

# TEST REPORT

**Applicant:** Shantou landi Toys Co., Ltd.

**Address of Applicant:** South Industrial Zone of Beiwan Village Road, Lianxia Town, Chenghai District, Shantou City, Guangdong Province, China

**Manufacturer:** Shantou landi Toys Co., Ltd.

**Address of Manufacturer:** South Industrial Zone of Beiwan Village Road, Lianxia Town, Chenghai District, Shantou City, Guangdong Province, China

**Equipment Under Test (EUT)**

Product Name: REMOTE CONTROL CAR SERIES

Model No.: See section 5.1

**FCC ID:** 2BD4F-QH207-1D

**Applicable standards:** FCC CFR Title 47 Part 15 Subpart C Section 15.249

**Date of sample receipt:** December 05, 2023

**Date of Test:** December 06-20, 2023

**Date of report issued:** December 20, 2023

**Test Result :** PASS \*

\* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



**Robinson Luo**

**Laboratory Manager**

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

## 2 Version

Version No.	Date	Description
00	December 20, 2023	Original

**Prepared By:**

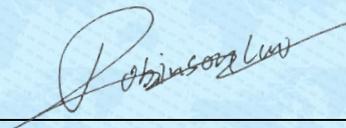


**Date:**

December 20, 2023

**Project Engineer**

**Check By:**



**Date:**

December 20, 2023

**Reviewer**

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## 4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
AC Power Line Conducted Emission	15.207	N/A
Field strength of the fundamental signal	15.249 (a)	Pass
Spurious emissions	15.249 (a) (d)/15.209	Pass
Band edge	15.249 (d)/15.205	Pass
20dB Occupied Bandwidth	15.215 (c)	Pass

*Remarks:*

1. Test according to ANSI C63.10:2013.
2. Pass: The EUT complies with the essential requirements in the standard.

### 4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9kHz-30MHz	3.1dB	(1)
Radiated Emission	30MHz-200MHz	3.8039dB	(1)
Radiated Emission	200MHz-1GHz	3.9679dB	(1)
Radiated Emission	1GHz-18GHz	4.29dB	(1)
Radiated Emission	18GHz-40GHz	3.30dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	3.44dB	(1)

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

## 5 General Information

### 5.1 General Description of EUT

Product Name:	REMOTE CONTROL CAR SERIES
Model No.:	<p>QH207-1, QH207-2, QH207-3, QH207-4, QH207-1D, QH207-2D, QH207-3D, QH207-4D, 888-1, 888-2, 888-3, 888-4, 888-5, 888-6, 888-7, 888-8, 888-9, 888-10, 888-11, 888-12, 888-13, 888-14, 888-15, 888-16, 888-17, 888-18, 888-19, 888-20, 888-1D, 888-2D, 888-3D, 888-4D, 888-5D, 888-6D, 888-7D, 888-8D, 888-9D, 888-10D, 888-11D, 888-12D, 888-13D, 888-14D, 888-15D, 888-16D, 888-17D, 888-18D, 888-19D, 888-20D, HJ8001-1, HJ8001-2, HJ8002-1, HJ8002-2, HJ8003-1, HJ8003-2, HJ8004-1, HJ8004-3, HJ8005-1, HJ8005-2, HJ8006-1, HJ8006-2, HJ8007, HJ8008, HJ8009, HJ8010, HJ8012, HJ8013, HJ8014, HJ8015, HJ8016, HJ8018, HJ8019, HJ8020, HJ8021, HJ8022, HJ8023, HJ8024, HJ8025, HJ8026, HJ8027, HJ8028, HJ8029, HJ8030, HJ8031, HJ8032, HJ8033, HJ8034, HJ8035, HJ8036, HJ8037, HJ8038, HJ8039, HJ8040, HJ8001-1D, HJ8001-2D, HJ8002-1D, HJ8002-2D, HJ8003-1D, HJ8003-2D, HJ8004-1D, HJ8004-3D, HJ8005-1D, HJ8005-2D, HJ8006-1D, HJ8006-2D, HJ8007D, HJ8008D, HJ8009D, HJ8010D, HJ8012D, HJ8013D, HJ8014D, HJ8015D, HJ8016D, HJ8018D, HJ8019D, HJ8020D, HJ8021D, HJ8022D, HJ8023D, HJ8024D, HJ8025D, HJ8026D, HJ8027D, HJ8028D, HJ8029D, HJ8030D, HJ8031D, HJ8032D, HJ8033D, HJ8034D, HJ8035D, HJ8036D, HJ8037D, HJ8038D, HJ8039D, HJ8040D, QH9001-1, QH9001-2, QH9002-1, QH9002-2, QH9003-1, QH9003-2, QH9004-1, QH9004-2, QH9004-3, QH9005-1, QH9005-2, QH9006-1, QH9006-2, QH9006-3, QH9007, QH9008, QH9009, QH9010, QH9011, QH9012, QH9013, QH9014, QH9001-1D, QH9001-2D, QH9002-1D, QH9002-2D, QH9003-1D, QH9003-2D, QH9004-1D, QH9004-2D, QH9004-3D, QH9005-1D, QH9005-2D, QH9006-1D, QH9006-2D, QH9006-3D, QH9007D, QH9008D, QH9009D, QH9010D, QH9011D, QH9012D, QH9013D, QH9014D, QH9015D, QH2023-1, QH2023-2, QH2023-3, QH2023-4, QH2023-5, QH2023-6, QH2023-7, QH2023-8, QH2023-9, QH2023-10, QH2023-11, QH2023-12, QH2023-1D, QH2023-2D, QH2023-3D, QH2023-4D, QH2023-5D, QH2023-6D, QH2023-7D, QH2023-8D, QH2023-9D, QH2023-10D, QH2023-11D, QH2023-12D, QH2801-1, QH2801-2, QH2801-3, QH2801-4, QH2802-1, QH2802-2, QH2802-3, QH2803-1, QH2804-1, QH2804-2, QH2804-3, QH2801-1D, QH2801-2D, QH2801-3D, QH2801-4D, QH2802-1D, QH2802-2D, QH2802-3D, QH2803-1D, QH2804-1D, QH2804-2D, QH2804-3D, QH2901-1, QH2901-2, QH2901-3, QH2901-4, QH2902-1, QH2902-2, QH2902-3, QH2903-1, QH2904-1, QH2904-2, QH2904-3, QH2901-1D, QH2901-2D, QH2901-3D, QH2901-4D, QH2902-1D, QH2902-2D, QH2902-3D, QH2903-1D, QH2904-1D, QH2904-2D, QH2904-3D, QH300-1, QH300-2, QH300-3, QH300-4, QH300-5, QH300-6, QH300-7, QH300-8, QH300-9, QH300-10, QH300-11, QH300-12, QH300-1D, QH300-2D, QH300-3D, QH300-4D, QH300-5D, QH300-6D, QH300-7D, QH300-8D, QH300-9D, QH300-10D, QH300-11D, QH300-12D, 858-01A, 858-01B, 858-01C, 858-02A, 858-02B, 858-02C, 858-03A, 858-03B, 858-03C, 858-04A, 858-04B, 858-04C, 868-01A, 868-01B, 868-01C, 868-01D, 868-02A, 868-02B, 868-02C, 868-02D, 868-03A, 868-03B, 868-03C, 868-03D, 868-04A, 868-04B, 868-04C, 868-04D, 868-</p>

	05A, 868-05B, 868-05C, 868-06A, 868-06B, 868-06C, 868-07A, 868-07B, 868-07C, 868-08A, 868-08B, 868-08C, 868-09A, 868-09B, 868-09C, 868-10A, 868-10B, 868-10C, 868-11A, 868-11B, 868-11C, 868-12A, 868-12B, 868-12C, 878-01A, 878-01B, 878-01C, 878-05A, 878-05D, QH040D, QH041D, 878-01D, 878-02A, 878-02B, 878-02C, 878-02D, 878-03A, 878-03B, 878-03C, 878-03D, 878-04A, 878-04B, 878-04C, 878-04D, 24-01A, 24-01B, 24-01C, 24-01D, 24-02A, 24-02B, 24-02C, 24-02D, 24-03A, 24-03B, 24-03C, 24-03D, 24-04A, 24-04B, 24-04C, 24-04D, QH25-02, QH25-02D, QH26-02, QH26-02D, QH26-03, QH26-03D, 23-02B, 23-02C, 23-03A, 23-03B, QH911-1, QH911-2, QH911-3, QH911-4, QH911-5, QH911-6, QH911-7, QH911-8, QH911-9, QH911-10, QH911-11, QH911-12, QH911-13, QH911-14, QH911-15, QH911-16, QH911-17, QH911-18, QH922-1, QH922-2, QH922-3, QH922-4, QH922-5, QH922-6, QH922-7, QH922-8, QH922-9, QH922-10, QH922-11, QH922-12, QH922-13, QH922-14, QH922-15, QH922-16, QH922-1D, QH922-2D, QH922-3D, QH922-4D, QH922-5D, QH922-6D, QH922-7D, QH922-8D, QH922-9D, QH922-10D, QH922-11D, QH922-12D, QH922-13D, QH922-14D, QH922-15D, QH922-16D, QH933-1, QH933-2, QH933-3, QH933-4, QH933-5, QH933-6, QH933-7, QH933-8, QH933-9, QH933-10, QH933-11, QH933-12, QH933-1D, QH933-2D, QH933-3D, QH933-4D, QH933-5D, QH933-6D, QH933-7D, QH933-8D, QH933-9D, QH933-10D, QH933-11D, QH933-12D, QH944-1, QH944-2, QH944-3, QH944-1D, QH944-2D, QH944-3D, QH955-1, QH955-2, QH955-3, QH955-1D, QH955-2D, QH955-3D, QH966-1, QH966-2, QH966-1D
Test Model No.:	QH207-1D
Remark: All above models are identical in the same PCB layout, interior structure and electrical circuits. The differences are appearance color and model name for commercial purpose.	
Serial No.:	6975351880752
Test sample(s) ID:	GTS2023120048-1
Sample(s) Status	Engineered sample
Operation Frequency:	2404MHz~2452MHz
Channel numbers:	17
Modulation type:	GFSK
Antenna Type:	Integral Antenna
Antenna gain:	0.59dBi(declare by applicant)
Power supply:	DC 3.0V (2*1.5V Size "AA" Battery)

Remark:

1. Antenna gain information provided by the customer
2. The relevant information of the sample is provided by the entrusting company, and the laboratory is not responsible for its authenticity.
3. The report is for TX device only.

Operation Frequency each of channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2404	6	2419	11	2434	16	2449
2	2407	7	2422	12	2437	17	2452
3	2410	8	2425	13	2440		
4	2413	9	2428	14	2443		
5	2416	10	2431	15	2446		

The test frequencies are below:

Channel	Frequency
The lowest channel	2404MHz
The middle channel	2443MHz
The Highest channel	2452MHz

## 5.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode.
Remark: New battery is used during all test.	

### Per-test mode.

We have verified the construction and function in typical operation, The EUT was placed on three different polar directions; i.e. X axis, Y axis, Z axis. which was shown in this test report and defined as follows:

Axis	X	Y	Z
Field Strength(dBuV/m)	88.47	89.11	87.25

## 5.3 Description of Support Units

None.
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## 5.4 Deviation from Standards

None.
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## 5.5 Abnormalities from Standard Conditions

None.
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## 5.6 Test Facility

<p>The test facility is recognized, certified, or accredited by the following organizations:</p> <ul style="list-style-type: none"> <li>● <b>FCC—Registration No.: 381383</b> Designation Number: CN5029 Global United Technology Services Co., Ltd., Shenzhen 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 files.</li> <li>● <b>ISED—Registration No.: 9079A</b> CAB identifier: CN0091 The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of ISED for radio equipment testing</li> <li>● <b>NVLAP (LAB CODE:600179-0)</b> Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).</li> </ul>
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## 5.7 Test Location

All tests were performed at:
<p>Global United Technology Services Co., Ltd. Address: No. 123- 128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102 Tel: 0755-27798480 Fax: 0755-27798960</p>

## 5.8 Additional Instructions

Test Software	Special test command provided by manufacturer
Power level setup	Default

## 6 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	June 23, 2021	June 22, 2024
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	April 14, 2023	April 13, 2024
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9168	GTS640	March 19, 2023	March 18, 2025
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	April 17, 2023	April 16, 2025
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	April 14, 2023	April 13, 2024
8	Loop Antenna	ZHINAN	ZN30900A	GTS534	Nov. 13, 2023	Nov.12, 2024
9	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	April 14, 2023	April 13, 2024
10	Amplifier(1GHz-26.5GHz)	HP	8449B	GTS601	April 14, 2023	April 13, 2024
11	Horn Antenna (18-26.5GHz)	/	UG-598A/U	GTS664	Oct. 29, 2023	Oct. 28, 2024
12	Horn Antenna (26.5-40GHz)	A.H Systems	SAS-573	GTS665	Oct. 29, 2023	Oct. 28, 2024
13	FSV-Signal Analyzer (10Hz-40GHz)	Keysight	FSV-40-N	GTS666	March 13, 2023	March 12, 2024
14	Amplifier	/	LNA-1000-30S	GTS650	April 14, 2023	April 13, 2024
15	CDNE M2+M3-16A	HCT	30MHz-300MHz	GTS692	Nov. 08, 2023	Nov.07, 2024
16	Wideband Amplifier	/	WDA-01004000-15P35	GTS602	April 14, 2023	April 13, 2024
17	Thermo meter	JINCHUANG	GSP-8A	GTS643	April 19, 2023	April 18, 2024
18	RE cable 1	GTS	N/A	GTS675	July 31. 2023	July 30. 2024
19	RE cable 2	GTS	N/A	GTS676	July 31. 2023	July 30. 2024
20	RE cable 3	GTS	N/A	GTS677	July 31. 2023	July 30. 2024
21	RE cable 4	GTS	N/A	GTS678	July 31. 2023	July 30. 2024
22	RE cable 5	GTS	N/A	GTS679	July 31. 2023	July 30. 2024
23	RE cable 6	GTS	N/A	GTS680	July 31. 2023	July 30. 2024
24	RE cable 7	GTS	N/A	GTS681	July 31. 2023	July 30. 2024
25	RE cable 8	GTS	N/A	GTS682	July 31. 2023	July 30. 2024

<b>RF Conducted Test:</b>						
<b>Item</b>	<b>Test Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Cal.Date (mm-dd-yy)</b>	<b>Cal.Due date (mm-dd-yy)</b>
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	April 14, 2023	April 13, 2024
2	EMI Test Receiver	R&S	ESCI 7	GTS552	April 14, 2023	April 13, 2024
3	PSA Series Spectrum Analyzer	Agilent	E4440A	GTS536	April 14, 2023	April 13, 2024
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	April 14, 2023	April 13, 2024
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	April 14, 2023	April 13, 2024
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	April 14, 2023	April 13, 2024
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	April 14, 2023	April 13, 2024
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	April 14, 2023	April 13, 2024
9	Thermo meter	JINCHUANG	GSP-8A	GTS641	April 19, 2023	April 18, 2024

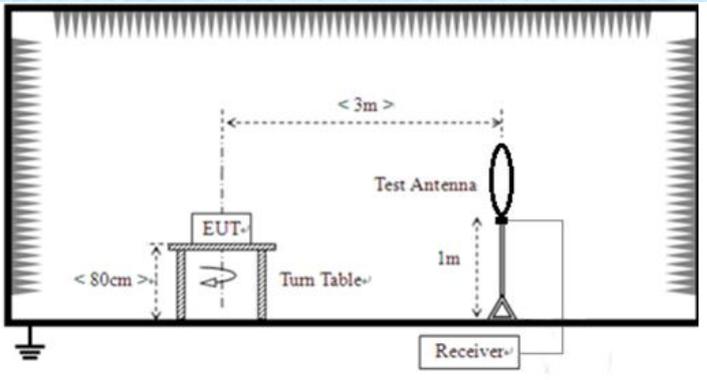
<b>General used equipment:</b>						
<b>Item</b>	<b>Test Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Inventory No.</b>	<b>Cal.Date (mm-dd-yy)</b>	<b>Cal.Due date (mm-dd-yy)</b>
1	Barometer	KUMAO	SF132	GTS647	April 19, 2023	April 18, 2024

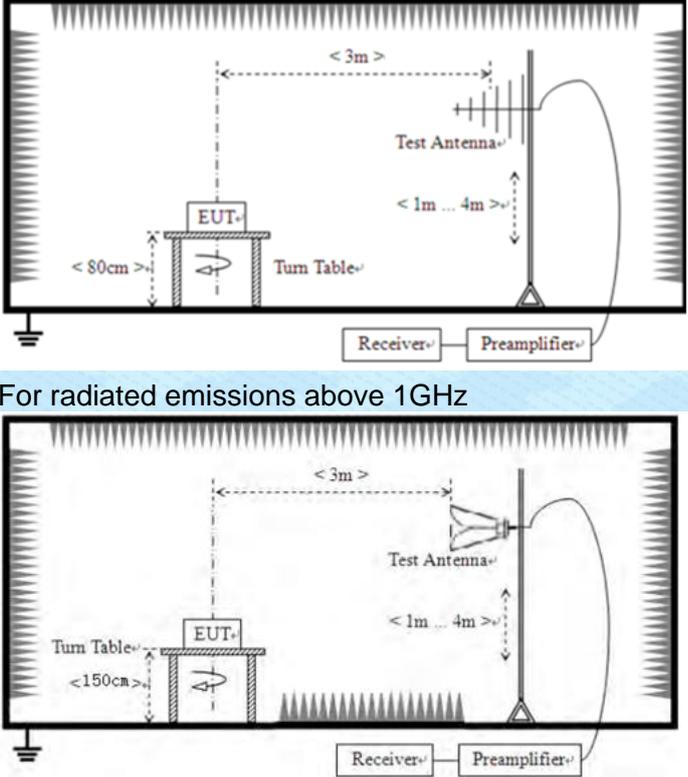
## 7 Test results and Measurement Data

### 7.1 Antenna requirement

<b>Standard requirement:</b>	FCC Part15 C Section 15.203
<p><b>15.203 requirement:</b></p> <p>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(c) (1)(i) requirement:</b></p> <p>(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.</p>	
<b>EUT Antenna:</b>	
The antenna is integral antenna, reference to the appendix II for details.	

## 7.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	9kHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	9kHz-150kHz	Quasi-peak	200Hz	300Hz	Quasi-peak Value
	150kHz-30MHz	Quasi-peak	9kHz	10kHz	Quasi-peak Value
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
Peak		1MHz	10Hz	Average Value	
Limit: (Field strength of the fundamental signal)	Frequency	Limit (dBuV/m @3m)		Remark	
	2400MHz-2483.5MHz	94.00		Average Value	
		114.00		Peak Value	
Limit: (Spurious Emissions)	Frequency	Limit (uV/m)		Remark	
	0.009MHz-0.490MHz	2400/F(kHz) @300m		Quasi-peak Value	
	0.490MHz-1.705MHz	24000/F(kHz) @30m		Quasi-peak Value	
	1.705MHz-30.0MHz	30 @30m		Quasi-peak Value	
	30MHz-88MHz	100 @3m		Quasi-peak Value	
	88MHz-216MHz	150 @3m		Quasi-peak Value	
	216MHz-960MHz	200 @3m		Quasi-peak Value	
	960MHz-1GHz	500 @3m		Quasi-peak Value	
	Above 1GHz	500 @3m		Average Value	
		5000 @3m		Peak Value	
Limit: (band edge)	Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.				
Test setup:	<p>For radiated emissions from 9kHz to 30MHz</p>  <p>For radiated emissions from 30MHz to 1GHz</p>				

	 <p>For radiated emissions above 1GHz</p>						
<p>Test Procedure:</p>	<ol style="list-style-type: none"> <li>1. The EUT was placed on the top of a rotating table (0.8m for below 1GHz and 1.5 meters for above 1GHz) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>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.</li> <li>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.</li> <li>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 and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.</li> <li>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>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.</li> </ol>						
<p>Test Instruments:</p>	<p>Refer to section 6.0 for details</p>						
<p>Test mode:</p>	<p>Refer to section 5.2 for details</p>						
<p>Test environment:</p>	<table border="1"> <tr> <td>Temp.:</td> <td>25 °C</td> <td>Humid.:</td> <td>52%</td> <td>Press.:</td> <td>1012mbar</td> </tr> </table>	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar		
<p>Test voltage:</p>	<p>DC 3.0V</p>						
<p>Test results:</p>	<p>Pass</p>						

**Measurement data:**

**7.2.1 Field Strength of The Fundamental Signal**

**Peak value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2404.00	94.28	27.43	2.93	38.88	85.76	114.00	-28.24	Vertical
2404.00	91.56	27.43	2.93	38.88	83.04	114.00	-30.96	Horizontal
2443.00	97.58	27.55	2.96	38.98	89.11	114.00	-24.89	Vertical
2443.00	92.11	27.55	2.96	38.98	83.64	114.00	-30.36	Horizontal
2452.00	96.40	27.64	2.99	39.05	87.98	114.00	-26.02	Vertical
2452.00	89.07	27.64	2.99	39.05	80.65	114.00	-33.35	Horizontal

**Average value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2404.00	76.82	27.43	2.93	38.88	68.30	94.00	-25.70	Vertical
2404.00	71.80	27.43	2.93	38.88	63.28	94.00	-30.72	Horizontal
2443.00	79.30	27.55	2.96	38.98	70.83	94.00	-23.17	Vertical
2443.00	74.18	27.55	2.96	38.98	65.71	94.00	-28.29	Horizontal
2452.00	76.23	27.64	2.99	39.05	67.81	94.00	-26.19	Vertical
2452.00	73.14	27.64	2.99	39.05	64.72	94.00	-29.28	Horizontal

Note: RBW>20dB BW, VBW> RBW, PK detector is for PK value, AV detector is for AV value .

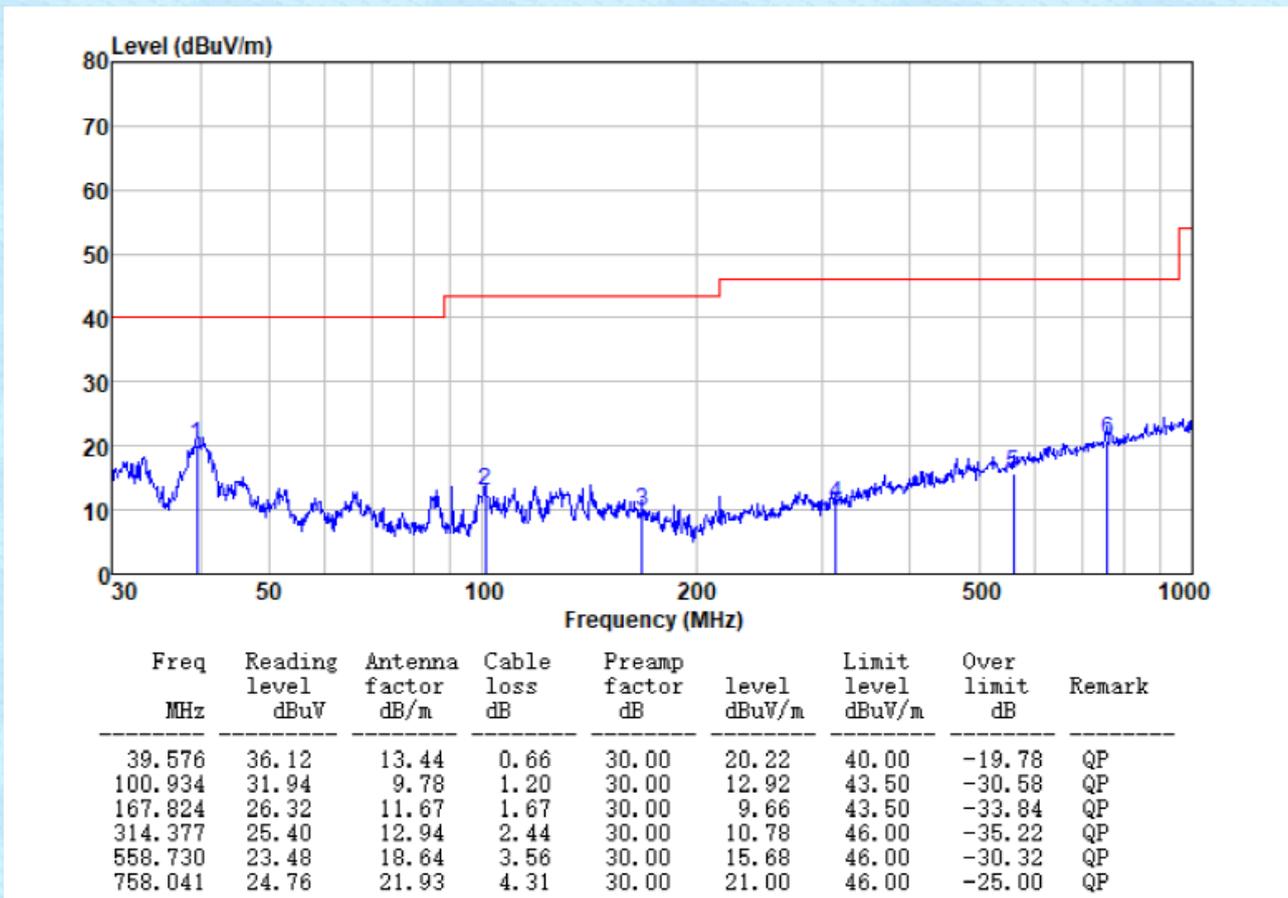
## 7.2.2 Spurious emissions

### ■ Below 30MHz

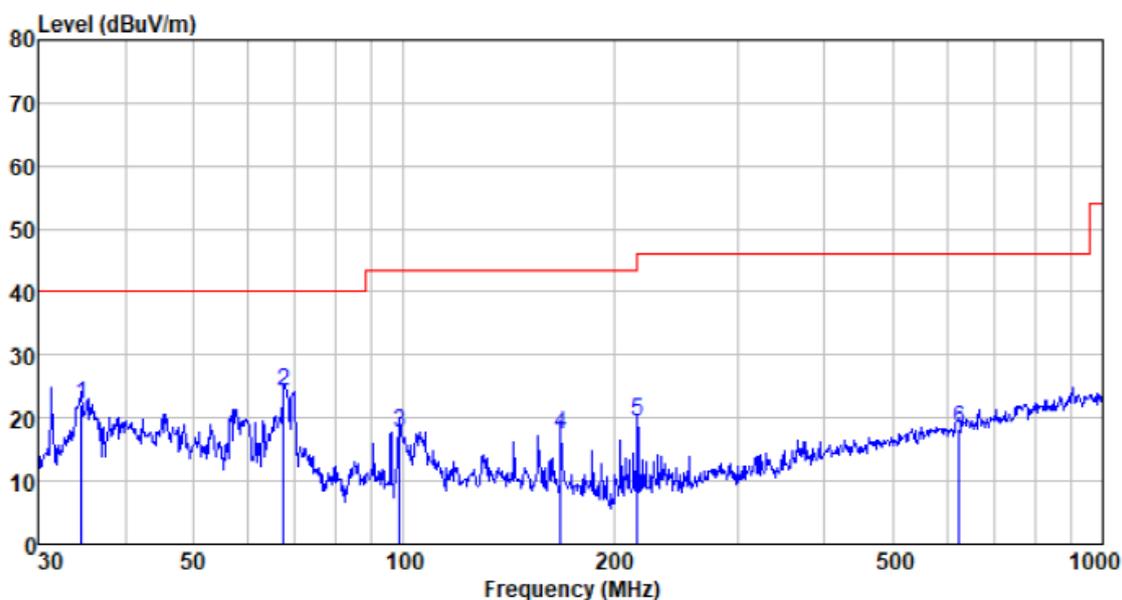
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o), the test result no need to reported.

### ■ Below 1GHz

Test channel:	Lowest	Polarization:	Horizontal
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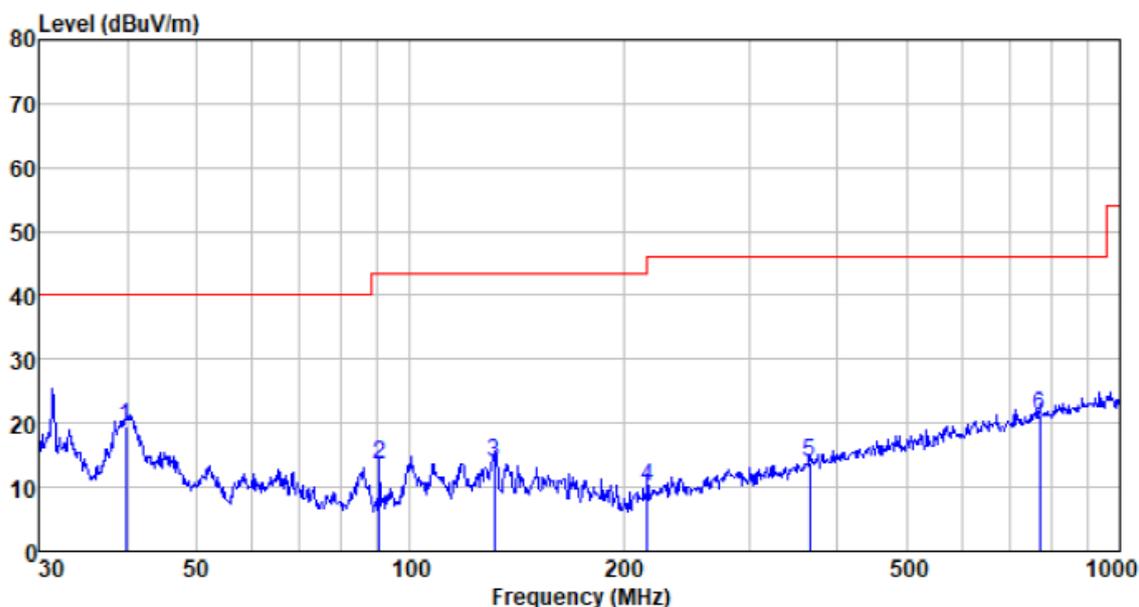


Test channel:	Lowest	Polarization:	Vertical
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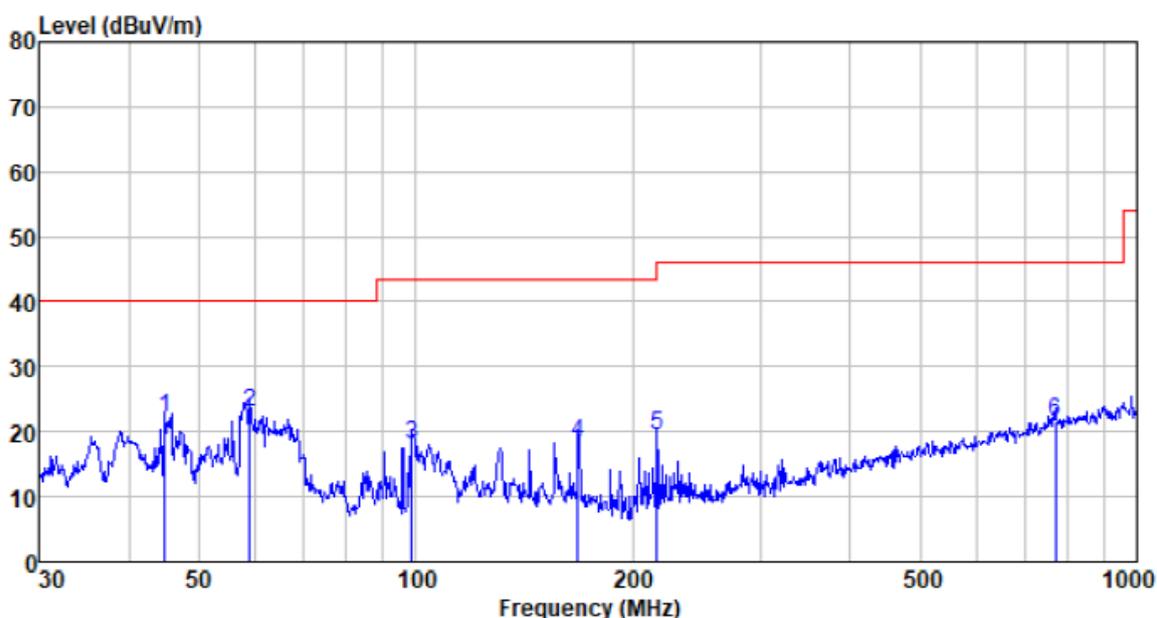
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
34.639	38.81	12.66	0.61	30.00	22.08	40.00	-17.92	QP
67.438	42.21	11.01	0.92	30.00	24.14	40.00	-15.86	QP
98.833	36.99	9.58	1.18	30.00	17.75	43.50	-25.75	QP
167.824	34.06	11.67	1.67	30.00	17.40	43.50	-26.10	QP
216.024	37.52	10.09	1.93	30.00	19.54	46.00	-26.46	QP
622.890	24.74	19.66	3.81	30.00	18.21	46.00	-27.79	QP

Test channel:	Middle	Polarization:	Horizontal
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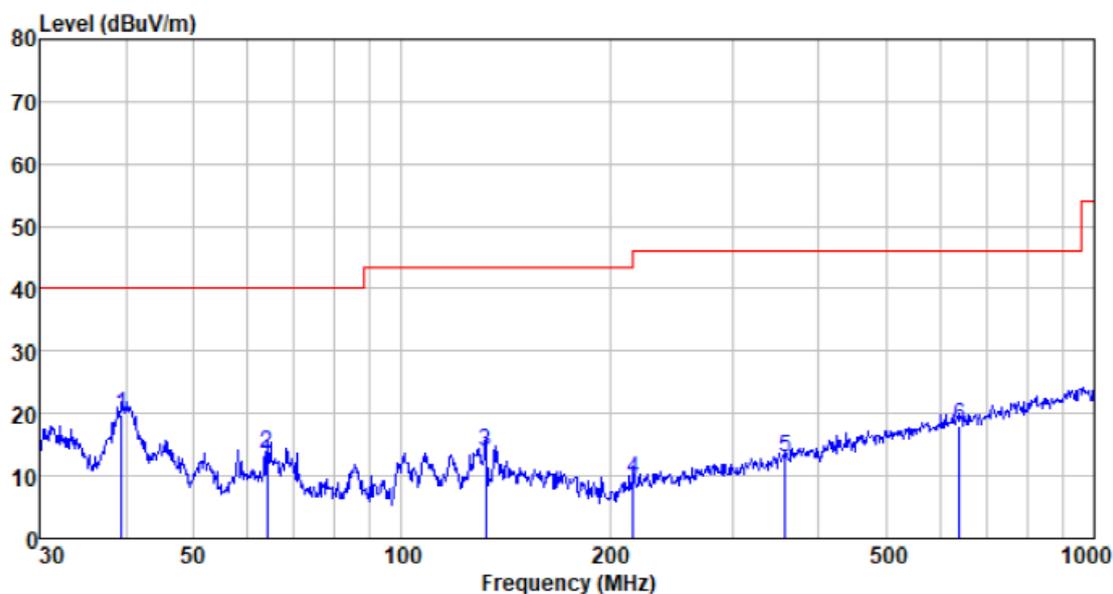
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
39.715	35.42	13.46	0.66	30.00	19.54	40.00	-20.46	QP
90.537	33.90	8.66	1.11	30.00	13.67	43.50	-29.83	QP
131.297	30.43	11.90	1.44	30.00	13.77	43.50	-29.73	QP
216.024	28.11	10.09	1.93	30.00	10.13	46.00	-35.87	QP
365.539	26.61	14.67	2.69	30.00	13.97	46.00	-32.03	QP
771.449	24.61	22.18	4.36	30.00	21.15	46.00	-24.85	QP

Test channel:	Middle	Polarization:	Vertical
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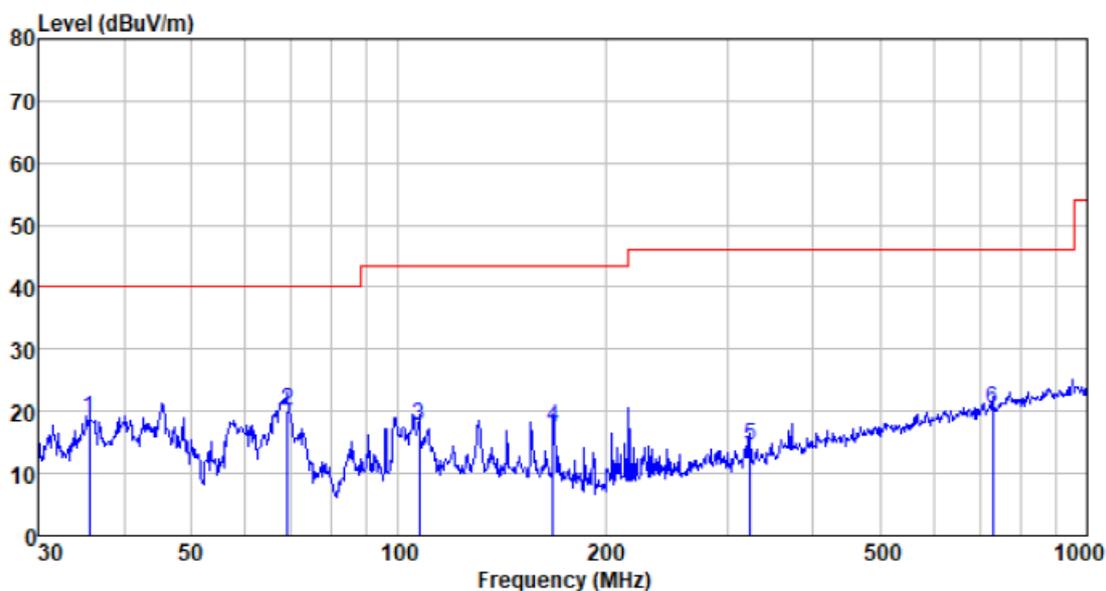
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
44.901	37.97	13.34	0.72	30.00	22.03	40.00	-17.97	QP
58.819	39.50	12.67	0.85	30.00	23.02	40.00	-16.98	QP
98.833	37.34	9.58	1.18	30.00	18.10	43.50	-25.40	QP
167.824	34.97	11.67	1.67	30.00	18.31	43.50	-25.19	QP
216.024	37.61	10.09	1.93	30.00	19.63	46.00	-26.37	QP
771.449	24.94	22.18	4.36	30.00	21.48	46.00	-24.52	QP

Test channel:	Highest	Polarization:	Horizontal
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Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
39.437	35.68	13.42	0.65	30.00	19.75	40.00	-20.25	QP
63.983	30.91	11.72	0.89	30.00	13.52	40.00	-26.48	QP
132.221	30.47	11.95	1.45	30.00	13.87	43.50	-29.63	QP
216.024	27.44	10.09	1.93	30.00	9.46	46.00	-36.54	QP
357.929	25.90	14.43	2.66	30.00	12.99	46.00	-33.01	QP
638.369	24.30	19.90	3.87	30.00	18.07	46.00	-27.93	QP

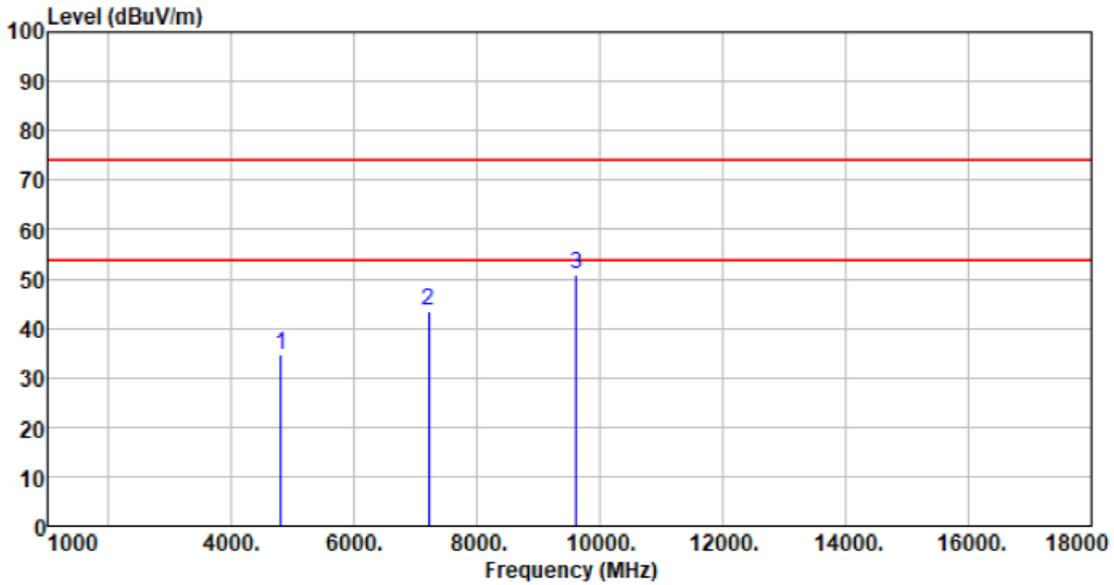
Test channel:	Highest	Polarization:	Vertical
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Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
35.624	35.43	12.81	0.62	30.00	18.86	40.00	-21.14	QP
69.114	38.42	10.67	0.93	30.00	20.02	40.00	-19.98	QP
107.134	36.07	10.27	1.25	30.00	17.59	43.50	-25.91	QP
167.824	34.09	11.67	1.67	30.00	17.43	43.50	-26.07	QP
324.456	28.79	13.30	2.49	30.00	14.58	46.00	-31.42	QP
729.358	24.85	21.38	4.19	30.00	20.42	46.00	-25.58	QP

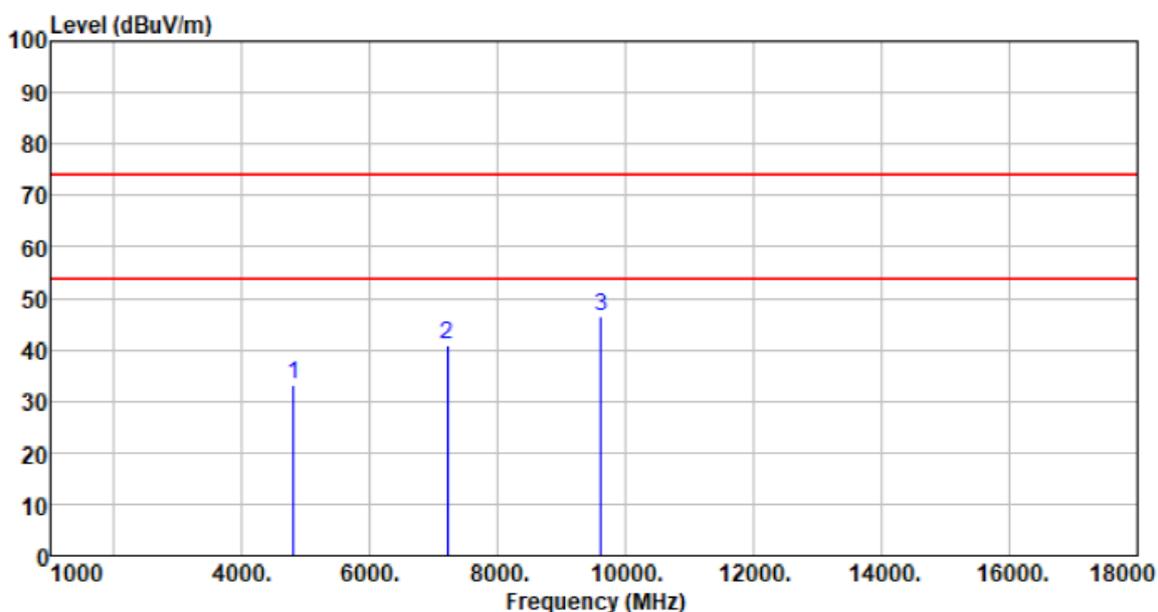
■ Above 1GHz

Test channel:	Lowest	Polarization:	Horizontal
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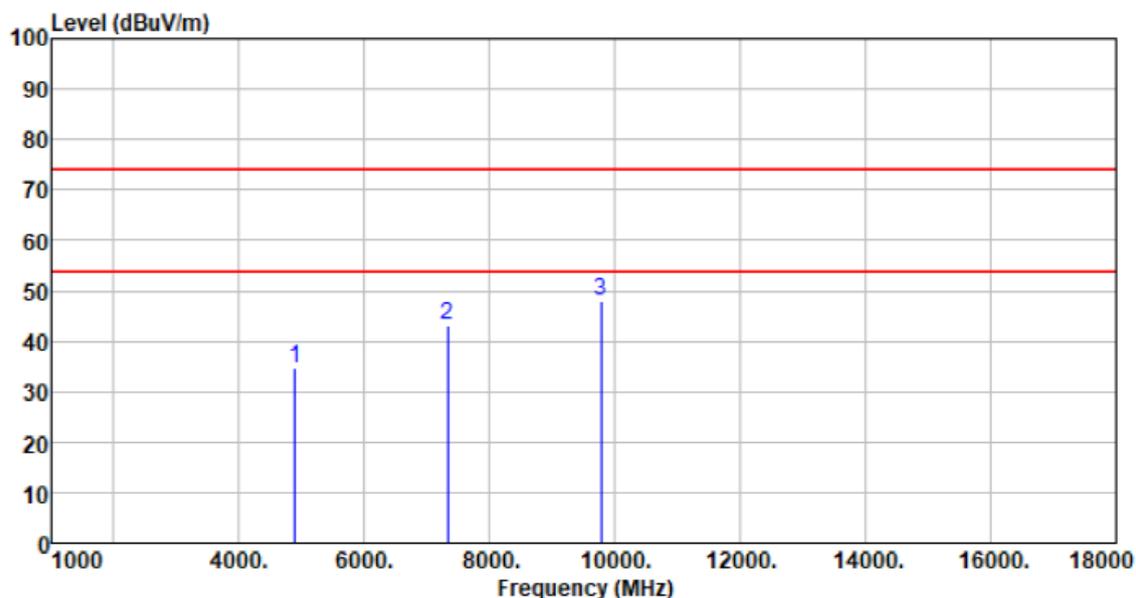
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4808.000	25.02	31.06	16.91	38.36	34.63	74.00	-39.37	Peak
7212.000	23.29	35.92	23.33	38.96	43.58	74.00	-30.42	Peak
9616.000	22.57	37.92	30.16	39.68	50.97	74.00	-23.03	Peak

Test channel:	Lowest	Polarization:	Vertical
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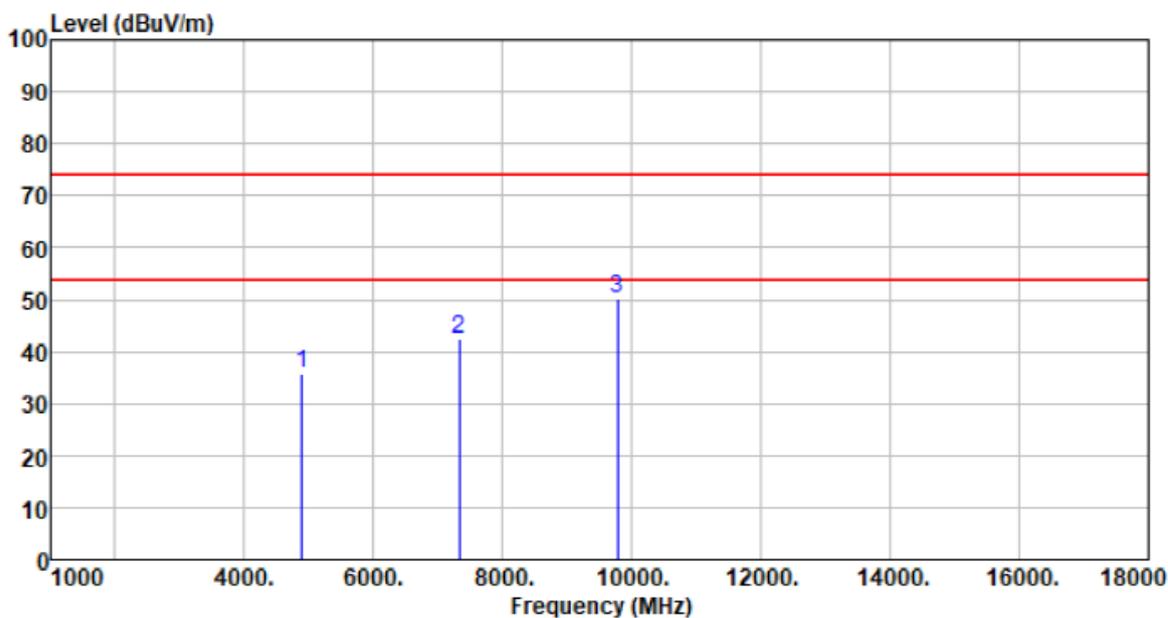
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4808.000	23.51	31.06	16.91	38.36	33.12	74.00	-40.88	Peak
7212.000	20.53	35.92	23.33	38.96	40.82	74.00	-33.18	Peak
9616.000	18.11	37.92	30.16	39.68	46.51	74.00	-27.49	Peak

Test channel:	Middle	Polarization:	Horizontal
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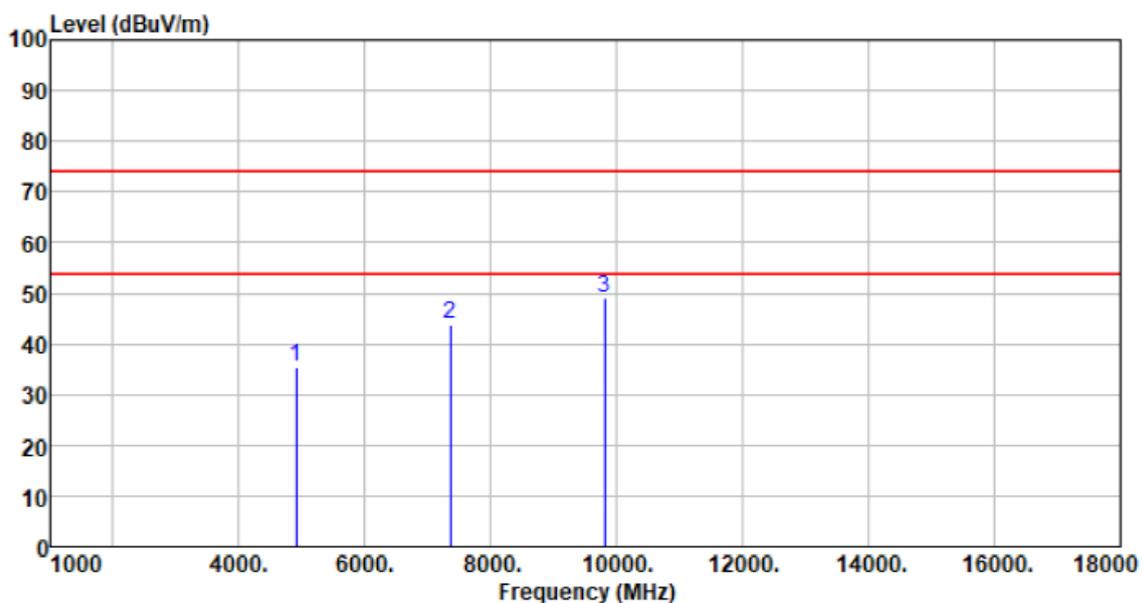
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4886.000	24.48	31.28	17.16	38.38	34.54	74.00	-39.46	Peak
7329.000	21.95	36.16	24.06	39.00	43.17	74.00	-30.83	Peak
9772.000	19.04	38.07	30.52	39.73	47.90	74.00	-26.10	Peak

Test channel:	Middle	Polarization:	Vertical
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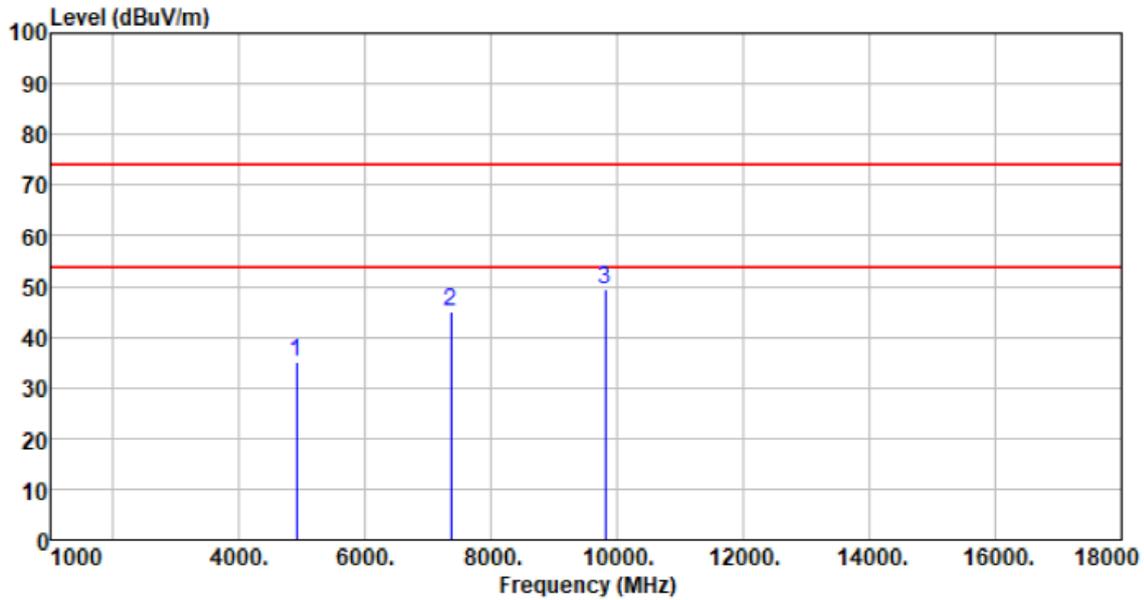
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4886.000	25.84	31.28	17.16	38.38	35.90	74.00	-38.10	Peak
7329.000	21.27	36.16	24.06	39.00	42.49	74.00	-31.51	Peak
9772.000	21.37	38.07	30.52	39.73	50.23	74.00	-23.77	Peak

Test channel:	Highest	Polarization:	Horizontal
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Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4904.000	25.21	31.33	17.21	38.38	35.37	74.00	-38.63	Peak
7356.000	22.37	36.21	24.23	39.01	43.80	74.00	-30.20	Peak
9808.000	20.13	38.11	30.63	39.74	49.13	74.00	-24.87	Peak

Test channel:	Highest	Polarization:	Vertical
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Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4904.000	25.04	31.33	17.21	38.38	35.20	74.00	-38.80	Peak
7356.000	23.58	36.21	24.23	39.01	45.01	74.00	-28.99	Peak
9808.000	20.33	38.11	30.63	39.74	49.33	74.00	-24.67	Peak

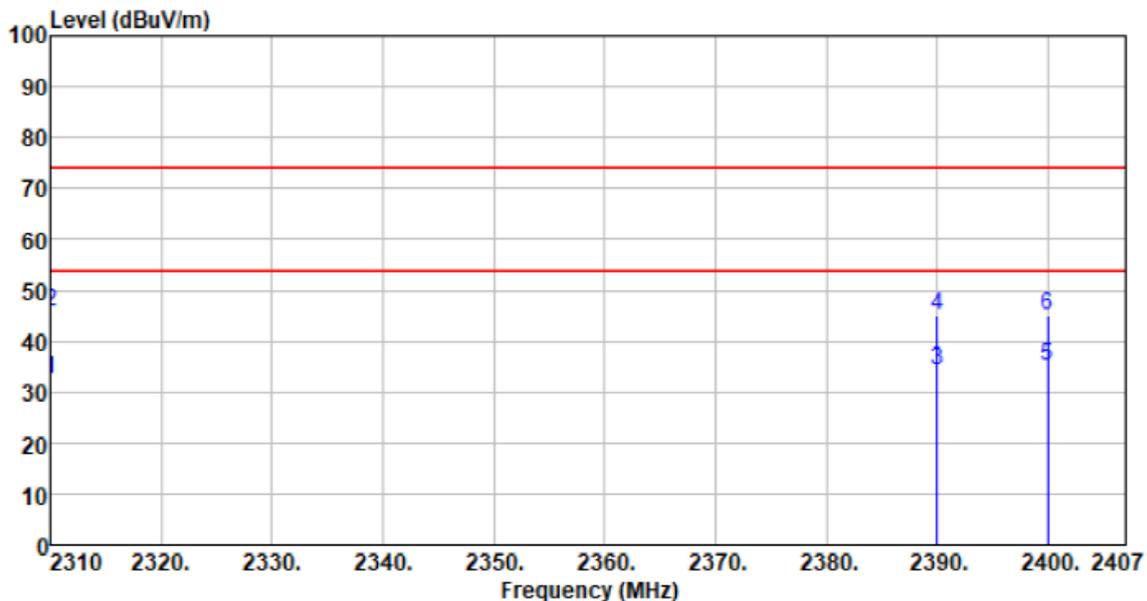
Remarks:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. For above 18GHz, no emission found.
4. If the average limit is met when using a Peak detector, the EUT shall be deemed to meet both peak and average limits. And measurement with the average detector is unnecessary.

### 7.2.3 Bandedge emissions

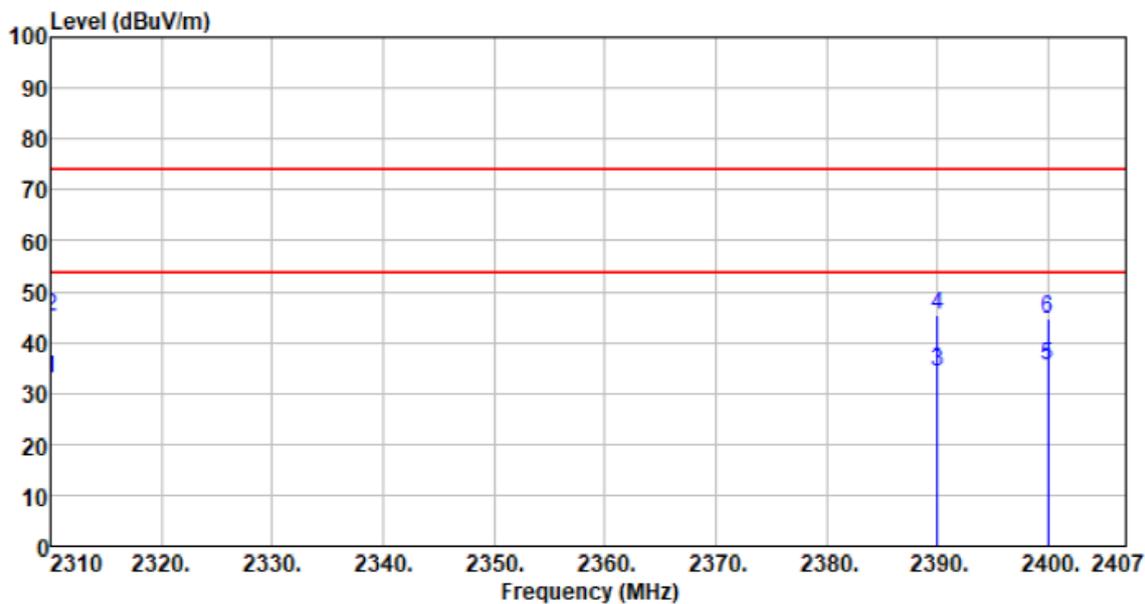
All of the restriction bands were tested, and only the data of worst case was exhibited.

Test channel:	Lowest	Polarization:	Horizontal
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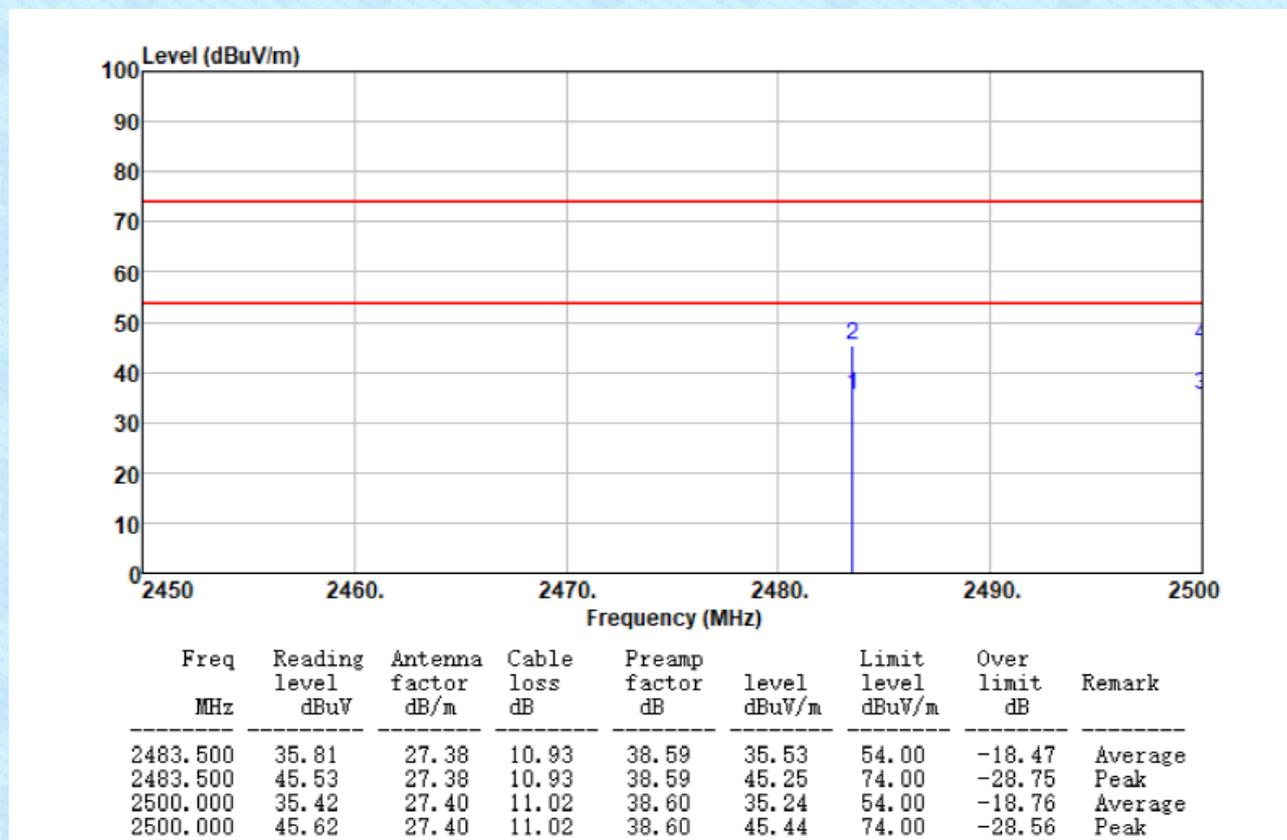
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	33.37	27.17	10.51	38.52	32.53	54.00	-21.47	Average
2310.000	46.53	27.17	10.51	38.52	45.69	74.00	-28.31	Peak
2390.000	34.97	27.27	10.47	38.56	34.15	54.00	-19.85	Average
2390.000	45.76	27.27	10.47	38.56	44.94	74.00	-29.06	Peak
2400.000	35.78	27.28	10.47	38.56	34.97	54.00	-19.03	Average
2400.000	45.93	27.28	10.47	38.56	45.12	74.00	-28.88	Peak

Test channel:	Lowest	Polarization:	Vertical
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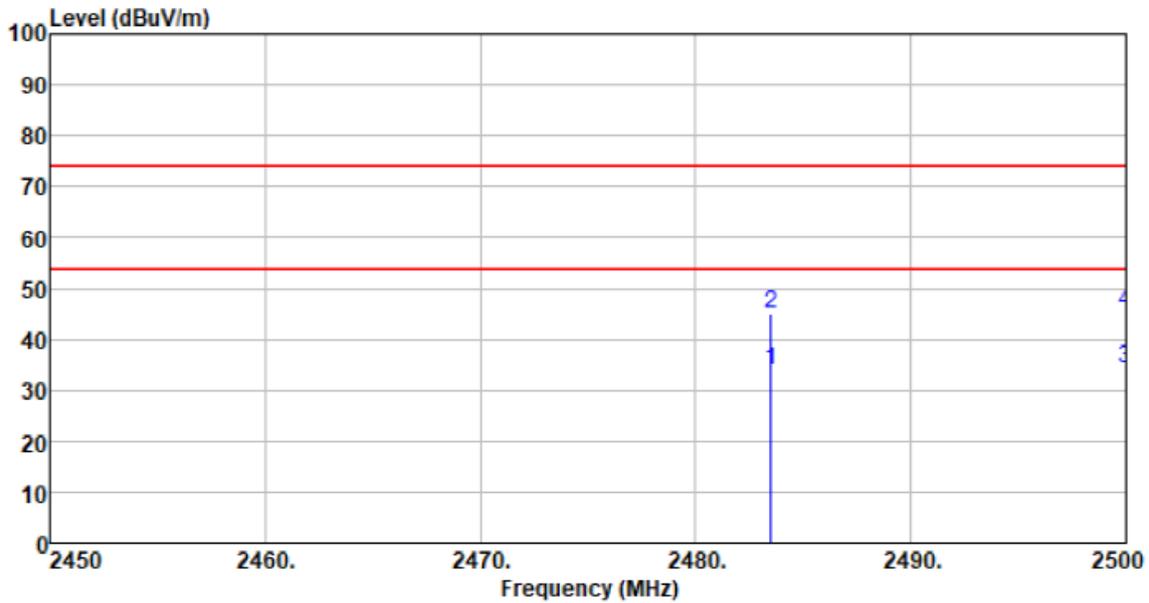


Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	33.67	27.17	10.51	38.52	32.83	54.00	-21.17	Average
2310.000	45.87	27.17	10.51	38.52	45.03	74.00	-28.97	Peak
2390.000	35.12	27.27	10.47	38.56	34.30	54.00	-19.70	Average
2390.000	46.03	27.27	10.47	38.56	45.21	74.00	-28.79	Peak
2400.000	36.28	27.28	10.47	38.56	35.47	54.00	-18.53	Average
2400.000	45.48	27.28	10.47	38.56	44.67	74.00	-29.33	Peak

Test channel:	Highest	Polarization:	Horizontal
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Test channel:	Highest	Polarization:	Vertical
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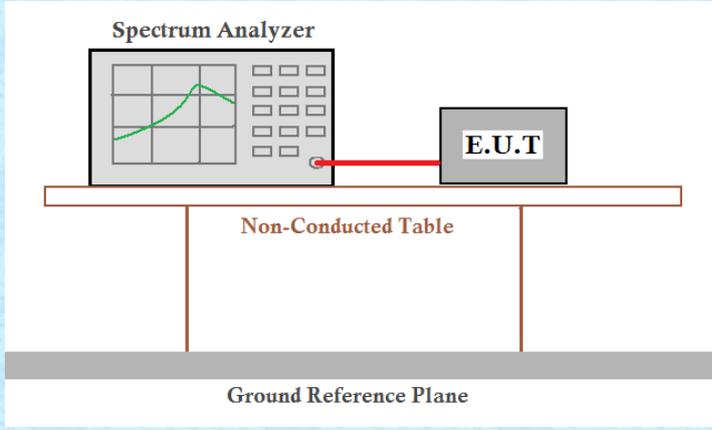


Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2483.500	34.40	27.38	10.93	38.59	34.12	54.00	-19.88	Average
2483.500	45.34	27.38	10.93	38.59	45.06	74.00	-28.94	Peak
2500.000	34.53	27.40	11.02	38.60	34.35	54.00	-19.65	Average
2500.000	45.39	27.40	11.02	38.60	45.21	74.00	-28.79	Peak

**Remark:**

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

## 7.3 20dB Occupancy Bandwidth

Test Requirement:	FCC Part15 C Section 15.249/15.215
Test Method:	ANSI C63.10:2013
Limit:	Operation Frequency range 2400MHz~2483.5MHz
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

### Measurement Data

Test channel	20dB bandwidth(MHz)	Result
Lowest	1.272	Pass
Middle	1.227	Pass
Highest	1.299	Pass

Test plot as follows:



Lowest channel



Middle channel



Highest channel

## **8 Test Setup Photo**

Reference to the **appendix I** for details.

## **9 EUT Constructional Details**

Reference to the **appendix II** for details.

-----End-----