

## TEST REPORT

**Product** : LTE MODULE  
**Trade mark** : GlocalMe  
**Model/Type reference** : GLMM18A02  
**Serial Number** : N/A  
**Report Number** : EED32K00246403  
**FCC ID** : 2AC88-GLMM18A02  
**Date of Issue** : Feb. 18, 2019  
**Test Standards** : 47 CFR Part 15Subpart C  
**Test result** : PASS

Prepared for:

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Prepared by:

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Date:

Feb. 18, 2019

Check No.:3096318232



## 2 Version

Version No.	Date	Description
00	Feb. 18, 2019	Original

### 3 Test Summary

Test Item	Test Requirement	Test method	Result
<b>Antenna Requirement</b>	47 CFR Part 15 Subpart C Section 15.203/15.247 (c)	ANSI C63.10-2013	PASS
<b>AC Power Line Conducted Emission</b>	47 CFR Part 15 Subpart C Section 15.207	ANSI C63.10-2013	PASS
<b>Conducted Peak Output Power</b>	47 CFR Part 15 Subpart C Section 15.247 (b)(3)	ANSI C63.10-2013	PASS
<b>6dB Occupied Bandwidth</b>	47 CFR Part 15 Subpart C Section 15.247 (a)(2)	ANSI C63.10-2013	PASS
<b>Power Spectral Density</b>	47 CFR Part 15 Subpart C Section 15.247 (e)	ANSI C63.10-2013	PASS
<b>Band-edge for RF Conducted Emissions</b>	47 CFR Part 15 Subpart C Section 15.247(d)	ANSI C63.10-2013	PASS
<b>RF Conducted Spurious Emissions</b>	47 CFR Part 15 Subpart C Section 15.247(d)	ANSI C63.10-2013	PASS
<b>Radiated Spurious Emissions</b>	47 CFR Part 15 Subpart C Section 15.205/15.209	ANSI C63.10-2013	PASS
<b>Restricted bands around fundamental frequency (Radiated Emission)</b>	47 CFR Part 15 Subpart C Section 15.205/15.209	ANSI C63.10-2013	PASS

Remark:

Test according to ANSI C63.4-2014 & ANSI C63.10-2013.

The tested sample(s) and the sample information are provided by the client.

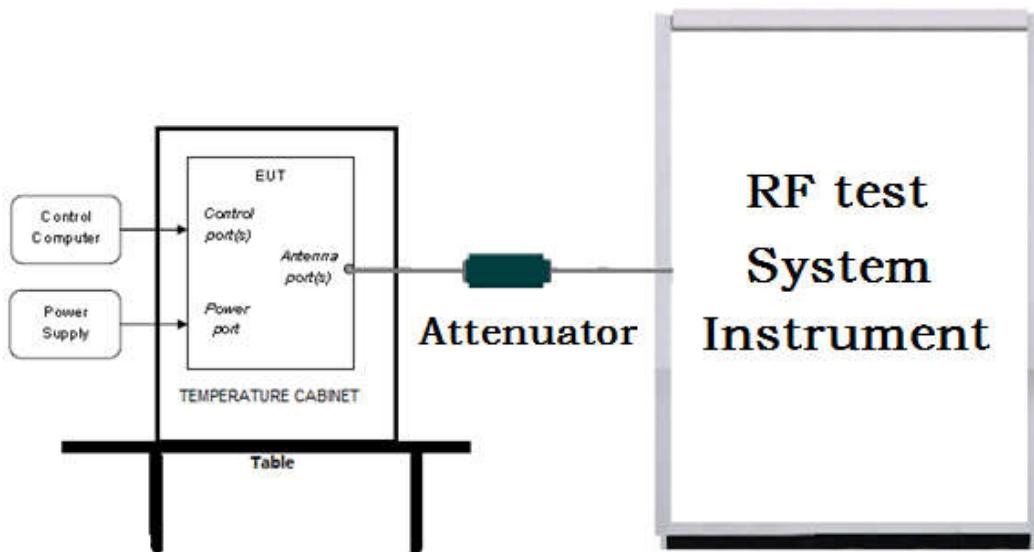
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## 5 Test Requirement

### 5.1 Test setup

#### 5.1.1 For Conducted test setup



#### 5.1.2 For Radiated Emissions test setup

##### Radiated Emissions setup:

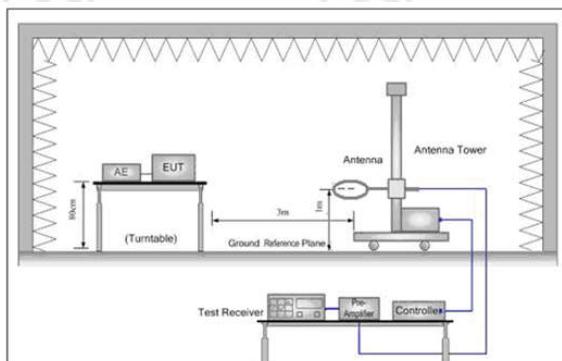


Figure 1. Below 30MHz

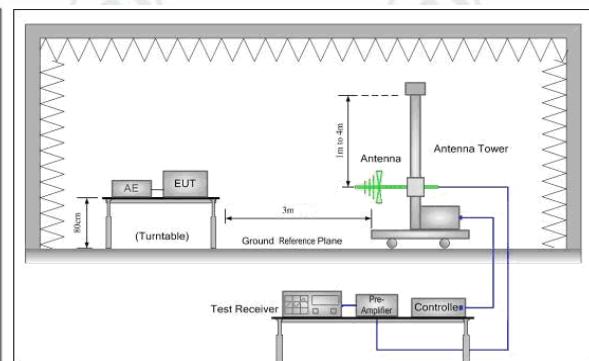


Figure 2. 30MHz to 1GHz

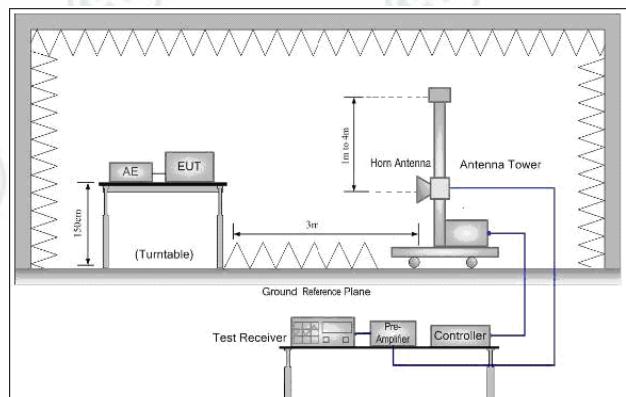
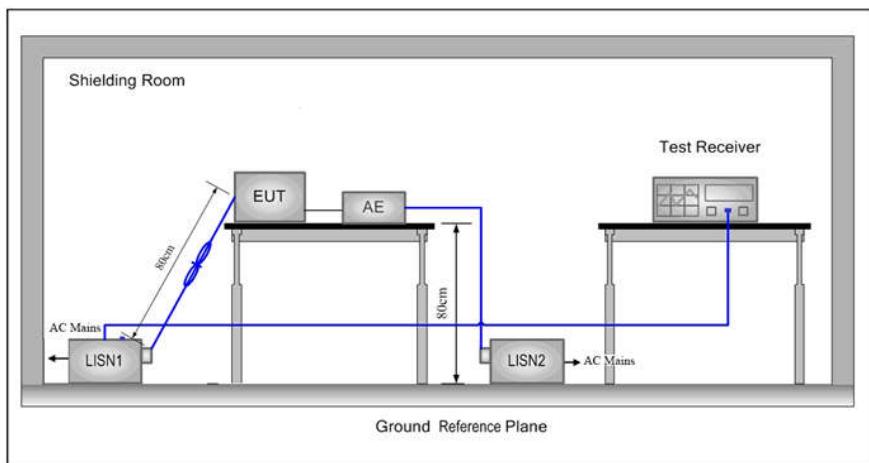


Figure 3. Above 1GHz

### 5.1.3 For Conducted Emissions test setup

#### Conducted Emissions setup



## 5.2 Test Environment

### Operating Environment:

Temperature:	25°C
Humidity:	57% RH
Atmospheric Pressure:	1010mbar

## 5.3 Test Condition

### Test channel:

Test Mode	Tx/Rx	RF Channel		
		Low(L)	Middle(M)	High(H)
802.11b/g/n(HT20)	2412MHz ~2462 MHz	Channel 1	Channel 6	Channel11
		2412MHz	2437MHz	2462MHz
TX mode:	The EUT transmitted the continuous signal at the specific channel(s).			

### Test mode:

#### Pre-scan under all rate at lowest channel 1

Mode		802.11b				802.11g			
Data Rate		1Mbps	2Mbps	5.5Mbps	11Mbps				
Power(dBm)		11.00	11.54	11.87	12.16				
Mode		802.11n (HT20)							
Data Rate		6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
Power(dBm)		12.21	12.00	11.94	11.75	11.47	11.21	11.07	10.87
Mode		802.11n (HT20)							
Data Rate		6.5Mbps	13Mbps	19.5Mbps	26Mbps	39Mbps	52Mbps	58.5Mbps	65Mbps
Power(dBm)		11.79	11.54	11.17	11.00	10.84	10.47	10.07	9.87

Through Pre-scan, 11Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20).

## 6 General Information

### 6.1 Client Information

Applicant:	HONGKONG UCLOUDLINK NETWORK TECHNOLOGY LIMITED
Address of Applicant:	Suite 603, 6/F, Laws Commercial Plaza, 788 Cheung Sha Wan Road, Kowloon, HongKong
Manufacturer:	HONGKONG UCLOUDLINK NETWORK TECHNOLOGY LIMITED
Address of Manufacturer:	Suite 603, 6/F, Laws Commercial Plaza, 788 Cheung Sha Wan Road, Kowloon, HongKong
Factory:	SHENZHEN CHIHANG TECHNOLOGY CO., LTD
Address of Factory:	1-4/F, Building 5, Detai Industrial Park, Huarong Road, Dalang Street, Longhua, Shenzhen

### 6.2 General Description of EUT

Product Name:	LTE MODULE
Model No.(EUT):	GLMM18A02
Trade Mark:	GlocalMe
EUT Supports Radios application:	4.0 BT Dual mode: 2402MHz to 2480MHz WiFi: IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz GPS: L1:1559MHz to 1610MHz GSM/GPRS/EGPRS 850: Tx: 824-849MHz, Rx: 869-894MHz GSM/GPRS/EGPRS 1900: Tx: 1850-1910MHz, Rx: 1930-1990MHz WCDMA Band 2: Tx: 1850-1910MHz, Rx: 1930-1990MHz WCDMA Band 4: Tx: 1850-1910MHz, Rx: 2110-2155MHz WCDMA Band 5: Tx: 824- 849MHz, Rx: 869 -894MHz LTE Band 2: Tx: 1850-1910MHz, Rx: 1930-1990MHz LTE Band 4: Tx: 1710-1755 MHz, Rx: 2110-2155 MHz LTE Band 5: Tx: 824-849 MHz, Rx: 869-894MHz LTE Band 7: TX:2500-2570 MHz, Rx: 2620-2690 MHz LTE Band 12: Tx: 699-716 MHz, Rx: 729-746 MHz LTE Band 13: Tx: 777-787 MHz, Rx: 746-756 MHz LTE Band 17: Tx: 704-716 MHz, Rx: 734-746 MHz LTE Band 26: Tx: 814-849 MHz, Rx: 859-894 MHz LTE Band 38: Tx: 2570- 2620MHz, Rx: 2570-2620MHz LTE Band 40: Tx:2305–2315 MHz, Rx:2305–2315MHz Tx:2350–2360 MHz, Rx:2350–2360MHz LTE Band 41: Tx: 2535-2655 MHz, Rx: 2535 -2655 MHz
Power Supply:	DC 3.3V
Sample Received Date:	Sep. 10, 2018
Sample tested Date:	Sep. 11, 2018 to Feb. 11, 2019

### 6.3 Product Specification subjective to this standard

Operation Frequency:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz
Channel Numbers:	IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels
Channel Separation:	5MHz
Type of Modulation:	IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE for 802.11g :OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11n(HT20) : OFDM (64QAM, 16QAM, QPSK, BPSK)
Test Power Grade:	3(manufacturer declare)
Test Software of EUT:	SoFia RFTestTool V1.1(manufacturer declare)
Antenna Type	External Antenna
Antenna Gain:	-0.5dBi
Firmware version:	GLMM18A01_TSV1.0.000.005.180821_userdebug(manufacturer declare)
Hardware version:	M2_VB(manufacturer declare)
Test Voltage:	DC 3.3V, AC120V/60Hz

Operation Frequency each of channel(802.11b/g/n HT20)							
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		

### 6.4 Description of Support Units

The EUT has been tested independently.

### 6.5 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668      Fax:+86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

### 6.6 Deviation from Standards

None.

### 6.7 Abnormalities from Standard Conditions

None.

### 6.8 Other Information Requested by the Customer

None.

## 6.9 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	$7.9 \times 10^{-8}$
2	RF power, conducted	0.46dB (30MHz-1GHz)
		0.55dB (1GHz-18GHz)
3	Radiated Spurious emission test	4.3dB (30MHz-1GHz)
		4.5dB (1GHz-12.75GHz)
4	Conduction emission	3.5dB (9kHz to 150kHz)
		3.1dB (150kHz to 30MHz)
5	Temperature test	0.64°C
6	Humidity test	3.8%
7	DC power voltages	0.026%

## 7 Equipment List

RF test system					
Equipment	Manufacturer	Model No.	Serial Number	Cal. Date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
Signal Generator	Keysight	E8257D	MY53401106	03-13-2018	03-12-2019
Spectrum Analyzer	Keysight	N9010A	MY54510339	03-13-2018	03-12-2019
Signal Generator	Keysight	N5182B	MY53051549	03-13-2018	03-12-2019
High-pass filter	Sinoscite	FL3CX03WG1 8NM12-0398-002	---	01-10-2018 01-09-2019	01-09-2019 01-08-2020
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	---	01-10-2018 01-09-2019	01-09-2019 01-08-2020
DC Power	Keysight	E3642A	MY54426035	03-13-2018	03-12-2019
PC-1	Lenovo	R4960d	---	03-13-2018	03-12-2019
BT&WI-FI Automatic control	R&S	OSP120	101374	03-13-2018	03-12-2019
RF control unit	JS Tonscend	JS0806-2	15860006	03-13-2018	03-12-2019
RF control unit	JS Tonscend	JS0806-1	15860004	03-13-2018	03-12-2019
RF control unit	JS Tonscend	JS0806-4	158060007	03-13-2018	03-12-2019
BT&WI-FI Automatic test software	JS Tonscend	JS1120-2	---	03-13-2018	03-12-2019
Temperature/Humidity Indicator	biaozhi	HM10	1804186	10-11-2017	10-12-2018
Temperature/Humidity Indicator	biaozhi	HM10	1804186	10-12-2018	10-11-2019

Conducted disturbance Test					
Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
Receiver	R&S	ESCI	100435	05-25-2018	05-24-2019
Temperature/ Humidity Indicator	Defu	TH128	/	07-02-2018	07-01-2019
Communication test set	Agilent	E5515C	GB47050 534	03-16-2018	03-15-2019
Communication test set	R&S	CMW500	152394	03-16-2018	03-15-2019
LISN	R&S	ENV216	100098	05-10-2018	05-10-2019
LISN	schwarzbeck	NNLK8121	8121-529	05-10-2018	05-10-2019
Voltage Probe	R&S	ESH2-Z3 0299.7810.5 6	100042	06-13-2017	06-11-2020
Current Probe	R&S	EZ-17 816.2063.03	100106	05-30-2018	05-29-2019
ISN	TESEQ	ISN T800	30297	02-06-2018	02-05-2019

3M Semi/full-anechoic Chamber					
Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
3M Chamber & Accessory Equipment	TDK	SAC-3	---	06-04-2016	06-03-2019
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-401	10-27-2017	10-28-2018
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-401	10-28-2018	10-27-2019
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-618	07-30-2018	07-29-2019
Microwave Preamplifier	Agilent	8449B	3008A02425	08-21-2018	08-20-2019
Microwave Preamplifier	Tonscend	EMC051845SE	980380	01-19-2018 01-18-2019	01-18-2019 01-17-2020
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-1869	04-25-2018	04-23-2021
Horn Antenna	ETS-LINDGREN	3117	00057410	06-05-2018	06-03-2021
Double ridge horn antenna	A.H.SYSTEMS	SAS-574	6042	06-05-2018	06-04-2021
Pre-amplifier	A.H.SYSTEMS	PAP-1840-60	6041	06-05-2018	06-04-2021
Loop Antenna	ETS	6502	00071730	06-22-2017	06-21-2019
Spectrum Analyzer	R&S	FSP40	100416	05-11-2018	05-10-2019
Receiver	R&S	ESCI	100435	05-25-2018	05-24-2019
Receiver	R&S	ESCI7	100938-003	11-22-2017	11-23-2018
Receiver	R&S	ESCI7	100938-003	11-23-2018	11-22-2019
Multi device Controller	maturo	NCD/070/10711 112	---	01-10-2018	01-09-2019
LISN	schwarzbeck	NNBM8125	81251547	05-11-2018	05-10-2019
LISN	schwarzbeck	NNBM8125	81251548	05-11-2018	05-10-2019
Signal Generator	Agilent	E4438C	MY45095744	03-13-2018	03-12-2019
Signal Generator	Keysight	E8257D	MY53401106	03-13-2018	03-12-2019
Temperature/Humidity Indicator	Shanghai qixiang	HM10	1804298	10-11-2017	10-12-2018
Temperature/Humidity Indicator	Shanghai qixiang	HM10	1804298	10-12-2018	10-11-2019
Communication test set	Agilent	E5515C	GB47050534	03-16-2018	03-15-2019
Cable line	Fulai(7M)	SF106	5219/6A	01-10-2018	01-09-2019
Cable line	Fulai(6M)	SF106	5220/6A	01-10-2018	01-09-2019
Cable line	Fulai(3M)	SF106	5216/6A	01-10-2018	01-09-2019
Cable line	Fulai(3M)	SF106	5217/6A	01-10-2018	01-09-2019
Communication test set	R&S	CMW500	104466	02-05-2018	02-04-2019
High-pass filter	Sinoscite	FL3CX03WG18 NM12-0398-002	---	01-10-2018 01-09-2019	01-09-2019 01-08-2020
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	---	01-10-2018 01-09-2019	01-09-2019 01-08-2020
band rejection filter	Sinoscite	FL5CX01CA09C L12-0395-001	---	01-10-2018 01-09-2019	01-09-2019 01-08-2020
band rejection filter	Sinoscite	FL5CX01CA08C L12-0393-001	---	01-10-2018 01-09-2019	01-09-2019 01-08-2020
band rejection filter	Sinoscite	FL5CX02CA04C L12-0396-002	---	01-10-2018 01-09-2019	01-09-2019 01-08-2020
band rejection filter	Sinoscite	FL5CX02CA03C L12-0394-001	---	01-10-2018 01-09-2019	01-09-2019 01-08-2020

## 8 Radio Technical Requirements Specification

### Reference documents for testing:

No.	Identity	Document Title
1	FCC Part15C	Subpart C-Intentional Radiators
2	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

### Test Results List:

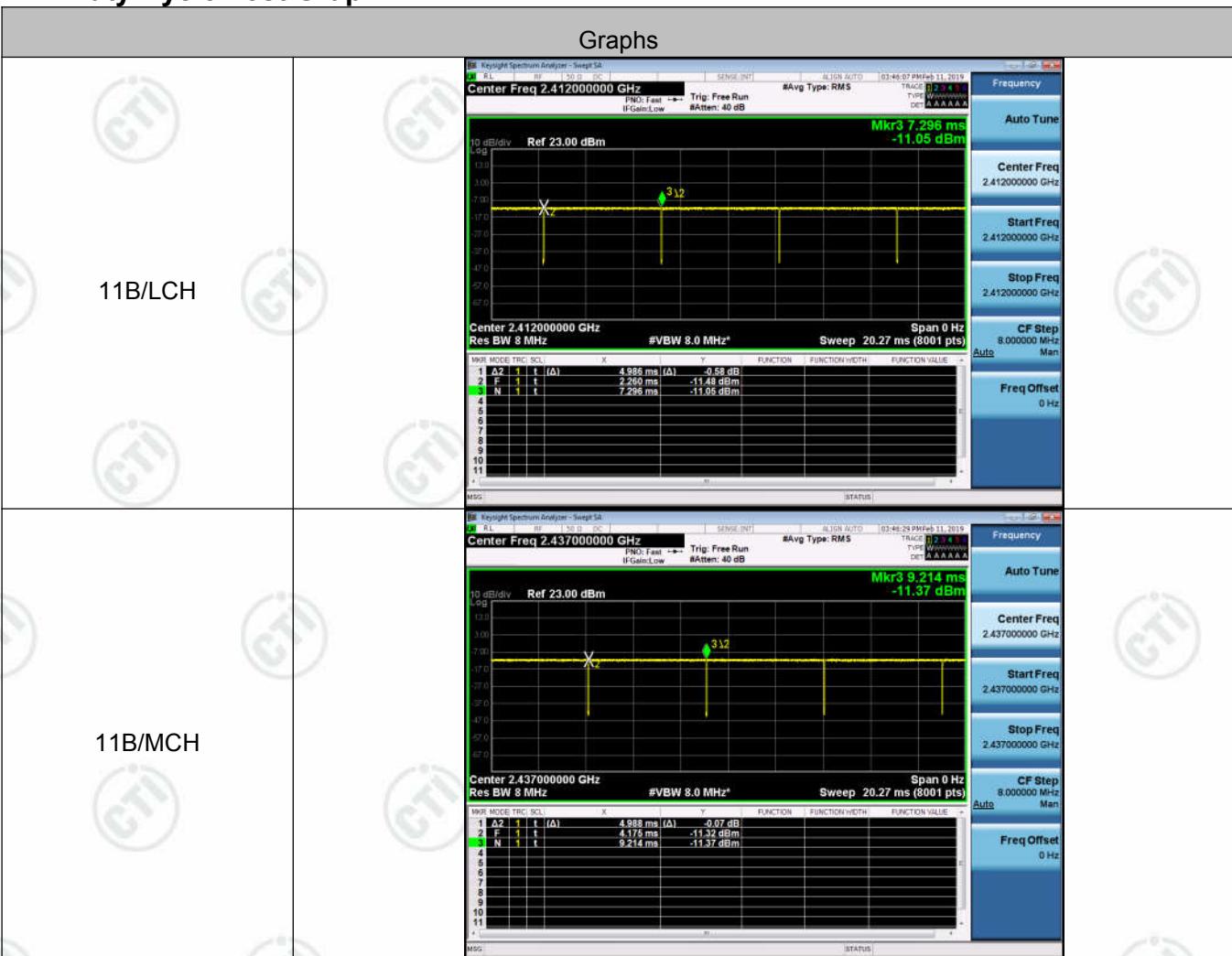
Test Requirement	Test method	Test item	Verdict	Note
Part15C Section 15.247 (b)(3)	ANSI C63.10	Conducted Peak Output Power	PASS	Appendix A)
Part15C Section 15.247 (a)(2)	ANSI C63.10	6dB Occupied Bandwidth	PASS	Appendix B)
Part15C Section 15.247(d)	ANSI C63.10	Band-edge for RF Conducted Emissions	PASS	Appendix C)
Part15C Section 15.247(d)	ANSI C63.10	RF Conducted Spurious Emissions	PASS	Appendix D)
Part15C Section 15.247 (e)	ANSI C63.10	Power Spectral Density	PASS	Appendix E)
Part15C Section 15.203/15.247 (c)	ANSI C63.10	Antenna Requirement	PASS	Appendix F)
Part15C Section 15.207	ANSI C63.10	AC Power Line Conducted Emission	PASS	Appendix G)
Part15C Section 15.205/15.209	ANSI C63.10	Restricted bands around fundamental frequency (Radiated Emission)	PASS	Appendix H)
Part15C Section 15.205/15.209	ANSI C63.10	Radiated Spurious Emissions	PASS	Appendix I)

## Appendix A): Conducted Peak Output Power

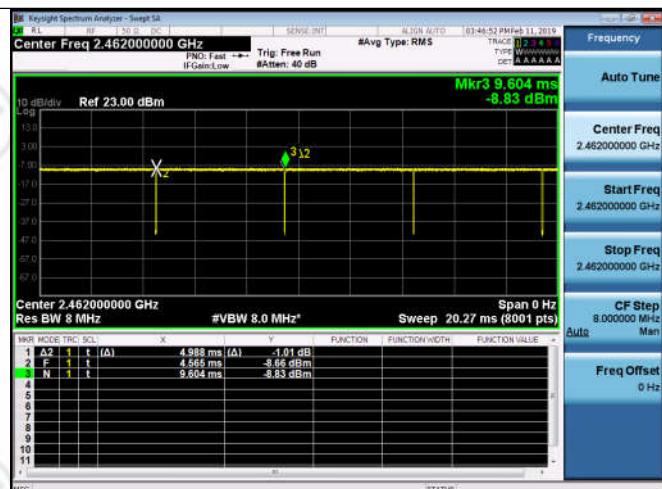
### Duty Cycle Result Table

Test Mode	Channel	Duty Cycle[%]	Verdict
11B	2412	98.99	PASS
11B	2437	98.99	PASS
11B	2462	98.99	PASS
11G	2412	95.87	PASS
11G	2437	95.87	PASS
11G	2462	95.87	PASS
11N20SISO	2412	94.01	PASS
11N20SISO	2437	94.01	PASS
11N20SISO	2462	93.75	PASS

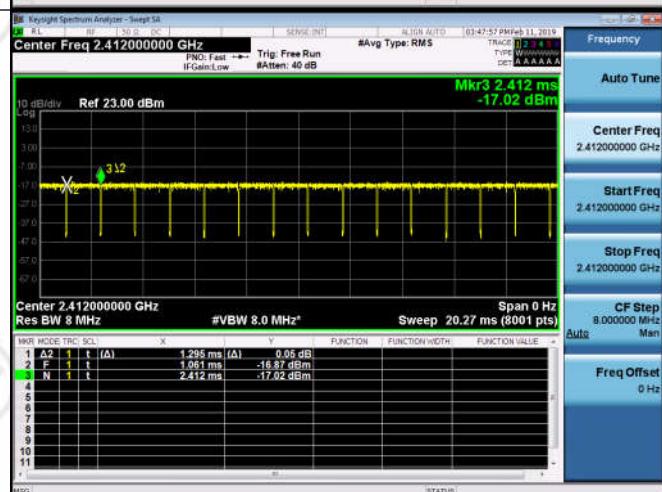
### Duty Cycle Test Graph



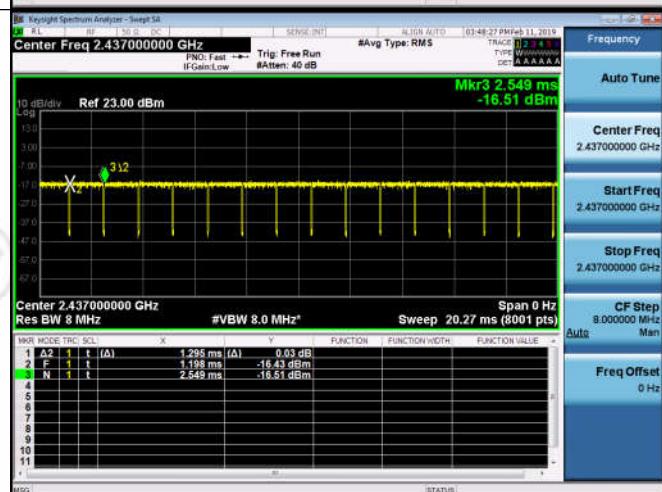
11B/HCH



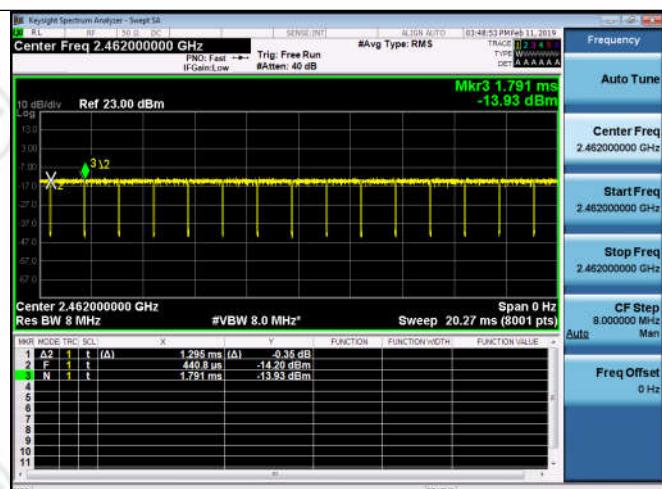
11G/LCH



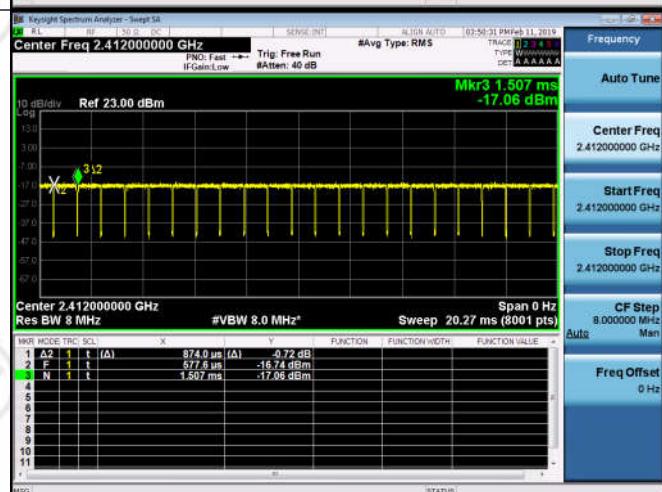
11G/MCH



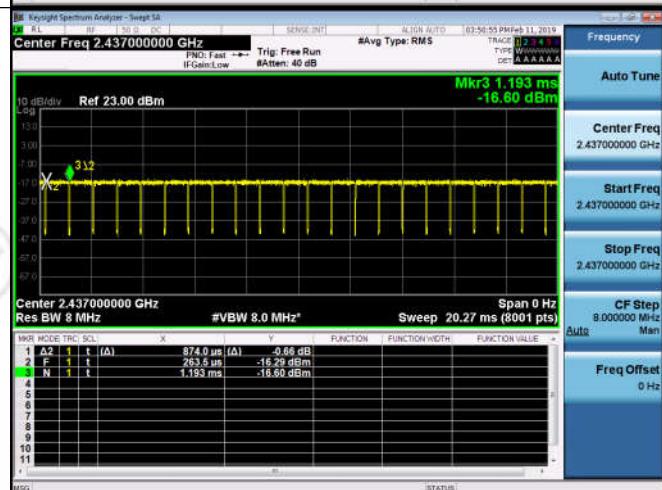
11G/HCH

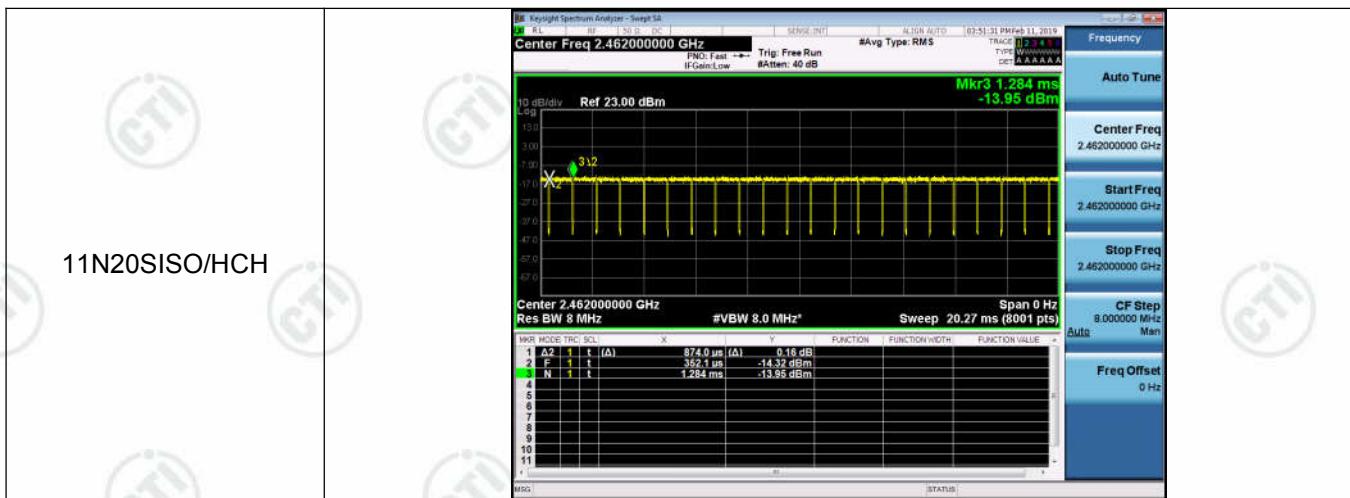


11N20SISO/LCH



11N20SISO/MCH

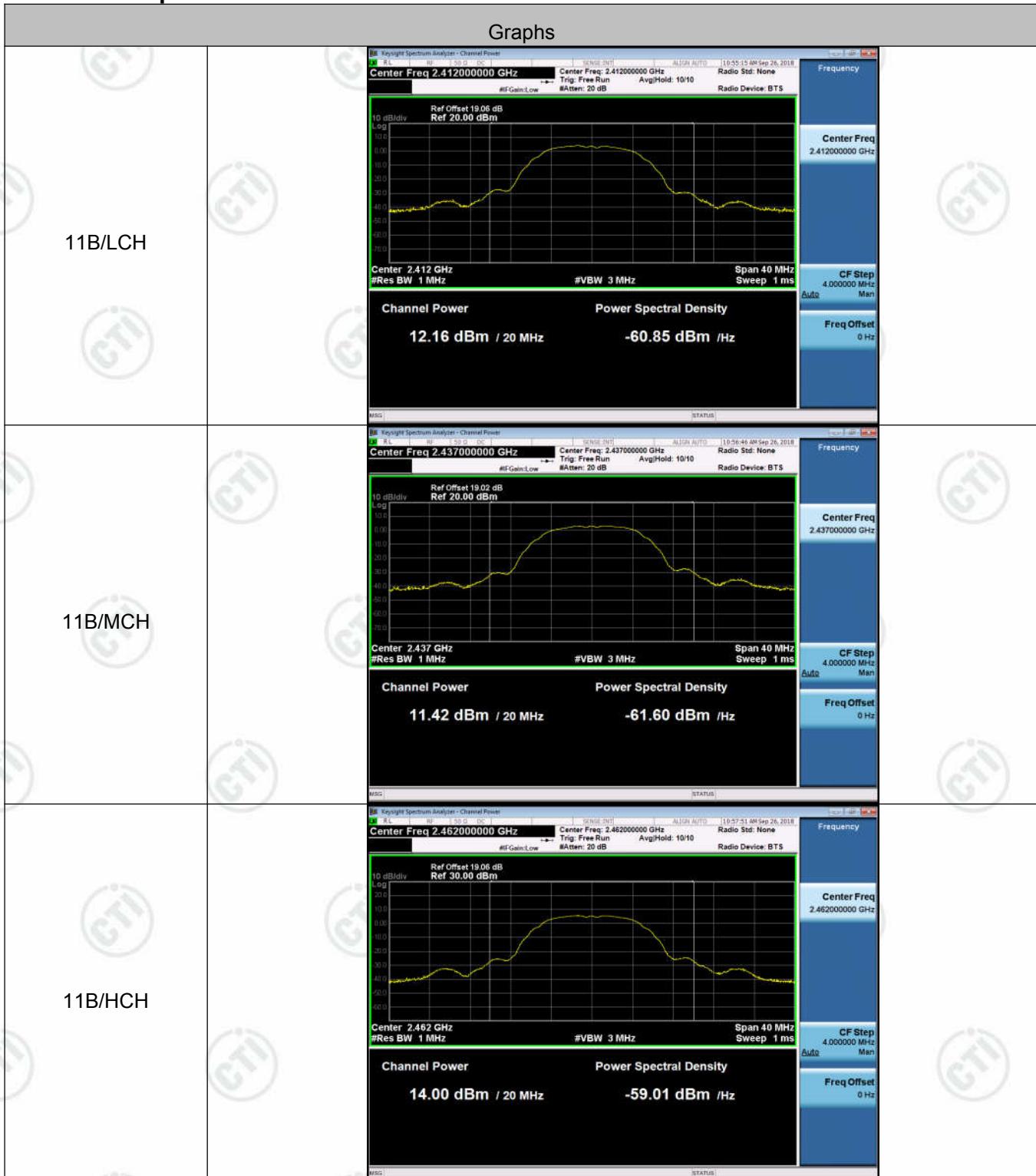




### Result Table

Mode	Channel	Conducted Peak Output Power [dBm]	Av.Power [dBm]	Verdict
11B	LCH	12.16	12.16	PASS
11B	MCH	11.42	11.42	PASS
11B	HCH	14.00	14.00	PASS
11G	LCH	12.21	12.03	PASS
11G	MCH	12.12	11.94	PASS
11G	HCH	14.47	14.29	PASS
11N20SISO	LCH	11.79	11.52	PASS
11N20SISO	MCH	11.92	11.65	PASS
11N20SISO	HCH	14.31	14.03	PASS

### Test Graph





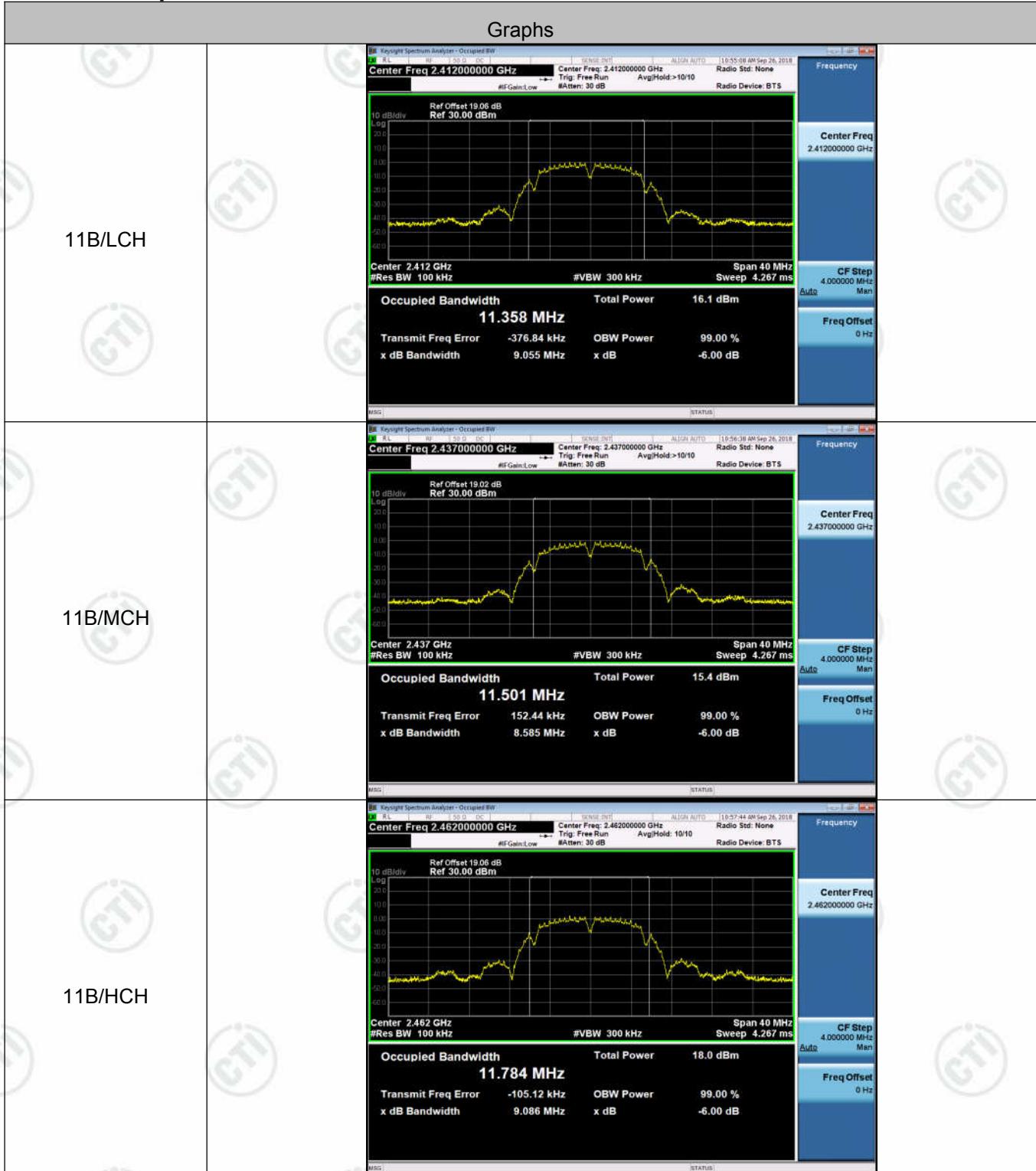


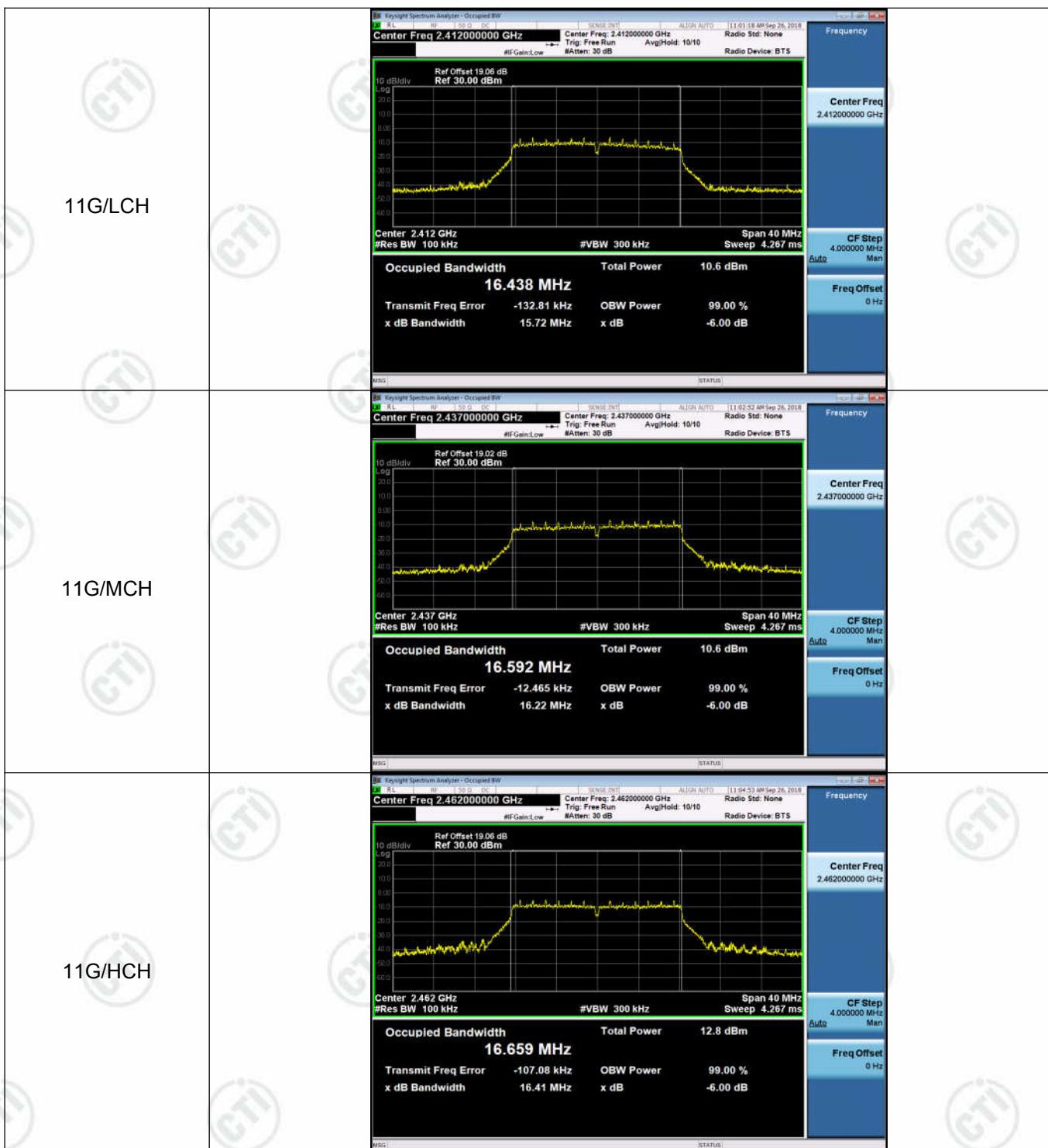
## Appendix B): 6dB Occupied Bandwidth

**Result Table**

Mode	Channel	6dB Bandwidth [MHz]	99% OBW [MHz]	Verdict	Remark
11B	LCH	9.055	11.358	PASS	Peak detector
11B	MCH	8.585	11.501	PASS	
11B	HCH	9.086	11.784	PASS	
11G	LCH	15.72	16.438	PASS	
11G	MCH	16.22	16.592	PASS	
11G	HCH	16.41	16.659	PASS	
11N20SISO	LCH	16.30	17.551	PASS	
11N20SISO	MCH	17.34	17.697	PASS	
11N20SISO	HCH	17.59	17.714	PASS	

### Test Graph





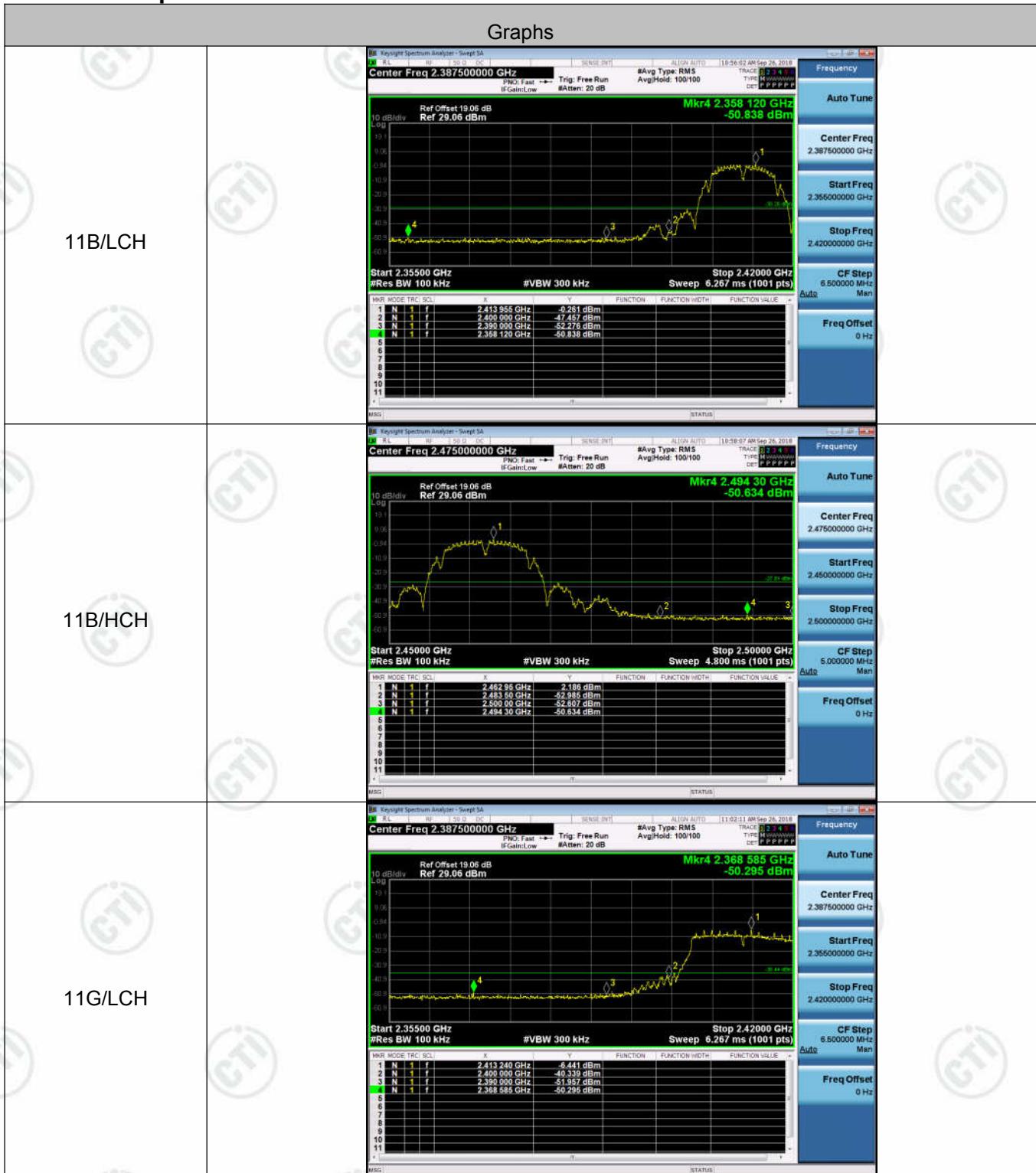


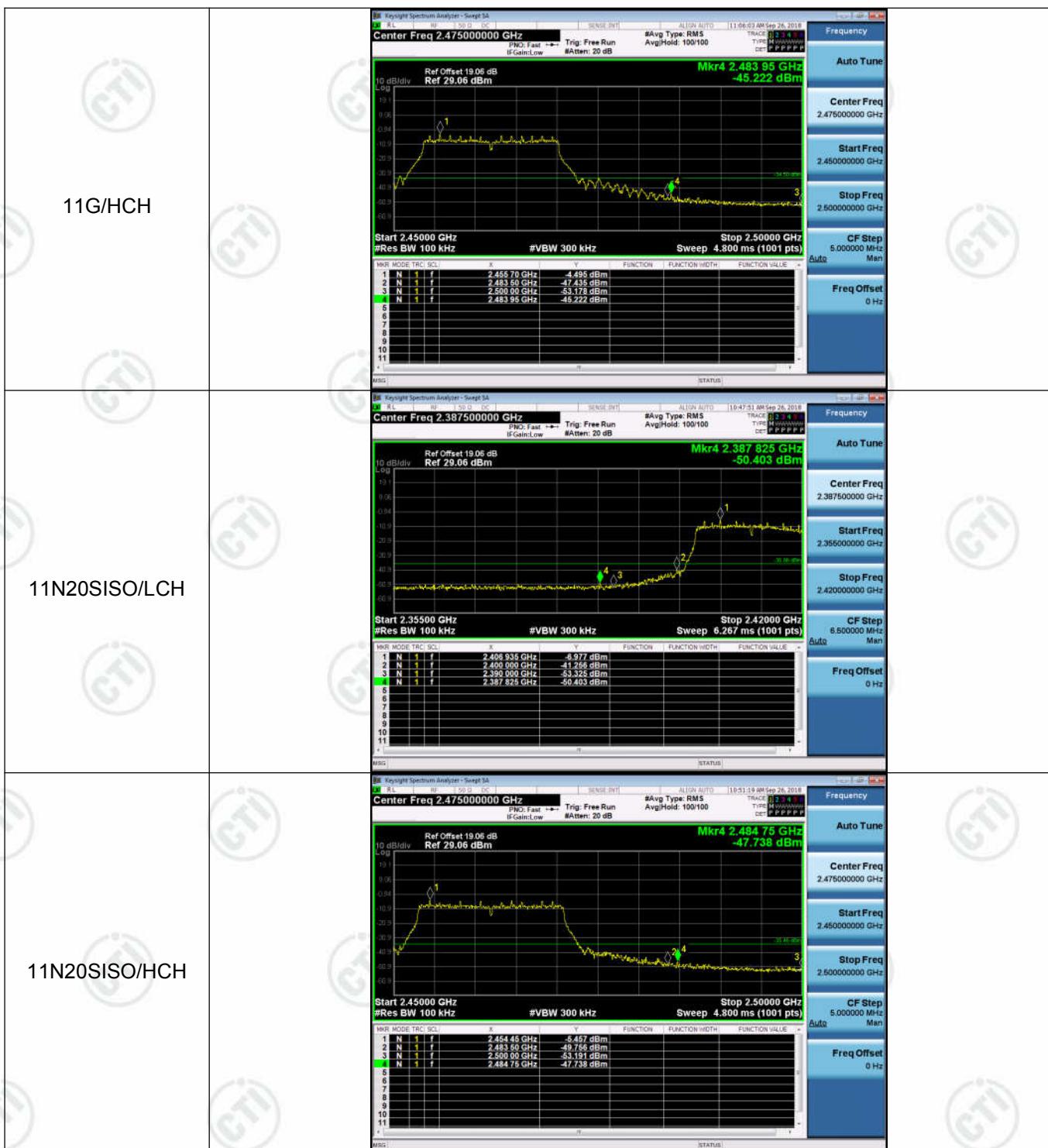
## Appendix C): Band-edge for RF Conducted Emissions

**Result Table**

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-0.261	-50.838	-30.26	PASS
11B	HCH	2.186	-50.634	-27.81	PASS
11G	LCH	-6.441	-50.295	-36.44	PASS
11G	HCH	-4.495	-45.222	-34.5	PASS
11N20SISO	LCH	-6.977	-50.403	-36.98	PASS
11N20SISO	HCH	-5.457	-47.738	-35.46	PASS

### Test Graph



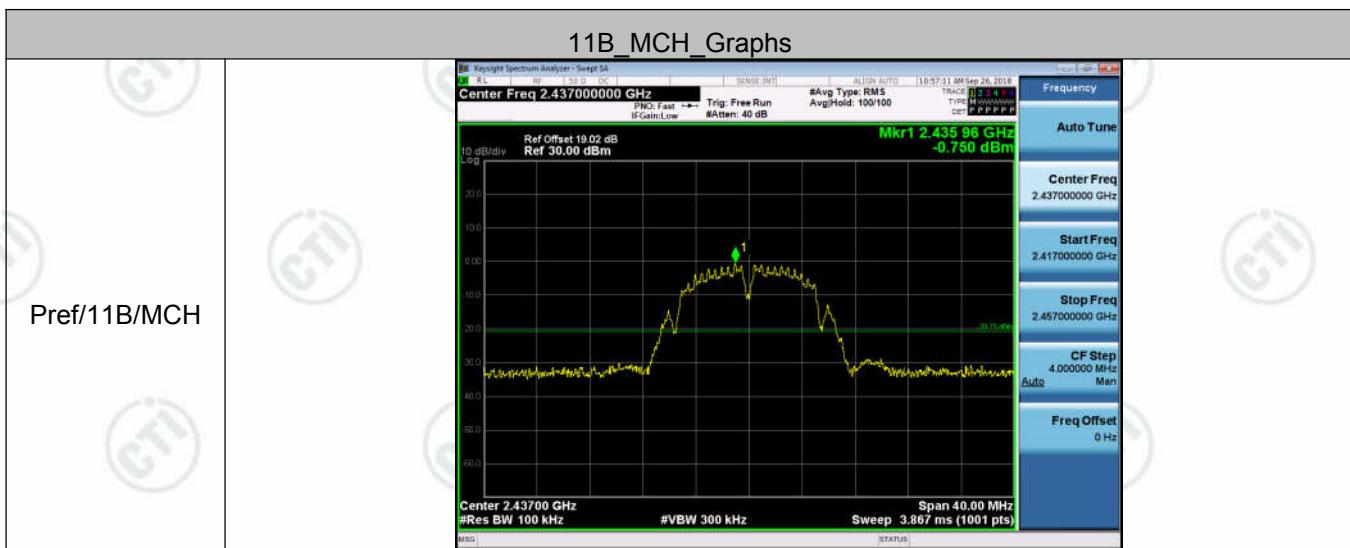
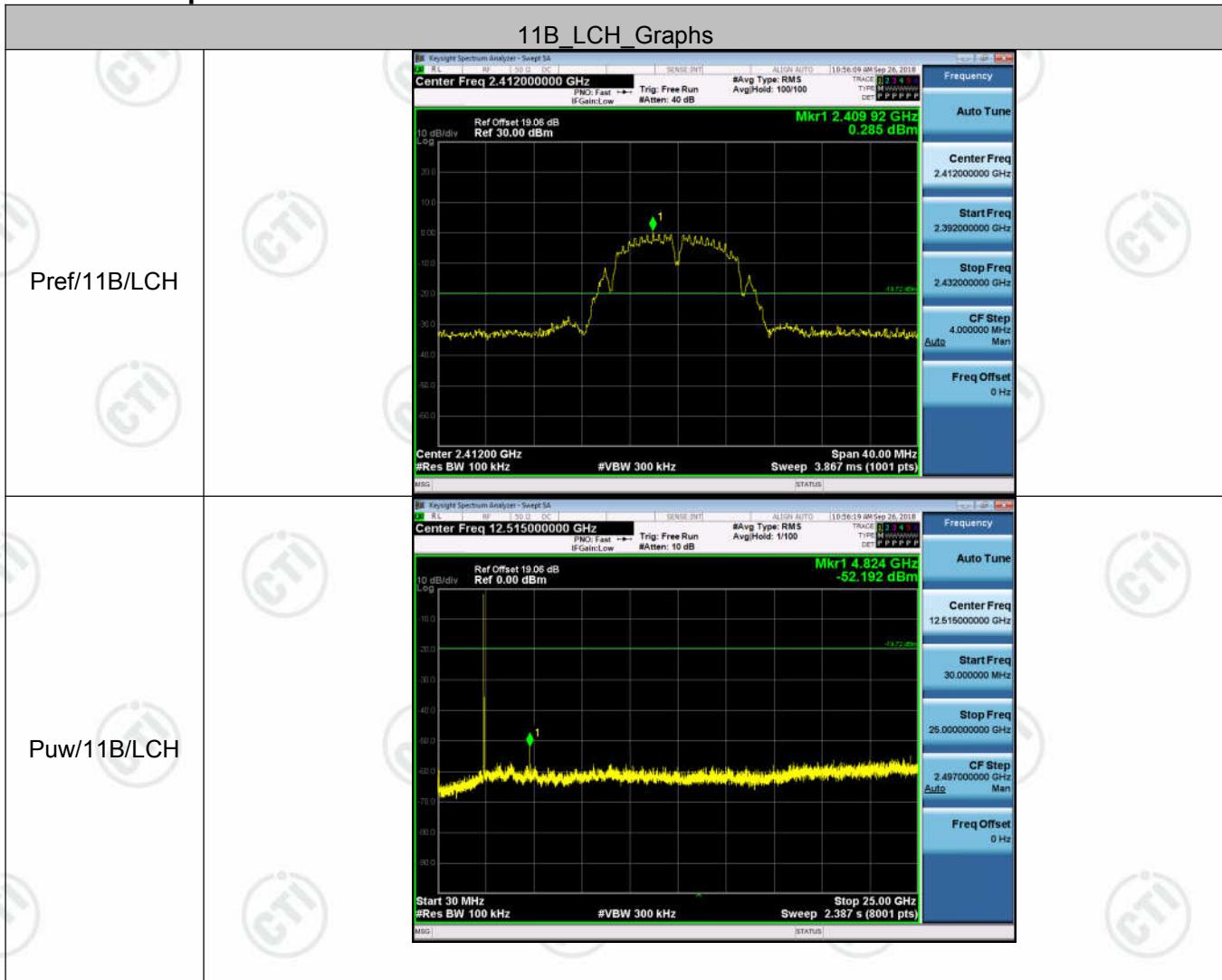


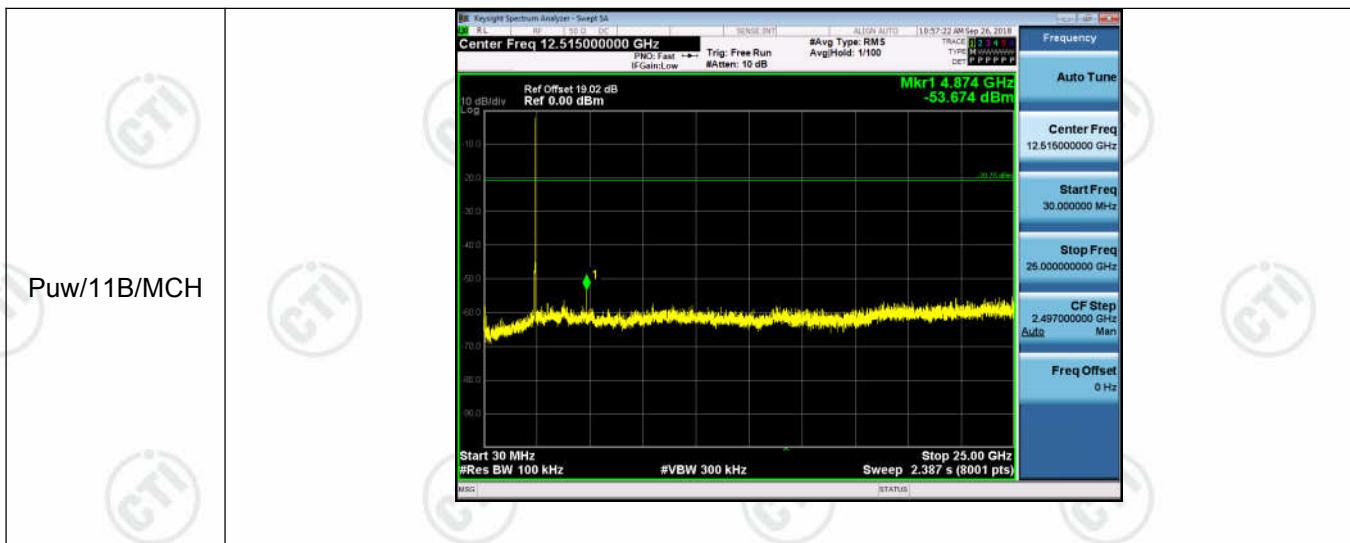
## Appendix D): RF Conducted Spurious Emissions

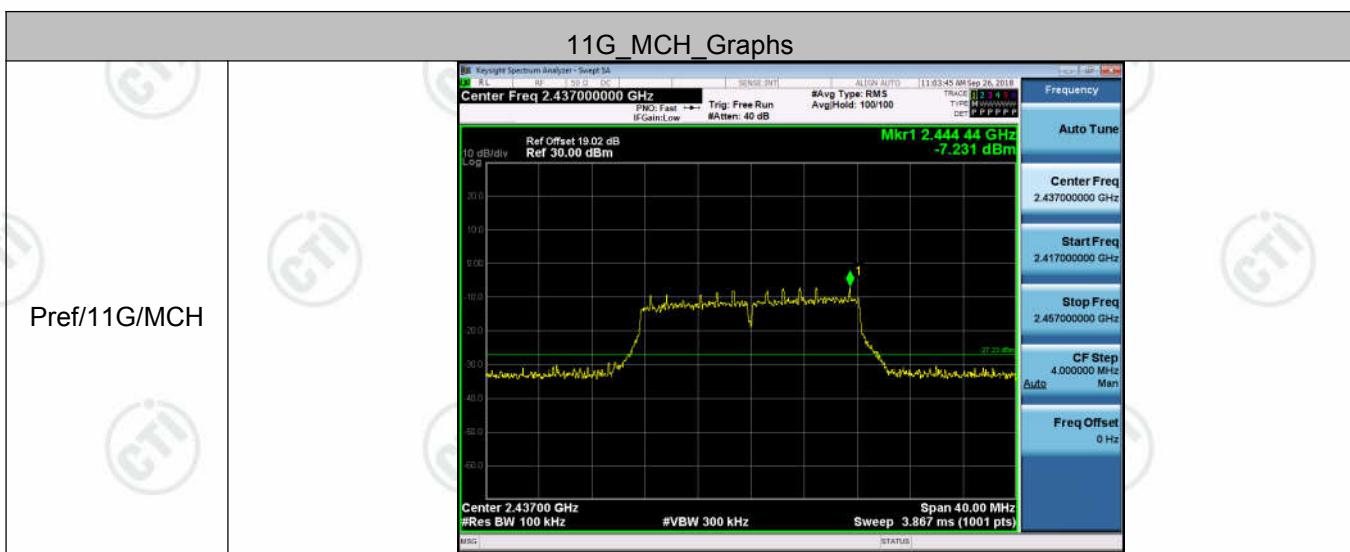
**Result Table**

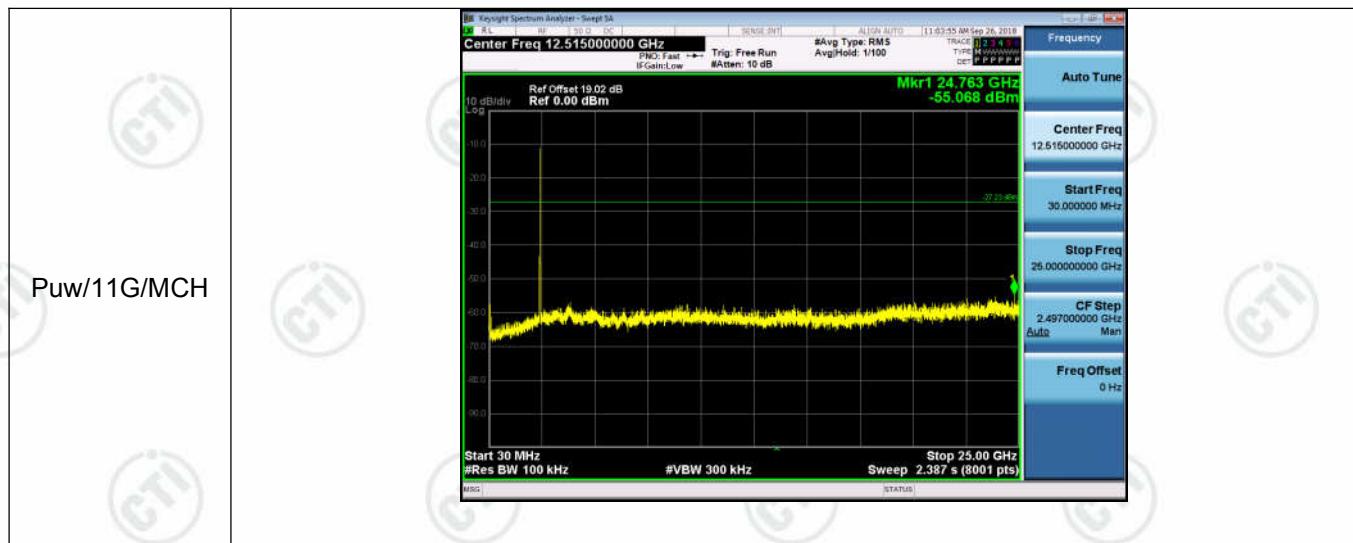
Mode	Channel	Pref [dBm]	Puw[dBm]	Verdict
11B	LCH	0.285	<Limit	PASS
11B	MCH	-0.75	<Limit	PASS
11B	HCH	2.255	<Limit	PASS
11G	LCH	-6.663	<Limit	PASS
11G	MCH	-7.231	<Limit	PASS
11G	HCH	-4.358	<Limit	PASS
11N20SISO	LCH	-6.77	<Limit	PASS
11N20SISO	MCH	-6.789	<Limit	PASS
11N20SISO	HCH	-5.114	<Limit	PASS

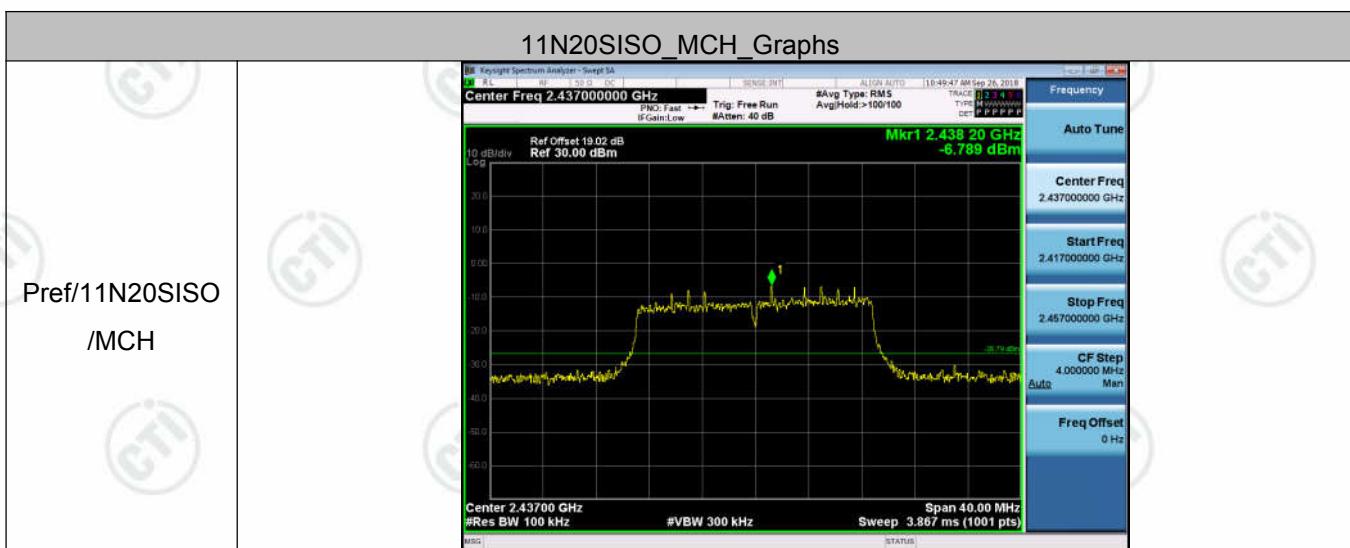
### Test Graph

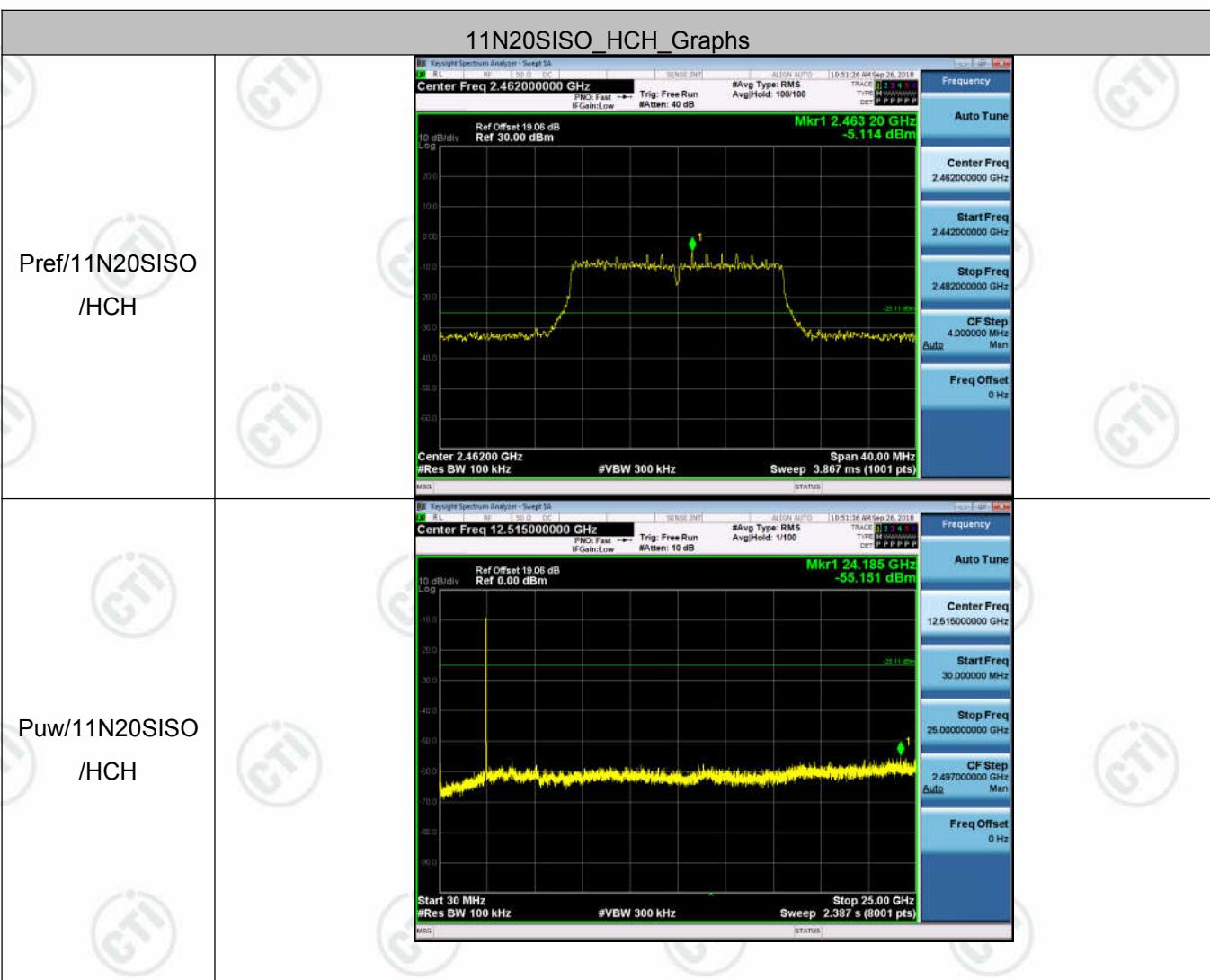
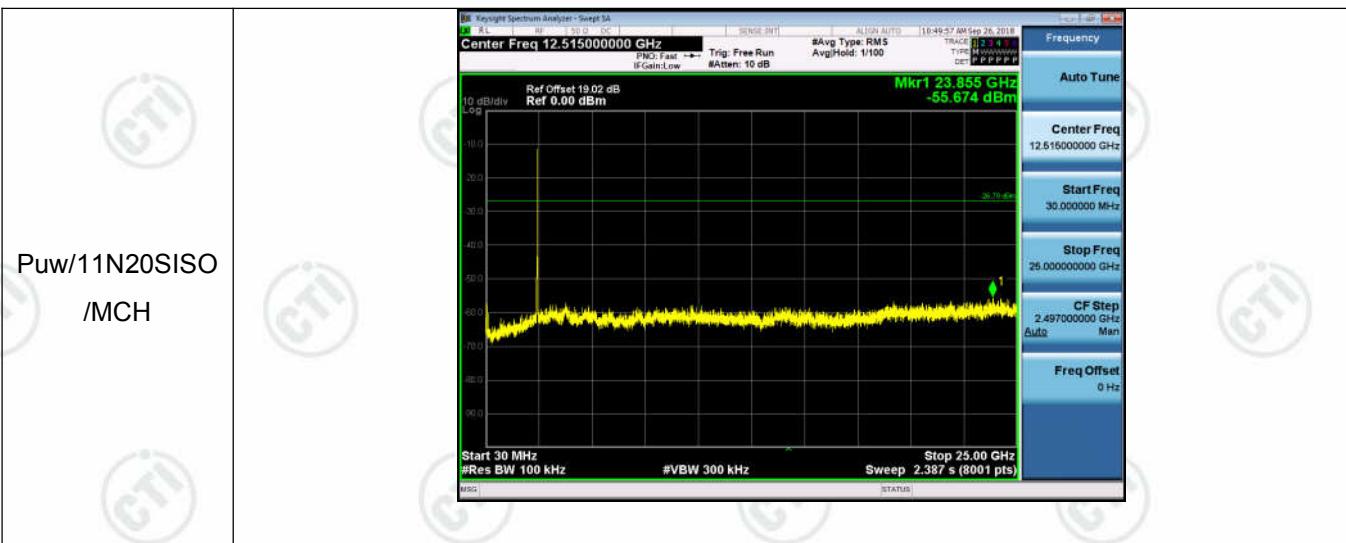












## Appendix E): Power Spectral Density

**Result Table**

Mode	Channel	Power Spectral Density [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
11B	LCH	-15.536	8	PASS
11B	MCH	-16.231	8	PASS
11B	HCH	-13.599	8	PASS
11G	LCH	-22.063	8	PASS
11G	MCH	-23.264	8	PASS
11G	HCH	-20.361	8	PASS
11N20SISO	LCH	-20.735	8	PASS
11N20SISO	MCH	-22.404	8	PASS
11N20SISO	HCH	-19.835	8	PASS

### Test Graph







## Appendix F): Antenna Requirement

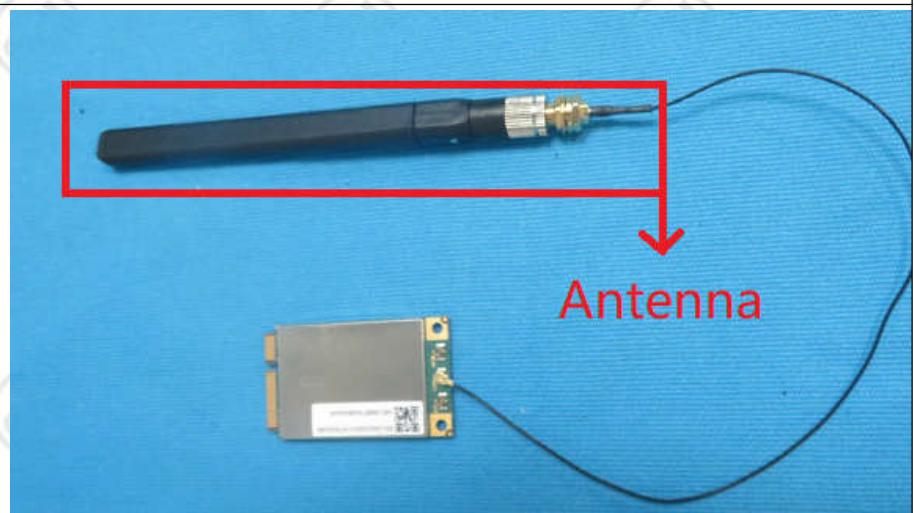
### 15.203 requirement:

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(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### EUT Antenna:



The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is -0.5dBi.

## Appendix G): AC Power Line Conducted Emission

Test Procedure:	<p>Test frequency range :150KHz-30MHz</p> <p>1)The mains terminal disturbance voltage test was conducted in a shielded room.</p> <p>2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a <math>50\Omega/50\mu\text{H} + 5\Omega</math> linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.</p> <p>3)The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,</p> <p>4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.</p> <p>5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.</p>														
Limit:	<table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th> <th colspan="2">Limit (dB<math>\mu</math>V)</th> </tr> <tr> <th>Quasi-peak</th> <th>Average</th> </tr> </thead> <tbody> <tr> <td>0.15-0.5</td> <td>66 to 56*</td> <td>56 to 46*</td> </tr> <tr> <td>0.5-5</td> <td>56</td> <td>46</td> </tr> <tr> <td>5-30</td> <td>60</td> <td>50</td> </tr> </tbody> </table> <p>* The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.</p> <p>NOTE : The lower limit is applicable at the transition frequency</p>	Frequency range (MHz)	Limit (dB $\mu$ V)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dB $\mu$ V)														
	Quasi-peak	Average													
0.15-0.5	66 to 56*	56 to 46*													
0.5-5	56	46													
5-30	60	50													

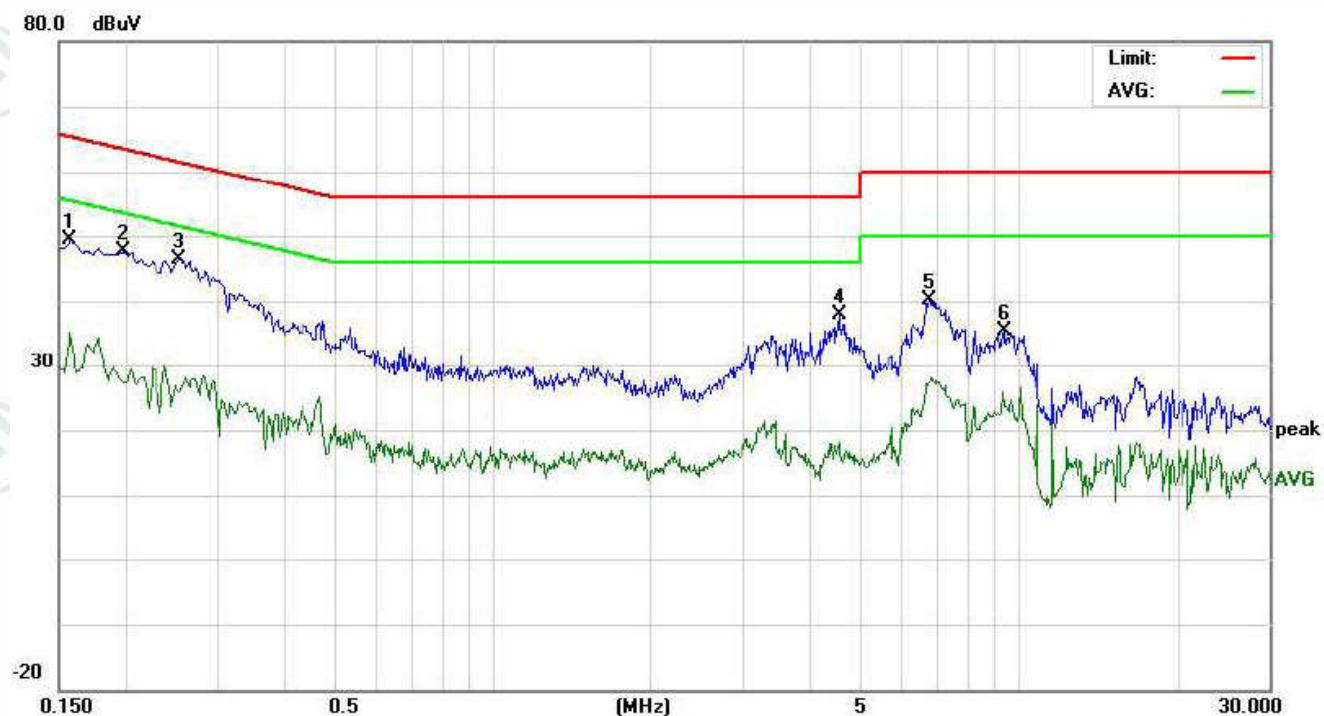
### Measurement Data

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 were detected.

**Product** : LTE MODULE  
**Temperature** : 21°C  
**Phase** : L

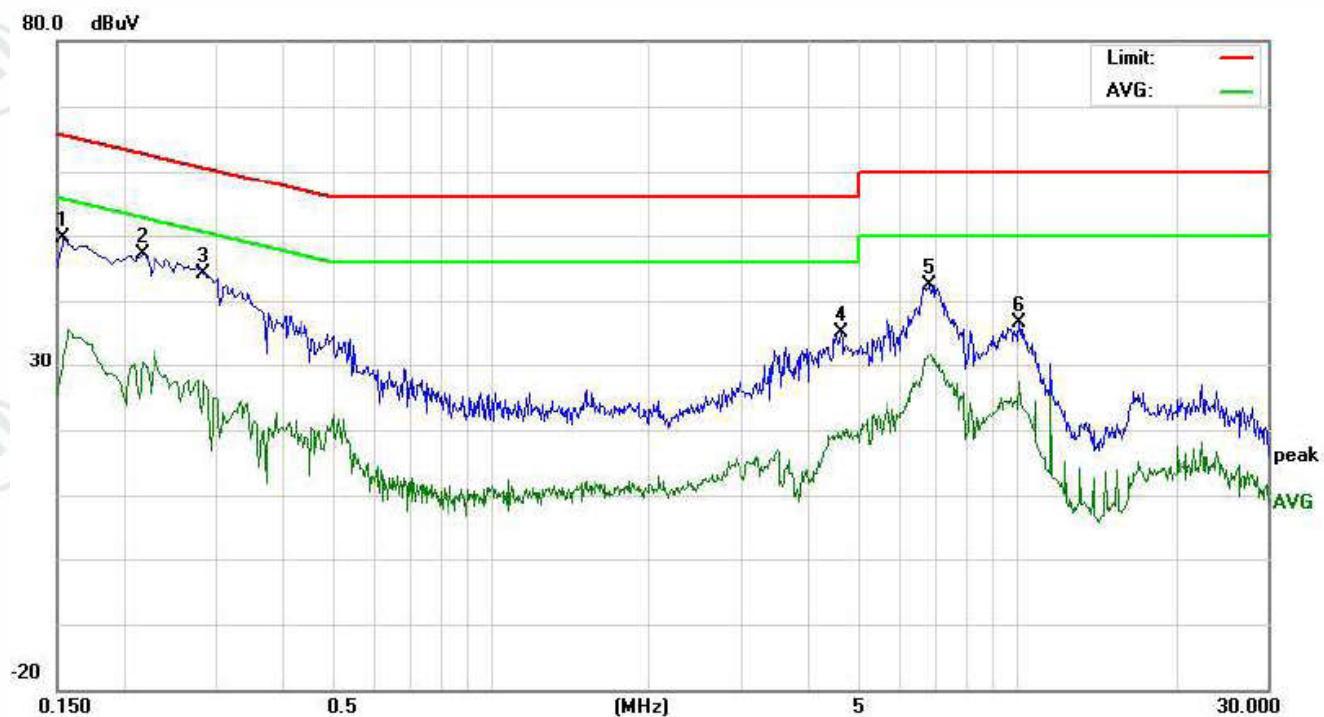
**Model/Type reference** : GLMM18A02  
**Humidity** : 53%



No.	Freq.	Reading_Level (dBuV)				Correct Factor			Measurement (dBuV)			Limit (dBuV)			Margin (dB)		
		MHz	Peak	QP	AVG	dB	peak	QP	Avg	QP	Avg	QP	Avg	P/F	Comment		
1	0.1580	39.65	36.64	25.49	9.76	49.41	46.40	35.25	65.56	55.56	-19.16	-20.31	P				
2	0.1980	37.84	34.52	17.69	9.71	47.55	44.23	27.40	63.69	53.69	-19.46	-26.29	P				
3	0.2540	38.19	35.22	20.08	9.75	47.94	44.97	29.83	61.62	51.62	-16.65	-21.79	P				
4	4.5660	28.13	25.46	8.54	9.63	37.76	35.09	18.17	56.00	46.00	-20.91	-27.83	P				
5	6.7700	30.62	27.98	17.80	9.62	40.24	37.60	27.42	60.00	50.00	-22.40	-22.58	P				
6	9.4340	38.18	35.24	20.07	9.76	47.94	45.00	29.83	60.00	50.00	-15.00	-20.17	P				

**Product** : LTE MODULE  
**Temperature** : 21°C  
**Phase** : N

**Model/Type reference** : GLMM18A02  
**Humidity** : 53%



No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor		Measurement (dBuV)			Limit (dBuV)		Margin (dB)		
		Peak	QP	Avg	dB	peak	QP	Avg	QP	Avg	QP	Avg	P/F	Comment
1	0.1539	39.79	36.54	21.28	9.76	49.55	46.30	31.04	65.78	55.78	-19.48	-24.74	P	
2	0.2180	37.46	34.58	20.57	9.72	47.18	44.30	30.29	62.89	52.89	-18.59	-22.60	P	
3	0.2878	35.36	32.16	15.54	9.77	45.13	41.93	25.31	60.59	50.59	-18.66	-25.28	P	
4	4.6300	25.41	22.47	8.97	9.63	35.04	32.10	18.60	56.00	46.00	-23.90	-27.40	P	
5	6.8580	32.88	29.68	22.02	9.62	42.50	39.30	31.64	60.00	50.00	-20.70	-18.36	P	
6	10.1059	26.78	23.65	17.54	9.79	36.57	33.44	27.33	60.00	50.00	-26.56	-22.67	P	

Notes:

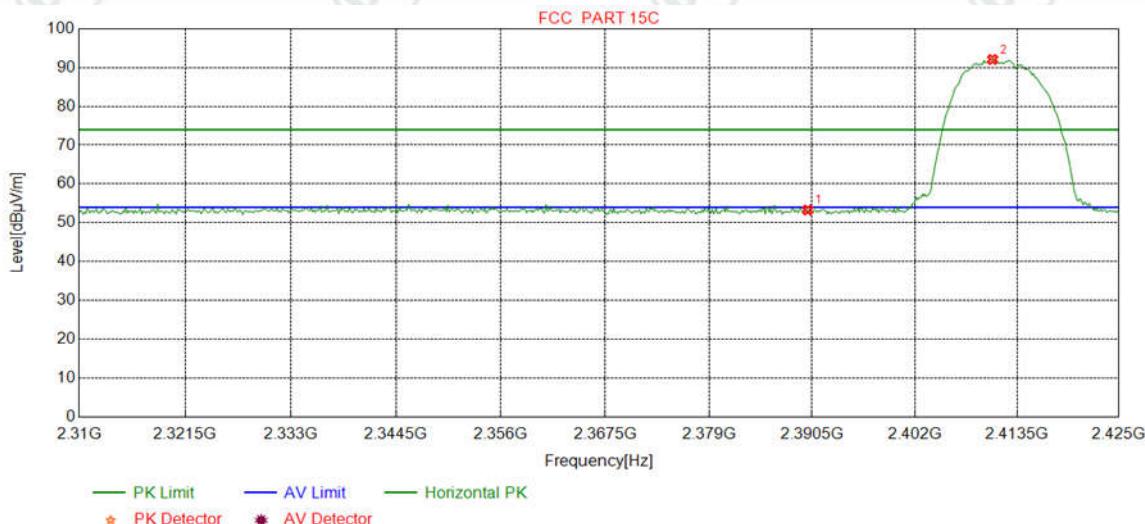
1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.

## Appendix H): Restricted bands around fundamental frequency (Radiated)

Receiver Setup:	Frequency	Detector	RBW	VBW	Remark		
Test Procedure:	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak		
	Above 1GHz	Peak	1MHz	3MHz	Peak		
		Peak	1MHz	10Hz	Average		
<b>Below 1GHz test procedure as below:</b>							
<p>a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</p> <p>b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</p> <p>c. 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.</p> <p>d. 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 rotatable was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>f. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel</p>							
<b>Above 1GHz test procedure as below:</b>							
<p>g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber change form table 0.8 meter to 1.5 meter( Above 18GHz the distance is 1 meter and table is 1.5 meter).</p> <p>h. Test the EUT in the lowest channel , the Highest channel</p> <p>i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.</p> <p>j. Repeat above procedures until all frequencies measured was complete.</p>							
Limit:	Frequency	Limit (dB $\mu$ V/m @3m)	Remark				
Limit:	30MHz-88MHz	40.0	Quasi-peak Value				
	88MHz-216MHz	43.5	Quasi-peak Value				
	216MHz-960MHz	46.0	Quasi-peak Value				
	960MHz-1GHz	54.0	Quasi-peak Value				
	Above 1GHz	54.0	Average Value				
		74.0	Peak Value				

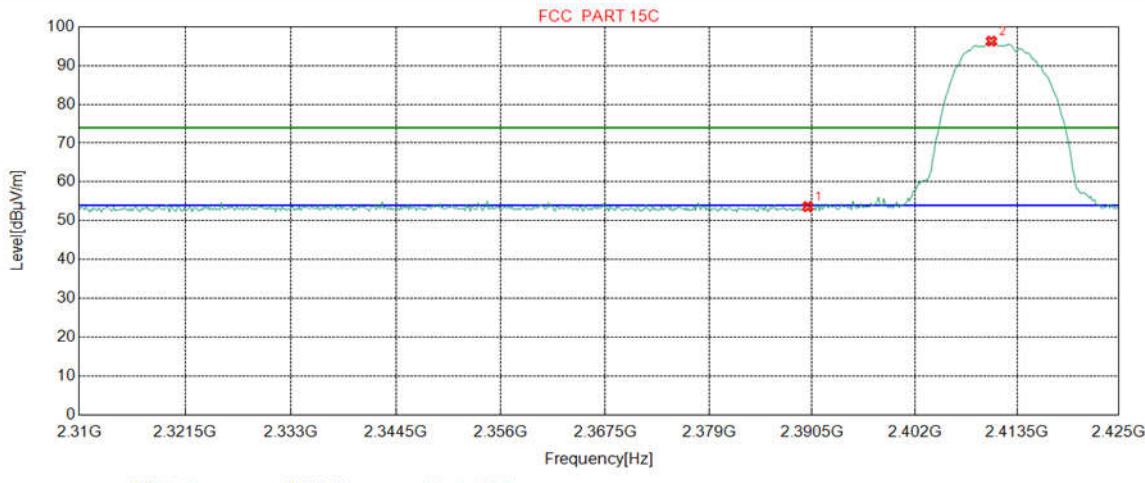
**Test plot as follows:**

Mode:	802.11 b(11Mbps) Transmitting	Channel:	2412
Remark:	Peak		



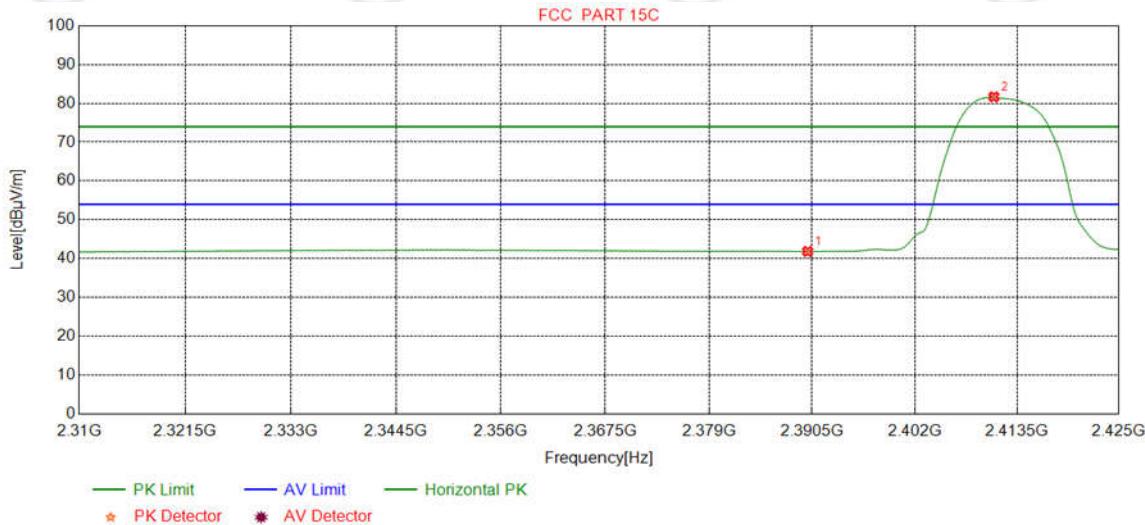
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-42.44	50.11	53.29	74	20.71	Pass	Horizontal
2	2410.7509	32.28	13.35	-42.43	88.9	92.10	74	-18.10	Pass	Horizontal

Mode:	802.11 b(11Mbps) Transmitting	Channel:	2412
Remark:	Peak		



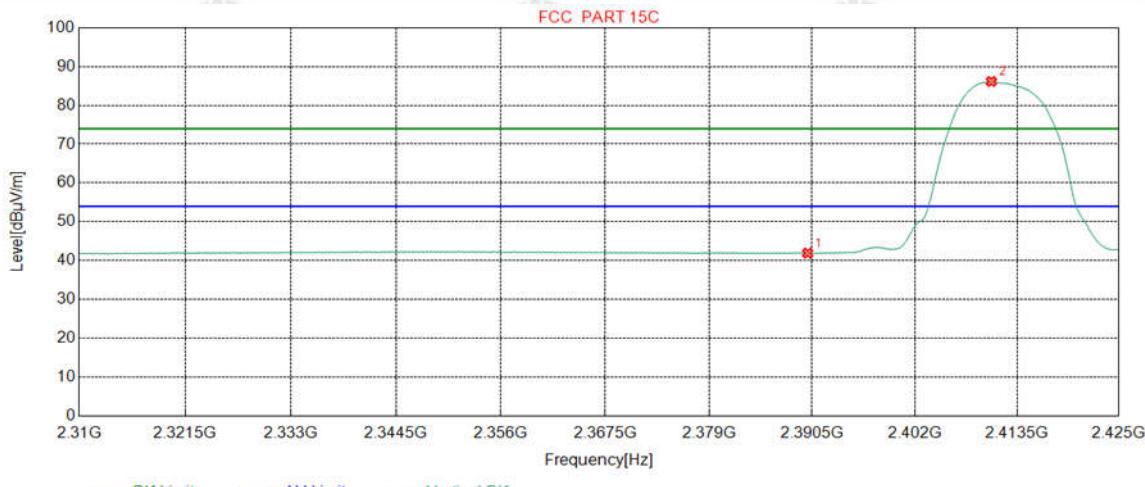
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-42.44	50.44	53.62	74	20.38	Pass	Vertical
2	2410.607	32.27	13.35	-42.43	93.1	96.29	74	-22.29	Pass	Vertical

Mode:	802.11 b(11Mbps) Transmitting	Channel:	2412
Remark:	AV		



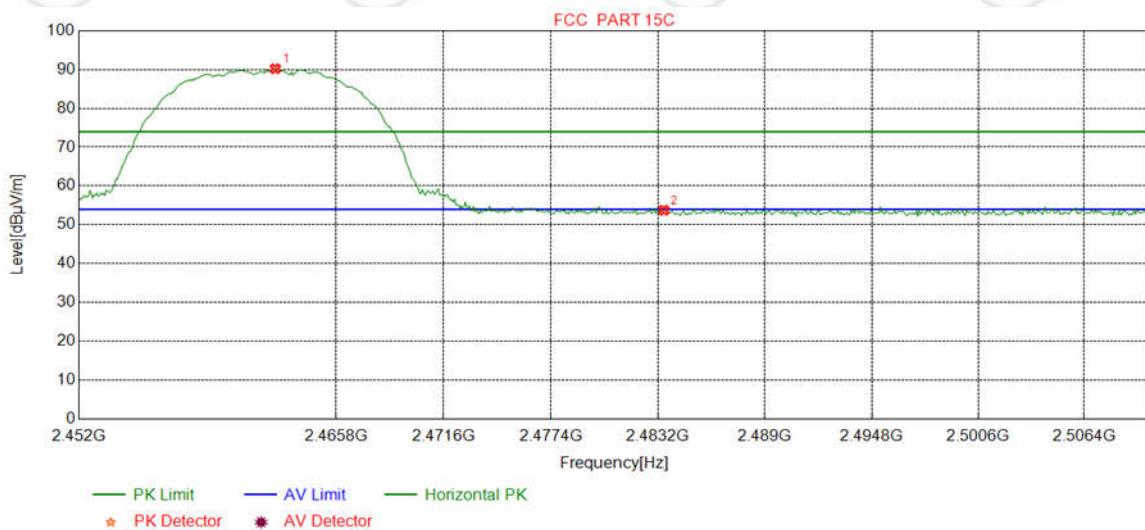
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-42.44	38.66	41.84	54	12.16	Pass	Horizontal
2	2410.8949	32.28	13.35	-42.43	78.48	81.68	54	-27.68	Pass	Horizontal

Mode:	802.11 b(11Mbps) Transmitting	Channel:	2412
Remark:	AV		



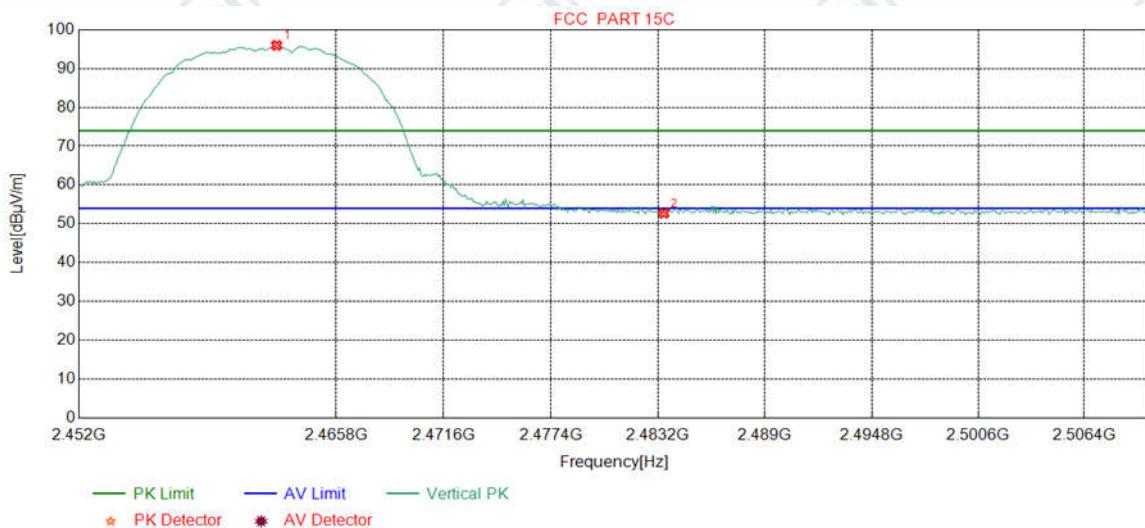
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-42.44	38.73	41.91	54	12.09	Pass	Vertical
2	2410.6070	32.27	13.35	-42.43	82.98	86.17	54	-32.17	Pass	Vertical

Mode:	802.11 b(11Mbps) Transmitting	Channel:	2462
Remark:	Peak		



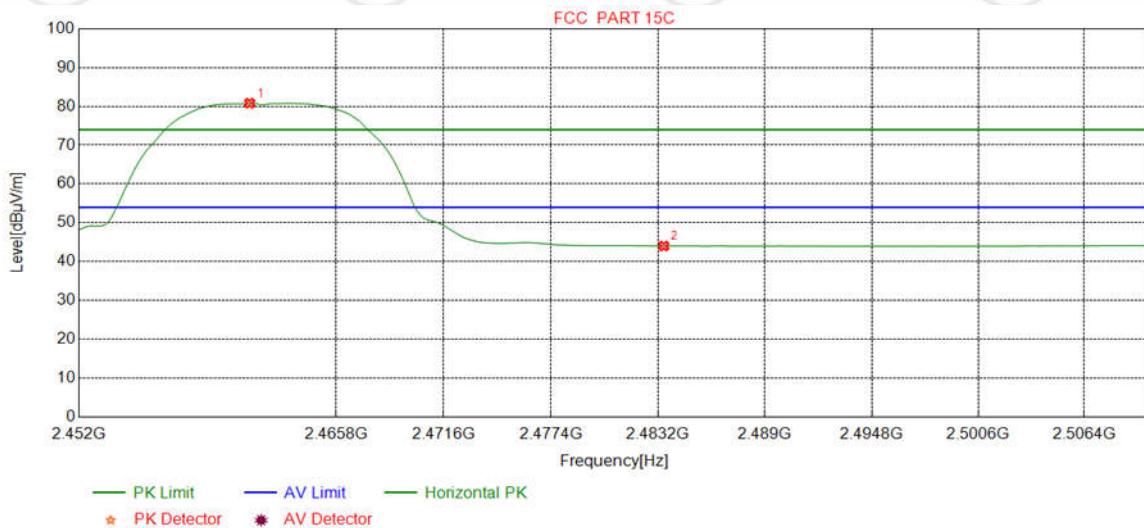
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2462.5257	32.35	13.47	-42.41	86.81	90.22	74	-16.22	Pass	Horizontal
2	2483.5000	32.38	13.38	-42.4	50.36	53.72	74	20.28	Pass	Horizontal

Mode:	802.11 b(11Mbps) Transmitting	Channel:	2462
Remark:	Peak		



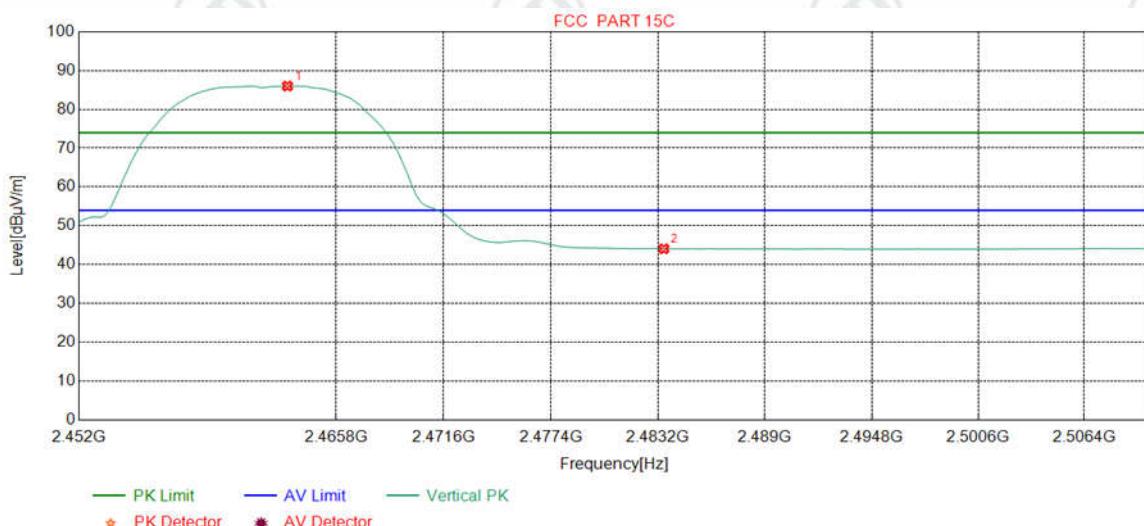
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2462.59820	32.35	13.47	-42.41	92.57	95.98	74	-21.98	Pass	Vertical
2	2483.50000	32.38	13.38	-42.4	49.35	52.71	74	21.29	Pass	Vertical

Mode:	802.11 b(11Mbps) Transmitting	Channel:	2462
Remark:	AV		



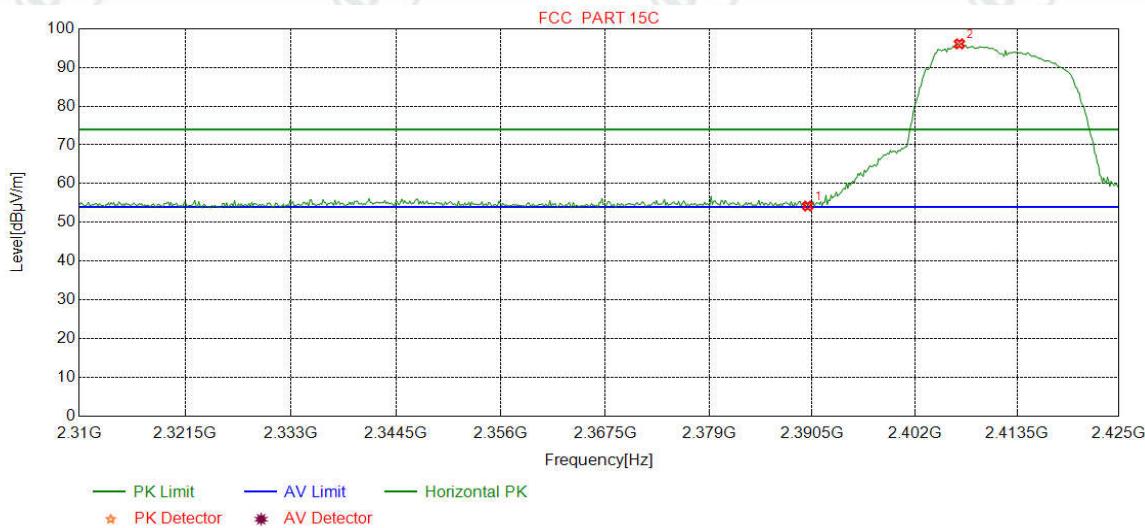
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2461.1464	32.35	13.48	-42.41	77.4	80.82	54	-26.82	Pass	Horizontal
2	2483.5000	32.38	13.38	-42.4	40.65	44.01	54	9.99	Pass	Horizontal

Mode:	802.11 b(11Mbps) Transmitting	Channel:	2462
Remark:	AV		



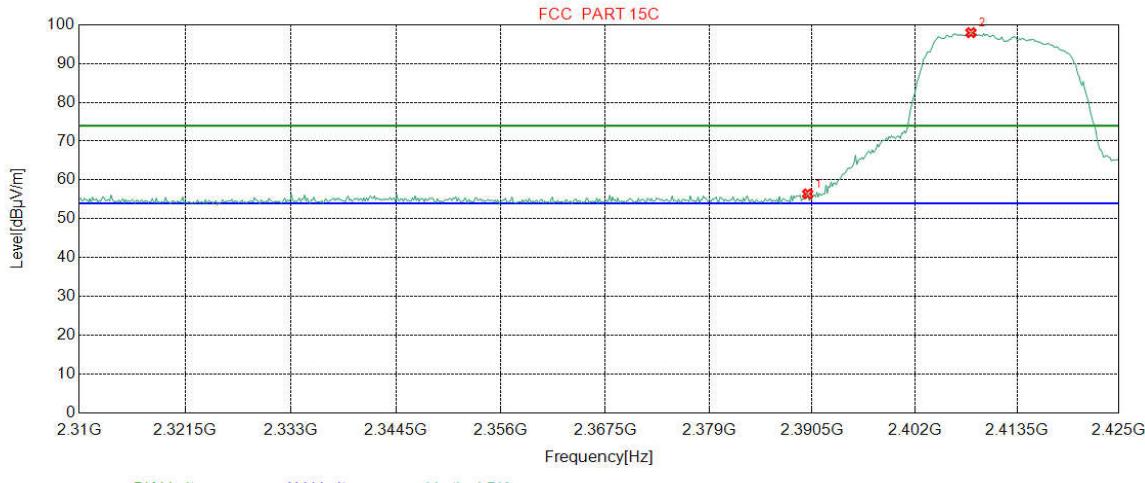
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2463.1790	32.35	13.47	-42.41	82.61	86.02	54	-32.02	Pass	Vertical
2	2483.5000	32.38	13.38	-42.4	40.7	44.06	54	9.94	Pass	Vertical

Mode:	802.11 g(6Mbps) Transmitting	Channel:	2412
Remark:	Peak		



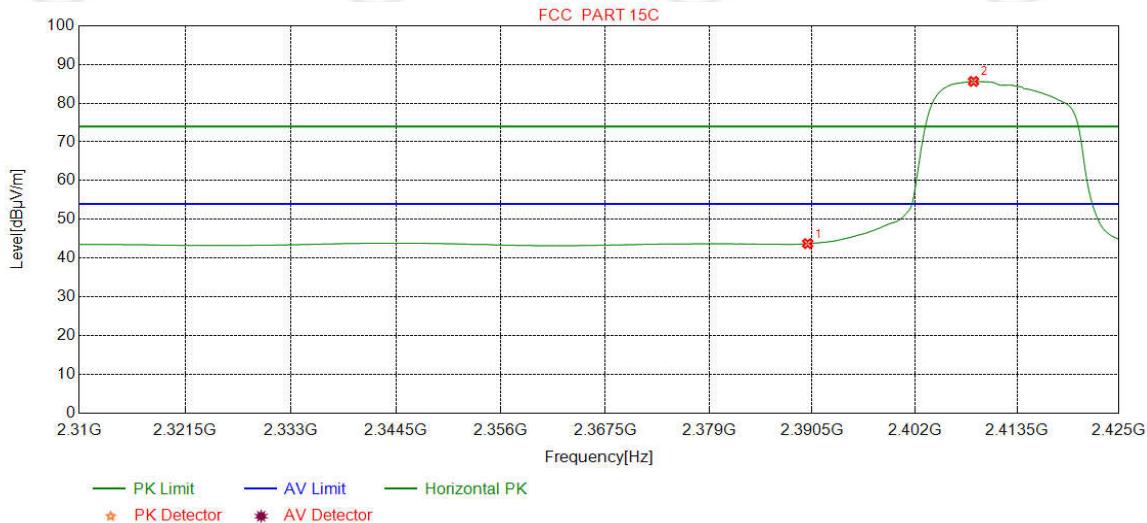
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-36.62	45.21	54.21	74.00	19.79	Pass	Horizontal
2	2407.0088	32.27	13.33	-36.60	87.11	96.11	74.00	-22.11	Pass	Horizontal

Mode:	802.11 g(6Mbps) Transmitting	Channel:	2412
Remark:	Peak		



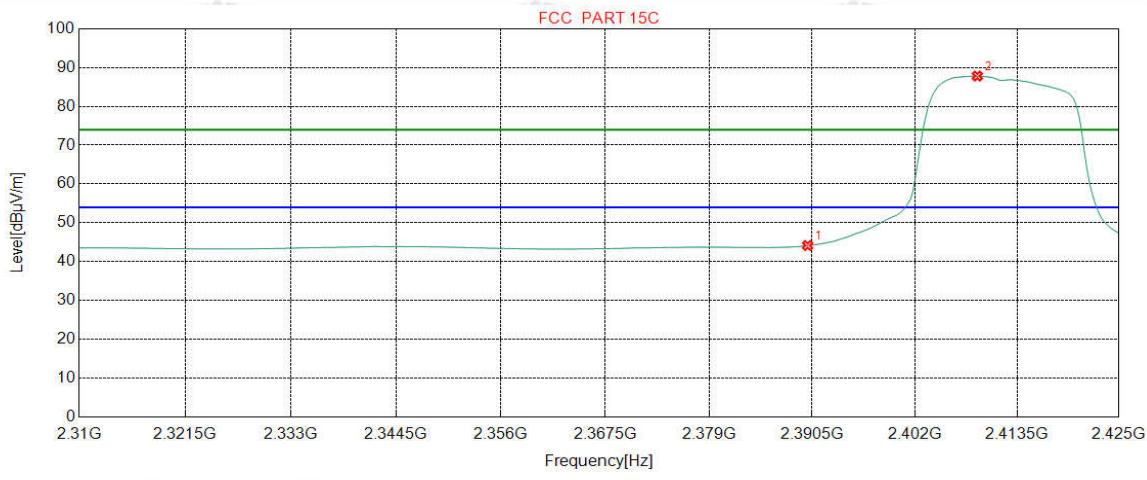
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-36.62	47.41	56.41	74.00	17.59	Pass	Vertical
2	2408.3041	32.27	13.34	-36.61	88.98	97.98	74.00	-23.98	Pass	Vertical

Mode:	802.11 g(6Mbps) Transmitting	Channel:	2412
Remark:	AV		



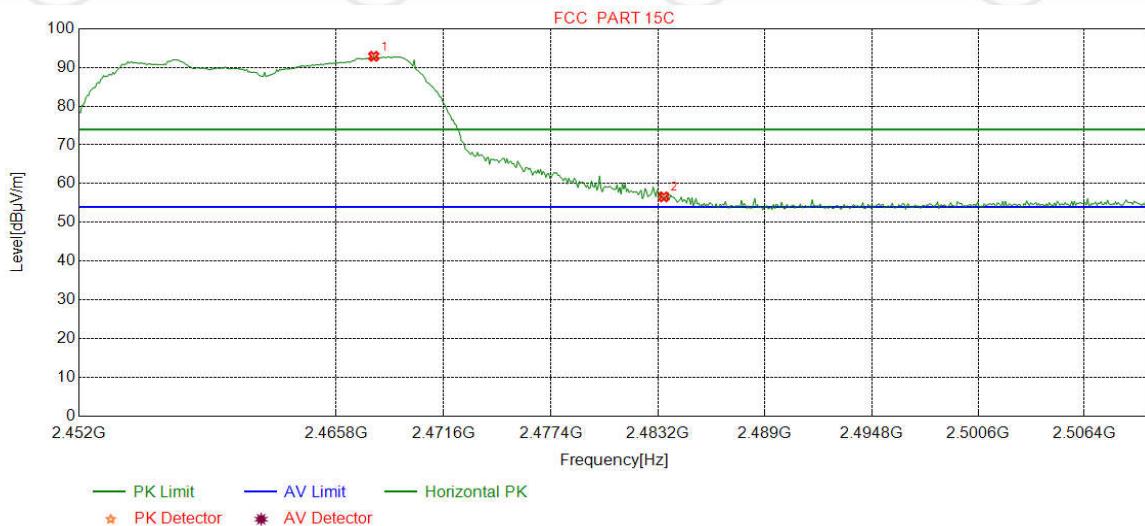
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-36.62	34.73	43.73	54.00	10.27	Pass	Horizontal
2	2408.5920	32.27	13.34	-36.60	76.62	85.63	54.00	-31.63	Pass	Horizontal

Mode:	802.11 g(6Mbps) Transmitting	Channel:	2412
Remark:	AV		



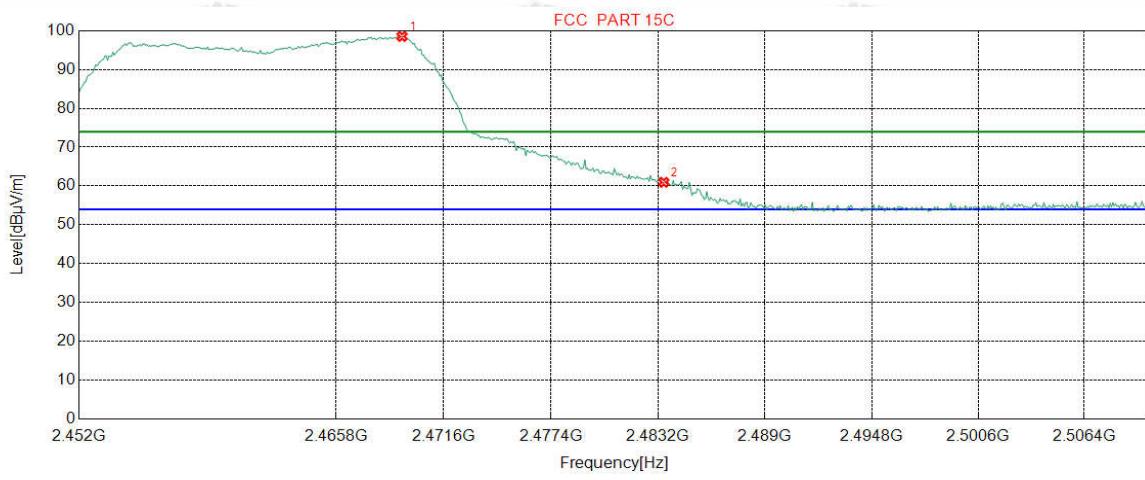
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-36.62	35.13	44.13	54.00	9.87	Pass	Vertical
2	2409.0238	32.27	13.34	-36.60	78.82	87.83	54.00	-33.83	Pass	Vertical

Mode:	802.11 g(6Mbps) Transmitting	Channel:	2462
Remark:	Peak		



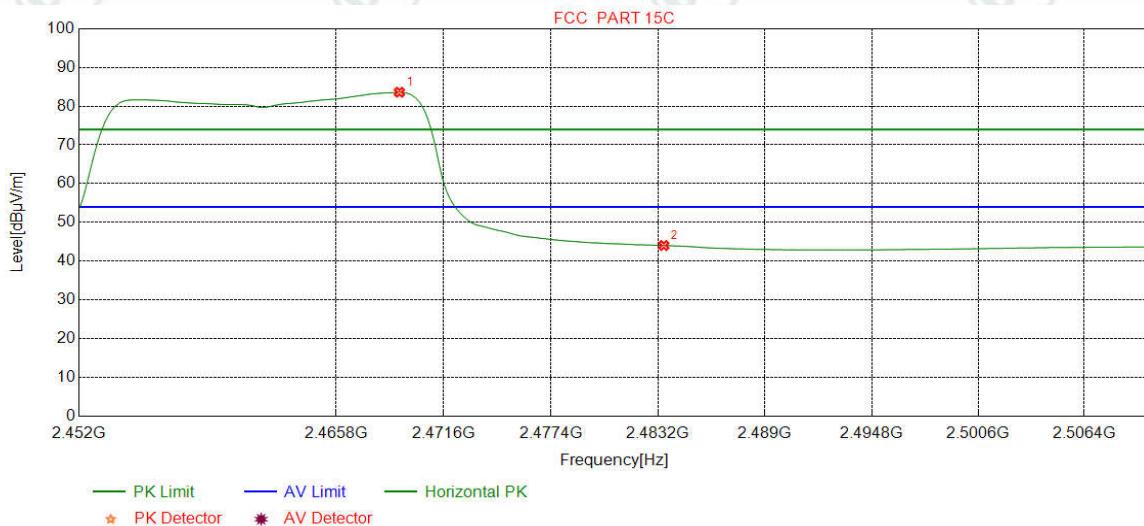
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2467.8248	32.35	13.45	-36.71	83.80	92.89	74.00	-18.89	Pass	Horizontal
2	2483.5000	32.38	13.38	-36.80	47.63	56.59	74.00	17.41	Pass	Horizontal

Mode:	802.11 g(6Mbps) Transmitting	Channel:	2462
Remark:	Peak		



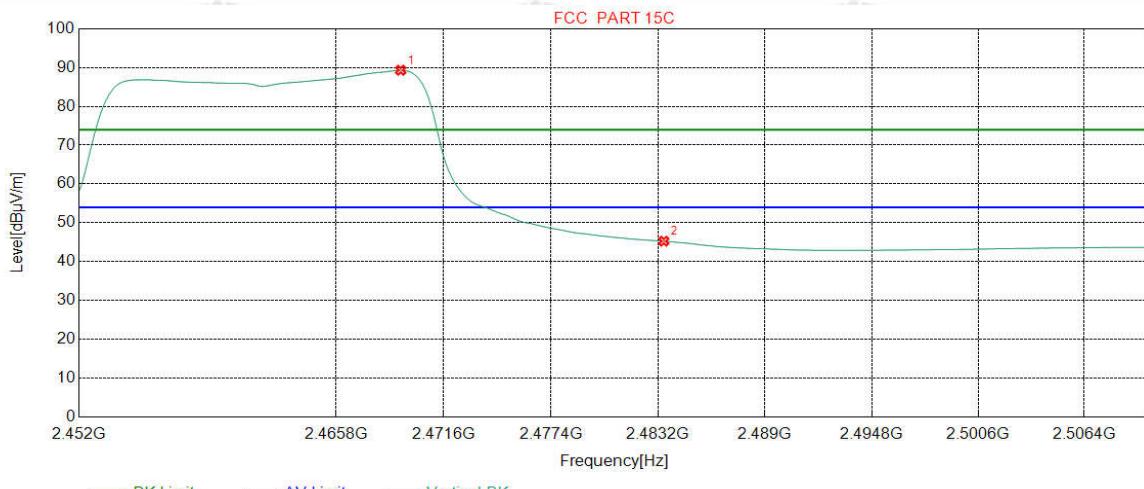
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2469.3492	32.36	13.44	-36.72	89.47	98.55	74.00	-24.55	Pass	Vertical
2	2483.5000	32.38	13.38	-36.80	51.97	60.93	74.00	13.07	Pass	Vertical

Mode:	802.11 g(6Mbps) Transmitting	Channel:	2462
Remark:	AV		



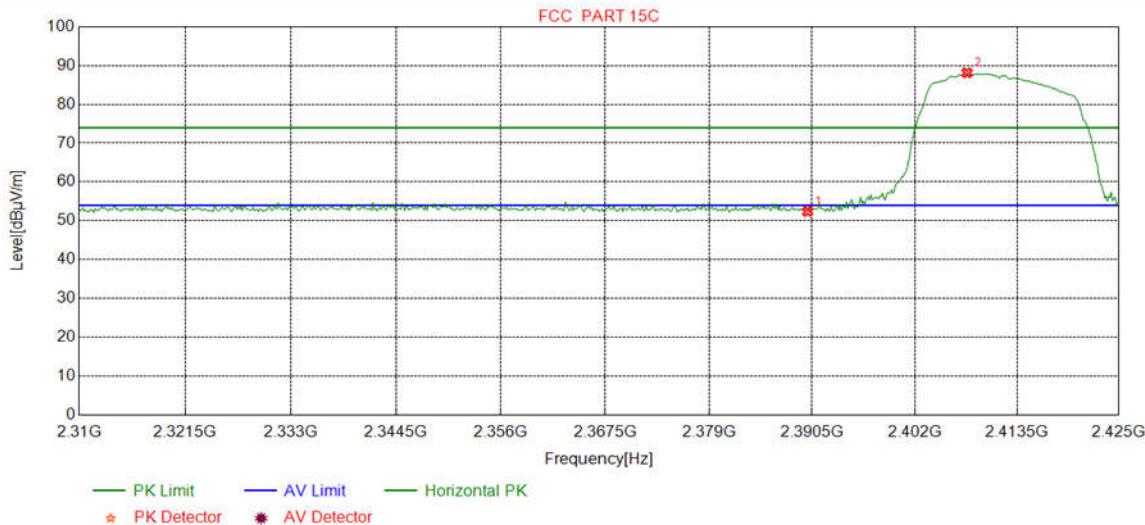
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2469.2040	32.36	13.44	-36.72	74.54	83.62	54.00	-29.62	Pass	Horizontal
2	2483.5000	32.38	13.38	-36.80	35.06	44.02	54.00	9.98	Pass	Horizontal

Mode:	802.11 g(6Mbps) Transmitting	Channel:	2462
Remark:	AV		



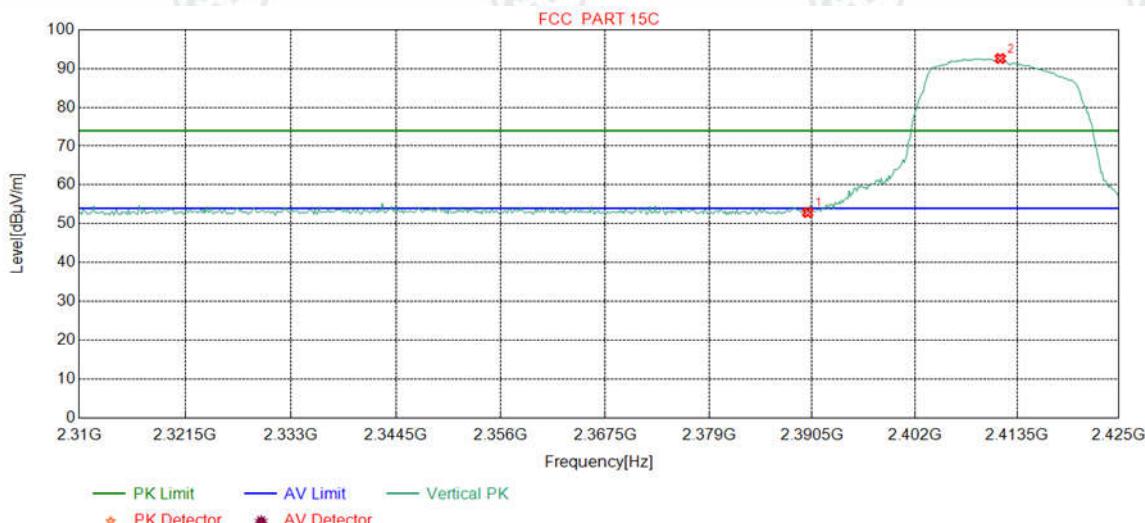
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2469.2766	32.36	13.44	-36.72	80.25	89.33	54.00	-35.33	Pass	Vertical
2	2483.5000	32.38	13.38	-36.80	36.29	45.25	54.00	8.75	Pass	Vertical

Mode:	802.11n(HT20)(6.5Mbps) Transmitting	Channel:	2412
Remark:	Peak		



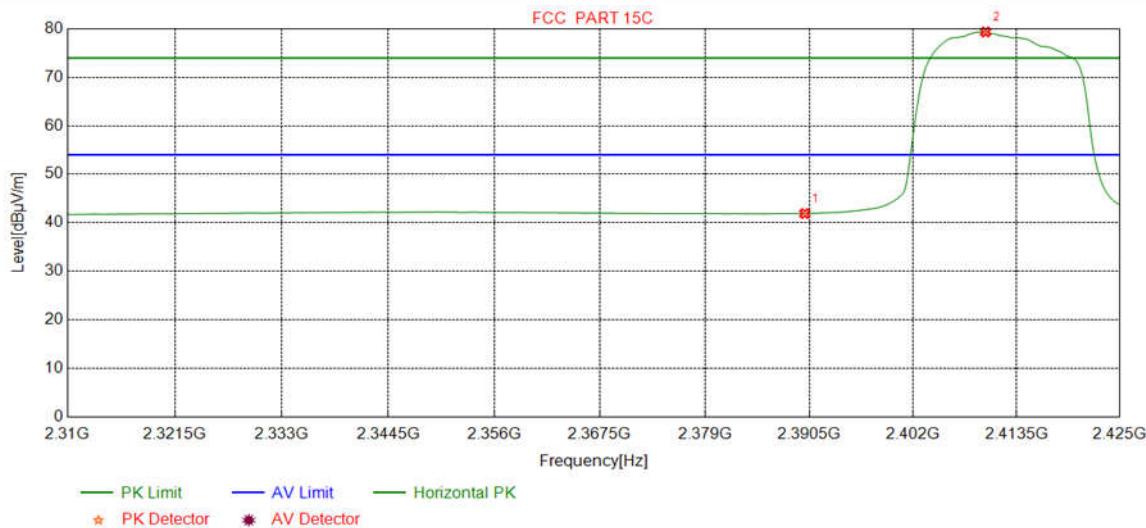
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-42.44	49.23	52.41	74	21.59	Pass	Horizontal
2	2407.8723	32.27	13.34	-42.43	84.96	88.14	74	-14.14	Pass	Horizontal

Mode:	802.11n(HT20)(6.5Mbps) Transmitting	Channel:	2412
Remark:	Peak		



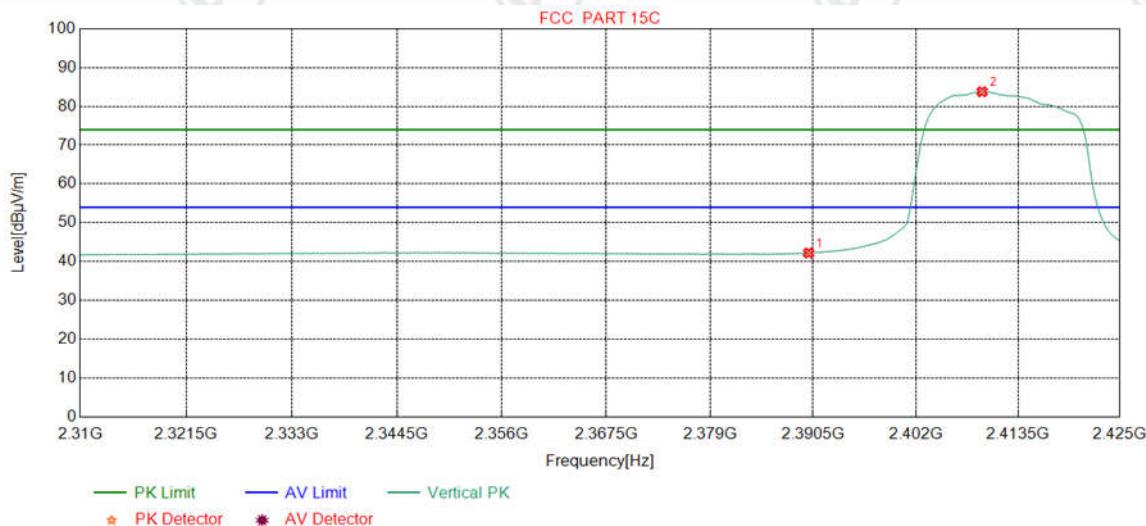
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-42.44	49.71	52.89	74	21.11	Pass	Vertical
2	2411.6145	32.28	13.35	-42.43	89.41	92.61	74	-18.61	Pass	Vertical

Mode:	802.11n(HT20)(6.5Mbps) Transmitting	Channel:	2412
Remark:	AV		



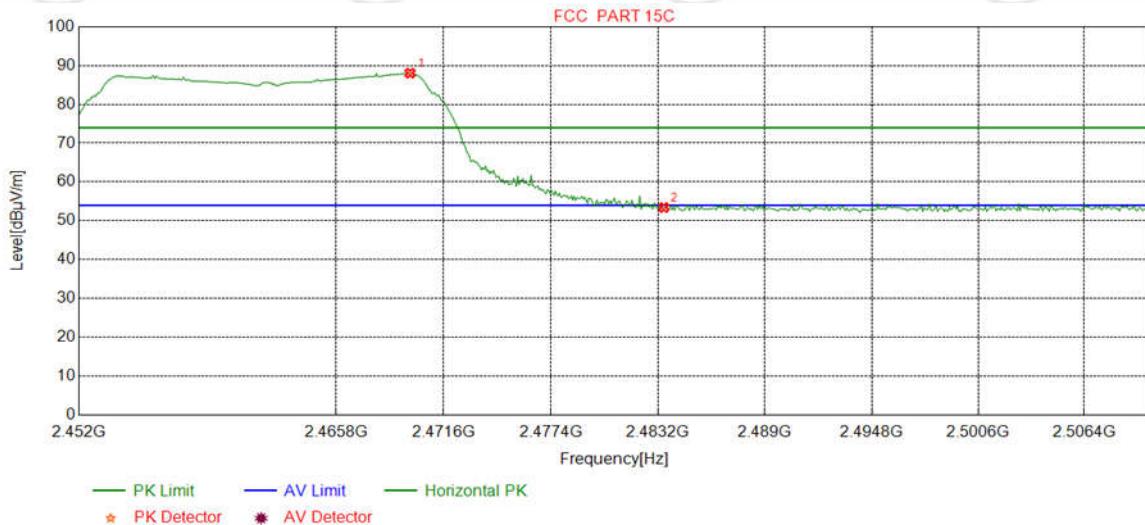
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-42.44	38.72	41.90	54	12.10	Pass	Horizontal
2	2410.0313	32.27	13.35	-42.43	76.16	79.35	54	-25.35	Pass	Horizontal

Mode:	802.11n(HT20)(6.5Mbps) Transmitting	Channel:	2412
Remark:	AV		



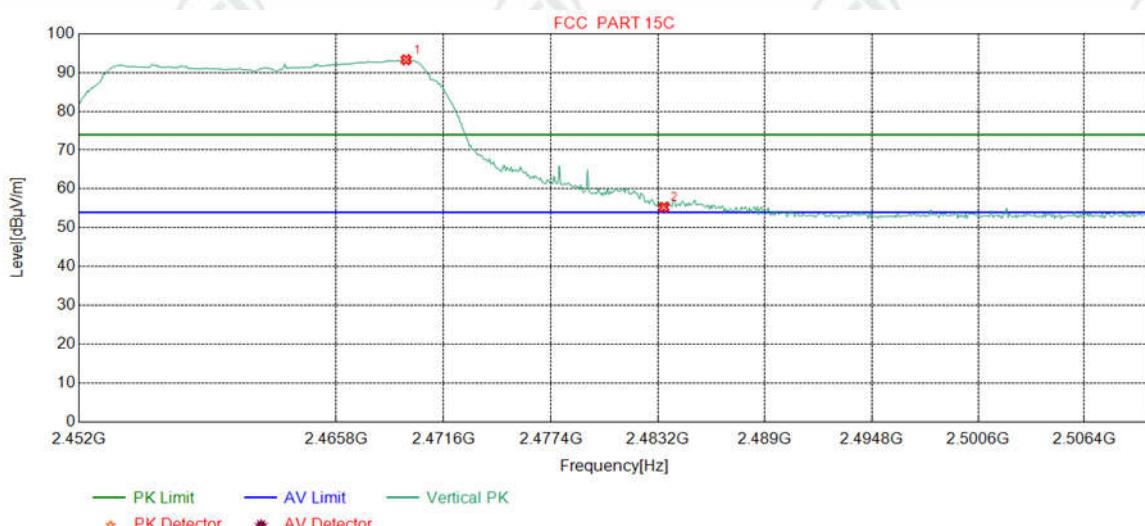
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1	2390.0000	32.25	13.37	-42.44	39.02	42.20	54	11.80	Pass	Vertical
2	2409.4556	32.27	13.34	-42.42	80.6	83.79	54	-29.79	Pass	Vertical

Mode:	802.11n(HT20)(6.5Mbps) Transmitting	Channel:	2462
Remark:	Peak		



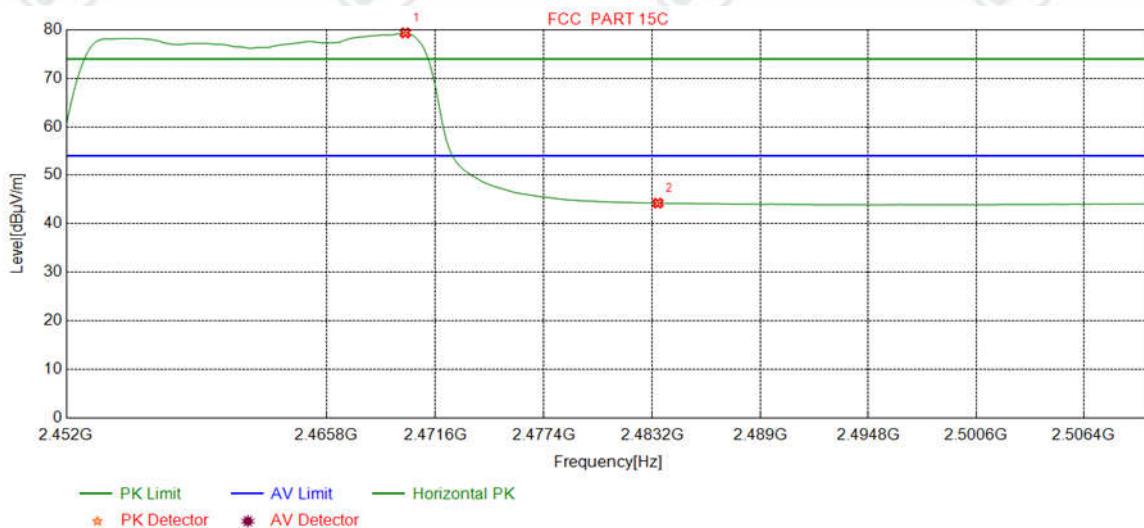
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2469.78470	32.36	13.44	-42.41	84.67	88.06	74	-14.06	Pass	Horizontal
2	2483.50000	32.38	13.38	-42.40	50.05	53.41	74	20.59	Pass	Horizontal

Mode:	802.11n(HT20)(6.5Mbps) Transmitting	Channel:	2462
Remark:	Peak		



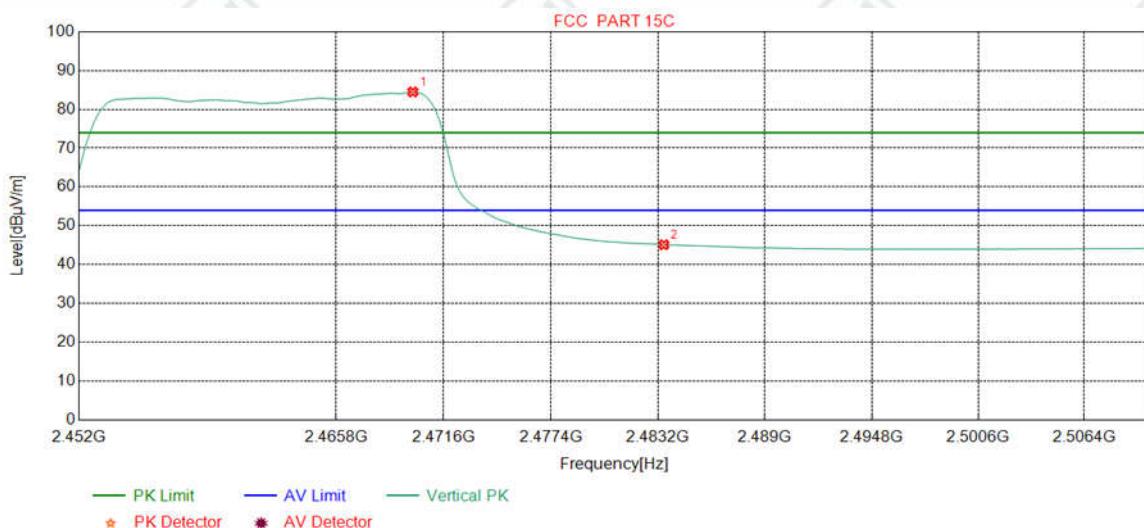
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2469.5670	32.36	13.44	-42.41	89.91	93.30	74	-19.30	Pass	Vertical
2	2483.5000	32.38	13.38	-42.40	51.93	55.29	74	18.71	Pass	Vertical

Mode:	802.11n(HT20)(6.5Mbps) Transmitting	Channel:	2462
Remark:	AV		



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2470.0025	32.36	13.44	-42.41	75.98	79.37	54	-25.37	Pass	Horizontal
2	2483.5000	32.38	13.38	-42.4	40.89	44.25	54	9.75	Pass	Horizontal

Mode:	802.11n(HT20)(6.5Mbps) Transmitting	Channel:	2462
Remark:	AV		



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Result	Polarity
1	2469.9299	32.36	13.44	-42.41	81.11	84.5	54	-30.5	Pass	Vertical
2	2483.5000	32.38	13.38	-42.40	41.74	45.1	54	8.90	Pass	Vertical

Note:

1) Through Pre-scan transmitting mode and charge+transmitter mode with all kind of modulation and data rate, find the 11Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20) .

2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading - Correct Factor

Correct Factor = Preamplifier Factor- Antenna Factor-Cable Factor

## Appendix I): Radiated Spurious Emissions

Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
	0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
	0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
Above 1GHz		Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average

### Test Procedure:

#### Below 1GHz test procedure as below:

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable 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.

#### Above 1GHz test procedure as below:

- Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter( Above 18GHz the distance is 1 meter and table is 1.5 meter)..
- Test the EUT in the lowest channel ,the middle channel ,the Highest channel
- The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.
- Repeat above procedures until all frequencies measured was complete.

Limit:	Frequency	Field strength (microvolt/meter)	Limit (dB $\mu$ V/m)	Remark	Measurement distance (m)
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz-88MHz	100	40.0	Quasi-peak	3
	88MHz-216MHz	150	43.5	Quasi-peak	3
	216MHz-960MHz	200	46.0	Quasi-peak	3
	960MHz-1GHz	500	54.0	Quasi-peak	3
	Above 1GHz	500	54.0	Average	3

Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

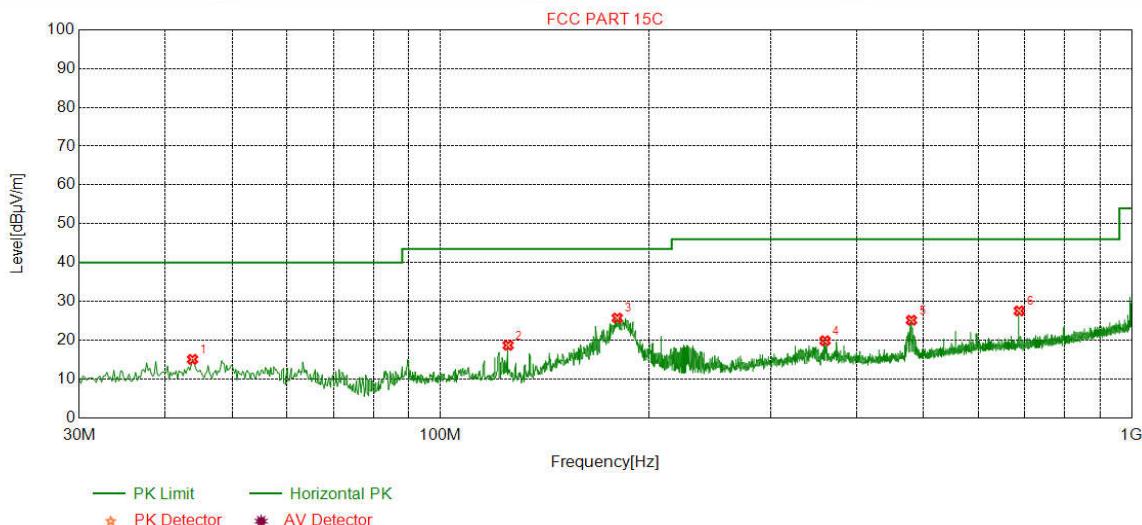
## Radiated Spurious Emissions test Data:

Product : LTE MODULE  
Temperature : 20°C

Model/Type reference : GLMM18A02  
Humidity : 61%

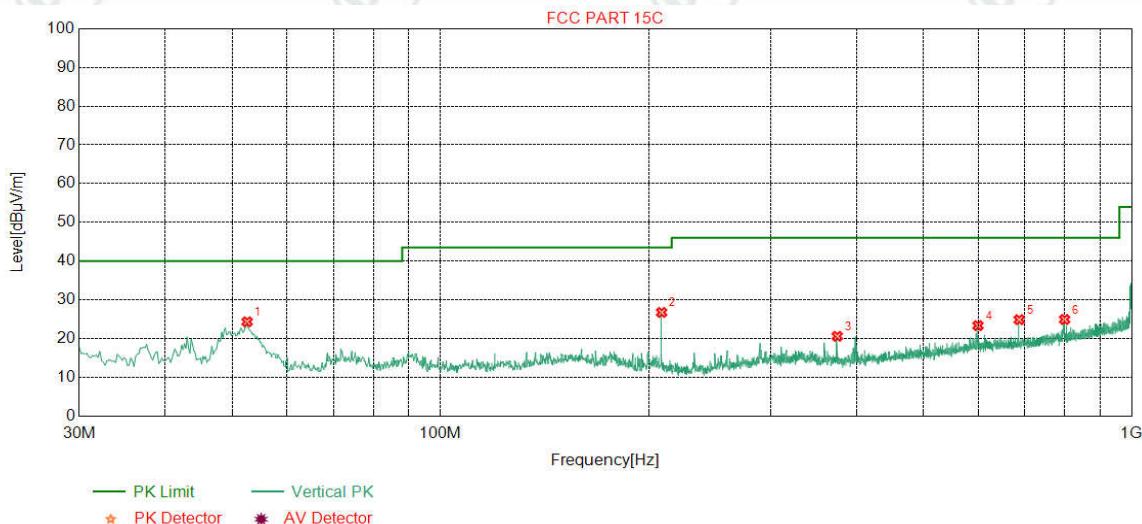
### Radiated Emission below 1GHz

Mode:	802.11 b(11Mbps) Transmitting	Channel:	2437
Remark:	QP		



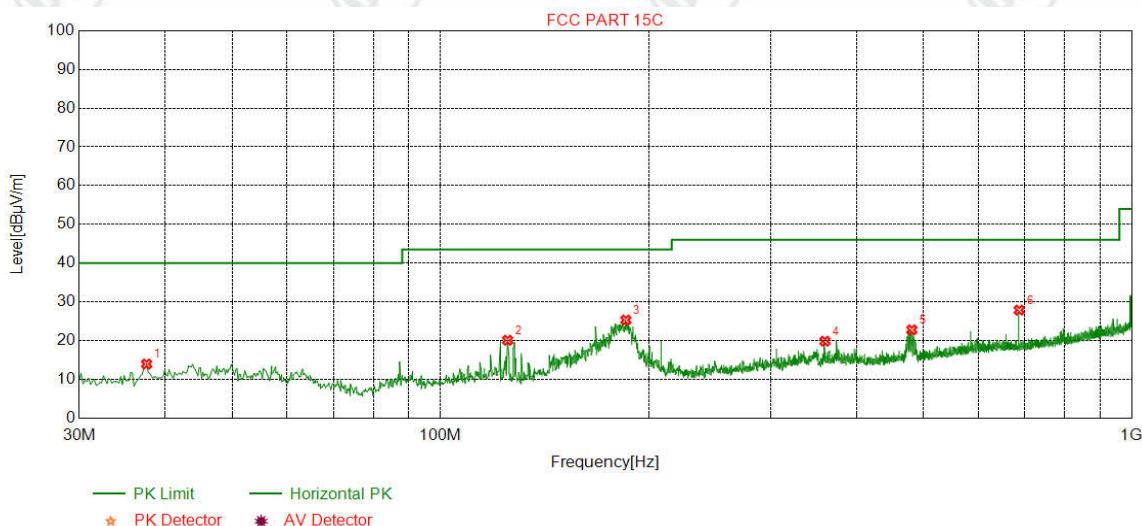
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Magin [dB]	Result	Polarity
1	43.7768	12.98	0.74	-32.11	33.42	15.03	40.00	24.97	Pass	Horizontal
2	125.2731	8.41	1.32	-32.05	40.97	18.65	43.50	24.85	Pass	Horizontal
3	180.1860	9.02	1.58	-31.99	47.07	25.68	43.50	17.82	Pass	Horizontal
4	360.0600	14.52	2.27	-31.84	34.89	19.84	46.00	26.16	Pass	Horizontal
5	480.1700	16.68	2.61	-31.90	37.74	25.13	46.00	20.87	Pass	Horizontal
6	687.5975	19.70	3.14	-32.06	36.74	27.52	46.00	18.48	Pass	Horizontal

Mode:	802.11 b(11Mbps) Transmitting	Channel:	2437
Remark:	QP		



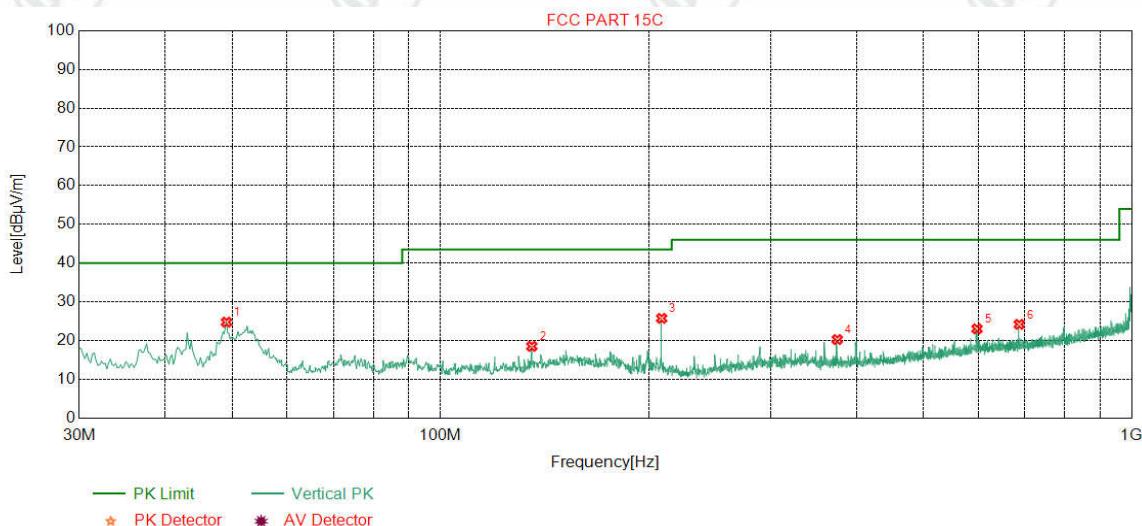
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Magin [dB]	Result	Polarity
1	52.5085	12.80	0.82	-32.10	42.79	24.31	40.00	15.69	Pass	Vertical
2	208.9038	11.13	1.71	-31.94	45.83	26.73	43.50	16.77	Pass	Vertical
3	375.0010	14.85	2.31	-31.88	35.28	20.56	46.00	25.44	Pass	Vertical
4	599.3099	18.99	2.96	-31.99	33.36	23.32	46.00	22.68	Pass	Vertical
5	687.5975	19.70	3.14	-32.06	34.07	24.85	46.00	21.15	Pass	Vertical
6	799.7520	20.90	3.39	-32.03	32.65	24.91	46.00	21.09	Pass	Vertical

Mode:	802.11 g(6Mbps) Transmitting	Channel:	2462
Remark:	QP		



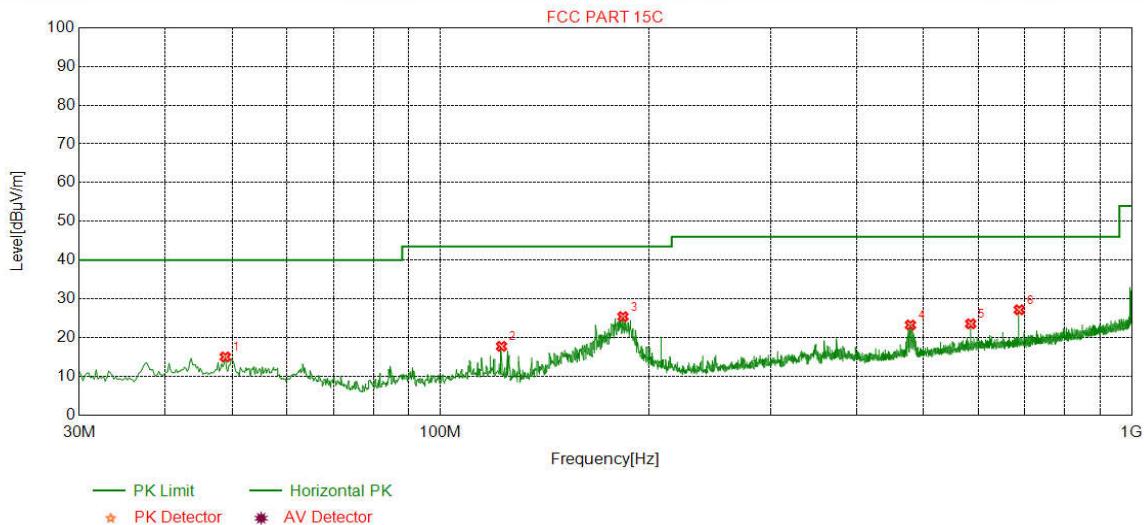
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Magin [dB]	Result	Polarity
1	37.5675	11.52	0.69	-32.11	33.82	13.92	40.00	26.08	Pass	Horizontal
2	125.0790	8.44	1.32	-32.05	42.34	20.05	43.50	23.45	Pass	Horizontal
3	185.4251	9.52	1.60	-31.99	46.16	25.29	43.50	18.21	Pass	Horizontal
4	360.0600	14.52	2.27	-31.84	34.87	19.82	46.00	26.18	Pass	Horizontal
5	480.7522	16.69	2.61	-31.89	35.33	22.74	46.00	23.26	Pass	Horizontal
6	687.5975	19.70	3.14	-32.06	37.05	27.83	46.00	18.17	Pass	Horizontal

Mode:	802.11 g(6Mbps) Transmitting	Channel:	2462
Remark:	QP		



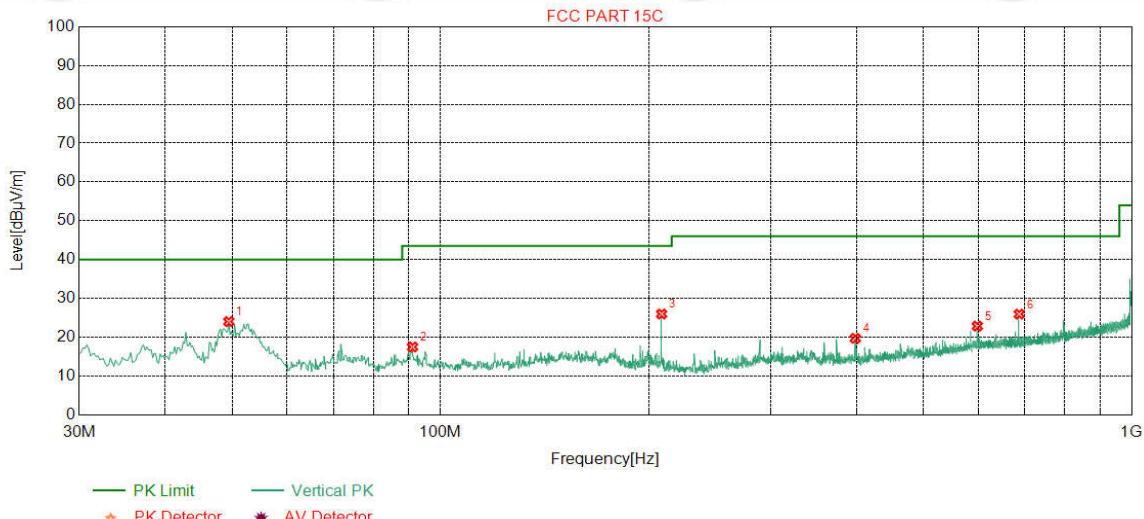
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Magin [dB]	Result	Polarity
1	49.0158	13.20	0.79	-32.12	42.85	24.72	40.00	15.28	Pass	Vertical
2	135.5571	7.42	1.36	-32.00	41.70	18.48	43.50	25.02	Pass	Vertical
3	208.9038	11.13	1.71	-31.94	44.82	25.72	43.50	17.78	Pass	Vertical
4	375.0010	14.85	2.31	-31.88	34.96	20.24	46.00	25.76	Pass	Vertical
5	597.3695	18.95	2.94	-31.97	33.09	23.01	46.00	22.99	Pass	Vertical
6	687.5975	19.70	3.14	-32.06	33.38	24.16	46.00	21.84	Pass	Vertical

Mode:	802.11 n(HT20)(6.5Mbps) Transmitting	Channel:	2462
Remark:	QP		



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Magin [dB]	Result	Polarity
1	48.8218	13.20	0.79	-32.12	33.10	14.97	40.00	25.03	Pass	Horizontal
2	122.5565	8.82	1.31	-32.06	39.64	17.71	43.50	25.79	Pass	Horizontal
3	183.6787	9.35	1.59	-31.98	46.43	25.39	43.50	18.11	Pass	Horizontal
4	478.6177	16.66	2.61	-31.90	35.85	23.22	46.00	22.78	Pass	Horizontal
5	584.9510	18.70	2.91	-31.95	33.87	23.53	46.00	22.47	Pass	Horizontal
6	687.5975	19.70	3.14	-32.06	36.36	27.14	46.00	18.86	Pass	Horizontal

Mode:	802.11 n(HT20)(6.5Mbps) Transmitting	Channel:	2462
Remark:	QP		



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Magin [dB]	Result	Polarity
1	49.4039	13.20	0.79	-32.12	42.13	24.00	40.00	16.00	Pass	Vertical
2	91.1222	9.58	1.10	-32.08	38.86	17.46	43.50	26.04	Pass	Vertical
3	208.9038	11.13	1.71	-31.94	45.05	25.95	43.50	17.55	Pass	Vertical
4	398.2857	15.36	2.37	-31.76	33.70	19.67	46.00	26.33	Pass	Vertical
5	597.9516	18.96	2.95	-31.98	32.90	22.83	46.00	23.17	Pass	Vertical
6	687.5975	19.70	3.14	-32.06	35.14	25.92	46.00	20.08	Pass	Vertical

**Transmitter Emission above 1GHz**

Mode:		802.11b(11Mbps) Transmitting			Channel:				2412		
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Magin [dB]	Result	Polarity	Remark
1	1593.7187	29.02	3.06	-36.99	49.68	44.77	74.00	29.23	Pass	H	Peak
2	3283.7534	33.31	4.54	-36.80	45.36	46.41	74.00	27.59	Pass	H	Peak
3	4824.0000	34.50	4.61	-36.11	41.99	44.99	74.00	29.01	Pass	H	Peak
4	6674.1674	35.97	5.46	-36.29	44.32	49.46	74.00	24.54	Pass	H	Peak
5	7236.0000	36.34	5.79	-36.44	41.86	47.55	74.00	26.45	Pass	H	Peak
6	9648.0000	37.66	6.72	-36.92	43.50	50.96	74.00	23.04	Pass	H	Peak
7	1594.5189	29.02	3.07	-36.99	52.70	47.80	74.00	26.20	Pass	V	Peak
8	3191.1191	33.28	4.64	-36.75	47.10	48.27	74.00	25.73	Pass	V	Peak
9	4824.0000	34.50	4.61	-36.11	43.88	46.88	74.00	27.12	Pass	V	Peak
10	5983.7984	35.77	5.33	-36.26	43.20	48.04	74.00	25.96	Pass	V	Peak
11	7236.0000	36.34	5.79	-36.44	41.68	47.37	74.00	26.63	Pass	V	Peak
12	9648.0000	37.66	6.72	-36.92	43.21	50.67	74.00	23.33	Pass	V	Peak

Mode:		802.11b(11Mbps) Transmitting			Channel:				2437		
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Magin [dB]	Result	Polarity	Remark
1	1793.3587	30.34	3.31	-36.81	52.15	48.99	74.00	25.01	Pass	H	Peak
2	3120.9121	33.25	4.66	-36.88	46.90	47.93	74.00	26.07	Pass	H	Peak
3	4874.0000	34.50	4.78	-36.09	42.88	46.07	74.00	27.93	Pass	H	Peak
4	6480.1230	35.90	5.49	-36.24	45.36	50.51	74.00	23.49	Pass	H	Peak
5	7311.0000	36.41	5.85	-36.31	41.92	47.87	74.00	26.13	Pass	H	Peak
6	9748.0000	37.70	6.77	-36.79	43.10	50.78	74.00	23.22	Pass	H	Peak
7	1598.1196	29.05	3.07	-36.99	52.79	47.92	74.00	26.08	Pass	V	Peak
8	3295.4545	33.32	4.57	-36.80	45.79	46.88	74.00	27.12	Pass	V	Peak
9	4874.0000	34.50	4.78	-36.09	44.04	47.23	74.00	26.77	Pass	V	Peak
10	5920.4170	35.67	5.17	-36.20	45.10	49.74	74.00	24.26	Pass	V	Peak
11	7311.0000	36.41	5.85	-36.31	43.00	48.95	74.00	25.05	Pass	V	Peak
12	9748.0000	37.70	6.77	-36.79	43.17	50.85	74.00	23.15	Pass	V	Peak

Mode:		802.11b(11Mbps) Transmitting			Channel:				2462		
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Magin [dB]	Result	Polarity	Remark
1	1595.3191	29.03	3.07	-37.00	49.70	44.80	74.00	29.20	Pass	H	Peak
2	3195.9946	33.28	4.64	-36.71	45.71	46.92	74.00	27.08	Pass	H	Peak
3	4924.0000	34.50	4.85	-36.17	43.05	46.23	74.00	27.77	Pass	H	Peak
4	6151.5152	35.83	5.25	-36.19	44.55	49.44	74.00	24.56	Pass	H	Peak
5	7386.0000	36.49	5.85	-36.34	41.67	47.67	74.00	26.33	Pass	H	Peak
6	9848.0000	37.74	6.83	-36.93	43.36	51.00	74.00	23.00	Pass	H	Peak
7	1802.9606	30.40	3.32	-36.82	50.49	47.39	74.00	26.61	Pass	V	Peak
8	3218.4218	33.29	4.58	-36.74	46.42	47.55	74.00	26.45	Pass	V	Peak
9	4924.0000	34.50	4.85	-36.17	43.51	46.69	74.00	27.31	Pass	V	Peak
10	6279.2529	35.86	5.41	-36.25	45.18	50.20	74.00	23.80	Pass	V	Peak
11	7386.0000	36.49	5.85	-36.34	42.56	48.56	74.00	25.44	Pass	V	Peak
12	9848.0000	37.74	6.83	-36.93	42.79	50.43	74.00	23.57	Pass	V	Peak

Mode:		802.11g(6Mbps) Transmitting			Channel:				2412		
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Magin [dB]	Result	Polarity	Remark
1	1798.1596	30.37	3.32	-36.81	52.19	49.07	74.00	24.93	Pass	H	Peak
2	3577.2577	33.46	4.39	-36.52	44.94	46.27	74.00	27.73	Pass	H	Peak
3	4824.0000	34.50	4.61	-36.11	42.13	45.13	74.00	28.87	Pass	H	Peak
4	6427.4677	35.89	5.43	-36.31	45.73	50.74	74.00	23.26	Pass	H	Peak
5	7236.0000	36.34	5.79	-36.44	41.88	47.57	74.00	26.43	Pass	H	Peak
6	9648.0000	37.66	6.72	-36.92	43.54	51.00	74.00	23.00	Pass	H	Peak
7	1391.2783	28.29	2.89	-37.22	51.27	45.23	74.00	28.77	Pass	V	Peak
8	3189.1689	33.28	4.63	-36.75	46.08	47.24	74.00	26.76	Pass	V	Peak
9	4824.0000	34.50	4.61	-36.11	41.88	44.88	74.00	29.12	Pass	V	Peak
10	5540.1290	35.06	5.16	-36.06	43.67	47.83	74.00	26.17	Pass	V	Peak
11	7236.0000	36.34	5.79	-36.44	40.99	46.68	74.00	27.32	Pass	V	Peak
12	9648.0000	37.66	6.72	-36.92	43.09	50.55	74.00	23.45	Pass	V	Peak

Mode:		802.11g(6Mbps) Transmitting			Channel:				2437		
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Magin [dB]	Result	Polarity	Remark
1	1794.5589	30.34	3.31	-36.80	52.39	49.24	74.00	24.76	Pass	H	Peak
2	3187.2187	33.27	4.63	-36.75	46.76	47.91	74.00	26.09	Pass	H	Peak
3	4874.0000	34.50	4.78	-36.09	41.18	44.37	74.00	29.63	Pass	H	Peak
4	6378.7129	35.88	5.37	-36.25	44.54	49.54	74.00	24.46	Pass	H	Peak
5	7311.0000	36.41	5.85	-36.31	42.26	48.21	74.00	25.79	Pass	H	Peak
6	9748.0000	37.70	6.77	-36.79	43.26	50.94	74.00	23.06	Pass	H	Peak
7	1592.9186	29.01	3.06	-36.99	52.28	47.36	74.00	26.64	Pass	V	Peak
8	3693.2943	33.55	4.25	-36.21	44.75	46.34	74.00	27.66	Pass	V	Peak
9	4874.0000	34.50	4.78	-36.09	41.06	44.25	74.00	29.75	Pass	V	Peak
10	6465.4966	35.89	5.50	-36.24	44.65	49.80	74.00	24.20	Pass	V	Peak
11	7311.0000	36.41	5.85	-36.31	42.07	48.02	74.00	25.98	Pass	V	Peak
12	9748.0000	37.70	6.77	-36.79	43.06	50.74	74.00	23.26	Pass	V	Peak

Mode:		802.11g(6Mbps) Transmitting			Channel:				2462		
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Magin [dB]	Result	Polarity	Remark
1	1794.5589	30.34	3.31	-36.80	52.92	49.77	74.00	24.23	Pass	H	Peak
2	4207.1707	34.09	4.48	-36.30	44.02	46.29	74.00	27.71	Pass	H	Peak
3	4924.0000	34.50	4.85	-36.17	41.82	45.00	74.00	29.00	Pass	H	Peak
4	6516.2016	35.91	5.43	-36.19	43.80	48.95	74.00	25.05	Pass	H	Peak
5	7386.0000	36.49	5.85	-36.34	41.68	47.68	74.00	26.32	Pass	H	Peak
6	9848.0000	37.74	6.83	-36.93	43.16	50.80	74.00	23.20	Pass	H	Peak
7	1597.7195	29.04	3.07	-36.99	53.13	48.25	74.00	25.75	Pass	V	Peak
8	3189.1689	33.28	4.63	-36.75	47.57	48.73	74.00	25.27	Pass	V	Peak
9	4924.0000	34.50	4.85	-36.17	41.48	44.66	74.00	29.34	Pass	V	Peak
10	6457.6958	35.89	5.51	-36.25	44.42	49.57	74.00	24.43	Pass	V	Peak
11	7386.0000	36.49	5.85	-36.34	42.30	48.30	74.00	25.70	Pass	V	Peak
12	9848.0000	37.74	6.83	-36.93	43.13	50.77	74.00	23.23	Pass	V	Peak

Mode:		802.11n(HT20)(6.5Mbps)			Channel:				2412		
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Magin [dB]	Result	Polarity	Remark
1	1796.1592	30.35	3.31	-36.80	50.39	47.25	74.00	26.75	Pass	H	Peak
2	2861.1722	32.98	4.26	-36.85	45.77	46.16	74.00	27.84	Pass	H	Peak
3	4824.0000	34.50	4.61	-36.11	41.69	44.69	74.00	29.31	Pass	H	Peak
4	6291.9292	35.86	5.44	-36.24	44.24	49.30	74.00	24.70	Pass	H	Peak
5	7236.0000	36.34	5.79	-36.44	41.63	47.32	74.00	26.68	Pass	H	Peak
6	9648.0000	37.66	6.72	-36.92	43.28	50.74	74.00	23.26	Pass	H	Peak
7	1394.0788	28.29	2.89	-37.21	49.91	43.88	74.00	30.12	Pass	V	Peak
8	3188.1938	33.28	4.63	-36.76	46.32	47.47	74.00	26.53	Pass	V	Peak
9	4824.0000	34.50	4.61	-36.11	41.81	44.81	74.00	29.19	Pass	V	Peak
10	7236.0000	36.34	5.79	-36.44	42.65	48.34	74.00	25.66	Pass	V	Peak
11	7491.2991	36.59	5.94	-36.16	44.08	50.45	74.00	23.55	Pass	V	Peak
12	9648.0000	37.66	6.72	-36.92	43.19	50.65	74.00	23.35	Pass	V	Peak

Mode:		802.11n(HT20)(6.5Mbps)			Channel:				2437		
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Magin [dB]	Result	Polarity	Remark
1	1794.5589	30.34	3.31	-36.80	51.52	48.37	74.00	25.63	Pass	H	Peak
2	3598.7099	33.48	4.34	-36.57	44.60	45.85	74.00	28.15	Pass	H	Peak
3	4874.0000	34.50	4.78	-36.09	40.85	44.04	74.00	29.96	Pass	H	Peak
4	6350.4350	35.87	5.46	-36.13	43.83	49.03	74.00	24.97	Pass	H	Peak
5	7311.0000	36.41	5.85	-36.31	42.53	48.48	74.00	25.52	Pass	H	Peak
6	9748.0000	37.70	6.77	-36.79	43.17	50.85	74.00	23.15	Pass	H	Peak
7	3001.9502	33.20	4.93	-36.72	46.00	47.41	74.00	26.59	Pass	V	Peak
8	4874.0000	34.50	4.78	-36.09	42.04	45.23	74.00	28.77	Pass	V	Peak
9	5807.3057	35.49	4.99	-36.01	43.69	48.16	74.00	25.84	Pass	V	Peak
10	6641.0141	35.96	5.45	-36.36	43.99	49.04	74.00	24.96	Pass	V	Peak
11	7311.0000	36.41	5.85	-36.31	41.56	47.51	74.00	26.49	Pass	V	Peak
12	9748.0000	37.70	6.77	-36.79	42.98	50.66	74.00	23.34	Pass	V	Peak

Mode:		802.11n(HT20)(6.5Mbps)			Channel:				2462		
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dB $\mu$ V]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Magin [dB]	Result	Polarity	Remark
1	1796.5593	30.36	3.31	-36.81	51.99	48.85	74.00	25.15	Pass	H	Peak
2	4210.0960	34.09	4.49	-36.30	43.19	45.47	74.00	28.53	Pass	H	Peak
3	4924.0000	34.50	4.85	-36.17	41.21	44.39	74.00	29.61	Pass	H	Peak
4	6112.5113	35.82	5.26	-36.30	43.42	48.20	74.00	25.80	Pass	H	Peak
5	7386.0000	36.49	5.85	-36.34	42.05	48.05	74.00	25.95	Pass	H	Peak
6	9848.0000	37.74	6.83	-36.93	43.16	50.80	74.00	23.20	Pass	H	Peak
7	1596.5193	29.04	3.07	-37.00	52.74	47.85	74.00	26.15	Pass	V	Peak
8	3195.0195	33.28	4.64	-36.72	45.98	47.18	74.00	26.82	Pass	V	Peak
9	4924.0000	34.50	4.85	-36.17	40.97	44.15	74.00	29.85	Pass	V	Peak
10	6779.4779	36.01	5.67	-36.16	43.65	49.17	74.00	24.83	Pass	V	Peak
11	7386.0000	36.49	5.85	-36.34	41.63	47.63	74.00	26.37	Pass	V	Peak
12	9848.0000	37.74	6.83	-36.93	43.04	50.68	74.00	23.32	Pass	V	Peak

## Note:

1) Through transmitting mode with all kind of modulation and data rate, find the 11Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20)

2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading - Correct Factor

Correct Factor = Preamplifier Factor - Antenna Factor - Cable Factor

3) Scan from 9kHz to 25GHz, the disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

## PHOTOGRAPHS OF TEST SETUP

Test model No.: GLMM18A02



Radiated spurious emission Test Setup-1( Below 30MHz)



Radiated spurious emission Test Setup-2(Below 1GHz)



**Radiated spurious emission Test Setup-3(Above 1GHz)**



**Conducted Emissions Test Setup**

## PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No.EED32K00246401 for EUT external and internal photos.

\*\*\* End of Report \*\*\*

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.

