FCC Radio Test Report

FCC ID: 2AVDG-80012

Original Grant

Report No.	:	TB-FCC170165
Applicant	:	Shenzhen Snapmaker Technologies Co., Ltd.
Equipment Under Test (EUT)		
EUT Name	:	Snapmaker Modular 3D Printer
Model No.	:	80012, 80013, 80014, 80015, 80016, 80017
Brand Name	:	SNAPMAKER
Receipt Date	:	2019-10-30
Test Date	:	2019-10-30 to 2019-12-12
Issue Date	:	2019-12-13
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
Test/Witness Engineer	:	Ivan Su
Approved& Authorized	:	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-FCC170165	Rev.01	Initial issue of report	2019-12-13

1. General Information about EUT

1.1 Client Information

Applicant	:	Shenzhen Snapmaker Technologies Co., Ltd.
Address	:	5F, Honglai Kechuang Building 13, Pingshan 1st Road, Nanshan District, Shenzhen, China
Manufacturer	:	Shenzhen Snapmaker Technologies Co., Ltd.
Address	:	5F, Honglai Kechuang Building 13, Pingshan 1st Road, Nanshan District, Shenzhen, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	Snapmaker Modular 3D Printer	
Models No.	:	80012, 80013, 80014, 80015, 80016, 80017	
Model Different	:	All these models are identical in the same PCB, layout and electrical circuit, the only difference is sizes.	
Product Description	:	Operation Frequency:	802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz
		Number of Channel:	802.11b/g/n(HT20):11 channels **see note(3)** 802.11n(HT40): 7 channels **see note(3)**
		RF Output Power:	802.11b:16.28dBm 802.11g: 19.28dBm 802.11n (HT20): 18.32dBm 802.11n (HT40): 20.09dBm
		Antenna Gain:	1.38dBi FPC Antenna provided by the applicant.
		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
Power Rating	:	Power Module(SM3DP005): Input: AC 100-240V, 50/60Hz, 4A. Output: DC 24V, 13.4A, 320W	
Software Version	:	SM2_TP_V1.0	
Hardware Version	:	SM2_5inch_V1.0	
Remark	:	The adapter and antenna gain provided by the applicant, the verified for the RF conduction test provided by TOBY test lab.	

Note:

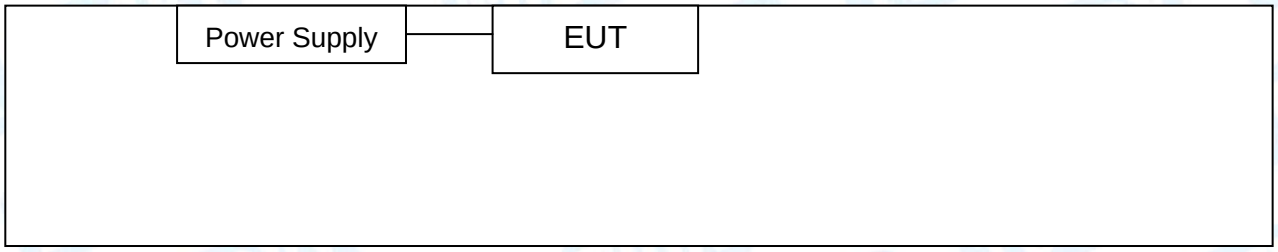
(1) This Test Report is FCC Part 15.247 for 802.11b/g/n, the test procedure follows the FCC KDB 558074 D01 v05r02.

(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) CH 03~CH 09 for 802.11n(HT40)					

1.3 Block Diagram Showing the Configuration of System Tested



1.4 Description of Support Units

The EUT has been test as an independent unit.

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	TX B Mode(Model: 80012)
Mode 2	TX B Mode(Model: 80013)
Mode 3	TX B Mode(Model: 80014)
For Radiated Test below 1GHz	
Final Test Mode	**Description**
Mode 4	TX B Mode(Model: 80012)
Mode 5	TX B Mode(Model: 80013)
Mode 6	TX B Mode(Model: 80014)
For Radiated Test above 1GHz	
Final Test Mode	**Description**
Mode 7	TX Mode B Mode Channel 01/06/11(Model: 80012)
Mode 8	TX Mode G Mode Channel 01/06/11(Model: 80012)
Mode 9	TX Mode N(HT20) Mode Channel 01/06/11(Model: 80012)
Mode 10	TX Mode N(HT40) Mode Channel 03/06/09(Model: 80012)

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)
802.11n (HT40) Mode: MCS 0 (30 Mbps)

(2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.

(3) The EUT 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.

Test Software: QRCT			
Mode	**Test Mode:** Continuously transmitting		
	Data Rate	**Channel**	**Parameters**
802.11b	CCK/ 1Mbps	01	16
	CCK/ 1Mbps	06	16
	CCK/ 1Mbps	11	16
802.11g	OFDM/ 6Mbps	01	15
	OFDM/ 6Mbps	06	15
	OFDM/ 6Mbps	11	15
802.11n(20)	MCS 0	01	14
	MCS 0	06	14
	MCS 0	11	14
802.11n(40)	MCS 0	03	16
	MCS 0	06	16
	MCS 0	09	16

1.7 Measurement Uncertainty

The reported uncertainty of measurement y ± U，where expended 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	±3.60 dB ±3.10 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	±4.60 dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	±4.20 dB
Radiated Emission	Level Accuracy: Above 1000MHz	±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-1)
The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A-1.

2. Test Summary

FCC Part 15 Subpart C(15.247)/ RSS 247 Issue 2				
Standard Section		Test Item	Judgment	Remark
FCC	IC			
15.203	/	Antenna Requirement	PASS	N/A
15.207	RSS-GEN 7.2.4	Conducted Emission	PASS	N/A
15.205	RSS-GEN 7.2.2	Restricted Bands	PASS	N/A
15.247(a)(2)	RSS 247 5.2 (1)	6dB Bandwidth	PASS	N/A
15.247(b)	RSS 247 5.4 (4)	Peak Output Power	PASS	N/A
15.247(e)	RSS 247 5.2 (2)	Power Spectral Density	PASS	N/A
15.247(d)	RSS 247 5.5	Band Edge	PASS	N/A
15.247(d)& 15.209	RSS 247 5.5	Transmitter Radiated Spurious Emission	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. 13, 2019	Jul. 12, 2020
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul. 13, 2019	Jul. 12, 2020
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul. 13, 2019	Jul. 12, 2020
LISN	Rohde & Schwarz	ENV216	101131	Jul. 13, 2019	Jul. 12, 2020
Radiation Emission Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 13, 2019	Jul. 12, 2020
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul. 13, 2019	Jul. 12, 2020
Spectrum Analyzer	Rohde & Schwarz	FSVR	1311.006K40-100945-DH	Feb. 10, 2019	Feb. 09, 2020
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Jan. 27, 2019	Jan. 26, 2020
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.03, 2019	Mar. 02, 2020
Horn Antenna	ETS-LINDGREN	BBHA 9170	BBHA9170582	Mar.03, 2019	Mar. 02, 2020
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 13, 2019	Jul. 12, 2020
Pre-amplifier	Sonoma	310N	185903	Mar.04, 2019	Mar. 03, 2020
Pre-amplifier	HP	8449B	3008A00849	Mar.03, 2019	Mar. 02, 2020
Pre-amplifier	SKET	LNPA_1840G-50	SK201904032	Jul. 27, 2019	Jul. 26, 2020
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar.03, 2019	Mar. 02, 2020
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. 13, 2019	Jul. 12, 2020
Spectrum Analyzer	Rohde & Schwarz	ESCI	100010/007	Jul. 13, 2019	Jul. 12, 2020
MXA Signal Analyzer	Agilent	N9020A	MY49100060	Sep. 16, 2019	Sep. 15, 2020
Vector Signal Generator	Agilent	N5182A	MY50141294	Sep. 16, 2019	Sep. 15, 2020
Analog Signal Generator	Agilent	N5181A	MY50141953	Sep. 16, 2019	Sep. 15, 2020
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO26	Sep. 16, 2019	Sep. 15, 2020
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO29	Sep. 16, 2019	Sep. 15, 2020
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO31	Sep. 16, 2019	Sep. 15, 2020
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO33	Sep. 16, 2019	Sep. 15, 2020

5. Conducted Emission Test

5.1 Test Standard and Limit

5.1.1Test Standard

FCC Part 15.207

5.1.2 Test Limit

Conducted Emission Test Limit

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

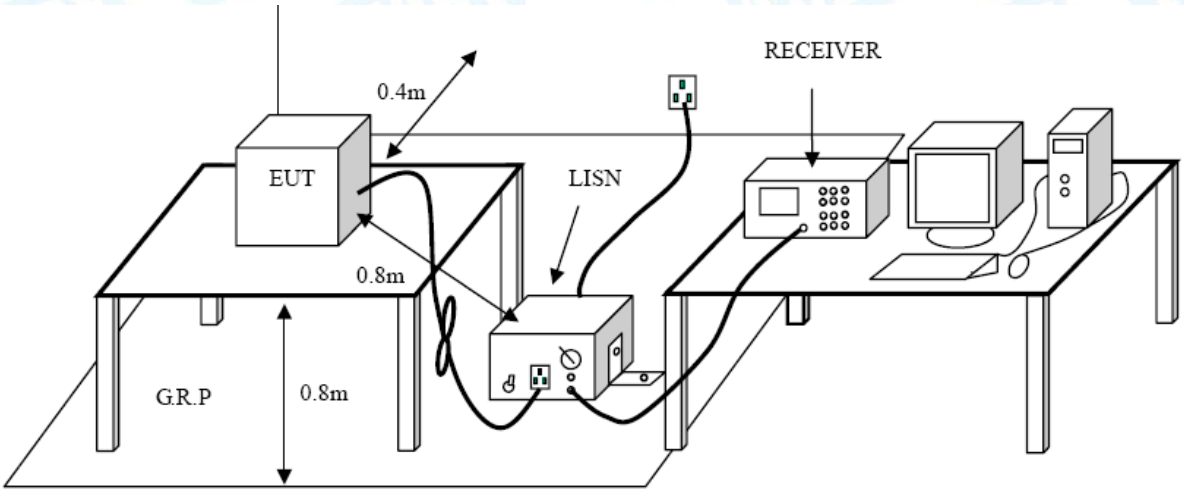
Notes:

(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

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.

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.

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.

LISN at least 80 cm from nearest part of EUT chassis.

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)

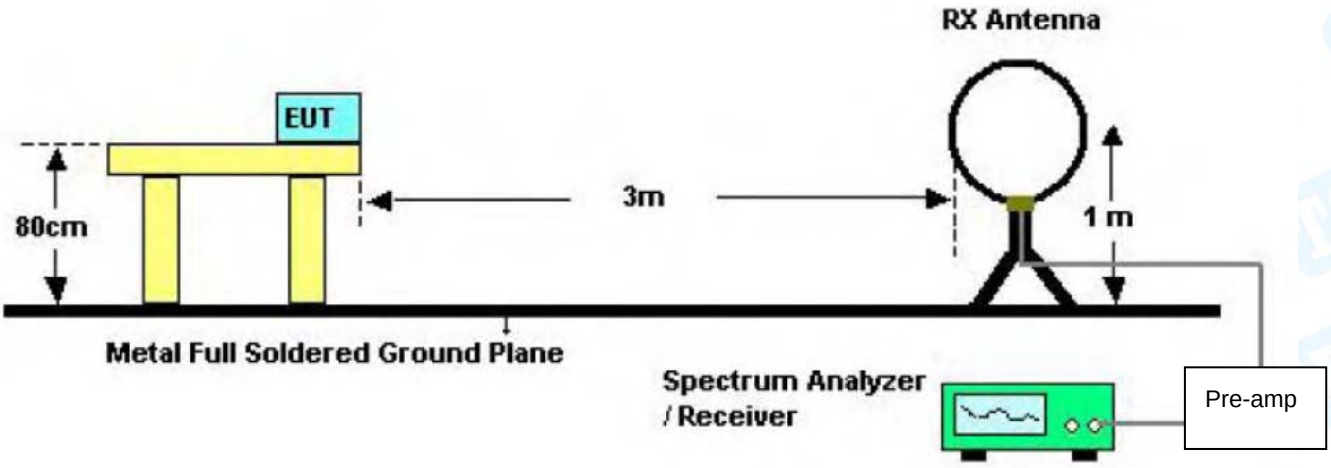
Frequency (MHz)	Distance of 3m (dBuV/m)	
	Peak	Average
Above 1000	74	54

Note:

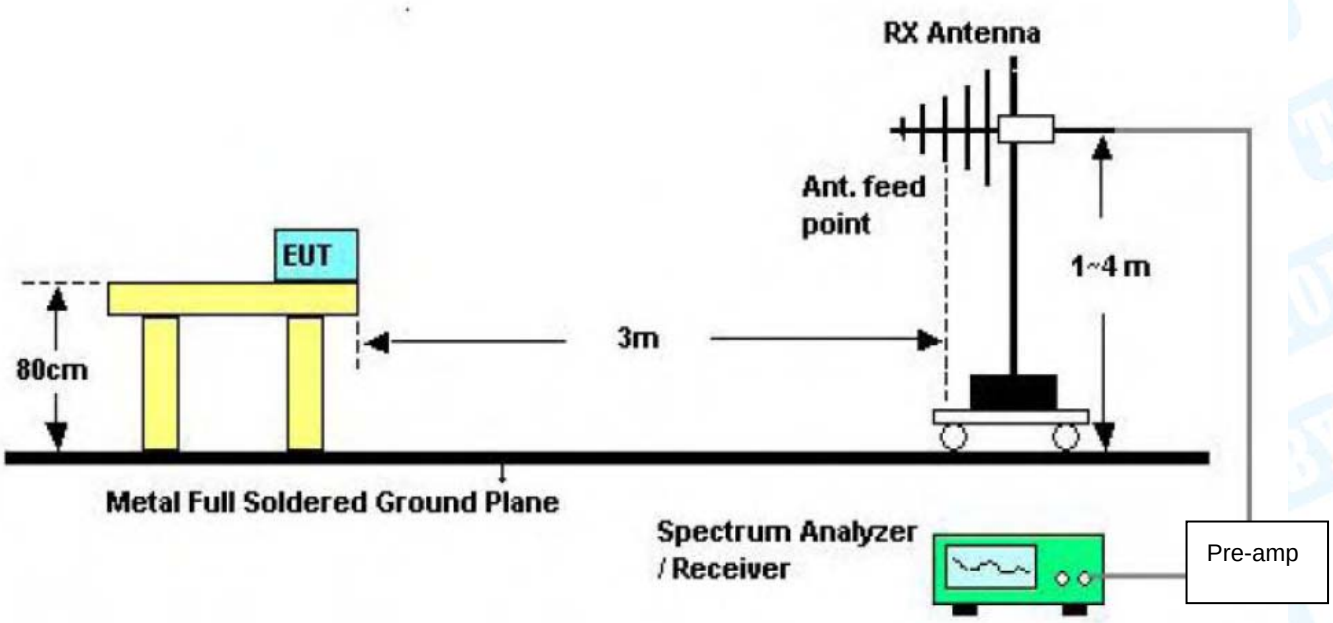
(1) The tighter limit applies at the band edges.

(2) Emission Level(dBuV/m)=20log Emission Level(uV/m)

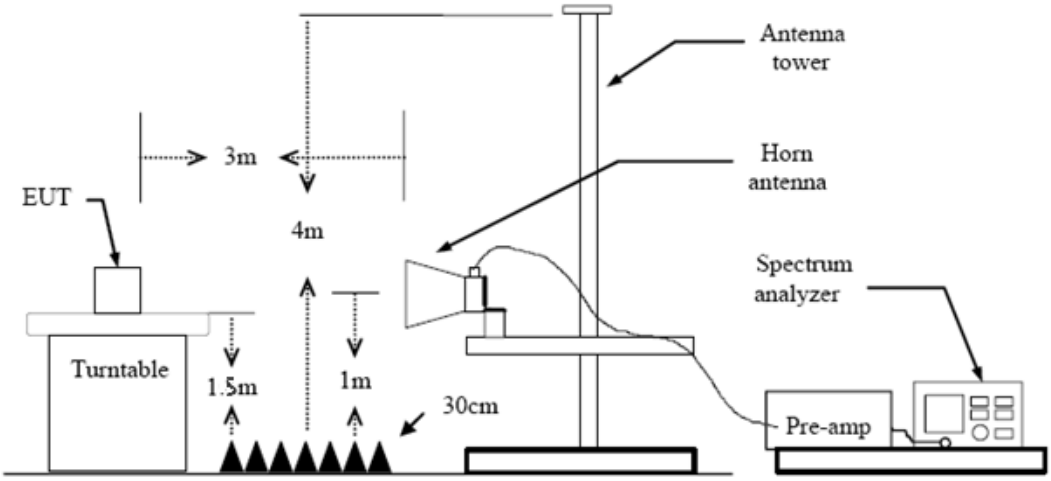
6.2 Test Setup



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

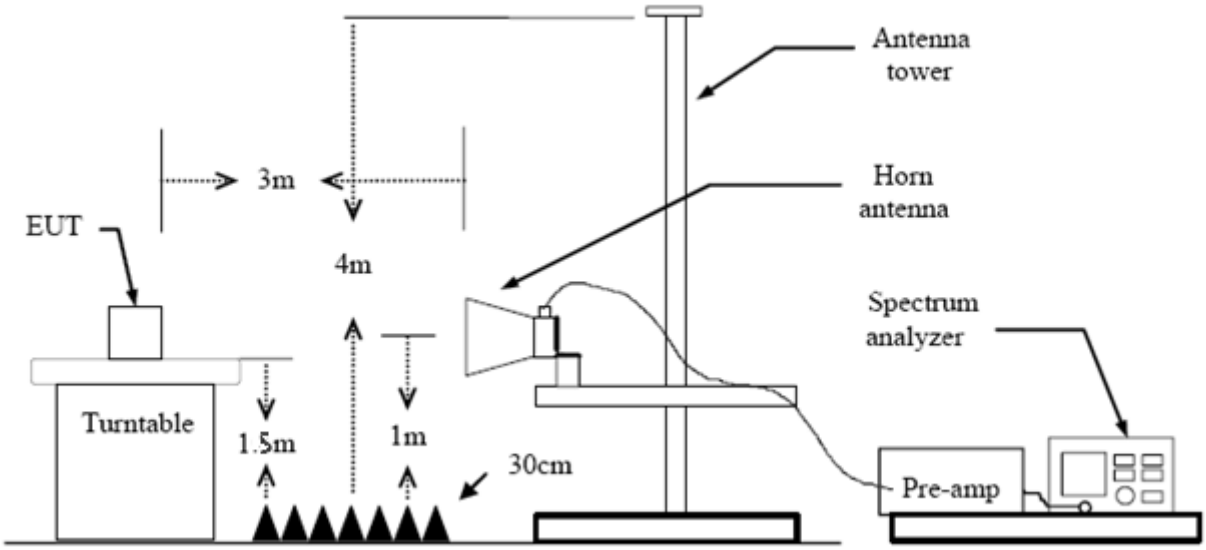
7.1.1 Test Standard

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

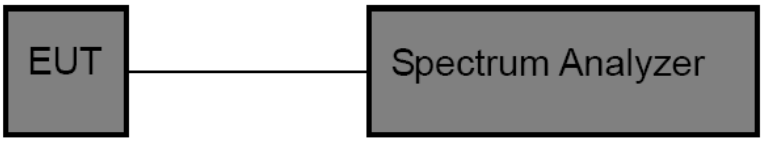
8.1.1 Test Standard

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	>=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

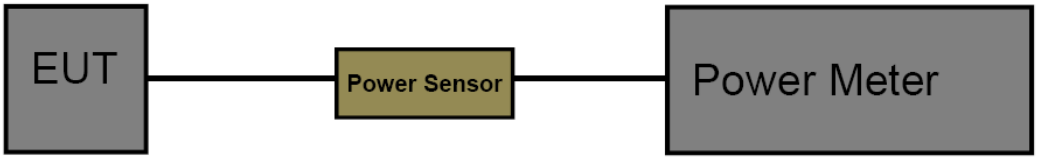
9.1.1 Test Standard

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

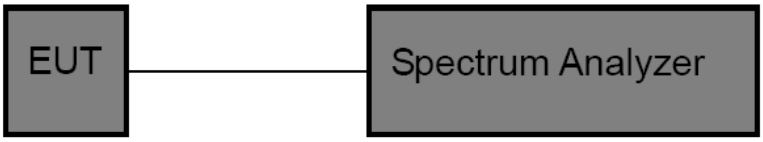
10.1.1 Test Standard

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

10.4 EUT Operating Condition

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

10.5 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 1.38dBi, and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

Result

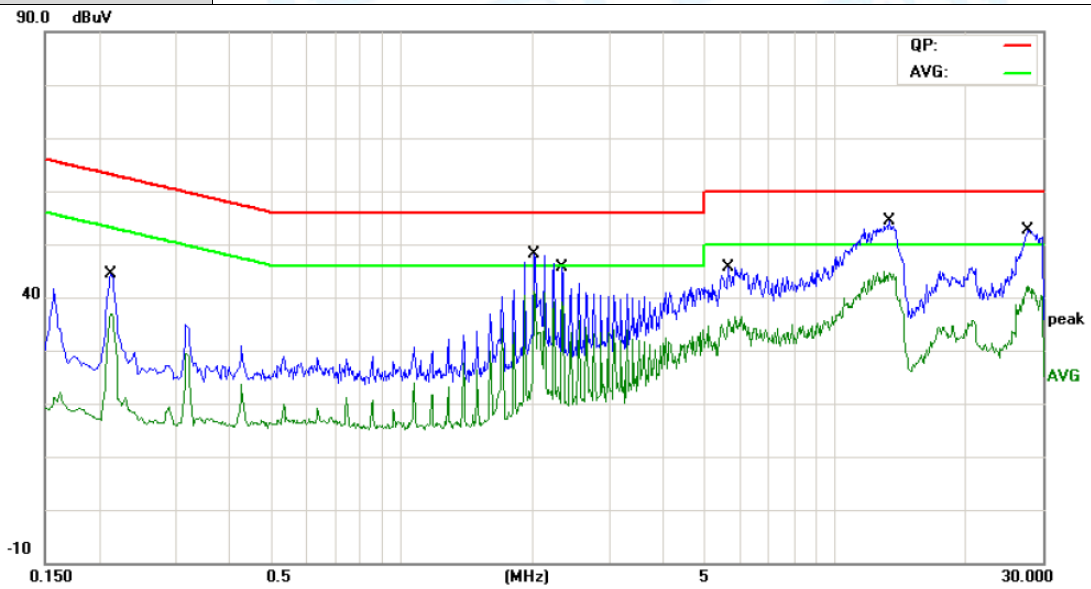
The EUT antenna is a FPC Antenna. It complies with the standard requirement.

Antenna Type
☐Permanent attached antenna
☒Unique connector antenna
☐Professional installation antenna

Attachment A-- Conducted Emission Test Data

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

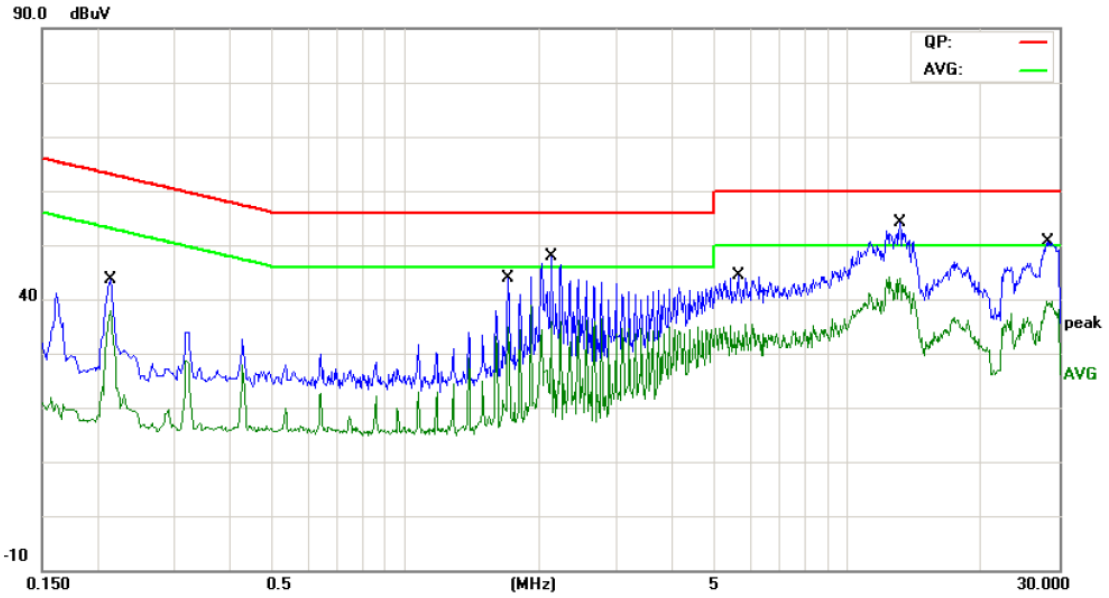
Temperature:	24.8 ℃	**Relative Humidity:**	42%
Test Voltage:	AC 120V/60Hz		
Terminal:	Line		
Test Mode:	Mode 1(Model: 80012)		
Remark:	Only worse case is reported.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.2127	34.51	9.78	44.29	63.10	-18.81	QP
2		0.2127	27.02	9.78	36.80	53.10	-16.30	AVG
3		2.0219	38.27	9.85	48.12	56.00	-7.88	QP
4	*	2.0219	31.32	9.85	41.17	46.00	-4.83	AVG
5		2.3420	35.72	9.83	45.55	56.00	-10.45	QP
6		2.3420	29.24	9.83	39.07	46.00	-6.93	AVG
7		5.6459	35.77	9.85	45.62	60.00	-14.38	QP
8		5.6459	25.35	9.85	35.20	50.00	-14.80	AVG
9		13.2979	44.49	9.82	54.31	60.00	-5.69	QP
10		13.2979	34.81	9.82	44.63	50.00	-5.37	AVG
11		27.7100	43.24	9.46	52.70	60.00	-7.30	QP
12		27.7100	31.77	9.46	41.23	50.00	-8.77	AVG

Emission Level= Read Level+ Correct Factor

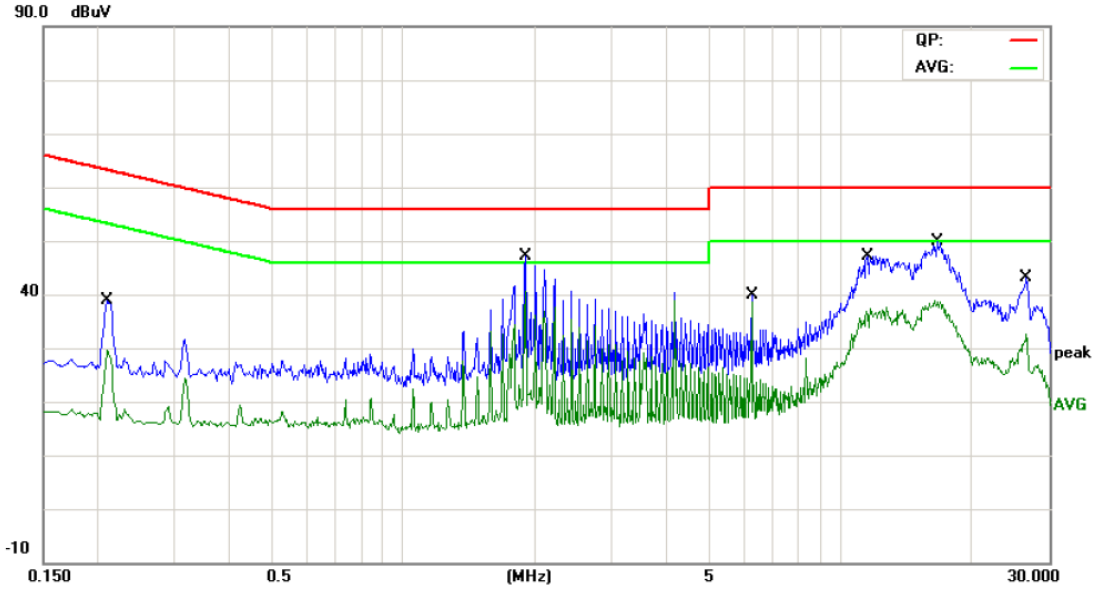
Temperature:	24.8 ℃	**Relative Humidity:**	42%
Test Voltage:	AC 120V/60Hz		
Terminal:	Neutral		
Test Mode:	Mode 1(Model: 80012)		
Remark:	Only worse case is reported.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.2139	33.95	9.79	43.74	63.05	-19.31	QP
2		0.2139	28.09	9.79	37.88	53.05	-15.17	AVG
3		1.7058	34.02	9.85	43.87	56.00	-12.13	QP
4		1.7058	25.14	9.85	34.99	46.00	-11.01	AVG
5		2.1229	25.70	9.84	35.54	46.00	-10.46	AVG
6		2.1299	37.99	9.84	47.83	56.00	-8.17	QP
7		5.6459	34.47	9.85	44.32	60.00	-15.68	QP
8		5.6459	22.38	9.85	32.23	50.00	-17.77	AVG
9	*	13.1059	44.36	9.82	54.18	60.00	-5.82	QP
10		13.1059	33.97	9.82	43.79	50.00	-6.21	AVG
11		28.2500	41.12	9.58	50.70	60.00	-9.30	QP
12		28.2500	29.35	9.58	38.93	50.00	-11.07	AVG

Emission Level= Read Level+ Correct Factor

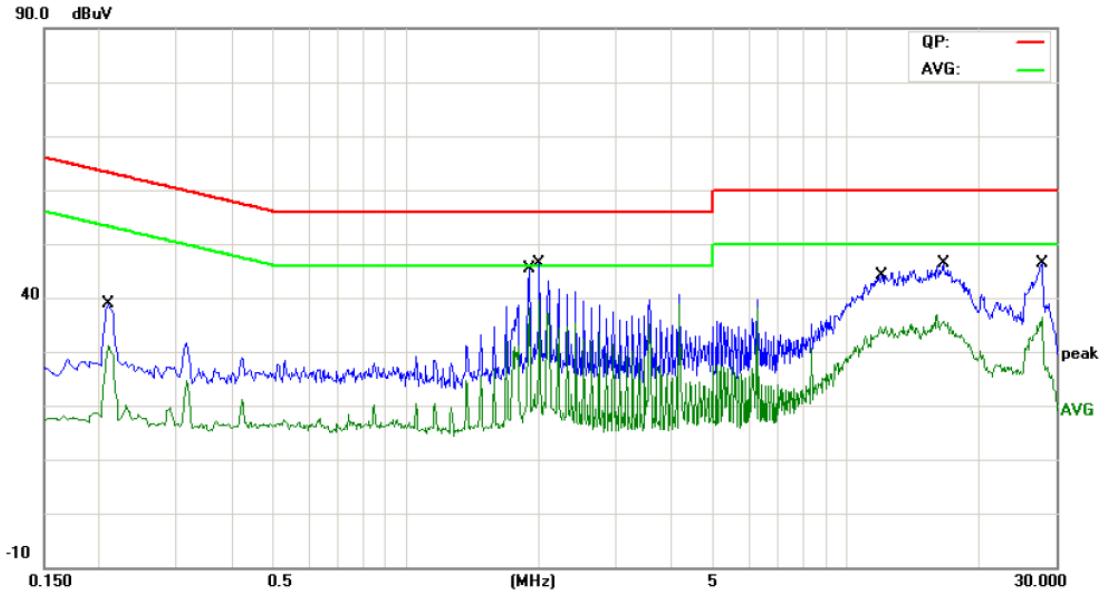
Temperature:	24.8 ℃	**Relative Humidity:**	42%
Test Voltage:	AC 120V/60Hz		
Terminal:	Line		
Test Mode:	Mode 1(Model: 80013)		
Remark:	Only worse case is reported.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.2099	29.06	9.78	38.84	63.21	-24.37	QP
2		0.2099	19.90	9.78	29.68	53.21	-23.53	AVG
3		1.8979	37.24	9.85	47.09	56.00	-8.91	QP
4	*	1.8979	30.85	9.85	40.70	46.00	-5.30	AVG
5		6.2618	30.11	9.83	39.94	60.00	-20.06	QP
6		6.2618	8.25	9.83	18.08	50.00	-31.92	AVG
7		11.5018	37.35	9.82	47.17	60.00	-12.83	QP
8		11.5018	26.21	9.82	36.03	50.00	-13.97	AVG
9		16.6459	40.08	9.84	49.92	60.00	-10.08	QP
10		16.6459	28.67	9.84	38.51	50.00	-11.49	AVG
11		26.5859	34.02	9.23	43.25	60.00	-16.75	QP
12		26.5859	23.34	9.23	32.57	50.00	-17.43	AVG

Emission Level= Read Level+ Correct Factor

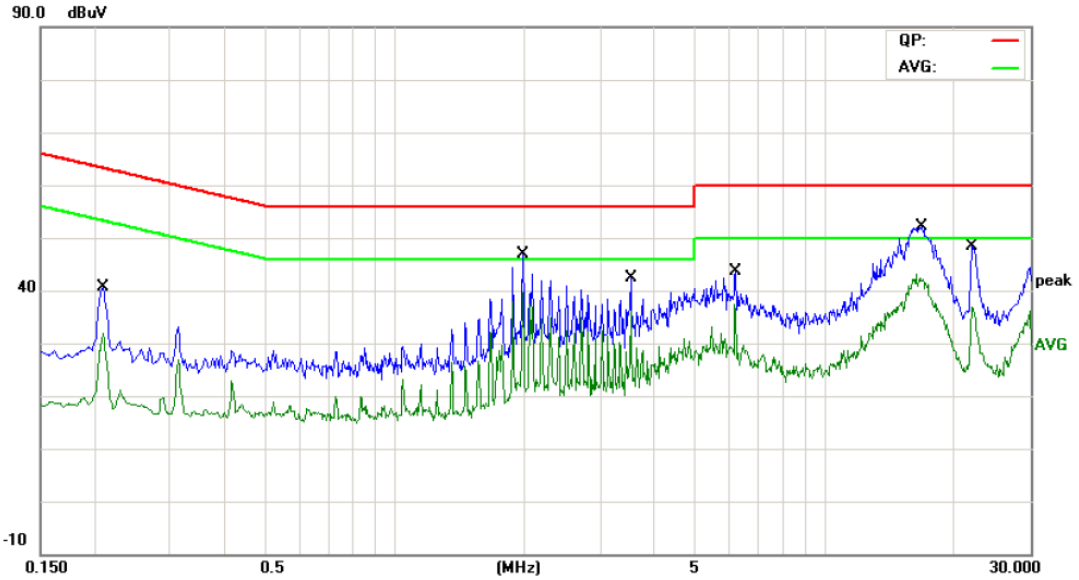
Temperature:	24.8 ℃	**Relative Humidity:**	42%
Test Voltage:	AC 120V/60Hz		
Terminal:	Neutral		
Test Mode:	Mode 1(Model: 80013)		
Remark:	Only worse case is reported.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.2099	29.21	9.59	38.80	63.21	-24.41	QP
2		0.2099	21.54	9.59	31.13	53.21	-22.08	AVG
3		1.8979	35.54	9.85	45.39	56.00	-10.61	QP
4		1.8979	28.25	9.85	38.10	46.00	-7.90	AVG
5		2.0059	36.52	9.86	46.38	56.00	-9.62	QP
6	*	2.0059	29.67	9.86	39.53	46.00	-6.47	AVG
7		12.0338	34.35	9.86	44.21	60.00	-15.79	QP
8		12.0338	24.00	9.86	33.86	50.00	-16.14	AVG
9		16.6298	36.50	9.78	46.28	60.00	-13.72	QP
10		16.6298	25.96	9.78	35.74	50.00	-14.26	AVG
11		27.8619	36.70	9.68	46.38	60.00	-13.62	QP
12		27.8619	26.58	9.68	36.26	50.00	-13.74	AVG

Emission Level= Read Level+ Correct Factor

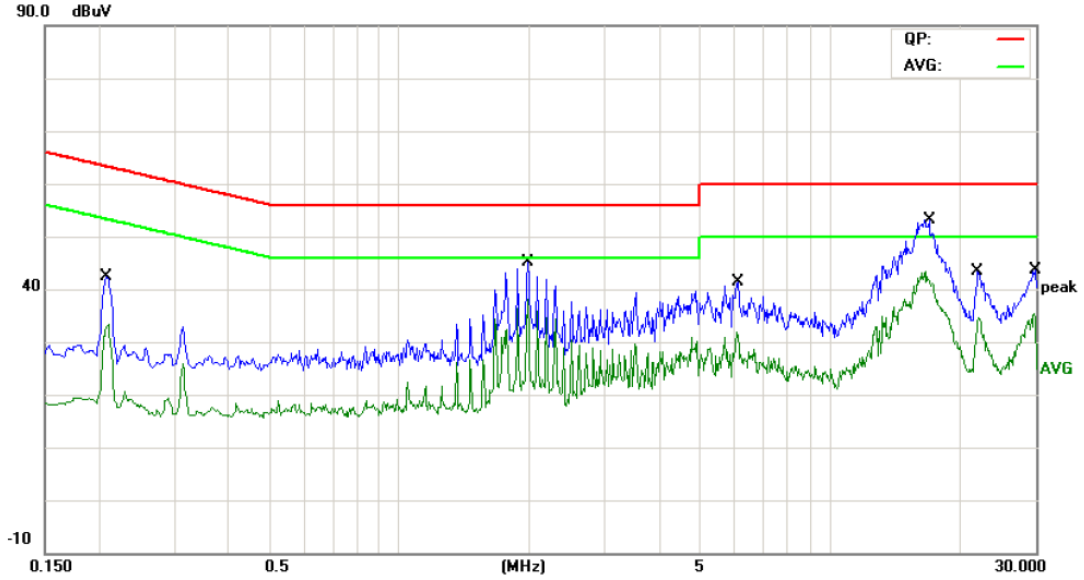
Temperature:	24.8 ℃	**Relative Humidity:**	42%
Test Voltage:	AC 120V/60Hz		
Terminal:	Line		
Test Mode:	Mode 1(Model: 80014)		
Remark:	Only worse case is reported.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.2099	30.96	9.78	40.74	63.21	-22.47	QP
2		0.2099	21.97	9.78	31.75	53.21	-21.46	AVG
3		1.9858	36.97	9.85	46.82	56.00	-9.18	QP
4	*	1.9858	29.74	9.85	39.59	46.00	-6.41	AVG
5		3.5419	32.52	9.85	42.37	56.00	-13.63	QP
6		3.5419	19.52	9.85	29.37	46.00	-16.63	AVG
7		6.1897	33.75	9.84	43.59	60.00	-16.41	QP
8		6.1897	26.44	9.84	36.28	50.00	-13.72	AVG
9		16.7698	42.35	9.84	52.19	60.00	-7.81	QP
10		16.7698	31.97	9.84	41.81	50.00	-8.19	AVG
11		22.0457	38.90	9.47	48.37	60.00	-11.63	QP
12		22.0457	27.38	9.47	36.85	50.00	-13.15	AVG

Emission Level= Read Level+ Correct Factor

Temperature:	24.8 ℃	**Relative Humidity:**	42%
Test Voltage:	AC 120V/60Hz		
Terminal:	Neutral		
Test Mode:	Mode 1(Model: 80014)		
Remark:	Only worse case is reported.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.2083	32.62	9.78	42.40	63.27	-20.87	QP
2		0.2083	23.08	9.78	32.86	53.27	-20.41	AVG
3		1.9858	35.38	9.85	45.23	56.00	-10.77	QP
4		1.9858	28.32	9.85	38.17	46.00	-7.83	AVG
5		6.0979	31.60	9.84	41.44	60.00	-18.56	QP
6		6.0979	21.35	9.84	31.19	50.00	-18.81	AVG
7	*	16.9817	43.21	9.84	53.05	60.00	-6.95	QP
8		16.9817	31.71	9.84	41.55	50.00	-8.45	AVG
9		22.0419	33.96	9.47	43.43	60.00	-16.57	QP
10		22.0419	24.22	9.47	33.69	50.00	-16.31	AVG
11		29.8738	33.68	9.92	43.60	60.00	-16.40	QP
12		29.8738	24.96	9.92	34.88	50.00	-15.12	AVG

Emission Level= Read Level+ Correct Factor

Attachment B-- Radiated Emission Test Data

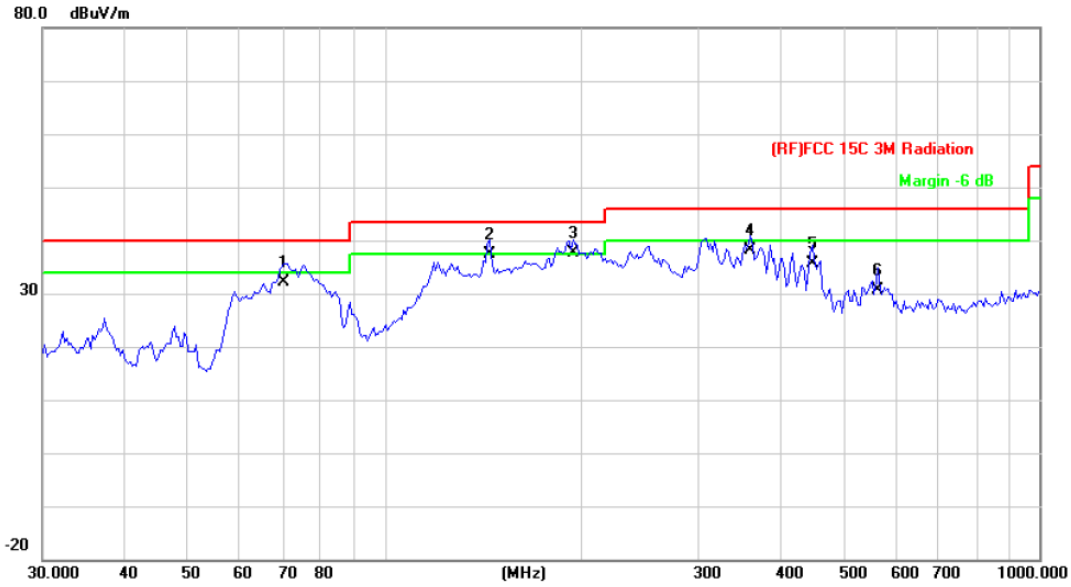
9KHz~30MHz

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

Temperature:	24.6 ℃	**Relative Humidity:**	43%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz(Model: 80012)		
Remark:	Only worse case is reported.		

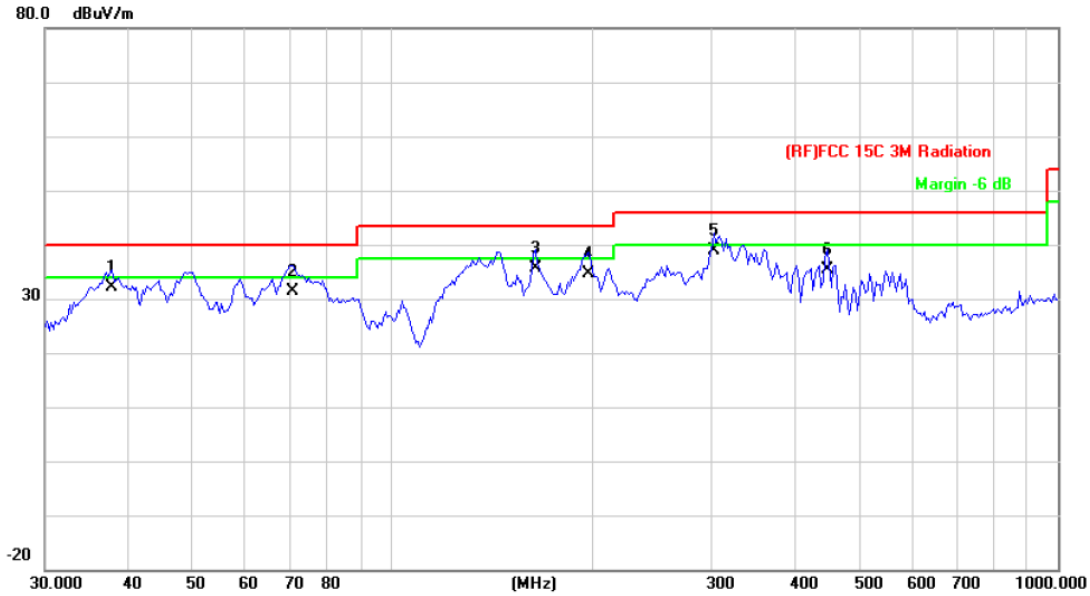


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		70.0901	55.65	-23.55	32.10	40.00	-7.90	QP
2		144.3348	59.52	-22.02	37.50	43.50	-6.00	QP
3	*	193.7726	57.42	-19.82	37.60	43.50	-5.90	QP
4		361.7139	51.95	-13.85	38.10	46.00	-7.90	QP
5		449.5557	47.48	-11.78	35.70	46.00	-10.30	QP
6		566.6221	39.20	-8.60	30.60	46.00	-15.40	QP

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

Emission Level= Read Level+ Correct Factor

Temperature:	24.6 ℃	**Relative Humidity:**	43%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHz(Model: 80012)		
Remark:	Only worse case is reported.		

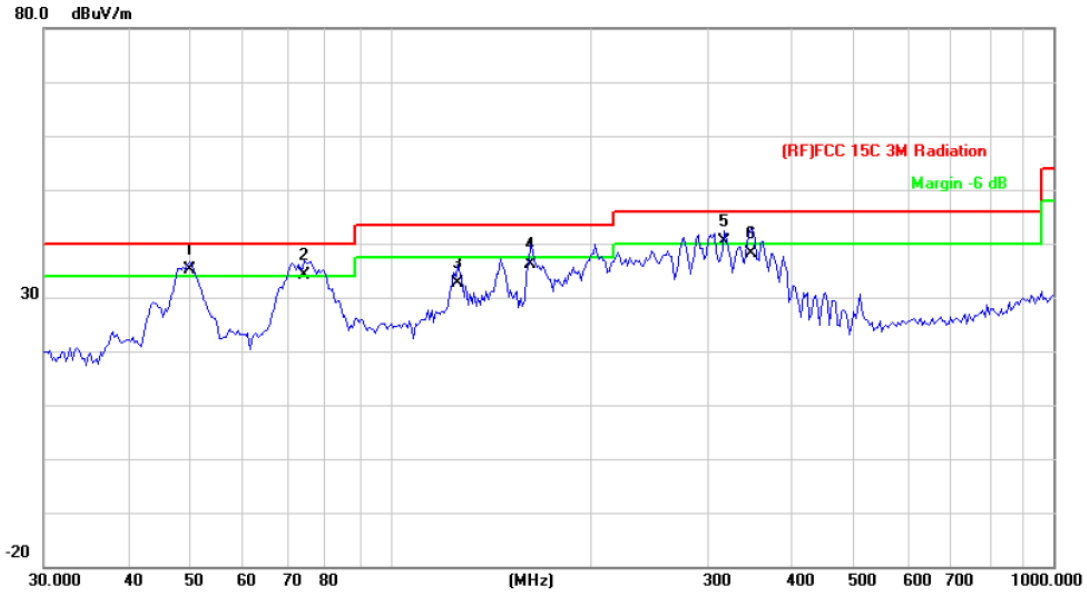


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		37.8121	50.33	-18.13	32.20	40.00	-7.80	QP
2		70.5836	55.01	-23.51	31.50	40.00	-8.50	QP
3		163.7548	56.42	-20.72	35.70	43.50	-7.80	QP
4		196.5098	54.56	-19.86	34.70	43.50	-8.80	QP
5	*	303.5437	54.77	-15.87	38.90	46.00	-7.10	QP
6		449.5557	47.18	-11.78	35.40	46.00	-10.60	QP

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

Emission Level= Read Level+ Correct Factor

Temperature:	24.6℃	**Relative Humidity:**	43%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz(Model: 80013)		
Remark:	Only worse case is reported.		

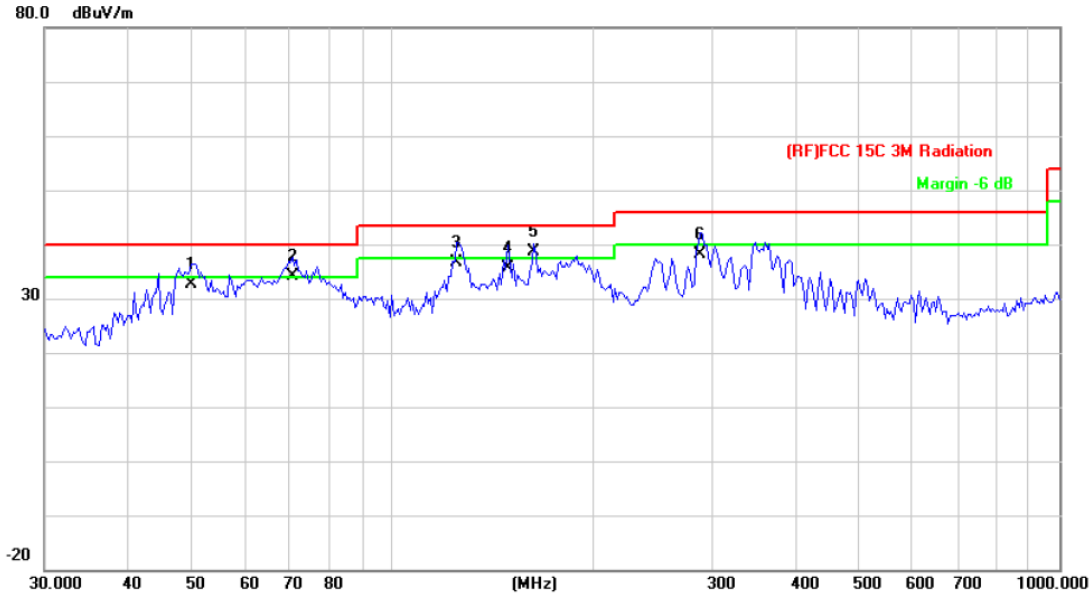


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	49.7068	58.49	-23.25	35.24	40.00	-4.76	QP
2	!	74.1350	57.40	-23.15	34.25	40.00	-5.75	QP
3		126.3285	55.14	-22.40	32.74	43.50	-10.76	QP
4		162.6106	57.00	-20.76	36.24	43.50	-7.26	QP
5	!	318.8170	55.71	-15.39	40.32	46.00	-5.68	QP
6		349.2500	52.66	-14.42	38.24	46.00	-7.76	QP

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

Emission Level= Read Level+ Correct Factor

Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHz(Model: 80013)		
Remark:	Only worse case is reported.		

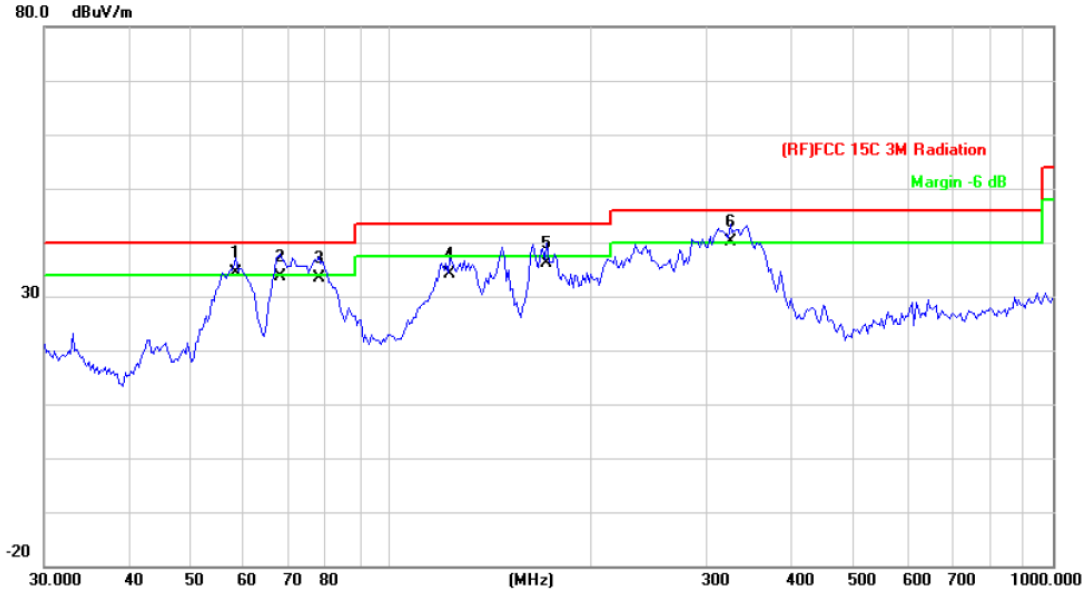


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		49.7068	55.89	-23.25	32.64	40.00	-7.36	QP
2	!	70.5836	57.76	-23.51	34.25	40.00	-5.75	QP
3		124.5690	58.93	-22.37	36.56	43.50	-6.94	QP
4		148.4410	57.34	-21.59	35.75	43.50	-7.75	QP
5	*	162.6106	59.28	-20.76	38.52	43.50	-4.98	QP
6		289.0020	54.48	-16.23	38.25	46.00	-7.75	QP

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

Emission Level= Read Level+ Correct Factor

Temperature:	24.6℃	**Relative Humidity:**	43%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz(Model: 80014)		
Remark:	Only worse case is reported.		

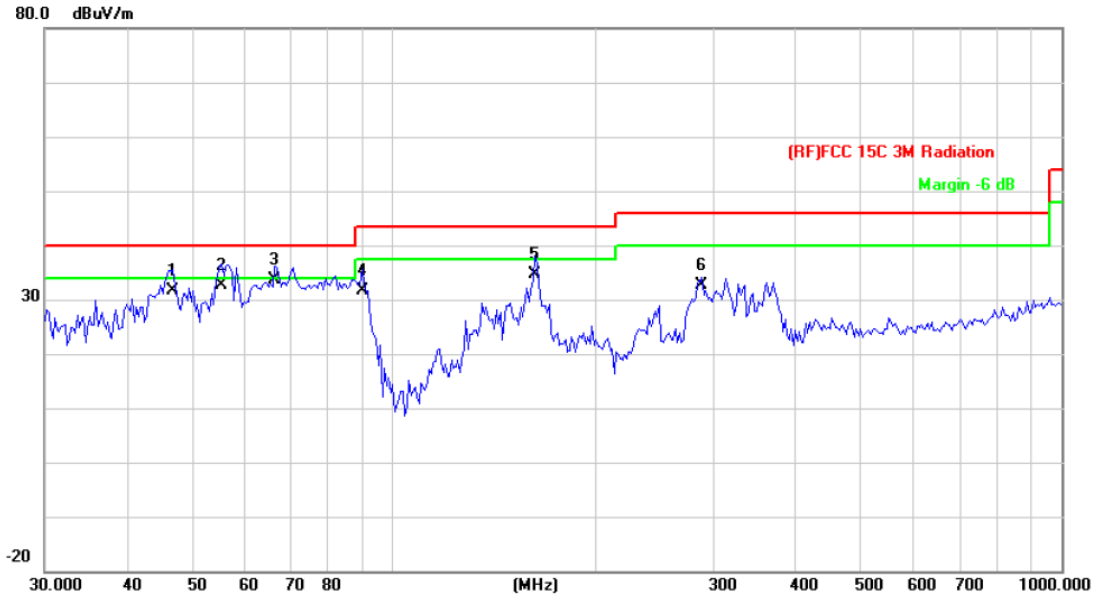


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	58.4074	58.54	-24.27	34.27	40.00	-5.73	QP
2		68.1512	57.35	-23.73	33.62	40.00	-6.38	QP
3		77.8653	56.20	-22.78	33.42	40.00	-6.58	QP
4		122.8340	56.61	-22.36	34.25	43.50	-9.25	QP
5		171.9945	56.63	-20.42	36.21	43.50	-7.29	QP
6	!	325.5957	55.42	-15.17	40.25	46.00	-5.75	QP

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

Emission Level= Read Level+ Correct Factor

Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHz(Model: 80014)		
Remark:	Only worse case is reported.		



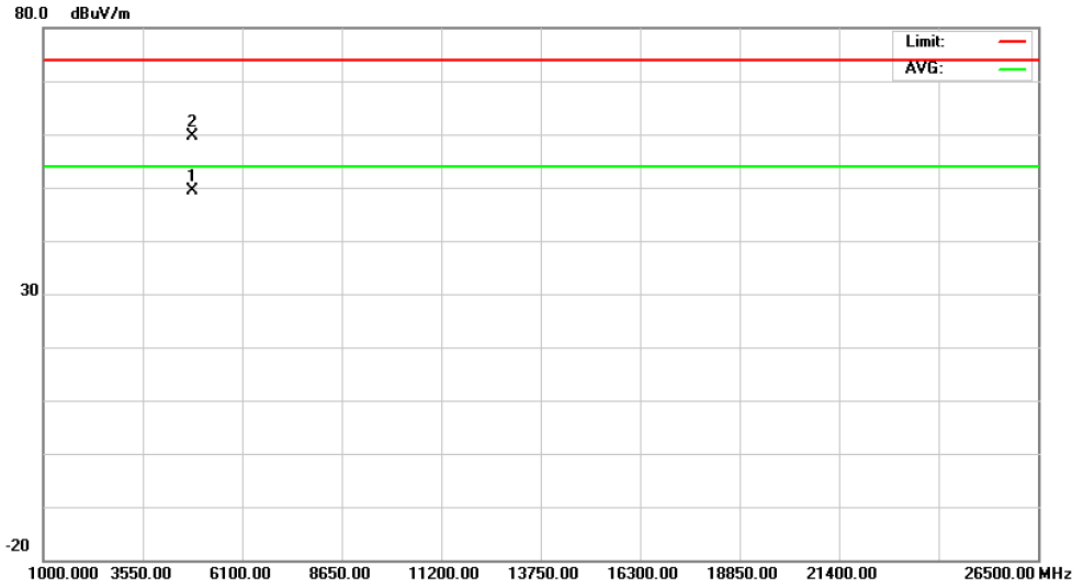
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		46.6664	53.90	-22.22	31.68	40.00	-8.32	QP
2		55.2207	56.59	-23.92	32.67	40.00	-7.33	QP
3	*	66.2661	57.48	-23.90	33.58	40.00	-6.42	QP
4		89.5899	53.68	-22.03	31.65	43.50	-11.85	QP
5		162.6106	55.38	-20.76	34.62	43.50	-8.88	QP
6		289.0020	48.81	-16.23	32.58	46.00	-13.42	QP

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

Emission Level= Read Level+ Correct Factor

Above 1GHz

Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	4823.563	36.85	12.54	49.39	54.00	-4.61	AVG
2		4824.264	47.00	12.54	59.54	74.00	-14.46	peak

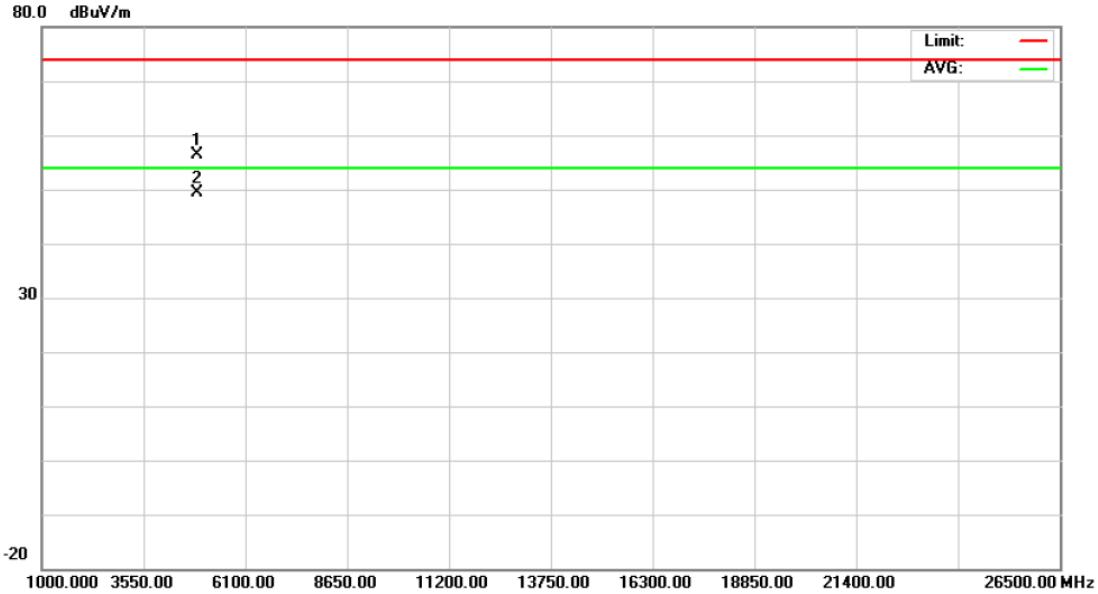
Emission Level= Read Level+ Correct Factor

Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	4823.564	32.92	12.54	45.46	54.00	-8.54	AVG
2		4824.462	43.81	12.54	56.35	74.00	-17.65	peak

Emission Level= Read Level+ Correct Factor

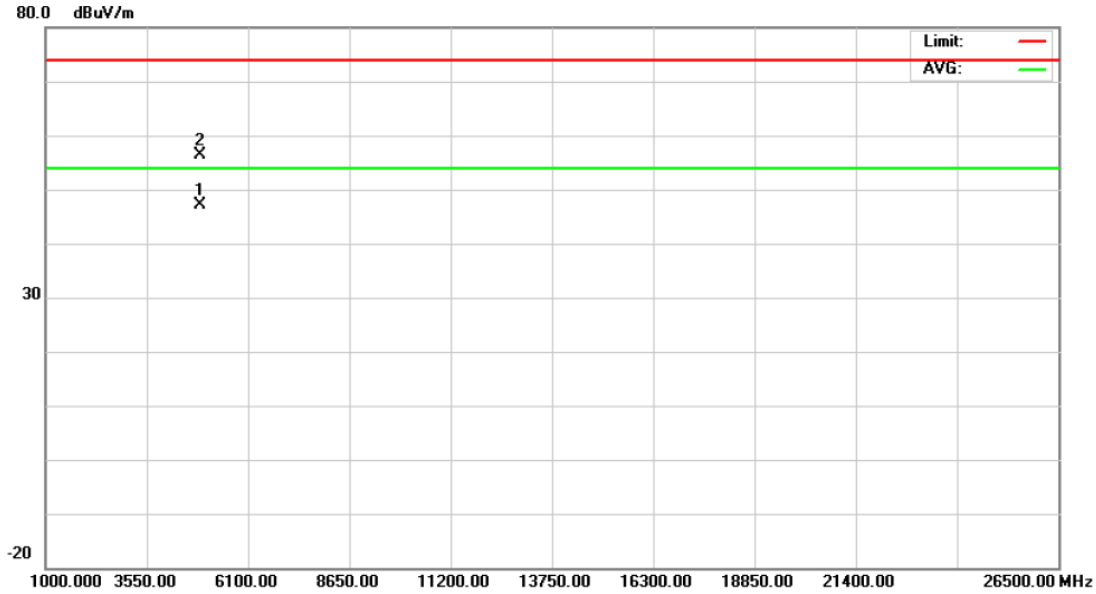
Temperature:	25 ℃	**Relative Humidity:**	55%
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2437MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4874.235	43.50	12.85	56.35	74.00	-17.65	peak
2	*	4875.394	36.49	12.86	49.35	54.00	-4.65	AVG

Emission Level= Read Level+ Correct Factor

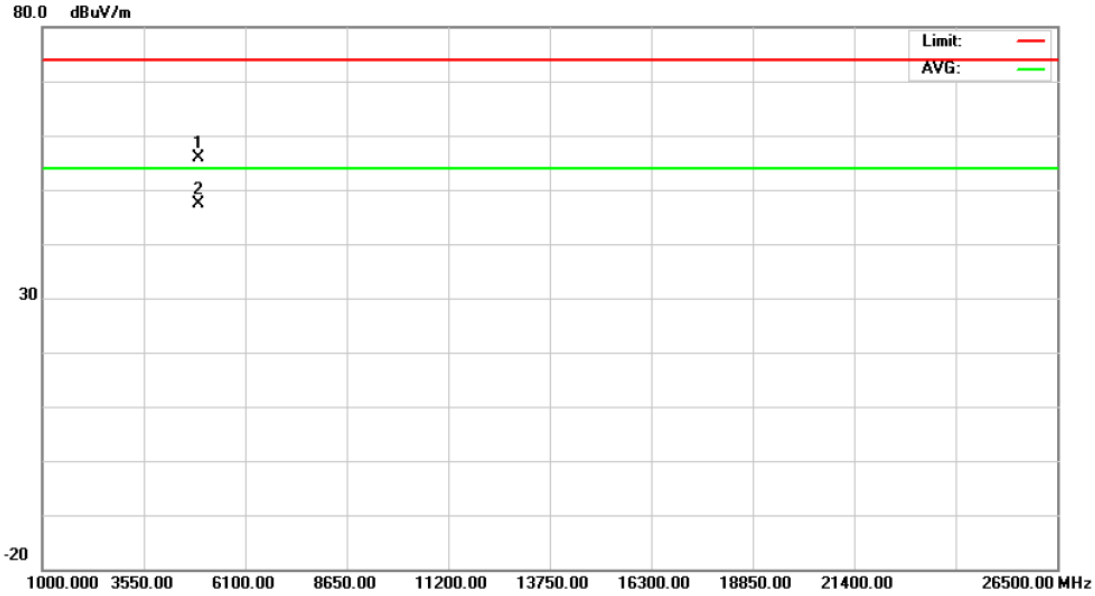
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2437MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	4874.269	34.18	12.85	47.03	54.00	-6.97	AVG
2		4874.954	43.41	12.85	56.26	74.00	-17.74	peak

Emission Level= Read Level+ Correct Factor

Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2462MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4923.269	42.81	13.15	55.96	74.00	-18.04	peak
2	*	4924.594	34.20	13.15	47.35	54.00	-6.65	AVG

Emission Level= Read Level+ Correct Factor

Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2462MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4923.231	44.54	13.15	57.69	74.00	-16.31	peak
2	*	4923.346	35.09	13.15	48.24	54.00	-5.76	AVG

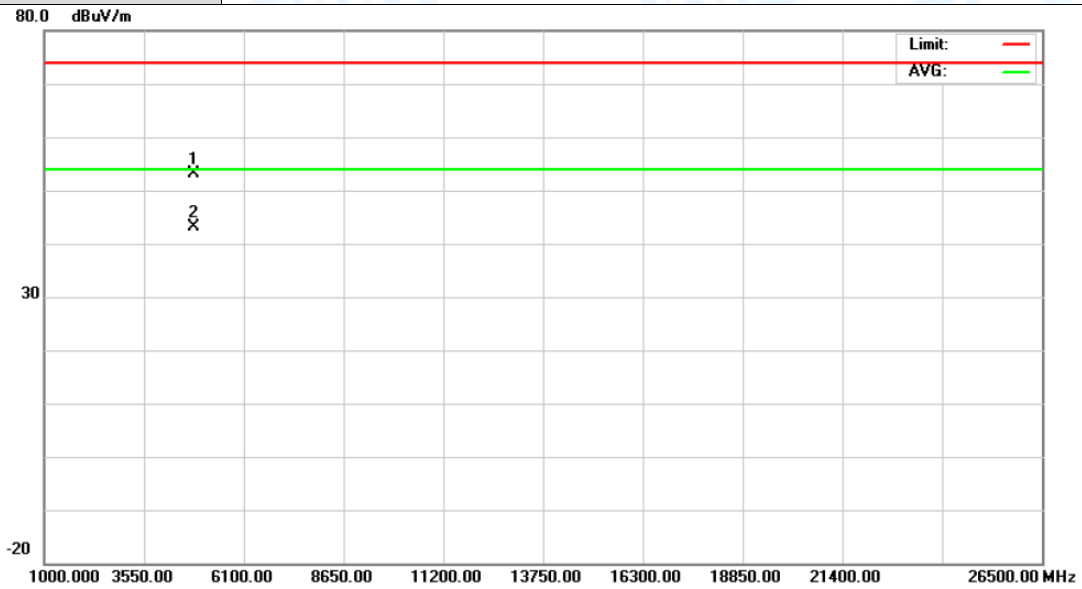
Emission Level= Read Level+ Correct Factor

Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2412MH		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	4824.562	29.77	12.54	42.31	54.00	-11.69	AVG
2		4824.726	45.11	12.54	57.65	74.00	-16.35	peak

Emission Level= Read Level+ Correct Factor

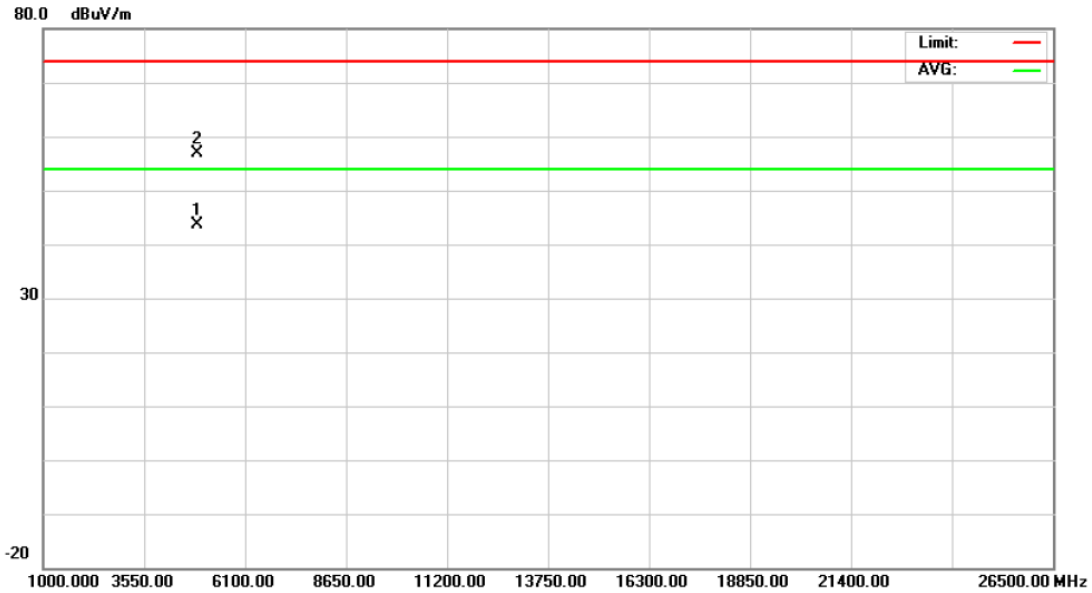
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2412MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4822.134	40.59	12.54	53.13	74.00	-20.87	peak
2	*	4823.362	30.67	12.54	43.21	54.00	-10.79	AVG

Emission Level= Read Level+ Correct Factor

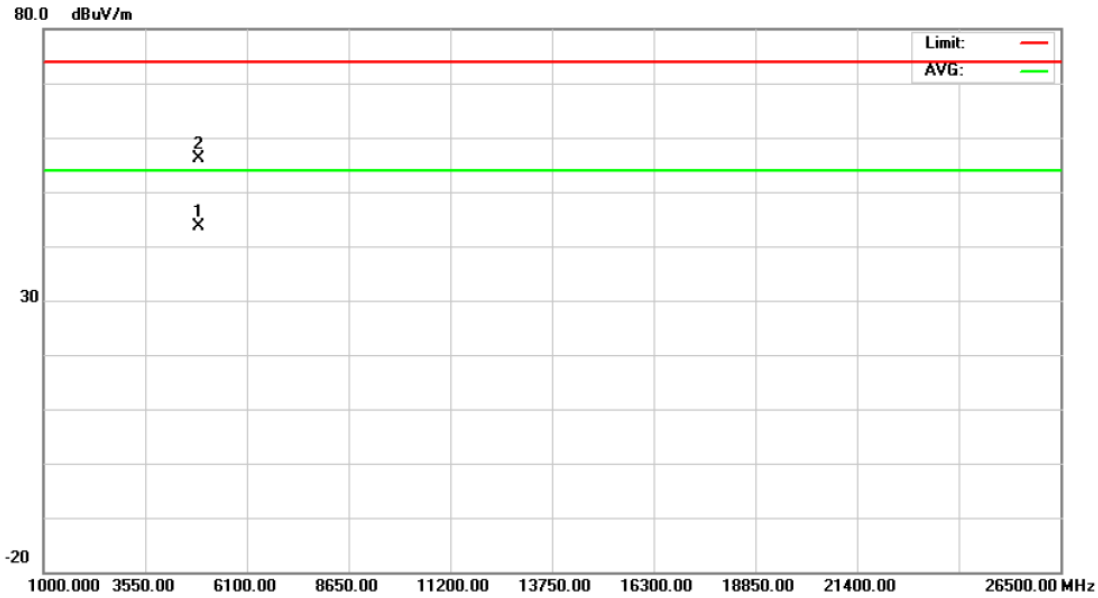
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2437MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	4872.726	30.84	12.84	43.68	54.00	-10.32	AVG
2		4875.263	43.99	12.86	56.85	74.00	-17.15	peak

Emission Level= Read Level+ Correct Factor

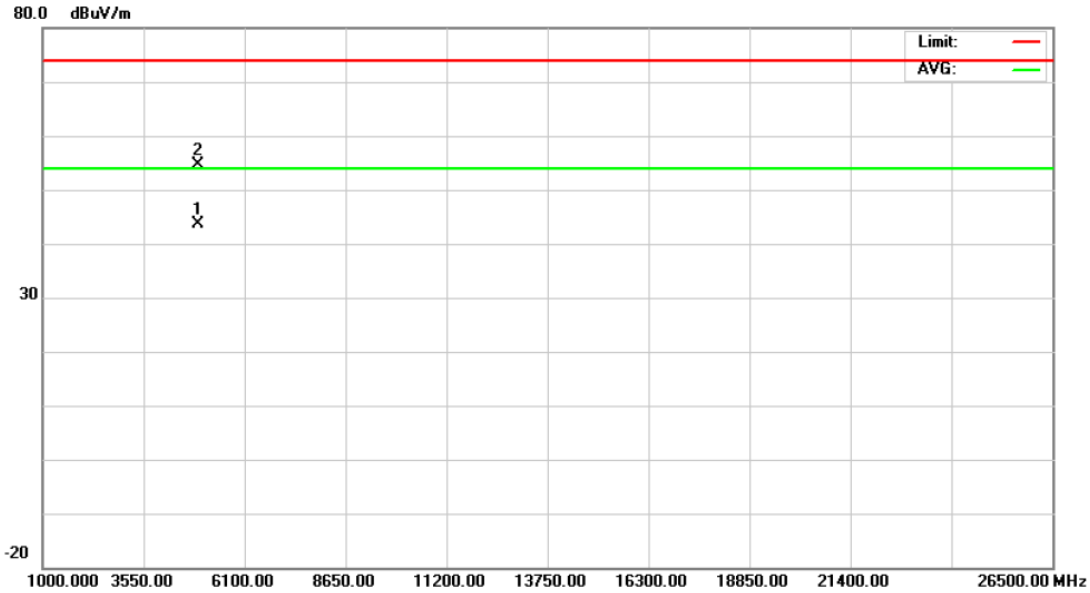
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2437MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	4874.167	30.74	12.85	43.59	54.00	-10.41	AVG
2		4875.361	43.27	12.86	56.13	74.00	-17.87	peak

Emission Level= Read Level+ Correct Factor

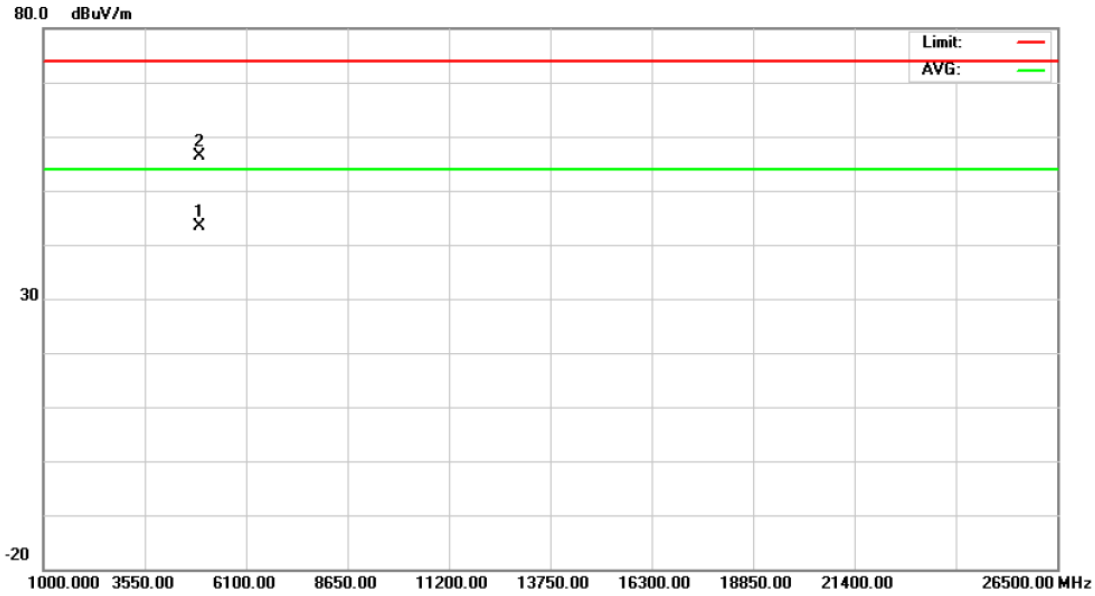
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2462MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	4923.267	30.54	13.15	43.69	54.00	-10.31	AVG
2		4924.464	41.44	13.15	54.59	74.00	-19.41	peak

Emission Level= Read Level+ Correct Factor

Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2462MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	4922.346	30.12	13.15	43.27	54.00	-10.73	AVG
2		4924.264	43.11	13.15	56.26	74.00	-17.74	peak

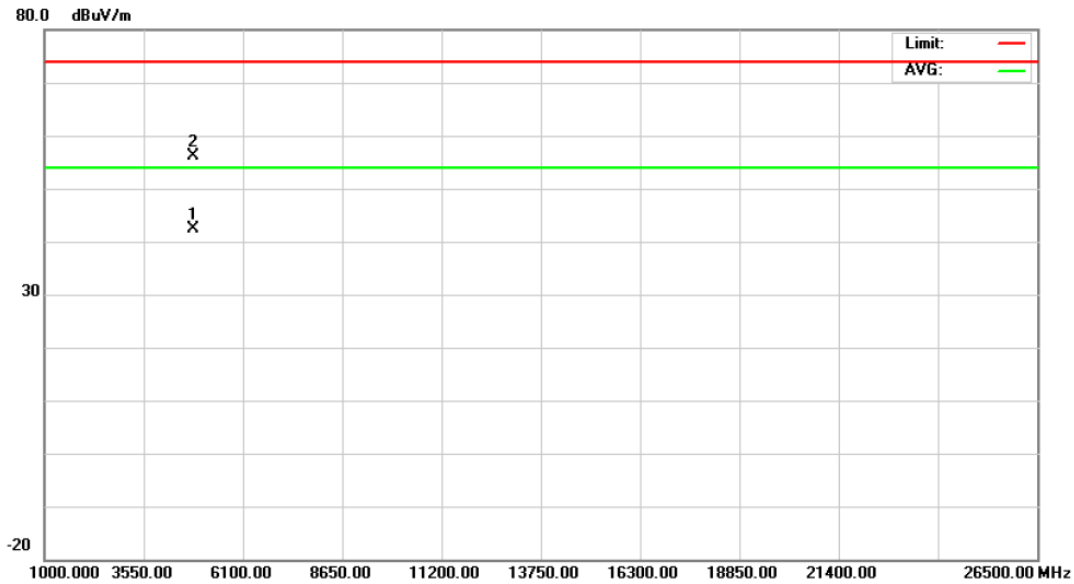
Emission Level= Read Level+ Correct Factor

Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX n(HT20) Mode 2412MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4823.464	45.01	12.54	57.55	74.00	-16.45	peak
2	*	4823.631	29.85	12.54	42.39	54.00	-11.61	AVG

Emission Level= Read Level+ Correct Factor

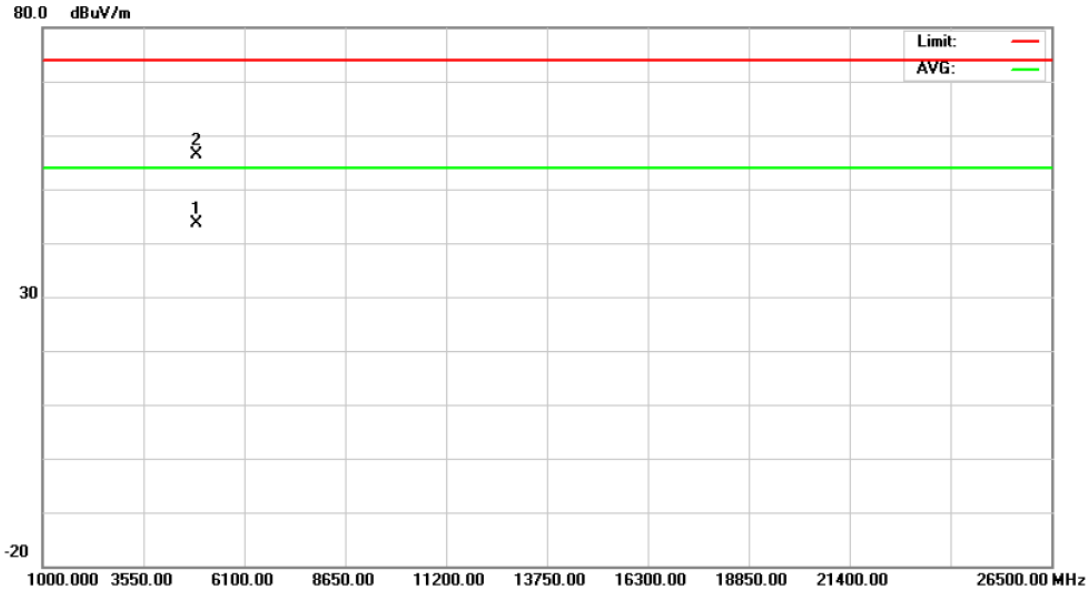
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX n(HT20) Mode 2412MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	4823.813	26.74	15.65	42.39	54.00	-11.61	AVG
2		4824.391	40.48	15.65	56.13	74.00	-17.87	peak

Emission Level= Read Level+ Correct Factor

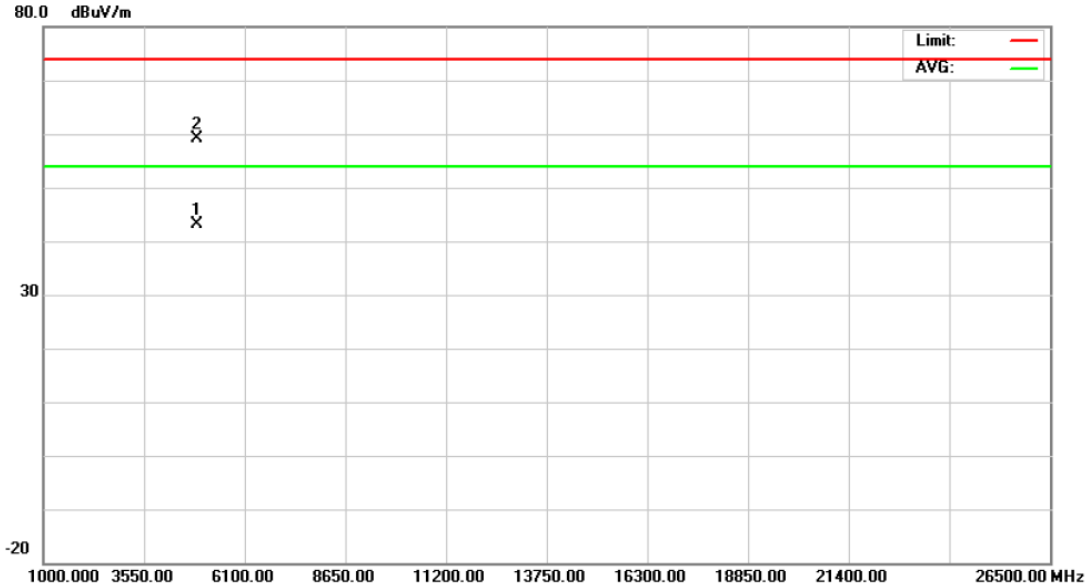
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX n(HT20) Mode 2437MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	4872.461	30.75	12.84	43.59	54.00	-10.41	AVG
2		4873.549	43.41	12.85	56.26	74.00	-17.74	peak

Emission Level= Read Level+ Correct Factor

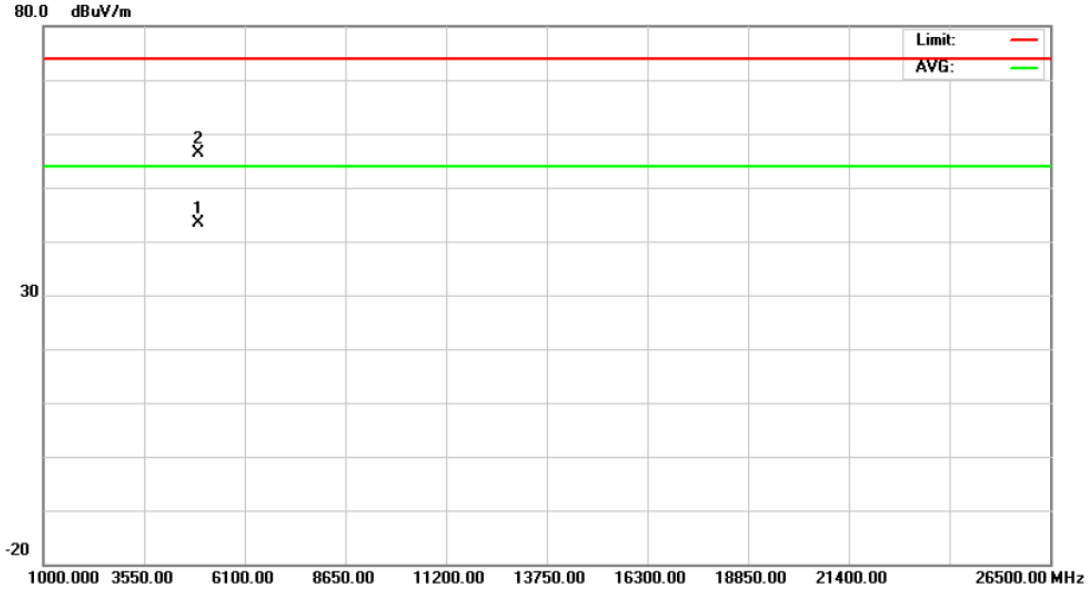
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX n(HT20) Mode 2437MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	4872.593	27.38	15.87	43.25	54.00	-10.75	AVG
2		4873.362	43.35	15.88	59.23	74.00	-14.77	peak

Emission Level= Read Level+ Correct Factor

Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX n(HT20) Mode 2462MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	4922.649	30.11	13.15	43.26	54.00	-10.74	AVG
2		4924.210	43.19	13.15	56.34	74.00	-17.66	peak

Emission Level= Read Level+ Correct Factor

Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX n(HT20) Mode 2462MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4924.136	44.13	12.54	56.67	74.00	-17.33	peak
2	*	4924.392	30.72	12.54	43.26	54.00	-10.74	AVG

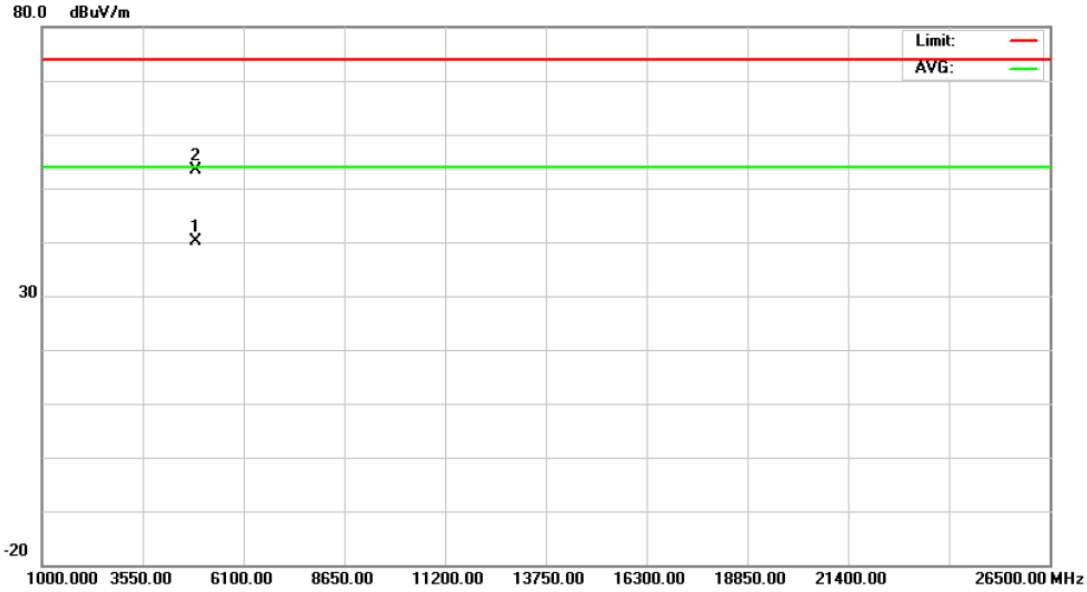
Emission Level= Read Level+ Correct Factor

Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX n(HT40) Mode 2422MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	4842.392	27.46	15.73	43.19	54.00	-10.81	AVG
2		4845.246	40.54	15.75	56.29	74.00	-17.71	peak

Emission Level= Read Level+ Correct Factor

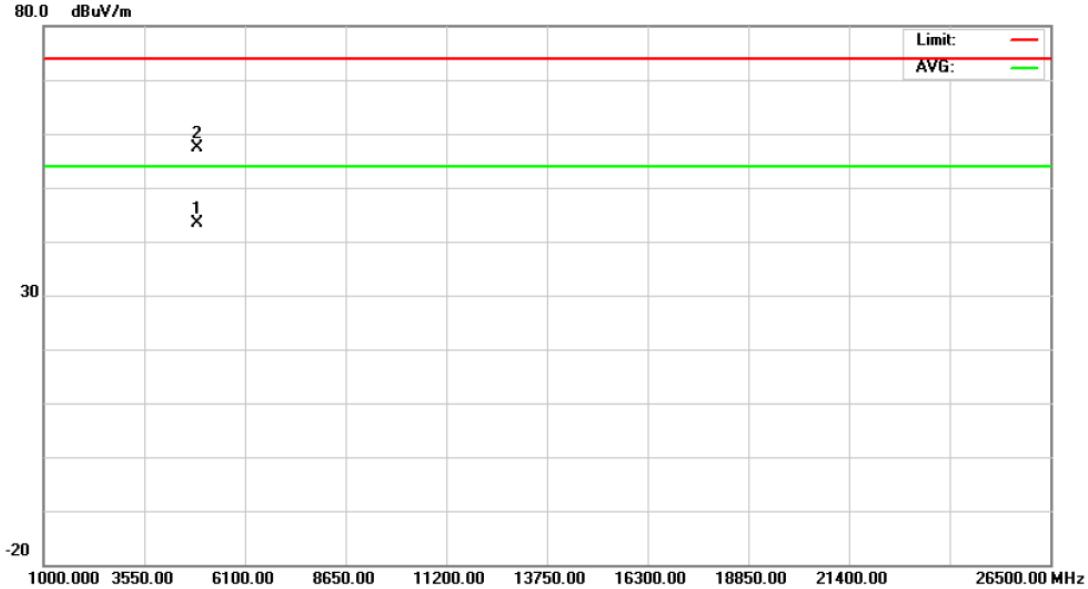
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX n(HT40) Mode 2422MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	4842.500	24.43	15.73	40.16	54.00	-13.84	AVG
2		4844.684	37.54	15.75	53.29	74.00	-20.71	peak

Emission Level= Read Level+ Correct Factor

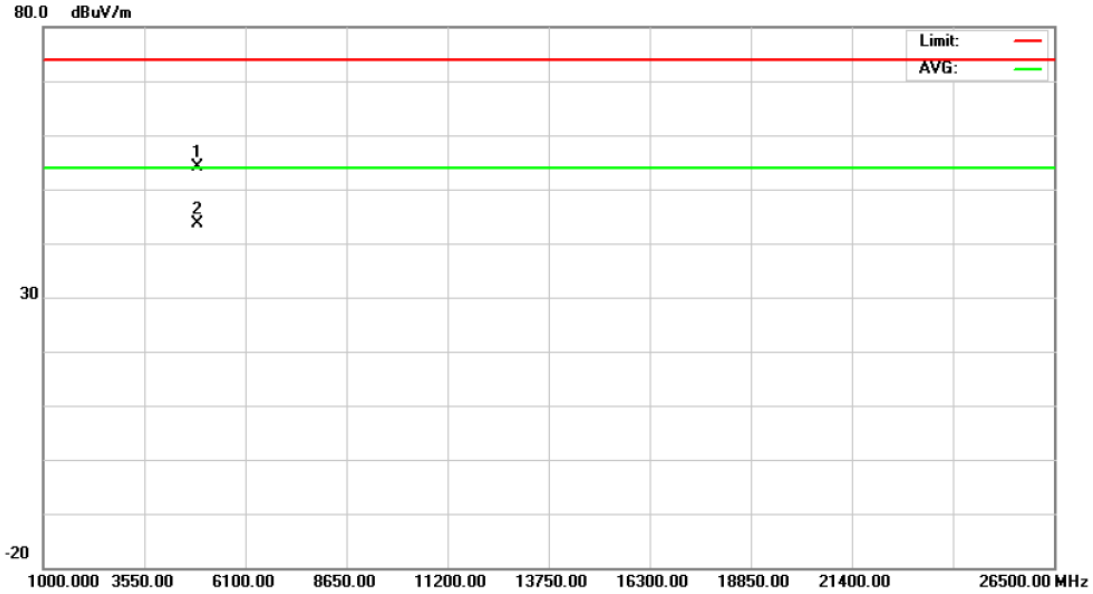
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX n(HT40) Mode 2437MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	4872.567	27.42	15.87	43.29	54.00	-10.71	AVG
2		4873.329	41.41	15.88	57.29	74.00	-16.71	peak

Emission Level= Read Level+ Correct Factor

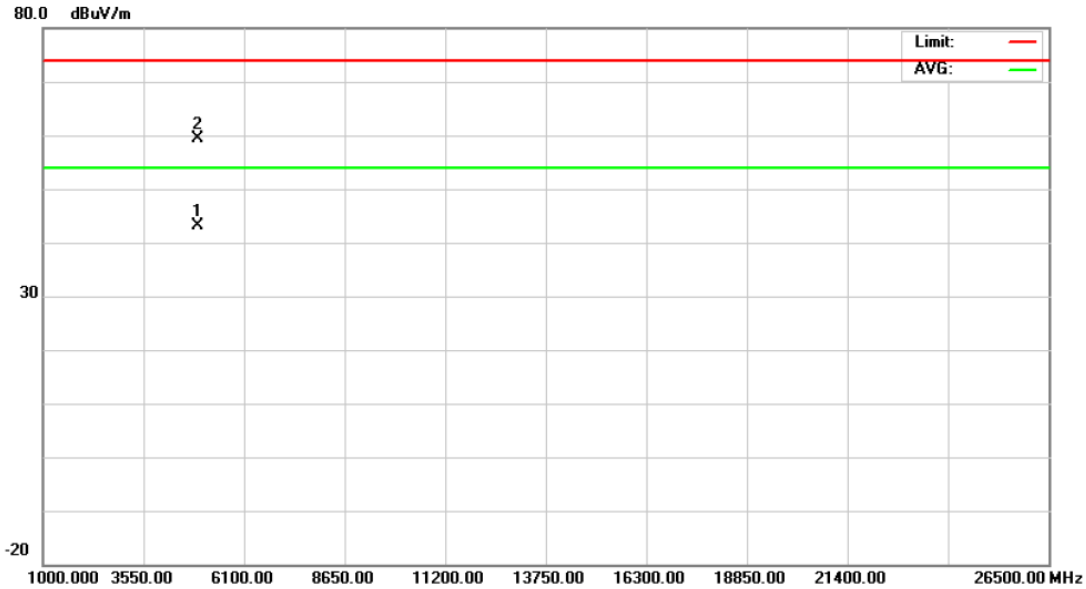
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX n(HT40) Mode 2437MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4872.392	38.26	15.87	54.13	74.00	-19.87	peak
2	*	4872.926	27.69	15.87	43.56	54.00	-10.44	AVG

Emission Level= Read Level+ Correct Factor

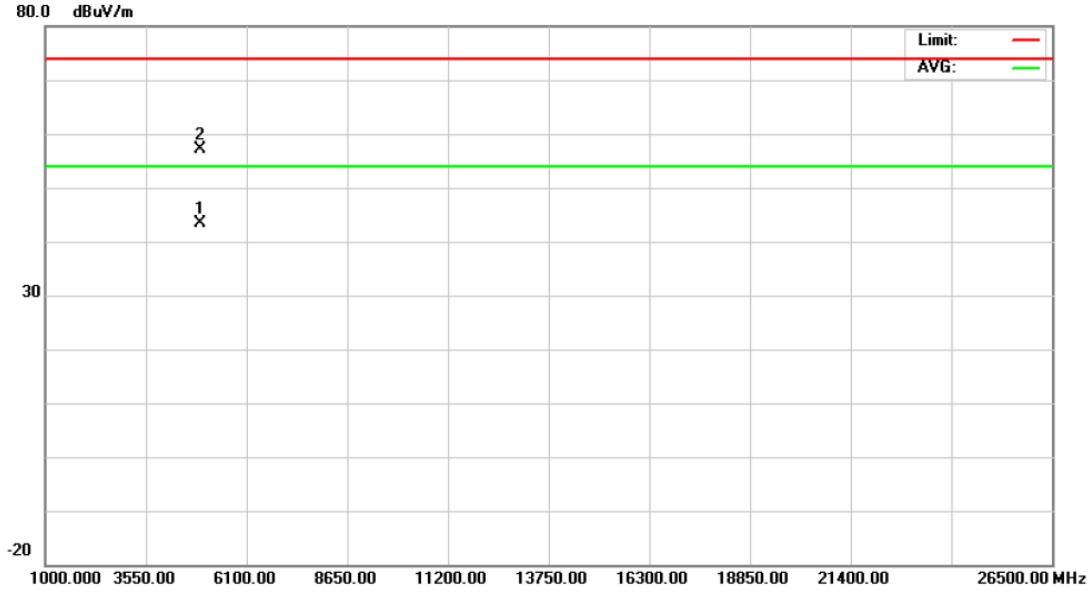
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX n(HT40) Mode 2452MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	4904.697	27.17	16.02	43.19	54.00	-10.81	AVG
2		4905.591	43.27	16.02	59.29	74.00	-14.71	peak

Emission Level= Read Level+ Correct Factor

Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX n(HT40) Mode 2452MHz		
Remark:	No report for the emission which more than 15dB below the prescribed limit.		



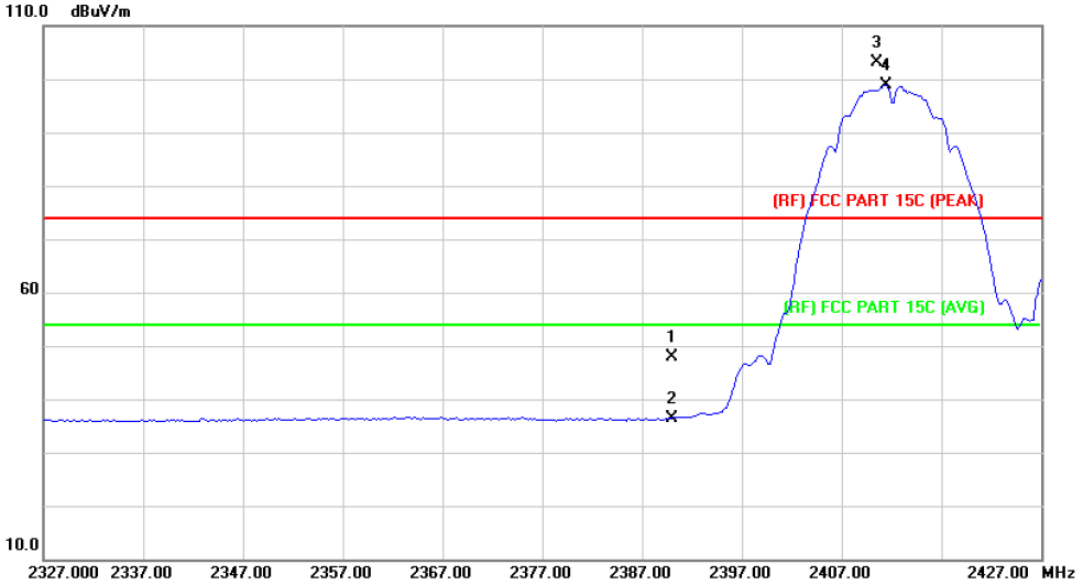
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	4904.283	27.30	16.01	43.31	54.00	-10.69	AVG
2		4904.643	41.00	16.02	57.02	74.00	-16.98	peak

Emission Level= Read Level+ Correct Factor

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

(1) Radiation Test

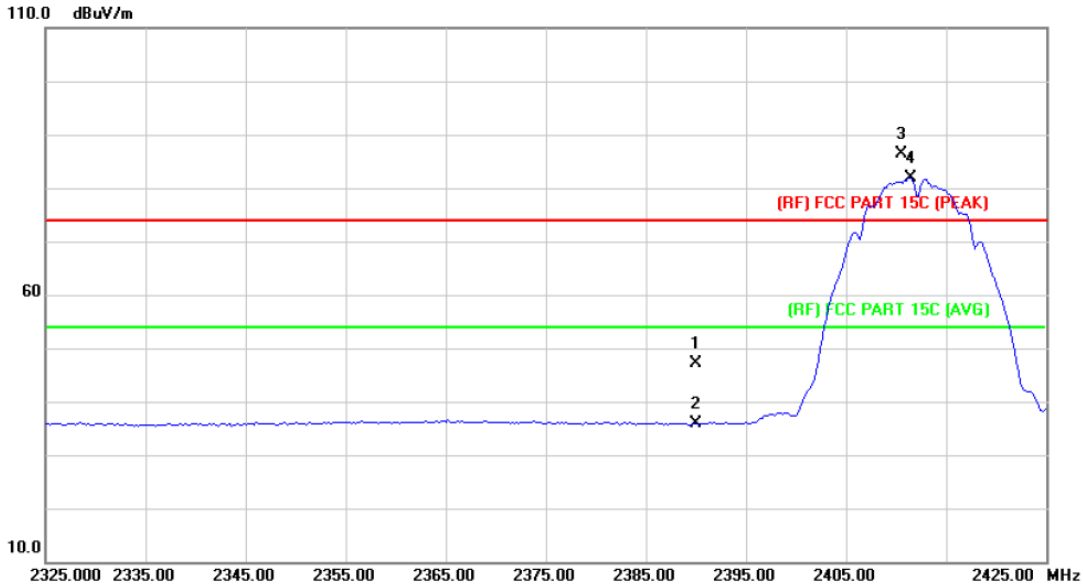
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz		
Remark:	Only show the worst case.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	45.00	2.91	47.91	74.00	-26.09	peak
2		2390.000	33.45	2.91	36.36	54.00	-17.64	AVG
3	X	2410.600	100.18	2.99	103.17	Fundamental Frequency		peak
4	*	2411.400	95.92	3.00	98.92	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

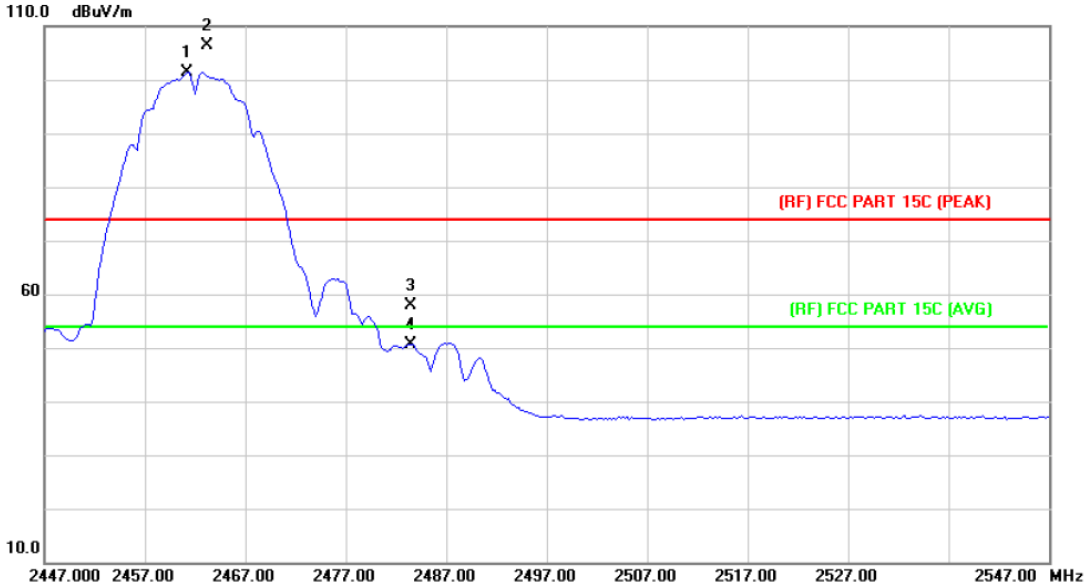
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHz		
Remark:	Only show the worst case.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	44.23	2.91	47.14	74.00	-26.86	peak
2		2390.000	32.95	2.91	35.86	54.00	-18.14	AVG
3	X	2410.600	83.32	2.99	86.31	Fundamental Frequency		peak
4	*	2411.400	78.88	3.00	81.88	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

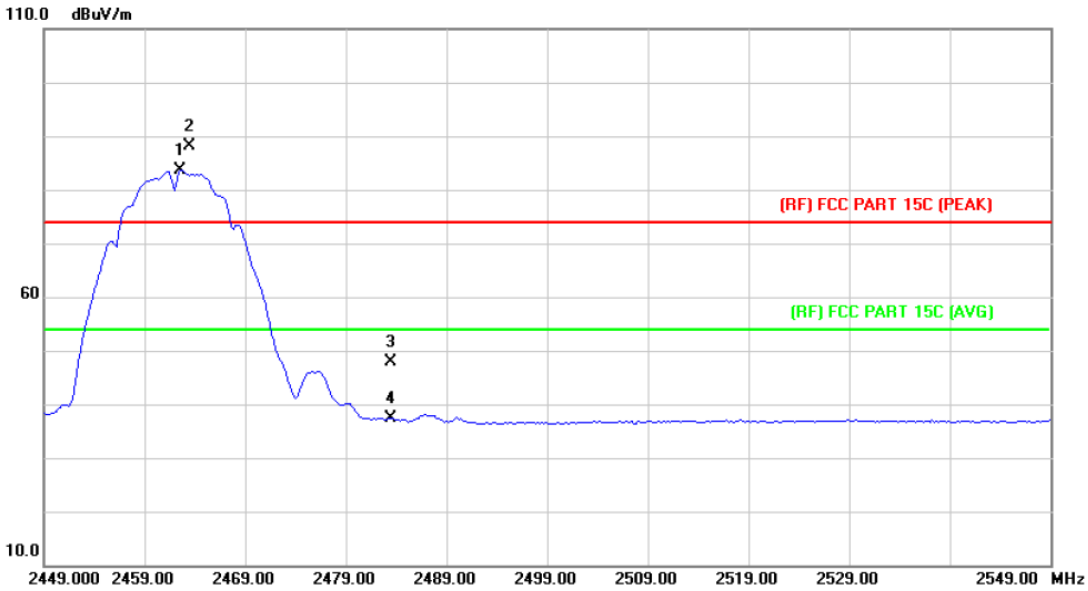
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2462MHz		
Remark:	Only show the worst case.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2461.200	98.03	3.28	101.31	Fundamental Frequency		AVG
2	X	2463.200	103.06	3.29	106.35	Fundamental Frequency		peak
3		2483.500	54.49	3.40	57.89	74.00	-16.11	peak
4		2483.500	47.20	3.40	50.60	54.00	-3.40	AVG

Emission Level= Read Level+ Correct Factor

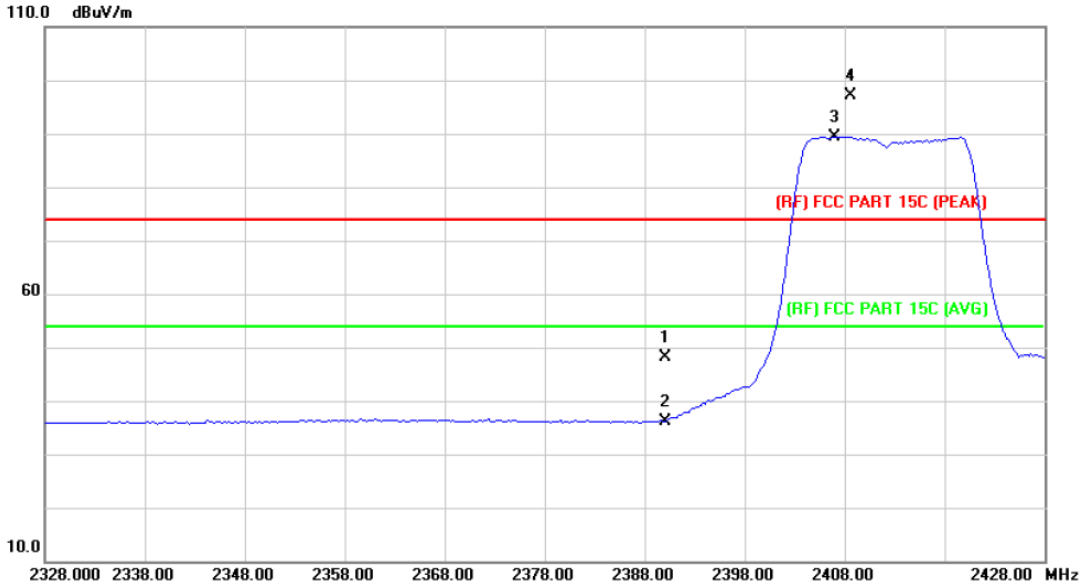
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2462MHz		
Remark:	Only show the worst case.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2462.600	80.30	3.28	83.58	Fundamental Frequency		AVG
2	X	2463.400	84.83	3.29	88.12	Fundamental Frequency		peak
3		2483.500	44.47	3.40	47.87	74.00	-26.13	peak
4		2483.500	34.05	3.40	37.45	54.00	-16.55	AVG

Emission Level= Read Level+ Correct Factor

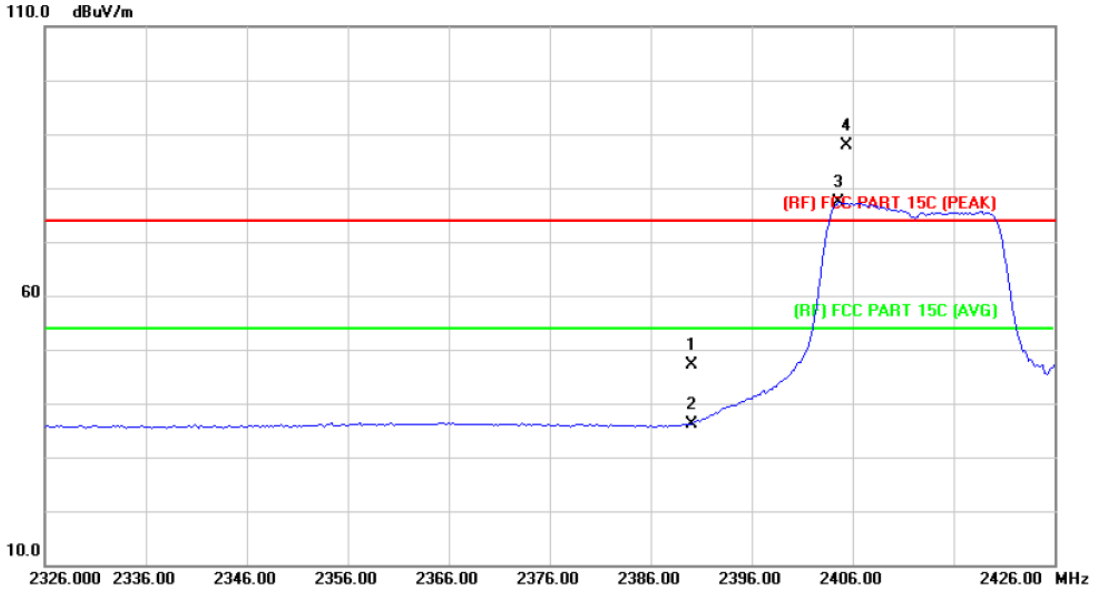
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2412MHz		
Remark:	Only show the worst case.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	45.31	2.91	48.22	74.00	-25.78	peak
2		2390.000	33.33	2.91	36.24	54.00	-17.76	AVG
3	*	2407.000	86.50	2.96	89.46	Fundamental Frequency		AVG
4	X	2408.650	94.22	2.98	97.20	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

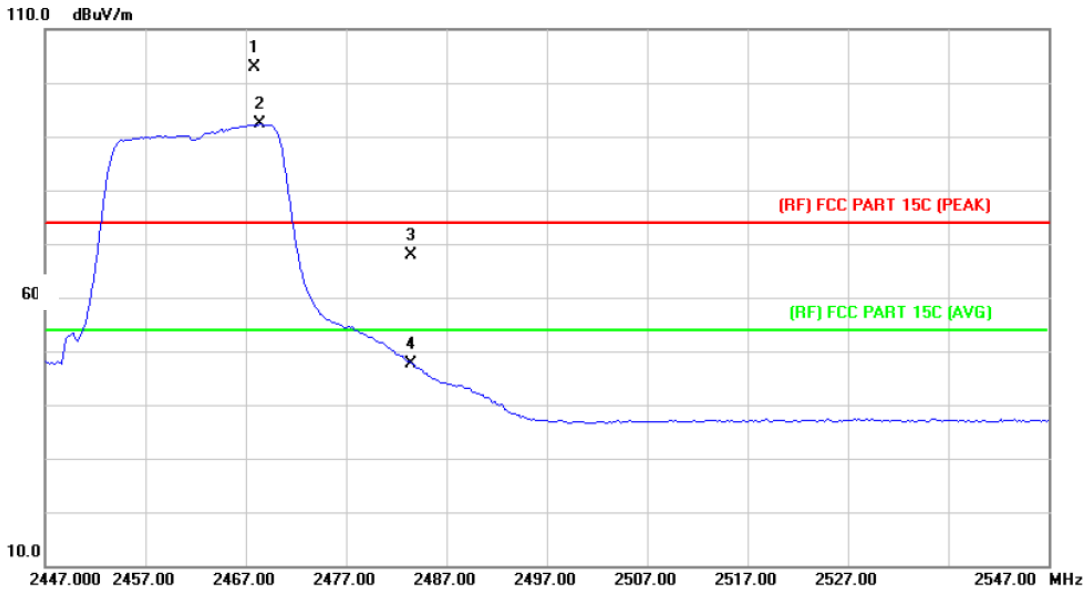
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2412MHz.		
Remark:	Only show the worst case.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	44.33	2.91	47.24	74.00	-26.76	peak
2		2390.000	33.14	2.91	36.05	54.00	-17.95	AVG
3	*	2404.600	74.31	2.96	77.27	Fundamental Frequency		AVG
4	X	2405.400	84.80	2.97	87.77	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

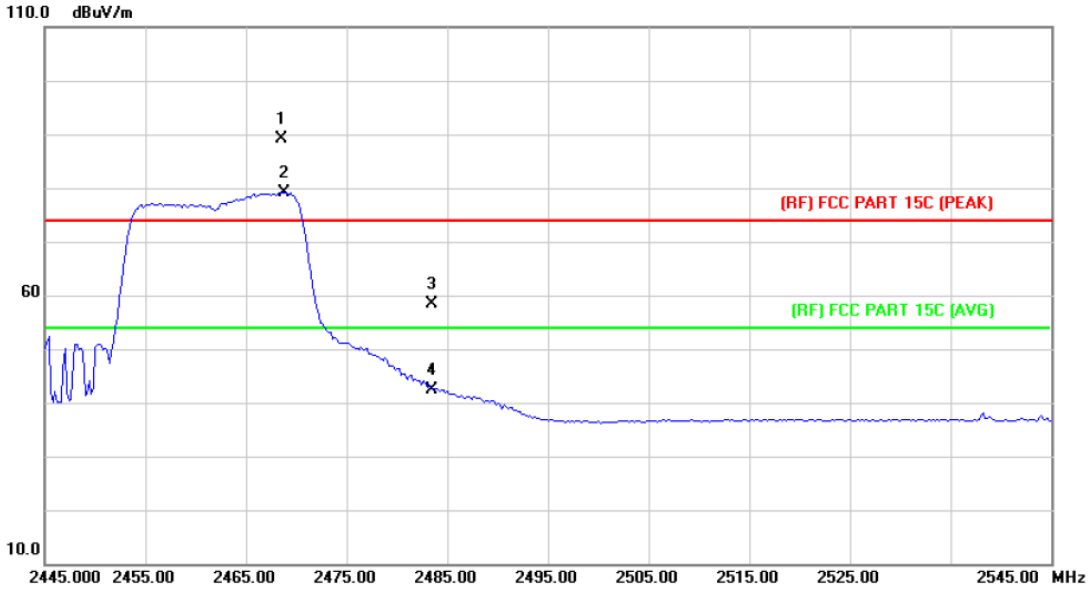
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2462MHz		
Remark:	Only show the worst case.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2467.800	99.67	3.32	102.99	Fundamental Frequency		peak
2	*	2468.400	88.95	3.32	92.27	Fundamental Frequency		AVG
3		2483.500	64.39	3.40	67.79	74.00	-6.21	peak
4		2483.500	44.16	3.40	47.56	54.00	-6.44	AVG

Emission Level= Read Level+ Correct Factor

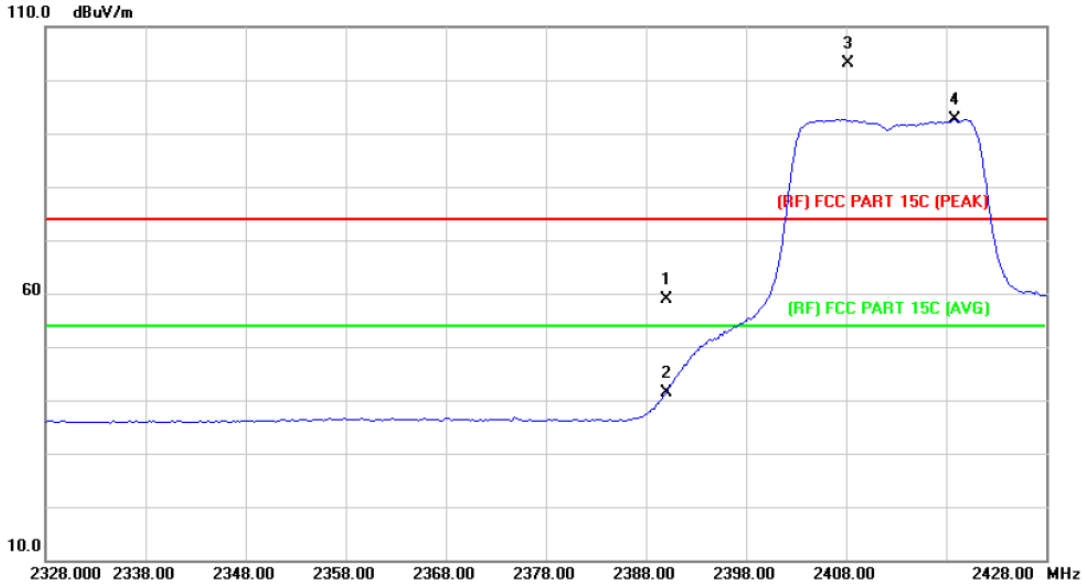
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2462MHz.		
Remark:	Only show the worst case.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2468.600	85.89	3.32	89.21	Fundamental Frequency		peak
2	*	2468.800	75.92	3.31	79.23	Fundamental Frequency		AVG
3		2483.500	54.89	3.40	58.29	74.00	-15.71	peak
4		2483.500	39.04	3.40	42.44	54.00	-11.56	AVG

Emission Level= Read Level+ Correct Factor

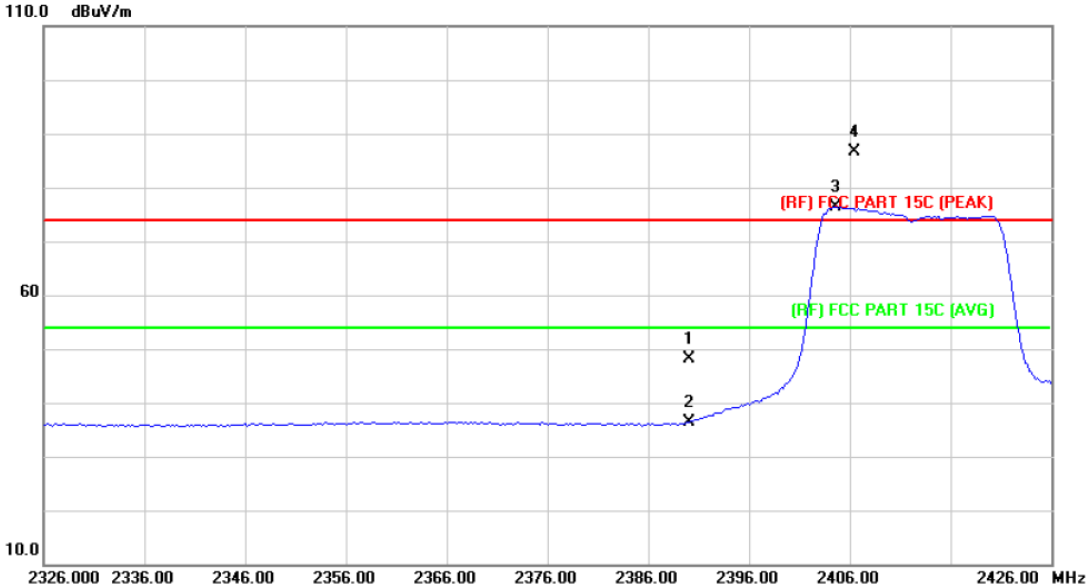
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Horizontal		
Test Mode:	TX n(HT20) Mode 2412MHz		
Remark:	Only show the worst case.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	55.96	2.91	58.87	74.00	-15.13	peak
2		2390.000	38.36	2.91	41.27	54.00	-12.73	AVG
3	X	2408.200	100.12	2.98	103.10	Fundamental Frequency		peak
4	*	2418.800	89.61	3.03	92.64	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

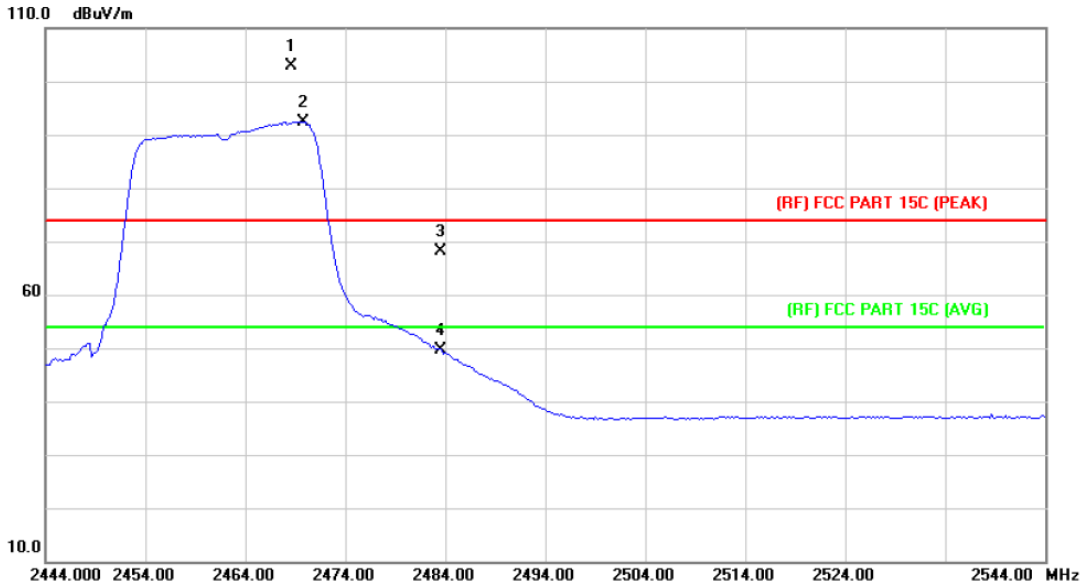
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Vertical		
Test Mode:	TX n(HT20) Mode 2412MHz		
Remark:	Only show the worst case.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	45.11	2.91	48.02	74.00	-25.98	peak
2		2390.000	33.46	2.91	36.37	54.00	-17.63	AVG
3	*	2404.600	73.46	2.96	76.42	Fundamental Frequency		AVG
4	X	2406.400	83.63	2.96	86.59	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

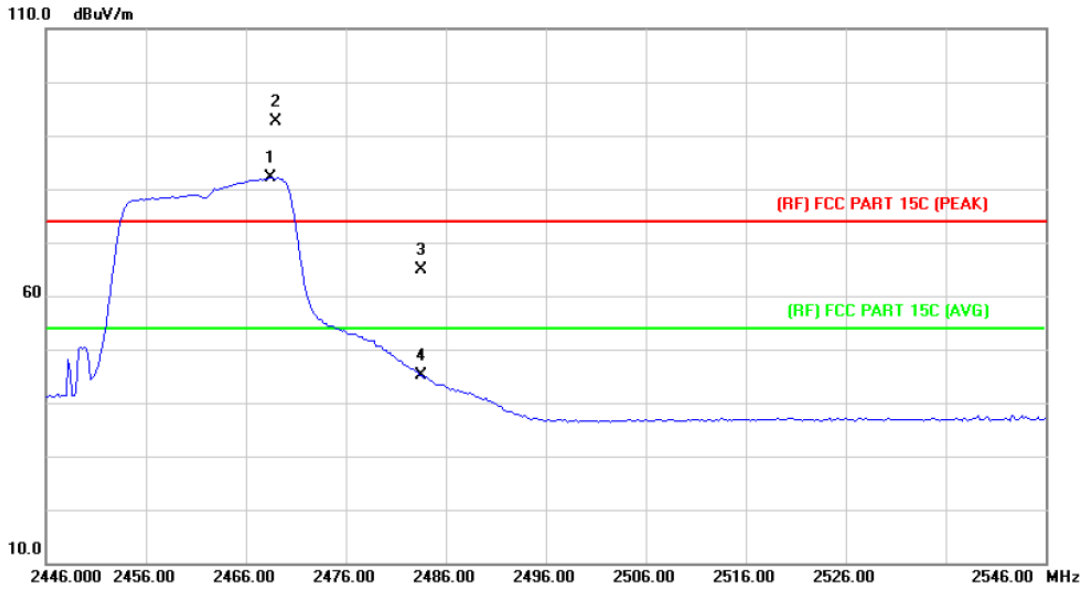
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Horizontal		
Test Mode:	TX n(HT20) Mode 2462MHz		
Remark:	Only show the worst case.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2468.600	99.44	3.32	102.76	Fundamental Frequency		peak
2	*	2469.800	89.10	3.32	92.42	Fundamental Frequency		AVG
3		2483.500	64.62	3.40	68.02	74.00	-5.98	peak
4		2483.500	46.13	3.40	49.53	54.00	-4.47	AVG

Emission Level= Read Level+ Correct Factor

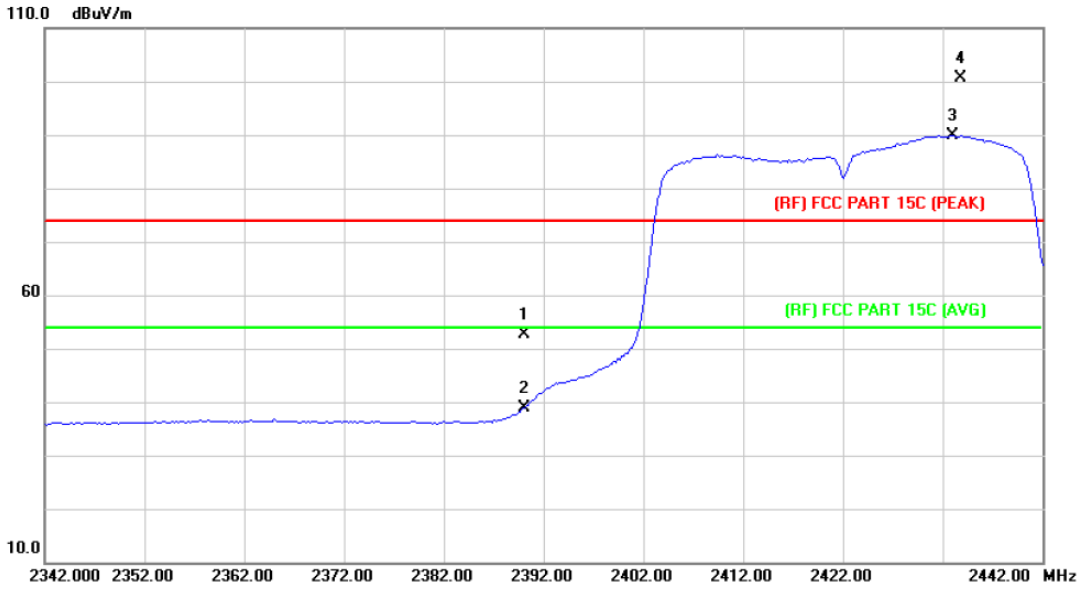
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Vertical		
Test Mode:	TX n(HT20) Mode 2462MHz		
Remark:	Only show the worst case.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2468.400	78.81	3.32	82.13	Fundamental Frequency		AVG
2	X	2469.000	89.22	3.31	92.53	Fundamental Frequency		peak
3		2483.500	61.48	3.40	64.88	74.00	-9.12	peak
4		2483.500	41.66	3.40	45.06	54.00	-8.94	AVG

Emission Level= Read Level+ Correct Factor

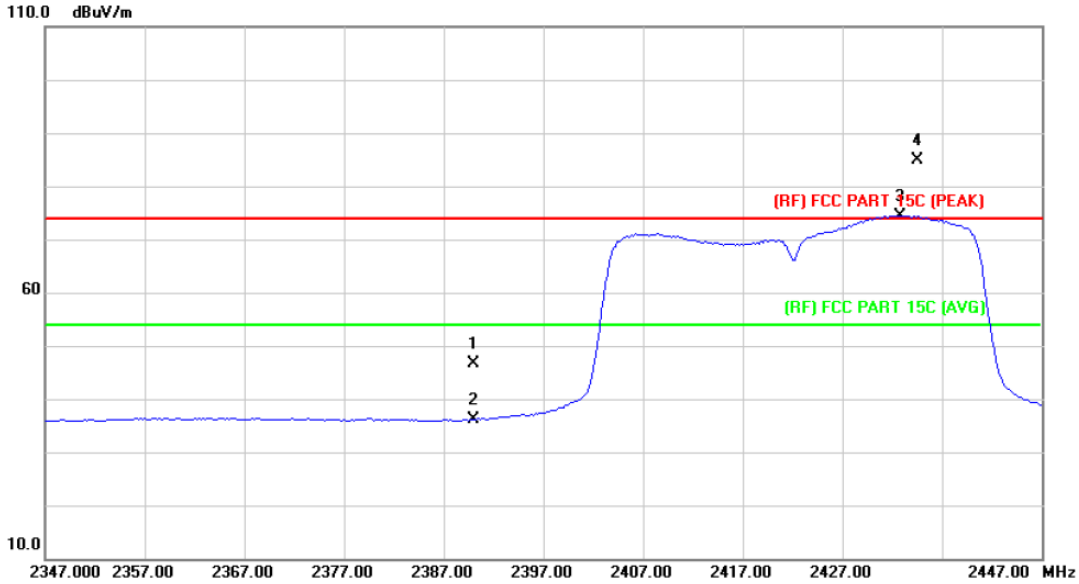
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Horizontal		
Test Mode:	TX n(HT40) Mode 2422MHz		
Remark:	Only show the worst case.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	49.76	2.91	52.67	74.00	-21.33	peak
2		2390.000	36.08	2.91	38.99	54.00	-15.01	AVG
3	*	2433.000	86.84	3.11	89.95	Fundamental Frequency		AVG
4	X	2433.800	97.50	3.12	100.62	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

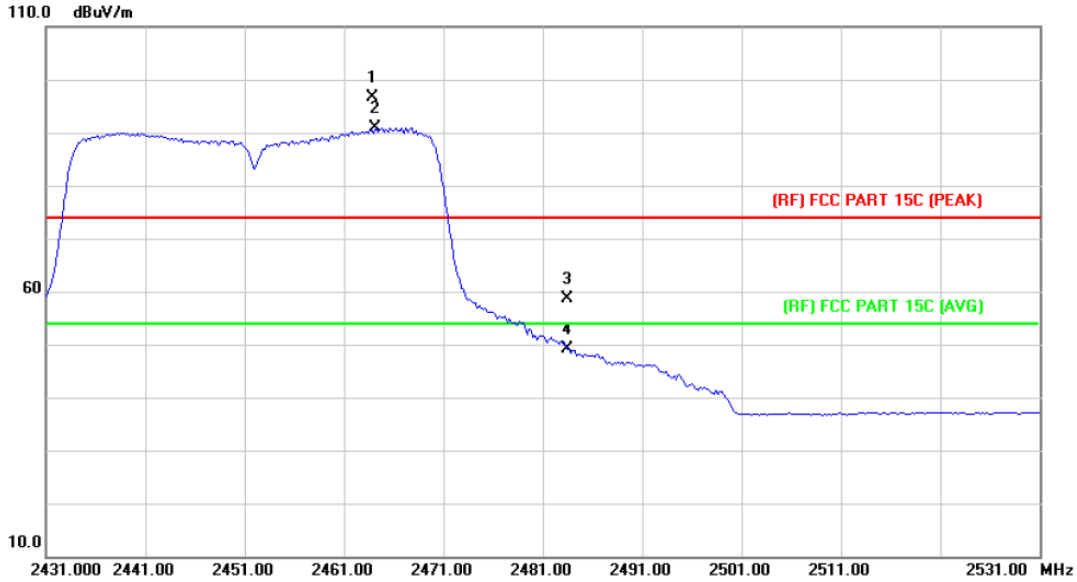
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Vertical		
Test Mode:	TX n(HT40) Mode 2422MHz		
Remark:	Only show the worst case.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	43.81	2.91	46.72	74.00	-27.28	peak
2		2390.000	33.14	2.91	36.05	74.00	-37.95	peak
3	*	2432.800	71.35	3.11	74.46	Fundamental Frequency		AVG
4	X	2434.600	81.75	3.12	84.87	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

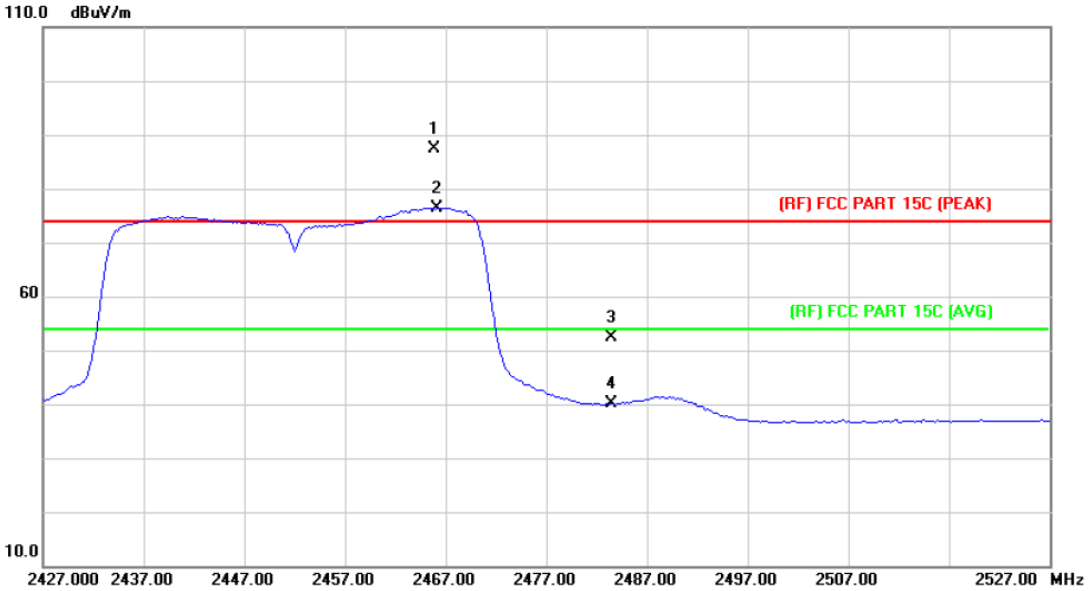
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Horizontal		
Test Mode:	TX n(HT40) Mode 2452MHz		
Remark:	Only show the worst case.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2463.850	93.29	3.29	96.58	Fundamental Frequency		AVG
2	X	2464.200	87.66	3.29	90.95	Fundamental Frequency		peak
3		2483.500	55.27	3.40	58.67	74.00	-15.33	peak
4		2483.500	45.79	3.40	49.19	54.00	-4.81	AVG

Emission Level= Read Level+ Correct Factor

Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Vertical		
Test Mode:	TX n(HT40) Mode 2452MHz		
Remark:	Only show the worst case.		

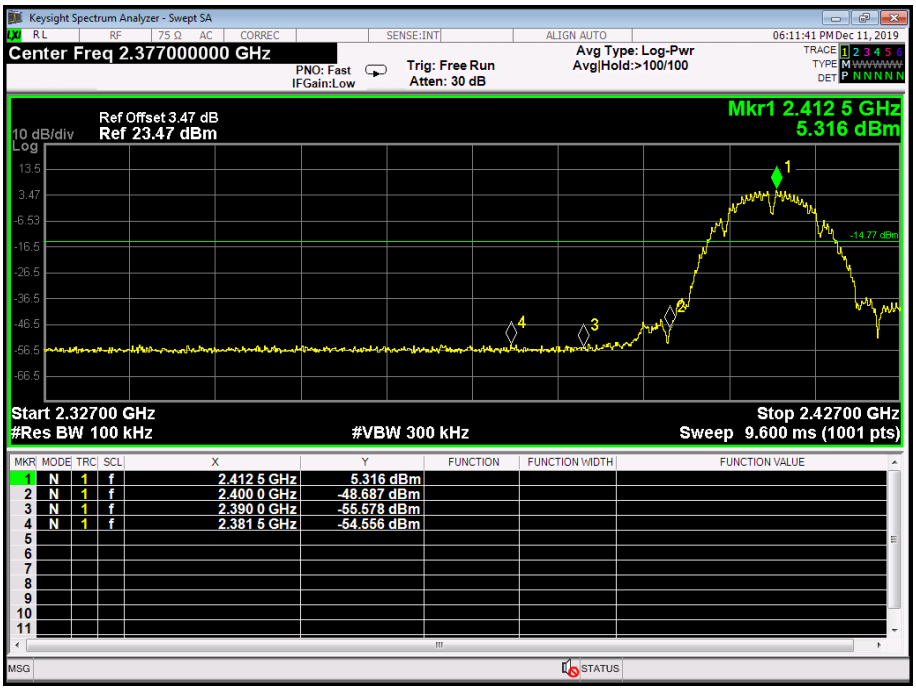


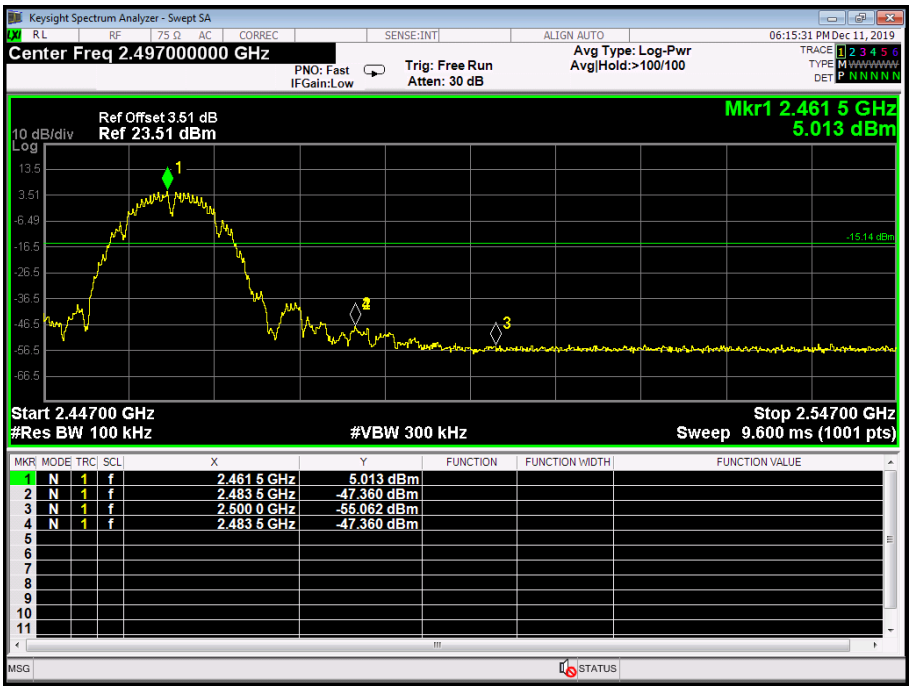
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2465.800	84.11	3.30	87.41	Fundamental Frequency		peak
2	*	2466.200	73.20	3.30	76.50	Fundamental Frequency		AVG
3		2483.500	49.07	3.40	52.47	74.00	-21.53	peak
4		2483.500	36.69	3.40	40.09	54.00	-13.91	AVG

Emission Level= Read Level+ Correct Factor

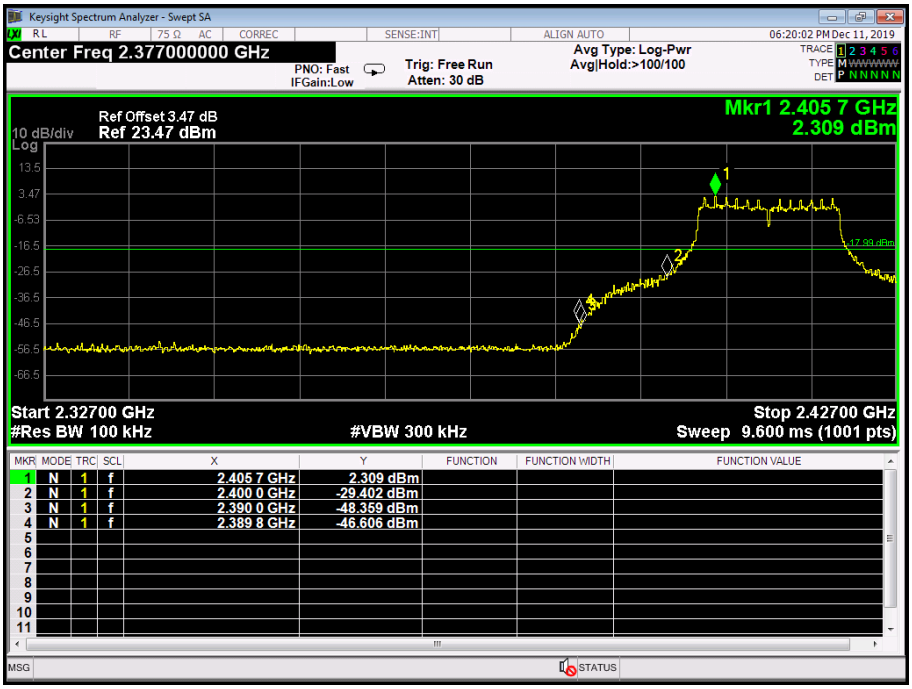
(2) Conducted Test

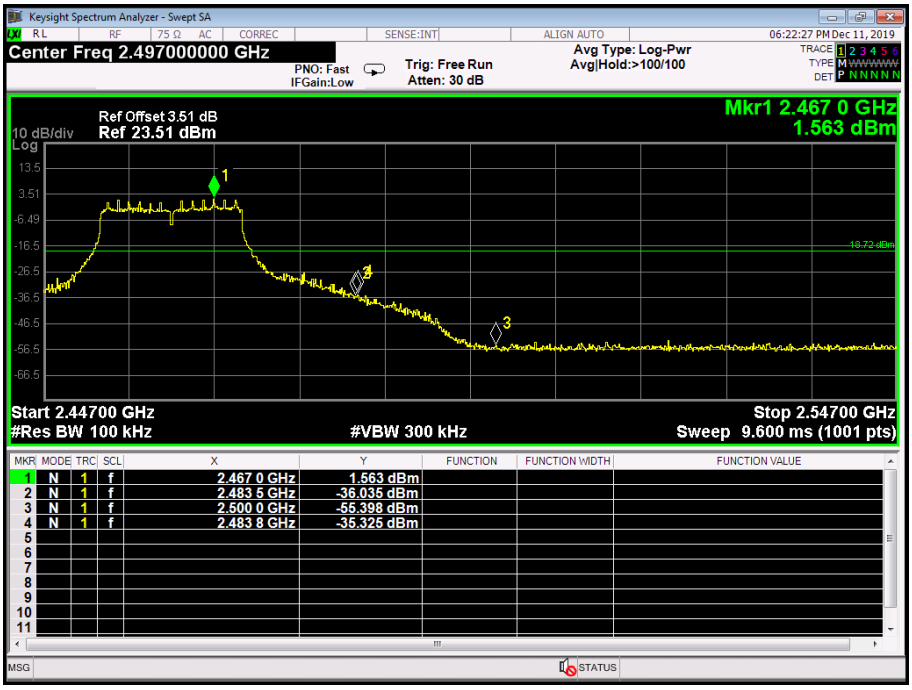
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60HZ		
Test Mode:	TX B Mode 2412MHz / TX B Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		



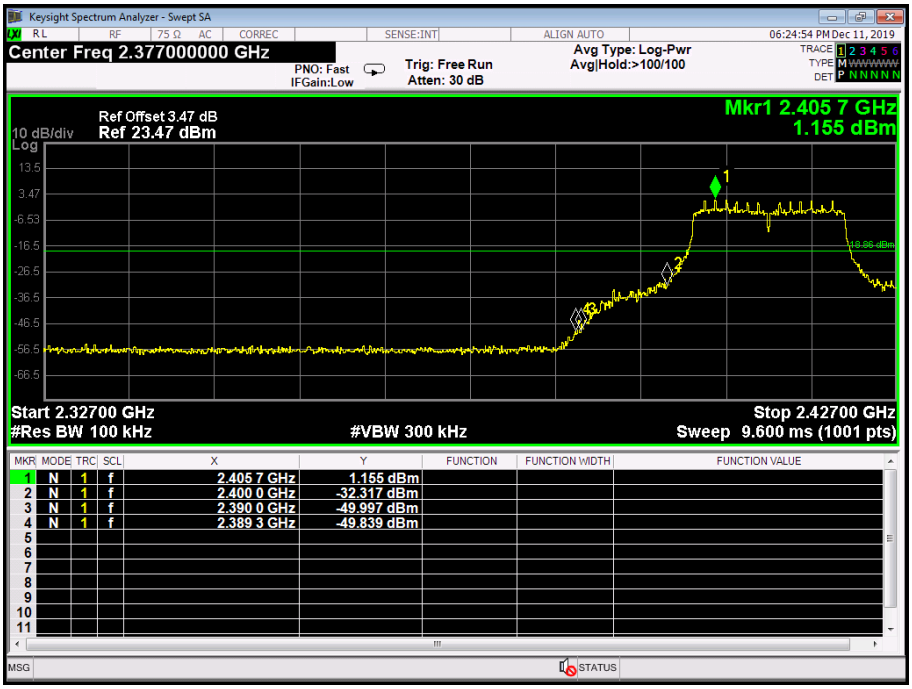


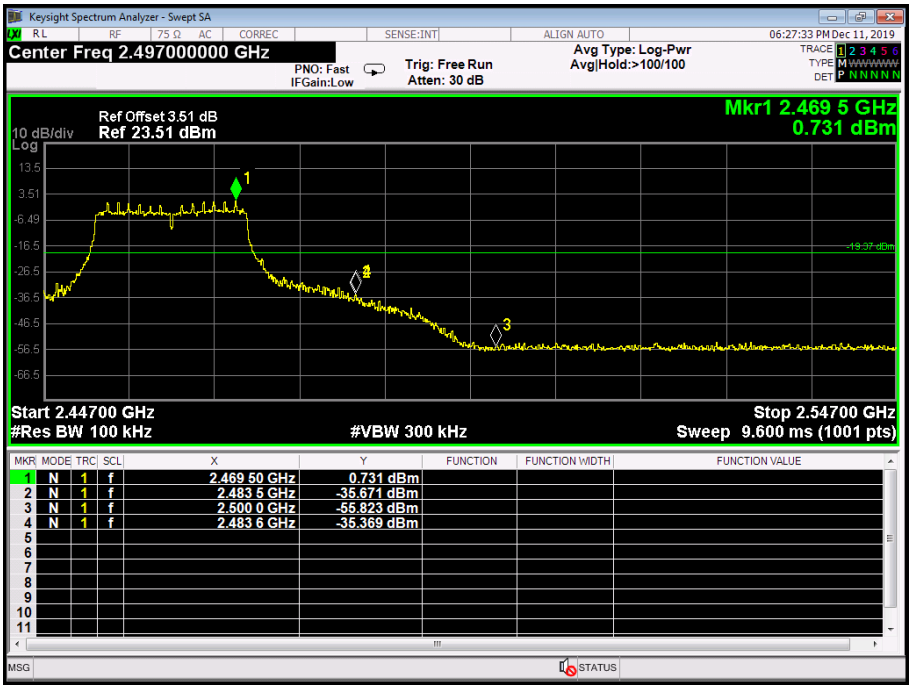
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60HZ		
Test Mode:	TX G Mode 2412MHz / TX G Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		



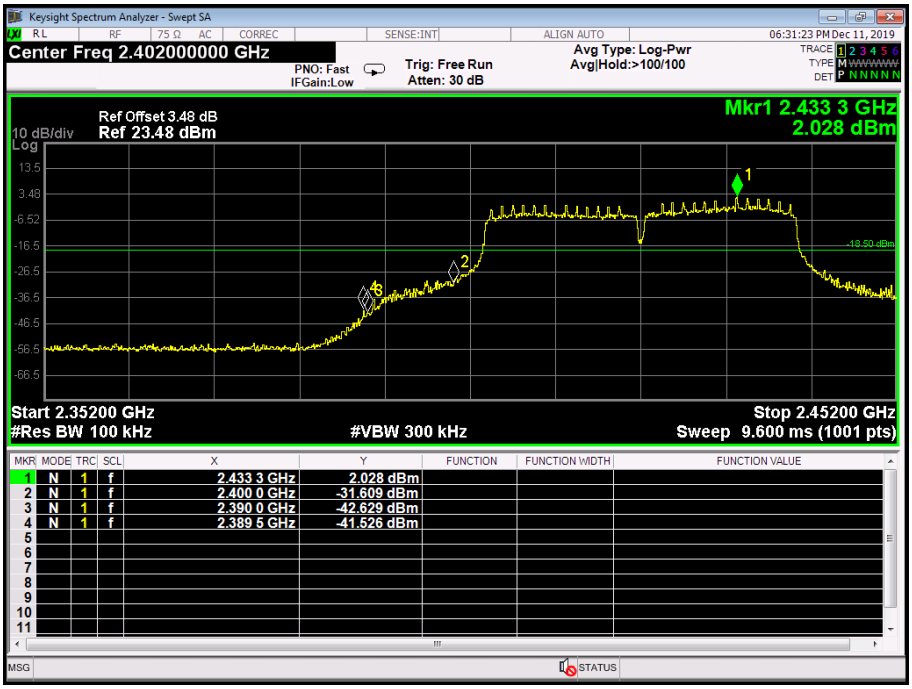


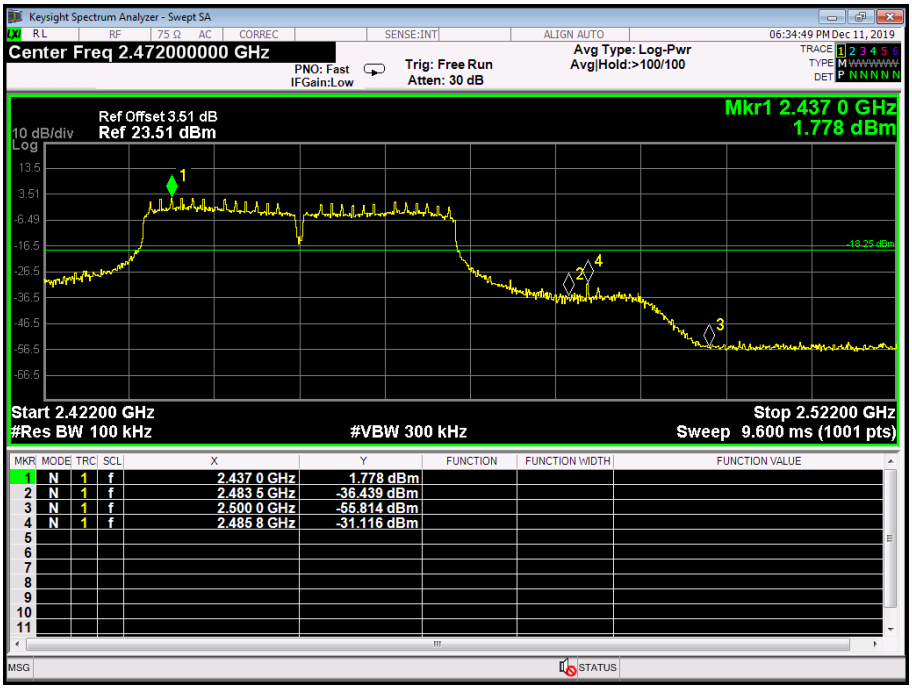
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60HZ		
Test Mode:	TX N(HT20) Mode 2412MHz / TX N(HT20) Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		





Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60HZ		
Test Mode:	TX N(HT40) Mode 2422MHz / TX N(HT40) Mode 2452MHz		
Remark:	The EUT is programed in continuously transmitting mode		





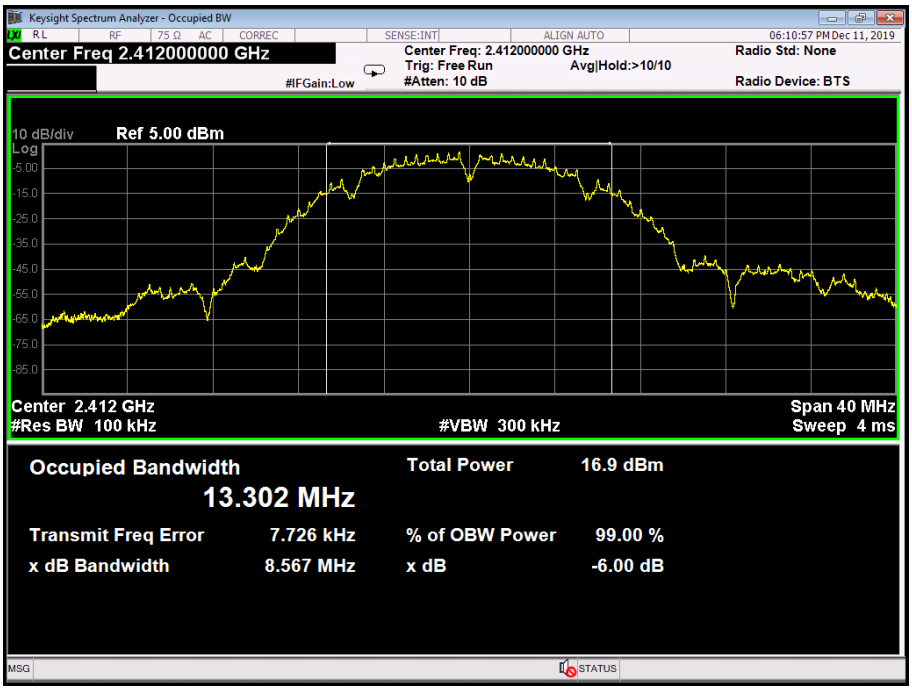
Attachment D-- Bandwidth Test Data

Temperature:	25 ℃	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	8.567	13.302	>=0.5
2437	8.018	13.022	
2462	8.081	13.106	

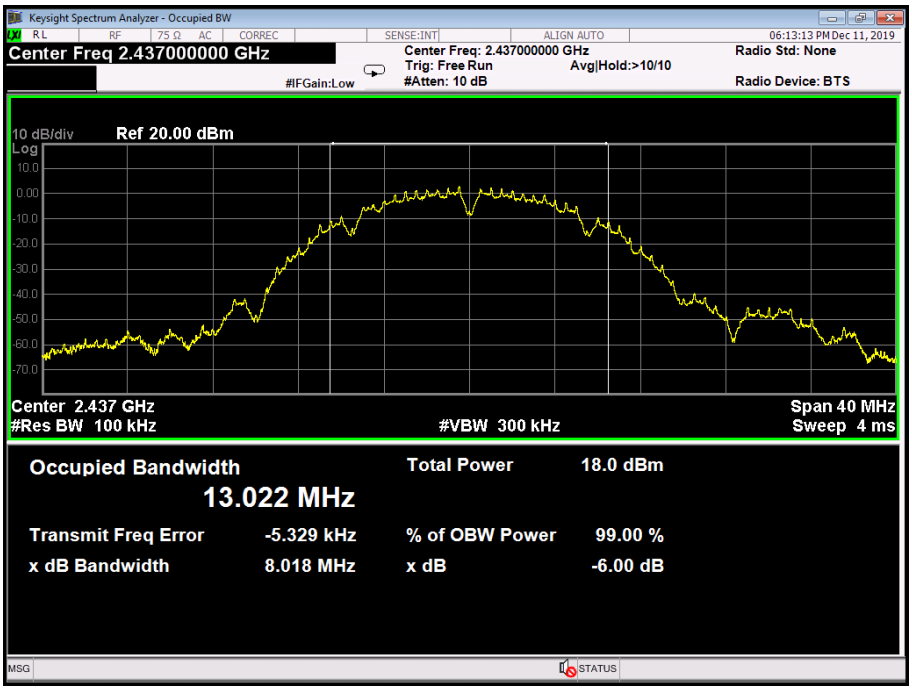
802.11B Mode

2412 MHz



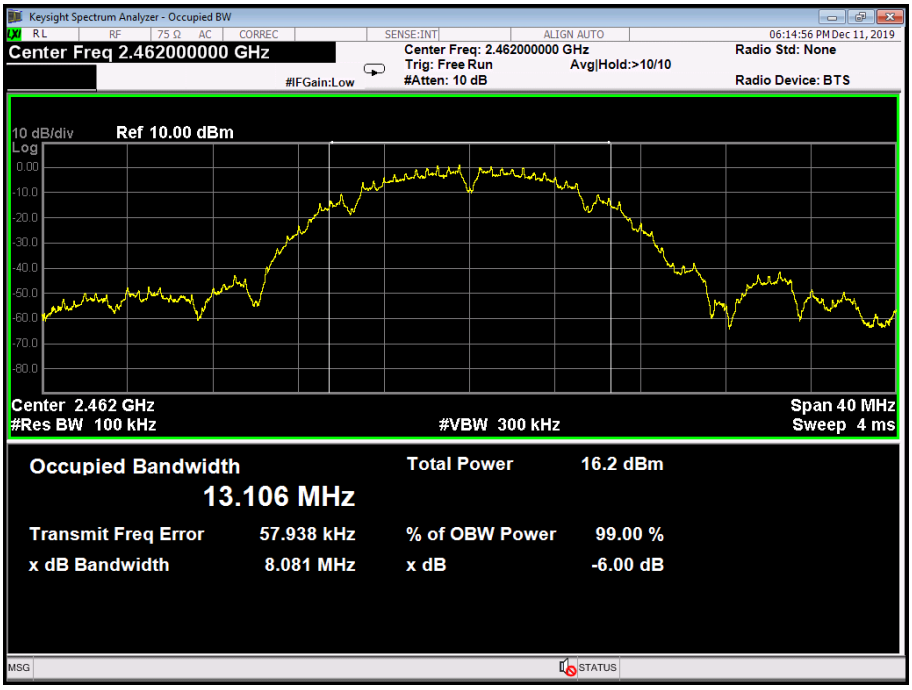
802.11B Mode

2437 MHz



802.11B Mode

2462 MHz

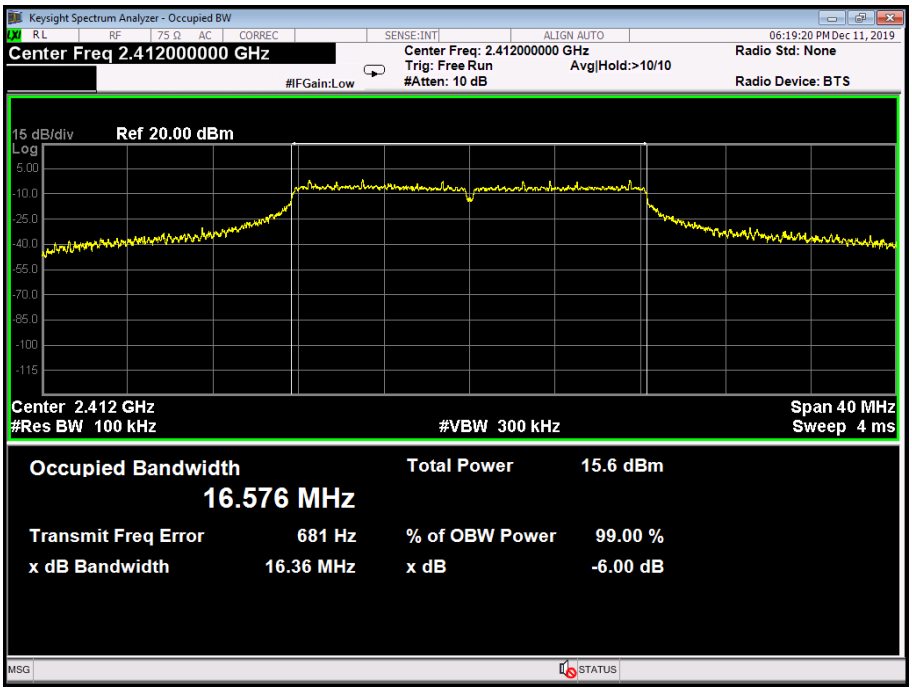


Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Test Mode:	TX 802.11G Mode		

Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	16.36	16.576	>=0.5
2437	16.33	16.467	
2462	16.36	16.588	

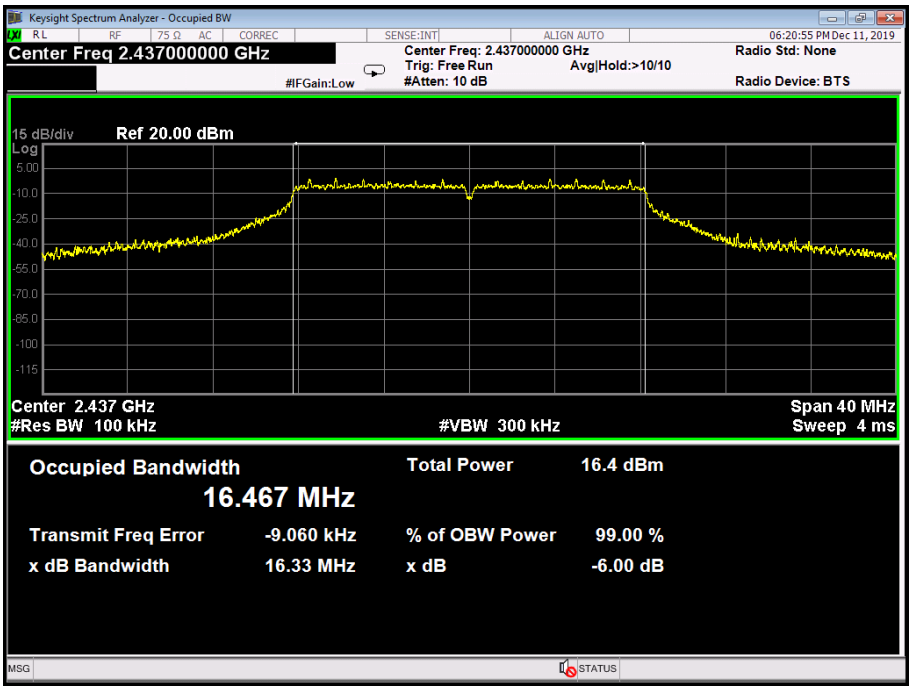
802.11G Mode

2412 MHz



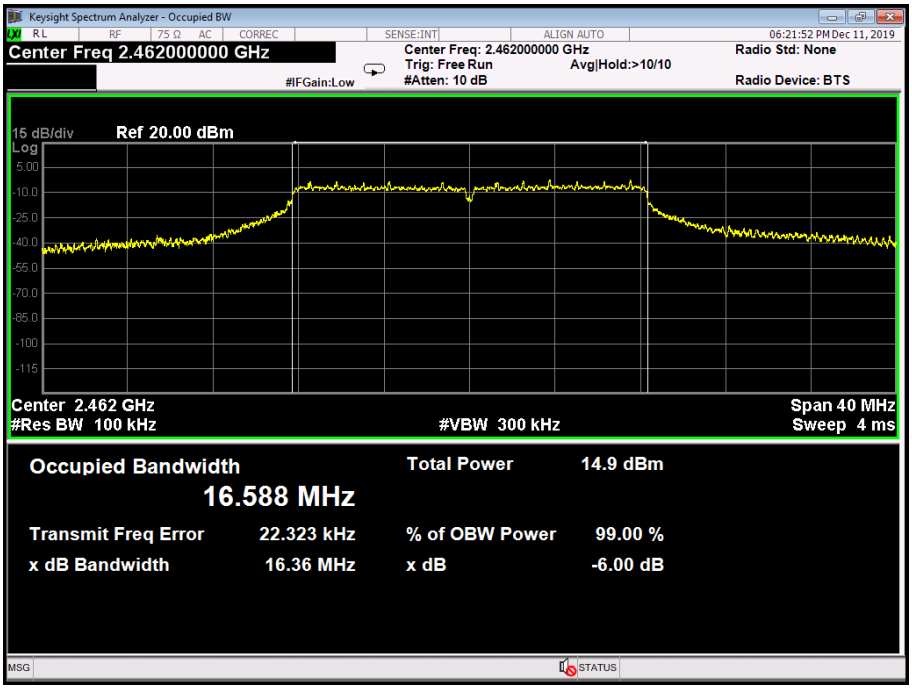
802.11G Mode

2437 MHz



802.11G Mode

2462 MHz

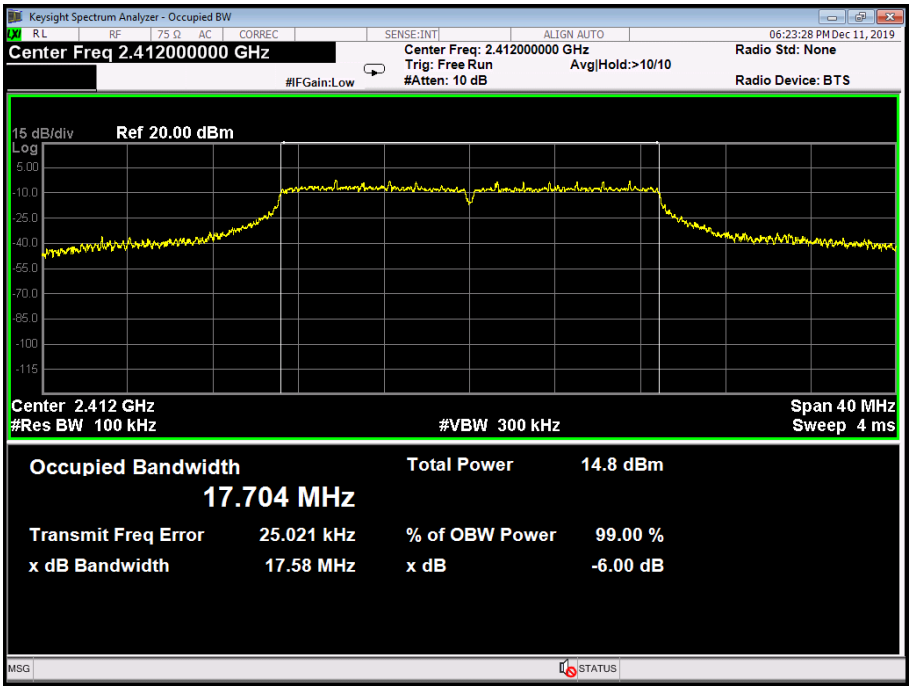


Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Test Mode:	TX 802.11N(HT20) Mode		

Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	17.58	17.704	>=0.5
2437	17.29	17.629	
2462	17.58	17.729	

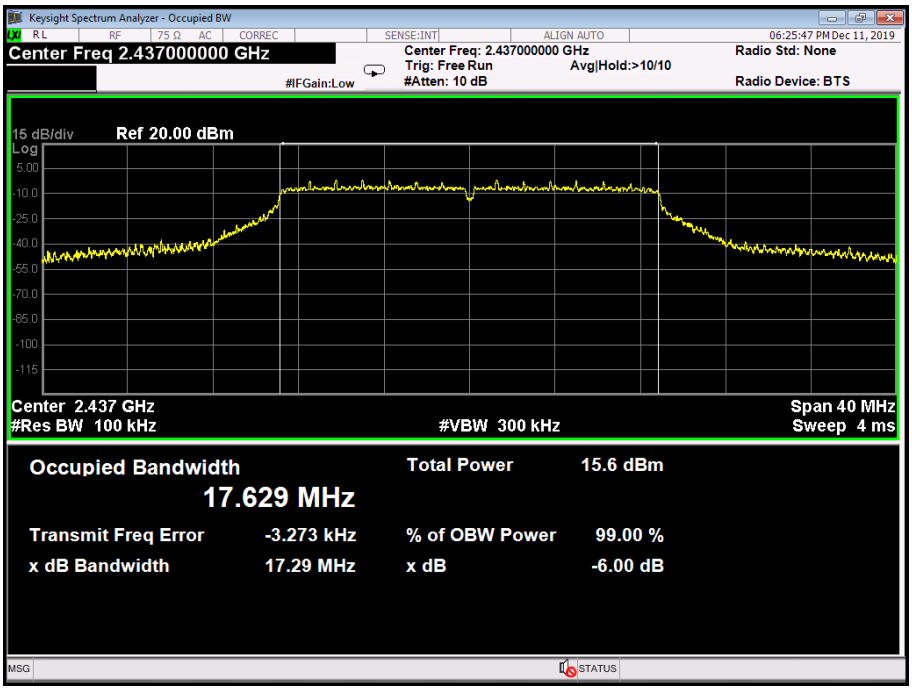
802.11N(HT20) Mode

2412 MHz



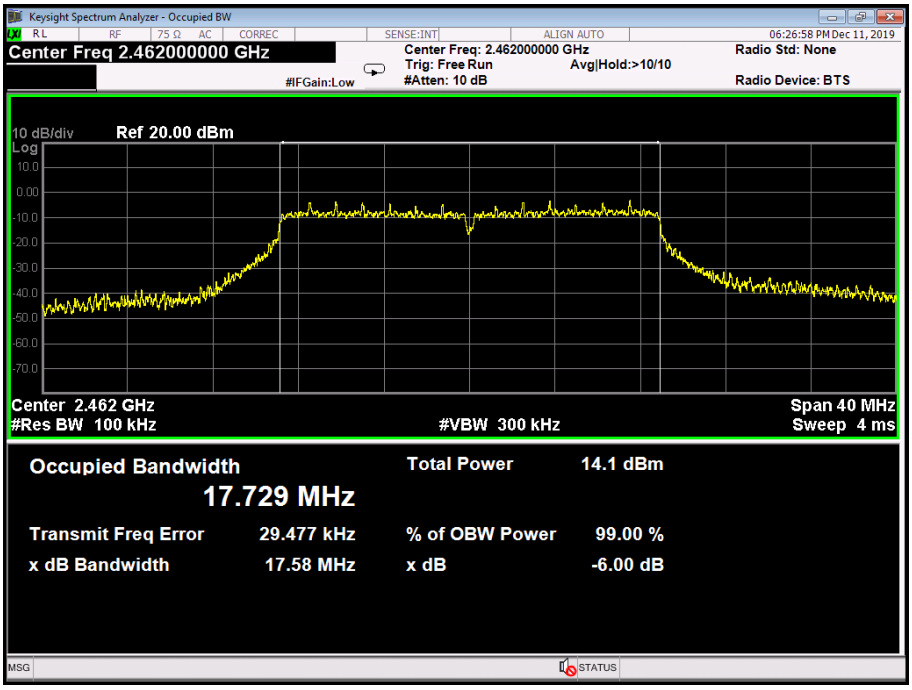
802.11N(HT20) Mode

2437 MHz



802.11N(HT20) Mode

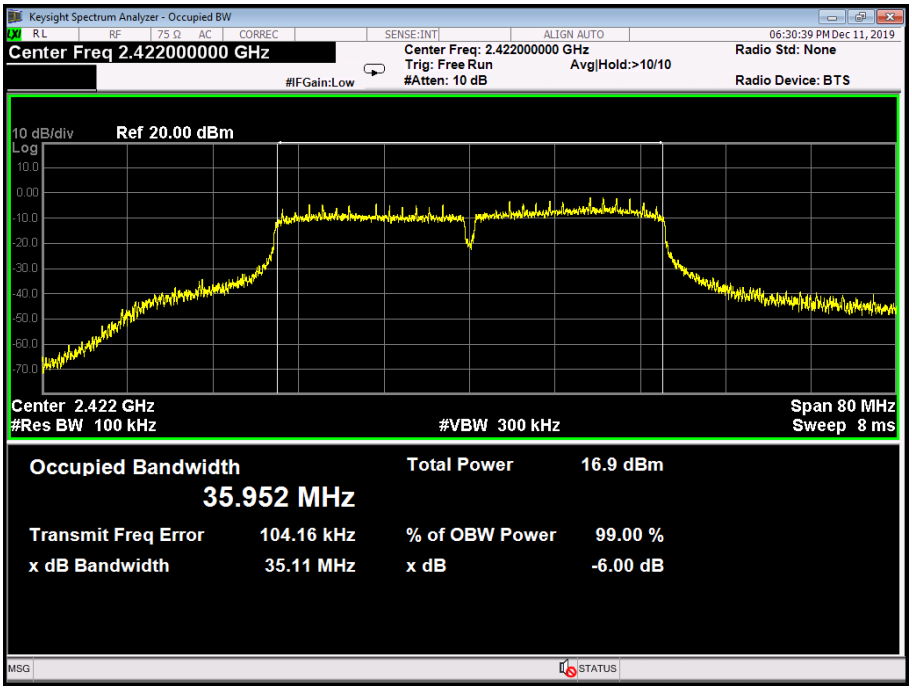
2462 MHz



Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Test Mode:	TX 802.11N(HT40) Mode		
Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2422	35.11	35.952	>=0.5
2437	35.05	35.747	
2452	35.47	36.105	

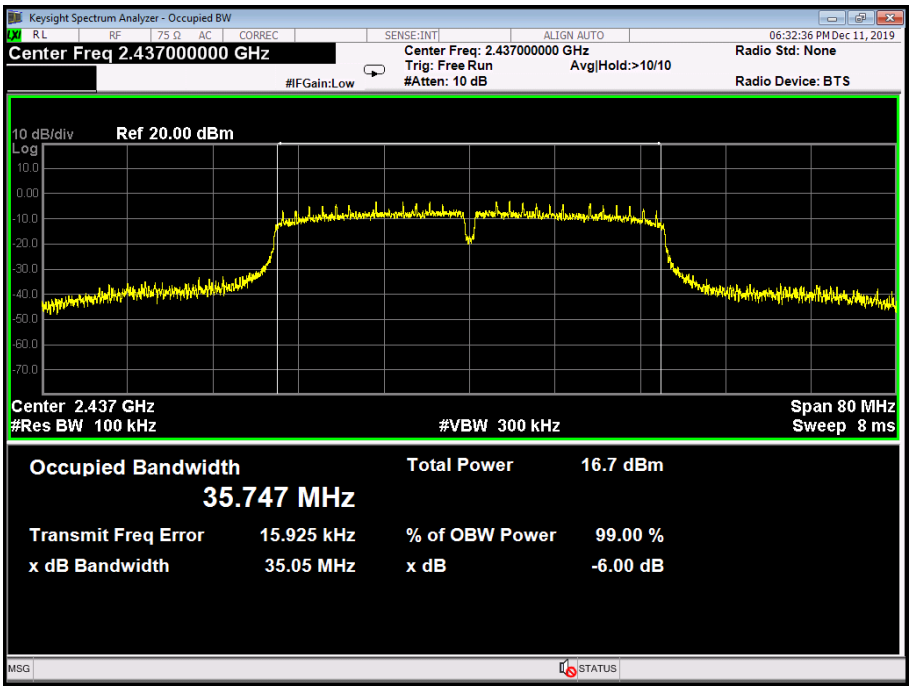
802.11N(HT40) Mode

2422 MHz



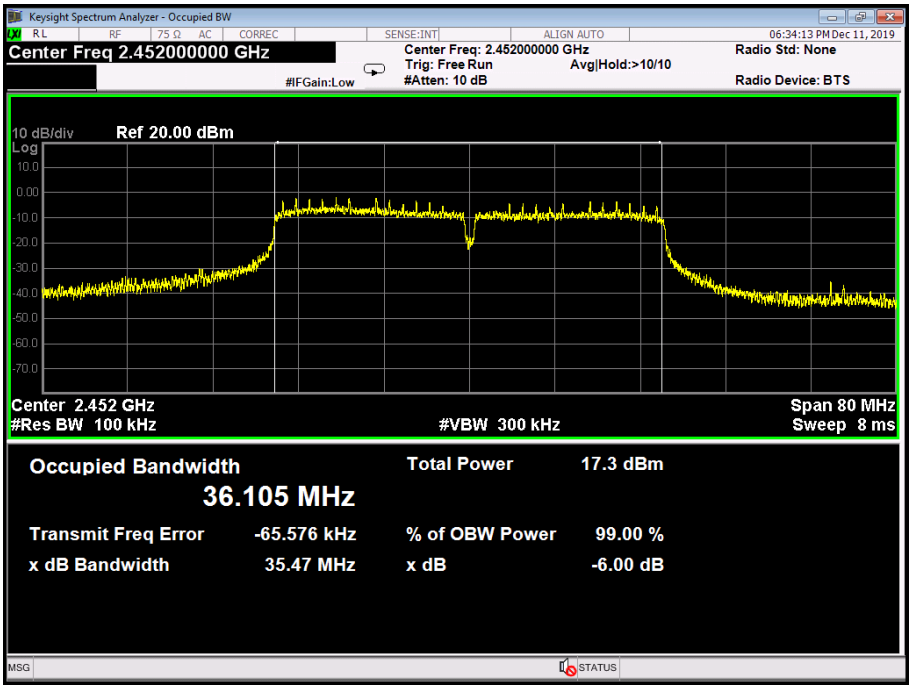
802.11N(HT40) Mode

2437 MHz



802.11N(HT40) Mode

2452 MHz



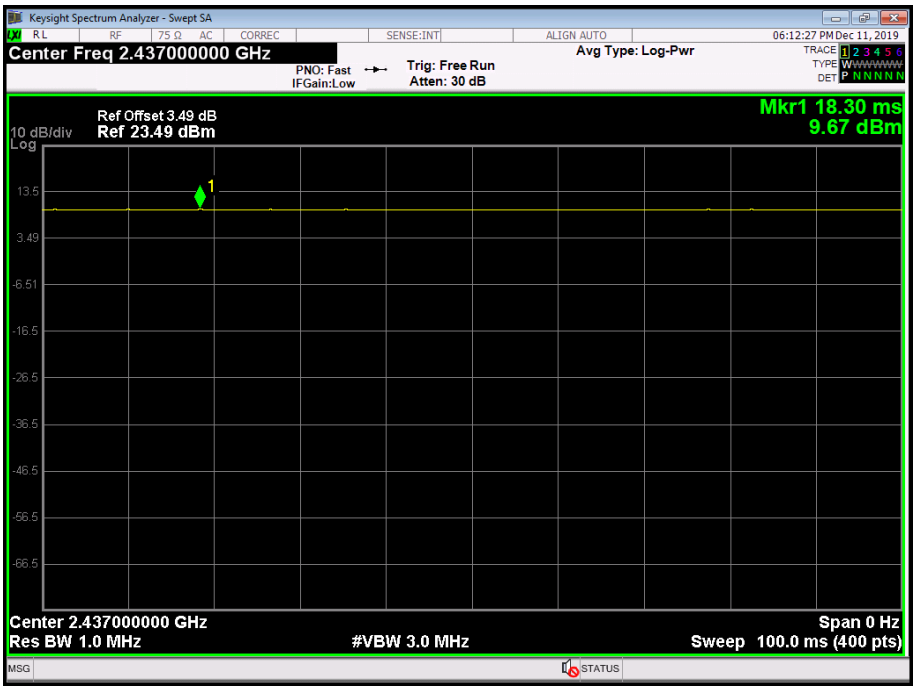
Attachment E-- Peak Output Power Test Data

Test Conditions:	Continuous Transmitting Mode		
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		

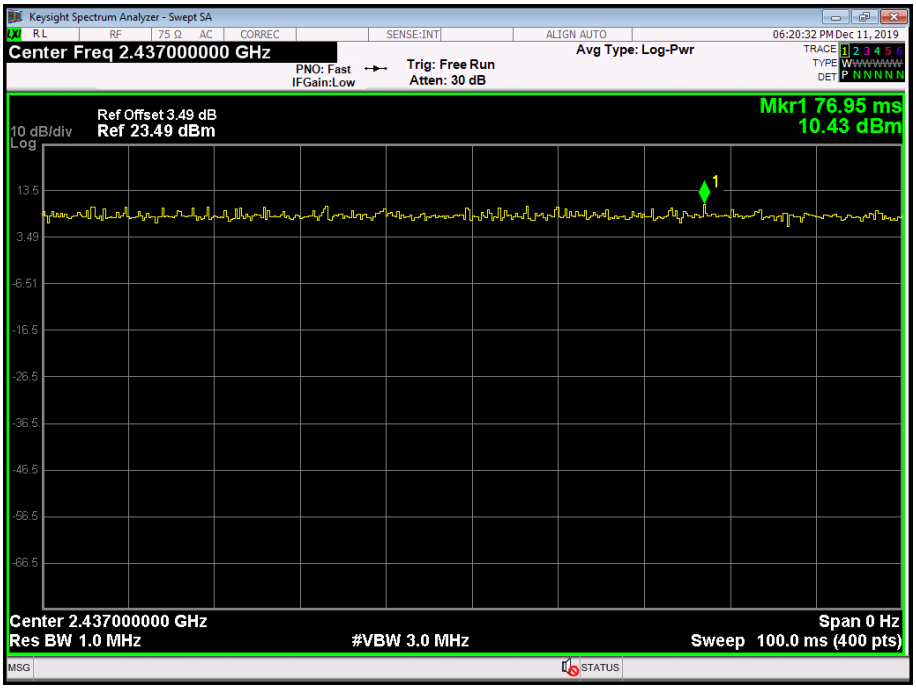
Mode	Channel frequency (MHz)	Test Result (dBm)	Limit (dBm)
802.11b	2412	15.20	30
	2437	16.28	
	2462	14.69	
802.11g	2412	18.23	
	2437	19.28	
	2462	17.78	
802.11n (HT20)	2412	17.40	
	2437	18.32	
	2462	16.93	
802.11n (HT40)	2422	19.56	
	2437	19.30	
	2452	20.09	
Result: PASS			

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	
802.11n (HT40)	2422	
	2437	
	2452	
Please see below plots		

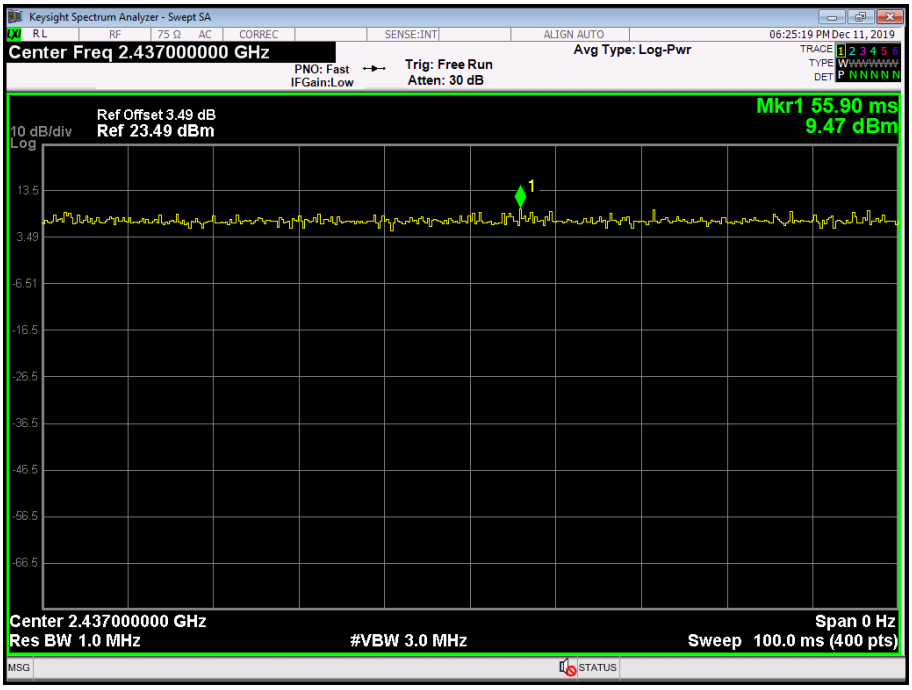
802.11 B Mode 2437 MHz



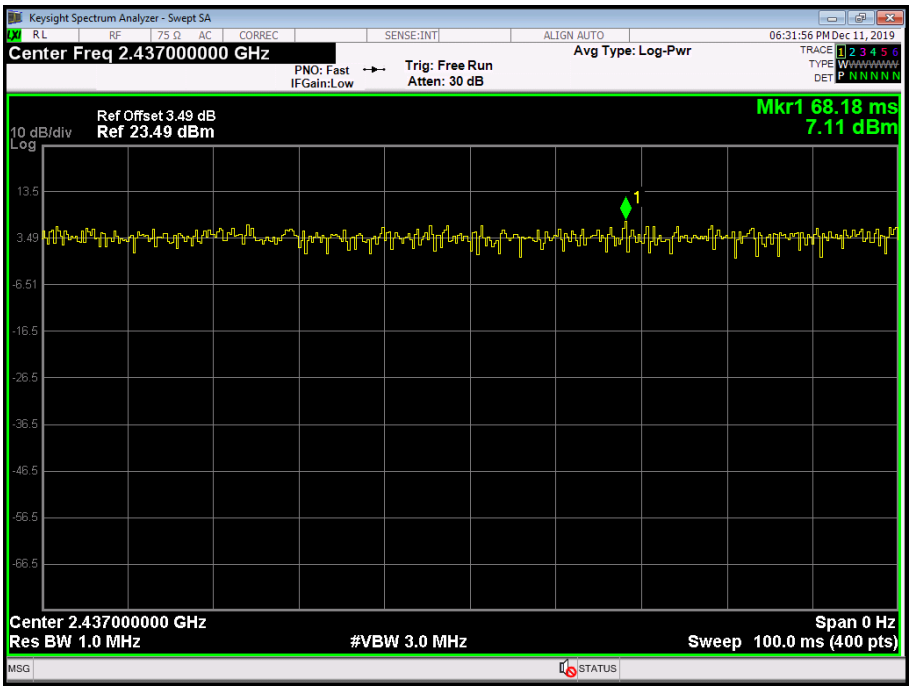
802.11 G Mode 2437 MHz



802.11 N(HT20) Mode 2437 MHz



802.11 N(HT40) Mode 2437 MHz



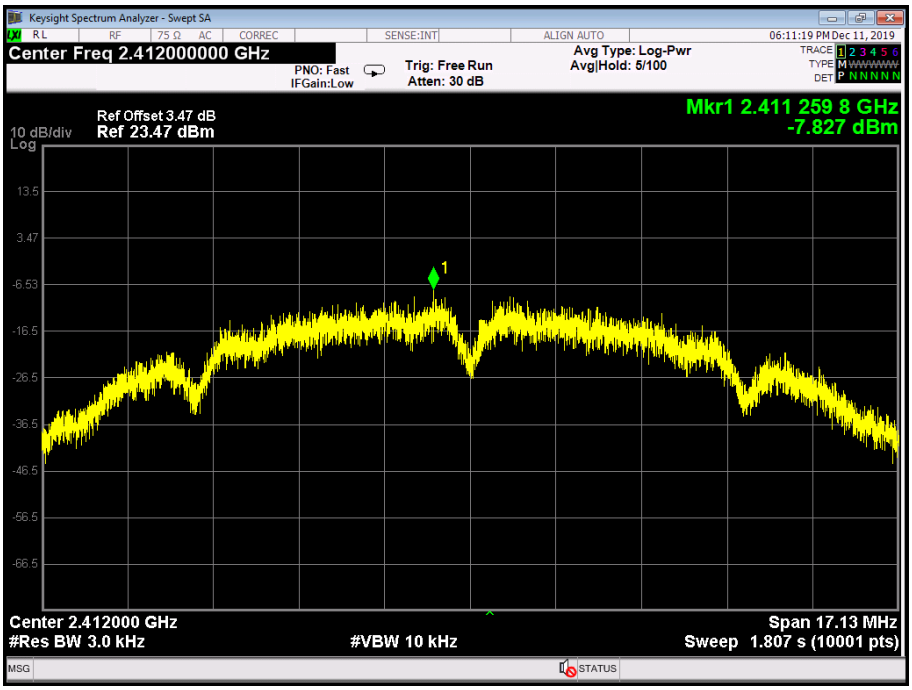
Attachment F-- Power Spectral Density Test Data

Temperature:	25 ℃	**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	-7.827	8
2437	-8.212	
2462	-9.568	

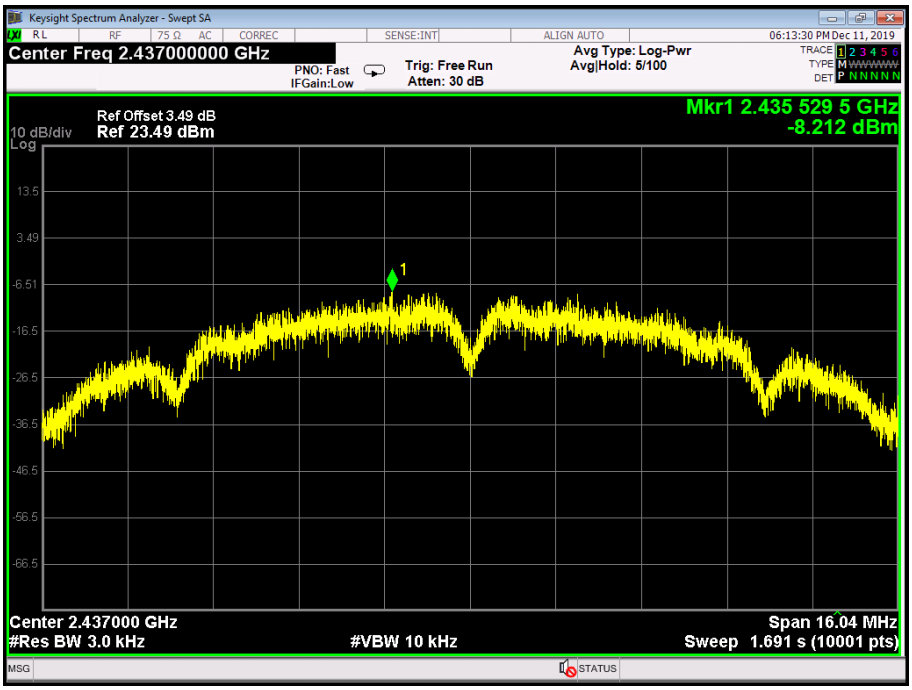
802.11B Mode

2412 MHz



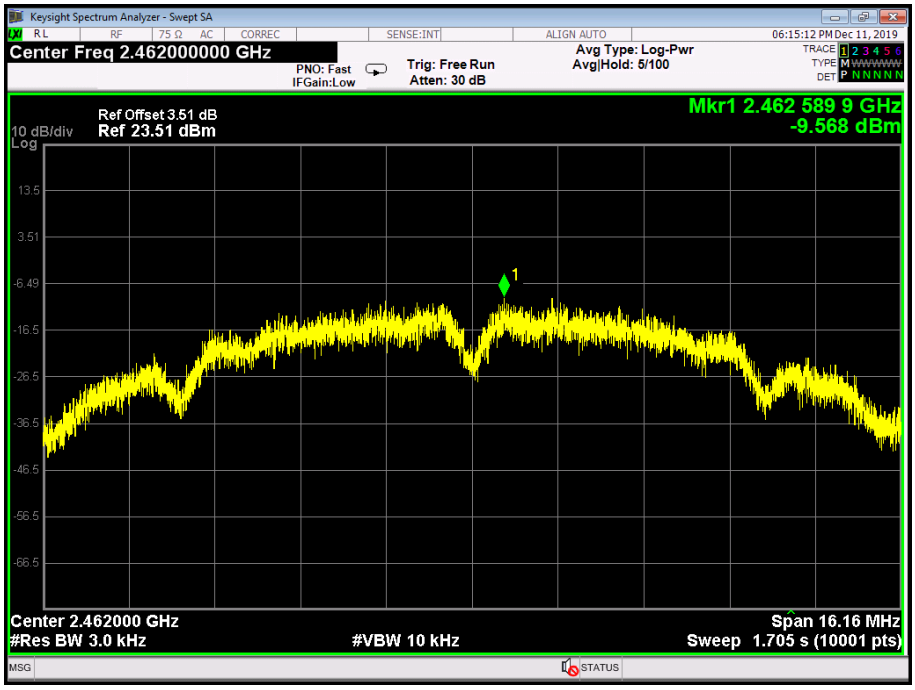
802.11B Mode

2437 MHz



802.11B Mode

2462 MHz

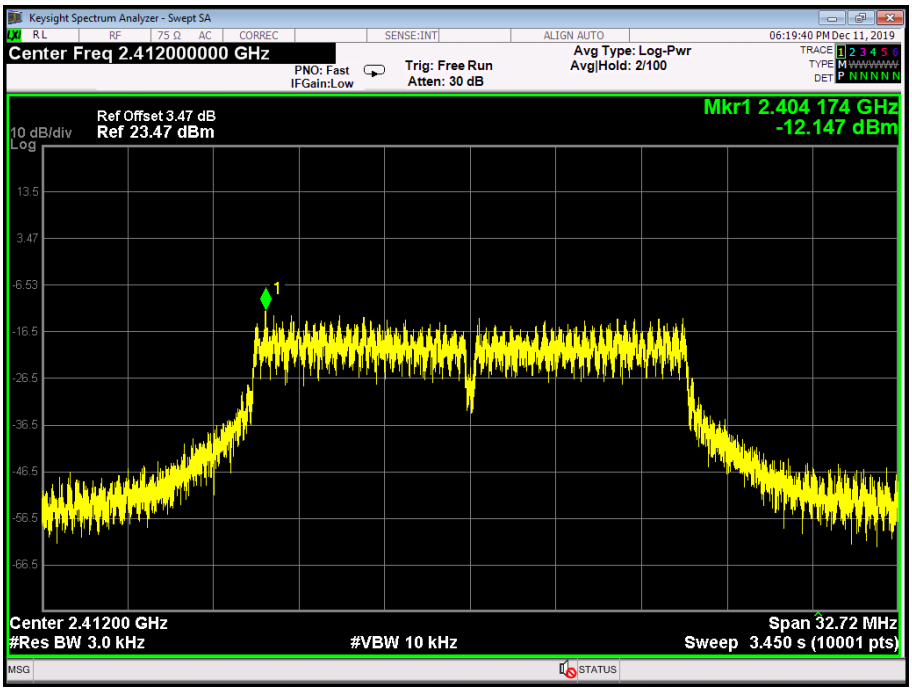


Temperature:	25 ℃	**Temperature:**	25 ℃
Test Voltage:	AC 120V/60 HZ		
Test Mode:	TX 802.11G Mode		

Channel Frequency (MHz)	**Power Density (dBm/3 kHz)**	**Limit (dBm/3 kHz)**
2412	-12.147	**8**
2437	-10.555	
2462	-12.365	

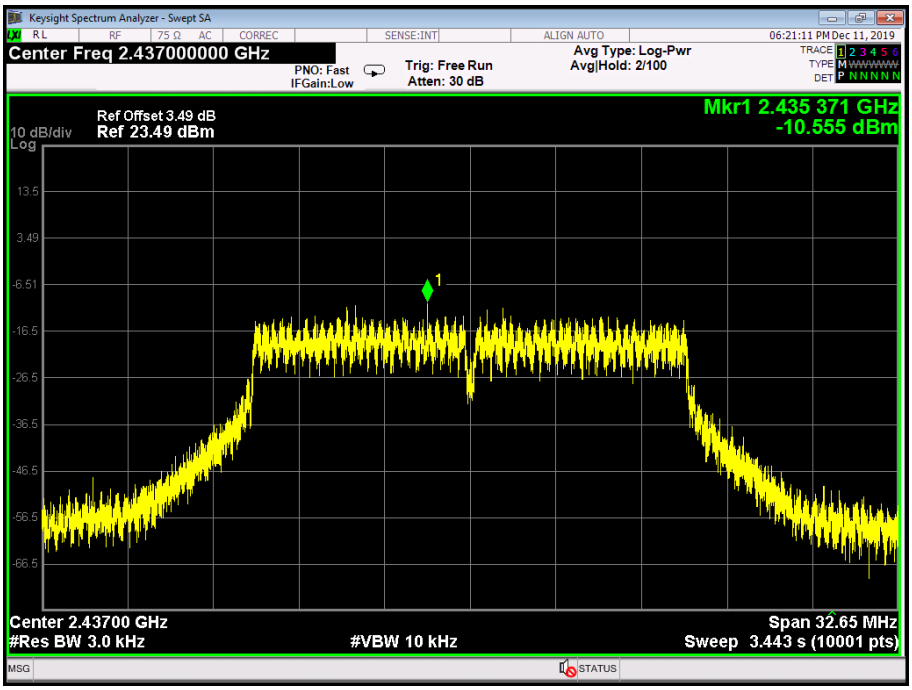
802.11G Mode

2412 MHz



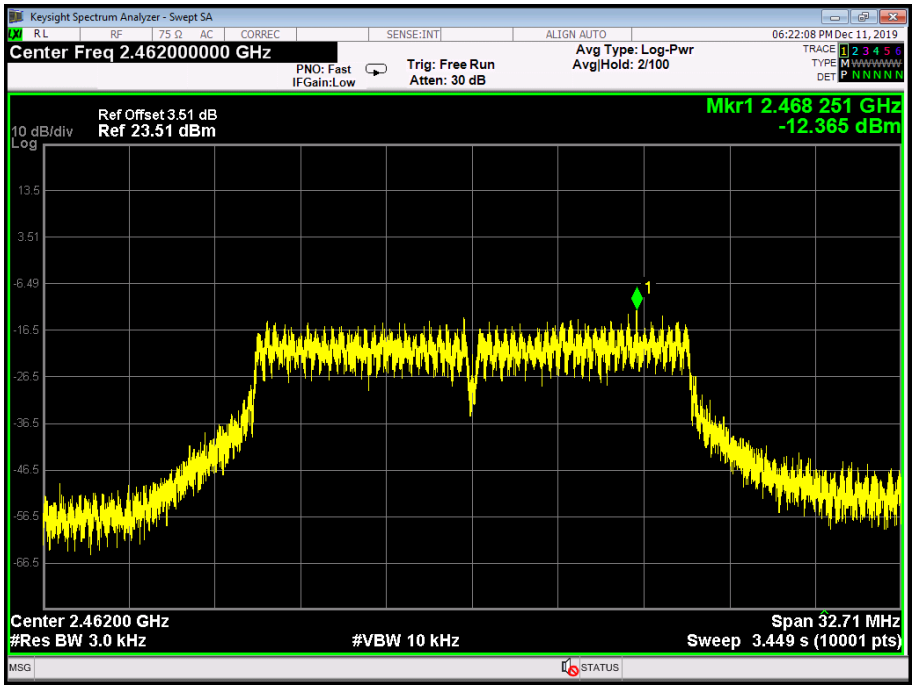
802.11G Mode

2437 MHz



802.11G Mode

2462 MHz

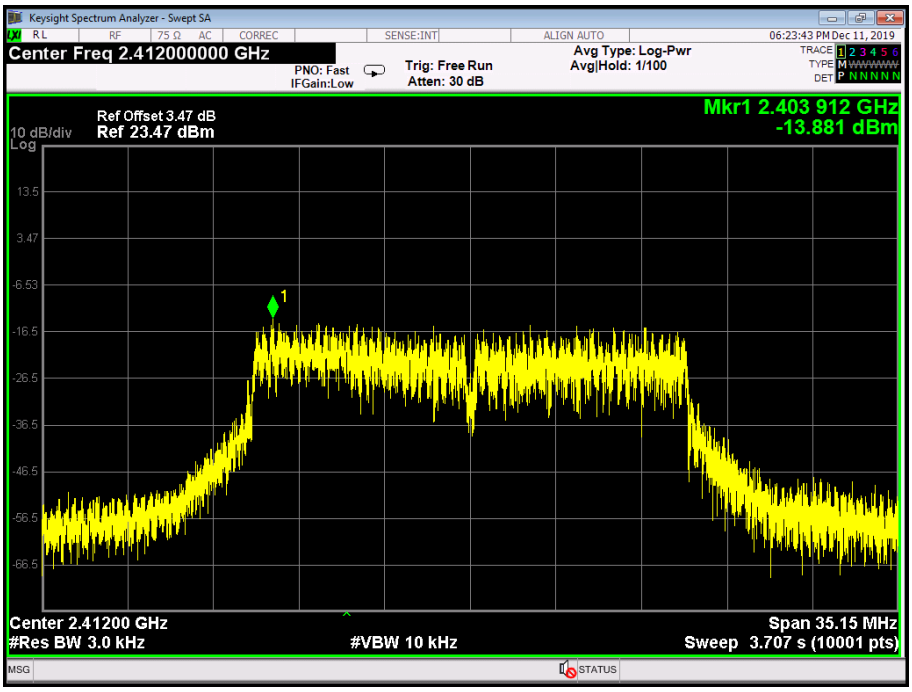


Temperature:	25 ℃	Temperature:	25 ℃
Test Voltage:	AC 120V/60 HZ		
Test Mode:	TX 802.11N(HT20) Mode		

Channel Frequency (MHz)	Power Density (dBm/3 kHz)	Limit (dBm/3 kHz)
2412	-13.881	8
2437	-13.036	
2462	-14.247	

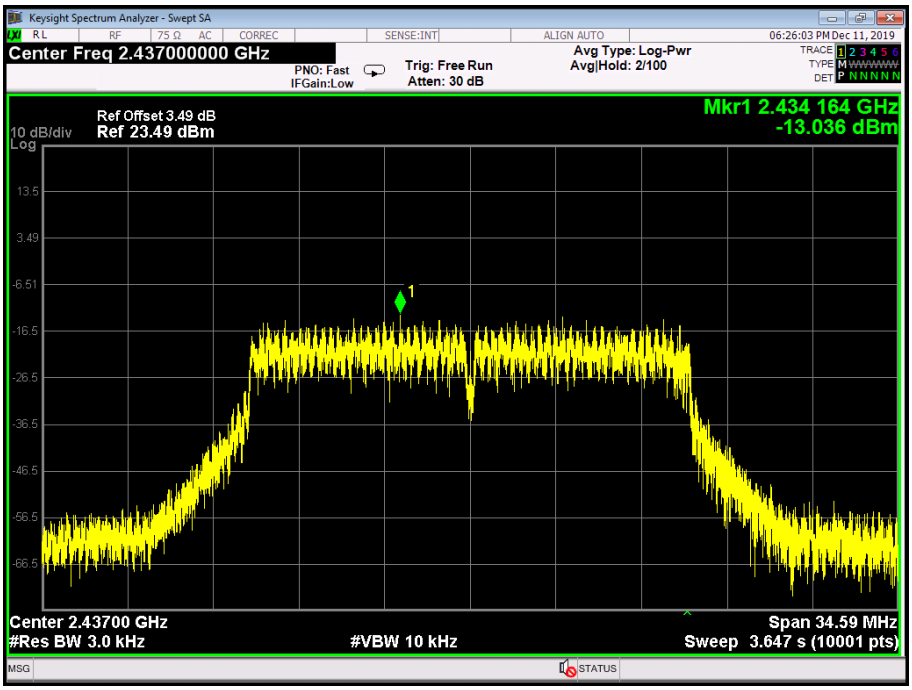
802.11N(HT20) Mode

2412 MHz



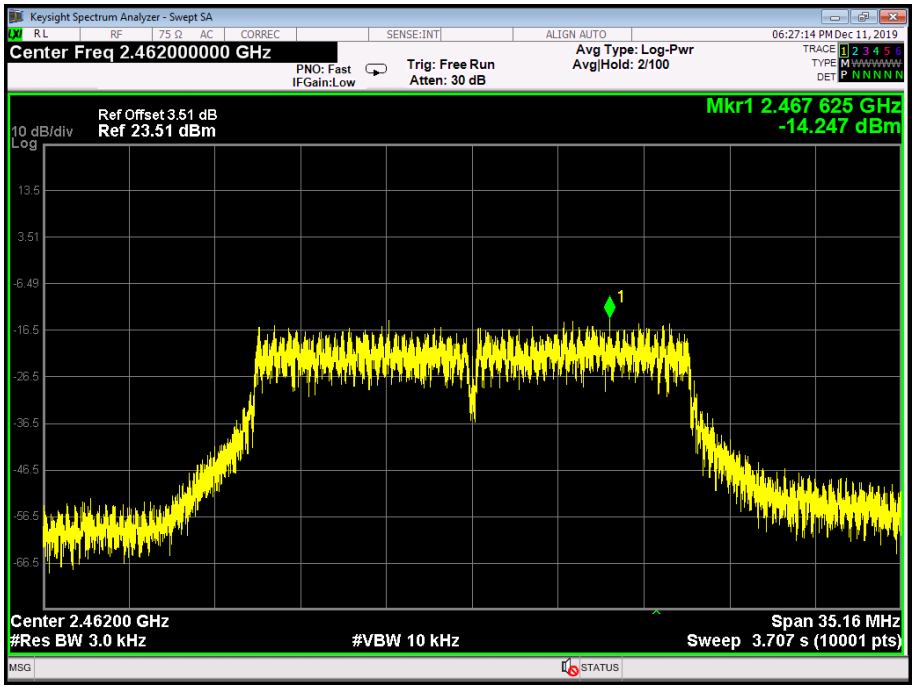
802.11N(HT20) Mode

2437 MHz



802.11N(HT20) Mode

2462 MHz

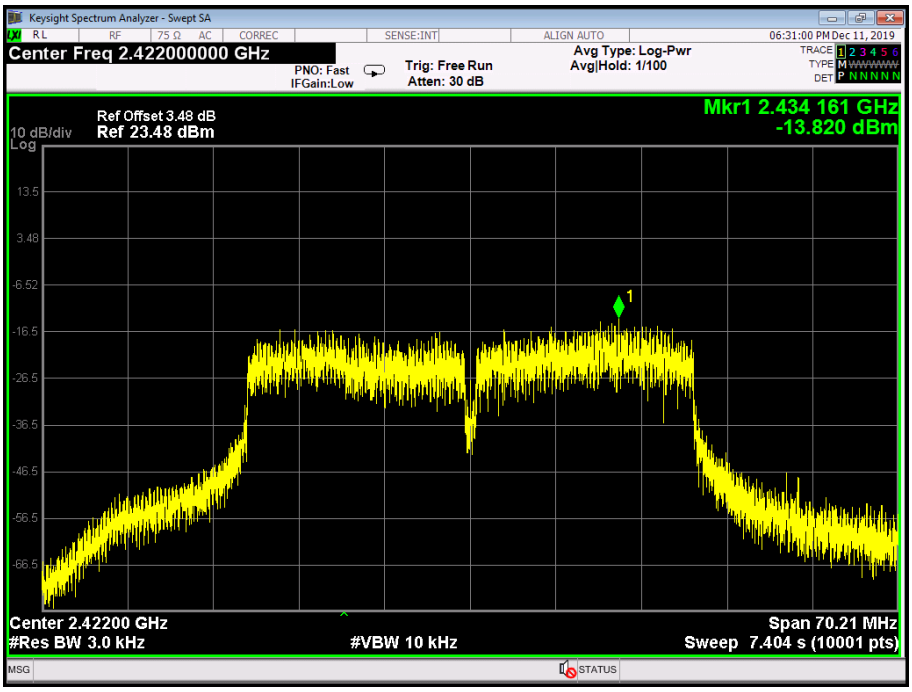


Temperature:	25 ℃	Temperature:	25 ℃
Test Voltage:	AC 120V/60 HZ		
Test Mode:	TX 802.11N(HT40) Mode		

Channel Frequency (MHz)	Power Density (dBm/3 kHz)	Limit (dBm/3 kHz)
2422	-13.820	8
2437	-14.368	
2452	-14.090	

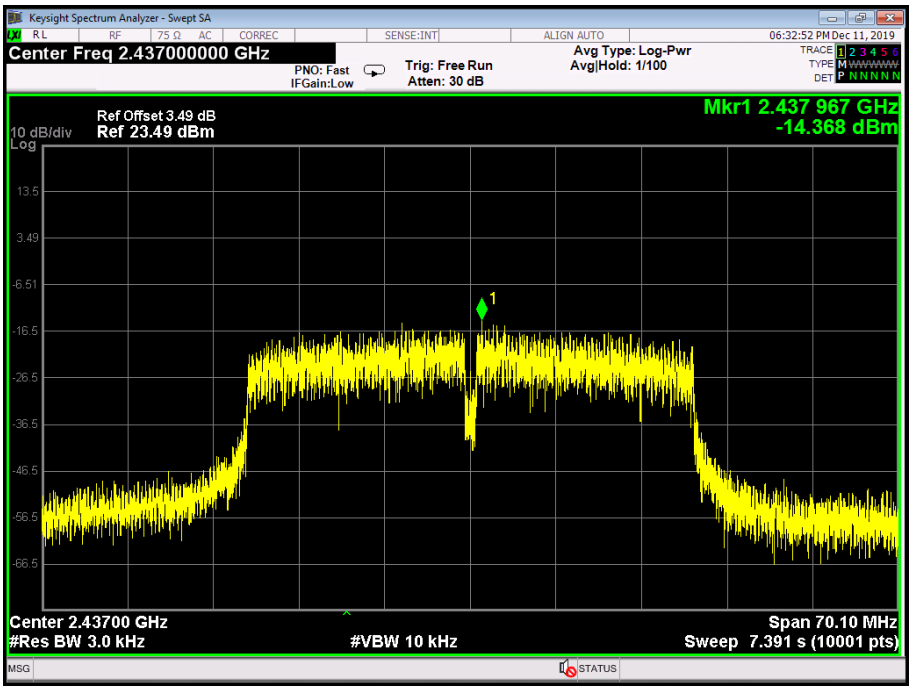
802.11N(HT40) Mode

2422 MHz



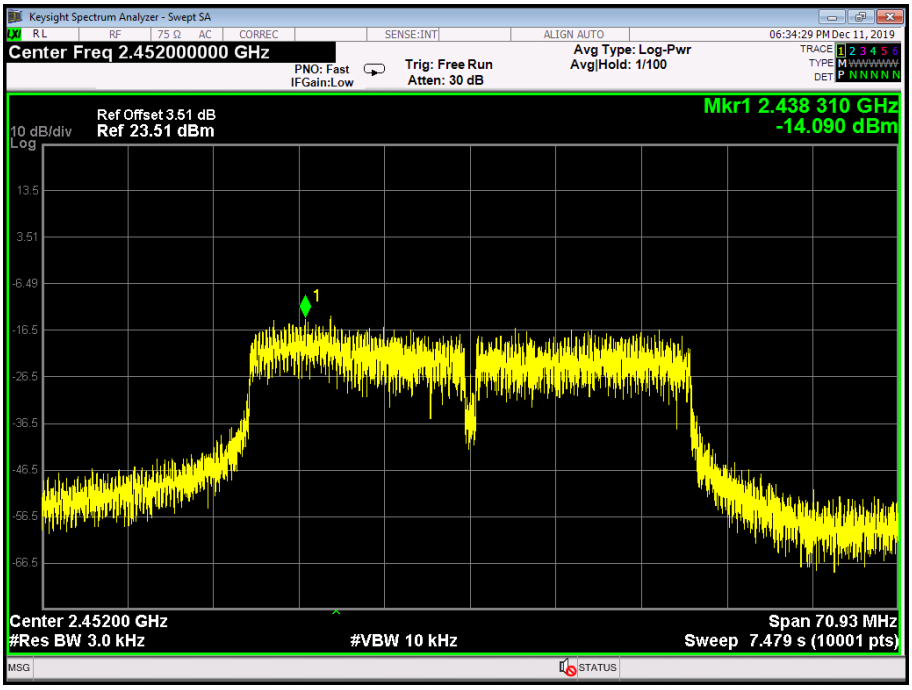
802.11N(HT40) Mode

2437 MHz



802.11N(HT40) Mode

2452 MHz



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