


# FCC Radio Test Report

## FCC ID: 2AKBP-Q6

### Original Grant

Report No. : TB-FCC159998  
Applicant : Shenzhen Hysiry Technology Co., Ltd.  
Equipment Under Test (EUT)  
EUT Name : SMART LAMP  
Model No. : Q6  
Series Model No. : Q3  
Brand Name :   
Receipt Date : 2018-05-24  
Test Date : 2018-05-25 to 2018-06-12  
Issue Date : 2018-06-13  
Standards : FCC Part 15, Subpart C (15.247: 2017)  
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 : 

Jason Xu

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.

TB-RF-074-1.0

## Contents

<b>CONTENTS.....</b>	<b>2</b>
<b>1. GENERAL INFORMATION ABOUT EUT .....</b>	<b>5</b>
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.....	7
1.4 Description of Support Units .....	7
1.5 Description of Test Mode.....	7
1.6 Description of Test Software Setting .....	9
1.7 Measurement Uncertainty .....	9
1.8 Test Facility.....	10
<b>2. TEST SUMMARY .....</b>	<b>11</b>
<b>3. TEST EQUIPMENT .....</b>	<b>12</b>
<b>4. CONDUCTED EMISSION TEST .....</b>	<b>13</b>
4.1 Test Standard and Limit.....	13
4.2 Test Setup.....	13
4.3 Test Procedure.....	13
4.4 EUT Operating Mode .....	14
4.5 Test Data.....	14
<b>5. RADIATED EMISSION TEST .....</b>	<b>15</b>
5.1 Test Standard and Limit.....	15
5.2 Test Setup.....	16
5.3 Test Procedure.....	17
5.4 EUT Operating Condition .....	18
5.5 Test Data.....	18
<b>6. RESTRICTED BANDS REQUIREMENT .....</b>	<b>19</b>
6.1 Test Standard and Limit.....	19
6.2 Test Setup.....	19
6.3 Test Procedure.....	19
6.4 EUT Operating Condition .....	20
6.5 Test Data.....	20
<b>7. BANDWIDTH TEST .....</b>	<b>21</b>
7.1 Test Standard and Limit.....	21
7.2 Test Setup.....	21
7.3 Test Procedure.....	21
7.4 EUT Operating Condition .....	21
7.5 Test Data.....	21
<b>8. PEAK OUTPUT POWER TEST.....</b>	<b>22</b>
8.1 Test Standard and Limit.....	22

8.2 Test Setup.....	22
8.3 Test Procedure.....	22
8.4 EUT Operating Condition .....	22
8.5 Test Data.....	22
<b>9. POWER SPECTRAL DENSITY TEST .....</b>	<b>23</b>
9.1 Test Standard and Limit.....	23
9.2 Test Setup.....	23
9.3 Test Procedure.....	23
9.4 EUT Operating Condition .....	23
9.5 Test Data.....	23
<b>10. ANTENNA REQUIREMENT.....</b>	<b>24</b>
10.1 Standard Requirement.....	24
10.2 Antenna Connected Construction .....	24
<b>ATTACHMENT A-- CONDUCTED EMISSION TEST DATA .....</b>	<b>25</b>
<b>ATTACHMENT B-- RADIATED EMISSION TEST DATA .....</b>	<b>29</b>
<b>ATTACHMENT C-- RESTRICTED BANDS REQUIREMENT TEST DATA.....</b>	<b>49</b>
<b>ATTACHMENT D-- BANDWIDTH TEST DATA.....</b>	<b>64</b>
<b>ATTACHMENT E-- PEAK OUTPUT POWER TEST DATA.....</b>	<b>70</b>
<b>ATTACHMENT F-- POWER SPECTRAL DENSITY TEST DATA.....</b>	<b>73</b>

## Revision History

Report No.	Version	Description	Issued Date
TB-FCC159998	Rev.01	Initial issue of report	2018-06-13

# 1. General Information about EUT

## 1.1 Client Information

<b>Applicant</b>	:	Shenzhen Hysiry Technology Co., Ltd.
<b>Address</b>	:	Room 406, Fourth floor, Buliding 1, Area D, Huameiju Decoration Materials City, Xinhua Road, Xin'an street, Bao'an District, Shenzhen
<b>Manufacturer</b>	:	Shenzhen Hysiry Technology Co., Ltd.
<b>Address</b>	:	Room 406, Fourth floor, Buliding 1, Area D, Huameiju Decoration Materials City, Xinhua Road, Xin'an street, Bao'an District, Shenzhen

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

<b>EUT Name</b>	:	SMART LAMP
<b>Models No.</b>	:	Q6, Q3
<b>Model Different</b>	:	All models are the same PCB layout interior structure and electrical circuits, The only difference is model name for power.
<b>Product Description</b>	:	Operation Frequency: 802.11b/g/n(HT20): 2412MHz~2462MHz
		Number of Channel: 802.11b/g/n(HT20):11 channels <b>see note(3)</b>
		RF Output Power: 802.11b: 17.80dBm 802.11g: 16.47dBm 802.11n (HT20): 14.97dBm
		Antenna Gain: 1dBi PCB Antenna
		Modulation Type: 802.11b: DSSS(CCK, DQPSK, DBPSK) 802.11g/n: OFDM(BPSK,QPSK,16QAM, 64QAM)
		Bit Rate of Transmitter: 802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6 Mbps 802.11n:up to 150Mbps
<b>Power Supply</b>	:	AC Voltage supplied
<b>Power Rating</b>	:	Input: AC 100~250V,50/ 60Hz
<b>Software Version</b>	:	N/A
<b>Hardware Version</b>	:	N/A
<b>Connecting I/O Port(S)</b>	:	Please refer to the User's Manual

**Note:**

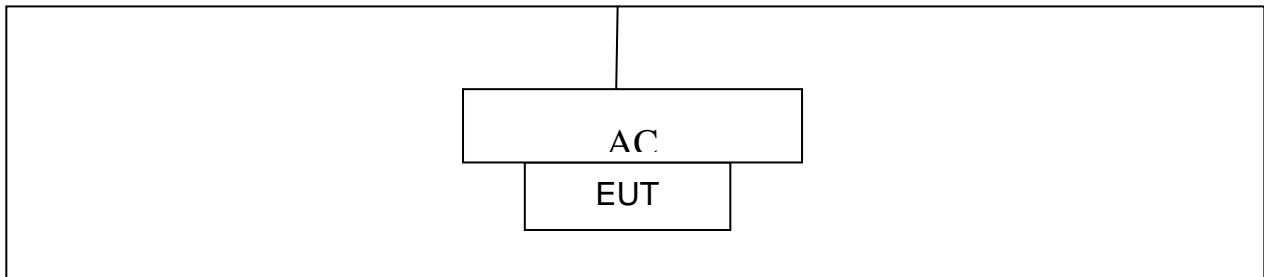
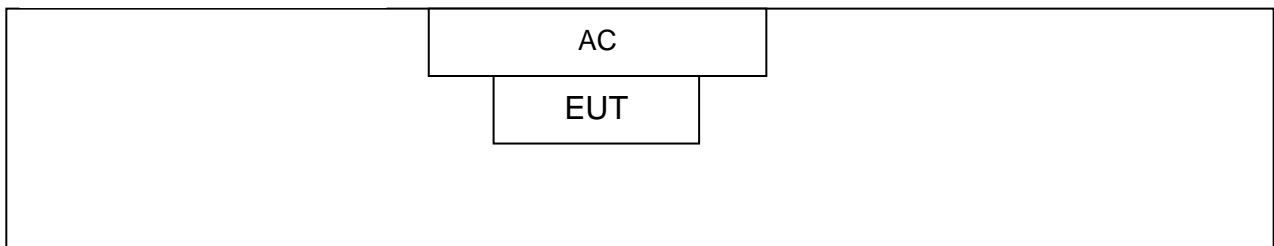
- (1) This Test Report is FCC Part 15.247 for 802.11b/g/n, the test procedure follows the FCC KDB 558074 D01 DTS Meas Guidance v04.
- (2) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

(3) Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	05	2432	09	2452
02	2417	06	2437	10	2457
03	2422	07	2442	11	2462
04	2427	08	2447		
Note: CH 01~CH 11 for 802.11b/g/n(HT20)					

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

### 1.3 Block Diagram Showing the Configuration of System Tested



### 1.4 Description of Support Units

The EUT has been tested as an independent unit.

### 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	Normal Working with TX B Mode

For Radiated Test	
Final Test Mode	Description
Mode 2	TX Mode B Mode Channel 01/06/11
Mode 3	TX Mode G Mode Channel 01/06/11
Mode 4	TX Mode N(HT20) Mode Channel 01/06/11

**Note:**

- (1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.  
According to ANSI C63.10 standards, the measurements are performed at the highest, Middle, lowest available channels, and the worst case data rate as follows:  
802.11b Mode: CCK (1 Mbps)  
802.11g Mode: OFDM (6 Mbps)  
802.11n (HT20) Mode: MCS 0 (6.5 Mbps)
- (2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.
- (3) The EUT is considered a portable unit; 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 Version	SecureCRT.exe		
Channel	CH 01	CH 06	CH 11
IEEE 802.11b DSSS	15	40	50
IEEE 802.11g OFDM	4	35	40
IEEE 802.11n (HT20)	252	25	30

## 1.7 Measurement Uncertainty

The reported uncertainty of measurement  $y \pm U$ , 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	$\pm 3.42$ dB $\pm 3.42$ dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	$\pm 4.60$ dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	$\pm 4.40$ dB
Radiated Emission	Level Accuracy: Above 1000MHz	$\pm 4.20$ dB

## 1.8 Test Facility

The testing report were 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.

### **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
<b>Note:</b> "/" for no requirement for this test item. N/A is an abbreviation for Not Applicable.				

### 3. Test Equipment

Conducted Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul. 20, 2017	Jul. 19, 2018
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul. 20, 2017	Jul. 19, 2018
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul. 20, 2017	Jul. 19, 2018
LISN	Rohde & Schwarz	ENV216	101131	Jul. 20, 2017	Jul. 19, 2018
Radiation Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 20, 2017	Jul. 19, 2018
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul. 20, 2017	Jul. 19, 2018
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar.16, 2018	Mar. 15, 2019
Bilog Antenna	ETS-LINDGREN	3142E	00117542	Mar.16, 2018	Mar. 15, 2019
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.16, 2018	Mar. 15, 2019
Horn Antenna	ETS-LINDGREN	3117	00143209	Mar.16, 2018	Mar. 15, 2019
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 03, 2017	Jul. 02, 2018
Pre-amplifier	Sonoma	310N	185903	Mar.17, 2018	Mar. 16, 2019
Pre-amplifier	HP	8449B	3008A00849	Mar.17, 2018	Mar. 16, 2019
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar.17, 2018	Mar. 16, 2019
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. 20, 2017	Jul. 19, 2018
Spectrum Analyzer	Rohde & Schwarz	ESCI	100010/007	Jul. 20, 2017	Jul. 19, 2018
MXA Signal Analyzer	Agilent	N9020A	MY49100060	Oct. 26, 2017	Oct. 25, 2018
Vector Signal Generator	Agilent	N5182A	MY50141294	Oct. 26, 2017	Oct. 25, 2018
Analog Signal Generator	Agilent	N5181A	MY50141953	Oct. 26, 2017	Oct. 25, 2018
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO26	Oct. 26, 2017	Oct. 25, 2018
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO29	Oct. 26, 2017	Oct. 25, 2018
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO31	Oct. 26, 2017	Oct. 25, 2018
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO33	Oct. 26, 2017	Oct. 25, 2018

## 4. Conducted Emission Test

### 4.1 Test Standard and Limit

#### 4.1.1 Test Standard

FCC Part 15.207

#### 4.1.2 Test Limit

**Conducted Emission Test Limit**

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

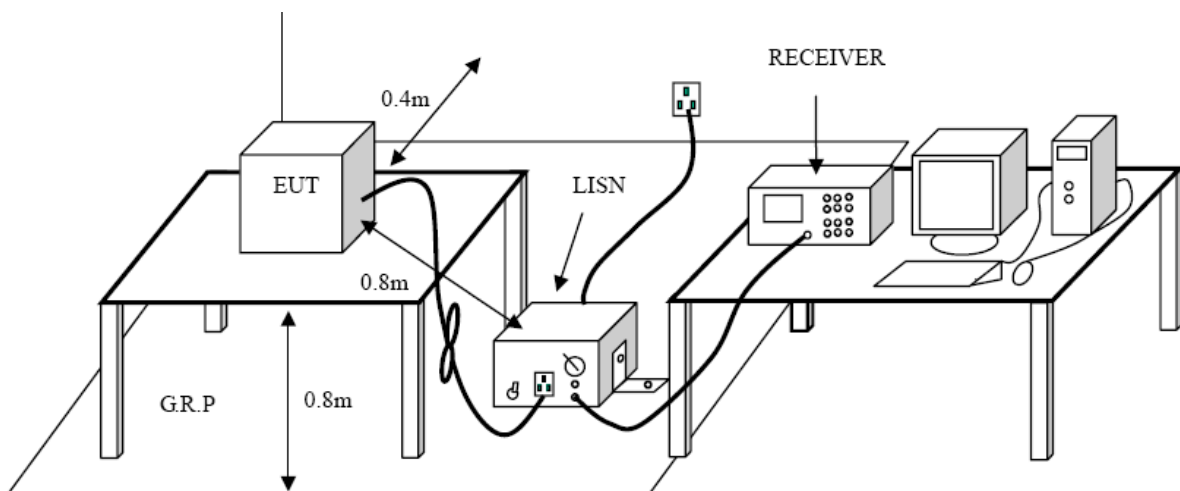
Notes:

(1) \*Decreasing linearly with logarithm of the frequency.

(2) The lower limit shall apply at the transition frequencies.

(3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

### 4.2 Test Setup



### 4.3 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.

#### 4.4 EUT Operating Mode

Please refer to the description of test mode.

#### 4.5 Test Data

Please refer to the Attachment A.

## 5. Radiated Emission Test

### 5.1 Test Standard and Limit

#### 5.1.1 Test Standard

FCC Part 15.209

#### 5.1.2 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

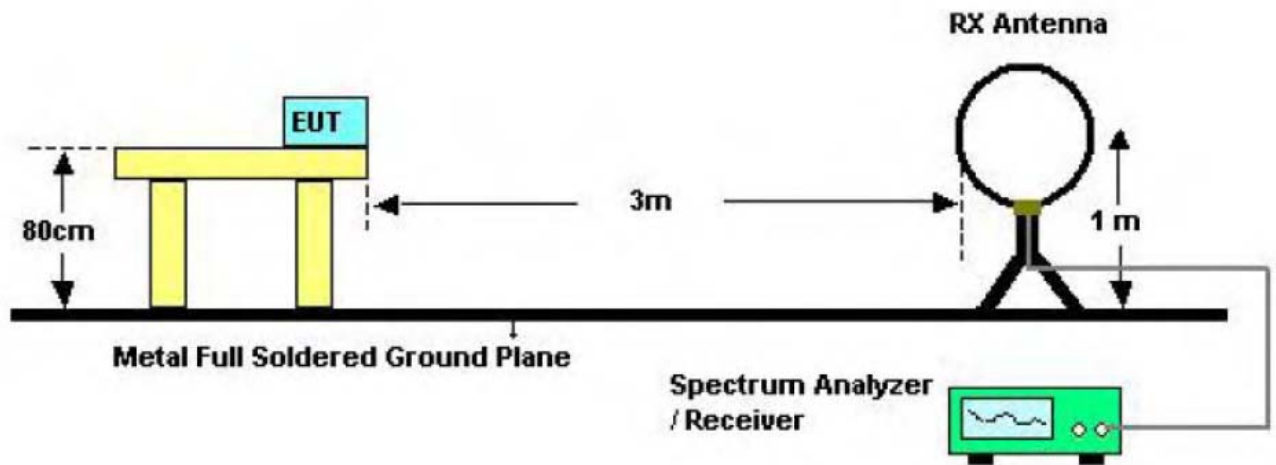
**Radiated Emission Limit (Above 1000MHz)**

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

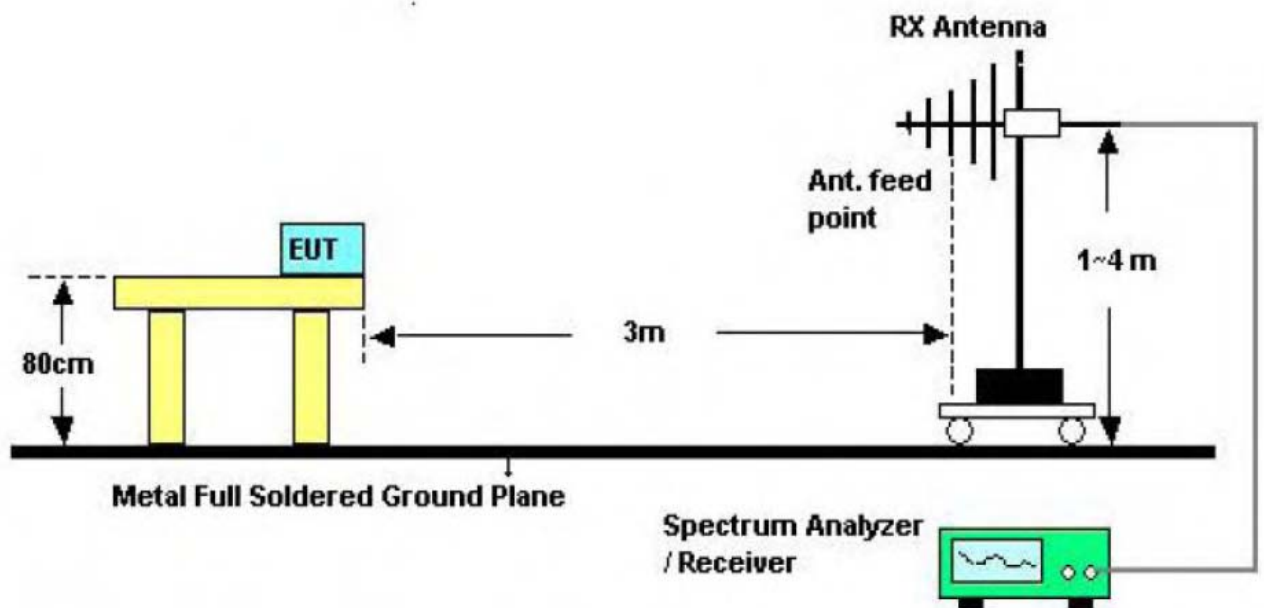
**Note:**

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

## 5.2 Test Setup

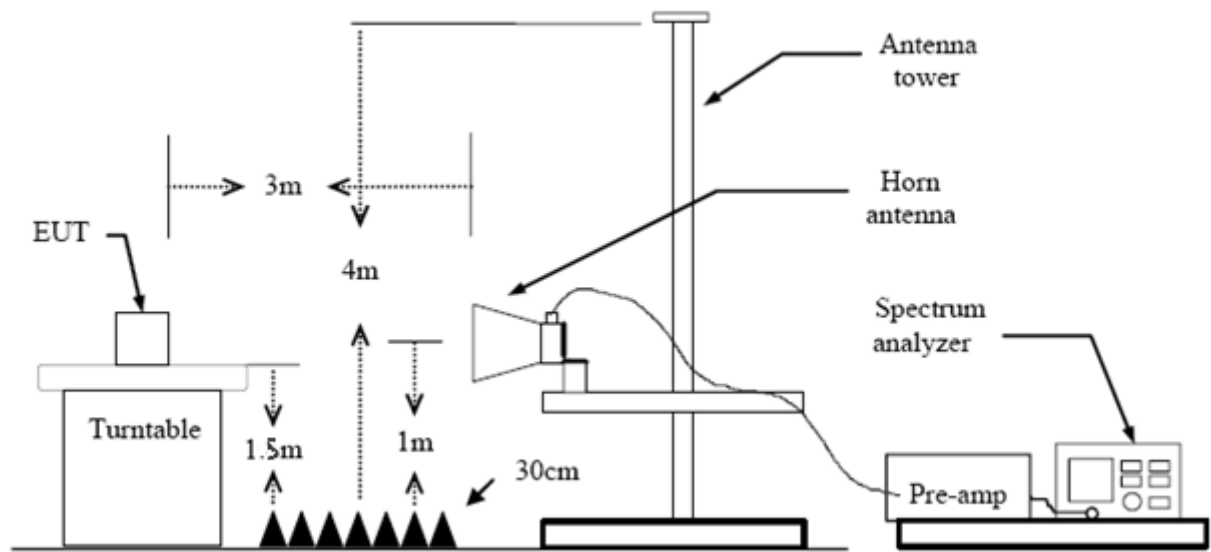


### Below 30MHz Test Setup



### Below 1000MHz Test Setup





Above 1GHz Test Setup

### 5.3 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.

#### 5.4 EUT Operating Condition

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

#### 5.5 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.

## 6. Restricted Bands Requirement

### 6.1 Test Standard and Limit

#### 6.1.1 Test Standard

FCC Part 15.247(d)

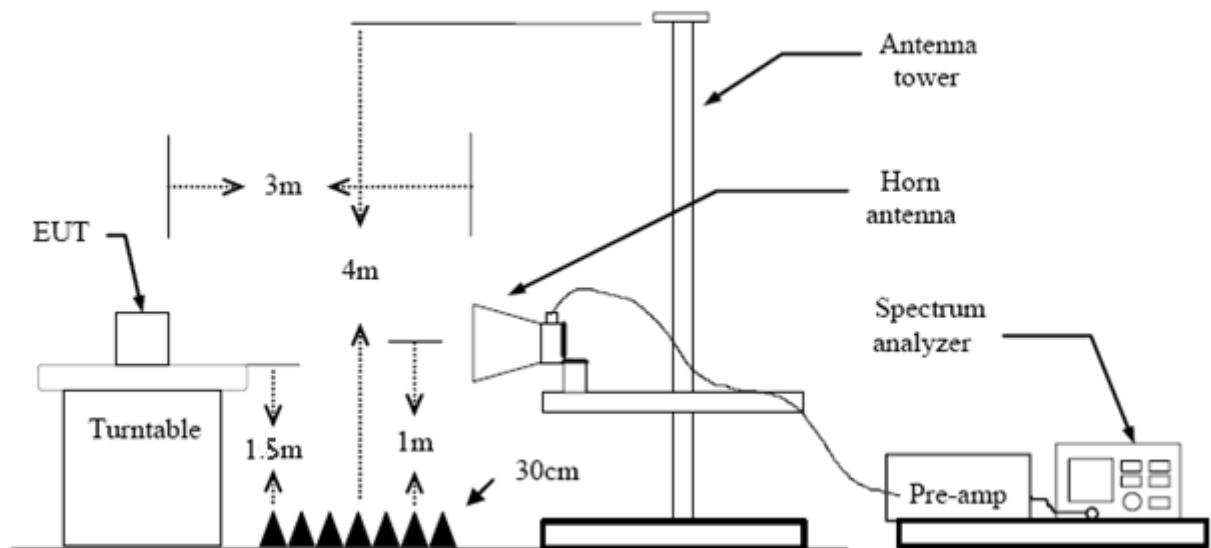
FCC Part 15.209

FCC Part 15.205

#### 6.1.2 Test Limit

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

### 6.2 Test Setup



### 6.3 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.

#### 6.4 EUT Operating Condition

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

#### 6.5 Test Data

Please refer to the Attachment C.

## 7. Bandwidth Test

### 7.1 Test Standard and Limit

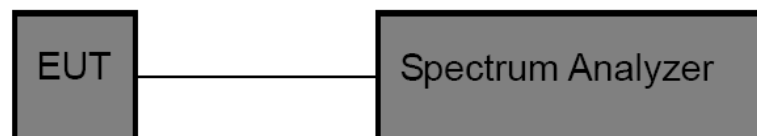
#### 7.1.1 Test Standard

FCC Part 15.247 (a)(2)

#### 7.1.2 Test Limit

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

### 7.2 Test Setup



### 7.3 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.

### 7.4 EUT Operating Condition

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

### 7.5 Test Data

Please refer to the Attachment D.

## 8. Peak Output Power Test

### 8.1 Test Standard and Limit

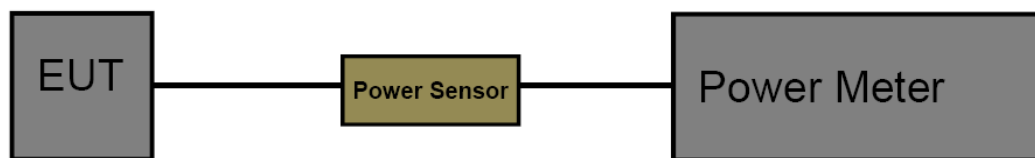
#### 8.1.1 Test Standard

FCC Part 15.247 (b)

#### 8.1.2 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

### 8.2 Test Setup



### 8.3 Test Procedure

The measurement is according to section 9.1.2 of KDB 558074 D01 DTS Meas Guidance v04. 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.

### 8.4 EUT Operating Condition

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

### 8.5 Test Data

Please refer to the Attachment E.

## 9. Power Spectral Density Test

### 9.1 Test Standard and Limit

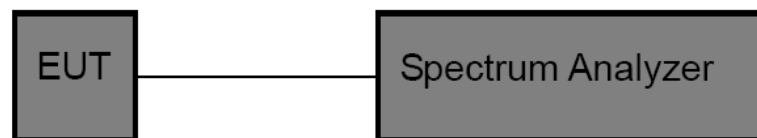
#### 9.1.1 Test Standard

FCC Part 15.247 (e)

#### 9.1.2 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

### 9.2 Test Setup



### 9.3 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 DTS Meas Guidance v04.

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Set analyser center frequency to DTS channel center 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.

### 9.4 EUT Operating Condition

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

### 9.5 Test Data

Please refer to the Attachment F.

## 10. Antenna Requirement

### 10.1 Standard Requirement

#### 10.1.1 Standard

FCC Part 15.203

#### 10.1.2 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.

### 10.2 Antenna Connected Construction

The gains of the antenna used for transmitting is 1dBi, and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

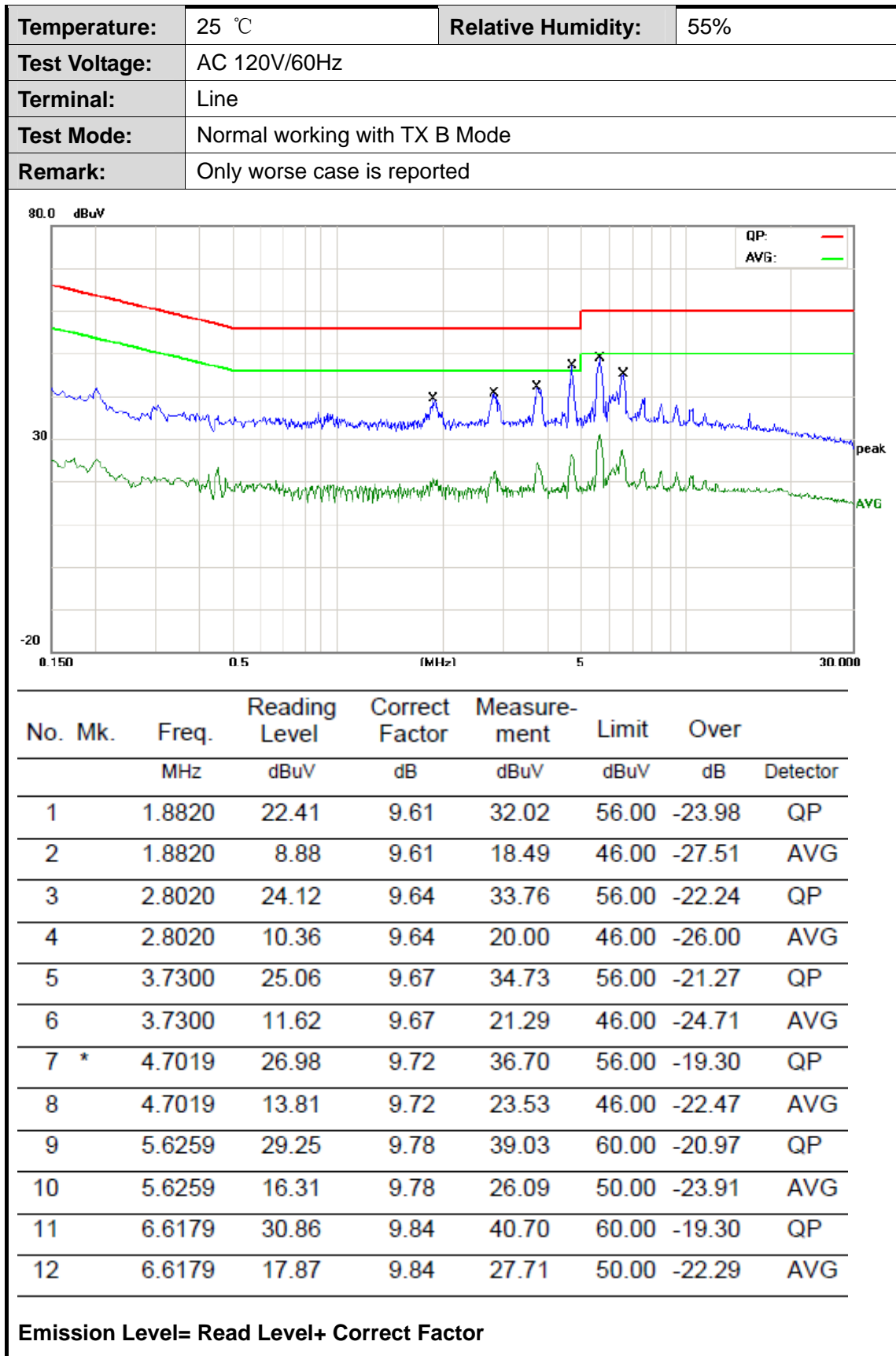
#### Result

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

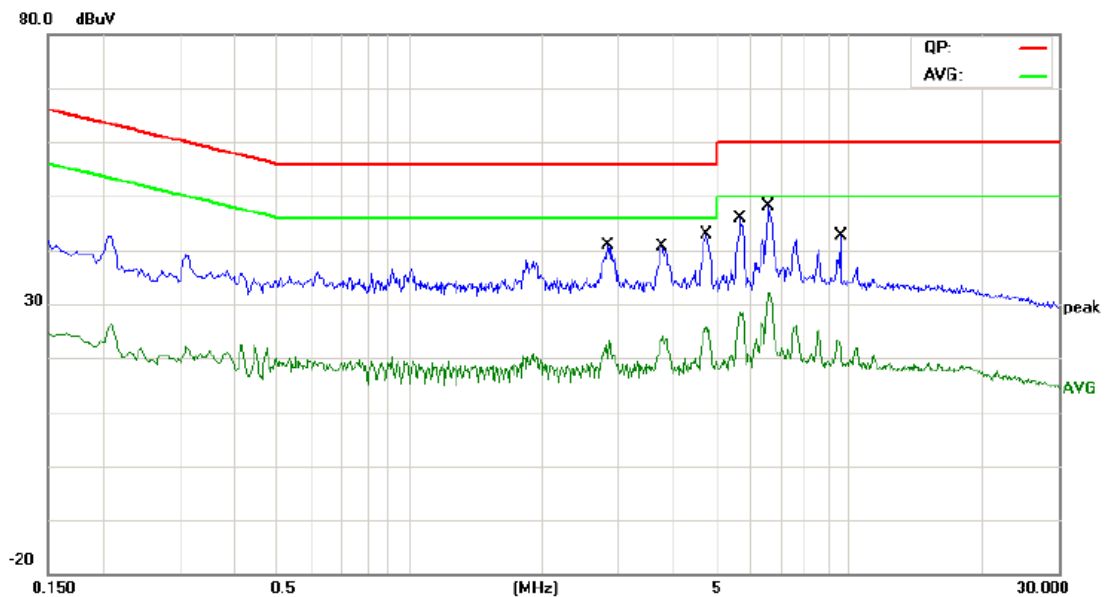
Antenna Type	
<input checked="" type="checkbox"/>	Permanent attached antenna
<input type="checkbox"/>	Unique connector antenna
<input type="checkbox"/>	Professional installation antenna



## Attachment A-- Conducted Emission Test Data



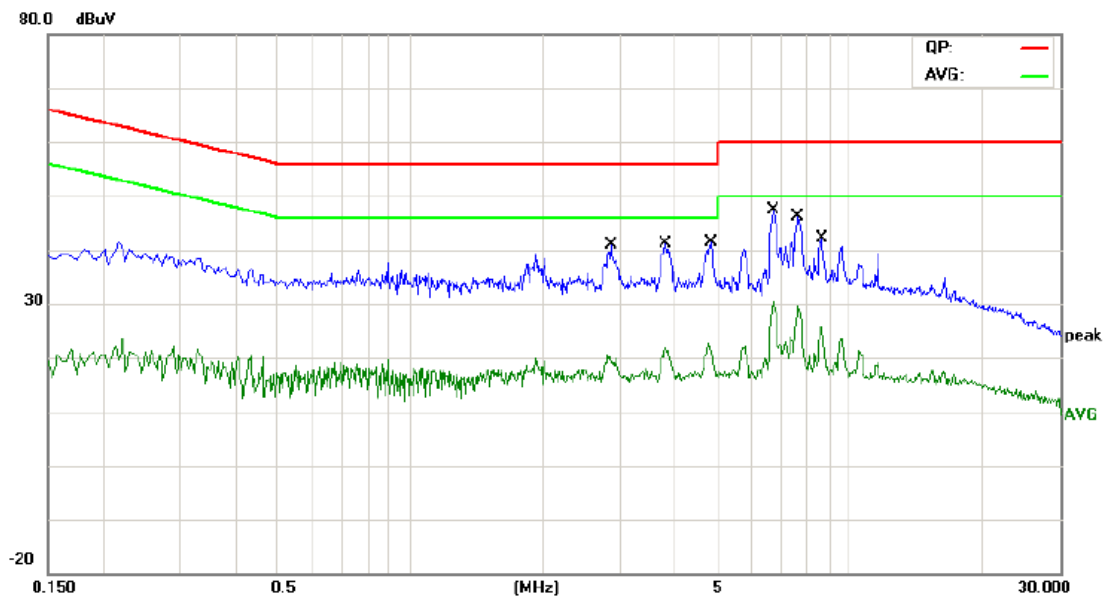
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Terminal:	Neutral		
Test Mode:	Normal working with TX B Mode		
Remark:	Only worse case is reported		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		2.8340	24.24	9.66	33.90	56.00	-22.10	QP
2		2.8340	11.43	9.66	21.09	46.00	-24.91	AVG
3		3.7580	24.78	9.71	34.49	56.00	-21.51	QP
4		3.7580	12.78	9.71	22.49	46.00	-23.51	AVG
5		4.7380	25.85	9.86	35.71	56.00	-20.29	QP
6		4.7380	14.41	9.86	24.27	46.00	-21.73	AVG
7		5.6660	26.43	10.04	36.47	60.00	-23.53	QP
8		5.6660	15.72	10.04	25.76	50.00	-24.24	AVG
9	*	6.5900	32.25	10.21	42.46	60.00	-17.54	QP
10		6.5900	22.13	10.21	32.34	50.00	-17.66	AVG
11		9.5580	21.28	10.25	31.53	60.00	-28.47	QP
12		9.5580	11.79	10.25	22.04	50.00	-27.96	AVG

Emission Level= Read Level+ Correct Factor

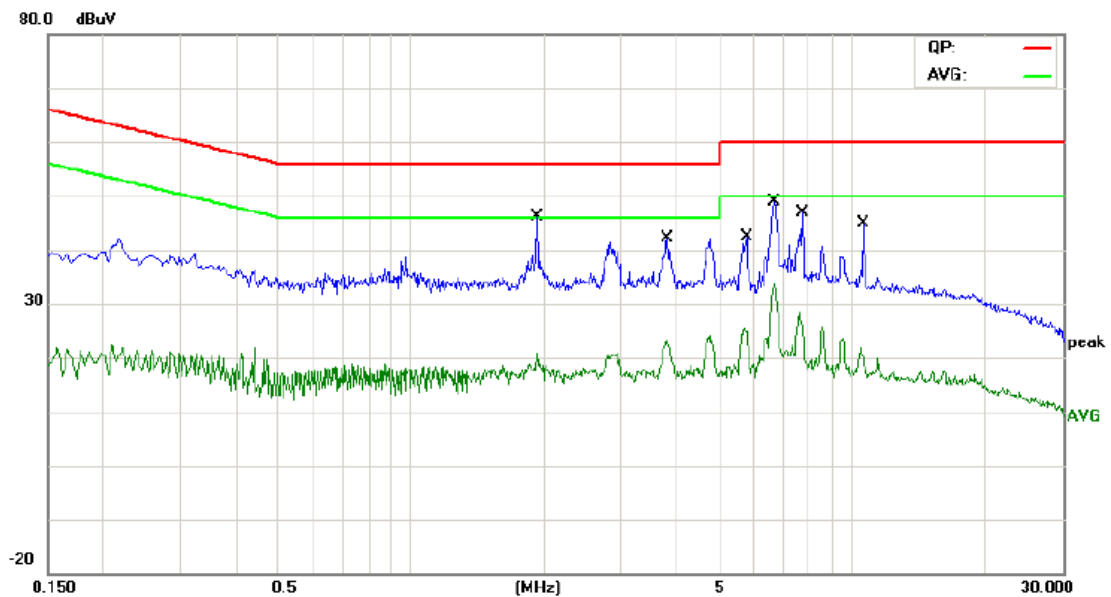
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 240V/50Hz		
Terminal:	Line		
Test Mode:	Normal working with TX B Mode		
Remark:	Only worse case is reported		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		2.8580	23.65	9.64	33.29	56.00	-22.71	QP
2		2.8580	8.66	9.64	18.30	46.00	-27.70	AVG
3		3.8060	23.88	9.67	33.55	56.00	-22.45	QP
4		3.8060	9.62	9.67	19.29	46.00	-26.71	AVG
5		4.8420	26.48	9.73	36.21	56.00	-19.79	QP
6		4.8420	10.09	9.73	19.82	46.00	-26.18	AVG
7	*	6.7020	30.44	9.84	40.28	60.00	-19.72	QP
8		6.7020	18.08	9.84	27.92	50.00	-22.08	AVG
9		7.6060	30.35	9.90	40.25	60.00	-19.75	QP
10		7.6060	18.65	9.90	28.55	50.00	-21.45	AVG
11		8.6220	26.70	9.96	36.66	60.00	-23.34	QP
12		8.6220	15.18	9.96	25.14	50.00	-24.86	AVG

Emission Level= Read Level+ Correct Factor

Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 240V/50Hz		
Terminal:	Neutral		
Test Mode:	Normal working with TX B Mode		
Remark:	Only worse case is reported		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB	dBuV	dBuV	dB	
1		1.9300	23.36	9.61	32.97	56.00	-23.03	QP
2		1.9300	7.30	9.61	16.91	46.00	-29.09	AVG
3		3.8140	24.15	9.71	33.86	56.00	-22.14	QP
4		3.8140	10.88	9.71	20.59	46.00	-25.41	AVG
5		5.7460	23.79	10.05	33.84	60.00	-26.16	QP
6		5.7460	12.53	10.05	22.58	50.00	-27.42	AVG
7	*	6.6300	31.14	10.22	41.36	60.00	-18.64	QP
8		6.6300	20.60	10.22	30.82	50.00	-19.18	AVG
9		7.6900	26.79	10.28	37.07	60.00	-22.93	QP
10		7.6900	16.65	10.28	26.93	50.00	-23.07	AVG
11		10.5659	19.35	10.28	29.63	60.00	-30.37	QP
12		10.5659	8.69	10.28	18.97	50.00	-31.03	AVG

Emission Level= Read Level+ Correct Factor

## Attachment B-- Radiated Emission Test Data

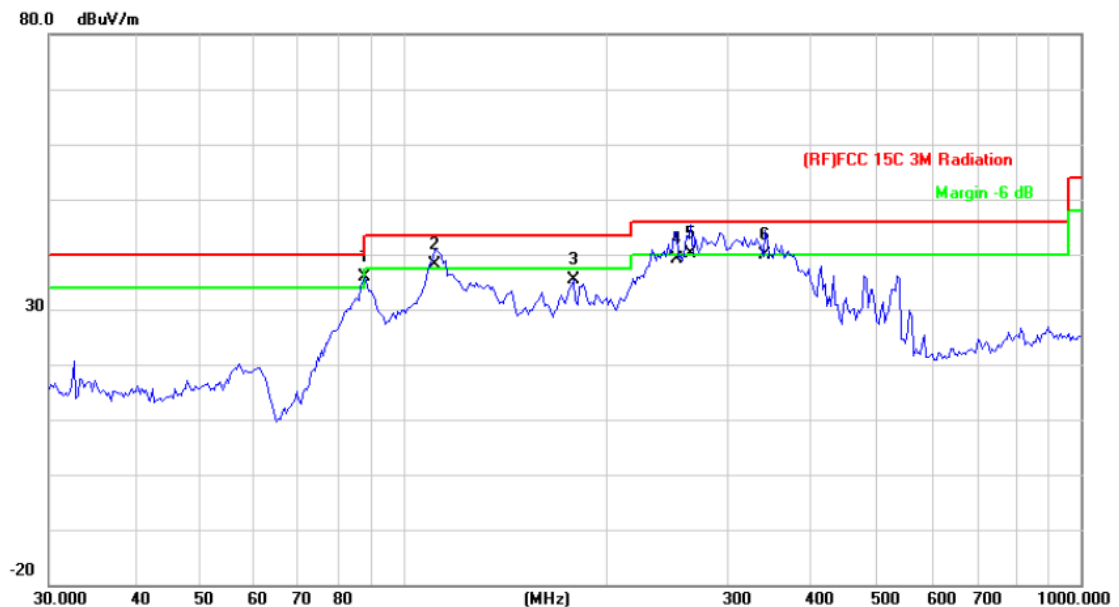
### 9KHz~30MHz

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

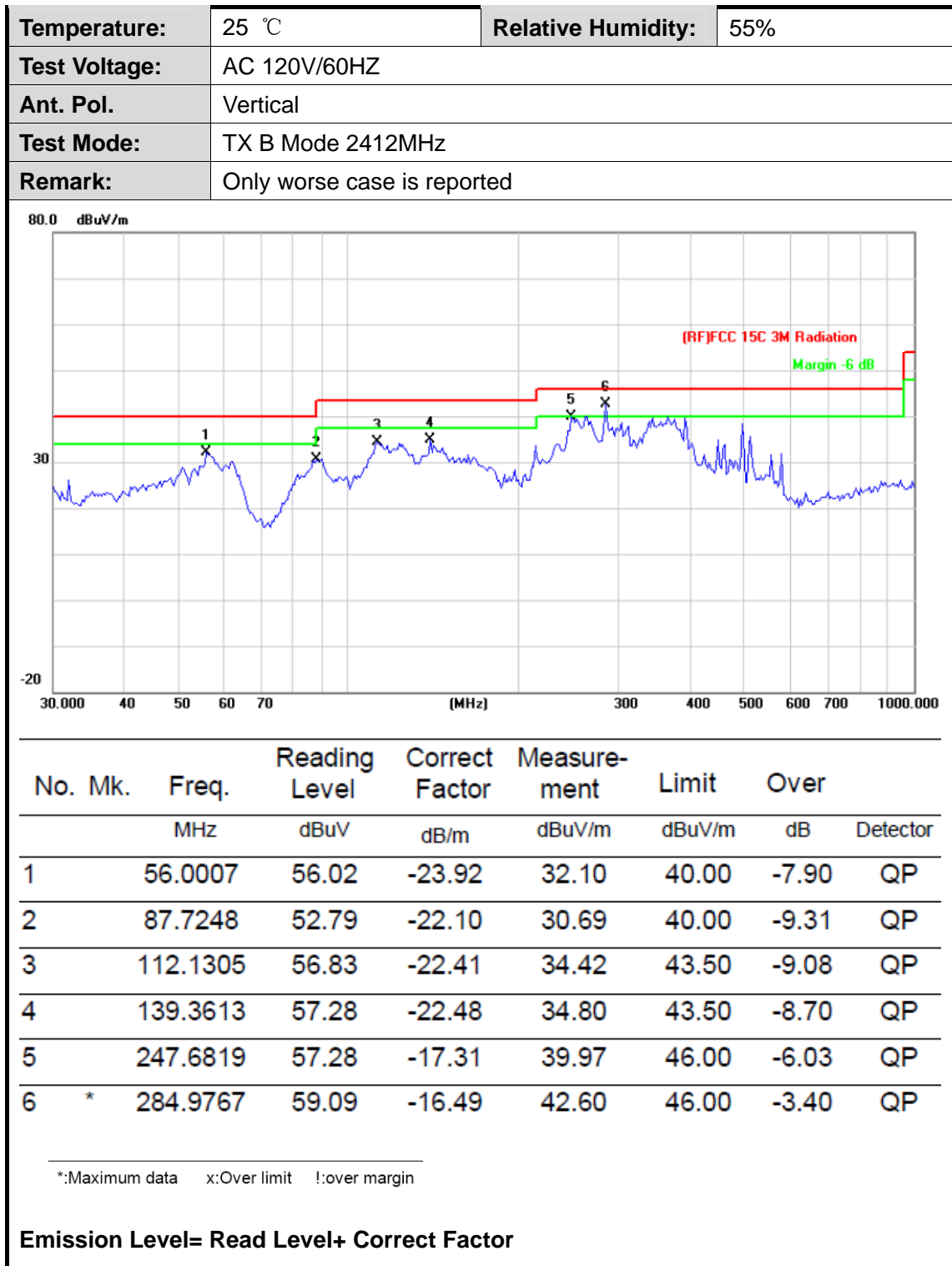
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz		
Remark:	Only worse case is reported		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	87.7248	57.97	-22.10	35.87	40.00	-4.13	QP
2	!	111.3468	60.62	-22.42	38.20	43.50	-5.30	QP
3		178.1327	55.65	-20.24	35.41	43.50	-8.09	QP
4		252.9482	56.33	-17.12	39.21	46.00	-6.79	QP
5	!	265.6757	57.07	-16.87	40.20	46.00	-5.80	QP
6		341.9786	54.85	-14.85	40.00	46.00	-6.00	QP

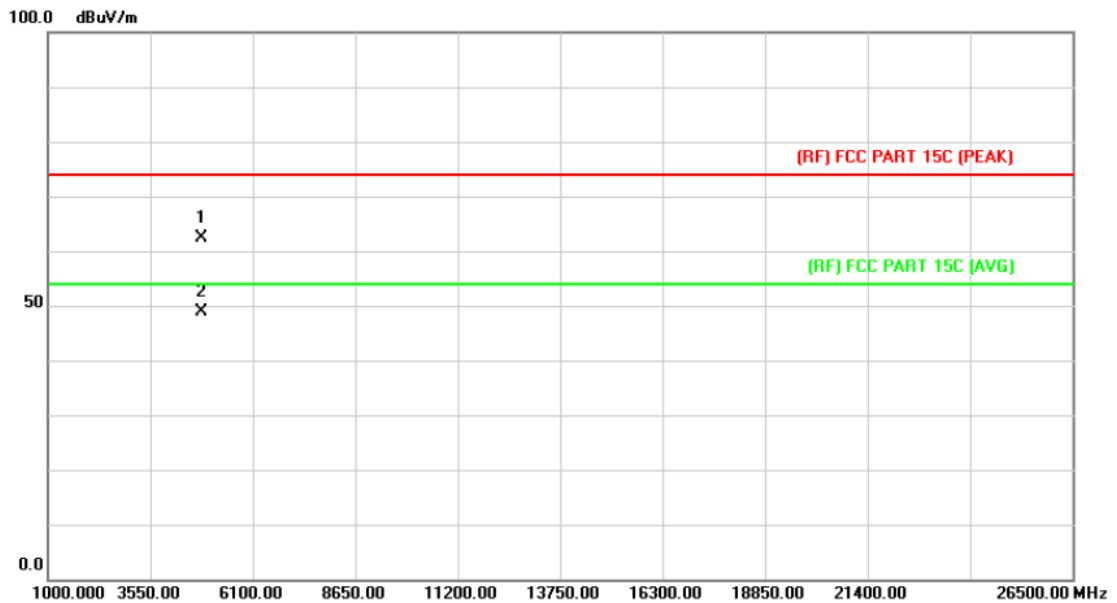
\*:Maximum data    x:Over limit    !:over margin

Emission Level= Read Level+ Correct Factor



### Above 1GHz

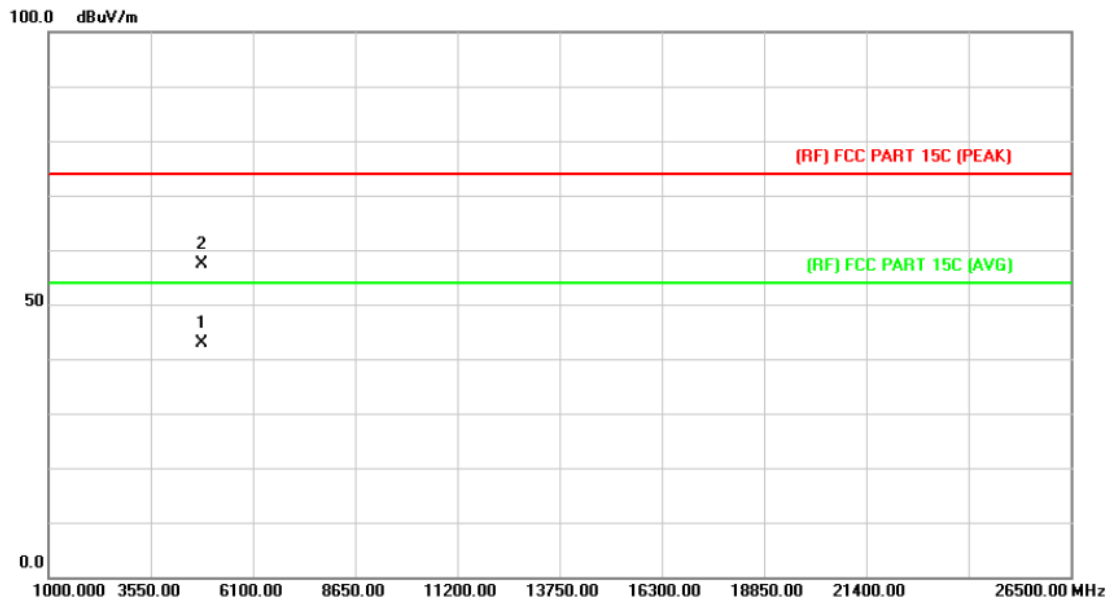
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4828.060	47.89	14.58	62.47	74.00	-11.53	peak
2	*	4828.640	34.36	14.58	48.94	54.00	-5.06	AVG

Emission Level= Read Level+ Correct Factor

Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		

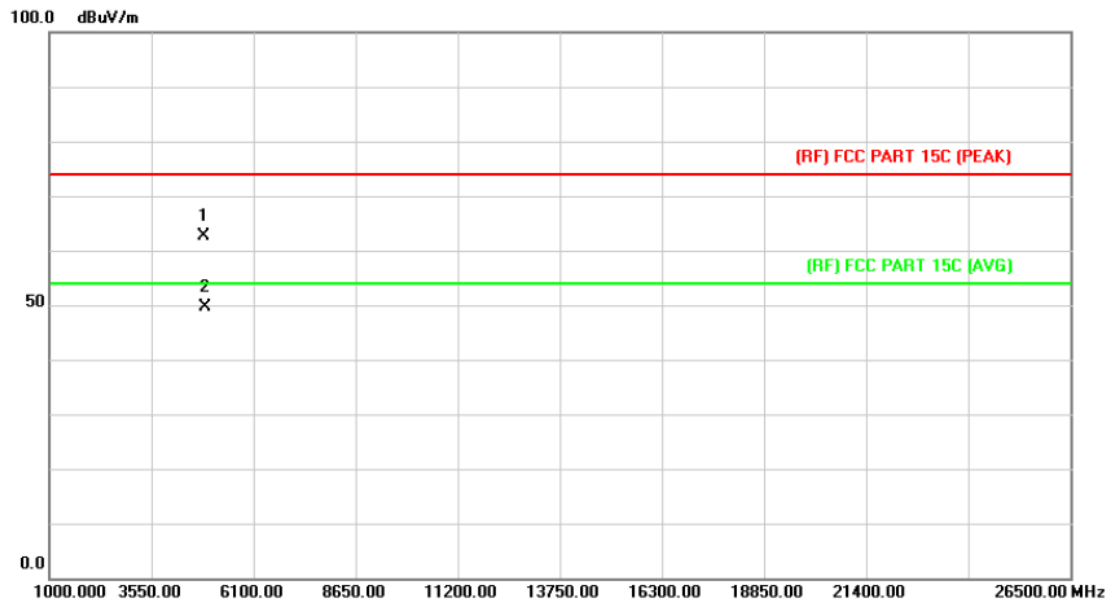


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4826.840	28.34	14.57	42.91	54.00	-11.09	AVG
2		4827.400	42.81	14.57	57.38	74.00	-16.62	peak

Emission Level= Read Level+ Correct Factor



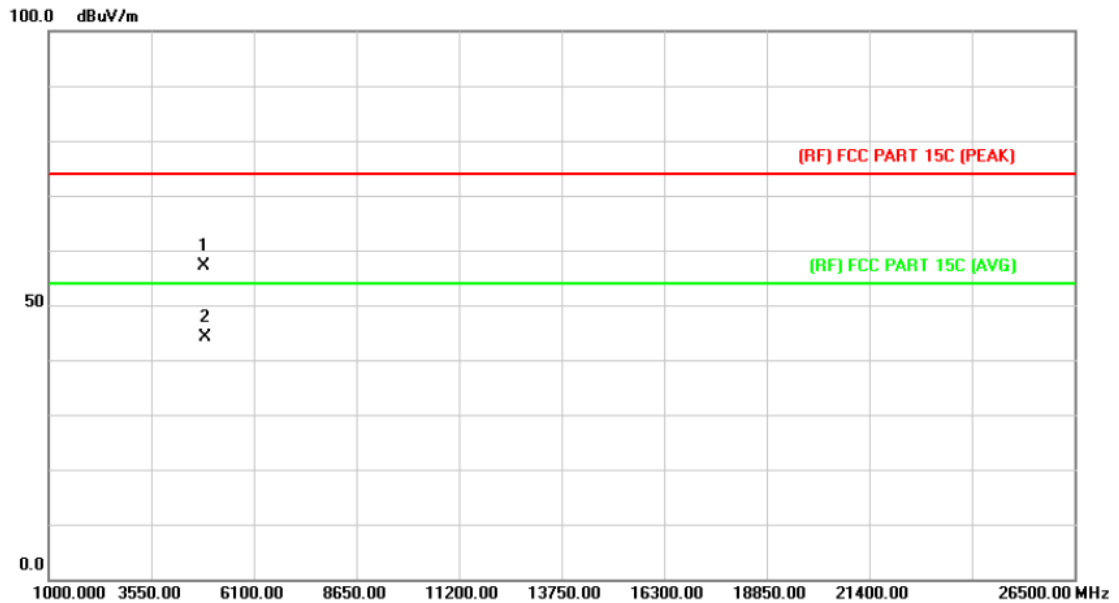
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB Detector
1		4871.780	47.73	14.84	62.57	74.00	-11.43 peak
2	*	4878.680	34.78	14.89	49.67	54.00	-4.33 AVG

Emission Level= Read Level+ Correct Factor

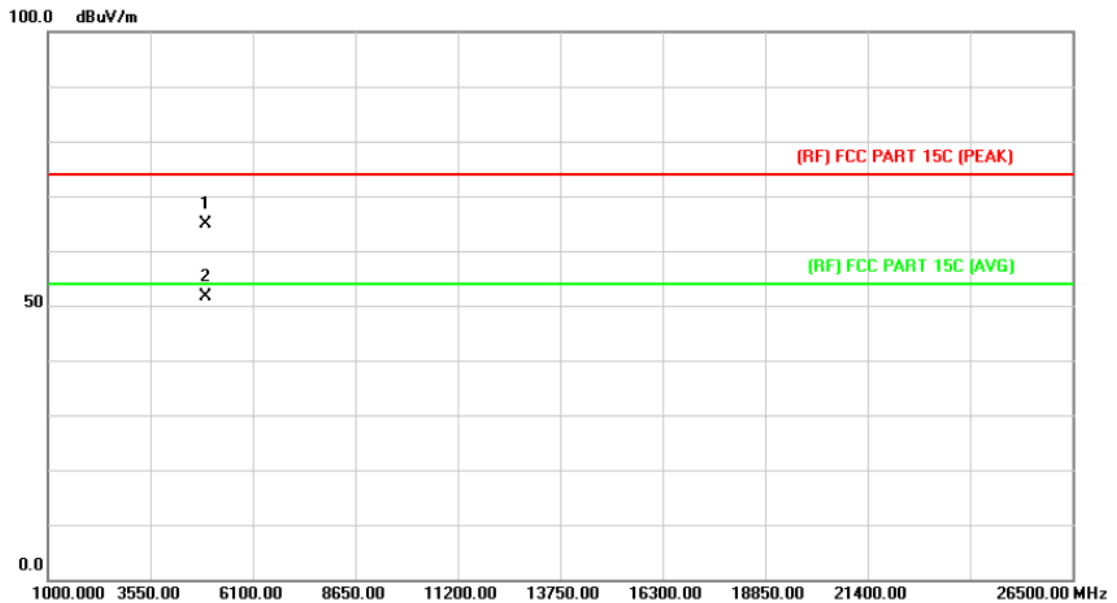
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4872.560	42.40	14.85	57.25	74.00	-16.75	peak
2	*	4878.920	29.19	14.89	44.08	54.00	-9.92	AVG

Emission Level= Read Level+ Correct Factor

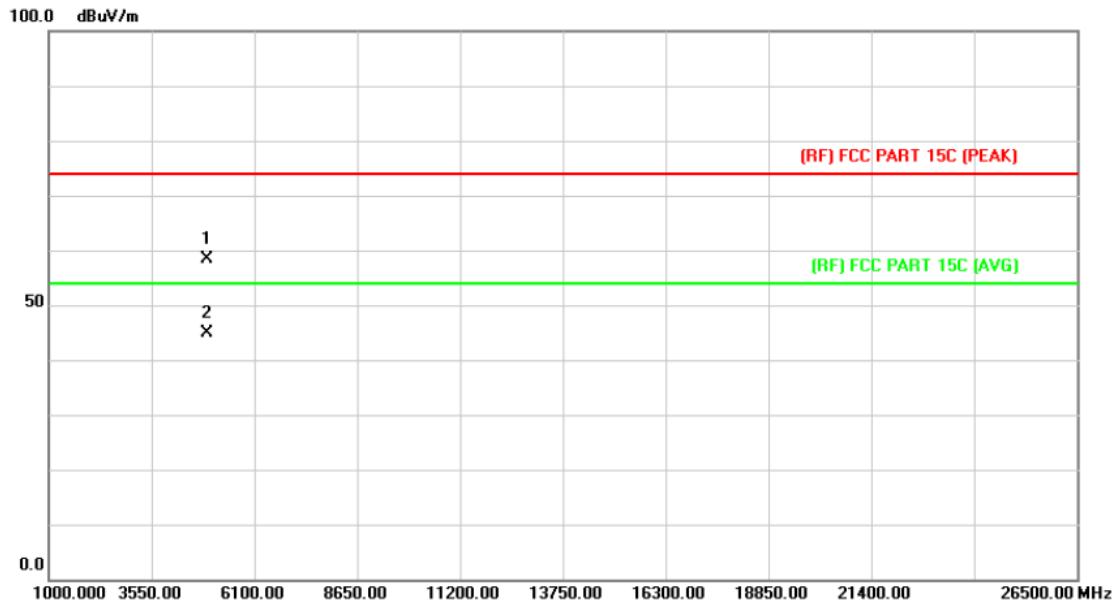
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4923.160	49.61	15.17	64.78	74.00	-9.22	peak
2	*	4923.640	36.42	15.17	51.59	54.00	-2.41	AVG

Emission Level= Read Level+ Correct Factor

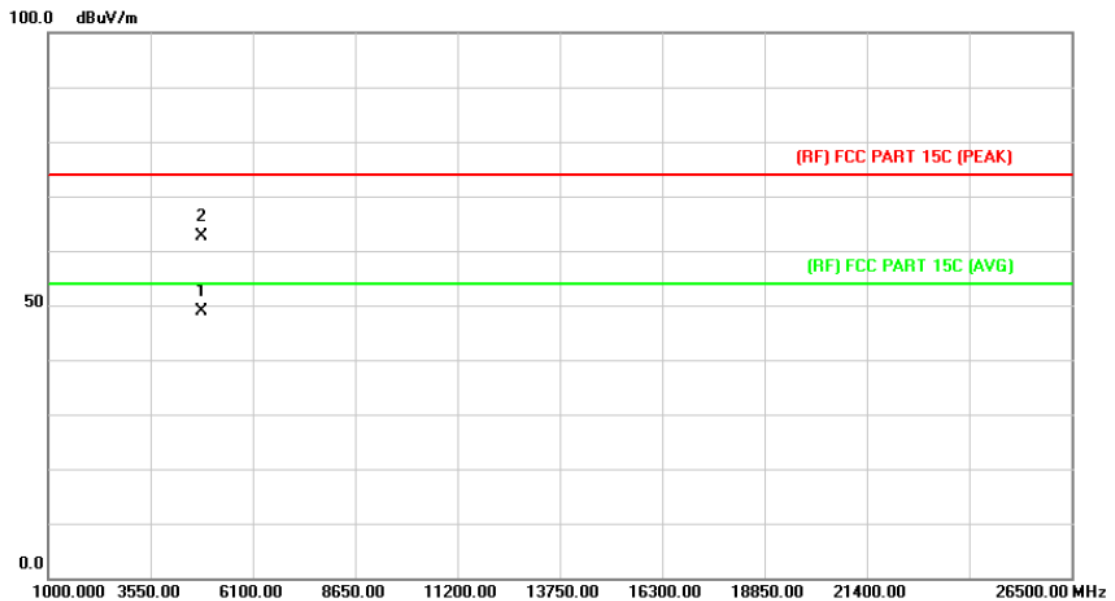
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB Detector
1		4922.080	43.26	15.16	58.42	74.00	-15.58 peak
2	*	4928.360	29.72	15.21	44.93	54.00	-9.07 AVG

Emission Level= Read Level+ Correct Factor

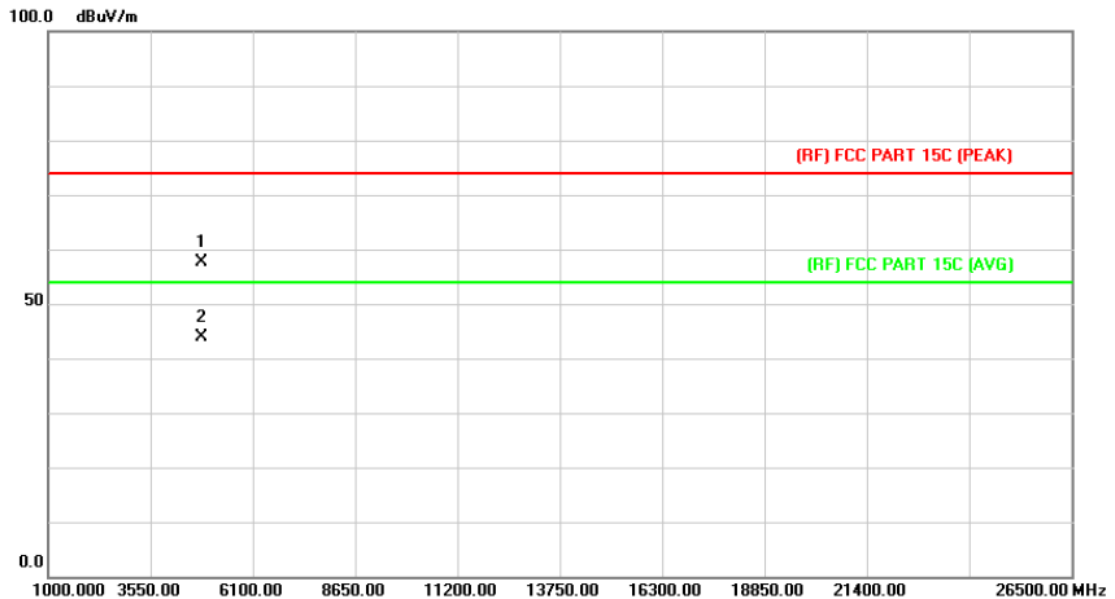
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4828.680	34.36	14.58	48.94	54.00	-5.06	AVG
2		4828.800	48.00	14.58	62.58	74.00	-11.42	peak

Emission Level= Read Level+ Correct Factor

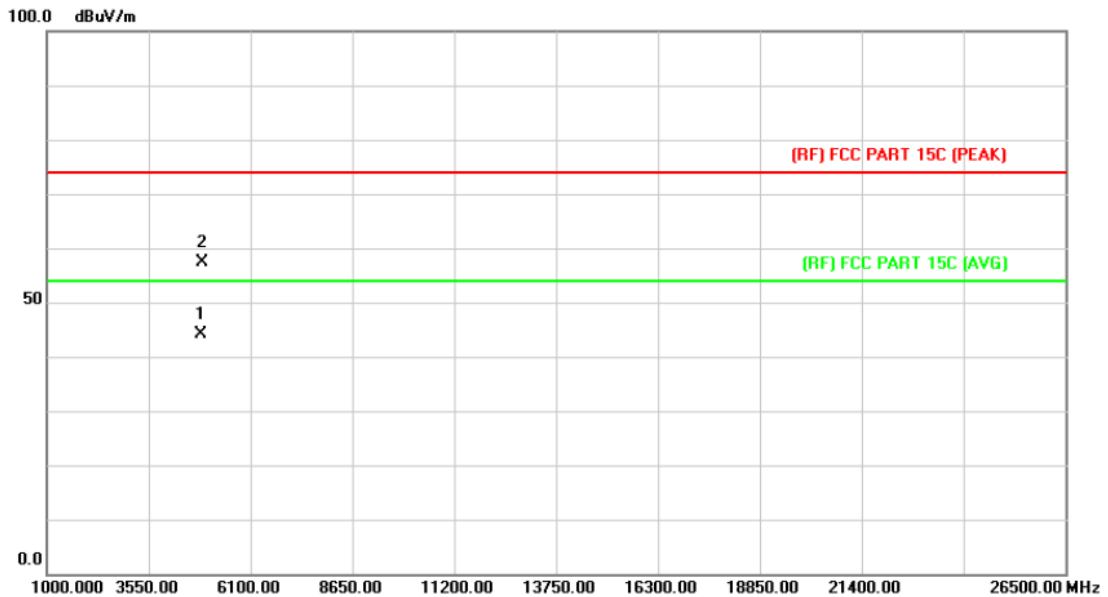
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4824.740	43.00	14.55	57.55	74.00	-16.45	peak
2	*	4829.000	29.28	14.58	43.86	54.00	-10.14	AVG

Emission Level= Read Level+ Correct Factor

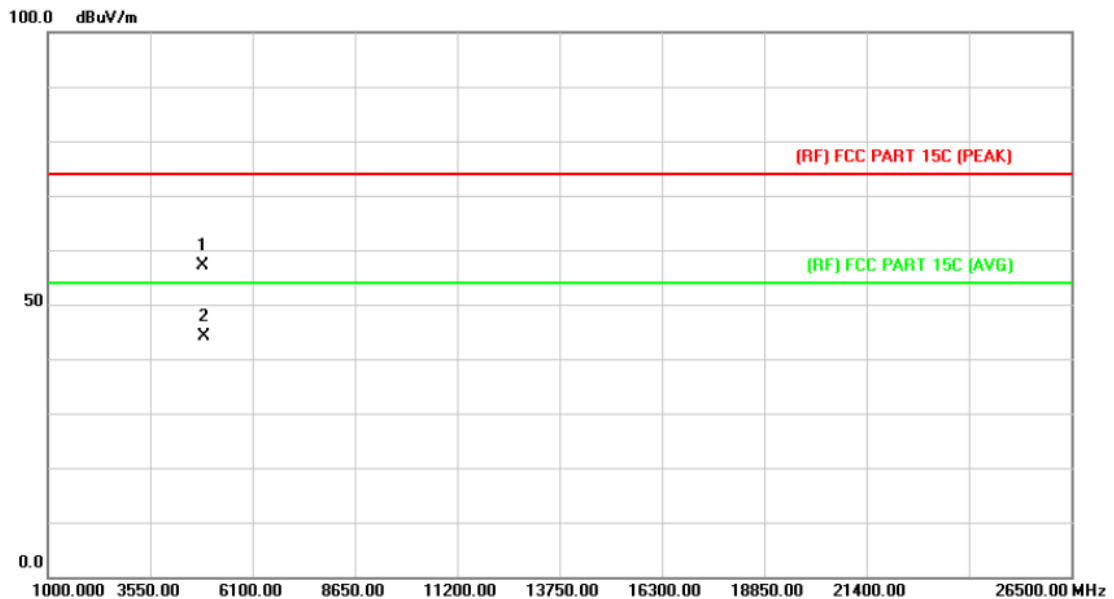
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4875.700	29.14	14.87	44.01	54.00	-9.99	AVG
2		4877.500	42.57	14.88	57.45	74.00	-16.55	peak

Emission Level= Read Level+ Correct Factor

Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		

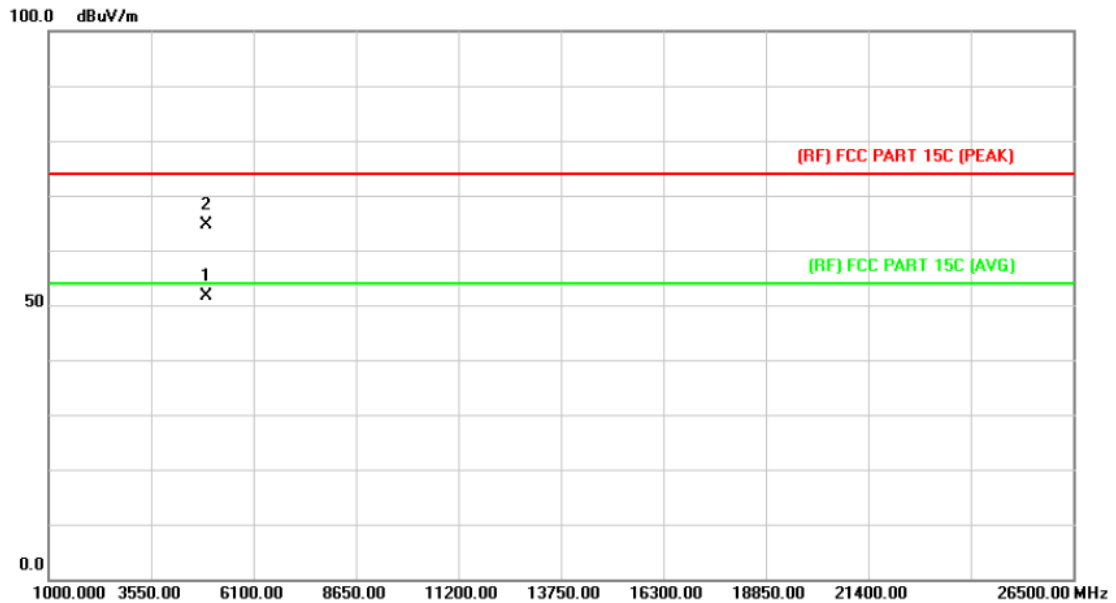


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4874.020	42.29	14.86	57.15	74.00	-16.85	peak
2	*	4878.800	29.22	14.89	44.11	54.00	-9.89	AVG

Emission Level= Read Level+ Correct Factor



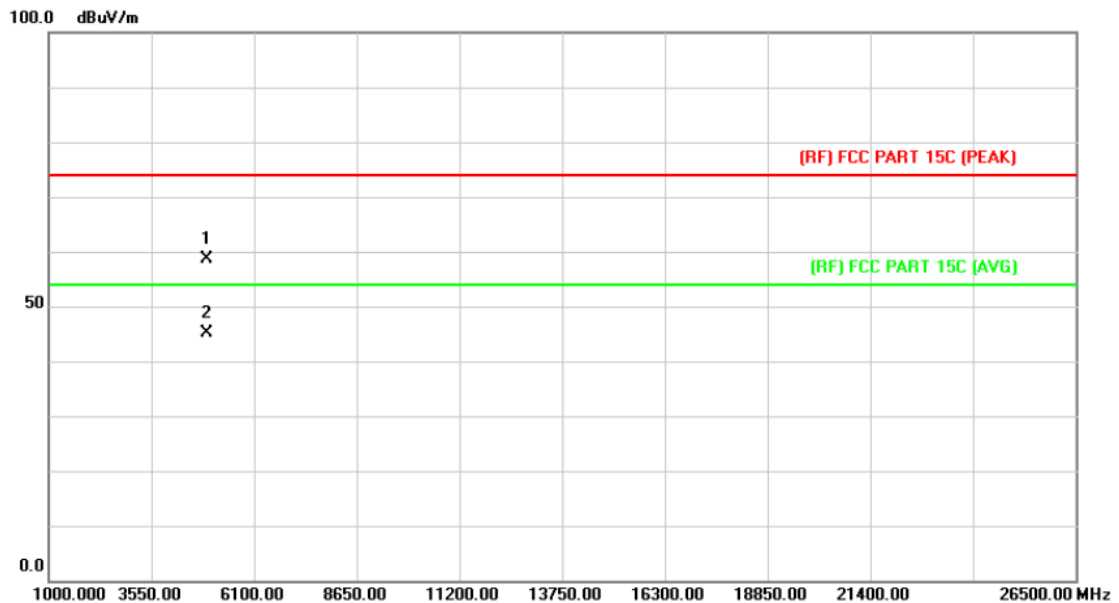
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4924.300	36.42	15.17	51.59	54.00	-2.41	AVG
2		4928.100	49.46	15.20	64.66	74.00	-9.34	peak

Emission Level= Read Level+ Correct Factor

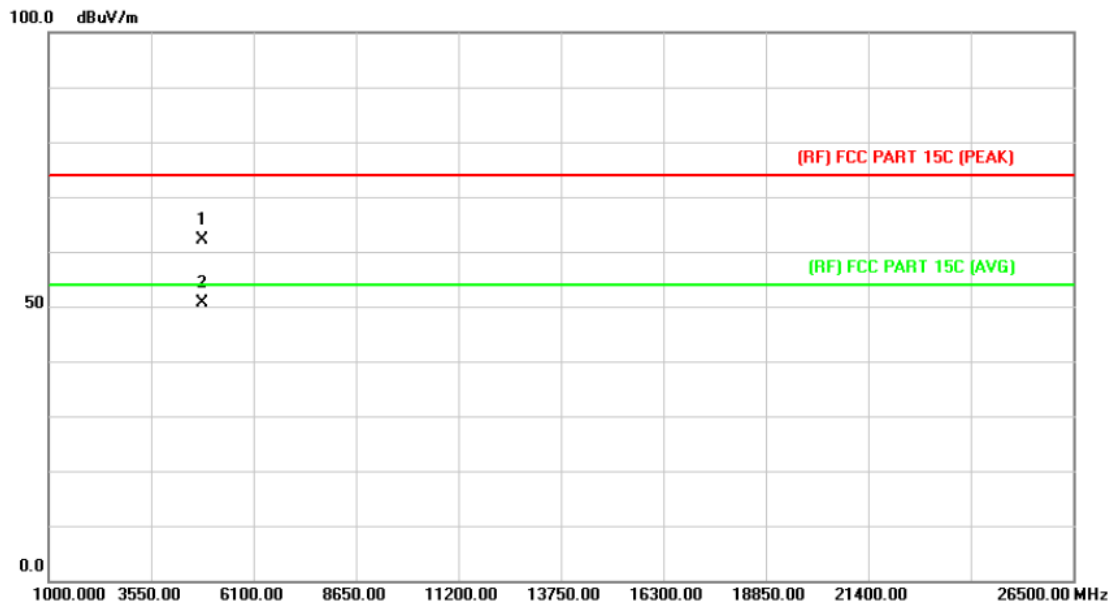
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4927.500	43.33	15.19	58.52	74.00	-15.48	peak
2	*	4928.000	29.83	15.20	45.03	54.00	-8.97	AVG

Emission Level= Read Level+ Correct Factor

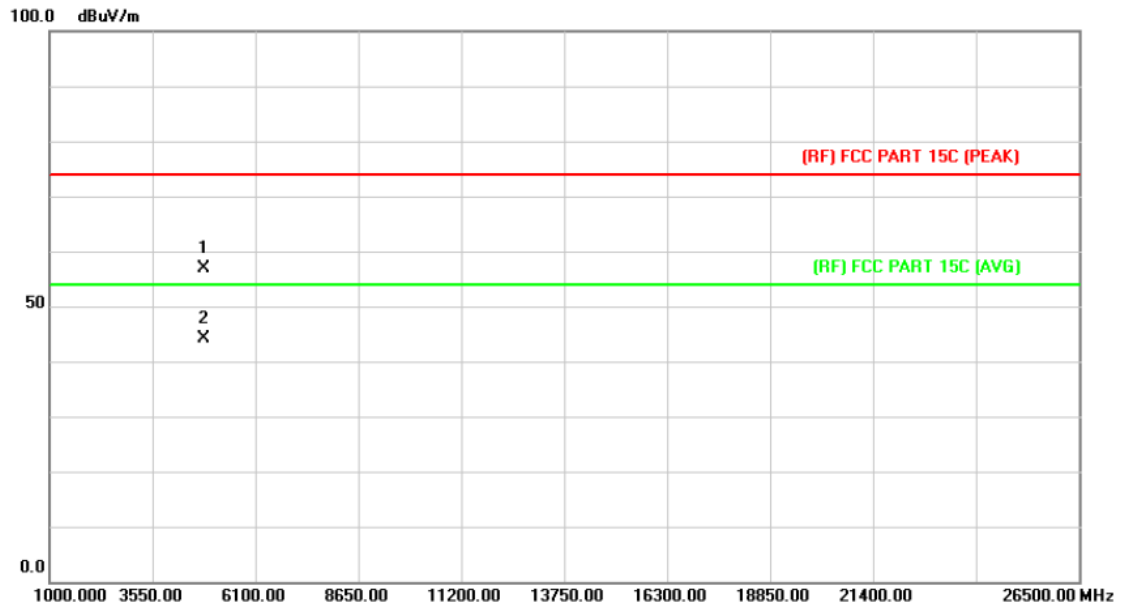
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4820.780	47.52	14.53	62.05	74.00	-11.95	peak
2	*	4824.560	36.15	14.55	50.70	54.00	-3.30	AVG

Emission Level= Read Level+ Correct Factor

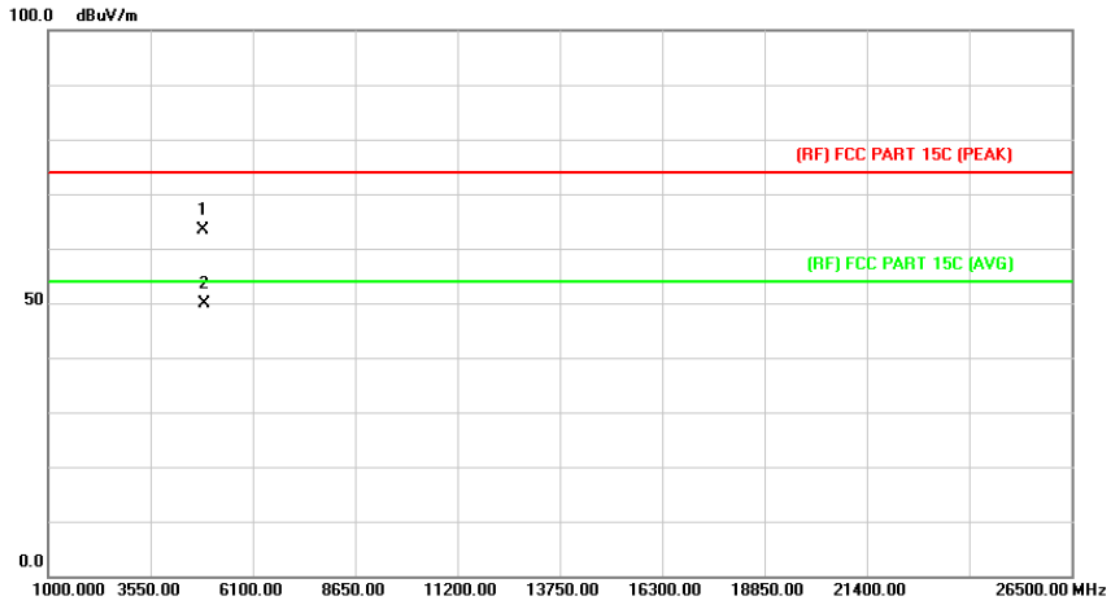
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4826.760	42.26	14.57	56.83	74.00	-17.17	peak
2	*	4828.800	29.44	14.58	44.02	54.00	-9.98	AVG

Emission Level= Read Level+ Correct Factor

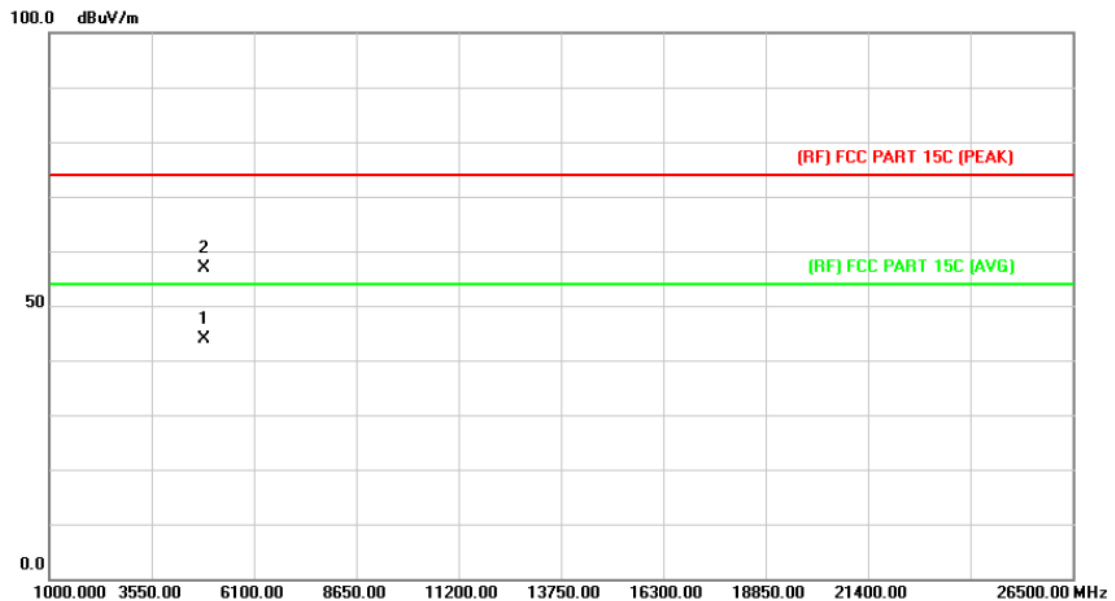
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4875.180	48.39	14.87	63.26	54.00	9.26	AVG
2		4876.880	34.90	14.88	49.78	74.00	-24.22	peak

Emission Level= Read Level+ Correct Factor

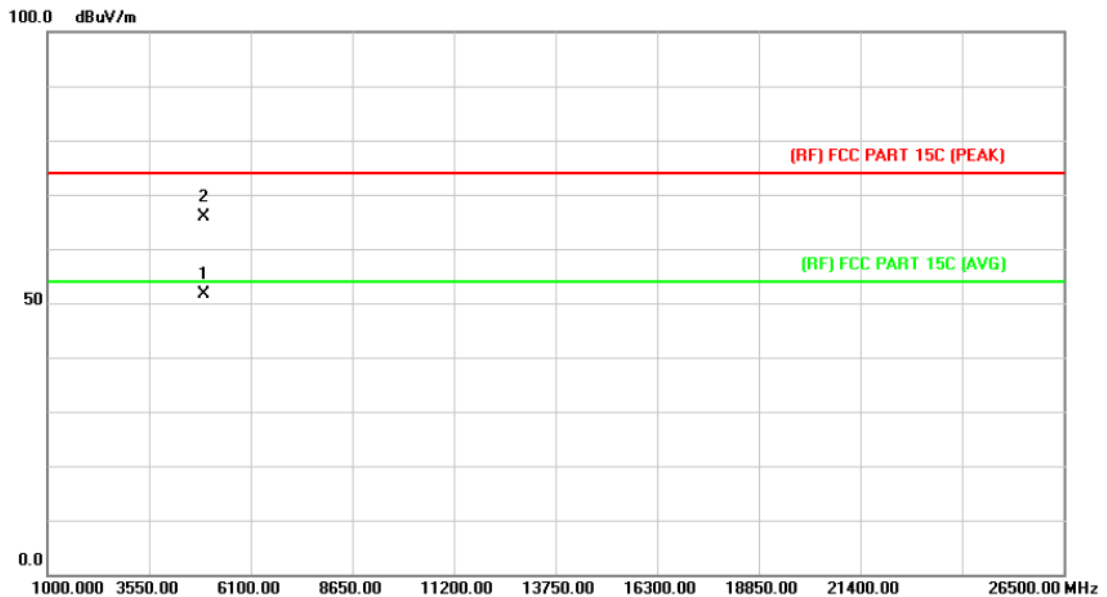
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4869.040	29.11	14.82	43.93	54.00	-10.07	AVG
2		4873.200	41.92	14.86	56.78	74.00	-17.22	peak

Emission Level= Read Level+ Correct Factor

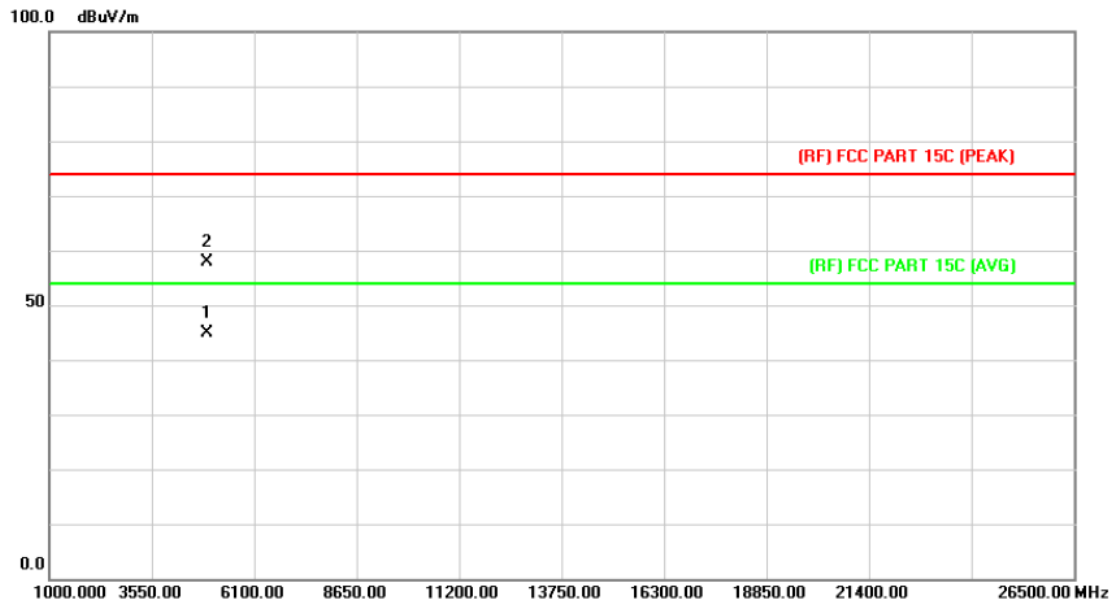
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4924.240	36.46	15.17	51.63	54.00	-2.37	AVG
2		4924.540	50.82	15.17	65.99	74.00	-8.01	peak

Emission Level= Read Level+ Correct Factor

Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



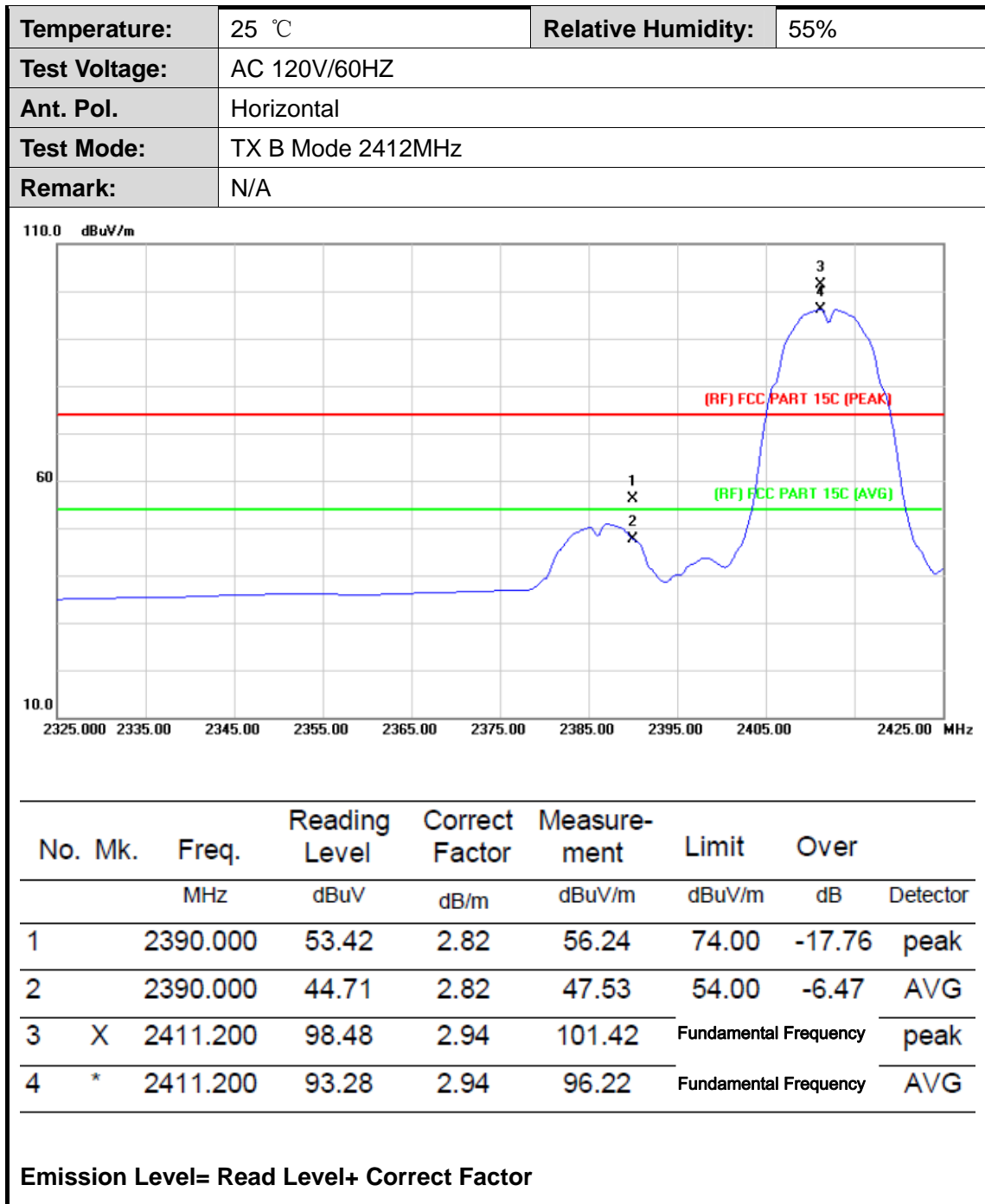
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4919.840	29.80	15.15	44.95	54.00	-9.05	AVG
2		4924.400	42.74	15.17	57.91	74.00	-16.09	peak

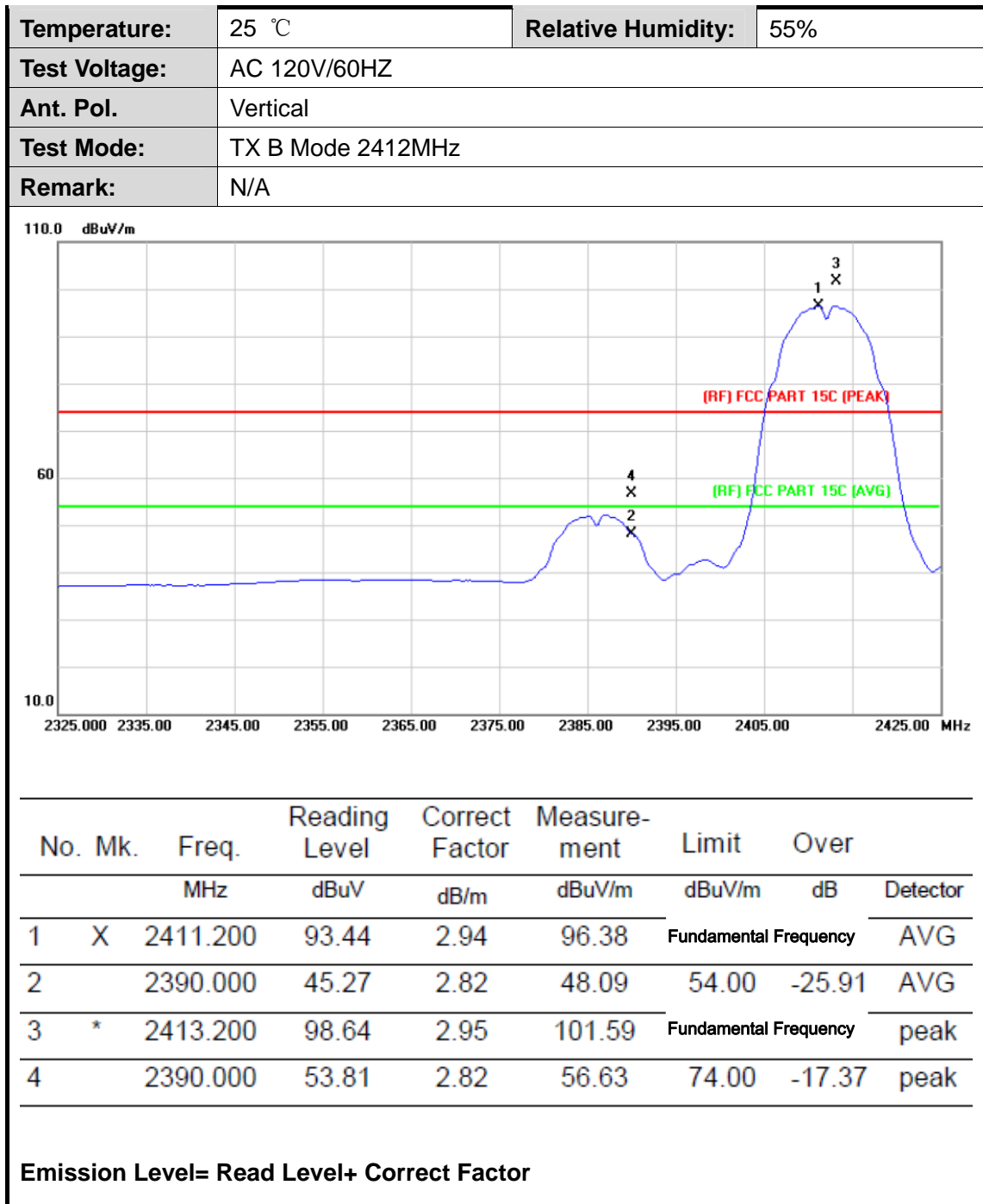
Emission Level= Read Level+ Correct Factor

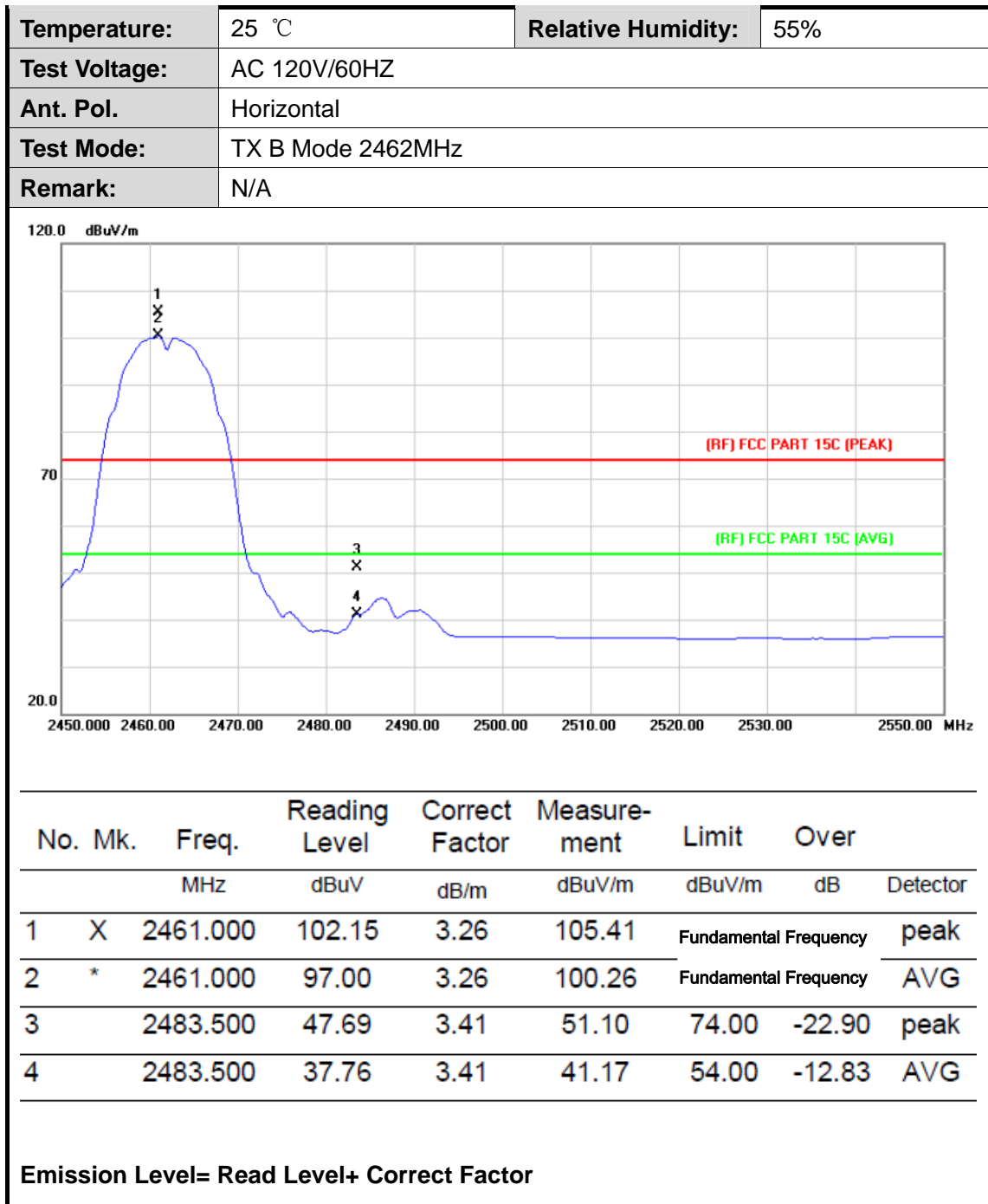


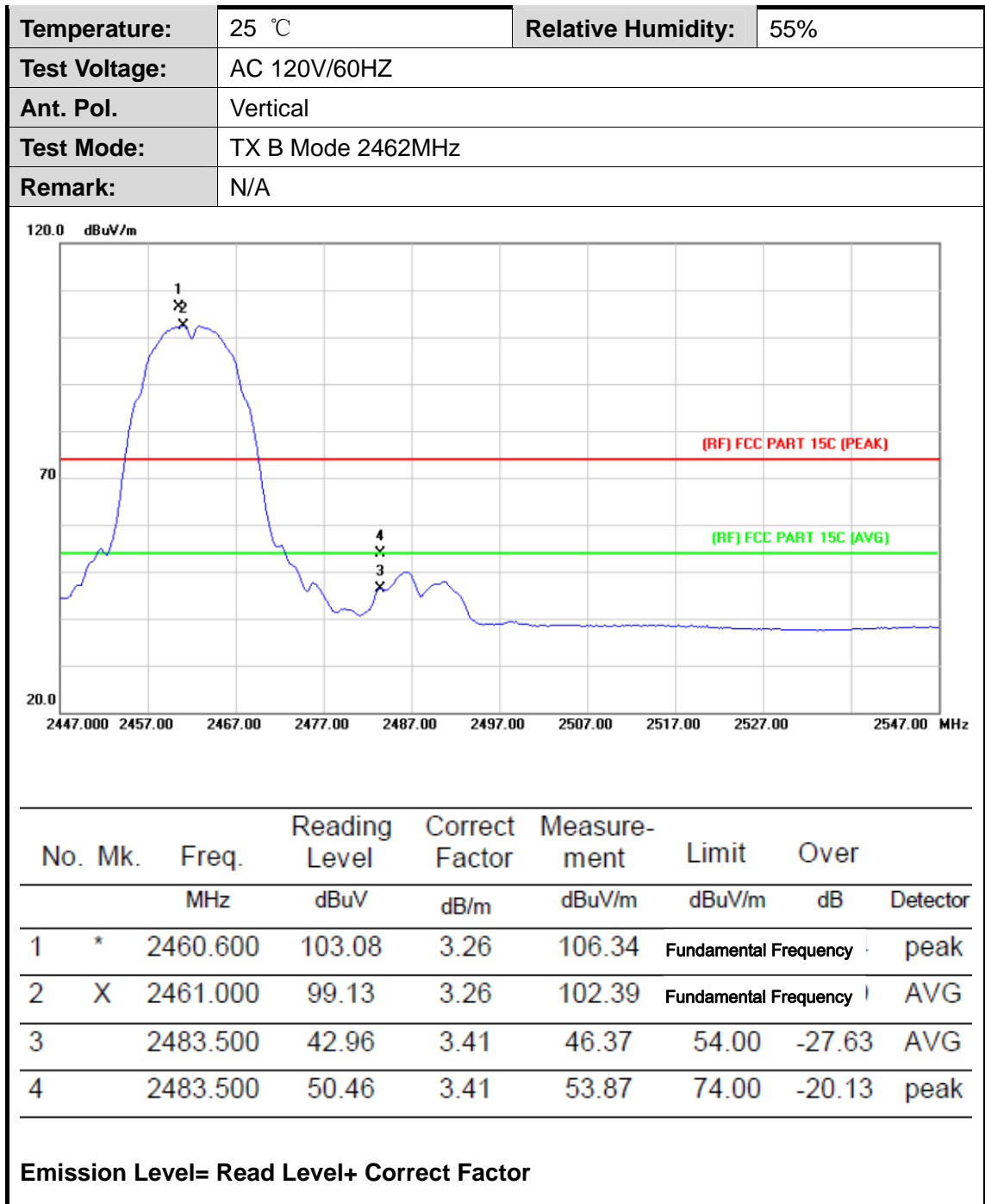
## Attachment C-- Restricted Bands Requirement Test Data

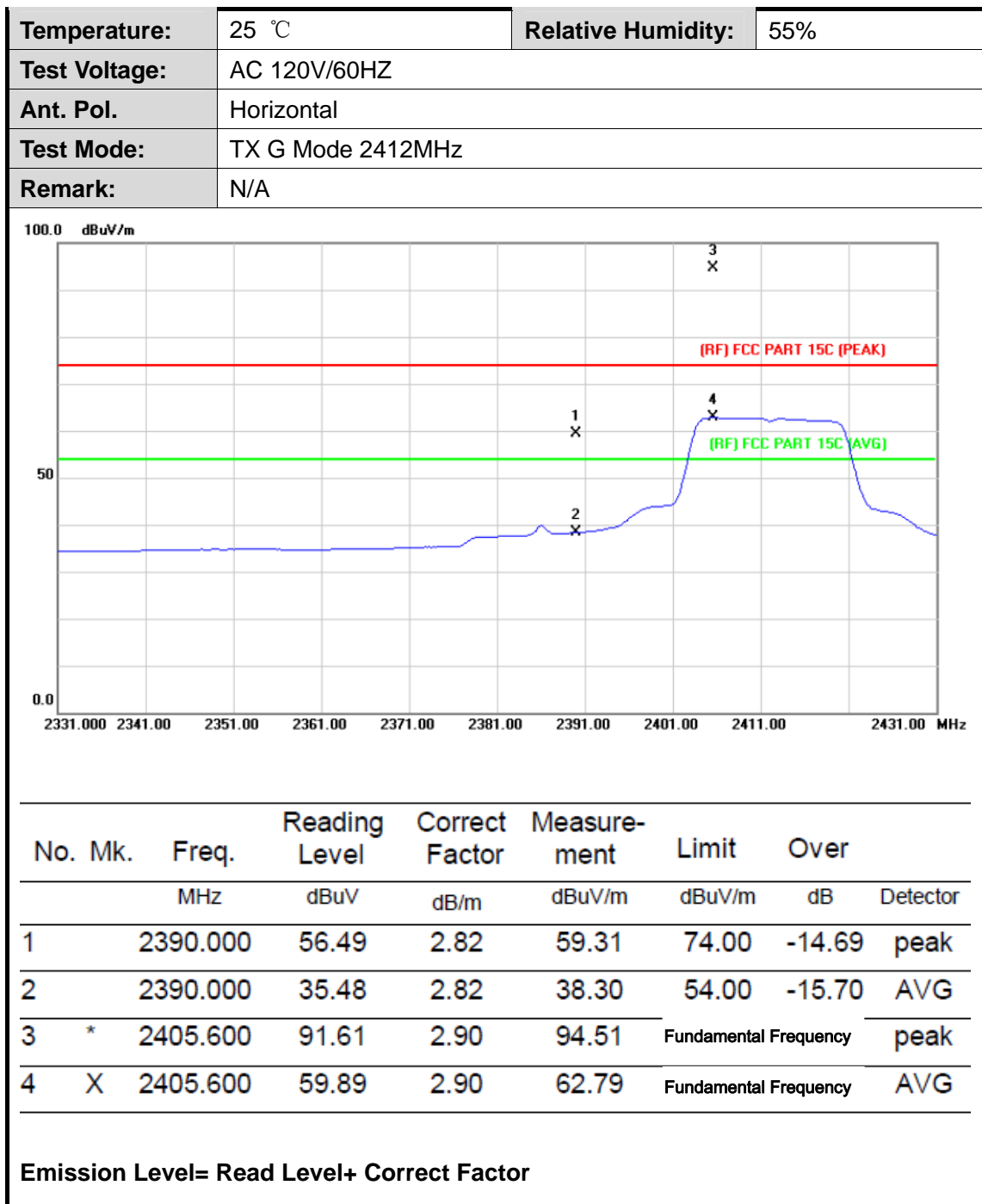
### (1) Radiation Test

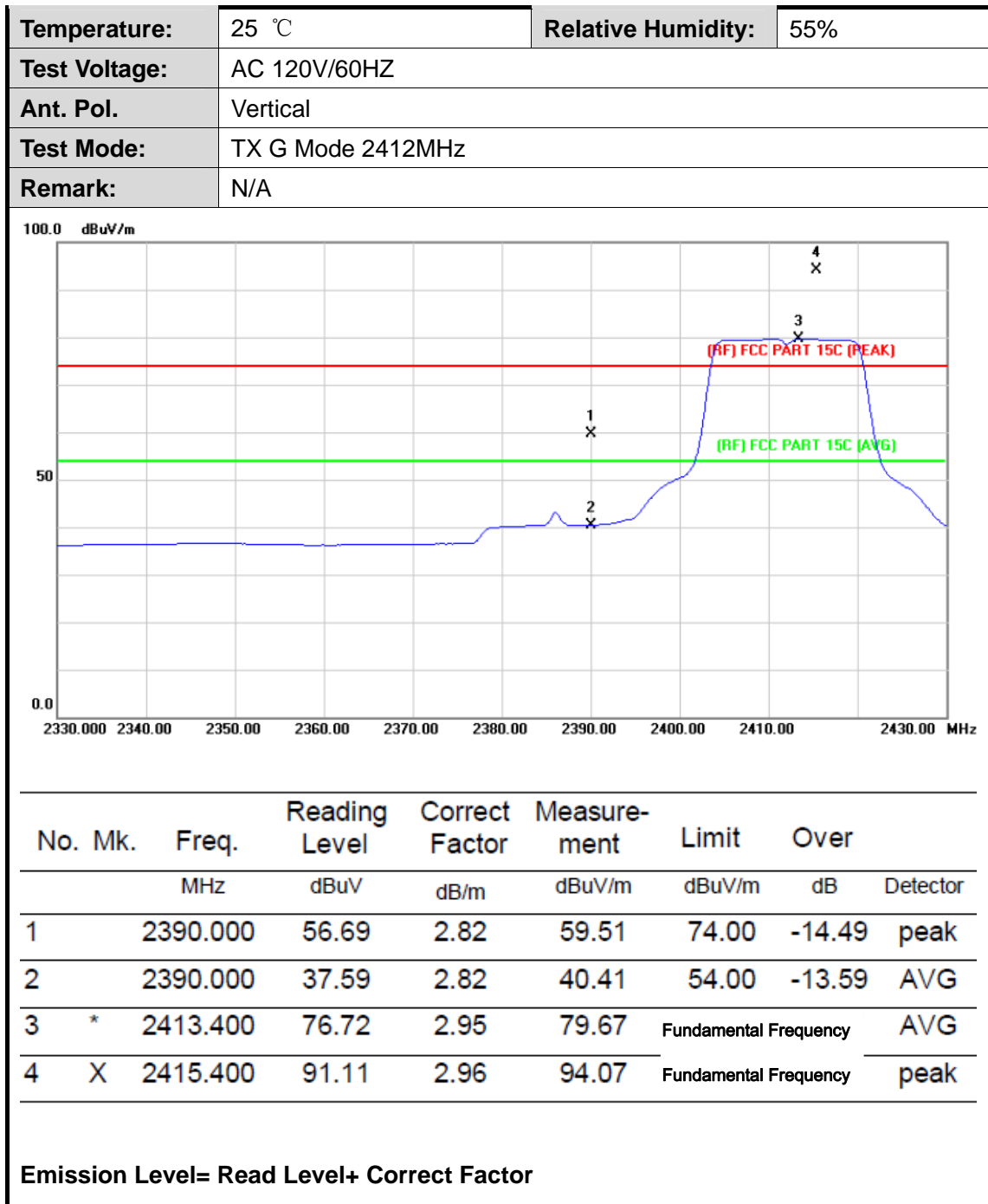




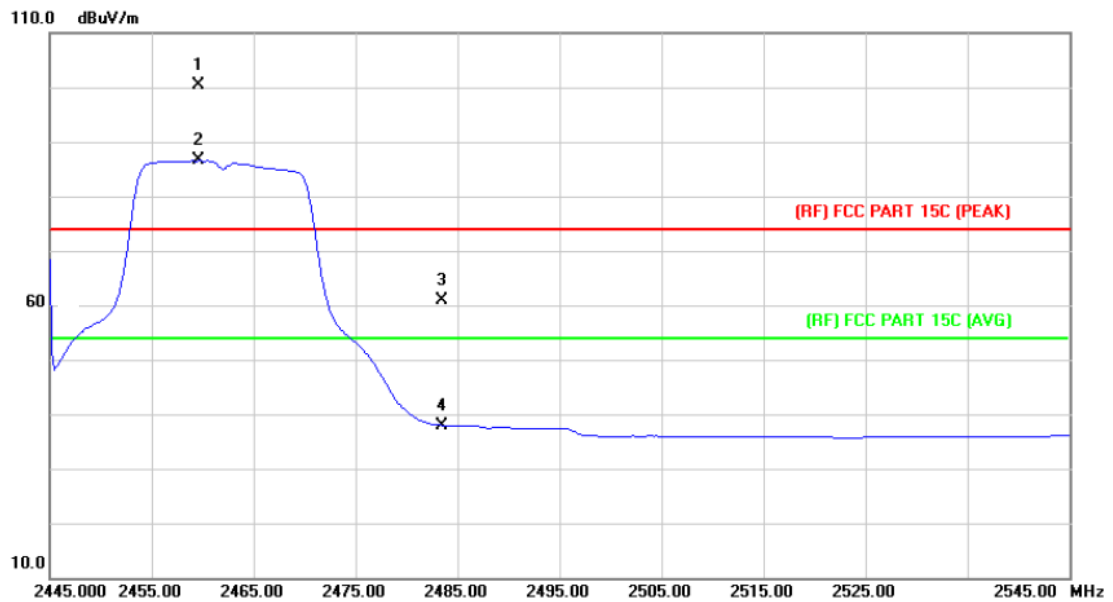






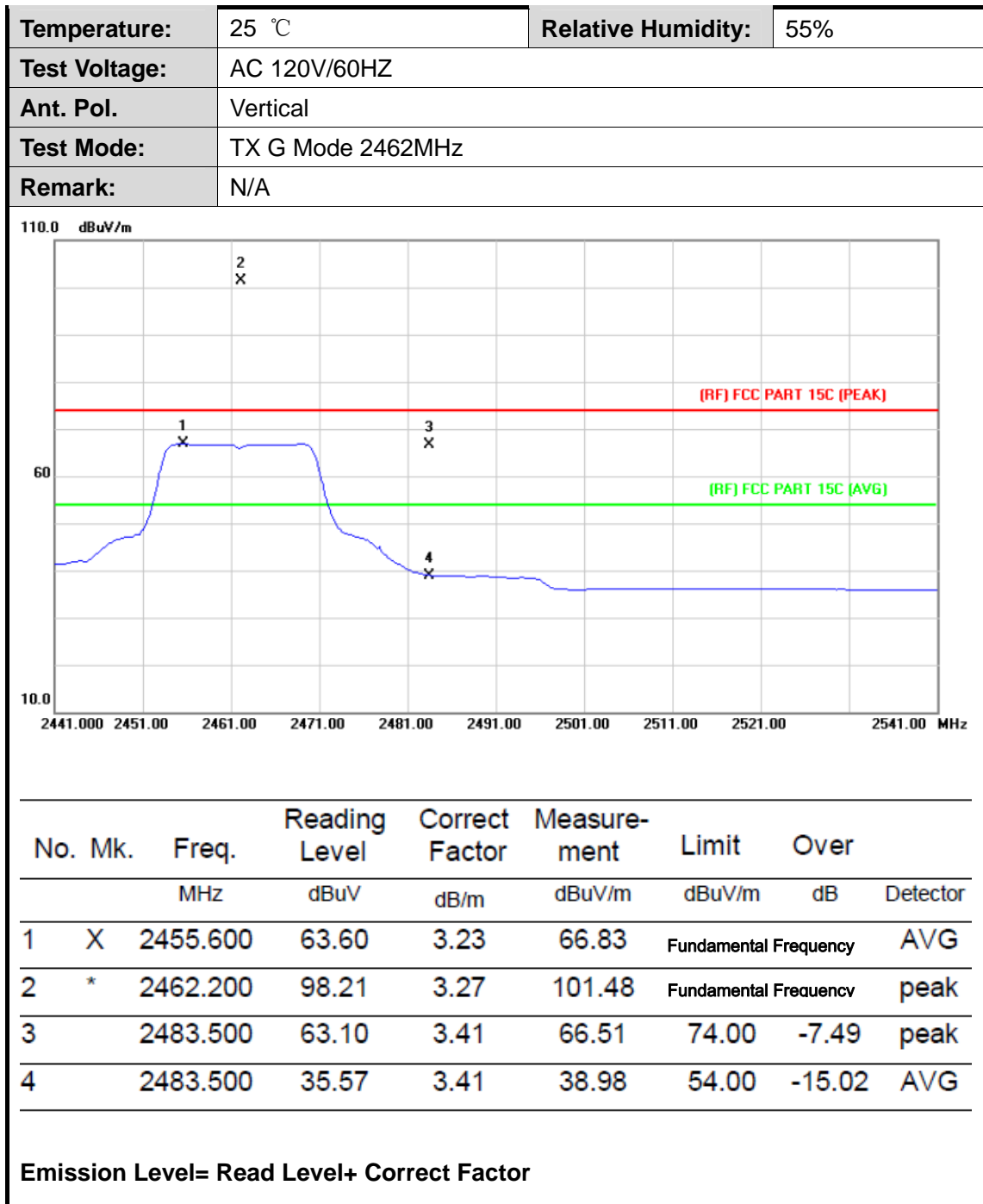


Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2462MHz		
Remark:	N/A		

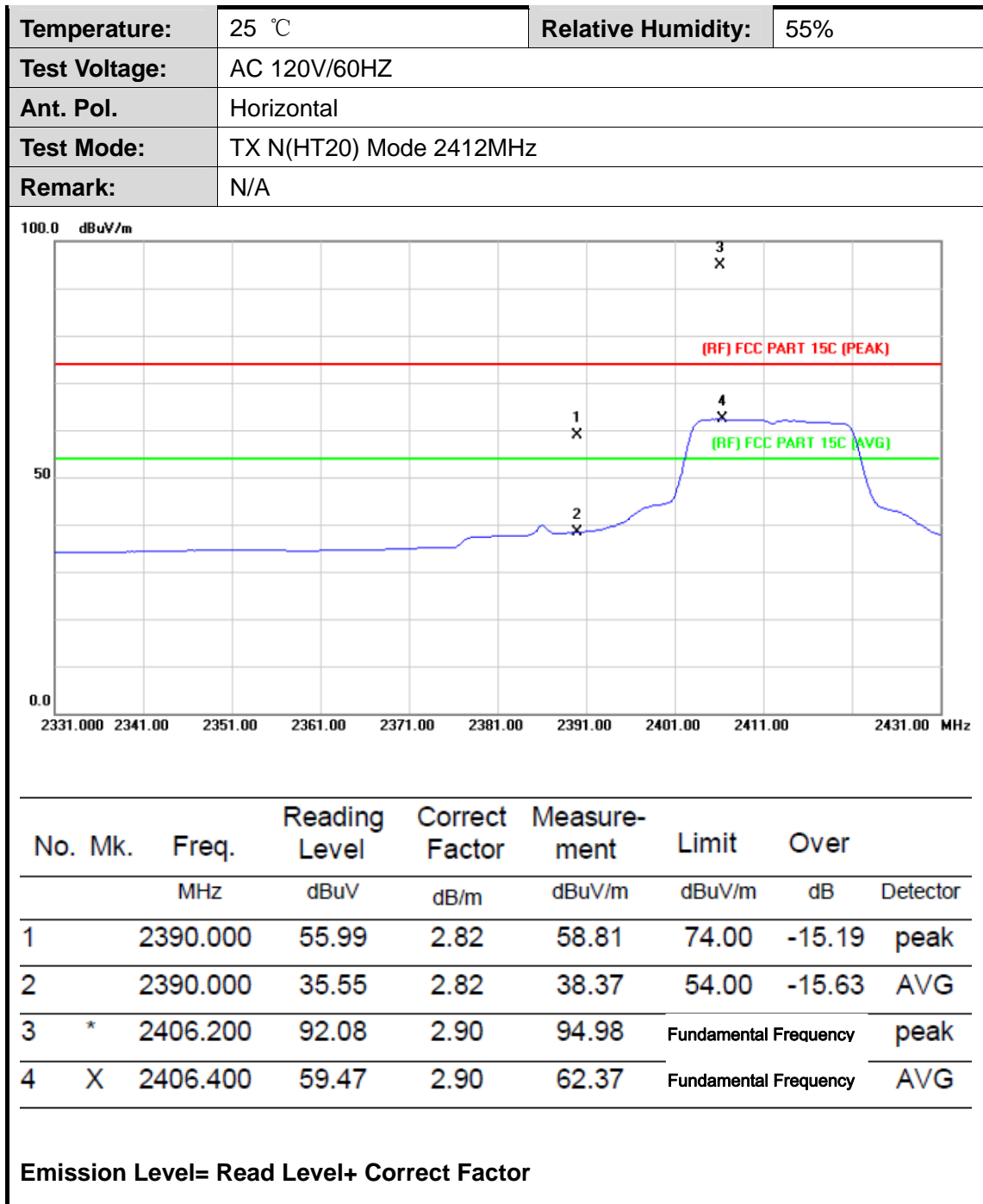


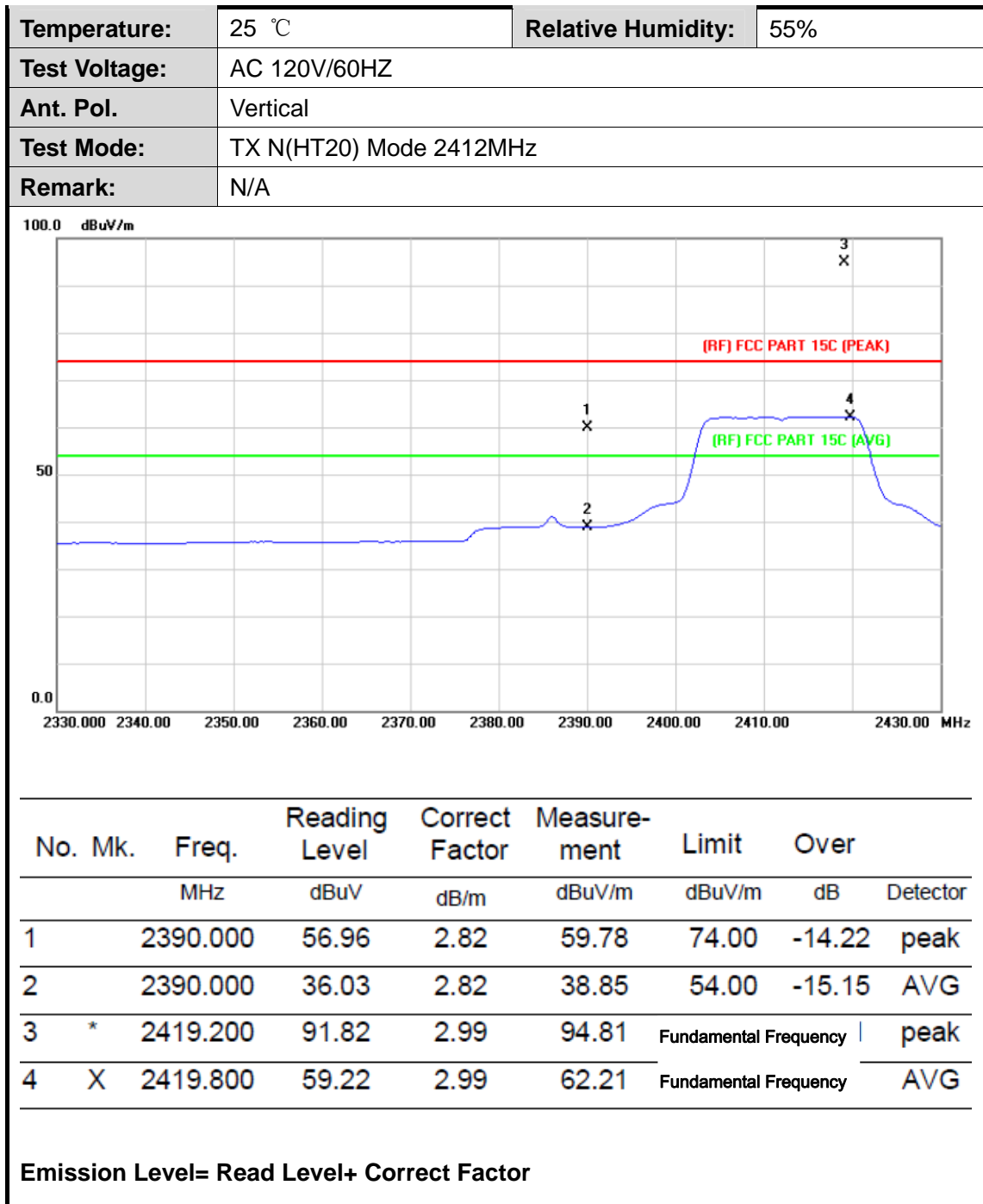
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB Detector
1	X	2459.600	97.17	3.26	100.43	Fundamental Frequency	peak
2	*	2459.600	83.26	3.26	86.52	Fundamental Frequency	AVG
3		2483.500	57.54	3.41	60.95	74.00	-13.05 peak
4		2483.500	34.49	3.41	37.90	54.00	-16.10 AVG

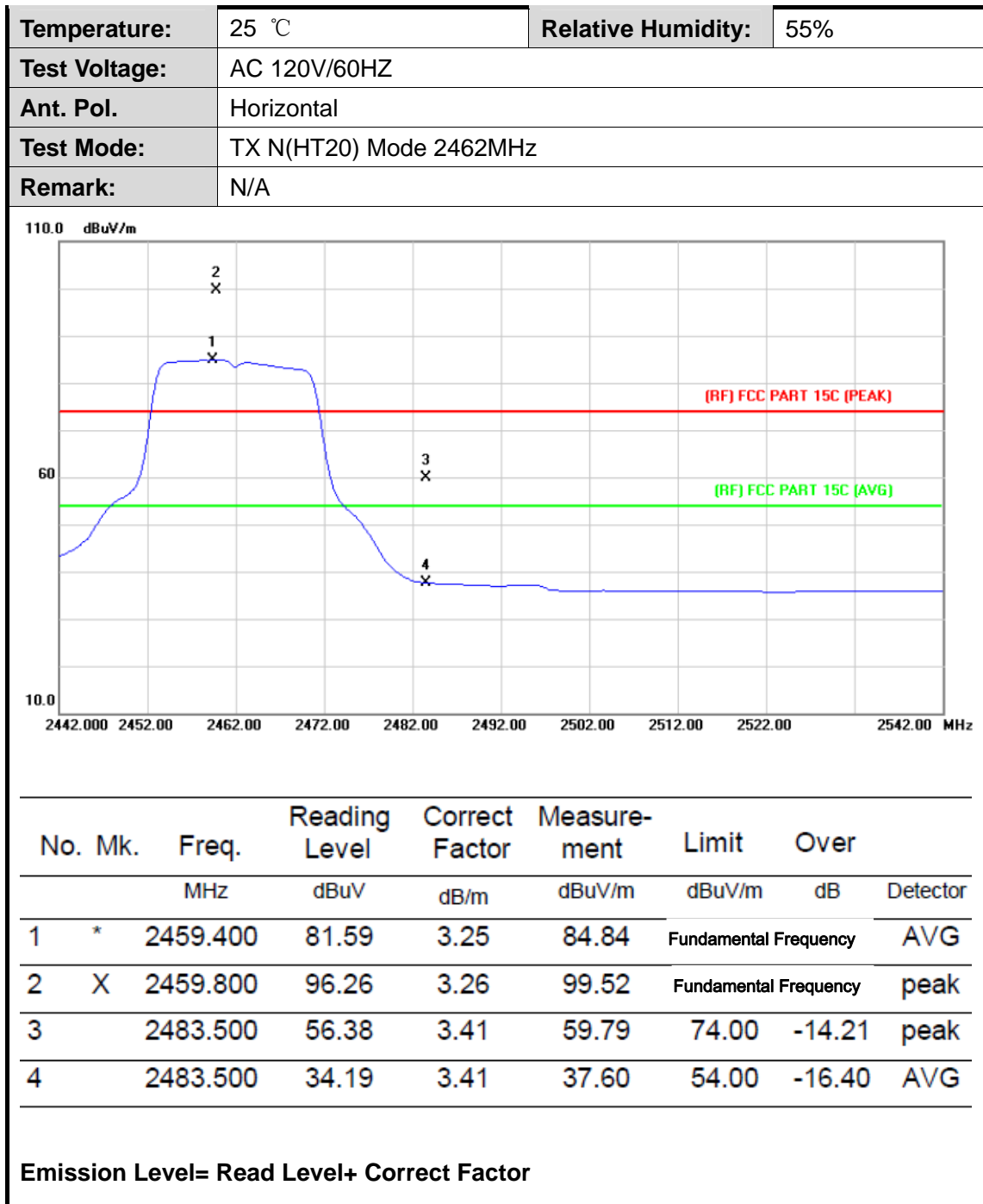
Emission Level= Read Level+ Correct Factor

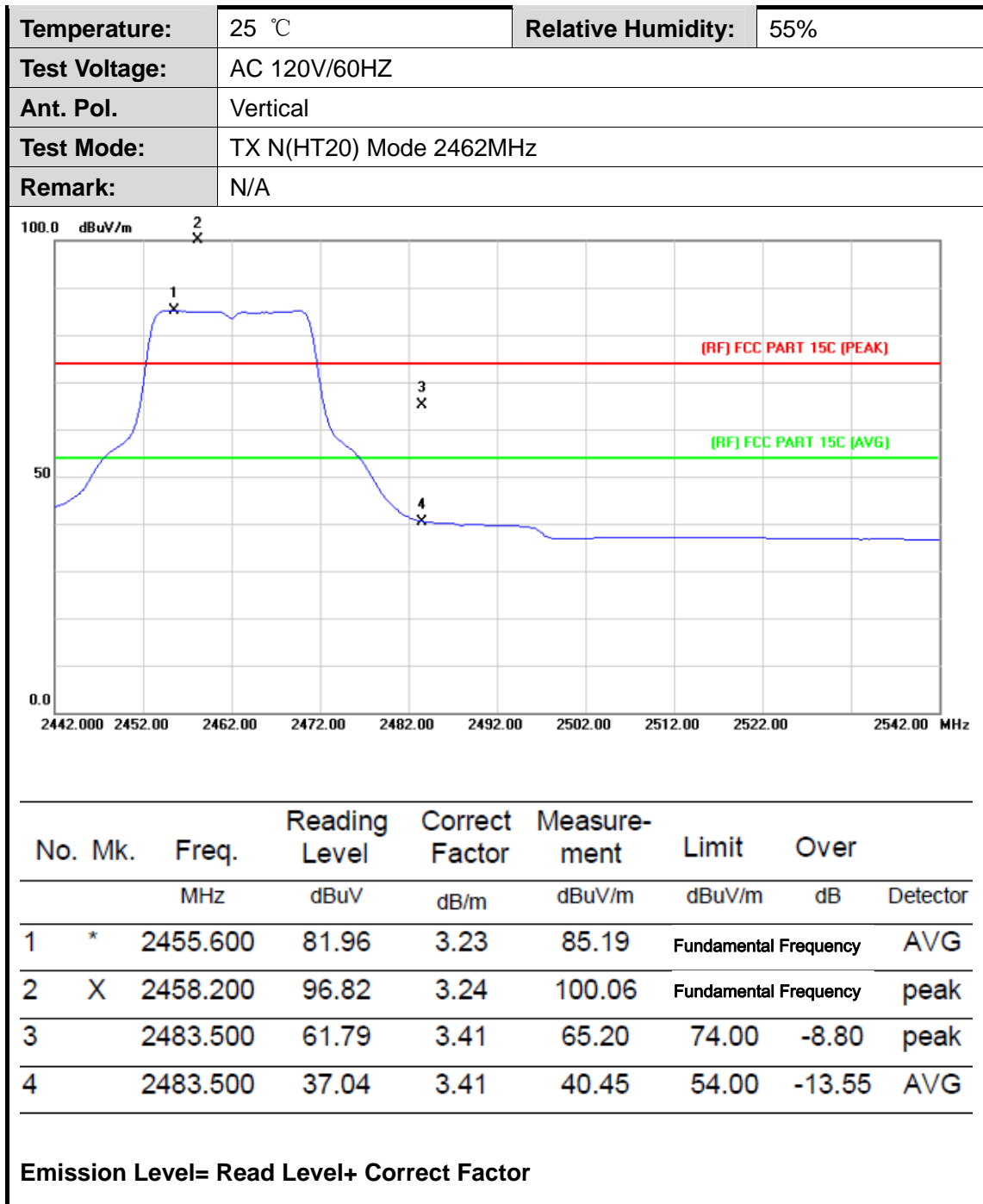






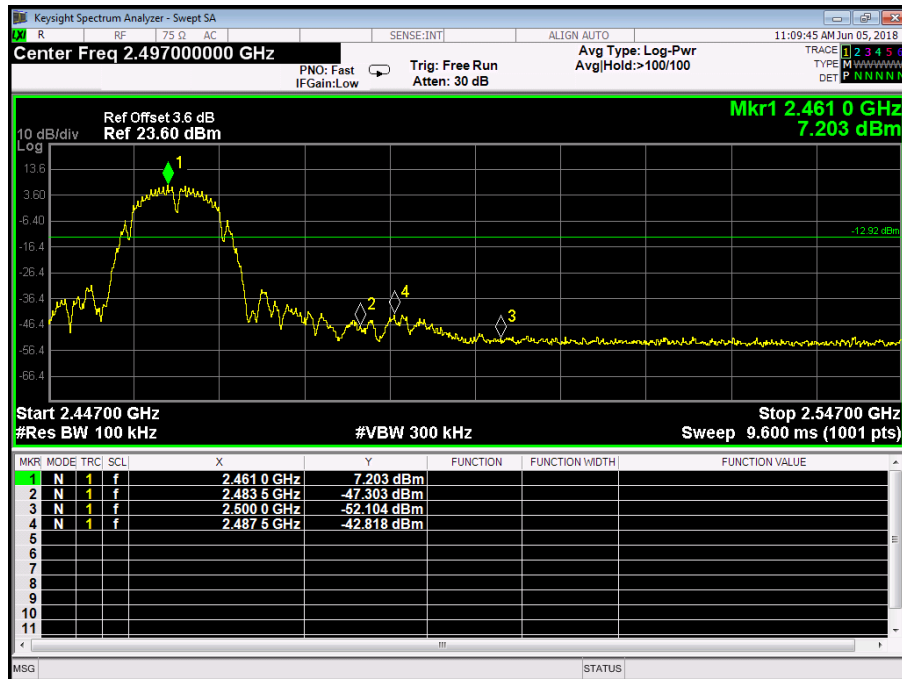
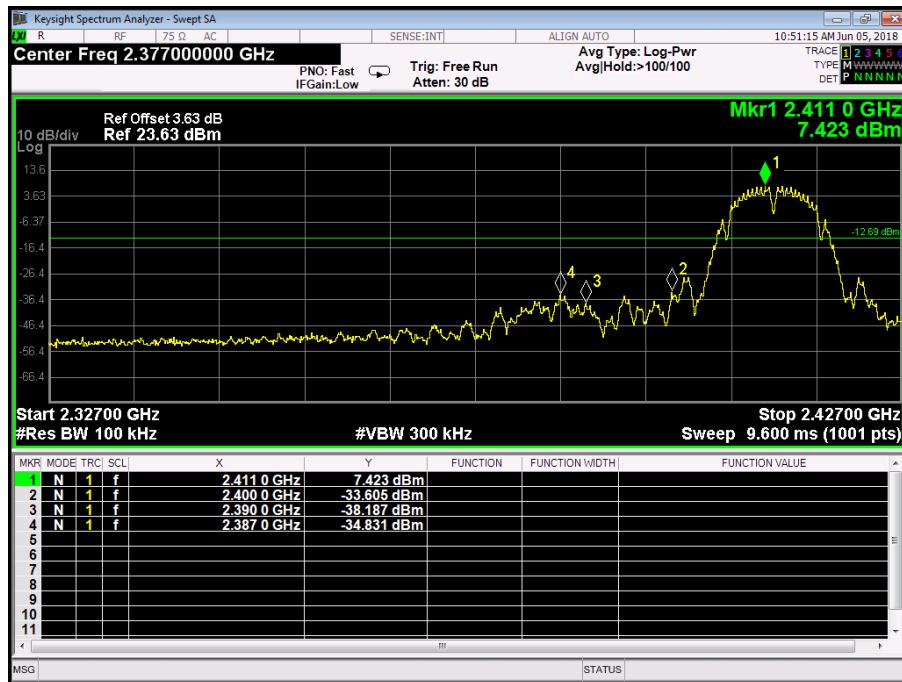




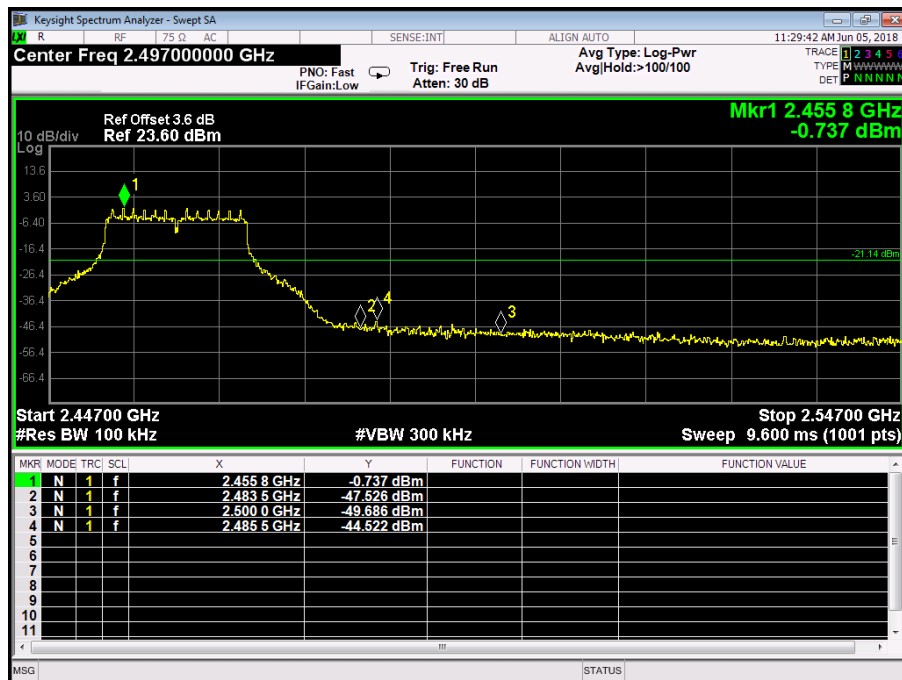
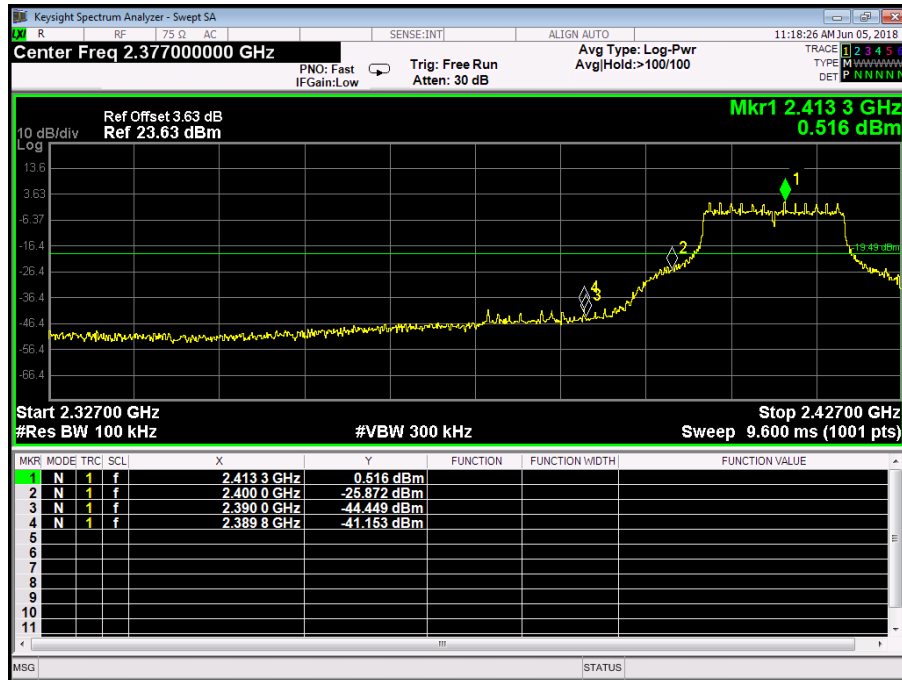


**(2) Conducted Test**

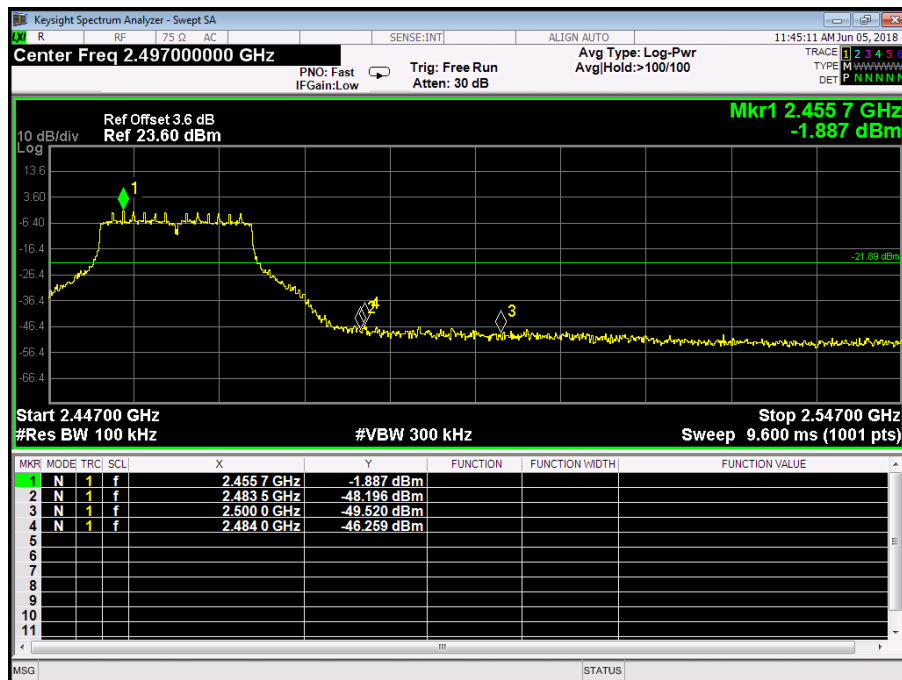
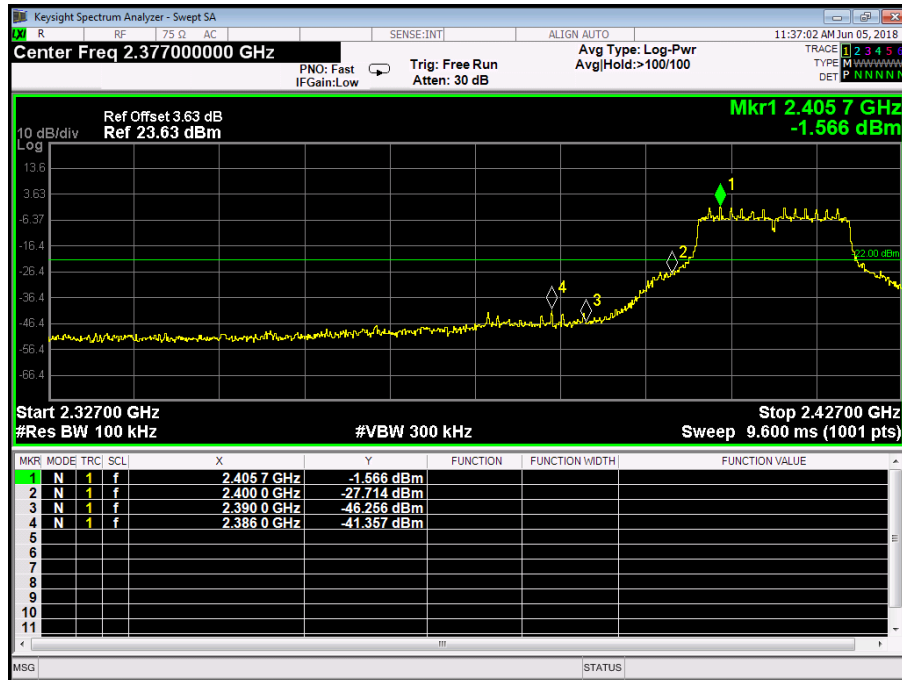
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Test Mode:	TX B Mode 2412MHz / TX B Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		



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



## Attachment D-- Bandwidth Test Data

Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Test Mode:	TX 802.11B Mode		
Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	8.104	11.700	>=0.5
2437	8.545	11.692	
2462	8.105	11.480	

802.11B Mode

2412 MHz

Keysight Spectrum Analyzer - Occupied BW

Center Freq 2.412000000 GHz

Center Freq: 2.412000000 GHz

Trig: Free Run

#Atten: 30 dB

Radio Std: None

Radio Device: BTS

10 dB/div

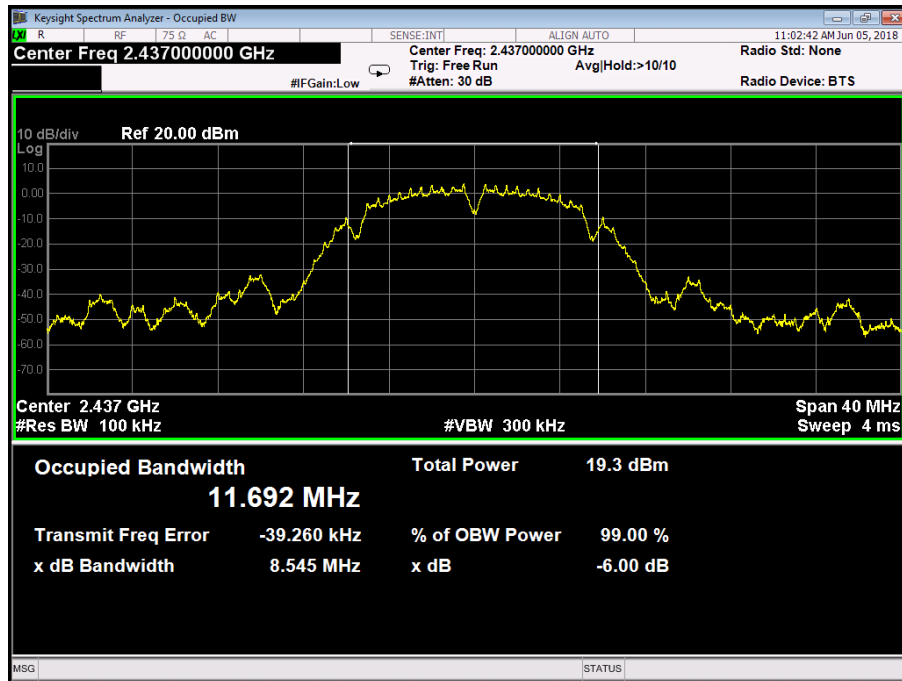
Ref 20.00 dBm

Log



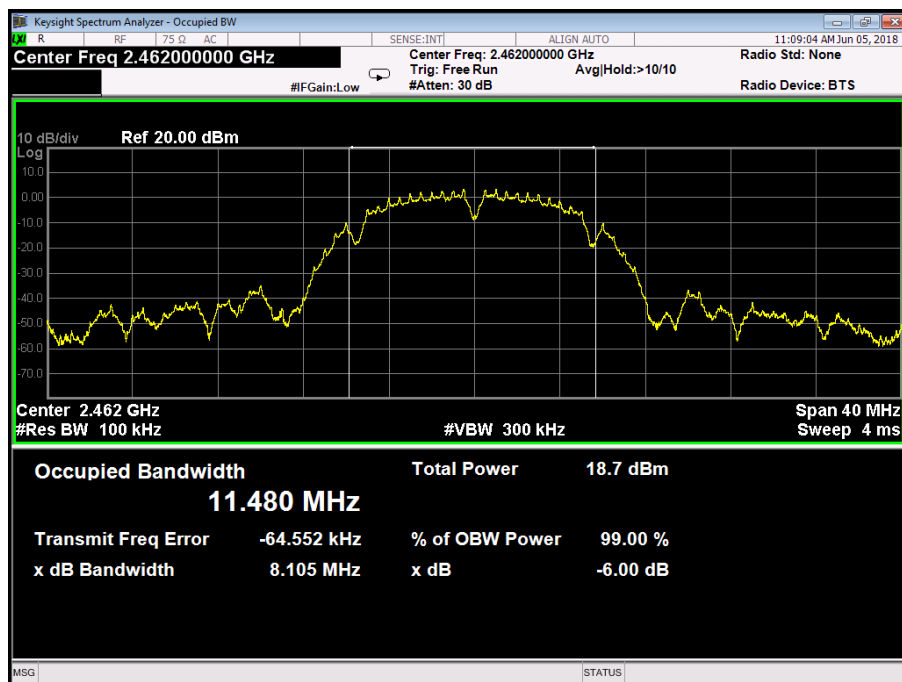
**802.11B Mode**

**2437 MHz**



**802.11B Mode**

**2462 MHz**



Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Test Mode:	TX 802.11G Mode		
Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	16.36	16.610	>=0.5
2437	16.33	16.557	
2462	16.34	16.568	

802.11G Mode

2412 MHz

Keysight Spectrum Analyzer - Occupied BW

R

RF

75 Ω

AC

SENSE:INT

ALIGN AUTO

11:17:28 AM Jun 05, 2018

Center Freq 2.412000000 GHz

Center Freq: 2.412000000 GHz

Trig: Free Run

Avg/Hold:>10/10

Radio Std: None

#FGain:Low

#Atten: 10 dB

Radio Device: BTS

15 dB/div

Ref 20.00 dBm

Log

5.00

-10.0

-25.0

-40.0

-55.0

-70.0

-85.0

-100

-115

Center 2.412 GHz

Span 40 MHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 4 ms

Occupied Bandwidth

16.610 MHz

Total Power

13.9 dBm

Transmit Freq Error

-22.816 kHz

% of OBW Power

99.00 %

x dB Bandwidth

16.36 MHz

x dB

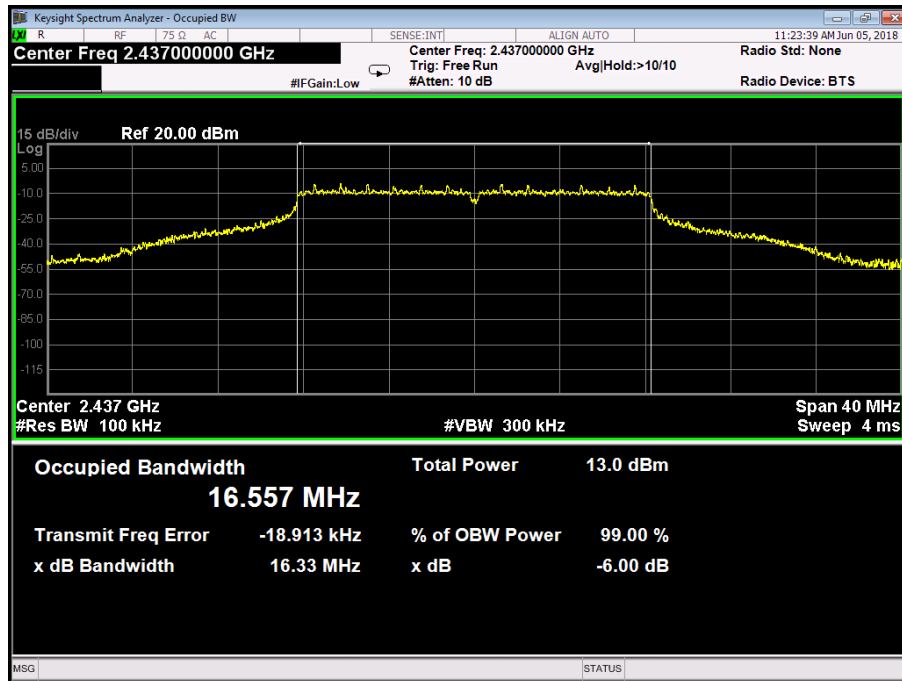
-6.00 dB

MSG

STATUS

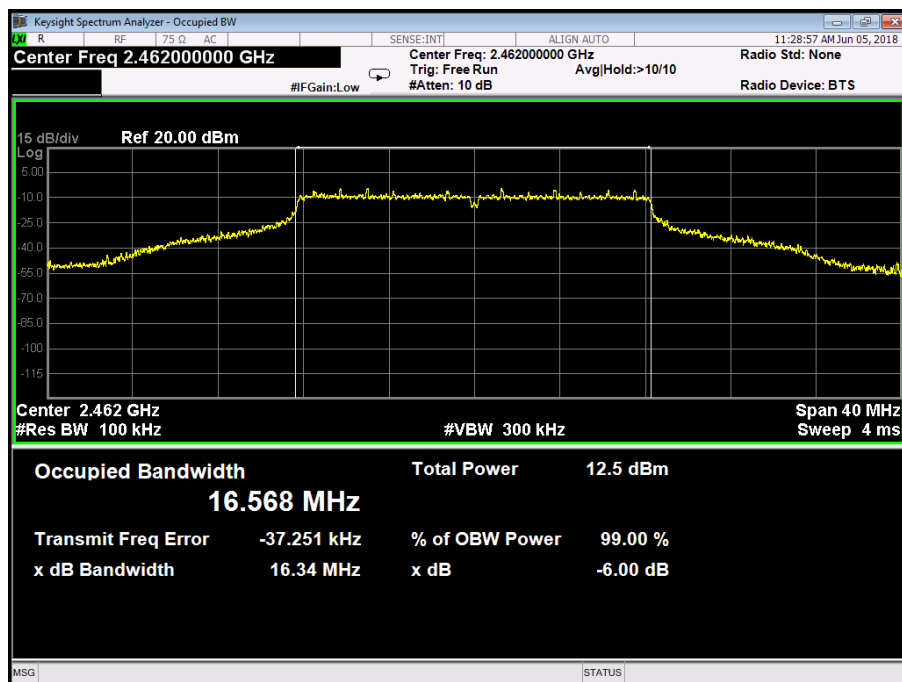
**802.11G Mode**

**2437 MHz**



**802.11G Mode**

**2462 MHz**



Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Test Mode:	TX 802.11N(HT20) Mode		
Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	17.58	17.823	>=0.5
2437	17.59	17.790	
2462	17.58	17.782	

802.11N(HT20) Mode

2412 MHz

Keysight Spectrum Analyzer - Occupied BW

Center Freq 2.412000000 GHz

Center Freq: 2.412000000 GHz

Trig: Free Run

#Atten: 10 dB

Radio Std: None

Radio Device: BTS

11:36:15 AM Jun 05, 2018

ALIGN AUTO

SENSE:INT

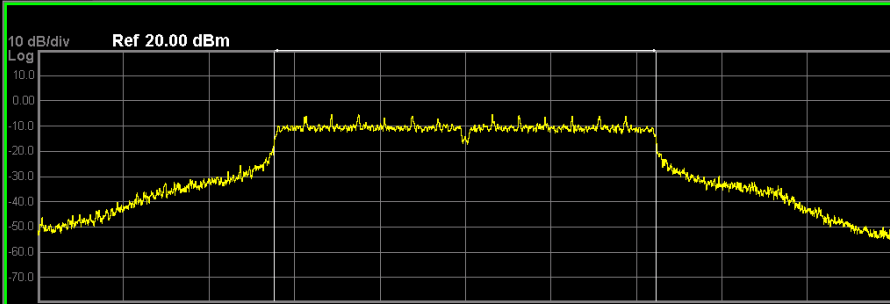
RF 75 G AC

R

10 dB/div

Log

Ref 20.00 dBm



Center 2.412 GHz

#Res BW 100 kHz

#VBW 300 kHz

Span 40 MHz

Sweep 4 ms

Occupied Bandwidth

17.823 MHz

Total Power

11.9 dBm

Transmit Freq Error

-16.747 kHz

% of OBW Power

99.00 %

x dB Bandwidth

17.58 MHz

x dB

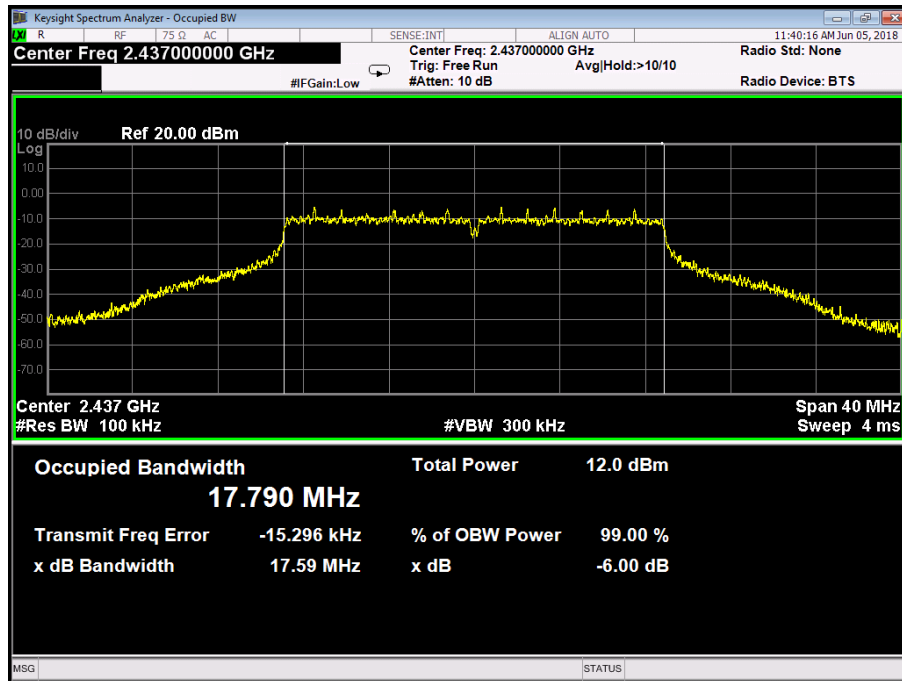
-6.00 dB

MSG

STATUS

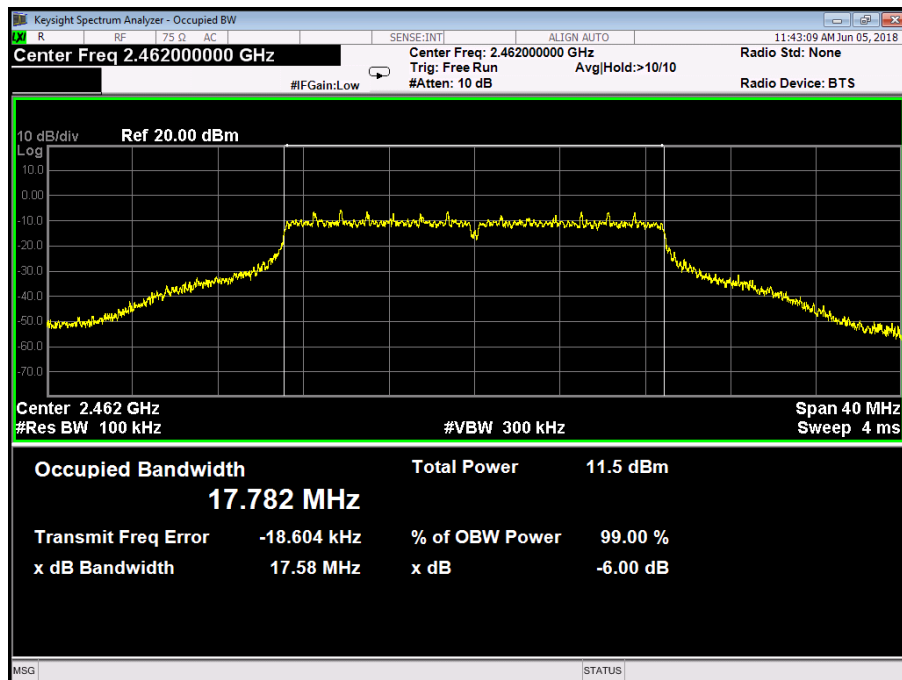
**802.11N(HT20) Mode**

**2437 MHz**



**802.11N(HT20) Mode**

**2462 MHz**

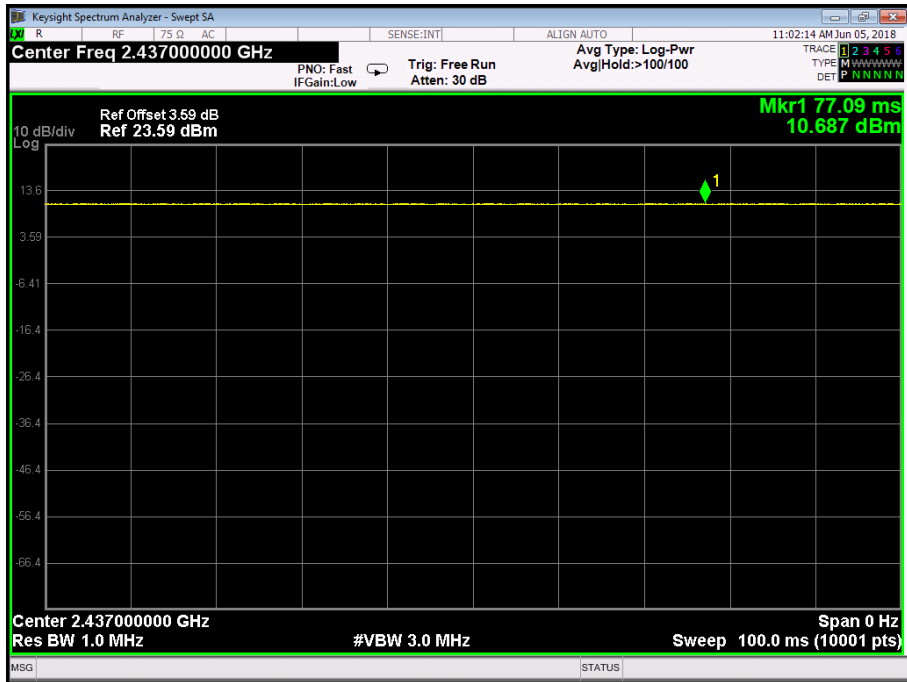


## Attachment E-- Peak Output Power Test Data

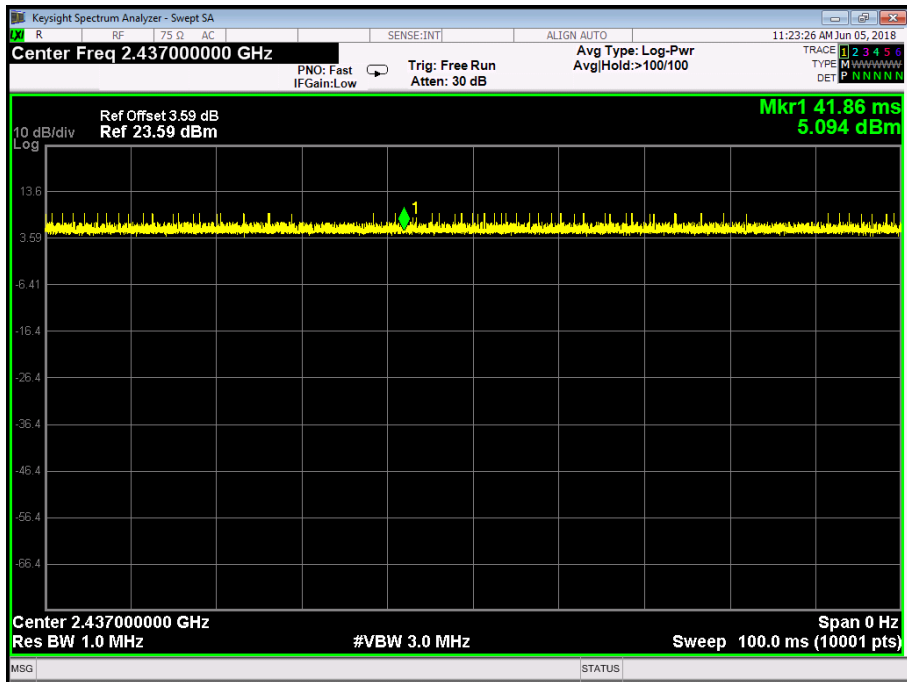
Test Conditions:		Continuous transmitting Mode	
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Mode	Channel frequency (MHz)	Test Result (dBm)	Limit (dBm)
802.11b	2412	17.80	30
	2437	17.72	
	2462	17.19	
802.11g	2412	16.47	
	2437	15.91	
	2462	15.53	
802.11n (HT20)	2412	14.76	
	2437	14.97	
	2462	14.49	
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	
Please see below plots		

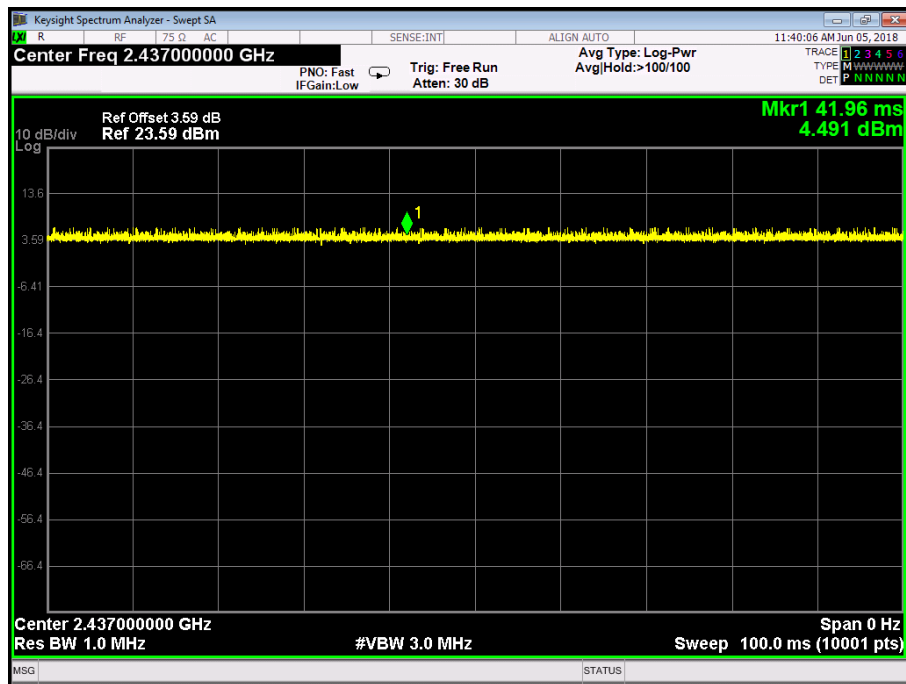
**802.11 B Mode 2437 MHz**



**802.11 G Mode 2437 MHz**



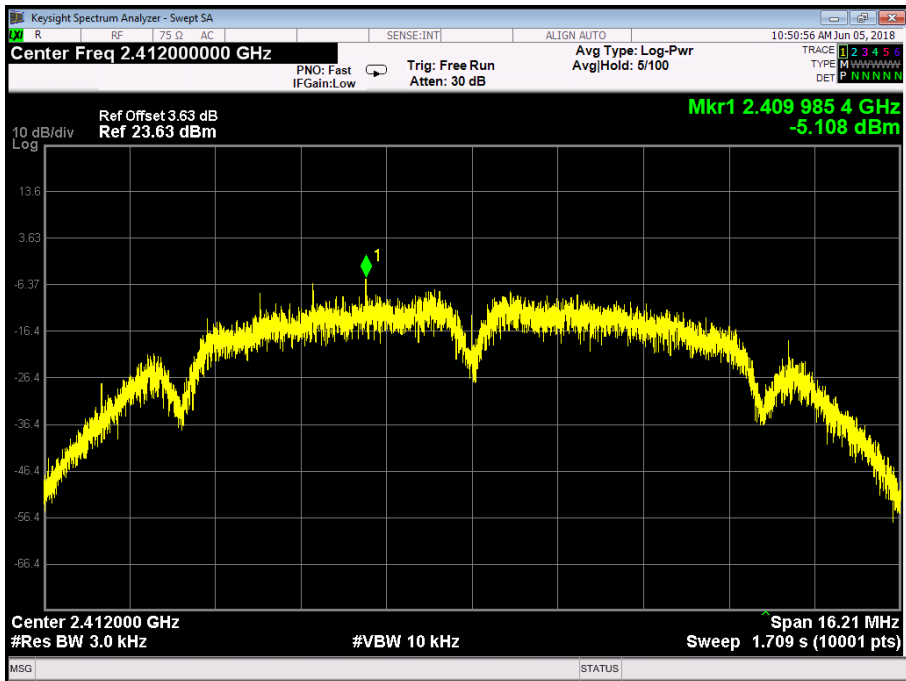
802.11 N(HT20) Mode 2437 MHz





## Attachment F-- Power Spectral Density Test Data

Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60HZ		
Test Mode:	TX 802.11B Mode		
Channel Frequency (MHz)	Power Density (dBm/3 kHz)	Limit (dBm/3kHz)	
2412	-5.108	8	
2437	-5.049		
2462	-5.077		
802.11B Mode			
2412 MHz			



Keysight Spectrum Analyzer - Swept SA

Center Freq 2.41200000 GHz

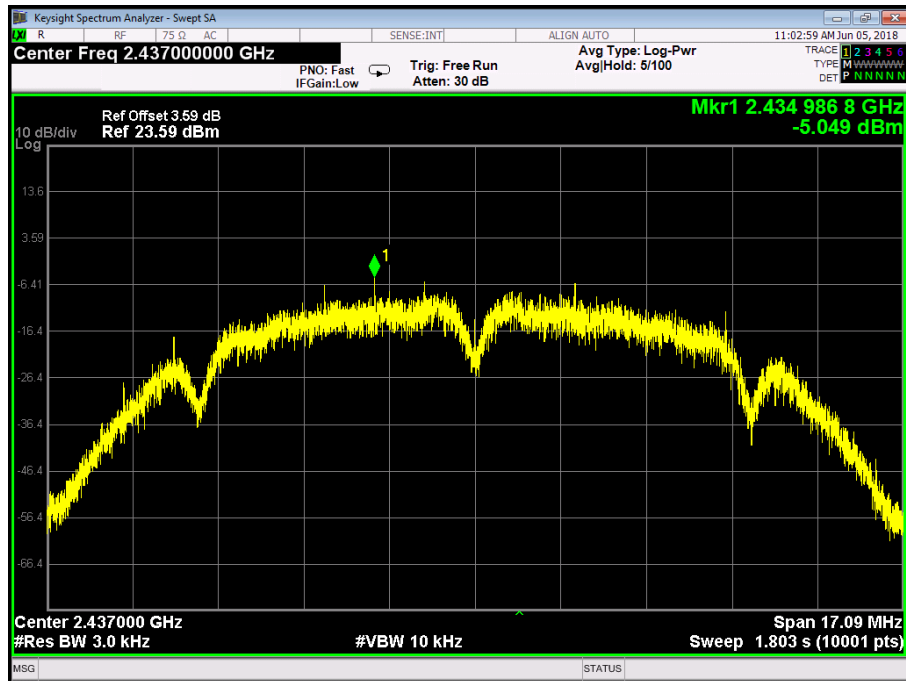
Ref Offset 3.63 dB  
Ref 23.63 dBm

Mkr1 2.409 985 4 GHz  
-5.108 dBm

Center 2.412000 GHz  
#Res BW 3.0 kHz  
#VBW 10 kHz  
Sweep 1.709 s (10001 pts)  
Span 16.21 MHz

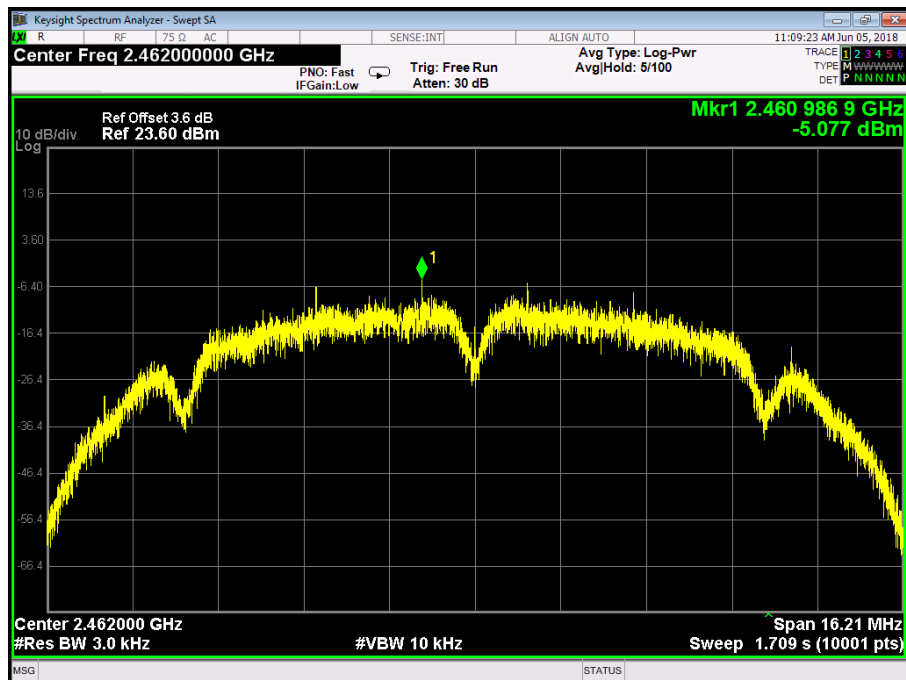
802.11B Mode

2437 MHz



802.11B Mode

2462 MHz



Temperature:	25 °C	Temperature:	25 °C
Test Voltage:	AC 120V/60HZ		
Test Mode:	TX 802.11G Mode		
Channel Frequency (MHz)	Power Density (dBm/3 kHz)	Limit (dBm/3kHz)	
2412	-14.843	8	
2437	-15.511		
2462	-15.918		
802.11G Mode			
2412 MHz			

Keysight Spectrum Analyzer - Swept SA

R

RF

75 Ω

AC

SENSE:INT

ALIGN AUTO

11:17:48 AM Jun 05, 2018

Center Freq 2.41200000 GHz

PNO: Fast  
IFGain:Low

Trig: Free Run  
Atten: 30 dB

Avg Type: Log-Pwr  
Avg/Hold: 2/100

TRACE 1 2 3 4 5 6  
TYPE R N N N N N N  
DET P N N N N N

10 dB/div  
Log

Ref Offset 3.63 dB  
Ref 23.63 dBm

Mkr1 2.408 804 GHz  
-14.843 dBm

Center 2.41200 GHz  
#Res BW 3.0 kHz

#VBW 10 kHz

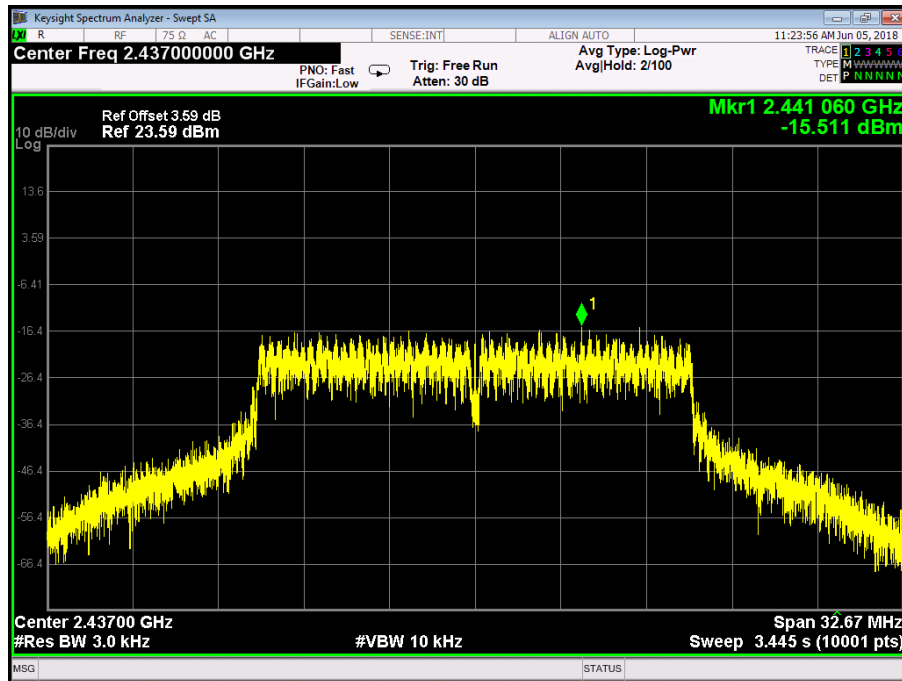
Span 32.71 MHz  
Sweep 3.449 s (10001 pts)

MSG

STATUS

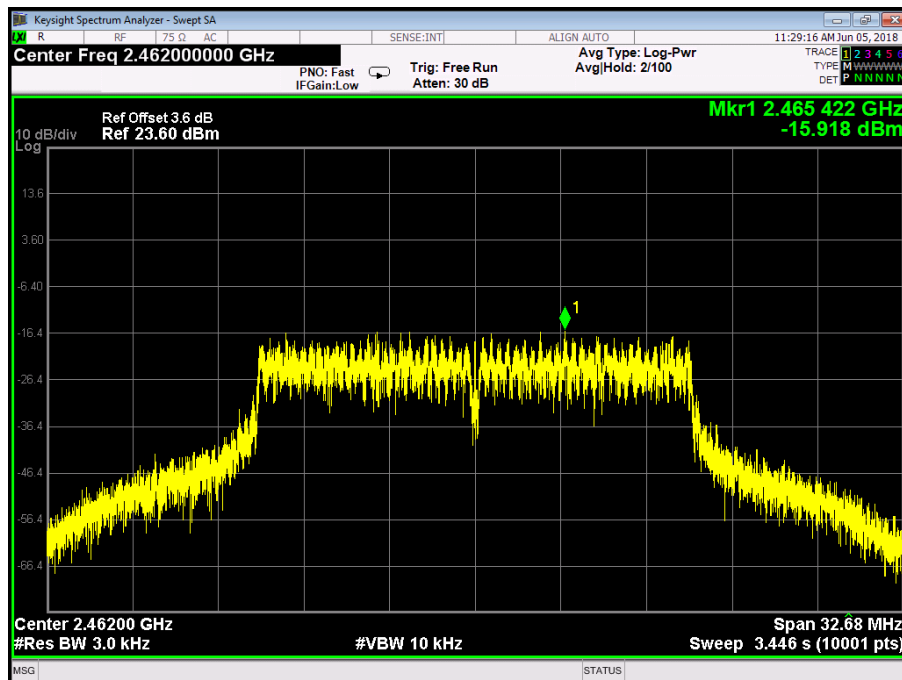
**802.11G Mode**

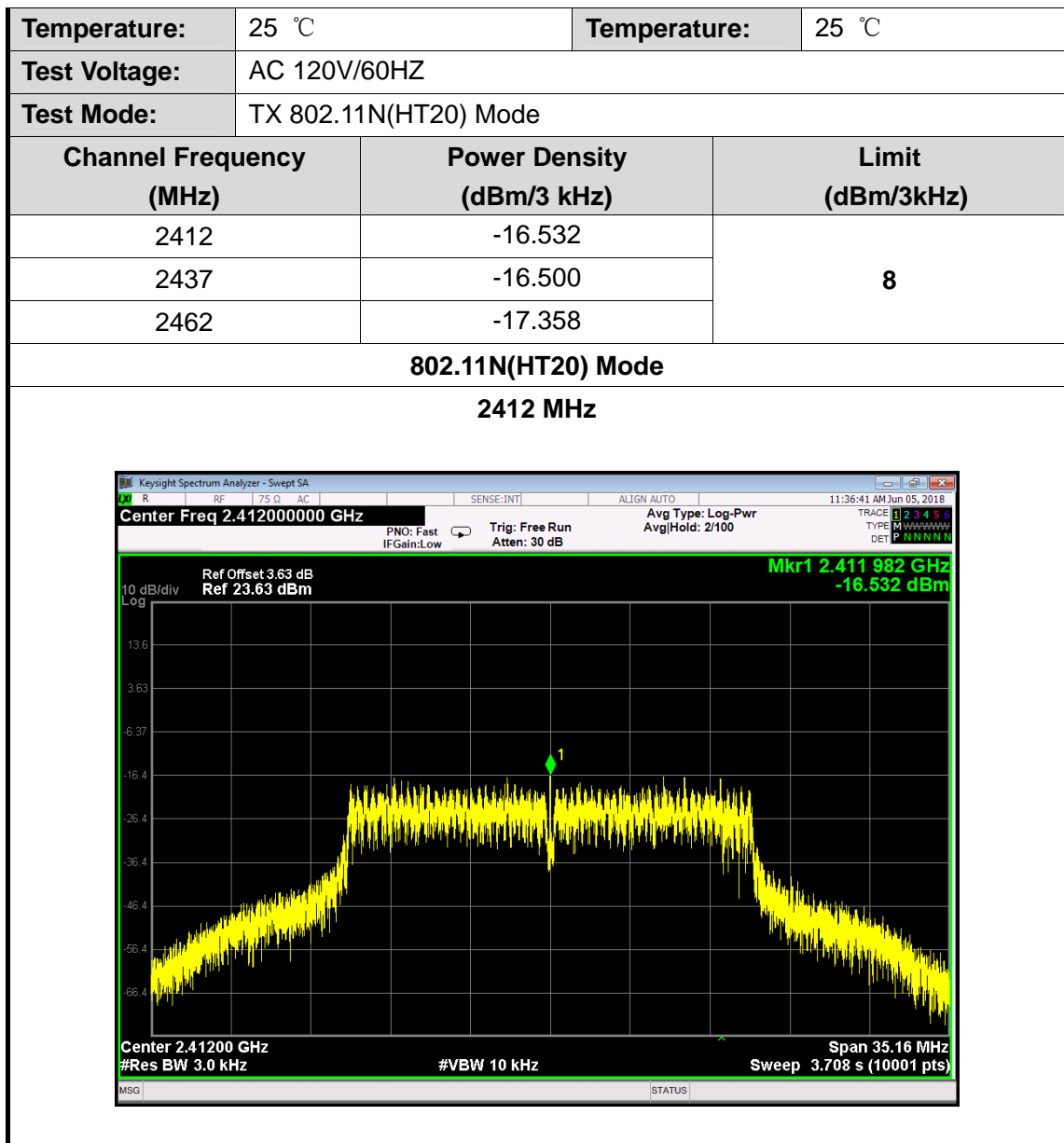
**2437 MHz**



**802.11G Mode**

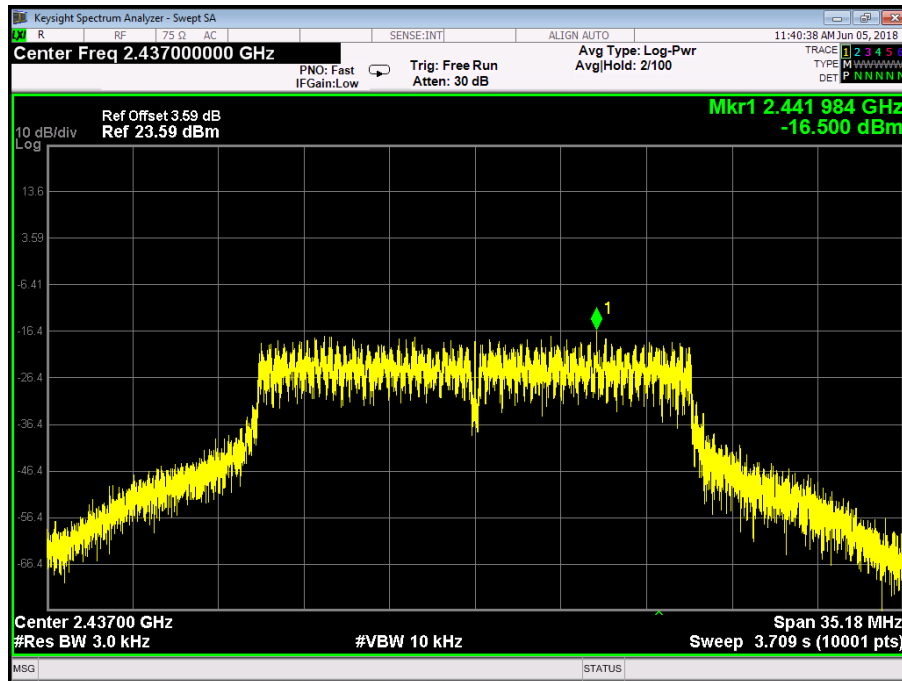
**2462 MHz**





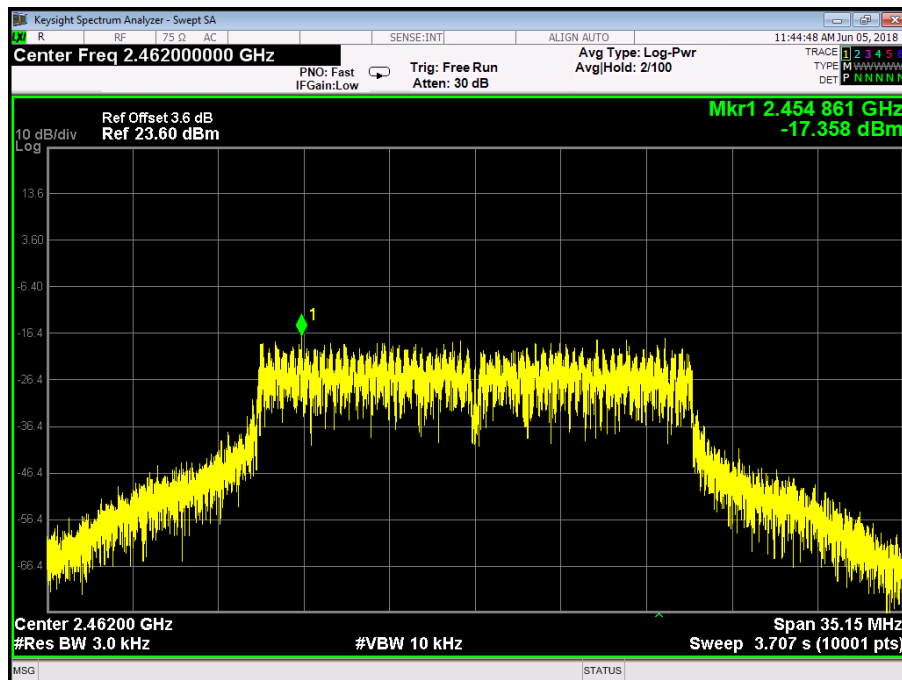
**802.11N(HT20) Mode**

**2437 MHz**



**802.11N(HT20) Mode**

**2462 MHz**



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