



FCC TEST REPORT

**Test report
On Behalf of
Shenzhen Xiangdangwen Technology Co.,Ltd.
For
POWER BANK
Model No.: 2E413
FCC ID: 2AW73-2E413**

Prepared For : Shenzhen Xiangdangwen Technology Co.,Ltd.
106, 1/F, No.313-4 Building, Huachang Road, Langkou Community, Dalang
Street, Longhua District, Shenzhen, China

Prepared By : Shenzhen HUAKE 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: Jun. 20, 2023 ~ Jun. 27, 2023

Date of Report: Jun. 27, 2023

Report Number: HK2306202579-1E

**TEST RESULT CERTIFICATION**

Applicant's name.....: Shenzhen Xiangdangwen Technology Co.,Ltd.

Address.....: 106, 1/F, No.313-4 Building, Huachang Road, Langkou
Community, Dalang Street, Longhua District, Shenzhen, China

Manufacture's Name.....: Shenzhen Xiangdangwen Technology Co.,Ltd.

Address.....: 106, 1/F, No.313-4 Building, Huachang Road, Langkou
Community, Dalang Street, Longhua District, Shenzhen, China

Product description

Trade Mark: LISEN, AINOPE, VEICO

Product name.....: POWER BANK

Model and/or type reference : 2E413

Standards.....: FCC CFR 47 PART 18

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen HUAKE Testing Technology Co., Ltd. is acknowledged as copyright owner and source of the material. Shenzhen HUAKE Testing Technology Co., Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Date of Test.....:

Date (s) of performance of tests.....: Jun. 20, 2023 ~ Jun. 27, 2023

Date of Issue.....: Jun. 27, 2023

Test Result.....: Pass

Testing Engineer :

(Gary Qian)

Technical Manager :

(Eden Hu)

Authorized Signatory :

(Jason Zhou)

**Table of Contents****Page**

1 . TEST SUMMARY	5
1.1 . Test Procedures And Results	5
1.2 . Information of the Test Laboratory	5
1.3 . Measurement Uncertainty	5
2. GENERAL INFORMATION	6
2.1. General Description of EUT	6
2.2. Carrier Frequency of Channels	7
2.3. Operation of EUT during testing	7
2.4. Description of Test Setup	8
2.5. Measurement Instruments List	9
3. CONDUCTED EMISSION TEST	10
3.1. Block Diagram of Test Setup	10
3.2. Conducted Power Line Emission Limit	10
3.3. Test Procedure	10
4. RADIATED EMISSIONS	13
4.1. Block Diagram of Test Setup	13
4.2. Rules and specifications	13
4.3. Test Procedure	14
5. ANTENNA REQUIREMENT	19
6. PHOTOGRAPH OF TEST	20
7. PHOTOS OF THE EUT	23



**** Modified History ****

Revision	Description	Issued Data	Remark
Revision 1.0	Initial Test Report Release	Jun. 27, 2023	Jason Zhou



1. TEST SUMMARY

1.1. Test Procedures And Results

DESCRIPTION OF TEST	SECTION NUMBER	RESULT
CONDUCTED EMISSIONS TEST	18.307	COMPLIANT
RADIATED EMISSION TEST	18.305	COMPLIANT

Note:

1. PASS: Test item meets the requirement.
2. Fail: Test item does not meet the requirement.
3. N/A: Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.

1.2. Information of the Test Laboratory

Shenzhen HUAKE Testing Technology Co., Ltd.

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

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



2. GENERAL INFORMATION

2.1. General Description of EUT

Equipment:	POWER BANK
Model Name:	2E413
Series Models:	N/A
Model Difference:	N/A
Trade Mark:	LISEN, AINOPE, VEICO
FCC ID:	2AW73-2E413
Antenna Type:	Coil Antenna
Antenna Gain:	0dBi
Operation frequency	314KHz
Test frequency:	314KHz
Number of Channels:	1
Modulation Type:	ASK
Power Source:	Input: Type-c: 5V=1.0A Wireless charger output: 2.5W Capacity : 1200 mAh 4.44Wh
Power Rating:	Input: Type-c: 5V=1.0A Wireless charger output: 2.5W Capacity : 1200 mAh 4.44Wh



2.2. Carrier Frequency of Channels

Operation Frequency each of channel	
Channel	Frequency
1	314KHz

2.3. Operation of EUT during testing

The equipment under test(EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode	Description	Remark
DC mode:	Wireless Charging Output: 2.5W	
AC mode:	Wireless Charging Output: 2.5W	Connect to the adapter

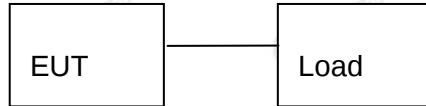
Note: All modes are tested, and the report shows only the worst mode data.



2.4. Description of Test Setup

DC mode:

Operation of EUT during testing:



AC mode:

Operation of EUT during testing:



Adapter information

Model: GD2B9

Input: 100-240V~ 50/60Hz, 2A Max

USB-C1 Output: 5V 3A, 9V 3A, 12V 3A, 15V 3A, 20V 5A, 28V 5A 140W MAX

USB-C2 Output: 5V 3A, 9V 3A, 12V 3A, 15V 3A, 20V 5A 100W MAX

USB-A Output: 5V 4.5A, 4.5V 5A, 5V 3A, 9V 2A, 12V 1.5A 22.5W MAX

Total output power: 140W Max

Model:BD-F1

Input: AC100-240V~50/60Hz, 1.5A

USB-C Output: (65W PD) DC5V 3A or 9V 3A or 12V 3A or 15V 3A or 20V 3.25A MAX

USB-A Output: DC5V 2.4A

The sample was placed (0.8m (30MHz~1GHz), 0.8m (9KHz~30MHz)) 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.

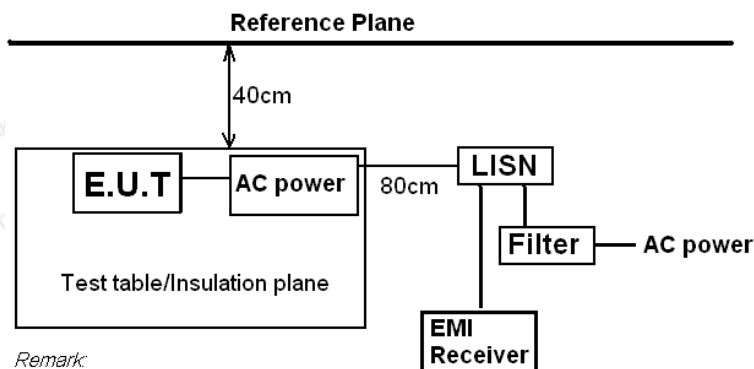
**2.5. Measurement Instruments List**

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	R&S	ENV216	HKE-002	Feb. 17, 2023	1 Year
2.	Receiver	R&S	ESR-7	HKE-010	Feb. 17, 2023	1 Year
3.	RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 17, 2023	1 Year
4.	Spectrum analyzer	R&S	FSP40	HKE-025	Feb. 17, 2023	1 Year
5.	Spectrum analyzer	Agilent	N9020A	HKE-048	Feb. 17, 2023	1 Year
6.	Preamplifier	Schwarzbeck	BBV 9743	HKE-006	Feb. 17, 2023	1 Year
7.	EMI Test Receiver	Rohde & Schwarz	ESCI 7	HKE-010	Feb. 17, 2023	1 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	HKE-012	Feb. 17, 2023	1 Year
9.	Loop Antenna	Schwarzbeck	FMZB 1519 B	HKE-014	Feb. 17, 2023	1 Year
10.	Horn Antenna	Schwarzbeck	9120D	HKE-013	Feb. 17, 2023	1 Year
11.	Pre-amplifier	EMCI	EMC051845 SE	HKE-015	Feb. 17, 2023	1 Year
12.	Pre-amplifier	Agilent	83051A	HKE-016	Feb. 17, 2023	1 Year
13.	EMI Test Software EZ-EMC	Tonscend	JS1120-B Version	HKE-083	N/A	N/A
14.	Power Sensor	Agilent	E9300A	HKE-086	Feb. 17, 2023	1 Year
15.	Spectrum analyzer	Agilent	N9020A	HKE-048	Feb. 17, 2023	1 Year
16.	Signal generator	Agilent	N5182A	HKE-029	Feb. 17, 2023	1 Year
17.	Signal Generator	Agilent	83630A	HKE-028	Feb. 17, 2023	1 Year
18.	Shielded room	Shiel Hong	4*3*3	HKE-039	Dec. 09, 2021	3 Year



3. CONDUCTED EMISSION TEST

3.1. Block Diagram of Test Setup



Remark:

E.U.T: Equipment Under Test

LISN: Line Impedance Stabilization Network

Test table height=0.8m

3.2. Conducted Power Line Emission Limit

According to FCC Part 18.307(b)

Frequency (MHz)	Maximum RF Line Voltage (dBμV)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §18.307 Line Conducted Emission Limit is same as above table.

3.3. Test Procedure

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.

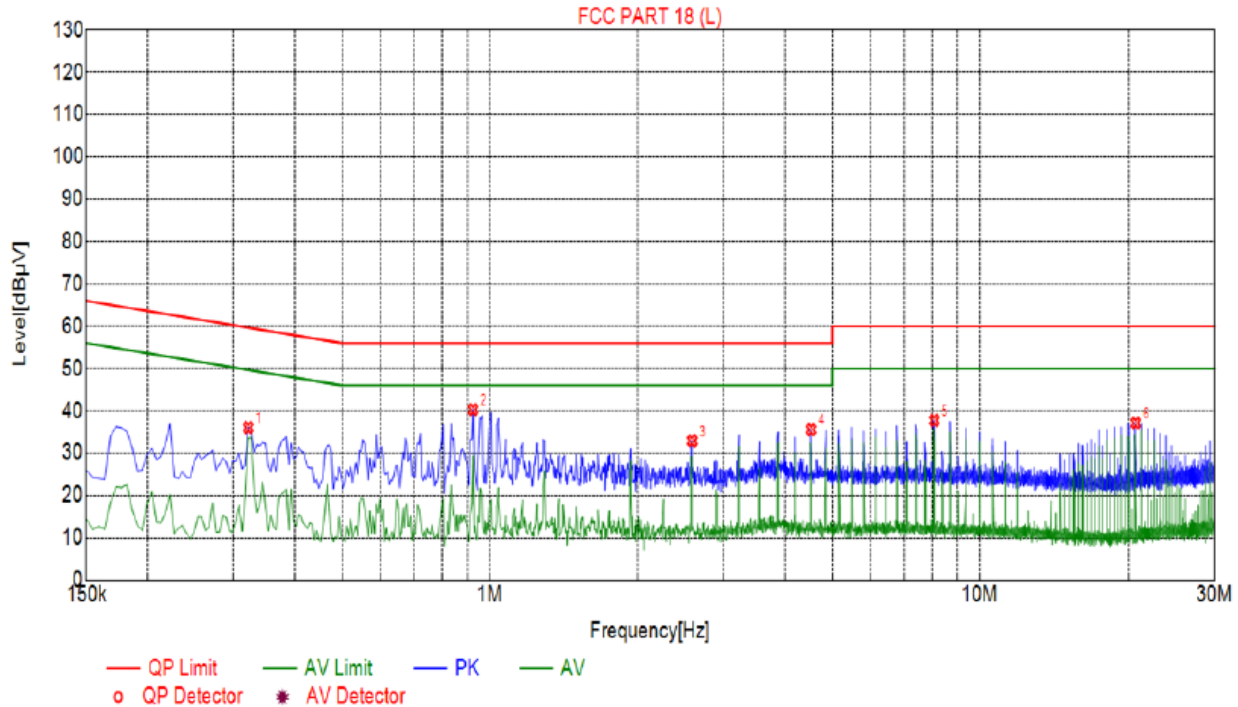


3.4. Test Result

PASS

All the test modes completed for test. only the worst result was reported as below:

Test Specification: Line



Suspected List

NO.	Freq. [MHz]	Level [dBμV]	Factor [dB]	Limit [dBμV]	Margin [dB]	Reading [dBμV]	Detector	Type
1	0.3210	36.03	20.05	59.68	23.65	15.98	PK	L
2	0.9240	40.28	20.06	56.00	15.72	20.22	PK	L
3	2.5890	32.91	20.20	56.00	23.09	12.71	PK	L
4	4.5285	35.56	20.25	56.00	20.44	15.31	PK	L
5	8.0835	37.74	20.14	60.00	22.26	17.60	PK	L
6	20.6970	37.13	20.13	60.00	22.87	17.00	PK	L

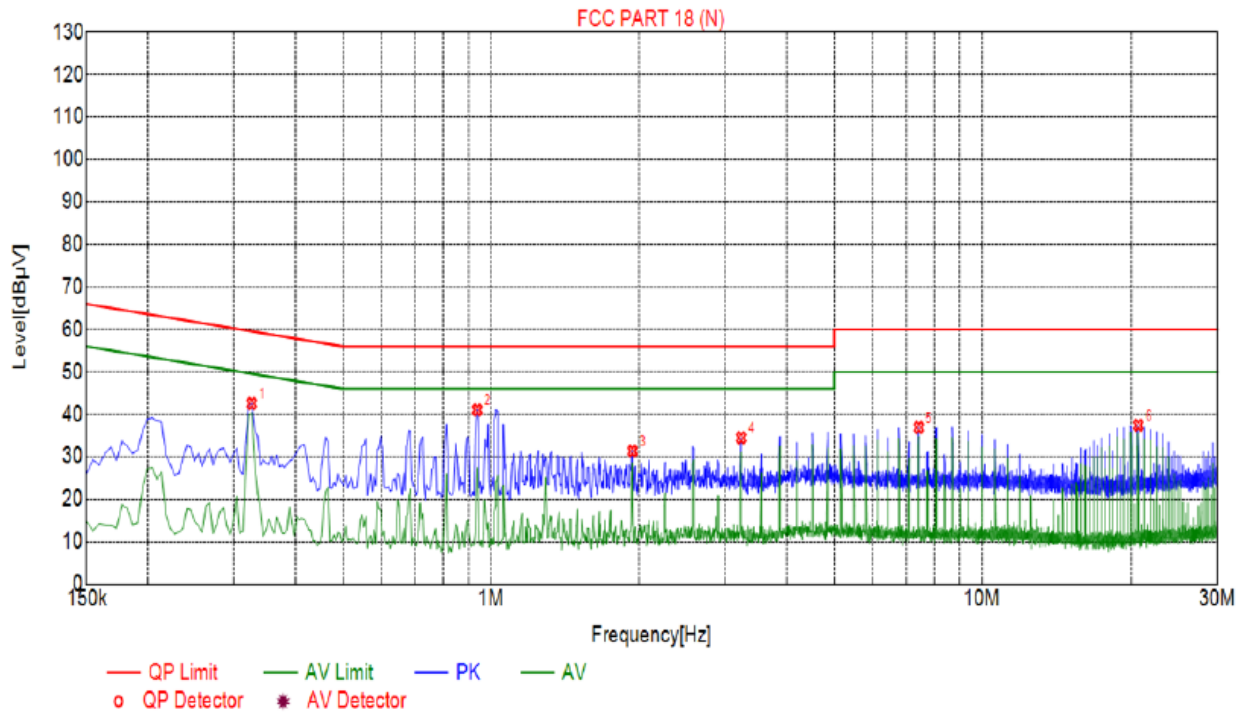
Remark: Margin = Limit - Level

Correction factor = Cable lose + LISN insertion loss

Level=Test receiver reading + correction factor



Test Specification: Neutral



Suspected List

NO.	Freq. [MHz]	Level [dBμV]	Factor [dB]	Limit [dBμV]	Margin [dB]	Reading [dBμV]	Detector	Type
1	0.3255	42.56	20.05	59.57	17.01	22.51	PK	N
2	0.9375	41.03	20.06	56.00	14.97	20.97	PK	N
3	1.9410	31.33	20.14	56.00	24.67	11.19	PK	N
4	3.2325	34.44	20.23	56.00	21.56	14.21	PK	N
5	7.4400	36.91	20.18	60.00	23.09	16.73	PK	N
6	20.6925	37.42	20.13	60.00	22.58	17.29	PK	N

Remark: Margin = Limit - Level

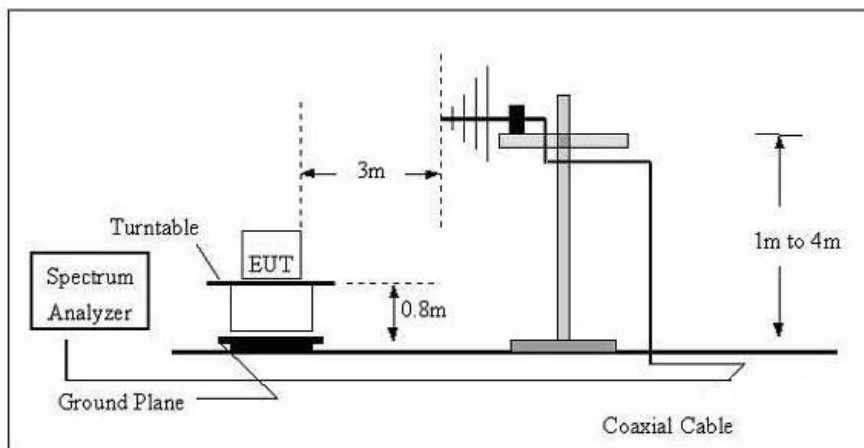
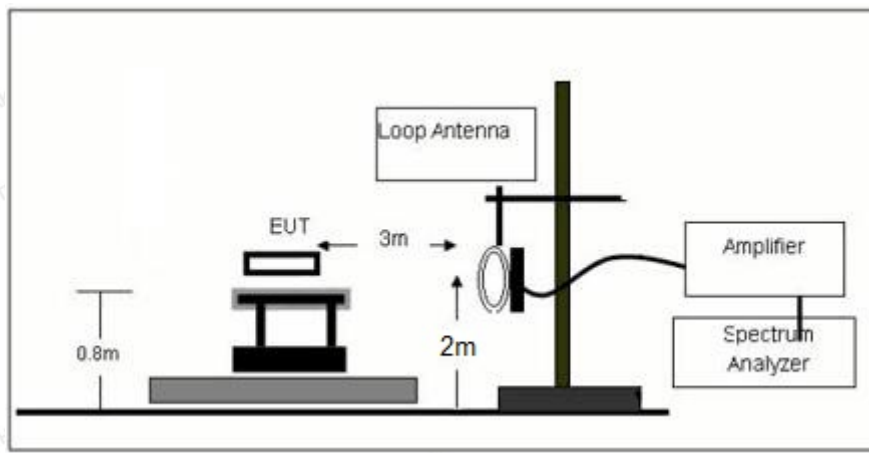
Correction factor = Cable lose + LISN insertion loss

Level=Test receiver reading + correction factor



4. RADIATED EMISSIONS

4.1. Block Diagram of Test Setup



4.2. Rules and specifications

Except as provided elsewhere in this Subpart 18.305 (b), the field strength levels of emissions which lie outside the bands specified in §18.301, unless otherwise indicated, shall not exceed the following table:

Equipment	Operating frequency	RF Power generated by equipment (watts)	Field strength limit (uV/m)	Distance (meters)
(miscellaneous)				
	Any non-ISM frequency	Below 500 500 or more	15 15 × SQRT(power/500)	300 1300

**Remark:**

- (1) Emission level dBuV/m for 0.009~30MHz = $20\log(15) + 40\log(300/3)$ dBuV/m;
- (2) Calculated according FCC 18.305.
- (3) The smaller limit shall apply at the cross point between two frequency bands.
- (4) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

4.3. Test Procedure

Measurement distance 3m

For the measurement range up to 30MHz in the following plots the field strength result from 3m Distance measurements are extrapolated to 300m and 30m distance respectively, by 40dB/decade, Per antenna factor scaling.

Measurements below 1000MHz are performed with a peak detector and compared to average limits, Measurements with an average detector are not required.

Note:

For battery operated equipment, the equipment tests shall be performed using a new battery.

4.4. Test Result

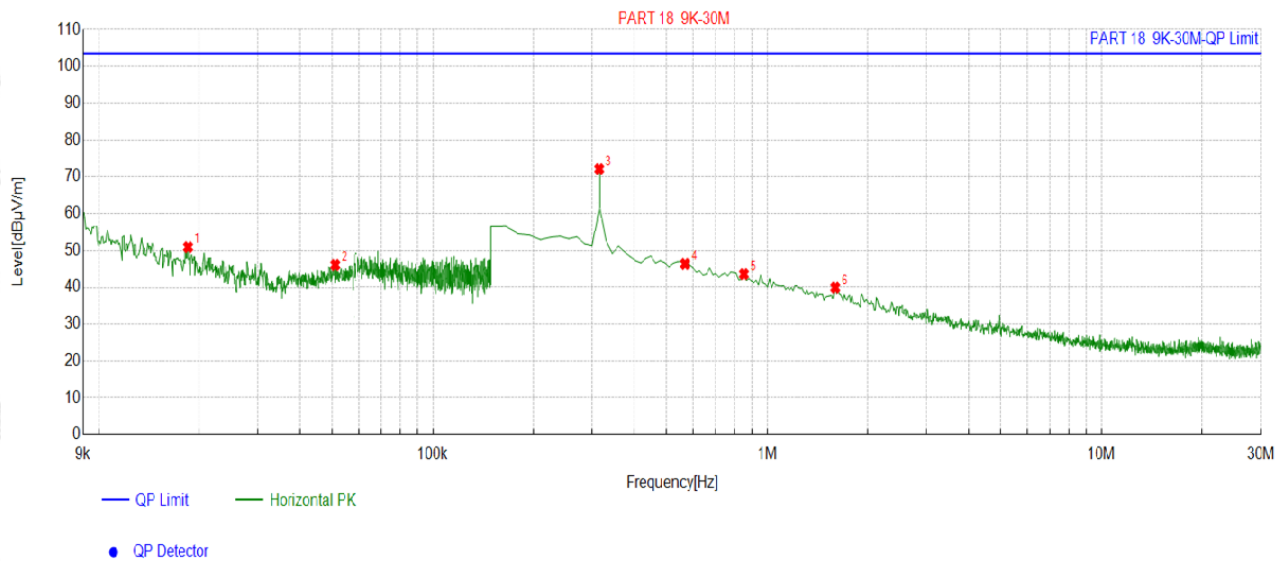
PASS

Note: All the test modes completed for test. Only the worst result (AC Mode: Wireless Charging Output: 2.5W) was reported as below:



For 9KHz - 30MHz

DC Mode:

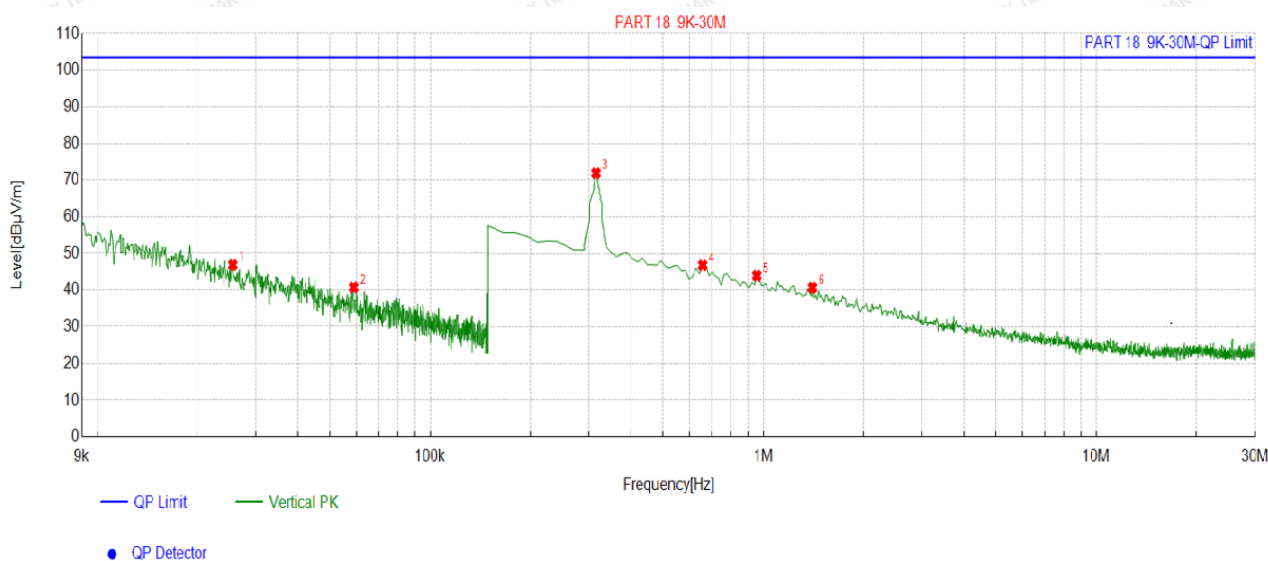


Suspected List						
NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]
1	0.0185	14.85	36.14	50.99	103.50	52.51
2	0.0510	13.92	32.23	46.15	103.50	57.35
3	0.3143	13.70	58.89	72.59	103.50	30.91
4	0.5681	13.71	32.63	46.34	103.50	57.16
5	0.8518	14.08	29.50	43.58	103.50	59.92
6	1.5984	14.36	25.54	39.90	103.50	63.60

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



AC Mode:



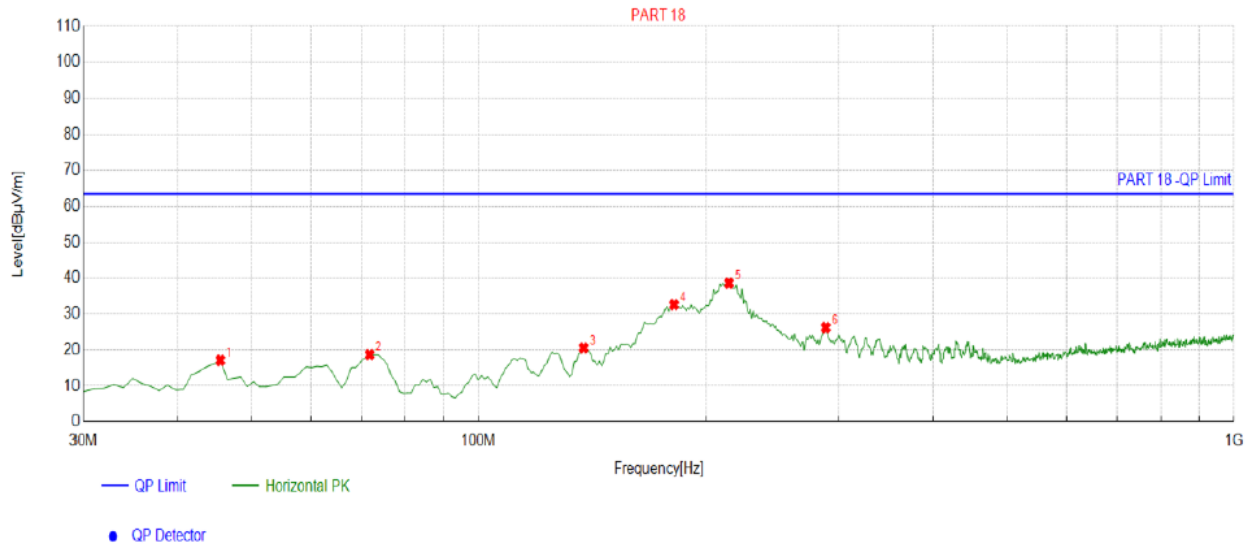
Suspected List						
NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]
1	0.0255	14.66	32.06	46.72	103.50	56.78
2	0.0588	13.96	26.61	40.57	103.50	62.93
3	0.3143	13.70	58.13	71.83	103.50	31.67
4	0.6577	13.76	33.06	46.82	103.50	56.68
5	0.9564	14.12	29.84	43.96	103.50	59.54
6	1.4043	14.28	26.41	40.69	103.50	62.81

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



For 30MHz-1GHz

Antenna polarity: H

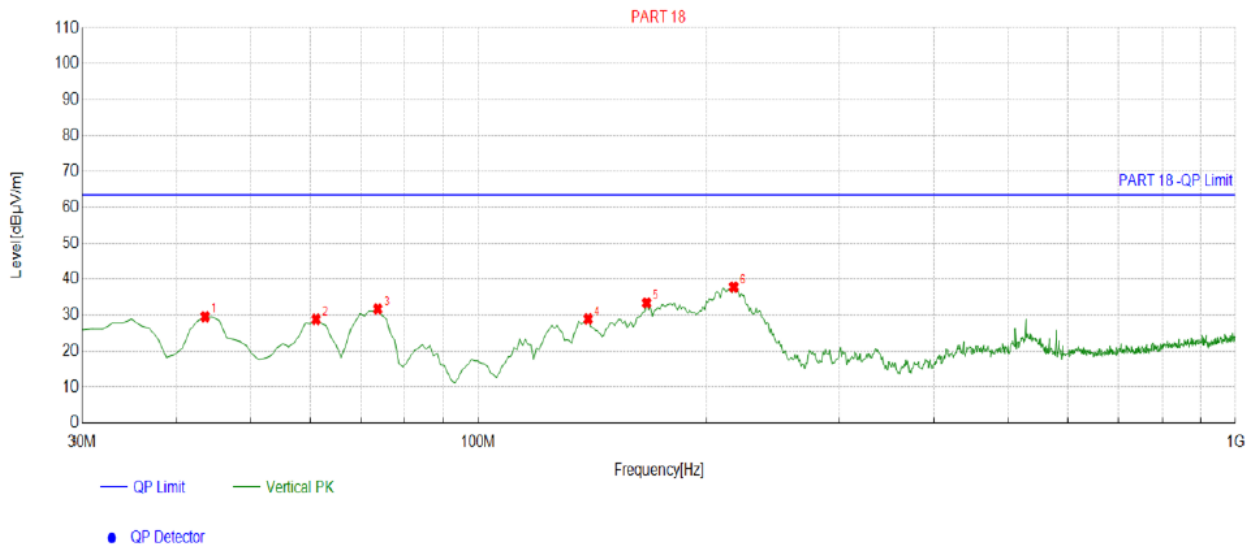


Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	45.5355	-14.97	32.07	17.10	63.50	46.40	100	53	Horizontal
2	71.7518	-16.40	35.04	18.64	63.50	44.86	100	2	Horizontal
3	137.7778	-17.79	38.39	20.60	63.50	42.90	100	173	Horizontal
4	181.4715	-16.94	49.54	32.60	63.50	30.90	100	337	Horizontal
5	214.4845	-14.46	53.10	38.64	63.50	24.86	100	189	Horizontal
6	288.2783	-12.42	38.67	26.25	63.50	37.25	100	333	Horizontal

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



Antenna polarity: V



Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	43.5936	-15.10	44.68	29.58	63.50	33.92	100	215	Vertical
2	61.0711	-14.27	43.09	28.82	63.50	34.68	100	219	Vertical
3	73.6937	-16.44	48.17	31.73	63.50	31.77	100	187	Vertical
4	139.7197	-17.95	46.88	28.93	63.50	34.57	100	183	Vertical
5	166.9069	-16.93	50.36	33.43	63.50	30.07	100	195	Vertical
6	217.3974	-14.36	52.25	37.89	63.50	25.61	100	171	Vertical

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



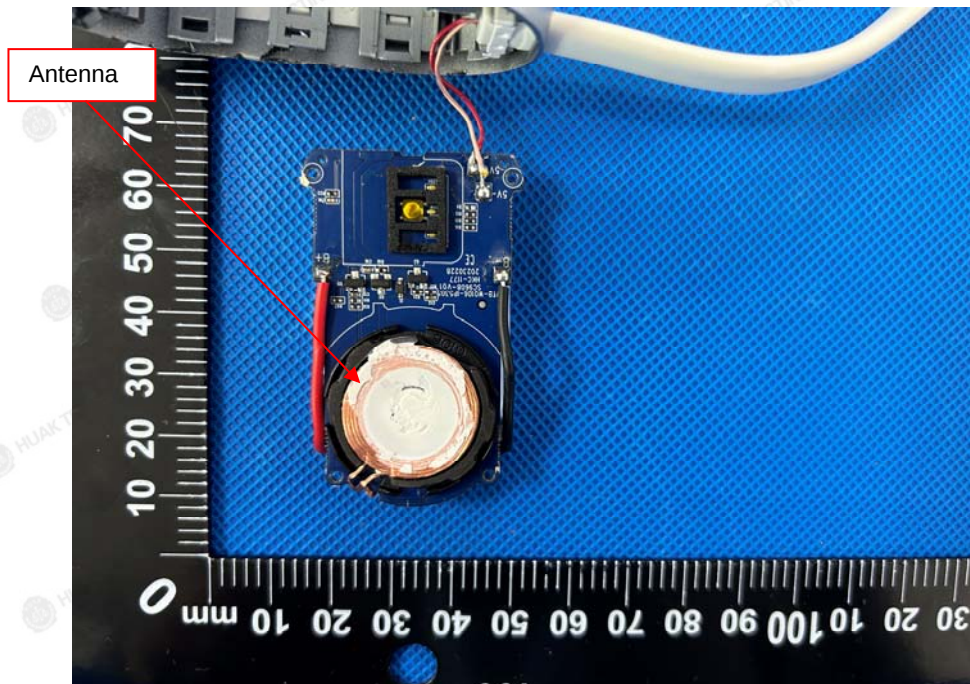
5. ANTENNA REQUIREMENT

Refer to statement below for compliance.

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

Antenna Connected Construction

The antenna used in this product is a Coil Antenna, which permanently attached. It conforms to the standard requirements. The directional gains of antenna used for transmitting is 0dBi.

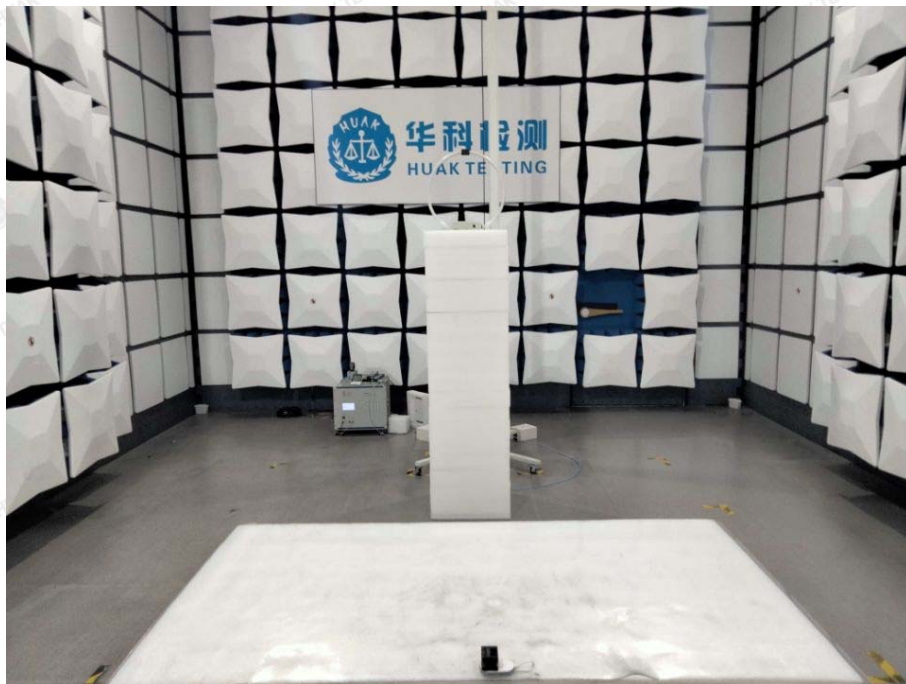
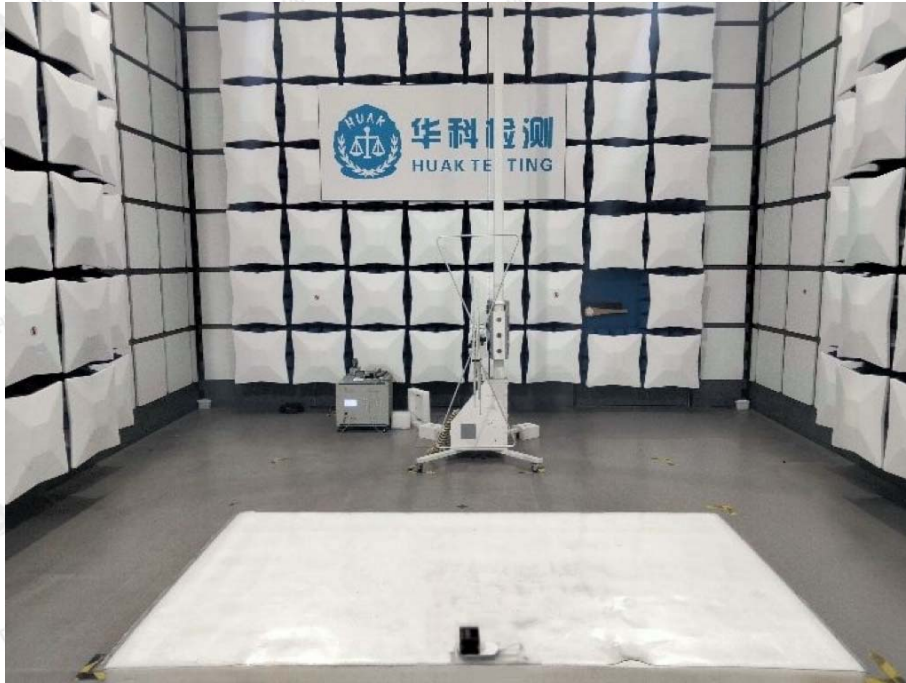




6. PHOTOGRAPH OF TEST

Radiated Emission

DC Mode:



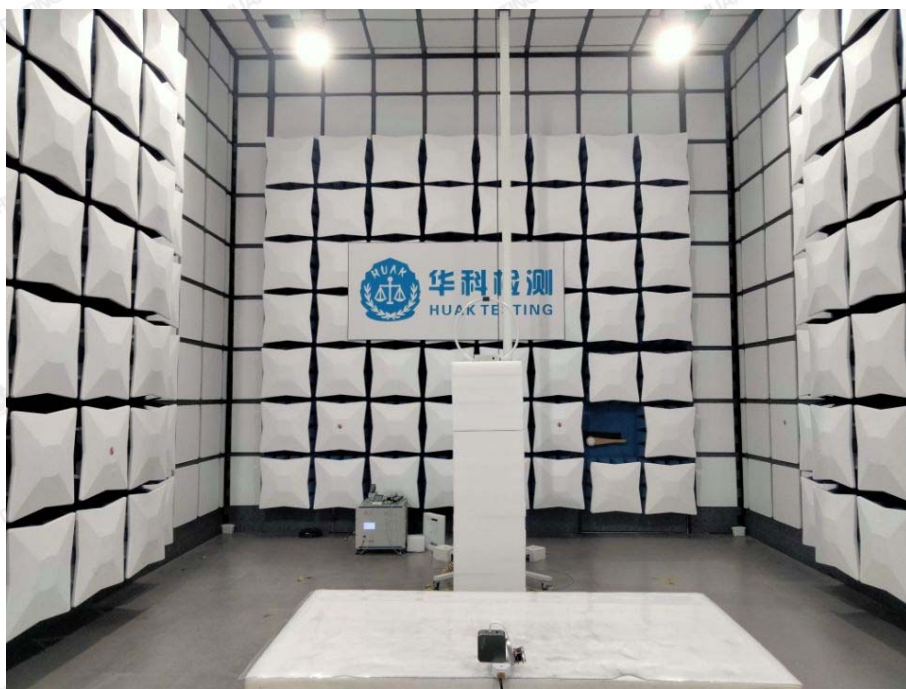
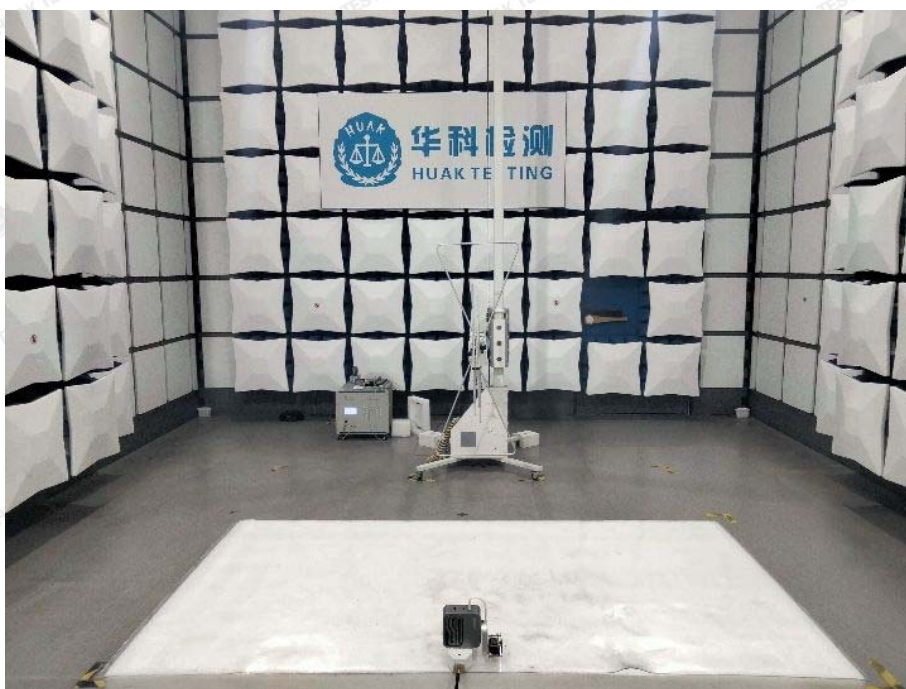
The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAKE, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.

TEL : +86-755 2302 9901 FAX : +86-755 2302 9901 E-mail : service@cer-mark.com

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



AC Mode:



The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAKE, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.

TEL : +86-755 2302 9901 FAX : +86-755 2302 9901 E-mail : service@cer-mark.com

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



Conducted Emissions



The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAKE, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.

TEL : +86-755 2302 9901 FAX : +86-755 2302 9901 E-mail : service@cer-mark.com

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



7. PHOTOS OF THE EUT

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

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