	213	1.6	V	-13.08	24.29	54.00	-29.71

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dB $\mu$ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB)
High Channel 2480MHz									
268.32	35.03	QP	274	1.3	H	-13.35	21.68	46.00	-24.32
268.32	41.69	QP	355	2.0	V	-13.35	28.34	46.00	-17.66
4960.00	45.40	PK	125	1.3	V	-0.24	45.16	74.00	-28.84
4960.00	43.83	Ave	125	1.3	V	-0.24	43.59	54.00	-10.41
7440.00	40.70	PK	162	1.5	H	2.84	43.54	74.00	-30.46
7440.00	34.38	Ave	162	1.5	H	2.84	37.22	54.00	-16.78
2342.84	45.61	PK	357	1.2	V	-13.19	32.42	74.00	-41.58
2342.84	39.58	Ave	357	1.2	V	-13.19	26.39	54.00	-27.61
2372.09	44.62	PK	267	1.2	H	-13.14	31.48	74.00	-42.52
2372.09	37.28	Ave	267	1.2	H	-13.14	24.14	54.00	-29.86
2496.42	44.95	PK	215	1.5	V	-13.08	31.87	74.00	-42.13
2496.42	36.97	Ave	215	1.5	V	-13.08	23.89	54.00	-30.11

**Test Frequency: 18GHz~25GHz**

The measurements were more than 20 dB below the limit and not reported



## 8 Conducted Spurious Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.247  
Test Method: KDB 558074 D01 DTS Meas Guidance v03r05 04/08/2016  
Test Result: PASS

Limit:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, provided the transmitter demonstrates compliance with the peak conducted power limits. 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. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

### 2.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer:  
RBW = 100kHz, VBW = 300kHz, Sweep = auto  
Detector function = peak, Trace = max hold

## 2.2 Test Result

802.11b

Low Channel

Fundamental



Middle Channel

Fundamental



### High Channel

Fundamental



802.11g

### Low Channel

Fundamental



### Middle Channel

Fundamental



### High Channel

Fundamental



802.11n HT20

Low Channel

Fundamental



Middle Channel

Fundamental



High Channel

Fundamenta



BLE GFSK

Low Channel

Fundamental



Middle Channel

Fundamental



High Channel

Fundamental





## 9 Band Edge Measurement

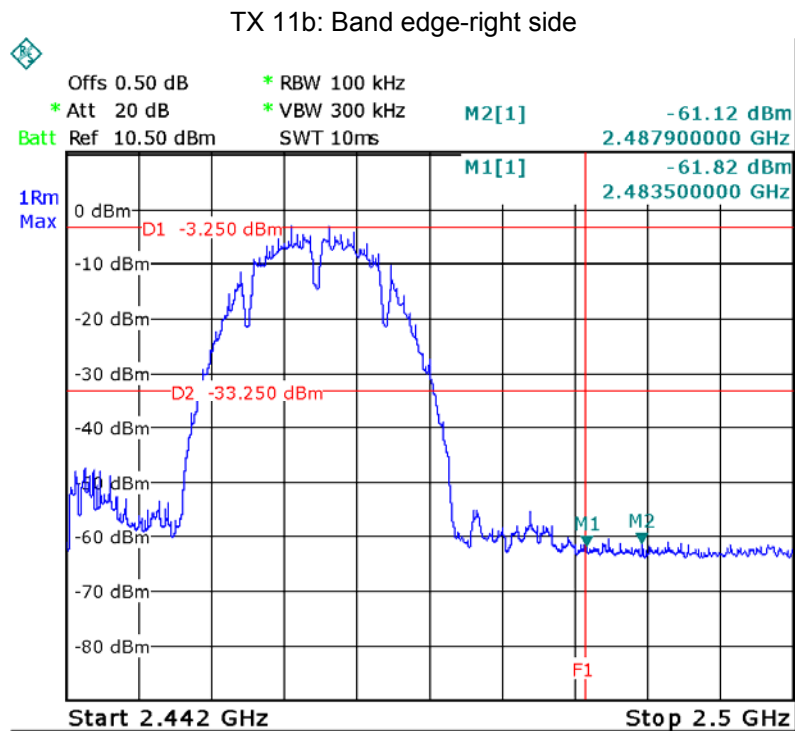
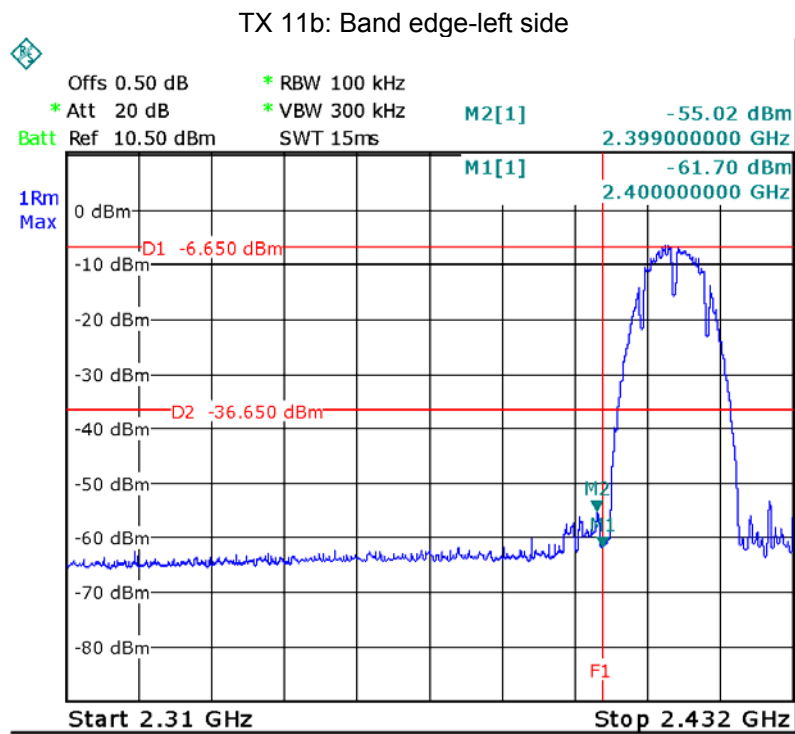
Test Requirement:	FCC CFR47 Part 15 Section 15.247
Test Method:	KDB 558074 D01 DTS Meas Guidance v03r05 04/08/2016
Test Limit:	Regulation 15.247 (d), In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency 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, provided the transmitter demonstrates compliance with the peak conducted power limits. 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. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).
Test Mode:	Transmitting

### 9.1 Test Produce

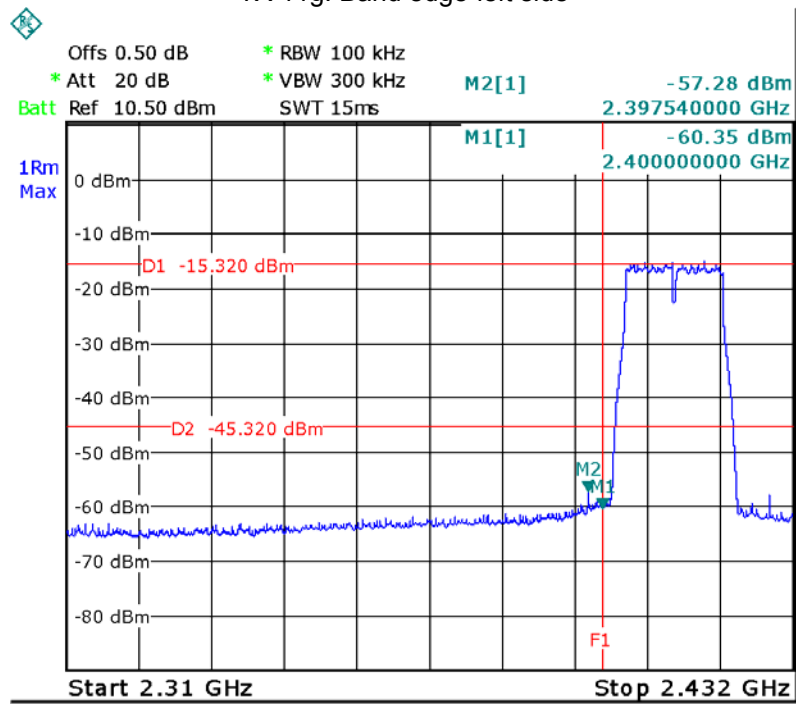
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

## 9.2 Test Result

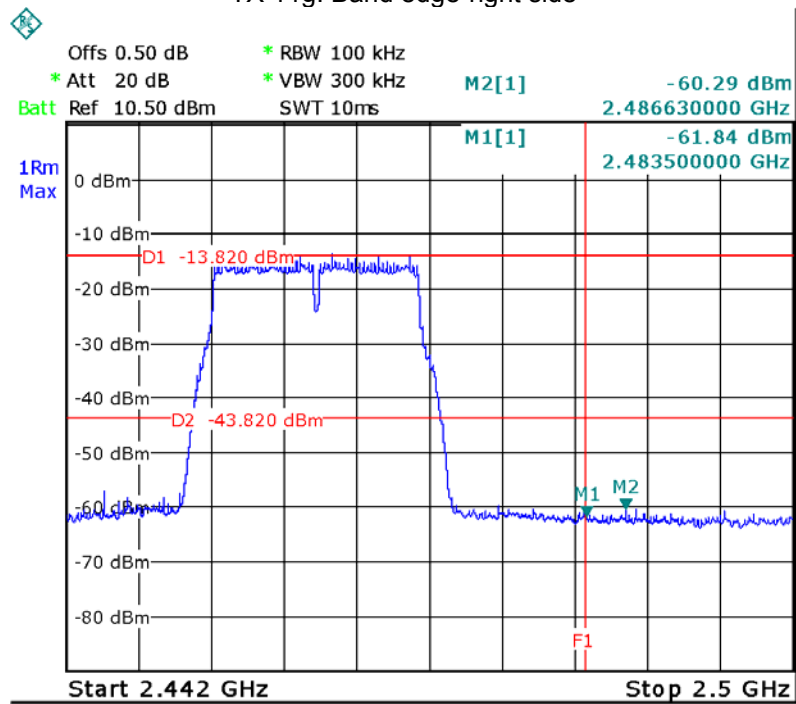
Test result plots shown as follows:



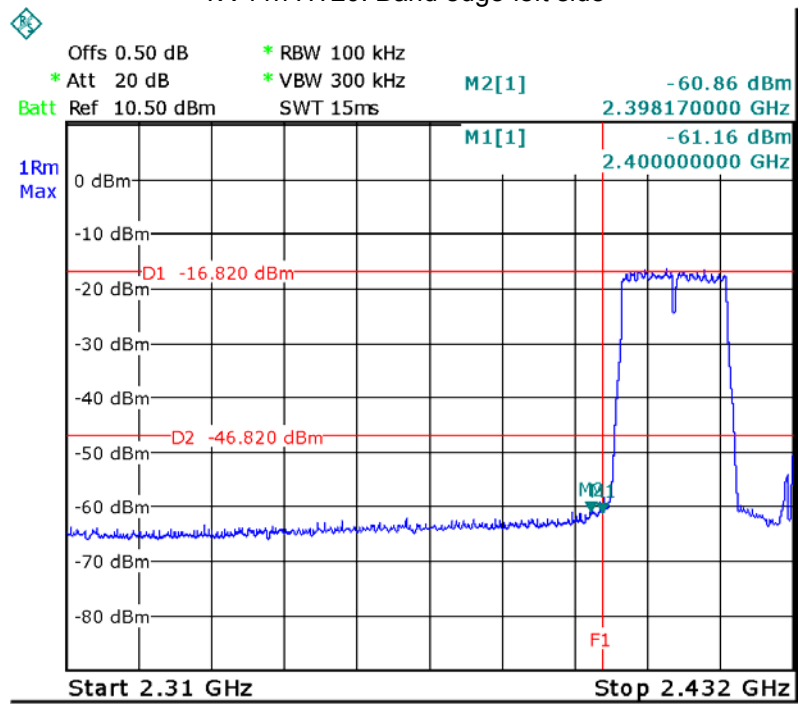
TX 11g: Band edge-left side



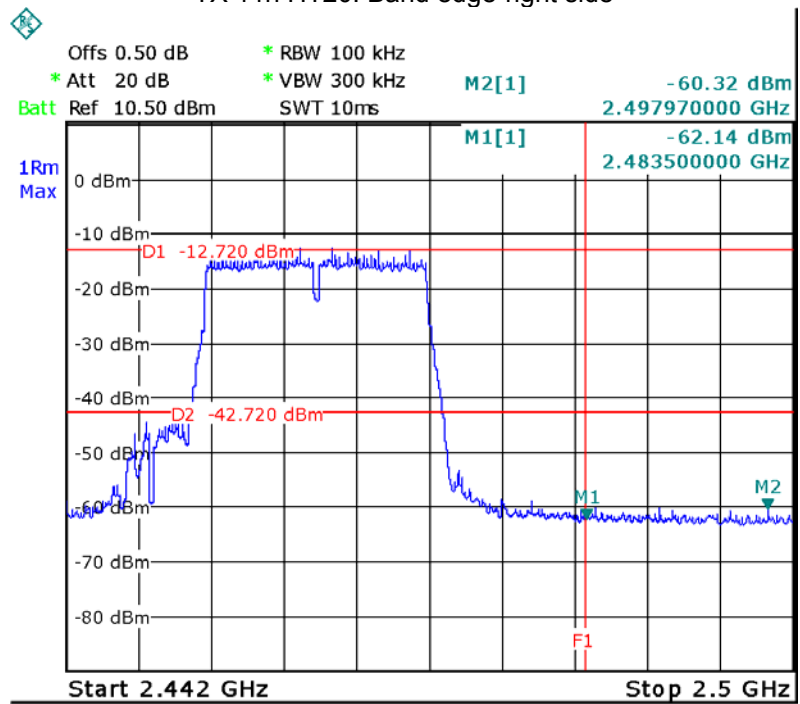
TX 11g: Band edge-right side



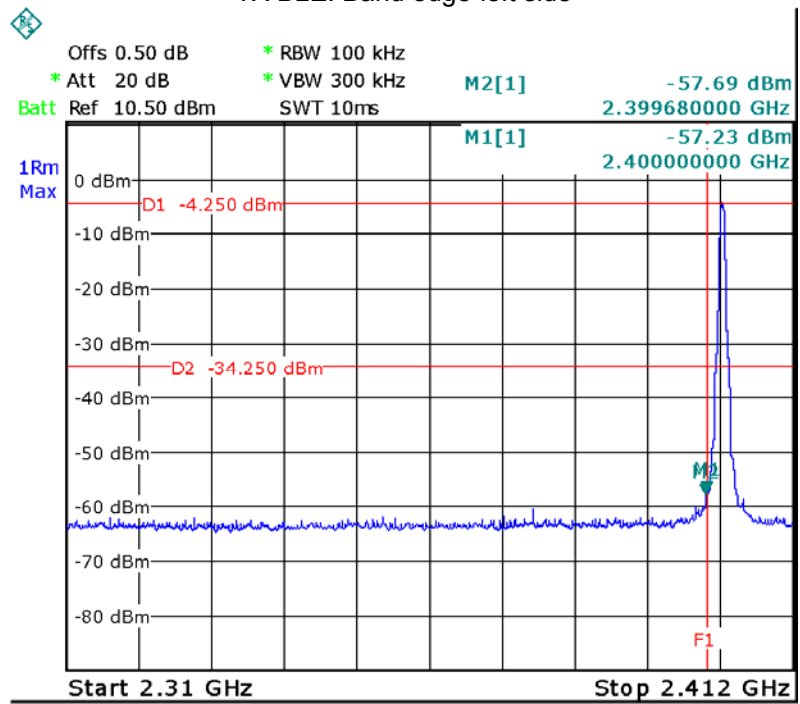
TX 11n HT20: Band edge-left side



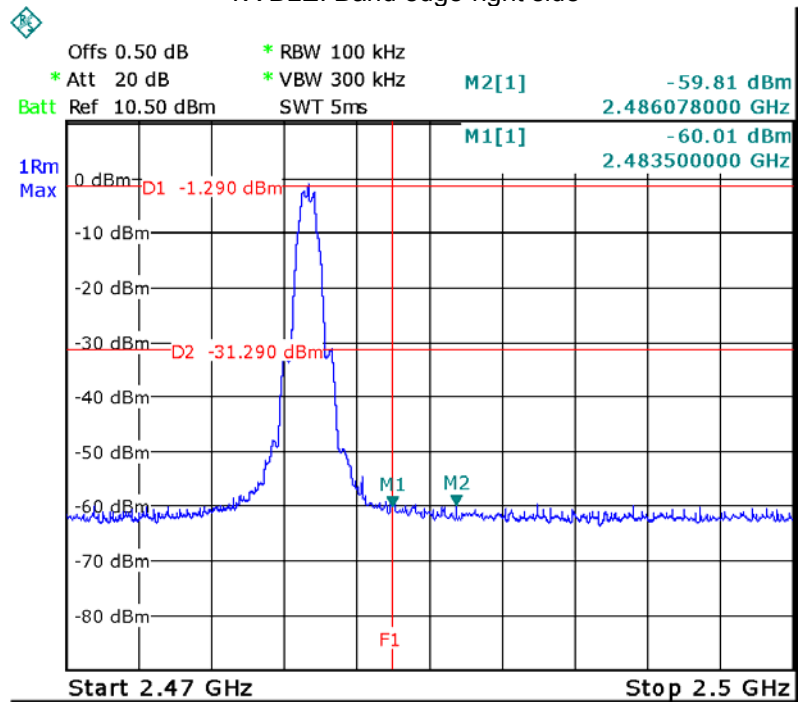
TX 11n HT20: Band edge-right side



TX BLE: Band edge-left side



TX BLE: Band edge-right side



## 10 6 dB Bandwidth Measurement

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: KDB 558074 D01 DTS Meas Guidance v03r05 04/08/2016

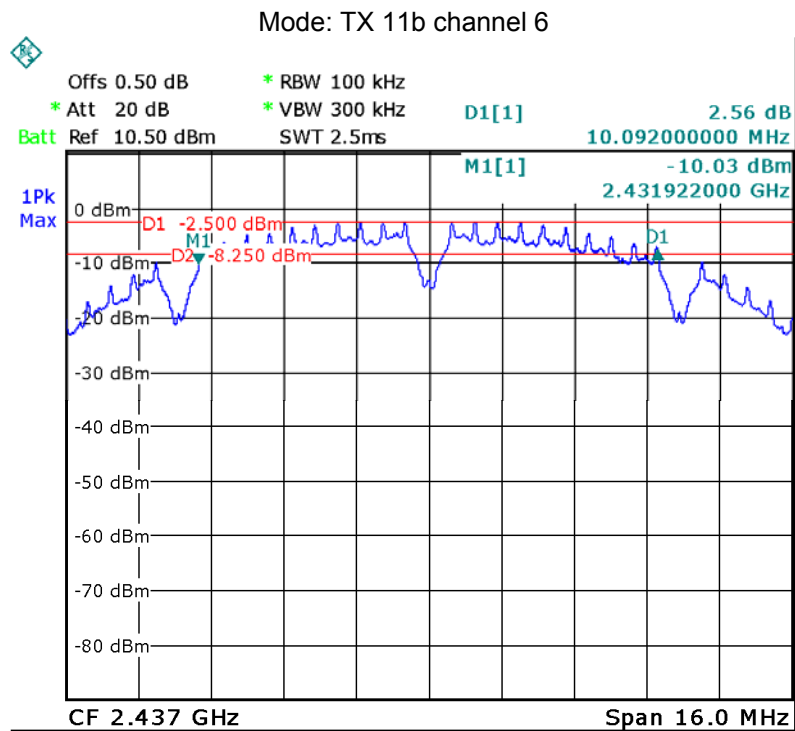
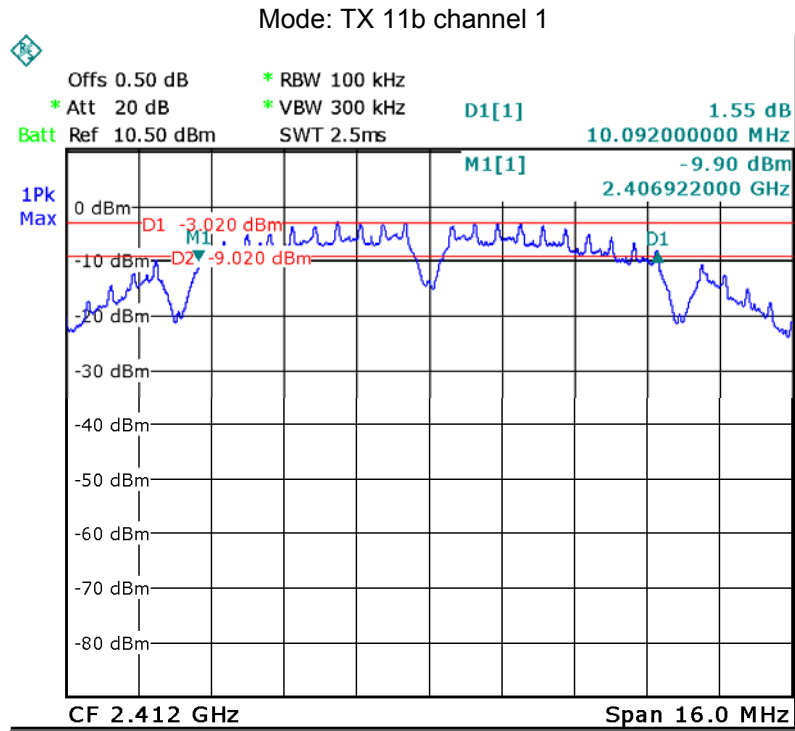
### 10.1 Test Procedure:

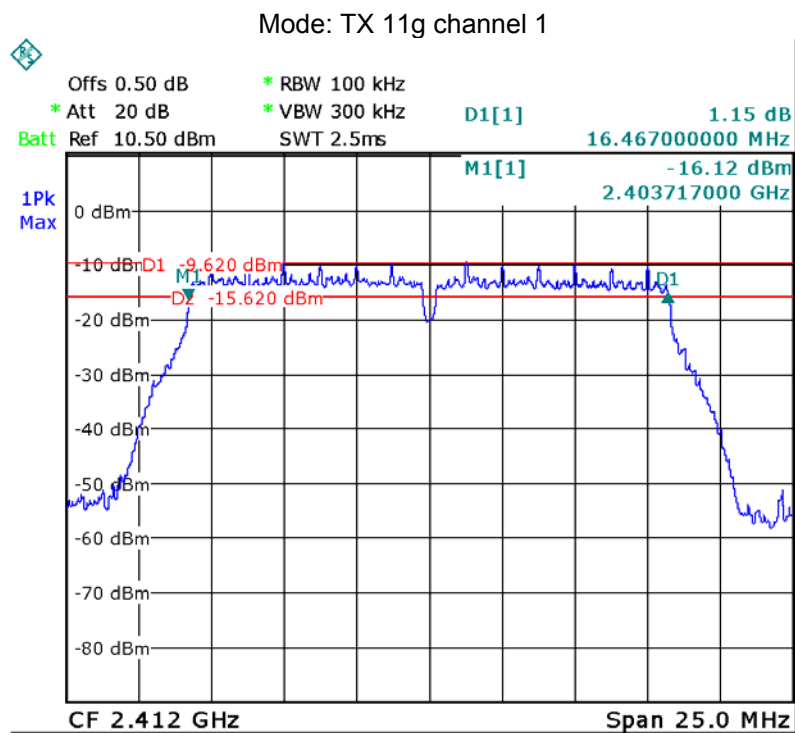
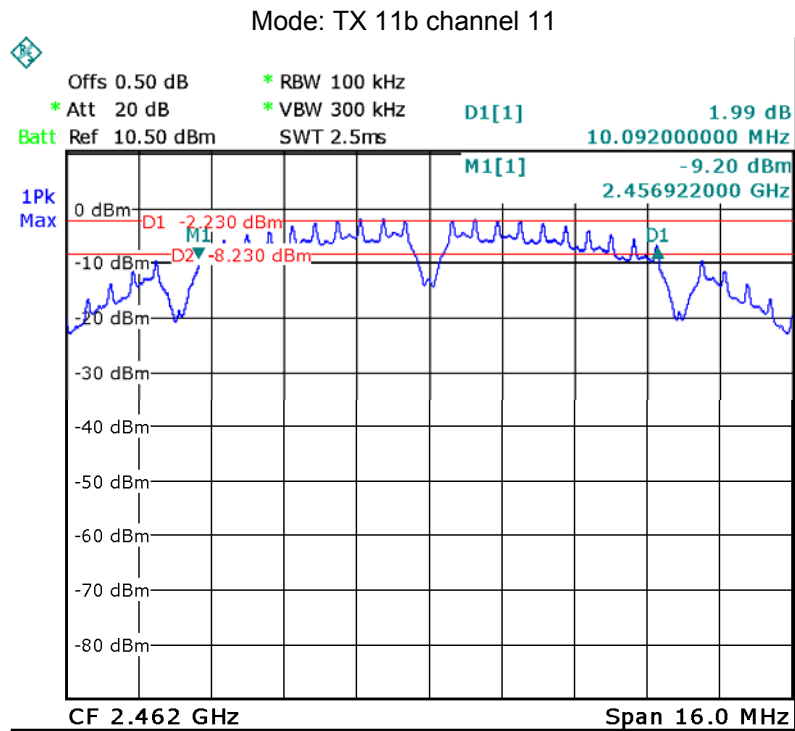
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz

### 10.2 Test Result:

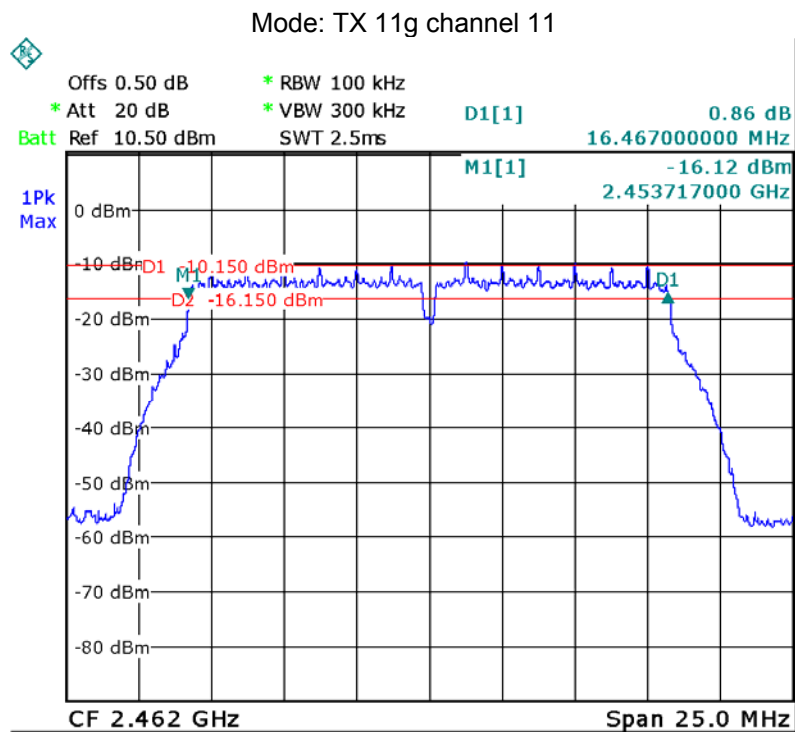
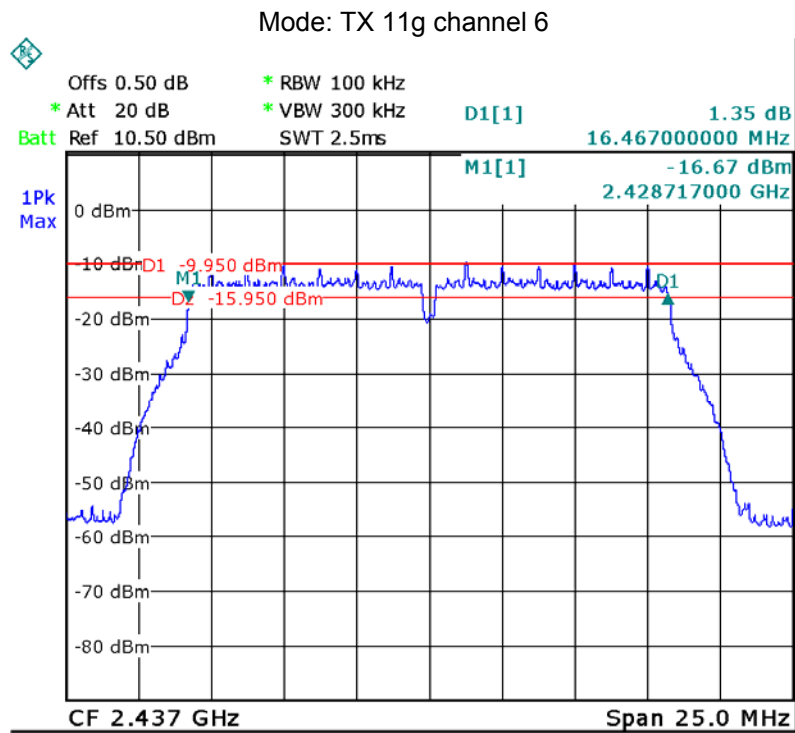
Operation mode	Bandwidth (MHz)		
	Channel 1	Channel 6	Channel 11
TX 11b	Channel 1	Channel 6	Channel 11
	10.092	10.092	10.092
TX 11g	Channel 1	Channel 6	Channel 11
	16.467	16.467	16.467
TX 11n HT20	Channel 1	Channel 6	Channel 11
	17.677	17.677	17.677
BT BLE	Channel 0	Channel 19	Channel 39
	0.701	0.701	0.701

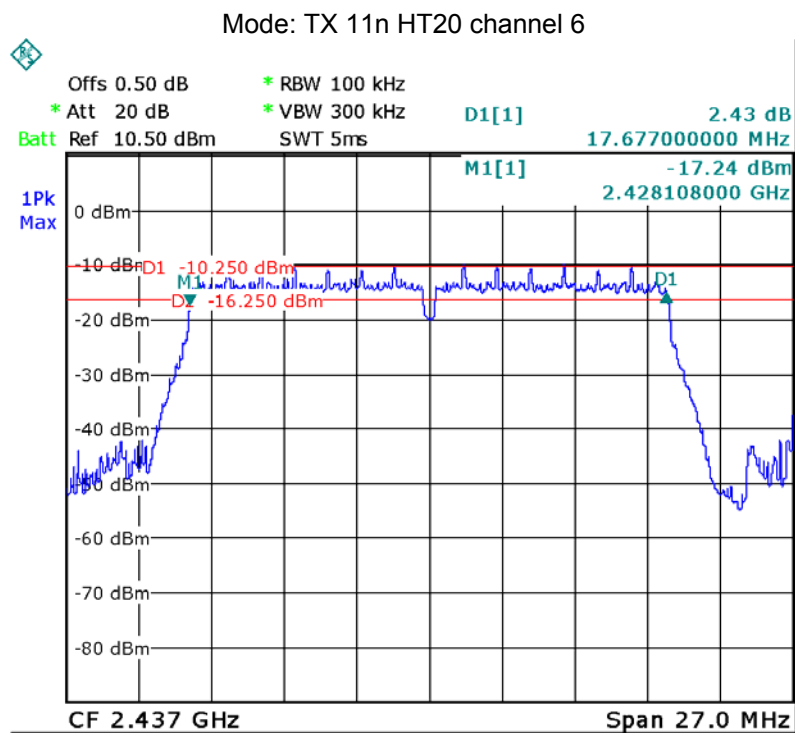
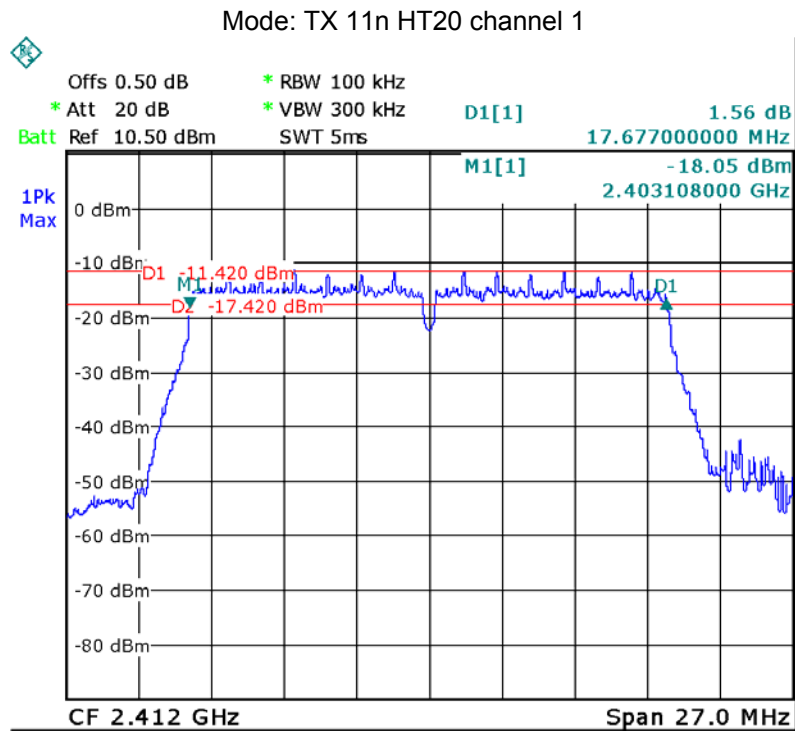
Test result plot as follows:



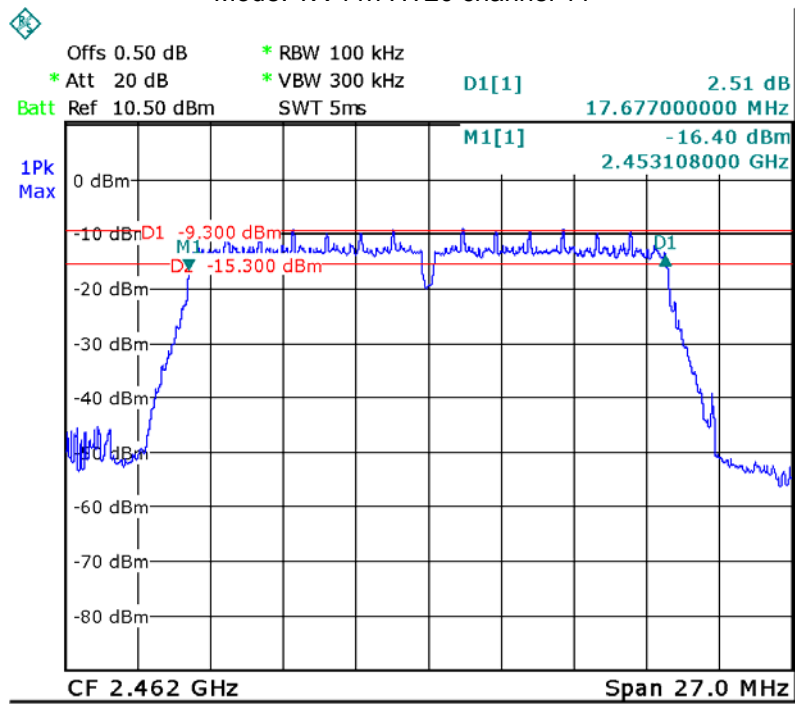




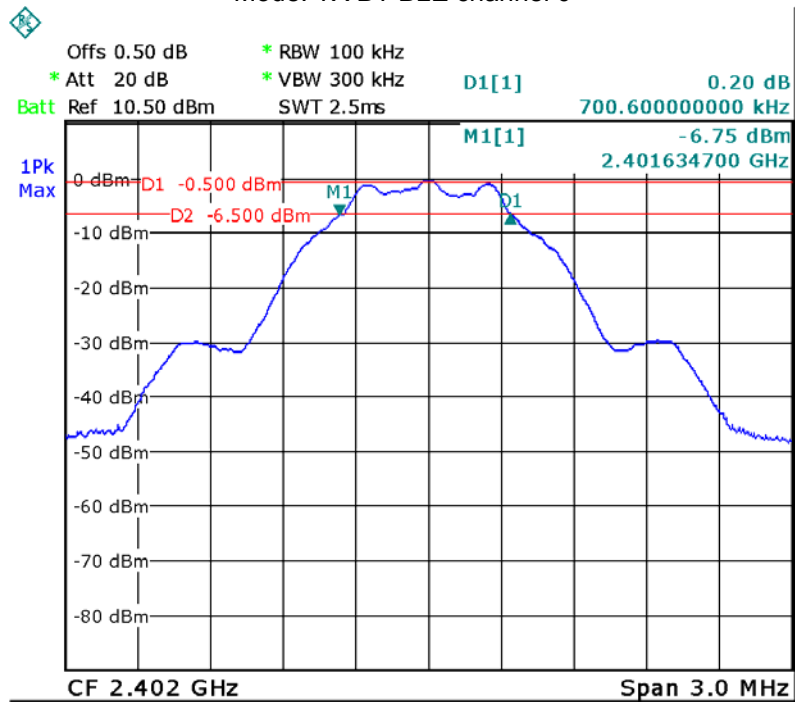


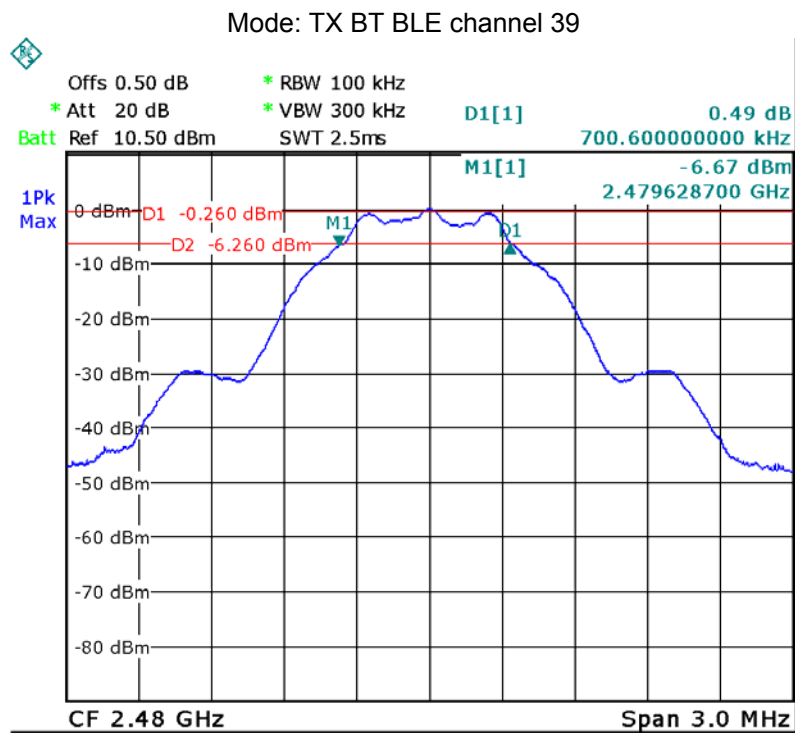
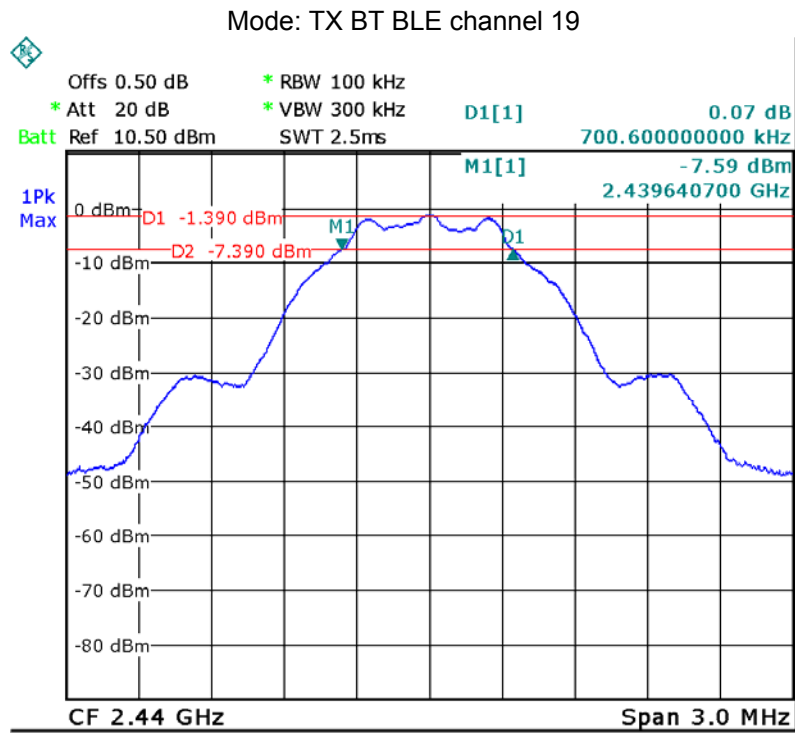


Mode: TX 11n HT20 channel 11



Mode: TX BT BLE channel 0





## 11 Maximum Peak Output Power

Test Requirement:

FCC CFR47 Part 15 Section 15.247

Test Method:

KDB 558074 D01 DTS Meas Guidance v03r05 04/08/2016

### 11.1 Test Procedure:

KDB 558074 D01 DTS Meas Guidance v03r05 04/08/2016

section 9.1.1 (For BLE)

This procedure shall be used when the measurement instrument has available a resolution bandwidth that is greater than the DTS bandwidth.

- a) Set the  $RBW \geq$  DTS bandwidth.
- b) Set  $VBW \geq 3$  RBW.
- c) Set  $span \geq 3 \times RBW$
- d) Sweep time = auto couple.
- e) Detector = peak.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use peak marker function to determine the peak amplitude level.

section 9.1.2 (For WIFI)

This procedure may be used when the maximum available RBW of the measurement instrument is less than the DTS bandwidth.

- a) Set the  $RBW = 1$  MHz.
- b) Set the  $VBW \geq 3$  RBW
- c) Set the  $span \geq 1.5 \times$  DTS bandwidth.
- d) Detector = peak.
- e) Sweep time = auto couple.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some instruments, this may require a manual override to select peak detector). If the instrument does not have a band power function, sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the DTS bandwidth.

**11.2 Test Result:**

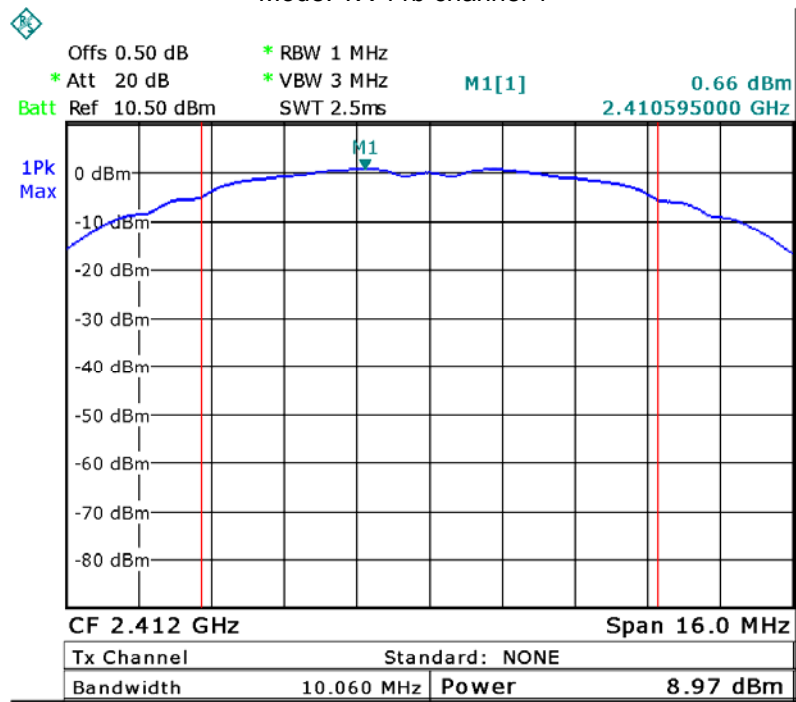
Test mode :TX 11b		
Maximum Peak Output Power (dBm)		
2412MHz	2437MHz	2462MHz
8.97	9.01	9.08
Limit: 1W/30dBm		

Test mode :TX 11g		
Maximum Peak Output Power (dBm)		
2412MHz	2437MHz	2462MHz
8.96	9.23	9.21
Limit: 1W/30dBm		

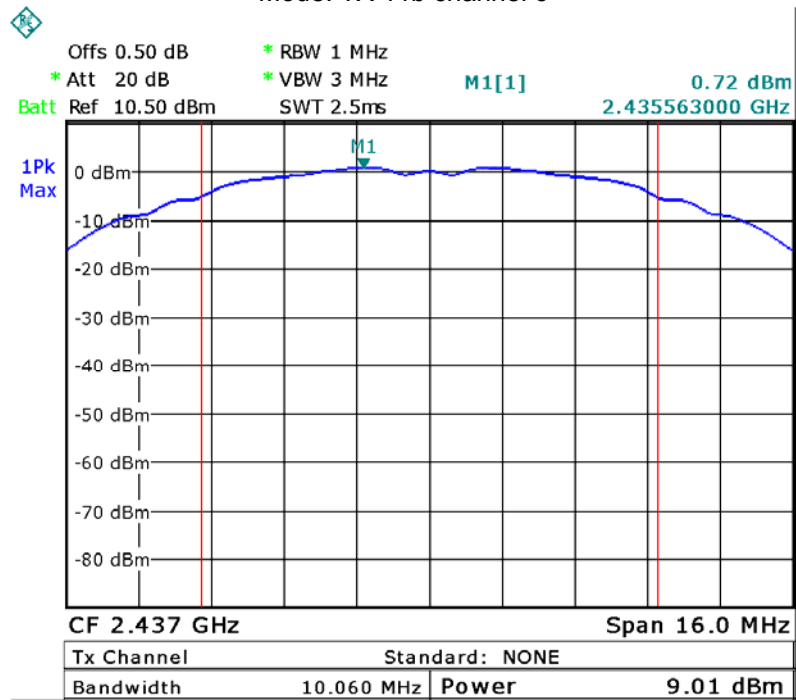
Test mode :TX 11n HT20		
Maximum Peak Output Power (dBm)		
2412MHz	2437MHz	2462MHz
9.16	9.02	9.28
Limit: 1W/30dBm		

Test mode : TX BT BLE		
Maximum Peak Output Power (dBm)		
2402MHz	2440MHz	2480MHz
-0.20	-1.19	-0.03
Limit: 1W/30dBm		

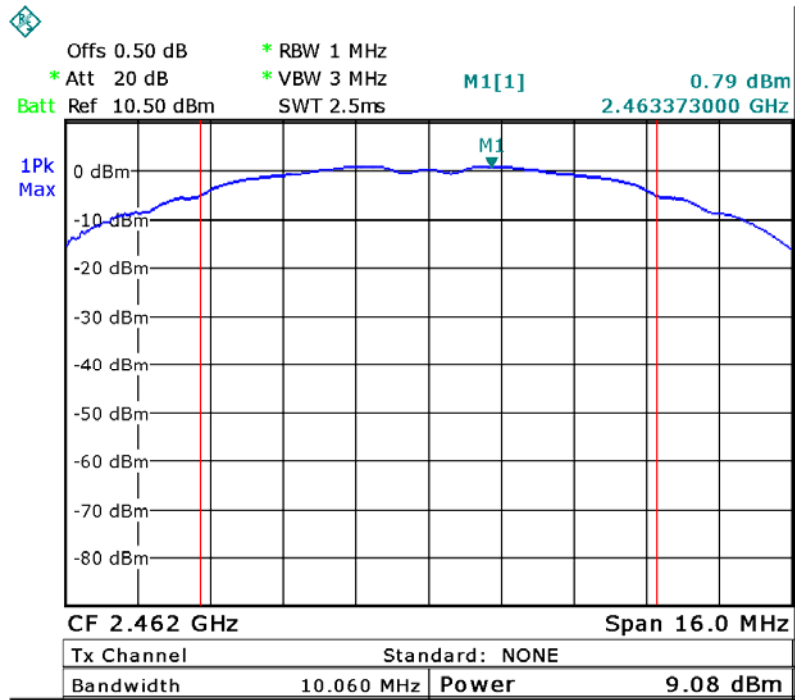
Mode: TX 11b channel 1



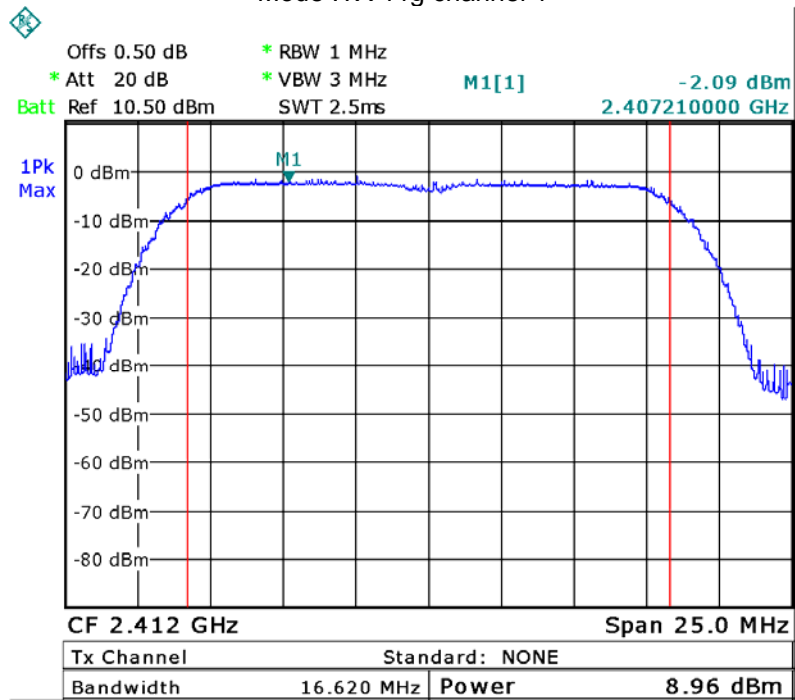
Mode: TX 11b channel 6



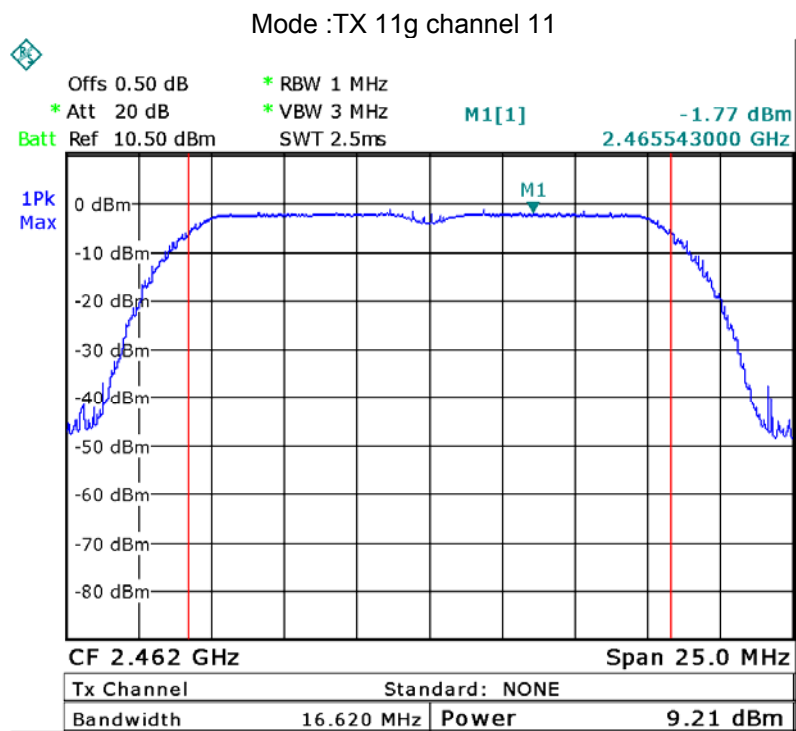
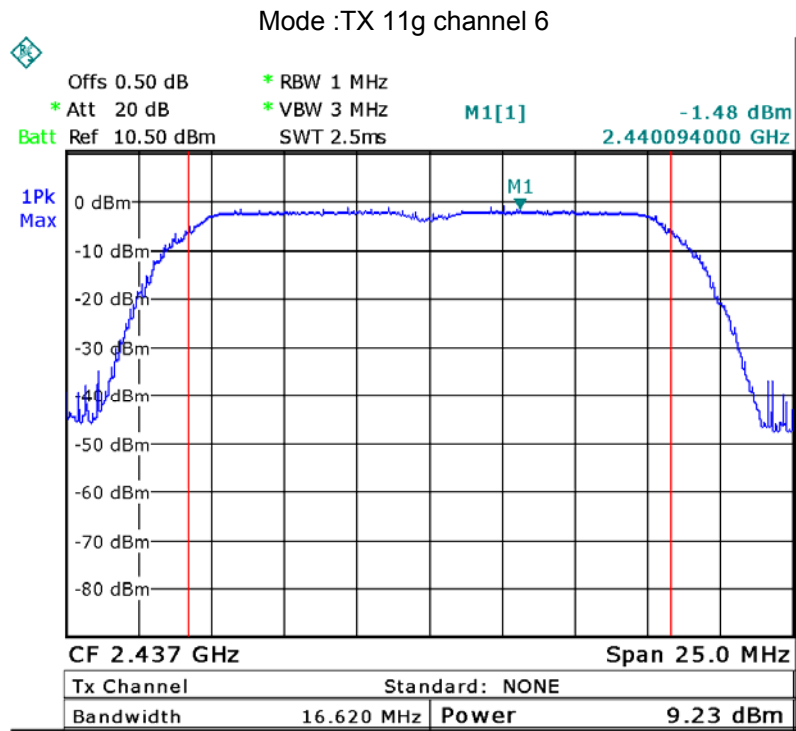
Mode: TX 11b channel 11



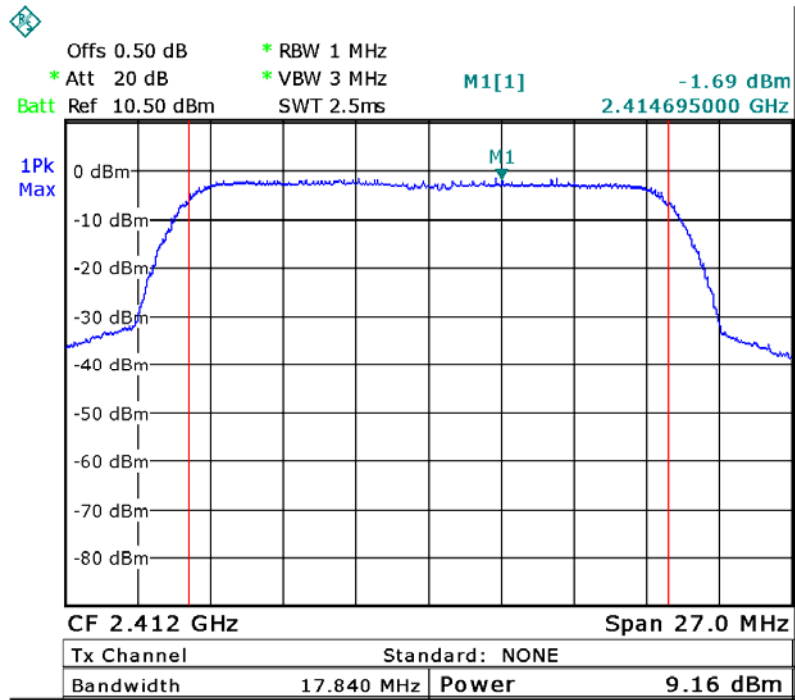
Mode :TX 11g channel 1



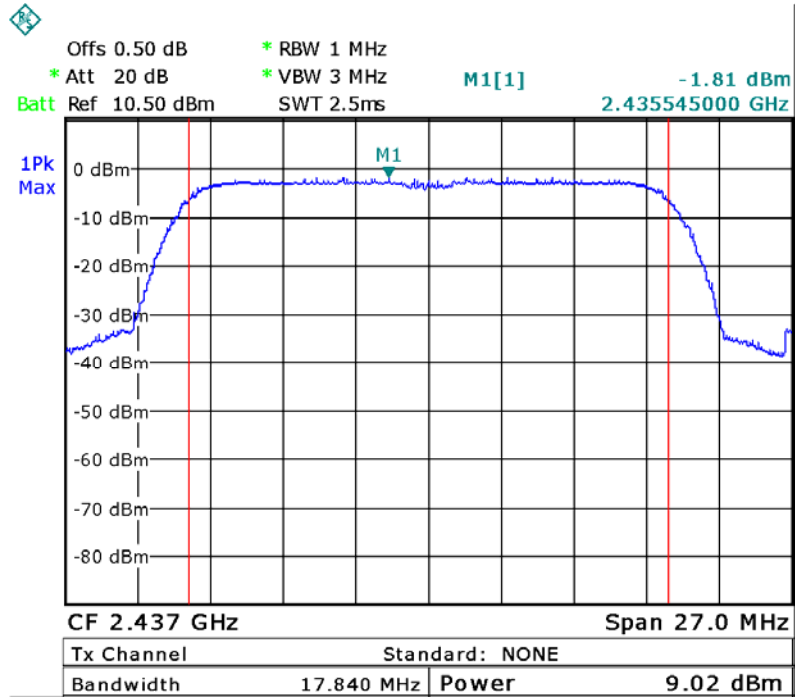


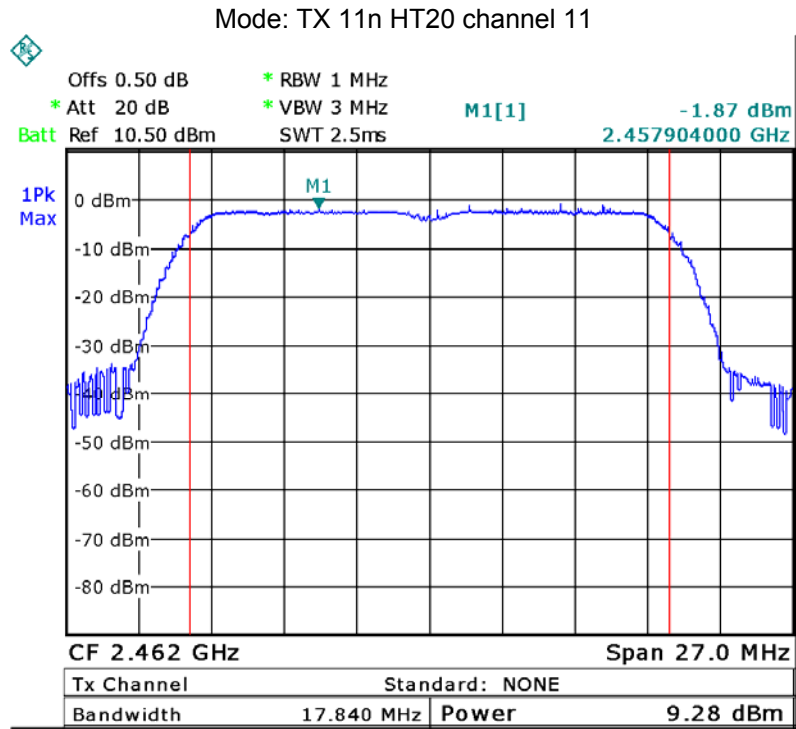


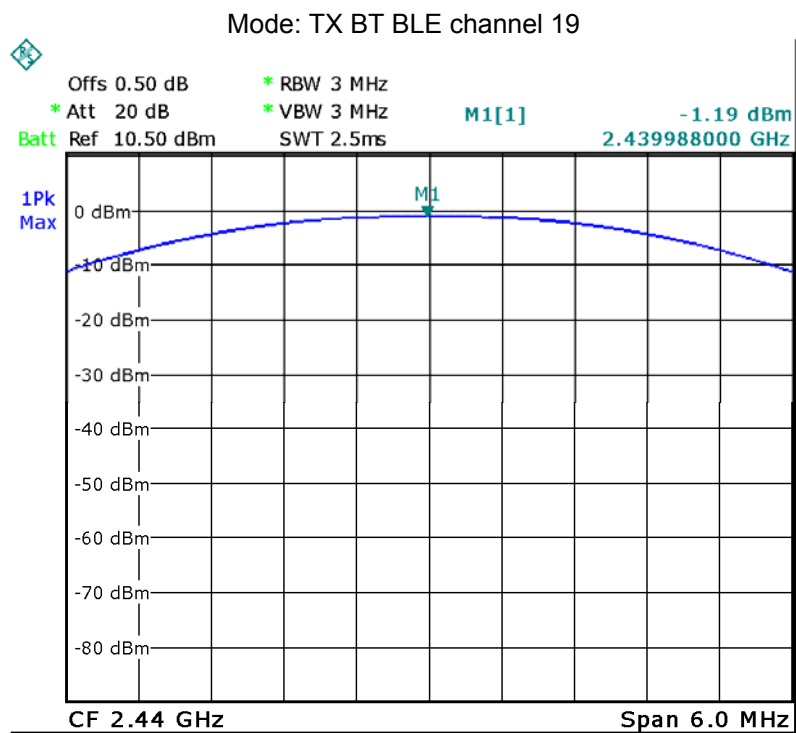
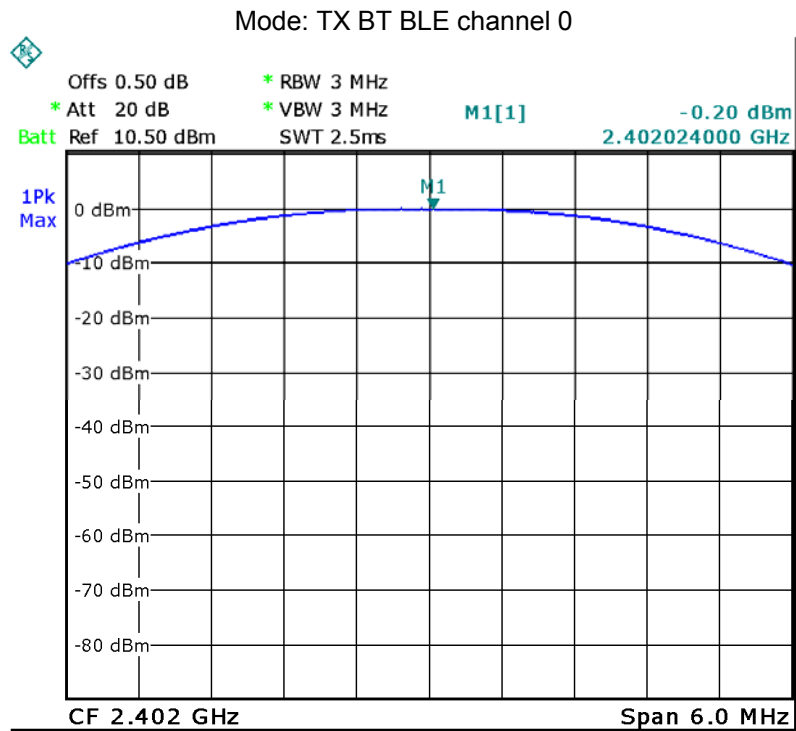
Mode: TX 11n HT20 channel 1

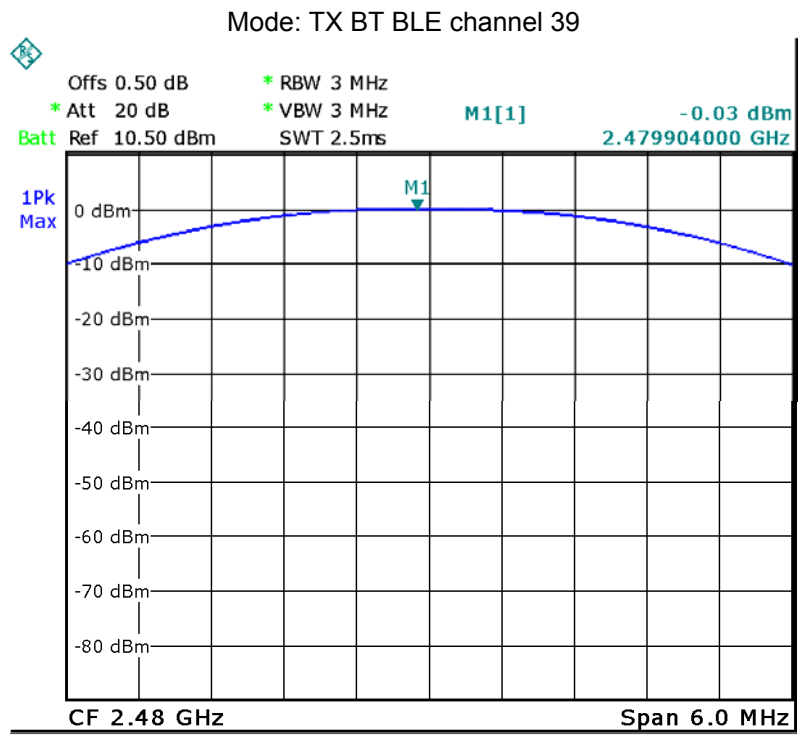


Mode: TX 11n HT20 channel 6









## 12 Power Spectral density

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: KDB 558074 D01 DTS Meas Guidance v03r05 04/08/2016

### 12.1 Test Procedure:

KDB 558074 D01 DTS Meas Guidance v03r05 04/08/2016 section 10.2

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz , Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

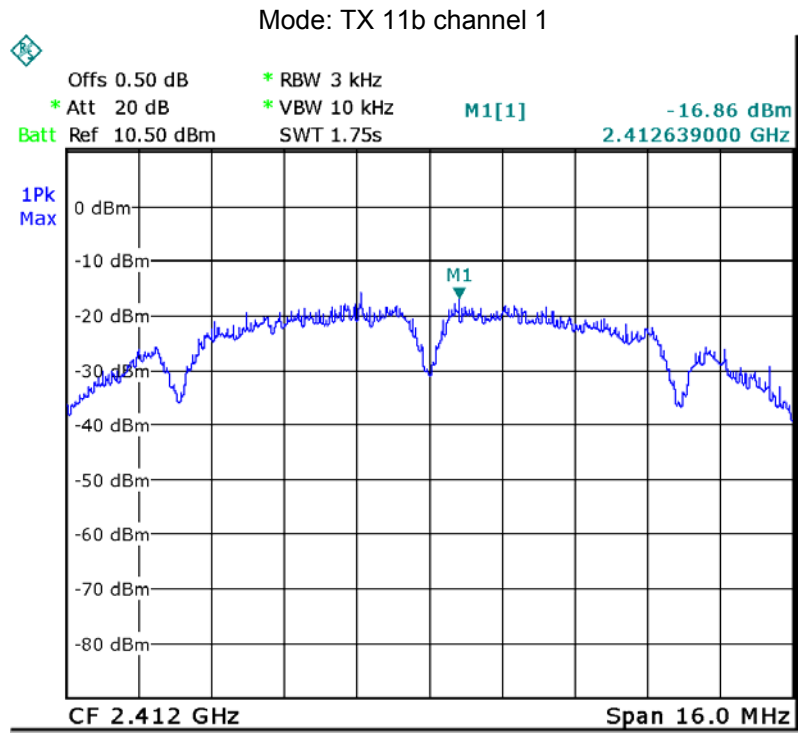
### 12.2 Test Result:

Test mode :TX 11b		
Power Spectral (dBm per 3kHz)		
2412MHz	2437MHz	2462MHz
-16.86	-16.99	-15.77
Limit: 8dBm per 3kHz		

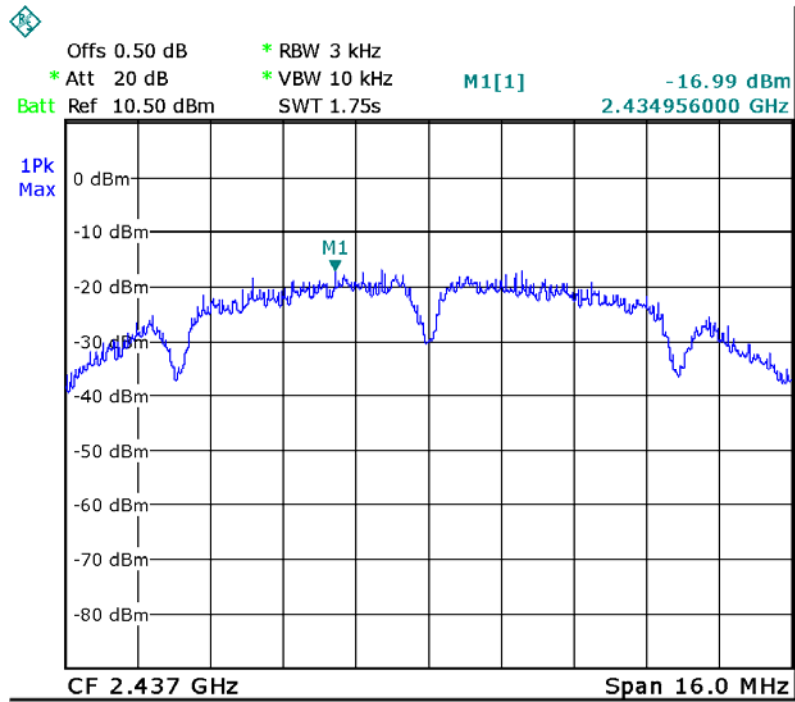
Test mode :TX 11g		
Power Spectral (dBm per 3kHz)		
2412MHz	2437MHz	2462MHz
-29.99	-25.77	-23.70
Limit: 8dBm per 3kHz		

Test mode :TX 11n HT20		
Power Spectral (dBm per 3kHz)		
2412MHz	2437MHz	2462MHz
-26.74	-26.02	-24.38
Limit: 8dBm per 3kHz		

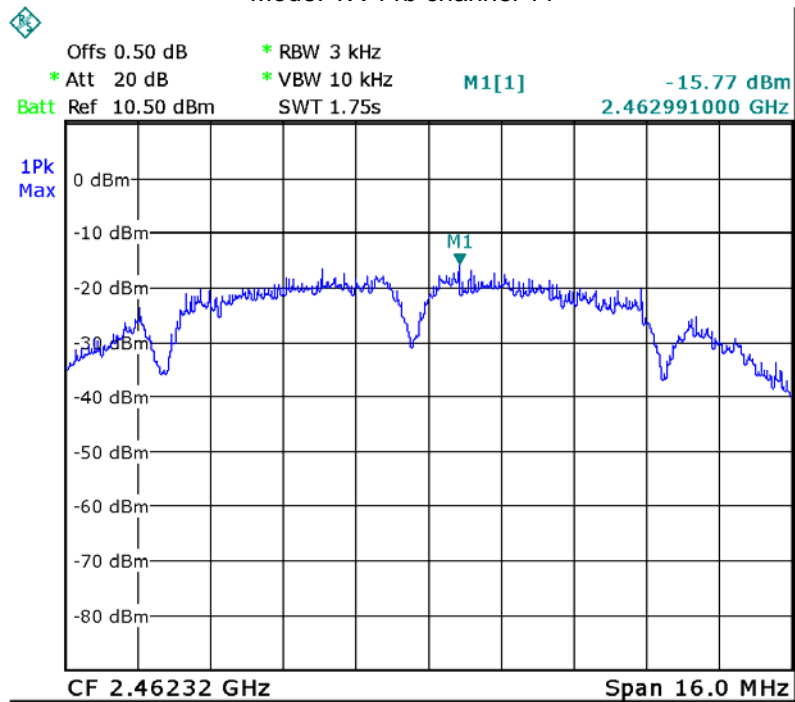
Test mode : TX BT BLE		
Power Spectral (dBm per 3kHz)		
2402MHz	2440MHz	2480MHz
-20.50	-21.14	-19.56
Limit: 8dBm per 3kHz		



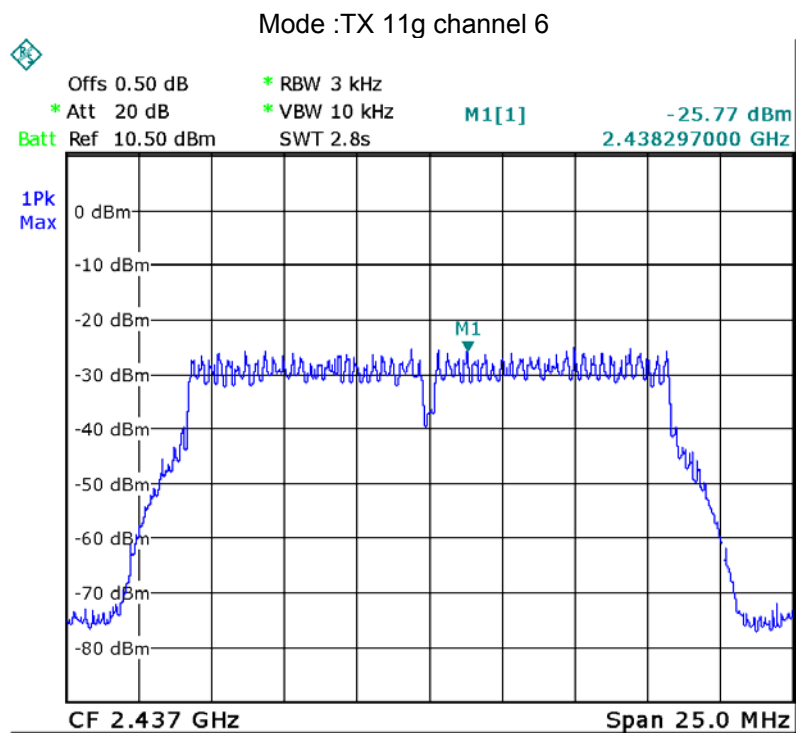
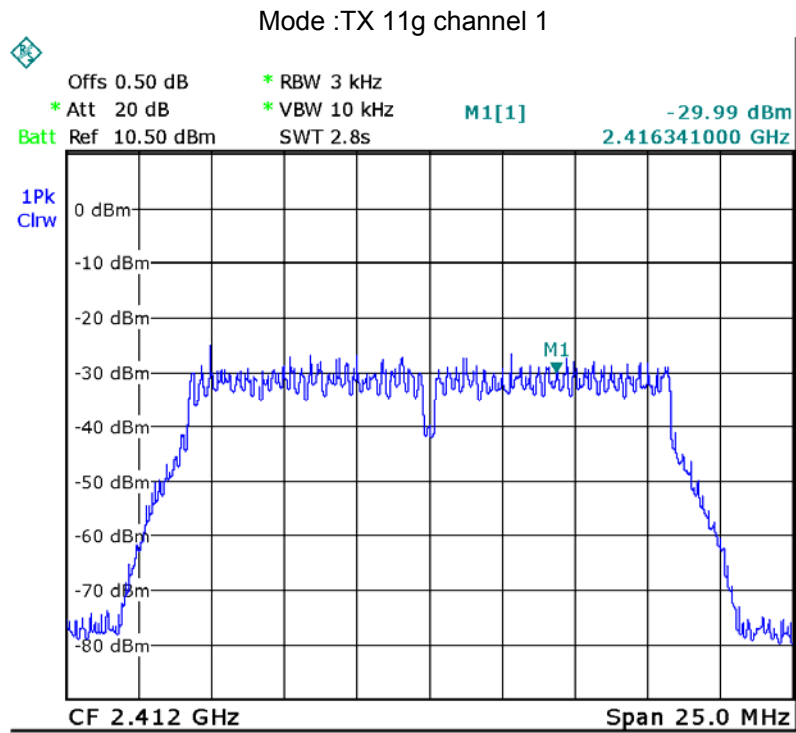
Mode: TX 11b channel 6

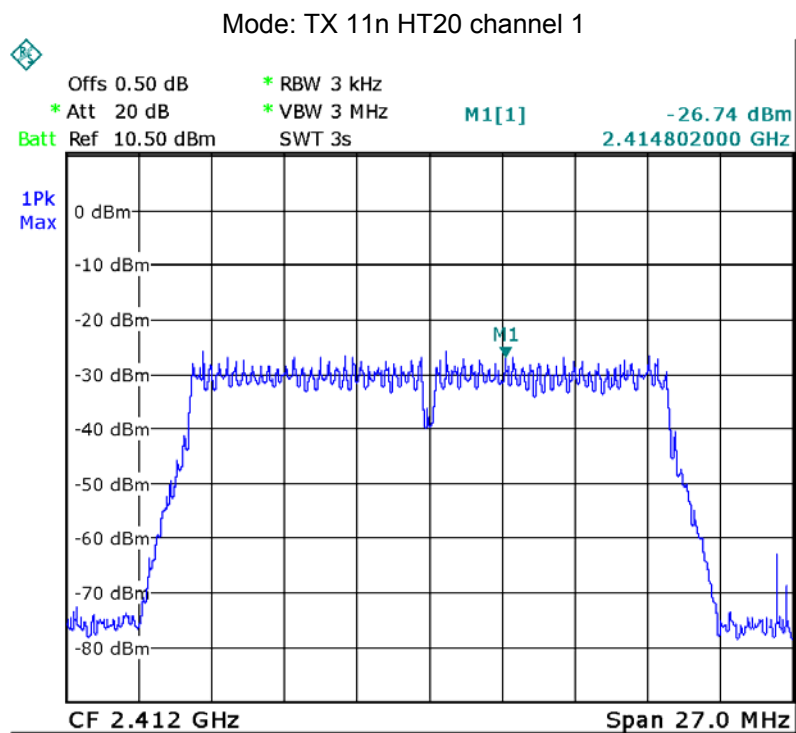
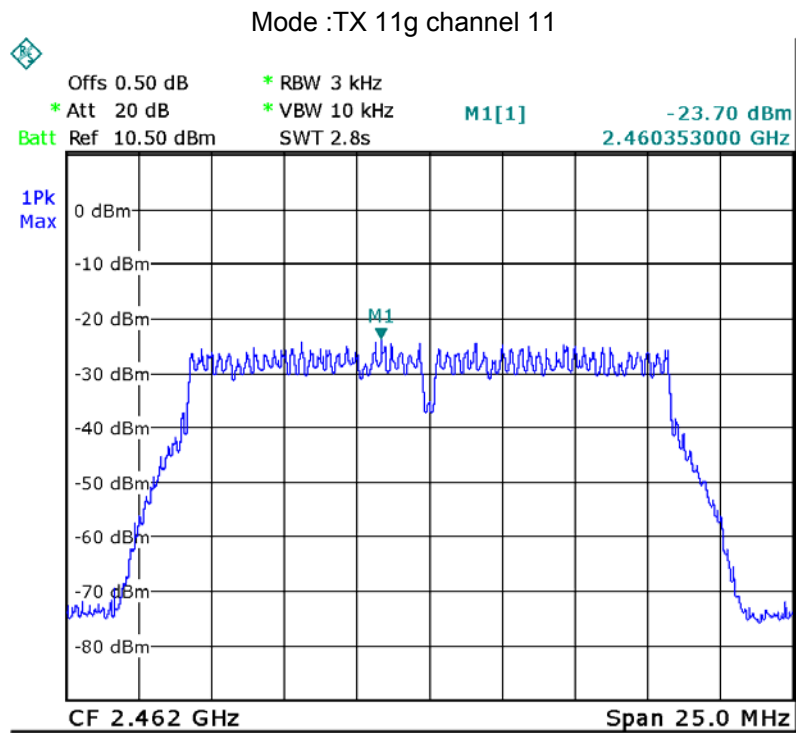


Mode: TX 11b channel 11

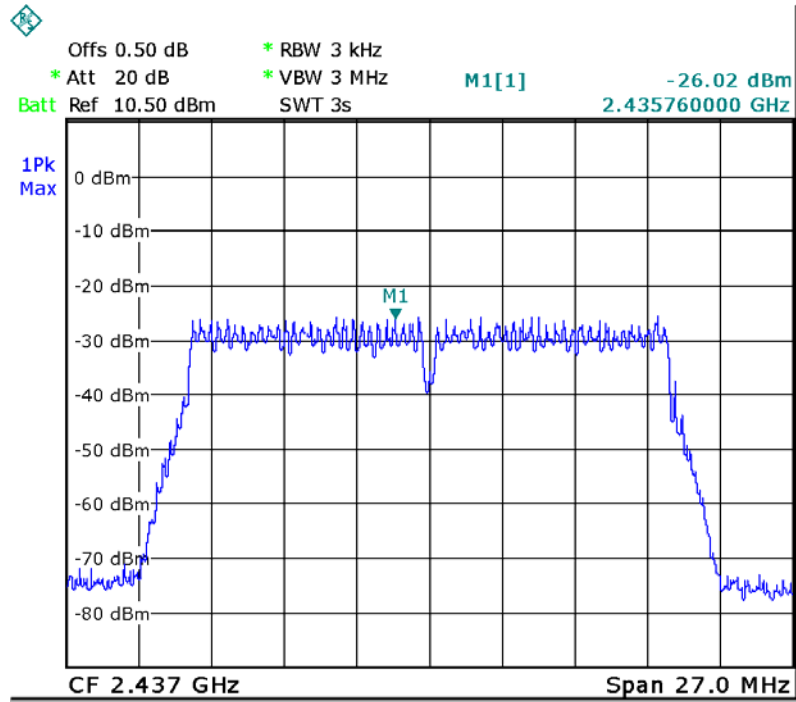




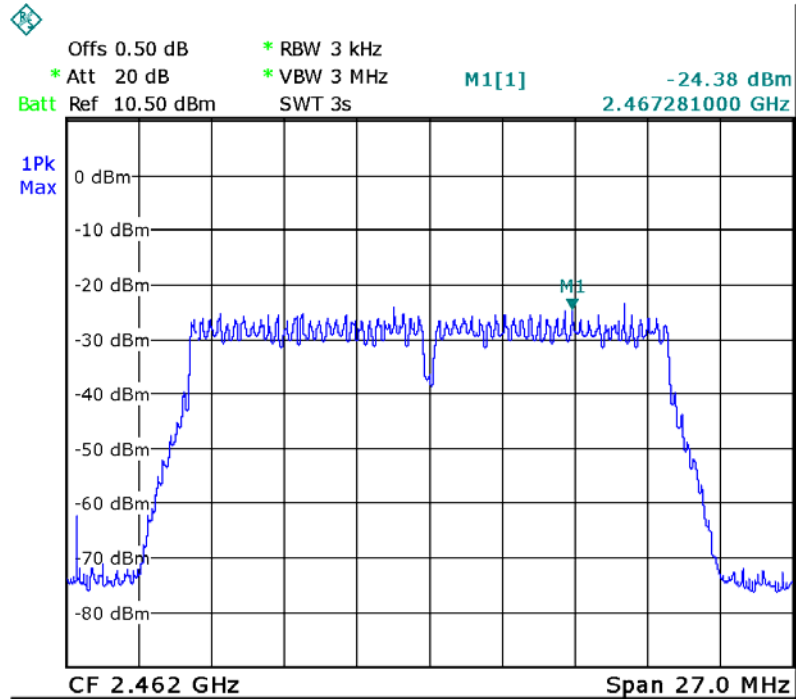


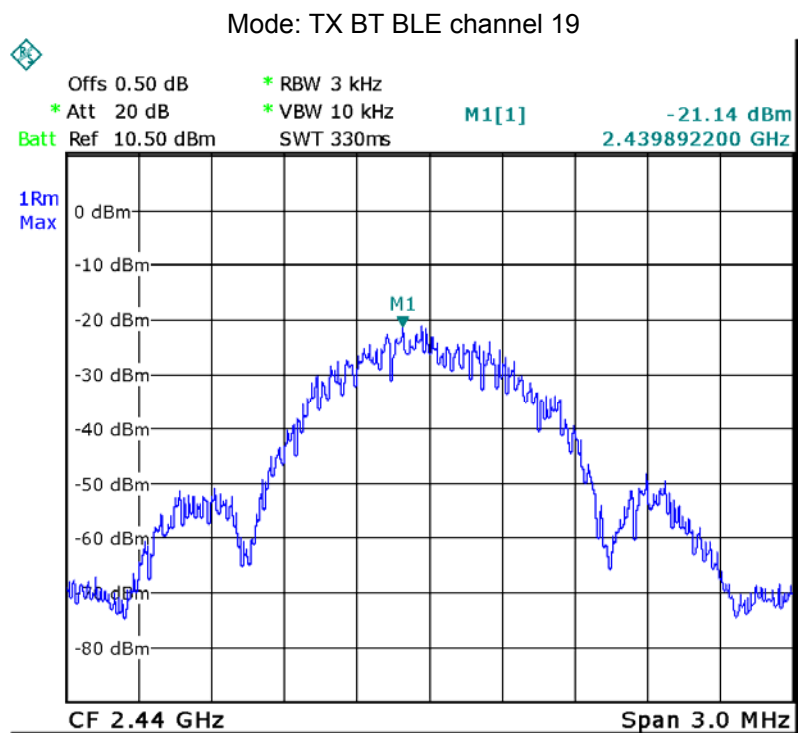
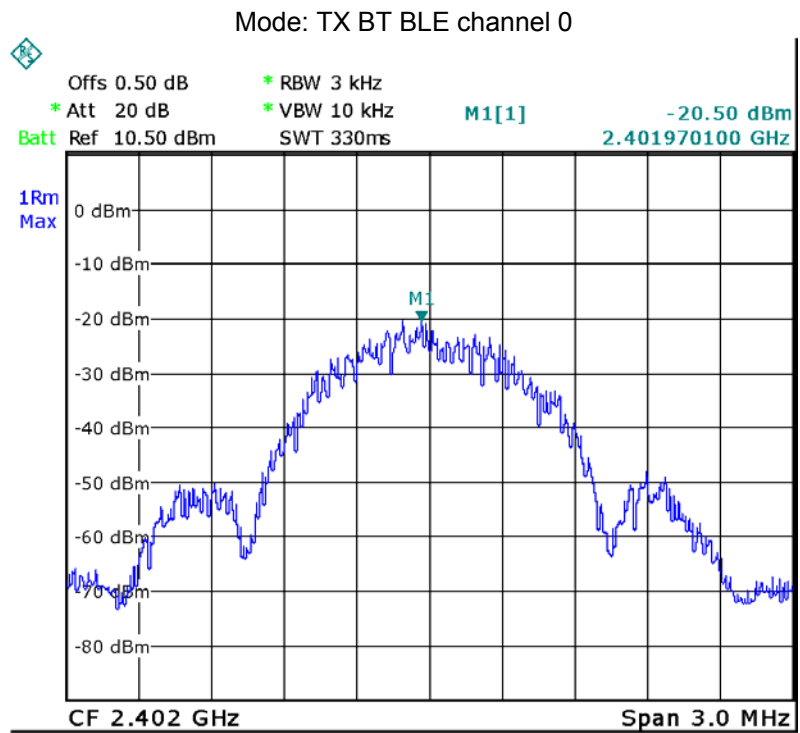


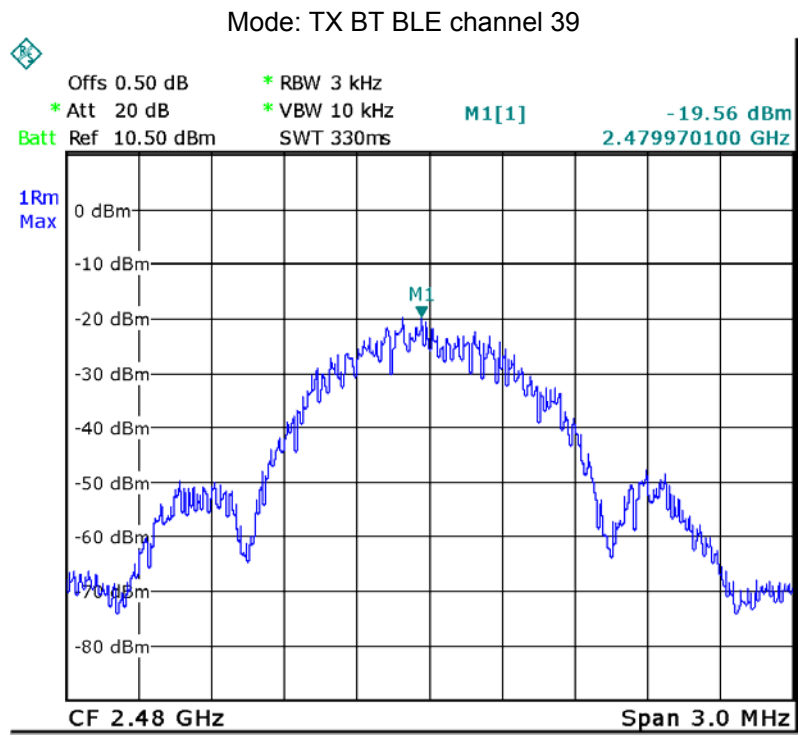
Mode: TX 11n HT20 channel 6



Mode: TX 11n HT20 channel 11







### **13 Antenna Requirement**

According to the FCC Part 15 Paragraph 15.203, 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. This product has an integrated antenna fulfill the requirement of this section.

## **14 RF Exposure**

Remark: refer to SAR test report: WTS16S0243054E

=====End of Report=====