FCC TEST REPORT

FCC ID: 2AYD9-202012

Product	:	PORTABLE POWER STATION
Model Name	:	XGH360/XGH720/XGH1000
Brand	:	N/A
Report No.	:	PTC20080200341E-FC01

Prepared for

Zhejiang Xingyu Mechanical & Electrical Technology Co., Ltd.

No.23 Wujin Ave,Tongqin,Wuyi County,Jinhua City,Zhejiang Province,China

Prepared by

Precise Testing & Certification Co., Ltd.

Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China

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TEST REPORT DECLARATION

Applicant	:	Zhejiang Xingyu Mechanical & Electrical Technology Co., Ltd.
Address	:	No.23 Wujin Ave,Tongqin,Wuyi County,Jinhua City,Zhejiang Province,China
Manufacturer	:	Zhejiang Xingyu Mechanical & Electrical Technology Co., Ltd.
Address	:	No.23 Wujin Ave,Tongqin,Wuyi County,Jinhua City,Zhejiang Province,China
EUT Description	:	PORTABLE POWER STATION
Model No.	:	XGH360/XGH720/XGH1000
Trademark	:	N/A

Measurement Standard Used:
FCC CFR Title 47 Part 15 Subpart C Section 15.209

This device described above has been tested by PTC, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Test Engineer:

Leo Yang / Engineer

Technical Manager:

Chris Du / Manager

1. Test Result Summary

Requirement	CFR 47 Section	Result
AC Power Line Conducted Emission	§15.207	PASS
Spurious Emission	§15.209(a)(f)	PASS
Occupied Bandwidth	§15.215 (c)	PASS
Antenna requirement	§15.203	PASS

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.

2. General Information

2.1. Description of Device (EUT)

EUT Name	:	PORTABLE POWER STATION
Model No.	:	XGH360/XGH720/XGH1000
DIFF.	:	The product size and battery capacity is different, the wireless charging module is the same, by prescan, the model XGH720 test data is worse, and the worse result is reported.
Trademark	:	N/A
Power supply	:	Input: AC100-120V,50/60Hz,1.2A Max Output: Wireless output：5V=1A 9V=1.12A 9V=1.66A
Operation frequency	:	115~200KHz
Modulation	:	MSK
Antenna Type	:	Coil Antenna, Maximum Gain is 0dBi(This value is supplied by applicant).
Connector cable loss	:	0.5dB (This value is supplied by applicant).
Software version	:	V1.2
Hardware version	:	V1.0

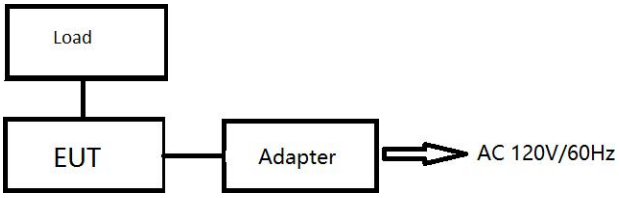
2.2. Accessories of Device (EUT)

Accessories1	:	/
Manufacturer	:	/
Model	:	/
Ratings	:	/

2.3. Tested Supporting System Details

No.	Description	Manufacturer	Model	Serial Number	Certification or SDOC
1	Adapter	--	--	--	--
2	Load	--	--	--	--

2.4. Block Diagram of connection between EUT and simulators



2.5. Description of Test Modes

Channel	Frequency (KHz)
1	132

2.6. Test Conditions

Items	Required	Actual
Temperature range:	15-35℃	24℃
Humidity range:	25-75%	56%
Pressure range:	86-106kPa	98kPa

2.7. Test Facility

Precise Testing & Certification Co., Ltd.
Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China
FCC Registration Number: 790290
A2LA Certificate No.: 4408.01
IC Registration Number: 12191A-1

2.8. Measurement Uncertainty

(95% confidence levels, k=2)

Item	MU	Remark
Uncertainty for Conducted Emission Test	3.4dB	
Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)	2.8dB	Polarize: V
	2.9dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	3.8dB	Polarize: V
	3.9dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	4.54dB	Polarize: H
	4.56dB	Polarize: V
Uncertainty for radio frequency	5.4×10^{-8}	
Uncertainty for conducted RF Power	0.37dB	

2.9. Test Equipment List

RF Conducted Test

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Calibration Due
MXG Signal Analyzer	Agilent	N9020A	MY56070279	10Hz-30GHz	Aug. 21, 2021
Coaxial Cable	CDS	79254	46107086	10Hz-30GHz	Aug. 21, 2021

Radiated Emissions Test

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Calibration Due
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	9KHz-3GHz	Aug. 21, 2021
Loop Antenna	Schwarzbeck	FMZB 1519	012	9 KHz -30MHz	Aug. 21, 2021
Bilog Antenna	SCHWARZBECK	VULB9160	9160-3355	25MHz-2GHz	Aug. 21, 2021
Preamplifier (low frequency)	SCHWARZBECK	BBV 9475	9745-0013	1MHz-1GHz	Aug. 21, 2021
Cable	Schwarzbeck	PLF-100	549489	9KHz-3GHz	Aug. 21, 2021
Spectrum Analyzer	Agilent	E4407B	MY45109572	9KHz-40GHz	Aug. 21, 2021
Horn Antenna	SCHWARZBECK	9120D	9120D-1246	1GHz-18GHz	Aug. 21, 2021
Power Amplifier	LUNAR EM	LNA1G18-40	J10100000081	1GHz-26.5GHz	Aug. 21, 2021
Cable	H+S	CBL-26	N/A	1GHz-26.5GHz	Aug. 21, 2021

Conducted Emissions Test

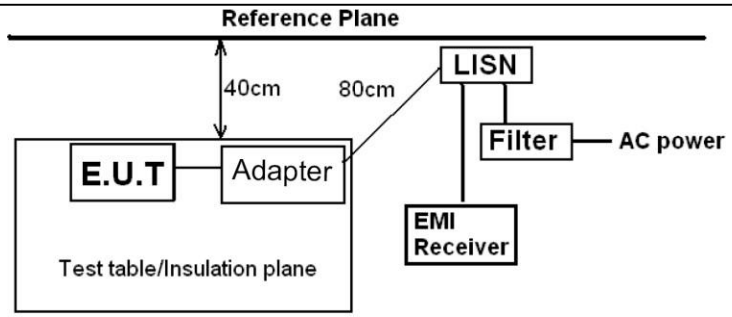
Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Calibration Due
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	9KHz-3GHz	Aug. 21, 2021
Artificial Mains Network	Rohde&Schwarz	L2-16B	000WX31025	9KHz-300MHz	Aug. 21, 2021
Artificial Mains Network	Rohde&Schwarz	ENV216	101342	9KHz-300MHz	Aug. 21, 2021

Software Information			
Test Item	**Software Name**	**Manufacturer**	**Version**
RE	e3	Emtek	e3/1.0.0.0
CE	e3	Emtek	e3/1.0.0.0
RF-CE	MTS 8310	MW	V2.0.0.0

3. Test Results and Measurement Data

3.1. Conducted Emission

3.1.1. Test Specification

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.207</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10:2013</td></tr>
<tr><td>Frequency Range:</td><td>150 kHz to 30 MHz</td></tr>
<tr><td>Receiver setup:</td><td>RBW=9 kHz, VBW=30 kHz, Sweep time=auto</td></tr>
<tr><td>Limits:</td><td>
<table>
<tr><td rowspan="2">Frequency range (MHz)</td><td colspan="2">Limit (dBuV)</td></tr>
<tr><td>Quasi-peak</td><td>Average</td></tr>
<tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr>
<tr><td>0.5-5</td><td>56</td><td>46</td></tr>
<tr><td>5-30</td><td>60</td><td>50</td></tr>
</table>
</td></tr>
<tr><td>Test Setup:</td><td>


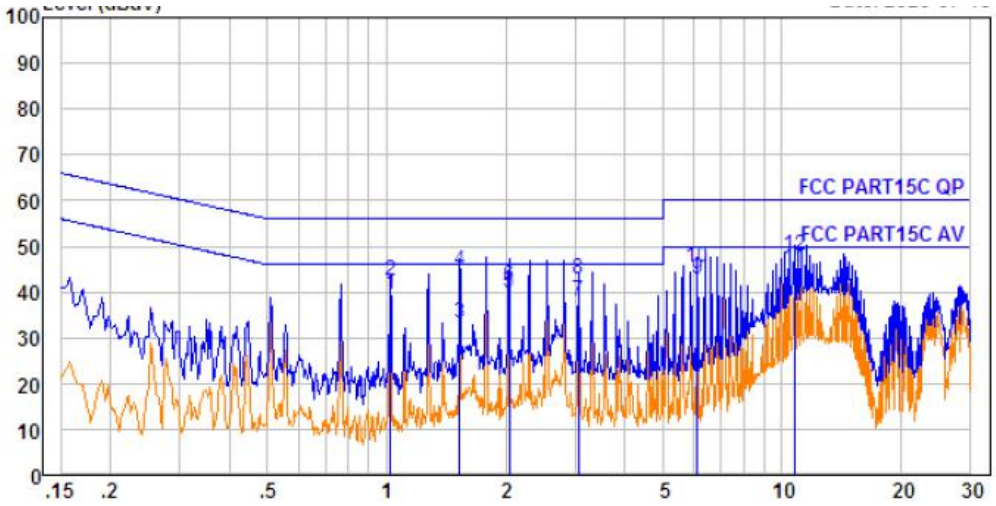
Remark:
E.U.T: Equipment Under Test
LISN: Line Impedence Stabilization Network
Test table height=0.8m
</td></tr>
<tr><td>Test Mode:</td><td>Transmitting Mode</td></tr>
<tr><td>Test Procedure:</td><td>1. The E.U.T is connected to an adapter through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.
2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).
3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.</td></tr>
<tr><td>Test Result:</td><td>PASS</td></tr>
</table>

3.1.2. Test data

Please refer to following diagram for individual

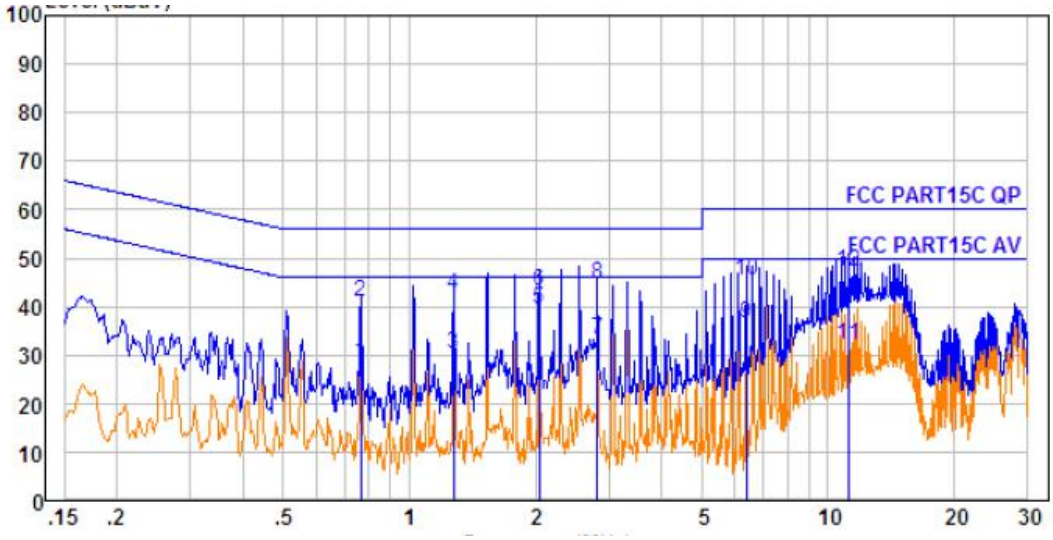
Test Mode :	Full Load(15W), Half Load(7.5W), Empty Load
Test Results :	**PASS**
Note:	The test results are listed in next pages. All test modes has been tested, this report only reflected the worst mode. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector and quasi-peak detector need not be carried out. If the limits for the measurement with the average detector are met when using a receiver with a quasi-peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out.

EUT Description	PORTABLE POWER STATION	Model No.	XGH720
Temperature	24℃	Humidity	56%
Pol	Line	Test mode	Full Load(15W)
Test Voltage	AC 120V/60Hz		



No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBuV	Emission Level dBuV	Limit dBuV	Over Limit dB	Remark
1.	1.021	0.46	9.61	29.45	39.52	46.00	-6.48	Average
2.	1.021	0.46	9.61	32.26	42.33	56.00	-13.67	QP
3.	1.527	0.47	9.61	23.19	33.27	46.00	-12.73	Average
4.	1.527	0.47	9.61	34.61	44.69	56.00	-11.31	QP
5.	2.040	0.47	9.61	29.70	39.78	46.00	-6.22	Average
6.	2.040	0.47	9.61	31.30	41.38	56.00	-14.62	QP
7.	3.058	0.47	9.63	28.08	38.18	46.00	-7.82	Average
8.	3.058	0.47	9.63	32.73	42.83	56.00	-13.17	QP
9.	6.121	0.53	9.71	32.50	42.74	50.00	-7.26	Average
10.	6.121	0.53	9.71	35.27	45.51	60.00	-14.49	QP
11.	10.733	0.56	9.77	34.86	45.19	50.00	-4.81	Average
12.	10.733	0.56	9.77	37.62	47.95	60.00	-12.05	QP

Pol	Neutral



No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBuV	Emission Level dBuV	Limit dBuV	Over Limit dB	Remark
1.	0.767	0.45	9.64	18.49	28.58	46.00	-17.42	Average
2.	0.767	0.45	9.64	31.01	41.10	56.00	-14.90	QP
3.	1.276	0.46	9.64	20.21	30.31	46.00	-15.69	Average
4.	1.276	0.46	9.64	32.39	42.49	56.00	-13.51	QP
5.	2.040	0.47	9.64	29.50	39.61	46.00	-6.39	Average
6.	2.040	0.47	9.64	32.90	43.01	56.00	-12.99	QP
7.	2.809	0.47	9.66	23.05	33.18	46.00	-12.82	Average
8.	2.809	0.47	9.66	34.36	44.49	56.00	-11.51	QP
9.	6.386	0.54	9.74	26.15	36.43	50.00	-13.57	Average
10.	6.386	0.54	9.74	35.06	45.34	60.00	-14.66	QP
11.	11.250	0.56	9.82	21.90	32.28	50.00	-17.72	Average
12.	11.250	0.56	9.82	36.71	47.09	60.00	-12.91	QP

3.2. Radiated Spurious Emission Measurement

3.2.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.209
Test Method:	ANSI C63.10: 2013
Frequency Range:	9 kHz to 25 GHz
Measurement Distance:	3 m
Antenna Polarization:	Horizontal & Vertical
Operation mode:	Refer to item 4.1

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
9kHz- 150kHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value
150kHz-30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value
30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value
Above 1GHz	Peak	1MHz	3MHz	Peak Value
	Peak	1MHz	10Hz	Average Value

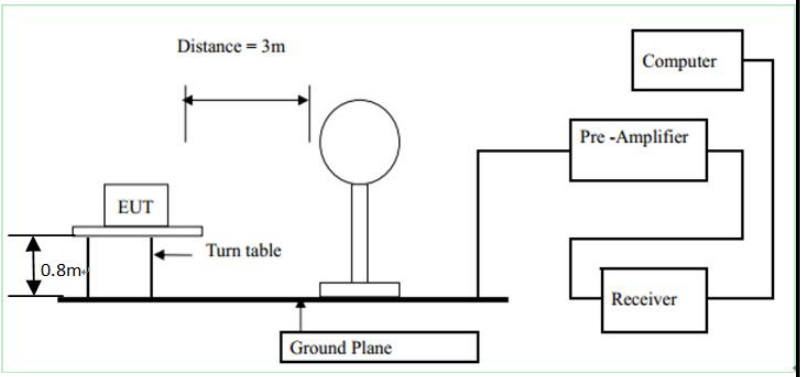
Limit:

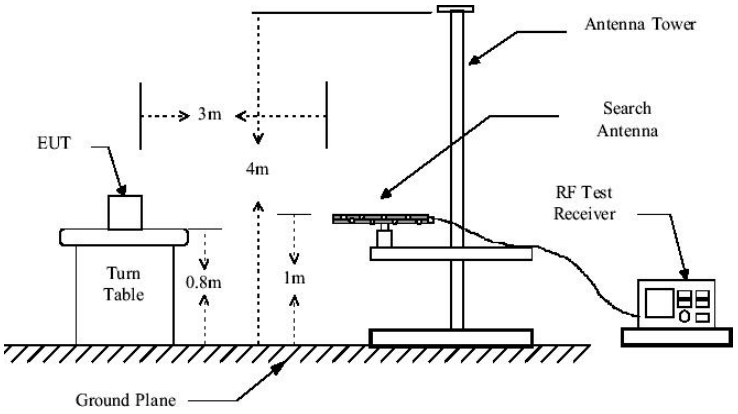
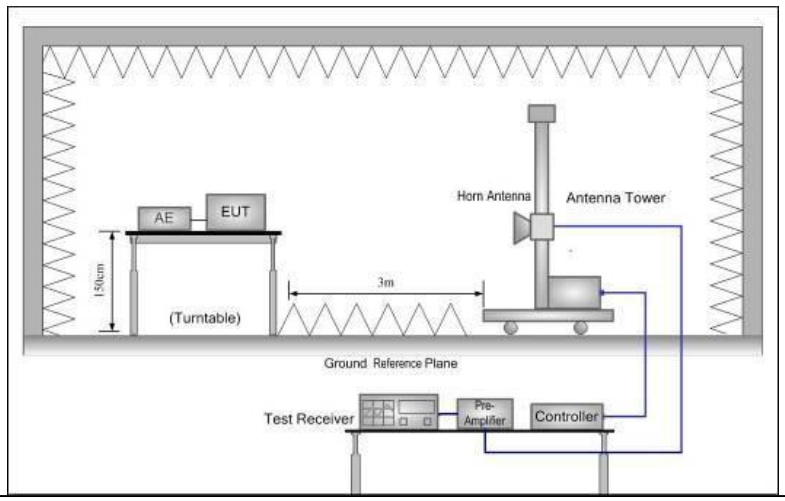
Frequency	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009-0.490	2400/F(KHz)	300
0.490-1.705	24000/F(KHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Frequency	Field Strength (microvolts/meter)	Measurement Distance (meters)	Detector
Above 1GHz	500	3	Average
	5000	3	Peak

Test setup:

For radiated emissions below 30MHz



Test setup:	30MHz to 1GHz  Above 1GHz 
Test Procedure:	1. For the radiated emission test below 1GHz: The EUT was placed on a turntable with 0.8 meter above ground. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high PASS filter are used for the test in order to get better signal level. For the radiated emission test above 1GHz: Place the measurement antenna on a turntable with 1.5 meter above ground, which is away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which

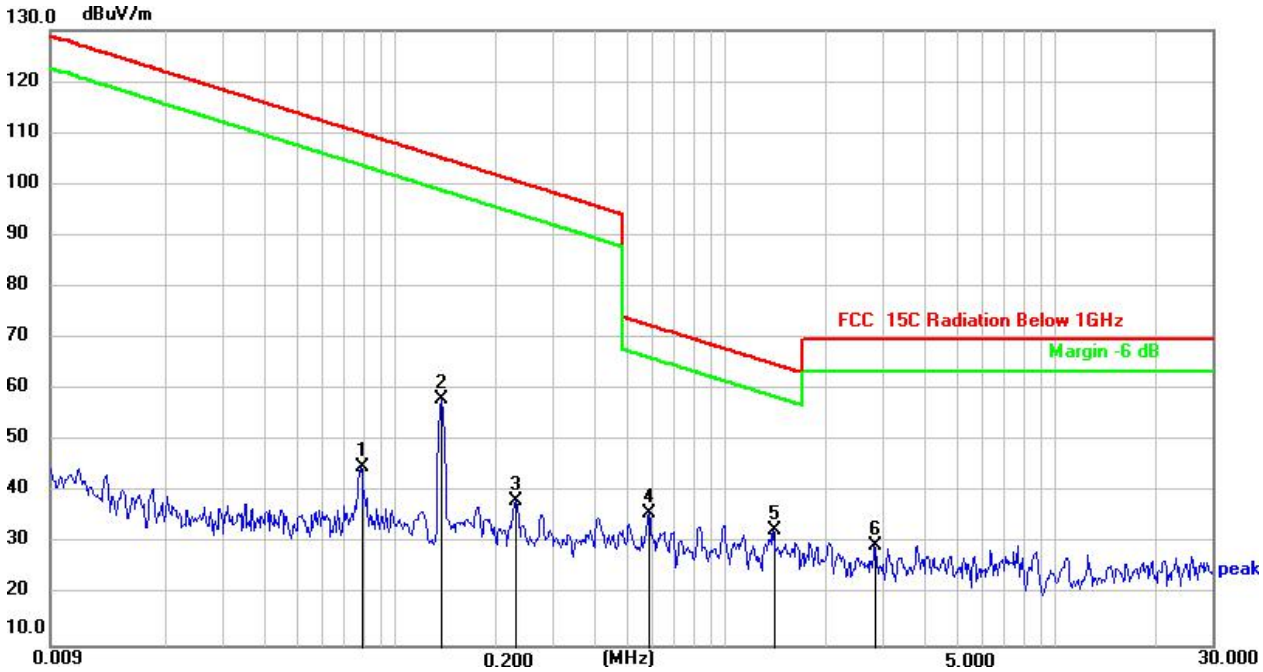
	maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. 2. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level 3. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported. 4. Use the following spectrum analyzer settings: (1) Span shall wide enough to fully capture the emission being measured; (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥RBW; Sweep = auto; Detector function = peak; Trace = max hold; (3) Set RBW = 1 MHz, VBW= 3MHz for f 1 GHz for peak measurement. For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent. VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
Test mode:	Refer to section 4.1 for details
Test results:	PASS

3.2.2. Test Data

Please refer to following diagram for individual

Frequency Range	:	9KHz~30MHz
Test Mode	:	TX: 132KHz, Full Load (15W)
Test Results	:	**PASS**

Note: 1. The test results are listed in next pages.
2. This mode is worst case mode, so this report only reflected the worst mode.
3. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the quasi-peak detector need not be carried out.



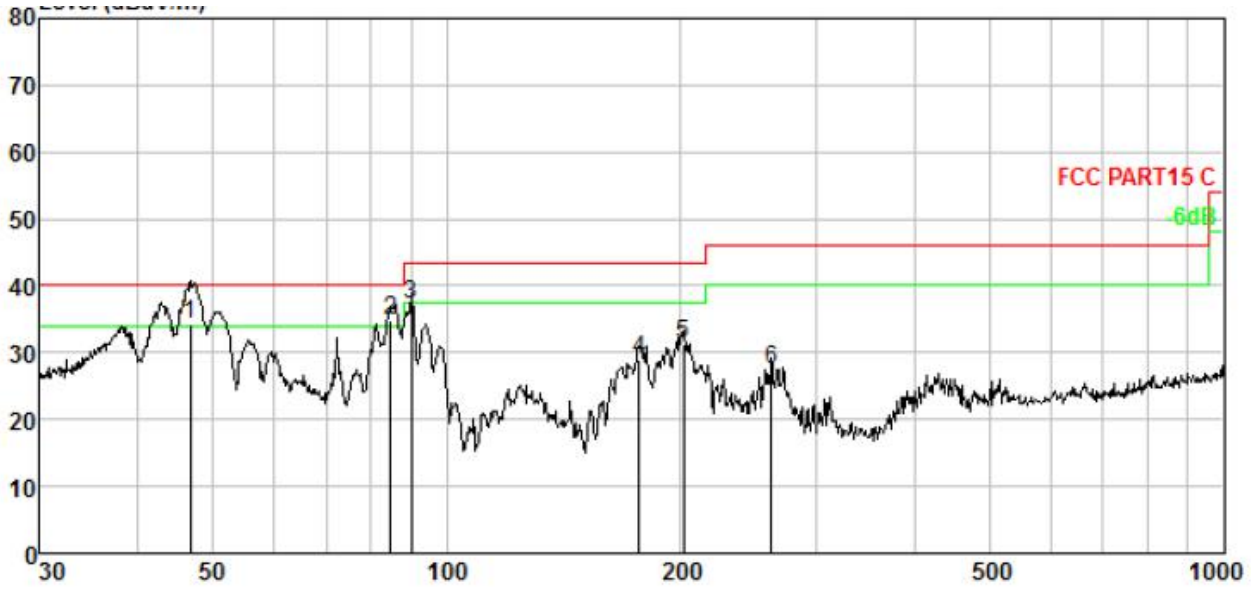
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.0785	24.37	20.60	44.97	109.71	-64.74	peak
2	0.1374	38.13	20.11	58.24	104.84	-46.60	peak
3	0.2309	18.11	20.17	38.28	100.34	-62.06	peak
4	0.5868	15.51	20.38	35.89	72.24	-36.35	peak
5 *	1.3979	12.14	20.50	32.64	64.72	-32.08	peak
6	2.8312	9.40	20.25	29.65	69.50	-39.85	peak

Frequency Range	:	30MHz~1000MHz
Test Mode	:	Full Load(15W)
Test Results	:	**PASS**
Note:	1. The test results are listed in next pages. 2. All test modes has been tested, this report only reflected the worst mode. 3. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the quasi-peak detector need not be carried out.	

Frequency Range	:	Above 1GHz			
EUT	:	/	Test Date	:	/
M/N	:	/	Temperature	:	/
Test Engineer	:	/	Humidity	:	/
Test Mode	:	/			
Test Results	:	N/A			
Note:	1. The highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz. So the frequency rang above 1GHz radiation test not applicable.				

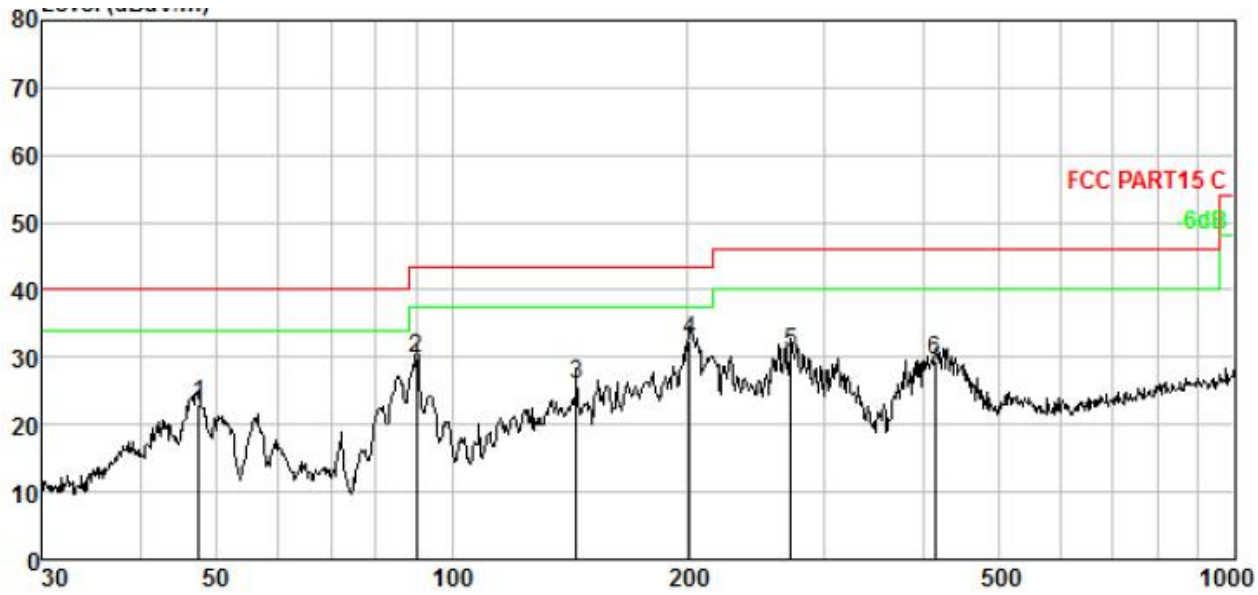
30MHz-1GHz

EUT Description	PORTABLE POWER STATION	Model No.	XGH720
Temperature	24℃	Humidity	56%
Pol	Vertical	Test mode	Full Load(15W)
Test Voltage	AC 120V/60Hz		



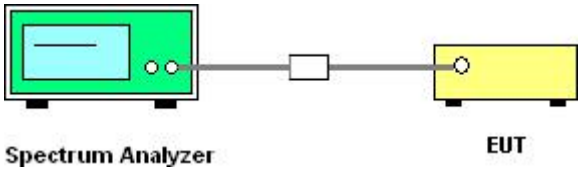
No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	46.830	1.97	12.22	49.91	29.92	34.18	40.00	-5.82	QP
2.	84.702	2.99	8.72	53.05	29.97	34.79	40.00	-5.21	QP
3.	90.220	3.09	9.20	54.79	29.98	37.10	43.50	-6.40	QP
4.	176.888	4.25	12.74	42.09	30.03	29.05	43.50	-14.45	QP
5.	202.100	4.48	11.07	45.93	30.05	31.43	43.50	-12.07	QP
6.	261.975	4.93	12.68	39.95	30.23	27.33	46.00	-18.67	QP

Pol	Horizontal



No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	47.492	1.99	12.20	38.83	29.92	23.10	40.00	-16.90	QP
2.	90.220	3.09	9.20	47.46	29.98	29.77	43.50	-13.73	QP
3.	144.335	3.90	13.48	38.70	30.02	26.06	43.50	-17.44	QP
4.	201.393	4.47	11.05	46.98	30.04	32.46	43.50	-11.04	QP
5.	271.325	4.99	12.81	43.24	30.25	30.79	46.00	-15.21	QP
6.	414.722	5.72	15.14	39.28	30.73	29.41	46.00	-16.59	QP

3.3. Test Specification

Test Requirement:	FCC Part15 C Section 15.215(c)
Test Method:	ANSI C63.10: 2013
Limit:	N/A
Test Procedure:	1. According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT. 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Use the following spectrum analyzer settings for 20dB Bandwidth measurement. Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel; RBW⩾1% of the 20 dB bandwidth; VBW⩾RBW; Sweep = auto; Detector function = peak; Trace = max hold. 4. Measure and record the results in the test report.
Test setup:	
Test Mode:	Refer to section 4.1 for details
Test results:	PASS

3.3.1. Test data

Frequency(kHz)	20dB Occupy Bandwidth (kHz)	Limit (kHz)	Conclusion
132	8.112	---	PASS

Test plots as follows:

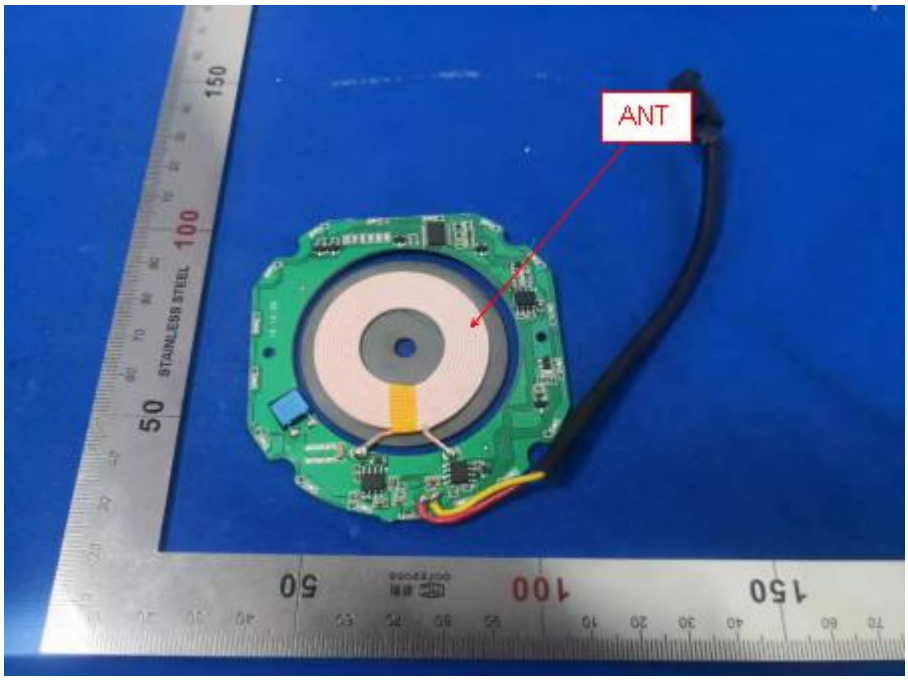
4. Antenna Requirement

4.1 Test Standard and Requirement

Test Standard	FCC Part15 Section 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.

4.2 Antenna Connected Construction

The antenna is a Inductive loop coil Antenna which permanently attached, and the best case gain of the antenna is 0 dBi. It complies with the standard requirement.

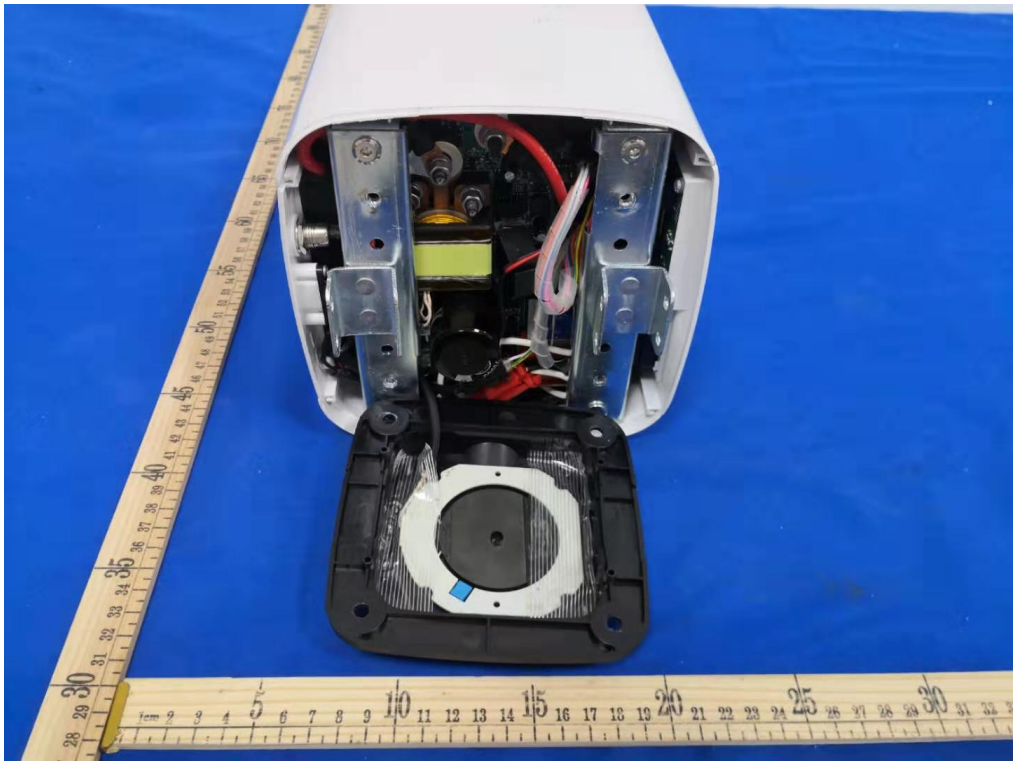


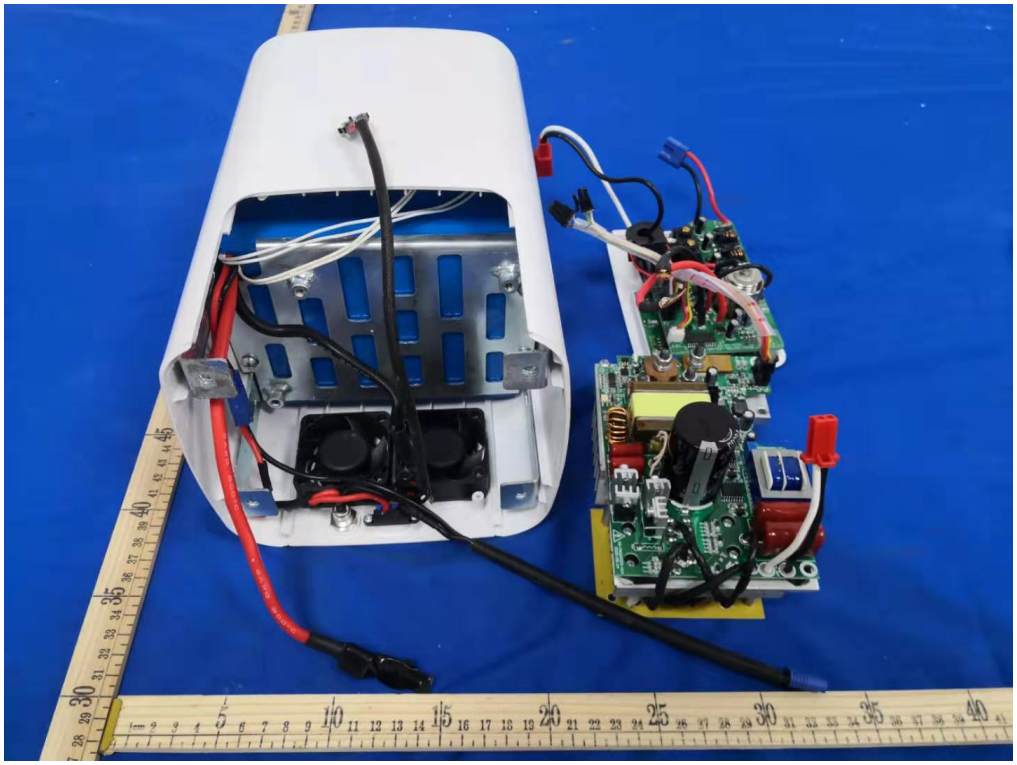
5. Photos of test setup

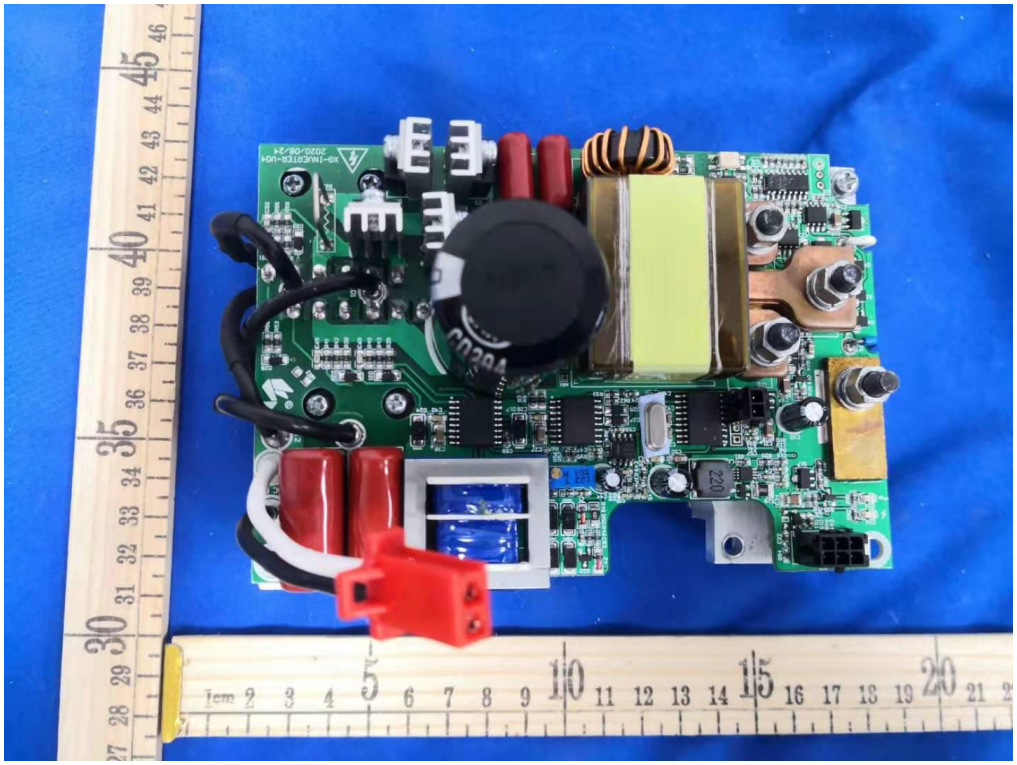
Radiated Emission

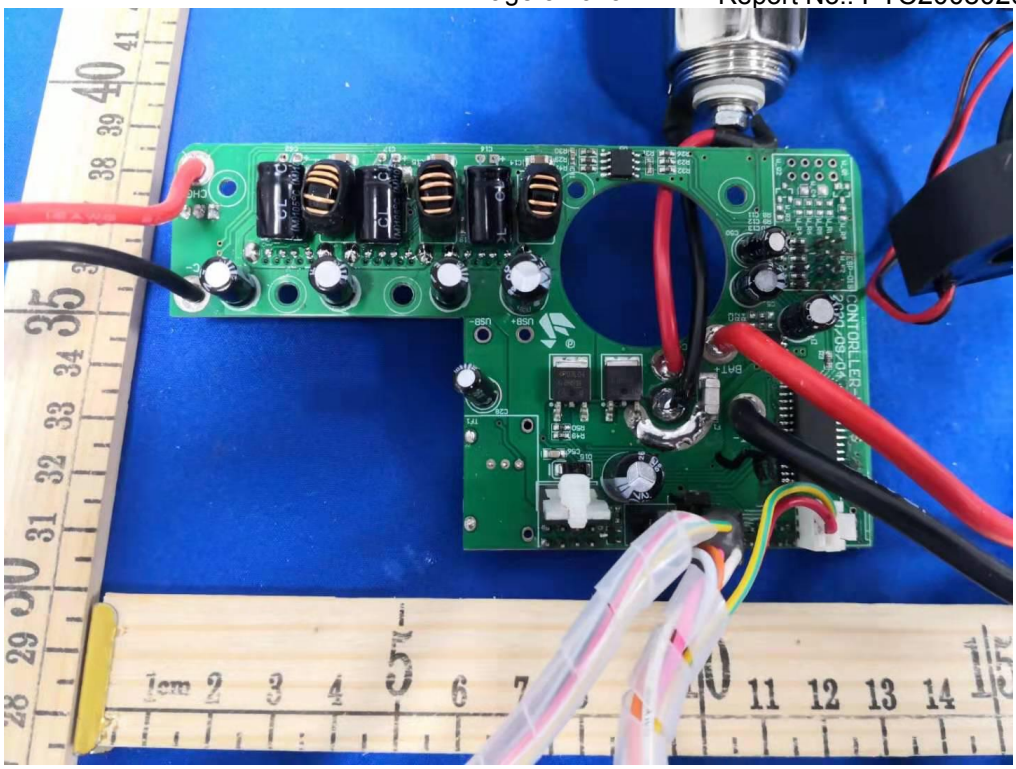
Conducted Emission

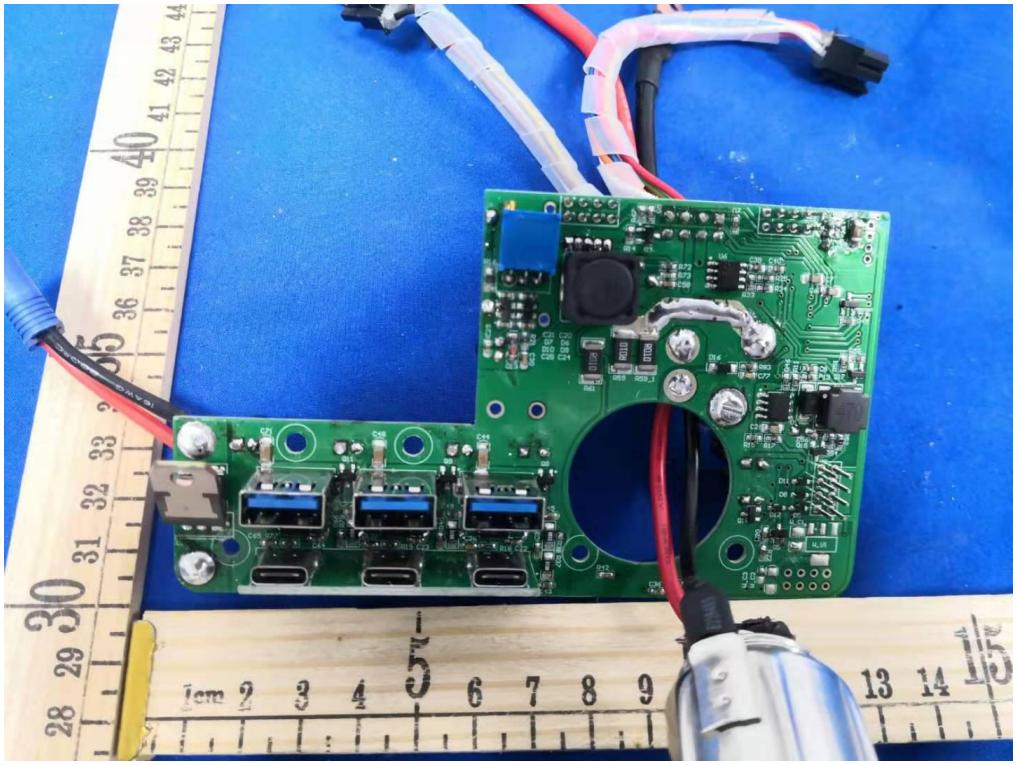
6.Photographs of EUT



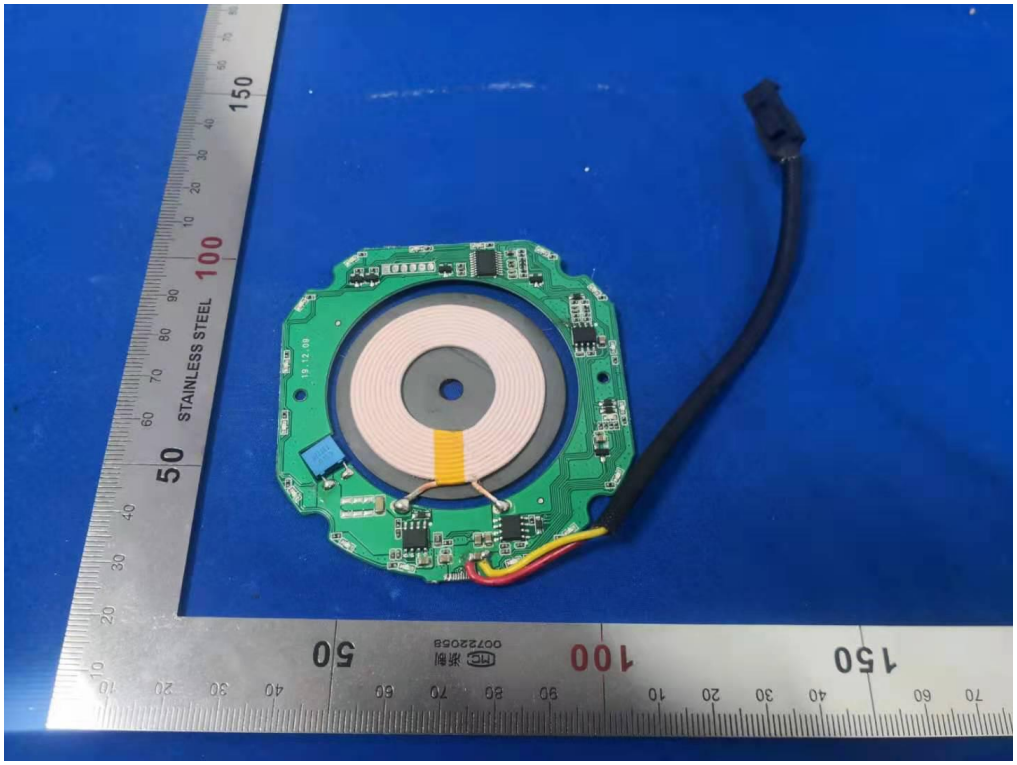


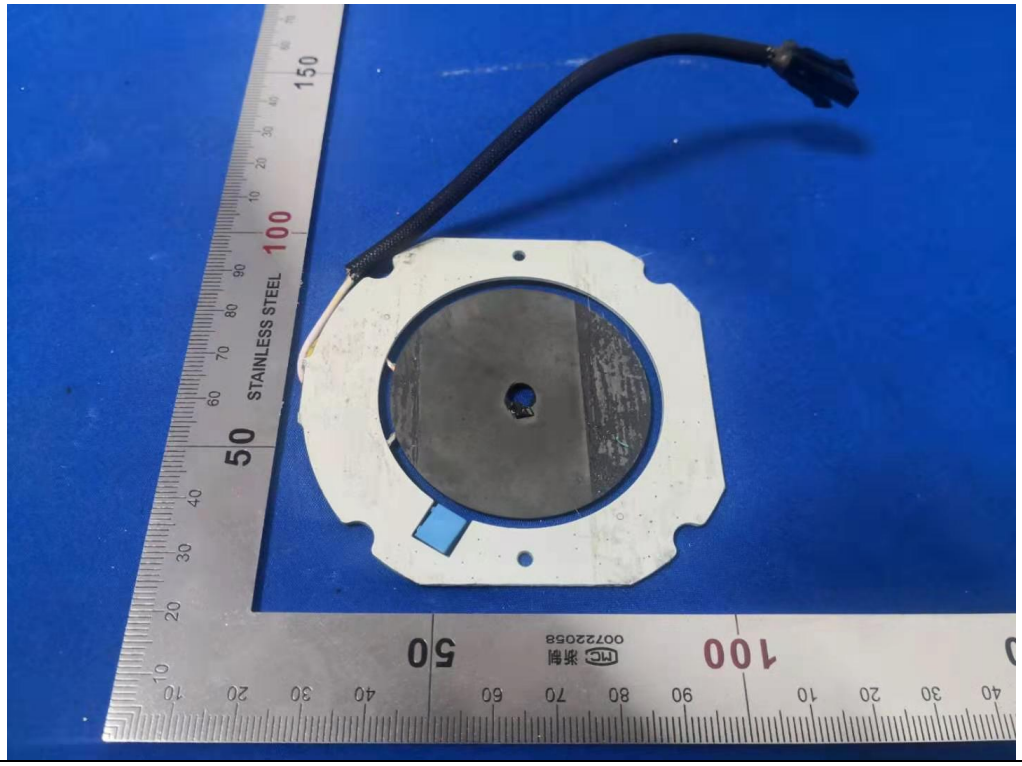






69 Li-ion Battery
14.8V52AH G
TianRen Battery
S/N 14.8V52B0E 042


STAINLESS STEEL



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