



## CTC Laboratories, Inc.

Room 101 of Building B, Room 107, 108, 207, 208 of Building A, 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

# TEST REPORT

**Report No.** ..... CTC2024214415  
**FCC ID** ..... XUJX431PROV5  
**Applicant** ..... Launch Tech Co., Ltd.  
**Address** ..... Launch Industrial Park, North of Wuhe Avenue, Banxuegang, Longgang, Shenzhen, Guangdong, P.R. China  
**Manufacturer** ..... Launch Tech Co., Ltd.  
**Address** ..... Launch Industrial Park, North of Wuhe Avenue, Banxuegang, Longgang, Shenzhen, Guangdong, P.R. China  
**Product Name** ..... AUTO Smart Diagnostic Tool  
**Trade Mark** ..... LAUNCH  
**Model/Type reference** ..... OADD-PO1005V, OADD-PO0805V  
**Listed Model(s)** ..... X-431 PRO3(V+ 5.0), X-431 PRO(V 5.0), X-431 PRO3(V+ 5), X-431 PRO(V 5)  
**Standard** ..... FCC CFR Title 47 Part 15 Subpart C Section 15.247  
**Date of receipt of test sample** ..... Sept. 02, 2024  
**Date of testing** ..... Jun. 22, 2023 ~ Aug. 06, 2023  
Sept. 02, 2024 ~ Sept. 29, 2024  
**Date of issue** ..... Oct. 14, 2024  
**Result** ..... PASS

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

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# 1. TEST SUMMARY

## 1.1. Test Standards

The tests were performed according to following standards:

FCC Rules Part 15.247: Operation within the bands of 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz.

RSS-247 Issue 3: Standard Specifications for Frequency Hopping Systems (FHSs) and Digital Transmission Systems (DTs) Operating in the Bands 902-928MHz, 2400-2483.5MHz and 5725-5850MHz.

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	CTC2024214415	Oct. 14, 2024	On the basis of the original report CTC20231384E02, add 4 product models, update battery factory and adapter. Retest conducted emission and radiated spurious emission (below 1GHz). Other data refer to the original report.

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### 1.3. Test Description

FCC Part 15 Subpart C (15.247)/ RSS-247 Issue 3				
Test Item	Standard Section		Result	Test Engineer
	FCC	IC		
Antenna Requirement	15.203	/	Pass	Jim Jiang
Conducted Emission	15.207	RSS-Gen 8.8	Pass	Cary Chen
Restricted Bands	15.205	RSS-Gen 8.10	N/A	N/A
Hopping Channel Separation	15.247(a)(1)	RSS-247 5.1 (b)	N/A	N/A
Dwell Time	15.247(a)(iii)	RSS-247 5.1 (d)	N/A	N/A
Peak Output Power	15.247(b)(1)	RSS-247 5.4 (b)	N/A	N/A
Number of Hopping Frequency	15.247(a)(iii)	RSS-247 5.1 (d)	N/A	N/A
Conducted Band Edge and Spurious Emissions	15.247(d)	RSS-247 5.5	N/A	N/A
Radiated Band Edge and Spurious Emissions	15.205&15.209&15.247(d)	RSS-247 5.5	Pass	Alicia Liu
Radiated Spurious Emission	15.247(d)&15.209	RSS-247 5.5&RSS-Gen 8.9	Pass	Jim Jiang
20dB Bandwidth	15.247(a)	RSS-247 5.1 (b)	N/A	N/A

Note: The measurement uncertainty is not included in the test result.

"N/A" is no application.

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## 1.4. Test Facility

### CTC Laboratories, Inc.

Add: Room 101 of Building B, Room 107, 108, 207, 208 of Building A, No. 7, Lanqing 1st Road, Luhu 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.

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Test Items	Measurement Uncertainty	Notes
20dB Emission Bandwidth	±0.0196%	(1)
Carrier Frequency Separation	±1.9%	(1)
Number of Hopping Channel	±1.9%	(1)
Time of Occupancy	±0.028%	(1)
Max Peak Conducted Output Power	±0.743 dB	(1)
Band-edge Spurious Emission	±1.328 dB	(1)
Conducted RF Spurious Emission	9kHz-1GHz: ±0.746dB 1GHz-26GHz: ±1.328dB	(1)
Conducted Emissions 9kHz~30MHz	±3.08 dB	(1)
Radiated Emissions 30~1000MHz	±4.51 dB	(1)
Radiated Emissions 1~18GHz	±5.84 dB	(1)
Radiated Emissions 18~40GHz	±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

Applicant:	Launch Tech Co., Ltd.
Address:	Launch Industrial Park, North of Wuhe Avenue, Banxuegang, Long-gang, Shenzhen, Guangdong, P.R. China
Manufacturer:	Launch Tech Co., Ltd.
Address:	Launch Industrial Park, North of Wuhe Avenue, Banxuegang, Long-gang, Shenzhen, Guangdong, P.R. China

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## 2.2. General Description of EUT

Product Name:	AUTO Smart Diagnostic Tool
Trade Mark:	LAUNCH
Model/Type reference:	OADD-PO1005V, OADD-PO0805V
Listed Model(s):	X-431 PRO3(V+ 5.0), X-431 PRO(V 5.0), X-431 PRO3(V+ 5), X-431 PRO(V 5)
Model Difference:	All these models are identical in the same PCB, Layout and electrical circuit, The only difference is screen size, antenna and antenna position. OADD-PO1005V, X-431 PRO3(V+ 5.0), X-431 PRO3(V+ 5), these models use the same antenna, the antenna position is the same. OADD-PO0805V, X-431 PRO(V 5.0), X-431 PRO(V 5), these models use the same antenna, the antenna position is the same.
Power supply:	5Vdc/5A from AC/DC Adapter 7.6Vdc from 6300mAh Li-ion Battery
Adapter model:	XDJ361R-050500 Input: 100-240V~ 50/60Hz 0.9A Output: 5Vdc/5A
Hardware version:	/
Software version:	/
<b>Bluetooth 5.1/EDR</b>	
Modulation:	GFSK, $\pi/4$ -DQPSK, 8-DPSK
Operation frequency:	2402MHz~2480MHz
Channel number:	79
Channel separation:	1MHz
Antenna type:	FPC Antenna
OADD-PO1005V Antenna gain:	3.42dBi Max
OADD-PO0805V Antenna gain:	2.96dBi Max

*Note: OADD-PO1005V and OADD-PO0805V have been tested, just the worst case is recorded in the report.*

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## 2.3. Accessory Equipment information

Equipment Information			
Name	Model	S/N	Manufacturer
/	/	/	/
/	/	/	/
Cable Information			
Name	Shielded Type	Ferrite Core	Length
/	/	/	/
Test Software Information			
Name	/	/	/
Engineering mode	/	/	/

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## 2.4. Operation state

Operation Frequency List: The EUT has been tested under typical operating condition. The Applicant provides communication tools software to control the EUT for staying in continuous transmitting and receiving mode for testing. BT EDR, 79 channels are provided to the EUT. Channels 00/39/78 were selected for testing.

Operation Frequency List:

Channel	Frequency (MHz)
<b>00</b>	<b>2402</b>
01	2403
:	:
38	2440
<b>39</b>	<b>2441</b>
40	2442
:	:
77	2479
<b>78</b>	<b>2480</b>

Note: The display in grey were the channel selected for testing.

Test mode

For RF test items:
The engineering test program was provided and enabled to make EUT continuous transmit
For AC power line conducted emissions:
The EUT was set to connect with the Bluetooth instrument under 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.



## 2.5. 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	MXA Signal Analyzer	Keysight	N9020A	MY46471737	Dec. 12, 2024
3	MXG Vector Signal Generator	Agilent	N5182A	MY47420864	Dec. 12, 2024
4	PSG Analog Signal Generator	Agilent	E8257D	MY46521908	Dec. 12, 2024
5	EXG Analog Signal Generator	Keysight	N5173B	MY59100842	Dec. 12, 2024
6	MXG Vector Signal Generator	Keysight	N5182B	MY59100212	Dec. 12, 2024
7	USB Wideband Power Sensor	Keysight	U2021XA	MY55130004	Mar. 21, 2025
8	USB Wideband Power Sensor	Keysight	U2021XA	MY55130006	Mar. 21, 2025
9	Wideband Radio Communication Tester	R&S	CMW500	102414	Dec. 12, 2024
10	RF Control Unit	Tonscend	JS0806-2	/	Aug. 21, 2025
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.

### 3. TEST ITEM AND RESULTS

#### 3.1. Conducted Emission

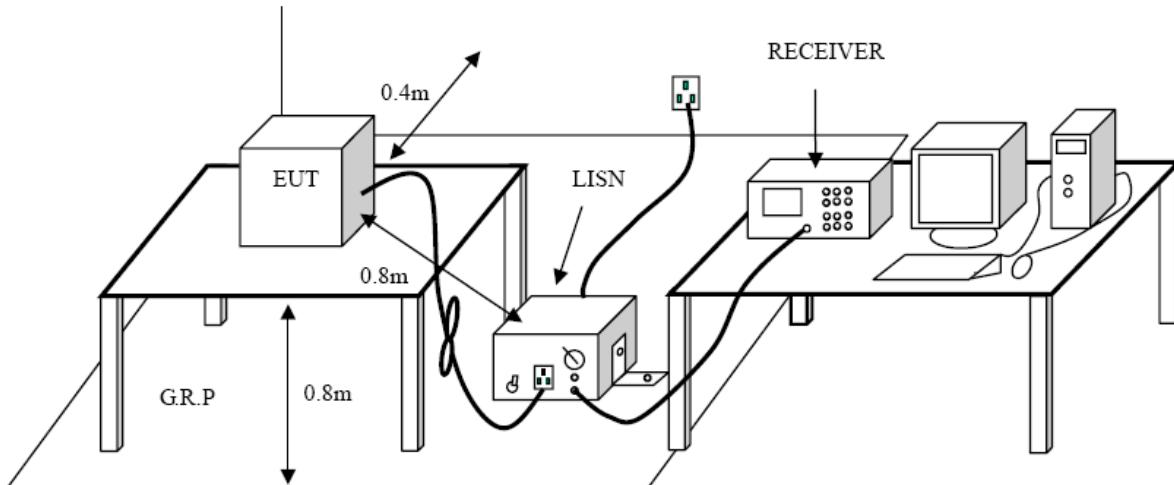
##### Limit

##### FCC CFR Title 47 Part 15 Subpart C Section 15.207/ RSS – Gen 8.8

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\* Decreases with the logarithm of the frequency.

##### Test Configuration



##### Test Procedure

1. The EUT was setup according to ANSI C63.10:2013 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
4. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
5. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
6. Conducted Emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
7. During the above scans, the emissions were maximized by cable manipulation.

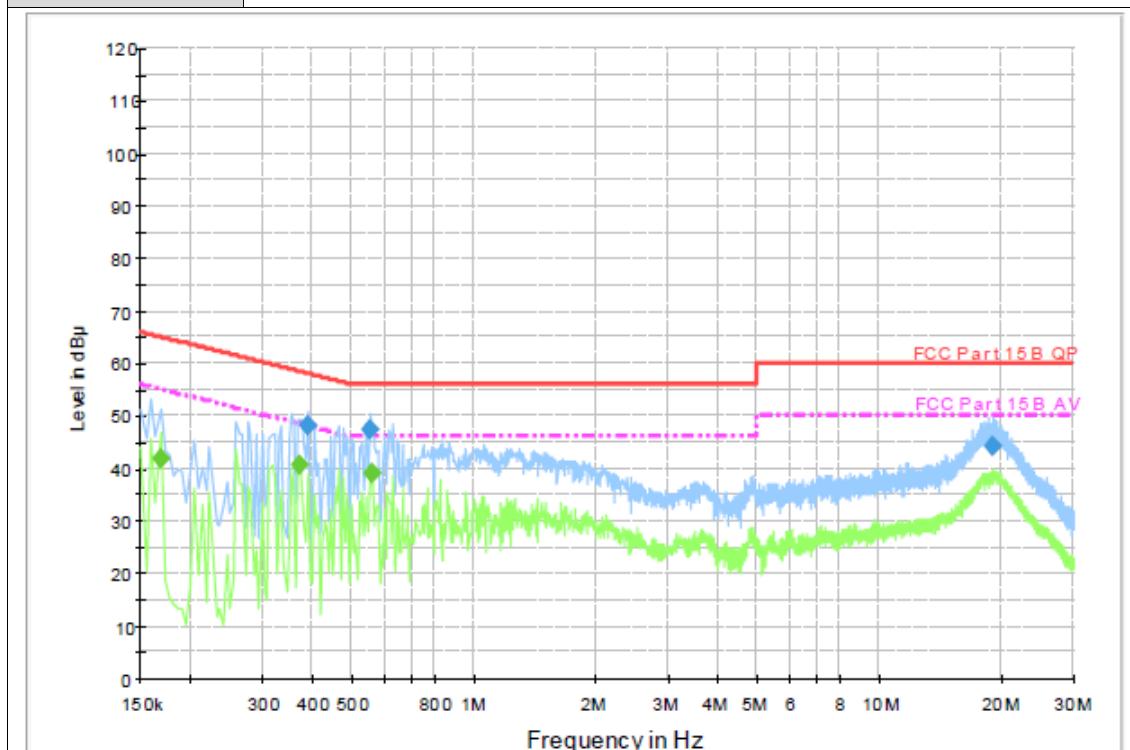
##### Test Mode

Please refer to the clause 2.4.

## Test Results

<b>Test Voltage:</b>	AC 120V/60 Hz																																								
<b>Terminal:</b>	Line																																								
<b>Remark:</b>	Only worse case is reported.																																								
<h3>Final Measurement Detector 1</h3> <table border="1"> <thead> <tr> <th>Frequency (MHz)</th> <th>QuasiPeak (dB<math>\mu</math> V)</th> <th>Meas. Time (ms)</th> <th>Bandwidth (kHz)</th> <th>Filter</th> <th>Line</th> <th>Corr. (dB)</th> <th>Margin (dB)</th> <th>Limit (dB<math>\mu</math> V)</th> <th>Comment</th> </tr> </thead> <tbody> <tr> <td>0.505500</td> <td>46.0</td> <td>1000.00</td> <td>9.000</td> <td>On</td> <td>L1</td> <td>9.5</td> <td>10.0</td> <td>56.0</td> <td></td> </tr> <tr> <td>0.568500</td> <td>44.3</td> <td>1000.00</td> <td>9.000</td> <td>On</td> <td>L1</td> <td>9.5</td> <td>11.7</td> <td>56.0</td> <td></td> </tr> <tr> <td>17.979000</td> <td>46.0</td> <td>1000.00</td> <td>9.000</td> <td>On</td> <td>L1</td> <td>9.7</td> <td>14.0</td> <td>60.0</td> <td></td> </tr> </tbody> </table>		Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment	0.505500	46.0	1000.00	9.000	On	L1	9.5	10.0	56.0		0.568500	44.3	1000.00	9.000	On	L1	9.5	11.7	56.0		17.979000	46.0	1000.00	9.000	On	L1	9.7	14.0	60.0	
Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment																																
0.505500	46.0	1000.00	9.000	On	L1	9.5	10.0	56.0																																	
0.568500	44.3	1000.00	9.000	On	L1	9.5	11.7	56.0																																	
17.979000	46.0	1000.00	9.000	On	L1	9.7	14.0	60.0																																	
<h3>Final Measurement Detector 2</h3> <table border="1"> <thead> <tr> <th>Frequency (MHz)</th> <th>Average (dB<math>\mu</math> V)</th> <th>Meas. Time (ms)</th> <th>Bandwidth (kHz)</th> <th>Filter</th> <th>Line</th> <th>Corr. (dB)</th> <th>Margin (dB)</th> <th>Limit (dB<math>\mu</math> V)</th> <th>Comment</th> </tr> </thead> <tbody> <tr> <td>0.483000</td> <td>38.4</td> <td>1000.00</td> <td>9.000</td> <td>On</td> <td>L1</td> <td>9.5</td> <td>7.9</td> <td>46.3</td> <td></td> </tr> <tr> <td>0.555000</td> <td>36.2</td> <td>1000.00</td> <td>9.000</td> <td>On</td> <td>L1</td> <td>9.5</td> <td>9.8</td> <td>46.0</td> <td></td> </tr> <tr> <td>17.637000</td> <td>40.3</td> <td>1000.00</td> <td>9.000</td> <td>On</td> <td>L1</td> <td>9.7</td> <td>9.7</td> <td>50.0</td> <td></td> </tr> </tbody> </table>		Frequency (MHz)	Average (dB $\mu$ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment	0.483000	38.4	1000.00	9.000	On	L1	9.5	7.9	46.3		0.555000	36.2	1000.00	9.000	On	L1	9.5	9.8	46.0		17.637000	40.3	1000.00	9.000	On	L1	9.7	9.7	50.0	
Frequency (MHz)	Average (dB $\mu$ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment																																
0.483000	38.4	1000.00	9.000	On	L1	9.5	7.9	46.3																																	
0.555000	36.2	1000.00	9.000	On	L1	9.5	9.8	46.0																																	
17.637000	40.3	1000.00	9.000	On	L1	9.7	9.7	50.0																																	
Emission Level= Read Level+ Correct Factor																																									

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



### Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment
0.388500	48.0	1000.00	9.000	On	N	9.4	10.1	58.1	
0.555000	47.3	1000.00	9.000	On	N	9.4	8.7	56.0	
18.955500	44.2	1000.00	9.000	On	N	9.5	15.8	60.0	

### Final Measurement Detector 2

Frequency (MHz)	Average (dB $\mu$ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment
0.168000	42.0	1000.00	9.000	On	N	9.5	13.1	55.1	
0.370500	40.8	1000.00	9.000	On	N	9.4	7.7	48.5	
0.559500	39.0	1000.00	9.000	On	N	9.4	7.0	46.0	

Emission Level= Read Level+ Correct Factor

## 3.2. Radiated Emission

### Limit

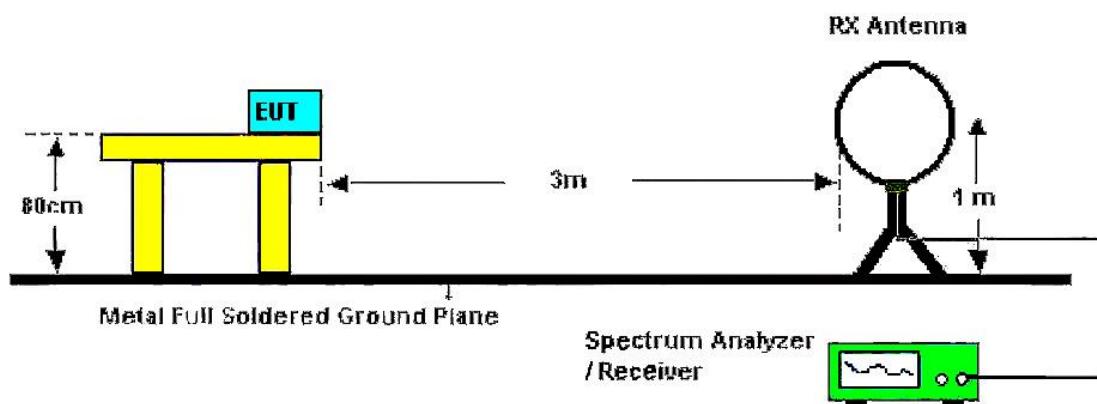
#### FCC CFR Title 47 Part 15 Subpart C Section 15.209/ RSS – Gen 8.9

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

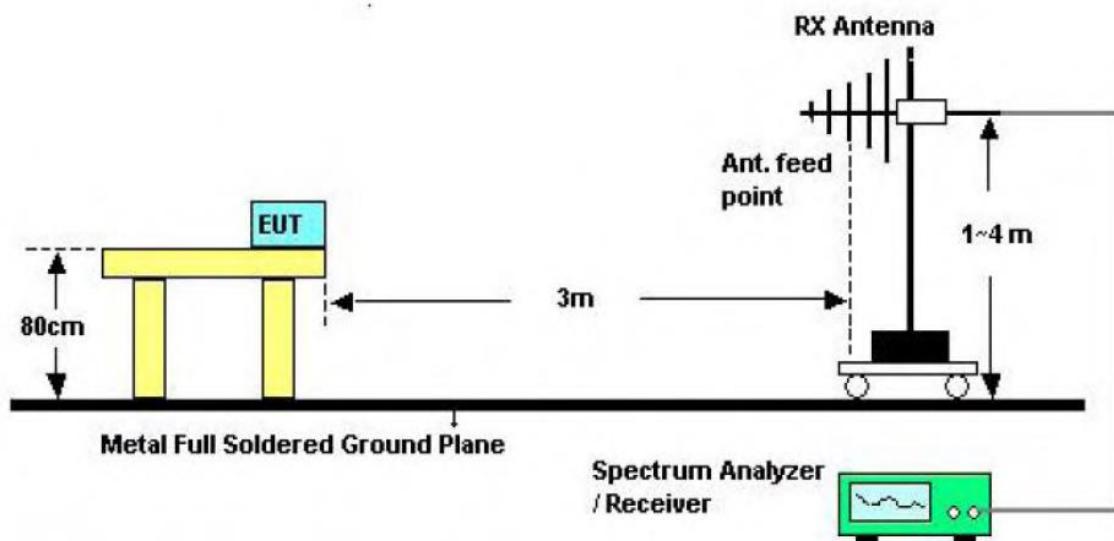
### **Note:**

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

### Test Configuration



Below 30MHz Test Setup



Below 1000MHz Test Setup

CTC Laboratories, Inc.

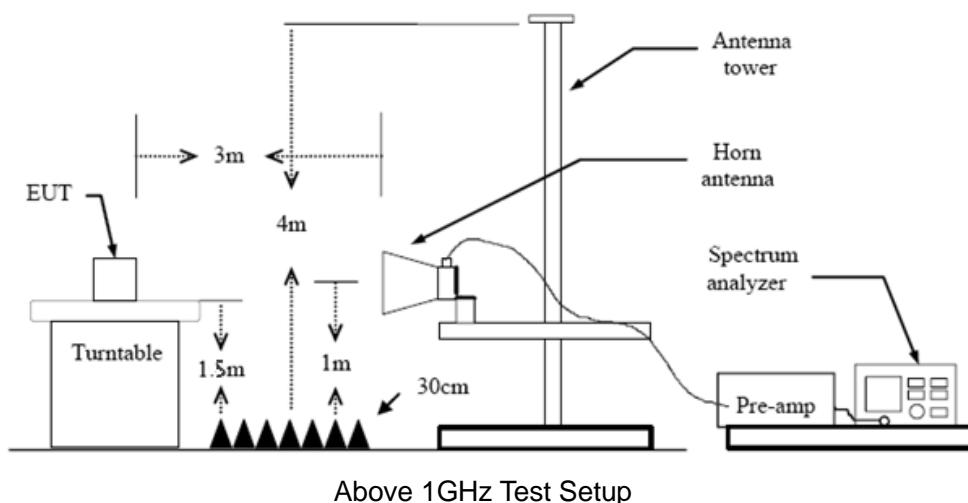
Room 101 of Building B, Room 107, 108, 207, 208 of Building A, No. 7, Lanqing 1st Road, Luhu Community, Guanhui Subdistrict, Longhua District, Shenzhen, Guangdong, China

Tel.: (86)755-27521059

Fax: (86)755-27521011

[Http://www.sz-ctc.org.cn](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://www.cnca.gov.cn)



### **Test Procedure**

1. The EUT was setup and tested according to ANSI C63.10:2013
2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 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.
4. 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.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Use the following spectrum analyzer settings
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) 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.
  - (3) From 1 GHz to 10<sup>th</sup> harmonic:  
RBW=1MHz, VBW=3MHz Peak detector for Peak value.  
RBW=1MHz, VBW $\geq$ 1/T Peak detector for Average value.

Note 1: For the 1/T& Duty Cycle please refer to clause 3.10 Duty Cycle.

### **Test Mode**

Please refer to the clause 2.4.

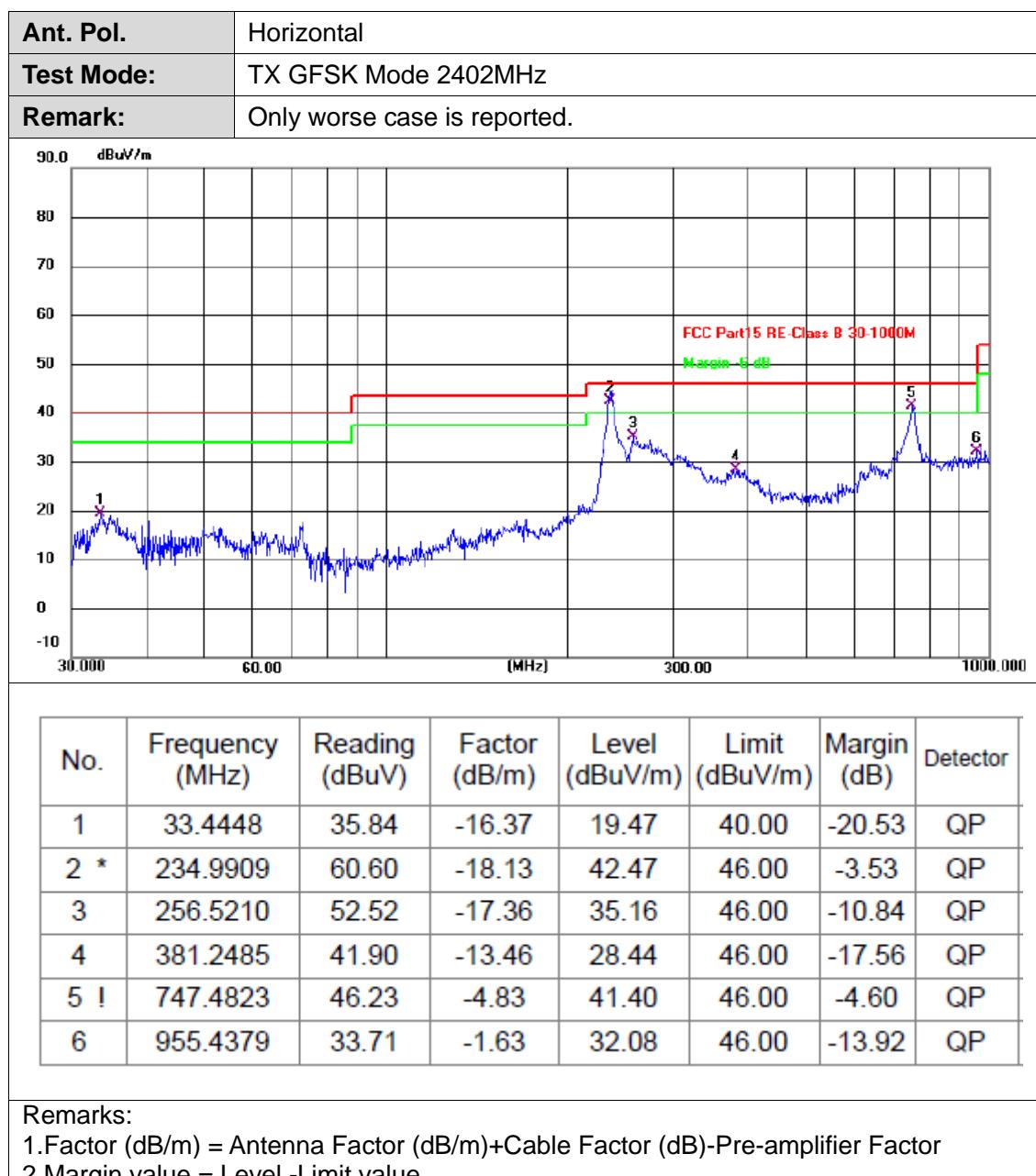
### **Test Result**

#### **9 KHz-30 MHz**

From 9 KHz to 30 MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

30MHz-1GHz



CTC Laboratories, Inc.

Room 101 of Building B, Room 107, 108, 207, 208 of Building A, No. 7, Lanqing 1st Road, Luhu Community, Guanhui Subdistrict, Longhua District, Shenzhen, Guangdong, China

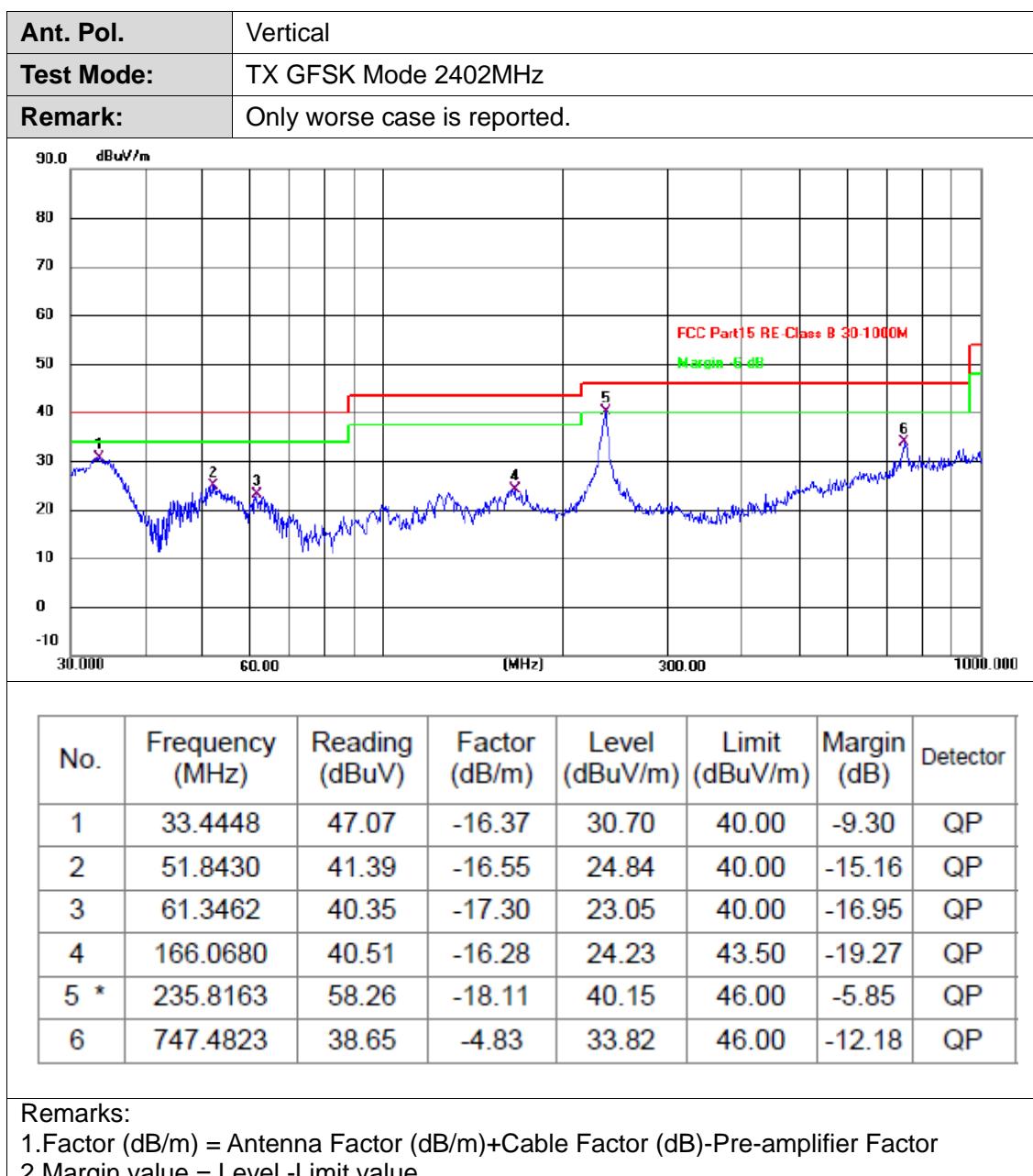
Tel.: (86)755-27521059

Fax: (86)755-27521011

[Http://www.sz-ctc.org.cn](http://www.sz-ctc.org.cn)

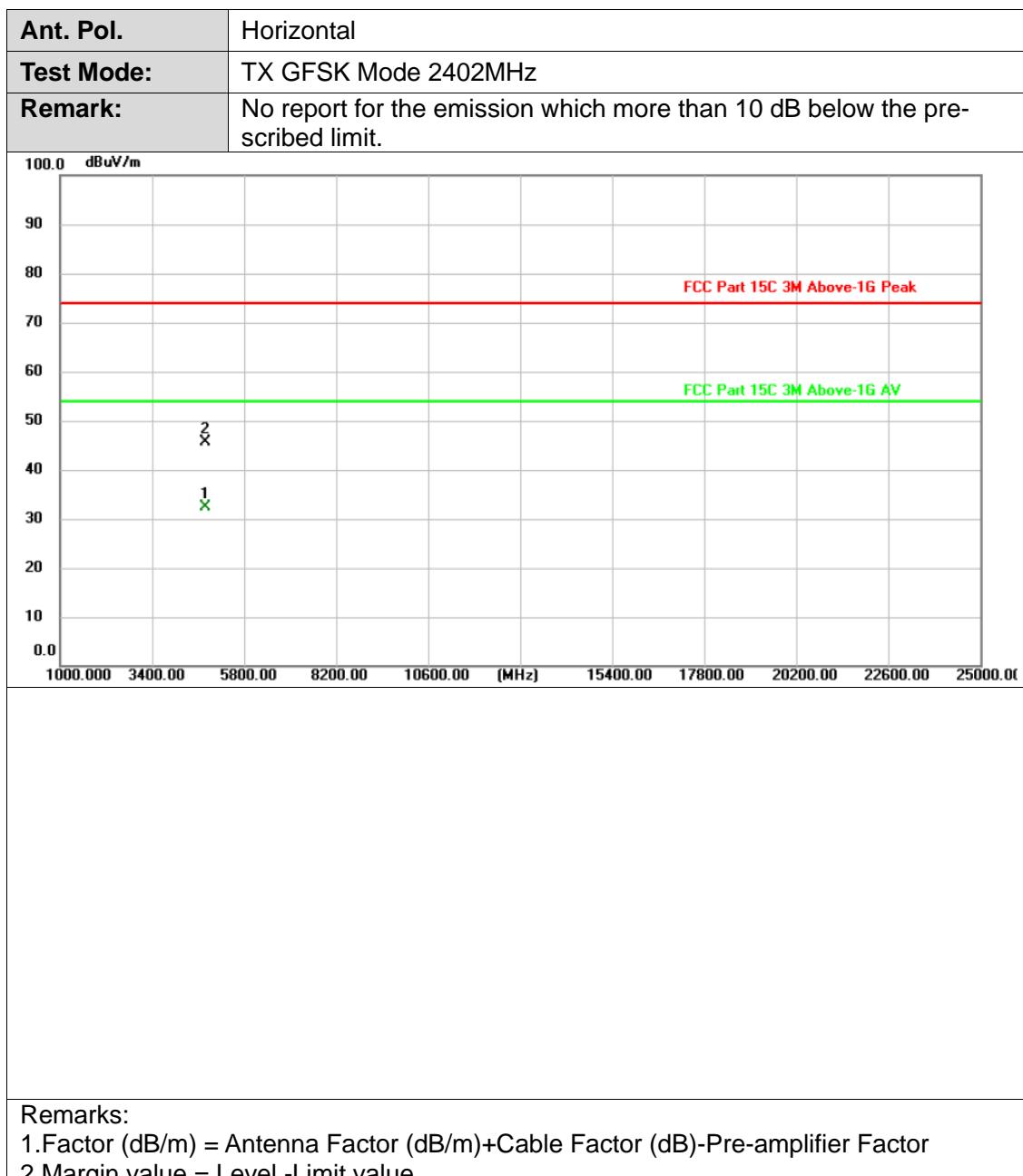
For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China :

[yz.cnca.cn](http://yz.cnca.cn)





Above 1GHz



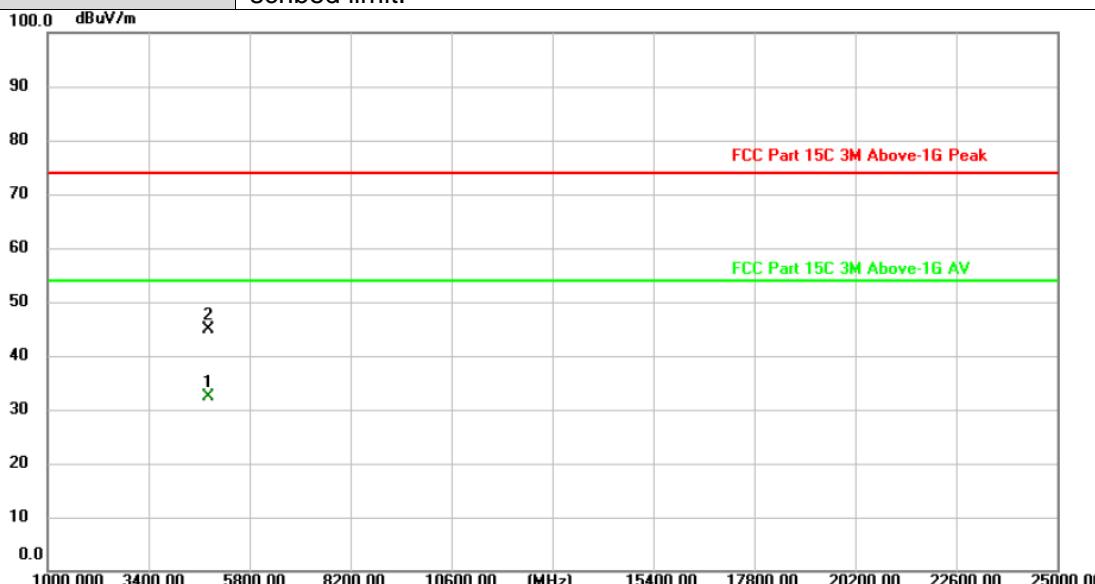
CTC Laboratories, Inc.

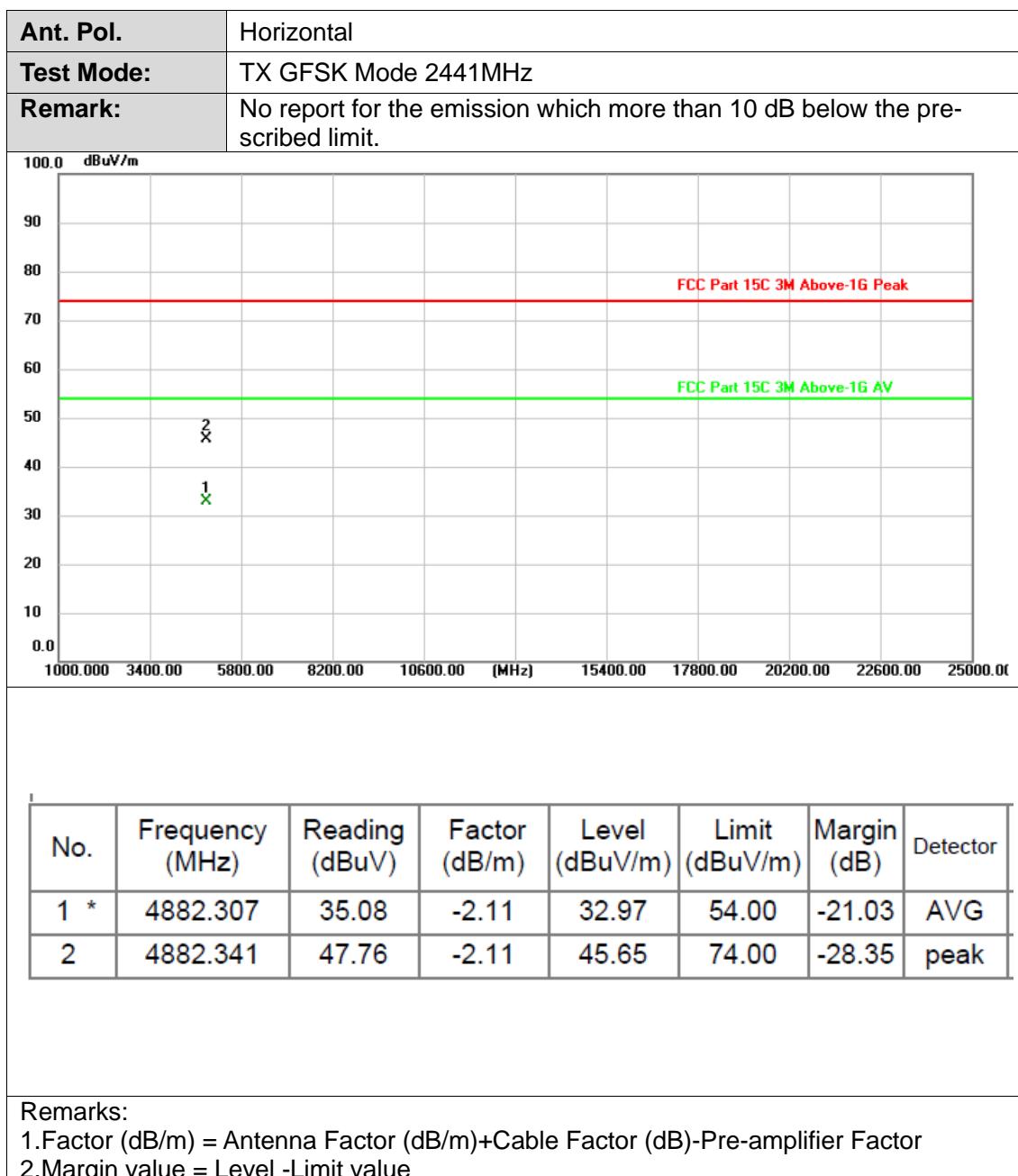
Room 101 of Building B, Room 107, 108, 207, 208 of Building A, No. 7, Lanqing 1st Road, Luhu Community, Guanhua Subdistrict, Longhua District, Shenzhen, Guangdong, China

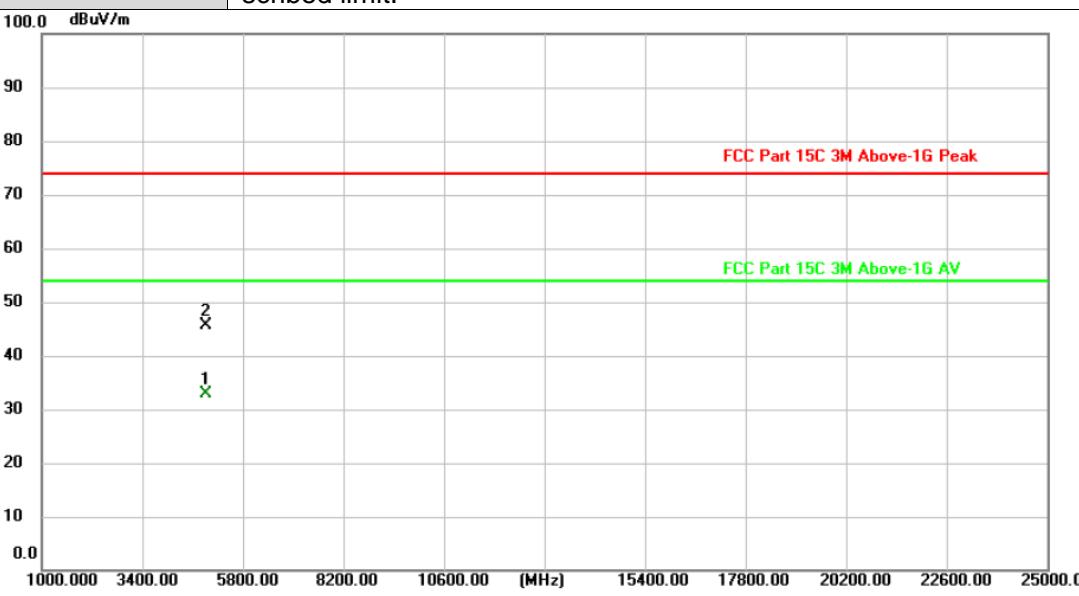
Tel.: (86)755-27521059

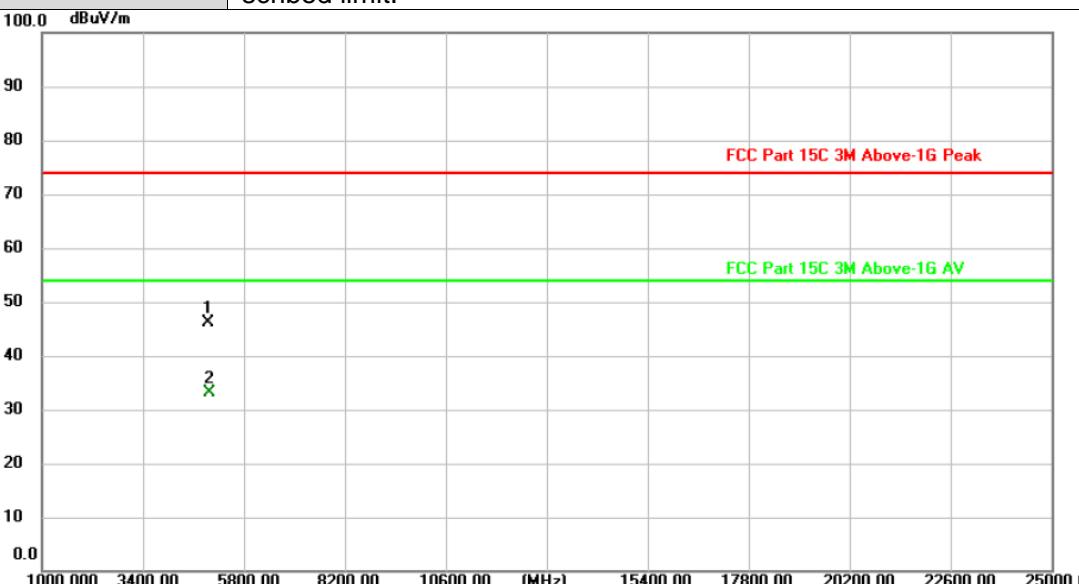
Fax: (86)755-27521011 [Http://www.sz-ctc.org.cn](http://www.sz-ctc.org.cn)

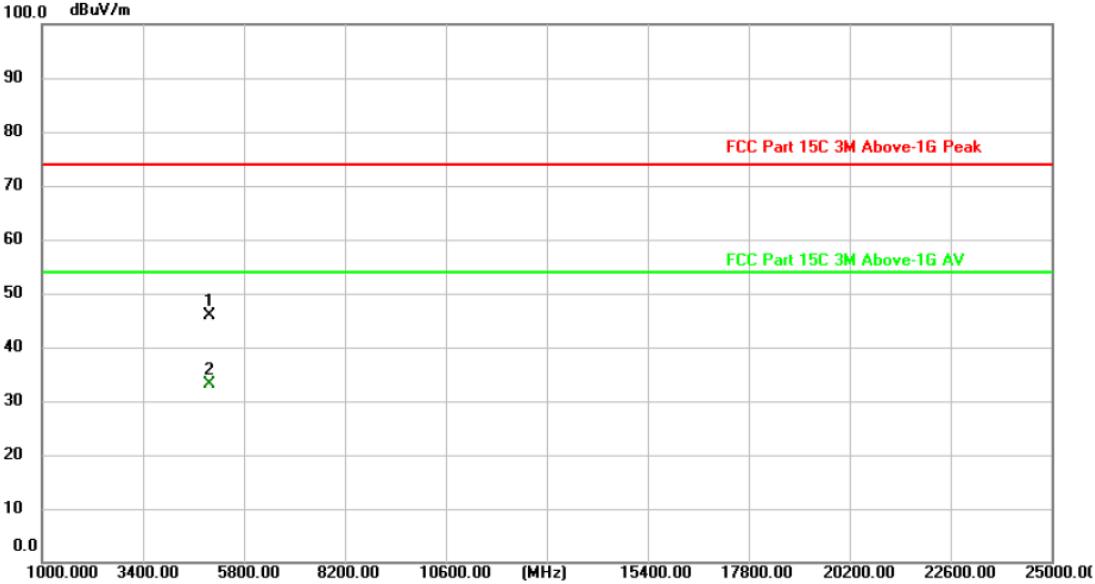
For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : [yz.cnca.cn](http://yz.cnca.cn)

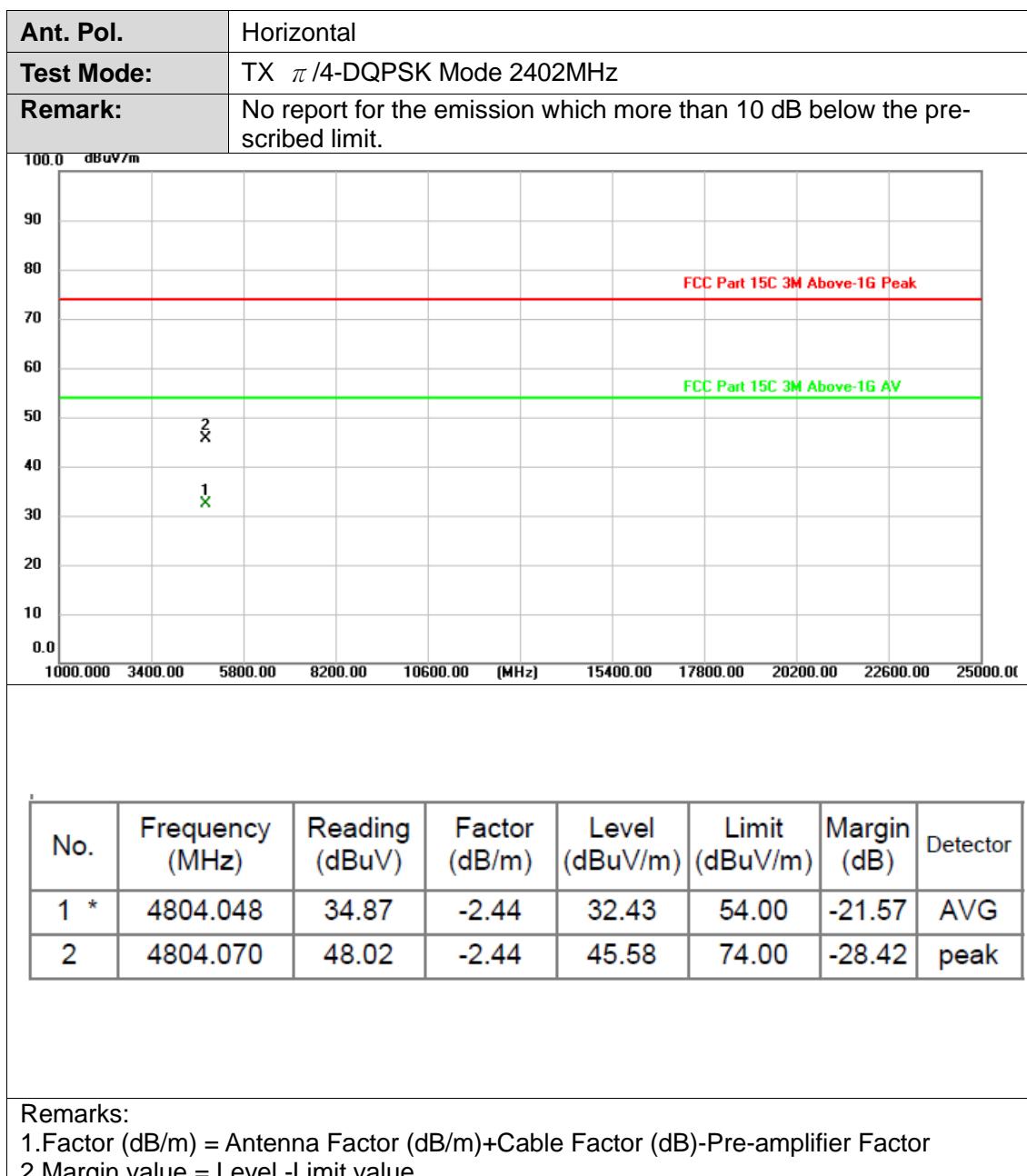
Ant. Pol.	Vertical																															
Test Mode:	TX GFSK Mode 2402MHz																															
Remark:	No report for the emission which more than 10 dB below the pre-scribed limit.																															
 <p>The plot shows a graph of dBuV/m versus MHz. The y-axis ranges from 0.0 to 100.0 dBuV/m with increments of 10. The x-axis ranges from 1000.000 to 25000.00 MHz with increments of 3400.00. A red horizontal line at approximately 73 dBuV/m is labeled 'FCC Part 15C 3M Above-1G Peak'. A green horizontal line at approximately 54 dBuV/m is labeled 'FCC Part 15C 3M Above-1G AV'. Two data points are plotted: point 1 at 4804.669 MHz with a reading of 34.71 dBuV and a factor of -2.44 dB/m, resulting in a level of 32.27 dBuV/m; point 2 at 4804.731 MHz with a reading of 47.42 dBuV and a factor of -2.44 dB/m, resulting in a level of 44.98 dBuV/m. The margin for point 1 is -21.73 dB and for point 2 is -29.02 dB.</p>																																
<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>4804.669</td> <td>34.71</td> <td>-2.44</td> <td>32.27</td> <td>54.00</td> <td>-21.73</td> <td>AVG</td> </tr> <tr> <td>2</td> <td>4804.731</td> <td>47.42</td> <td>-2.44</td> <td>44.98</td> <td>74.00</td> <td>-29.02</td> <td>peak</td> </tr> </tbody> </table> <p>Remarks:  1. Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor  2. Margin value = Level -Limit value </p>									No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	1 *	4804.669	34.71	-2.44	32.27	54.00	-21.73	AVG	2	4804.731	47.42	-2.44	44.98	74.00	-29.02	peak
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																									
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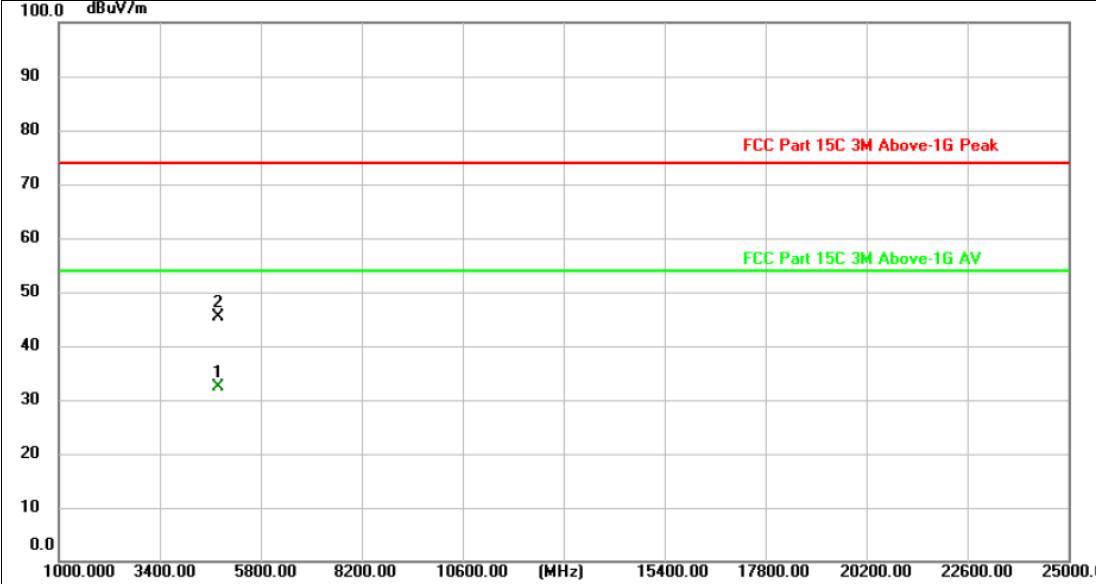


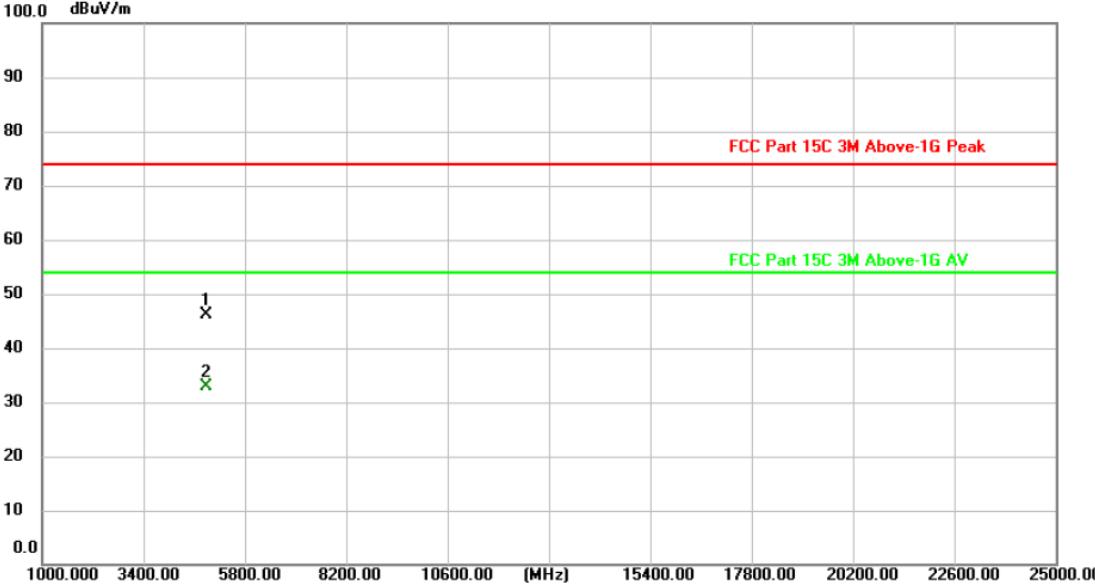
Ant. Pol.	Vertical																														
Test Mode:	TX GFSK Mode 2441MHz																														
Remark:	No report for the emission which more than 10 dB below the pre-scribed limit.																														
 <p>The figure is a spectral emission mask plot showing dBuV/m on the y-axis (0.0 to 100.0) versus MHz on the x-axis (1000.000 to 25000.00). A red horizontal line at 74 dBuV/m represents the 'FCC Part 15C 3M Above-16 Peak' limit. A green horizontal line at 54 dBuV/m represents the 'FCC Part 15C 3M Above-16 AV' limit. Two data points are plotted: point 1 at 4882.194 MHz with a reading of 34.95 dBuV and a factor of -2.11 dB/m; point 2 at 4882.309 MHz with a reading of 47.73 dBuV and a factor of -2.11 dB/m. The plot shows a grid with major ticks every 3400 MHz and minor ticks every 1000 MHz.</p>																															
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No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																								
1 *	4882.194	34.95	-2.11	32.84	54.00	-21.16	AVG																								
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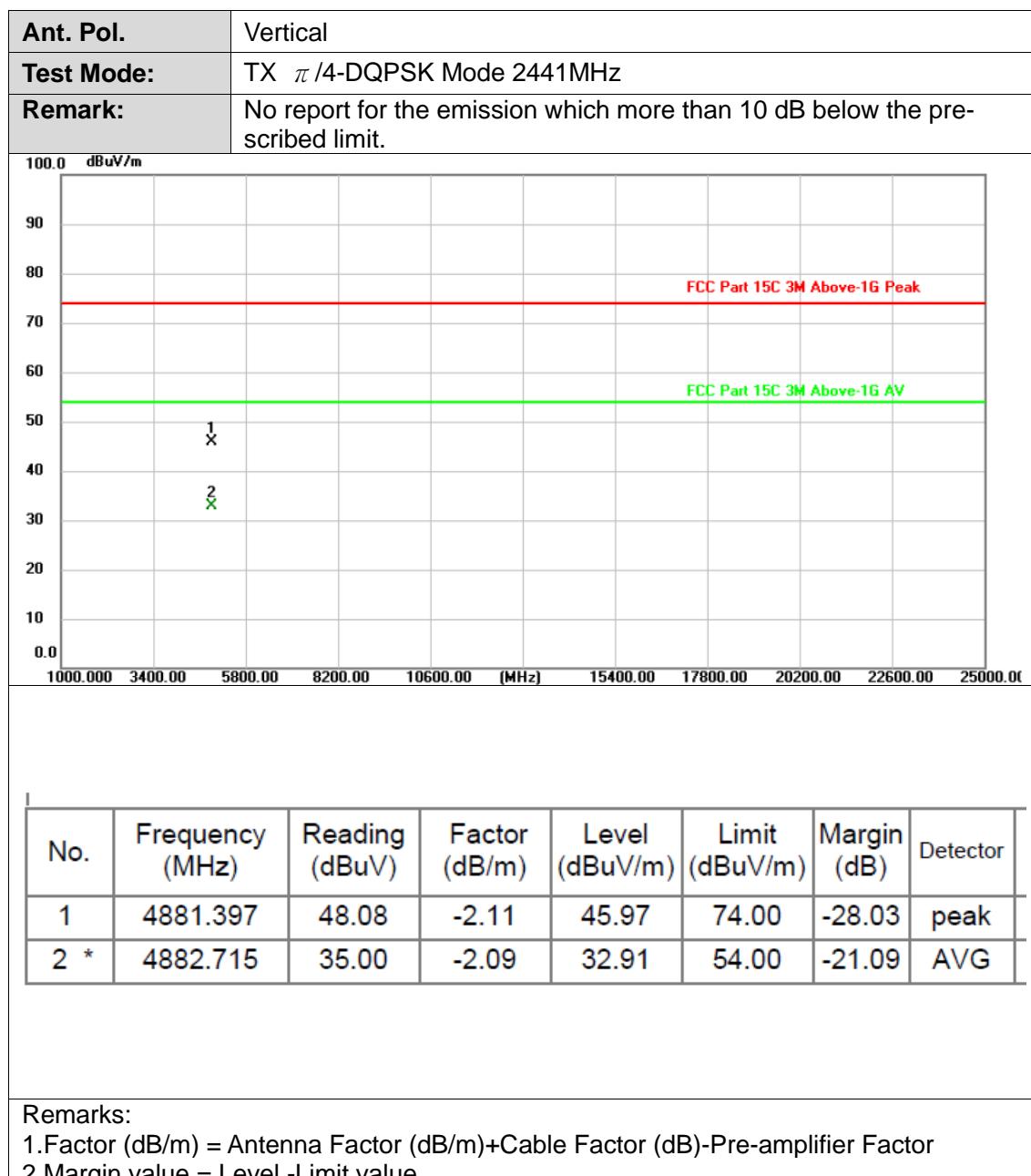
Ant. Pol.	Horizontal																														
Test Mode:	TX GFSK Mode 2480MHz																														
Remark:	No report for the emission which more than 10 dB below the pre-scribed limit.																														
																															
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No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																								
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2 *	4960.518	34.88	-1.77	33.11	54.00	-20.89	AVG																								
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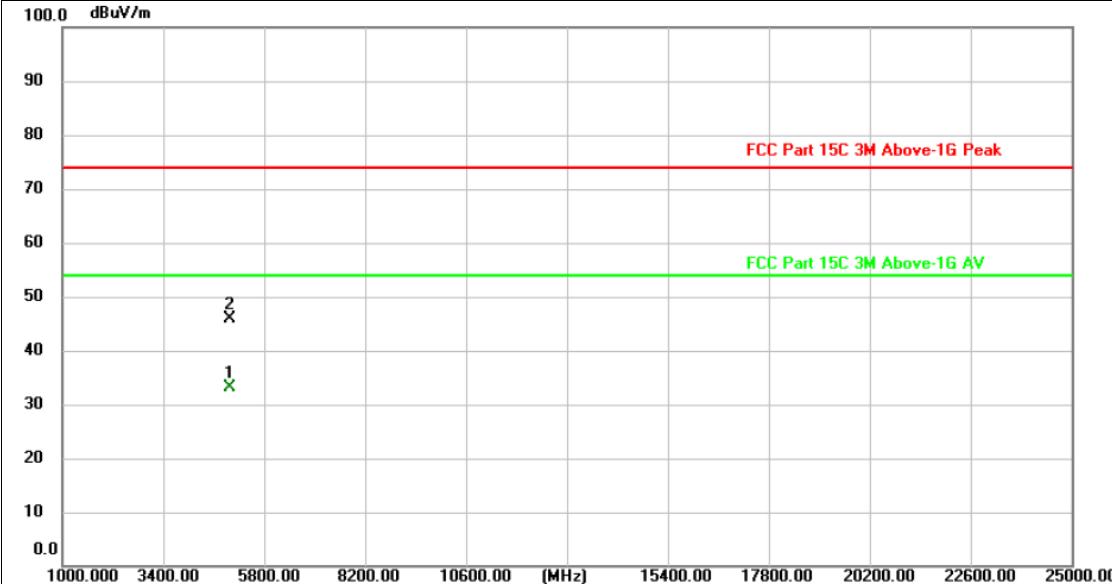
Ant. Pol.	Vertical																															
Test Mode:	TX GFSK Mode 2480MHz																															
Remark:	No report for the emission which more than 10 dB below the pre-scribed limit.																															
 <p>The plot shows a spectral emission mask for FCC Part 15C. The Y-axis represents dBuV/m from 0.0 to 100.0. The X-axis represents frequency in MHz from 1000.000 to 25000.00. A red horizontal line at 74.00 dBuV/m is labeled 'FCC Part 15C 3M Above-1G Peak'. A green horizontal line at 54.00 dBuV/m is labeled 'FCC Part 15C 3M Above-1G AV'. Two data points are plotted: point 1 at 47.66 dBuV/m and point 2 at 34.86 dBuV/m. Point 1 is above the peak limit, while point 2 is below the average limit.</p>																																
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No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																									
1	4960.171	47.66	-1.77	45.89	74.00	-28.11	peak																									
2 *	4960.178	34.86	-1.77	33.09	54.00	-20.91	AVG																									
<p>Remarks:</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>																																



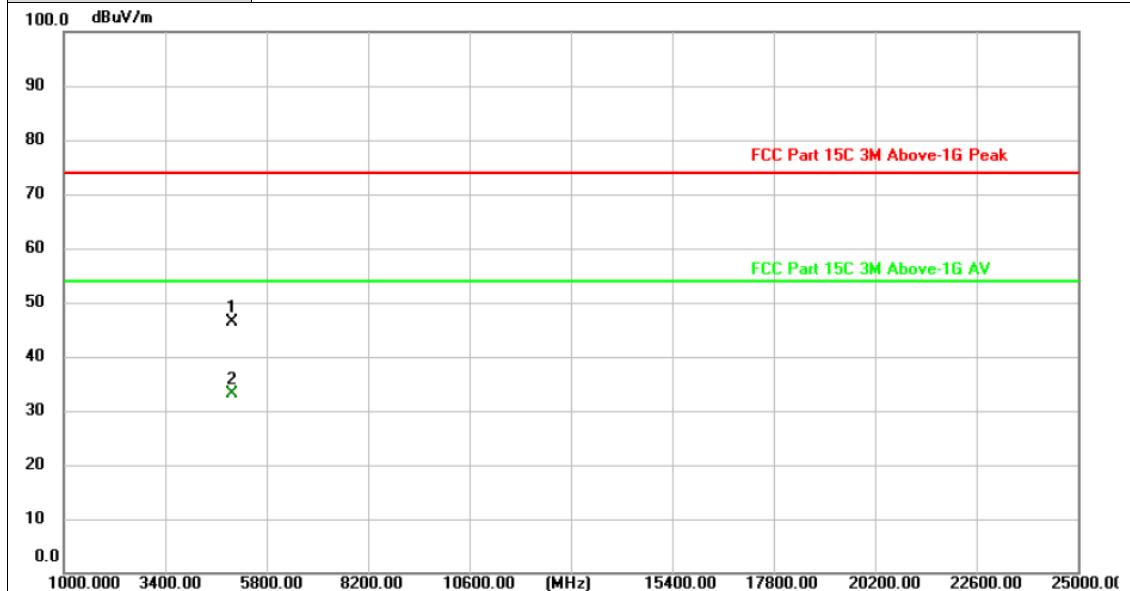
Ant. Pol.	Vertical																															
Test Mode:	TX $\pi/4$ -DQPSK Mode 2402MHz																															
Remark:	No report for the emission which more than 10 dB below the pre-scribed limit.																															
																																
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No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																									
1 *	4804.699	34.75	-2.44	32.31	54.00	-21.69	AVG																									
2	4804.790	47.76	-2.44	45.32	74.00	-28.68	peak																									
<p>Remarks:</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>																																

Ant. Pol.	Horizontal																															
Test Mode:	TX $\pi/4$ -DQPSK Mode 2441MHz																															
Remark:	No report for the emission which more than 10 dB below the pre-scribed limit.																															
 <p>The plot shows a spectral emission mask for FCC Part 15C. The Y-axis represents the field strength in dBuV/m, ranging from 0.0 to 100.0. The X-axis represents frequency in MHz, ranging from 1000.000 to 25000.00. A red horizontal line at approximately 74 dBuV/m is labeled "FCC Part 15C 3M Above-1G Peak". A green horizontal line at approximately 54 dBuV/m is labeled "FCC Part 15C 3M Above-1G AV". Two data points are plotted: point 1 (red 'x') at 48.22 dBuV at 4881.189 MHz, and point 2 (green 'x') at 35.00 dBuV at 4881.590 MHz. The plot area has a grid with major lines every 2 dBuV and major ticks every 2000 MHz.</p>																																
<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>4881.189</td> <td>48.22</td> <td>-2.11</td> <td>46.11</td> <td>74.00</td> <td>-27.89</td> <td>peak</td> </tr> <tr> <td>2 *</td> <td>4881.590</td> <td>35.00</td> <td>-2.11</td> <td>32.89</td> <td>54.00</td> <td>-21.11</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	4881.189	48.22	-2.11	46.11	74.00	-27.89	peak	2 *	4881.590	35.00	-2.11	32.89	54.00	-21.11	AVG
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																									
1	4881.189	48.22	-2.11	46.11	74.00	-27.89	peak																									
2 *	4881.590	35.00	-2.11	32.89	54.00	-21.11	AVG																									
<p>Remarks:</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>																																



Ant. Pol.	Horizontal																															
Test Mode:	TX $\pi/4$ -DQPSK Mode 2480MHz																															
Remark:	No report for the emission which more than 10 dB below the pre-scribed limit.																															
 <p>The plot shows a spectral emission mask for FCC Part 15C. The y-axis represents the level in dBuV/m from 0.0 to 100.0. The x-axis represents frequency in MHz from 1000.000 to 25000.00. A red horizontal line at approximately 74 dBuV/m is labeled "FCC Part 15C 3M Above-1G Peak". A green horizontal line at approximately 54 dBuV/m is labeled "FCC Part 15C 3M Above-1G AV". Two data points are plotted: point 1 at 4960.062 MHz with a reading of 34.91 dBuV, and point 2 at 4960.942 MHz with a reading of 47.77 dBuV. The plot area has a grid with major lines every 2000 MHz and minor lines every 100 MHz.</p>																																
<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>4960.062</td> <td>34.91</td> <td>-1.77</td> <td>33.14</td> <td>54.00</td> <td>-20.86</td> <td>AVG</td> </tr> <tr> <td>2</td> <td>4960.942</td> <td>47.77</td> <td>-1.77</td> <td>46.00</td> <td>74.00</td> <td>-28.00</td> <td>peak</td> </tr> </tbody> </table>									No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	1 *	4960.062	34.91	-1.77	33.14	54.00	-20.86	AVG	2	4960.942	47.77	-1.77	46.00	74.00	-28.00	peak
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																									
1 *	4960.062	34.91	-1.77	33.14	54.00	-20.86	AVG																									
2	4960.942	47.77	-1.77	46.00	74.00	-28.00	peak																									
<p>Remarks:</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>																																

<b>Ant. Pol.</b>	Vertical
<b>Test Mode:</b>	TX $\pi/4$ -DQPSK Mode 2480MHz
<b>Remark:</b>	No report for the emission which more than 10 dB below the pre-scribed limit.



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4959.344	48.22	-1.78	46.44	74.00	-27.56	peak
2 *	4960.018	35.02	-1.77	33.25	54.00	-20.75	AVG

**Remarks:**

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

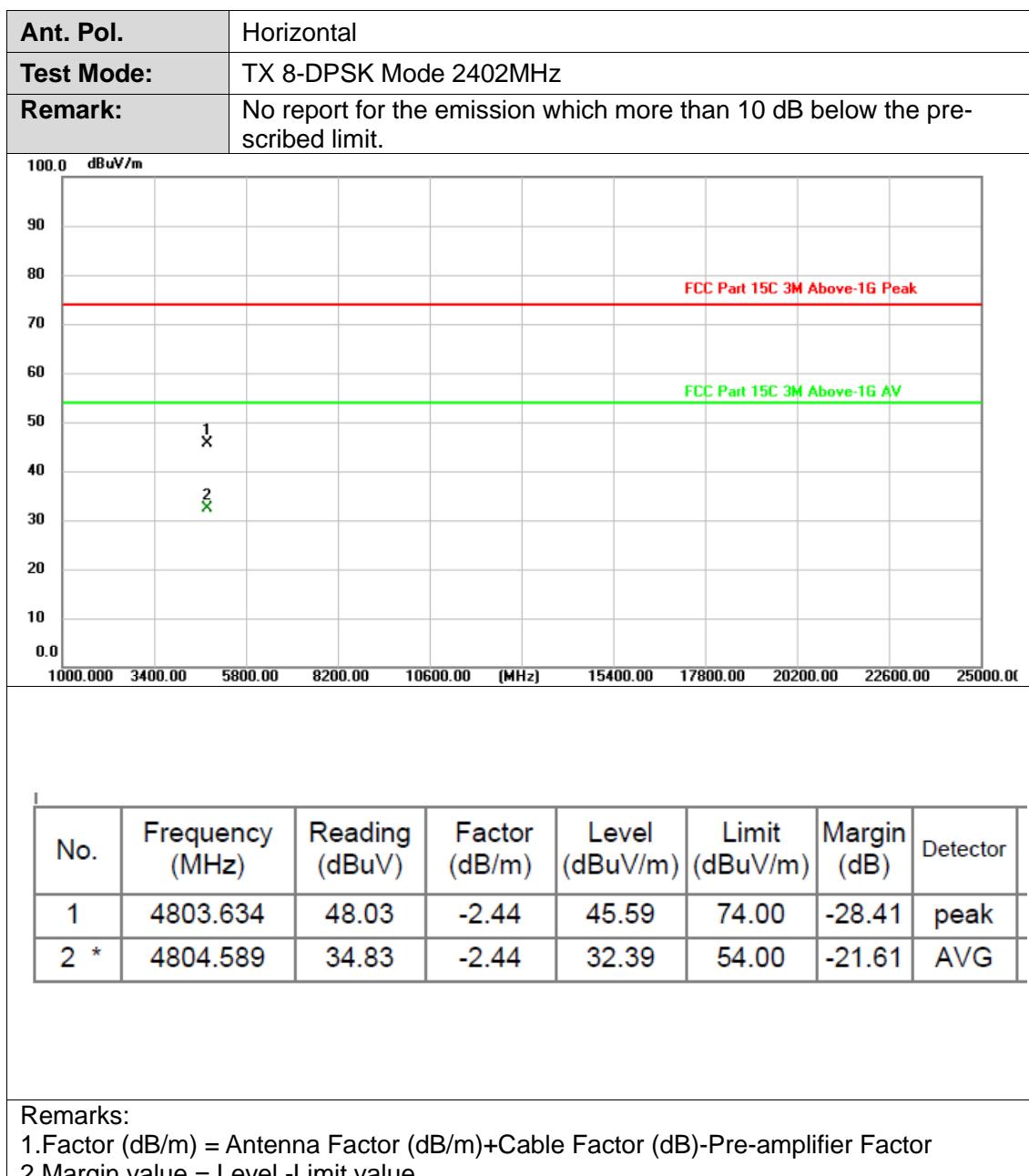
CTC Laboratories, Inc.

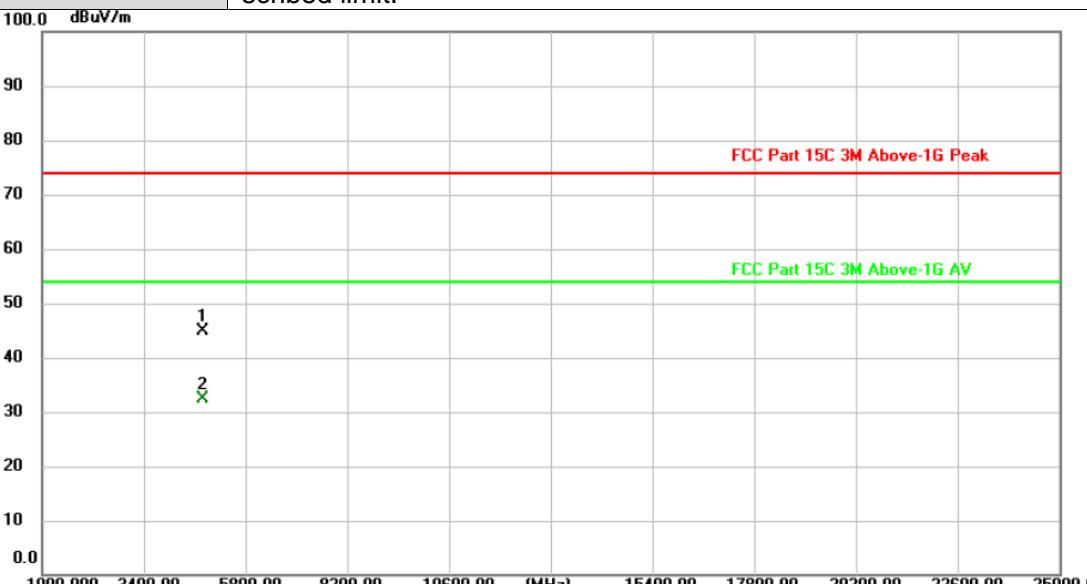
Room 101 of Building B, Room 107, 108, 207, 208 of Building A, No. 7, Lanqing 1st Road, Luhu Community, Guanhua Subdistrict, Longhua District, Shenzhen, Guangdong, China

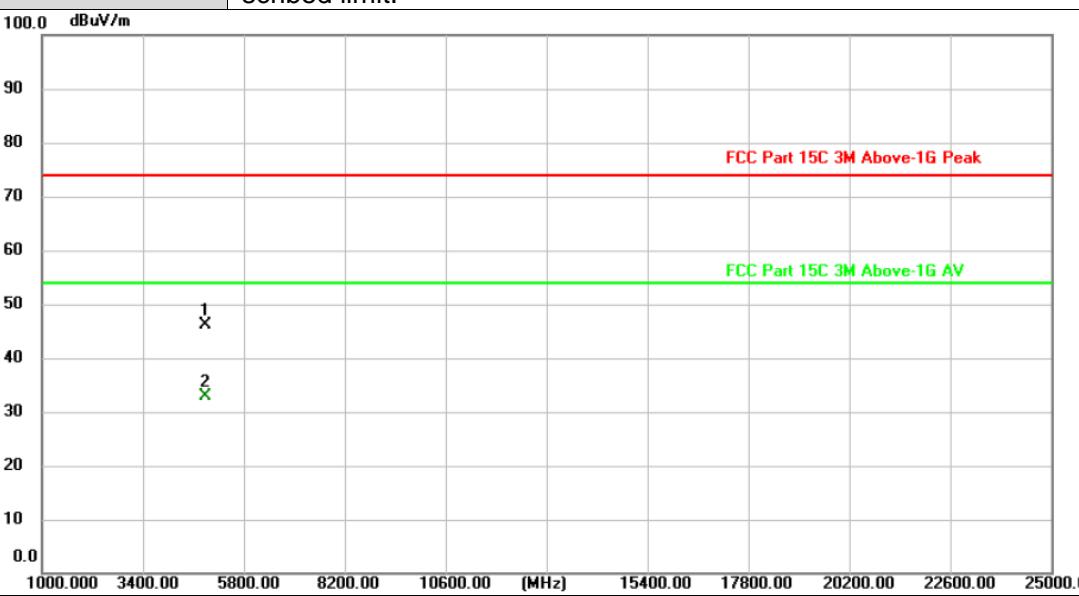
Tel.: (86)755-27521059

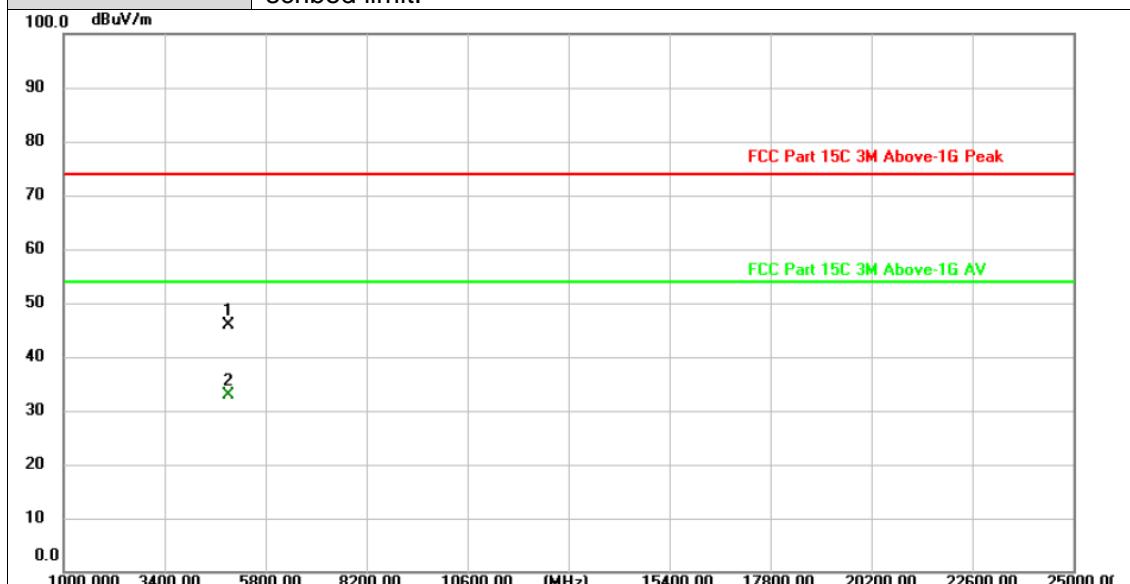
Fax: (86)755-27521011

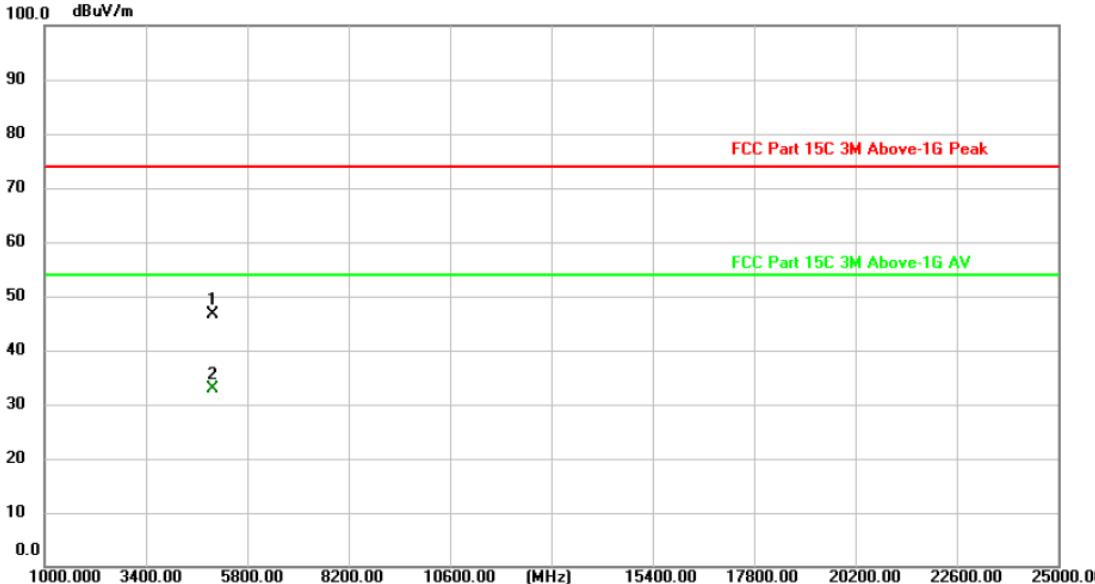
[Http://www.sz-ctc.org.cn](http://www.sz-ctc.org.cn)  
For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : [yz.cnca.cn](http://yz.cnca.cn)

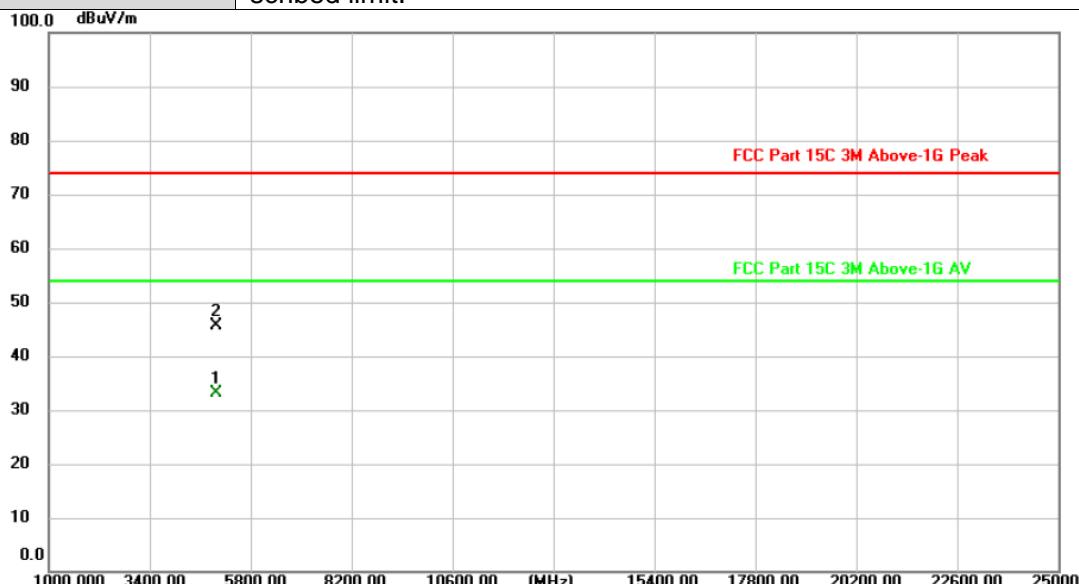


Ant. Pol.	Vertical																															
Test Mode:	TX 8-DPSK Mode 2402MHz																															
Remark:	No report for the emission which more than 10 dB below the pre-scribed limit.																															
 <p>The plot shows a graph of dBuV/m versus MHz. The x-axis ranges from 1000.000 to 25000.00 MHz. The y-axis ranges from 0.0 to 100 dBuV/m. A red horizontal line at 74.00 dBuV/m is labeled 'FCC Part 15C 3M Above-1G Peak'. A green horizontal line at 54.00 dBuV/m is labeled 'FCC Part 15C 3M Above-1G AV'. Two data points are plotted: point 1 at approximately 4803.010 MHz with a value of 47.30 dBuV, and point 2 at approximately 4803.917 MHz with a value of 34.77 dBuV. The plot area has a grid with major lines every 2000 MHz and minor lines every 100 MHz.</p>																																
<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>4803.010</td><td>47.30</td><td>-2.44</td><td>44.86</td><td>74.00</td><td>-29.14</td><td>peak</td></tr> <tr> <td>2 *</td><td>4803.917</td><td>34.77</td><td>-2.44</td><td>32.33</td><td>54.00</td><td>-21.67</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	4803.010	47.30	-2.44	44.86	74.00	-29.14	peak	2 *	4803.917	34.77	-2.44	32.33	54.00	-21.67	AVG
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																									
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<p>Remarks:</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>																																

Ant. Pol.	Horizontal																															
Test Mode:	TX 8-DPSK Mode 2441MHz																															
Remark:	No report for the emission which more than 10 dB below the pre-scribed limit.																															
																																
<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>4881.166</td> <td>48.21</td> <td>-2.11</td> <td>46.10</td> <td>74.00</td> <td>-27.90</td> <td>peak</td> </tr> <tr> <td>2 *</td> <td>4882.158</td> <td>35.02</td> <td>-2.11</td> <td>32.91</td> <td>54.00</td> <td>-21.09</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	4881.166	48.21	-2.11	46.10	74.00	-27.90	peak	2 *	4882.158	35.02	-2.11	32.91	54.00	-21.09	AVG
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																									
1	4881.166	48.21	-2.11	46.10	74.00	-27.90	peak																									
2 *	4882.158	35.02	-2.11	32.91	54.00	-21.09	AVG																									
<p>Remarks:</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>																																

Ant. Pol.	Vertical																															
Test Mode:	TX 8-DPSK Mode 2441MHz																															
Remark:	No report for the emission which more than 10 dB below the pre-scribed limit.																															
																																
<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>4881.205</td><td>47.92</td><td>-2.11</td><td>45.81</td><td>74.00</td><td>-28.19</td><td>peak</td></tr> <tr> <td>2 *</td><td>4882.768</td><td>34.95</td><td>-2.09</td><td>32.86</td><td>54.00</td><td>-21.14</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	4881.205	47.92	-2.11	45.81	74.00	-28.19	peak	2 *	4882.768	34.95	-2.09	32.86	54.00	-21.14	AVG
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																									
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2 *	4882.768	34.95	-2.09	32.86	54.00	-21.14	AVG																									
<p>Remarks:</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>																																

Ant. Pol.	Horizontal																															
Test Mode:	TX 8-DPSK Mode 2480MHz																															
Remark:	No report for the emission which more than 10 dB below the pre-scribed limit.																															
 <p>The plot shows a spectral emission mask for FCC Part 15C. The Y-axis represents the level in dBuV/m from 0.0 to 100.0. The X-axis represents frequency in MHz from 1000.000 to 25000.00. A red horizontal line at 74.00 dBuV/m is labeled 'FCC Part 15C 3M Above-1G Peak'. A green horizontal line at 54.00 dBuV/m is labeled 'FCC Part 15C 3M Above-1G AV'. Two data points are plotted: point 1 at approximately 4959.526 MHz with a reading of 48.33 dBuV, and point 2 at approximately 4960.384 MHz with a reading of 34.77 dBuV.</p>																																
<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>4959.526</td><td>48.33</td><td>-1.78</td><td>46.55</td><td>74.00</td><td>-27.45</td><td>peak</td></tr> <tr> <td>2 *</td><td>4960.384</td><td>34.77</td><td>-1.77</td><td>33.00</td><td>54.00</td><td>-21.00</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	4959.526	48.33	-1.78	46.55	74.00	-27.45	peak	2 *	4960.384	34.77	-1.77	33.00	54.00	-21.00	AVG
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																									
1	4959.526	48.33	-1.78	46.55	74.00	-27.45	peak																									
2 *	4960.384	34.77	-1.77	33.00	54.00	-21.00	AVG																									
<p>Remarks:</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>																																

Ant. Pol.	Vertical																															
Test Mode:	TX 8-DPSK Mode 2480MHz																															
Remark:	No report for the emission which more than 10 dB below the pre-scribed limit.																															
 <p>The plot shows a spectral emission mask for FCC Part 15C. The Y-axis represents the level in dBuV/m from 0.0 to 100.0. The X-axis represents frequency in MHz from 1000.000 to 25000.00. A red horizontal line at approximately 73 dBuV/m is labeled "FCC Part 15C 3M Above-1G Peak". A green horizontal line at approximately 54 dBuV/m is labeled "FCC Part 15C 3M Above-1G AV". Two data points are plotted: point 1 at 4959.050 MHz with a reading of 34.91 dBuV, and point 2 at 4959.370 MHz with a reading of 47.49 dBuV. The plot area has a grid with major lines every 2000 MHz and minor lines every 100 MHz.</p>																																
<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>4959.050</td><td>34.91</td><td>-1.78</td><td>33.13</td><td>54.00</td><td>-20.87</td><td>AVG</td></tr> <tr> <td>2</td><td>4959.370</td><td>47.49</td><td>-1.78</td><td>45.71</td><td>74.00</td><td>-28.29</td><td>peak</td></tr> </tbody> </table>									No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	1 *	4959.050	34.91	-1.78	33.13	54.00	-20.87	AVG	2	4959.370	47.49	-1.78	45.71	74.00	-28.29	peak
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																									
1 *	4959.050	34.91	-1.78	33.13	54.00	-20.87	AVG																									
2	4959.370	47.49	-1.78	45.71	74.00	-28.29	peak																									
<p>Remarks:</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>																																

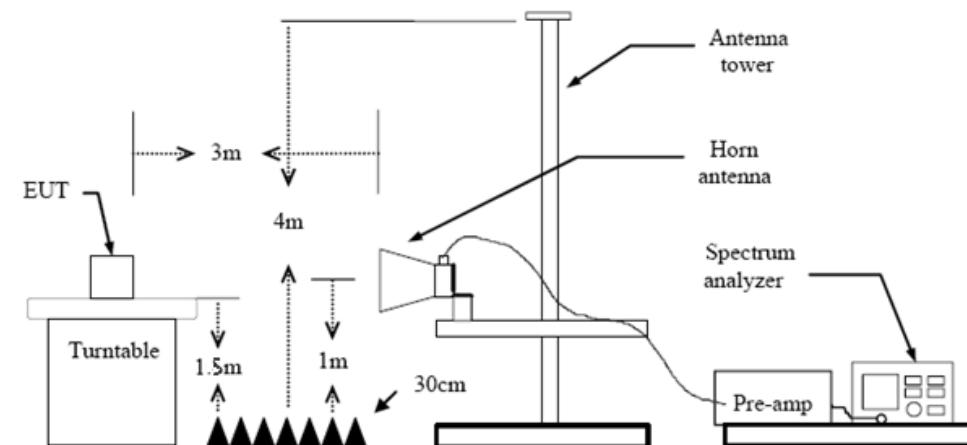
### 3.3. Band Edge Emissions (Radiated)

#### Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d):

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

#### Test Configuration



#### Test Procedure

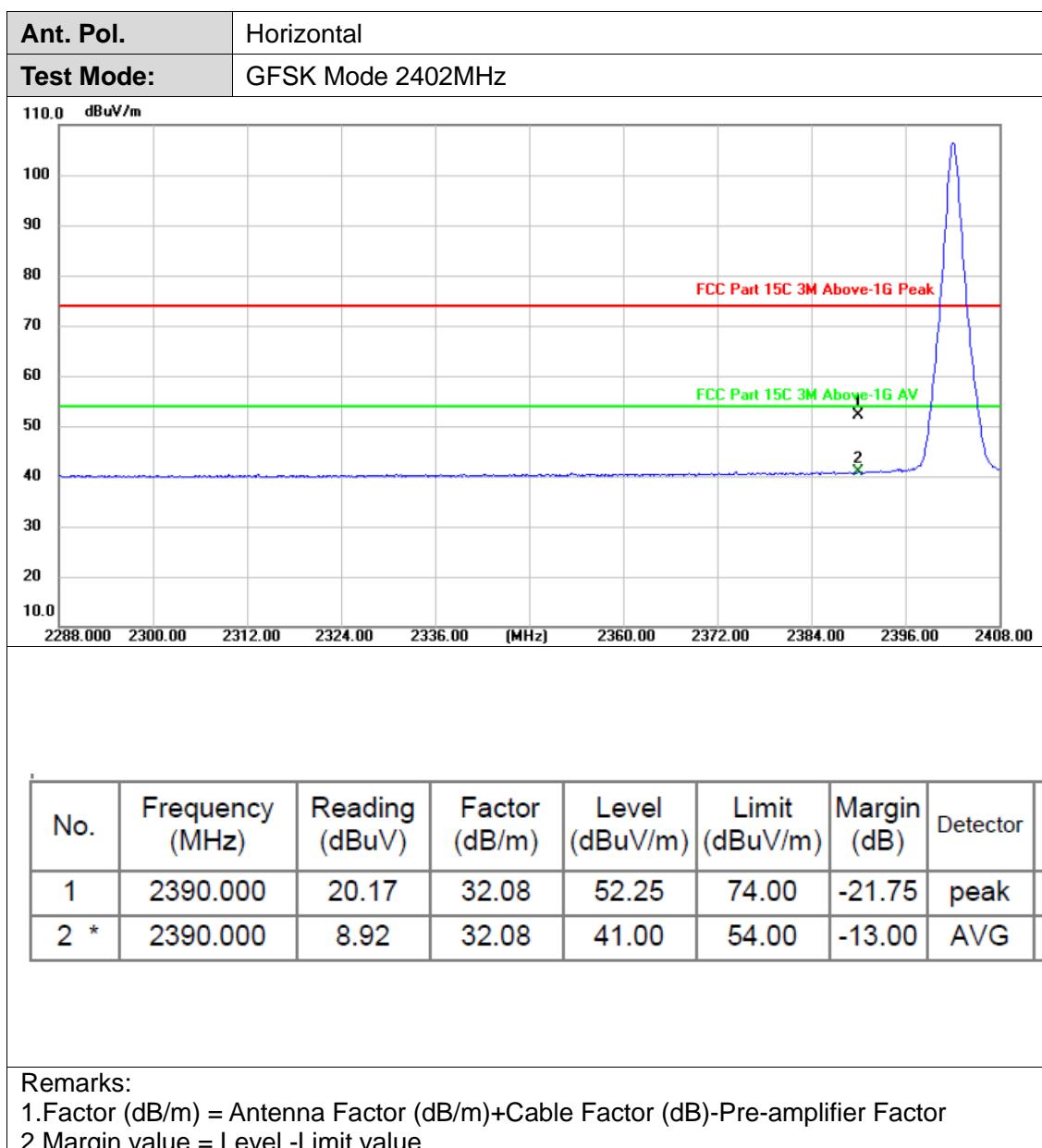
1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was positioned such that the distance from antenna 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.  
RBW=1MHz, VBW see note 1 with Peak Detector for Average Value.

Note 1: For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause 3.9 Duty Cycle.

#### Test Mode

Please refer to the clause 2.4.

## Test Results



CTC Laboratories, Inc.

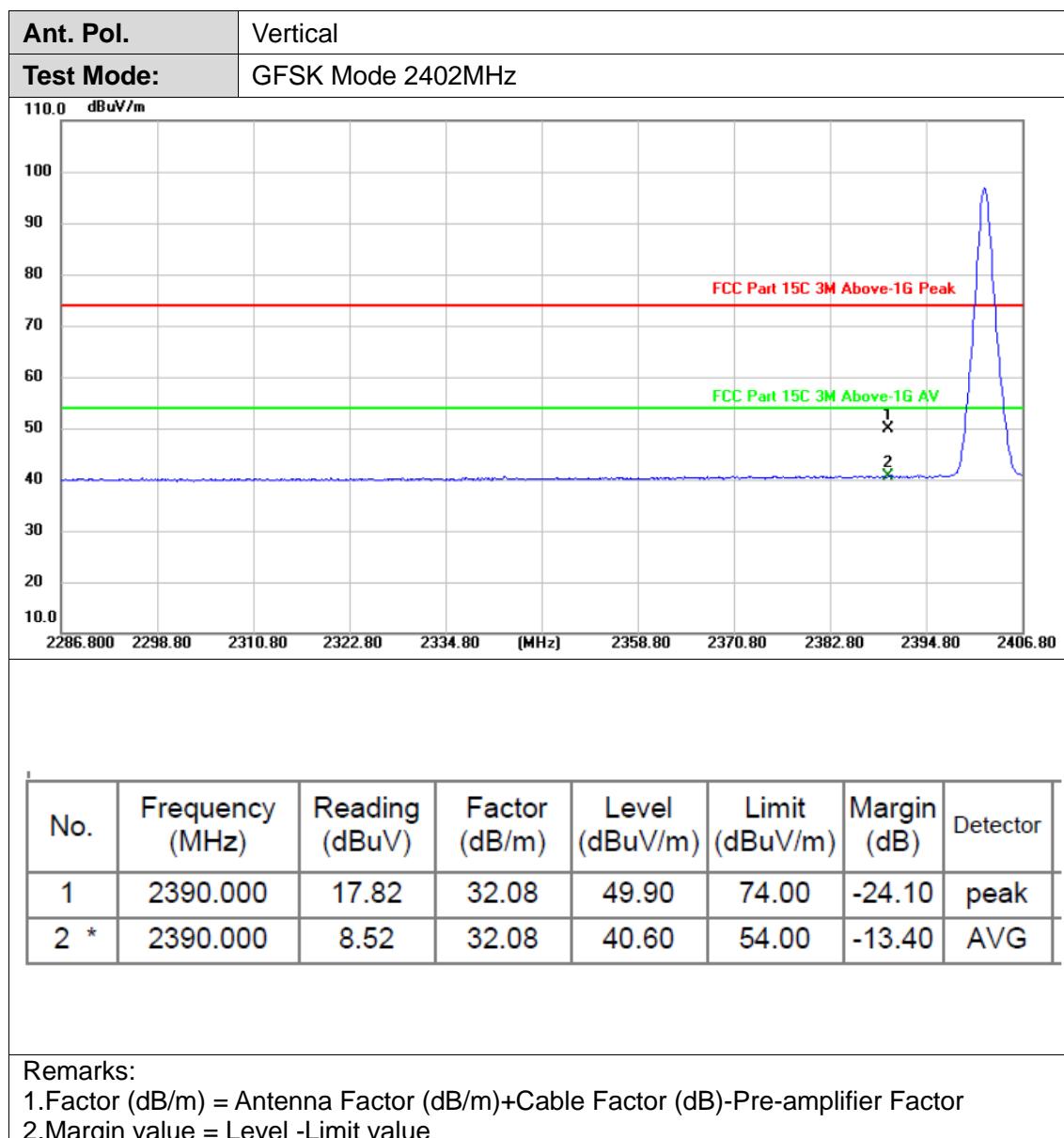
Room 101 of Building B, Room 107, 108, 207, 208 of Building A, No. 7, Lanqing 1st Road, Luhu Community, Guanhui Subdistrict, Longhua District, Shenzhen, Guangdong, China

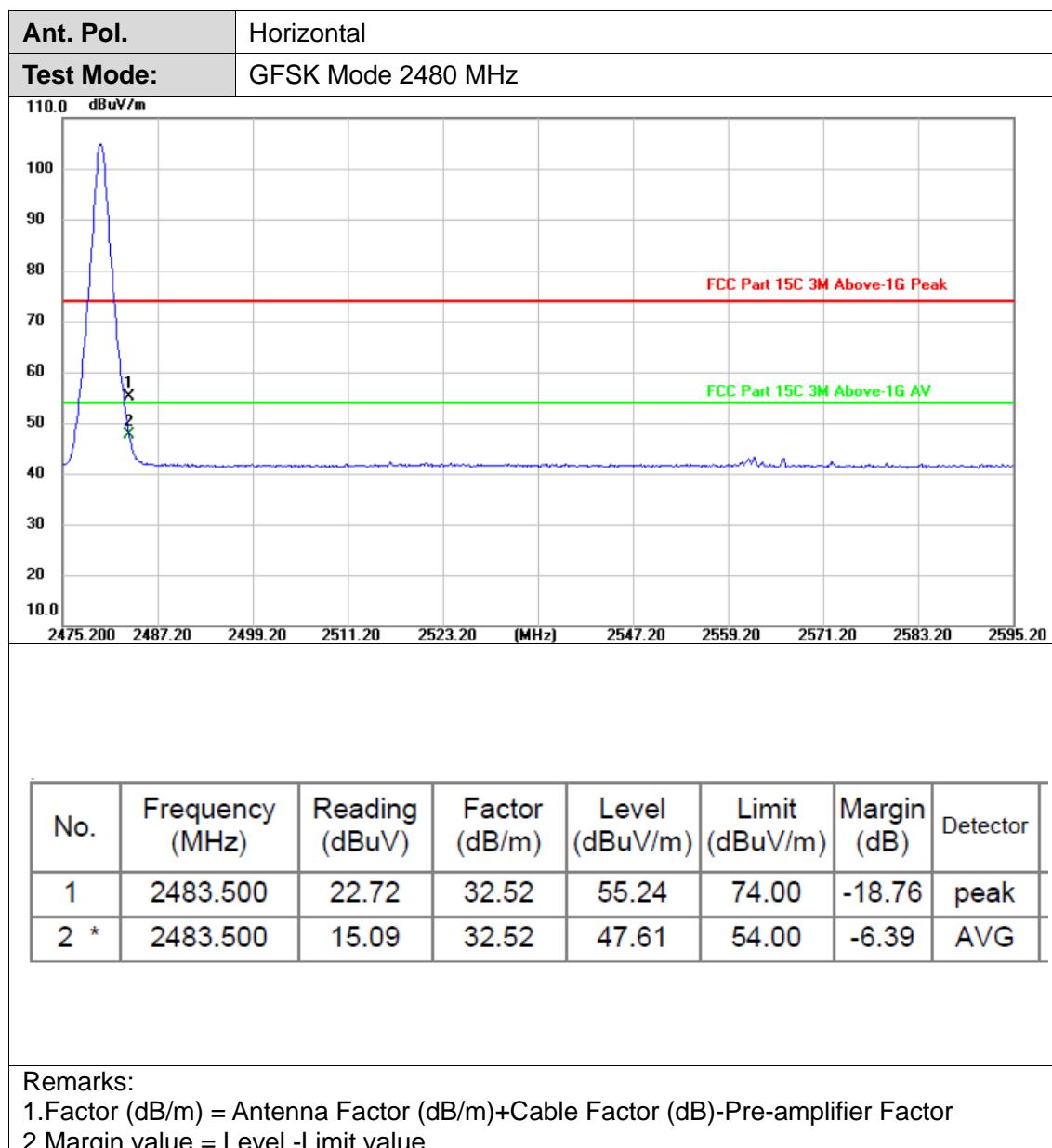
Tel.: (86)755-27521059

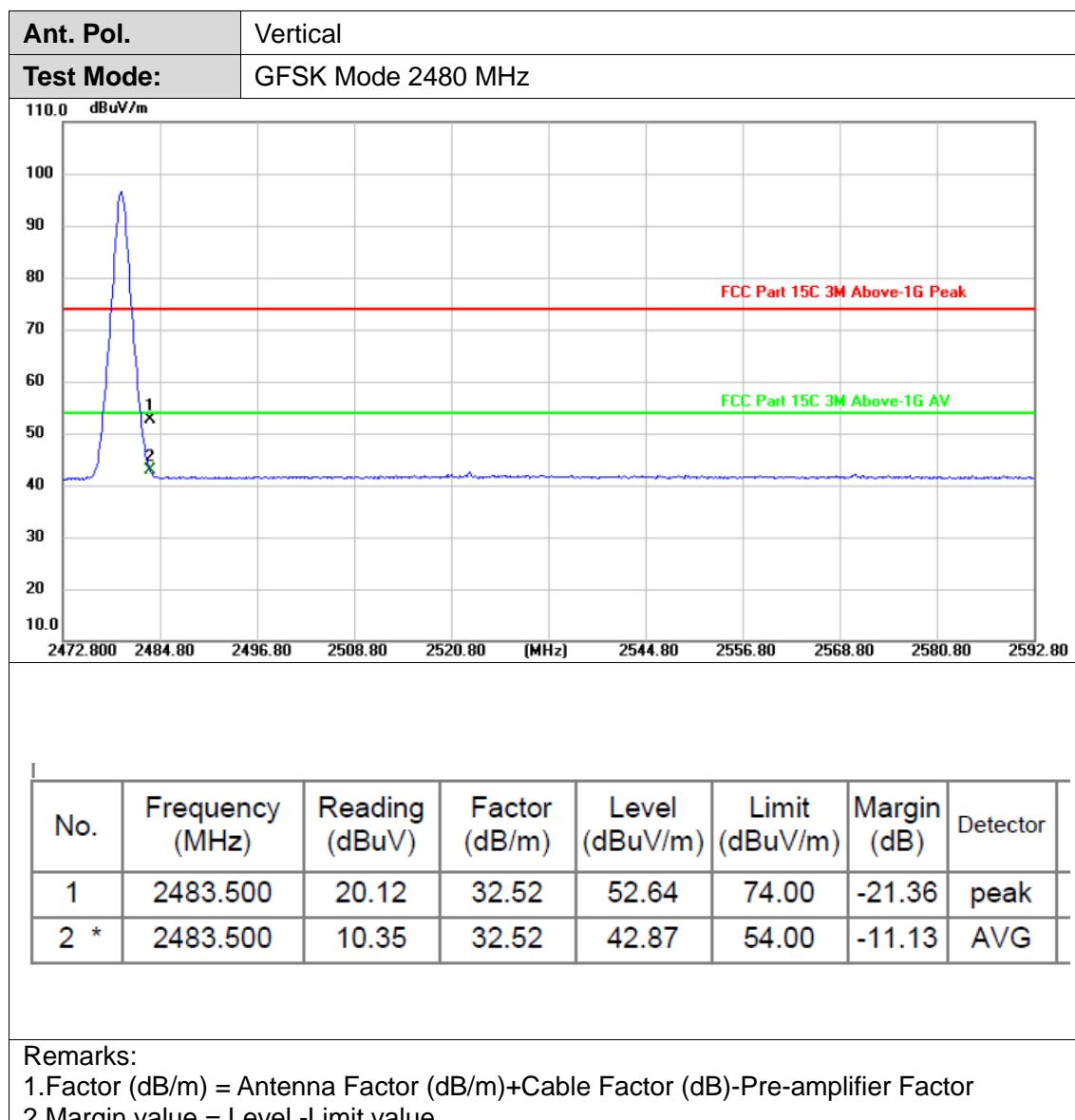
Fax: (86)755-27521011 [Http://www.sz-ctc.org.cn](http://www.sz-ctc.org.cn)

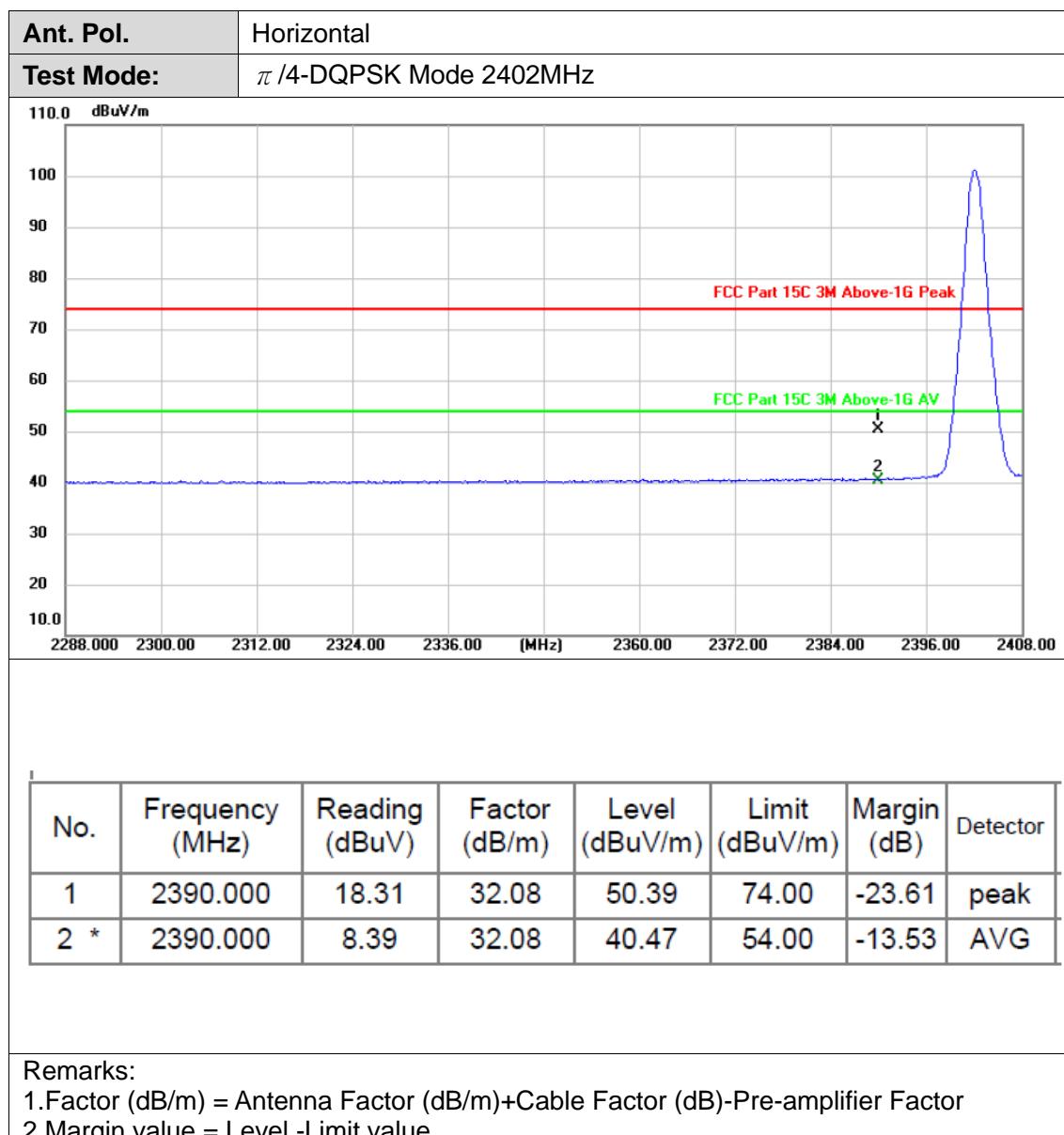


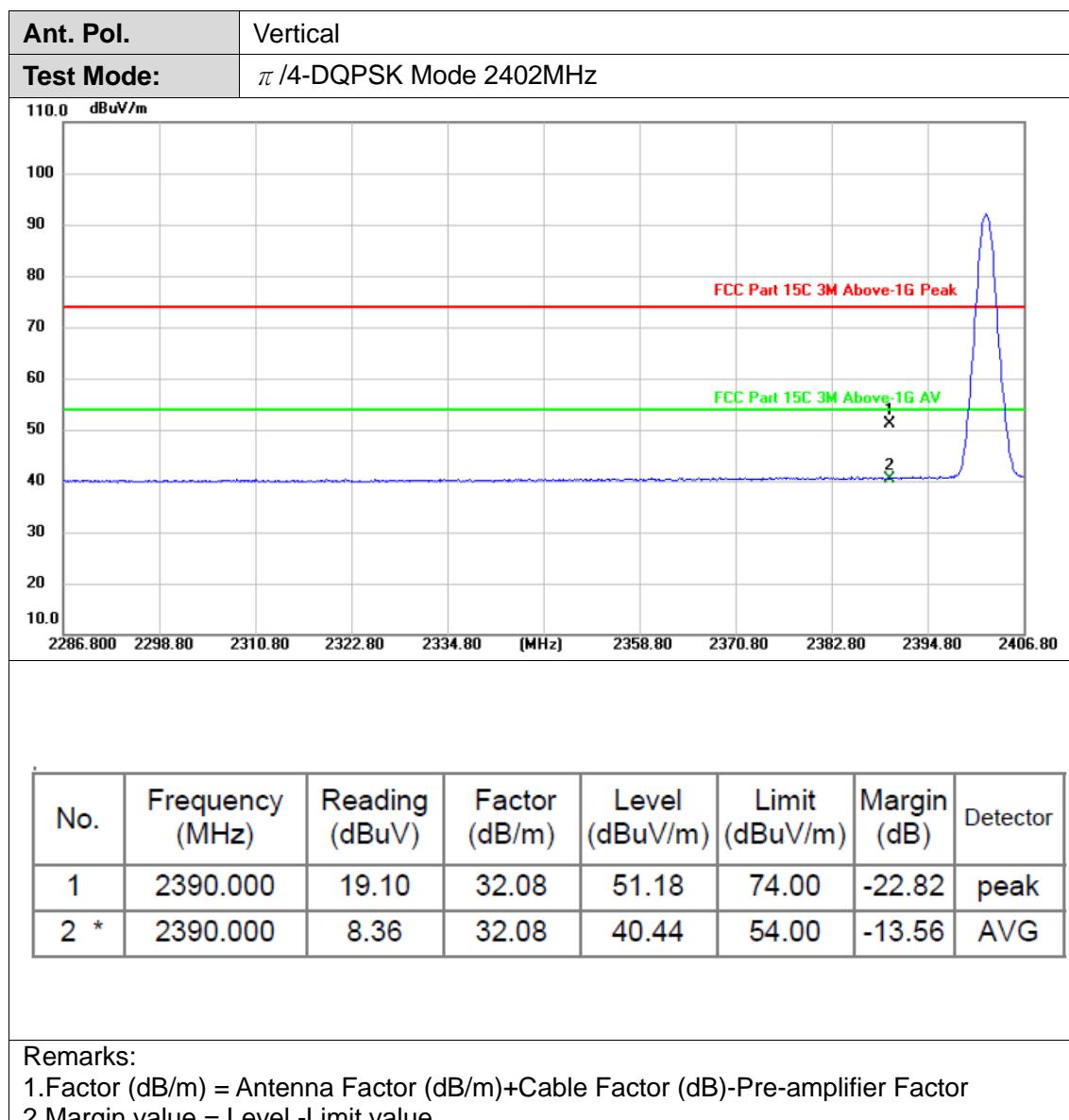
For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : [yz.cnca.cn](http://yz.cnca.cn)

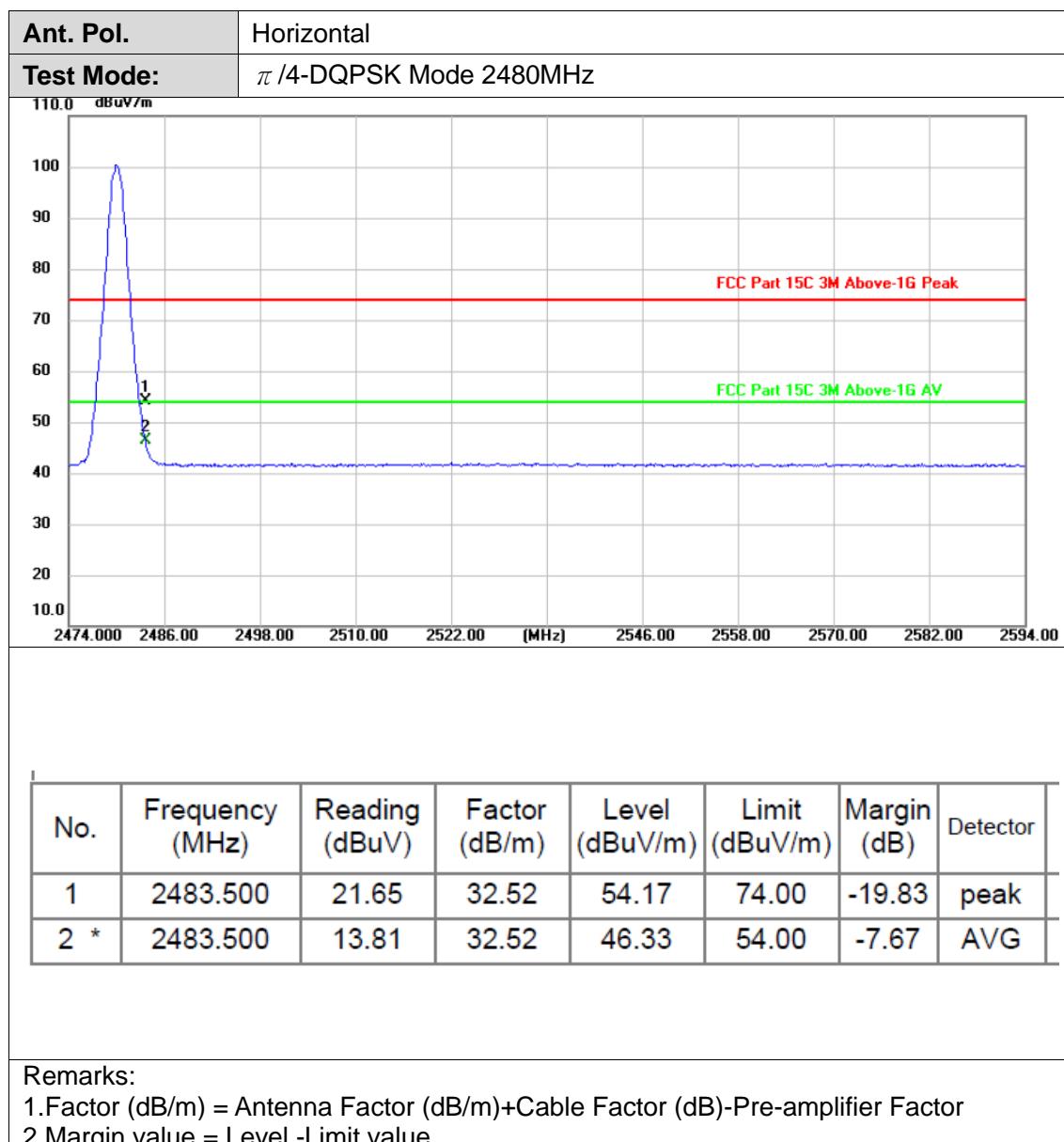


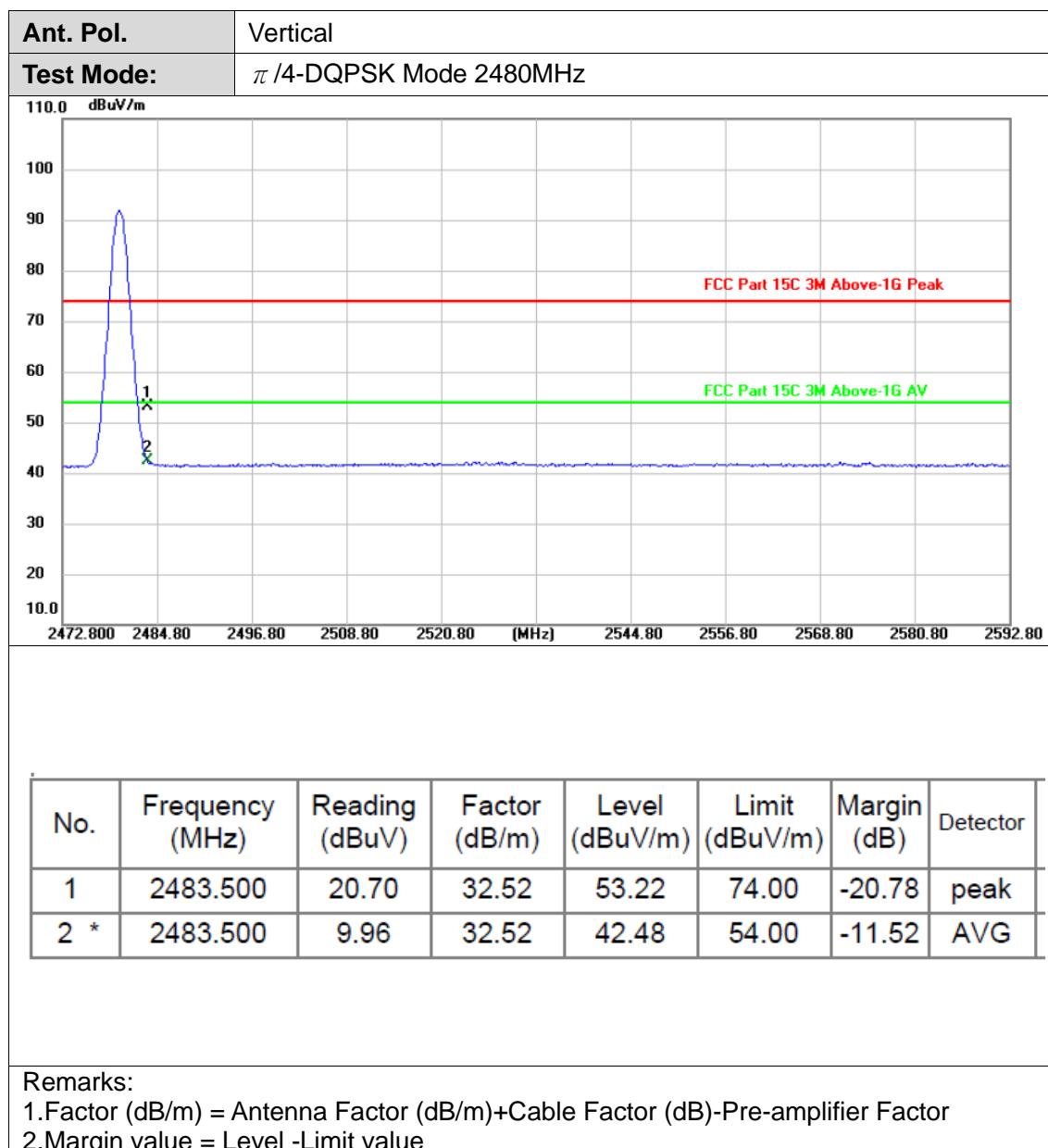


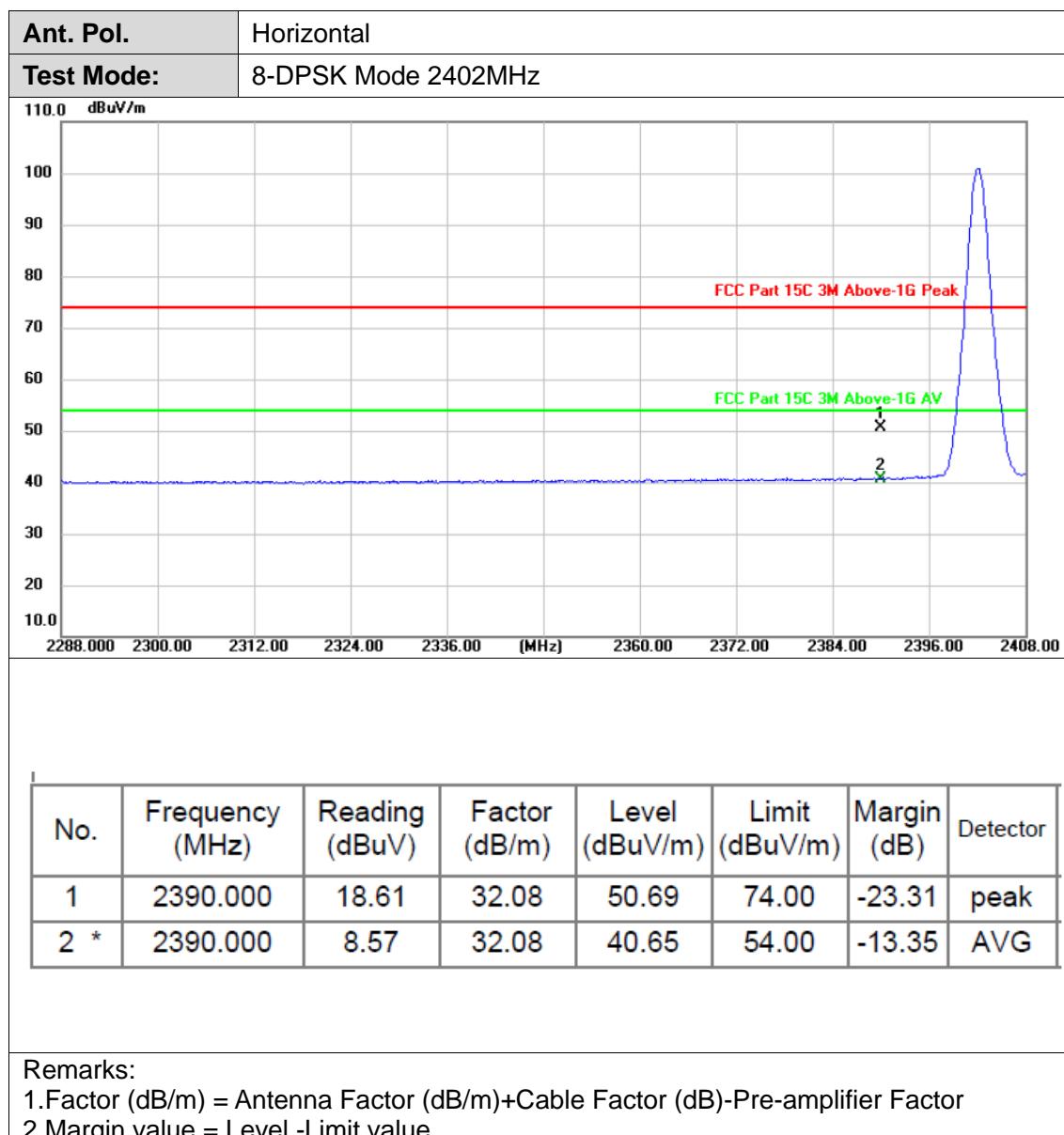


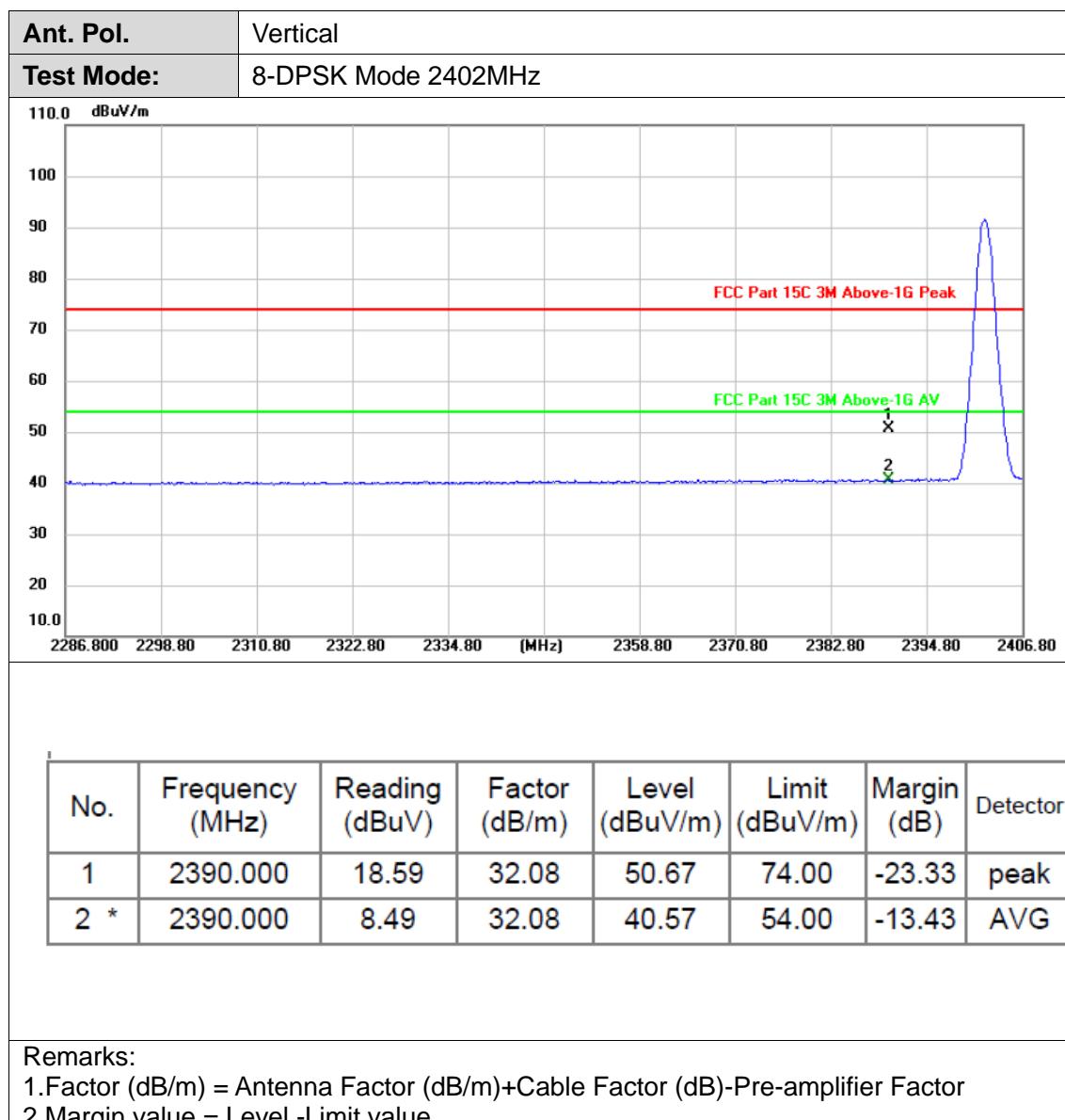


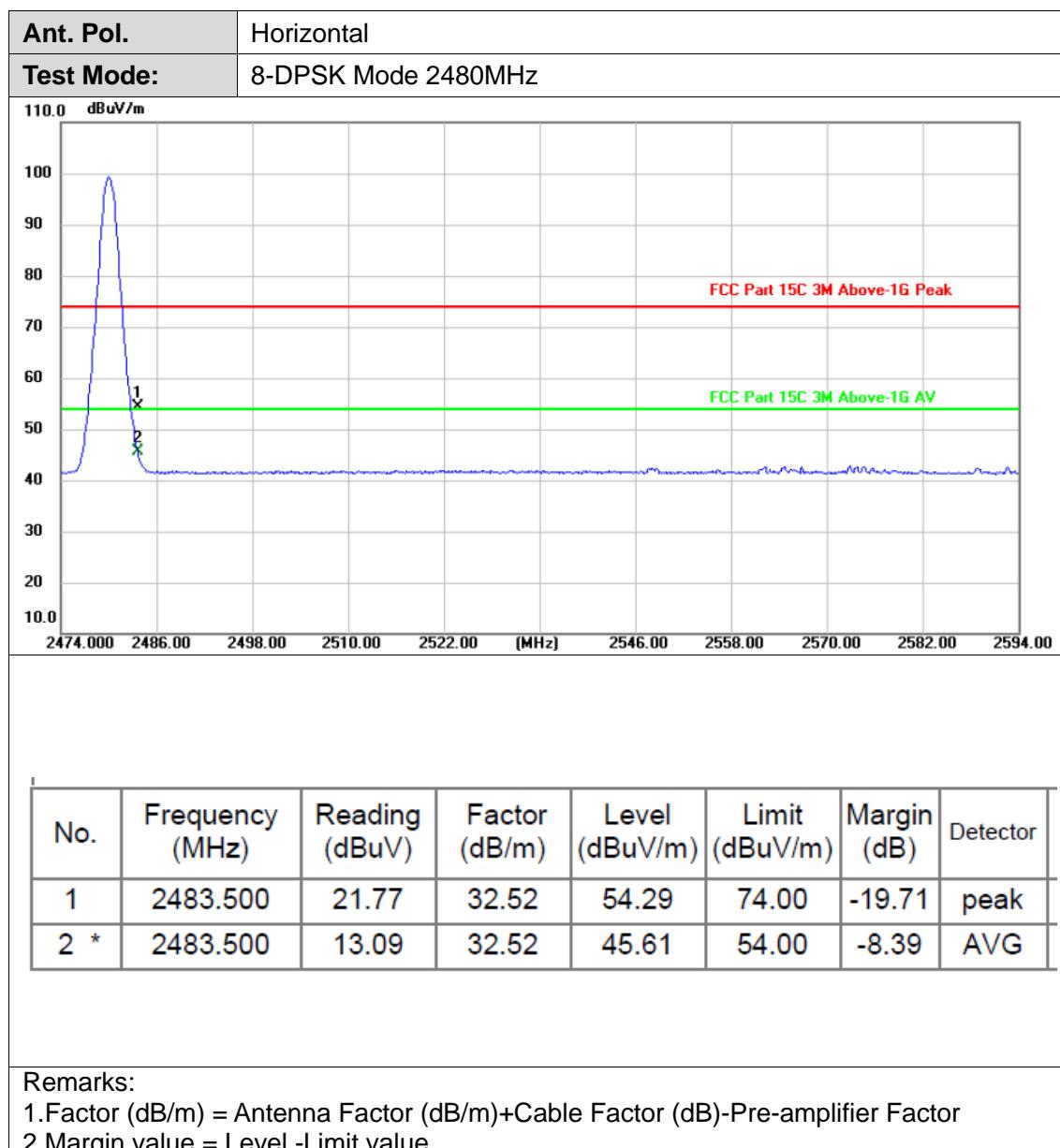


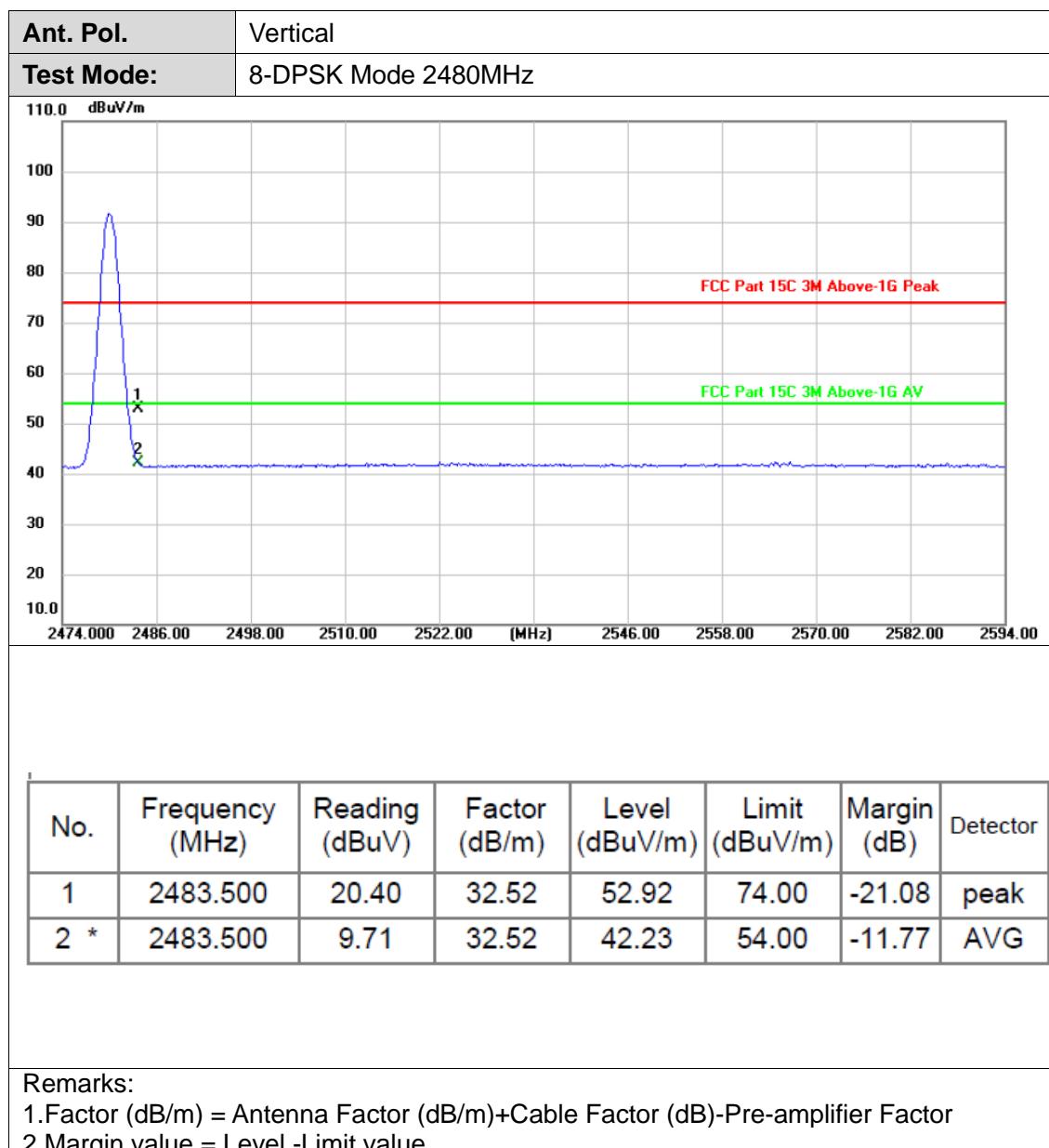










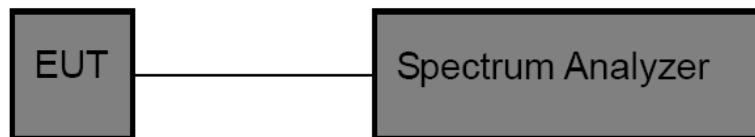


### 3.4. Band edge and Spurious Emissions (Conducted)

#### Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

#### 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:  
RBW = 100 kHz, VBW  $\geq$  RBW, scan up through 10<sup>th</sup> harmonic.  
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 2.4.

#### Test Results

##### **(1) Band edge Conducted Test**

Note: This test item not applicable.

##### **(2) Conducted Spurious Emissions Test**

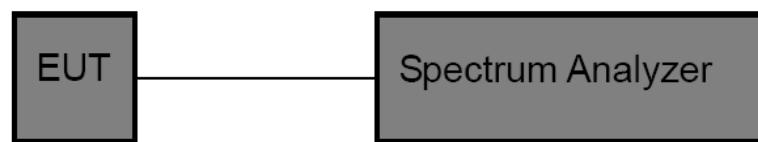
Note: This test item not applicable.

### 3.5. 20DB Bandwidth

#### Limit

N/A

#### Test Configuration



#### Test Procedure

5. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
6. OCB and 20dB Spectrum Setting:
  - (1) Set RBW = 1% ~ 5% occupied bandwidth.
  - (2) Set the video bandwidth (VBW)  $\geq$  3 RBW.
  - (3) Detector = Peak.
  - (4) Trace mode = Max hold.
  - (5) Sweep = Auto couple.

Note: The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

#### Test Mode

Please refer to the clause 2.4.

#### Test Results

Note: This test item not applicable.

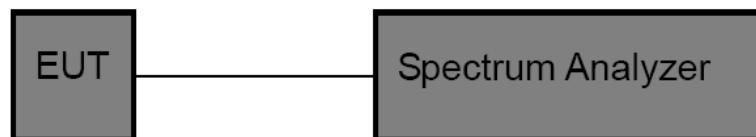
### 3.6. Channel Separation

#### Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(1)/ RSS-247 5.1 b :

Test Item	Limit	Frequency Range(MHz)
Channel Separation	>25KHz or >two-thirds of the 20 dB bandwidth Which is greater	2400~2483.5

#### Test Configuration



#### Test Procedure

7. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
8. Spectrum Setting:
  - (1) Set RBW = 100 kHz.
  - (2) Set the video bandwidth (VBW)  $\geq$  3 RBW.
  - (3) Detector = Peak.
  - (4) Trace mode = Max hold.
  - (5) Sweep = Auto couple.

#### Test Mode

Please refer to the clause 2.4.

#### Test Results

Note: This test item not applicable.

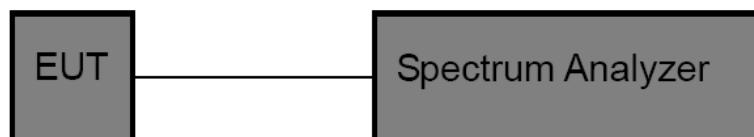
### 3.7. Number of Hopping Channel

#### Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(iii)/ RSS-247 5.1 d:

Section	Test Item	Limit
15.247 (a)(iii)/ RSS-247 5.1 d:	Number of Hopping Channel	>15

#### Test Configuration



#### 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:
  - (1) Peak Detector: RBW=100 kHz, VBW $\geq$ RBW, Sweep time= Auto.

#### Test Mode

Please refer to the clause 2.4.

#### Test Result

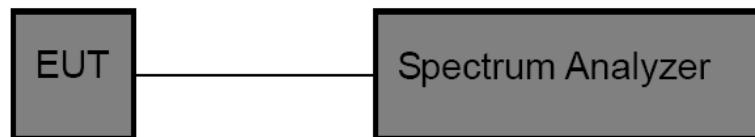
Note: This test item not applicable.

### 3.8. Dwell Time

#### Limit

Section	Test Item	Limit
15.247(a)(iii)/ RSS-247 5.1 d	Average Time of Occupancy	0.4 sec

#### Test Configuration



#### 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:
  - (1) Spectrum Setting:  $RBW=1\text{MHz}$ ,  $VBW \geq RBW$ .
  - (2) Use video trigger with the trigger level set to enable triggering only on full pulses.
  - (3) Sweep Time is more than once pulse time.
  - (4) Set the center frequency on any frequency would be measure and set the frequency span to zero.
  - (5) Measure the maximum time duration of one single pulse.
  - (6) Set the EUT for packet transmitting.

#### Test Mode

Please refer to the clause 2.4.

#### Test Result

Note: This test item not applicable.

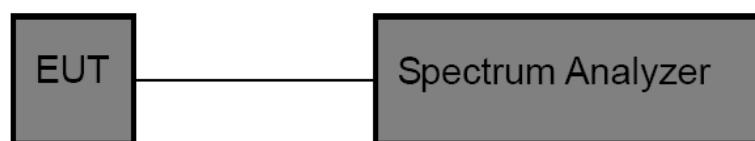
### 3.9. Peak Output Power

#### Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (b)(1) / RSS-247 5.4 b:

Test Item	Limit	Frequency Range(MHz)
Peak Output Power	Hopping Channels>75 Power<1W(30dBm) Other <125mW(21dBm)	2400~2483.5

#### Test Configuration



#### 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:
  - (1) Set RBW> 20DB Bandwidth.
  - (2) Set the video bandwidth (VBW)  $\geq$  RBW.
  - (3) Detector = Peak.
  - (4) Trace mode = Max hold.
  - (5) Sweep = Auto couple.

#### Test Mode

Please refer to the clause 2.4.

#### Test Result

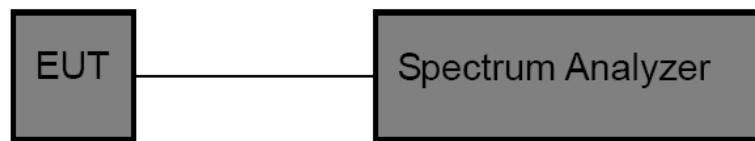
Note: This test item not applicable.

### 3.10. Duty Cycle

#### Limit

None, for report purposes only.

#### Test Configuration



#### 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 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 v05r02.
3. Spectrum Setting:  
Set analyzer center frequency to test channel center frequency.  
Set the span to 0Hz  
Set the RBW to 10MHz  
Set the VBW to 10MHz  
Detector: Peak  
Sweep time: Auto  
Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

#### Test Mode

Please refer to the clause 2.4.

#### Test Result

Note: This test item not applicable.

### 3.11. 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 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.

##### **FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1)(i):**

(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\*\*\*\*\*