






Test Report No.:  
FCC2024-0001-RF

# TEST REPORT

**FCC ID** : 2A9LE-WLJG4-RF  
**Applicant** : Zhongshan Donlim Weili Cleaning  
Technology Co., Ltd.  
**Product Name** : remote-control unit  
**Mode No.** : WLJG4-RF

**CVC Testing Technology Co., Ltd.**

<b>Applicant</b>		<b>Name:</b> Zhongshan Donlim Weili Cleaning Technology Co., Ltd.	
		<b>Address:</b> 1st and 2nd Floor, Building F, No. 30, Dongfu Road, Fusha Town, Zhongshan City.	
<b>Manufacturer</b>		<b>Name:</b> Zhongshan Donlim Weili Cleaning Technology Co., Ltd.	
		<b>Address:</b> 1st and 2nd Floor, Building F, No. 30, Dongfu Road, Fusha Town, Zhongshan City.	
<b>Equipment Under Test</b>		<b>Product Name :</b> remote-control unit	
		<b>Model No. :</b> WLJG4-RF	
		<b>Trade mark :</b> WEILI	
		<b>Serial no. :</b> WLJG4-RF-0001	
		<b>Sampling :</b> 1-1	
Date of Receipt.	<b>2024.01.08</b>	Date of Testing	<b>2024.01.29</b>
<b>Test Specification</b>		<b>Test Result</b>	
FCC CFR47 Part 15C Radio Frequency Devices ANSI C63.10 (2020)		PASS	
Evaluation of Test Result	The equipment under test was found to comply with the requirements of the standards applied.		
	Seal of CVC <b>Issue Date: 2024.01.30</b>		
Approved by: <b>Chen HuaWen</b> 	Reviewed by: <b>Xu Zhenfei</b> 	Tested by: <b>Lu Weiji</b> 	
<b>Other Aspects: NONE.</b>			
Abbreviations:OK, Pass= passed Fail = failed N/A= not applicable EUT= equipment, sample(s) under tested			
This test report relates only to the EUT, and shall not be reproduced except in full, without written approval of <b>CVC</b> .			

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# 1. General Product Information

## 1.1 General information

Product Name	remote-control unit
Model No.	WLJG4-RF
Additional model	/
Power Supply	DC 3V
Serial Number(SN)	WLJG4-RF-0001
HVIN	WLJG4-RF
firmware	V1.0
software	V1.0
Antenna Type	Internal Antenna
Antenna Connector	A permanently attached antenna
Antenna Gain	1.5 dBi (provided by client)
Beamforming gain	Unsupported (provided by client)
Frequency Range	2400~2483.5 MHz
Channel Number	3 Channel
Type of Modulation	GFSK
Max. Conducted Power	Custom technology 2.4G: -15.49dBm
Operate Temp. Range	+1° C to +40° C
<b>Note:</b> <ol style="list-style-type: none"><li>1. The information of the EUT is declared by the manufacturer.</li><li>2. The laboratory is not responsible for the product technical specification provided by the client.</li><li>3. Transmitter part is located in the controller, and Receiver is located in the Complete Equipment.</li></ol>	

## 2. Test Sites

### 2.1 Test Facilities

The tests and measurements refer to this report were performed by RF testing Lab. of CVC Testing Technology Co., Ltd.

Add.: No.3, Tiantaiyi Road, Kaitai Avenue, Science City, Guangzhou,Guangdong,510663, People's Republic of China

Telephone : +86-20-32293888

Fax : +86-20-32293889

FCC(Test firm designation number: CN1282)

IC(Test firm CAB identifier number: CN0103)

### 2.2 Description of Non-standard Method and Deviations

The testing and measurement methods used in this report are applied by all standard methods. Not any non-standard method or deviation from the used standards was used.

### 2.3 List of Test and Measurement Instruments

Refer to **Appendix A**.

### 3. Test Configuration

#### 3.1 Test Mode

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Test Mode	Antenna Delivery	Test Channel [MHz]
Custom technology 2.4G	1TX / 1RX	2403
	1TX / 1RX	2430
	1TX / 1RX	2480

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

In order to find the worst case condition, Pre-tests are needed at the presence of different data rate and different channels. Preliminary tests have been done on all the configuration for confirming worst case. Data rate below means worst-case rate of each test item.

Worst-case Antenna and channels are shown as following table.

Test Mode	Antenna 1	Antenna 2	MIMO
Custom technology 2.4G	√	/	/

Test Items	Test Antennas	Test Modes	Test Frequency [MHz]
Conducted Emissions	Antenna 1	/	/
Radiated Emissions	Antenna 1	Custom technology 2.4G	2403, 2430, 2480
Occupied Channel Bandwidth	Antenna 1	Custom technology 2.4G	2403, 2430, 2480
Antenna Requirement	Antenna 1	/	/

### 3.2 Duty cycle

TestMode	Antenna	Channel [MHz]	Transmission Duration [us]	Transmission Period [us]	Duty Cycle [%]	Limit	Verdict
Custom technology 2.4G	Ant1	2403	249.6	641.7	38.90	---	PASS
	Ant1	2430	237.7	665.5	35.72	---	PASS
	Ant1	2480	249.6	677.4	36.85	---	PASS

## 4. Summary of measurement results

Summary of measurements of results	Clause in FCC rules	Verdict	Note
Conducted Emissions	15.207	Not Applicable	See Note1
Radiated Emissions	15.249(a)(d)(e), 15.205, 15.209	PASS	/
Occupied Channel Bandwidth	15.215(c)	PASS	/
Antenna Requirement	15.203	PASS	/

Note1: Battery powered, conducted emissions Not applicable.



## 5. Measurement procedure

### 5.1 Conducted Emission

Ambient condition:

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.2kPa

#### Method of Measurement:

The EUT was setup according to ANSI C63.10, 2020 for compliance to FCC 47CFR 15.247 requirements. 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. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /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) 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.

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.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

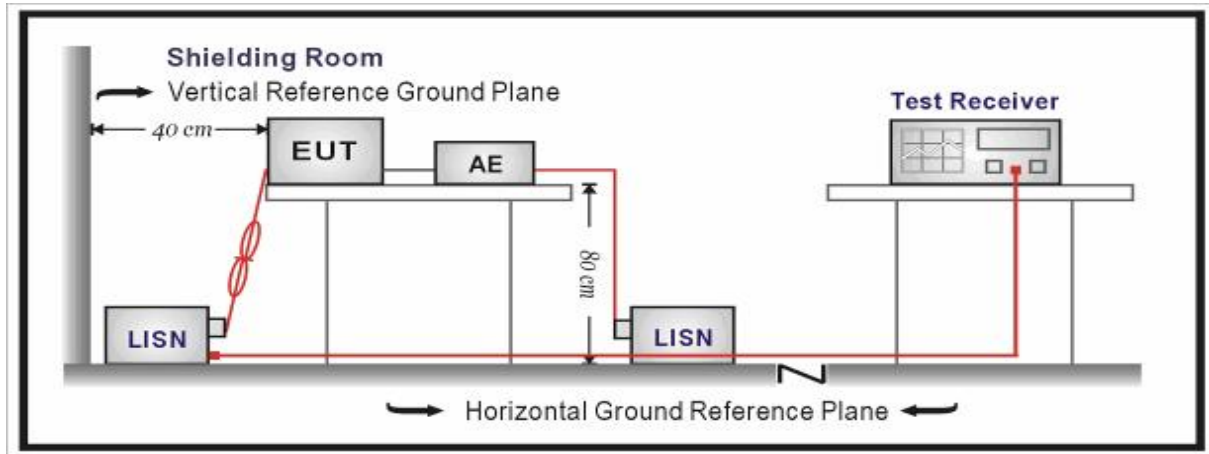
#### Limits:

Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46*
0.5 - 5	56	46
5 - 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

Test Setup:



Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Level = Reading + Factor.

Measurement Uncertainty:

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .  $U = 3.12$  dB.

Test Results:

Battery powered, conducted emissions Not applicable.

## 5.2 Radiated Emission

Ambient condition:

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.2kPa

### Method of Measurement:

The EUT was setup and tested according to ANSI C63.10, 2020.

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. The EUT was positioned such that the distance from Antenna to the EUT was 3 meters.

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 C63.10:2020 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

The frequency range from 30MHz to 10th harmonic is checked.

Note: When doing emission measurement above 1GHz, the horn Antenna will be bended down a little (as horn

Antenna has the narrow beamwidth) in order to keeping the Antenna in the “cone of radiation” of EUT. The 3dB beamwidth is 10~60 degrees for H-plane and 10~90 degrees for E-plane.

### Limits:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Frequency	Limit (µV/m )	Limit (dBµV/m @3m)	Remark
0.009MHz-0.490MHz	2400/F(kHz)@300m	20lg(24000000/F(kHz))	Quasi-peak Level
0.490MHz~1.705MHz	24000/F(kHz)@30m	20lg(24000000/F(kHz))	Quasi-peak Level
1.705MHz~30.0MHz	30@30m	49.54	Quasi-peak Level
30MHz-88MHz	100@3m	40.0	Quasi-peak Level
88MHz-216MHz	150@3m	43.5	Quasi-peak Level
216MHz-960MHz	200@3m	46.0	Quasi-peak Level
960MHz-1GHz	500@3m	54.0	Quasi-peak Level

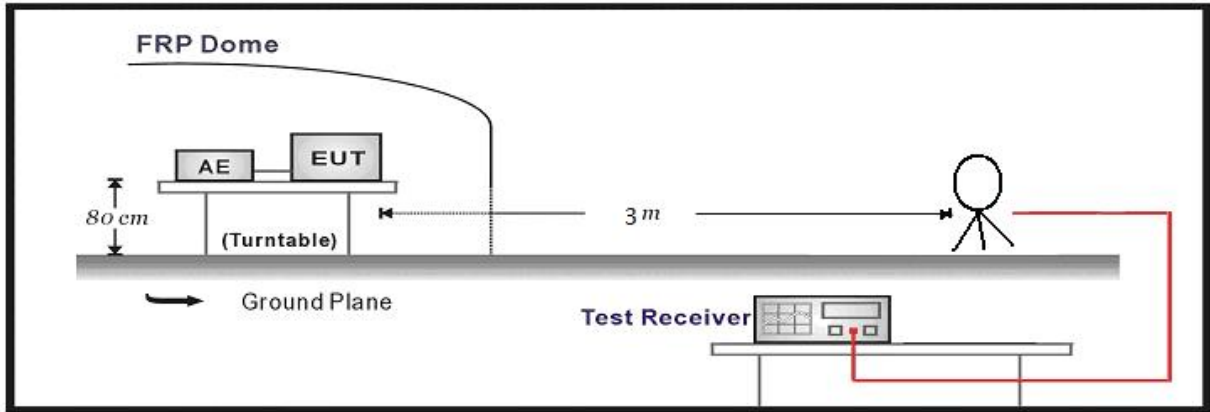
Above 1GHz	500@3m	54.0	Average Level
	5000@3m	74.0	Peak Level

Spurious Radiated Emissions are permitted in any of the frequency bands listed below:

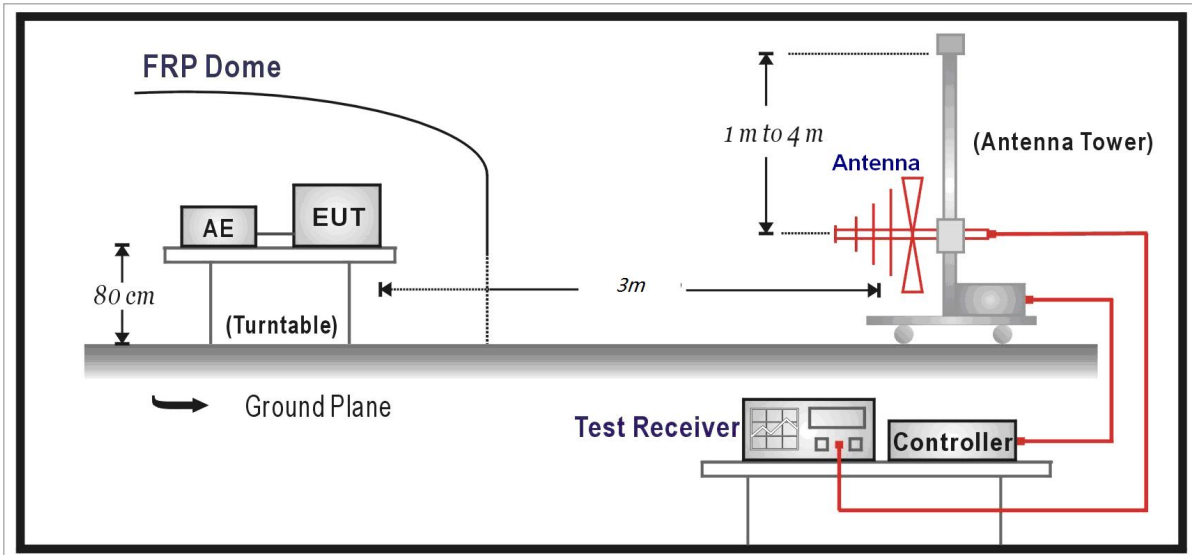
MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.
12.57675-12.57725	322-335.4	3600-4400	/
13.36-13.41	/	/	/

### Test Setup:

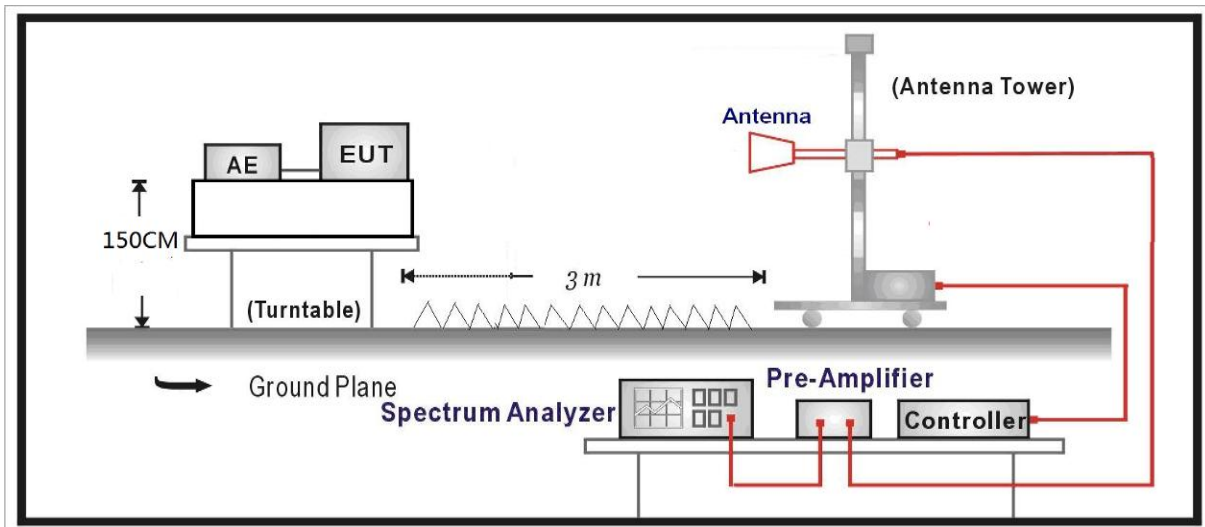
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:



### Measurement Data:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

$$\text{Final Level} = \text{Reading} - \text{Factor}$$

$$\text{Factor} = \text{Preamplifier Factor} - \text{Antenna Factor} - \text{Cable Loss}$$

### Measurement Uncertainty:

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .

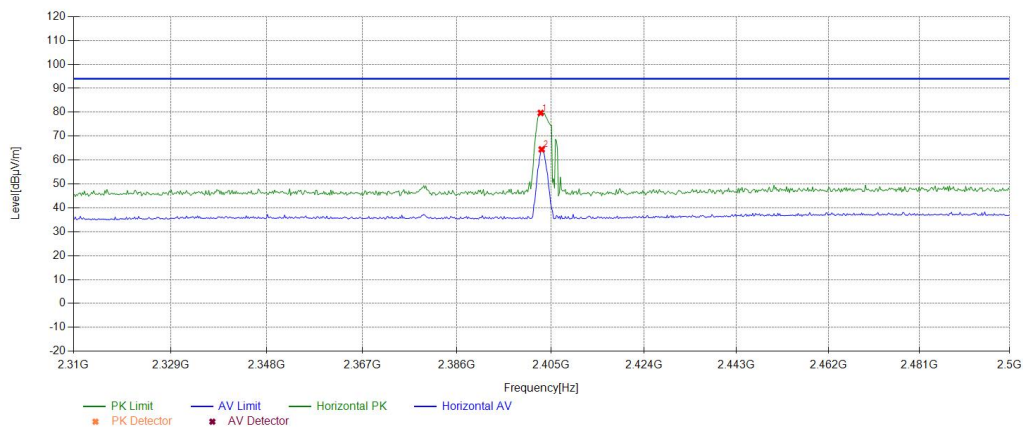
Frequency	Uncertainty
9KHz-30MHz	3.55 dB
30MHz-200MHz	4.19 dB
200MHz-1GHz	3.63 dB
Above 1GHz	3.68 dB

Test Results:

Fundamental Field Strength:

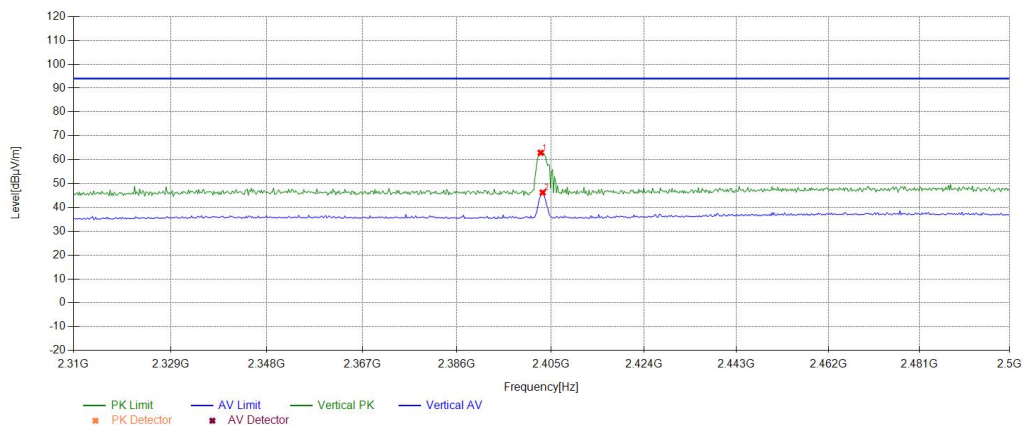
Test Carrier frequency (MHz)	2403
Polarity	Horizontal

Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
2402.9403	-5.17	84.88	79.71	94.00	14.29	PK	150	20	PASS
2403.1403	-5.17	69.64	64.47	94.00	29.53	AV	150	120	PASS



Test Carrier frequency (MHz)	2403
Polarity	Vertical

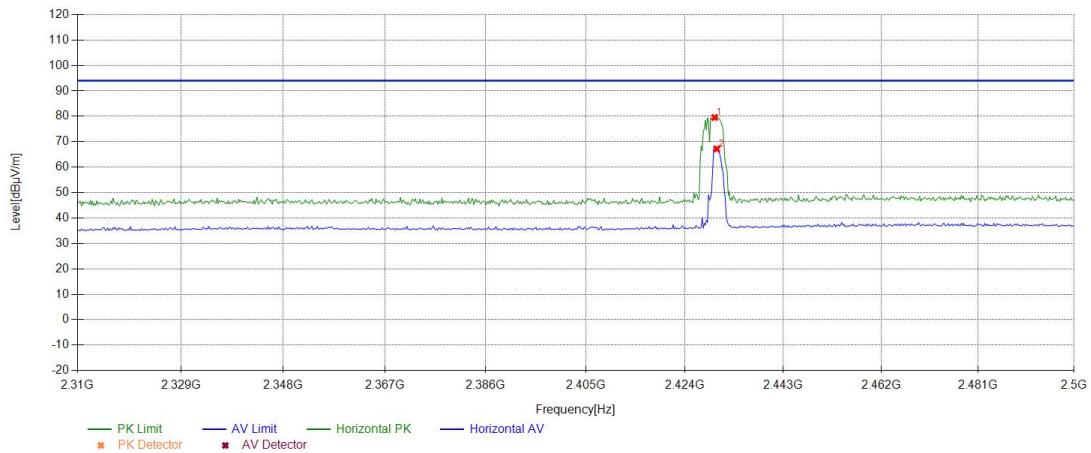
Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
2402.9403	-5.17	68.05	62.88	94.00	31.12	PK	150	220	PASS
2403.3403	-5.17	51.36	46.19	94.00	47.81	AV	150	340	PASS





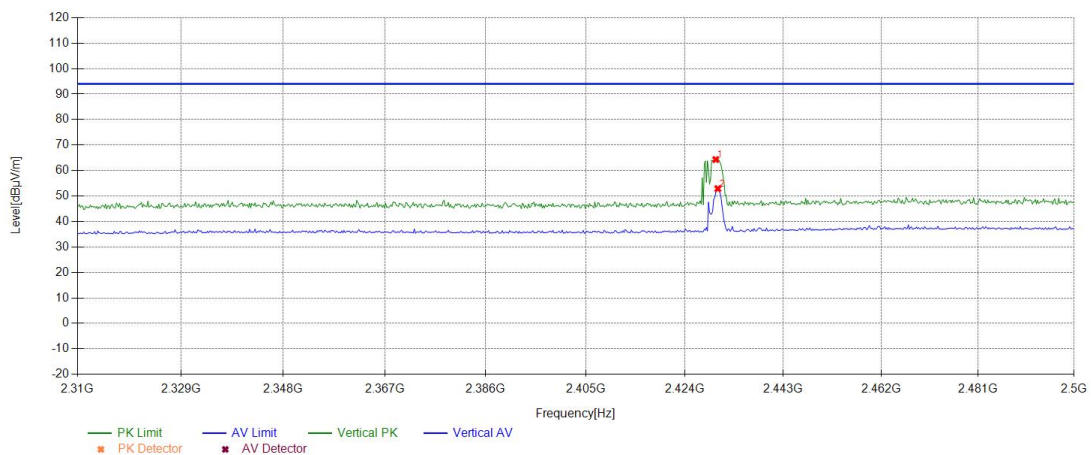
Test Carrier frequency (MHz)	2430
Polarity	Horizontal

Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
2429.743	-5.10	84.63	79.53	94.00	14.47	PK	150	270	PASS
2430.143	-5.10	72.27	67.17	94.00	26.83	AV	150	10	PASS



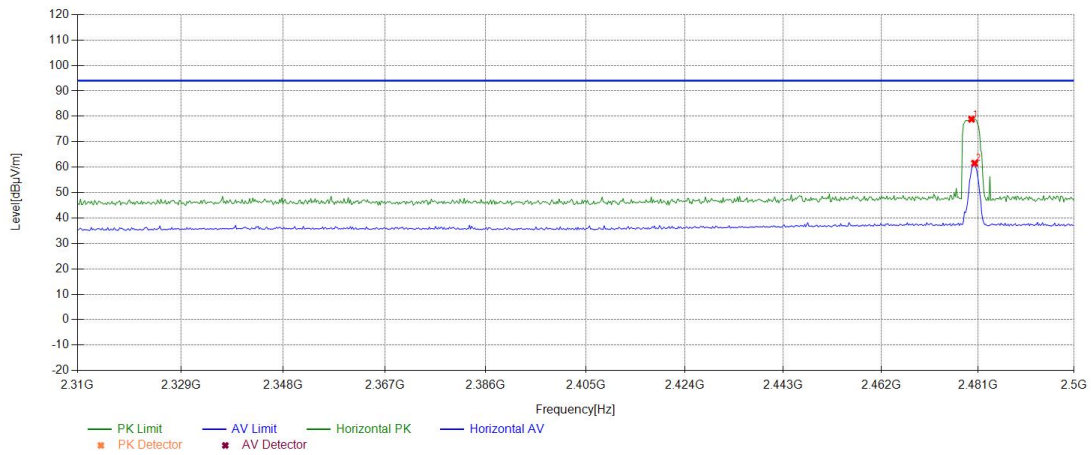
Test Carrier frequency (MHz)	2430
Polarity	Vertical

Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
2429.943	-5.10	69.41	64.31	94.00	29.69	PK	150	290	PASS
2430.343	-5.10	57.96	52.86	94.00	41.14	AV	150	20	PASS



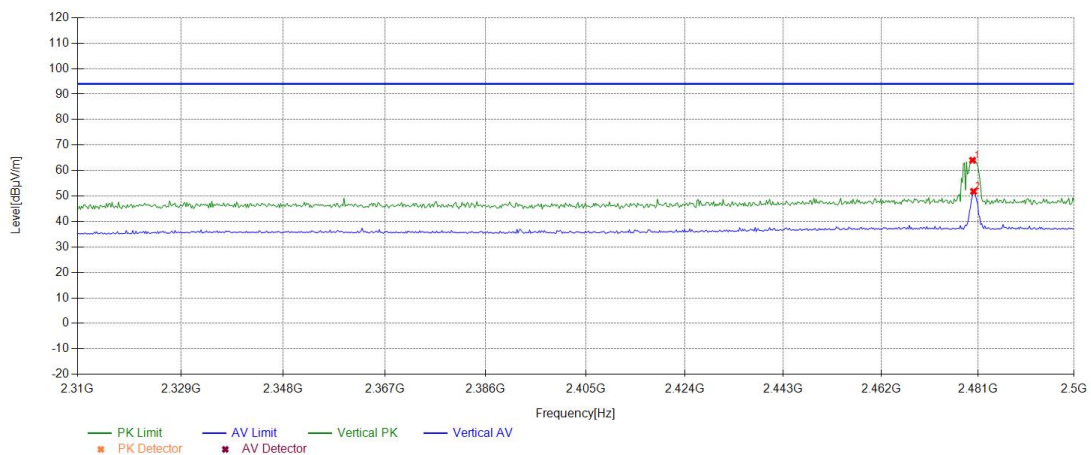
Test Carrier frequency (MHz)	2480
Polarity	Horizontal

Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
2479.748	-4.97	83.82	78.85	94.00	15.15	PK	150	80	PASS
2480.348	-4.97	66.51	61.54	94.00	32.46	AV	150	100	PASS



Test Carrier frequency (MHz)	2480
Polarity	Vertical

Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
2479.948	-4.97	68.99	64.02	94.00	29.98	PK	150	240	PASS
2480.148	-4.97	56.76	51.79	94.00	42.21	AV	150	10	PASS



SPURIOUS EMISSIONS:

During the test, the Radiates Emission from 9kHz to 40GHz was performed in all modes with all channels and all antenna. Custom technology 2.4G, Channel 1, Antenna 1 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

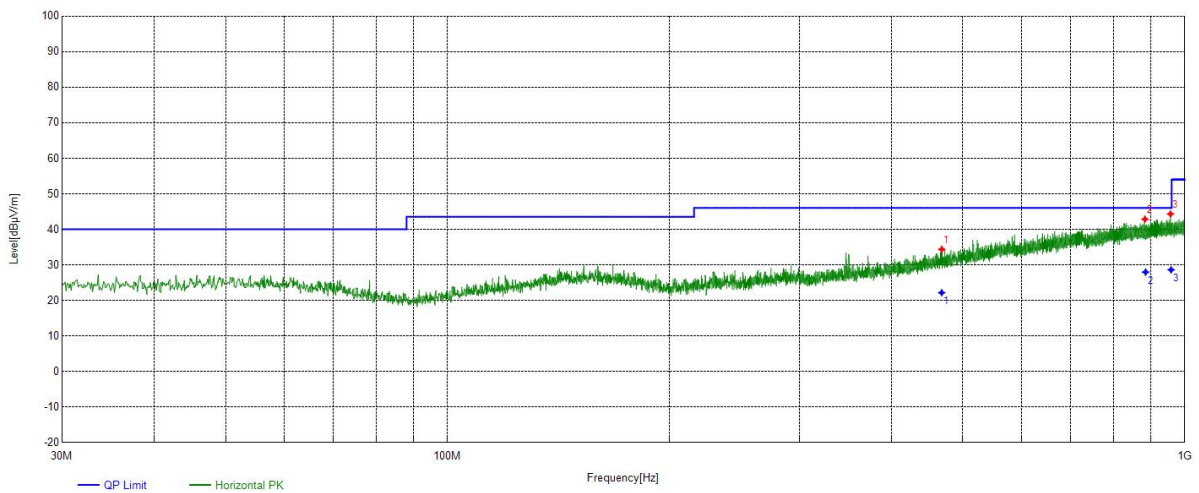
Radiates Emission	9k~1G
Test channel	Worst-Case

**Suspected List**

Frequency [MHz]	Polarity	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detect or	Height [cm]	Angle deg	Pass/Fail
468.0958	Horizontal	25.77	8.60	34.37	46.00	11.63	PK	100	30	PASS
883.0063	Horizontal	32.88	9.96	42.84	46.00	3.16	PK	100	280	PASS
956.3456	Horizontal	33.67	10.64	44.31	46.00	1.69	PK	100	270	PASS

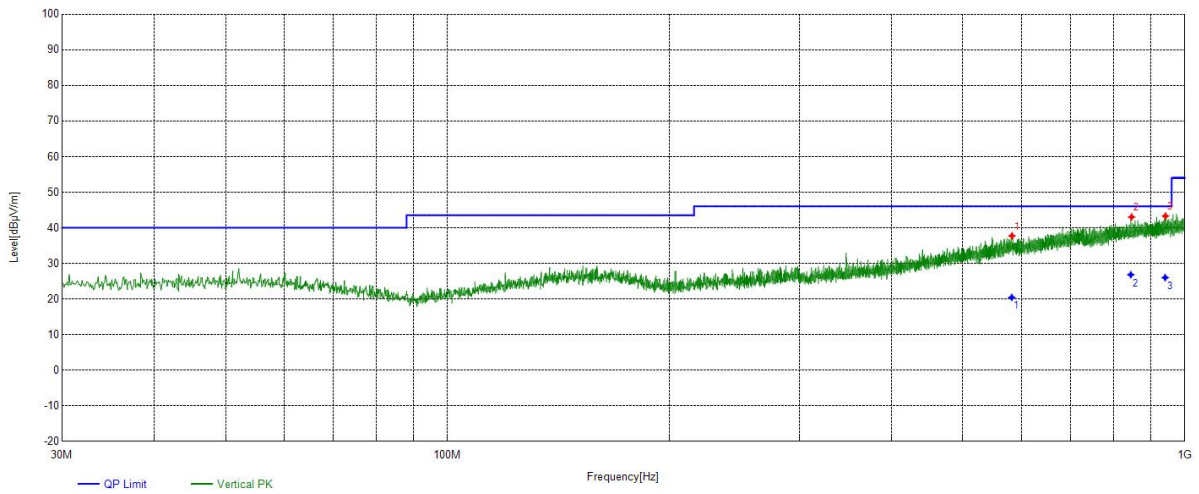
**Final Data List**

Frequency [MHz]	Polarity	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Pass/Fail
468.028	Horizontal	25.77	22.16	46.00	23.84	380	30	PASS
884.7953	Horizontal	32.88	27.99	46.00	18.01	170	280	PASS
958.2279	Horizontal	33.67	28.63	46.00	17.37	310	270	PASS

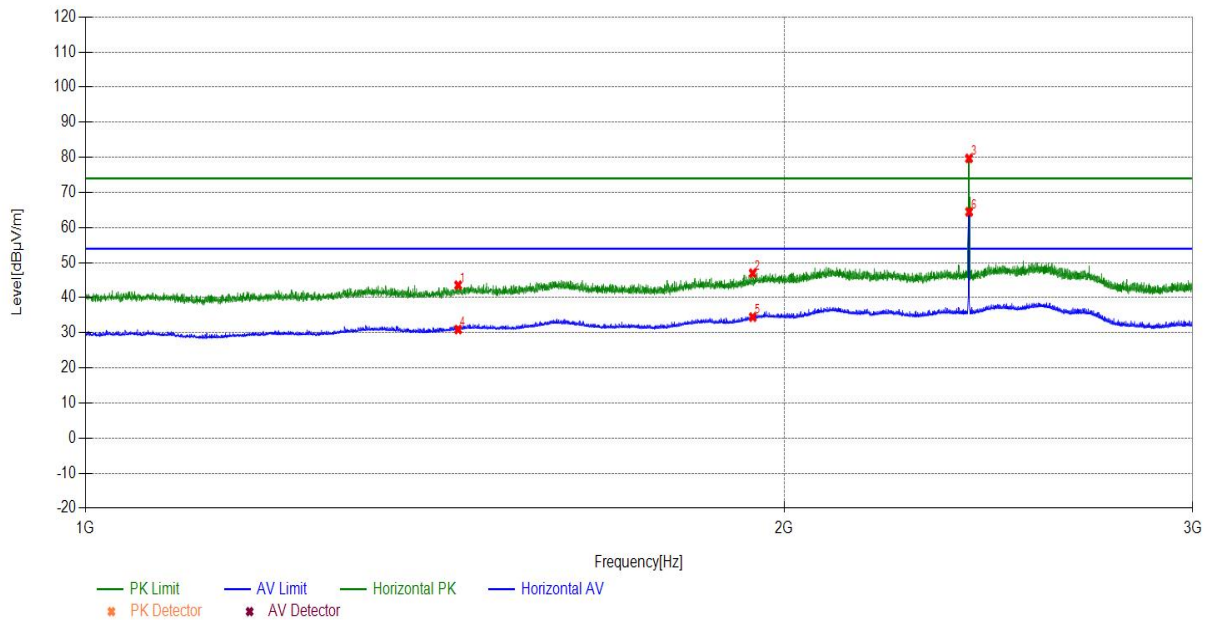


Radiates Emission		9k~1G								
Test channel		Worst-Case								
Suspected List										
Frequency [MHz]	Polarity	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detect or	Height [cm]	Angle deg	Pass/Fail
582.8583	Vertical	28.37	9.37	37.74	46.00	8.26	PK	100	170	PASS
846.9187	Vertical	32.57	10.45	43.02	46.00	2.98	PK	100	110	PASS
941.4061	Vertical	33.49	9.80	43.29	46.00	2.71	PK	100	310	PASS

Final Data List									
Frequency [MHz]	Polarity	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Pass/Fail	
582.5125	Vertical	28.37	20.47	46.00	25.53	310	170	PASS	
844.7611	Vertical	32.57	26.85	46.00	19.15	230	110	PASS	
940.5071	Vertical	33.49	26.03	46.00	19.97	110	310	PASS	

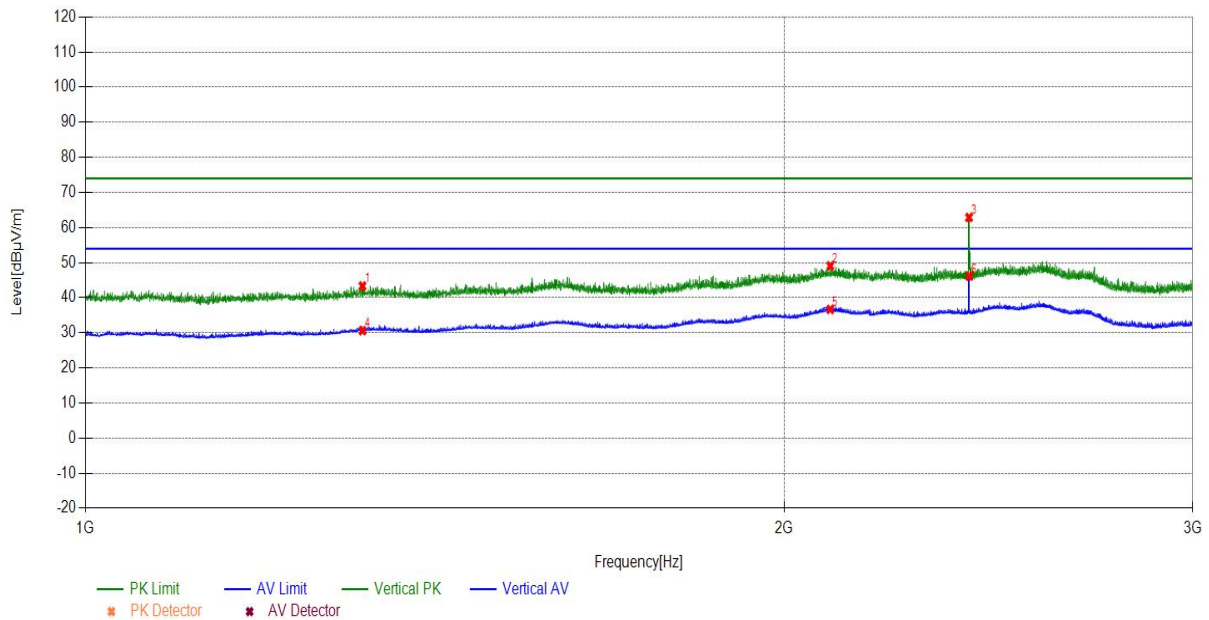


Radiates Emission		1G~3G							
Test channel		Worst-Case							
polarization		Horizontal							
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
1447.4447	-8.15	51.71	43.56	74.00	30.44	PK	150	280	PASS
1938.8939	-6.57	53.57	47.00	74.00	27.00	PK	150	220	PASS
2402.9403	-5.17	84.88	79.71	74.00	-5.71	PK	150	20	---
1447.4447	-8.15	39.08	30.93	54.00	23.07	AV	150	80	PASS
1938.8939	-6.57	41.03	34.46	54.00	19.54	AV	150	10	PASS
2403.1403	-5.17	69.64	64.47	54.00	-10.47	AV	150	120	---



Note: The signal beyond the limit is carrier

Radiates Emission		1G~3G							
Test channel		Worst-Case							
polarization		Vertical							
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
1316.4316	-8.48	51.83	43.35	74.00	30.65	PK	150	70	PASS
2093.9094	-6.10	55.17	49.07	74.00	24.93	PK	150	290	PASS
2402.9403	-5.17	68.05	62.88	74.00	11.12	PK	150	220	---
1316.4316	-8.48	39.11	30.63	54.00	23.37	AV	150	100	PASS
2093.9094	-6.10	42.75	36.65	54.00	17.35	AV	150	10	PASS
2403.3403	-5.17	51.36	46.19	54.00	7.81	AV	150	340	---

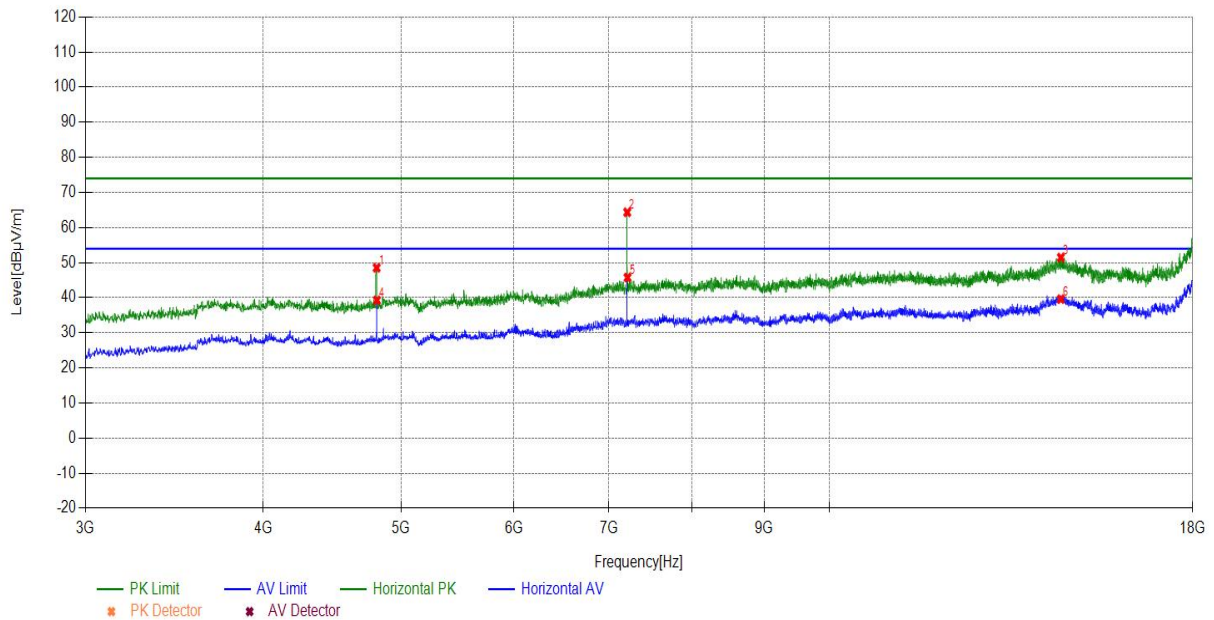


Note: The signal beyond the limit is carrier

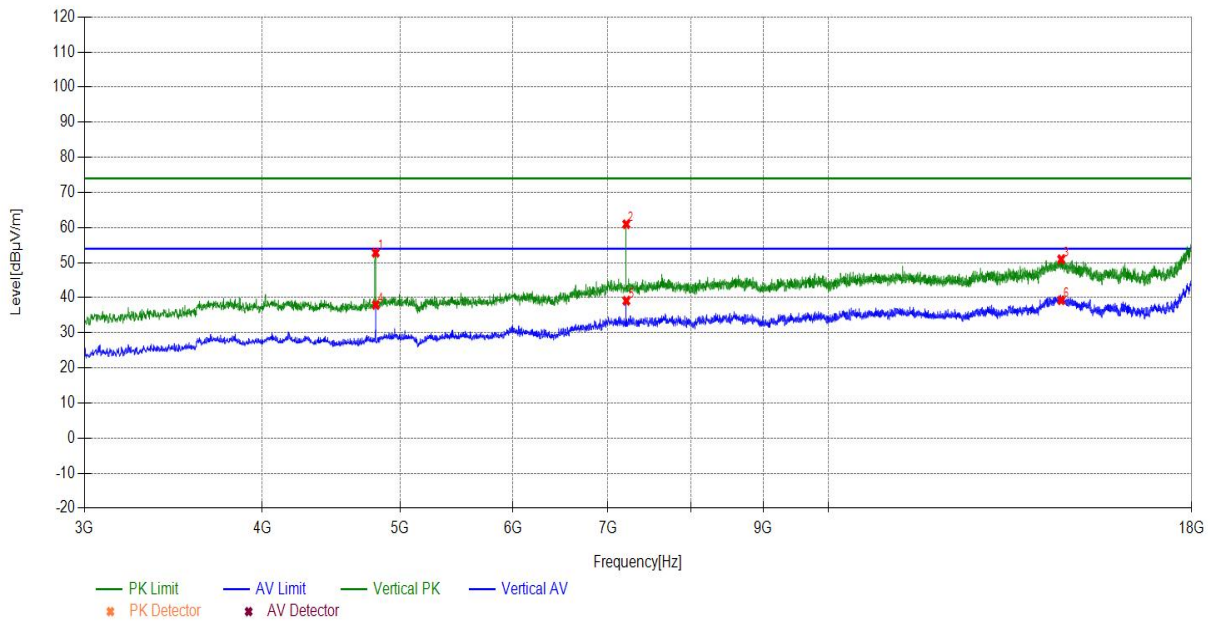
Radiates Emission	3G~18G
Test channel	Worst-Case
polarization	Horizontal

**Suspected List**

Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
4806.1806	1.26	47.24	48.50	74.00	25.50	PK	150	180	PASS
7209.4209	9.01	55.34	64.35	74.00	9.65	PK	150	70	PASS
14542.1542	18.23	33.22	51.45	74.00	22.55	PK	150	20	PASS
4807.6808	1.27	38.00	39.27	54.00	14.73	AV	150	10	PASS
7212.4212	9.01	36.74	45.75	54.00	8.25	AV	150	20	PASS
14542.1542	18.23	21.37	39.60	54.00	14.40	AV	150	120	PASS

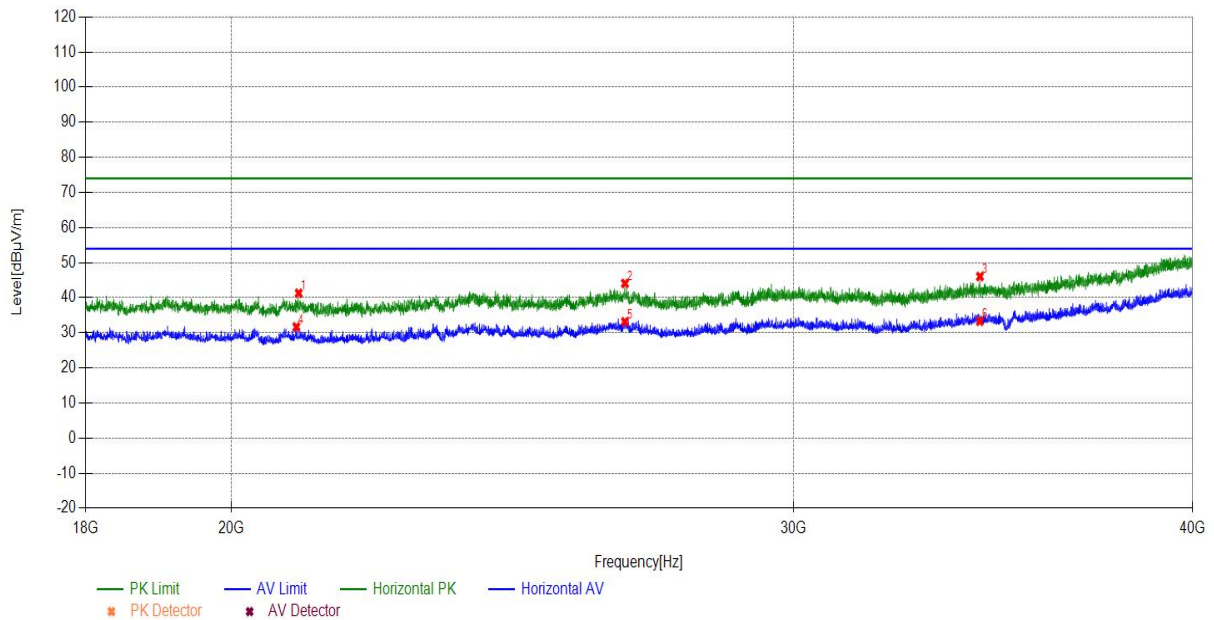


Radiates Emission		3G~18G							
Test channel		Worst-Case							
polarization		Vertical							
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dB $\mu$ V/m]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
4806.1806	1.26	51.54	52.80	74.00	21.20	PK	150	40	PASS
7209.4209	9.01	51.93	60.94	74.00	13.06	PK	150	60	PASS
14575.1575	18.11	32.84	50.95	74.00	23.05	PK	150	70	PASS
4807.6808	1.27	36.69	37.96	54.00	16.04	AV	150	30	PASS
7210.9211	9.01	30.10	39.11	54.00	14.89	AV	150	280	PASS
14575.1575	18.11	21.15	39.26	54.00	14.74	AV	150	20	PASS

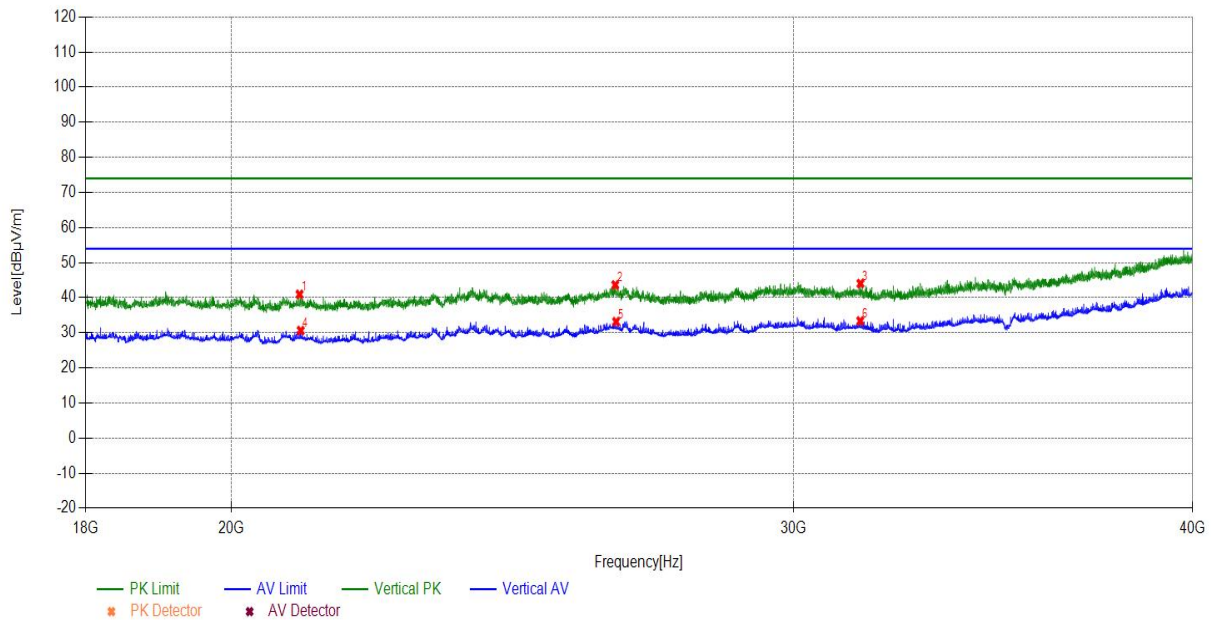




Radiates Emission		18G~40G							
Test channel		Worst-Case							
polarization		Horizontal							
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dB $\mu$ V/m]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
20992.2992	1.65	39.63	41.28	74.00	32.72	PK	150	20	PASS
26561.0561	4.72	39.34	44.06	74.00	29.94	PK	150	50	PASS
34310.231	6.66	39.37	46.03	74.00	27.97	PK	150	30	PASS
20957.0957	1.63	30.05	31.68	54.00	22.32	AV	150	10	PASS
26561.0561	4.72	28.41	33.13	54.00	20.87	AV	150	10	PASS
34310.231	6.66	26.64	33.30	54.00	20.70	AV	150	10	PASS



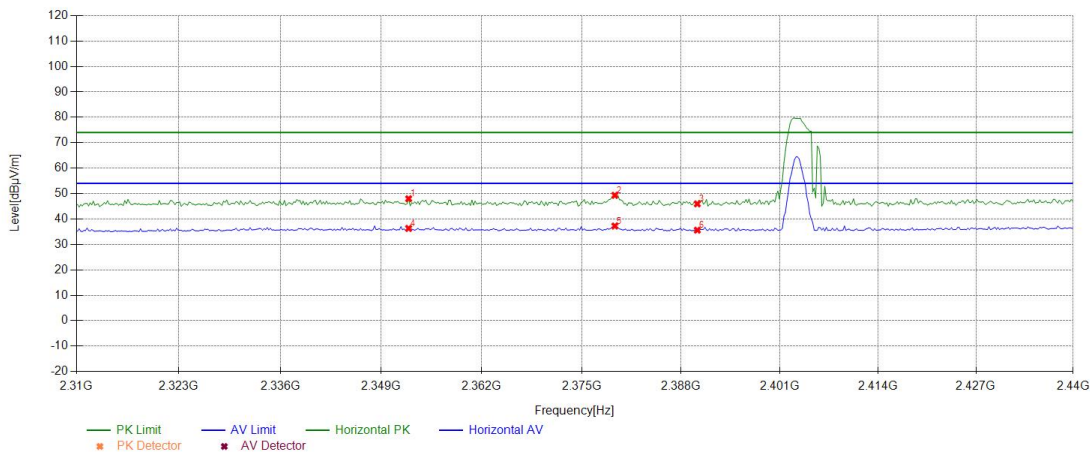
Radiates Emission		18G~40G							
Test channel		Worst-Case							
polarization		Vertical							
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dB $\mu$ V/m]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
21005.5006	1.65	39.30	40.95	74.00	33.05	PK	150	30	PASS
26376.2376	4.65	38.98	43.63	74.00	30.37	PK	150	160	PASS
31478.5479	6.08	37.95	44.03	74.00	29.97	PK	150	310	PASS
21023.1023	1.66	28.98	30.64	54.00	23.36	AV	150	10	PASS
26391.6392	4.66	28.50	33.16	54.00	20.84	AV	150	10	PASS
31474.1474	6.08	27.30	33.38	54.00	20.62	AV	150	10	PASS



**Band Edge:**

During the test, the Band Edge was performed in Custom technology 2.4G all modes with all channels and all antenna. Custom technology 2.4G, Antenna 1, highest and lowest channels are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

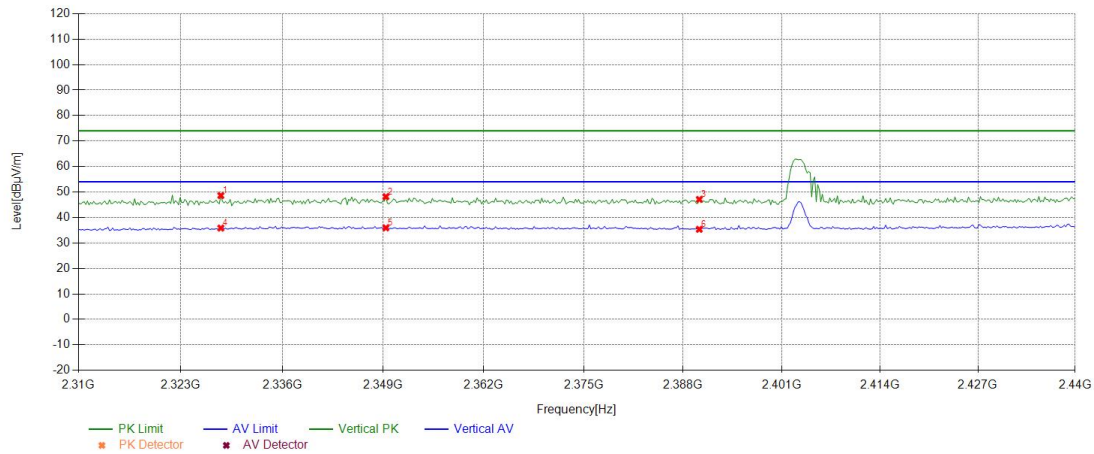
Test mode	Custom technology 2.4G								
Test channel	Lowest channel								
polarization	Horizontal								
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
2352.5353	-5.33	53.31	47.98	74.00	26.02	PK	150	300	PASS
2379.3379	-5.25	54.57	49.32	74.00	24.68	PK	150	330	PASS
2390.139	-5.21	51.17	45.96	74.00	28.04	PK	150	120	PASS
2352.5353	-5.33	41.63	36.30	54.00	17.70	AV	150	10	PASS
2379.3379	-5.25	42.49	37.24	54.00	16.76	AV	150	300	PASS
2390.139	-5.21	40.82	35.61	54.00	18.39	AV	150	20	PASS



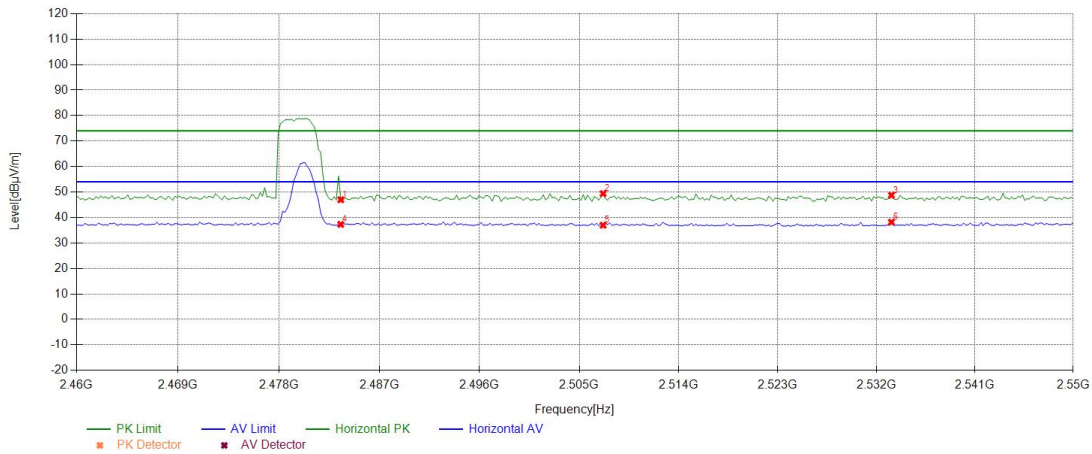
Test mode	Custom technology 2.4G
Test channel	Lowest channel
polarization	Vertical

**Suspected List**

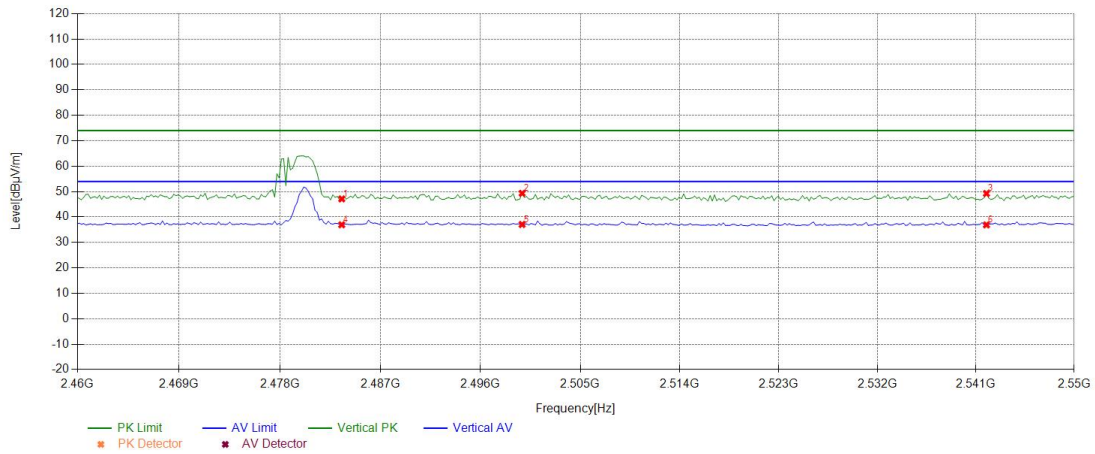
Frequency [MHz]	Factor [dB]	Reading [dB $\mu$ V/m]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
2328.1328	-5.41	54.02	48.61	74.00	25.39	PK	150	260	PASS
2349.3349	-5.35	53.49	48.14	74.00	25.86	PK	150	280	PASS
2390.139	-5.21	52.31	47.10	74.00	26.90	PK	150	140	PASS
2328.1328	-5.41	41.25	35.84	54.00	18.16	AV	150	30	PASS
2349.3349	-5.35	41.27	35.92	54.00	18.08	AV	150	20	PASS
2390.139	-5.21	40.58	35.37	54.00	18.63	AV	150	230	PASS



Test mode	Custom technology 2.4G								
Test channel	Highest channel								
polarization	Horizont								
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dB $\mu$ V/m]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
2483.5484	-4.96	51.94	46.98	74.00	27.02	PK	150	270	PASS
2507.1507	-4.89	54.26	49.37	74.00	24.63	PK	150	290	PASS
2533.3533	-4.80	53.53	48.73	74.00	25.27	PK	150	170	PASS
2483.5484	-4.96	42.25	37.29	54.00	16.71	AV	150	80	PASS
2507.1507	-4.89	41.87	36.98	54.00	17.02	AV	150	60	PASS
2533.3533	-4.80	42.95	38.15	54.00	15.85	AV	150	10	PASS



Test mode	Custom technology 2.4G								
Test channel	Highest channel								
polarization	Vertical								
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dB $\mu$ V/m]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
2483.5484	-4.96	52.08	47.12	74.00	26.88	PK	150	30	PASS
2499.75	-4.92	54.24	49.32	74.00	24.68	PK	150	70	PASS
2541.9542	-4.77	54.02	49.25	74.00	24.75	PK	150	150	PASS
2483.5484	-4.96	41.90	36.94	54.00	17.06	AV	150	120	PASS
2499.75	-4.92	41.97	37.05	54.00	16.95	AV	150	120	PASS
2541.9542	-4.77	41.67	36.90	54.00	17.10	AV	150	160	PASS



### 5.3 Occupied Channel Bandwidth

Ambient condition:

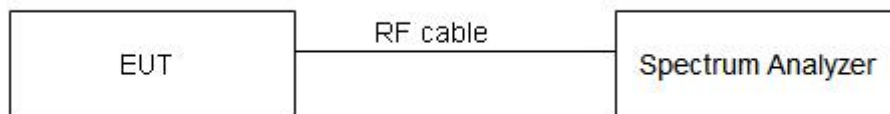
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.2kPa

#### Method of Measurement:

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable. RBW is set to 50 kHz; VBW is set to 200 kHz on spectrum analyzer.

Detector=Peak, Trace mode=Max hold.

#### Test Setup:



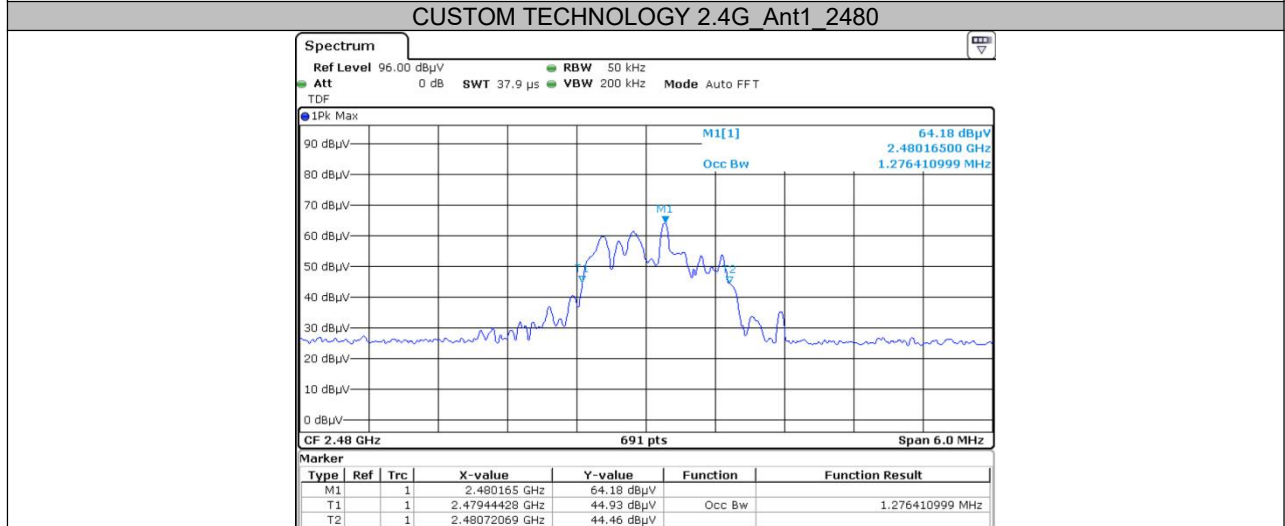
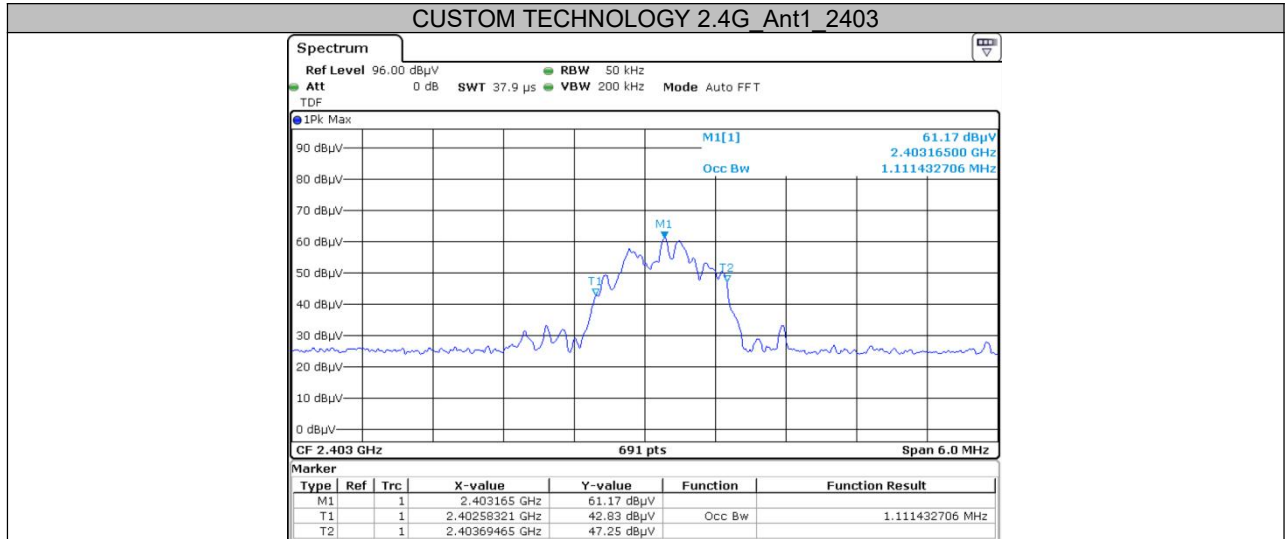
#### Measurement Uncertainty:

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 936$  Hz.

Test Results:

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
CUSTOM TECHNOLOGY 2.4G	Ant1	2403	1.11	2402.58	2403.69	---	PASS
	Ant1	2430	1.22	2429.65	2430.88	---	PASS
	Ant1	2480	1.28	2479.44	2480.72	---	PASS

Test Graphs:





## 5.4 Antenna Measurement

### Limits:

For intentional device, according to 15.203, an intentional radiator shall be designed to ensure that no antenna other than furnished by the responsible party shall be used with the device.

### Antenna Description:

PCB antenna, without antenna connector. According to 15.203, it is considered sufficient to comply with the provisions of this section.

## 6. Appendix A

Test Equipment	Type/Mode	SERIAL NO.	Equipment No.	Manufacturer	Cal. Due
3m Semi-Anechoic Chamber	FACT-4	ST08035	WKNA-0024	ETS	2024/12/12
5m Semi-Anechoic Chamber	SAC-5	SAC-5-2.0	EM-000557	COMTEST	2024/11/02
Spectrum Analyzer	N9010B	MY57470323	DZ-000174	KEYSIGHT	2024/02/22
EMI Test Receiver	N9038A-508	MY532290079	EM-000397	Agilent	2024/02/22
EMI Test Receiver	ESR7	102235	VG DY-0956	R&S	2024/02/22
loop antenna	HLA 6121	540046	EM-000546	TESEQ	2024/06/05
Broadband Antenna	VULB 9168	01537	EM-000736-1	SCHWARZBECK	2024/04/24
Broadband Antenna	VULB 9163	9163-530	EM-000342	SCHWARZBECK	2024/06/10
Waveguide Horn Antenna	HF906	360306/008	EM-000093	R&S	2024/02/24
Waveguide Horn Antenna	BBHA9170	00949	DZ-000209-2	SCHWARZBECK	2024/08/05
Bandstop Filters	SW-BSF-2400-100 -7-A1	/	EM-000495	/	2024/08/29
Preamplifier	BBV 9721	9721-050	DZ-000209-1	SCHWARZBECK	2024/06/04
Temperature and humidity meter	MHO-C201	/	DZ-000249-2	Seconds test	2024/09/23

The End

## Important

1. The test report is invalid without the official stamp of CVC;
2. Any part photocopies of the test report are forbidden without the written permission from CVC;
3. The test report is invalid without the signatures of Author and Reviewer;
4. The test report is invalid if altered;
5. Objections to the test report must be submitted to CVC within 15 days;
6. Generally, commission test is responsible for the tested samples only;
7. As for the test result, “—” or “N/A” means “not applicable”, “/” means “not testing”, “P” means “pass” and “F” means “fail”.

Address: No.3,Tiantaiyi Road, Kaitai Avenue, Science City, Guangzhou, China (Test location)

Post Code: 510663      Tel: 020-32293888

FAX: 020 32293889      E-mail: [office@cvc.org.cn](mailto:office@cvc.org.cn)