FCC Radio Test Report

FCC ID: 2AVDG-80012

Original Grant

Report No.	:	TB-FCC170167
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 E 15.407
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	Jack Deng
Test/Witness Engineer	:	IVAN SU	Ivan Su
Approved& Authorized	:	Ray Lai	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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Contents

CONTENTS....2
1. GENERAL INFORMATION ABOUT EUT....5
1.1 Client Information....5
1.2 General Description of EUT (Equipment Under Test)....5
1.3 Block Diagram Showing the Configuration of System Tested....6
1.4 Description of Support Units....6
1.5 Description of Test Mode....7
1.6 Description of Test Software Setting....8
1.7 Measurement Uncertainty....9
1.8 Test Facility....9
2. TEST SUMMARY....10
3. TEST SOFTWARE....10
4. TEST EQUIPMENT....11
5. CONDUCTED EMISSION TEST....12
5.1 Test Standard and Limit....12
5.2 Test Setup....12
5.3 Test Procedure....13
5.4 Deviation From Test Standard....13
5.5 EUT Operating Mode....13
5.6 Test Data....13
6. RADIATED EMISSION TEST....14
6.1 Test Standard and Limit....14
6.2 Test Setup....15
6.3 Test Procedure....16
6.4 Deviation From Test Standard....17
6.5 EUT Operating Condition....17
6.6 Test Data....17
7. BAND EDGE EMISSIONS....18
7.1 Test Standard and Limit....18
7.2 Test Setup....18
7.3 Test Procedure....19
7.4 Deviation From Test Standard....19
7.5 EUT Operating Condition....19
7.6 Test Data....19
8. BANDWIDTH TEST....20
8.1 Test Standard and Limit....20
8.2 Test Setup....20
8.3 Test Procedure....20
8.4 Deviation From Test Standard....21

8.5 EUT Operating Condition 21
8.6 Test Data 21
9. OUTPUT POWER TEST 22
9.1 Test Standard and Limit 22
9.2 Test Setup 22
9.3 Test Procedure 22
9.4 Deviation From Test Standard 22
9.5 EUT Operating Condition 22
9.6 Test Date 22
10. POWER SPECTRAL DENSITY TEST 23
10.1 Test Standard and Limit 23
9.2 Test Setup 23
10.3 Test Procedure 23
10.4 Deviation From Test Standard 24
10.5 EUT Operating Condition 24
10.6 Test Data 24
11. FREQUENCY STABILITY MEASUREMENT 25
11.1 Test Standard and Limit 25
11.2 Test Setup 25
11.3 Test Procedure 25
11.4 Deviation From Test Standard 25
11.5 EUT Operating Condition 26
11.6 Test Data 26
12. ANTENNA REQUIREMENT 27
12.1 Standard Requirement 27
12.2 Antenna Connected Construction 27
12.3 Deviation From Test Standard 27
12.4 Result 27
ATTACHMENT A-- CONDUCTED EMISSION TEST DATA 28
ATTACHMENT B-- RADIATED EMISSION TEST DATA 34
ATTACHMENT C-- RESTRICTED BANDS REQUIREMENT AND BAND-EDGE TEST DATA 72
ATTACHMENT D--BANDWIDTH TEST DATA 102
ATTACHMENT E--AVG OUTPUT POWER TEST DATA 114
ATTACHMENT F-- POWER SPECTRAL DENSITY TEST DATA 118
ATTACHMENT G----FREQUENCY STABILITY MEASUREMENT DATA 125

Revision History

Report No.	Version	Description	Issued Date
TB-FCC169406	Rev.01	Initial issue of report	2019-12-02

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 Difference	:	All these models are identical in the same PCB, layout and electrical circuit, the only difference is sizes.		
Product Description	:	Operation Frequency: U-NII-1: 5180MHz~5240MHz; U-NII-3: 5745MHz~5825MHz		
		RF Output Power:	**U-NII-1:** 802.11a: 16.62dBm 802.11n(HT20): 18.57dBm 802.11n(HT40): 17.05dBm	**U-NII-3:** 802.11a: 20.49dBm 802.11n(HT20): 20.55dBm 802.11n(HT40): 20.69dBm
		Antenna Gain:	1.45dBi FPC Antenna provided by the applicant.	
		Modulation Type:	802.11a: OFDM (QPSK, BPSK, 16QAM) 802.11n: OFDM (QPSK, BPSK, 16QAM, 64QAM	
		Bit Rate of Transmitter:	802.11a: 6/9/12/18/24/36/48/54 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:

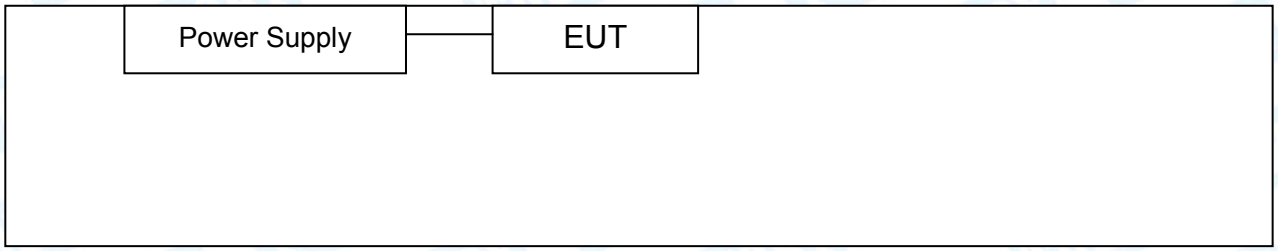
(1) This Test Report is FCC Part 15, Subpart E(15.407) for 802.11a/n, the test procedure follows the KDB 789033 D02 General U-NII Test Procedures New Rules v02r01. More detailed features description, please refer to the manufacturer's specifications or the User's Manual.

(2) Channel List:

5G Band 5150~5250 MHz (U-NII-1)				
Frequency Band	**Channel No.**	**Frequency**	**Channel No.**	**Frequency**
5180~5240 MHz Band 1	36	5180 MHz	44	5220 MHz
	38	5190 MHz	46	5230 MHz
	40	5200 MHz	48	5240 MHz
	42	5210 MHz		
Remark: For 20 MHz Bandwidth, use channel 36, 40, 44, 48. For 40 MHz Bandwidth, use channel 38, 46. For 80 MHz Bandwidth, use channel 42.				

5G Band 5745~5825 MHz(U-NII-3)				
Frequency Band	**Channel No.**	**Frequency**	**Channel No.**	**Frequency**
5745~5825 MHz Band 4	149	5745 MHz	157	5785 MHz
	151	5755 MHz	159	5795 MHz
	153	5765 MHz	161	5805 MHz
	155	5775 MHz	165	5825 MHz
Remark: For 20 MHz Bandwidth, use channel 149, 153, 157, 161, 165. For 40 MHz Bandwidth, use channel 151, 159. For 80 MHz Bandwidth, use channel 155.				

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 a Mode(Model: 80012)
Mode 2		TX a Mode(Model: 80013)
Mode 3		TX a Mode(Model: 80014)
For Radiated Test Below 1GHz		
Final Test Mode		**Description**
Mode 4		TX a Mode(Model: 80012)
Mode 5		TX a Mode(Model: 80013)
Mode 6		TX a Mode(Model: 80014)
For Radiated Test Above 1GHz		
Test Band	**Final Test Mode**	**Description**
U-NII-1	Mode 7	TX Mode 802.11a Mode Channel 36/40/48
	Mode 8	TX Mode 802.11n(HT20) Mode Channel 36/40/48
	Mode 9	TX Mode 802.11n(HT40) Mode Channel 38/46
U-NII-3	Mode 10	TX Mode 802.11a Mode Channel 149/157/165
	Mode 11	TX Mode 802.11n(HT20) Mode Channel 149/157/165
	Mode 12	TX Mode 802.11n(HT40) Mode Channel 151/159

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:
802.11a Mode: OFDM (6 Mbps)
802.11n (HT20) Mode: MCS 8
802.11n (HT40) Mode: MCS 8

(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		
Test Mode: Continuously transmitting		
U-NII-1		
Mode	**Frequency (MHz)**	**Parameters**
802.11a	**5180**	**8**
	5200	**7**
	5240	**8**
802.11n (HT20)	**5180**	**7**
	5200	**7**
	5240	**7**
802.11n (HT40)	**5190**	**10**
	5230	**10**
U-NII-3		
Mode	**Frequency (MHz)**	**Parameters**
802.11a	**5745**	**DEF**
	5785	**DEF**
	5825	**DEF**
802.11n (HT20)	**5745**	**DEF**
	5785	**DEF**
	5825	**DEF**
802.11n (HT40)	**5755**	**DEF**
	5795	**DEF**

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	±4.50 dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	±4.40 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 E(15.407)			
Standard Section	**Test Item**	**Judgment**	**Remark**
FCC			
15.203	Antenna Requirement	PASS	N/A
15.207	Conducted Emission	PASS	N/A
15.407(b)	Band Edge Emissions	PASS	N/A
15.407(a)	26dB Bandwidth&99% Bandwidth	PASS	N/A
15.407(e)	6dB Bandwidth(**only for UNII-3**)	PASS	N/A
15.407(a)	AVG Output Power	PASS	N/A
15.407(a)	Power Spectral Density	PASS	N/A
15.407(b)	Transmitter Radiated Spurious Emission	PASS	N/A
15.407(a)	Peak Excursion	PASS	N/A
15.407(g)	Frequency Stability	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	1311.006K40-100946-Vn	Jan. 31, 2019	Jan. 30, 2020
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Jan. 27, 2019	Jan. 26, 2020
Bilog Antenna	ETS-LINDGREN	3142E	00117542	Jan. 27, 2019	Jan. 26, 2020
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.03, 2019	Mar. 02, 2020
Horn Antenna	ETS-LINDGREN	3117	00143209	Mar.03, 2019	Mar. 02, 2020
Horn Antenna	ETS-LINDGREN	BBHA 9170	BBHA9170582	Aug.07, 2019	Aug. 06, 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

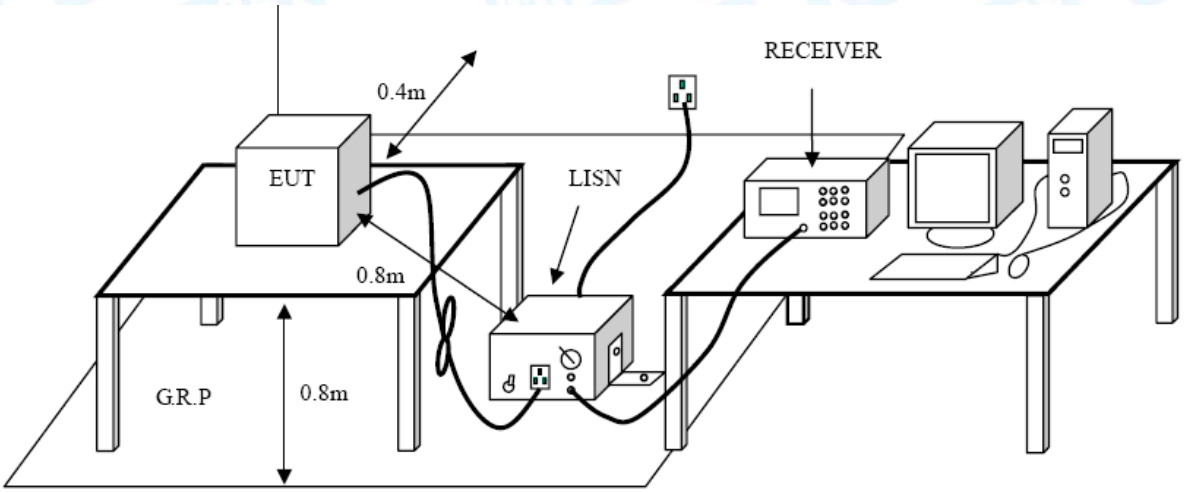
5.1.2 Test Limit

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 (9kHz~1000MHz)

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)

Limits of unwanted emission out of the restricted bands

Frequency (MHz)	EIRP Limits (dBm)	Equivalent Field Strength at 3m (dBuV/m)
5150~5250	-27	68.3
5250~5350	-27	68.3
5470~5725	-27	68.3
5725~5825	-27(Note 2)	68.3
	10(Note 2)	105.3
	15.6(Note 2)	110.9
	27(Note 2)	122.3

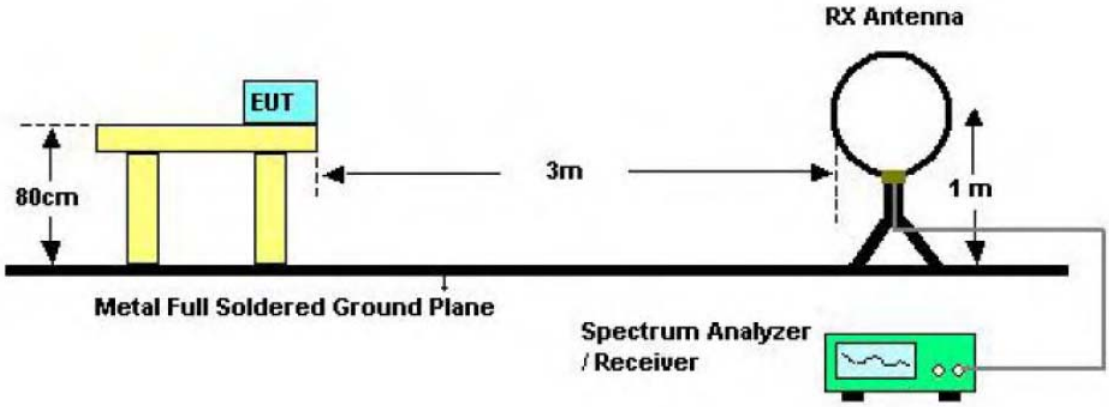
NOTE:

1, The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

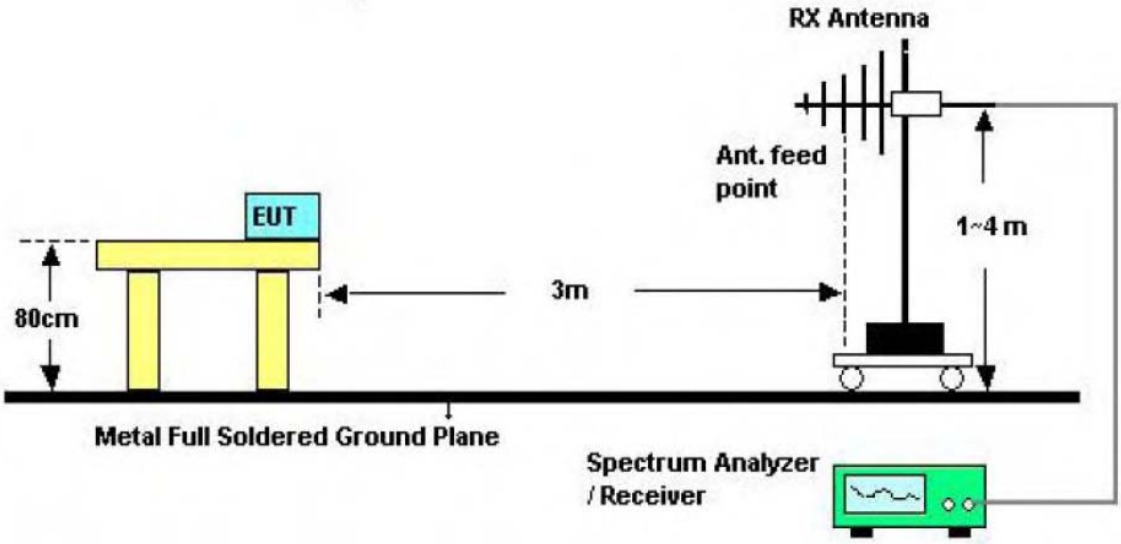
E= $\frac{1000000\sqrt{30P}}{3}$ uV/m, where P is the eirp (Watts)

2, According to FCC 16-24,All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below theband edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above orbelow the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27dBm/MHz at the band edge.

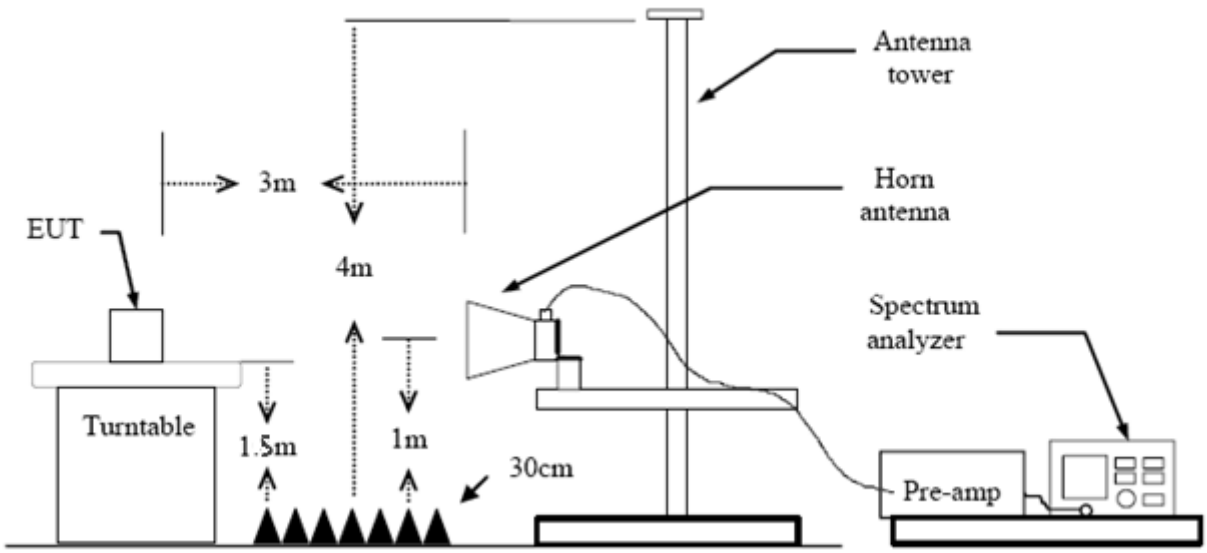
6.2 Test Setup



Below 30MHz Test Setup



Below 1000MHz Test Setup



Above 1GHz Test Setup

6.3 Test Procedure

(1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz. The EUT was placed on a rotating 0.8m high above the 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 0re 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. Band Edge Emissions

7.1 Test Standard and Limit

7.1.1 Test Standard

FCC Part 15.407(b)

7.1.2 Test Limit

Limits of unwanted emission out of the restricted bands

Frequency (MHz)	EIRP Limits (dBm)	Equivalent Field Strength at 3m (dBuV/m)
5150~5250	-27	68.3
5250~5350	-27	68.3
5470~5725	-27	68.3
5725~5825	-27(Note 2)	68.3
	10(Note 2)	105.3
	15.6(Note 2)	110.9
	27(Note 2)	122.3

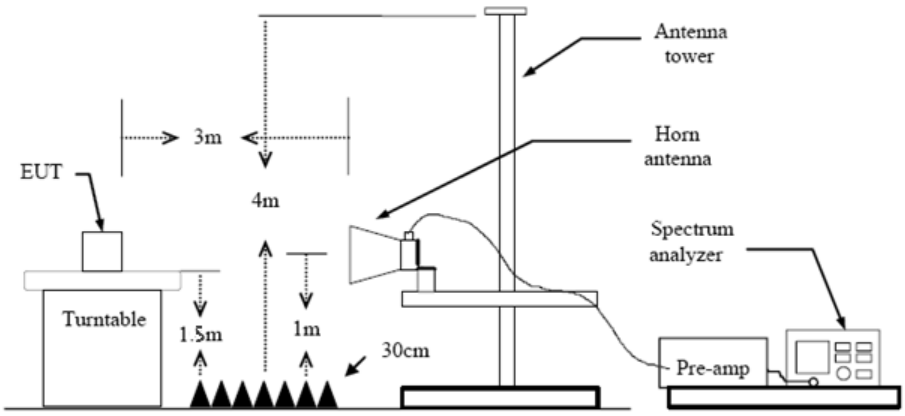
NOTE:

1, The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

E= $\frac{1000000\sqrt{30P}}{3}$ uV/m, where P is the eirp (Watts)

2, According to FCC 16-24,All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below theband edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above orbelow the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27dBm/MHz at the band edge.

7.2 Test Setup



7.3 Test Procedure

(1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz. The EUT was placed on a rotating 0.8m high above the 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 0re 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

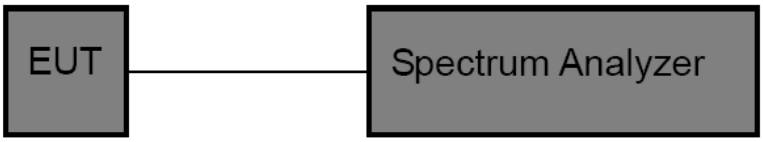
8.1.1 Test Standard

FCC Part 15.407

8.1.2 Test Limit

FCC Part 15 Subpart C(15.407)/RSS-210		
Test Item	**Limit**	**Frequency Range (MHz)**
26 Bandwidth	N/A	5150~5250
		5250~5350
		5500~5700
6 dB Bandwidth	>500kHz	5725~5850

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 setting of the spectrum analyser as below:

26dB Bandwidth Test	
Spectrum Parameters	**Setting**
Attenuation	Auto
Span	>26 dB Bandwidth
RBW	Approximately 1% of the emission bandwidth
VBW	VBW>RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

6dB Bandwidth Test	
Spectrum Parameters	**Setting**
Attenuation	Auto
Span	>6 dB Bandwidth
RBW	100 kHz
VBW	VBW>=3*RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto
99% Occupied Bandwidth Test	
Spectrum Parameters	**Setting**
Attenuation	Auto
RBW	1% to 5% of the OBW
VBW	≥ 3RBW
Detector	Peak
Trace	Max Hold

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. Output Power Test

9.1 Test Standard and Limit

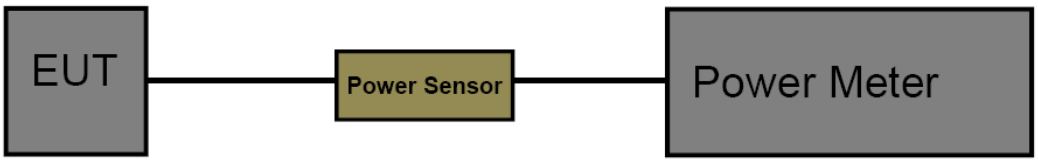
9.1.1 Test Standard

FCC Part 15.407 (a)

9.1.2 Test Limit

FCC Part 15 Subpart E(15.407)/RSS-210		
Test Item	**Limit**	**Frequency Range(MHz)**
Conducted Output Power	Fixed: 1 Watt (30dBm) Mobile and Portable: 250mW (24dBm)	5150~5250
	250mW (24dBm)	5250~5350
	250mW (24dBm)	5500~5700
	1 Watt (30dBm)	5725~5850

9.2 Test Setup



9.3 Test Procedure

The measurement is according to section 3 of KDB 789033 D02 General U-NII Test Procedures New Rules v02r01.
The EUT was connected to RF power meter via a broadband power sensor as show the block above.

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 Date

Please refer to the Attachment E.

10. Power Spectral Density Test

10.1 Test Standard and Limit

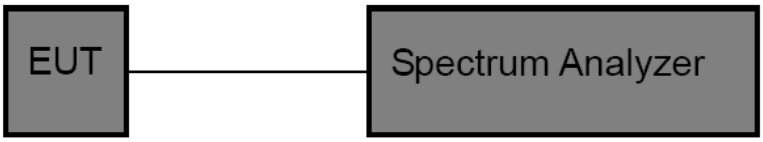
10.1.1 Test Standard

FCC Part 15.407 (a)

10.1.2 Test Limit

FCC Part 15 Subpart E(15.407)		
Test Item	**Limit**	**Frequency Range(MHz)**
Power Spectral Density	Other than Mobile and Portable : 17dBm/MHz Mobile and Portable : 11dBm/MHz	5150~5250
	11dBm/MHz	5250~5350
	11dBm/MHz	5500~5700
	30dBm/500kHz	5725~5850

9.2 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 is according to KDB 789033 D02 General U-NII Test Procedures New Rules v02r01.

(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 transmitting frequency.

(3) Set the span to encompass the entire emissions bandwidth (EBW)(alternatively, the entire 99% OBW) of the signal.

(4) Set the RBW to: 1 MHz

(5) Set the VBW to: 3 MHz

(6) Detector: RMS

(7) Trace: Max Hold

(7) Sweep time: auto

(8) Trace average at least 100 traces in power averaging.

(9) User the peak marker function to determine the maximum amplitude level within the RBW. Apply correction to the result if different RBW is used.

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. Frequency Stability Measurement

11.1 Test Standard and Limit

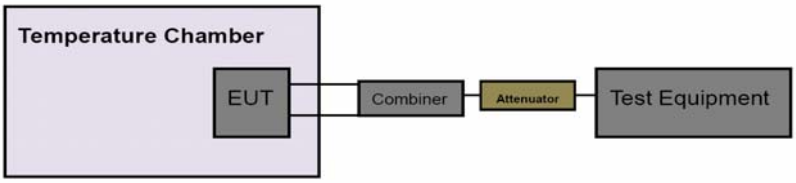
11.1.1 Test Standard

FCC Part 15.407

11.1.2 Test Limit

FCC Part 15 Subpart C(15.407)		
Test Item	**Limit**	**Frequency Range(MHz)**
Peak Excursion Measurement	Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual	5150~5250
		5250~5350
		5500~5700
		5725~5850

11.2 Test Setup



11.3 Test Procedure

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above.

(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 transmitting frequency.
(3) Set the span to encompass the entire emissions bandwidth (EBW) of the signal.
(4) Set the RBW to: 10 kHz, VBW=10 kHz with peak detector and maxhold settings.
(5) The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.
(6) Extreme temperature is 0℃~50℃

11.4 Deviation From Test Standard

No deviation

11.5 EUT Operating Condition

The EUT was set to continuously transmitting in continuously un-modulation transmitting mode.

11.6 Test Data

Please refer to the Attachment G.

12. Antenna Requirement

12.1 Standard Requirement

12.1.1 Standard

FCC Part 15.203

12.1.2 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.

12.2 Antenna Connected Construction

The gains of the antenna used for transmitting is 1.35 dBi, and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

12.3 Deviation From Test Standard

No deviation

12.4 Result

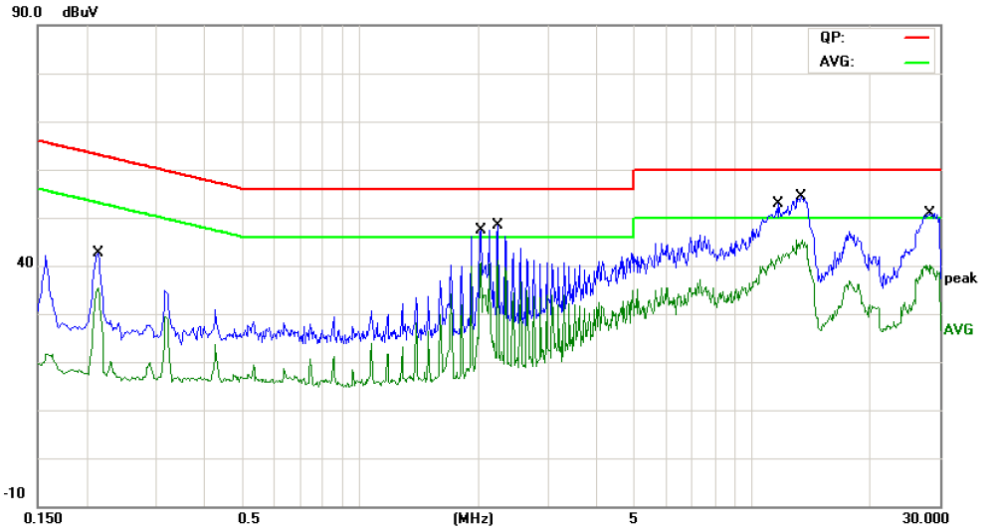
The EUT antennas are FPC Antenna. It complies with the standard requirement.

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/60 Hz		
Terminal:	Line		
Test Mode:	TX 802.11a Mode CH36 (Model:80012)		
Remark:	Only worse case is reported.		

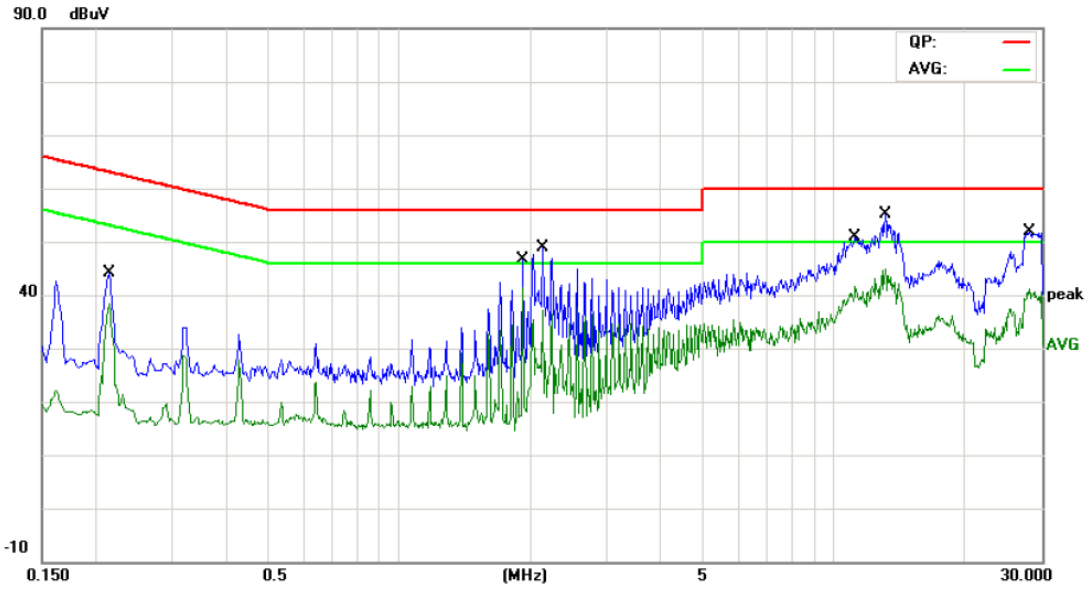


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.2139	32.78	9.79	42.57	63.05	-20.48	QP
2		0.2139	25.61	9.79	35.40	53.05	-17.65	AVG
3		2.0259	37.61	9.85	47.46	56.00	-8.54	QP
4		2.0259	30.67	9.85	40.52	46.00	-5.48	AVG
5		2.2378	38.61	9.84	48.45	56.00	-7.55	QP
6	*	2.2378	31.28	9.84	41.12	46.00	-4.88	AVG
7		11.6737	42.97	9.82	52.79	60.00	-7.21	QP
8		11.6737	32.43	9.82	42.25	50.00	-7.75	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		28.2457	41.30	9.58	50.88	60.00	-9.12	QP
12		28.2457	28.90	9.58	38.48	50.00	-11.52	AVG

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

Emission Level= Read Level+ Correct Factor

Temperature:	24.8 ℃	**Relative Humidity:**	42%
Test Voltage:	AC 120V/60 Hz		
Terminal:	Neutral		
Test Mode:	TX 802.11a Mode CH36 (Model:80012)		
Remark:	Only worse case is reported		

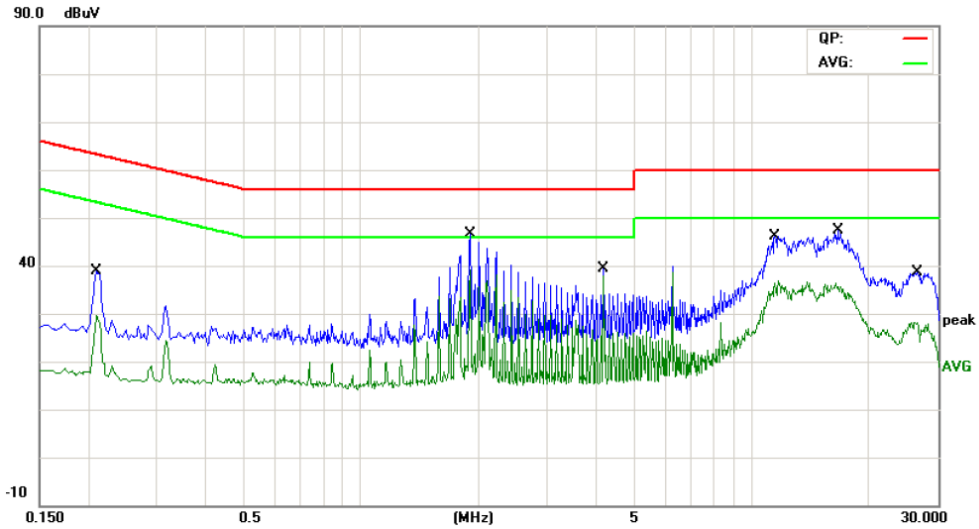


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.2139	34.45	9.79	44.24	63.05	-18.81	QP
2		0.2139	28.59	9.79	38.38	53.05	-14.67	AVG
3		1.9178	36.78	9.85	46.63	56.00	-9.37	QP
4		1.9178	27.94	9.85	37.79	46.00	-8.21	AVG
5		2.1299	38.99	9.84	48.83	56.00	-7.17	QP
6		2.1299	27.20	9.84	37.04	46.00	-8.96	AVG
7		11.1897	41.02	9.82	50.84	60.00	-9.16	QP
8		11.1897	31.73	9.82	41.55	50.00	-8.45	AVG
9	*	13.1059	45.36	9.82	55.18	60.00	-4.82	QP
10		13.1059	34.97	9.82	44.79	50.00	-5.21	AVG
11		28.0380	42.35	9.53	51.88	60.00	-8.12	QP
12		28.0380	31.51	9.53	41.04	50.00	-8.96	AVG

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

Emission Level= Read Level+ Correct Factor

Temperature:	24.8℃	**Relative Humidity:**	42%
Test Voltage:	AC 120V/60 Hz		
Terminal:	Line		
Test Mode:	TX 802.11a Mode CH36 (Model:80013)		
Remark:	Only worse case is reported		

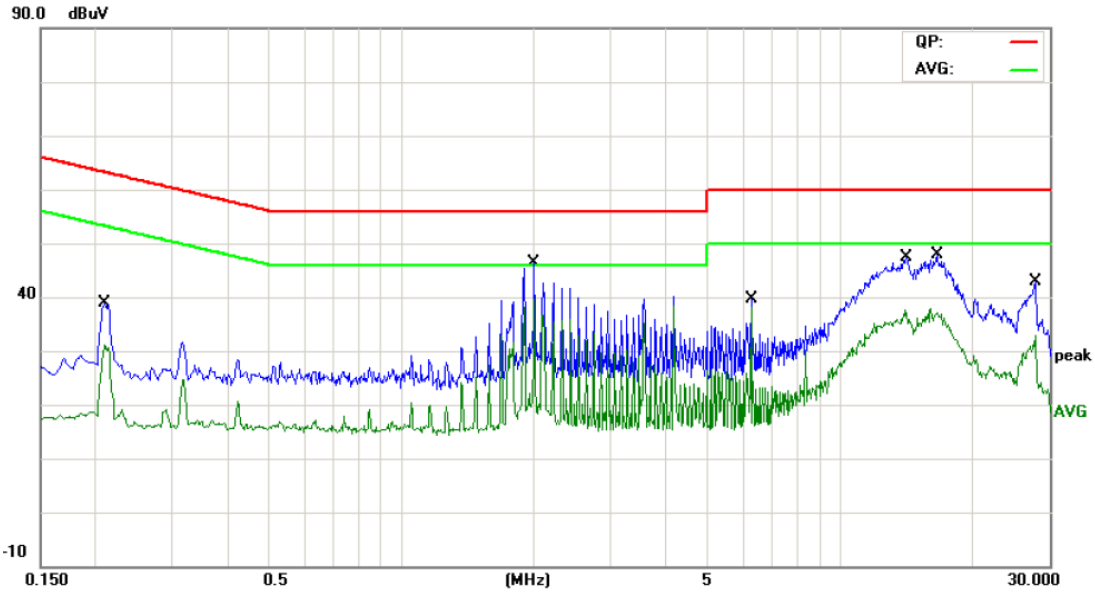


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.2099	29.06	9.78	38.84	63.21	-24.37	QP
2		0.2099	19.90	9.78	29.68	53.21	-23.53	AVG
3		1.8979	36.74	9.85	46.59	56.00	-9.41	QP
4	*	1.8979	29.35	9.85	39.20	46.00	-6.80	AVG
5		4.1738	29.56	9.84	39.40	56.00	-16.60	QP
6		4.1738	28.11	9.84	37.95	46.00	-8.05	AVG
7		11.4899	36.42	9.82	46.24	60.00	-13.76	QP
8		11.4899	26.48	9.82	36.30	50.00	-13.70	AVG
9		16.6459	37.58	9.84	47.42	60.00	-12.58	QP
10		16.6659	25.67	9.84	35.51	50.00	-14.49	AVG
11		26.5859	29.52	9.23	38.75	60.00	-21.25	QP
12		26.5859	18.84	9.23	28.07	50.00	-21.93	AVG

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

Emission Level= Read Level+ Correct Factor

Temperature:	24.8℃	**Relative Humidity:**	42%
Test Voltage:	AC 120V/60 Hz		
Terminal:	Neutral		
Test Mode:	TX 802.11a Mode CH36(Model:80013)		
Remark:	Only worse case is reported		

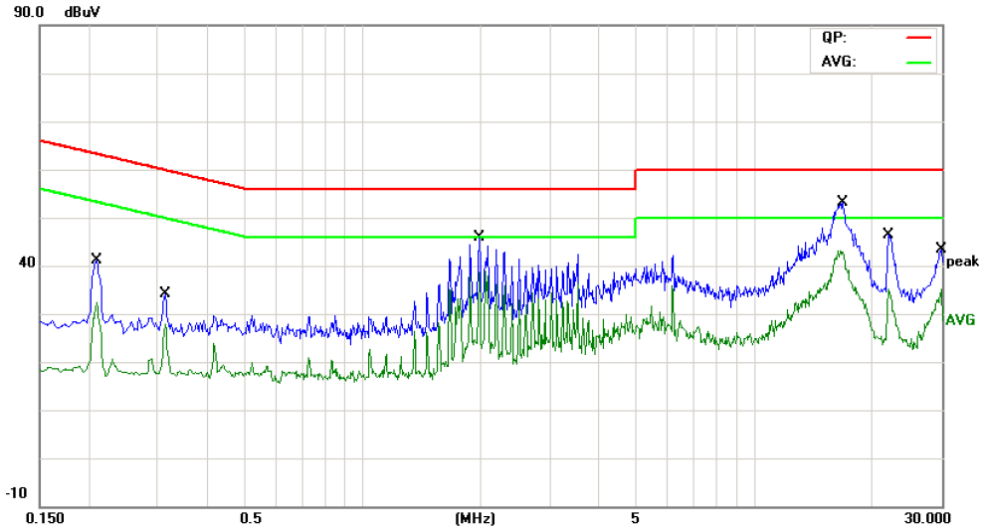


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.2099	29.21	9.59	38.80	63.21	-24.41	QP
2		0.2099	21.54	9.59	31.13	53.21	-22.08	AVG
3		2.0059	36.52	9.86	46.38	56.00	-9.62	QP
4	*	2.0059	29.67	9.86	39.53	46.00	-6.47	AVG
5		6.2618	29.73	9.85	39.58	60.00	-20.42	QP
6		6.2618	6.82	9.85	16.67	50.00	-33.33	AVG
7		14.1659	37.48	9.86	47.34	60.00	-12.66	QP
8		14.1659	27.35	9.86	37.21	50.00	-12.79	AVG
9		16.6298	38.00	9.78	47.78	60.00	-12.22	QP
10		16.6298	27.46	9.78	37.24	50.00	-12.76	AVG
11		27.8619	33.20	9.68	42.88	60.00	-17.12	QP
12		27.8619	23.08	9.68	32.76	50.00	-17.24	AVG

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

Emission Level= Read Level+ Correct Factor

Temperature:	24.8℃	**Relative Humidity:**	42%
Test Voltage:	AC 120V/60 Hz		
Terminal:	Line		
Test Mode:	TX 802.11a Mode CH36 (Model:80014)		
Remark:	Only worse case is reported		

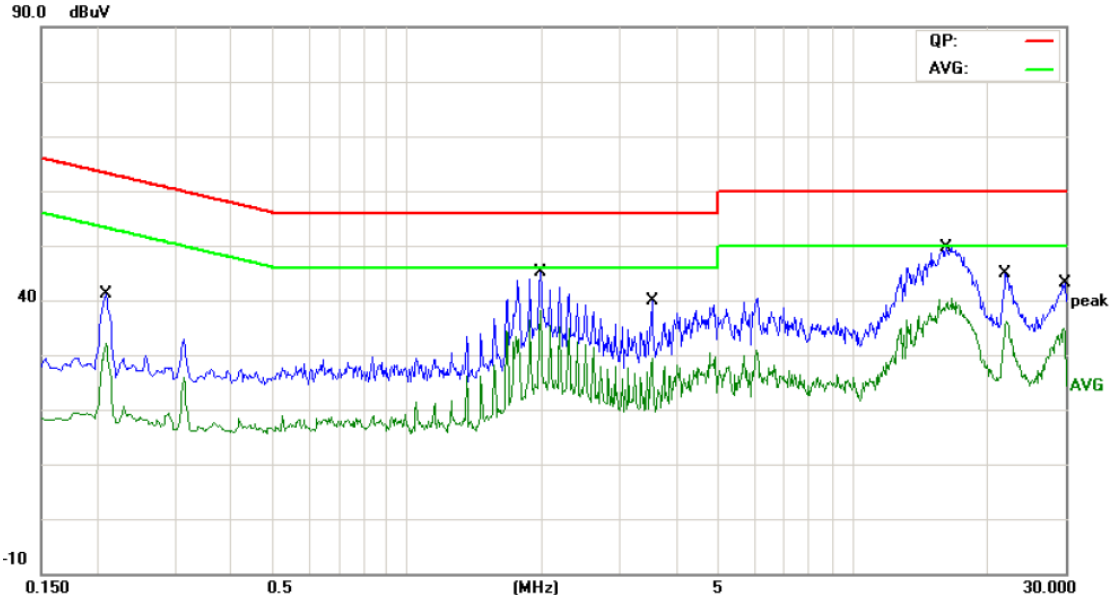


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.2099	31.46	9.78	41.24	63.21	-21.97	QP
2		0.2099	22.47	9.78	32.25	53.21	-20.96	AVG
3		0.3140	24.39	9.84	34.23	59.86	-25.63	QP
4		0.3140	18.09	9.84	27.93	49.86	-21.93	AVG
5		1.9858	35.97	9.85	45.82	56.00	-10.18	QP
6		1.9858	28.74	9.85	38.59	46.00	-7.41	AVG
7	*	16.7698	43.35	9.84	53.19	60.00	-6.81	QP
8		16.7698	32.97	9.84	42.81	50.00	-7.19	AVG
9		22.0457	36.90	9.47	46.37	60.00	-13.63	QP
10		22.0457	25.38	9.47	34.85	50.00	-15.15	AVG
11		29.8780	33.47	9.92	43.39	60.00	-16.61	QP
12		29.8780	25.23	9.92	35.15	50.00	-14.85	AVG

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

Emission Level= Read Level+ Correct Factor

Temperature:	24.8℃	**Relative Humidity:**	42%
Test Voltage:	AC 120V/60 Hz		
Terminal:	Neutral		
Test Mode:	TX 802.11a Mode CH36(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	31.34	9.78	41.12	63.21	-22.09	QP
2		0.2099	22.40	9.78	32.18	53.21	-21.03	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		3.5299	29.99	9.85	39.84	56.00	-16.16	QP
6		3.5299	16.53	9.85	26.38	46.00	-19.62	AVG
7		16.1899	39.86	9.83	49.69	60.00	-10.31	QP
8		16.1899	29.48	9.83	39.31	50.00	-10.69	AVG
9		22.0419	35.46	9.47	44.93	60.00	-15.07	QP
10		22.0419	25.72	9.47	35.19	50.00	-14.81	AVG
11		29.8738	33.18	9.92	43.10	60.00	-16.90	QP
12		29.8738	24.46	9.92	34.38	50.00	-15.62	AVG

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

Emission Level= Read Level+ Correct Factor

Attachment B-- Radiated Emission Test Data

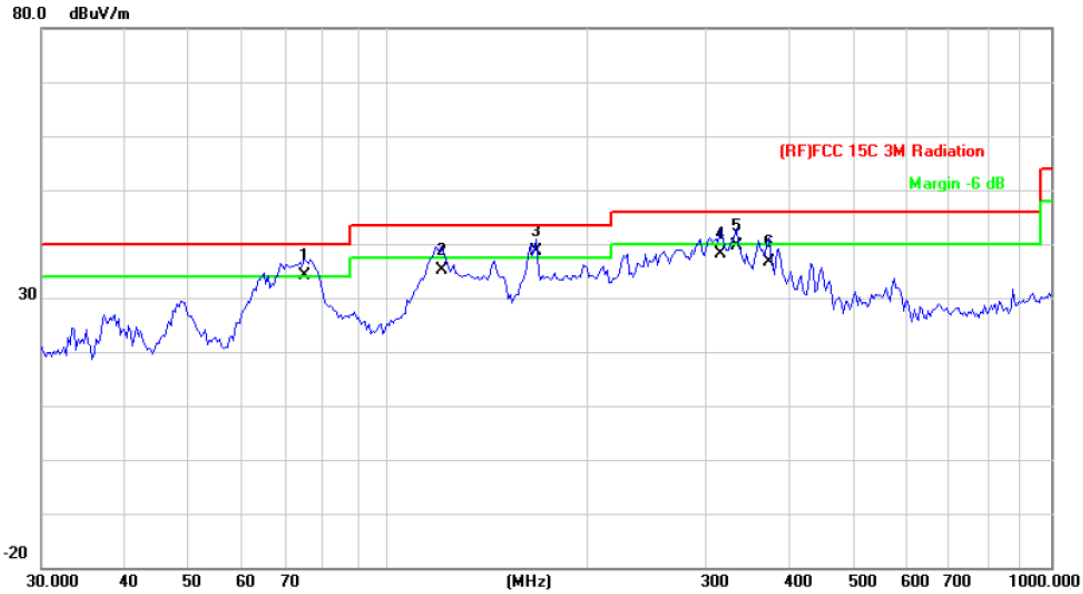
9 KHz~30 MHz

From 9 KHz to 30 MHz: 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 802.11a Mode 5180MHz (U-NII-1) (Model : 80012)		
Remark:	Only worse case is reported		

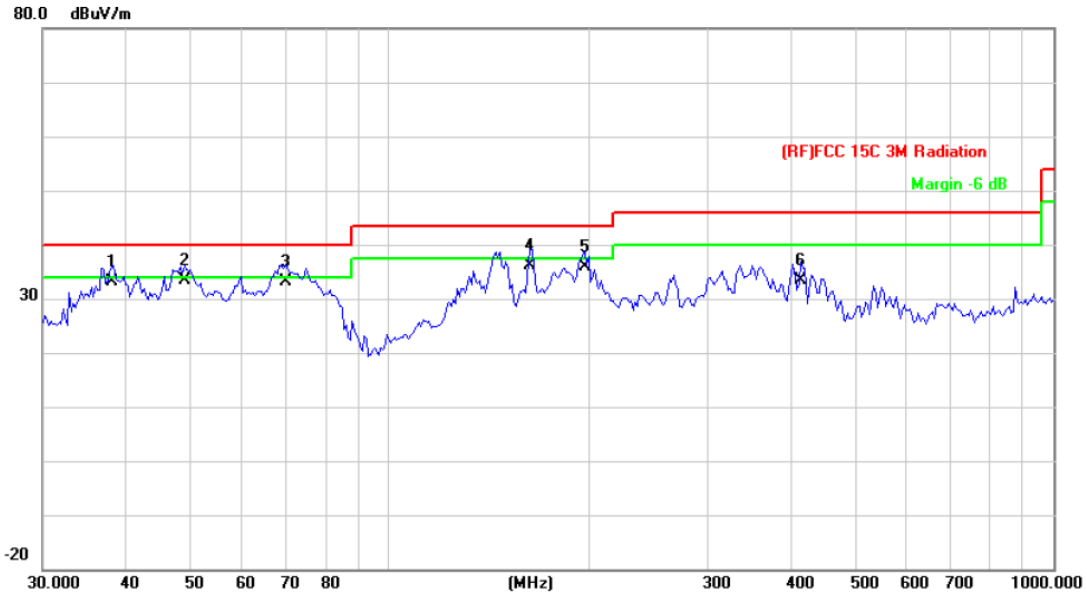


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	!	74.6568	57.35	-23.10	34.25	40.00	-5.75	QP
2		120.2766	57.53	-22.32	35.21	43.50	-8.29	QP
3	*	167.2366	59.13	-20.59	38.54	43.50	-4.96	QP
4		316.5889	53.70	-15.46	38.24	46.00	-7.76	QP
5		334.8589	54.39	-14.87	39.52	46.00	-6.48	QP
6		374.6225	49.84	-13.26	36.58	46.00	-9.42	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 802.11a Mode 5180MHz (U-NII-1) (Model : 80012)		
Remark:	Only worse case is reported.		

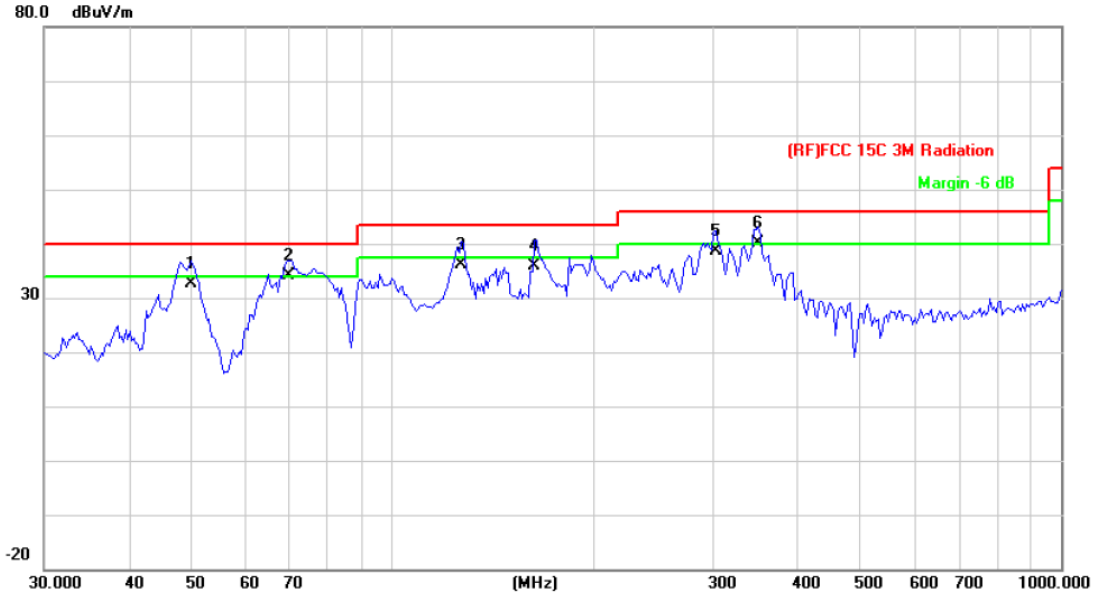


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		38.0782	51.36	-18.26	33.10	40.00	-6.90	QP
2	*	49.0144	56.41	-23.01	33.40	40.00	-6.60	QP
3		69.6004	56.79	-23.59	33.20	40.00	-6.80	QP
4		162.6106	56.86	-20.76	36.10	43.50	-7.40	QP
5		196.5098	55.66	-19.86	35.80	43.50	-7.70	QP
6		416.1791	45.39	-11.99	33.40	46.00	-12.60	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 802.11a Mode 5180MHz (U-NII-1) (Model : 80013)		
Remark:	Only worse case is reported		

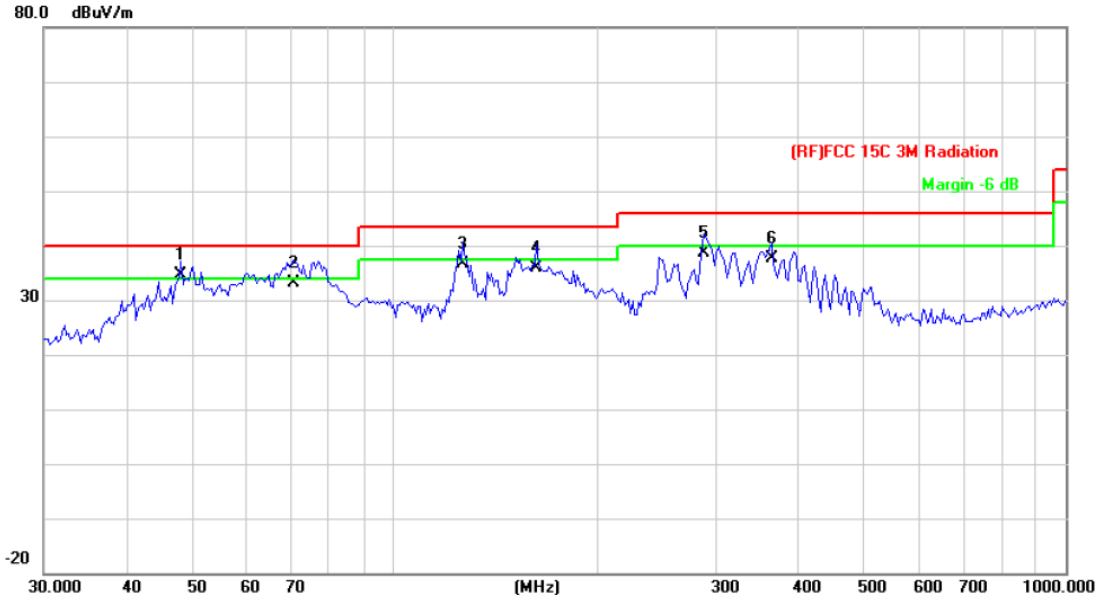


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		49.7068	55.77	-23.25	32.52	40.00	-7.48	QP
2	*	69.6004	57.84	-23.59	34.25	40.00	-5.75	QP
3		126.3285	58.65	-22.40	36.25	43.50	-7.25	QP
4		162.6106	56.62	-20.76	35.86	43.50	-7.64	QP
5		303.5437	54.39	-15.87	38.52	46.00	-7.48	QP
6	!	351.7078	54.52	-14.31	40.21	46.00	-5.79	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 802.11a Mode 5180MHz (U-NII-1) (Model : 80013)		
Remark:	Only worse case is reported.		

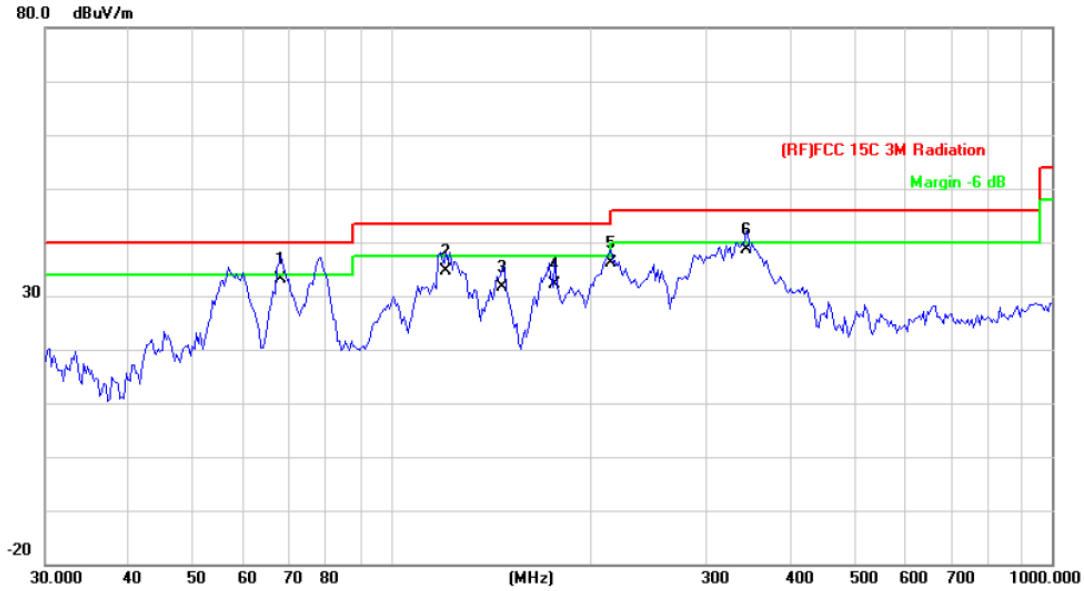


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	47.9939	57.29	-22.67	34.62	40.00	-5.38	QP
2		70.5836	56.76	-23.51	33.25	40.00	-6.75	QP
3		126.3285	58.98	-22.40	36.58	43.50	-6.92	QP
4		162.6106	56.61	-20.76	35.85	43.50	-7.65	QP
5		289.0020	54.75	-16.23	38.52	46.00	-7.48	QP
6		364.2595	51.31	-13.73	37.58	46.00	-8.42	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 802.11a Mode 5180MHz (U-NII-1) (Model : 80014)		
Remark:	Only worse case is reported		

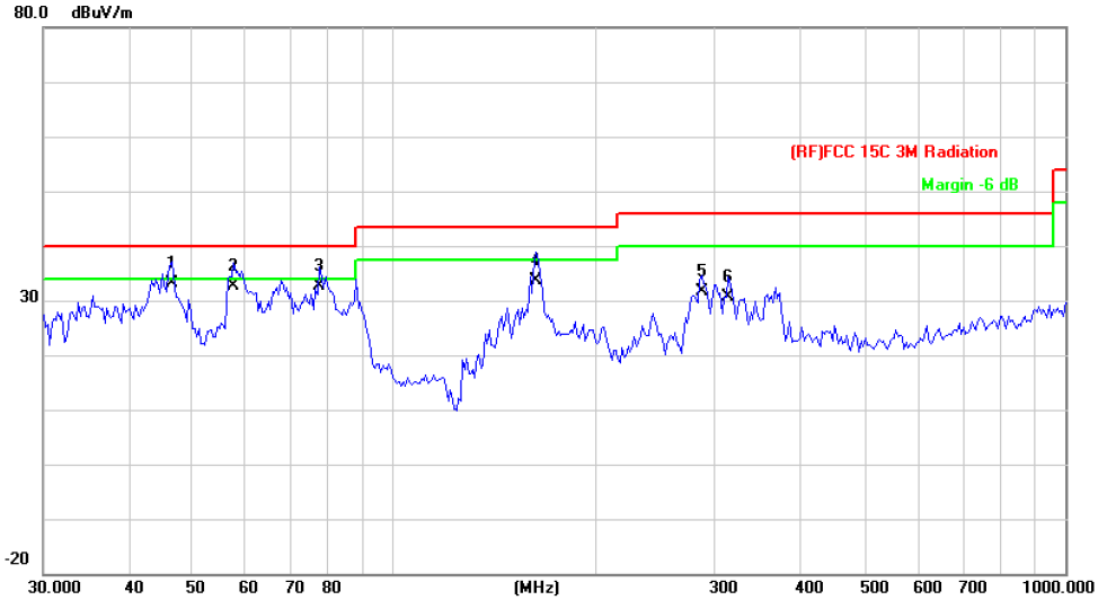


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	68.1512	56.97	-23.73	33.24	40.00	-6.76	QP
2		121.1230	57.01	-22.33	34.68	43.50	-8.82	QP
3		147.4036	53.27	-21.70	31.57	43.50	-11.93	QP
4		176.8877	52.39	-20.23	32.16	43.50	-11.34	QP
5		215.2677	55.28	-19.04	36.24	43.50	-7.26	QP
6		344.3854	53.22	-14.57	38.65	46.00	-7.35	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 802.11a Mode 5180MHz (U-NII-1) (Model : 80014)		
Remark:	Only worse case is reported.		



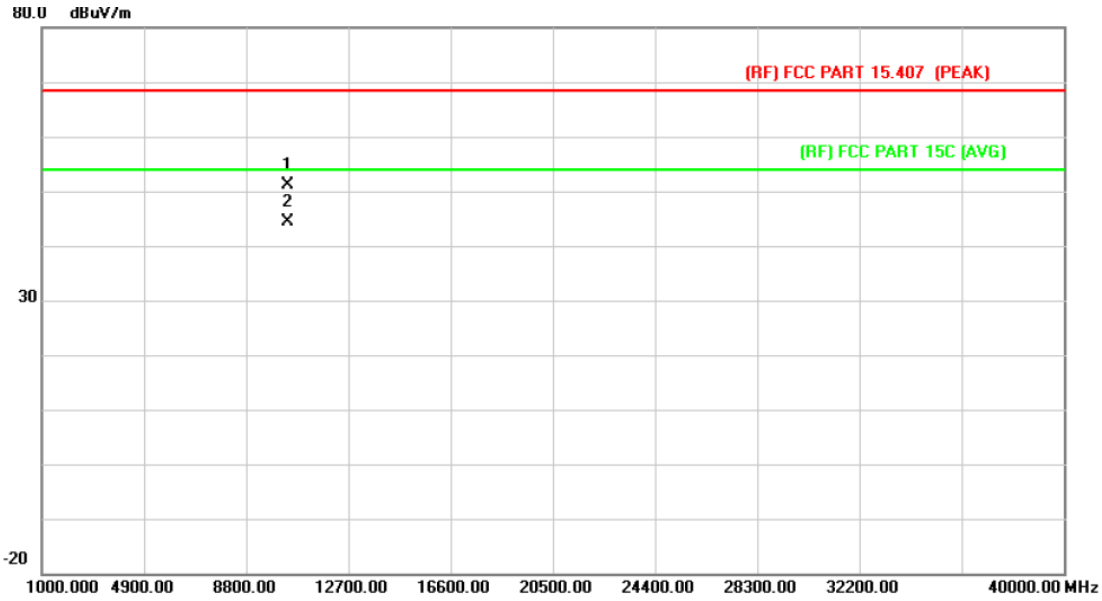
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	46.6664	55.46	-22.22	33.24	40.00	-6.76	QP
2		57.5938	56.82	-24.18	32.64	40.00	-7.36	QP
3		77.3212	55.51	-22.83	32.68	40.00	-7.32	QP
4		162.6106	54.34	-20.76	33.58	43.50	-9.92	QP
5		286.9823	47.94	-16.27	31.67	46.00	-14.33	QP
6		314.3765	46.21	-15.53	30.68	46.00	-15.32	QP

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

Emission Level= Read Level+ Correct Factor

5180MHz-5250MHz(U-NII-1)

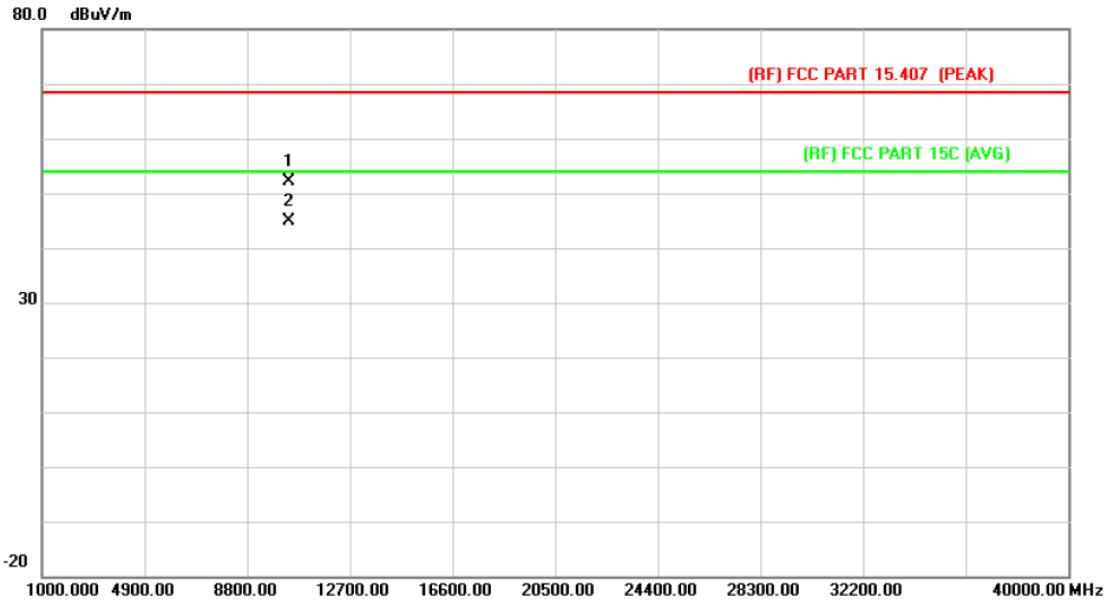
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 802.11a Mode 5180MHz (U-NII-1)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		10360.052	30.68	20.50	51.18	68.30	-17.12	peak
2	*	10360.054	23.84	20.50	44.34	54.00	-9.66	AVG

Emission Level= Read Level+ Correct Factor

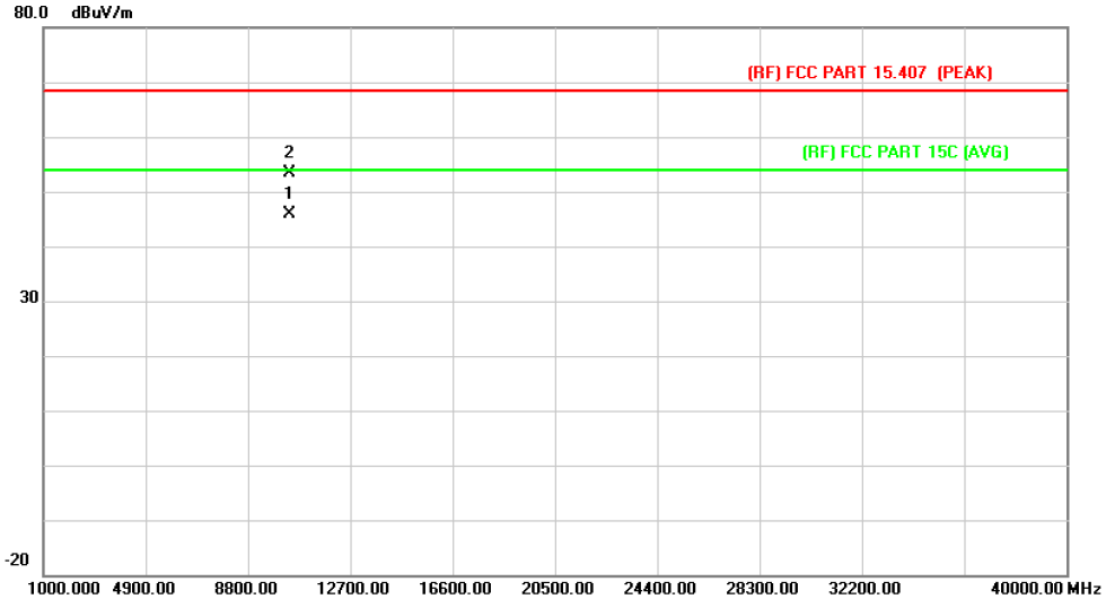
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 802.11a Mode 5180MHz (U-NII-1)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		10360.125	31.57	20.50	52.07	68.30	-16.23	peak
2	*	10360.125	24.36	20.50	44.86	54.00	-9.14	AVG

Emission Level= Read Level+ Correct Factor

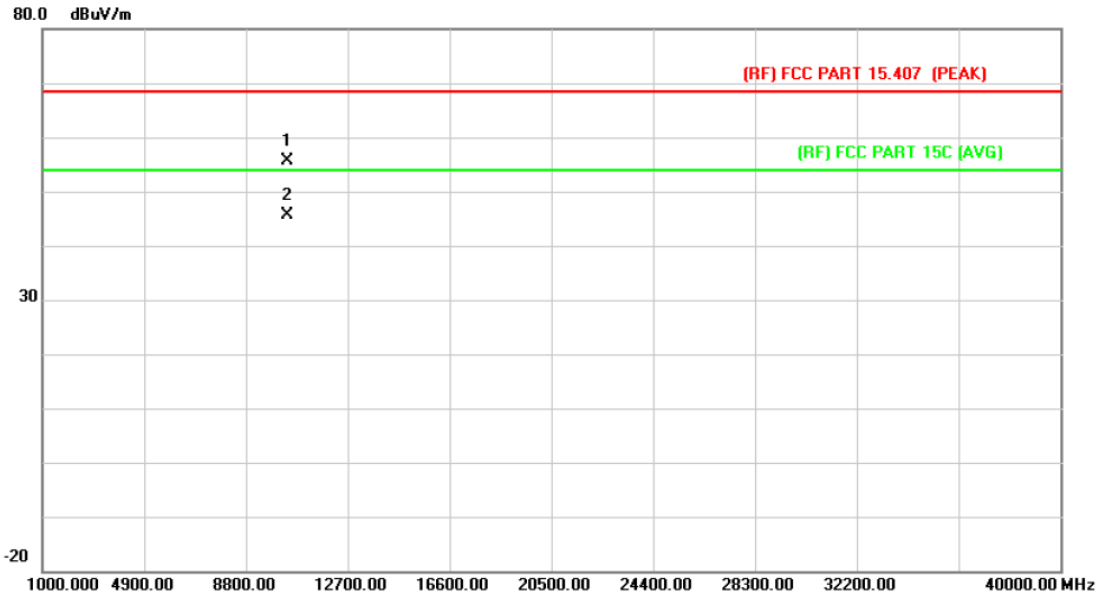
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 802.11a Mode 5200MHz (U-NII-1)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	10400.264	25.35	20.56	45.91	54.00	-8.09	AVG
2		10400.692	32.92	20.56	53.48	68.30	-14.82	peak

Emission Level= Read Level+ Correct Factor

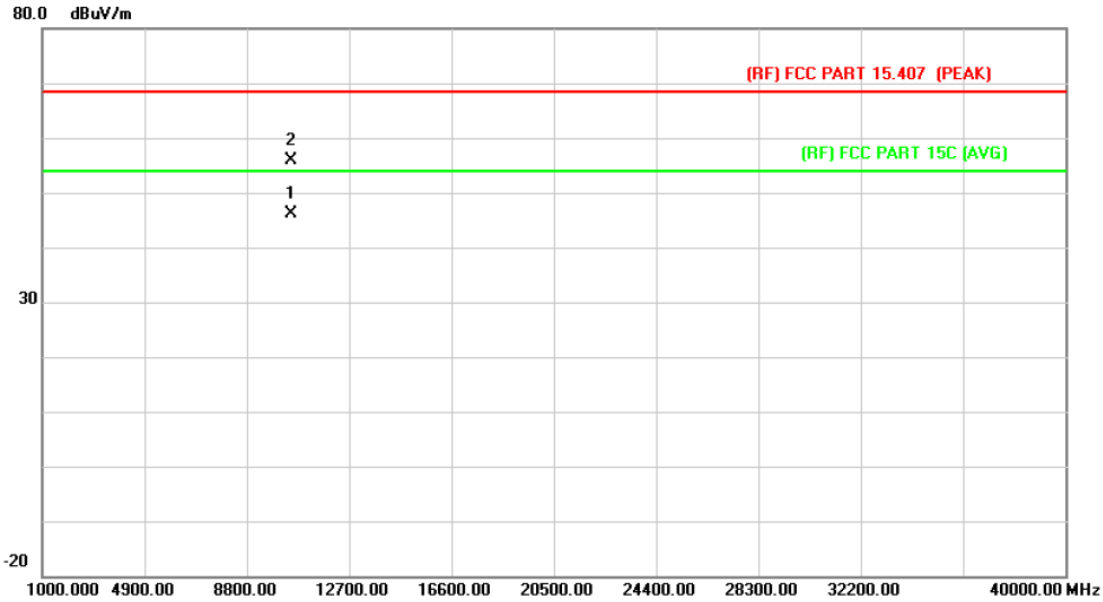
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 802.11a Mode 5200MHz (U-NII-1)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		10400.293	35.13	20.56	55.69	68.30	-12.61	peak
2	*	10400.391	25.13	20.56	45.69	54.00	-8.31	AVG

Emission Level= Read Level+ Correct Factor

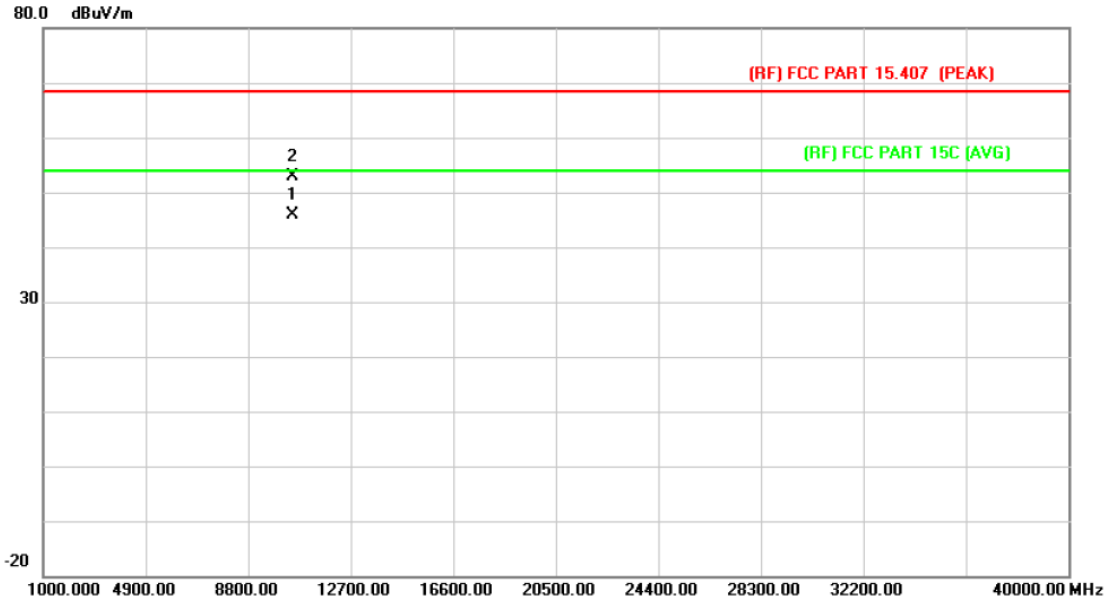
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 802.11a Mode 5240MHz (U-NII-1)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	10480.267	25.39	20.68	46.07	54.00	-7.93	AVG
2		10480.923	35.29	20.68	55.97	68.30	-12.33	peak

Emission Level= Read Level+ Correct Factor

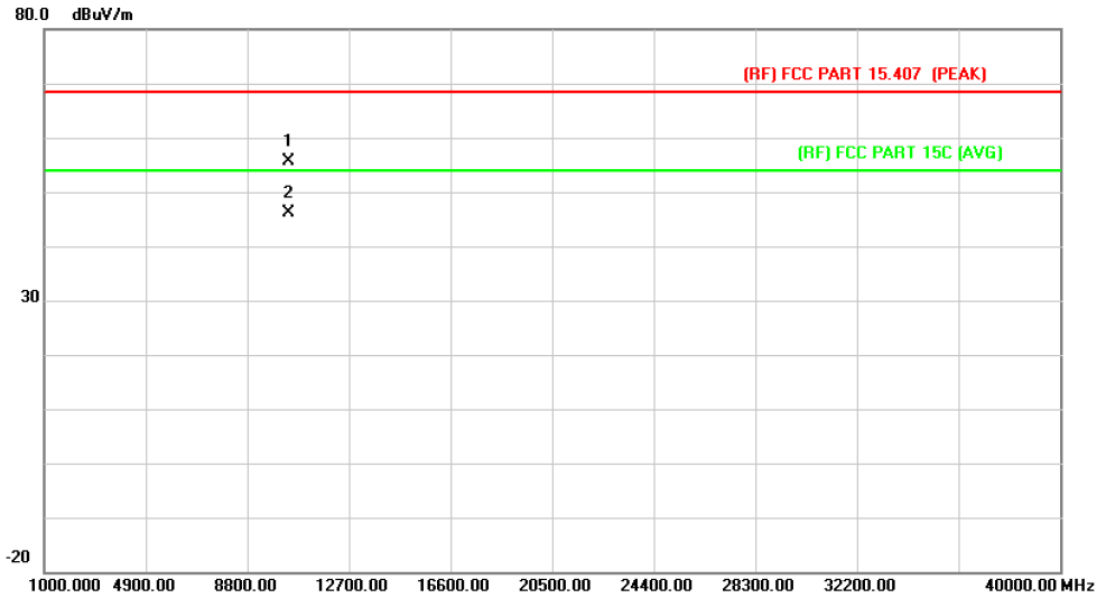
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 802.11a Mode 5240MHz (U-NII-1)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	10480.792	25.13	20.68	45.81	54.00	-8.19	AVG
2		10480.923	32.29	20.68	52.97	68.30	-15.33	peak

Emission Level= Read Level+ Correct Factor

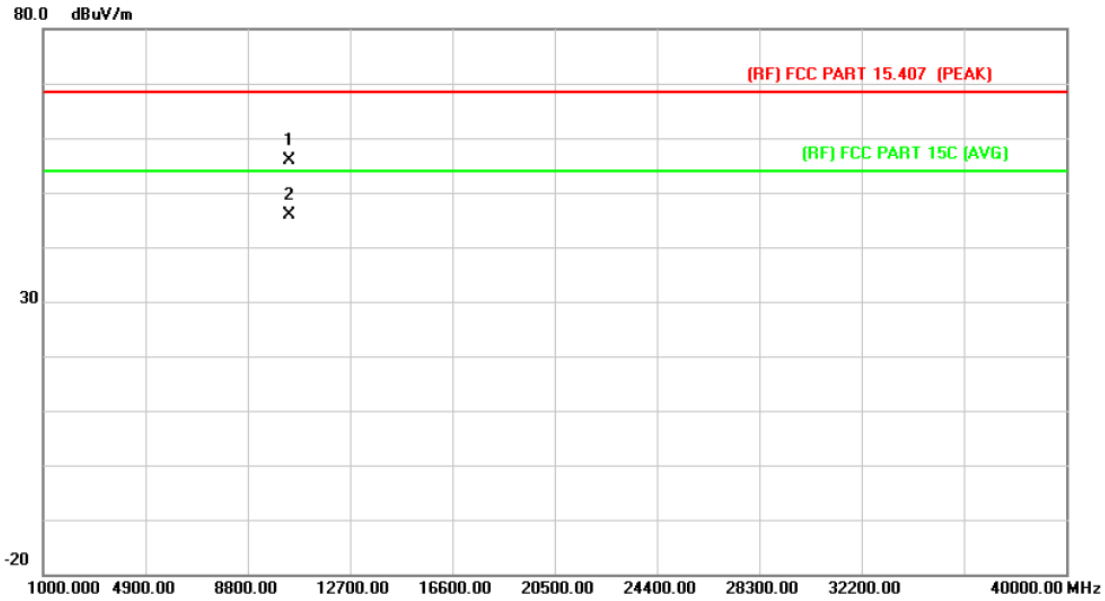
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 802.11n(HT20) Mode 5180MHz (U-NII-1)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	10360.313	35.16	20.50	55.66	68.30	-12.64	peak
2		10360.313	25.69	20.50	46.19	54.00	-7.81	AVG

Emission Level= Read Level+ Correct Factor

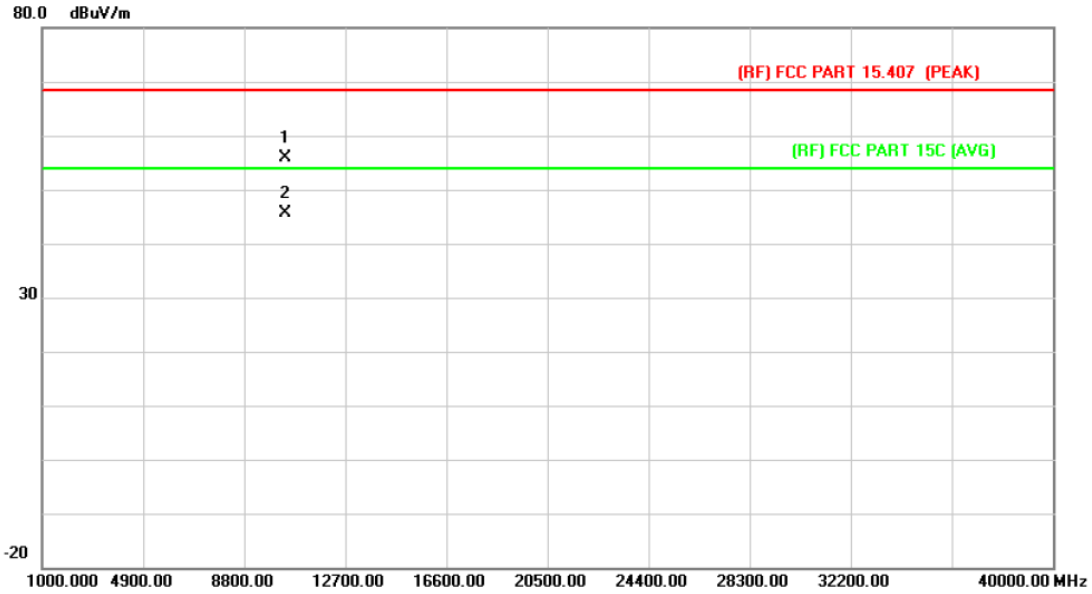
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 802.11n(HT20) Mode 5180MHz (U-NII-1)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		10360.293	35.31	20.50	55.81	68.30	-12.49	peak
2	*	10360.692	25.26	20.50	45.76	54.00	-8.24	AVG

Emission Level= Read Level+ Correct Factor

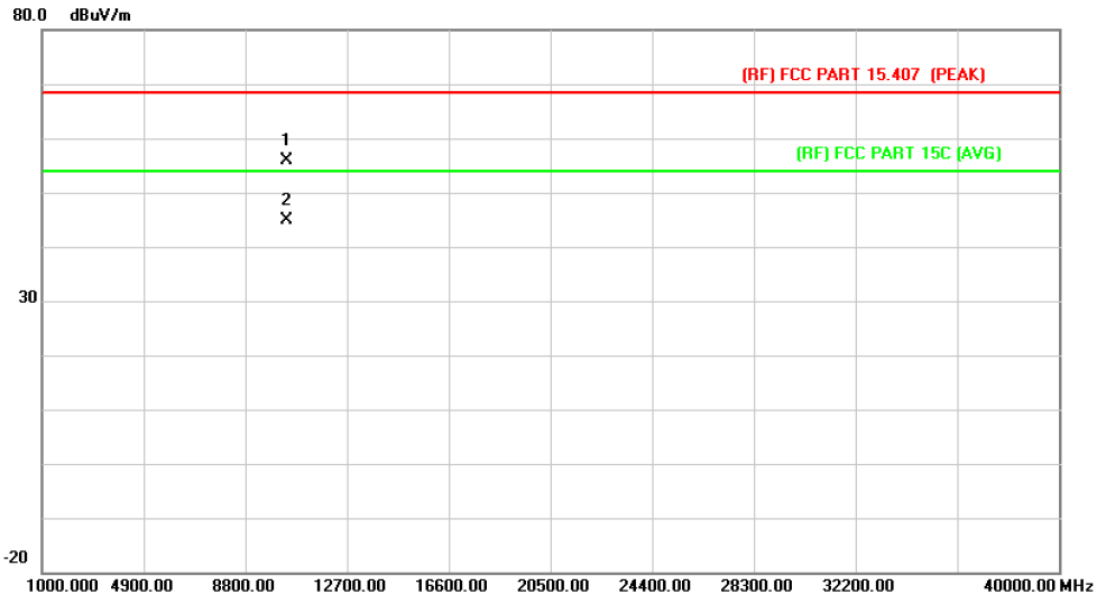
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 802.11n(HT20) Mode 5200MHz (U-NII-1)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		10400.169	35.31	20.56	55.87	68.30	-12.43	peak
2	*	10400.302	25.16	20.56	45.72	54.00	-8.28	AVG

Emission Level= Read Level+ Correct Factor

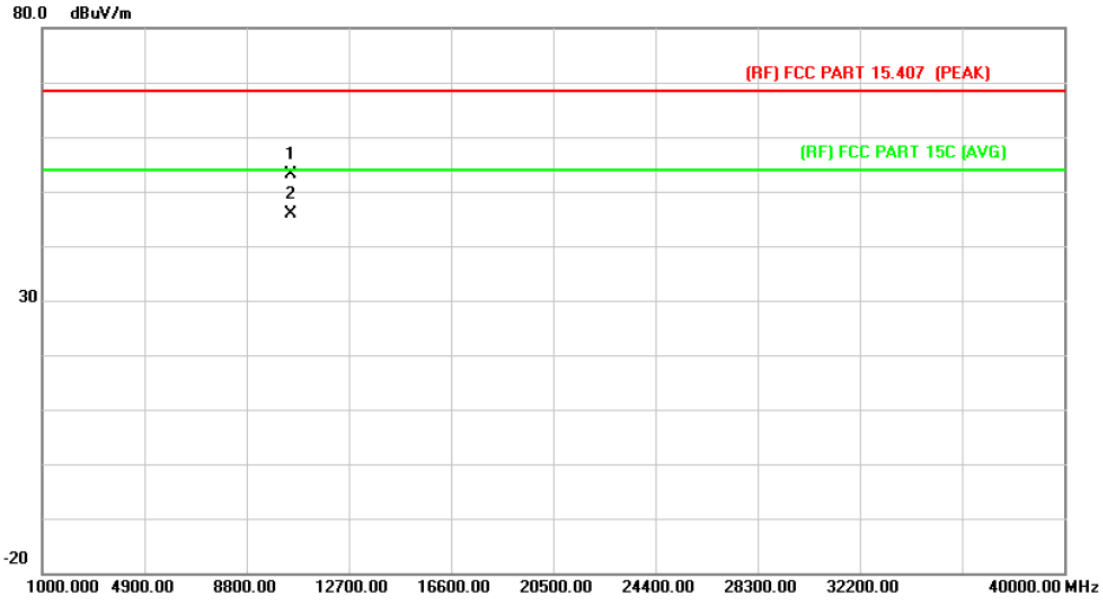
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 802.11n(HT20) Mode 5200MHz (U-NII-1)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		10400.169	35.32	20.56	55.88	68.30	-12.42	peak
2	*	10400.369	24.26	20.56	44.82	54.00	-9.18	AVG

Emission Level= Read Level+ Correct Factor

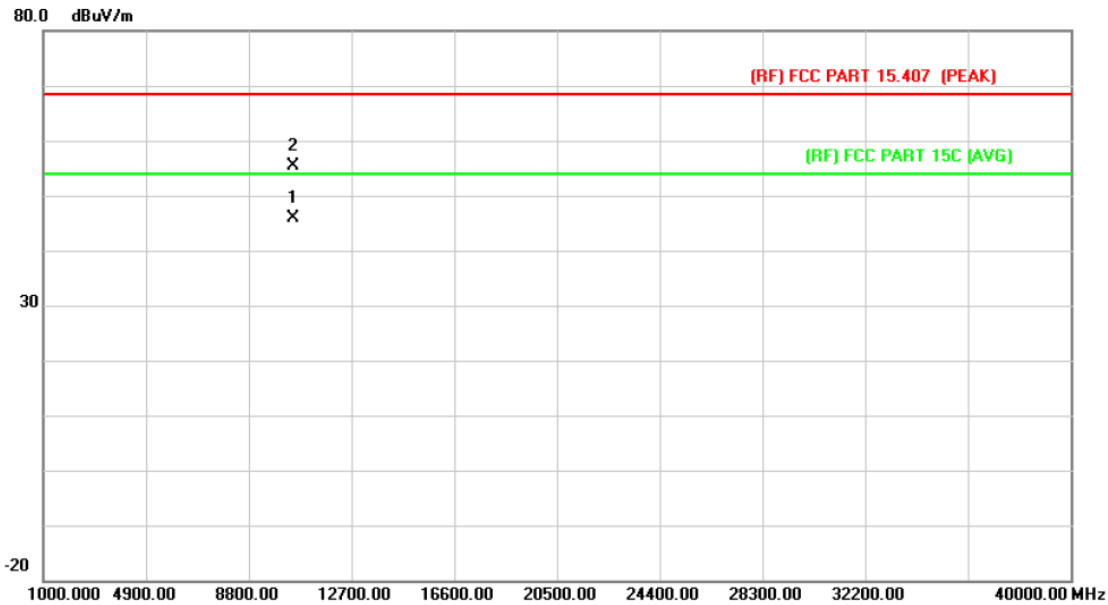
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 802.11n(HT20) Mode 5240MHz (U-NII-1)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		10480.246	32.46	20.68	53.14	68.30	-15.16	peak
2	*	10480.392	25.19	20.68	45.87	54.00	-8.13	AVG

Emission Level= Read Level+ Correct Factor

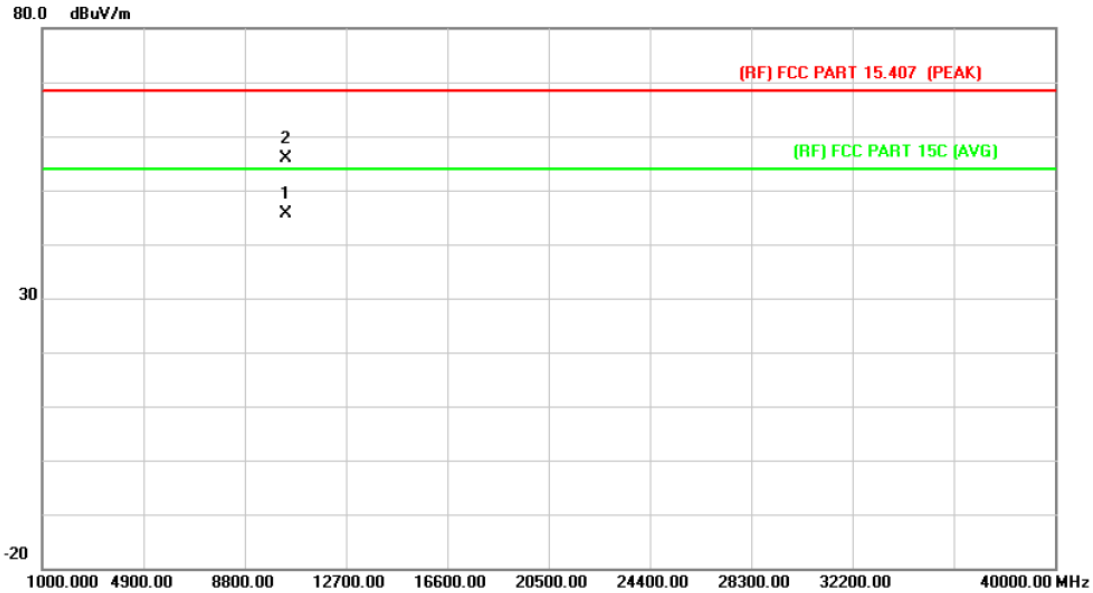
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 802.11n(HT20) Mode 5240MHz (U-NII-1)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	10480.291	25.10	20.68	45.78	54.00	-8.22	AVG
2		10480.391	34.65	20.68	55.33	68.30	-12.97	peak

Emission Level= Read Level+ Correct Factor

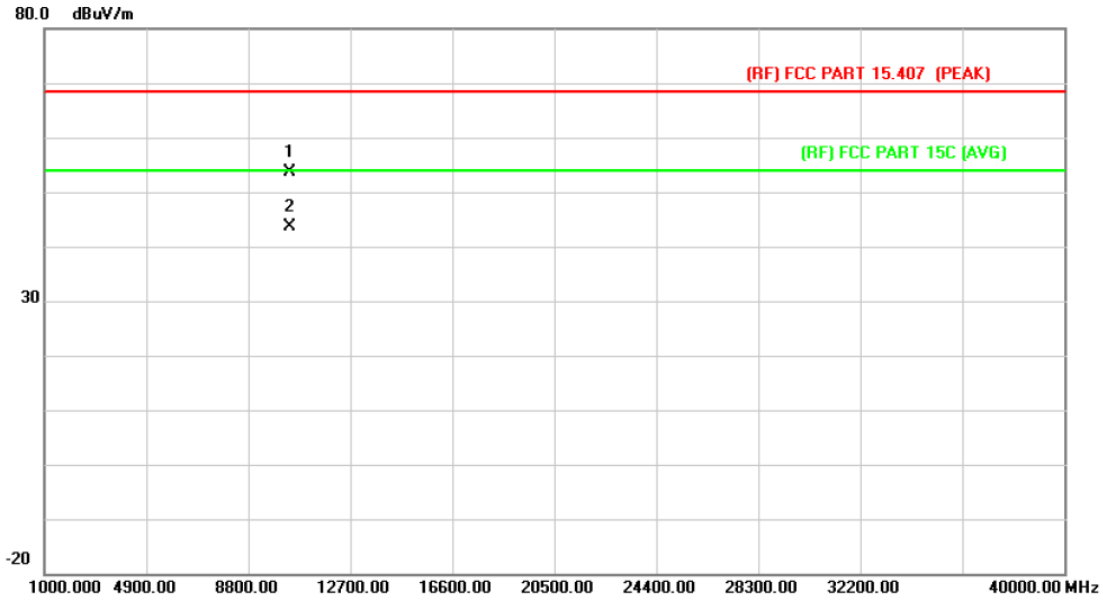
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 802.11n(HT40) Mode 5190MHz (U-NII-1)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	10380.136	25.13	20.53	45.66	54.00	-8.34	AVG
2		10380.469	35.46	20.53	55.99	68.30	-12.31	peak

Emission Level= Read Level+ Correct Factor

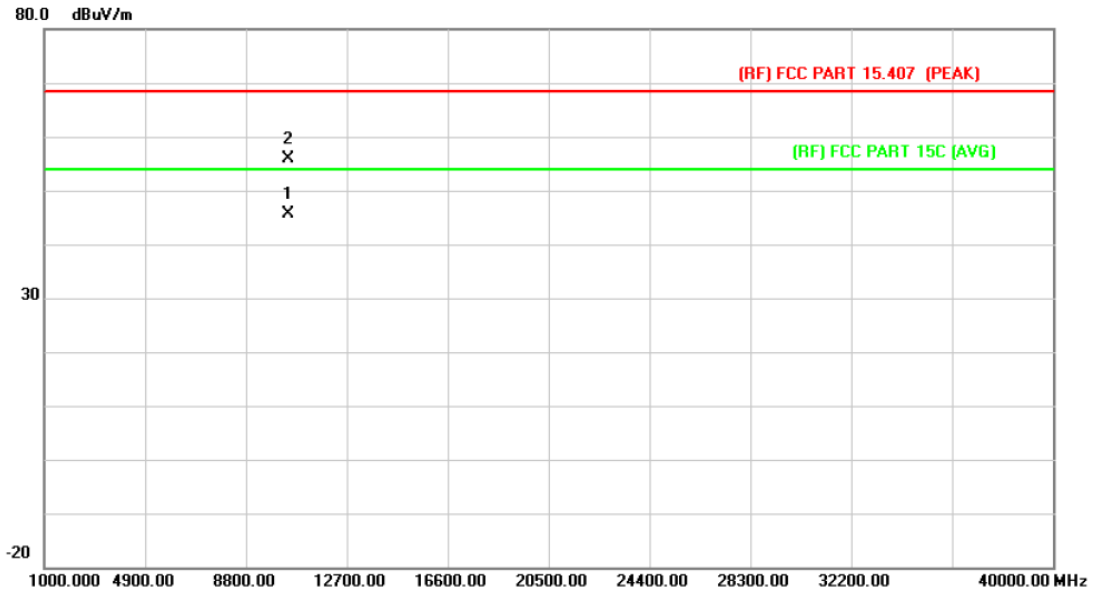
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 802.11n(HT40) Mode 5190MHz (U-NII-1)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		10380.267	33.19	20.53	53.72	68.30	-14.58	peak
2	*	10380.267	23.20	20.53	43.73	54.00	-10.27	AVG

Emission Level= Read Level+ Correct Factor

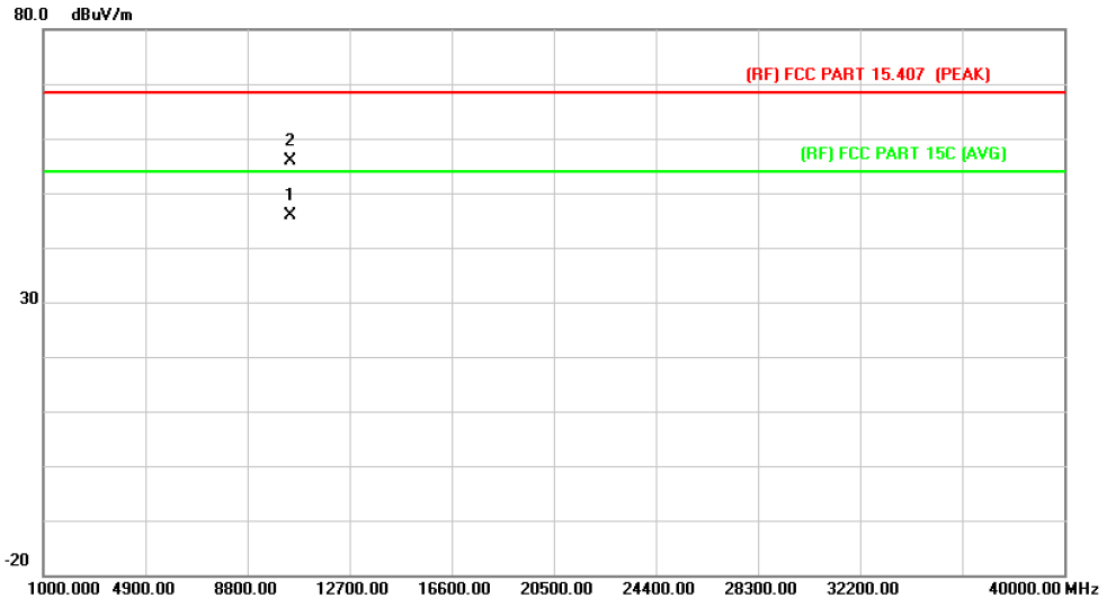
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 802.11n(HT40) Mode 5230MHz (U-NII-1)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	10460.209	25.02	20.65	45.67	54.00	-8.33	AVG
2		10460.293	35.13	20.65	55.78	68.30	-12.52	peak

Emission Level= Read Level+ Correct Factor

Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 802.11n(HT40) Mode 5230MHz (U-NII-1)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		

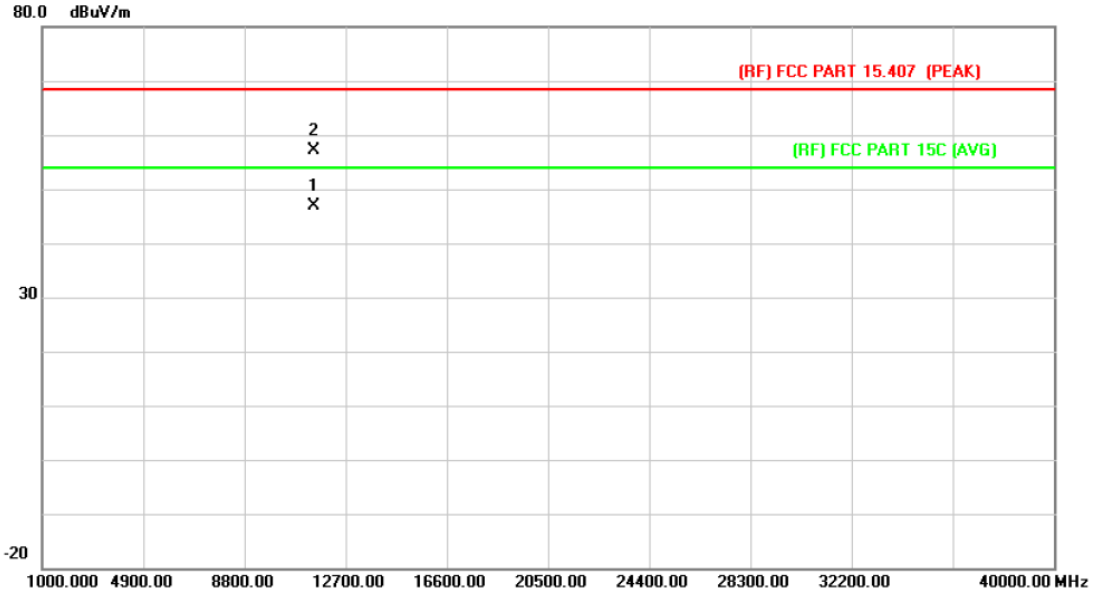


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	10460.291	25.32	20.65	45.97	54.00	-8.03	AVG
2		10460.462	35.13	20.65	55.78	68.30	-12.52	peak

Emission Level= Read Level+ Correct Factor

5745MHz-5825MHz(U-NII-3)

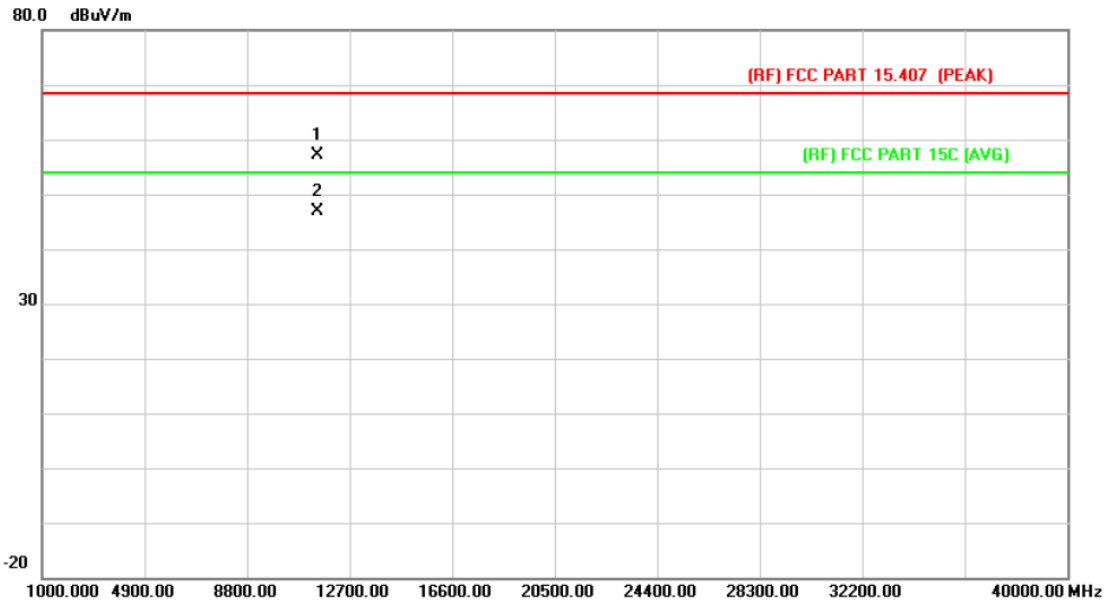
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 802.11a Mode 5745MHz (U-NII-3)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	11490.263	25.13	21.81	46.94	54.00	-7.06	AVG
2		11490.346	35.20	21.81	57.01	68.30	-11.29	peak

Emission Level= Read Level+ Correct Factor

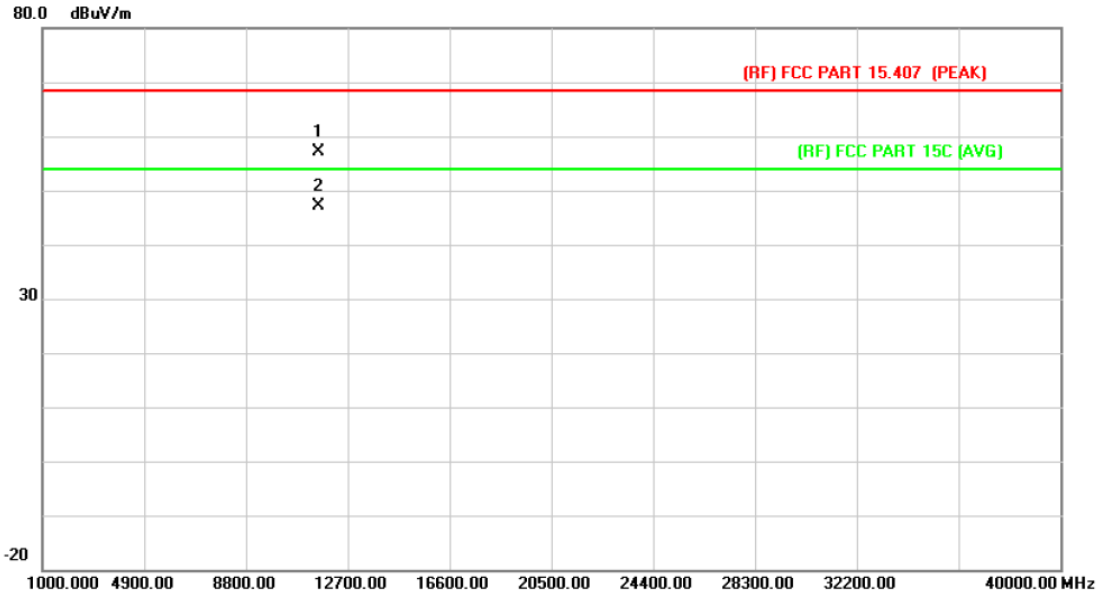
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 802.11a Mode 5745MHz (U-NII-3)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		11490.296	35.32	21.81	57.13	68.30	-11.17	peak
2	*	11490.296	25.13	21.81	46.94	54.00	-7.06	AVG

Emission Level= Read Level+ Correct Factor

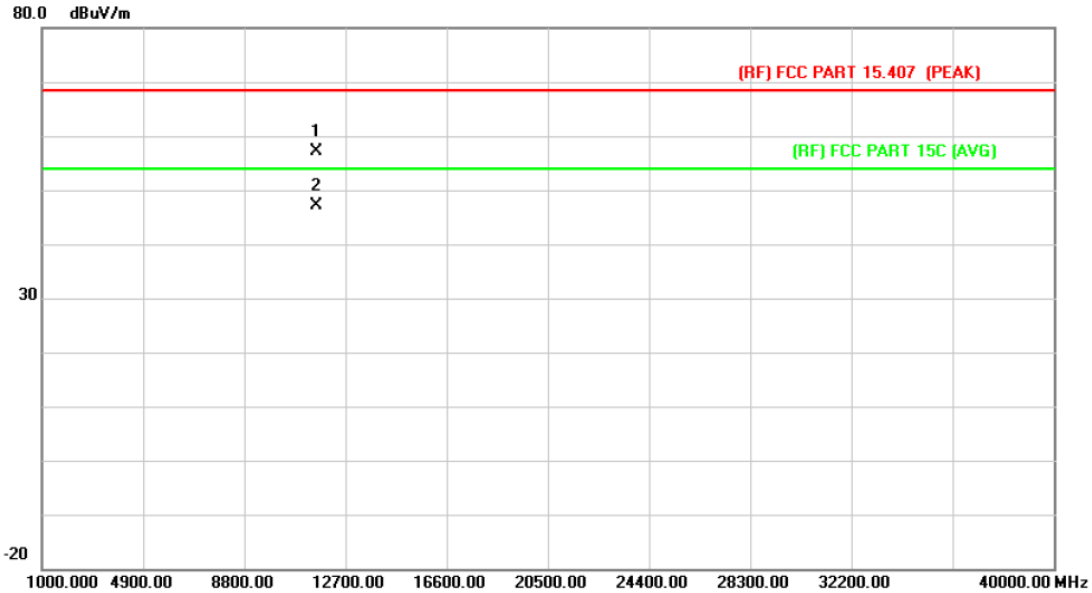
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 802.11a Mode 5785MHz (U-NII-3)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		11570.246	35.13	21.88	57.01	68.30	-11.29	peak
2	*	11570.645	25.32	21.88	47.20	54.00	-6.80	AVG

Emission Level= Read Level+ Correct Factor

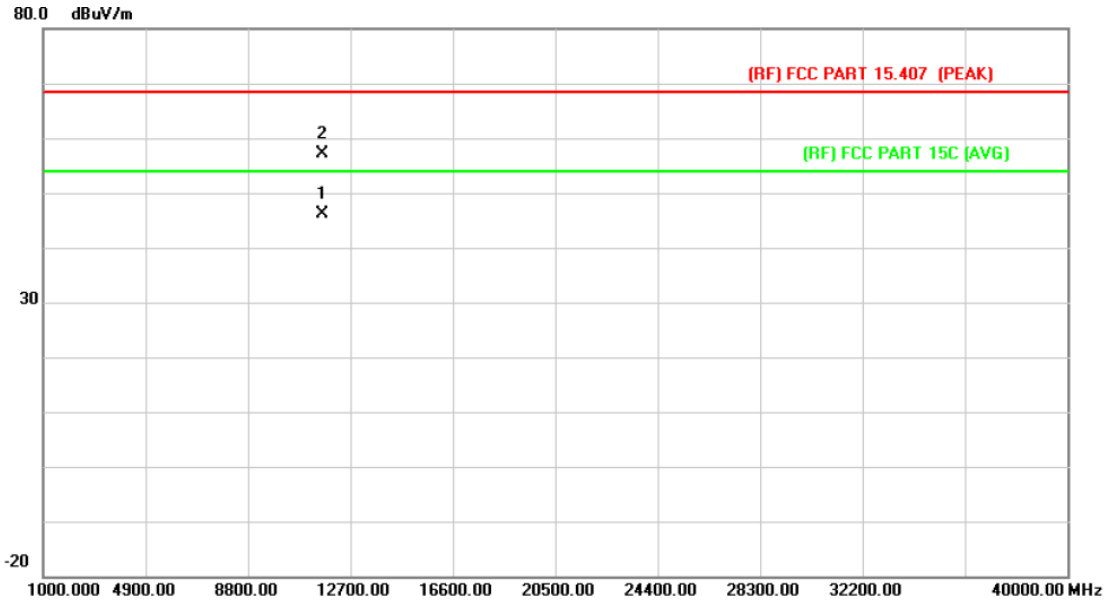
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 802.11a Mode 5785MHz (U-NII-3)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		11570.264	35.26	21.88	57.14	68.30	-11.16	peak
2	*	11570.392	25.32	21.88	47.20	54.00	-6.80	AVG

Emission Level= Read Level+ Correct Factor

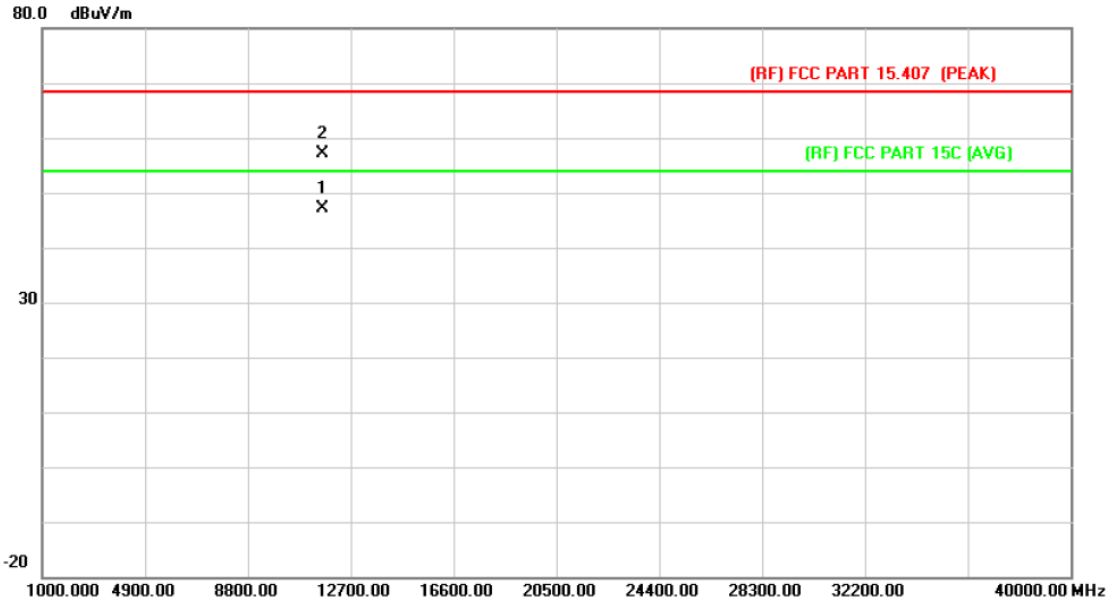
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 802.11a Mode 5825MHz (U-NII-3)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	11650.126	24.13	21.96	46.09	54.00	-7.91	AVG
2		11650.295	35.24	21.96	57.20	68.30	-11.10	peak

Emission Level= Read Level+ Correct Factor

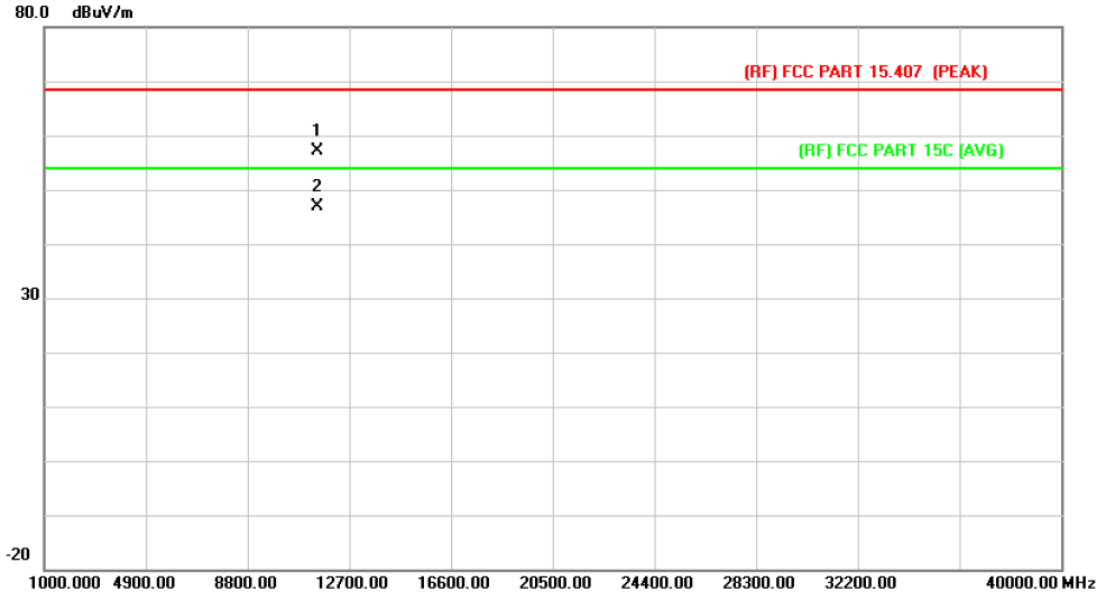
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 802.11a Mode 5825MHz (U-NII-3)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	11650.426	25.20	21.96	47.16	54.00	-6.84	AVG
2		11650.629	35.23	21.96	57.19	68.30	-11.11	peak

Emission Level= Read Level+ Correct Factor

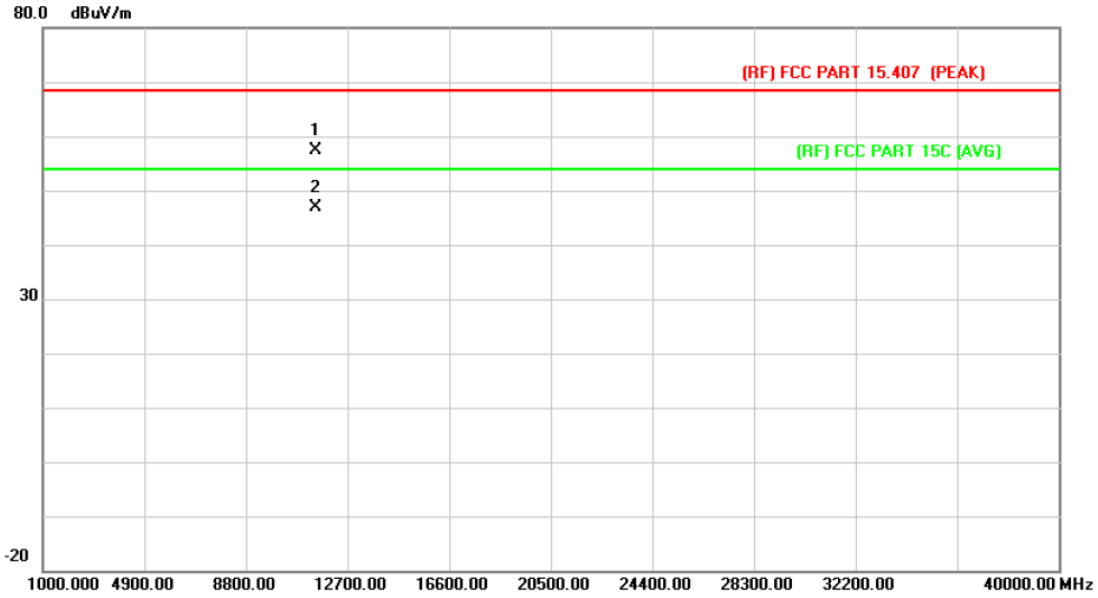
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 802.11n(HT20) Mode 5745MHz (U-NII-3)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		11490.269	35.26	21.81	57.07	68.30	-11.23	peak
2	*	11490.316	25.09	21.81	46.90	54.00	-7.10	AVG

Emission Level= Read Level+ Correct Factor

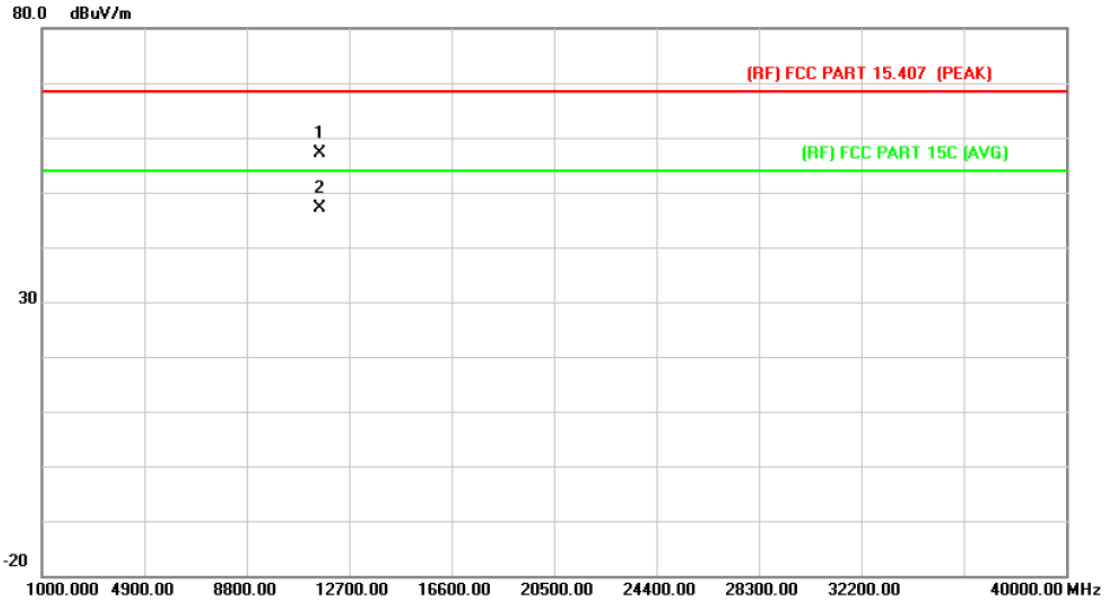
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 802.11n(HT20) Mode 5745MHz (U-NII-3)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		11490.293	35.56	21.81	57.37	68.30	-10.93	peak
2	*	11490.293	25.03	21.81	46.84	54.00	-7.16	AVG

Emission Level= Read Level+ Correct Factor

Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 802.11n(HT20) Mode 5785MHz (U-NII-3)		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		11570.362	35.29	21.88	57.17	68.30	-11.13	peak
2	*	11570.362	25.20	21.88	47.08	54.00	-6.92	AVG

Emission Level= Read Level+ Correct Factor