

TEST REPORT

FCC ID:2BDPK-ER02

Report No..... : ZHT-231120028E

Product..... : EMF METER

Trademark..... : /

Model(s)..... : ER02
RT-100, EMF01

Model Difference..... : Only the model name and Appearance color are different.

Applicant..... : Shenzhenshi Wenlaibo Keji Youxiangongsi

Address..... : No. 41 201 District 3, Nandong, Huangpu Community, Xinqiao Street,
Baoan District, Shenzhen City

Manufacturer..... : Shenzhenshi Wenlaibo Keji Youxiangongsi

Address..... : No. 41 201 District 3, Nandong, Huangpu Community, Xinqiao Street,
Baoan District, Shenzhen City

Prepared by..... : Guangdong Zhonghan Testing Technology Co., Ltd.

Address..... : Room 104, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai
Street, Bao'an District, Shenzhen, Guangdong, China

Date of Receipt..... : Nov. 20, 2023

Date of Test(s)..... : Nov. 20, 2023 - Nov. 28, 2023

Date of Issue..... : Nov. 28, 2023

Test Standard(s)..... : 47CFR Part 15 Subpart B
ANSI C63.4:2014

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

Tested by:

Reviewed by:

Approved by:

Kimi Lu

Kimi Lu/ Engineer

Baret Wu

Baret Wu/ Director

Levi Lee

Levi Lee/ Manager

Note: The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report shall not be reproduced except in full, without prior written approval of ZHT. This document may be altered or revised by ZHT, personnel only, and shall be noted in the revision of the document.

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1. Revision History

Report No.	Issue Date	Description	Approved
ZHT-231120028E	Nov. 28, 2023	Original	Valid

2. Test Summary

Emission			
Requirement - Test	Test Method	Limit	Result
Conducted Emission	47CFR Part 15 Subpart B ANSI C63.4:2014	Class B	PASS
Radiated Emission	47CFR Part 15 Subpart B ANSI C63.4:2014	Class B	PASS

Remark: N/A is abbreviation for Not Applicable.

3. General Information

3.1. Description of EUT

Product	EMF METER
Model Name	ER02
Rated Power Supply	Input: DC 5 V, Battery 3.7 V
Normal Testing Voltage	AC 120 V/ 60 Hz, DC 3.7V
DC Line	Shorter than 3m
I/O Ports	Refer to User Manual
Highest Frequency Generated	Above 108 MHz

Power Adapter

Product:	/
Model Name:	/
Rated Power Supply:	/
Normal Testing Voltage:	/
DC Line	/
I/O Ports	/

Note:

1) Other Accessory Device List and Details

Description	Manufacturer	Model	Note
AC Adapter	HUAWEI	HW-200500C00	AE
/	/	/	/

2) The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



3.2. Block diagram of EUT configuration

Mode 1



Mode 2



3.3. Test Mode

Pretest mode	Mode 1: Charging mode Mode 2: Working mode		
Final Test mode	Conducted Emission		Mode 1
	Radiated Emission	Below 1 GHz	Mode 2
		Above 1 GHz	Mode 2

* Only the final test mode is shown in the report

3.4. Test Site Environment

Test Item	Required (IEC 60068-1)		Actual
Conducted Emission	Temperature (°C)	15-35	23.6
	Humidity (%RH)	25-75	53.8
	Barometric pressure (mbar)	860-1060	1014
Radiated Emission	Temperature (°C)	15-35	24.0
	Humidity (%RH)	25-75	54
	Barometric pressure (mbar)	860-1060	1014

4. Facilities

4.1. Test Facility

Test site 1: Guangdong Zhonghan Testing Technology Co., Ltd.

Room 104, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

4.2. Test Instruments

Conducted Emissions Test

Equipment	Manufacturer	Model	Last Cal.	Next Cal.
Receiver	R&S	ESCI	May 12, 2023	May 11, 2024
LISN	R&S	ENV216	May 12, 2023	May 11, 2024
ISN CAT 6	Schwarzbeck	NTFM 8158	May 12, 2023	May 11, 2024
ISN CAT 5	Schwarzbeck	CAT5 8158	May 12, 2023	May 11, 2024
Capacitive Voltage Probe	Schwarzbeck	CVP 9222 C	May 12, 2023	May 11, 2024
Current Transformer Clamp	Schwarzbeck	SW 9605	May 12, 2023	May 11, 2024
CE Shielding Room	EMToni	9m4m3m	Nov. 25, 2021	Nov. 24, 2024

Radiated emissions Test (966 chamber)

Equipment	Manufacturer	Model	Last Cal.	Next Cal.
Receiver	R&S	ESCI	May 12, 2023	May 11, 2023
Amplifier	Schwarzbeck	BBV 9743 B	May 12, 2023	May 11, 2023
Amplifier	Schwarzbeck	BBV 9718 B	May 12, 2023	May 11, 2023
Bilog Antenna	Schwarzbeck	VULB9162	May 17, 2023	May 16, 2023
Horn Antenna	Schwarzbeck	BBHA9120D	May 17, 2023	May 16, 2023

4.3. Testing software

Project	Software name	Edition
Conducted Emission	EZ-EMC	EMC-CON 3A1.1+
Radiated Emission	EZ-EMC	FA-03A2 RE+



4.4. Measurement uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

Test item	Value (dB)
Conducted Emission (150kHz-30MHz)	2.60
Radiated Emission(30MHz~1GHz)	4.60
Radiated Emission(1GHz~18GHz)	4.30

Decision Rule

- ☒ Uncertainty is not included
☐ Uncertainty is included

5. Emission

5.1. Conducted Emission

5.1.1. Limit

For Class B devices:

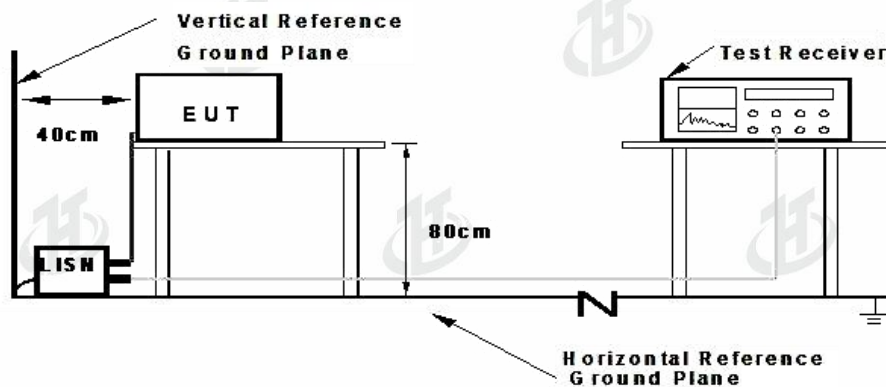
Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

For Class A devices:

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	79	66
0.5-30	73	60

5.1.2. Test setup



**Note: 1. Support units were connected to second LISH.
2. Both of LISHs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes**

The setup of EUT is according with ANSI C63.4 measurement procedure. Specification used with 47CFR Part 15 Subpart B limits.



5.1.3. Test procedure

Measurement was performed in shielded room, and instruments used were followed clause 4 of ANSI C63.4.

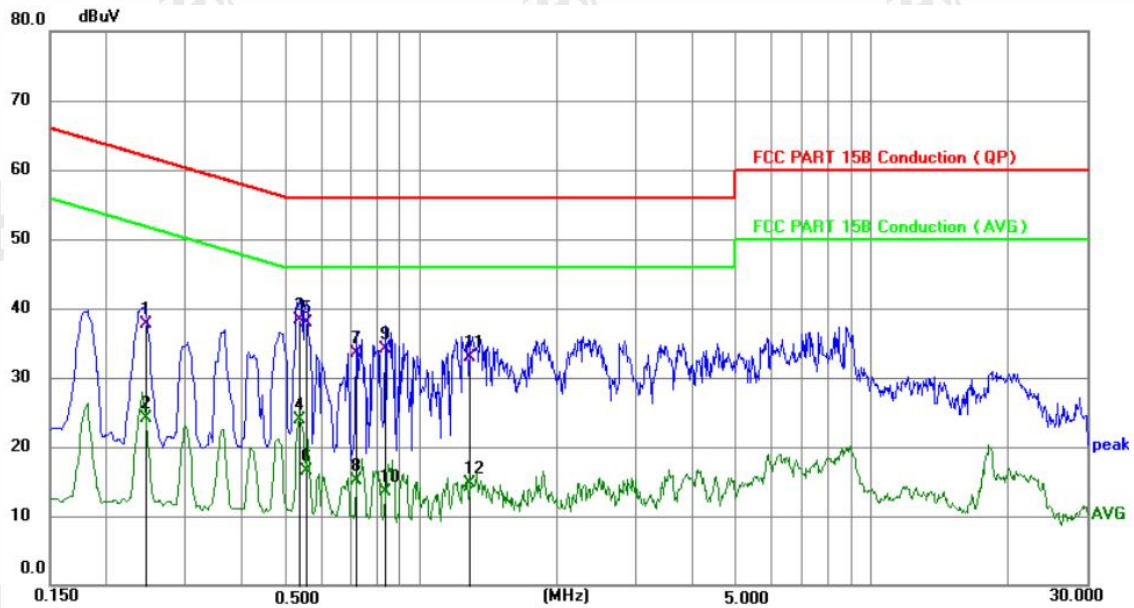
Detailed test procedure was following clause 7 of ANSI C63.4.

Frequency range 150kHz – 30MHz was checked and EMI receiver measurement bandwidth was set to 9 kHz.

5.1.4. Test results

PASS

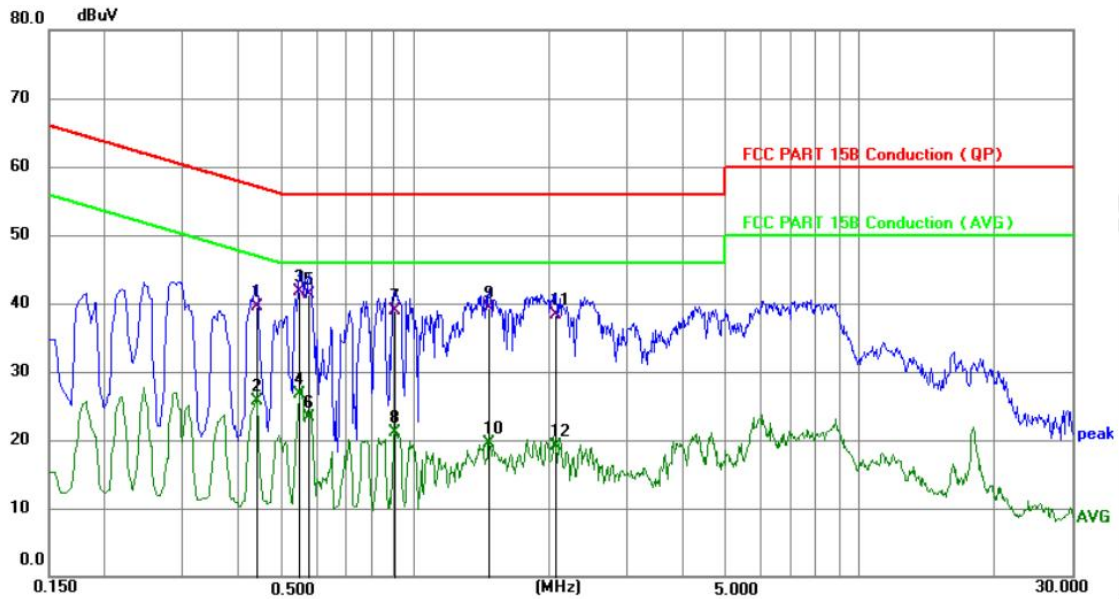
Please refer to pages 11 - 12 for data.



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.2445	27.87	9.93	37.80	61.94	-24.14	QP	P
2	0.2445	14.24	9.93	24.17	51.94	-27.77	AVG	P
3 *	0.5370	28.38	10.02	38.40	56.00	-17.60	QP	P
4	0.5370	13.88	10.02	23.90	46.00	-22.10	AVG	P
5	0.5550	27.96	10.02	37.98	56.00	-18.02	QP	P
6	0.5550	6.41	10.02	16.43	46.00	-29.57	AVG	P
7	0.7170	23.51	10.04	33.55	56.00	-22.45	QP	P
8	0.7170	5.15	10.04	15.19	46.00	-30.81	AVG	P
9	0.8340	24.09	10.05	34.14	56.00	-21.86	QP	P
10	0.8340	3.42	10.05	13.47	46.00	-32.53	AVG	P
11	1.2885	22.86	10.06	32.92	56.00	-23.08	QP	P
12	1.2885	4.62	10.06	14.68	46.00	-31.32	AVG	P



Phase: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.4380	29.59	10.00	39.59	57.10	-17.51	QP	P
2	0.4380	15.76	10.00	25.76	47.10	-21.34	AVG	P
3 *	0.5460	31.74	10.02	41.76	56.00	-14.24	QP	P
4	0.5460	16.74	10.02	26.76	46.00	-19.24	AVG	P
5	0.5775	31.27	10.03	41.30	56.00	-14.70	QP	P
6	0.5775	13.26	10.03	23.29	46.00	-22.71	AVG	P
7	0.9014	28.83	10.05	38.88	56.00	-17.12	QP	P
8	0.9014	10.99	10.05	21.04	46.00	-24.96	AVG	P
9	1.4683	29.23	10.07	39.30	56.00	-16.70	QP	P
10	1.4683	9.50	10.07	19.57	46.00	-26.43	AVG	P
11	2.0670	28.33	10.07	38.40	56.00	-17.60	QP	P
12	2.0670	9.11	10.07	19.18	46.00	-26.82	AVG	P

Note: Level=Reading + Factor

Margin=Level – Limit



5.2. Radiated emissions

5.2.1. Limit

For Class B devices (at 3m):

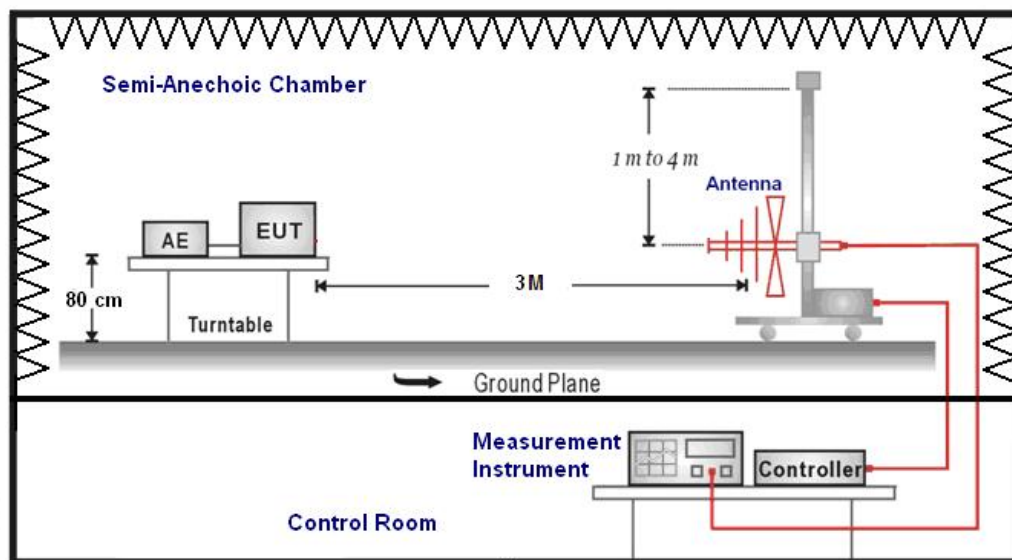
Frequency of emission (MHz)	(microvolts/meter)	(dB μ V/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

For Class A devices (at 10m):

Frequency of emission (MHz)	(microvolts/meter)	(dB μ V/m)
30-88	90	39
88-216	150	43.5
216-960	210	46.4
Above 960	300	49.5

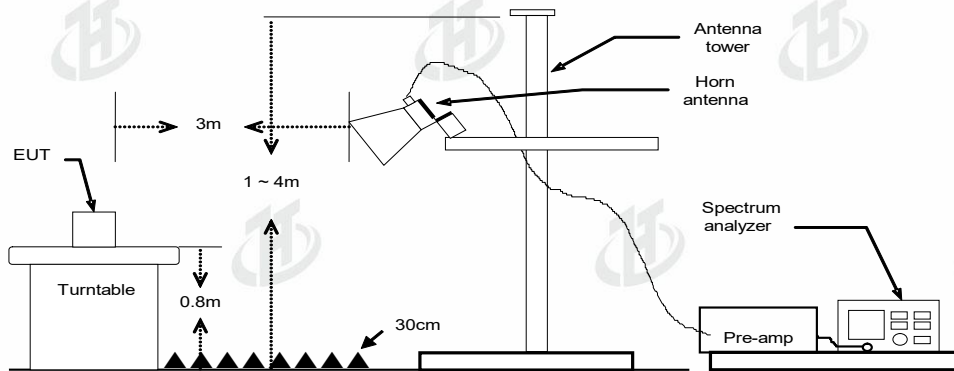
5.2.2. Test setup

Radiated Emission Test Set-Up Frequency Below 1 GHz





Radiated Emission Test Set-Up Frequency Above 1GHz



The radiated tests were performed in semi-anechoic(3m) test site, using the setup accordance with the ANSI C63.4:2014.

5.2.3. EMI Test Receiver Setup and Spectrum Analyzer Setup

During the radiated emission test, the EMI test receiver and Spectrum Analyzer were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz-1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	PK
	1 MHz	3 MHz	/	AVG

5.2.4. Test procedure

The measurement was performed in a 3m semi-anechoic chamber, and instruments used were followed clause 4 of ANSI C63.4.

Detailed test procedure was following clause 8 of ANSI C63.4.

Note: for the measurement distance other than 3m and 10m, the limit is varied according to 20dB/10 decades.

5.2.5. Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Limit - Corrected Amplitude

5.2.6. Test results

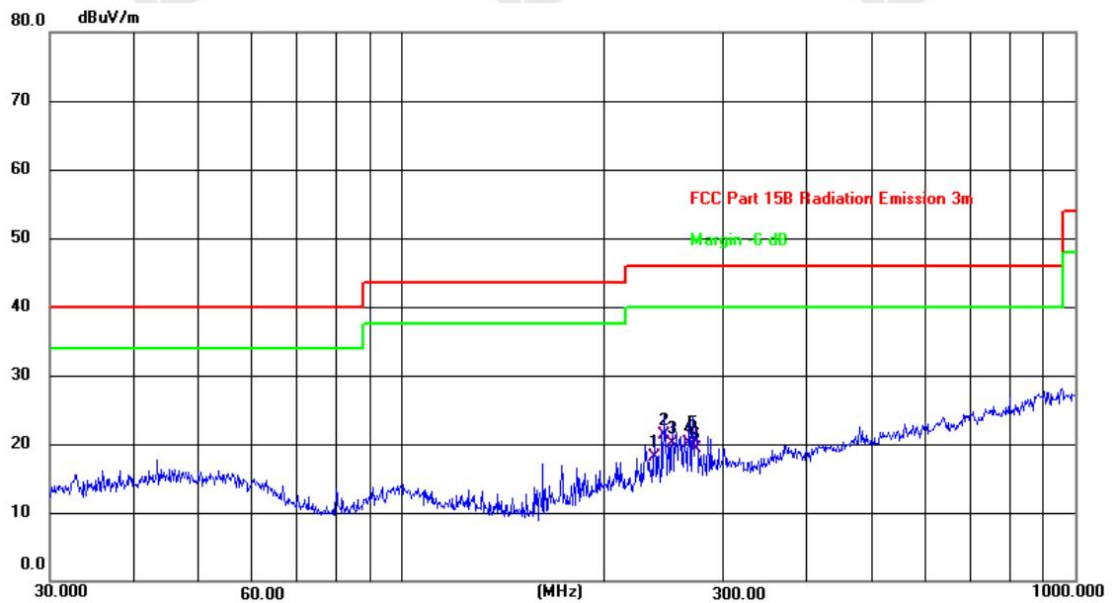
PASS

Please refer to pages 15 - 16 for data.



30 MHz-1000 MHz

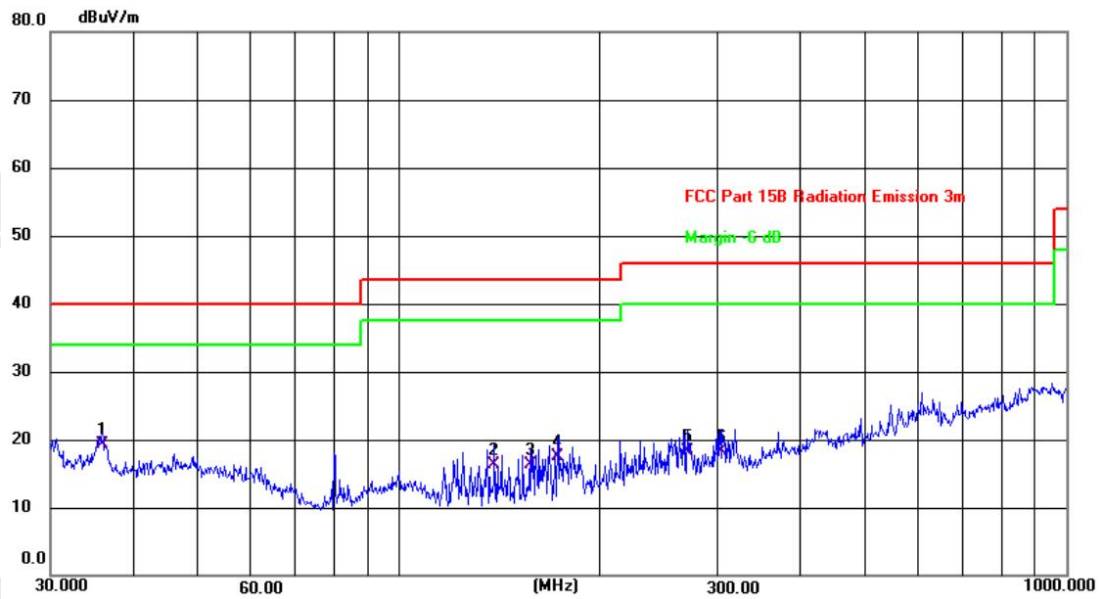
Polarization: Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	237.4760	27.72	-9.52	18.20	46.00	-27.80	QP
2 *	245.0900	30.63	-9.24	21.39	46.00	-24.61	QP
3	252.0627	29.16	-9.02	20.14	46.00	-25.86	QP
4	266.6090	28.87	-8.72	20.15	46.00	-25.85	QP
5	270.3748	29.56	-8.64	20.92	46.00	-25.08	QP
6	273.2340	27.83	-8.59	19.24	46.00	-26.76	QP



Polarization: Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	35.8746	29.78	-10.42	19.36	40.00	-20.64	QP
2	138.8734	29.85	-13.62	16.23	43.50	-27.27	QP
3	157.0073	29.87	-13.62	16.25	43.50	-27.25	QP
4	172.5987	30.29	-12.74	17.55	43.50	-25.95	QP
5	270.3748	26.93	-8.64	18.29	46.00	-27.71	QP
6	304.6099	26.23	-7.94	18.29	46.00	-27.71	QP

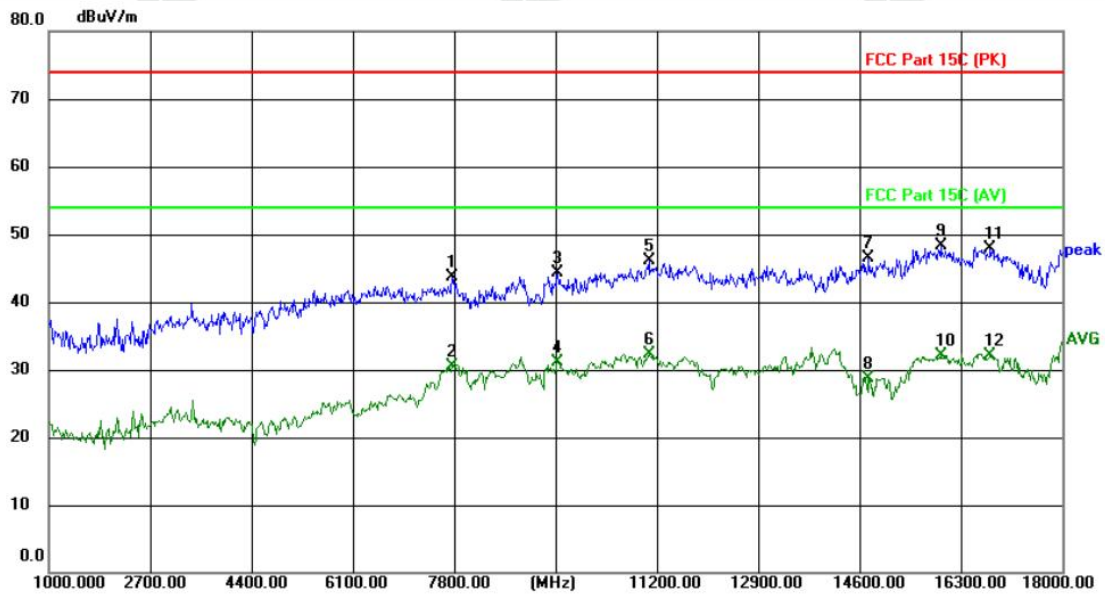
Note: Level=Reading + Factor

Margin=Level – Limit



Above 1 GHz

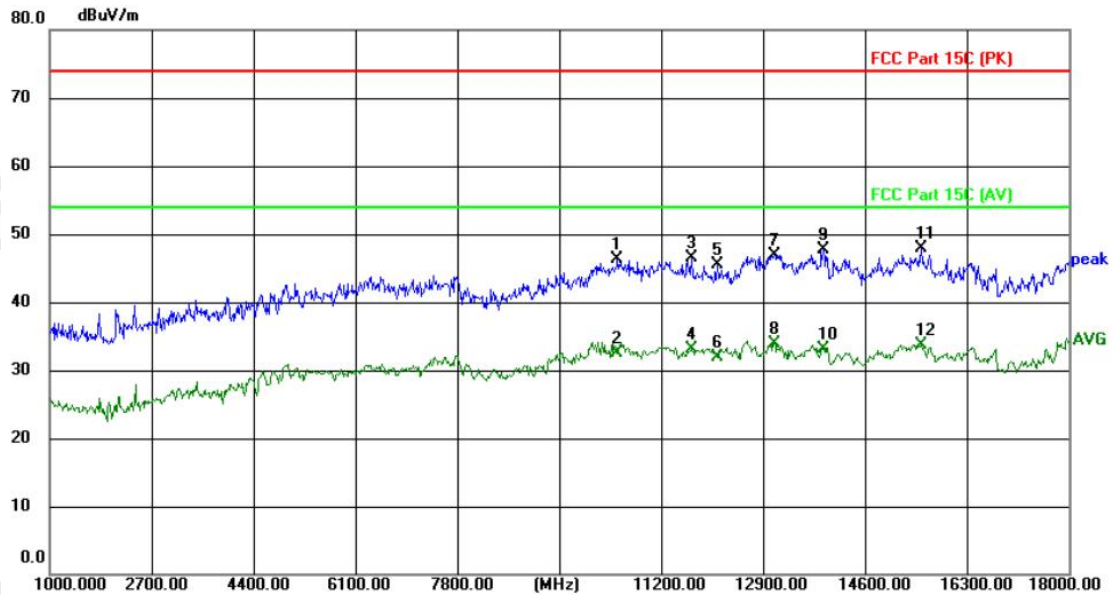
Polarization: Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	7766.000	33.10	10.53	43.63	74.00	-30.37	peak
2	7766.000	20.00	10.53	30.53	54.00	-23.47	AVG
3	9534.000	31.27	12.95	44.22	74.00	-29.78	peak
4	9534.000	18.20	12.95	31.15	54.00	-22.85	AVG
5	11064.000	31.16	14.85	46.01	74.00	-27.99	peak
6 *	11064.000	17.48	14.85	32.33	54.00	-21.67	AVG
7	14753.000	31.10	15.45	46.55	74.00	-27.45	peak
8	14753.000	13.20	15.45	28.65	54.00	-25.35	AVG
9	15960.000	30.26	18.13	48.39	74.00	-25.61	peak
10	15960.000	14.01	18.13	32.14	54.00	-21.86	AVG
11	16793.000	27.26	20.64	47.90	74.00	-26.10	peak
12	16793.000	11.45	20.64	32.09	54.00	-21.91	AVG



Polarization: Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	10469.000	32.39	14.00	46.39	74.00	-27.61	peak
2	10469.000	18.55	14.00	32.55	54.00	-21.45	AVG
3	11710.000	30.65	15.77	46.42	74.00	-27.58	peak
4	11710.000	17.28	15.77	33.05	54.00	-20.95	AVG
5	12135.000	29.30	16.28	45.58	74.00	-28.42	peak
6	12135.000	15.67	16.28	31.95	54.00	-22.05	AVG
7	13087.000	30.16	16.80	46.96	74.00	-27.04	peak
8 *	13087.000	17.17	16.80	33.97	54.00	-20.03	AVG
9	13903.000	31.58	16.14	47.72	74.00	-26.28	peak
10	13903.000	17.00	16.14	33.14	54.00	-20.86	AVG
11	15535.000	31.13	16.86	47.99	74.00	-26.01	peak
12	15535.000	16.90	16.86	33.76	54.00	-20.24	AVG

Note: Level=Reading + Factor

Margin=Level – Limit

Remark: which 18GHz-40GHz are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

6. Photographs of EUT

EUT Photo 1



EUT Photo 2



EUT Photo 3



EUT Photo 4



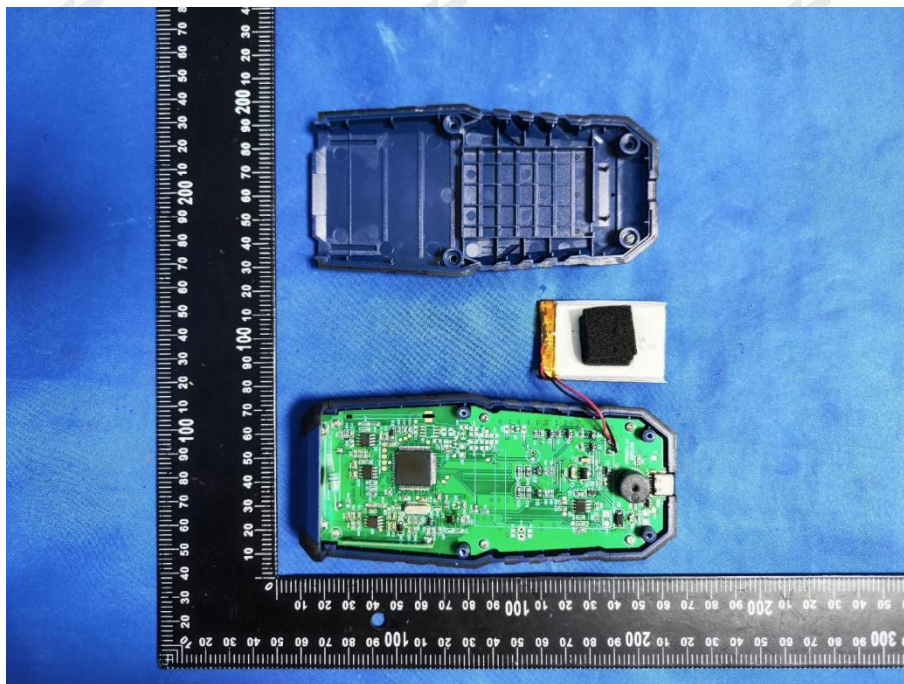
EUT Photo 5



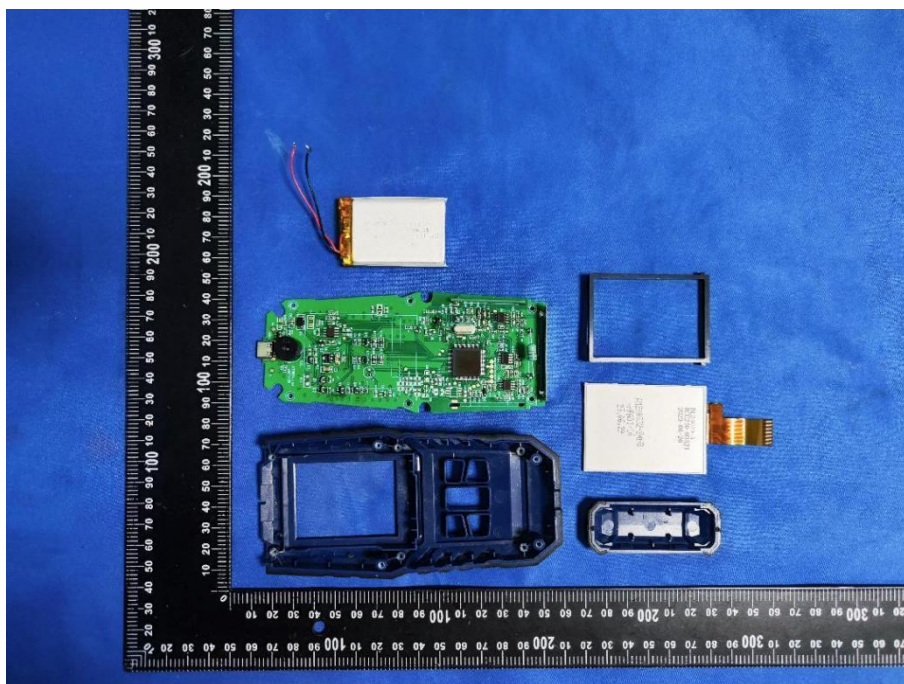
EUT Photo 6



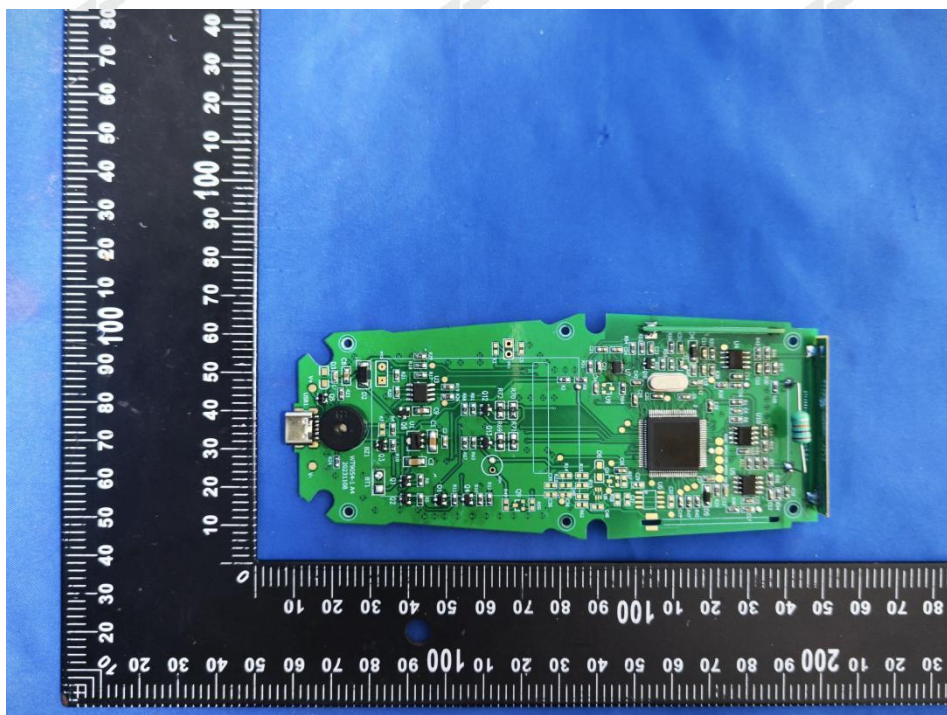
EUT Photo 7



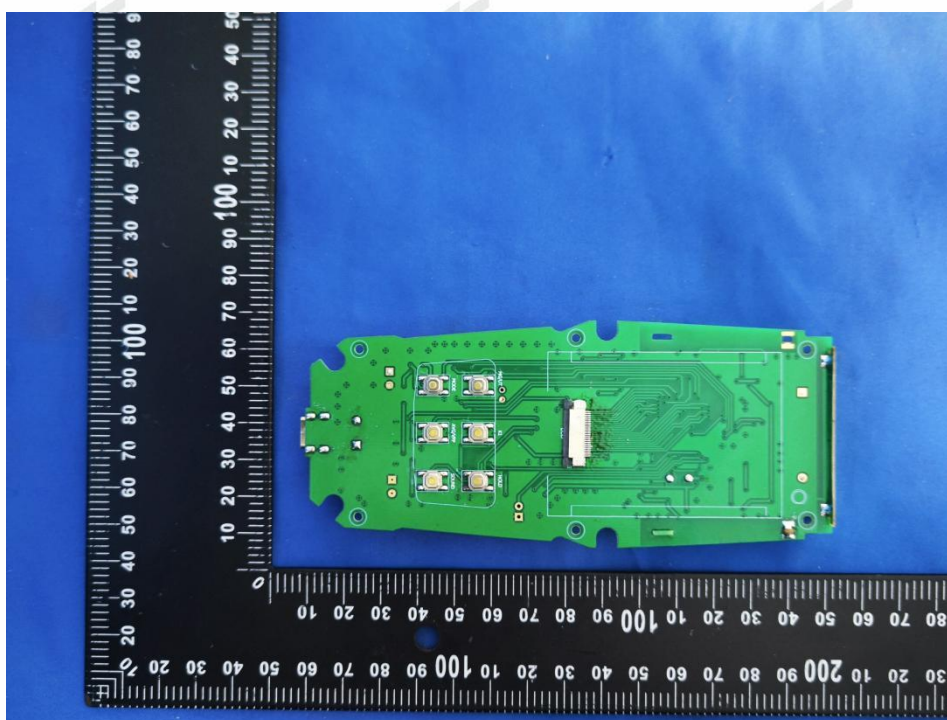
EUT Photo 8



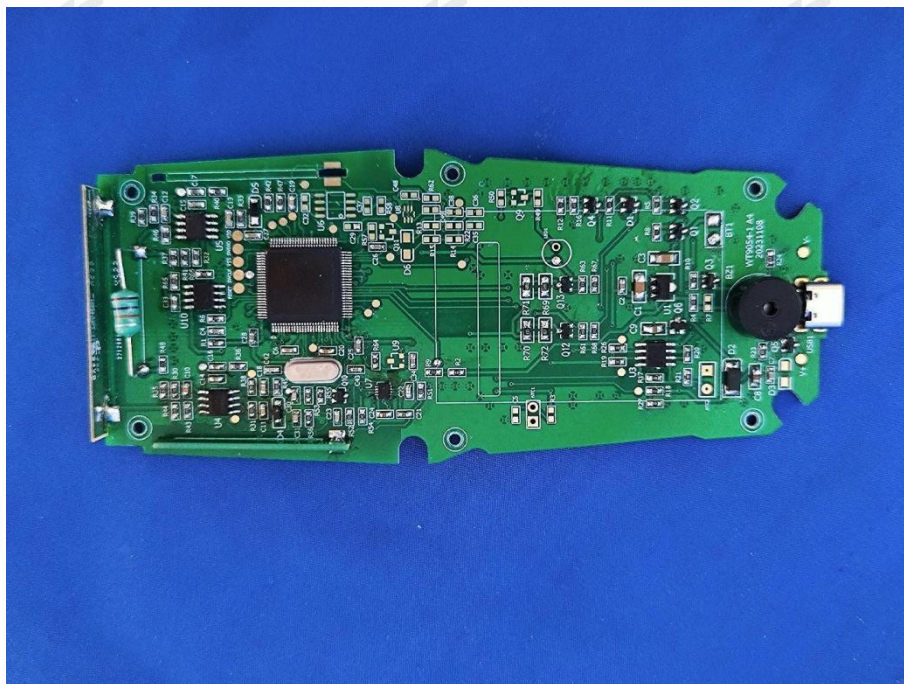
EUT Photo 9



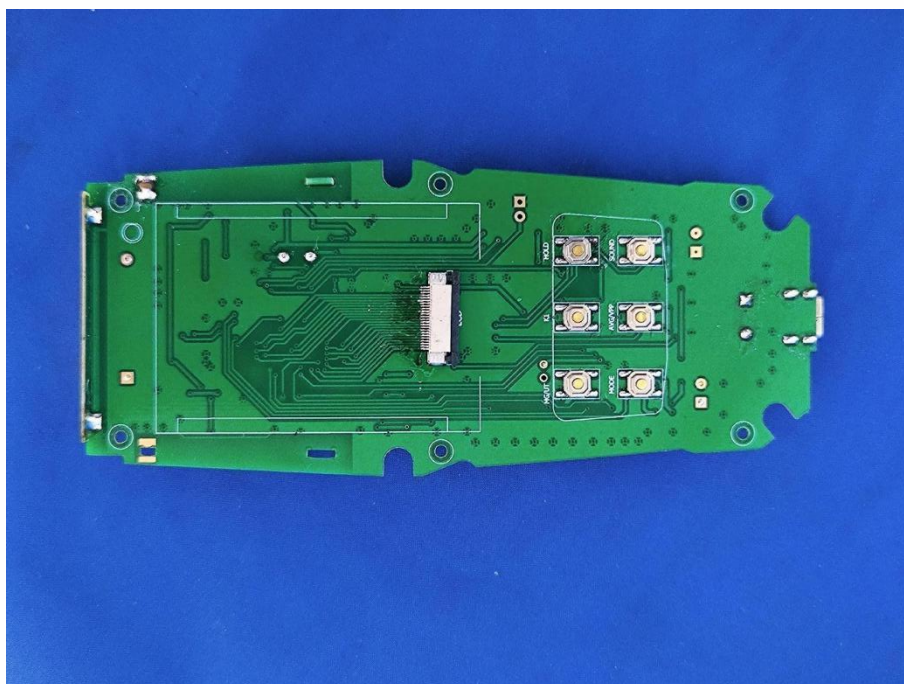
EUT Photo 10



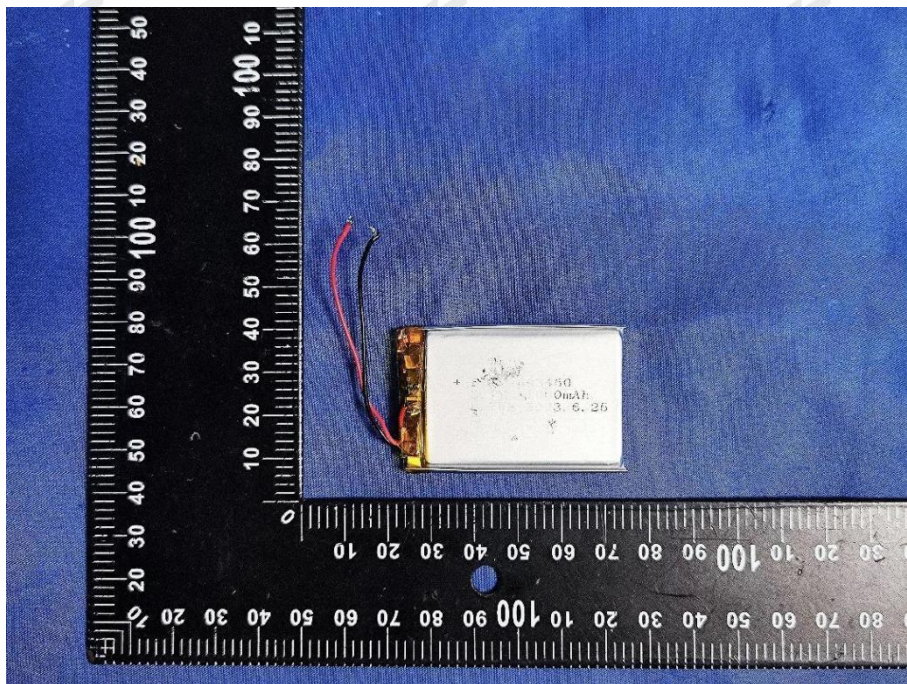
EUT Photo 11



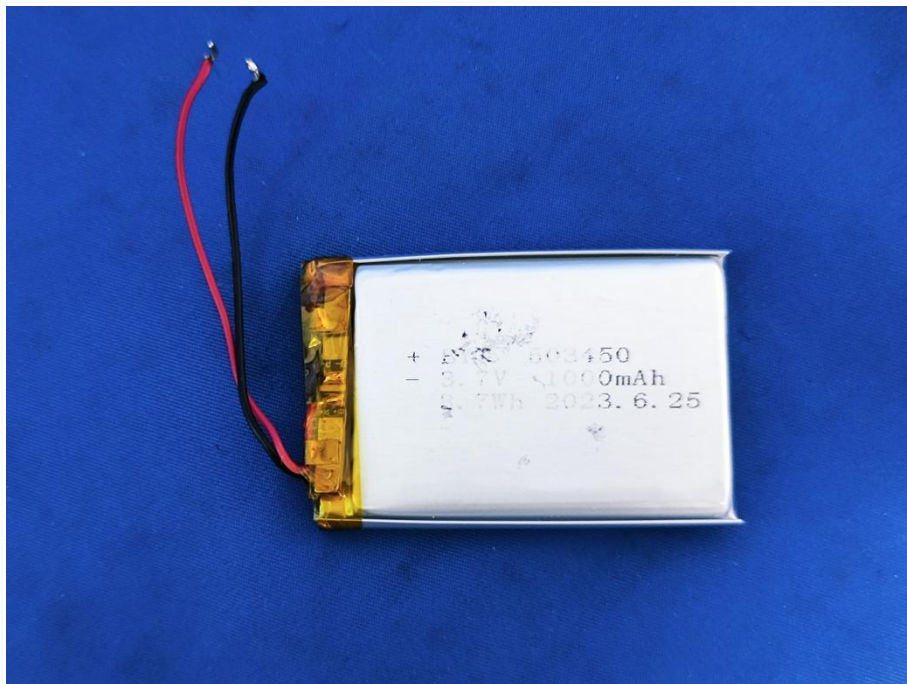
EUT Photo 12



EUT Photo 13



EUT Photo 14

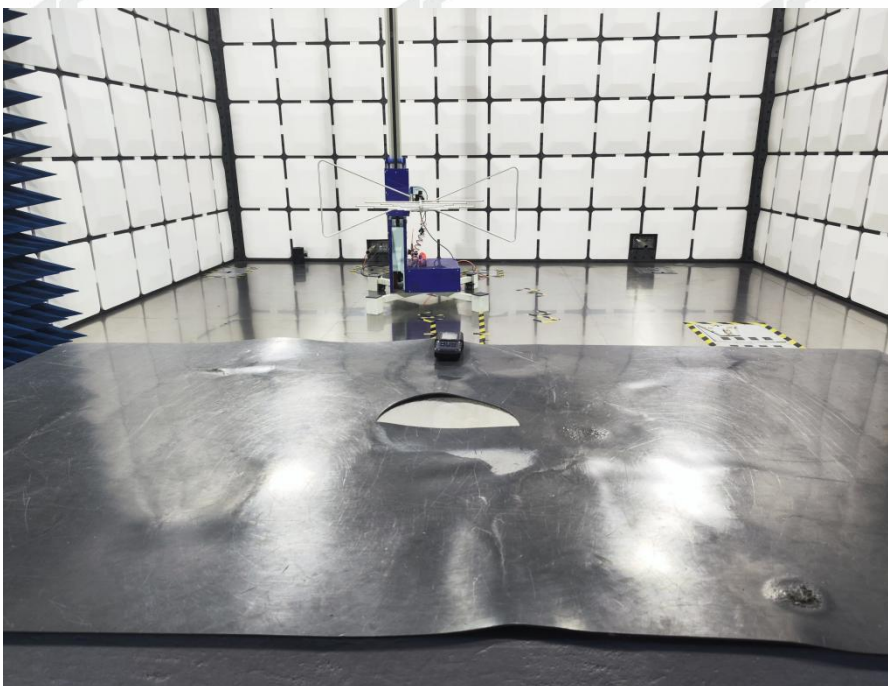


7. Test Setup Photographs

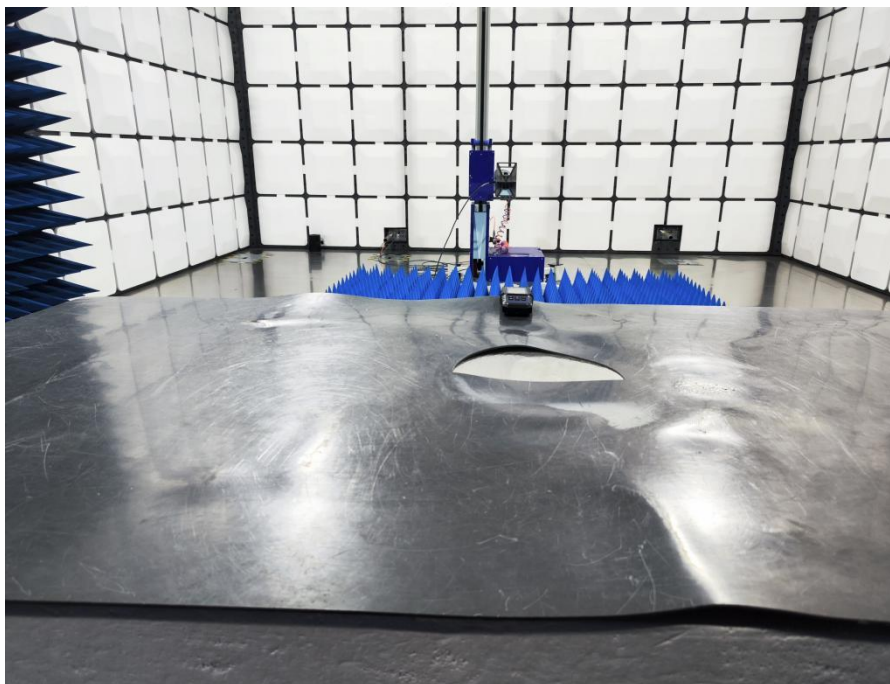
Conducted Emission



Radiated Emission (Below 1GHz)



Radiated Emission (Above 1GHz)



End of report