



# FCC Test Report

## Test Report

On Behalf of

**HELIWAY MODEL CO., LIMITED**

For

remote control car

Model No.: 1611, 1811, 1813, 1815, 1816, 1817, 1613, 1615, 1617, 1211, 1213, 1215, 1217, S3, S2, S7, 1810, EC10, 1601, 1603, 1609, 2023, 2423, 2624, 2625, 2626, F8B

**FCC ID: 2AZUH-1611**

**Prepared For:** **HELIWAY MODEL CO., LIMITED**  
**Shangxiang Industrial Park, ChengHai District, Shantou City, Guangdong, 515800, China**

**Prepared By:** **Shenzhen HUAK Testing Technology Co., Ltd.**  
**1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China**

**Date of Test:** **Jul. 09, 2025 ~ Jul. 15, 2025**

**Date of Report:** **Jul. 15, 2025**

**Report Number:** **HK2507093744-E**

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**\*\* Modified History \*\***

Revision	Description	Issued Data	Remark
Revision 1.0	Initial Test Report Release	Jul. 15, 2025	Jason Zhou
		HUAK TESTING	



## HUAK TESTING

## 1. Test Summary

## 1.1 Test Procedures and Results

DESCRIPTION OF TEST	SECTION NUMBER	RESULT
AC CONDUCTED EMISSIONS TEST	15.207	N/A
RADIATED EMISSION TEST	15.249(a)/15.209	COMPLIANT
BAND EDGE	15.249(d)/15.205	COMPLIANT
OCCUPIED BANDWIDTH MEASUREMENT	15.215(c)	COMPLIANT
ANTENNA REQUIREMENT	15.203	COMPLIANT

## 1.2 Information of the Test Laboratory

Shenzhen HUAK Testing Technology Co., Ltd.

Shenzhen Jinfeng Testing Technology Co., Ltd. JIANGSU TESTING  
Add.: 1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street,  
Bao'an District, Shenzhen, Guangdong, China

#### Testing Laboratory Authorization:

A2LA Accreditation Code is 4781.01.  
FCC Designation Number is CN1229.  
Canada IC CAB identifier is CN0045.  
CNAS Registration Number is L9589.

## 1.3 Measurement Uncertainty

Measurement Uncertainty		HUAK TESTING
Conducted Emission Expanded Uncertainty	=	2.71dB, k=2
Radiated emission expanded uncertainty(9kHz-30MHz)	=	3.90dB, k=2
Radiated emission expanded uncertainty(30MHz-1000MHz)	=	3.90dB, k=2
Radiated emission expanded uncertainty(Above 1GHz)	=	4.28dB, k=2



## HUAK TESTING

## 2. General Information

## 2.1 General Description of EUT

Equipment:	remote control car
Model Name:	1611
Series Model:	1811, 1813, 1815, 1816, 1817, 1613, 1615, 1617, 1211, 1213, 1215, 1217, S3, S2, S7, 1810, EC10, 1601, 1603, 1609, 2023, 2423, 2624, 2625, 2626, F8B
Model Difference:	All model's the function, software and electric circuit are the same, only with a product model named different. Test sample model: 1611.
FCC ID:	2AZUH-1611
Antenna Type:	Internal Antenna
Antenna Gain:	2.96dBi
Operation Frequency:	2449-2475MHz
Number of Channels:	27CH
Modulation Type:	GFSK
Power Source:	DC6V From Battery
Power Rating:	DC6V From Battery
<b>Note:</b>	
1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.	
2. Antenna gain Refer to the antenna specifications.	
3. The cable loss data is obtained from the supplier.	
4. The test results in the report only apply to the tested sample.	

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## 2.2 Carrier Frequency of Channels

Operation Frequency each of channel					
Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2449MHz	10	2458MHz	19	2467MHz
2	2450MHz	11	2459MHz	20	2468MHz
3	2451MHz	12	2460MHz	21	2469MHz
4	2452MHz	13	2461MHz	22	2470MHz
5	2453MHz	14	2462MHz	23	2471MHz
6	2454MHz	15	2463MHz	24	2472MHz
7	2455MHz	16	2464MHz	25	2473MHz
8	2456MHz	17	2465MHz	26	2474MHz
9	2457MHz	18	2466MHz	27	2475MHz

## 2.3 Operation of EUT during Testing

## Operating Mode

The mode is used: **Transmitting mode**

Low Channel: 2449MHz

Middle Channel: 2462MHz

High Channel: 2475MHz



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## 2.4 Description of Test Setup

Operation of EUT during radiation testing:



Operation of EUT during RF conducted testing:



The sample was placed (0.8m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages. The worst case is X position.



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## 2.5 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Trade Mark	Model/Type No.	Specification	Note
1	remote control car	N/A	1611	N/A	EUT

### Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
3. For conducted measurements (Output Power, 6dB Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.



## 2.5 Measurement Instruments List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N.	R&S	ENV216	HKE-002	2025/02/19	1 Year
2	L.I.S.N.	R&S	ENV216	HKE-059	2025/02/19	1 Year
3	EMI Test Receiver	R&S	ESR	HKE-005	2025/02/19	1 Year
4	Spectrum analyzer	Agilent	N9020A	HKE-025	2025/02/19	1 Year
5	Spectrum analyzer	Agilent	N9020A	HKE-117	2025/02/19	1 Year
6	Spectrum analyzer	R&S	FSV3044	HKE-126	2025/02/19	1 Year
7	Preamplifier	EMCI	EMC05184 5S	HKE-006	2025/02/19	1 Year
8	Preamplifier	Schwarzbeck	BBV 9743	HKE-016	2025/02/19	1 Year
9	Preamplifier	A.H. Systems	SAS-574	HKE-182	2025/02/19	1 Year
10	6dB Attenuator	Pasternack	6db	HKE-184	2025/02/19	1 Year
11	EMI Test Receiver	Rohde & Schwarz	ESR-7	HKE-010	2025/02/19	1 Year
12	Broadband Antenna	Schwarzbeck	VULB9168	HKE-167	2024/02/21	2 Year
13	Loop Antenna	COM-POWER	AL-130R	HKE-014	2024/02/21	2 Year
14	Horn Antenna	Schwarzbeck	9120D	HKE-013	2024/02/21	2 Year
15	EMI Test Software	Tonscend	JS32-CE 2.5.0.6	HKE-081	/	/
16	EMI Test Software	Tonscend	JS32-RE 5.0.0	HKE-082	/	/
17	RF Automatic control unit	Tonscend	JS0806-2	HKE-060	2025/02/19	1 Year
18	High pass filter unit	Tonscend	JS0806-F	HKE-055	2025/02/19	1 Year
19	Wireless Communication Test Set	R&S	CMU200	HKE-026	2025/02/19	1 Year
20	Wireless Communication Test Set	R&S	CMW500	HKE-027	2025/02/19	1 Year
21	High-low temperature chamber	Guangke	HT-80L	HKE-118	2025/06/09	1 Year
22	Temperature and humidity meter	Boyang	HTC-1	HKE-075	2025/06/09	1 Year
23	RF Test Software	Tonscend	JS1120-3 Version 3.5.39	HKE-083	/	/
24	10dB Attenuator	Schwarzbeck	VTSD9561F	HKE-153	2025/02/19	1 Year
25	RSE Test Software	Tonscend	JS36-RSE 5.0.0	HKE-184	/	/

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### 3.4 Test Result

Not applicable.

Note: EUT Power Supply by Battery Powered, so this test item not applicable.



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#### 4. Radiated Emission Test

## 4.1 Radiation Limit

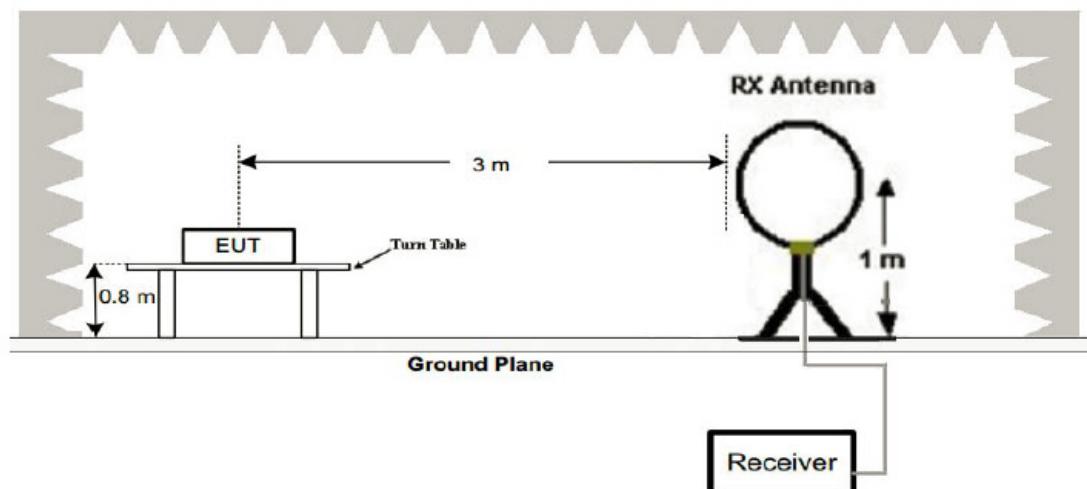
For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Distance (Meters)	Radiated (dB $\mu$ V/m)	Radiated ( $\mu$ V/m)
0.009-0.490	300	20log 2400/F (kHz)	2400/F (kHz)
0.490-1.705	30	20log 24000/F (kHz)	24000/F (kHz)
1.705-30	30	20log 30	30
30-88	3	40	100
88-216	3	43.5	150
216-960	3	46	200
Above 960	3	54	500

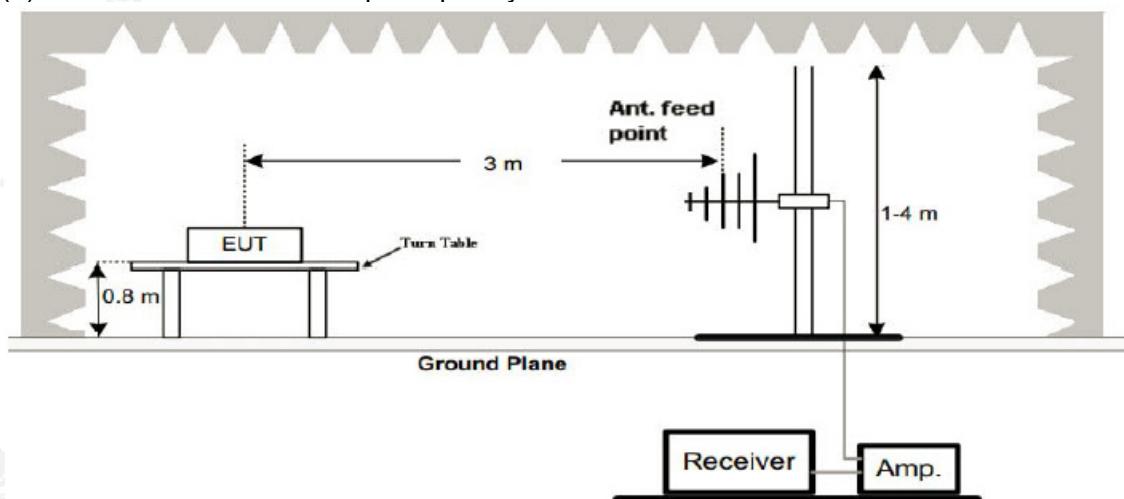
For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

## 4.2 Test Setup

### (1) Radiated Emission Test-Up Frequency Below 30MHz



## (2) Radiated Emission Test-Up Frequency 30MHz~1GHz



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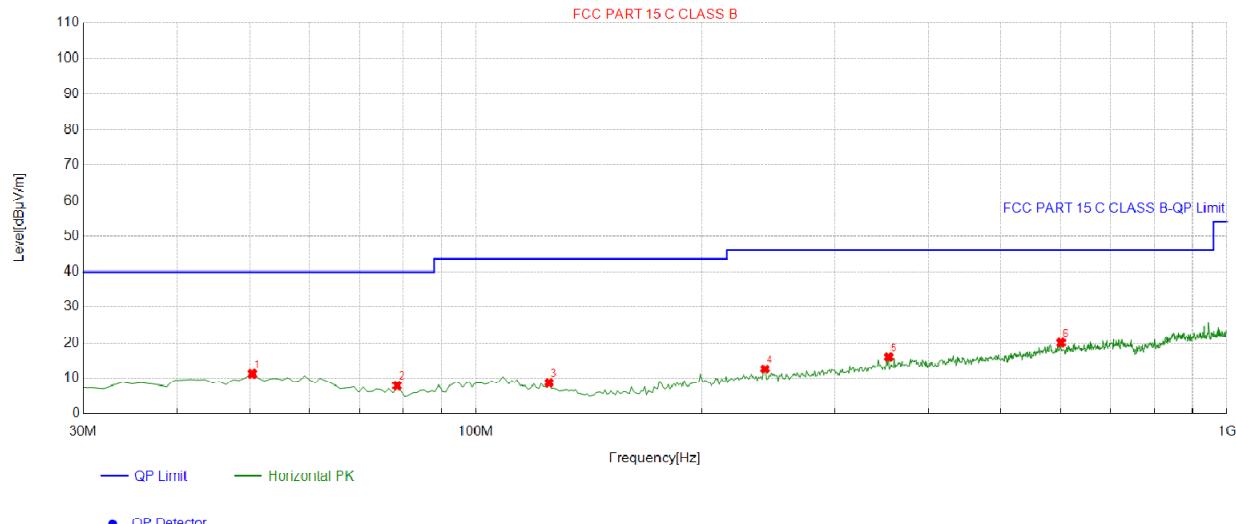
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Below 1GHz Test Results:

Antenna polarity: H

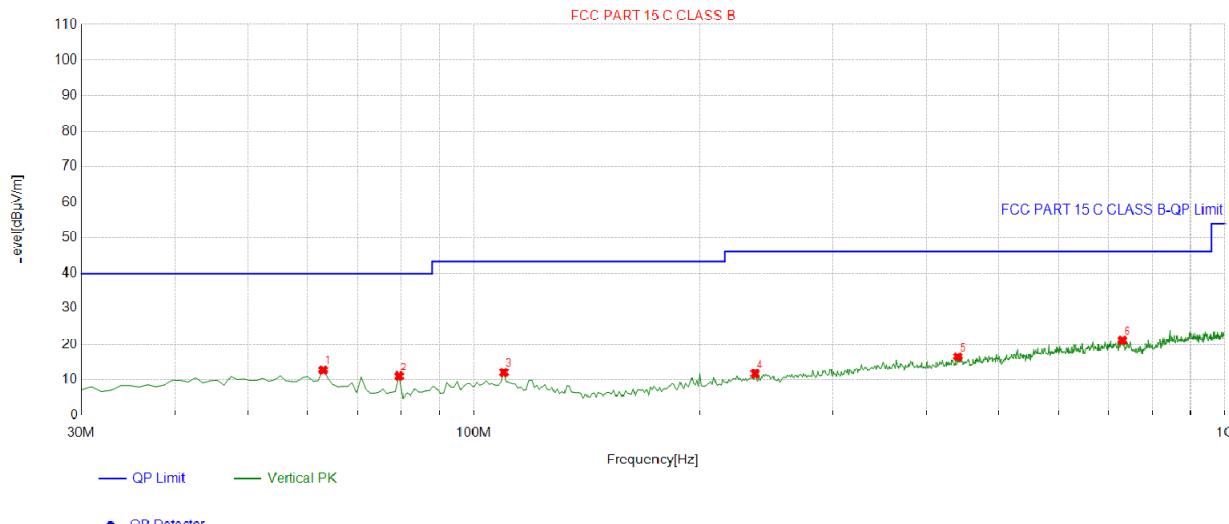


Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	50.3904	-13.15	24.35	11.20	40.00	28.80	100	66	Horizontal
2	78.5485	-17.92	25.78	7.86	40.00	32.14	100	91	Horizontal
3	125.1552	-16.61	25.30	8.69	43.50	34.81	100	288	Horizontal
4	242.6426	-13.42	26.00	12.58	46.00	33.42	100	106	Horizontal
5	354.3043	-10.22	26.19	15.97	46.00	30.03	100	235	Horizontal
6	600.9309	-5.28	25.36	20.08	46.00	25.92	100	44	Horizontal

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level;



Antenna polarity: V



Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dB $\mu$ V/m]	Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	63.0130	-14.48	27.22	12.74	40.00	27.26	100	337	Vertical
2	79.5195	-18.01	28.97	10.96	40.00	29.04	100	212	Vertical
3	109.6196	-14.22	26.25	12.03	43.50	31.47	100	237	Vertical
4	236.8168	-13.80	25.46	11.66	46.00	34.34	100	52	Vertical
5	440.7207	-8.67	25.21	16.54	46.00	29.46	100	3	Vertical
6	730.0701	-3.46	24.59	21.13	46.00	24.87	100	308	Vertical

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level;

## Harmonics and Spurious Emissions

### Frequency Range (9 kHz-30MHz)

Frequency (MHz)	Level@3m (dB $\mu$ V/m)	Limit@3m (dB $\mu$ V/m)
--	--	--
--	--	--
--	--	--
--	--	--

**Note:** 1. Emission Level=Reading+ Cable loss+ Antenna factor-Amp factor.

2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement.



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Above 1 GHz Test Results:

CH Low (2449MHz)

Horizontal:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
2449	100.35	-5.84	94.51	114	19.49	peak
2449	84.07	-5.84	78.23	94	15.77	AVG
4898	49.9	-3.64	46.26	74	27.74	peak
4898	36.45	-3.64	32.81	54	21.19	AVG
7347	50.26	-0.95	49.31	74	24.69	peak
7347	37.68	-0.95	36.73	54	17.27	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor;  
Margin = Limit-Level.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
2449	101.14	-5.84	95.3	114	18.7	peak
2449	80.29	-5.84	74.45	94	19.55	AVG
4898	50.98	-3.64	47.34	74	26.66	peak
4898	38.75	-3.64	35.11	54	18.89	AVG
7347	46.35	-0.95	45.4	74	28.6	peak
7347	37.65	-0.95	36.7	54	17.3	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor;  
Margin = Limit-Level.

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**CH Middle (2462MHz)****Horizontal:**

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
2462	104.91	-5.71	99.2	114	14.8	
2462	73.21	-5.71	67.5	94	26.5	AVG
4924	46.02	-3.51	42.51	74	31.49	peak
4924	41.35	-3.51	37.84	54	16.16	AVG
7386	47.78	-0.82	46.96	74	27.04	peak
7386	41.37	-0.82	40.55	54	13.45	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor;  
Margin = Limit-Level.

**Vertical:**

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
2462	101.46	-5.71	95.75	114	18.25	
2462	77.04	-5.71	71.33	94	22.67	AVG
4924	54.48	-3.51	50.97	74	23.03	peak
4924	42.41	-3.51	38.9	54	15.1	AVG
7386	49.94	-0.82	49.12	74	24.88	peak
7386	39.21	-0.82	38.39	54	15.61	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor;  
Margin = Limit-Level.

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CH High (2475MHz)

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB $\mu$ V)	(dB)	(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB)	
2475	102.89	-5.65	97.24	114	16.76	peak
2475	78.11	-5.65	72.46	94	21.54	AVG
4950	51.01	-3.43	47.58	74	26.42	peak
4950	41.23	-3.43	37.8	54	16.2	AVG
7425	49.27	-0.75	48.52	74	25.48	peak
7425	38.20	-0.75	37.45	54	16.55	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB $\mu$ V)	(dB)	(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB)	
2475	103.64	-5.65	97.99	114	16.01	peak
2475	78.51	-5.65	72.86	94	21.14	AVG
4950	50.52	-3.43	47.09	74	26.91	peak
4950	43.52	-3.43	40.09	54	13.91	AVG
7425	46.6	-0.75	45.85	74	28.15	peak
7425	36.79	-0.75	36.04	54	17.96	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Remark :

- (1) Measuring frequencies from 1 GHz to the 25 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency; "E" denotes band edge frequency.
- (3) \* denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) The emissions are attenuated more than 20dB below the permissible limits are not record in the report.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dB $\mu$ V/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dB $\mu$ V/m(PK Value) <54 dB $\mu$ V/m(AV Limit), the Average Detected not need to completed.
- (7) All modes of operation were investigated and the worst-case emissions are reported.

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## 5. Band Edge

### 5.1 Limits

FCC PART 15.249(d) 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 §15.209, whichever is the lesser attenuation.

### 5.2 Test Procedure

The band edge compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW to 1MHz and VBM to 3MHz to measure the peak field strength and set RBW to 1MHz and VBW to 10Hz to measure the average radiated field strength. The conducted RF band edge was measured by using a spectrum analyzer. Set span wide enough to capture the highest in-band emission and the emission at the band edge. Set RBW to 1MHz and VBW to 3MHz, to measure the conducted peak band edge.



## HUAK TESTING

### 5.3 Test Result

PASS

### Radiated Band Edge Test:

Operation Mode: TX CH Low (2449MHz)

### Horizontal (Worst case):

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB $\mu$ V)	(dB)	(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB)	
2310	52.17	-5.81	46.36	74	27.64	peak
2310	/	-5.81	/	54	/	AVG
2390	51.89	-5.84	46.05	74	27.95	peak
2390	/	-5.84	/	54	/	AVG
2400	49.43	-5.84	43.59	74	30.41	peak
2400	/	-5.84	/	54	/	AVG

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB $\mu$ V)	(dB)	(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB)	
2310	56.39	-5.81	50.58	74	23.42	peak
2310	/	-5.81	/	54	/	AVG
2390	50.96	-5.84	45.12	74	28.88	peak
2390	/	-5.84	/	54	/	AVG
2400	51.23	-5.84	45.39	74	28.61	peak
2400	/	-5.84	/	54	/	AVG

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Operation Mode: TX CH High (2475MHz)

## Horizontal (Worst case):

Frequency (MHz)	Reading Result (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
2483.50	56.02	-5.65	50.37	74	23.63	peak
2483.50	/	-5.65	/	54	/	AVG
2500.00	52.76	-5.65	47.11	74	26.89	peak
2500.00	/	-5.65	/	54	/	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

### Vertical:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB $\mu$ V)	(dB)	(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB)	
2483.50	50.56	-5.65	44.91	74	29.09	peak
2483.50	/	-5.65	/	54	/	AVG
2500.00	48.06	-5.65	42.41	74	31.59	peak
2500.00	/	-5.65	/	54	/	AVG

### Remark:

1. If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.
2. In restricted bands of operation, the spurious emissions below the permissible value more than 20dB.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

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## 6. Occupied Bandwidth Measurement

## 6.1 Test Setup

Same as Radiated Emission Measurement

## 6.2 Test Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.  
2. Set EUT as normal operation.  
3. Based on ANSI C63.10 section 6.9.2: RBW= 20KHz. VBW= 62KHz, Span= 3MHz.  
4. The useful radiated emission from the EUT was detected by the spectrum analyzer with peak detector.

### 6.3 Measurement Equipment Used

Same as Radiated Emission Measurement

## 6.4 Test Result

**PASS**

Frequency	20dB Bandwidth (MHz)	Result
2449MHz	1.215	<b>PASS</b>
2462MHz	1.213	<b>PASS</b>
2475MHz	1.145	<b>PASS</b>

CH: 2449MHz



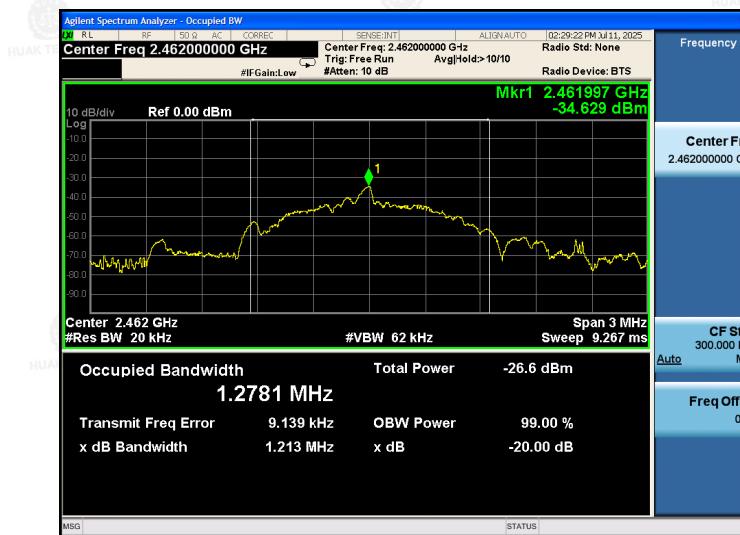
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CH: 2462MHz



CH: 2475MHz







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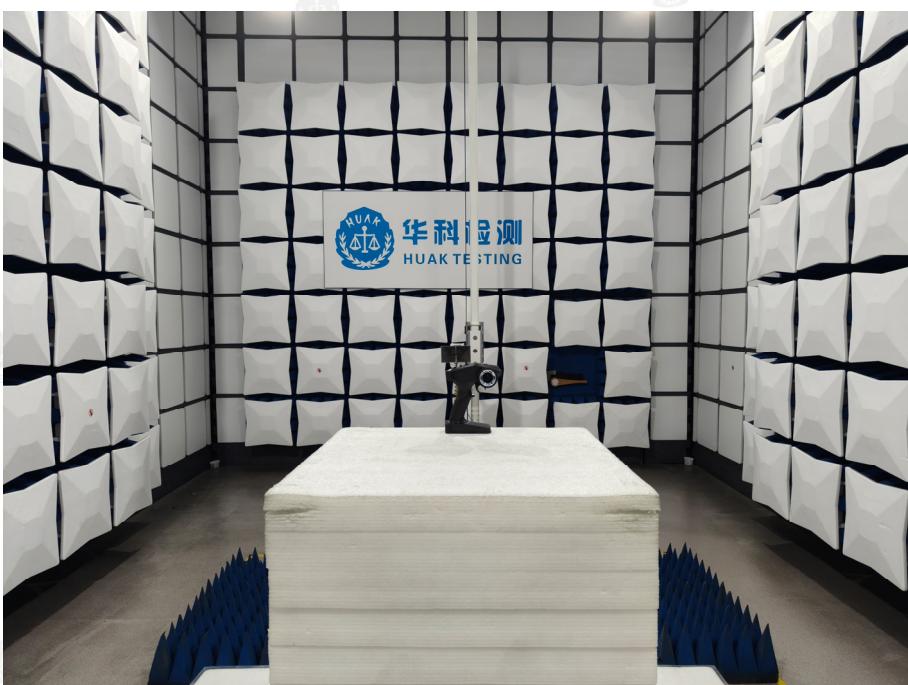
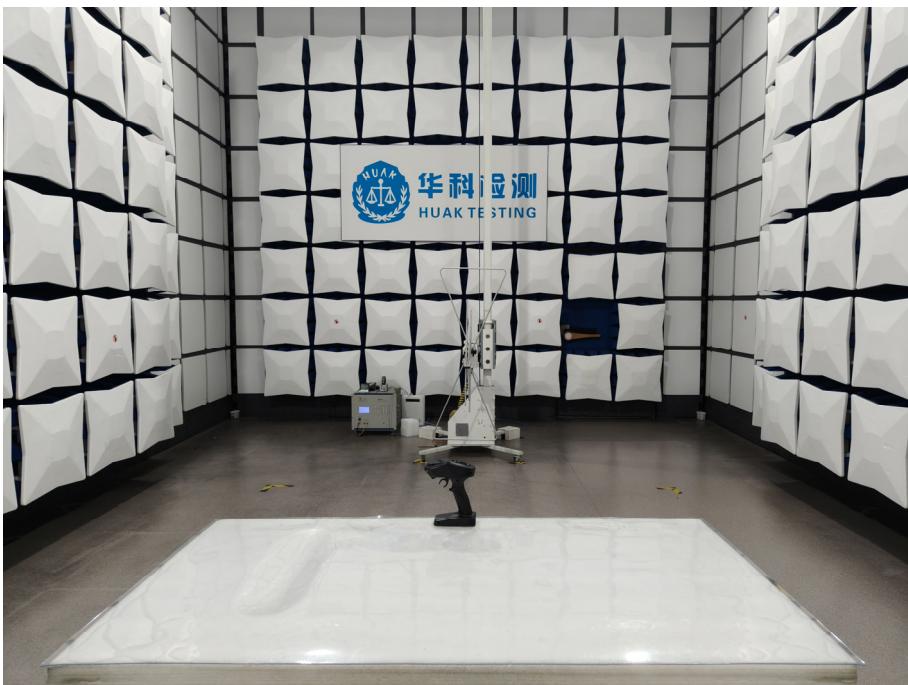
The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.

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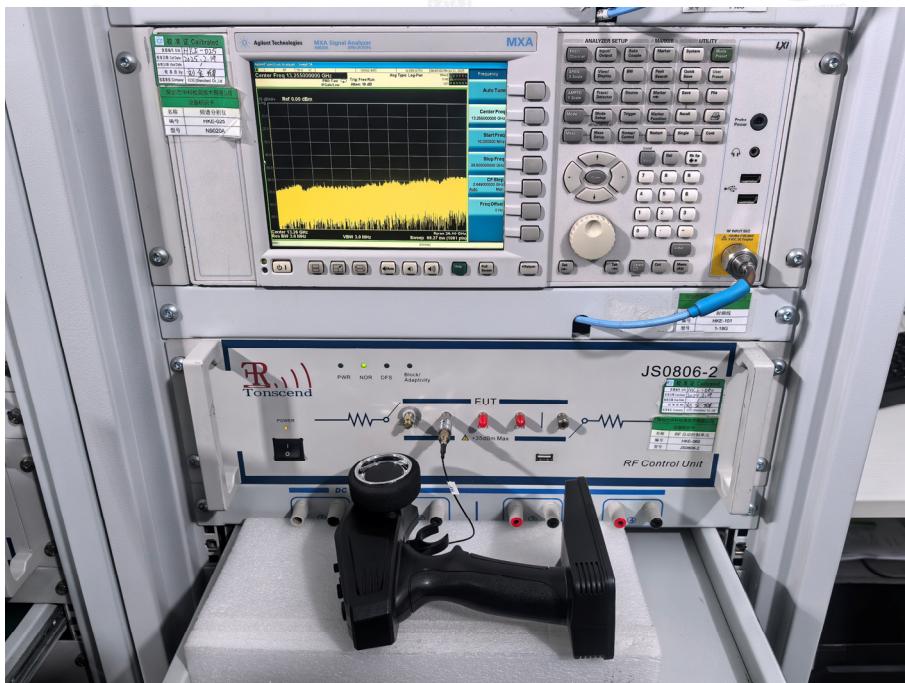
Add.: 1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

## 8. Photographs of Test

Radiated Emission



## RF Conducted Emission



## 9. Photos of the EUT

Reference to the report: ANNEX A of external photos and ANNEX B of internal photos.

-----End of test report-----