

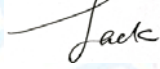

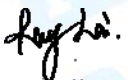
# FCC Radio Test Report

## FCC ID: 2APRB-DB-WNIP2-SU

### Original Grant

**Report No.** : TB-FCC174310  
**Applicant** : Guangzhou Juan Intelligent Tech Joint Stock Co.,Ltd  
**Equipment Under Test (EUT)**  
**EUT Name** : Wireless IP Doorbell  
**Model No.** : DB-WNIP2-SU  
**Series Model No.** : DB-WNIP2, WM-2DBWNPM, DBWNIP2M, DBWNIP2M-B, CL-WNIP2DB-M  
**Brand Name** : NIGHT OWL  
**Sample ID** : TBBJ-20200630-03-1#& TBBJ-20200630-03-2#  
**Receipt Date** : 2020-07-20  
**Test Date** : 2020-07-21 to 2020-08-03  
**Issue Date** : 2020-08-04  
**Standards** : FCC Part 15, Subpart C 15.247  
**Test Method** : ANSI C63.10: 2013  
**Conclusions** : **PASS**

In the configuration tested, the EUT complied with the standards specified above,  
The EUT technically complies with the FCC and IC requirements

**Test/Witness Engineer** :  Jack Deng  
**Engineer Supervisor** :  Ivan Su  
**Engineer Manager** :  Ray Lai



This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

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## Revision History

Report No.	Version	Description	Issued Date
TB-FCC174310	Rev.01	Initial issue of report	2020-08-04

# 1. General Information about EUT

## 1.1 Client Information

<b>Applicant</b>	:	Guangzhou Juan Intelligent Tech Joint Stock Co.,Ltd
<b>Address</b>	:	No.2 Plant, West of Shanxi country, Dashi street, Panyu District, Guangzhou City, China
<b>Manufacturer</b>	:	Guangzhou Juan Intelligent Tech Joint Stock Co.,Ltd
<b>Address</b>	:	No.2 Plant, West of Shanxi country, Dashi street, Panyu District, Guangzhou City, China

## 1.2 General Description of EUT (Equipment Under Test)

<b>EUT Name</b>	:	Wireless IP Doorbell
<b>Models No.</b>	:	DB-WNIP2-SU, DB-WNIP2, WM-2DBWNPM, DBWNIP2M, DBWNIP2M-B, CL-WNIP2DB-M
<b>Model Different</b>	:	All these models are identical in the same PCB, layout and electrical circuit, the only difference is model name for commercial.
<b>Product Description</b>	:	Operation Frequency: 802.11b/g/n(HT20): 2412MHz~2462MHz
		Number of Channel: 802.11b/g/n(HT20):11 channels <b>see note(3)</b>
		RF Output Power: 802.11b:11.61dBm 802.11g: 12.45dBm 802.11n (HT20): 12.63dBm
		Antenna Gain: 2.5 dBi FPC Antenna
		Modulation Type: 802.11b: DSSS(CCK, DQPSK, DBPSK) 802.11g/n:OFDM(BPSK,QPSK,16QAM,64QAM)
		Bit Rate of Transmitter: 802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6 Mbps 802.11n:up to 150Mbps
<b>Power Rating</b>	:	Input:AC 12-24V DC 3.7V 300mAh by Li-ion Battery
<b>Software Version</b>	:	DB-WNVR-SU_20200713
<b>Hardware Version</b>	:	FH8852_V161P_F37_MTY_DR

**Note:**

- (1) This Test Report is FCC Part 15.247 for 802.11b/g/n, the test procedure follows the FCC KDB 558074 D01 v05r02 and KDB 662911 D01 Multiple Transmitter Output v02r01.
- (2) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

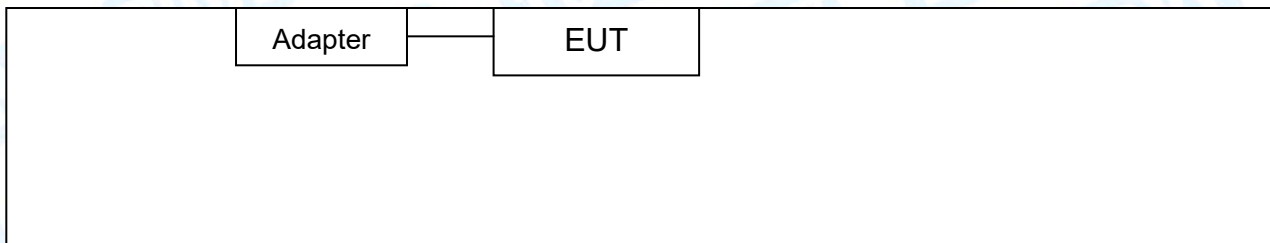
## (3) Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	05	2432	09	2452
02	2417	06	2437	10	2457
03	2422	07	2442	11	2462
04	2427	08	2447		

Note: CH 01~CH 11 for 802.11b/g/n(HT20)

(4) The Antenna information about the equipment is provided by the applicant.

## 1.3 Block Diagram Showing the Configuration of System Tested



## 1.4 Description of Support Units

Name	Model	S/N	Manufacturer	Used “√”
Notebook	161301-CN	15987/00203076	Xiaomi	√

### 1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

For Conducted Test	
Final Test Mode	Description
Mode 1	Charging with TX B Mode
For Radiated and RF Conducted Test	
Final Test Mode	Description
Mode 2	TX Mode B Mode Channel 01/06/11
Mode 3	TX Mode G Mode Channel 01/06/11
Mode 4	TX Mode N(HT20) Mode Channel 01/06/11
<b>Note : (1)The antenna gain provided by the applicant, the adapter and verified for the RF conduction test provided by TOBY test lab.</b>	

**Note:**

- (1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.  
According to ANSI C63.10 standards, the measurements are performed at the highest, Middle, lowest available channels, and the worst case data rate as follows:
  - 802.11b Mode: CCK (1 Mbps)
  - 802.11g Mode: OFDM (6 Mbps)
  - 802.11n (HT20) Mode: MCS 0 (6.5 Mbps)
- (2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.
- (3) The EUT is considered a Mobile device; in normal use it was positioned on X-plane. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.

## 1.6 Description of Test Software Setting

During testing channel & Power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of WLAN.

<b>Test Software: Xshell</b>			
<b>Test Mode:</b> Continuously transmitting			
<b>Mode</b>	<b>Data Rate</b>	<b>Channel</b>	<b>Parameters</b>
<b>802.11b</b>	CCK/ 1Mbps	01	35
	CCK/ 1Mbps	06	27
	CCK/ 1Mbps	11	27
<b>802.11g</b>	OFDM/ 6Mbps	01	50
	OFDM/ 6Mbps	06	44
	OFDM/ 6Mbps	11	44
<b>802.11n(20)</b>	MCS 0	01	50
	MCS 0	06	44
	MCS 0	11	44



## 1.7 Measurement Uncertainty

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

Test Item	Parameters	Expanded Uncertainty ( $U_{Lab}$ )
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	$\pm 3.50$ dB $\pm 3.10$ dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	$\pm 4.60$ dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	$\pm 4.50$ dB
Radiated Emission	Level Accuracy: Above 1000MHz	$\pm 4.20$ dB

## 1.8 Test Facility

The testing was performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at:1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, Guangdong, China.

At the time of testing, the following bodies accredited the Laboratory:

### **CNAS (L5813)**

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

### **A2LA Certificate No.: 4750.01**

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.FCC Accredited Test Site Number: 854351.

### **IC Registration No.: (11950A)**

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A.

## 2. Test Summary

FCC Part 15 Subpart C(15.247)				
Standard Section FCC	Test Item	Test Sample(s)	Judgment	Remark
15.203	Antenna Requirement	TBBJ-20200630-03-2#	PASS	N/A
15.207	Conducted Emission	TBBJ-20200630-03-1#	PASS	N/A
15.205	Restricted Bands	TBBJ-20200630-03-2#	PASS	N/A
15.247(a)(2)	6dB Bandwidth	TBBJ-20200630-03-2#	PASS	N/A
15.247(b)	Peak Output Power	TBBJ-20200630-03-2#	PASS	N/A
15.247(e)	Power Spectral Density	TBBJ-20200630-03-2#	PASS	N/A
15.247(d)	Band Edge	TBBJ-20200630-03-2#	PASS	N/A
15.247(d)&15.209	Transmitter Radiated Spurious Emission	TBBJ-20200630-03-1# TBBJ-20200630-03-2#	PASS	N/A

**Note:** “/” for no requirement for this test item.  
N/A is an abbreviation for Not Applicable.

## 3. Test Software

Test Item	Test Software	Manufacturer	Version No.
Conducted Emission	EZ-EMC	EZ	CDI-03A2
Radiation Emission	EZ-EMC	EZ	FA-03A2RE
RF Conducted Measurement	MTS-8310	MWRFtest	V2.0.0.0

## 4. Test Equipment

Conducted Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul. 06, 2020	Jul. 05, 2021
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul. 06, 2020	Jul. 05, 2021
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul. 06, 2020	Jul. 05, 2021
LISN	Rohde & Schwarz	ENV216	101131	Jul. 06, 2020	Jul. 05, 2021
Radiation Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 06, 2020	Jul. 05, 2021
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul. 06, 2020	Jul. 05, 2021
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jul. 06, 2020	Jul. 05, 2021
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar.01, 2020	Feb. 28, 2021
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.01, 2020	Feb. 28, 2022
Horn Antenna	ETS-LINDGREN	BBHA 9170	BBHA9170582	Mar.01, 2020	Feb. 28, 2022
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 06, 2020	Jul. 05, 2021
Pre-amplifier	Sonoma	310N	185903	Mar.01, 2020	Feb. 28, 2021
Pre-amplifier	HP	8449B	3008A00849	Mar.01, 2020	Feb. 28, 2021
Pre-amplifier	SKET	LNPA_1840G-50	SK201904032	Jul. 26, 2020	Jul. 25, 2021
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar.01, 2020	Feb. 28, 2021
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Antenna Conducted Emission					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 06, 2020	Jul. 05, 2021
Spectrum Analyzer	Rohde & Schwarz	ESCI	100010/007	Jul. 06, 2020	Jul. 05, 2021
MXA Signal Analyzer	Agilent	N9020A	MY49100060	Jul. 06, 2020	Jul. 05, 2021
Vector Signal Generator	Agilent	N5182A	MY50141294	Mar.01, 2020	Feb. 28, 2021
Analog Signal Generator	Agilent	N5181A	MY50141953	Mar.01, 2020	Feb. 28, 2021
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO26	Mar.01, 2020	Feb. 28, 2021
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO29	Jul. 06, 2020	Jul. 05, 2021
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO31	Mar.01, 2020	Feb. 28, 2021
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO33	Mar.01, 2020	Feb. 28, 2021

## 5. Conducted Emission Test

### 5.1 Test Standard and Limit

#### 5.1.1 Test Standard

FCC Part 15.207

#### 5.1.2 Test Limit

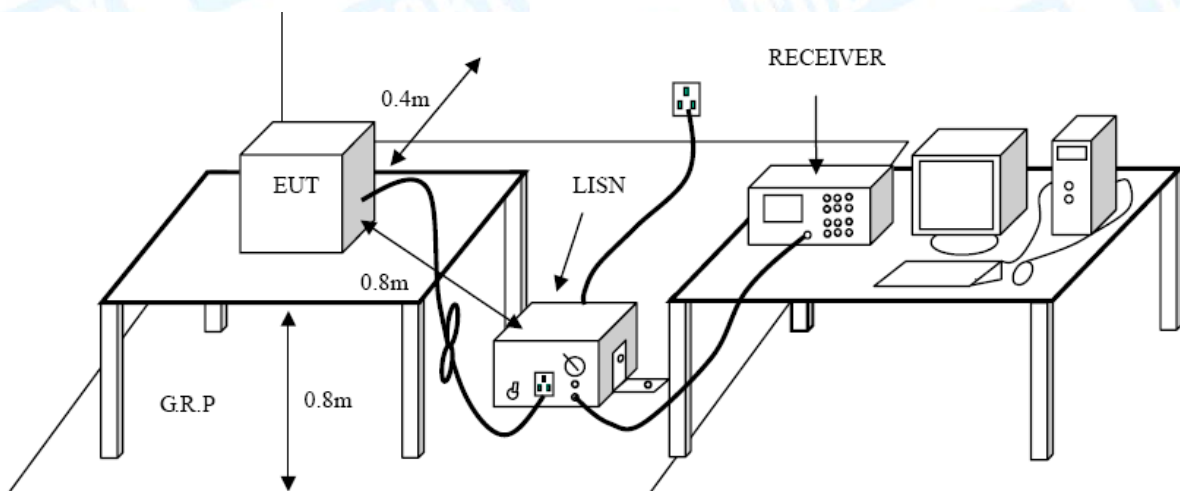
**Conducted Emission Test Limit**

Frequency	Maximum RF Line Voltage (dB $\mu$ V)	
	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Notes:

- (1) \*Decreasing linearly with logarithm of the frequency.
- (2) The lower limit shall apply at the transition frequencies.
- (3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

### 5.2 Test Setup



### 5.3 Test Procedure

- (1) The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- (2) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- (3) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- (4) LISN at least 80 cm from nearest part of EUT chassis.
- (5) The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

### 5.4 Deviation From Test Standard

No deviation

### 5.5 EUT Operating Mode

Please refer to the description of test mode.

### 5.6 Test Data

Please refer to the Attachment A.

## 6. Radiated Emission Test

### 6.1 Test Standard and Limit

#### 6.1.1 Test Standard

FCC Part 15.209

#### 6.1.2 Test Limit

#### Radiated Emission Limits ( 9 kHz~1000 MHz)

Frequency (MHz)	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

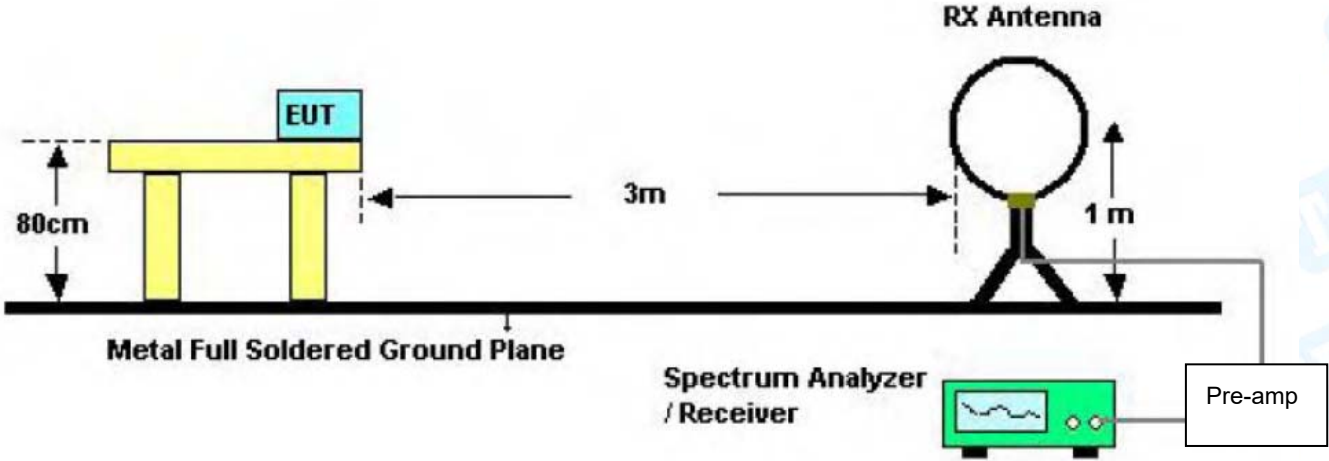
#### Radiated Emission Limit (Above 1000MHz)

Frequency (MHz)	Distance of 3m (dBuV/m)	
	Peak	Average
Above 1000	74	54

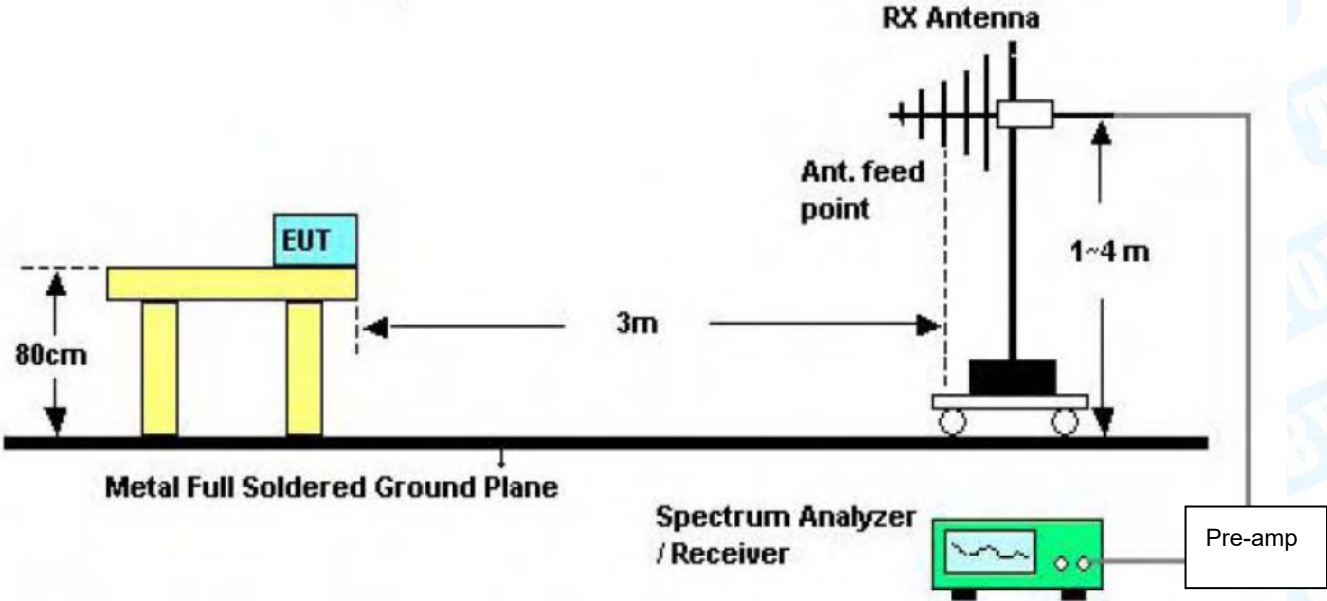
**Note:**

- (1) The tighter limit applies at the band edges.
- (2) Emission Level(dBuV/m)=20log Emission Level(uV/m)

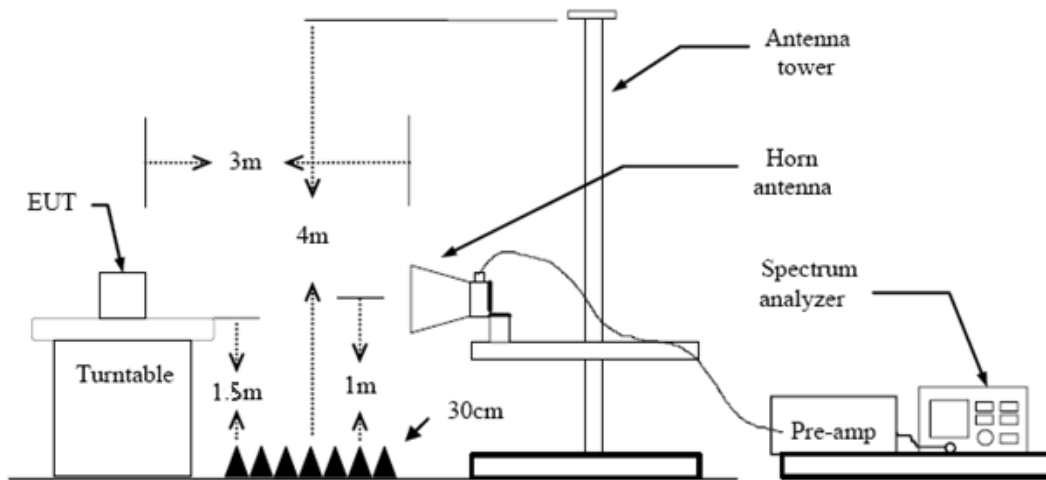
6.2 Test Setup



Below 30MHz Test Setup



Below 1000MHz Test Setup



Above 1GHz Test Setup

### 6.3 Test Procedure

- (1) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency Below 1GHz. The EUT was placed on a rotating 0.8m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.



#### 6.4 Deviation From Test Standard

No deviation

#### 6.5 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

#### 6.6 Test Data

Remark: During testing above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

Please refer to the Attachment B.

## 7. Restricted Bands Requirement

### 7.1 Test Standard and Limit

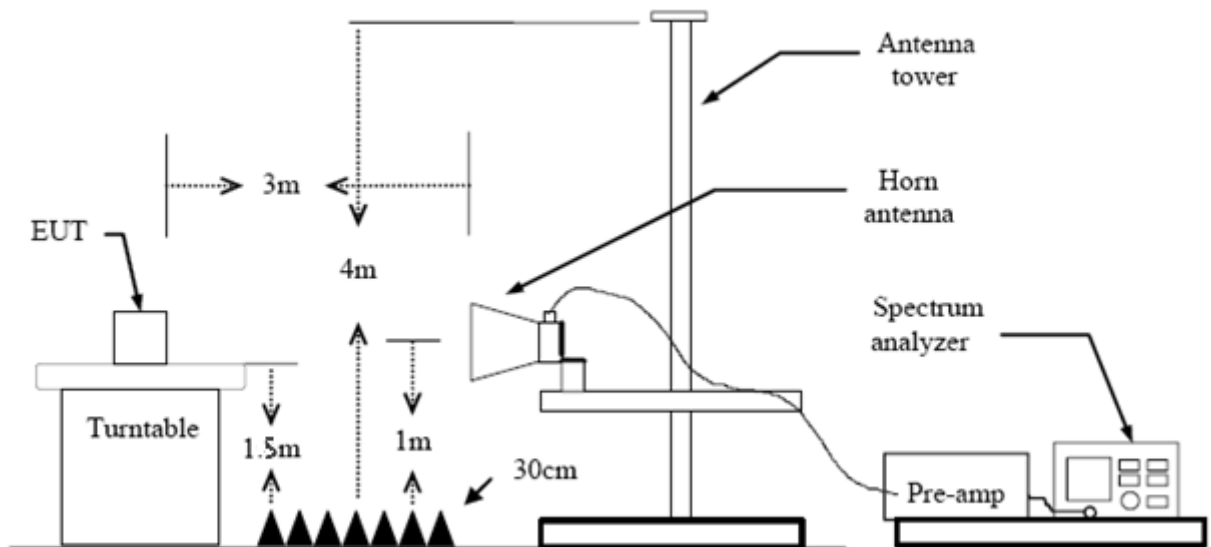
#### 7.1.1 Test Standard

FCC Part 15.247(d)  
FCC Part 15.209  
FCC Part 15.205

#### 7.1.2 Test Limit

Restricted Frequency Band (MHz)	Distance of 3m (dBuV/m)	
	Peak	Average
2310 ~2390	74	54
2483.5 ~2500	74	54

### 7.2 Test Setup



### 7.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency Below 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.

### 7.4 Deviation From Test Standard

No deviation

### 7.5 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

### 7.6 Test Data

Please refer to the Attachment C.

## 8. Bandwidth Test

### 8.1 Test Standard and Limit

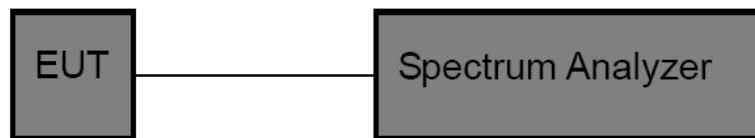
#### 8.1.1 Test Standard

FCC Part 15.247 (a)(2)

#### 8.1.2 Test Limit

FCC Part 15 Subpart C(15.247)		
Test Item	Limit	Frequency Range(MHz)
Bandwidth	$\geq 500$ KHz (6dB bandwidth)	2400~2483.5

### 8.2 Test Setup



### 8.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) The bandwidth is measured at an amplitude level reduced 6dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst –case (i.e the widest) bandwidth.
- (3) Measure the channel separation the spectrum analyzer was set to Resolution Bandwidth:100 kHz, and Video Bandwidth:300 kHz, Detector: Peak, Sweep Time set auto.

### 8.4 Deviation From Test Standard

No deviation

### 8.5 EUT Operating Condition

The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

### 8.6 Test Data

Please refer to the Attachment D.

## 9. Peak Output Power Test

### 9.1 Test Standard and Limit

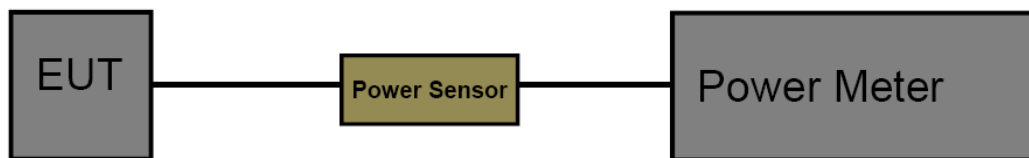
#### 9.1.1 Test Standard

FCC Part 15.247 (b)

#### 9.1.2 Test Limit

FCC Part 15 Subpart C(15.247)		
Test Item	Limit	Frequency Range(MHz)
Peak Output Power	1 Watt or 30 dBm	2400~2483.5

### 9.2 Test Setup



### 9.3 Test Procedure

The measurement is according to section 9.1.2 of KDB 558074 D01 v05r02.

The EUT was connected to RF power meter via a broadband power sensor as show the block above. The power sensor video bandwidth is greater than or equal to the DTS bandwidth of the equipment.

### 9.4 Deviation From Test Standard

No deviation

### 9.5 EUT Operating Condition

The EUT was set to continuously transmitting in the max power during the test.

### 9.6 Test Data

Please refer to the Attachment E.

## 10. Power Spectral Density Test

### 10.1 Test Standard and Limit

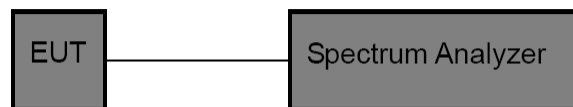
#### 10.1.1 Test Standard

FCC Part 15.247 (e)

#### 10.1.2 Test Limit

FCC Part 15 Subpart C(15.247)		
Test Item	Limit	Frequency Range(MHz)
Power Spectral Density	8dBm(in any 3 kHz)	2400~2483.5

### 10.2 Test Setup



### 10.3 Test Procedure

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 D01 v05r02.

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Set analyser centre frequency to DTS channel centre frequency.
- (3) Set the span to 1.5 times the DTS bandwidth.
- (4) Set the RBW to: 3 kHz
- (5) Set the VBW to: 10 kHz
- (6) Detector: peak
- (7) Sweep time: auto
- (8) Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

### 10.4 Deviation From Test Standard

No deviation

### 10.5 EUT Operating Condition

The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

### 10.6 Test Data

Please refer to the Attachment F.

## 11. Antenna Requirement

### 11.1 Standard Requirement

#### 11.1.1 Standard

FCC Part 15.203

#### 11.1.2 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 shall be considered sufficient to comply with the provisions of this Section. 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.

### 11.2 Deviation From Test Standard

No deviation

### 11.3 Antenna Connected Construction

The gains of the antenna used for transmitting is 2.5 dBi, and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

#### Result

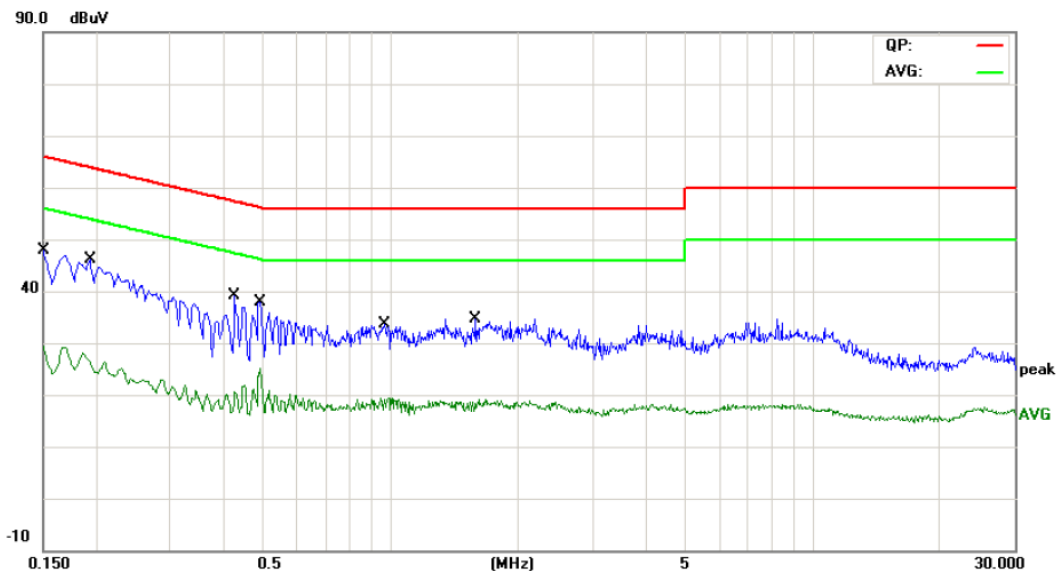
The EUT antenna is a FPC Antenna. It complies with the standard requirement.

Antenna Type
<input type="checkbox"/> Permanent attached antenna
<input checked="" type="checkbox"/> Unique connector antenna
<input type="checkbox"/> Professional installation antenna

## Attachment A-- Conducted Emission Test Data

Remark: All channels have been tested and Shows only the worst channels.

<b>Temperature:</b>	23.5°C	<b>Relative Humidity:</b>	45%
<b>Test Voltage:</b>	AC 120V/60Hz		
<b>Terminal:</b>	Line		
<b>Test Mode:</b>	Mode 1		
<b>Remark:</b>	Only worst case is reported		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB	dBuV	dBuV	dB	
1		0.1500	35.06	9.70	44.76	65.99	-21.23	QP
2		0.1500	17.88	9.70	27.58	55.99	-28.41	AVG
3		0.1940	31.18	9.70	40.88	63.86	-22.98	QP
4		0.1940	13.96	9.70	23.66	53.86	-30.20	AVG
5		0.4260	23.11	9.70	32.81	57.33	-24.52	QP
6		0.4260	9.46	9.70	19.16	47.33	-28.17	AVG
7	*	0.4900	25.33	9.70	35.03	56.17	-21.14	QP
8		0.4900	13.17	9.70	22.87	46.17	-23.30	AVG
9		0.9660	19.14	9.79	28.93	56.00	-27.07	QP
10		0.9660	7.90	9.79	17.69	46.00	-28.31	AVG
11		1.5900	17.52	9.74	27.26	56.00	-28.74	QP
12		1.5900	7.18	9.74	16.92	46.00	-29.08	AVG

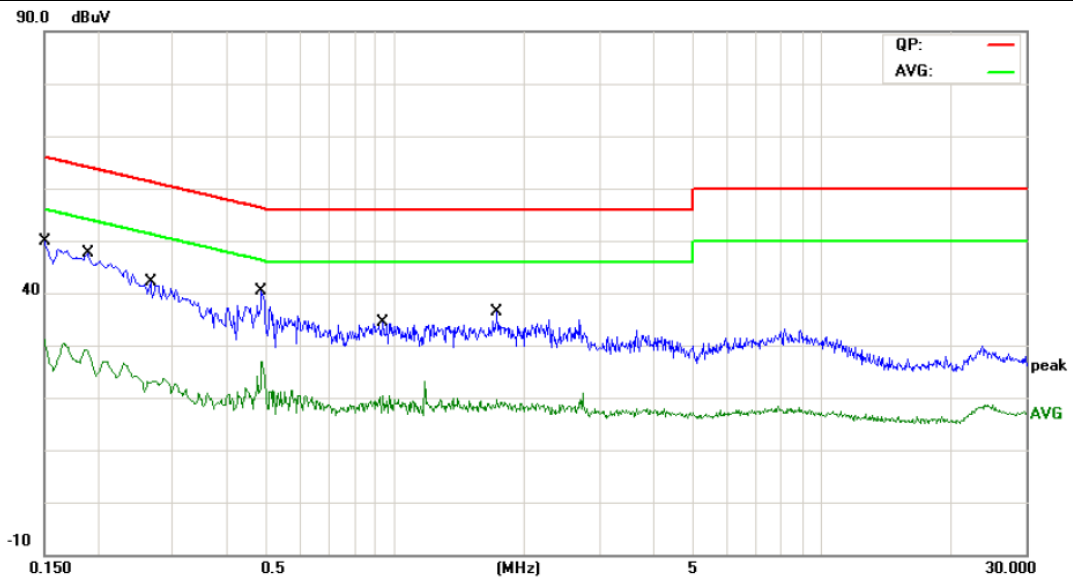
Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)

2. Margin (dB) = QuasiPeak/Average (dBuV) - Limit (dBuV)



<b>Temperature:</b>	23.5°C	<b>Relative Humidity:</b>	45%
<b>Test Voltage:</b>	AC 120V/60Hz		
<b>Terminal:</b>	Neutral		
<b>Test Mode:</b>	Mode 1		
<b>Remark:</b>	Only worst case is reported		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1	*	0.1500	35.78	9.80	45.58	65.99	-20.41	QP
2		0.1500	18.60	9.80	28.40	55.99	-27.59	AVG
3		0.1900	32.67	9.80	42.47	64.03	-21.56	QP
4		0.1900	16.83	9.80	26.63	54.03	-27.40	AVG
5		0.2660	26.60	9.80	36.40	61.24	-24.84	QP
6		0.2660	11.49	9.80	21.29	51.24	-29.95	AVG
7		0.4860	24.98	9.80	34.78	56.24	-21.46	QP
8		0.4860	10.54	9.80	20.34	46.24	-25.90	AVG
9		0.9340	19.17	9.80	28.97	56.00	-27.03	QP
10		0.9340	7.23	9.80	17.03	46.00	-28.97	AVG
11		1.7340	18.97	9.80	28.77	56.00	-27.23	QP
12		1.7340	8.10	9.80	17.90	46.00	-28.10	AVG

**Remark:**

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = QuasiPeak/Average (dBuV) - Limit (dBuV)

## Attachment B-- Radiated Emission Test Data

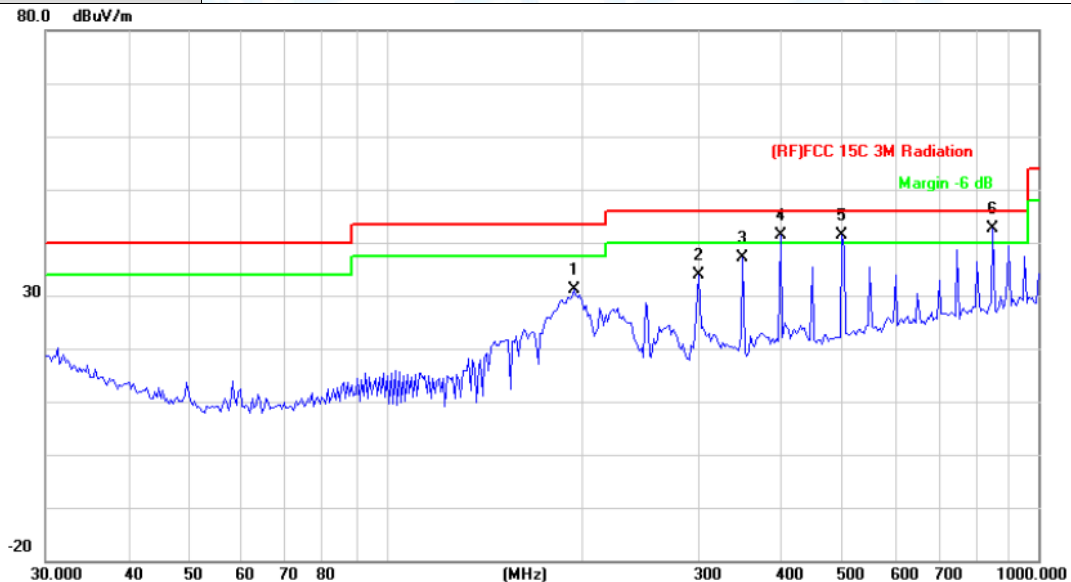
### 9KHz~30MHz

From 9KHz to 30MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

### 30MHz~1GHz

<b>Temperature:</b>	25°C	<b>Relative Humidity:</b>	55%
<b>Test Voltage:</b>	AC 120V/60HZ		
<b>Ant. Pol.</b>	Horizontal		
<b>Test Mode:</b>	TX B Mode 2412MHz		
<b>Remark:</b>	Only worst case is reported.		



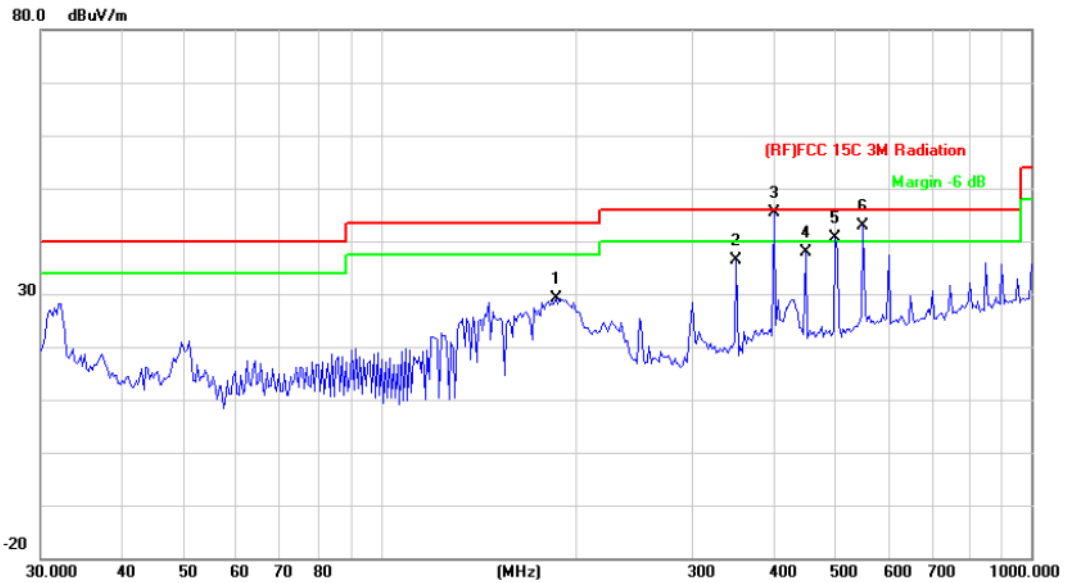
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measurement dBuV/m	Limit dBuV/m	Over dB	Detector
1		193.7728	50.92	-19.85	31.07	43.50	-12.43	QP
2		301.4224	50.06	-16.25	33.81	46.00	-12.19	QP
3		351.7079	51.61	-14.55	37.06	46.00	-8.94	QP
4	!	401.8385	53.75	-12.28	41.47	46.00	-4.53	QP
5	!	499.4247	51.96	-10.48	41.48	46.00	-4.52	QP
6	*	851.0353	48.51	-5.87	42.64	46.00	-3.36	QP

\*:Maximum data    x:Over limit    !:over margin

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = QuasiPeak (dBμV/m)-Limit QPK(dBμV/m)

Temperature:	25°C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHZ		
Remark:	Only worst case is reported.		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		185.7882	49.16	-19.94	29.22	43.50	-14.28	QP
2		351.7079	50.95	-14.55	36.40	46.00	-9.60	QP
3	*	401.8385	57.61	-12.28	43.33	46.00	-2.67	QP
4		449.5558	49.72	-11.94	37.78	46.00	-8.22	QP
5	!	499.4247	51.17	-10.48	40.69	46.00	-5.31	QP
6	!	550.9480	51.87	-8.93	42.94	46.00	-3.06	QP

\*:Maximum data    x:Over limit    !:over margin

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = QuasiPeak (dBμV/m)-Limit QPK(dBμV/m)

**Above 1GHz**

<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60 Hz		
<b>Ant. Pol.</b>	Horizontal		
<b>Test Mode:</b>	TX B Mode 2412MHz		
<b>Remark:</b>	No report for the emission which more than 10dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	4823.994	36.65	13.16	49.81	54.00	-4.19	AVG
2		4824.276	48.95	13.16	62.11	74.00	-11.89	peak

**Remark:**  
 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)  
 2. Peak/AVG (dBuV/m)= Corr. (dB/m)+ Read Level (dBuV)  
 3. Margin (dB) = Peak/AVG (dBuV/m)-Limit PK/AVG(dBuV/m)

<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60 Hz		
<b>Ant. Pol.</b>	Vertical		
<b>Test Mode:</b>	TX B Mode 2412MHz		
<b>Remark:</b>	No report for the emission which more than 10dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	4824.030	37.13	13.16	50.29	54.00	-3.71	AVG
2		4824.216	49.44	13.16	62.60	74.00	-11.40	peak

**Remark:**  
 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)  
 2. Peak/AVG (dBuV/m)= Corr. (dB/m)+ Read Level (dBuV)  
 3. Margin (dB) = Peak/AVG (dBuV/m)-Limit PK/AVG(dBuV/m)

<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60 Hz		
<b>Ant. Pol.</b>	Horizontal		
<b>Test Mode:</b>	TX B Mode 2437MHz		
<b>Remark:</b>	No report for the emission which more than 10dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	4874.358	36.93	13.53	50.46	54.00	-3.54	AVG
2		4874.695	48.36	13.53	61.89	74.00	-12.11	peak

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)

<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60 Hz		
<b>Ant. Pol.</b>	Vertical		
<b>Test Mode:</b>	TX B Mode 2437MHz		
<b>Remark:</b>	No report for the emission which more than 10dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1		4874.235	48.60	13.53	62.13	74.00	-11.87	peak
2	*	4875.216	36.35	13.54	49.89	54.00	-4.11	AVG

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)

<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60 Hz		
<b>Ant. Pol.</b>	Horizontal		
<b>Test Mode:</b>	TX B Mode 2462MHz		
<b>Remark:</b>	No report for the emission which more than 10dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	4924.012	37.04	13.89	50.93	54.00	-3.07	AVG
2		4924.096	49.02	13.89	62.91	74.00	-11.09	peak

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)

<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60 Hz		
<b>Ant. Pol.</b>	Vertical		
<b>Test Mode:</b>	TX B Mode 2462MHz		
<b>Remark:</b>	No report for the emission which more than 10dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1		4922.566	48.68	13.89	62.57	74.00	-11.43	peak
2	*	4923.910	34.63	13.89	48.52	54.00	-5.48	AVG

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)

<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60 Hz		
<b>Ant. Pol.</b>	Horizontal		
<b>Test Mode:</b>	TX G Mode 2412MHz		
<b>Remark:</b>	No report for the emission which more than 10dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1		4824.006	48.52	13.16	61.68	74.00	-12.32	peak
2	*	4824.648	33.97	13.16	47.13	54.00	-6.87	AVG

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)

<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60 Hz		
<b>Ant. Pol.</b>	Vertical		
<b>Test Mode:</b>	TX G Mode 2412MHz		
<b>Remark:</b>	No report for the emission which more than 10dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	4823.118	34.11	13.16	47.27	54.00	-6.73	AVG
2		4824.276	48.77	13.16	61.93	74.00	-12.07	peak

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)

<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60 Hz		
<b>Ant. Pol.</b>	Horizontal		
<b>Test Mode:</b>	TX G Mode 2437MHz		
<b>Remark:</b>	No report for the emission which more than 10dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1		4784.352	49.55	12.87	62.42	74.00	-11.58	peak
2	*	4874.892	35.05	13.53	48.58	54.00	-5.42	AVG

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)

<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60 Hz		
<b>Ant. Pol.</b>	Vertical		
<b>Test Mode:</b>	TX G Mode 2437MHz		
<b>Remark:</b>	No report for the emission which more than 10dB below the prescribed limit. Only show the worst case ANT. A.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	4874.356	34.83	13.53	48.36	54.00	-5.64	AVG
2		4875.312	50.03	13.54	63.57	74.00	-10.43	peak

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)



<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60 Hz		
<b>Ant. Pol.</b>	Horizontal		
<b>Test Mode:</b>	TX G Mode 2462MHz		
<b>Remark:</b>	No report for the emission which more than 10dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	4923.892	34.74	13.89	48.63	54.00	-5.37	AVG
2		4925.128	48.70	13.91	62.61	74.00	-11.39	peak

**Remark:**  
1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)  
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)  
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)

<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60 Hz		
<b>Ant. Pol.</b>	Vertical		
<b>Test Mode:</b>	TX G Mode 2462MHz		
<b>Remark:</b>	No report for the emission which more than 10dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1		4922.554	49.17	13.89	63.06	74.00	-10.94	peak
2	*	4924.150	34.36	13.89	48.25	54.00	-5.75	AVG

**Remark:**  
1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)  
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)  
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)

<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60 Hz		
<b>Ant. Pol.</b>	Horizontal		
<b>Test Mode:</b>	TX n(HT20) Mode 2412MHz		
<b>Remark:</b>	No report for the emission which more than 10dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4823.532	34.71	13.16	47.87	54.00	-6.13	AVG
2		4824.834	48.68	13.16	61.84	74.00	-12.16	peak

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)

<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60 Hz		
<b>Ant. Pol.</b>	Vertical		
<b>Test Mode:</b>	TX n(HT20) Mode 2412MHz		
<b>Remark:</b>	No report for the emission which more than 10dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4822.632	48.57	13.16	61.73	74.00	-12.27	peak
2	*	4822.680	34.40	13.16	47.56	54.00	-6.44	AVG

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)

<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60 Hz		
<b>Ant. Pol.</b>	Horizontal		
<b>Test Mode:</b>	TX n(HT20) Mode 2437MHz		
<b>Remark:</b>	No report for the emission which more than 10dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	4874.574	35.36	13.53	48.89	54.00	-5.11	AVG
2		4874.652	48.22	13.53	61.75	74.00	-12.25	peak

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)

<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60 Hz		
<b>Ant. Pol.</b>	Vertical		
<b>Test Mode:</b>	TX n(HT20) Mode 2437MHz		
<b>Remark:</b>	No report for the emission which more than 10dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	4874.246	34.84	13.53	48.37	54.00	-5.63	AVG
2		4874.652	48.45	13.53	61.98	74.00	-12.02	peak

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)

<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60 Hz		
<b>Ant. Pol.</b>	Horizontal		
<b>Test Mode:</b>	TX n(HT20) Mode 2462MHz		
<b>Remark:</b>	No report for the emission which more than 10dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1		4924.312	47.71	13.89	61.60	74.00	-12.40	peak
2	*	4924.924	34.70	13.90	48.60	54.00	-5.40	AVG

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBµV/m)= Corr. (dB/m)+ Read Level (dBµV)
3. Margin (dB) = Peak/AVG (dBµV/m)-Limit PK/AVG(dBµV/m)

<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60 Hz		
<b>Ant. Pol.</b>	Vertical		
<b>Test Mode:</b>	TX n(HT20) Mode 2462MHz		
<b>Remark:</b>	No report for the emission which more than 10dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	4922.758	34.37	13.89	48.26	54.00	-5.74	AVG
2		4924.300	48.14	13.89	62.03	74.00	-11.97	peak

**Remark:**

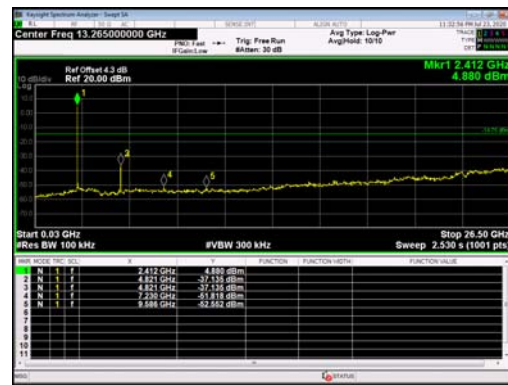
1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBµV/m)= Corr. (dB/m)+ Read Level (dBµV)
3. Margin (dB) = Peak/AVG (dBµV/m)-Limit PK/AVG(dBµV/m)

**Conducted RF Spurious Emission Test Data**

Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Test Mode:	TX B Mode		
Remark:	This report only shall the worst case mode for TX IEEE 802.11b.		

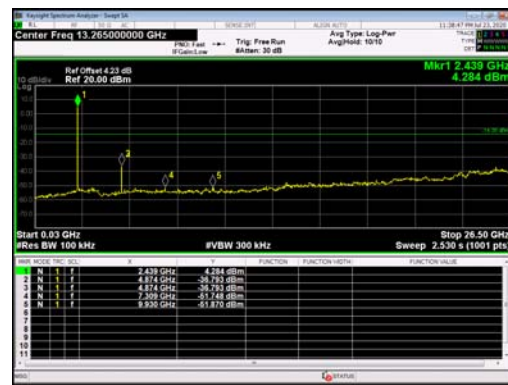
**2412 MHz**

**0.03GHz-26.5GHz**



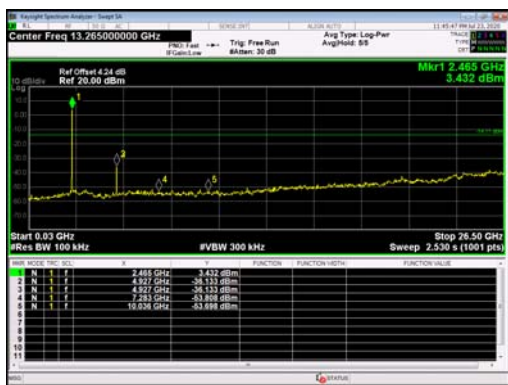
**2437 MHz**

**0.03GHz-26.5GHz**



**2462 MHz**

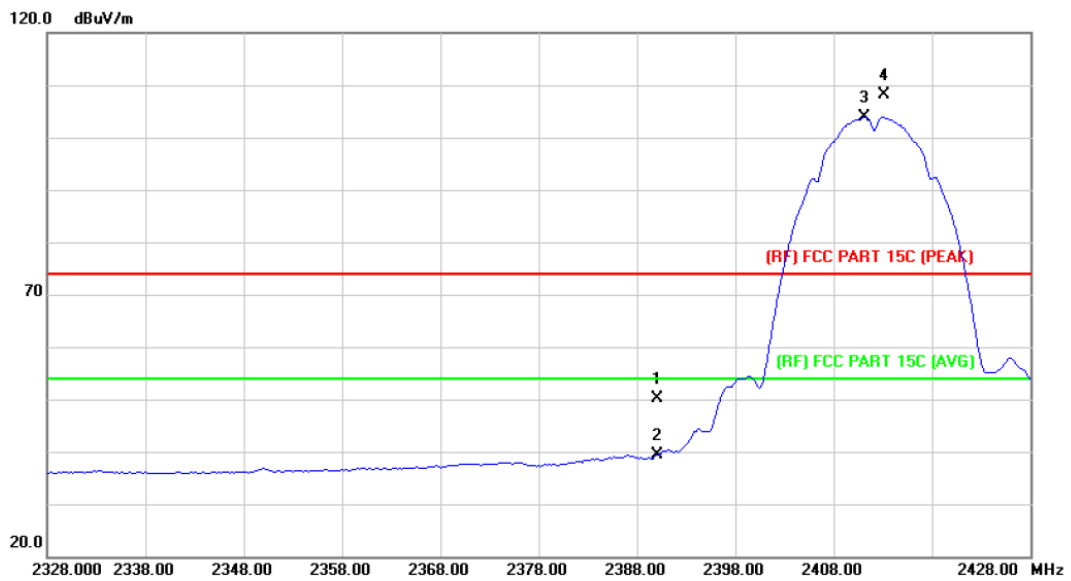
**0.03GHz-26.5GHz**



# Attachment C-- Restricted Bands Requirement and Band-edge Test Data

## (1) Radiation Test

Temperature:	22.8°C	Relative Humidity:	37%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz		
Remark:	Only show the worst case.		

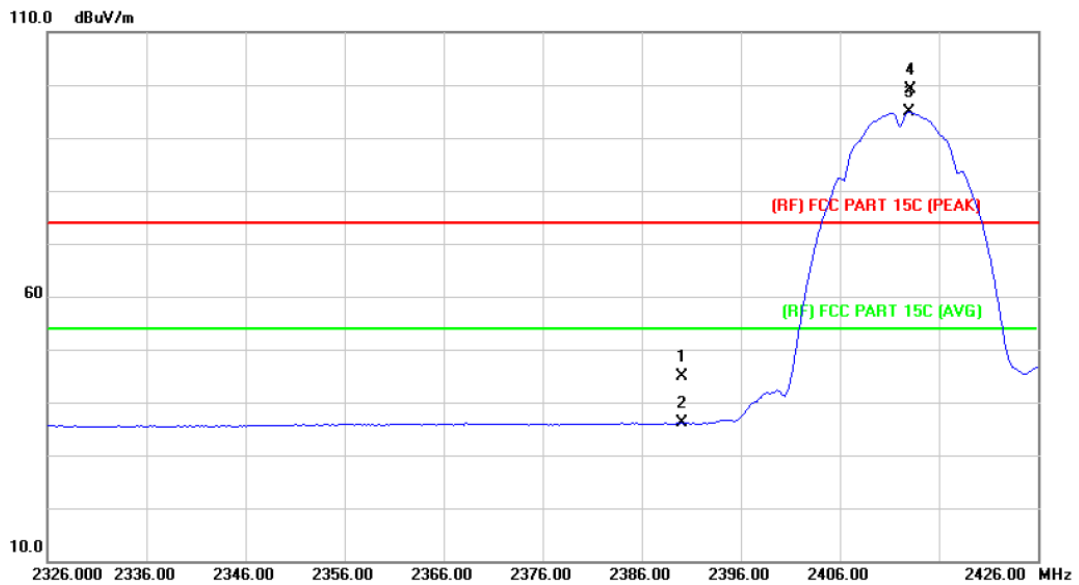


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		2390.000	48.87	1.28	50.15	74.00	-23.85	peak
2		2390.000	38.09	1.28	39.37	54.00	-14.63	AVG
3	*	2411.200	102.55	1.39	103.94	Fundamental Frequency		AVG
4	X	2413.200	106.68	1.41	108.09	Fundamental Frequency		peak

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBuV/m) = Corr. (dB/m) + Read Level (dBuV)
3. Margin (dB) = Peak/AVG (dBuV/m) - Limit PK/AVG (dBuV/m)

Temperature:	22.8°C	Relative Humidity:	37%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHZ		
Remark:	Only show the worst case.		

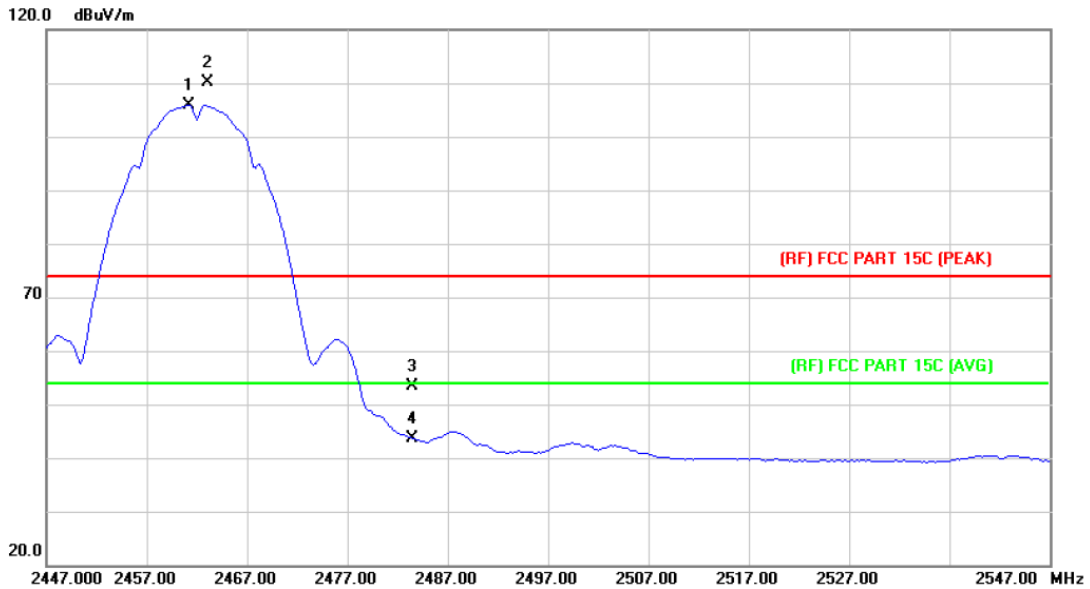


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		2390.000	43.55	1.28	44.83	74.00	-29.17	peak
2		2390.000	34.73	1.28	36.01	54.00	-17.99	AVG
3	*	2413.000	93.38	1.40	94.78	Fundamental Frequency		AVG
4	X	2413.200	97.76	1.41	99.17	Fundamental Frequency		peak

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBuV/m) = Corr. (dB/m) + Read Level (dBuV)
3. Margin (dB) = Peak/AVG (dBuV/m) - Limit PK/AVG (dBuV/m)

<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60HZ		
<b>Ant. Pol.</b>	Horizontal		
<b>Test Mode:</b>	TX B Mode 2462MHz		
<b>Remark:</b>	Only show the worst case.		



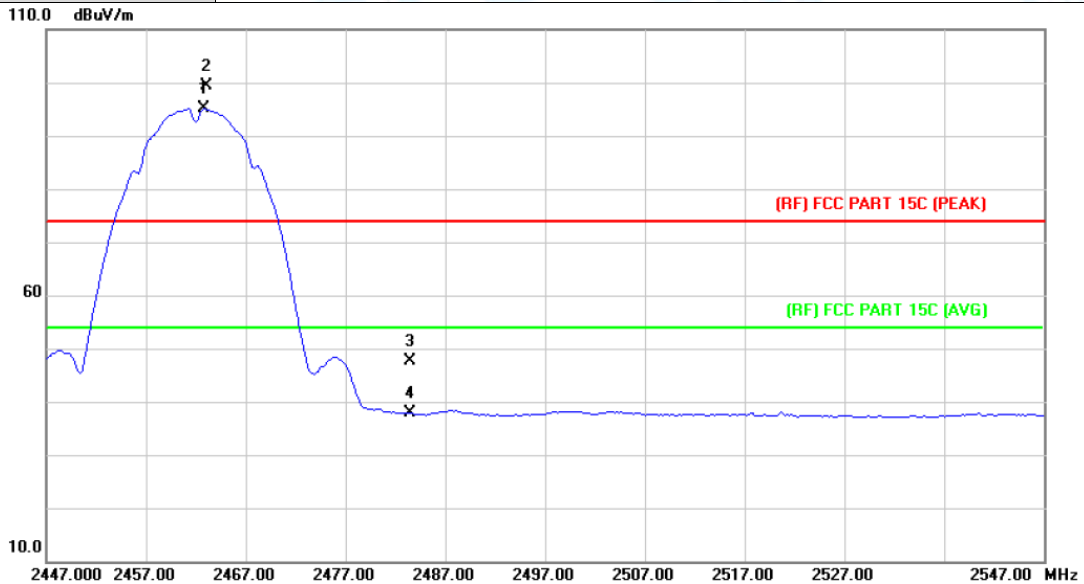
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	2461.200	104.19	1.73	105.92	Fundamental Frequency		AVG
2	X	2463.000	108.31	1.74	110.05	Fundamental Frequency		peak
3		2483.500	51.43	1.88	53.31	74.00	-20.69	peak
4		2483.500	41.82	1.88	43.70	54.00	-10.30	AVG

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBuV/m) = Corr. (dB/m) + Read Level (dBuV)
3. Margin (dB) = Peak/AVG (dBuV/m) - Limit PK/AVG (dBuV/m)



<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60HZ		
<b>Ant. Pol.</b>	Vertical		
<b>Test Mode:</b>	TX B Mode 2462MHz		
<b>Remark:</b>	Only show the worst case.		

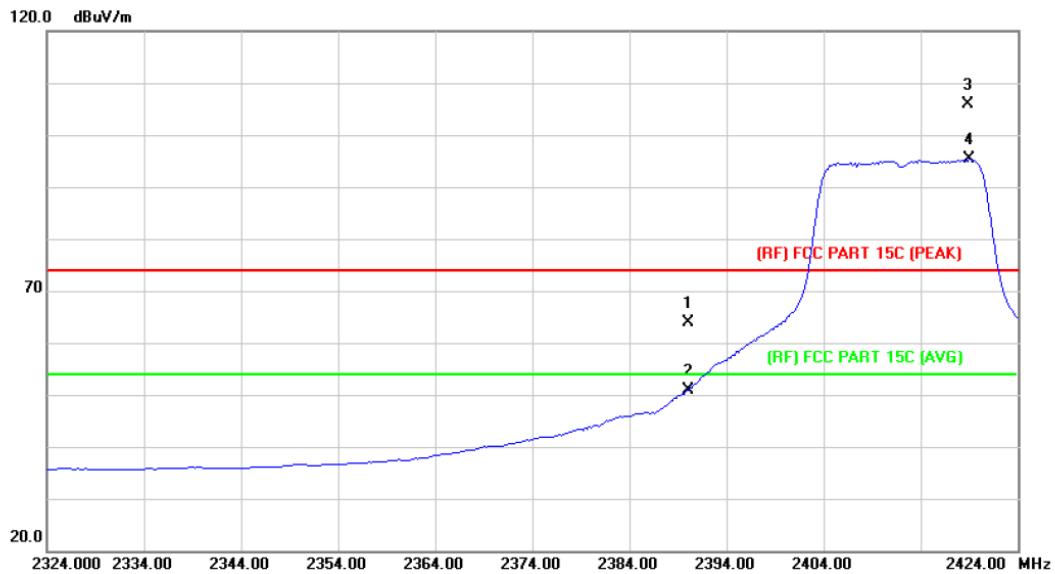


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	2462.800	93.35	1.74	95.09	Fundamental Frequency		AVG
2	X	2463.000	97.75	1.74	99.49	Fundamental Frequency		peak
3		2483.500	45.68	1.88	47.56	74.00	-26.44	peak
4		2483.500	35.92	1.88	37.80	54.00	-16.20	AVG

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)

<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60HZ		
<b>Ant. Pol.</b>	Horizontal		
<b>Test Mode:</b>	TX G Mode 2412MHz		
<b>Remark:</b>	Only show the worst case.		

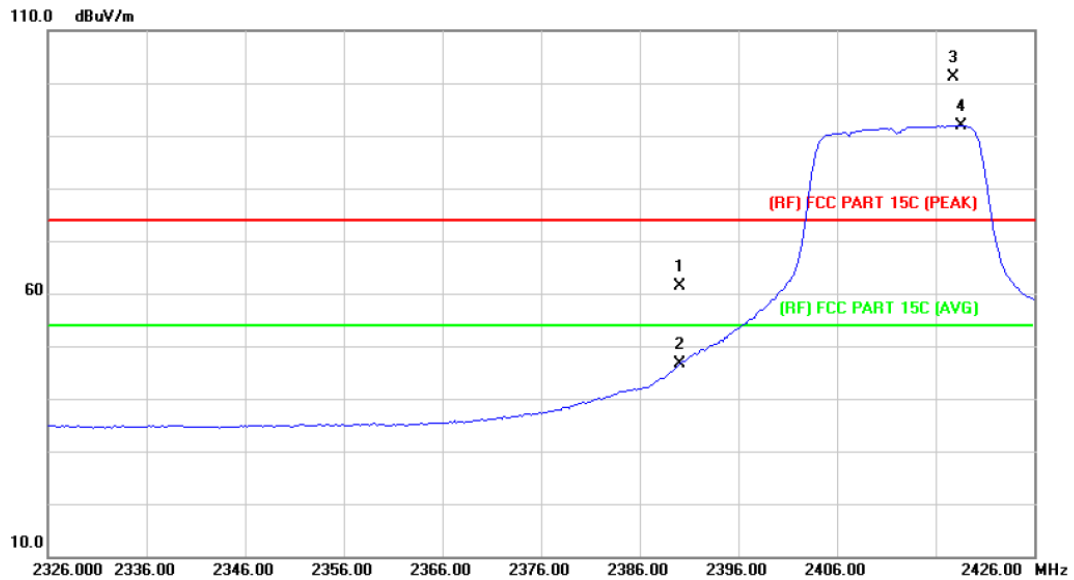


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		2390.000	62.66	1.28	63.94	74.00	-10.06	peak
2		2390.000	49.51	1.28	50.79	54.00	-3.21	AVG
3	X	2418.800	104.46	1.44	105.90	Fundamental Frequency		peak
4	*	2419.000	93.92	1.44	95.36	Fundamental Frequency		AVG

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBuV/m) = Corr. (dB/m) + Read Level (dBuV)
3. Margin (dB) = Peak/AVG (dBuV/m) - Limit PK/AVG (dBuV/m)

Temperature:	22.8°C	Relative Humidity:	37%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2412MHz		
Remark:	Only show the worst case.		

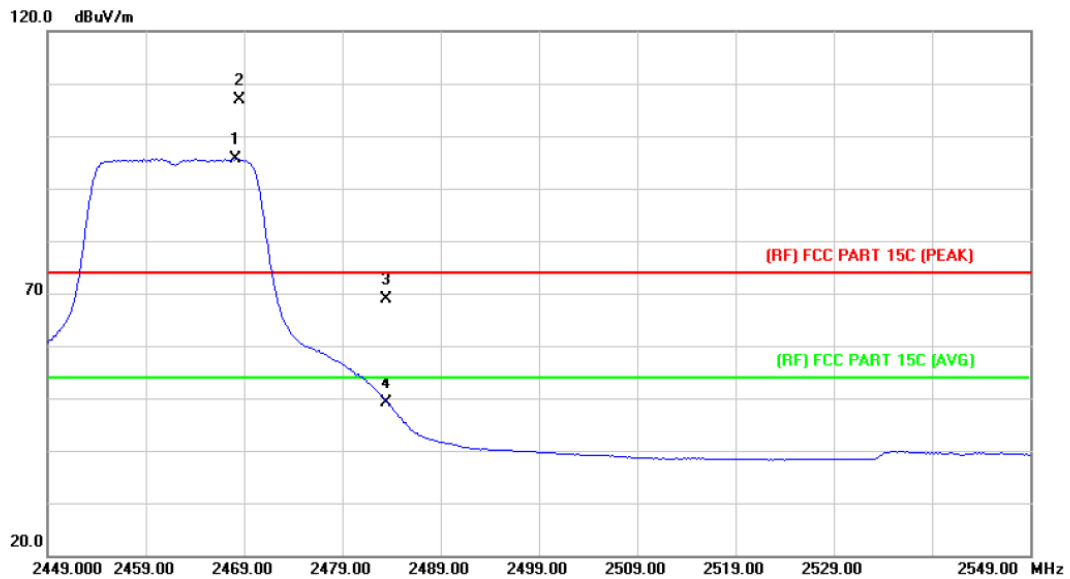


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		2390.000	60.04	1.28	61.32	74.00	-12.68	peak
2		2390.000	45.36	1.28	46.64	54.00	-7.36	AVG
3	X	2417.800	99.77	1.44	101.21	Fundamental Frequency		peak
4	*	2418.600	90.50	1.44	91.94	Fundamental Frequency		AVG

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m) = Corr. (dB/m) + Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m) - Limit PK/AVG (dBμV/m)

<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60HZ		
<b>Ant. Pol.</b>	Horizontal		
<b>Test Mode:</b>	TX G Mode 2462MHz		
<b>Remark:</b>	Only show the worst case.		

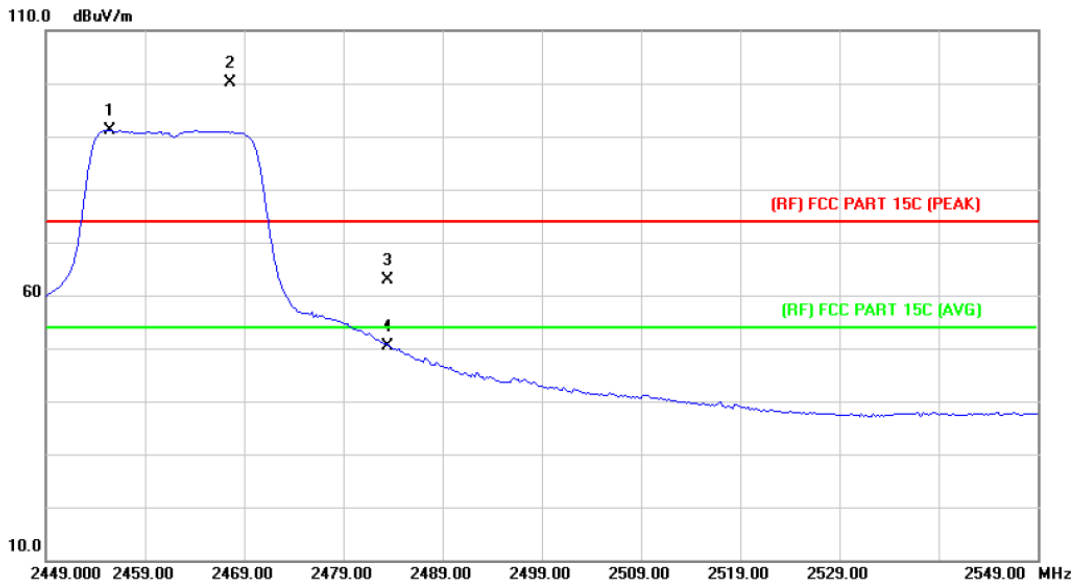


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	2468.200	93.86	1.78	95.64	Fundamental Frequency		AVG
2	X	2468.600	104.99	1.78	106.77	Fundamental Frequency		peak
3		2483.500	66.98	1.88	68.86	74.00	-5.14	peak
4		2483.500	47.25	1.88	49.13	54.00	-4.87	AVG

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBuV/m)= Corr. (dB/m)+ Read Level (dBuV)
3. Margin (dB) = Peak/AVG (dBuV/m)-Limit PK/AVG(dBuV/m)

Temperature:	22.8°C	Relative Humidity:	37%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2462MHz ANT. A+ANT. B		
Remark:	Only show the worst case.		

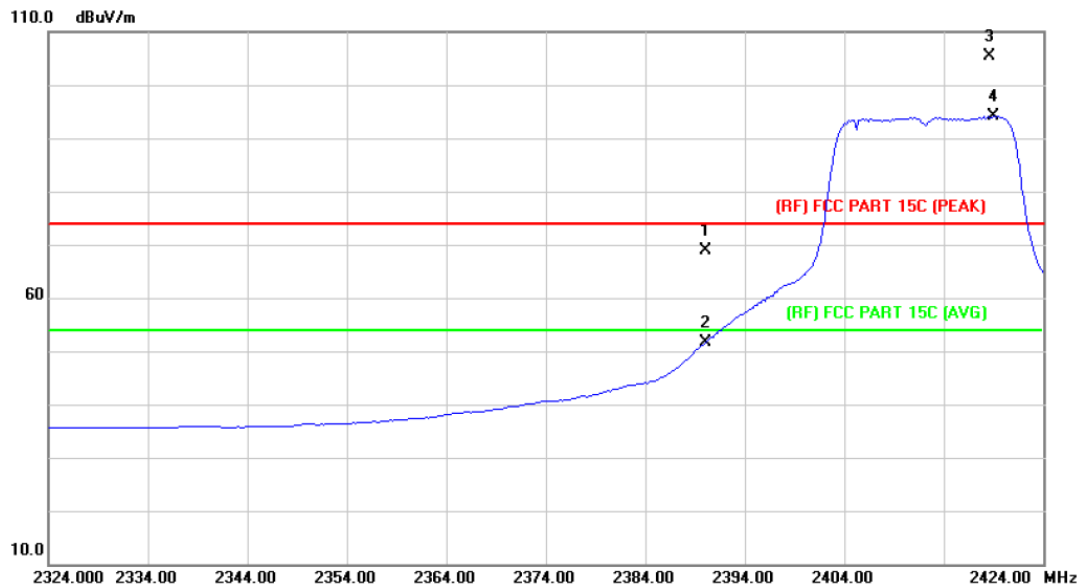


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	2455.400	89.56	1.69	91.25	Fundamental Frequency		AVG
2	X	2467.600	98.39	1.78	100.17	Fundamental Frequency		peak
3		2483.500	61.06	1.88	62.94	74.00	-11.06	peak
4		2483.500	48.49	1.88	50.37	54.00	-3.63	AVG

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m) = Corr. (dB/m) + Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m) - Limit PK/AVG (dBμV/m)

Temperature:	22.8°C	Relative Humidity:	37%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	Only show the worst case.		

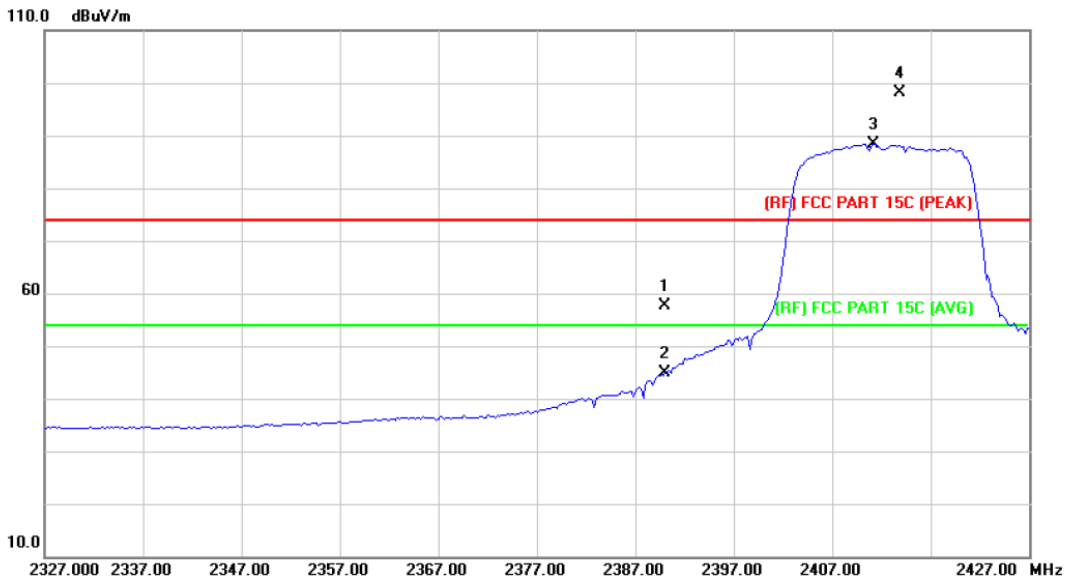


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		2390.000	67.60	1.28	68.88	74.00	-5.12	peak
2		2390.000	50.31	1.28	51.59	54.00	-2.41	AVG
3	X	2418.600	103.84	1.44	105.28	Fundamental Frequency		peak
4	*	2419.000	92.60	1.44	94.04	Fundamental Frequency		AVG

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBuV/m)= Corr. (dB/m)+ Read Level (dBuV)
3. Margin (dB) = Peak/AVG (dBuV/m)-Limit PK/AVG(dBuV/m)

<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60HZ		
<b>Ant. Pol.</b>	Vertical		
<b>Test Mode:</b>	TX N(HT20) Mode 2412MHz		
<b>Remark:</b>	Only show the worst case.		

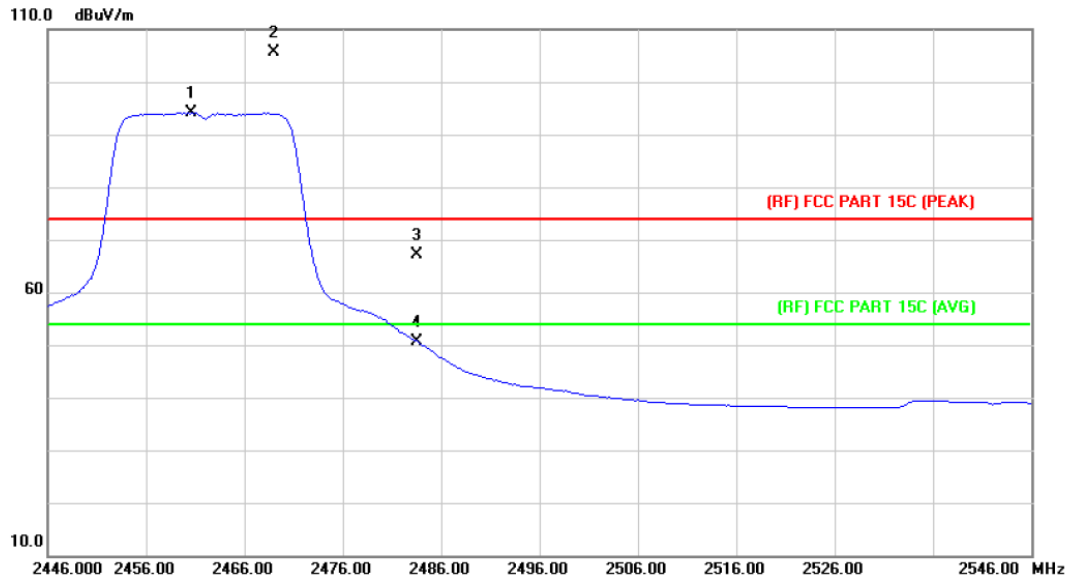


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		2390.000	56.44	1.28	57.72	74.00	-16.28	peak
2		2390.000	43.63	1.28	44.91	54.00	-9.09	AVG
3	*	2411.200	86.98	1.39	88.37	Fundamental Frequency		AVG
4	X	2413.800	96.64	1.41	98.05	Fundamental Frequency		peak

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m) = Corr. (dB/m) + Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m) - Limit PK/AVG (dBμV/m)

<b>Temperature:</b>	22.8°C	<b>Relative Humidity:</b>	37%
<b>Test Voltage:</b>	AC 120V/60HZ		
<b>Ant. Pol.</b>	Horizontal		
<b>Test Mode:</b>	TX N(HT20) Mode 2462MHz		
<b>Remark:</b>	Only show the worst case.		



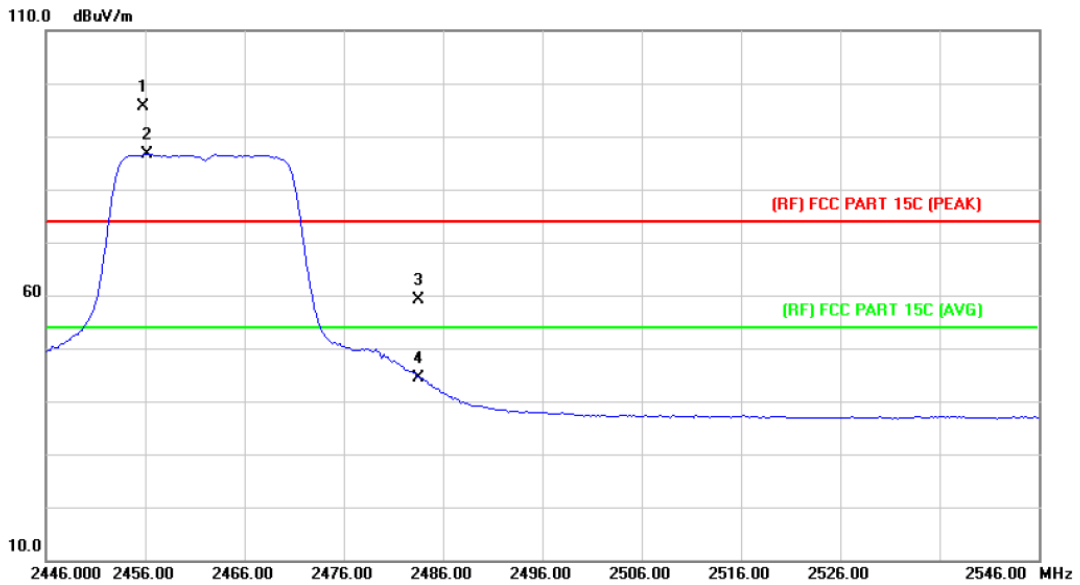
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	2460.600	92.38	1.72	94.10	Fundamental Frequency		AVG
2	X	2469.000	103.96	1.78	105.74	Fundamental Frequency		peak
3		2483.500	65.27	1.88	67.15	74.00	-6.85	peak
4		2483.500	48.67	1.88	50.55	54.00	-3.45	AVG

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)



Temperature:	22.8°C	Relative Humidity:	37%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	Only show the worst case.		



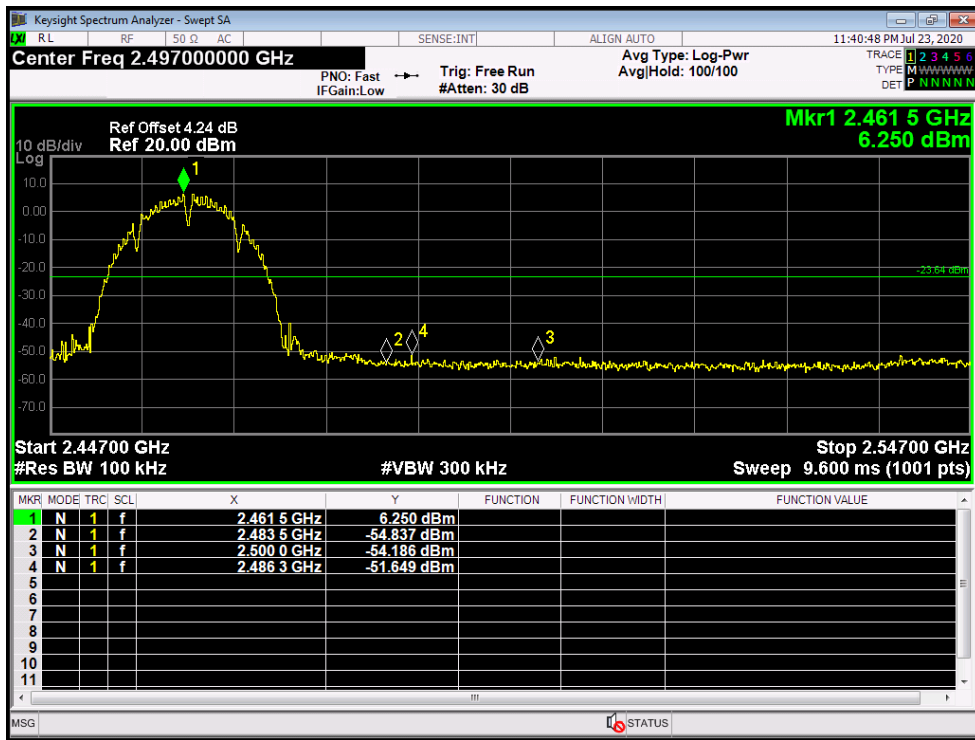
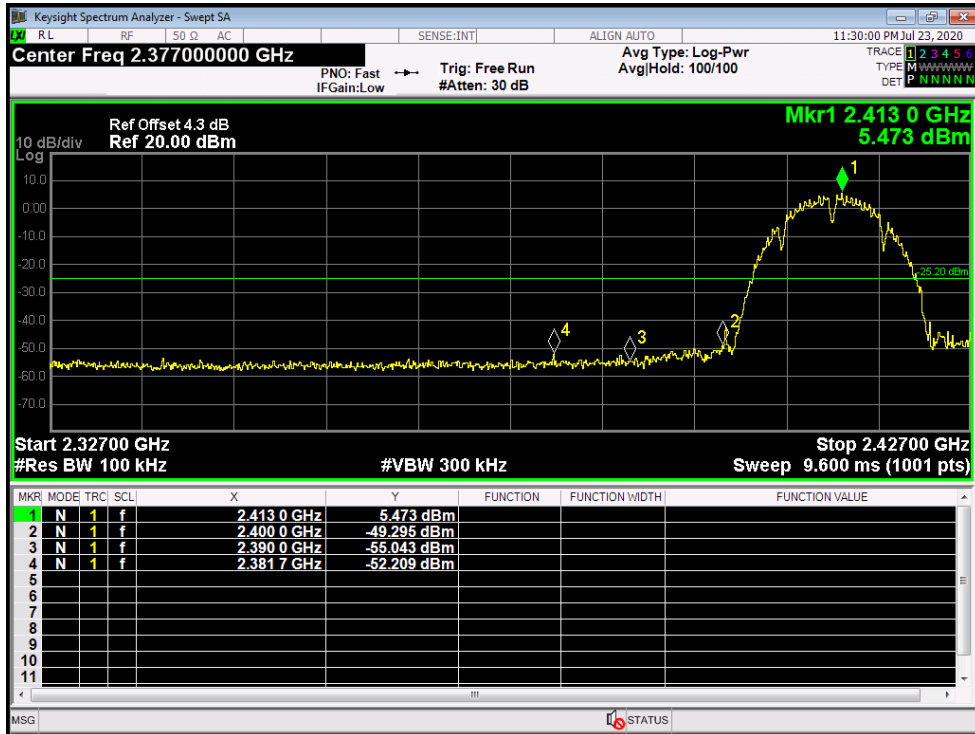
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	X	2455.800	94.01	1.69	95.70	Fundamental Frequency		peak
2	*	2456.200	84.94	1.69	86.63	Fundamental Frequency		AVG
3		2483.500	57.20	1.88	59.08	74.00	-14.92	peak
4		2483.500	42.52	1.88	44.40	54.00	-9.60	AVG

**Remark:**

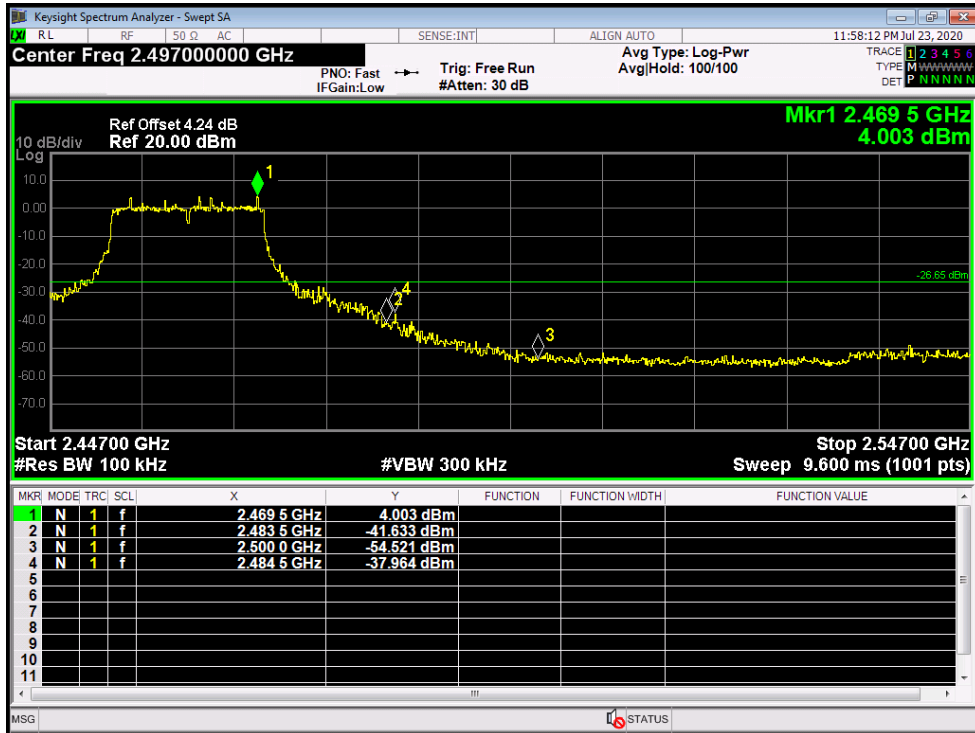
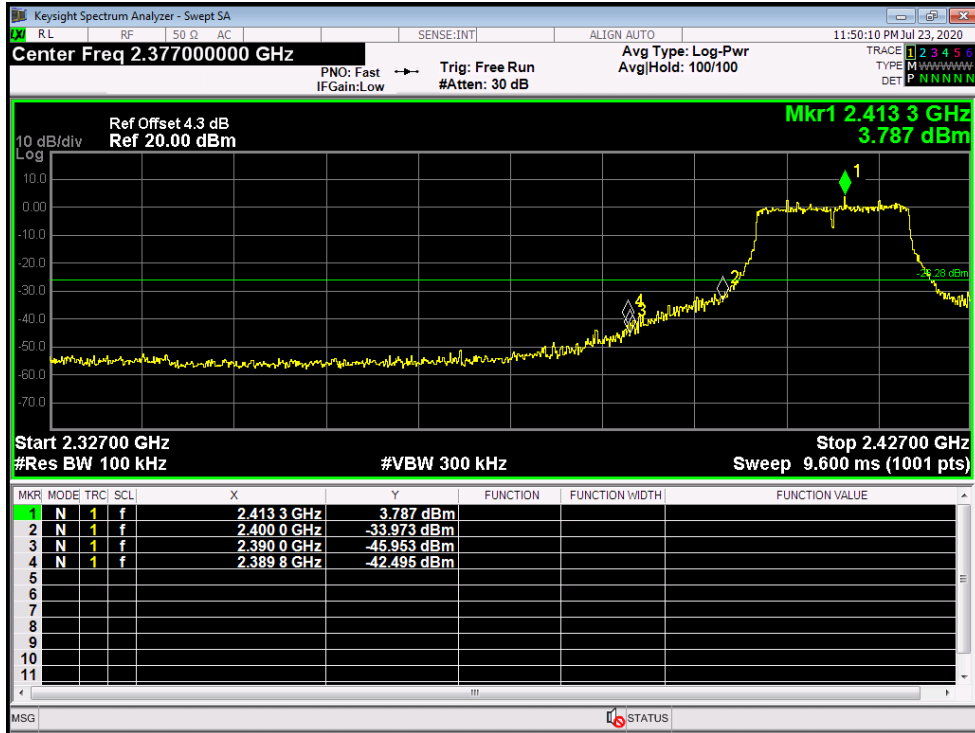
1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBuV/m) = Corr. (dB/m) + Read Level (dBuV)
3. Margin (dB) = Peak/AVG (dBuV/m) - Limit PK/AVG (dBuV/m)

**(2) Conducted Test**

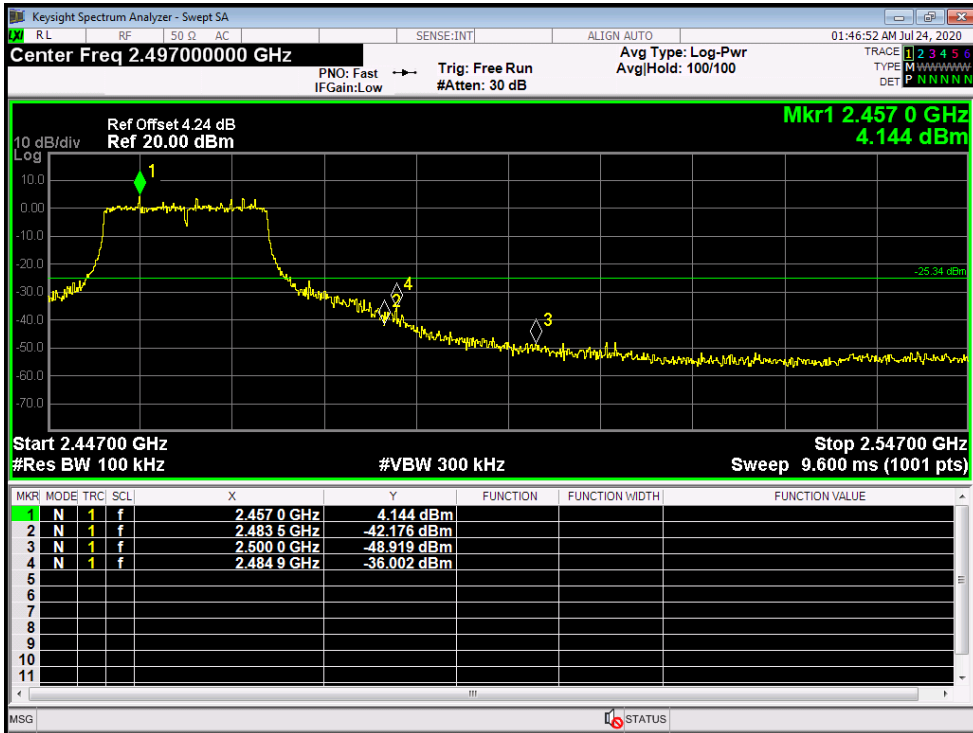
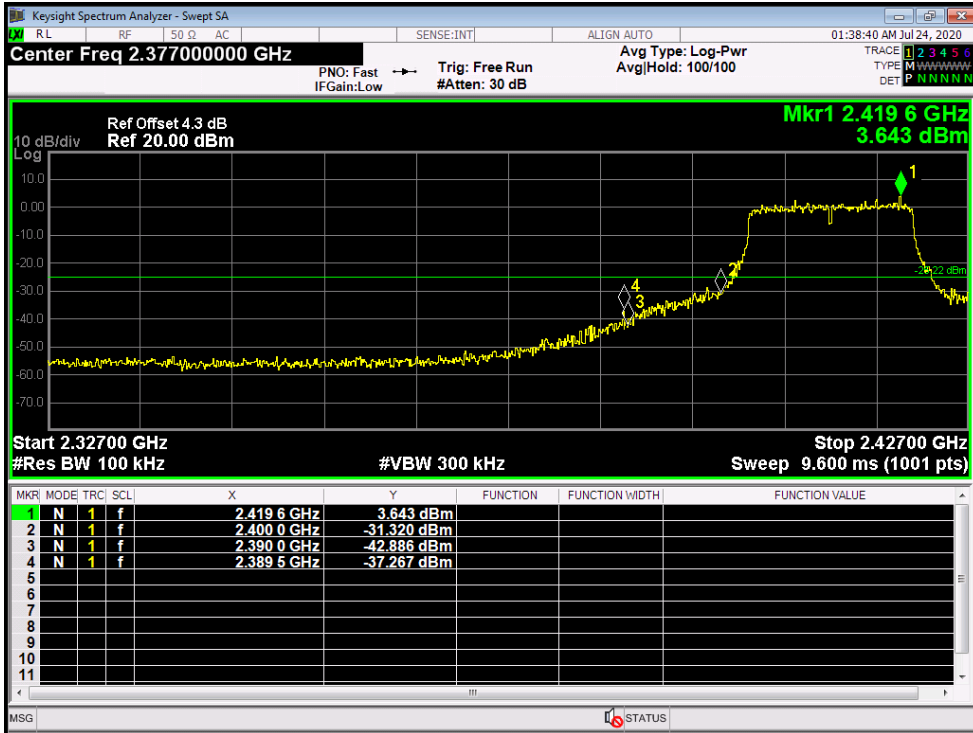
<b>Temperature:</b>	25°C	<b>Relative Humidity:</b>	55%
<b>Test Voltage:</b>	AC 120V/60HZ		
<b>Test Mode:</b>	TX B Mode 2412MHz / TX B Mode 2462MHz		
<b>Remark:</b>	The EUT is programmed in continuously transmitting mode		



Temperature:	25°C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Test Mode:	TX G Mode 2412MHz / TX G Mode 2462MHz		
Remark:	The EUT is programmed in continuously transmitting mode		



Temperature:	25°C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Test Mode:	TX N(HT20) Mode 2412MHz / TX N(HT20) Mode 2462MHz		
Remark:	The EUT is programmed in continuously transmitting mode		

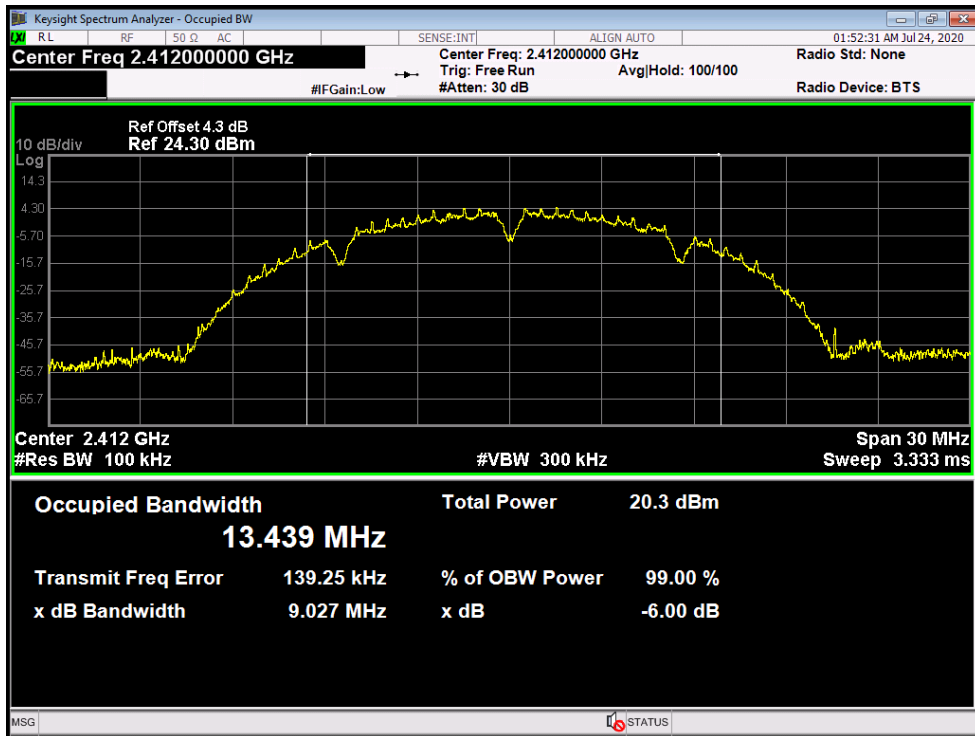


### Attachment D-- Bandwidth Test Data

Temperature:	25°C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Test Mode:	TX 802.11B Mode		
Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	9.027	13.439	>=0.5
2437	8.084	13.372	
2462	8.028	13.387	

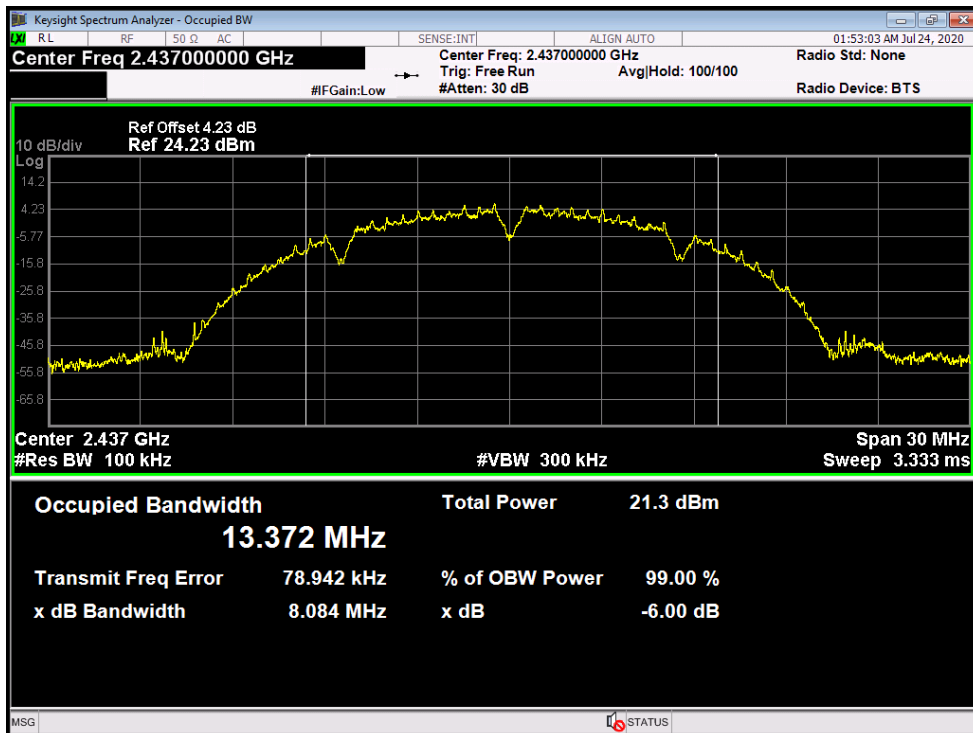
**802.11B Mode**

**2412 MHz**



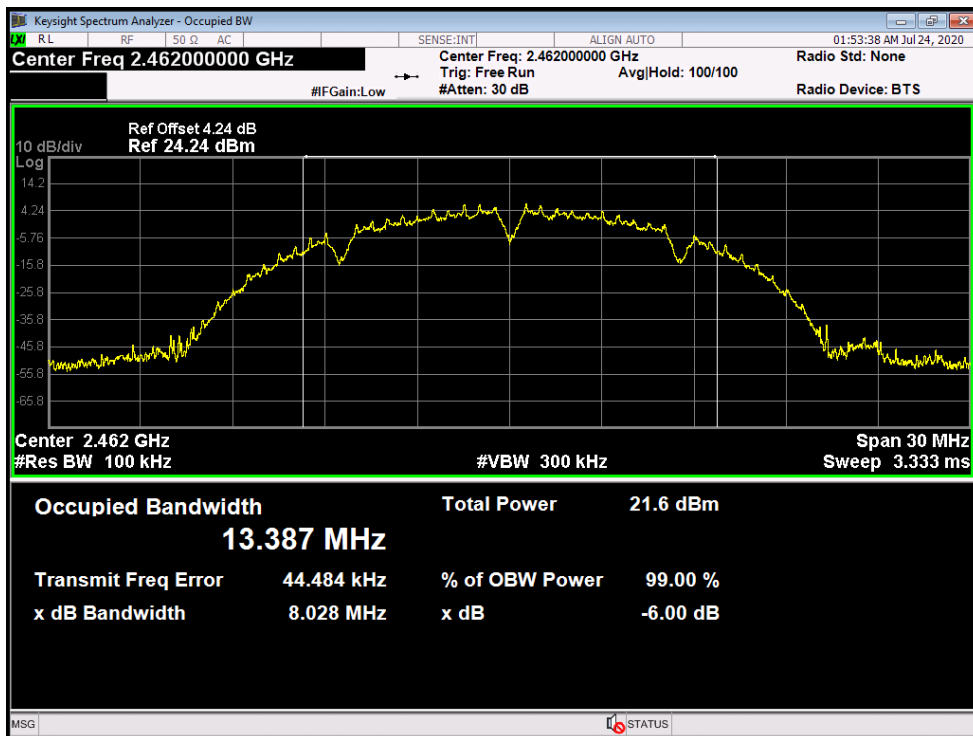
**802.11B Mode**

**2437 MHz**



**802.11B Mode**

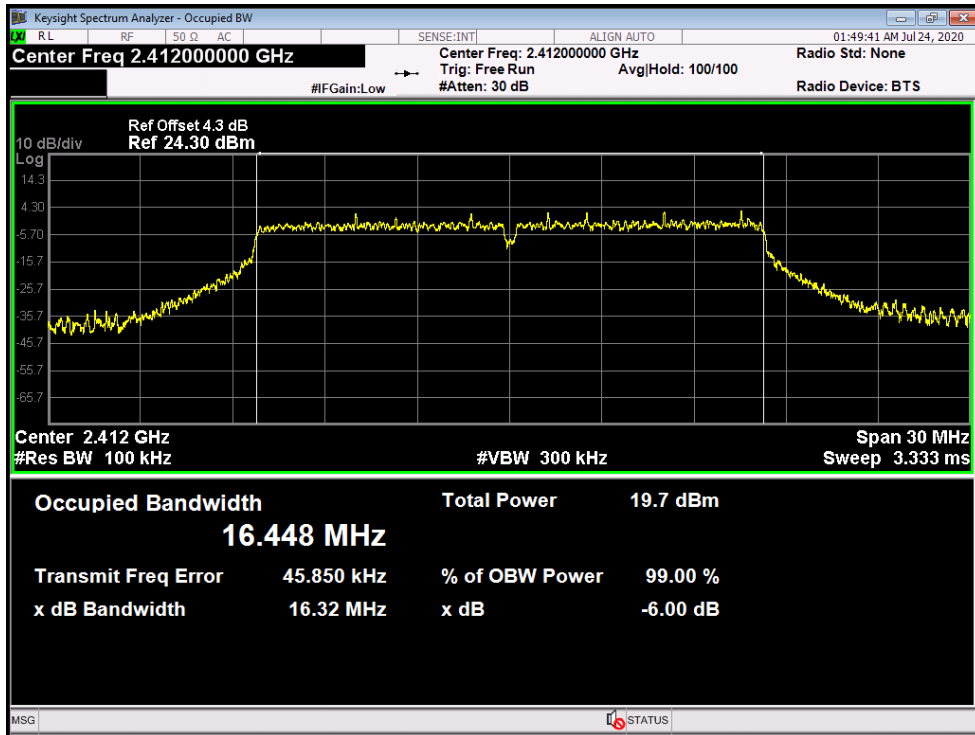
**2462 MHz**



Temperature:	25°C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Test Mode:	TX 802.11G Mode		
Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	16.32	16.448	>=0.5
2437	16.37	16.458	
2462	16.33	16.446	

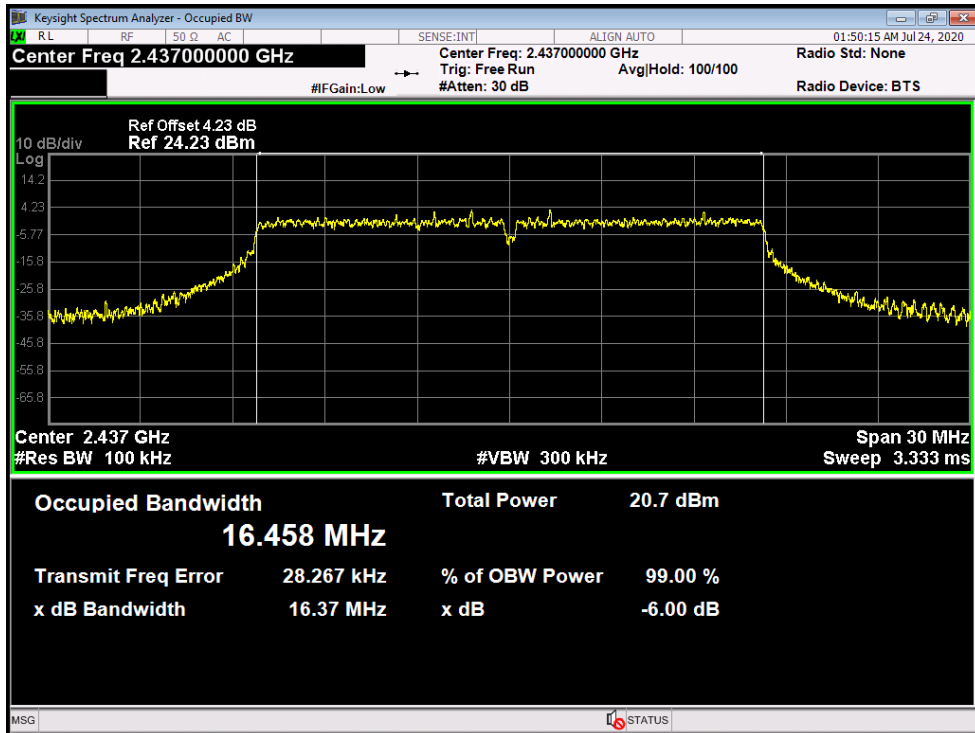
**802.11G Mode**

**2412 MHz**



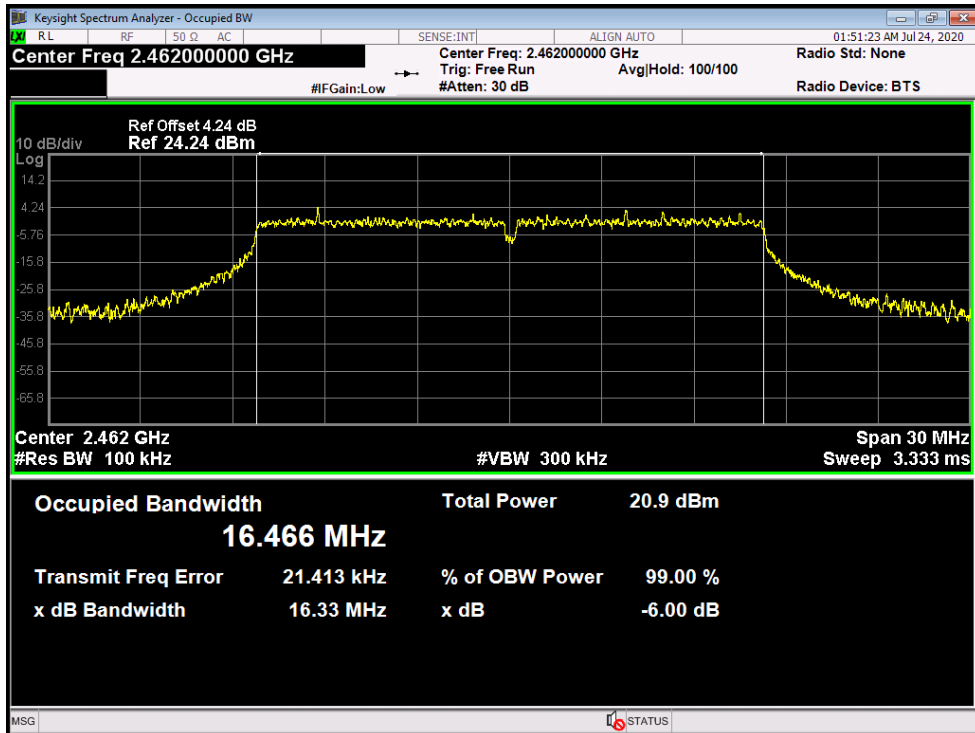
**802.11G Mode**

**2437 MHz**



**802.11G Mode**

**2462 MHz**

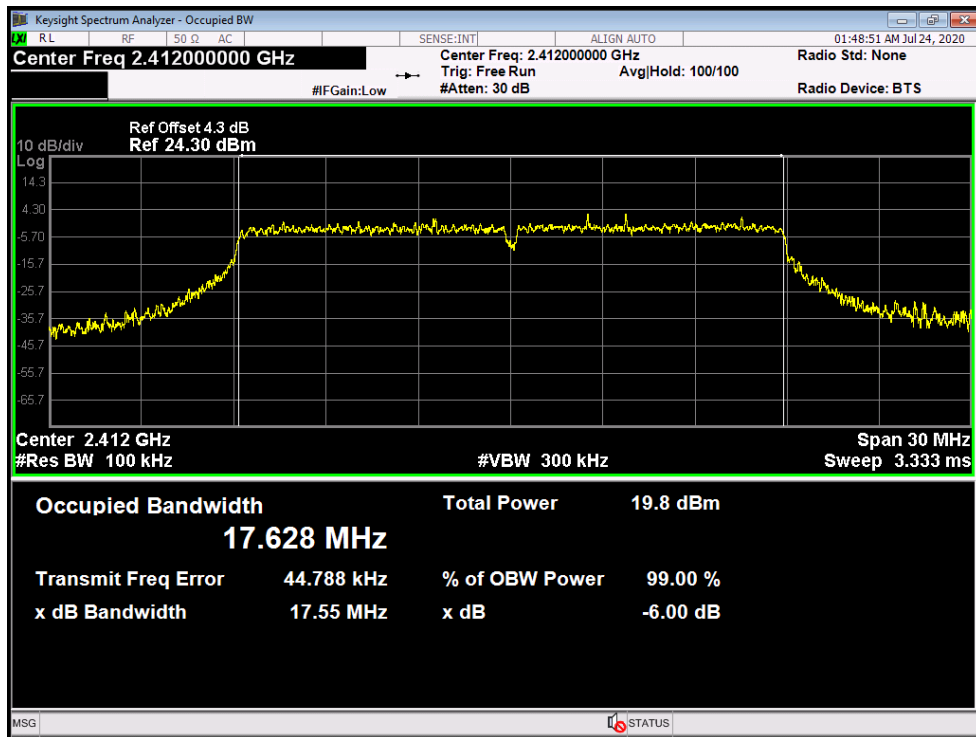




Temperature:	25°C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Test Mode:	TX 802.11N(HT20) Mode		
Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	17.55	17.628	>=0.5
2437	17.58	17.624	
2462	17.59	17.644	

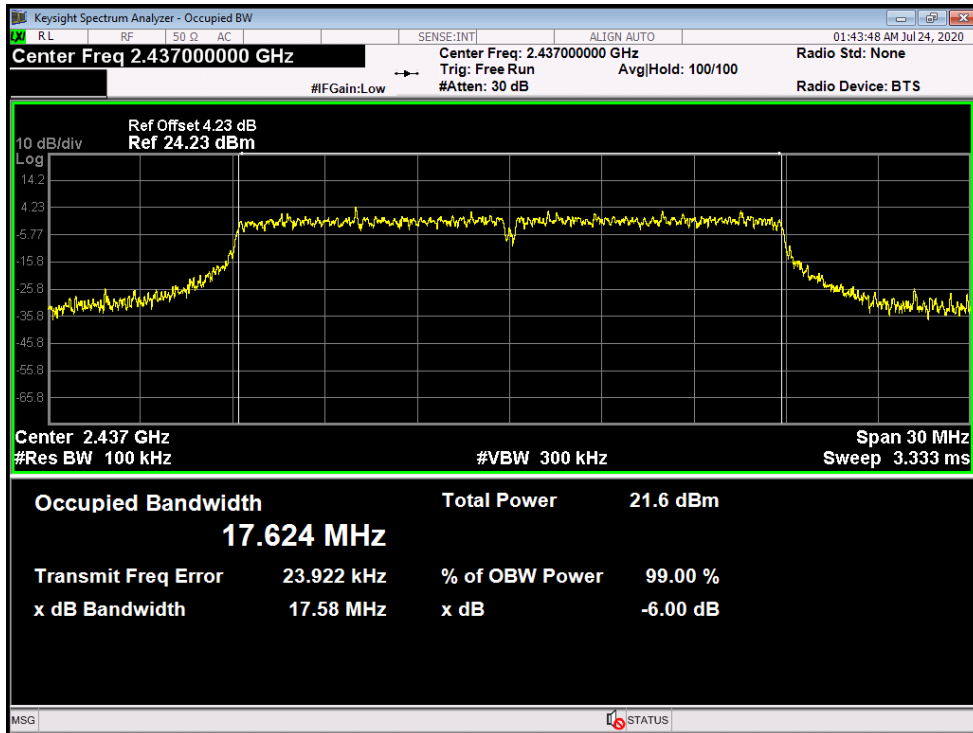
**802.11N(HT20) Mode**

**2412 MHz**



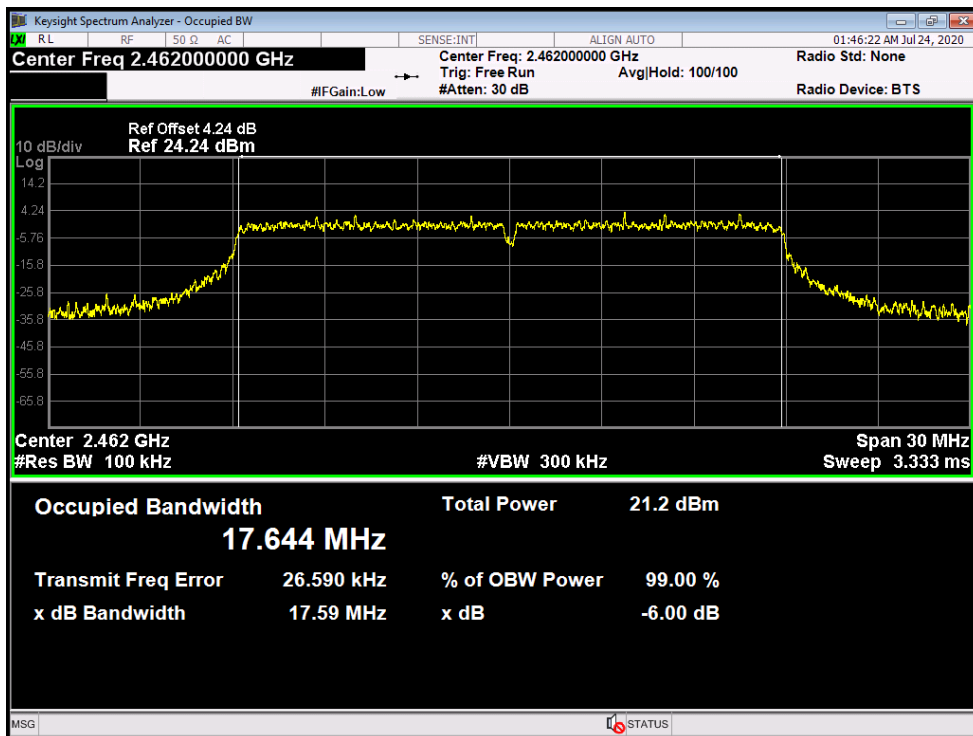
**802.11N(HT20) Mode**

**2437 MHz**



**802.11N(HT20) Mode**

**2462 MHz**

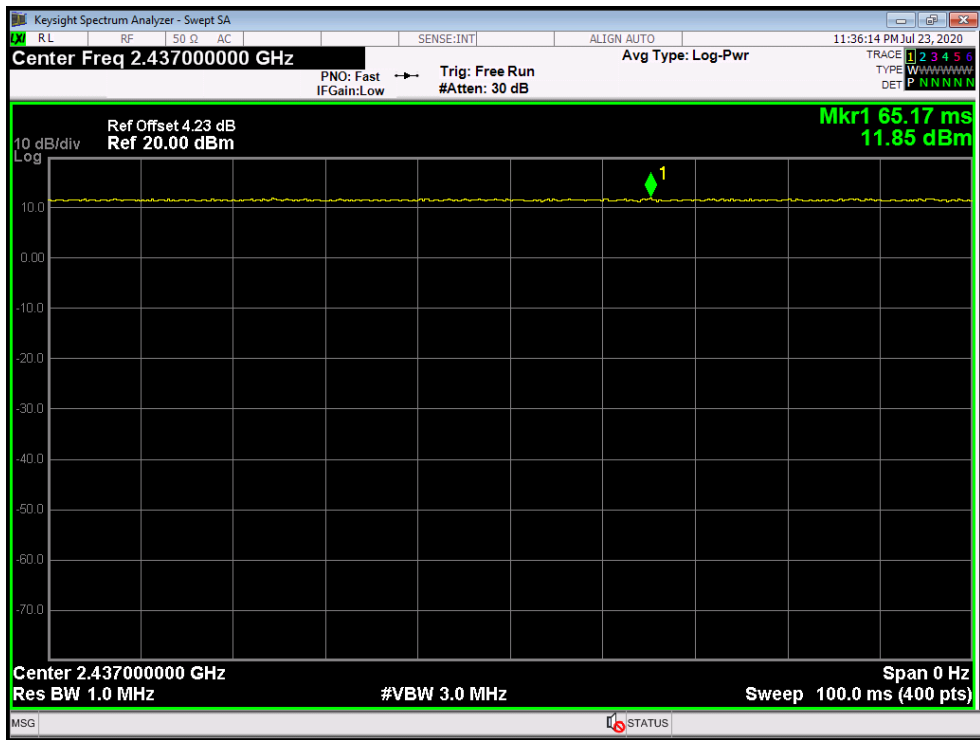


## Attachment E-- Peak Output Power Test Data

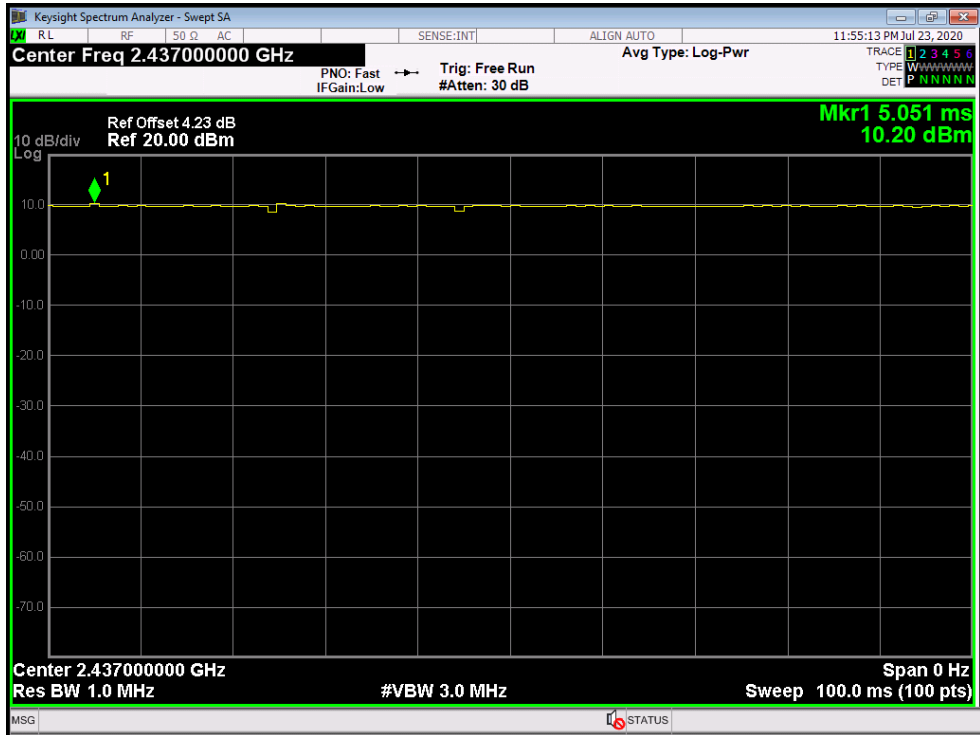
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120/60Hz		
Mode	Channel frequency (MHz)	Test Result (dBm)	Limit (dBm)
802.11b	2412	11.61	30
	2437	8.97	
	2462	8.97	
802.11g	2412	12.45	
	2437	10.53	
	2462	10.77	
802.11n (HT20)	2412	12.63	
	2437	10.48	
	2462	10.95	
<b>Result: PASS</b>			

Duty Cycle		
Mode	Channel frequency (MHz)	Test Result
802.11b	2412	>98%
	2437	
	2462	
802.11g	2412	
	2437	
	2462	
802.11n (HT20)	2412	
	2437	
	2462	
Please see below plots.		

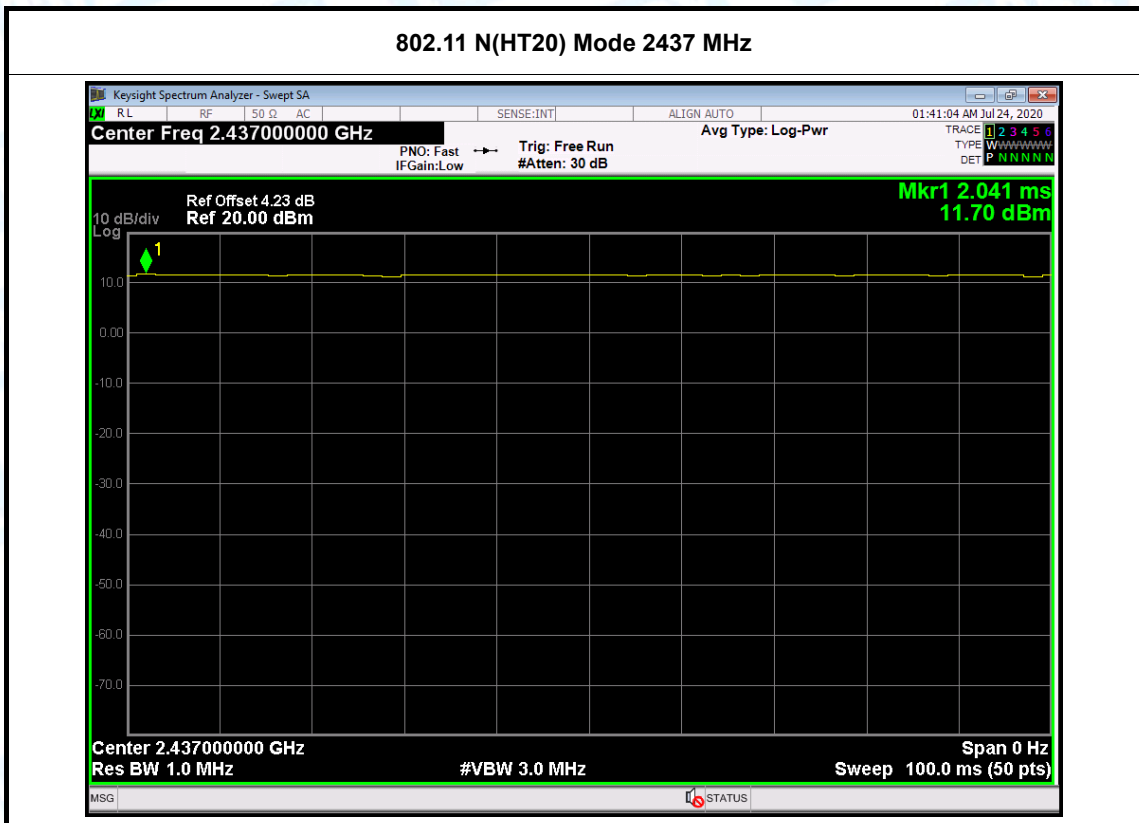
802.11 B Mode 2437 MHz



802.11 G Mode 2437 MHz



802.11 N(HT20) Mode 2437 MHz

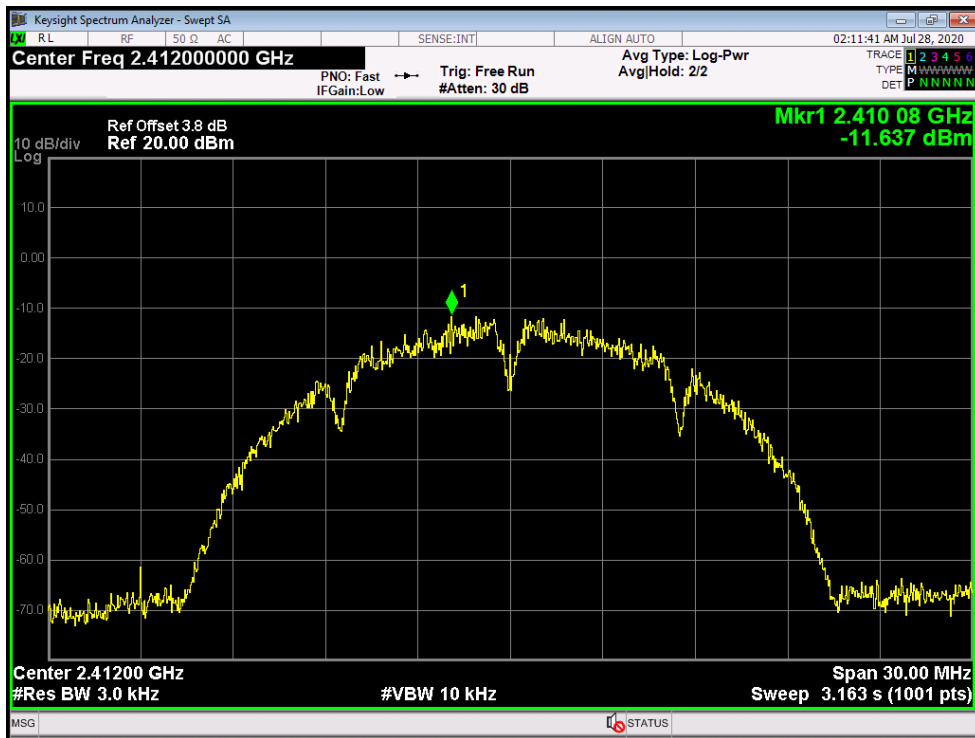


### Attachment F-- Power Spectral Density Test Data

Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 HZ		
Test Mode:	TX 802.11B Mode		
Channel Frequency (MHz)	Power Density (dBm/3 kHz)	Limit (dBm/3 kHz)	
2412	-11.637	8	
2437	-13.417		
2462	-14.015		

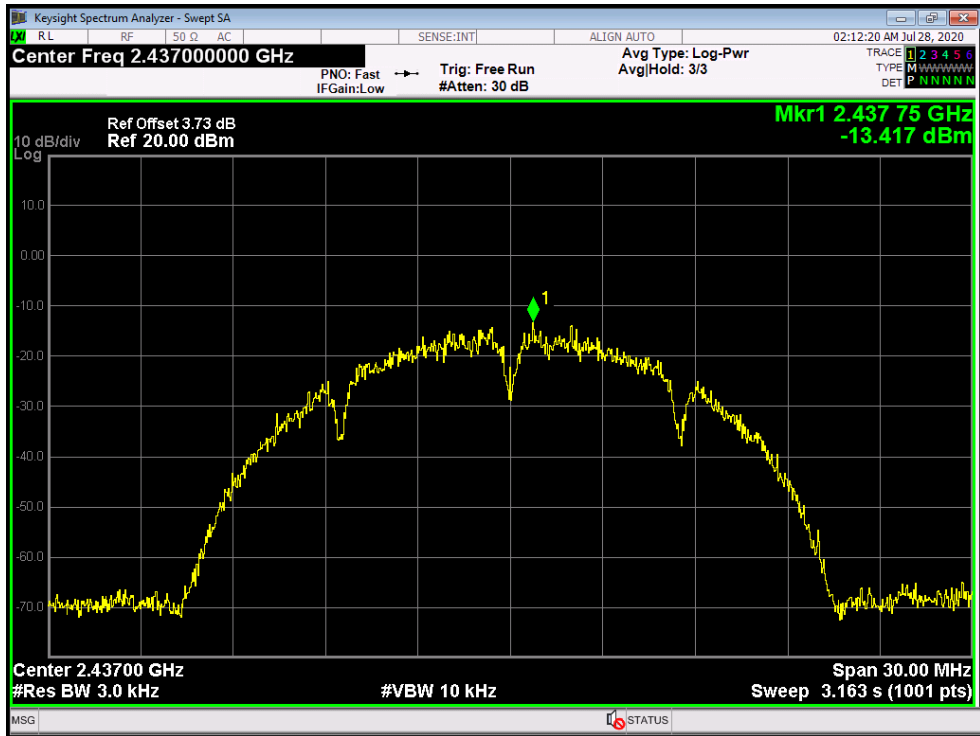
802.11B Mode

2412 MHz



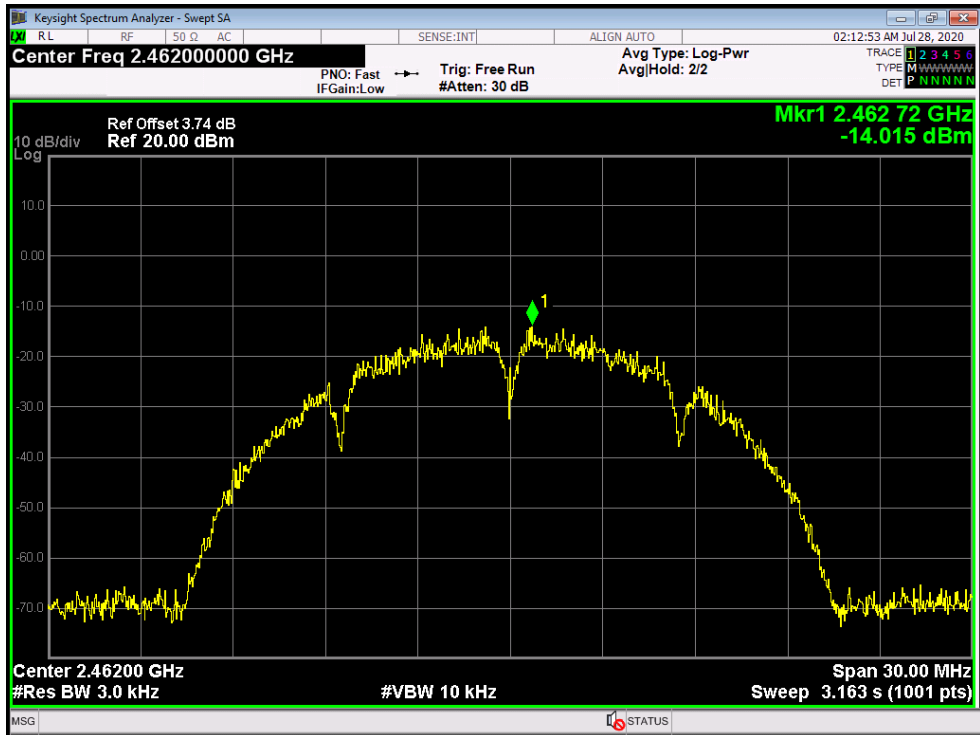
802.11B Mode

2437 MHz



802.11B Mode

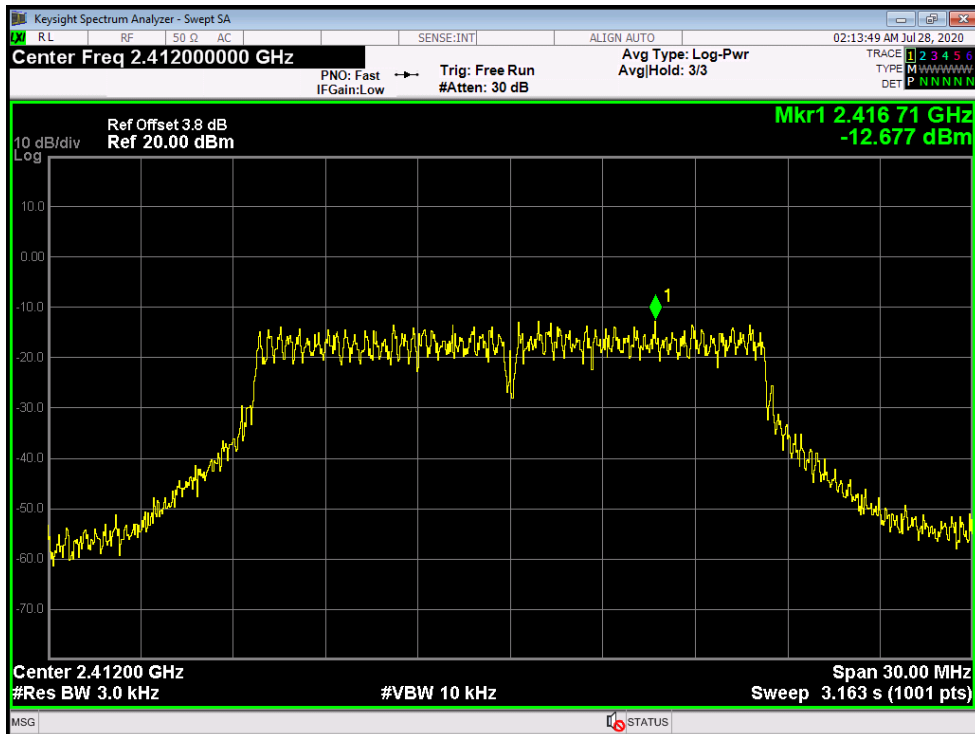
2462 MHz



Temperature:	25 °C	Temperature:	25 °C
Test Voltage:	AC 120V/60 HZ		
Test Mode:	TX 802.11G Mode		
Channel Frequency (MHz)	Power Density (dBm/3 kHz)	Limit (dBm/3 kHz)	
2412	-12.677	8	
2437	-12.891		
2462	-13.248		

**802.11G Mode**

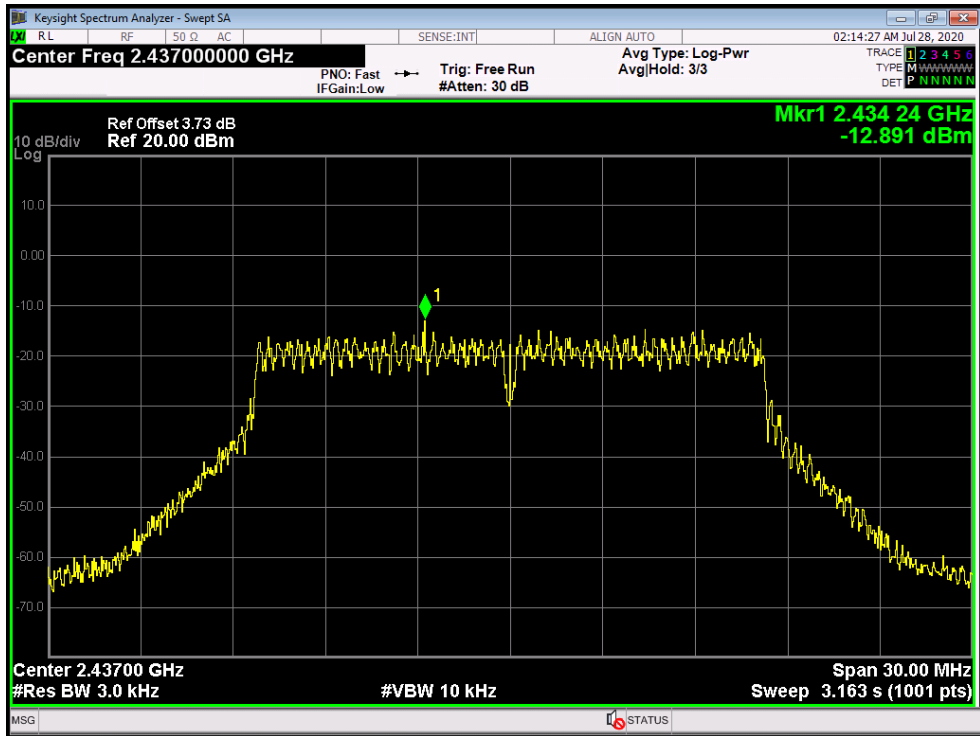
**2412 MHz**





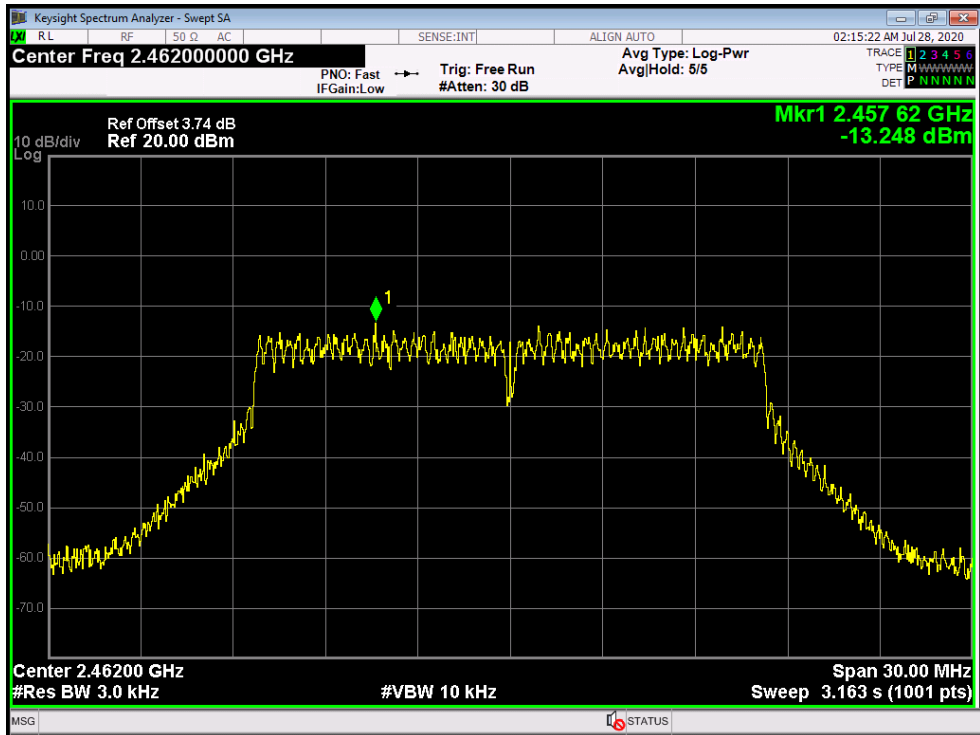
**802.11G Mode**

**2437 MHz**



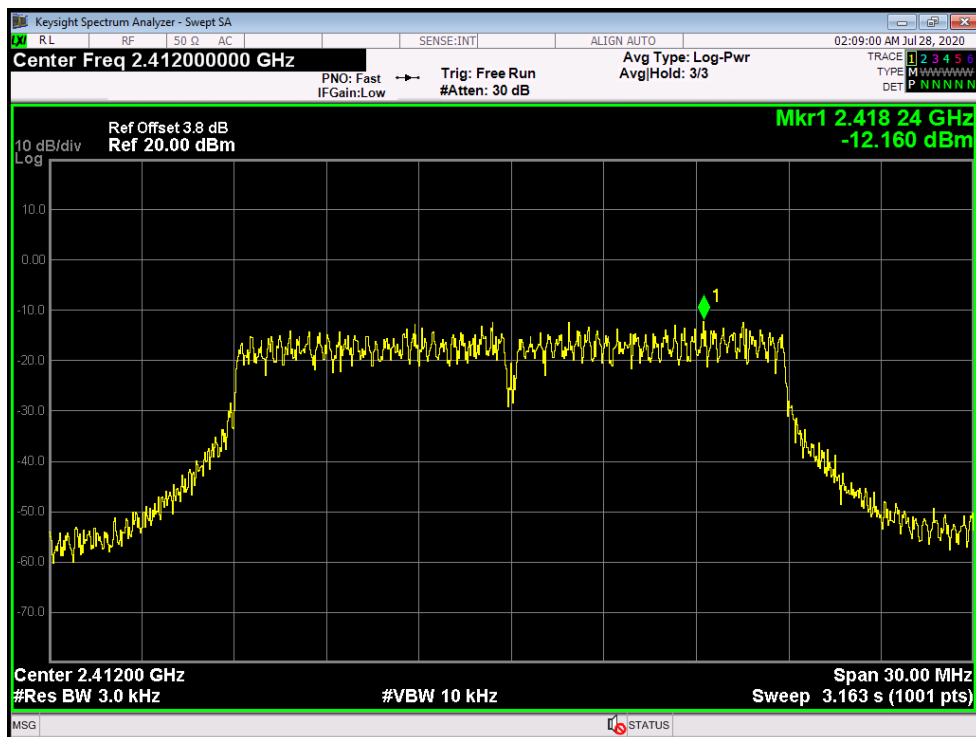
**802.11G Mode**

**2462 MHz**

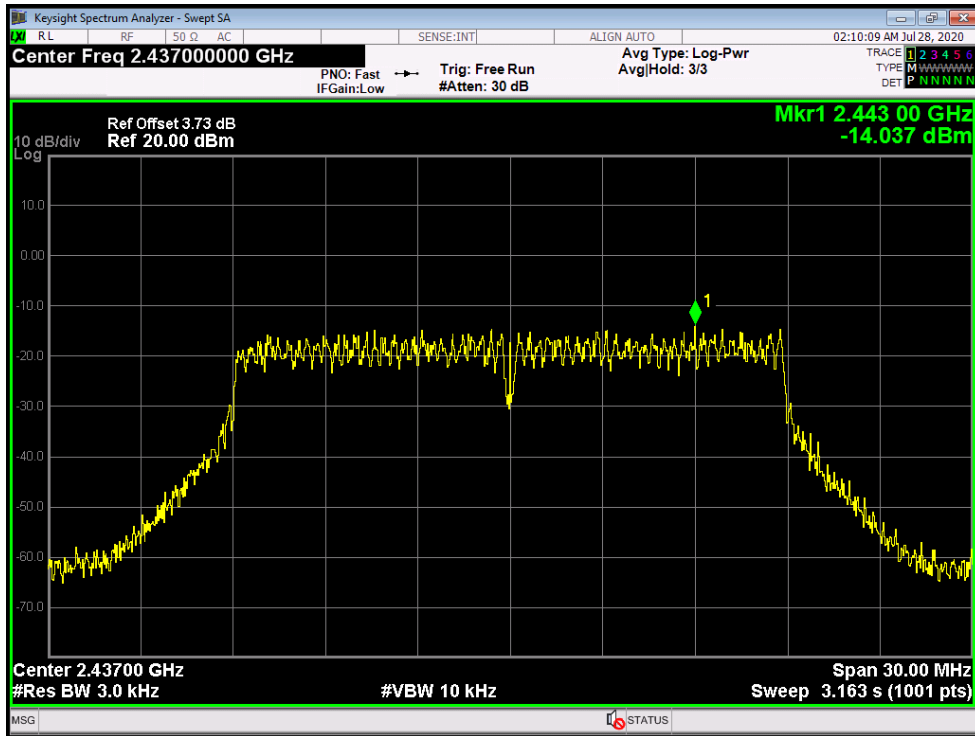


Temperature:	25 °C	Temperature:	25 °C
Test Voltage:	AC 120V/60 HZ		
Test Mode:	TX 802.11N(HT20) Mode		
Channel Frequency (MHz)	Power Density (dBm/3 kHz)	Limit (dBm/3 kHz)	
2412	-12.160	8	
2437	-14.037		
2462	-13.919		
<b>802.11N(HT20) Mode</b>			

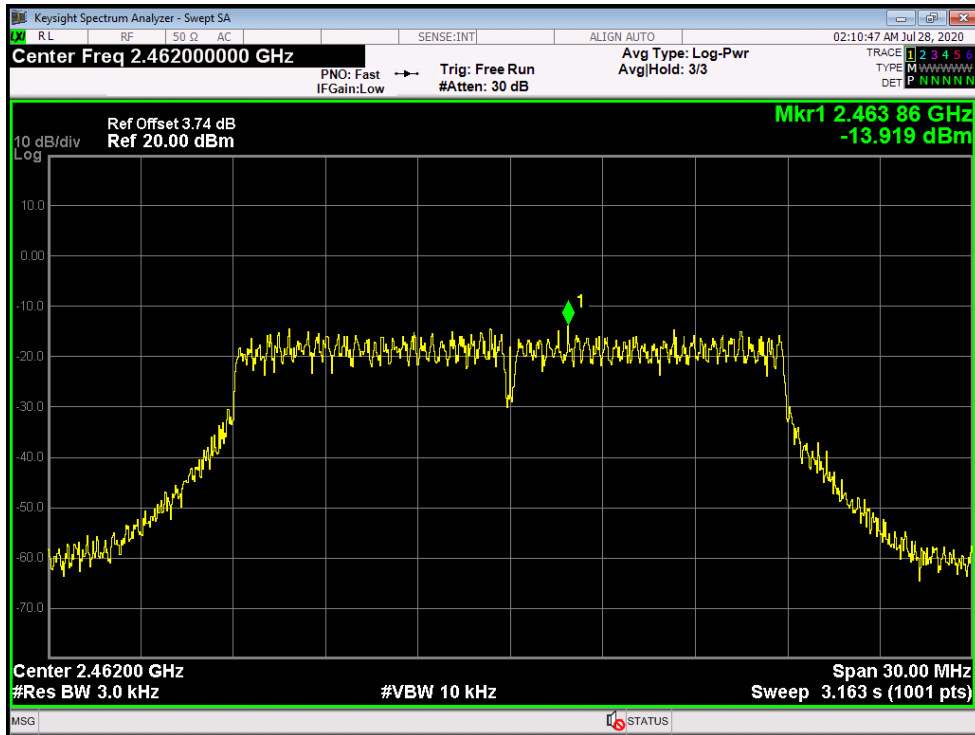
**2412 MHz**



**802.11N(HT20) Mode  
2437 MHz**



**802.11N(HT20) Mode  
2462 MHz**



-----END OF REPORT-----