



# CTC Laboratories, Inc.

Room 101 Building B, No. 7, Lanqing 1st Road, Luhua Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China  
Tel: +86-755-27521059 Fax: +86-755-27521011 <http://www.sz-ctc.org.cn>

## TEST REPORT

**Report No.** .....: **CTC2024198504**

**FCC ID**.....: **PADWF149**

**IC**.....: **10563A-WF149**

**FCC Applicant/Manufacturer**..: **Wahoo Fitness LLC**  
Address.....: 90 W. Wieuca Road #110, Atlanta, GA 30342, United States

**IC Applicant/Manufacturer**.....: **Wahoo Fitness**  
Address.....: 90 W. Wieuca Road #110, Atlanta, GA 30342, United States

**Product Name**.....: **Bike Computer**

Trade Mark.....: WAHOO FITNESS

Model/Type reference.....: WF149

Listed Model(s) .....: /

**Standard**.....: **FCC CFR Title 47 Part 15 Subpart C Section 15.249**  
**RSS-210 Issue 11**

Date of receipt of test sample...: Aug. 14, 2024

Date of testing.....: Aug. 14, 2024 ~ Oct. 14, 2024

Date of issue.....: Oct. 14, 2024

**Result**.....: **PASS**

Compiled by:		
(Printed name+signature)	Jim Jiang	
Supervised by:		
(Printed name+signature)	Eric Zhang	
Approved by:		
(Printed name+signature)	Totti Zhao	

This test report may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product endorsement by CTC. The test results in the report only apply to the tested sample. The test report shall be invalid without all the signatures of testing engineers, reviewer and approver. Any objections must be raised to CTC within 15 days since the date when the report is received. It will not be taken into consideration beyond this limit. The test report merely correspond to the test sample.



Table of Contents

Page

**1. TEST SUMMARY ..... 3**

1.1. TEST STANDARDS.....3

1.2. REPORT VERSION .....3

1.3. TEST DESCRIPTION.....3

1.4. TEST FACILITY .....4

1.5. MEASUREMENT UNCERTAINTY .....4

1.6. ENVIRONMENTAL CONDITIONS.....5

**2. GENERAL INFORMATION ..... 6**

2.1. CLIENT INFORMATION .....6

2.2. GENERAL DESCRIPTION OF EUT .....6

2.3. DESCRIPTION OF TEST MODES .....7

2.4. ACCESSORY EQUIPMENT INFORMATION .....7

2.5. MEASUREMENT INSTRUMENTS LIST .....8

**3. TEST ITEM AND RESULTS ..... 9**

3.1. AC POWER LINE CONDUCTED EMISSIONS .....9

3.2. BANDWIDTH.....12

3.3. RADIATED FIELD STRENGTH OF THE FUNDAMENTAL SIGNAL.....14

3.4. RADIATED SPURIOUS EMISSIONS AND BANDEDGE EMISSION .....17

3.5. ANTENNA REQUIREMENT .....24



# 1. TEST SUMMARY

## 1.1. Test Standards

The tests were performed according to following standards:

[FCC Rules Part 15.249](#): Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz.

[RSS-210 Issue 11](#): Licence-Exempt Radio Apparatus: Category I Equipment

[ANSI C63.10-2013](#): American National Standard for Testing Unlicensed Wireless Devices.

## 1.2. Report Version

Revised No.	Report No.	Date of issue	Description
01	CTC2024198504	Oct. 14, 2024	Original

## 1.3. Test Description

Test Item	Section in CFR 47	RSS-210	Result	Test Engineer
AC Power Line Conducted Emissions	15.207	RSS-Gen 8.8	PASS	Jim Jiang
20dB Occupied Bandwidth	15.215/15.249	/	PASS	Jim Jiang
Field strength of the Fundamental signal	15.249(a)	RSS-210 F.1.a	PASS	Jim Jiang
Spurious Emissions	15.209/15.249(a)	RSS-210 F.1.e	PASS	Jim Jiang
Band edge Emissions	15.205/15.249(d)	/	PASS	Jim Jiang
Antenna requirement	15.203	/	PASS	Jim Jiang

Note: "N/A" is not applicable.

The measurement uncertainty is not included in the test result.



## 1.4. Test Facility

### Address of the report laboratory

#### CTC Laboratories, Inc.

Add: Room 101 Building B, No. 7, Lanqing 1st Road, Luhua Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China

### Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

#### A2LA-Lab Cert. No.: 4340.01

CTC Laboratories, Inc. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

#### Industry Canada (Registration No.: 9783A, CAB Identifier: CN0029)

CTC Laboratories, Inc. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 9783A on Jan, 2016.

#### FCC (Registration No.: 951311, Designation Number CN1208)

CTC Laboratories, Inc. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 951311, Aug 26, 2017.

## 1.5. Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2" and is documented in the CTC Laboratories, Inc. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Below is the best measurement capability for CTC Laboratories, Inc.



Test Items	Measurement Uncertainty	Notes
DTS Bandwidth	$\pm 0.0196\%$	(1)
Maximum Conducted Output Power	$\pm 0.686$ dB	(1)
Maximum Power Spectral Density Level	$\pm 0.743$ dB	(1)
Band-edge Compliance	$\pm 1.328$ dB	(1)
Unwanted Emissions In Non-restricted Freq Bands	9kHz-1GHz: $\pm 0.746$ dB 1GHz-26GHz: $\pm 1.328$ dB	(1)
Conducted Emissions 9kHz~30MHz	$\pm 3.08$ dB	(1)
Radiated Emissions 30~1000MHz	$\pm 4.51$ dB	(1)
Radiated Emissions 1~18GHz	$\pm 5.84$ dB	(1)
Radiated Emissions 18~40GHz	$\pm 6.12$ dB	(1)

Note (1): This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

## 1.6. Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	21°C ~ 27°C
Relative Humidity:	40% ~ 60%
Air Pressure:	101kPa



## 2. GENERAL INFORMATION

### 2.1. Client Information

FCC Applicant/ Manufacturer:	Wahoo Fitness LLC
Address:	90 W. Wieuca Road #110, Atlanta, GA 30342, United States
IC Applicant/ Manufacturer:	Wahoo Fitness
Address:	90 W. Wieuca Road #110, Atlanta, GA 30342, United States

### 2.2. General Description of EUT

Product Name:	Bike Computer
Trade Mark:	WAHOO FITNESS
Model/Type reference:	WF149
Listed Model(s):	/
Model Difference:	/
Power supply:	5Vdc from USB Cable, 3.85Vdc from 4350mAh Li-ion Battery
Sample ID:	CTC240528-006-S001
Hardware version:	DVT1
Software version:	ACE-userdebug-(0029)
<b>ANT+ Specification</b>	
Modulation:	GFSK
Operation frequency:	2457MHz
Antenna type:	Chip Antenna
Antenna gain:	0.5dBi



## 2.3. Description of Test Modes

The EUT has been tested under test mode condition. The Applicant provides software to control the EUT for staying in continuous transmitting and receiving mode for testing.

### Operation Frequency List:

Channel	Frequency (MHz)
01	2457

### Test Mode

For RF test items
The engineering test program was provided and enabled to make EUT continuous transmit. (duty cycle>98%).
For AC power line conducted emissions:
The EUT was set to connect with large package sizes transmission.
For Radiated spurious emissions test item:
The engineering test program was provided and enabled to make EUT continuous transmit. The EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

## 2.4. Accessory Equipment Information

Equipment Information			
Name	Model	S/N	Manufacturer
Adapter	A2167	/	Apple
Cable Information			
Name	Shielded Type	Ferrite Core	Length
USB Cable	Unshielded	NO	100cm
Test Software Information			
Name	Version	/	/
WahooSerial	/	/	/



## 2.5. Measurement Instruments List

RF Test System					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until
1	Spectrum Analyzer	R&S	FSV40-N	101331	Mar. 21, 2025
2	Spectrum Analyzer	R&S	FSU26	100105	Dec. 12, 2024
3	MXA Signal Analyzer	Keysight	N9020A	MY46471737	Dec. 12, 2024
4	MXG Vector Signal Generator	Agilent	N5182A	MY47420864	Dec. 12, 2024
5	PSG Analog Signal Generator	Agilent	E8257D	MY46521908	Dec. 12, 2024
6	EXG Analog Signal Generator	Keysight	N5173B	MY59100842	Dec. 12, 2024
7	MXG Vector Signal Generator	Keysight	N5182B	MY59100212	Dec. 12, 2024
8	USB Wideband Power Sensor	Keysight	U2021XA	MY55130004	Mar. 21, 2025
9	USB Wideband Power Sensor	Keysight	U2021XA	MY55130006	Mar. 21, 2025
10	Wideband Radio Communication Tester	R&S	CMW500	102414	Dec. 12, 2024
11	High and low temperature test chamber	ESPEC	MT3035	/	Mar. 21, 2025

Radiated Emission (3m chamber 3)					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until
1	Trilog-Broadband Antenna	Schwarzbeck	VULB 9163	01026	Dec. 18, 2024
2	Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-647	Dec. 01, 2024
3	Test Receiver	Keysight	N9038A	MY56400071	Dec. 12, 2024
4	Broadband Amplifier	SCHWARZBECK	BBV9743B	259	Dec. 12, 2024
5	Mirowave Broadband Amplifier	SCHWARZBECK	BBV9718C	111	Dec. 12, 2024
6	3m chamber 3	YIHENG	EE106	/	Aug. 28, 2026
7	Test Software	FARA	EZ-EMC	FA-03A2	/

Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until
1	LISN	R&S	ENV216	101112	Dec. 12, 2024
2	LISN	R&S	ENV216	101113	Dec. 12, 2024
3	EMI Test Receiver	R&S	ESCS30	100353	Dec. 12, 2024
4	ISN CAT6	Schwarzbeck	NTFM 8158	CAT6-8158-0046	Dec. 12, 2024
5	ISN CAT5	Schwarzbeck	NTFM 8158	CAT5-8158-0046	Dec. 12, 2024
6	Test Software	R&S	EMC32	6.10.10	/

Note: 1. The Cal. Interval was one year.

2. The Cal. Interval was three year of the chamber

3. The cable loss has calculated in test result which connection between each test instruments..

CTC Laboratories, Inc.

Room 101 Building B, No. 7, Lanqing 1st Road, Luhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China

Tel.: (86)755-27521059 Fax: (86)755-27521011 Http://www.sz-ctc.org.cn



For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : [yz.cnca.cn](http://yz.cnca.cn)





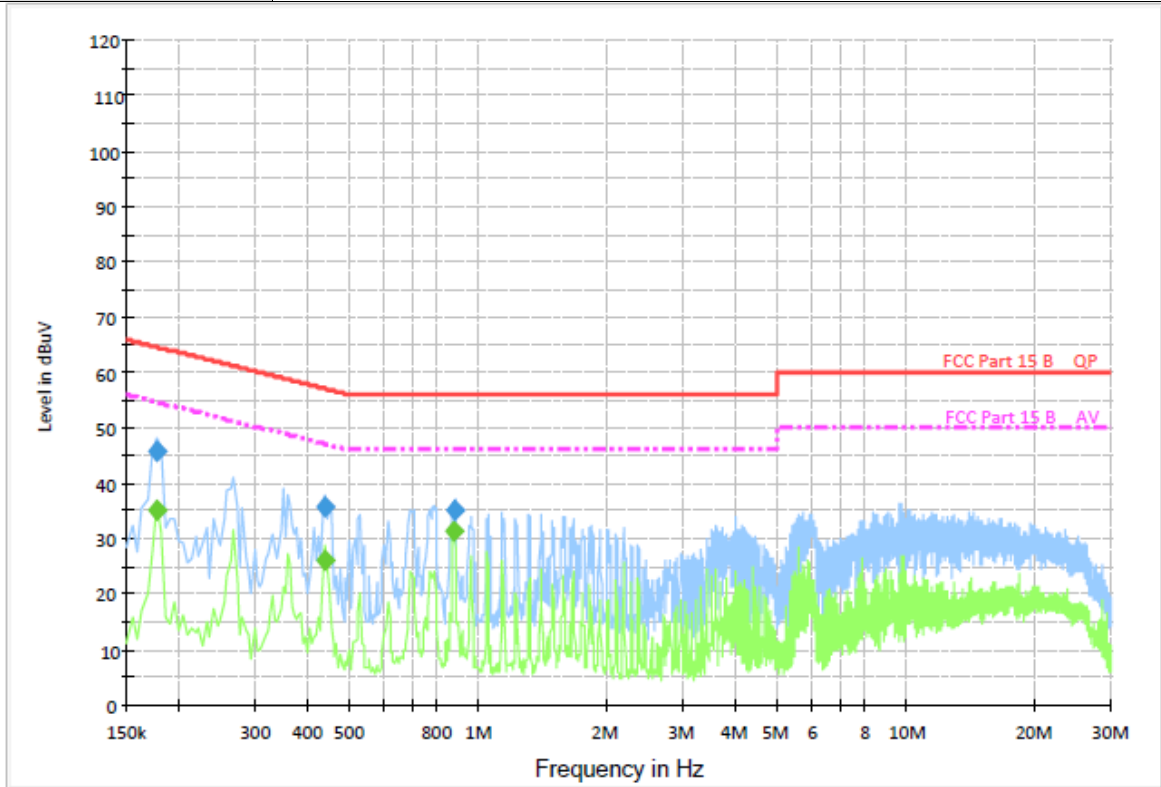


**Test Mode**

Please refer to the clause 2.3

**Test Results**

<b>Test Voltage:</b>	AC 120V/60Hz
<b>Terminal:</b>	Line
<b>Remark:</b>	Only worse case is reported.



**Final Measurement Detector 1**

Frequency (MHz)	QuasiPeak (dB μV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μV)	Comment
0.177000	46.0	1000.00	9.000	On	L1	9.5	18.6	64.6	
0.438000	35.6	1000.00	9.000	On	L1	9.5	21.5	57.1	
0.880000	35.0	1000.00	9.000	On	L1	9.5	21.0	56.0	

**Final Measurement Detector 2**

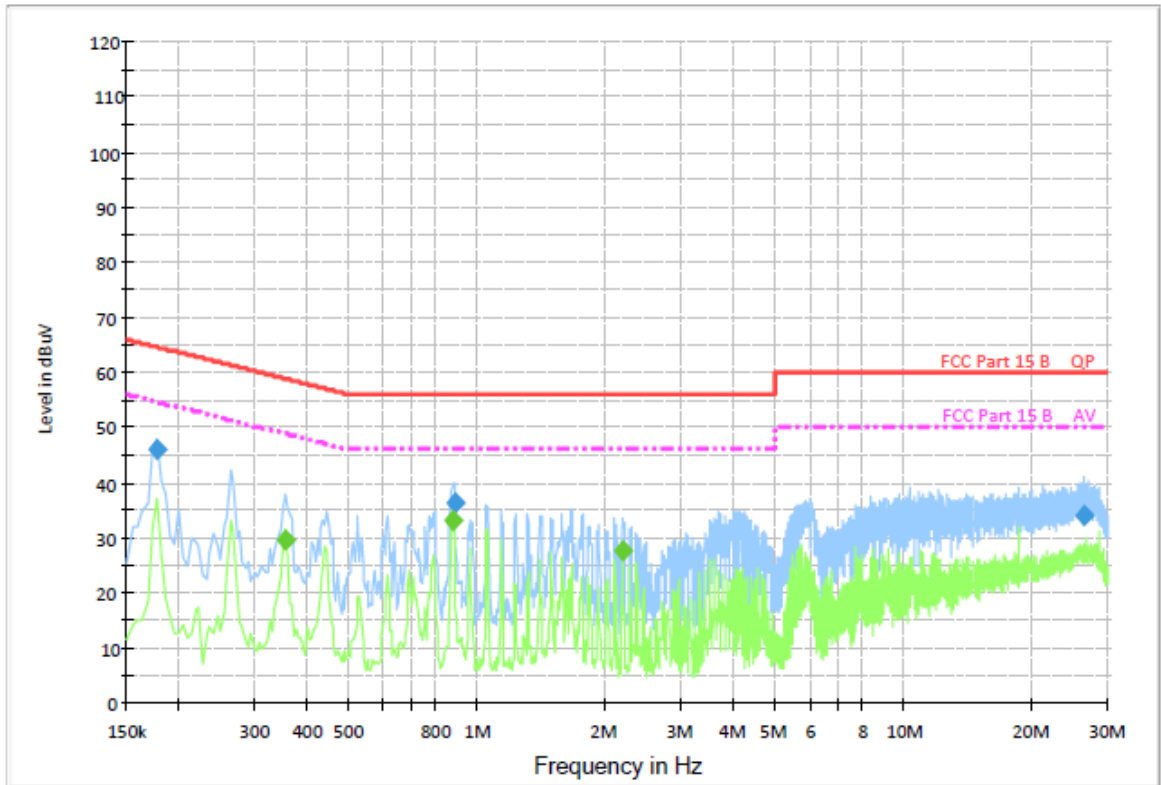
Frequency (MHz)	Average (dB μV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μV)	Comment
0.177000	35.1	1000.00	9.000	On	L1	9.5	19.5	54.6	
0.438000	26.0	1000.00	9.000	On	L1	9.5	21.1	47.1	
0.870000	31.4	1000.00	9.000	On	L1	9.5	14.6	46.0	

Emission Level = Read Level + Correct Factor





<b>Test Voltage:</b>	AC 120V/60Hz
<b>Terminal:</b>	Neutral
<b>Remark:</b>	Only worse case is reported.



### Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dB µ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)	Comment
0.177000	46.0	1000.00	9.000	On	N	9.5	18.6	64.6	
0.883500	36.0	1000.00	9.000	On	N	9.4	20.0	56.0	
26.403000	33.9	1000.00	9.000	On	N	9.5	26.1	60.0	

### Final Measurement Detector 2

Frequency (MHz)	Average (dB µ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)	Comment
0.352500	29.5	1000.00	9.000	On	N	9.4	19.4	48.9	
0.874500	33.0	1000.00	9.000	On	N	9.4	13.0	46.0	
2.179500	27.6	1000.00	9.000	On	N	9.4	18.4	46.0	

Emission Level = Read Level + Correct Factor

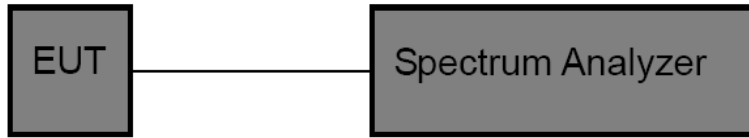


### 3.2. Bandwidth

#### Limit

Operation frequency range 2400MHz~2483.5MHz.

#### Test Configuration



#### Test Procedure

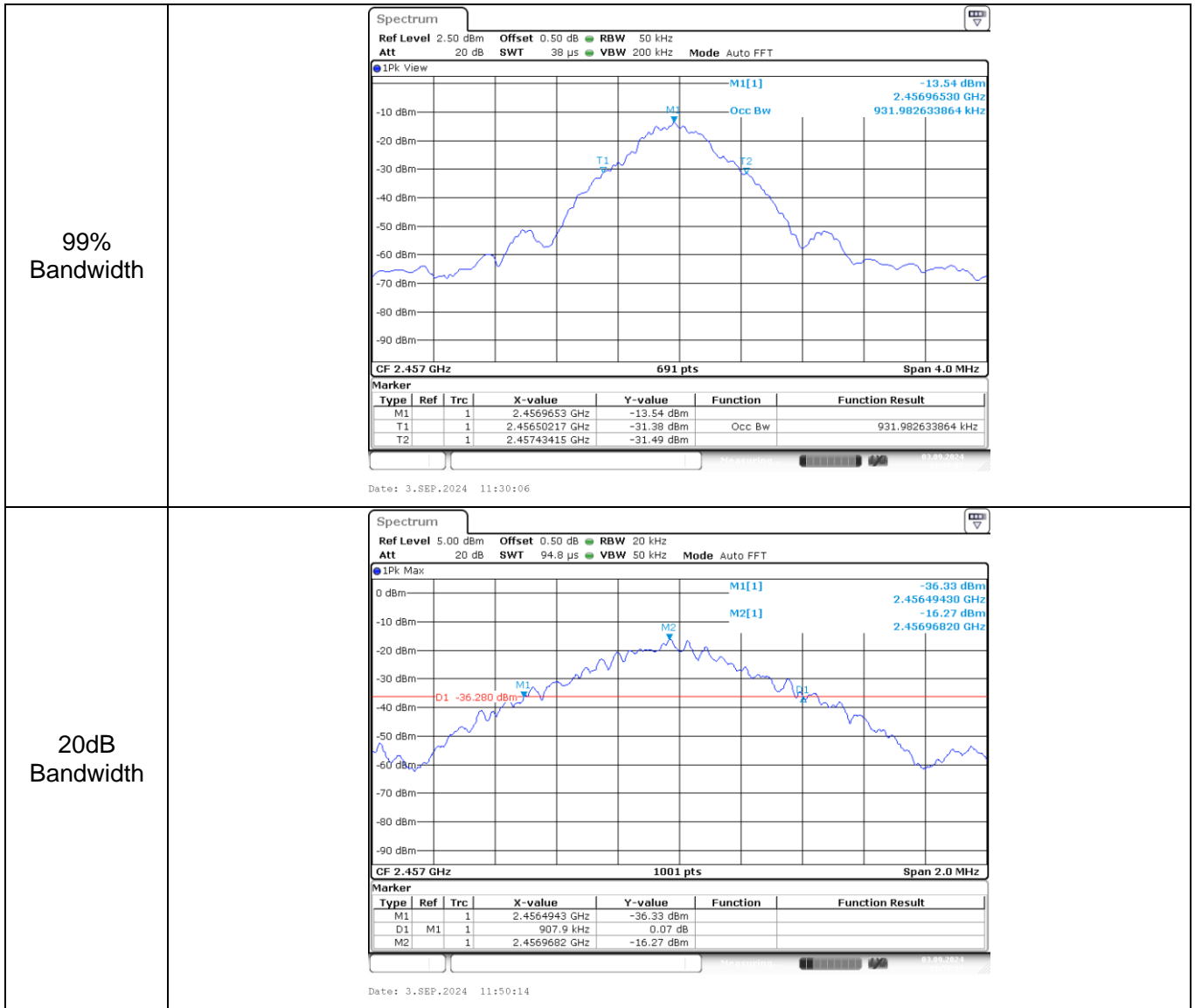
1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously
3. Use the following spectrum analyzer settings:  
 Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a test channel  
 RBW ≥ 1% of the 20 dB bandwidth, VBW ≥ RBW  
 Sweep = auto, Detector function = peak, Trace = max hold
4. Measure and record the results in the test report.

#### Test Mode

Please refer to the clause 2.3

#### Test Results

Channel	20dB Bandwidth (KHz)	99% Bandwidth (KHz)	Result
01	907.90	931.98	Pass



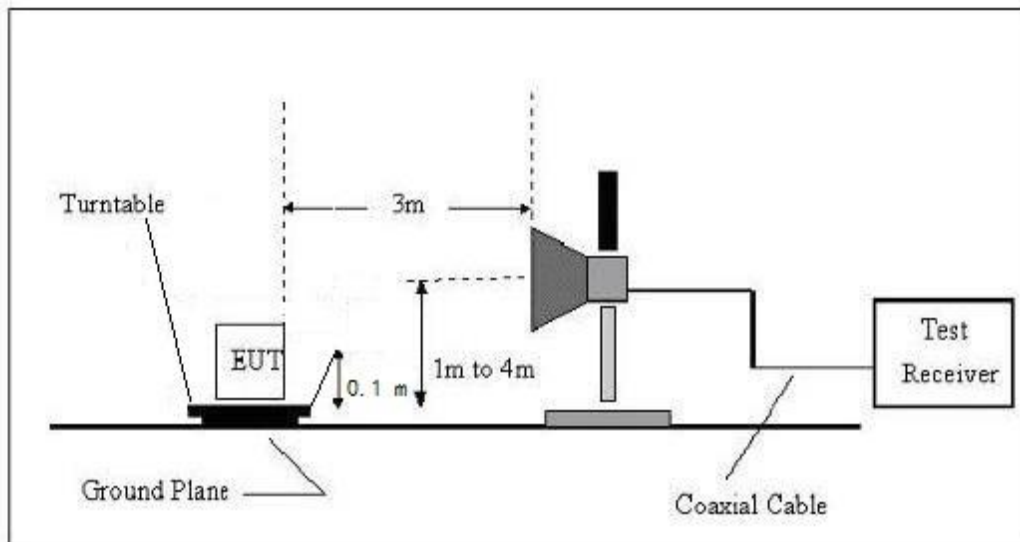
### 3.3. Radiated field strength of the fundamental signal

#### Limit

Fundamental frequency	Field strength of fundamental (millivolts/meter/ AVG)	Field strength of harmonics (microvolts/meter/ AVG)
902-928 MHz	50 (94dBuV/m @3m)	500 (54dBuV/m @3m)
2400-2483.5 MHz	50 (94dBuV/m @3m)	500 (54dBuV/m @3m)
5725-5875 MHz	50 (94dBuV/m @3m)	500 (54dBuV/m @3m)
24.0-24.25 GHz	250 (108dBuV/m @3m)	2500 (68dBuV/m @3m)

Frequencies above 1000 MHz, the field strength limits are based on average limits

#### Test Configuration



#### Test Procedure

1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
2. The EUT is placed on a turn table which is 0.1 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
5. The receiver set as follow:  
RBW=1MHz, VBW=3MHz Peak detector for Peak value.

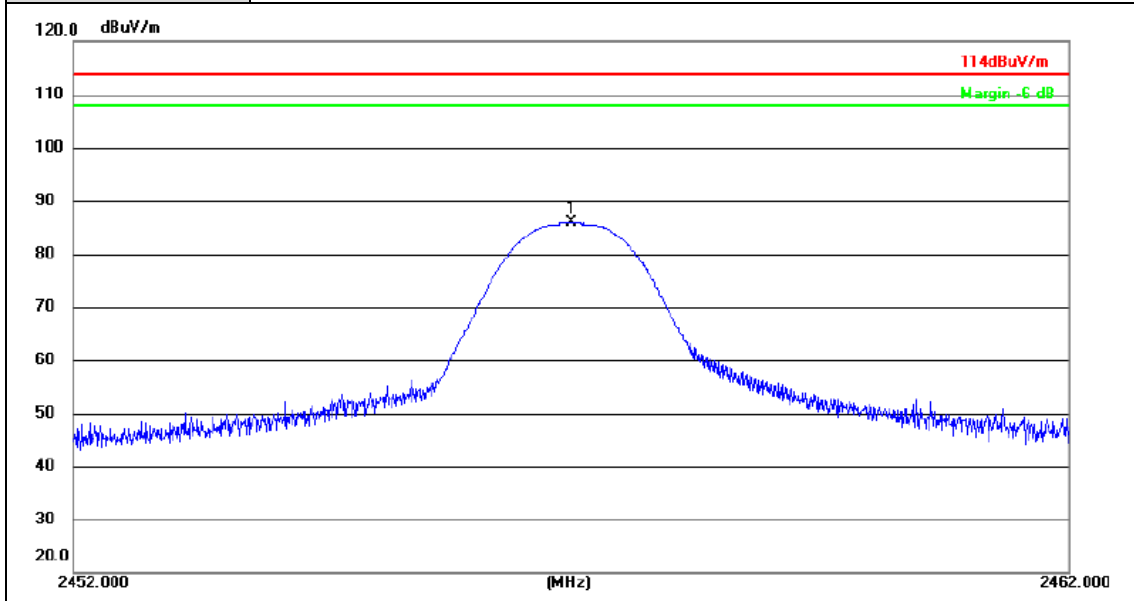
#### Test Mode

Please refer to the clause 2.3



Test Results

Ant. Pol.	Horizontal
Test Mode	TX ANT+ Mode 2457MHz



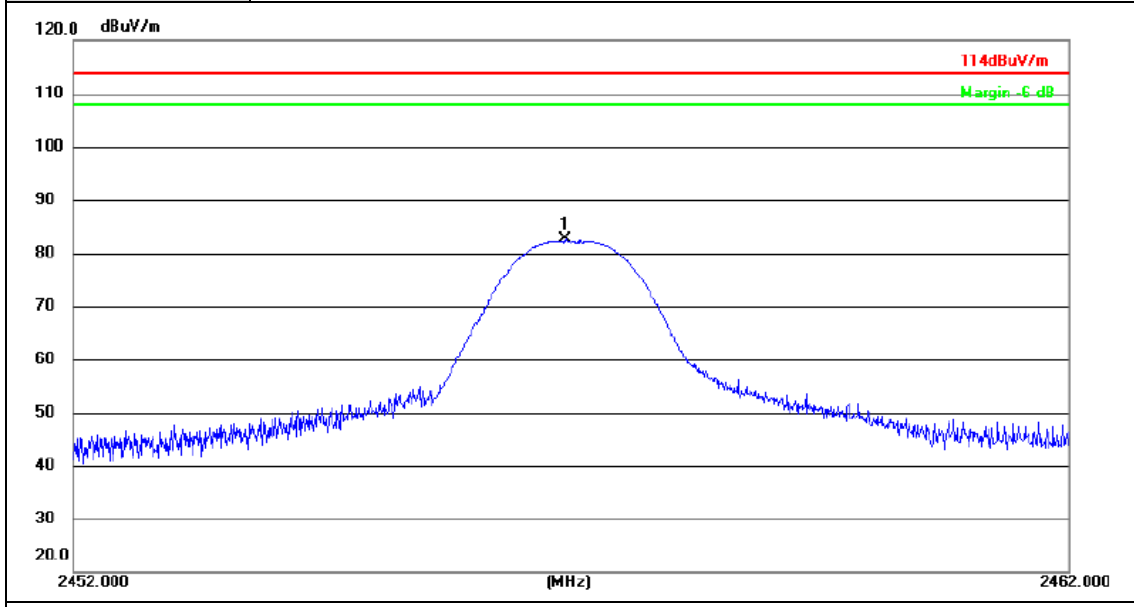
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	2456.997	88.99	-3.08	85.91	114.00	-28.09	peak

Remarks:

- 1. Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
- 2. Margin value = Level -Limit value



Ant. Pol.	Vertical
Test Mode	TX ANT+ Mode 2457MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	2456.953	85.61	-3.08	82.53	114.00	-31.47	peak

Remarks:  
 1. Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor  
 2. Margin value = Level -Limit value



### 3.4. Radiated Spurious Emissions and Bandedge Emission

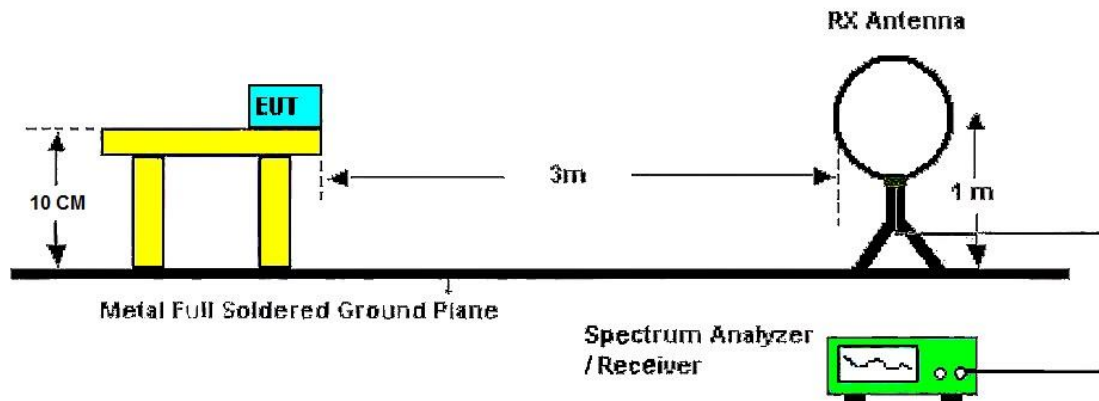
**Limit**

FCC CFR Title 47 Part 15 Subpart C Section 15.209

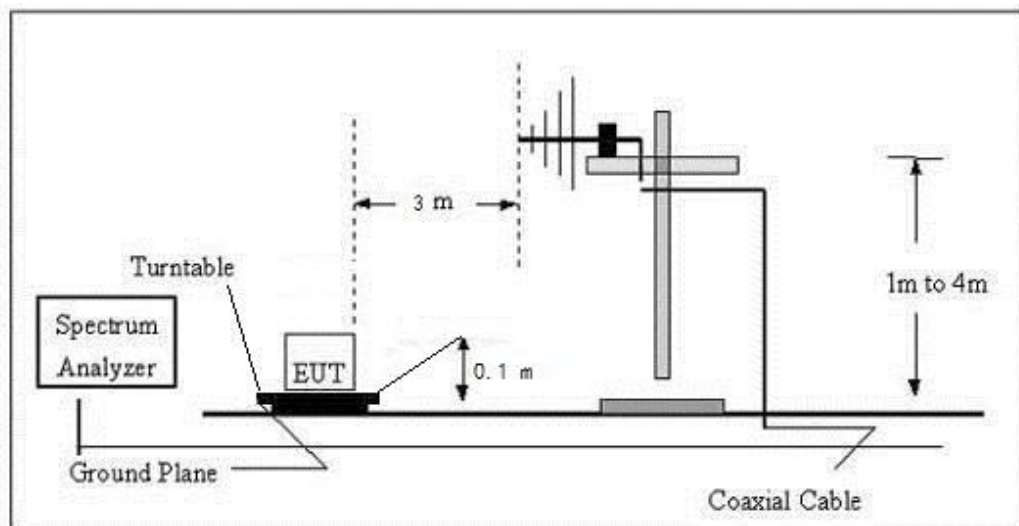
Frequency	Limit (dBuV/m @3m)	Value
30MHz~88MHz	40.00	Quasi-peak
88MHz~216MHz	43.50	Quasi-peak
216MHz~960MHz	46.00	Quasi-peak
960MHz~1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

**Test Configuration**

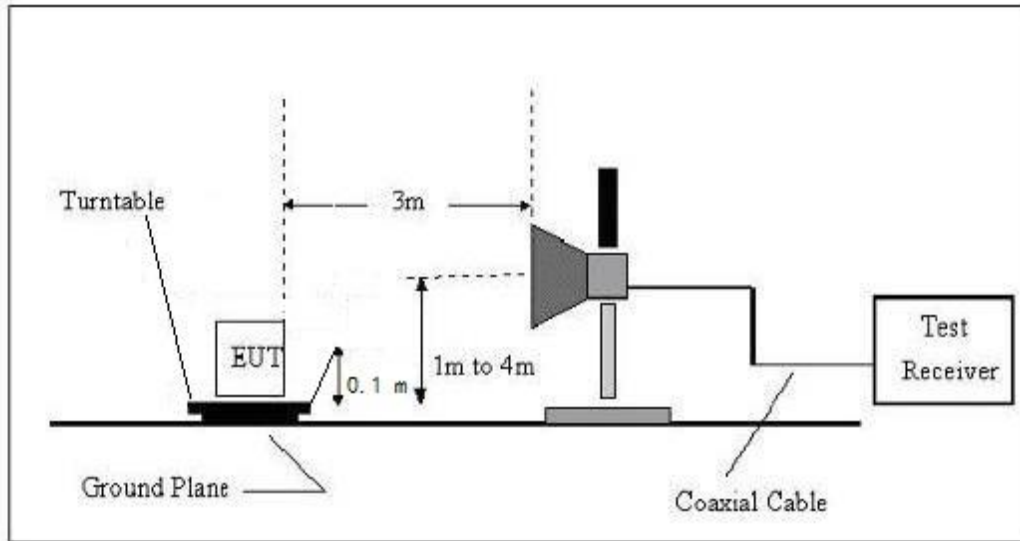
- 9 kHz ~ 30 MHz



- 30 MHz ~ 1 GHz



- Above 1 GHz



### Test Procedure

1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
2. The EUT is placed on a turn table which is 0.1 meter above ground for below 1 GHz, and 0.1 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
4. Set to the maximum power setting and enable the EUT transmit continuously.
5. Use the following spectrum analyzer settings  
Span shall wide enough to fully capture the emission being measured;  
(1)Below 1 GHz:  
RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold;  
If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.  
(2)From 1 GHz to 10th harmonic:  
RBW=1MHz, VBW=3MHz Peak detector for Peak value.  
RBW=1MHz, VBW=3MHz RMS detector for Average value.

### Test Mode

Please refer to the clause 2.3

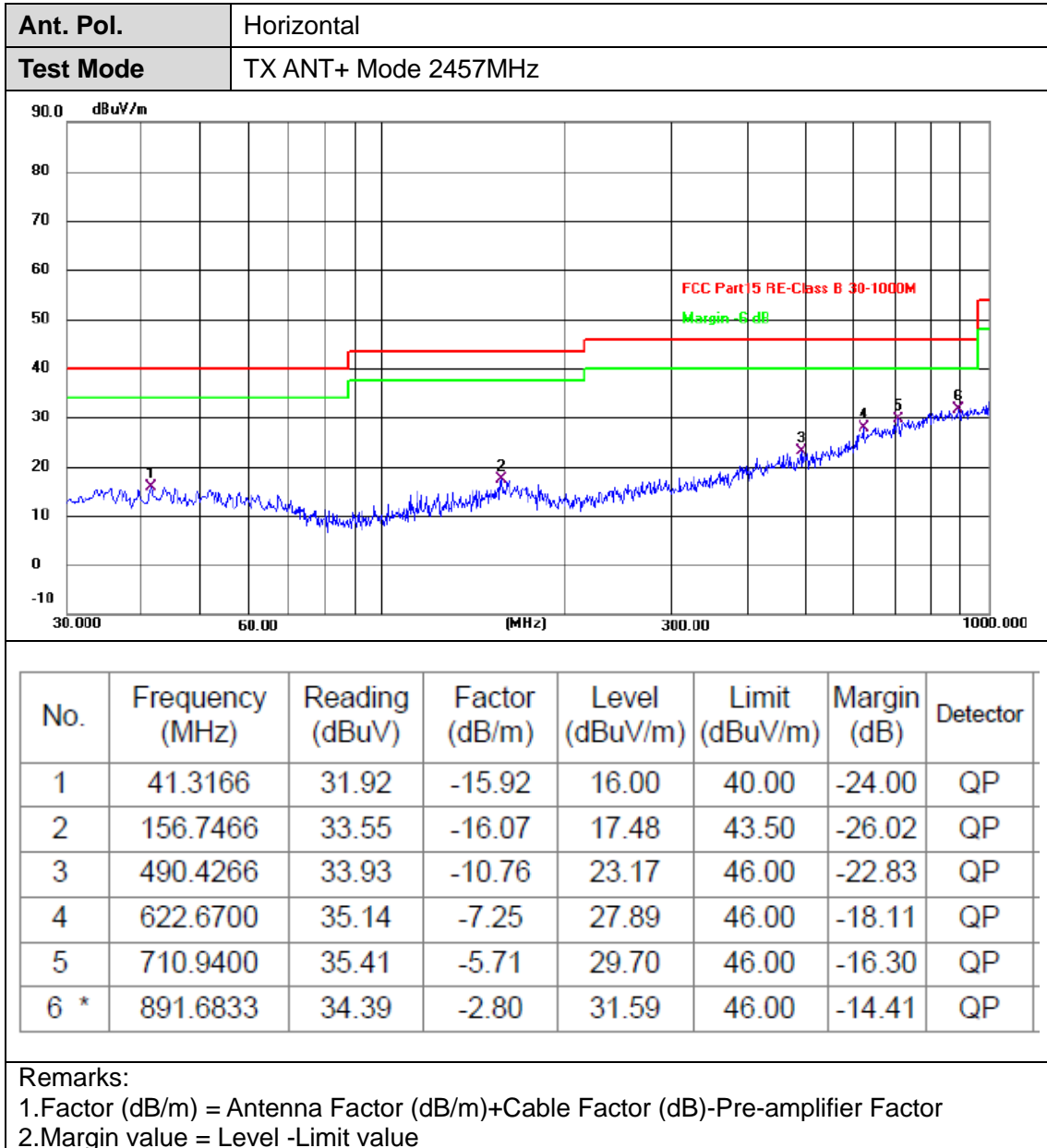
### Test Results

#### ■ 9 kHz ~ 30 MHz

The EUT was pre-scanned the frequency band (9 kHz ~ 30 MHz), found the radiated level lower than the limit, so don't show on the report.

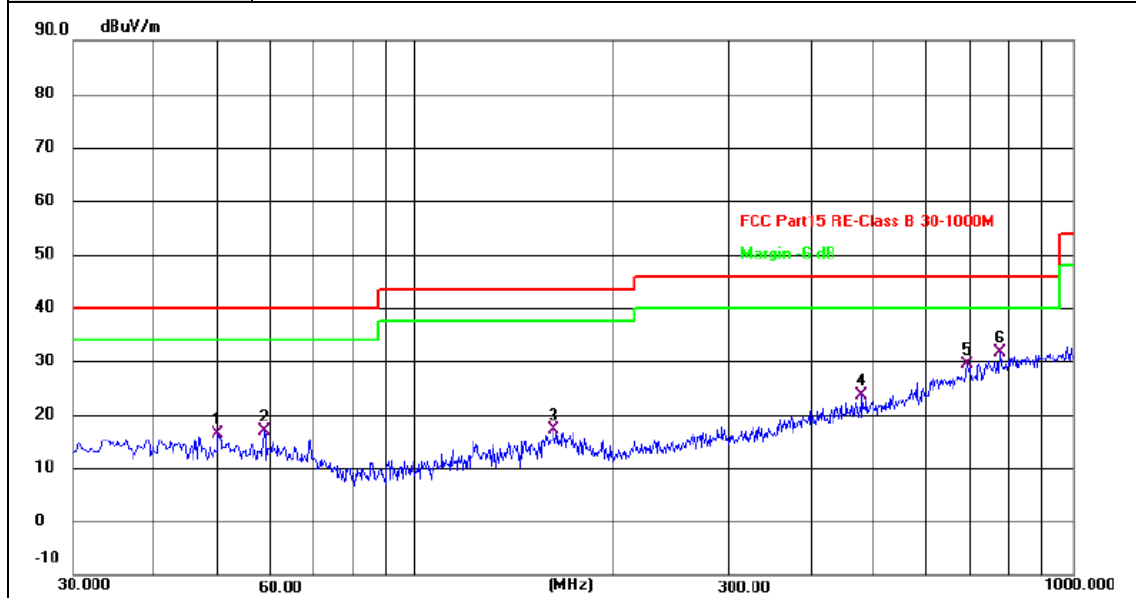


■ 30 MHz ~ 1 GHz





<b>Ant. Pol.</b>	Vertical
<b>Test Mode</b>	TX ANT+ Mode 2457MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	50.0466	32.68	-16.41	16.27	40.00	-23.73	QP
2	58.7766	33.91	-17.00	16.91	40.00	-23.09	QP
3	162.2433	33.22	-16.14	17.08	43.50	-26.42	QP
4	477.1700	34.67	-10.96	23.71	46.00	-22.29	QP
5	691.5400	35.37	-6.10	29.27	46.00	-16.73	QP
6 *	774.6366	35.88	-4.29	31.59	46.00	-14.41	QP

Remarks:

1. Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2. Margin value = Level -Limit value



■ Above 1 GHz

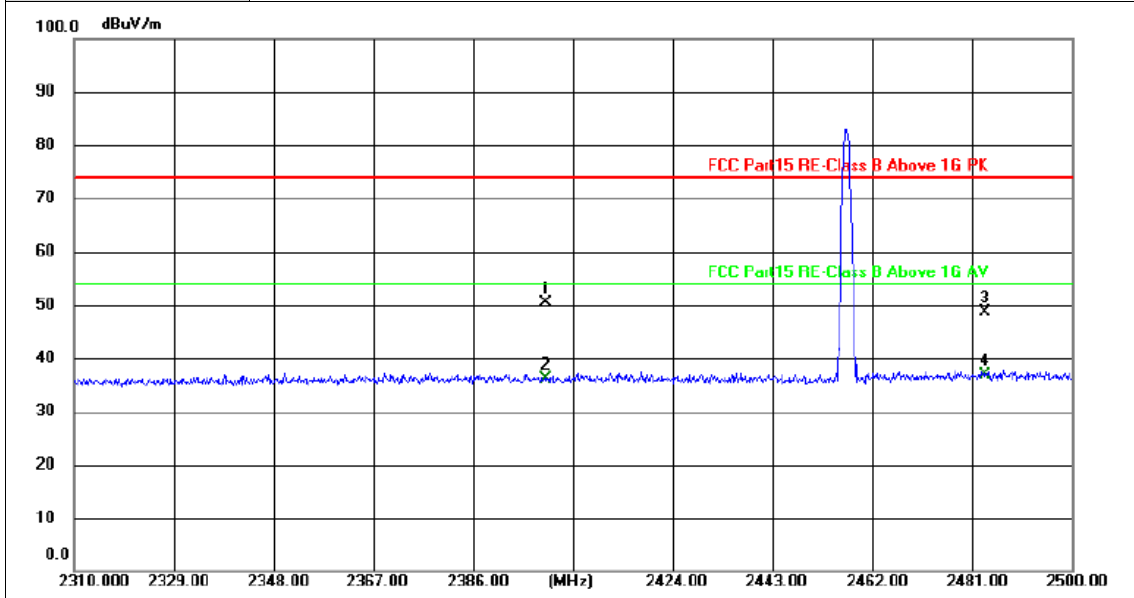
<b>Ant. Pol.</b>	Horizontal						
<b>Test Mode</b>	TX ANT+ Mode 2457MHz						
<b>Remark:</b>	No report for the emission which more than 20 dB below the prescribed limit.						
<b>No.</b>	<b>Frequency (MHz)</b>	<b>Reading (dBuV)</b>	<b>Factor (dB/m)</b>	<b>Level (dBuV/m)</b>	<b>Limit (dBuV/m)</b>	<b>Margin (dB)</b>	<b>Detector</b>
1	6444.167	39.55	7.18	46.73	74.00	-27.27	peak
2	7525.167	40.38	10.09	50.47	74.00	-23.53	peak
3	8476.917	40.67	10.69	51.36	74.00	-22.64	peak
4	9671.500	40.07	12.72	52.79	74.00	-21.21	peak
5	11238.167	38.58	14.78	53.36	74.00	-20.64	peak
6 *	12009.750	38.16	15.46	53.62	74.00	-20.38	peak
<b>Remarks:</b>							
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor							
2.Margin value = Level -Limit value							

<b>Ant. Pol.</b>	Vertical						
<b>Test Mode</b>	TX ANT+ Mode 2457MHz						
<b>Remark:</b>	No report for the emission which more than 20 dB below the prescribed limit.						
<b>No.</b>	<b>Frequency (MHz)</b>	<b>Reading (dBuV)</b>	<b>Factor (dB/m)</b>	<b>Level (dBuV/m)</b>	<b>Limit (dBuV/m)</b>	<b>Margin (dB)</b>	<b>Detector</b>
1	3957.083	41.76	0.37	42.13	74.00	-31.87	peak
2	5112.500	42.32	2.60	44.92	74.00	-29.08	peak
3	7681.833	40.70	10.20	50.90	74.00	-23.10	peak
4	9087.917	39.87	11.99	51.86	74.00	-22.14	peak
5	10936.583	38.44	14.61	53.05	74.00	-20.95	peak
6 *	12507.167	37.78	15.80	53.58	74.00	-20.42	peak
<b>Remarks:</b>							
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor							
2.Margin value = Level -Limit value							



**Bandedge Emission**

<b>Ant. Pol.</b>	Horizontal
<b>Test Mode</b>	TX ANT+ Mode 2457MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2400.000	19.03	31.32	50.35	74.00	-23.65	peak
2	2400.000	4.92	31.32	36.24	54.00	-17.76	AVG
3	2483.500	17.12	31.48	48.60	74.00	-25.40	peak
4 *	2483.500	5.29	31.48	36.77	54.00	-17.23	AVG

**Remark:**

- Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
- Margin value = Level -Limit value



<b>Ant. Pol.</b>	Vertical																																														
<b>Test Mode</b>	TX ANT+ Mode 2457MHz																																														
<table border="1"> <thead> <tr> <th>No.</th> <th>Frequency (MHz)</th> <th>Reading (dBuV)</th> <th>Factor (dB/m)</th> <th>Level (dBuV/m)</th> <th>Limit (dBuV/m)</th> <th>Margin (dB)</th> <th>Detector</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2400.000</td> <td>18.80</td> <td>31.32</td> <td>50.12</td> <td>74.00</td> <td>-23.88</td> <td>peak</td> </tr> <tr> <td>2</td> <td>2400.000</td> <td>4.48</td> <td>31.32</td> <td>35.80</td> <td>54.00</td> <td>-18.20</td> <td>AVG</td> </tr> <tr> <td>3</td> <td>2483.500</td> <td>17.47</td> <td>31.48</td> <td>48.95</td> <td>74.00</td> <td>-25.05</td> <td>peak</td> </tr> <tr> <td>4 *</td> <td>2483.500</td> <td>4.89</td> <td>31.48</td> <td>36.37</td> <td>54.00</td> <td>-17.63</td> <td>AVG</td> </tr> </tbody> </table>								No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	1	2400.000	18.80	31.32	50.12	74.00	-23.88	peak	2	2400.000	4.48	31.32	35.80	54.00	-18.20	AVG	3	2483.500	17.47	31.48	48.95	74.00	-25.05	peak	4 *	2483.500	4.89	31.48	36.37	54.00	-17.63	AVG
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																																								
1	2400.000	18.80	31.32	50.12	74.00	-23.88	peak																																								
2	2400.000	4.48	31.32	35.80	54.00	-18.20	AVG																																								
3	2483.500	17.47	31.48	48.95	74.00	-25.05	peak																																								
4 *	2483.500	4.89	31.48	36.37	54.00	-17.63	AVG																																								
<p>Remark:</p> <p>1. Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor</p> <p>2. Margin value = Level -Limit value</p>																																															



### 3.5. Antenna Requirement

#### Requirement

##### **FCC CFR Title 47 Part 15 Subpart C Section 15.203:**

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, 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.

(i) Systems operating in the 2400~2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

#### Test Result

The directional gain of the antenna less than 6dBi, please refer to the EUT internal photographs antenna photo.

\*\*\*\*\*THE END\*\*\*\*\*