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 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:	**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

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

(Gary Qian)

Technical Manager : Eden Hu

(Eden Hu)

Authorized Signatory : Jason Zhou

(Jason Zhou)

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** Modified History **

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

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

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 HUAK 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 Capaclty : 1200 mAh 4.44Wh
Power Rating:	Input: Type-c: 5V=1.0A Wireless charger output: 2.5W Capaclty : 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

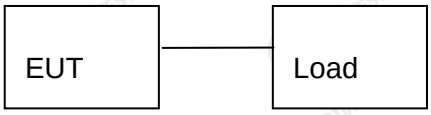
The equipment under test(EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

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

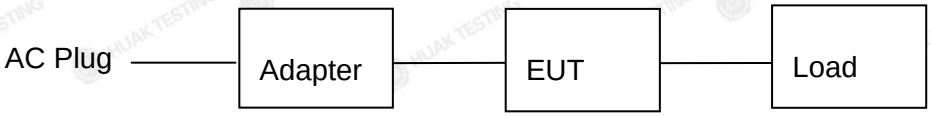
Note: All modes are tested, and the report shows only the worst mode data.

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

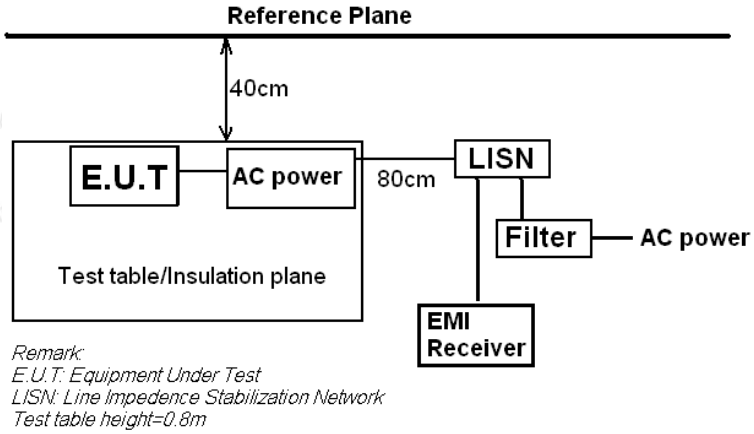
The sample was placed (0.8m (30MHz~1GHz), 0.8m (9KHz~30MHz)) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about 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	Schewarzbeck	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 Impedence 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

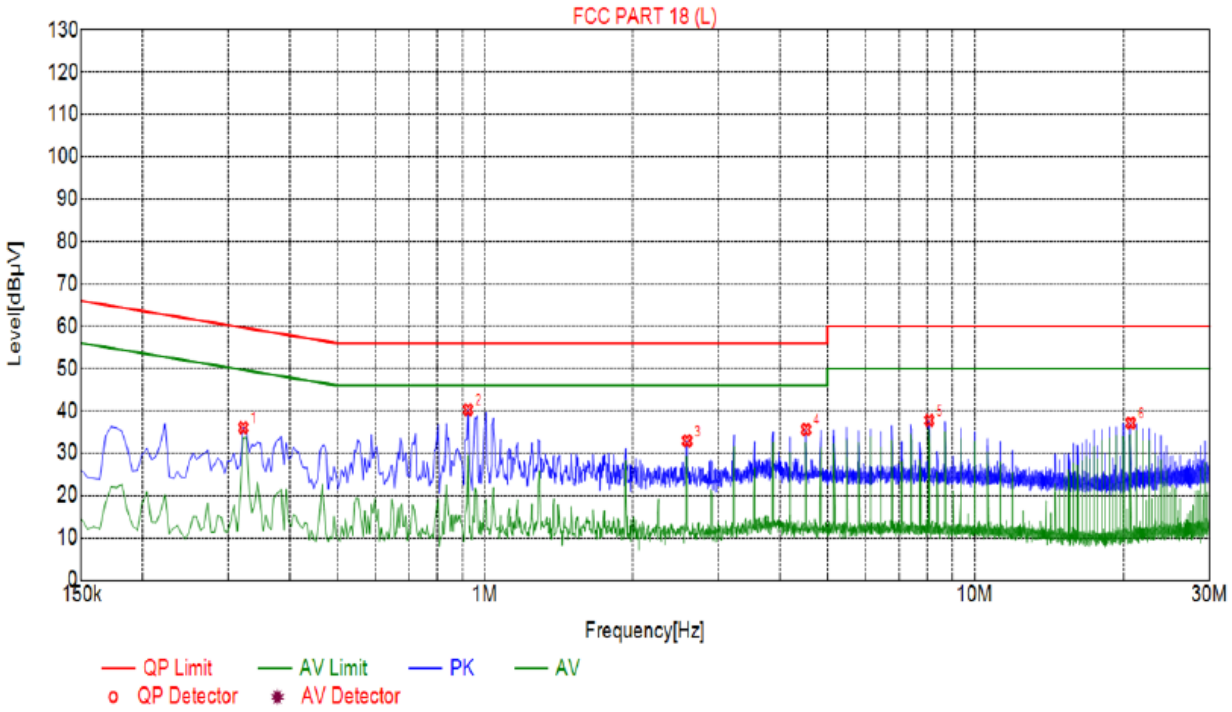
1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10.
2. Support equipment, if needed, was placed as per ANSI 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



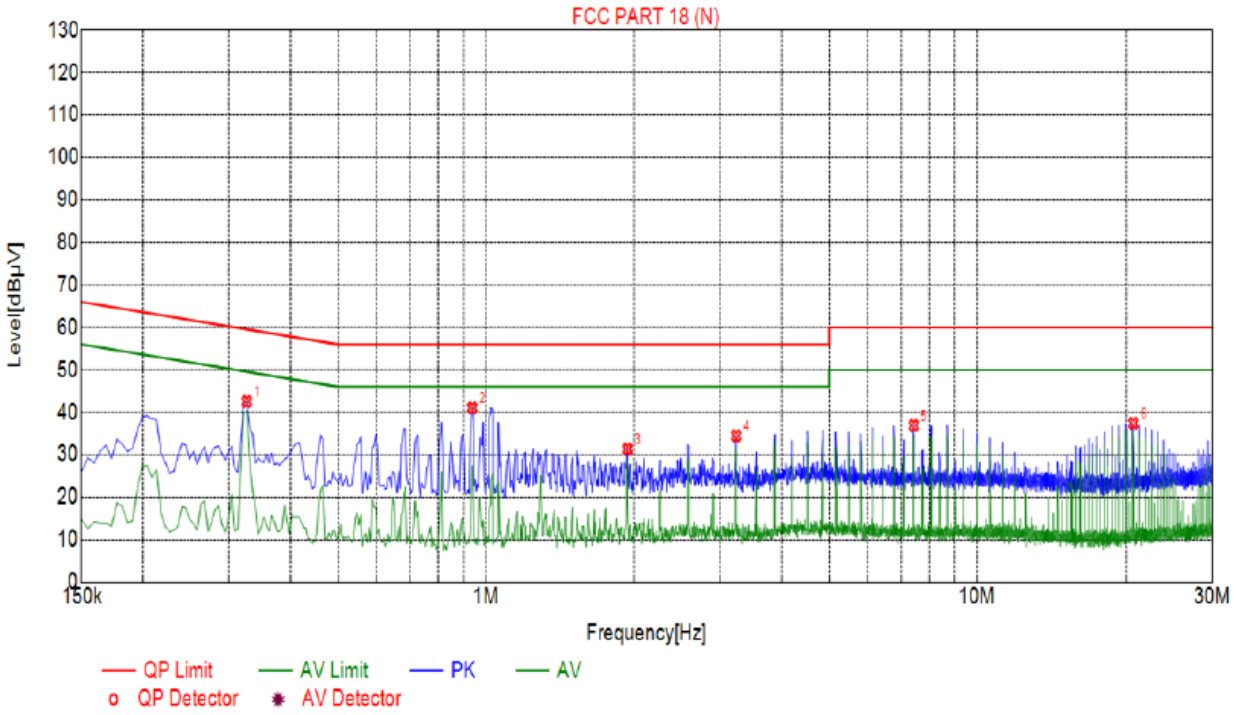
Suspected List								
NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Reading [dBµV]	Detector	Type
1	0.3210	36.03	20.05	59.68	23.65	15.98	PK	L
2	0.9240	40.28	20.06	56.00	15.72	20.22	PK	L
3	2.5890	32.91	20.20	56.00	23.09	12.71	PK	L
4	4.5285	35.56	20.25	56.00	20.44	15.31	PK	L
5	8.0835	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

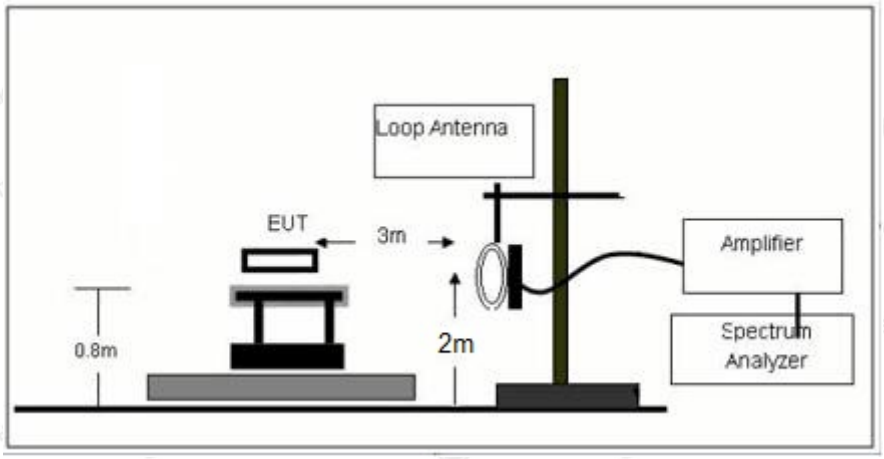
Remark: Margin = Limit － Level

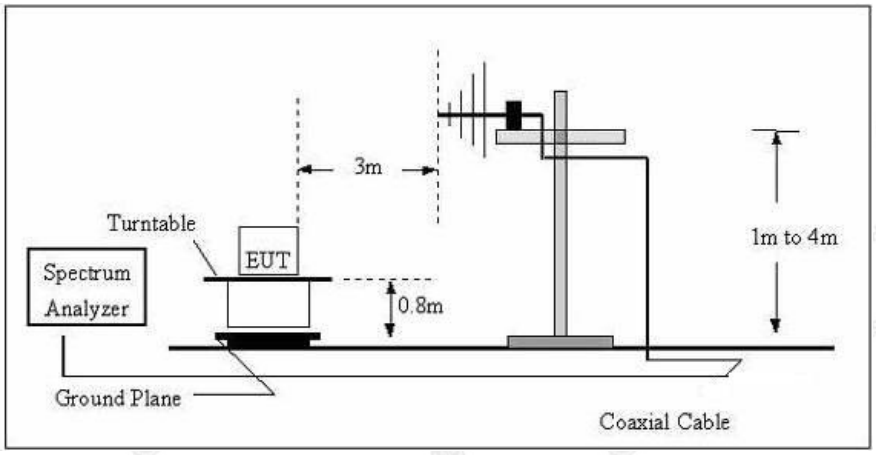
Correction factor = Cable lose + LISN insertion loss

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 [1]300

Remark:

(1) Emission level dBuV/m for 0.009~30MHz = 20log (15) + 40log (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.

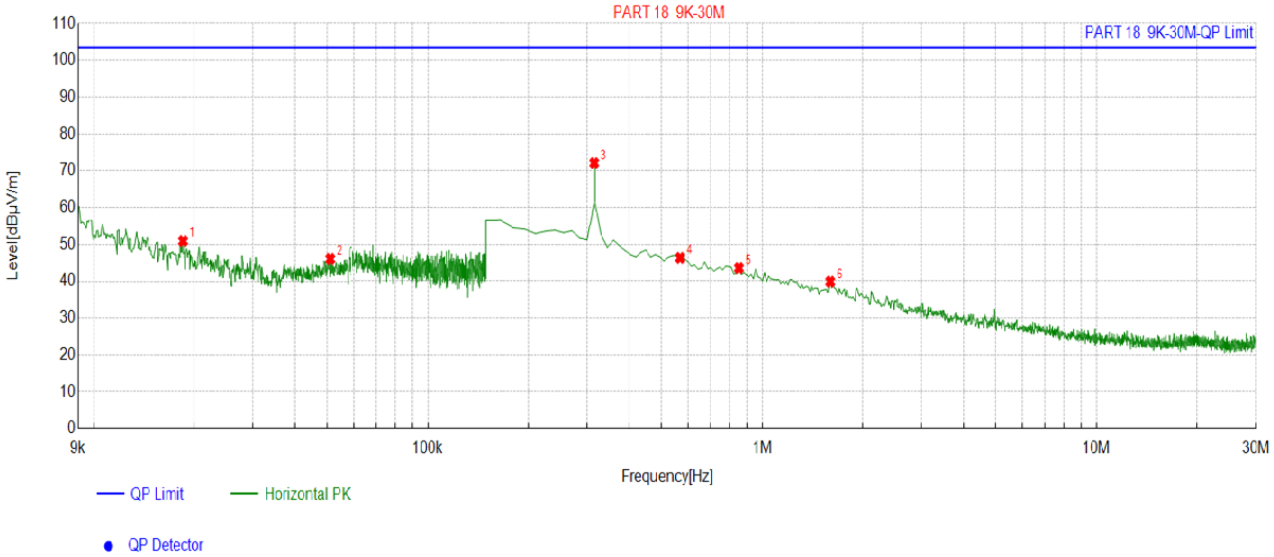
4.4. Test Result

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

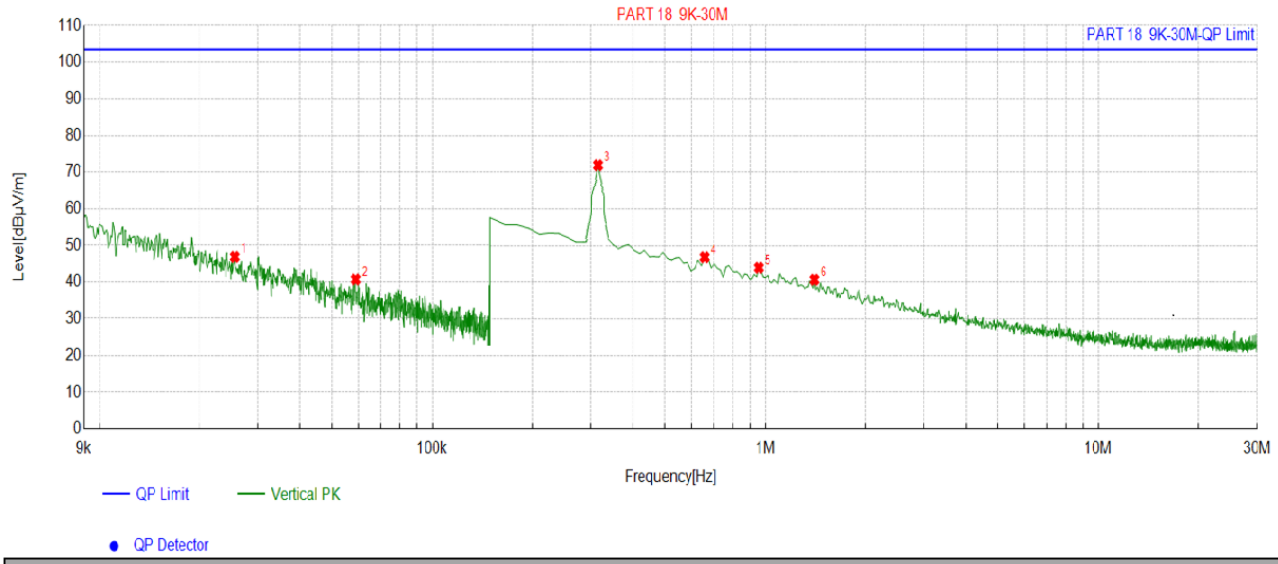
DC Mode:



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:

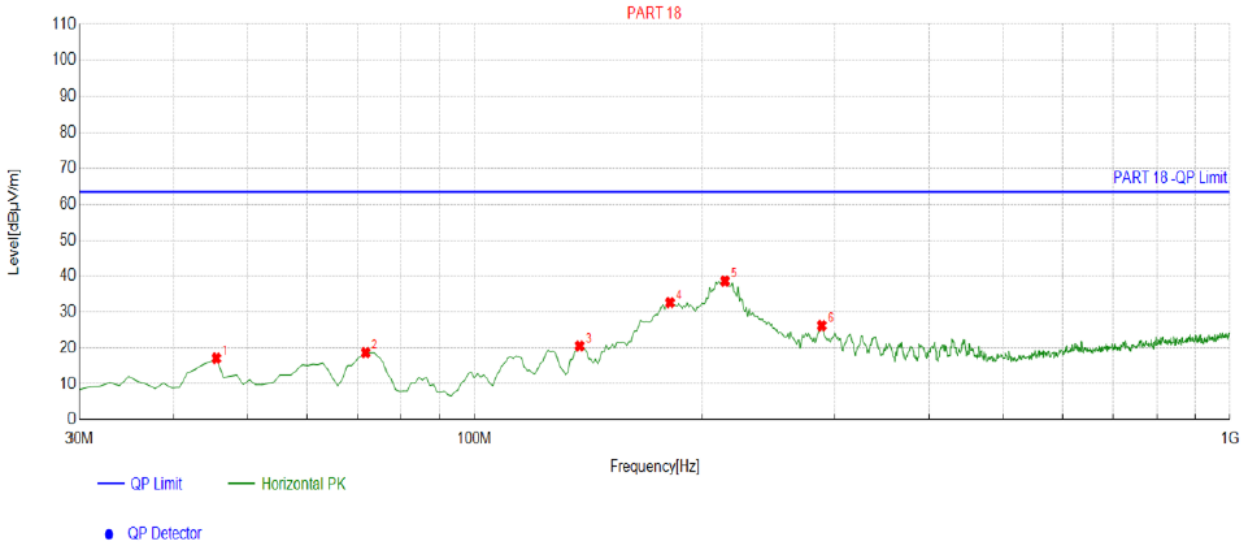


Suspected List						
NO.	Freq. [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]
1	0.0255	14.66	32.06	46.72	103.50	56.78
2	0.0588	13.96	26.61	40.57	103.50	62.93
3	0.3143	13.70	58.13	71.83	103.50	31.67
4	0.6577	13.76	33.06	46.82	103.50	56.68
5	0.9564	14.12	29.84	43.96	103.50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

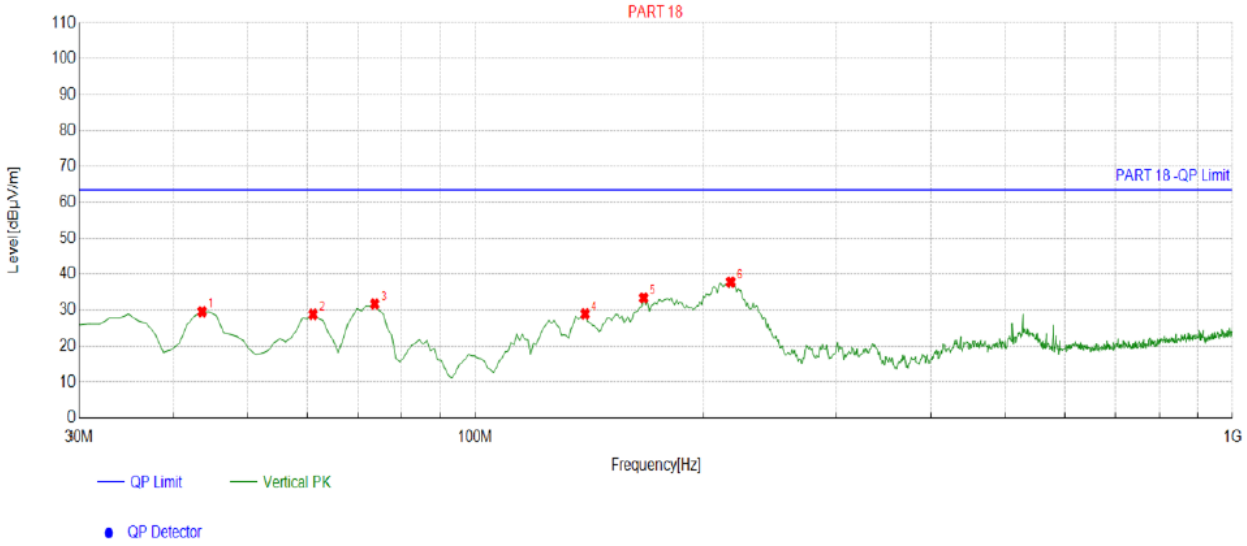
Antenna polarity: H



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



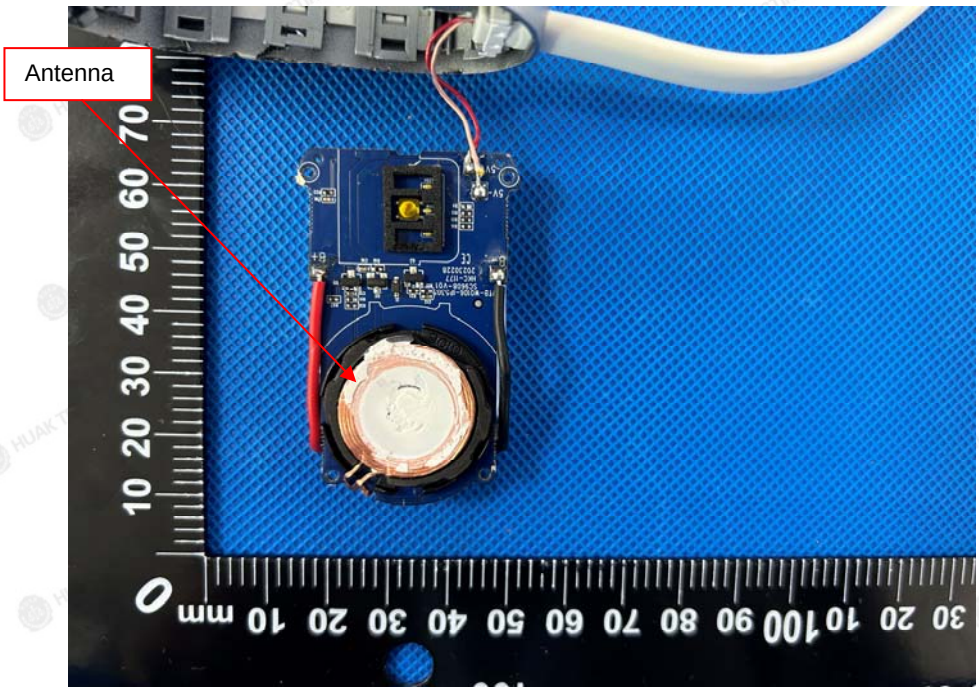
Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	43.5936	-15.10	44.68	29.58	63.50	33.92	100	215	Vertical
2	61.0711	-14.27	43.09	28.82	63.50	34.68	100	219	Vertical
3	73.6937	-16.44	48.17	31.73	63.50	31.77	100	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.

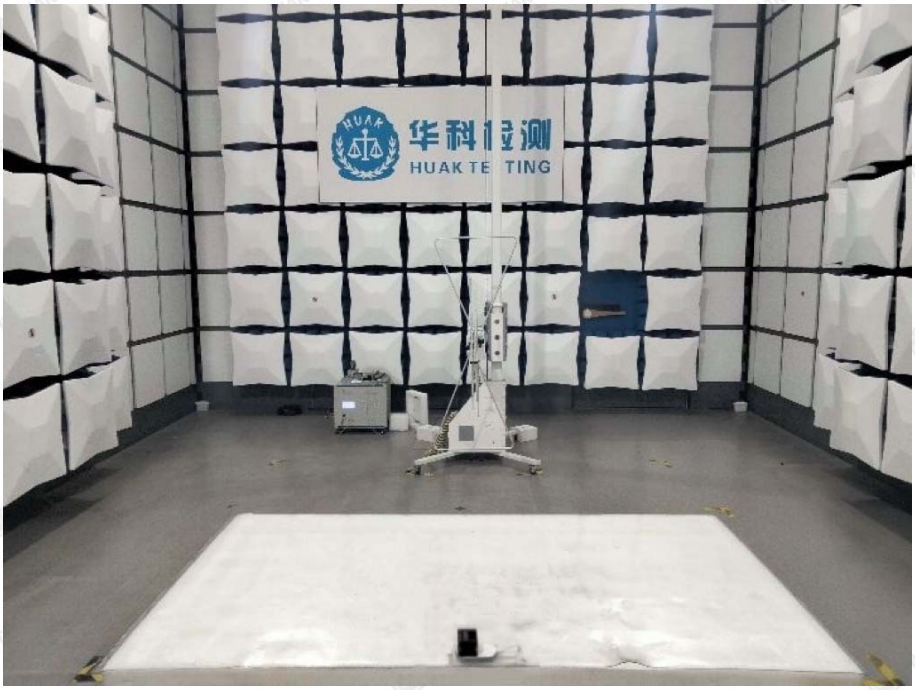
Antenna Connected Construction
The antenna used in this product is a Coil Antenna, which permanently attached. It conforms to the standard requirements. The directional gains of antenna used for transmitting is 0dBi.

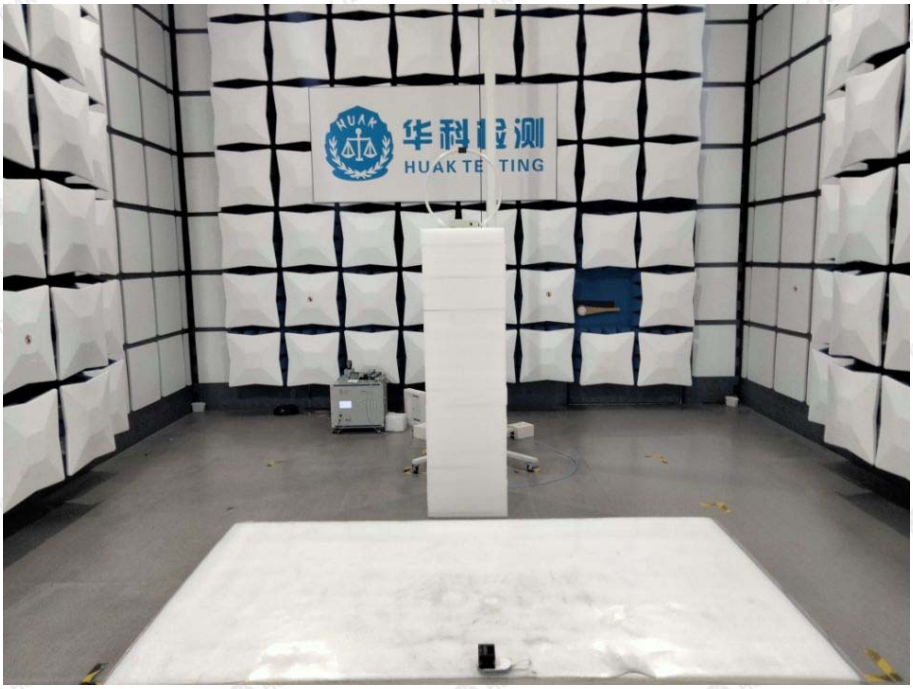


6. PHOTOGRAPH OF TEST

Radiated Emission

DC Mode:





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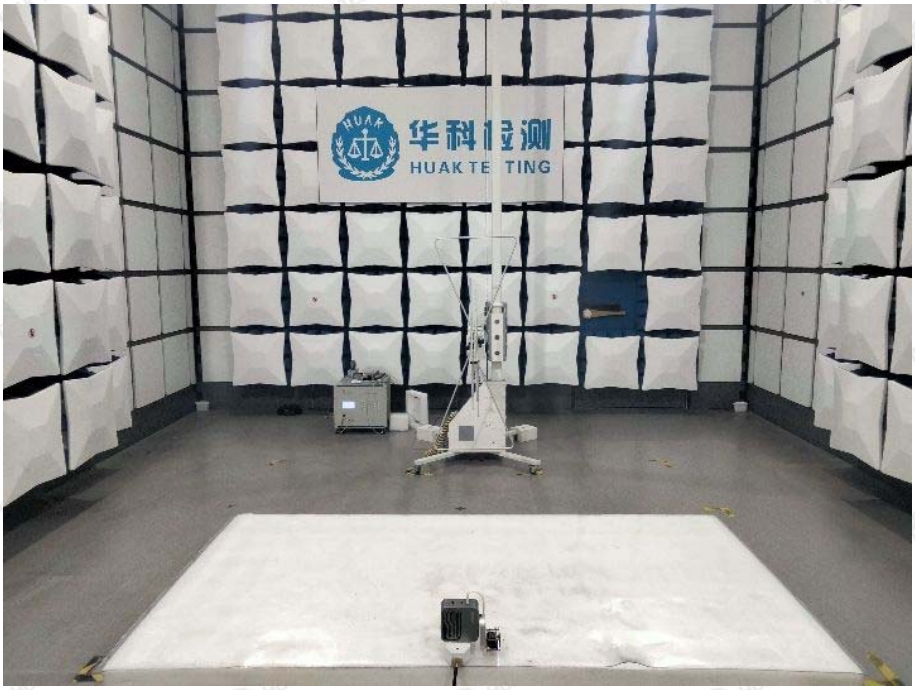
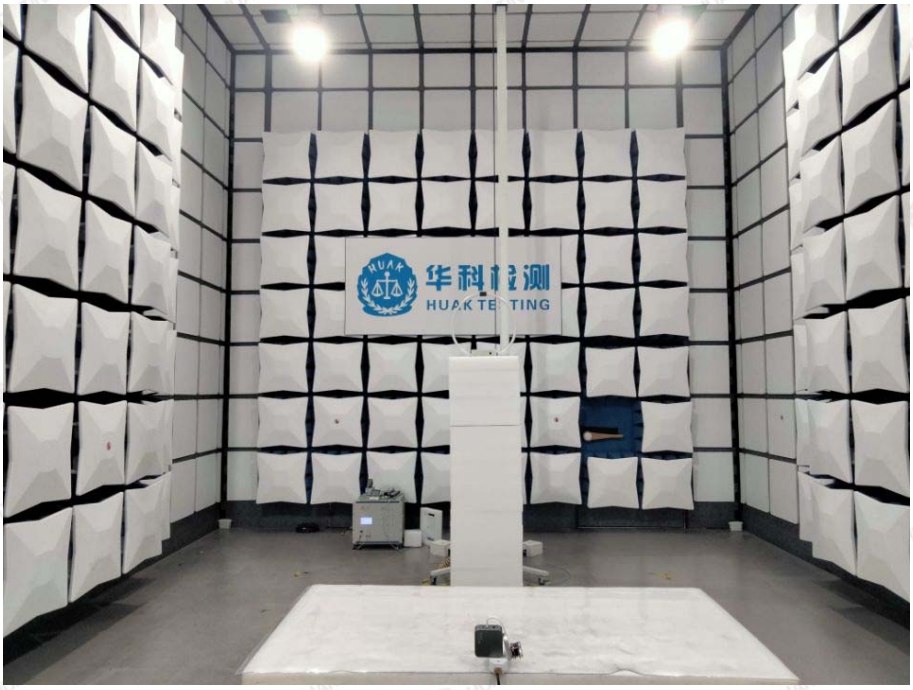
AC Mode:





Conducted Emissions

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7. PHOTOS OF THE EUT

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

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

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