

# FCC Radio Test Report

## FCC ID: 2APWK-MT08

**Report No.** : TB-FCC159579  
**Applicant** : Shenzhen Mingtuo Technology Co., Ltd.  
**Equipment Under Test (EUT)**  
**EUT Name** : Wireless Keyboard  
**Model No.** : MT08  
**Serial Model No.** : MT10, i8  
**Brand Name** : N/A  
**Receipt Date** : 2018-04-24  
**Test Date** : 2018-04-25 to 2018-05-16  
**Issue Date** : 2018-05-17  
**Standards** : FCC Part 15, Subpart C (15.249: 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 requirements

**Test/Witness Engineer** :

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**Engineer Supervisor**

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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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## Revision History

Report No.	Version	Description	Issued Date
TB-FCC159579	Rev.01	Initial issue of report	2018-05-17



## 1. General Information about EUT

### 1.1 Client Information

<b>Applicant</b>	:	Shenzhen Mingtuo Technology Co., Ltd.
<b>Address</b>	:	Room 608, Building 407, Sangda Industrial Area, Lanhai Road, Huaqiang North Street, Futian District, Shenzhen City, China
<b>Manufacturer</b>	:	Shenzhen Mingtuo Technology Co., Ltd.
<b>Address</b>	:	Room 402, Building 4, Jingsheng Industrial Area, Dalang Street, Longhua New District, Shenzhen, China

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

EUT Name	:	Wireless Keyboard	
Models No.	:	MT08, MT10, i8	
Model Difference	:	All these models are identical in the same PCB, layout and electrical circuit, the only difference is apperance of color.	
Product Description	:	Operation Frequency: 2407~2476MHz	
		Number of Channels:	70 Channels(See Note 2)
		Out Power:	95.12 dBuV/m@3m Peak 91.05 dBuV/m@3m Avg
		Antenna Gain:	0 dBi PCB Antenna
		Modulation Type:	GFSK
		Data Rate:	2Mbps
Power Rating	:	DC 5.0 V from the USB Cable. DC 3.7V 1020mAh by Rechargeable Li-ion Battery.	
Software Version	:	N/A	
Hardware Version	:	N/A	
Connecting I/O Port(S)	:	Please refer to the User's Manual	

**Note:**

- (1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- (2) Channel List:

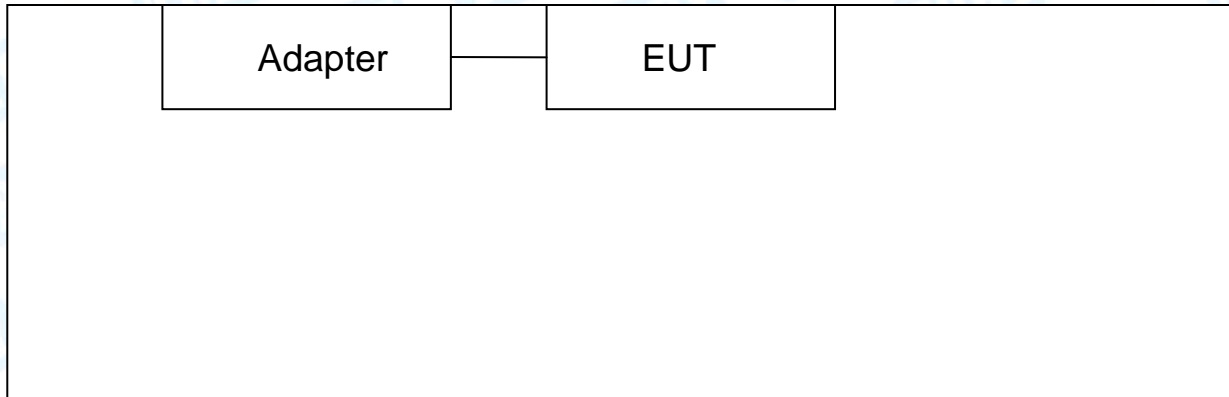
Bluetooth Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2407	27	2434	54	2461
01	2408	28	2435	55	2462

02	2409	29	2436	56	2463
03	2410	30	2437	57	2464
04	2411	31	2438	58	2465
05	2412	32	2439	59	2466
06	2413	33	2440	60	2467
07	2414	34	2441	61	2468
08	2415	35	2442	62	2469
09	2416	36	2443	63	2470
10	2417	<b>37</b>	<b>2444</b>	64	2471
11	2418	38	2445	65	2472
12	2419	39	2446	66	2473
13	2420	40	2447	67	2474
14	2421	41	2448	68	2475
15	2422	42	2449	<b>69</b>	<b>2476</b>
16	2423	43	2450		
17	2424	44	2451		
18	2425	45	2452		
19	2426	46	2453		
20	2427	47	2454		
21	2428	48	2455		
22	2429	49	2456		
23	2430	50	2457		
24	2431	51	2458		
25	2432	52	2459		
26	2433	53	2460		

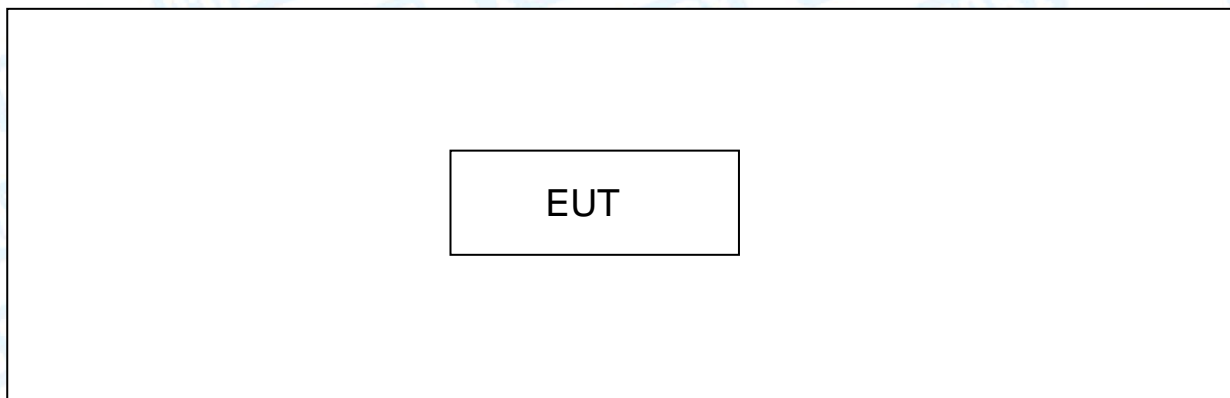


### 1.3 Block Diagram Showing the Configuration of System Tested

#### USB Charging Mode



#### TX Mode



### 1.4 Description of Support Units

Equipment Information				
Name	Model	FCC ID/VOC	Manufacturer	Used “√”
Adapter	BSY02D050200V	----	BSY	√
Cable Information				
Number	Shielded Type	Ferrite Core	Length	Note
Cable 1	YES	YES	0.1M	

## 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 Mode
For Radiated Test	
Final Test Mode	Description
Mode 2	TX Mode(CH00/CH37/CH069)

### Note:

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.

- (1)According to ANSI C63.10 standards, the measurements are performed at the highest, middle, lowest available channels.
- (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; it was pre-tested on the positioned of each 3 axis, X-plane, Y-plane and Z-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 RF mode.

Test Software Version	N/A		
Frequency	2407 MHz	2444MHz	2476 MHz
GFSK	DEF	DEF	DEF



## 1.7 Measurement Uncertainty

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

Test Item	Parameters	Expanded Uncertainty ( $U_{Lab}$ )
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	$\pm 3.42$ 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(15.249)			
Standard Section	Test Item	Judgment	Remark
15.203	Antenna Requirement	PASS	N/A
15.205	Restricted Bands	PASS	N/A
15.207	AC Power Conducted Emission	PASS	N/A
15.249 & 15.209	Radiated Spurious Emission	PASS	N/A
15.215(C)	20dB Bandwidth	PASS	N/A
<b>Note:</b> 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.16, 2018	Mar. 15, 2019
Pre-amplifier	HP	8449B	3008A00849	Mar.16, 2018	Mar. 15, 2019
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar.16, 2018	Mar. 15, 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

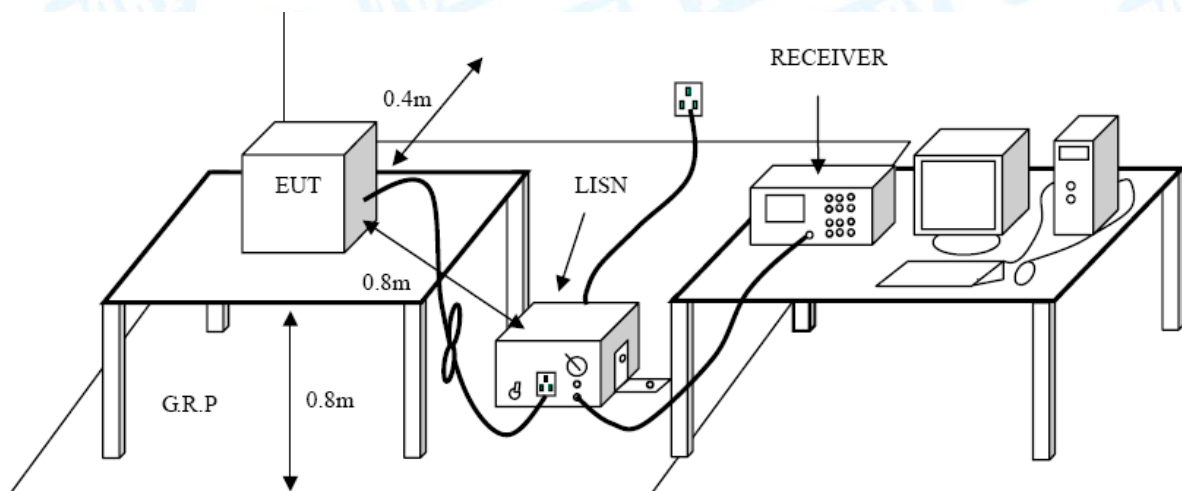
Notes:

(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 is 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 Limit (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 Meters (at 3m)	
	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)

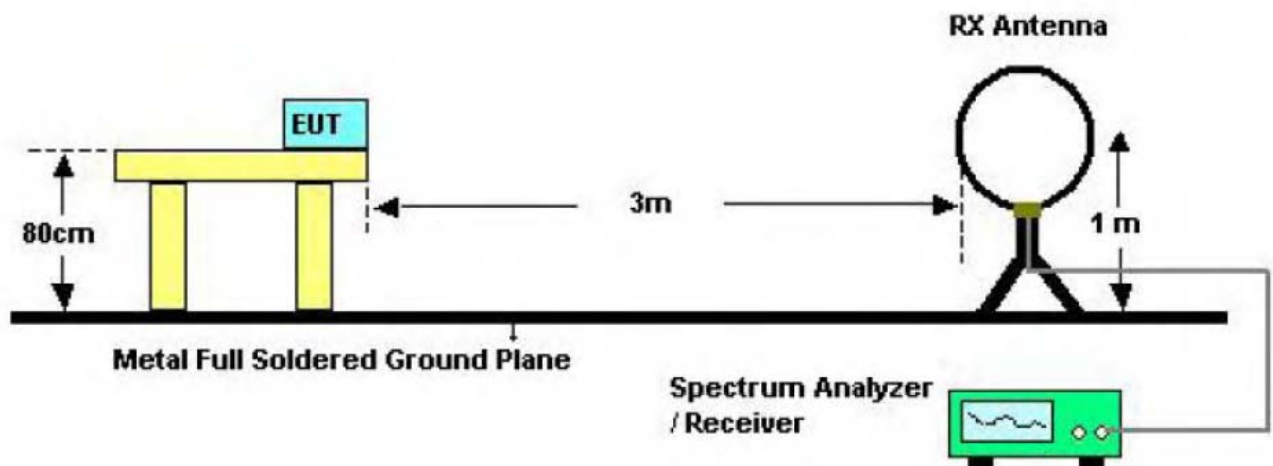
#### Limits of radiated emission measurement (15.249)

FCC Part 15 (15.249), Subpart C	
Limit	Frequency Range (MHz)
Field strength of fundamental 50000 $\mu$ V/m (94 dB $\mu$ V/m) @ 3 m	2400~2483.5
Field strength of fundamental 500 $\mu$ V/m (94 dB $\mu$ V/m) @ 3 m	Above 2483.5

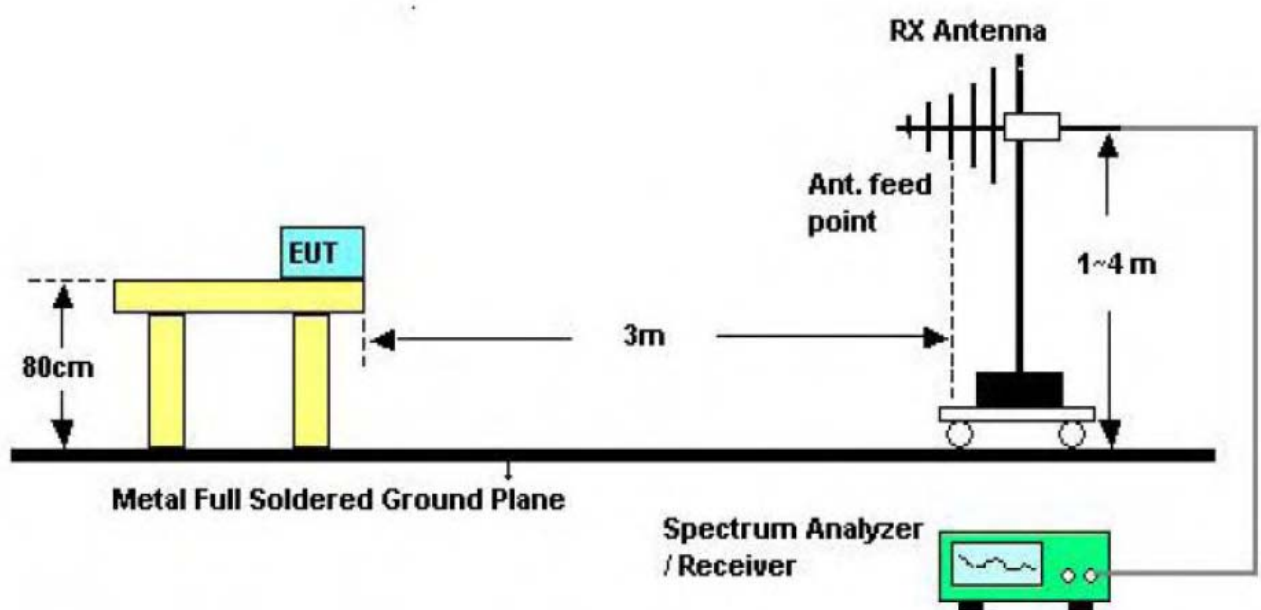
**Restricted bands requirement for equipment operating in 2400MHz to 2483.5 MHz (15.249)**

Restricted Frequency Band (MHz)	(dBuV/m)(at 3 M)
2310~2390	Attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in 15.209, whichever is the lesser attenuation
2483.5~2500	

## 5.2 Test Setup

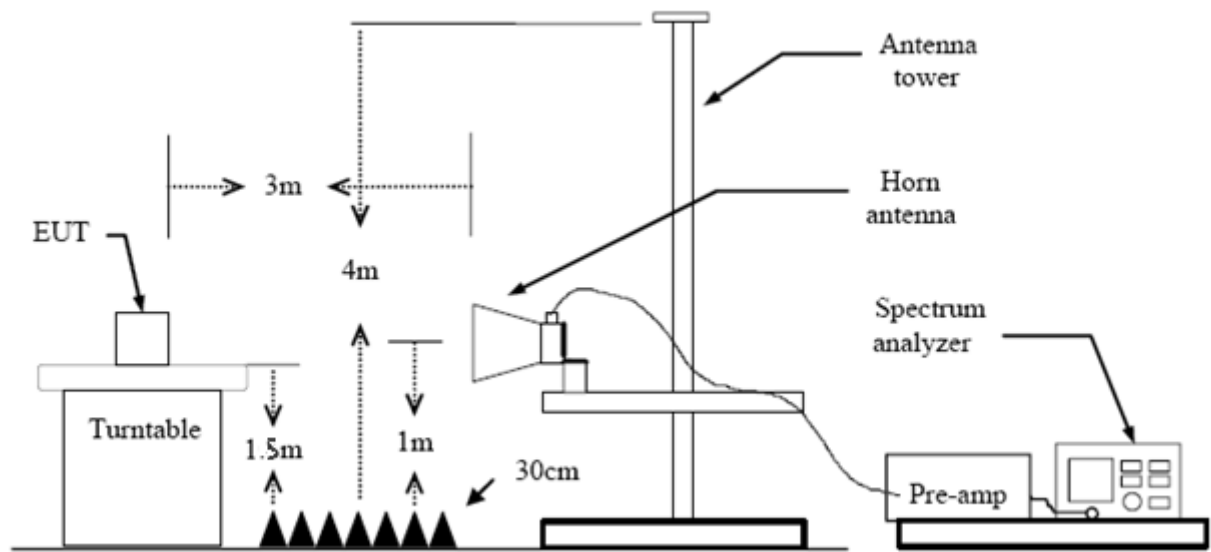


## Bellow 30MHz Test Setup



## Bellow 1000MHz Test Setup





Above 1GHz Test Setup

### 5.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency Below 1GHz. 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.

## 5.4 EUT Operating Condition

The EUT was set to Continual Transmitting in maximum power, and new batteries are used during testing.

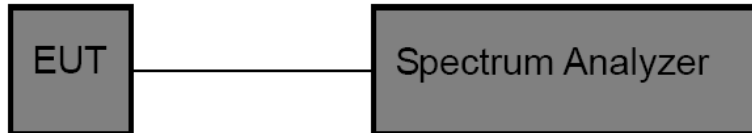
## 5.5 Test Data

Please refer to the Attachment B.



## 6. Bandwidth Test

### 6.1 Test Setup



### 6.2 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting:  
Bandwidth: RBW=100 kHz, VBW=300kHz.
- (3) The bandwidth is measured at an amplitude level reduced 20dB 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.

### 6.3 EUT Operating Condition

The EUT was set to continuously transmitting for the Bandwidth Test.

### 6.4 Test Data

Please refer to the Attachment C.

## 7. Antenna Requirement

### 7.1 Standard Requirement

#### 7.1.1 Standard

FCC Part 15.203

#### 7.1.2 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.

### 7.2 Antenna Connected Construction

The gains of the antenna used for transmitting is 0dBi, and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

### 7.3 Result

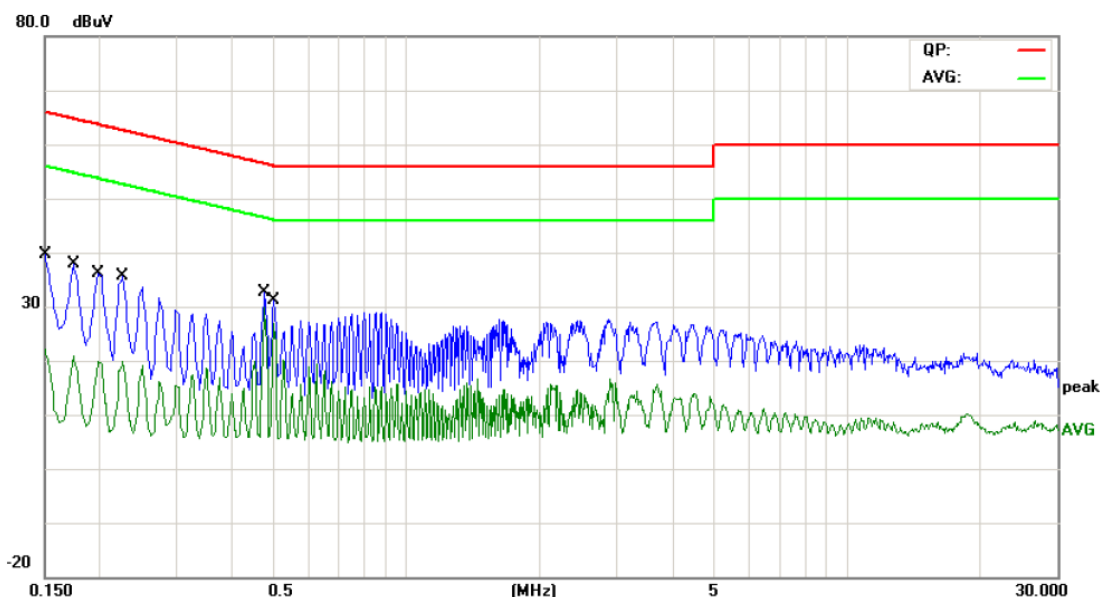
The EUT antenna is a PCB Antenna. It complies with the standard requirement.

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



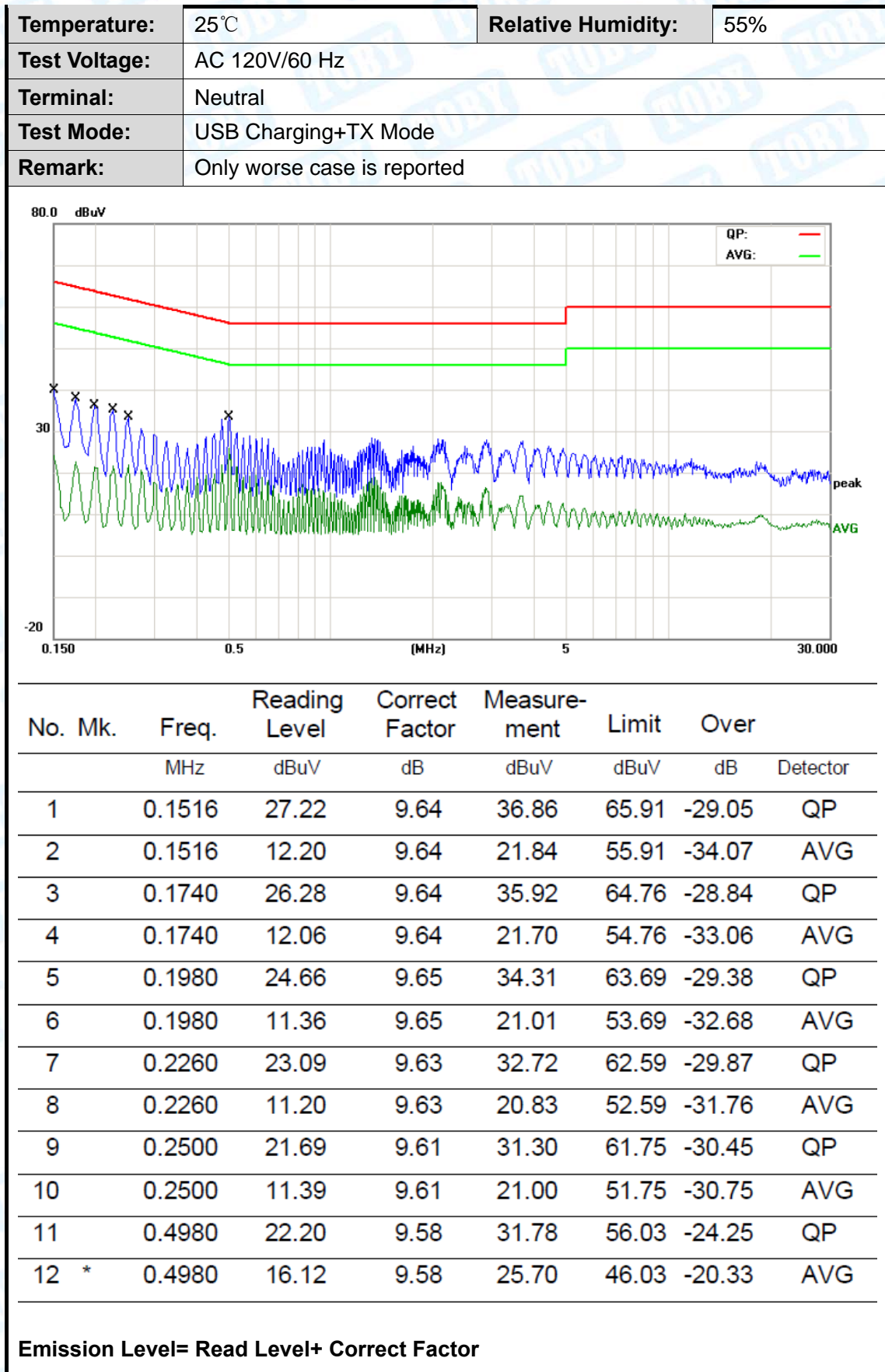
## Attachment A--Conducted Emission Test Data

Temperature:	25°C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Terminal:	Line		
Test Mode:	USB Charging+TX Mode		
Remark:	Only worse case is reported		



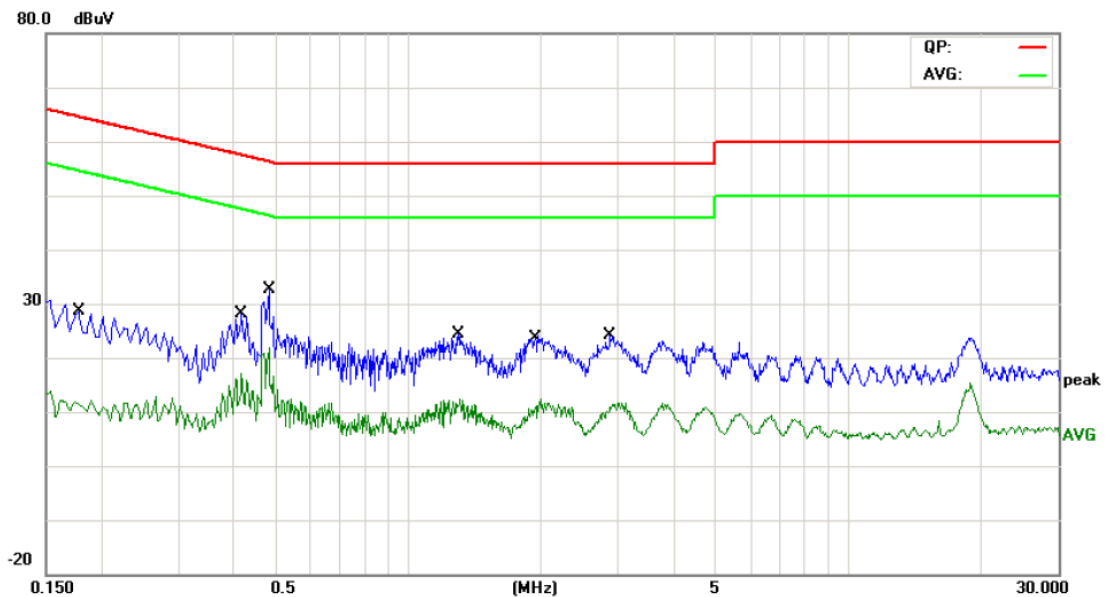
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1500	28.51	9.58	38.09	65.99	-27.90	QP
2		0.1500	11.32	9.58	20.90	55.99	-35.09	AVG
3		0.1740	26.52	9.58	36.10	64.76	-28.66	QP
4		0.1740	10.21	9.58	19.79	54.76	-34.97	AVG
5		0.1980	25.09	9.58	34.67	63.69	-29.02	QP
6		0.1980	10.07	9.58	19.65	53.69	-34.04	AVG
7		0.2260	23.42	9.58	33.00	62.59	-29.59	QP
8		0.2260	9.59	9.58	19.17	52.59	-33.42	AVG
9		0.4740	21.29	9.60	30.89	56.44	-25.55	QP
10	*	0.4740	20.03	9.60	29.63	46.44	-16.81	AVG
11		0.4980	19.31	9.60	28.91	56.03	-27.12	QP
12		0.4980	17.19	9.60	26.79	46.03	-19.24	AVG

Emission Level= Read Level+ Correct Factor



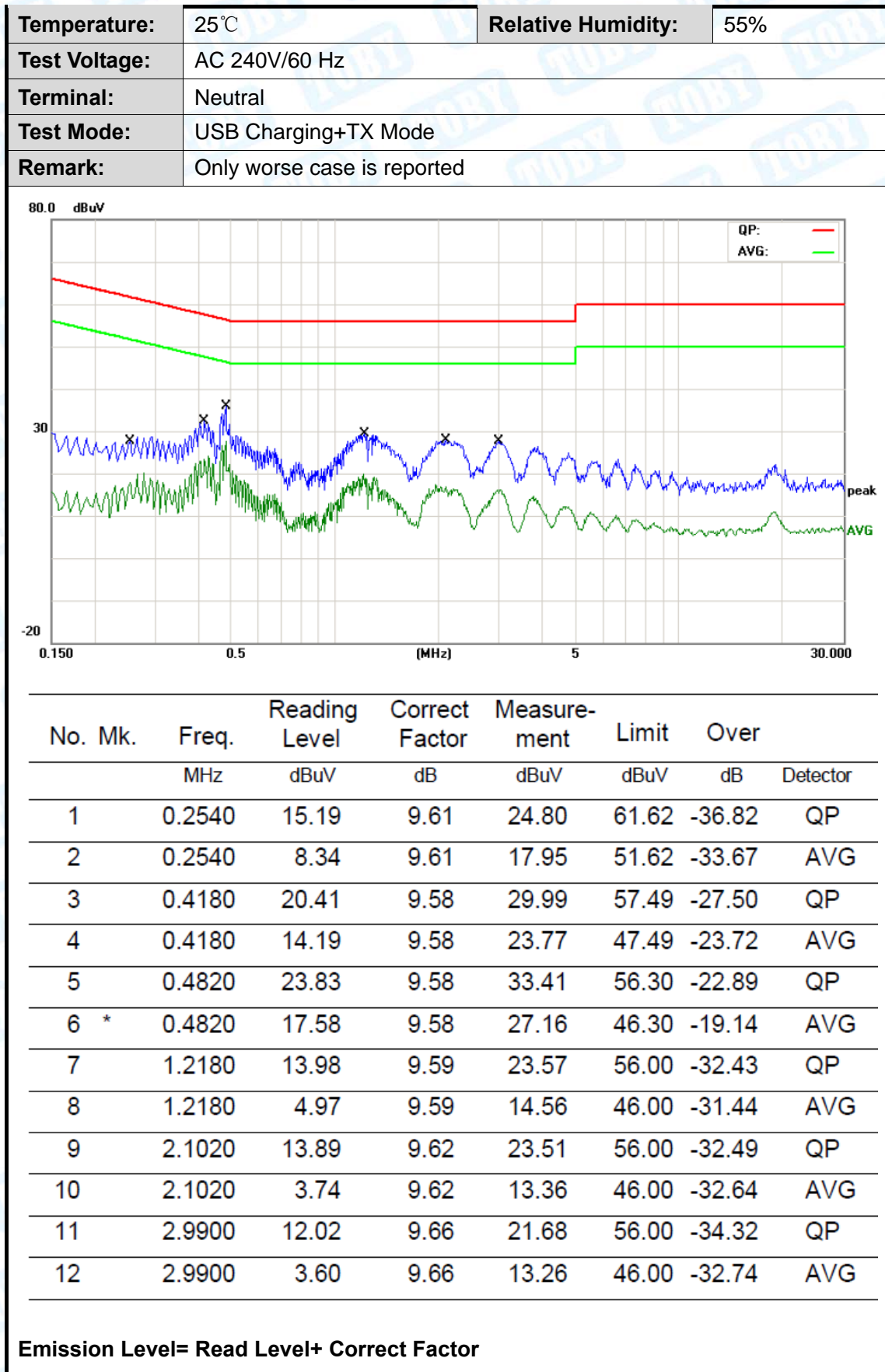


Temperature:	25°C	Relative Humidity:	55%
Test Voltage:	AC 240V/60 Hz		
Terminal:	Line		
Test Mode:	USB Charging+TX Mode		
Remark:	Only worse case is reported		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1780	16.21	9.58	25.79	64.57	-38.78	QP
2		0.1780	0.97	9.58	10.55	54.57	-44.02	AVG
3		0.4180	15.01	9.60	24.61	57.49	-32.88	QP
4		0.4180	6.80	9.60	16.40	47.49	-31.09	AVG
5		0.4820	19.84	9.60	29.44	56.30	-26.86	QP
6	*	0.4820	12.43	9.60	22.03	46.30	-24.27	AVG
7		1.3020	10.81	9.60	20.41	56.00	-35.59	QP
8		1.3020	2.51	9.60	12.11	46.00	-33.89	AVG
9		1.9460	10.50	9.61	20.11	56.00	-35.89	QP
10		1.9460	0.49	9.61	10.10	46.00	-35.90	AVG
11		2.8820	9.20	9.64	18.84	56.00	-37.16	QP
12		2.8820	0.64	9.64	10.28	46.00	-35.72	AVG

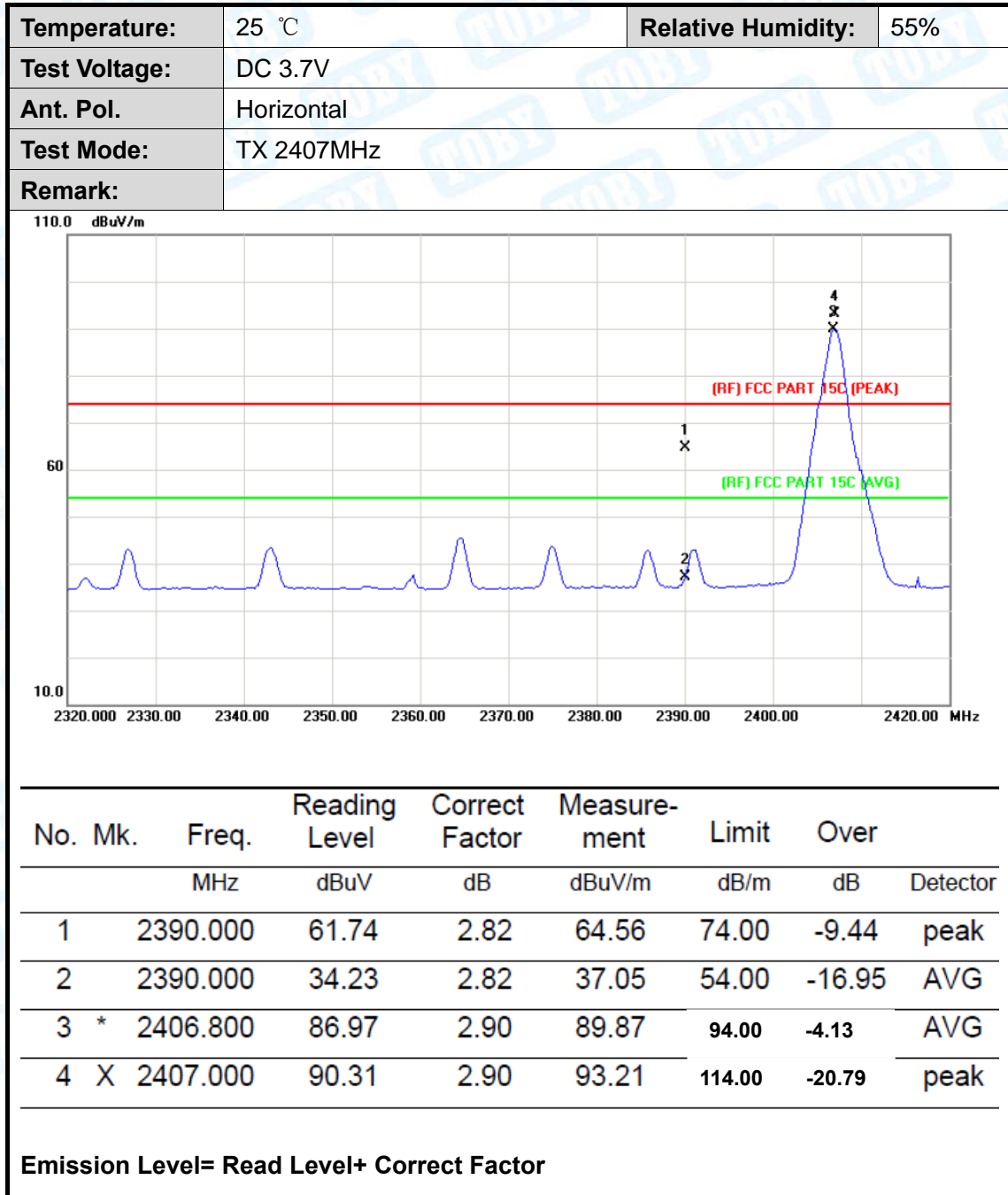
Emission Level= Read Level+ Correct Factor



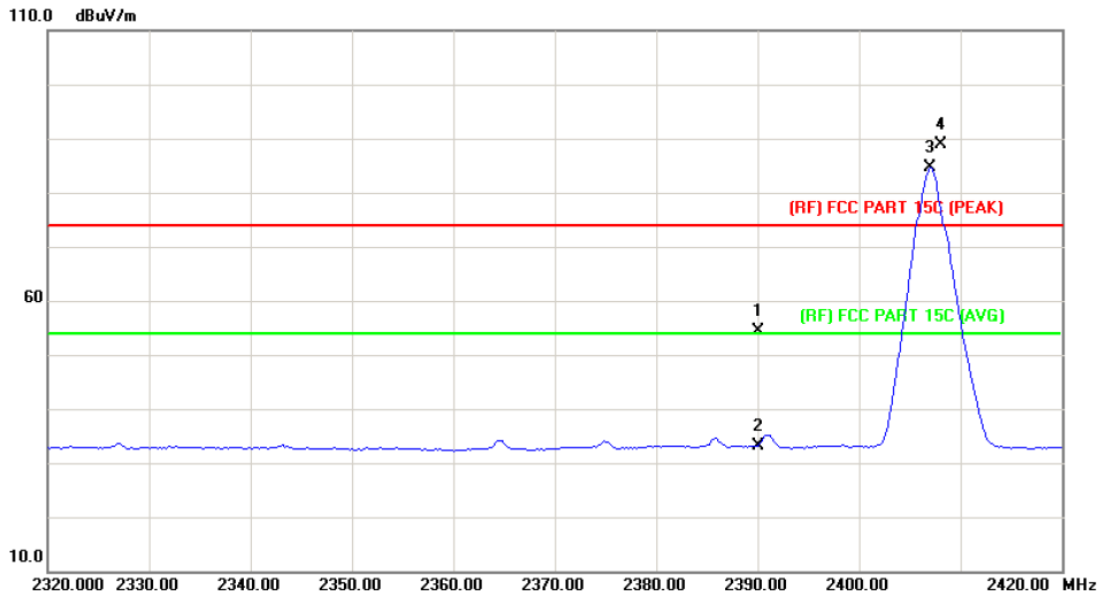


## Attachment B-- Radiated Emission Test Data

### Field Strength of the Fundamental



Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 6V		
Ant. Pol.	Vertical		
Test Mode:	TX 2407MHz		
Remark:			

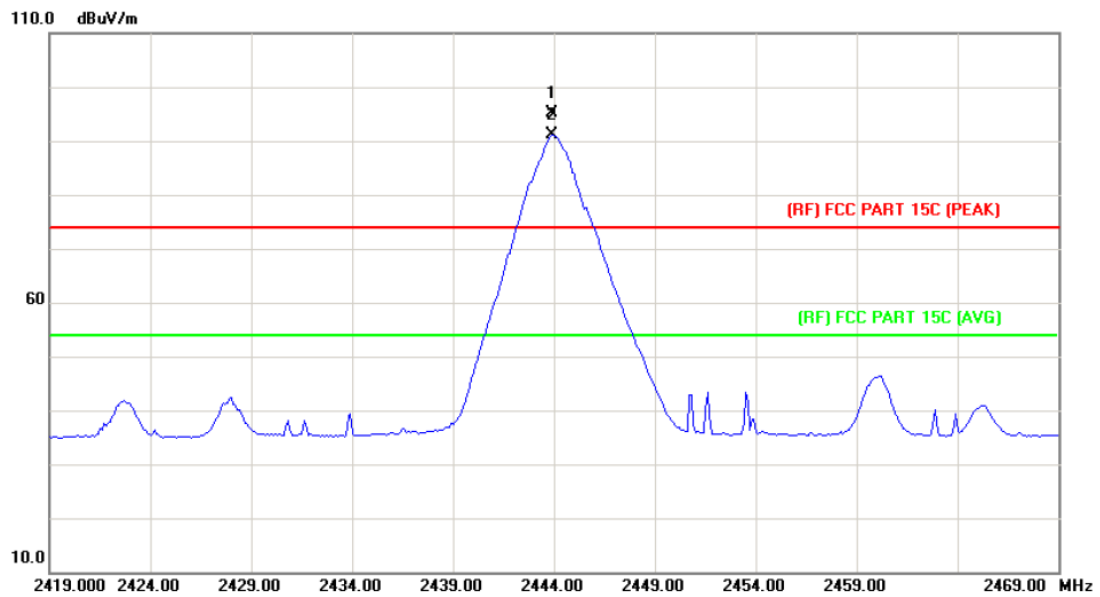


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		2390.000	51.59	2.82	54.41	74.00	-19.59	peak
2		2390.000	30.23	2.82	33.05	54.00	-20.95	AVG
3	*	2407.000	81.62	2.90	84.52	94.00	-9.48	AVG
4	X	2408.000	86.06	2.91	88.97	114.00	-25.03	peak

Emission Level= Read Level+ Correct Factor



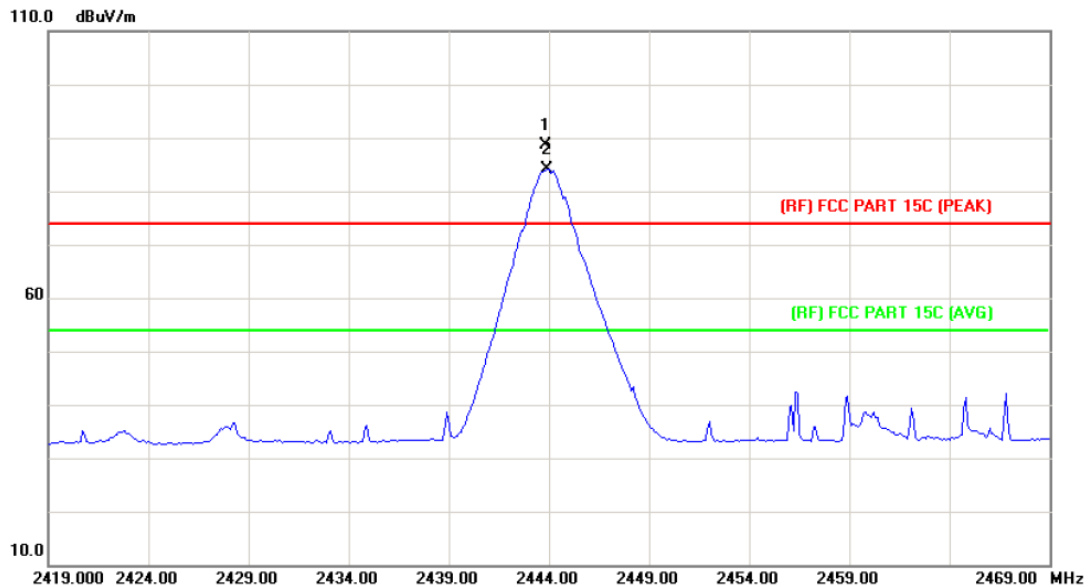
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 6V		
Ant. Pol.	Horizontal		
Test Mode:	TX 2444MHz		
Remark:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	X	2443.900	91.98	3.14	95.12	114.00	-18.88	peak
2	*	2443.900	87.91	3.14	91.05	94.00	-2.95	AVG

Emission Level= Read Level+ Correct Factor

Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 6V		
Ant. Pol.	Vertical		
Test Mode:	TX 2444MHz		
Remark:			

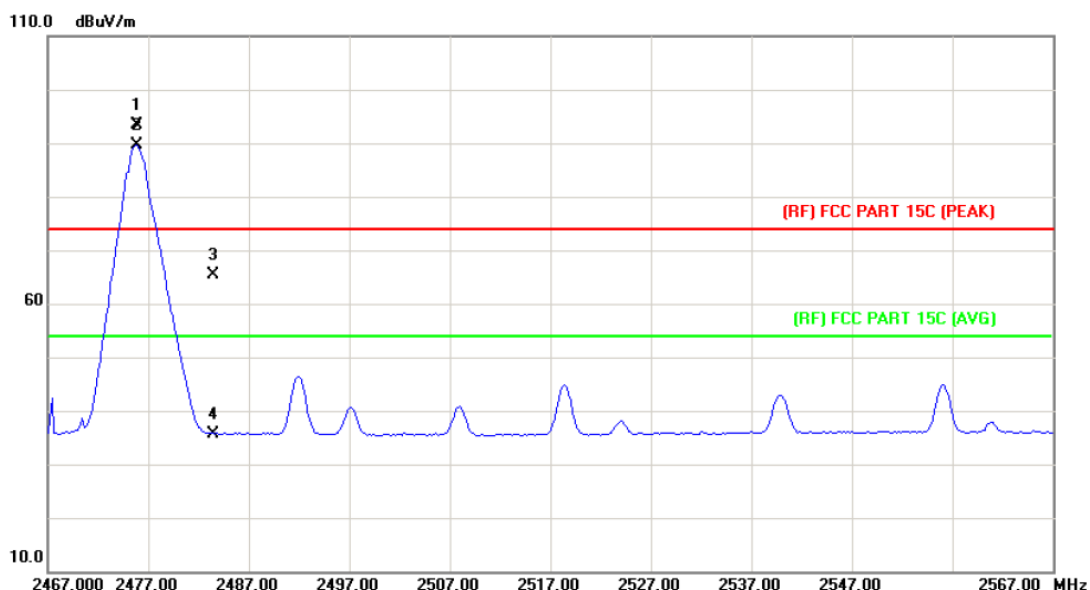


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	X	2443.800	85.53	3.14	88.67	114.00	-25.33	peak
2	*	2443.900	80.98	3.14	84.12	94.00	-9.88	AVG

Emission Level= Read Level+ Correct Factor



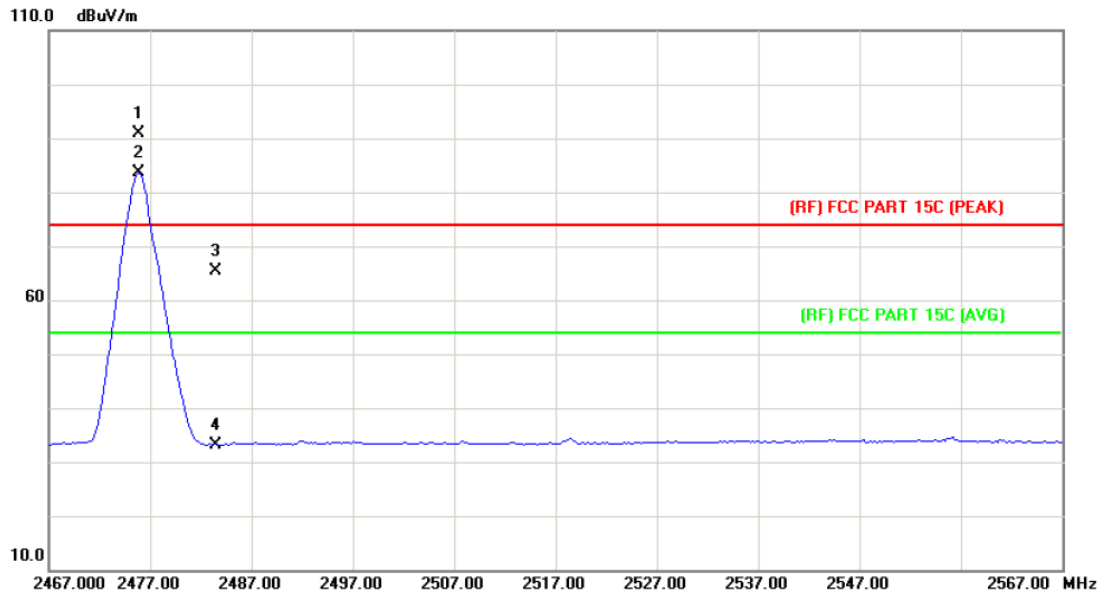
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Horizontal		
Test Mode:	TX 2476MHz		
Remark:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	X	2475.800	90.05	3.36	93.41	114.00	-20.59	peak
2	*	2475.800	86.15	3.36	89.51	94.00	-4.49	AVG
3		2483.500	61.93	3.41	65.34	74.00	-8.66	peak
4		2483.500	32.34	3.41	35.75	54.00	-18.25	AVG

Emission Level= Read Level+ Correct Factor

<b>EUT:</b>	Juno Flash	<b>Model Name :</b>	F1102
<b>Temperature:</b>	25 °C	<b>Relative Humidity:</b>	55%
<b>Test Voltage:</b>	DC 3.7V		
<b>Ant. Pol.</b>	Vertical		
<b>Test Mode:</b>	TX 2476MHz		
<b>Remark:</b>			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	X	2475.800	87.63	3.36	90.99	114.00	-23.01	peak
2	*	2475.800	80.22	3.36	83.58	94.00	-10.42	AVG
3		2483.500	62.00	3.41	65.41	74.00	-8.59	peak
4		2483.500	29.82	3.41	33.23	54.00	-20.77	AVG

**Emission Level= Read Level+ Correct Factor**



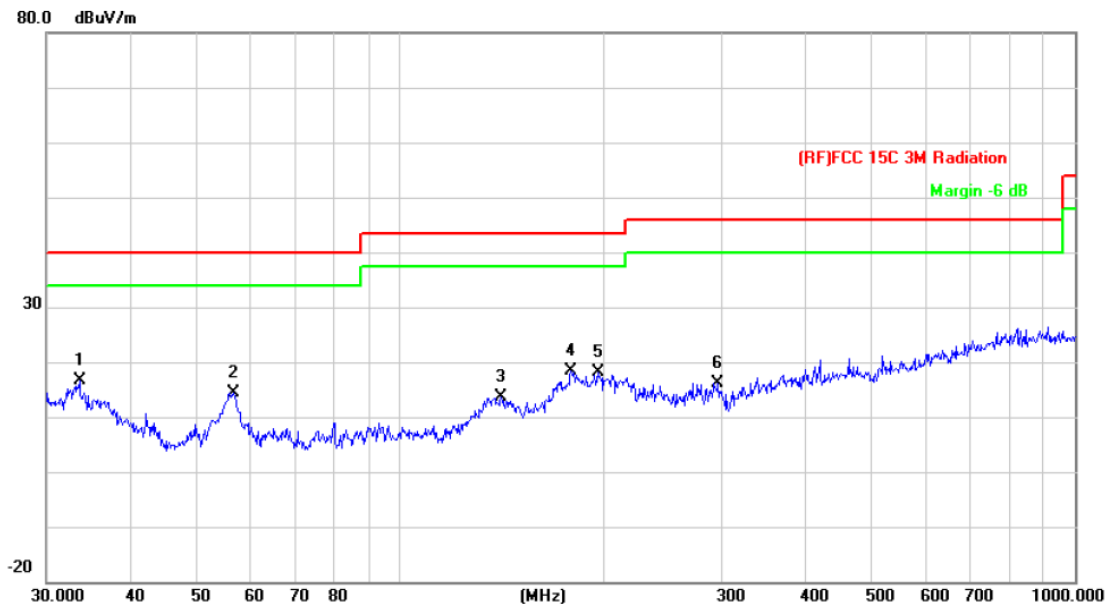
## Radiated Spurious Emission (9 KHz~30 MHz)

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.

## Radiated Spurious Emission (Below 1 GHz)

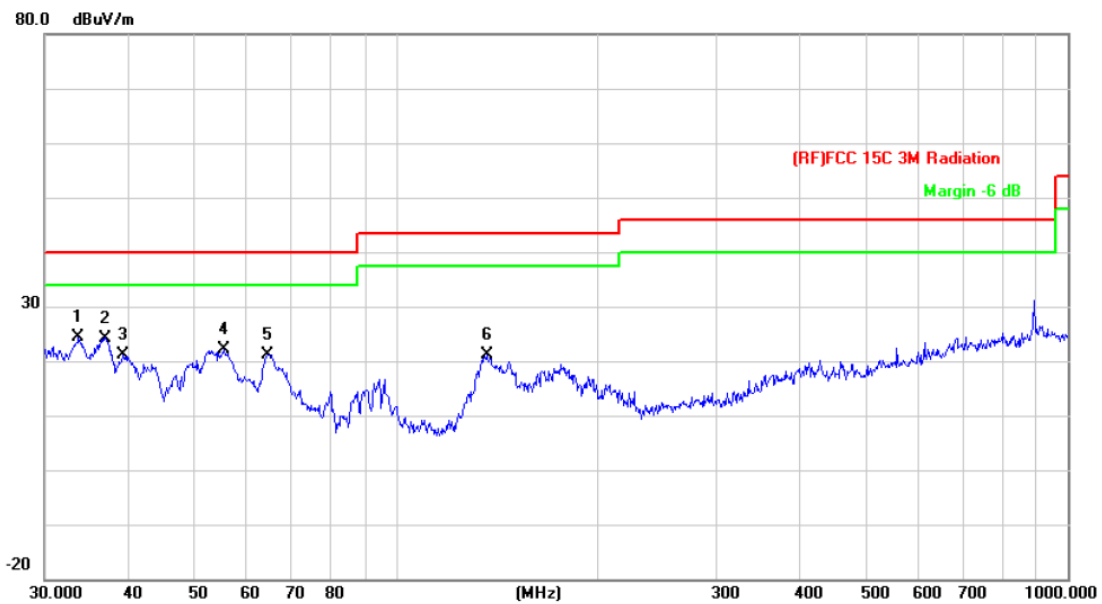
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Horizontal		
Test Mode:	TX 2407MHz		
Remark:	Only worse case is reported		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	33.5624	32.17	-15.65	16.52	40.00	-23.48	peak
2		56.7917	38.27	-23.89	14.38	40.00	-25.62	peak
3		141.3298	34.81	-21.24	13.57	43.50	-29.93	peak
4		179.3863	38.28	-19.79	18.49	43.50	-25.01	peak
5		196.5098	37.67	-19.65	18.02	43.50	-25.48	peak
6		296.1836	32.17	-16.01	16.16	46.00	-29.84	peak

Emission Level= Read Level+ Correct Factor

Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Vertical		
Test Mode:	TX 2407MHz		
Remark:	Only worse case is reported		



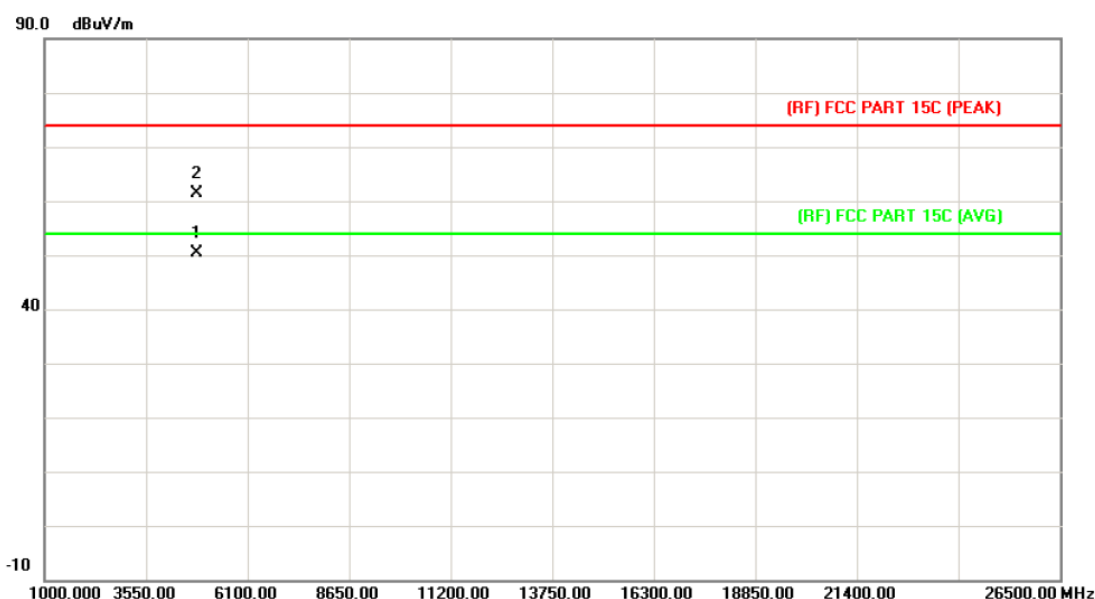
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	33.6802	40.11	-15.72	24.39	40.00	-15.61	peak
2		36.8953	41.95	-17.70	24.25	40.00	-15.75	peak
3		39.2991	40.28	-19.18	21.10	40.00	-18.90	peak
4		55.4147	46.03	-23.87	22.16	40.00	-17.84	peak
5		64.4331	44.79	-23.55	21.24	40.00	-18.76	peak
6		136.4598	42.45	-21.42	21.03	43.50	-22.47	peak

Emission Level= Read Level+ Correct Factor



## Radiated Spurious Emission (Above 1 GHz)

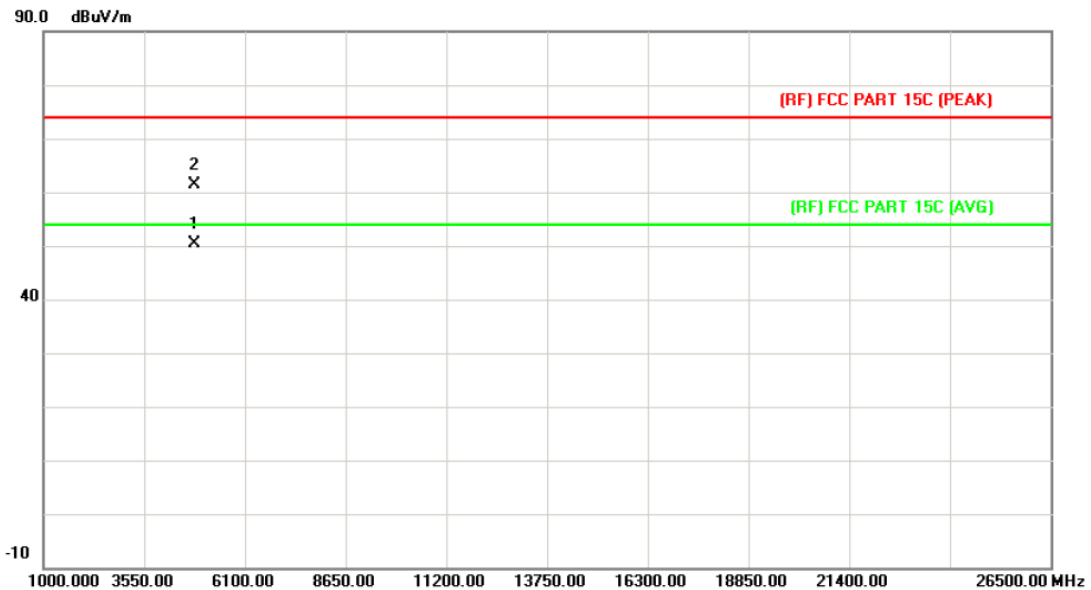
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Horizontal		
Test Mode:	TX 2407MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	*	4813.920	35.85	14.49	50.34	54.00	-3.66	AVG
2		4814.240	46.78	14.49	61.27	74.00	-12.73	peak

Emission Level= Read Level+ Correct Factor

Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Vertical		
Test Mode:	TX 2407MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		

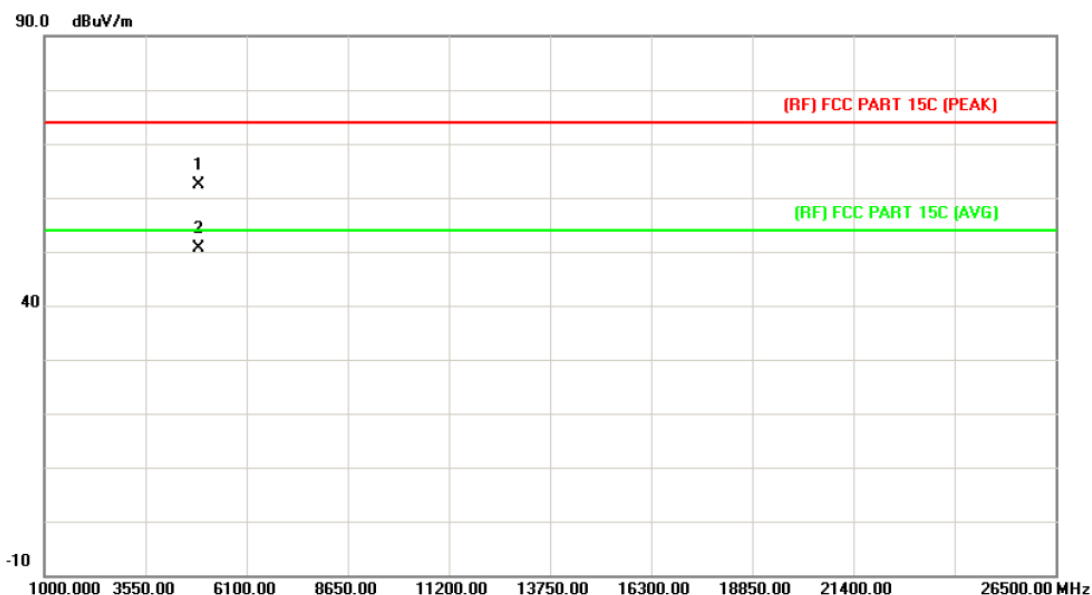


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	*	4813.886	35.85	14.49	50.34	54.00	-3.66	AVG
2		4814.132	46.98	14.49	61.47	74.00	-12.53	peak

Emission Level= Read Level+ Correct Factor



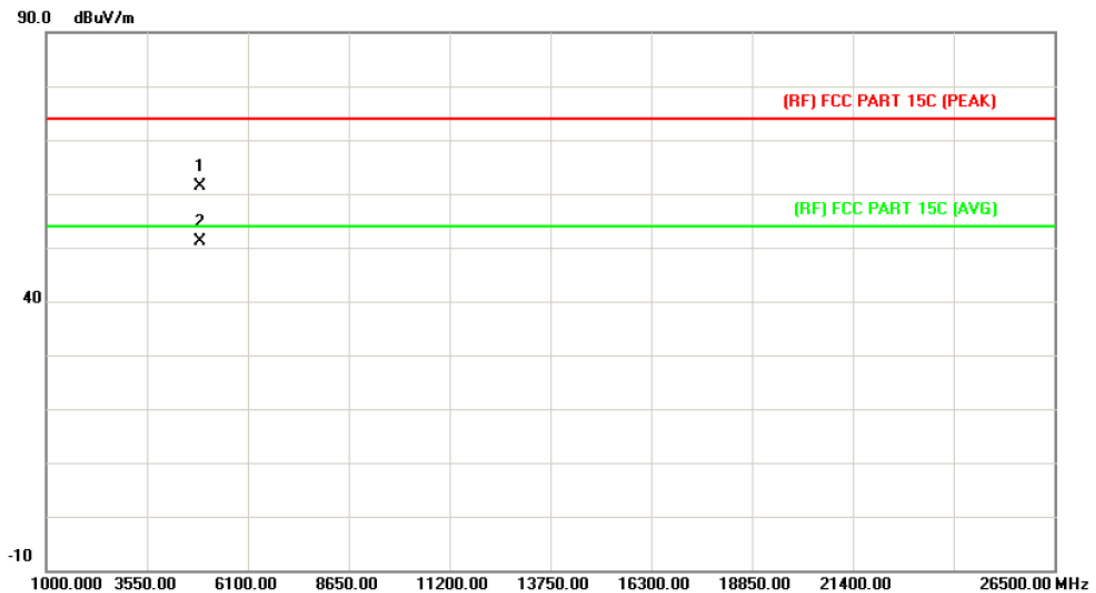
<b>Temperature:</b>	25 °C	<b>Relative Humidity:</b>	55%
<b>Test Voltage:</b>	DC 3.7V		
<b>Ant. Pol.</b>	Horizontal		
<b>Test Mode:</b>	TX 2444MHz		
<b>Remark:</b>	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over
		MHz	dBuV	dB	dBuV/m	dB/m	dB Detector
1		4887.700	47.49	14.94	62.43	74.00	-11.57 peak
2	*	4887.700	35.74	14.94	50.68	54.00	-3.32 AVG

Emission Level= Read Level+ Correct Factor

Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Vertical		
Test Mode:	TX 2444MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		

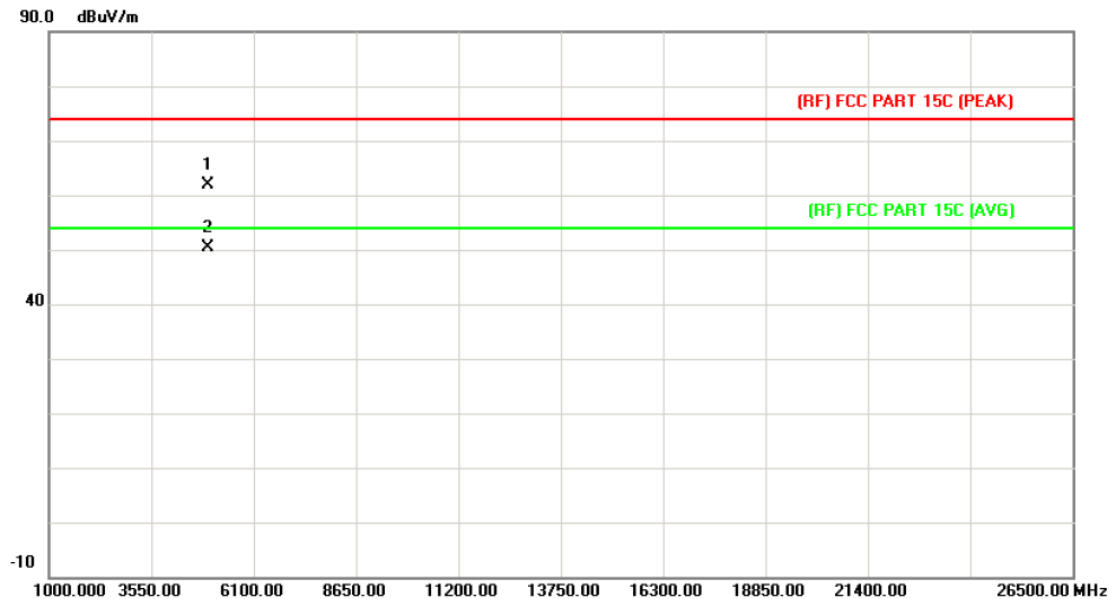


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		4887.700	46.44	14.94	61.38	74.00	-12.62	peak
2	*	4887.700	36.20	14.94	51.14	54.00	-2.86	AVG

Emission Level= Read Level+ Correct Factor



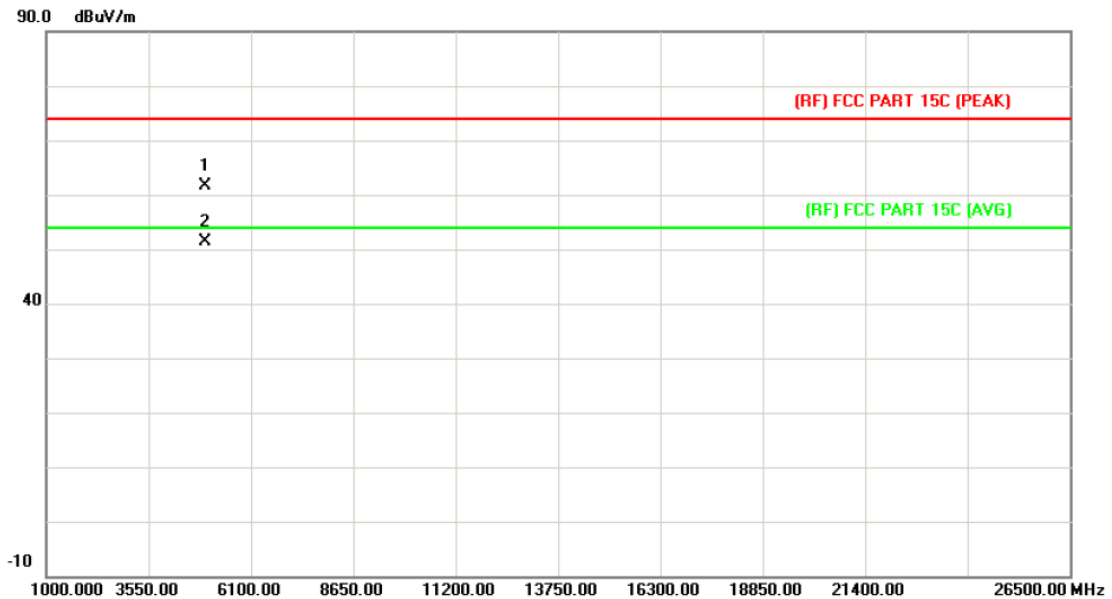
<b>Temperature:</b>	25 °C	<b>Relative Humidity:</b>	55%
<b>Test Voltage:</b>	DC 3.7V		
<b>Ant. Pol.</b>	Horizontal		
<b>Test Mode:</b>	TX 2476MHz		
<b>Remark:</b>	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		4951.900	46.60	15.35	61.95	74.00	-12.05	peak
2	*	4951.900	34.99	15.35	50.34	54.00	-3.66	AVG

**Emission Level= Read Level+ Correct Factor**

Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Vertical		
Test Mode:	TX 2476MHz		
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	dBuV/m	dB/m	dB	Detector
1		4951.800	46.22	15.35	61.57	74.00	-12.43	peak
2	*	4951.800	36.07	15.35	51.42	54.00	-2.58	AVG

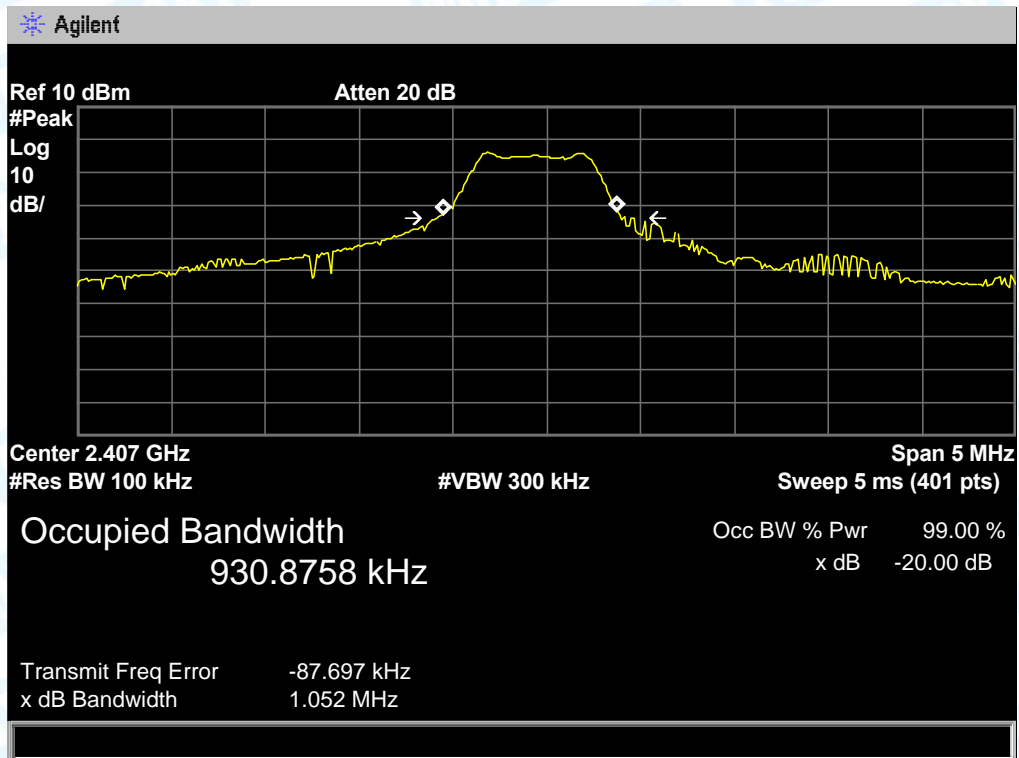
Emission Level= Read Level+ Correct Factor



## Attachment C--Bandwidth Test Data

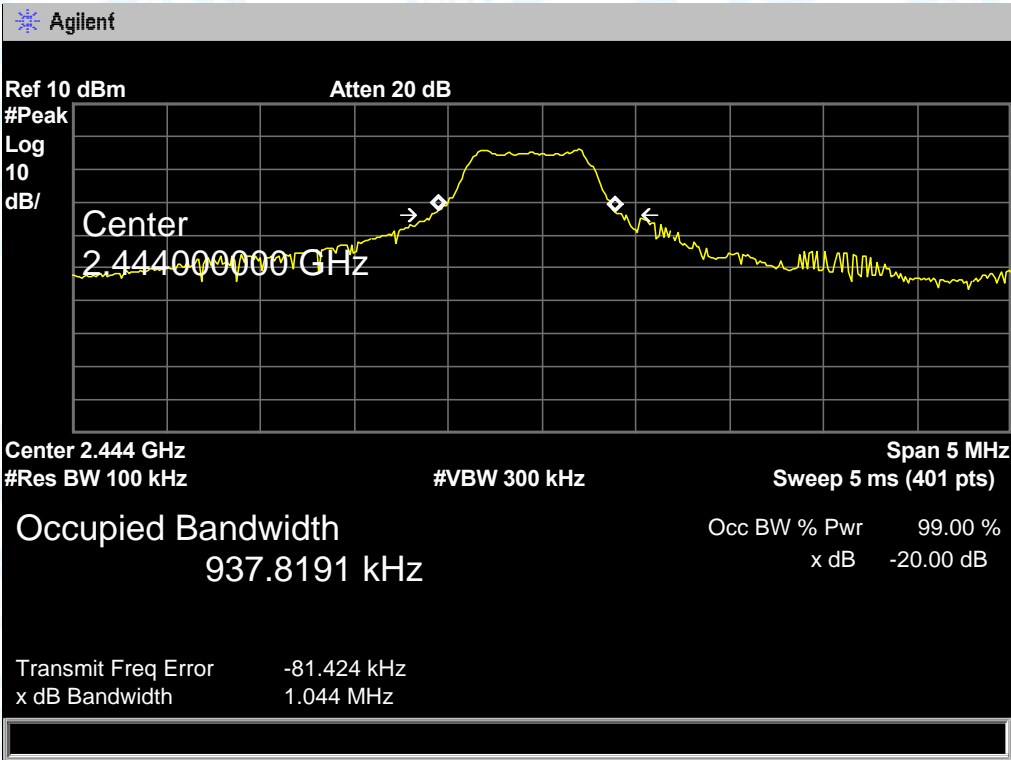
Low Channel Frequency (MHz)	20dB Bandwidth (MHz)
2407	1.052

2407 MHz



MID Channel Frequency (MHz)	20dB Bandwidth (MHz)
2444	1.044

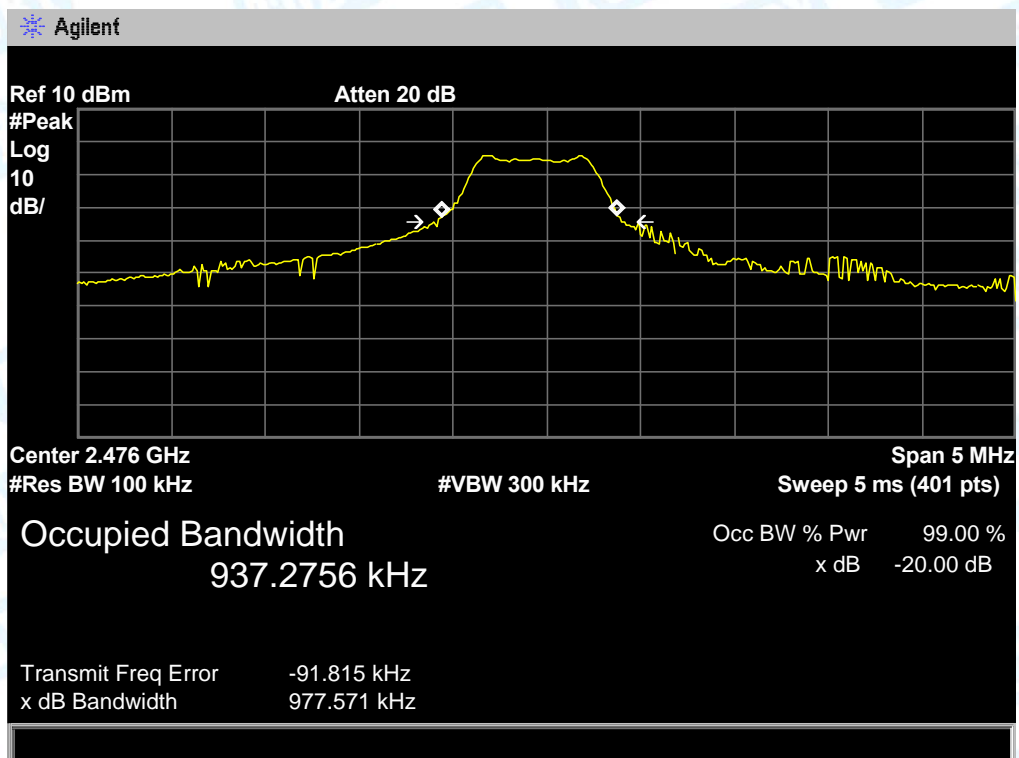
2444 MHz





HIGH Channel Frequency (MHz)	20dB Bandwidth (MHz)
2476	0.977571

**2476 MHz**



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