

Global United Technology Services Co., Ltd.

Report No.: GTS2024070311F01

TEST REPORT

Applicant: AOHO Intelligent Technology (Shantou) Co., LTD

Address of Applicant: Xinfa Road west, Neidi Industrial Zone, Xiadaimei Village,

Xinan Town, Chenghai District, Shantou, Guangdong, China

Manufacturer: AOHO Intelligent Technology (Shantou) Co., LTD

Address of Xinfa Road west, Neidi Industrial Zone, Xiadaimei Village, Manufacturer: Xinan Town, Chenghai District, Shantou, Guangdong, China

Equipment Under Test (EUT)

Product Name: Remote control car

911-659A, 911-599B, 911-606B, 911-607B, 911-606A, MT1245 Model No.:

FCC ID: 2A7RD659

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

Date of sample receipt: July 22, 2024

Date of Test: July 23, 2024-August 21, 2024

August 21, 2024 Date of report issued:

Test Result: PASS *

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

Authorized Signature:

Robinson Luo **Laboratory Manager**



2 Version

Version No.	Date	Description		
00	August 21, 2024	Original		

Joseph Du	Date:	August 21, 2024
Project Engineer		
Johnson Lust	Date:	August 21, 2024
	Project Engineer	Project Engineer

Reviewer



Contents

		Page
1	1 COVER PAGE	1
2	2 VERSION	2
3	3 CONTENTS	3
4	4 TEST SUMMARY	4
	4.1 MEASUREMENT UNCERTAINTY	4
5	5 GENERAL INFORMATION	5
	5.1 GENERAL DESCRIPTION OF EUT	
	5.2 TEST MODE	
	5.3 DESCRIPTION OF SUPPORT UNITS	
	5.4 DEVIATION FROM STANDARDS	
	5.5 ABNORMALITIES FROM STANDARD CONDITIONS	
	5.6 TEST FACILITY	7
	5.7 TEST LOCATION	7
	5.8 ADDITIONAL INSTRUCTIONS	7
6	6 TEST INSTRUMENTS LIST	8
7	7 TEST RESULTS AND MEASUREMENT DATA	10
	7.1 ANTENNA REQUIREMENT	10
	7.2 RADIATED EMISSION METHOD	11
	7.2.1 Field Strength of The Fundamental Signal	13
	7.2.2 Spurious emissions	14
	7.2.3 Bandedge emissions	
	7.3 20DB OCCUPY BANDWIDTH	26
8	8 TEST SETUP PHOTO	28
9	9 EUT CONSTRUCTIONAL DETAILS	28



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

	The modern of the critical training				
No.	Item	Measurement Uncertainty			
1	Radio Frequency	±7.25×10 ⁻⁸			
2	Duty cycle	±0.37%			
3	Occupied Bandwidth	±3%			
4	RF conducted power	±0.75dB			
5	RF power density	±3dB			
6	Conducted Spurious emissions	±2.58dB			
7	AC Power Line Conducted Emission	±3.44dB (0.15MHz ~ 30MHz)			
		±3.1dB (9kHz-30MHz)			
	Radiated Spurious emission test	±3.8039dB (30MHz-200MHz)			
8		±3.9679dB (200MHz-1GHz)			
		±4.29dB (1GHz-18GHz)			
		±3.30dB (18GHz-40GHz)			
9	Temperature test	±1°C			
10	Humidity test	±3%			
11	Time	±3%			



Page 5 of 28

5 General Information

5.1 General Description of EUT

Product Name:	Remote control car		
Model No.:	911-659A, 911-599B, 911-606B, 911-607B, 911-606A, MT1245		
Test Model No.:	911-659A		
	identical in the same PCB layout, interior structure and electrical circuits.		
Serial No.:	KYD-2427T		
Test sample(s) ID:	GTS2024070311-1		
Sample(s) Status	Engineered sample		
Operation Frequency:	2405MHz~2475MHz		
Channel Numbers:	32		
Modulation Type:	GFSK		
Antenna Type:	Wire Antenna		
Antenna gain:	0dBi(declare by applicant)		
Power supply:	DC 3V(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.



Operation Frequency each of channel							
Channel	Frequency (MHz) Channel		Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2405	9	2421	17	2434	25	2454
2	2410	10	2426	18	2439	26	2456
3	2414	11	2427	19	2441	27	2458
4	2415	12	2428	20	2442	28	2462
5	2416	13	2429	21	2444	29	2464
6	2417	14	2430	22	2446	30	2465
7	2418	15	2431	23	2450	31	2473
8	2419	16	2433	24	2452	32	2475

The test frequencies are below:

Channel	Frequency
The lowest channel	2405MHz
The middle channel	2440MHz
The Highest channel	2475MHz



5.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode.
Remark: New battery is used dur	ing 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)	88.56	89.87	87.64	

5.3 Description of Support Units

None.

5.4 Deviation from Standards

None.

5.5 Abnormalities from Standard Conditions

None.

5.6 Test Facility

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

• FCC—Registration No.: 381383

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.

• ISED—Registration No.: 9079A

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

• NVLAP (LAB CODE:600179-0)

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

5.7 Test Location

All tests were performed at:

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

5.8 Additional Instructions

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

Global United Technology Services Co., Ltd.



6 Test Instruments list

Radia	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 22, 2024	June 21, 2027		
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 11, 2024	April 10, 2025		
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 11, 2024	April 10, 2025		
8	Loop Antenna	ZHINAN	ZN30900A	GTS534	Nov. 13, 2023	Nov.12, 2024		
9	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	April 11, 2024	April 10, 2025		
10	Amplifier(1GHz-26.5GHz)	HP	8449B	GTS601	April 11, 2024	April 10, 2025		
11	Horn Antenna (18- 26.5GHz)	I	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 12, 2024	March 11, 2025		
14	Amplifier	1	LNA-1000-30S	GTS650	April 11, 2024	April 10, 2025		
15	CDNE M2+M3-16A	HCT	30MHz-300MHz	GTS692	Nov. 08, 2023	Nov.07, 2024		
16	Wideband Amplifier	1	WDA-01004000-15P35	GTS602	April 11, 2024	April 10, 2025		
17	Thermo meter	JINCHUANG	GSP-8A	GTS643	April 18, 2024	April 17, 2025		
18	RE cable 1	GTS	N/A	GTS675	July 02. 2024	July 01. 2025		
19	RE cable 2	GTS	N/A	GTS676	July 02. 2024	July 01. 2025		
20	RE cable 3	GTS	N/A	GTS677	July 02. 2024	July 01. 2025		
21	RE cable 4	GTS	N/A	GTS678	July 02. 2024	July 01. 2025		
22	RE cable 5	GTS	N/A	GTS679	July 02. 2024	July 01. 2025		
23	RE cable 6	GTS	N/A	GTS680	July 02. 2024	July 01. 2025		
24	RE cable 7	GTS	N/A	GTS681	July 05. 2024	July 04. 2025		
25	RE cable 8	GTS	N/A	GTS682	July 05. 2024	July 04. 2025		



RF Co	onducted Test:					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	April 11, 2024	April 10, 2025
2	EMI Test Receiver	R&S	ESCI 7	GTS552	April 11, 2024	April 10, 2025
3	PSA Series Spectrum Analyzer	Agilent	E4440A	GTS536	April 11, 2024	April 10, 2025
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	April 11, 2024	April 10, 2025
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	April 11, 2024	April 10, 2025
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	April 11, 2024	April 10, 2025
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	April 11, 2024	April 10, 2025
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	April 11, 2024	April 10, 2025
9	Thermo meter	JINCHUANG	GSP-8A	GTS641	April 18, 2024	April 17, 2025

Ger	neral used equipment:					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Barometer	KUMAO	SF132	GTS647	April 18, 2024	April 17, 2025



7 Test results and Measurement Data

7.1 Antenna requirement

Standard requirement: FCC Part15 C Section 15.203

15.203 requirement:

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.

15.247(c) (1)(i) requirement:

(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.

EUT Antenna:

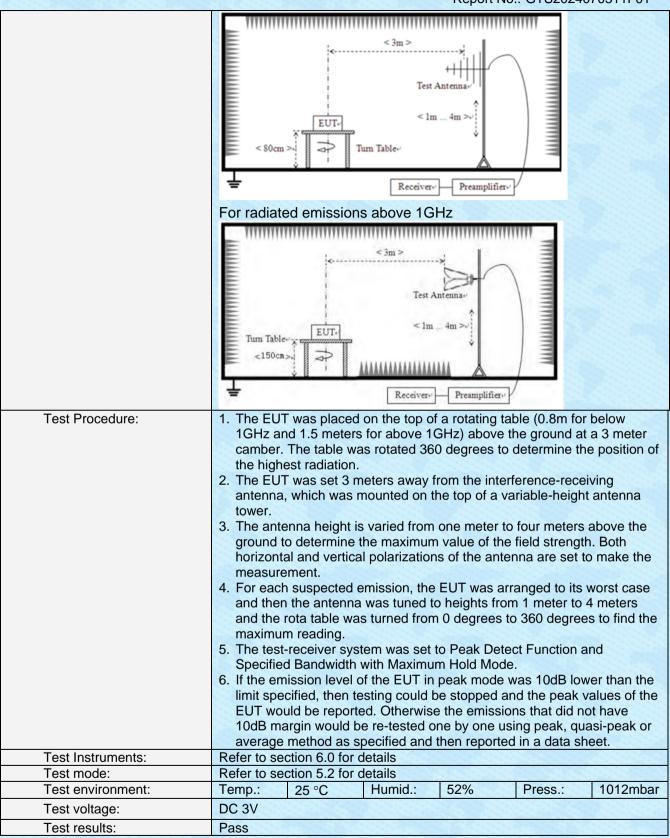
The antenna is wire antenna, reference to the appendix II for details.



7.2 Radiated Emission Method

1.2 Radiated Lillission Me	tilled				
Test Requirement:	FCC Part15 C S	Section 15.20	9		
Test Method:	ANSI C63.10:20	013			
Test Frequency Range:	9kHz to 25GHz				
Test site:	Measurement D	Distance: 3m			
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
·	9kHz- 150kHz	Quasi-peal		300Hz	Quasi-peak Value
	150kHz- 30MHz	Quasi-peal	k 9kHz	10kHz	Quasi-peak Value
	30MHz- 1GHz	Quasi-peal	< 120KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak Peak	1MHz 1MHz	3MHz 10Hz	Peak Value Average Value
Limit:	Freque		Limit (dBuV		Remark
(Field strength of the	Treque	ысу	94.0		Average Value
fundamental signal)	2400MHz-24	483.5MHz			
<u> </u>	_		114.0		Peak Value
Limit:	Freque		Limit (u		Remark
(Spurious Emissions)	0.009MHz-0		2400/F(kHz)		Quasi-peak Value
	0.490MHz-1		24000/F(kH	,	Quasi-peak Value
	1.705MHz-		30 @3		Quasi-peak Value
	30MHz-8		100 @		Quasi-peak Value
	88MHz-2		150 @		Quasi-peak Value
	216MHz-9		200 @		Quasi-peak Value
	960MHz	-1GHz	500 @		Quasi-peak Value
	Above 1	1GHz	500 @		Average Value
			5000 @		Peak Value
Limit: (band edge)	harmonics, sha	Il be attenuate to the general	ed by at least al radiated emi	50 dB belov	bands, except for w the level of the in Section 15.209,
Test setup:	For radiated e	missions fro	m 9kHz to 30	OMHz	
	< \$0cm >+-	EUT-	Receive		
	For radiated e	missions fro	m 30MHz to	IGHZ	

Telephone: +86 (0) 755 2779 8480 Fax: +86 (0) 755 2779 8960 Page 11 of 28





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
2405.00	95.46	27.20	4.20	39.38	87.48	114.00	-26.52	Vertical
2405.00	97.77	27.20	4.20	39.38	89.79	114.00	-24.21	Horizontal
2440.00	97.40	27.22	4.15	39.42	89.35	114.00	-24.65	Vertical
2440.00	97.92	27.22	4.15	39.42	89.87	114.00	-24.13	Horizontal
2475.00	97.51	27.25	4.10	39.52	89.34	114.00	-24.66	Vertical
2475.00	96.84	27.25	4.10	39.52	88.67	114.00	-25.33	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
2405.00	83.81	27.20	4.20	39.38	75.83	94.00	-18.17	Vertical
2405.00	86.56	27.20	4.20	39.38	78.58	94.00	-15.42	Horizontal
2440.00	86.21	27.22	4.15	39.42	78.16	94.00	-15.84	Vertical
2440.00	86.64	27.22	4.15	39.42	78.59	94.00	-15.41	Horizontal
2475.00	86.77	27.25	4.10	39.52	78.60	94.00	-15.40	Vertical
2475.00	86.00	27.25	4.10	39.52	77.83	94.00	-16.17	Horizontal

Note: For fundamental frequency , RBW>20dB BW, VBW>=RBW, PK detector for PK value, RMS detector for AV value



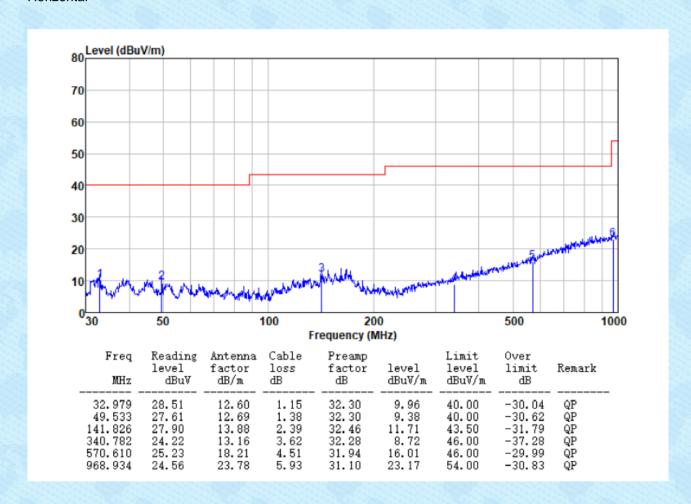
7.2.2 Spurious emissions

■ 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.

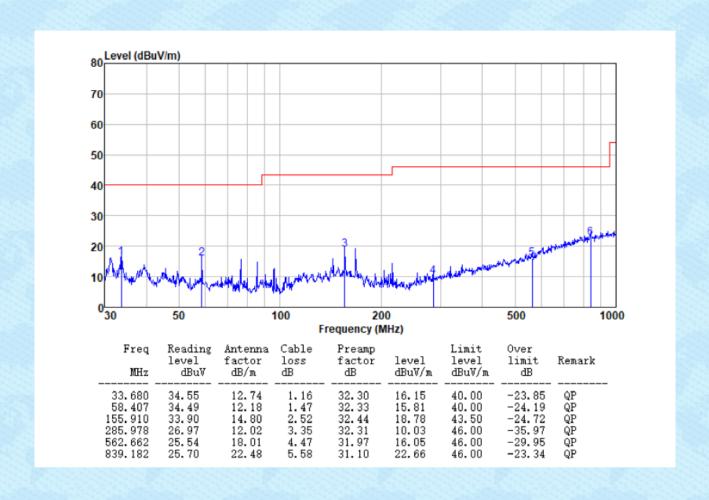
■ Below 1GHz

Pre-scan all test modes, found worst case at 2405MHz, and so only show the test result of it Horizontal





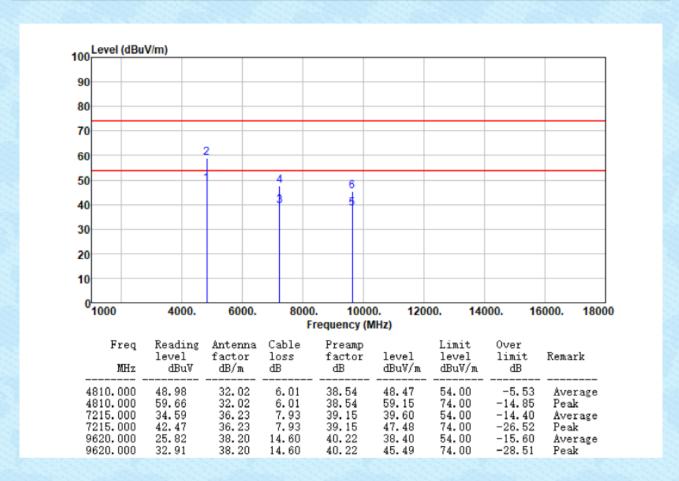
Vertical





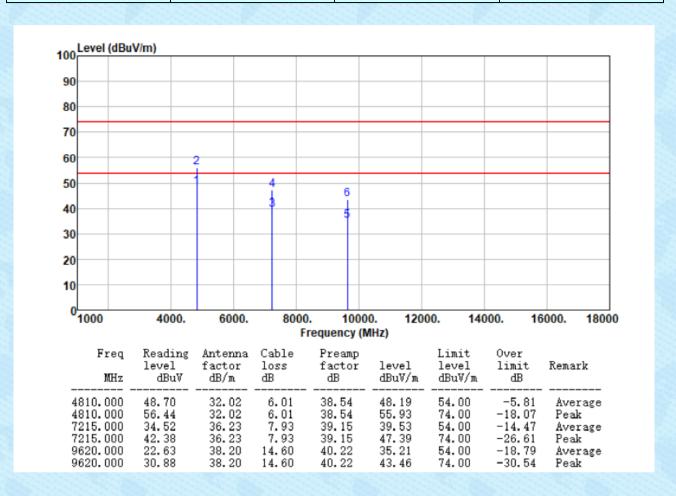
■ Above 1GHz

Test channel:	Lowest	Polarization:	Horizontal
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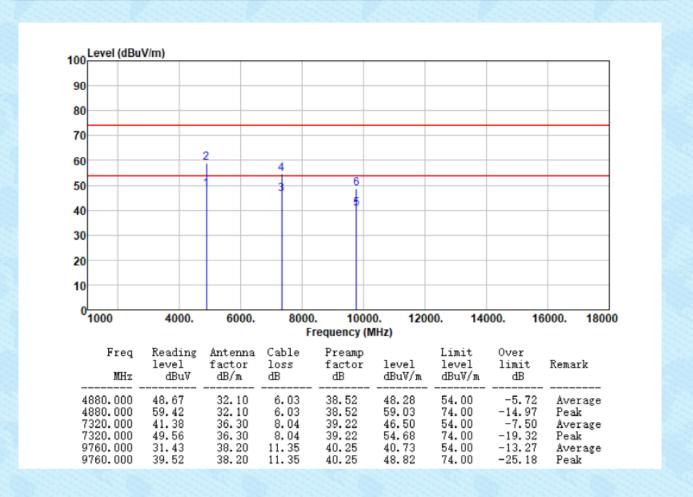


Test channel: Lowest Polarization: Vertical



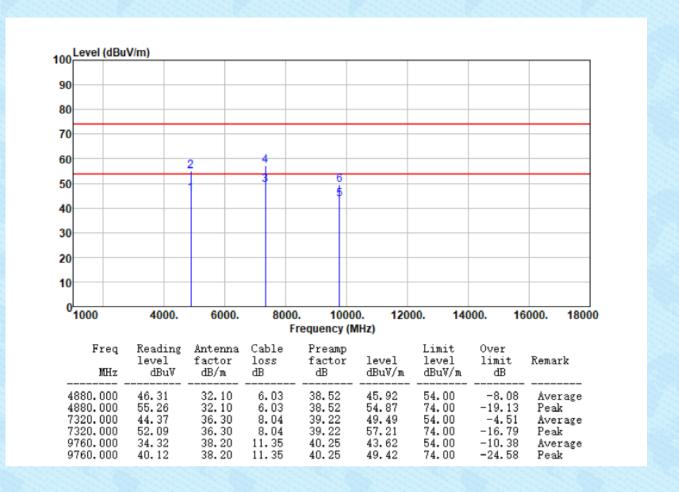


Test channel:	Middle	l Polarization:	Horizontal



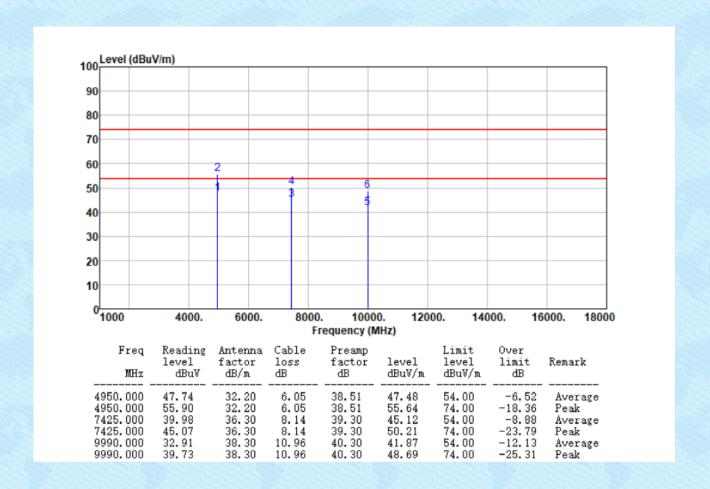


ş	Test channel:	Middle	Polarization:	Vertical

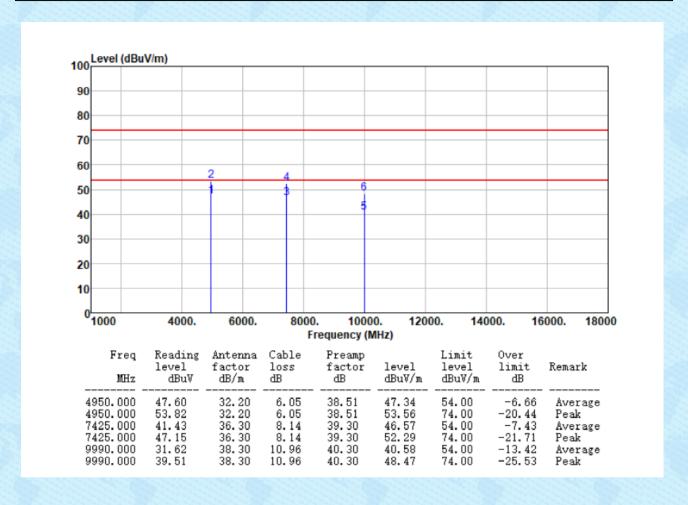




Test channel: Highest Polarization: Horizontal
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Remarks:

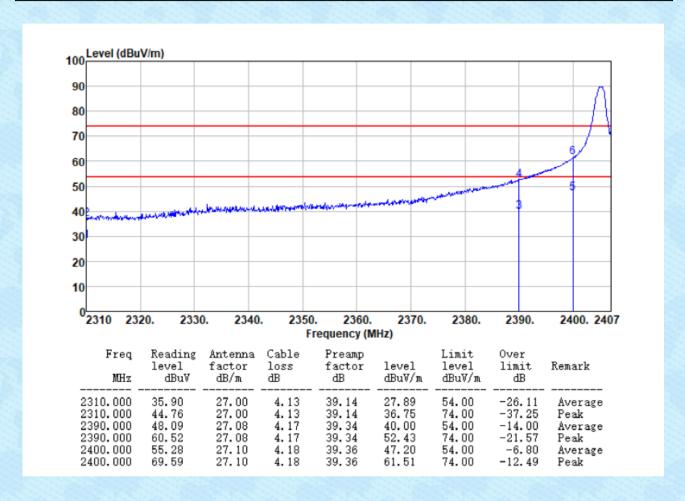
- 1. Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 3. For above 18GHz, no emission found.
- 4. If the average limit is met when using a Peak detector, the EUT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



7.2.3 Bandedge emissions

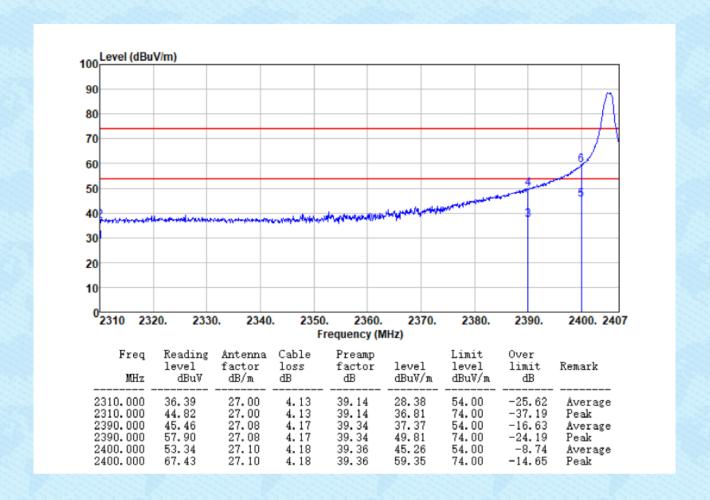
All of the restriction bands were tested, and only the data of worst case was exhibited.

Test channel: Lowest Polarization: Horizontal



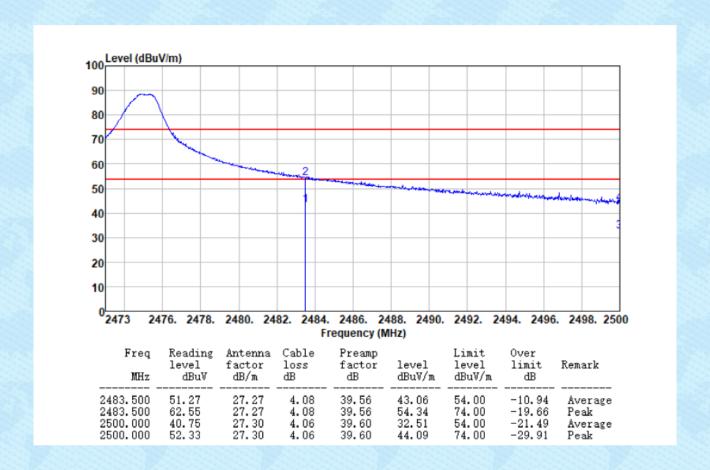


Test channel: Lowest Polarization: Vertical



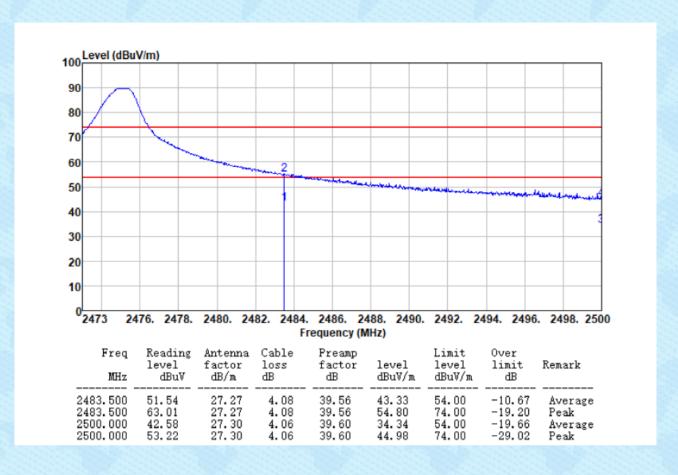


Test channel:	Highest	Polarization:	Horizontal	





ş	Test channel:	Highest	Polarization:	Vertical



Remark:

- 1. Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2. For above 18GHz, no emission found



7.3 20dB Occupy Bandwidth

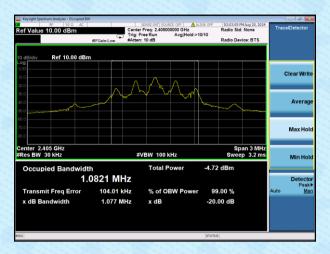
Test Requirement:	FCC Part15 C Section 15.249/15.215		
Test Method:	ANSI C63.10:2013		
Limit:	Operation Frequency range 2400MHz~2483.5MHz		
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane		
Test Instruments:	Refer to section 6.0 for details		
Test mode:	Refer to section 5.2 for details		
Test results:	Pass		

Measurement Data

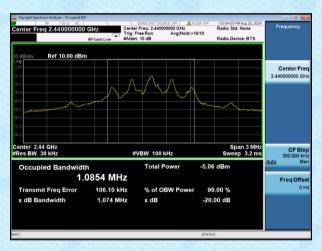
Test channel	20dB bandwidth(MHz)	Result
Lowest	1.077	Pass
Middle	1.074	Pass
Highest	1.079	Pass



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-----