

# TEST REPORT

**Product Name:** WIFI Module  
**Trade Mark:** GSD  
**Model No.:** WT31M2311A2  
**Report Number:** 171024001RFC-1  
**Test Standards:** FCC 47 CFR Part 15 Subpart C  
**FCC ID:** 2AC23-WT31M2311A  
**Test Result:** PASS  
**Date of Issue:** November 9, 2017

Prepared for:

**Hui Zhou Gaoshengda Technology Co., LTD.**  
**NO.75 Zhongkai Development Area, Huizhou, Guangdong, China**

Prepared by:

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**  
**16/F, Block A, Building 6, Baoneng Science and Technology Park,**  
**Qingxiang Road No.1, Longhua New District, Shenzhen, China**  
**TEL: +86-755-2823 0888**  
**FAX: +86-755-2823 0886**

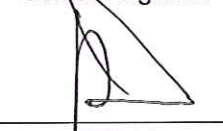
Tested by:

  
Kevin Liang  
Senior Engineer

Reviewed by:

  
Jim Long  
Senior Supervisor

Approved by:

  
Billy Li  
Technical Director

Date:

November 9, 2017



**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

Address: 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China  
Tel: +86-755-28230888 Fax: +86-755-28230886 E-mail: info@uttlab.com

[Http://www.uttlab.com](http://www.uttlab.com)

**Version**

Version No.	Date	Description
V1.0	November 9, 2017	Original



## CONTENTS

<b>1. GENERAL INFORMATION</b> .....	<b>4</b>
<b>1.1 CLIENT INFORMATION</b> .....	<b>4</b>
<b>1.2 EUT INFORMATION</b> .....	<b>4</b>
1.2.1 GENERAL DESCRIPTION OF EUT .....	4
1.2.2 DESCRIPTION OF ACCESSORIES .....	4
<b>1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD</b> .....	<b>4</b>
<b>1.4 OTHER INFORMATION</b> .....	<b>4</b>
<b>1.5 DESCRIPTION OF SUPPORT UNITS</b> .....	<b>5</b>
<b>1.6 TEST LOCATION</b> .....	<b>5</b>
<b>1.7 TEST FACILITY</b> .....	<b>6</b>
<b>1.8 DEVIATION FROM STANDARDS</b> .....	<b>6</b>
<b>1.9 ABNORMALITIES FROM STANDARD CONDITIONS</b> .....	<b>6</b>
<b>1.10 OTHER INFORMATION REQUESTED BY THE CUSTOMER</b> .....	<b>6</b>
<b>1.11 MEASUREMENT UNCERTAINTY</b> .....	<b>6</b>
<b>2. TEST SUMMARY</b> .....	<b>7</b>
<b>3. EQUIPMENT LIST</b> .....	<b>8</b>
<b>4. TEST CONFIGURATION</b> .....	<b>9</b>
<b>4.1 ENVIRONMENTAL CONDITIONS FOR TESTING</b> .....	<b>9</b>
4.1.1 NORMAL OR EXTREME TEST CONDITIONS .....	9
<b>4.2 TEST CHANNELS</b> .....	<b>9</b>
<b>4.3 EUT TEST STATUS</b> .....	<b>9</b>
<b>4.4 PRE-SCAN</b> .....	<b>9</b>
<b>4.5 TEST SETUP</b> .....	<b>10</b>
4.5.1 FOR RADIATED EMISSIONS TEST SETUP .....	10
<b>4.6 SYSTEM TEST CONFIGURATION</b> .....	<b>11</b>
<b>5. RADIO TECHNICAL REQUIREMENTS SPECIFICATION</b> .....	<b>12</b>
<b>5.1 REFERENCE DOCUMENTS FOR TESTING</b> .....	<b>12</b>
<b>5.2 ANTENNA REQUIREMENT</b> .....	<b>12</b>
<b>5.3 RADIATED SPURIOUS EMISSIONS</b> .....	<b>13</b>
<b>5.4 BAND EDGE MEASUREMENTS (RADIATED)</b> .....	<b>17</b>
<b>APPENDIX 1 PHOTOS OF TEST SETUP</b> .....	<b>20</b>
<b>APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS</b> .....	<b>20</b>

## 1. GENERAL INFORMATION

### 1.1 CLIENT INFORMATION

<b>Applicant:</b>	Hui Zhou Gaoshengda Technology Co., LTD.
<b>Address of Applicant:</b>	NO.75 Zhongkai Development Area, Huizhou, Guangdong, China
<b>Manufacturer:</b>	Hui Zhou Gaoshengda Technology Co., LTD.
<b>Address of Manufacturer:</b>	NO.75 Zhongkai Development Area, Huizhou, Guangdong, China

### 1.2 EUT INFORMATION

#### 1.2.1 General Description of EUT

<b>Product Name:</b>	WIFI Module
<b>Model No.:</b>	WT31M2311A2
<b>Add. Model No.:</b>	N/A
<b>Trade Mark:</b>	GSD
<b>DUT Stage:</b>	Identical Prototype
<b>Sample Received Date:</b>	October 25, 2017
<b>Sample Tested Date:</b>	October 25, 2017 to November 8, 2017

#### 1.2.2 Description of Accessories

N/A

### 1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

<b>Frequency Range:</b>	2400 MHz to 2483.5 MHz
<b>Bluetooth Version:</b>	Bluetooth EDR
<b>Modulation Technique:</b>	Frequency Hopping Spread Spectrum(FHSS)
<b>Type of Modulation:</b>	GFSK, $\pi/4$ DQPSK, 8DPSK
<b>Number of Channels:</b>	79
<b>Channel Separation:</b>	1 MHz
<b>Hopping Channel Type:</b>	Adaptive Frequency Hopping Systems
<b>Antenna Type:</b>	PCB Antenna
<b>Antenna Gain:</b>	1.11 dBi
<b>Maximum Peak Power:</b>	4.3 dBm

### 1.4 OTHER INFORMATION

Operation Frequency Each of Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402 MHz	20	2422 MHz	40	2442 MHz	60	2462 MHz
1	2403 MHz	21	2423 MHz	41	2443 MHz	61	2463 MHz
2	2404 MHz	22	2424 MHz	42	2444 MHz	62	2464 MHz
3	2405 MHz	23	2425 MHz	43	2445 MHz	63	2465 MHz
4	2406 MHz	24	2426 MHz	44	2446 MHz	64	2466 MHz
5	2407 MHz	25	2427 MHz	45	2447 MHz	65	2467 MHz
6	2408 MHz	26	2428 MHz	46	2448 MHz	66	2468 MHz
7	2409 MHz	27	2429 MHz	47	2449 MHz	67	2469 MHz
8	2410 MHz	28	2430 MHz	48	2450 MHz	68	2470 MHz
9	2411 MHz	29	2431 MHz	49	2451 MHz	69	2471 MHz
10	2412 MHz	30	2432 MHz	50	2452 MHz	70	2472 MHz

11	2413 MHz	31	2433 MHz	51	2453 MHz	71	2473 MHz
12	2414 MHz	32	2434 MHz	52	2454 MHz	72	2474 MHz
13	2415 MHz	33	2435 MHz	53	2455 MHz	73	2475 MHz
14	2416 MHz	34	2436 MHz	54	2456 MHz	74	2476 MHz
15	2417 MHz	35	2437 MHz	55	2457 MHz	75	2477 MHz
16	2418 MHz	36	2438 MHz	56	2458 MHz	76	2478 MHz
17	2419 MHz	37	2439 MHz	57	2459 MHz	77	2479 MHz
18	2420 MHz	38	2440 MHz	58	2460 MHz	78	2480 MHz
19	2421 MHz	39	2441 MHz	59	2461 MHz	N/A	

Modulation Configure			
Modulation	Packet	Packet Type	Packet Size
GFSK	1-DH1	4	27
	1-DH3	11	183
	1-DH5	15	339
π/4 DQPSK	2-DH1	20	54
	2-DH3	26	367
	2-DH5	30	679
8DPSK	3-DH1	24	83
	3-DH3	27	552
	3-DH5	31	1021

### 1.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested with associated equipment below.

1) Support Equipment

Description	Manufacturer	Model No.	Serial Number	Supplied by
Notebook	Lenovo	E450	SL10G10780	UnionTrust

2) Support Cable

Cable No.	Description	Connector	Length	Supplied by
1	USB Cable	USB-A	0.80 Meter	UnionTrust

### 1.6 TEST LOCATION

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

Address: 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China 518109

Telephone: +86 (0) 755 2823 0888

Fax: +86 (0) 755 2823 0886

## 1.7 TEST FACILITY

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

**CNAS-Lab Code: L9069**

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

**IC-Registration No.: 21600-1**

The 3m Semi-anechoic chamber of Shenzhen UnionTrust Quality and Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 21600-1.

**A2LA-Lab Certificate No.: 4312.01**

Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

**FCC Accredited Lab.**

Designation Number: CN1194

Test Firm Registration Number: 259480

## 1.8 DEVIATION FROM STANDARDS

None.

## 1.9 ABNORMALITIES FROM STANDARD CONDITIONS

None.

## 1.10 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

## 1.11 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Measurement Uncertainty
3	Radiated emission 9KHz-30MHz	±4.9 dB
4	Radiated emission 30MHz-1GHz	±4.7 dB
5	Radiated emission 1GHz-18GHz	±5.1 dB
6	Radiated emission 18GHz-26GHz	±5.2 dB
7	Radiated emission 26GHz-40GHz	±5.2 dB

## 2. TEST SUMMARY

FCC 47 CFR Part 15 Subpart C Test Cases			
Test Item	Test Requirement	Test Method	Result
Antenna Requirement	FCC 47 CFR Part 15 Subpart C Section 15.203/15.247 (c)	ANSI C63.10-2013	PASS
AC Power Line Conducted Emission	FCC 47 CFR Part 15 Subpart C Section 15.207	ANSI C63.10-2013	N/A <sup>(Note2)</sup>
Conducted Peak Output Power	FCC 47 CFR Part 15 Subpart C Section 15.247 (b)(1)	ANSI C63.10-2013	N/A <sup>(Note2)</sup>
20 dB Bandwidth	FCC 47 CFR Part 15 Subpart C Section 15.247 (a)(1)	ANSI C63.10-2013	N/A <sup>(Note2)</sup>
Carrier Frequencies Separation	FCC 47 CFR Part 15 Subpart C Section 15.247 (a)(1)	ANSI C63.10-2013	N/A <sup>(Note2)</sup>
Number of Hopping Channel	FCC 47 CFR Part 15 Subpart C Section 15.247 (b)(1)	ANSI C63.10-2013	N/A <sup>(Note2)</sup>
Dwell Time	FCC 47 CFR Part 15 Subpart C Section 15.247 (a)(1)	ANSI C63.10-2013	N/A <sup>(Note2)</sup>
Conducted Out of Band Emission	FCC 47 CFR Part 15 Subpart C Section 15.247(d)	ANSI C63.10-2013	N/A <sup>(Note2)</sup>
Radiated Emissions	FCC 47 CFR Part 15 Subpart C Section 15.205/15.209	ANSI C63.10-2013	PASS
Band Edge Measurement	FCC 47 CFR Part 15 Subpart C Section 15.205/15.209	ANSI C63.10-2013	PASS
<b>Note:</b> 1) N/A: In this whole report not application. 2) The EUT (Model No.: WT31M2311A2) this time and previous (Model No.: WT31M2311A) are the same, the only differences are the model number and the length of the bluetooth antenna. After assessment, this differences does not affect the test results, so the following test data from the original report with report No. FCC-ATL2016118886-3 (FCC ID: 2AC23-WT31M2311A).			

### 3. EQUIPMENT LIST

Radiated Emission Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm dd, yyyy)	Cal. Due date (mm dd, yyyy)
<input checked="" type="checkbox"/>	3M Chamber & Accessory Equipment	ETS-LINDGREN	3M	N/A	Dec. 20, 2015	Dec. 19, 2018
<input checked="" type="checkbox"/>	Receiver	R&S	ESIB26	100114	Dec. 22, 2016	Dec. 22, 2017
<input checked="" type="checkbox"/>	Loop Antenna	ETS-LINDGREN	6502	00202525	Jun. 24, 2015	Jun. 23, 2018
<input checked="" type="checkbox"/>	Broadband Antenna	ETS-LINDGREN	3142E	00201566	Jul. 24, 2015	Jul. 23, 2018
<input checked="" type="checkbox"/>	Preamplifier	HP	8447F	2805A02960	Dec. 22, 2016	Dec. 22, 2017
<input checked="" type="checkbox"/>	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201874	Dec. 30, 2016	Dec. 30, 2017
<input checked="" type="checkbox"/>	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3116C-PA	00202652	Jul. 29, 2015	Jul. 28, 2018
<input checked="" type="checkbox"/>	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
<input checked="" type="checkbox"/>	Band Rejection Filter (2400MHz~2500MHz)	Micro-Tronics	BRM50702	G248	Jun. 21, 2017	Jun. 20, 2018
<input checked="" type="checkbox"/>	Test Software	Audix	e3	Software Version: 9.160323		



## 4. TEST CONFIGURATION

### 4.1 ENVIRONMENTAL CONDITIONS FOR TESTING

#### 4.1.1 Normal or Extreme Test Conditions

Environment Parameter	Selected Values During Tests		
Test Condition	Ambient		
	Temperature (°C)	Voltage	Relative Humidity (%)
NT/NV	+15 to +35	USB 5.0 Vdc	20 to 75
<b>Remark:</b>			
1) NV: Normal Voltage; NT: Normal Temperature			

### 4.2 TEST CHANNELS

Mode	Tx/Rx Frequency	Test RF Channel Lists		
		Lowest(L)	Middle(M)	Highest(H)
GFSK (DH1, DH3, DH5)	2402 MHz to 2480 MHz	Channel 0	Channel 39	Channel 78
		2402 MHz	2441 MHz	2480 MHz
$\pi$ /4DQPSK (DH1, DH3, DH5)	2402 MHz to 2480 MHz	Channel 0	Channel 39	Channel 78
		2402 MHz	2441 MHz	2480 MHz
8DPSK (DH1, DH3, DH5)	2402 MHz to 2480 MHz	Channel 0	Channel 39	Channel 78
		2402 MHz	2441 MHz	2480 MHz

### 4.3 EUT TEST STATUS

Type of Modulation	Tx Function	Description
GFSK/ $\pi$ /4DQPSK/ 8DPSK	1Tx	1. Keep the EUT in continuously transmitting with Modulation test single

### 4.4 PRE-SCAN

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data packets and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

Type of Modulation	GFSK			$\pi$ /4DQPSK			8DPSK		
Data Packets	1-DH1	1-DH3	1-DH5	2-DH1	2-DH3	2-DH5	3-DH1	3-DH3	3-DH5
Available Channel	0 to 78								
Test Item	Test channel and choose of data packets								
AC Power Line Conducted Emission	Frequency Hopping Channel 0 to 78								
	Link								
Radiated Emissions	Channel 0 & 39 & 78								
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Band Edge Measurements (Radiated)	Channel 0 & 78								
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Remark:</b>									
1. The mark " <input checked="" type="checkbox"/> " means is chosen for testing;									
2. The mark " <input type="checkbox"/> " means is not chosen for testing.									

4.5 TEST SETUP

4.5.1 For Radiated Emissions test setup

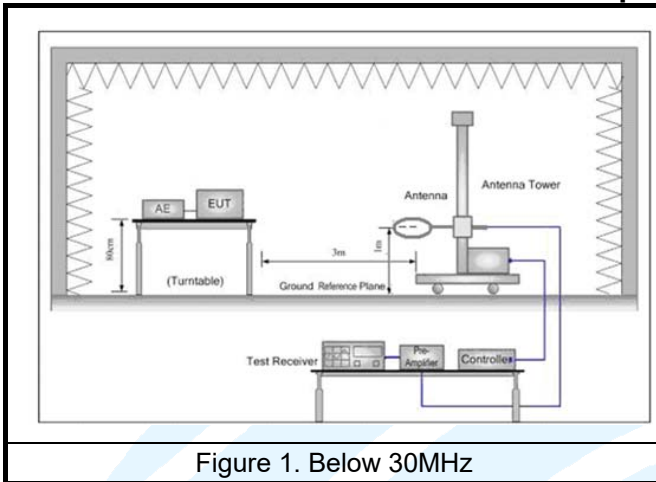


Figure 1. Below 30MHz

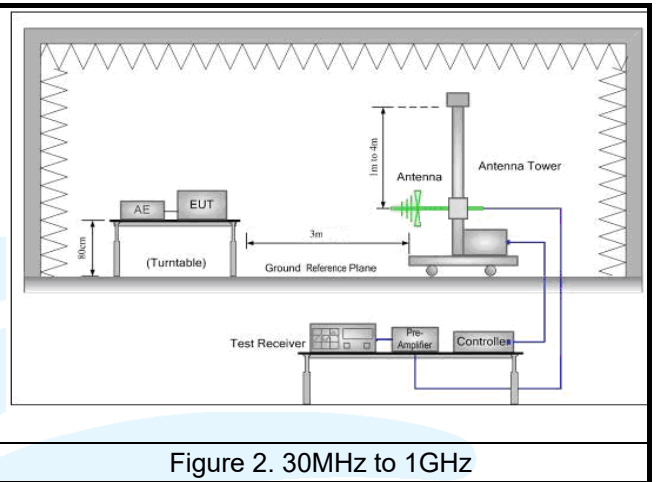


Figure 2. 30MHz to 1GHz

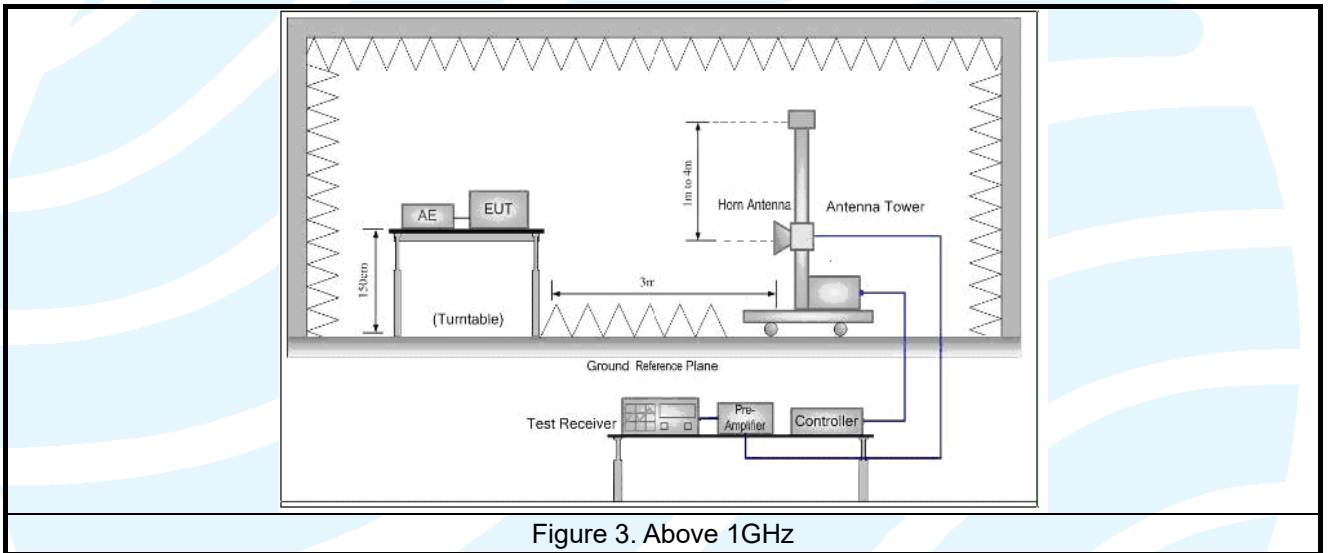


Figure 3. Above 1GHz

### 4.6 SYSTEM TEST CONFIGURATION

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, radiated emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario. It was power the by USB 5Vdc. Only the worst case data were recorded in this test report.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. Therefore, all final radiated testing was performed with the EUT in (see table below) orientation.

Frequency	Mode	Antenna Port	Worst-case axis positioning
Above 1GHz	1TX	Chain 0	Z axis

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

## 5. RADIO TECHNICAL REQUIREMENTS SPECIFICATION

### 5.1 REFERENCE DOCUMENTS FOR TESTING

No.	Identity	Document Title
1	FCC 47 CFR Part 2	Frequency allocations and radio treaty matters; general rules and regulations
2	FCC 47 CFR Part 15	Radio Frequency Devices
5	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

### 5.2 ANTENNA REQUIREMENT

Standard Requirement
<p><b>15.203 requirement:</b> 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.</p>
<p><b>15.247(b) (4) requirement:</b> The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.</p>
<p><b>EUT Antenna:</b> Antenna in the interior of the equipment and no consideration of replacement. The gain of the antenna is 1.11 dBi.</p>

### 5.3 RADIATED SPURIOUS EMISSIONS

**Test Requirement:** FCC 47 CFR Part 15 Subpart C Section 15.205/15.209

**Test Method:** ANSI C63.10-2013 Section 6.6.4.3

**Receiver Setup:**

Frequency	RBW
0.009 MHz-0.150 MHz	200/300 kHz
0.150 MHz -30 MHz	9/10 kHz
30 MHz-1 GHz	100/120 kHz
Above 1 GHz	1 MHz

**Limits:**

#### Spurious Emissions

Frequency	Field strength (microvolt/meter)	Limit (dB $\mu$ V/m )	Remark	Measurement distance (m)
0.009 MHz-0.490 MHz	2400/F(kHz)	--	--	300
0.490 MHz-1.705 MHz	24000/F(kHz)	--	--	30
1.705 MHz-30 MHz	30	--	--	30
30 MHz-88 MHz	100	40.0	Quasi-peak	3
88 MHz-216 MHz	150	43.5	Quasi-peak	3
216 MHz-960 MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3
Above 1 GHz	500	54.0	Average	3

**Remark:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

**Test Setup:** Refer to section 4.5.1 for details.

#### Test Procedures:

1. From 30 MHz to 1GHz test procedure as below:
  - 1) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
  - 2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
  - 3) The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
  - 4) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rota table table was turned from 0 degrees to 360 degrees to find the maximum reading.
  - 5) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
  - 6) If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
2. Above 1GHz test procedure as below:
  - 1) Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter( Above 18GHz the distance is 1 meter and table is 1.5 meter).
  - 2) Test the EUT in the lowest channel ,middle channel, the Highest channel

#### Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

[Http://www.uttlab.com](http://www.uttlab.com)

- 3) The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the Z axis positioning which it is worse case.
- 4) Repeat above procedures until all frequencies measured was complete.

**Equipment Used:** Refer to section 3 for details.

**Test Result:** Pass

**The measurement data as follows:**

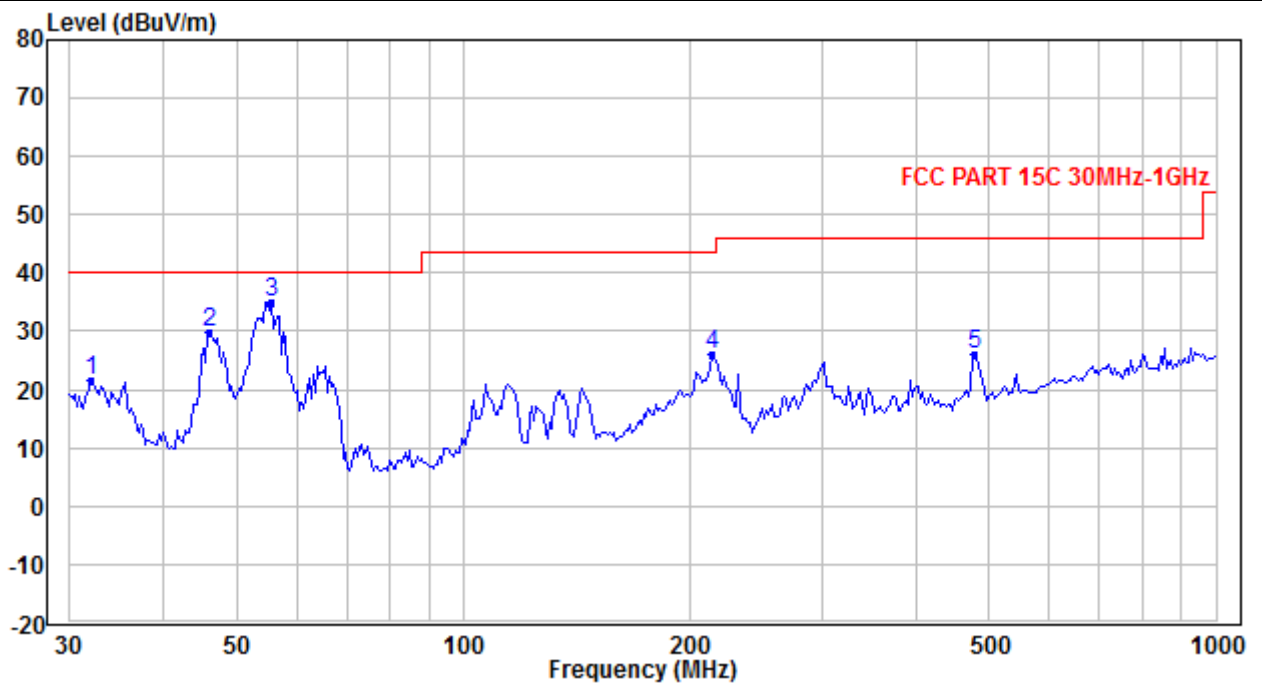
**Radiated Emission Test Data (9 KHz ~ 30 MHz):**

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

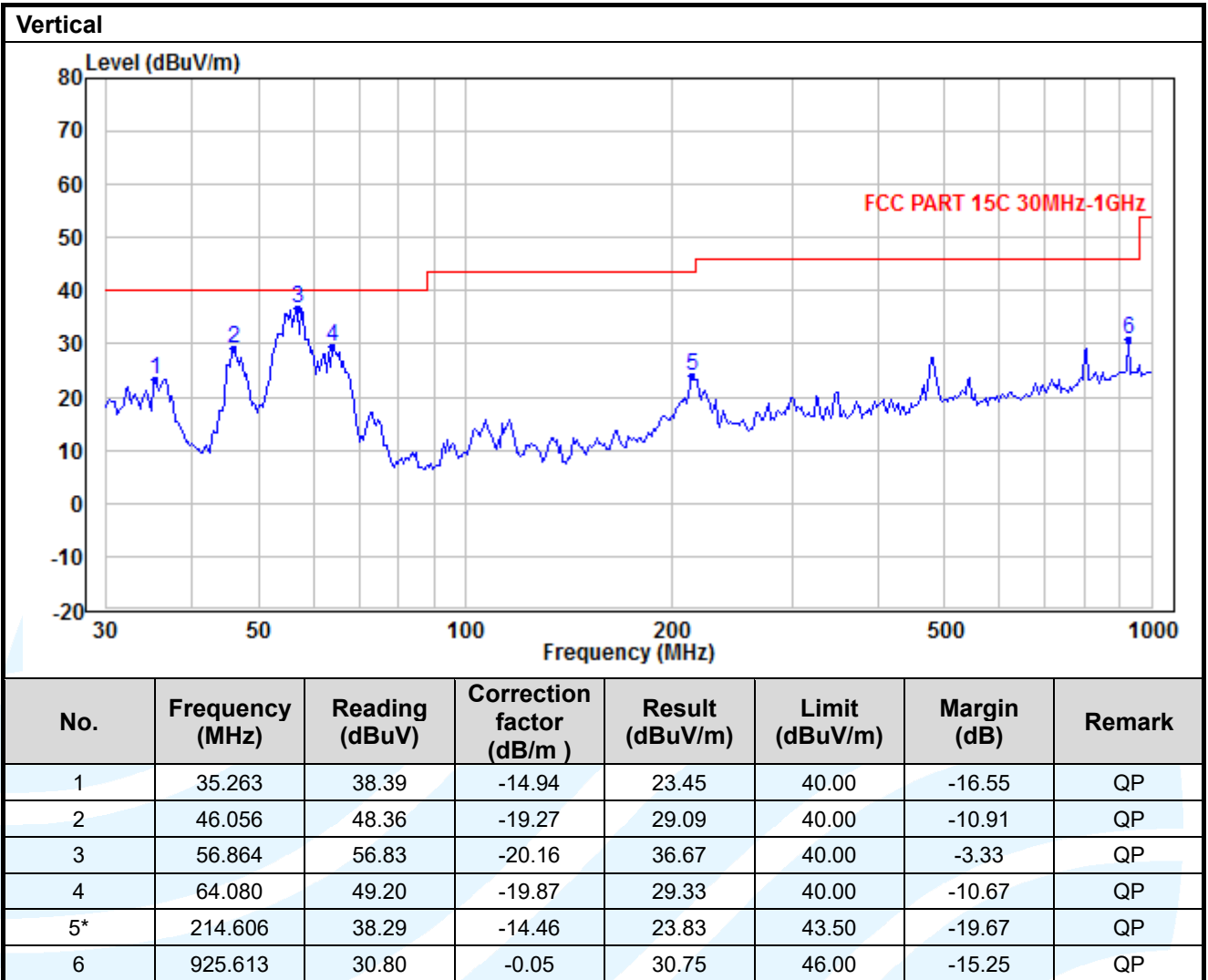
**Radiated Emission Test Data (30 MHz ~ 1 GHz):**

**Worst-Case Configuration**

**Horizontal**



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	31.959	33.78	-12.25	21.53	40.00	-18.47	QP
2	46.056	48.69	-18.73	29.96	40.00	-10.04	QP
3	55.678	55.63	-20.53	35.10	40.00	-4.90	QP
4	214.606	40.94	-14.78	26.16	43.50	-17.34	QP
5*	478.139	33.59	-7.39	26.20	46.00	-19.80	QP



**Radiated Emission Test Data (Above 1GHz):**

**Lowest Channel:**

No.	Frequency (MHz)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Polaxis
1	4804.00	56.00	74.00	-18.00	Peak	Horizontal
2	4804.00	33.82	54.00	-20.18	AV	Horizontal
3	7206.00	55.40	74.00	-18.60	Peak	Horizontal
4	7206.00	35.82	54.00	-18.18	AV	Horizontal
5	9608.00	60.70	74.00	-13.30	Peak	Horizontal
6	9608.00	38.38	54.00	-15.62	AV	Horizontal
7	4804.00	48.61	74.00	-25.39	Peak	Vertical
8	4804.00	29.83	54.00	-24.17	AV	Vertical
9	7206.00	51.23	74.00	-22.77	Peak	Vertical
10	7206.00	33.64	54.00	-20.36	AV	Vertical
11	9608.00	59.07	74.00	-14.93	Peak	Vertical
12	9608.00	37.28	54.00	-16.72	AV	Vertical

**Middle Channel:**

No.	Frequency (MHz)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Polaxis
1	4882.00	60.79	74.00	-13.21	Peak	Horizontal
2	4882.00	36.98	54.00	-17.02	AV	Horizontal
3	7323.00	63.45	74.00	-10.55	Peak	Horizontal
4	7323.00	38.26	54.00	-15.74	AV	Horizontal
5	9764.00	62.71	74.00	-11.29	Peak	Horizontal
6	9764.00	39.52	54.00	-14.48	AV	Horizontal
7	4882.00	58.82	74.00	-15.18	Peak	Vertical
8	4882.00	35.56	54.00	-18.44	AV	Vertical
9	7323.00	58.15	74.00	-15.85	Peak	Vertical
10	7323.00	35.33	54.00	-18.67	AV	Vertical
11	9764.00	62.35	74.00	-11.65	Peak	Vertical
12	9764.00	38.42	54.00	-15.58	AV	Vertical

**Highest Channel:**

No.	Frequency (MHz)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Polaxis
1	4960.00	61.96	74.00	-12.04	Peak	Horizontal
2	4960.00	37.25	54.00	-16.75	AV	Horizontal
3	7440.00	61.04	74.00	-12.96	Peak	Horizontal
4	7440.00	37.74	54.00	-16.26	AV	Horizontal
5	9920.00	65.26	74.00	-8.74	Peak	Horizontal
6	9920.00	40.98	54.00	-13.02	AV	Horizontal
7	4960.00	58.90	74.00	-15.10	Peak	Vertical
8	4960.00	35.61	54.00	-18.39	AV	Vertical
9	7440.00	56.44	74.00	-17.56	Peak	Vertical
10	7440.00	35.17	54.00	-18.83	AV	Vertical
11	9920.00	56.65	74.00	-17.35	Peak	Vertical
12	9920.00	36.99	54.00	-17.01	AV	Vertical



### 5.4 BAND EDGE MEASUREMENTS (RADIATED)

**Test Requirement:** FCC 47 CFR Part 15 Subpart C Section 15.205/15.209

**Test Method:** ANSI C63.10-2013 Section 6.6.4.3

**Limits:**

Radiated emissions which fall in the restricted bands, as defined in section 15.205(a), must also comply with the radiated emission limits specified in section 15.209(a).

Frequency	Limit (dBµV/m @3m)	Remark
30 MHz-88 MHz	40.0	Quasi-peak Value
88 MHz-216 MHz	43.5	Quasi-peak Value
216 MHz-960 MHz	46.0	Quasi-peak Value
960 MHz-1 GHz	54.0	Quasi-peak Value
Above 1 GHz	54.0	Average Value
	74.0	Peak Value

**Test Setup:** Refer to section 4.5.1 for details.

**Test Procedures:**

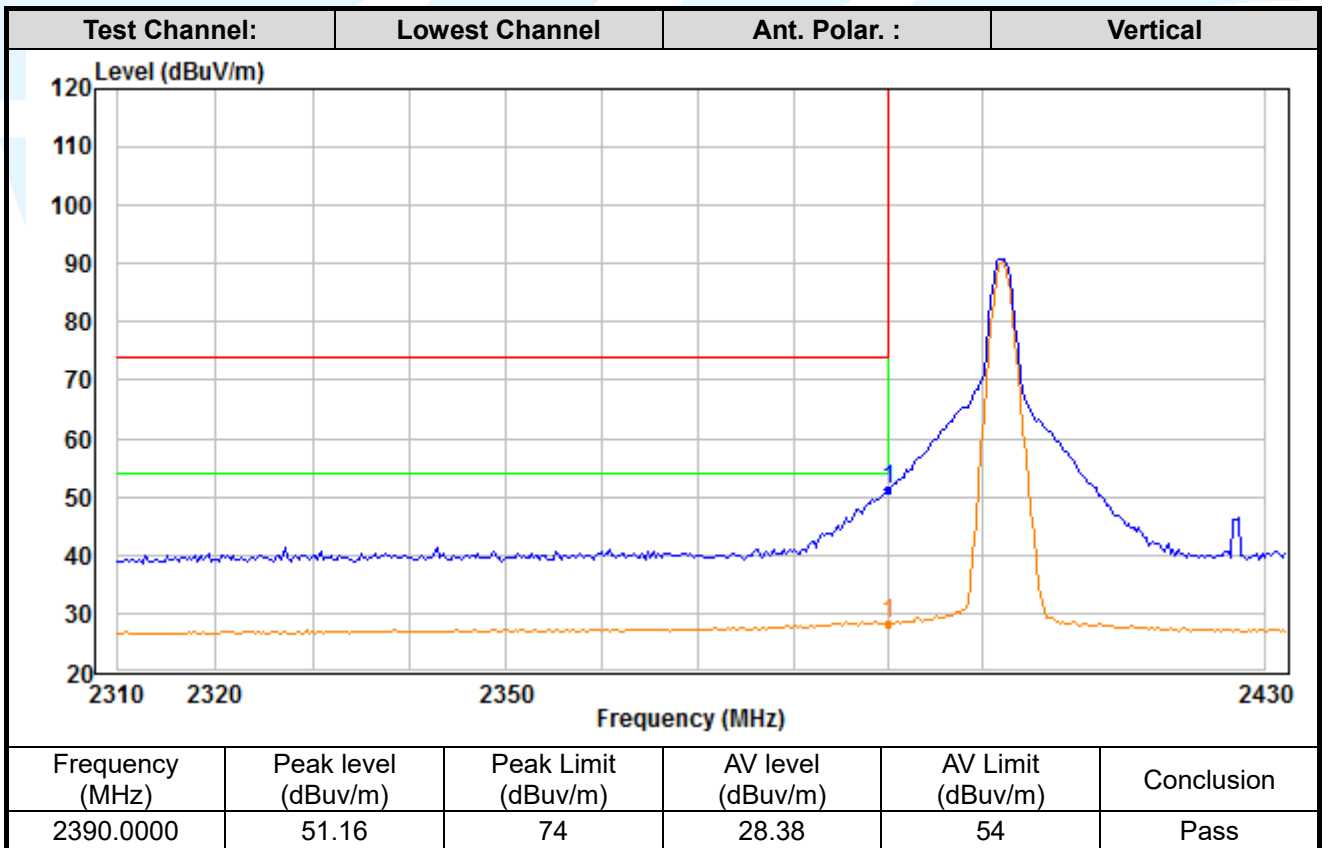
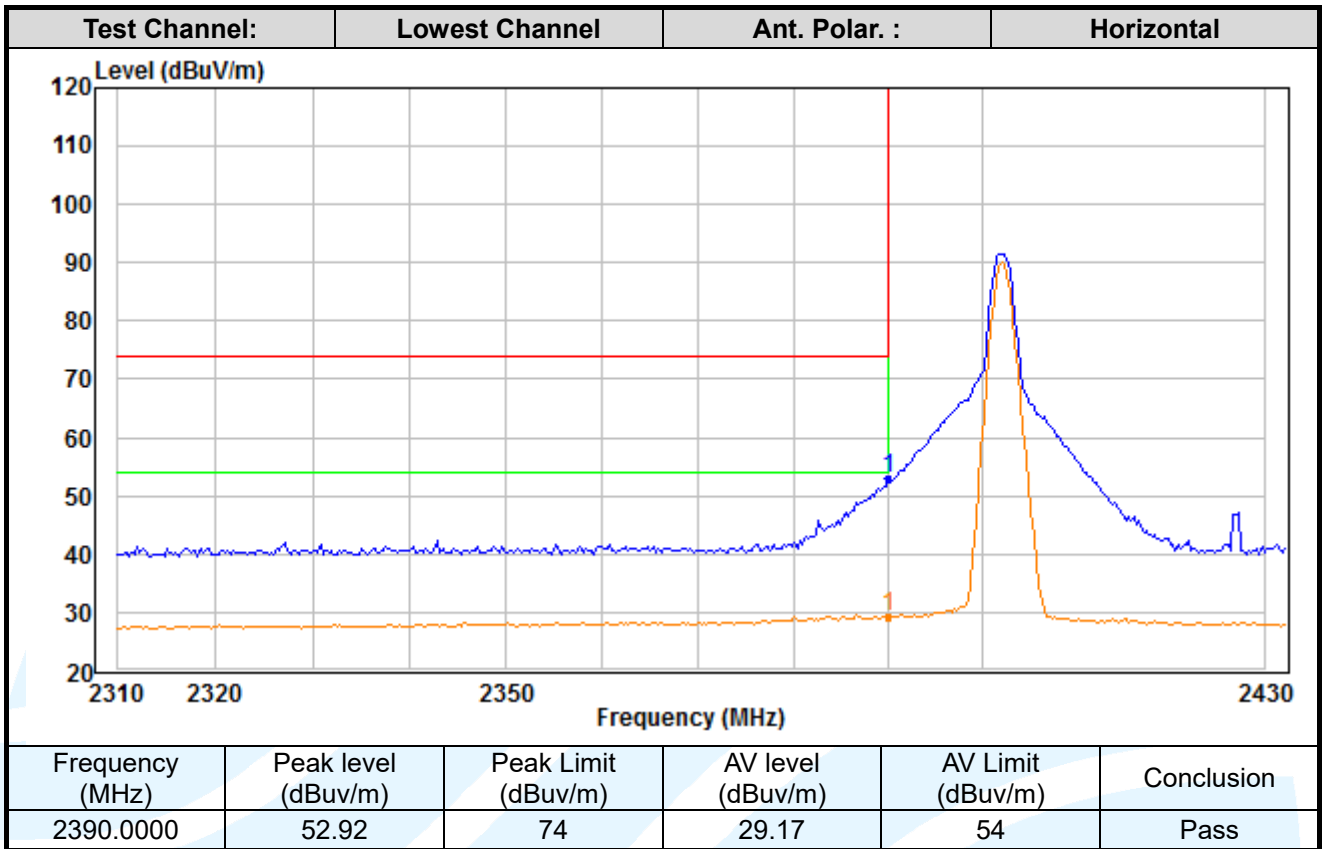
Radiated band edge measurements at 2390 MHz and 2483.5 MHz were made with the unit transmitting in the low end of the channel range and the high end closest to the restricted bands respectively. The emissions were made on the 966 Semi-Chamber. Use (resolution bandwidth (RBW) = 1 MHz, video bandwidth (VBW) = 3 MHz for peak levels and RBW = 1 MHz and VBW = 10 Hz or 1/T for average levels).

1. Use radiated spurious emission test procedure described in clause 5.10. The transmitter output (antenna port) was connected to the test receiver.
2. Set the PK and AV limit line.
3. Record the fundamental emission and emissions out of the band-edge.
4. Determine band-edge compliance as required.

**Equipment Used:** Refer to section 3 for details.

**Test Result:** Pass

**The measurement data as follows:**



**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

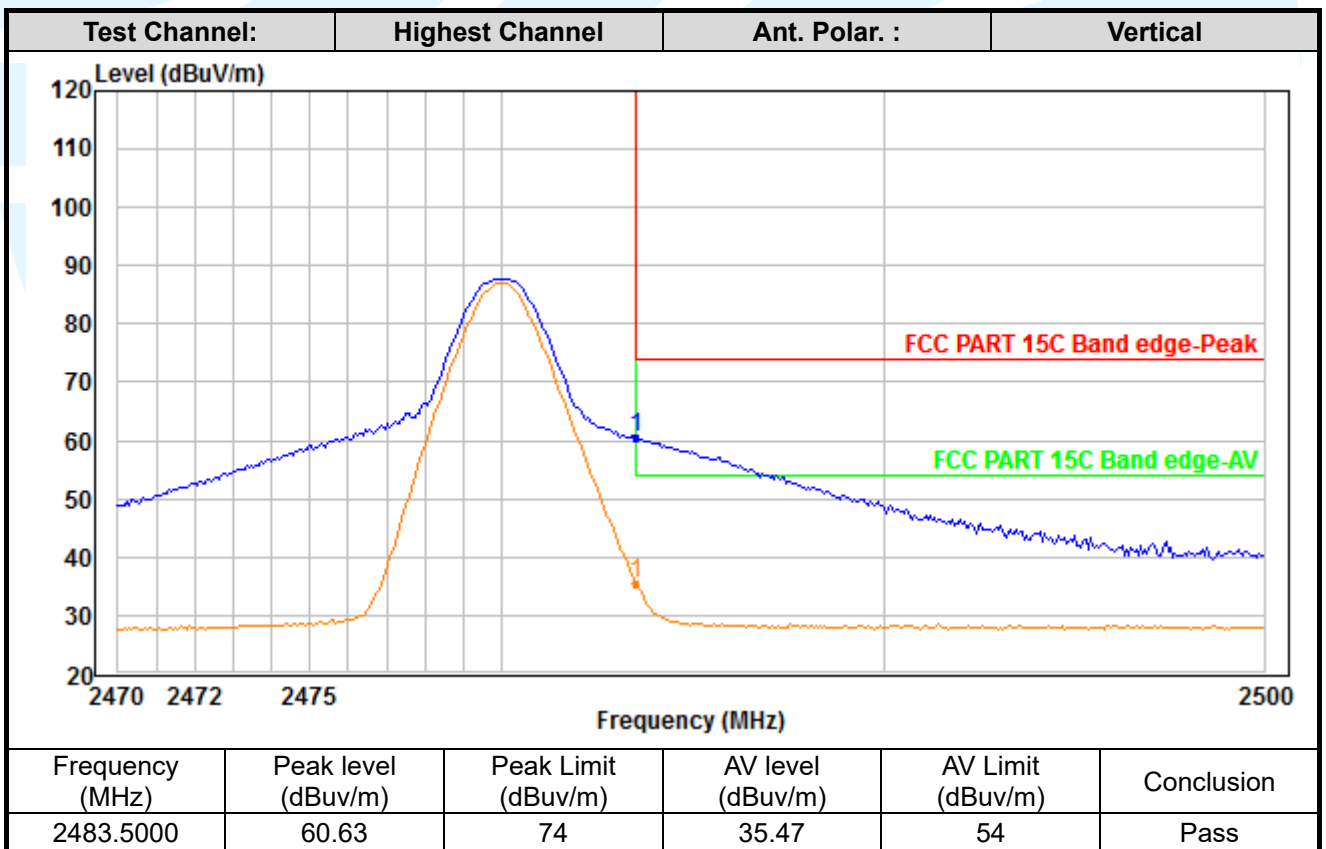
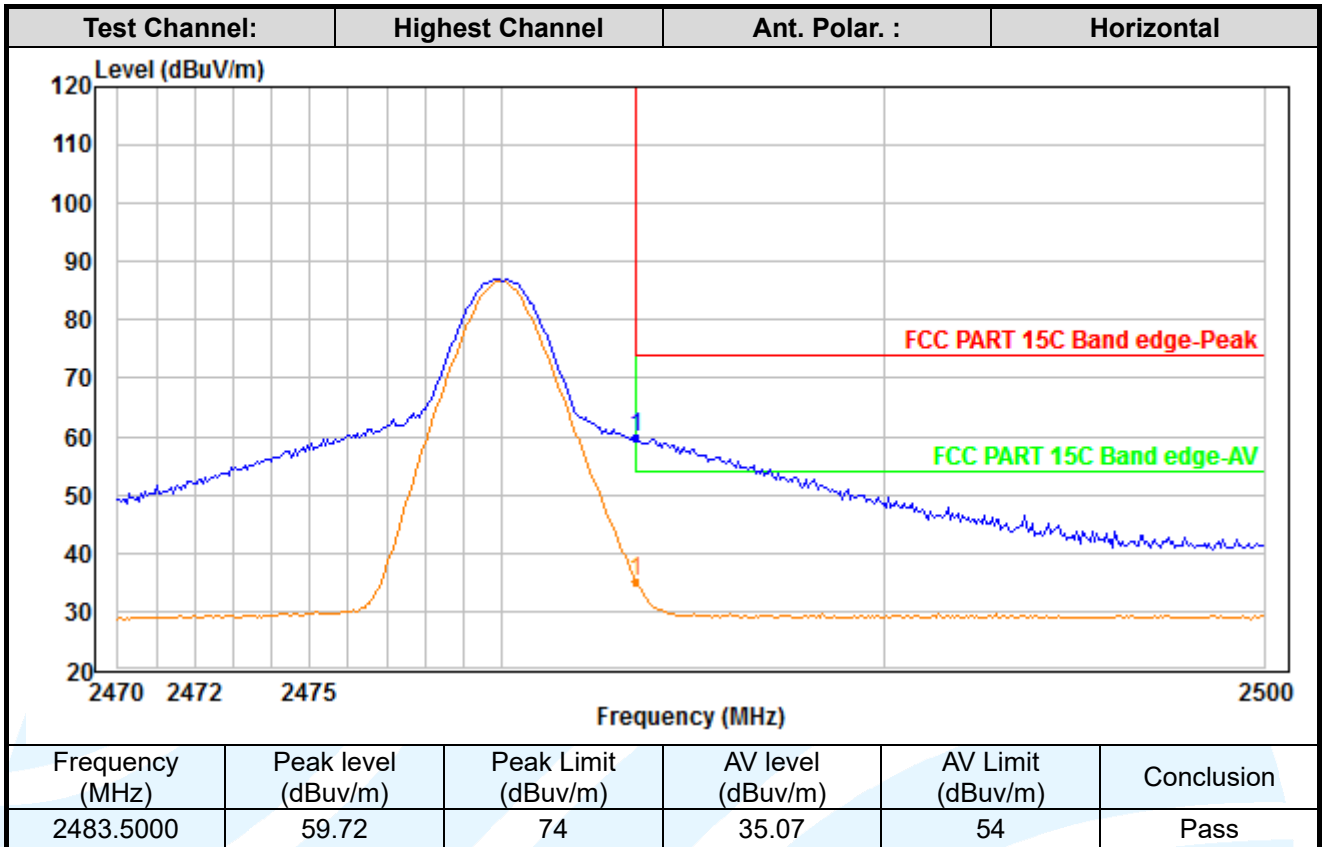
Address: 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

[Http://www.uttlab.com](http://www.uttlab.com)



## APPENDIX 1 PHOTOS OF TEST SETUP

See test photos attached in Appendix 1 for the actual connections between Product and support equipment.

## APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal photos.

\*\*\* End of Report \*\*\*

---

---

The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of UnionTrust, this report can't be reproduced except in full.

---

---