

Global United Technology Services Co., Ltd.

Report No.: GTS2024070216F01

TEST REPORT

Shantou Meiyida Intelligent Technology Co., Ltd **Applicant:**

Address of Applicant: No.1, Chenghua Road, Xiajiao Shuiwei Industrial Zone,

Chenghua Street, Chenghai District, Shantou City, Guangdong

Province. China

Manufacturer: Shantou Meiyida Intelligent Technology Co., Ltd

Address of No.1, Chenghua Road, Xiajiao Shuiwei Industrial Zone,

Chenghua Street, Chenghai District, Shantou City, Guangdong Manufacturer:

Province, China

Equipment Under Test (EUT)

Product Name: REMOTE CONTROL AIRCRAFT TOY

Model No.: 9900-198

FCC ID: 2BEGJ-9900-198

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

Date of sample receipt: July 15, 2024

Date of Test: July 16-29, 2024

Date of report issued: July 29, 2024

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	July 29, 2024	Original

Prepared By:	Typomelly	Date:	July 29, 2024
	Project Engineer		
Check By:	Johnsong Lux	Date:	July 29, 2024
	Reviewer		



Contents

			Page
1	cov	ER PAGE	1
2	VER	RSION	2
3	COL	NTENTS	3
3	COI		
4	TES	ST SUMMARY	4
	4.1	MEASUREMENT UNCERTAINTY	4
5	GEN	NERAL INFORMATION	
	5.1	GENERAL DESCRIPTION OF EUT	
	5.1	TEST MODE	
	5.3	DESCRIPTION OF SUPPORT UNITS	
	5.4	DEVIATION FROM STANDARDS	
	5.5	ABNORMALITIES FROM STANDARD CONDITIONS	
	5.6	TEST FACILITY	
	5.7	TEST LOCATION	7
	5.8	ADDITIONAL INSTRUCTIONS	7
6	TES	ST INSTRUMENTS LIST	8
7	TES	ST RESULTS AND MEASUREMENT DATA	10
	7.1	ANTENNA REQUIREMENT	10
	7.2	RADIATED EMISSION METHOD	11
	7.2.		13
	7.2.		
	7.2.		
	7.3	20DB OCCUPY BANDWIDTH	26
8	TES	ST SETUP PHOTO	28
9	E117	T CONSTRUCTIONAL DETAILS	20
IJ	EUI	I CONSTRUCTIONAL DETAILS	20



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

m mode and one of tame,						
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 unce	ertainty is for coverage factor of k	=2 and a level of confidence of 9	95%.			



5 General Information

5.1 General Description of EUT

Product Name:	REMOTE CONTROL AIRCRAFT TOY
Model No.:	9900-198
Serial No.:	697628247008
Test sample(s) ID:	GTS2024070216-1
Sample(s) Status	Engineered sample
Operation Frequency:	2420MHz~2460MHz
Channel Numbers:	41
Modulation Type:	GFSK
Antenna Type:	Wire Antenna
Antenna gain:	0.17dBi(declare by applicant)
Power supply:	DC 4.5V(3*1.5V Size"AAA" 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	2420	12	2431	23	2442	34	2453
2	2421	13	2432	24	2443	35	2454
3	2422	14	2433	25	2444	36	2455
4	2423	15	2434	26	2445	37	2456
5	2424	16	2435	27	2446	38	2457
6	2425	17	2436	28	2447	39	2458
7	2426	18	2437	29	2448	40	2459
8	2427	19	2438	30	2449	41	2460
9	2428	20	2439	31	2450		
10	2429	21	2440	32	2451		
11	2430	22	2441	33	2452		

The test frequencies are below:

Channel	Frequency
The lowest channel	2420MHz
The middle channel	2440MHz
The Highest channel	2460MHz



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)	75.64	76.94	74.69

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



6 Test Instruments list

Radia	Radiated Emission:						
Item	Test Equipment	Test Equipment Manufacturer		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)	1	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		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 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	



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.

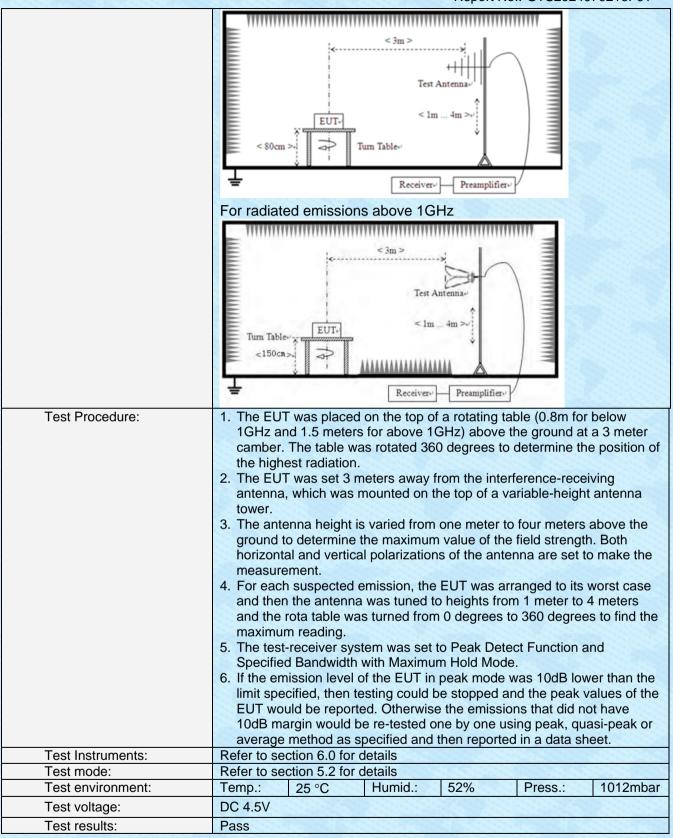
EUT Antenna:

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



7.2 Radiated Emission Method

1	.z Radiated Lillission We					
	Test Requirement:	FCC Part15 C S	Section 15.20)9		
	Test Method:	ANSI C63.10:20				
	Test Frequency Range:	9kHz to 25GHz				
	Test site:	Measurement D	Distance: 3m			
	Receiver setup:	Frequency	Detector	RBW	VBW	Remark
		9kHz- 150kHz	Quasi-pea	k 200Hz	300Hz	Quasi-peak Value
		150kHz- 30MHz	Quasi-pea	k 9kHz	10kHz	Quasi-peak Value
		30MHz- 1GHz	Quasi-pea	k 120KHz	300KHz	Quasi-peak Value
		Above 1GHz	Peak Peak	1MHz 1MHz	3MHz 10Hz	Peak Value Average Value
	Limit:	Frague				Remark
	(Field strength of the	Freque	ency	Limit (dBuV		
	fundamental signal)	2400MHz-24	483.5MHz	94.0		Average Value Peak Value
3	- · ·	_		114.0		
	Limit:	Freque		Limit (u		Remark
	(Spurious Emissions)	0.009MHz-0		2400/F(kHz)		Quasi-peak Value
3		0.490MHz-1		24000/F(kH		Quasi-peak Value
		1.705MHz-3		30 @3		Quasi-peak Value
		30MHz-8		100 @		Quasi-peak Value
		88MHz-2		150 @		Quasi-peak Value
		216MHz-9		200 @		Quasi-peak Value
		960MHz-	- IGHZ	500 @		Quasi-peak Value
		Above 1	IGHz	500 @ 5000 @		Average Value Peak Value
	Limit:	Emissions radio	atod outoido d			bands, except for
	(band edge)	harmonics, sha	II be attenuat to the genera	ed by at least al radiated emi	50 dB belov	w the level of the in Section 15.209,
	Test setup:	For radiated e	missions fro	m 9kHz to 30	OMHz	
		< 80cm >	EUT-	Receiver		
		For radiated e	missions fro	om Suivinz to	IGHZ	





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
2420.00	83.01	27.43	4.57	38.56	76.45	114.00	-37.55	Vertical
2420.00	80.30	27.43	4.57	38.56	73.74	114.00	-40.26	Horizontal
2440.00	83.40	27.55	4.56	38.57	76.94	114.00	-37.06	Vertical
2440.00	82.34	27.55	4.56	38.57	75.88	114.00	-38.12	Horizontal
2460.00	83.24	27.64	4.55	38.58	76.85	114.00	-37.15	Vertical
2460.00	82.12	27.64	4.55	38.58	75.73	114.00	-38.27	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
2420.00	71.69	27.43	4.57	38.56	65.13	94.00	-28.87	Vertical
2420.00	68.98	27.43	4.57	38.56	62.42	94.00	-31.58	Horizontal
2440.00	72.08	27.55	4.56	38.57	65.62	94.00	-28.38	Vertical
2440.00	71.02	27.55	4.56	38.57	64.56	94.00	-29.44	Horizontal
2460.00	71.92	27.64	4.55	38.58	65.53	94.00	-28.47	Vertical
2460.00	70.80	27.64	4.55	38.58	64.41	94.00	-29.59	Horizontal

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



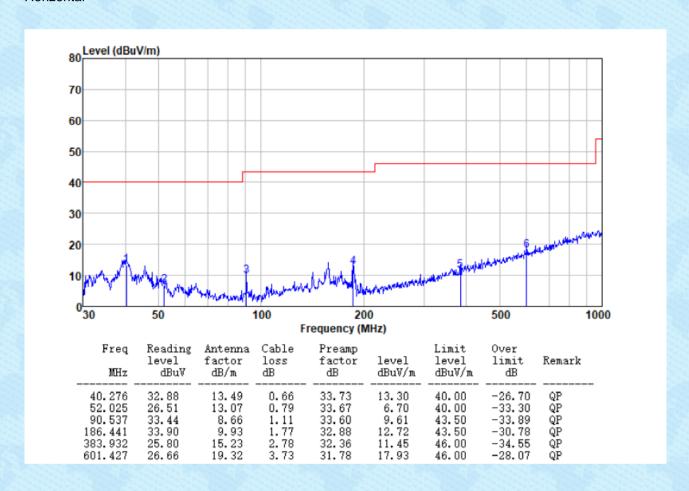
7.2.2 Spurious emissions

■ 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.

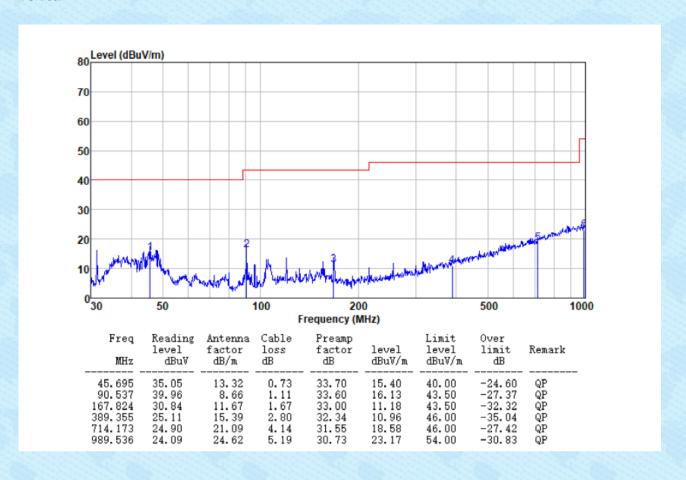
■ Below 1GHz

Pre-scan all test modes, found worst case at 2420MHz, and so only show the test result of it Horizontal





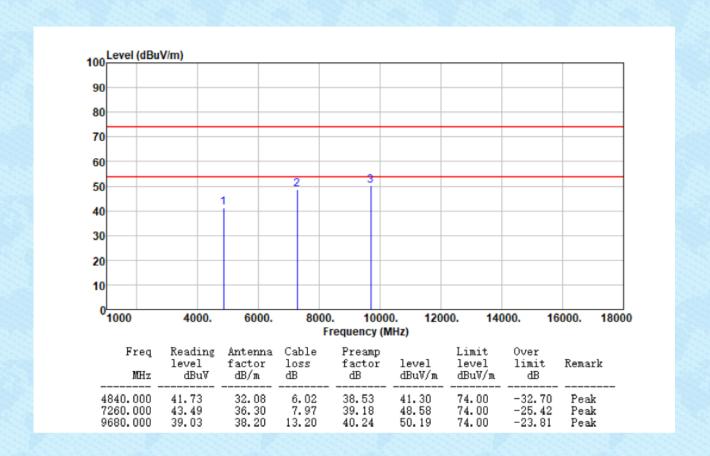
Vertical





■ Above 1GHz

Test channel:	Lowest	Polarization:	Horizontal
---------------	--------	---------------	------------



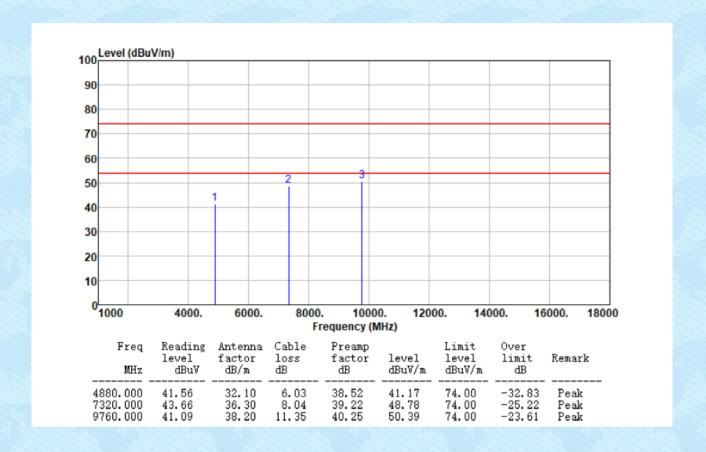


Lest channel: Lowest Polarization: Vertical



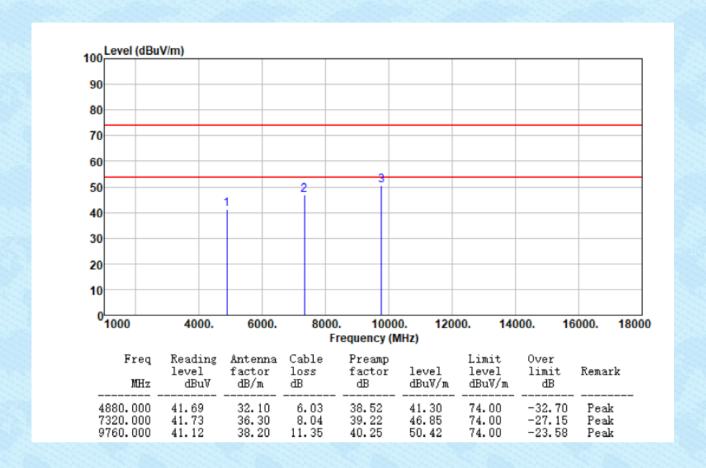


Test channel: Middle Polarization: Horizontal



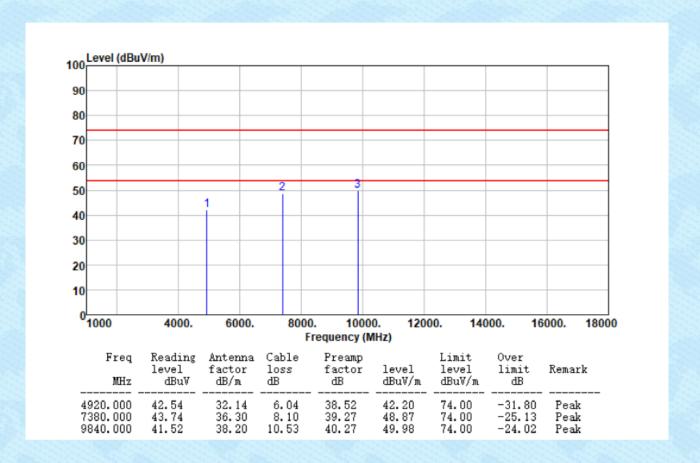
Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102 Telephone: +86 (0) 755 2779 8480 Fax: +86 (0) 755 2779 8960





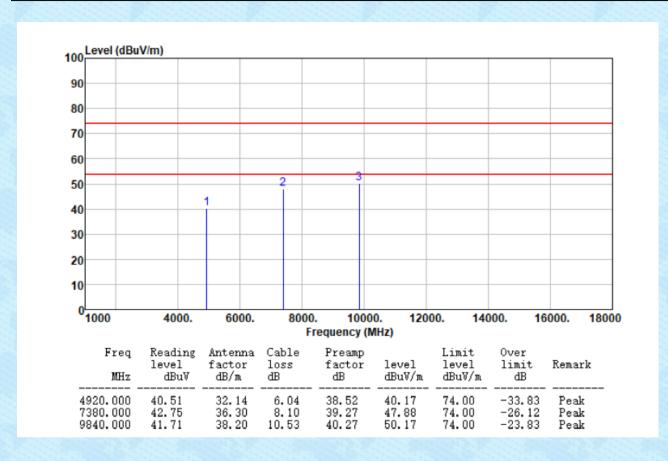


Test channel:	Highest	Polarization:	Horizontal	
---------------	---------	---------------	------------	--





Test channel: Highest	Polarization:	Vertical	
-----------------------	---------------	----------	--



Remarks:

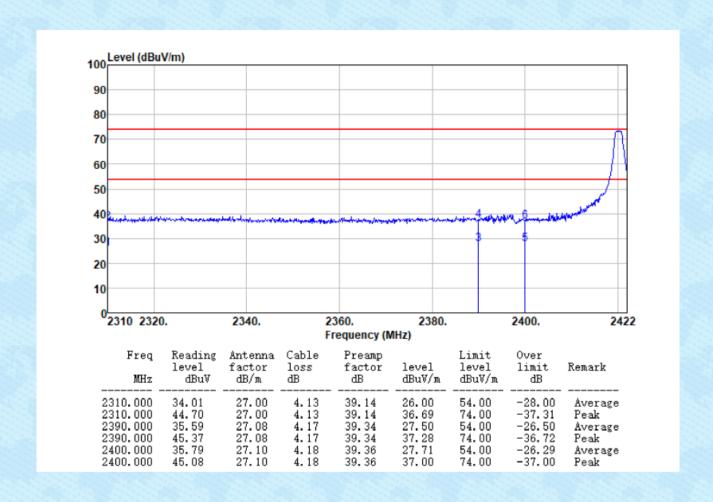
- 1. Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 3. For above 18GHz, no emission found.
- 4. If the average limit is met when using a Peak detector, the EUT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



7.2.3 Bandedge emissions

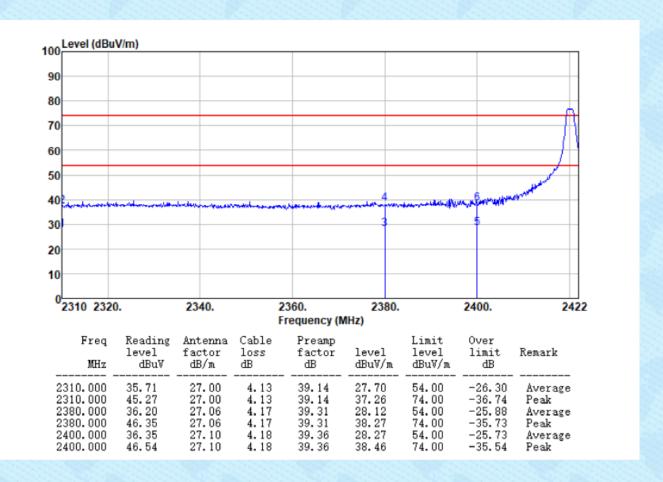
All of the restriction bands were tested, and only the data of worst case was exhibited.

Test channel: Lowest Polarization: Horizontal



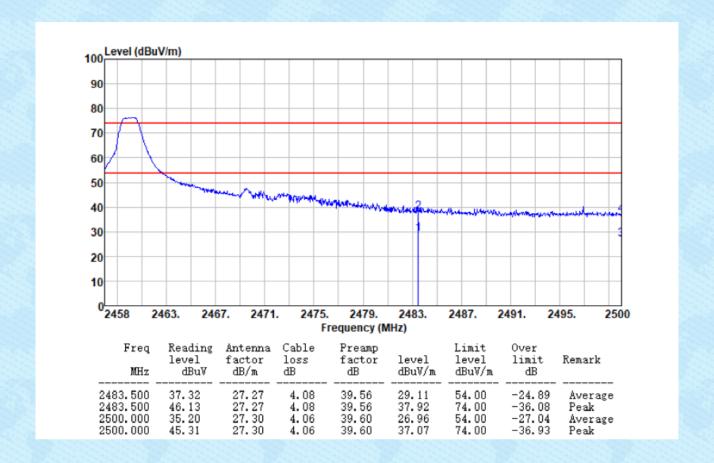


Test channel: Lowest Polarization: Vertical



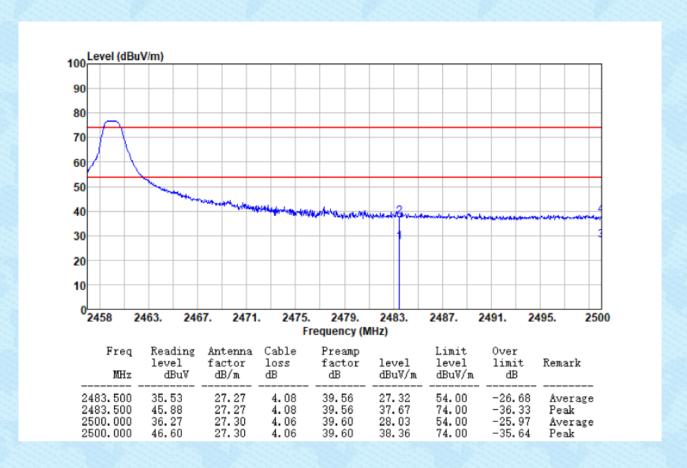


Test channel:	Highest	Polarization:	Horizontal
	9		





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 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	1.137	Pass
Middle	1.092	Pass
Highest	1.107	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-----