

FCC Radio Test Report

FCC ID: 2AK8Q-WM289

Report No. : TB-FCC158792
Applicant : SHENZHEN UNICHAIN TECHNOLOGY CO., LTD
Equipment Under Test (EUT)
EUT Name : Cordless Optical Mouse
Model No. : WM289
Serial Model No. : TM194G
Brand Name : TECKNET
Receipt Date : 2018-03-20
Test Date : 2018-03-21 to 2018-03-26
Issue Date : 2018-03-27
Standards : FCC Part 15: 2017, Subpart C(15.249)
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 :

Jason Xu

Jason Xu

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Ivan Su

Engineer Manager :

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-RF158792	Rev.01	Initial issue of report	2018-03-27

1. General Information about EUT

1.1 Client Information

Applicant	:	SHENZHEN UNICHAIN TECHNOLOGY CO., LTD
Address	:	3 Floor, HongXiangJia electronic commerce Pioneer Park, Yang Mei, BanTian Street, Shenzhen City, China
Manufacturer	:	DONGGUAN TOGRAN ELECTRONICS TECHNOLOGY CO.,LTD
Address	:	262 Shidan Rd, the 3rd Industrial of Juzhou Shijie Town, Dongguan Guangdong, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	Cordless Optical Mouse
Models No.	:	WM289, TM194G
Model Difference	:	All these models are identical in the same PCB, layout and electrical circuit, the only difference is model name for commercial.
Product Description	:	Operation Frequency:2408~2474 MHz
	:	Number of Channels: 34 Channels
	:	Out Power: 91.23 dBuV/m@3m Peak 87.97 dBuV/m@3m Avg
	:	Antenna Gain: 0 dBi PCB Antenna
	:	Modulation Type: GFSK
Power Supply	:	DC Voltage supplied by AA battery.
Power Rating	:	DC 3.0V (2*AA battery).
Connecting I/O Port(S)	:	Please refer to the User's Manual

Note:

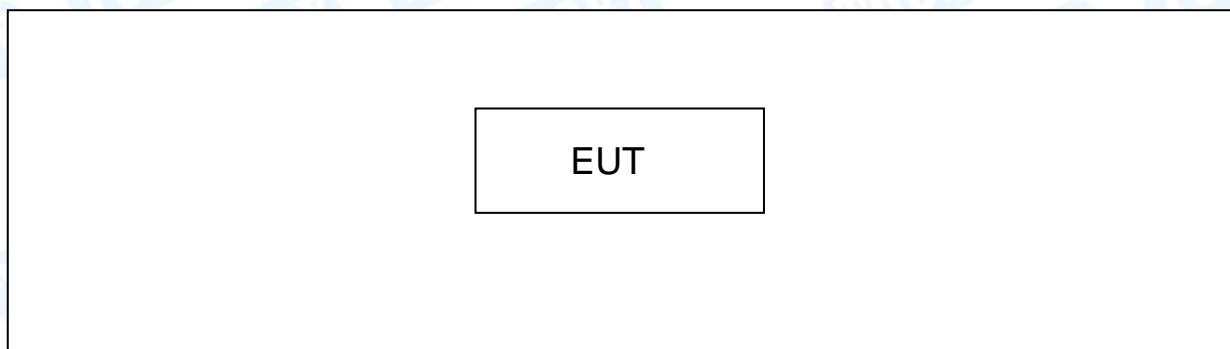
- (1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- (2) Channel List:

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2408	13	2432	25	2456
02	2410	14	2434	26	2458
03	2412	15	2436	27	2460
04	2414	16	2438	28	2462
05	2416	17	2440	29	2464
06	2418	18	2442	30	2466

07	2420	19	2444	31	2468
08	2422	20	2446	32	2470
09	2424	21	2448	33	2472
10	2426	22	2450	34	2474
11	2428	23	2452		
12	2430	24	2454		

1.3 Block Diagram Showing the Configuration of System Tested

Mode 1: TX Mode



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
N/A	N/A
For Radiated Test	
Final Test Mode	Description
Mode 1	TX Mode

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.

Product SW/HW Version :	N/A		
Radio SW/HW Version:	N/A		
Test Software Version	N/A		
Frequency	2408 MHz	2440MHz	2474 MHz
FSK	DEF	DEF	DEF

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	± 3.42 dB
	150kHz to 30MHz	± 3.42 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	± 4.60 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 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	N/A	N/A
15.249 &15.209	Radiated Spurious Emission	PASS	N/A
15.215(C)	20dB Bandwidth	PASS	N/A
Note: 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. 21, 2017	Jul. 20, 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 μ V)	
	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50

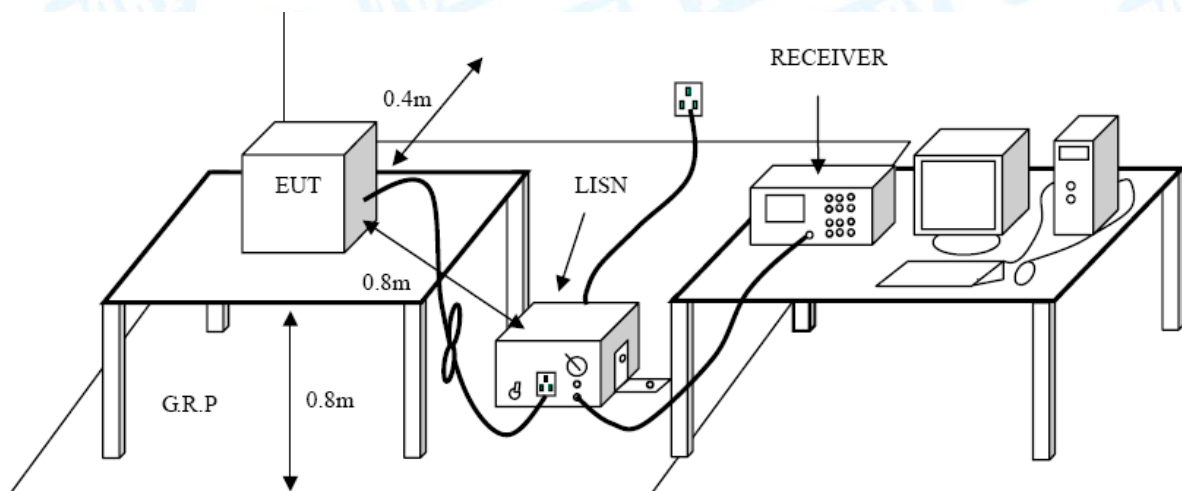
Notes:

(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

The EUT is powered by AA battery, no requirement for this test item.

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)	Class B (dBuV/m)(at 3 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)

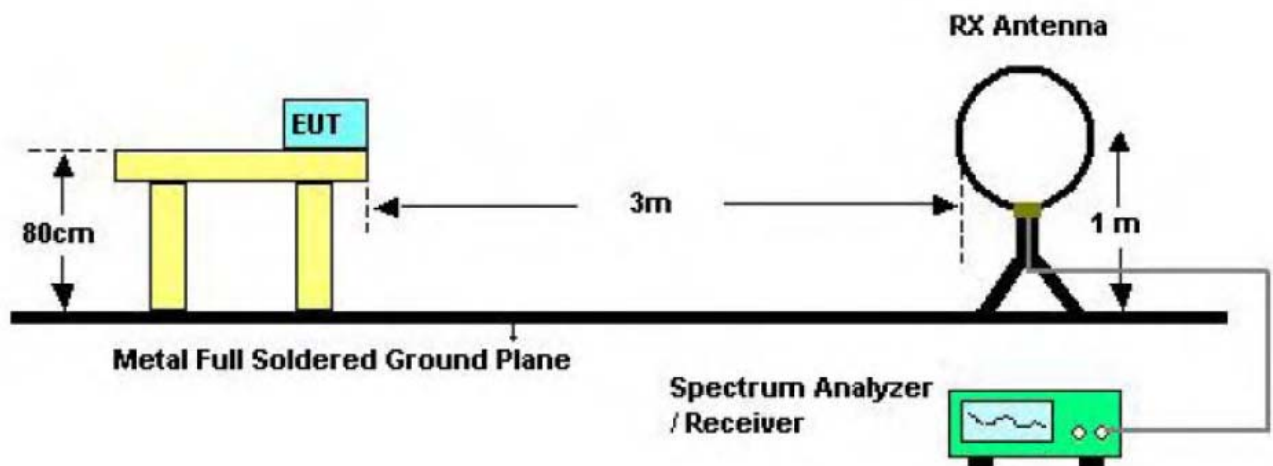
Limits of radiated emission measurement (15.249)

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

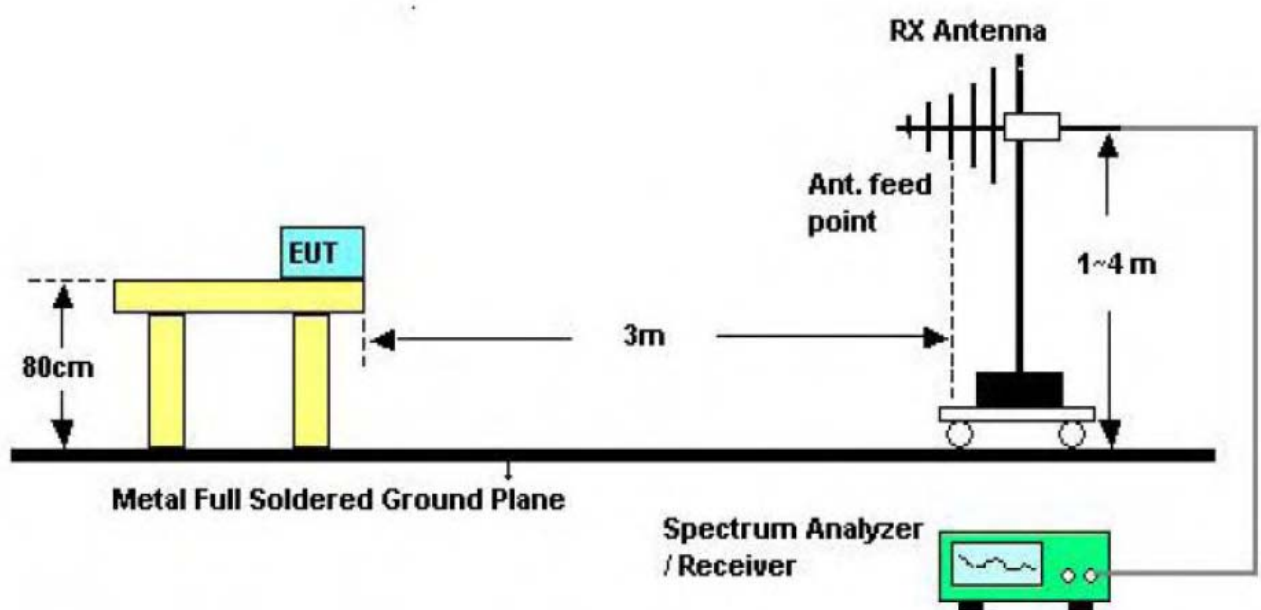
Restricted bands requirement for equipment operating in 2400MHz to 2483.5 MHz (15.249)

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	

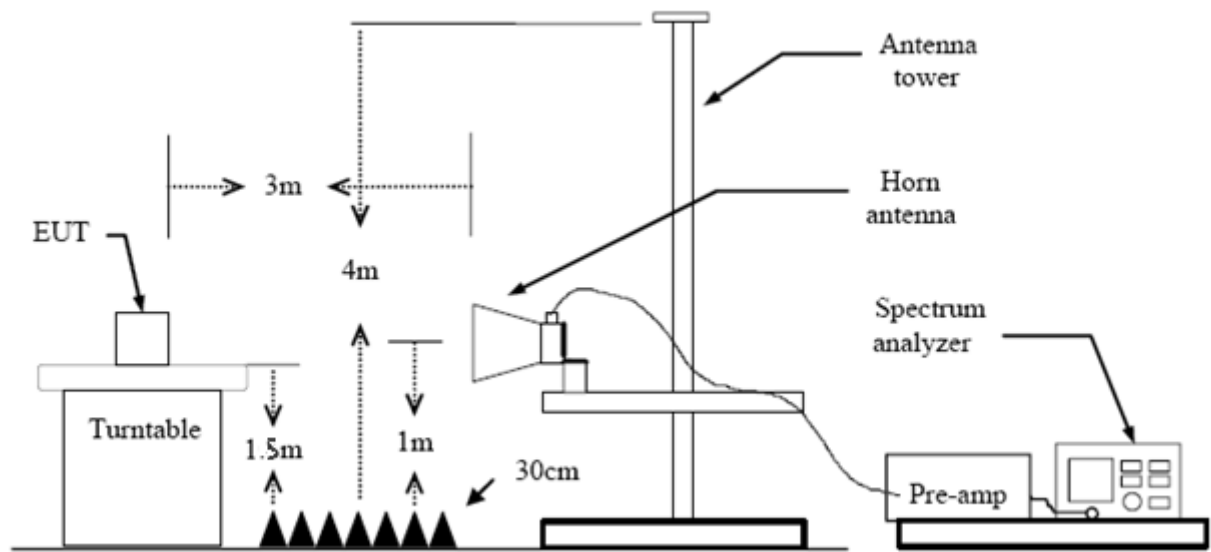
5.2 Test Setup



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 up to 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.

5.4 EUT Operating Condition

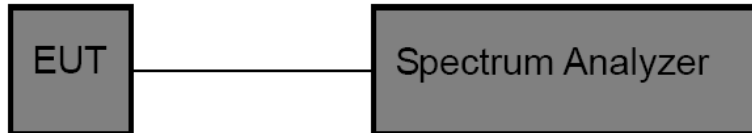
The EUT was set to Continual Transmitting in maximum power, and new batteries are used during testing.

5.5 Test Data

Please refer to the Attachment A.

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 B.

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 directional gains of the antenna used for transmitting is 0 dBi, 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-- Radiated Emission Test Data

(1) 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.

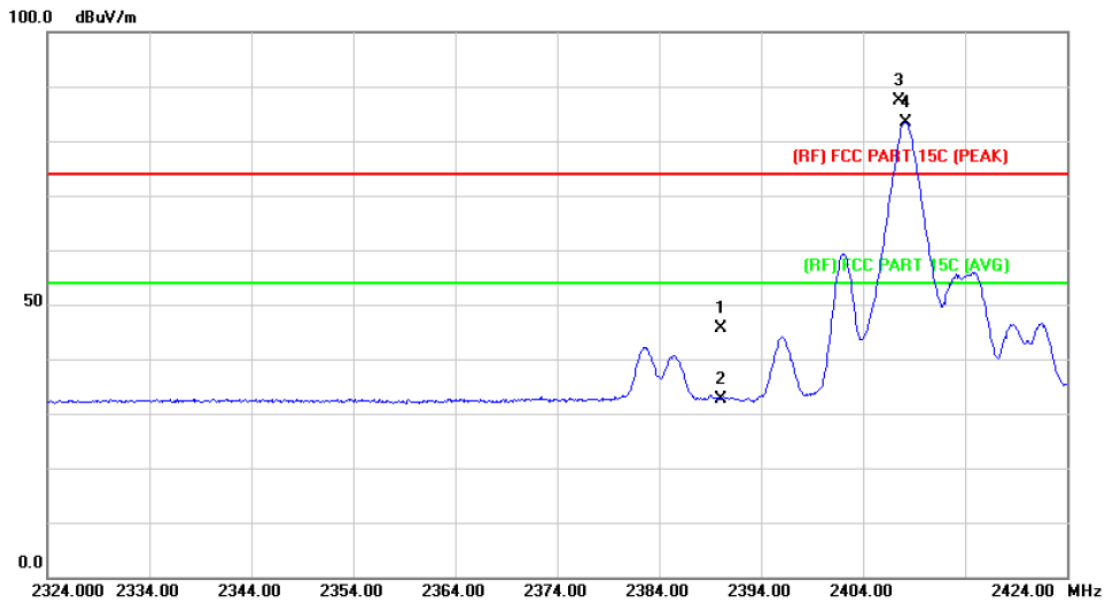
(2) Field Strength of the Fundamental

Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3V		
Ant. Pol.	Horizontal		
Test Mode:	TX 2408MHz		
Remark:			

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		2390.000	51.32	0.91	52.23	74.00	-21.77	peak
2		2390.000	42.12	0.91	43.03	54.00	-10.97	AVG
3	X	2407.600	90.23	1.00	91.23	114.00	-22.77	peak
4	*	2408.100	86.96	1.01	87.97	94.00	-6.03	AVG

Emission Level= Read Level+ Correct Factor

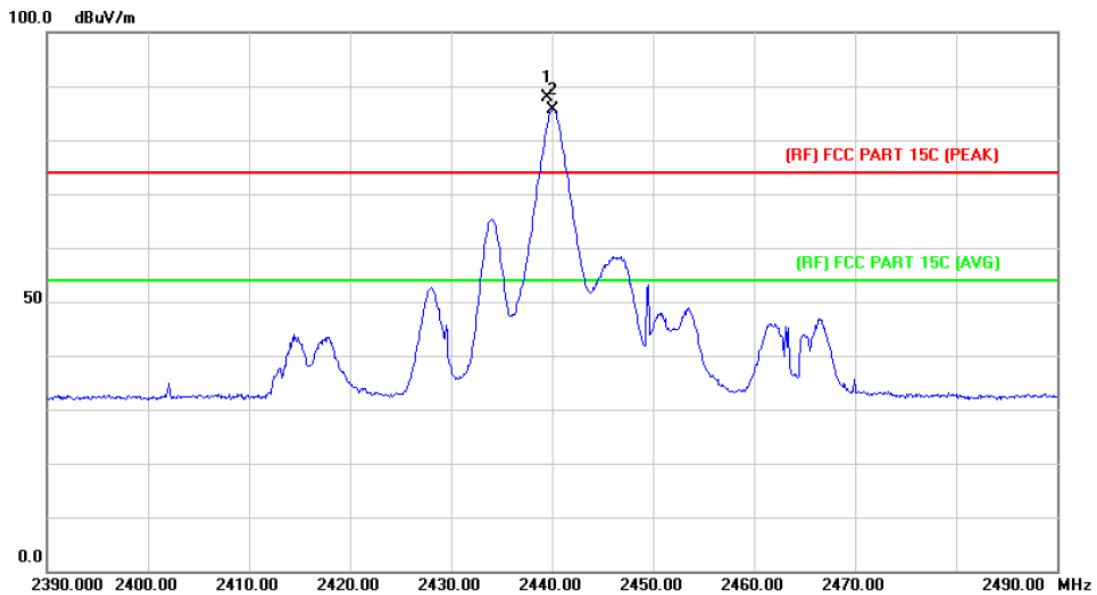
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3V		
Ant. Pol.	Vertical		
Test Mode:	TX 2408MHz		
Remark:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	44.75	0.91	45.66	74.00	-28.34	peak
2		2390.000	31.78	0.91	32.69	54.00	-21.31	AVG
3	X	2407.600	86.26	1.00	87.26	114.00	-26.74	peak
4	*	2408.200	82.37	1.01	83.38	94.00	-10.62	AVG

Emission Level= Read Level+ Correct Factor

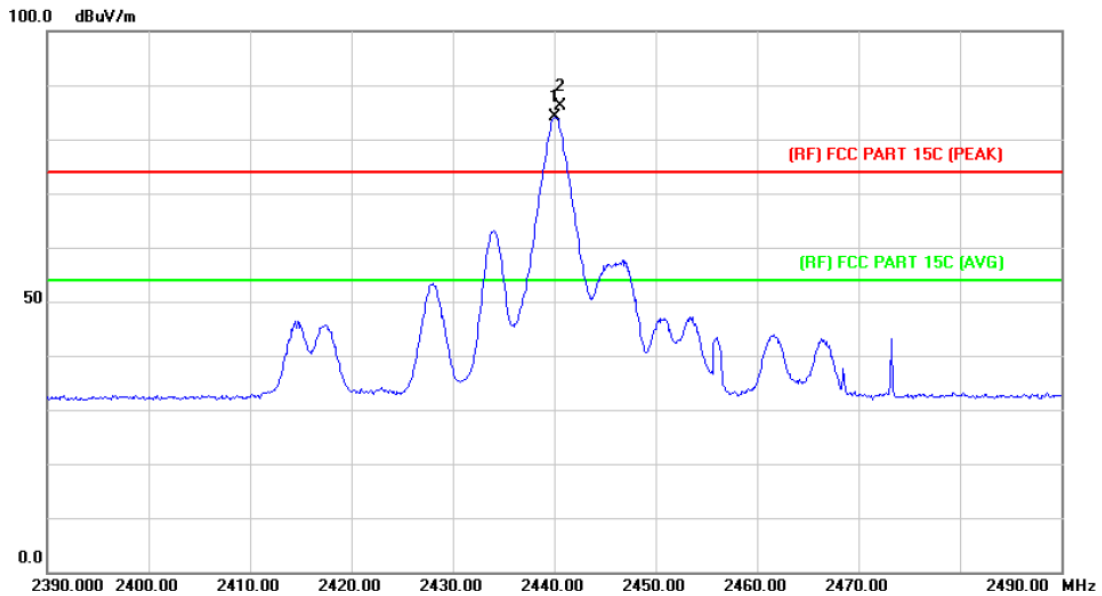
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3V		
Ant. Pol.	Horizontal		
Test Mode:	TX 2440MHz		
Remark:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2439.500	86.63	1.14	87.77	114.00	-26.23	peak
2	*	2440.000	84.50	1.14	85.64	94.00	-8.36	AVG

Emission Level= Read Level+ Correct Factor

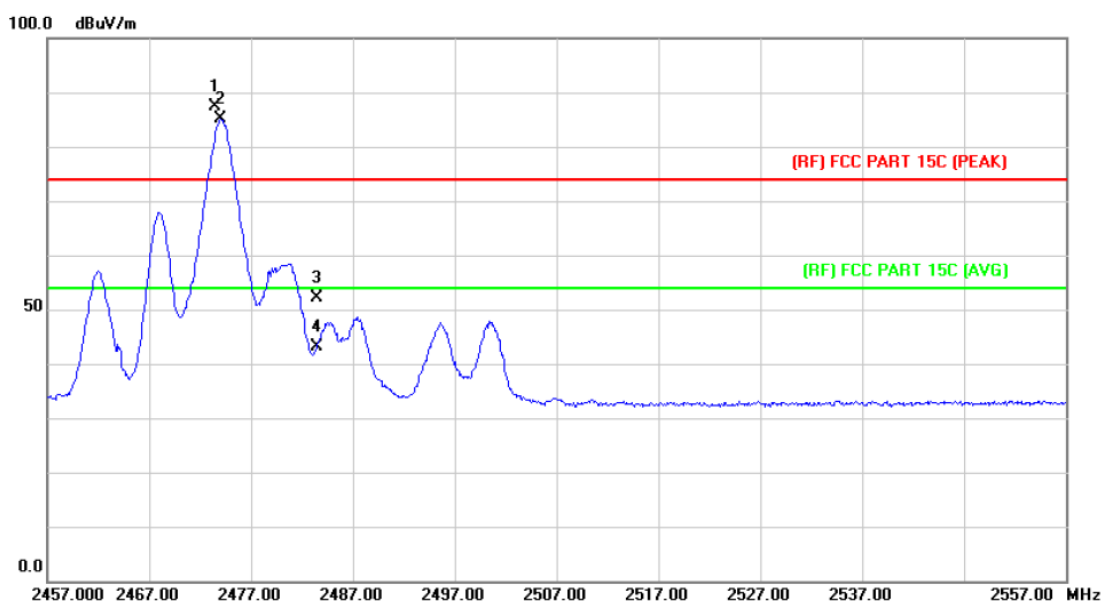
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3V		
Ant. Pol.	Vertical		
Test Mode:	TX 2440MHz		
Remark:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2440.100	82.94	1.14	84.08	114.00	-29.92	AVG
2	X	2440.600	85.08	1.14	86.22	94.00	-7.78	peak

Emission Level= Read Level+ Correct Factor

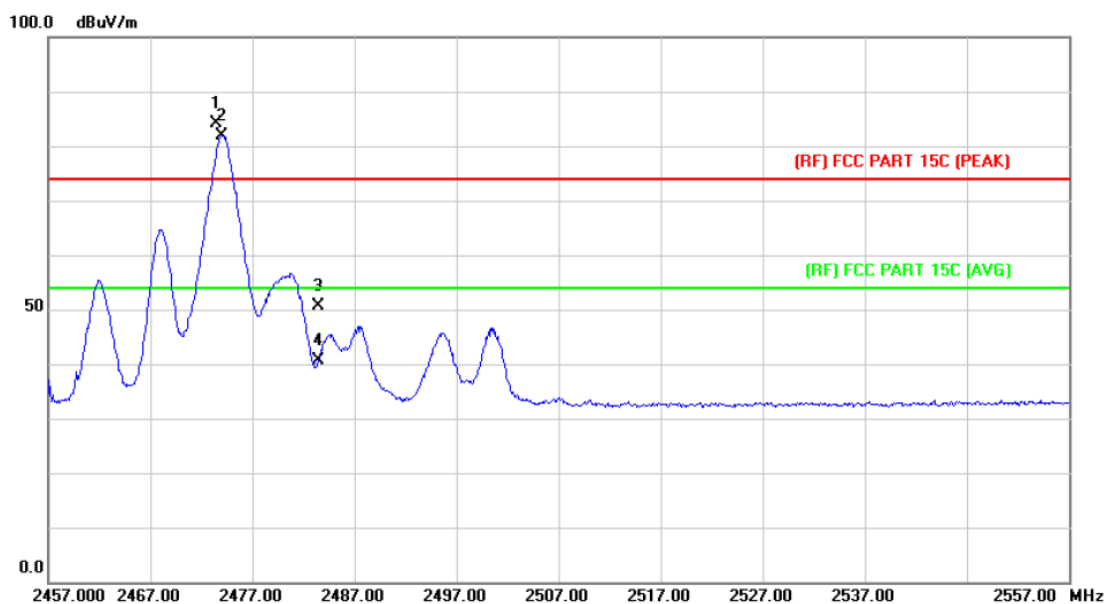
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3V		
Ant. Pol.	Horizontal		
Test Mode:	TX 2474MHz		
Remark:			



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	X	2473.500	86.14	1.29	87.43	114.00	-26.57	peak
2	*	2474.000	83.80	1.29	85.09	94.00	-8.91	AVG
3		2483.500	50.86	1.34	52.20	74.00	-21.80	peak
4		2483.500	41.87	1.34	43.21	54.00	-10.79	AVG

Emission Level= Read Level+ Correct Factor

Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3V		
Ant. Pol.	Vertical		
Test Mode:	TX 2474MHz		
Remark:			

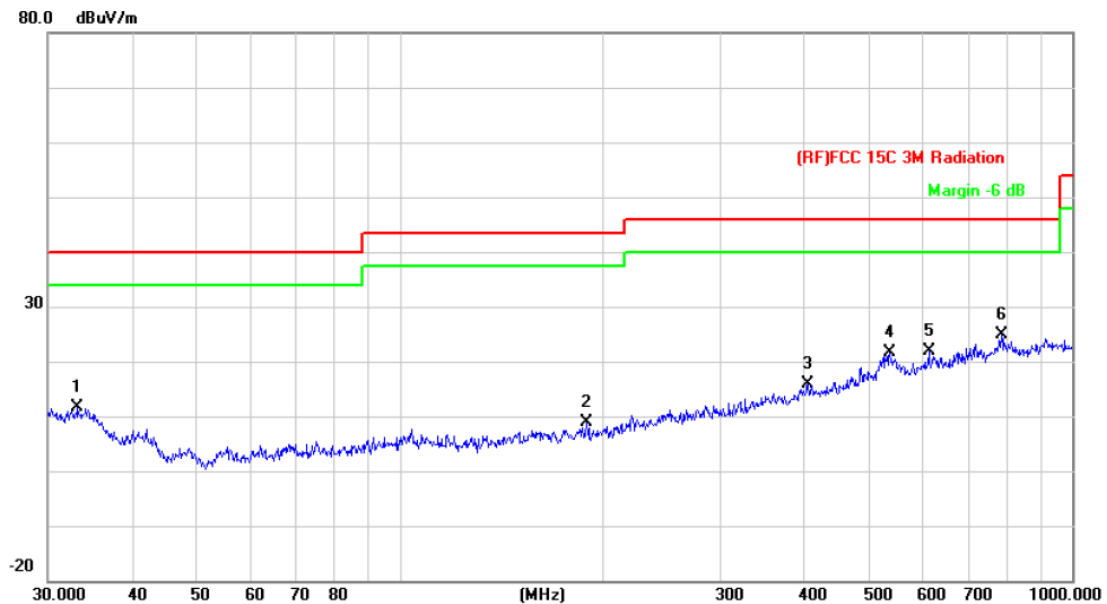


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2473.500	82.79	1.29	84.08	114.00	-29.92	peak
2	*	2474.000	80.61	1.29	81.90	94.00	-12.10	AVG
3		2483.500	49.25	1.34	50.59	74.00	-23.41	peak
4		2483.500	39.27	1.34	40.61	54.00	-13.39	AVG

Emission Level= Read Level+ Correct Factor

(3) Radiated Spurious Emission (Below 1 GHz)

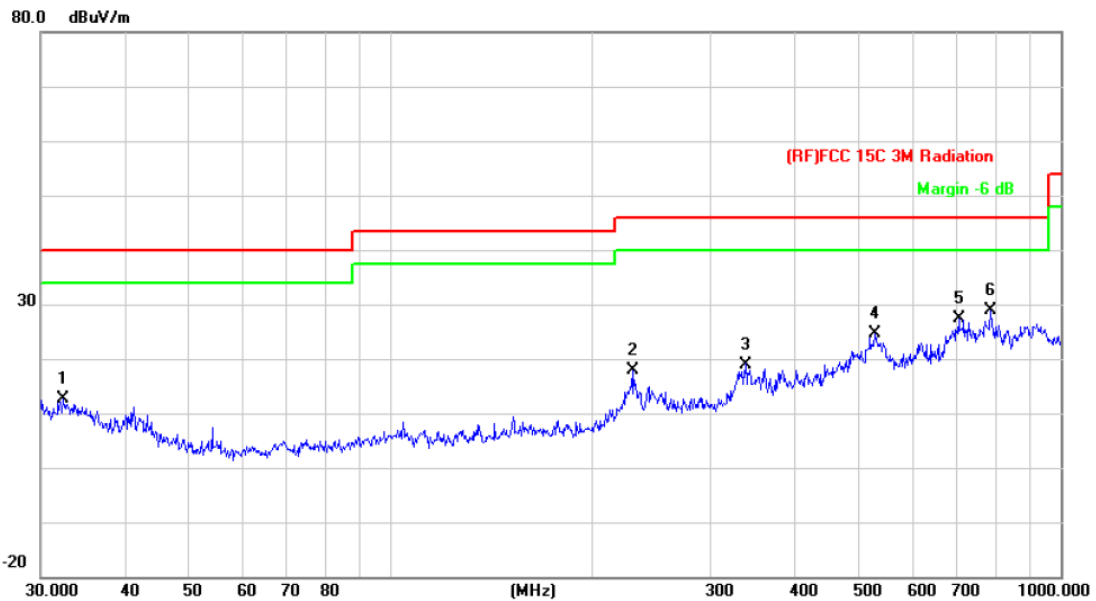
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3V		
Ant. Pol.	Horizontal		
Test Mode:	TX 2408MHz		
Remark:	Only worse case is reported		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		33.2112	27.12	-15.44	11.68	40.00	-28.32	peak
2		189.7385	28.87	-20.02	8.85	43.50	-34.65	peak
3		404.6665	27.82	-11.83	15.99	46.00	-30.01	peak
4		535.7073	30.81	-9.23	21.58	46.00	-24.42	peak
5		612.0642	29.95	-8.02	21.93	46.00	-24.07	peak
6	*	785.0935	30.24	-5.43	24.81	46.00	-21.19	peak

Emission Level= Read Level+ Correct Factor

Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3V		
Ant. Pol.	Vertical		
Test Mode:	TX 2408MHz		
Remark:	Only worse case is reported		

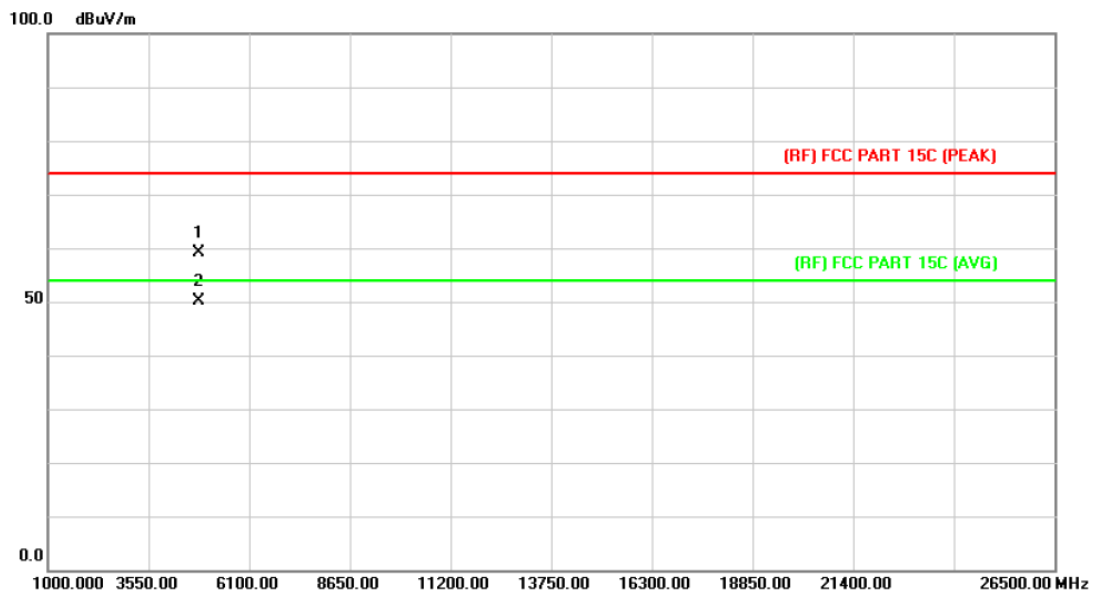


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		32.4059	27.61	-14.94	12.67	40.00	-27.33	peak
2		229.2931	35.87	-18.10	17.77	46.00	-28.23	peak
3		338.4001	33.22	-14.22	19.00	46.00	-27.00	peak
4		528.2458	33.86	-9.24	24.62	46.00	-21.38	peak
5		704.2261	33.14	-5.82	27.32	46.00	-18.68	peak
6	*	785.0935	34.39	-5.43	28.96	46.00	-17.04	peak

Emission Level= Read Level+ Correct Factor

(4) Radiated Spurious Emission (Above 1 GHz)

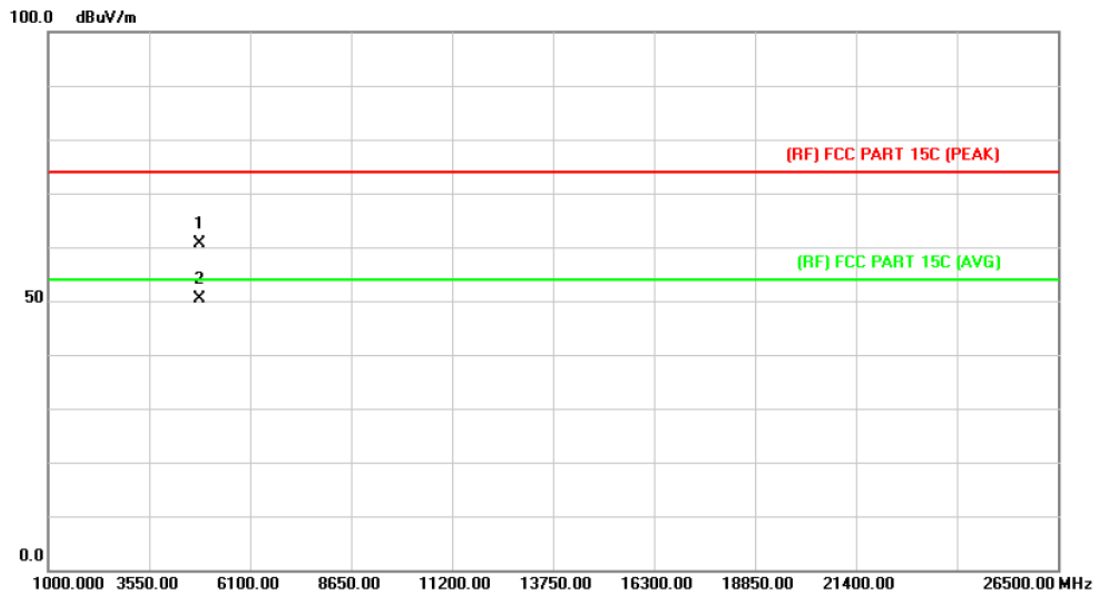
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3V		
Ant. Pol.	Horizontal		
Test Mode:	TX 2408MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4816.920	43.21	15.97	59.18	74.00	-14.82	peak
2	*	4816.920	34.13	15.97	50.10	54.00	-3.90	AVG

Emission Level= Read Level+ Correct Factor

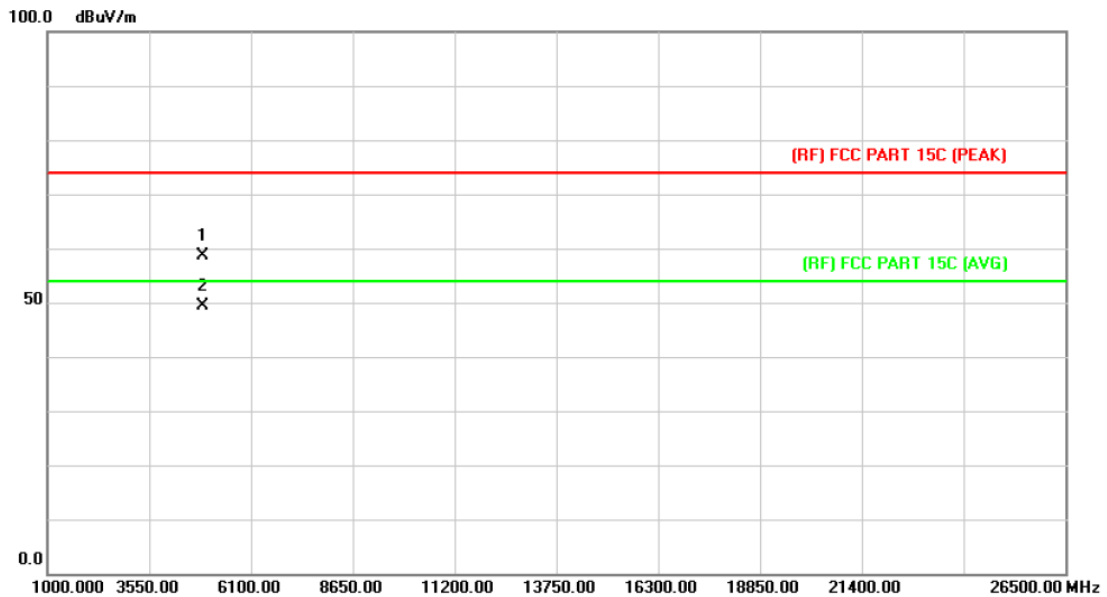
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3V		
Ant. Pol.	Vertical		
Test Mode:	TX 2408MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4814.730	44.72	15.96	60.68	74.00	-13.32	peak
2	*	4817.060	34.52	15.98	50.50	54.00	-3.50	AVG

Emission Level= Read Level+ Correct Factor

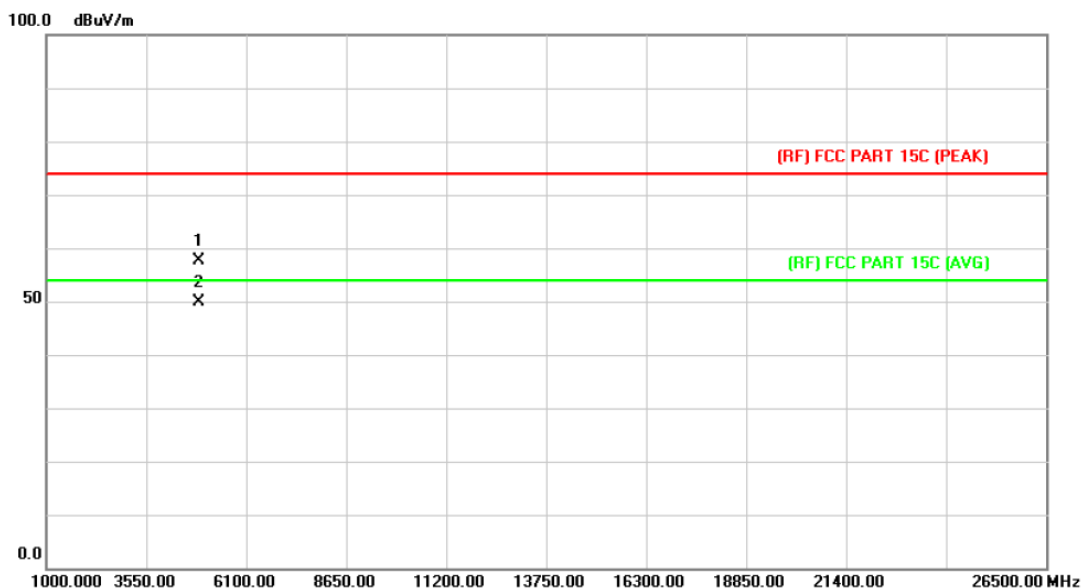
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3V		
Ant. Pol.	Horizontal		
Test Mode:	TX 2440MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4880.930	42.17	16.52	58.69	74.00	-15.31	peak
2	*	4880.930	32.84	16.52	49.36	54.00	-4.64	AVG

Emission Level= Read Level+ Correct Factor

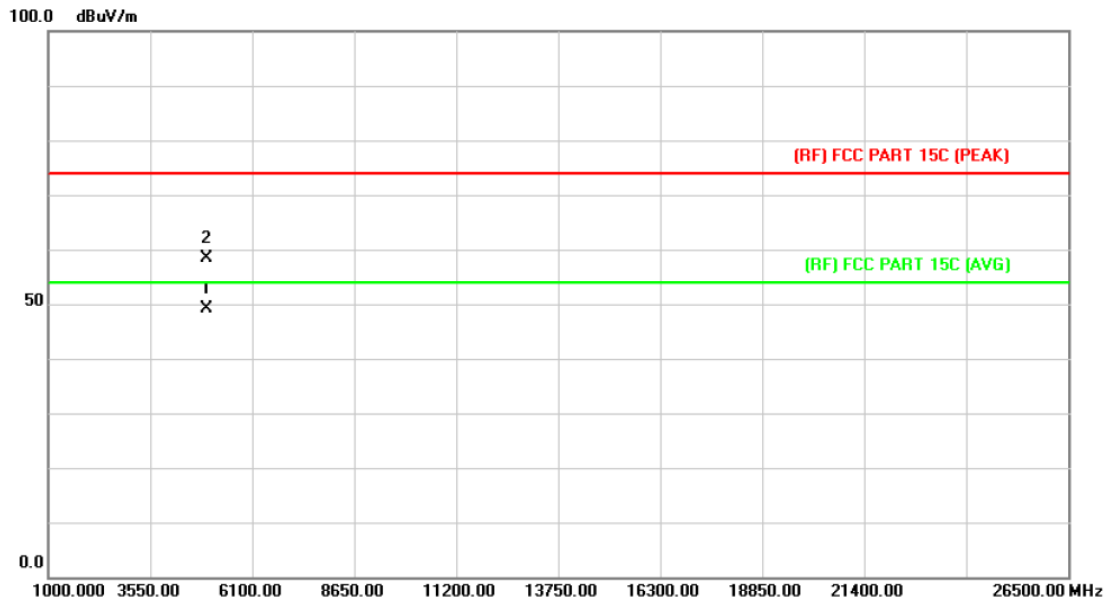
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3V		
Ant. Pol.	Vertical		
Test Mode:	TX 2440MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		4880.830	41.16	16.52	57.68	74.00	-16.32	peak
2	*	4880.830	33.37	16.52	49.89	54.00	-4.11	AVG

Emission Level= Read Level+ Correct Factor

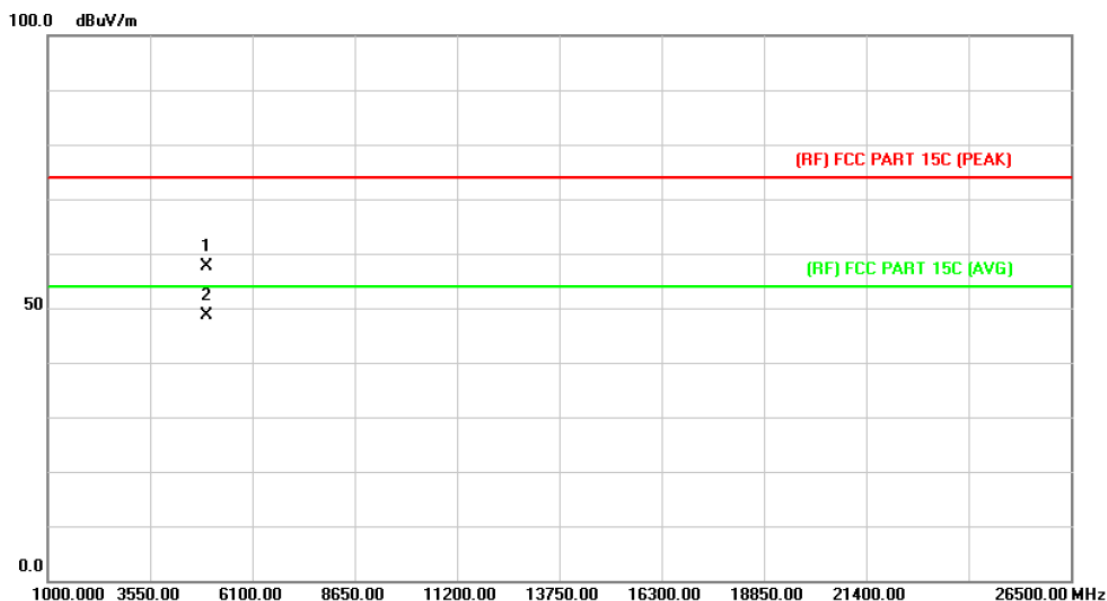
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3V		
Ant. Pol.	Horizontal		
Test Mode:	TX 2474MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4948.990	32.15	17.09	49.24	74.00	-24.76	peak
2	*	4948.990	41.37	17.09	58.46	74.00	-15.54	peak

Emission Level= Read Level+ Correct Factor

Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3V		
Ant. Pol.	Vertical		
Test Mode:	TX 2474MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



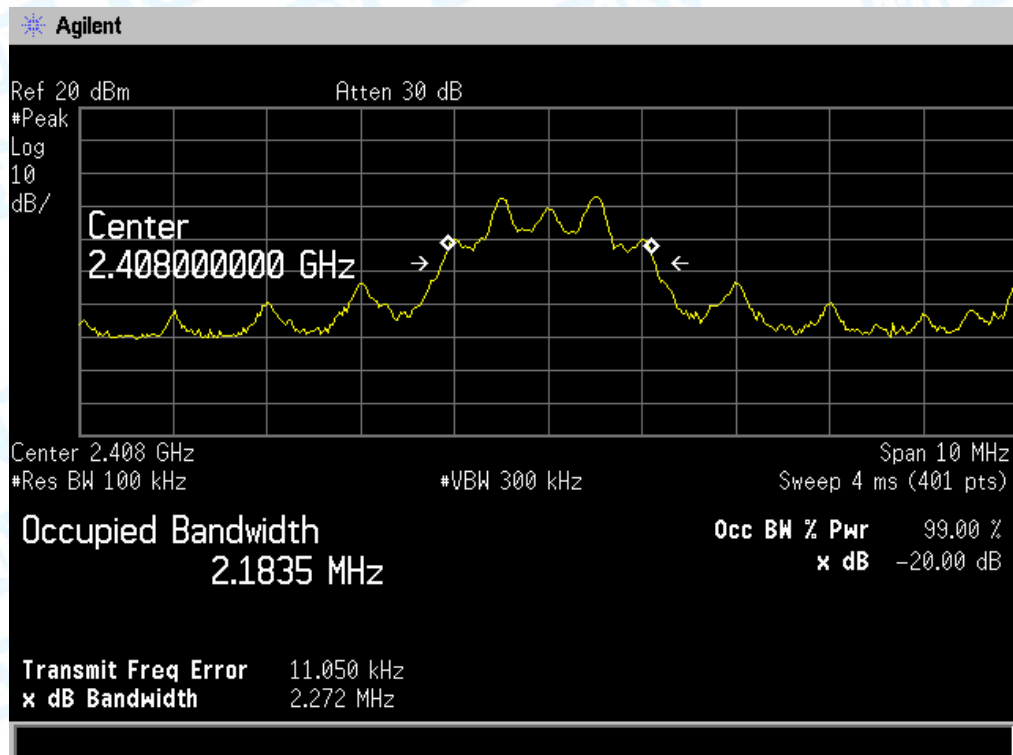
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4948.910	40.55	17.09	57.64	74.00	-16.36	peak
2	*	4948.910	31.60	17.09	48.69	54.00	-5.31	AVG

Emission Level= Read Level+ Correct Factor

Attachment B--Bandwidth Test Data

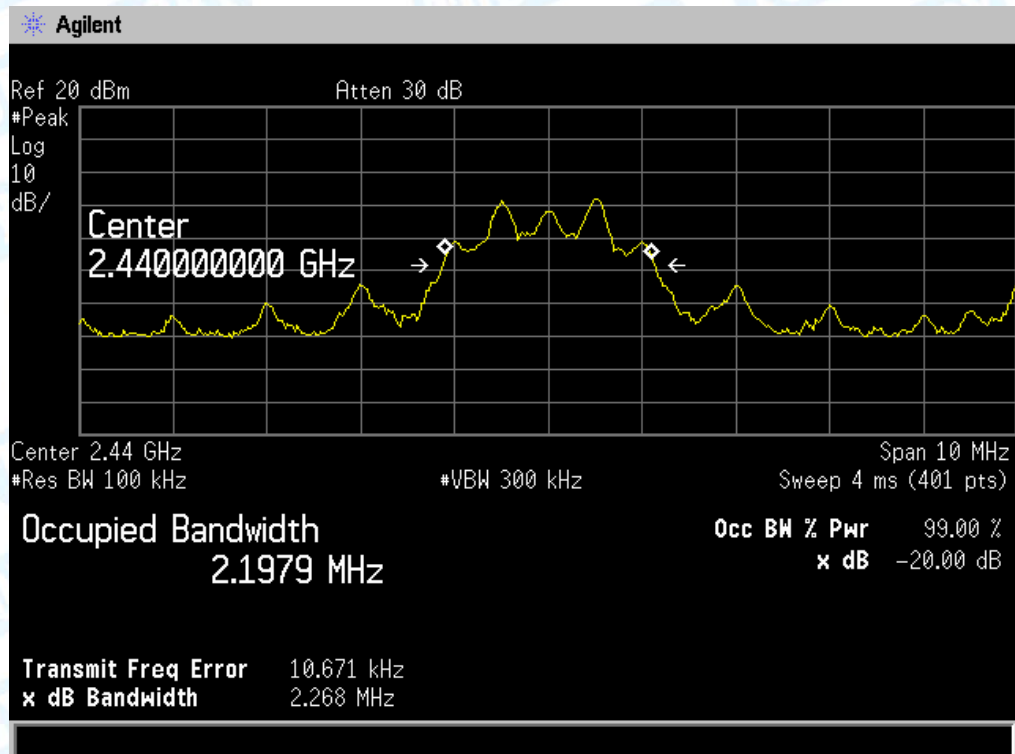
Low Channel Frequency (MHz)	20dB Bandwidth (MHz)
2408	2.272

2408 MHz



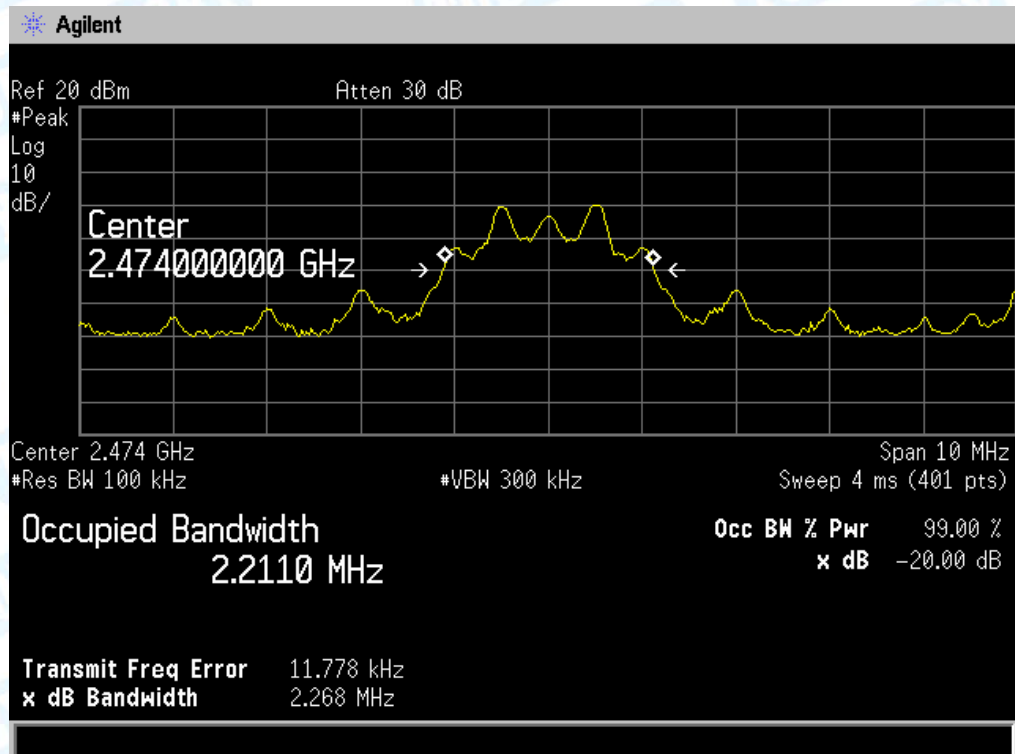
MID Channel Frequency (MHz)	20dB Bandwidth (MHz)
2440	2.268

2440 MHz



HIGH Channel Frequency (MHz)	20dB Bandwidth (MHz)
2474	2.268

2474 MHz



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