Shenzhen Global Test Service Co.,Ltd.
No.7-101 and 8A-104,Building 7 and 8,DCC Cultural and Creative Garden No.98,Pingxin North Road,Shangmugu,Pinghu Street, Longgang District,Shenzhen,Guangdong,China

TEST REPORT

FCC Rules and Regulations Part 15 Subpart C (Section 15.209), ANSI C63.10: 2013

Report Reference No.....:	**GTS20200926004-1-1**
FCC ID.....:	**2AHCL-TEK006**
Compiled by (position+printed name+signature)..:	File administrators Peter Xiao
Supervised by (position+printed name+signature)..:	Test Engineer Moon Tan
Approved by (position+printed name+signature)..:	Manager Simon Hu
Date of issue.....:	Oct.15, 2020
Representative Laboratory Name .:	**Shenzhen Global Test Service Co.,Ltd.**
Address.....:	No.7-101 and 8A-104,Building 7 and 8,DCC Cultural and Creative Garden No.98,Pingxin North Road,Shangmugu,Pinghu Street,Longgang District,Shenzhen,Guangdong,China
Applicant's name.....:	**DONGGUAN ARUN INDUSTRIAL CO.,LTD**
Address .....:	NO.18 Xinfeng Changlong Huangjiang, Dongguan City, Guangdong Province, P.R.China
Test specification .....**:**	
Standard .....:	FCC Rules and Regulations Part 15 Subpart C (Section 15.209), ANSI C63.10: 2013

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Test item description .....:	**Power Bank**
Trade Mark .....:	N/A
Manufacturer .....:	DONGGUAN ARUN INDUSTRIAL CO.,LTD
Model/Type reference.....:	TEK006
List Model .....:	N/A
Modulation Type .....:	Load modulation
Operation Frequency.....:	110-205KHz
Ratings .....:	Input: DC 5.0V/3.0A , DC 9.0V/2.0A , DC12V/1.5A Type -C Output: DC 5.0V/3.0A , DC 9.0V/2.0A , DC12V/1.5A USB -A Output: DC 5.0V/3.0A , DC 9.0V/2.0A , DC12V/1.5A Wireless Output:5W/7.5W/10W Total Output: DC 5.0V/ 3.0A
Result.....:	**PASS**

TEST REPORT

Test Report No. :	GTS20200926004-1-1	Oct.15, 2020 Date of issue

Equipment under Test	:	Power Bank
Model /Type	:	TEK006
Listed Models	:	N/A
Applicant	:	**DONGGUAN ARUN INDUSTRIAL CO.,LTD**
Address	:	NO.18 Xinfeng Changlong Huangjiang, Dongguan City, Guangdong Province, P.R.China
Manufacturer		**DONGGUAN ARUN INDUSTRIAL CO.,LTD**
Address	:	NO.18 Xinfeng Changlong Huangjiang, Dongguan City, Guangdong Province, P.R.China

Test Result:	**PASS**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Contents

1. TEST STANDARDS 4

2. SUMMARY 5

2.1. General Remarks 5
2.2. Product Description 5
2.3. Equipment Under Test 6
2.4. EUT Exercise Software 6
2.5. Special Accessories 6
2.6. External I/O Cable 6
2.7. Modifications 6

3. TEST ENVIRONMENT 7

3.1. Address of the test laboratory 7
3.2. Test Facility 7
3.3. Test Description 7
3.4. Statement of the measurement uncertainty 7
3.5. Equipments Used during the Test 8

4. TEST CONDITIONS AND RESULTS 9

4.1. AC Power Conducted Emission 9
4.2. Radiated Emission 11
4.3. Occupied Bandwidth 15
4.4. Antenna Requirement 16

5. TEST SETUP PHOTOS OF THE EUT 17

6. EXTERNAL AND INTERNAL PHOTOS OF THE EUT 19

1. TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 15 Subpart C (Section 15.209): Radiated emission limits; general requirements.

ANSI C63.10: 2013: American National Standard for Testing Unlicensed Wireless Devices

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Oct.09, 2020
Testing commenced on	:	Oct.09, 2020
Testing concluded on	:	Oct.15, 2020

2.2. Product Description

Product Name:	Power Bank
Trade Mark:	N/A
Model/Type reference:	TEK006
List Model:	N/A
Model Declaration	N/A
Power supply:	Input: DC 5.0V/3.0A , DC 9.0V/2.0A , DC12V/1.5A Type -C Output: DC 5.0V/3.0A , DC 9.0V/2.0A , DC12V/1.5A USB -A Output: DC 5.0V/3.0A , DC 9.0V/2.0A , DC12V/1.5A Wireless Output:5W/7.5W/10W Total Output: DC 5.0V/ 3.0A
Hardware version	V1
Software version	V0
WPT	
Operation frequency	110-205KHz
Modulation Type	Load modulation
Antenna Type	Coil Antenna
Antenna Gain	0dBi

2.3. Equipment Under Test

Power supply system utilised

Power supply voltage	:	○	230V / 50 Hz	○	120V / 60Hz
		●	12 V DC	○	24 V DC
		○	Other (specified in blank below)		

Description of the test mode

Operation Frequency each of channel	
Channel	Frequency
1	147.0KHz

Operating Mode
The mode is used:
Mode 1:Transmitting mode
Mode 2: Full load mode
Mode 3: Half load mode
Mode 4: Idle mode
Note:
All test modes were tested, but we only recorded the worst case in this report.

2.4. EUT Exercise Software

N/A

2.5. Special Accessories

Manufacturer	Description	Model	Serial Number	Certificate
HUAWEI Corporation	Adapter	E5572-855	--	SDOC

Note: The Adapter is only used for auxiliary testing.

2.6. External I/O Cable

I/O Port Description	Quantity	Cable
DC IN Port	1	0.8M, Unscreened Cable
USB IN Port	1	N/A

2.7. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen Global Test Service Co.,Ltd.
No.7-101 and 8A-104,Building 7 and 8,DCC Cultural and Creative Garden No.98,Pingxin North Road,Shangmugu,Pinghu Street,Longgang District,Shenzhen,Guangdong,China

3.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS (No. CNAS L8169)
Shenzhen Global Test Service Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2019 General Requirements) for the Competence of Testing and Calibration Laboratories.
A2LA (Certificate No. 4758.01)
Shenzhen Global Test Service Co., Ltd. has been assessed by the American Association for Laboratory Accreditation (A2LA). Certificate No. 4758.01.
Industry Canada Registration Number. is 24189.
FCC Designation Number is CN1234.
FCC Registered Test Site Number is165725.

3.3. Test Description

Description Of Test	Result
Conducted Emissions Test	Compliant
Radiated Emission Test	Compliant
Occupied Bandwidth Measurement	Compliant
Antenna Requirement	Compliant

3.4. Statement of the measurement uncertainty

Measurement Uncertainty		
Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty(9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty(30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty(Above 1GHz)	=	4.06dB, k=2

3.5. Equipments Used during the Test

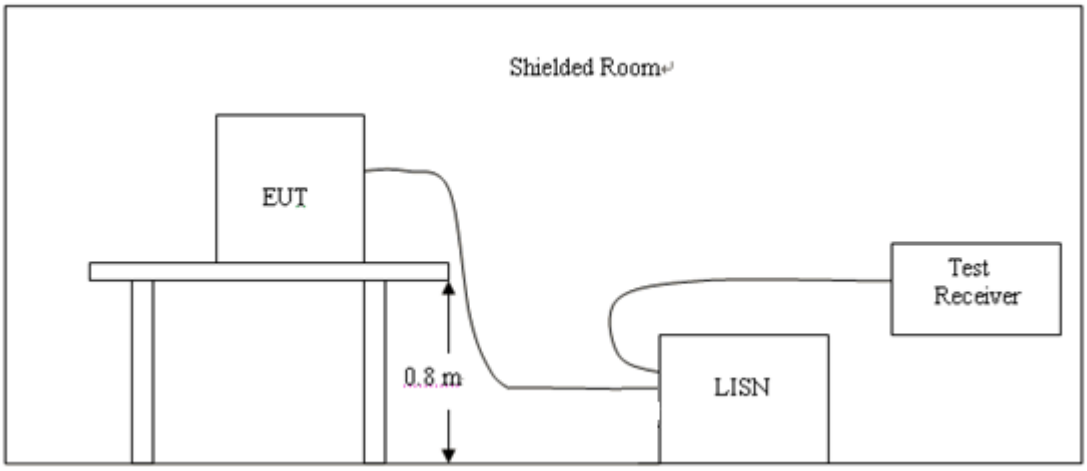
Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	ULTRA-BROADBAND ANTENNA	Schwarzbeck	VULB9163	000976	2020/09/19	2021/09/18
2	EMI Test Receiver	R&S	ESCI 3	101841-cd	2020/06/25	2021/06/24
3	Horn Antenna	Sunol Sciences Corp.	DRH-118	A062013	2020/09/19	2021/09/18
4	Pre-Amplifier	Agilent	8349B	3008A02306	2020/09/19	2021/09/18
5	Pre-Amplifier	Agilent	8447D	2944A10176	2020/09/19	2021/09/18
6	Loop Antenna	Beijing Da Ze Technology Co.,Ltd.	ZN30900C	15006	2020/09/19	2021/09/18
7	RS SPECTRUM ANALYZER	R&S	FSP40-N	101800	2020/09/19	2021/09/18
8	EMI Test software	Tonscend	JS32-RE	Version 2.0.1.5	/	/
9	EMI Test Software	AUDIX	E3	/	N/A	N/A
10	EMI Test Receiver	ROHDE & SCHWARZ	ESCI 7	101102	2020/09/19	2021/09/18
11	Artificial Mains	ROHDE & SCHWARZ	ESH2-Z5	893606/008	2020/09/19	2021/09/18
12	Artificial Mains	CYBERTEK	EM5040A	E1850400105	2020/09/19	2021/09/18
13	Pulse Limiter	Agilent	11947A	3107A04120	2020/09/19	2021/09/18
14	Impedance Stabilization Network	Schwarzbeck	CAT5 8158	102	2020/09/19	2021/09/18
15	Transient Limiter	CYBERTEK	EM5010A	E1950100106	2020/09/19	2021/09/18
16	Spectrum Analyzer	Agilent	N9020A	MY48010425	2020/09/19	2021/09/18

The calibration interval is 1 year.

4. TEST CONDITIONS AND RESULTS

4.1. AC Power Conducted Emission

TEST CONFIGURATION



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 adapter, the adapter adapter received 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.

AC Power Conducted Emission Limit

For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following：

Frequency range (MHz)	Limit (dBuV)	
	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.		

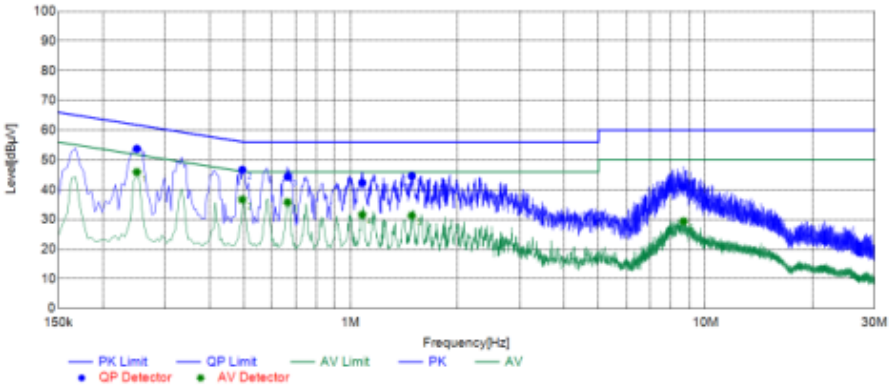
TEST RESULTS

1. Both 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz power supply have been tested, only the worst result of 120 VAC, 60 Hz was reported as below:.

Temperature	23.6℃	Humidity	55.3%
Test Engineer	Moon Tan	Configurations	WPT

Power supply:	AC 120V/60Hz	Polarization	L

Test Graph



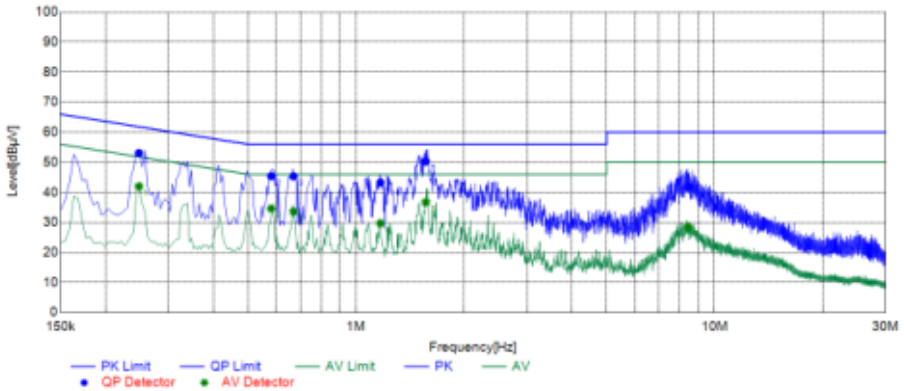
Final Data List

NO.	Frequency [MHz]	QP Reading [dBμV]	AVG. Reading [dBμV]	Factor [dB]	QP Result [dBμV]	AVG. Result [dBμV]	QP Limit [dBμV]	AVG. Limit [dBμV]	QP Margin [dB]	AVG. Margin [dB]	Line	Remark
1	0.2498	43.73	35.89	10.02	53.75	45.91	61.76	51.76	8.01	5.85	L1	PASS
2	0.4954	36.61	26.59	10.06	46.67	36.65	56.08	46.08	9.41	9.43	L1	PASS
3	0.6646	34.28	25.72	10.05	44.33	35.77	56.00	46.00	11.67	10.23	L1	PASS
4	1.0786	32.23	21.48	10.08	42.31	31.56	56.00	46.00	13.69	14.44	L1	PASS
5	1.4879	34.48	21.19	10.11	44.59	31.30	56.00	46.00	11.41	14.70	L1	PASS
6	8.6820	30.23	18.69	10.66	40.89	29.35	60.00	50.00	19.11	20.65	L1	PASS

Note:1. Result (dBμV) = Reading (dBμV) + Factor (dB).
2. Factor (dB) = Cable loss (dB) + LISN Factor (dB).

Power supply:	AC 120V/60Hz	Polarization	N

Test Graph



Final Data List

NO.	Frequency [MHz]	QP Reading [dBμV]	AVG. Reading [dBμV]	Factor [dB]	QP Result [dBμV]	AVG. Result [dBμV]	QP Limit [dBμV]	AVG. Limit [dBμV]	QP Margin [dB]	AVG. Margin [dB]	Line	Remark
1	0.2482	43.06	31.96	10.02	53.08	41.98	61.82	51.82	8.74	9.84	N	PASS
2	0.5805	35.32	24.56	10.06	45.38	34.62	56.00	46.00	10.62	11.38	N	PASS
3	0.6701	35.27	23.54	10.05	45.32	33.59	56.00	46.00	10.68	12.41	N	PASS
4	1.1703	33.19	19.59	10.09	43.28	29.68	56.00	46.00	12.72	16.32	N	PASS
5	1.5661	40.17	26.60	10.12	50.29	36.72	56.00	46.00	5.71	9.28	N	PASS
6	8.4476	31.24	17.84	10.65	41.89	28.49	60.00	50.00	18.11	21.51	N	PASS

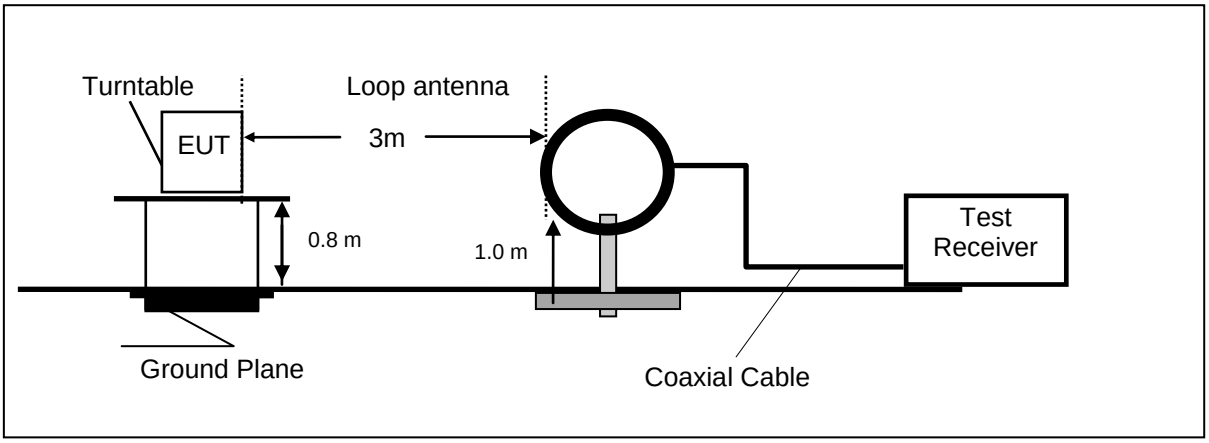
Note:1. Result (dBμV) = Reading (dBμV) + Factor (dB).
2. Factor (dB) = Cable loss (dB) + LISN Factor (dB).

Note: All the modes have been tested and recorded worst mode in the report.

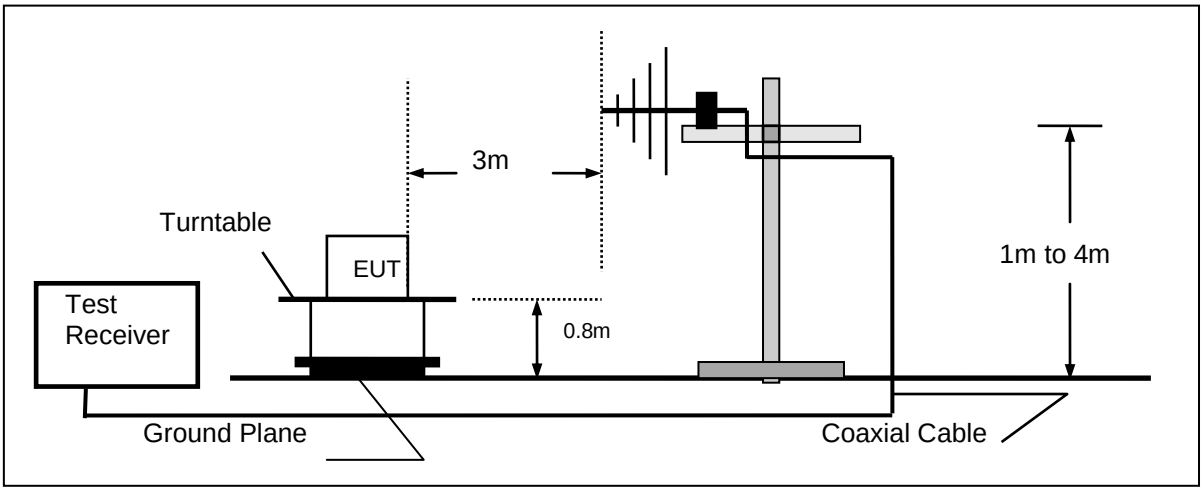
4.2. Radiated Emission

TEST CONFIGURATION

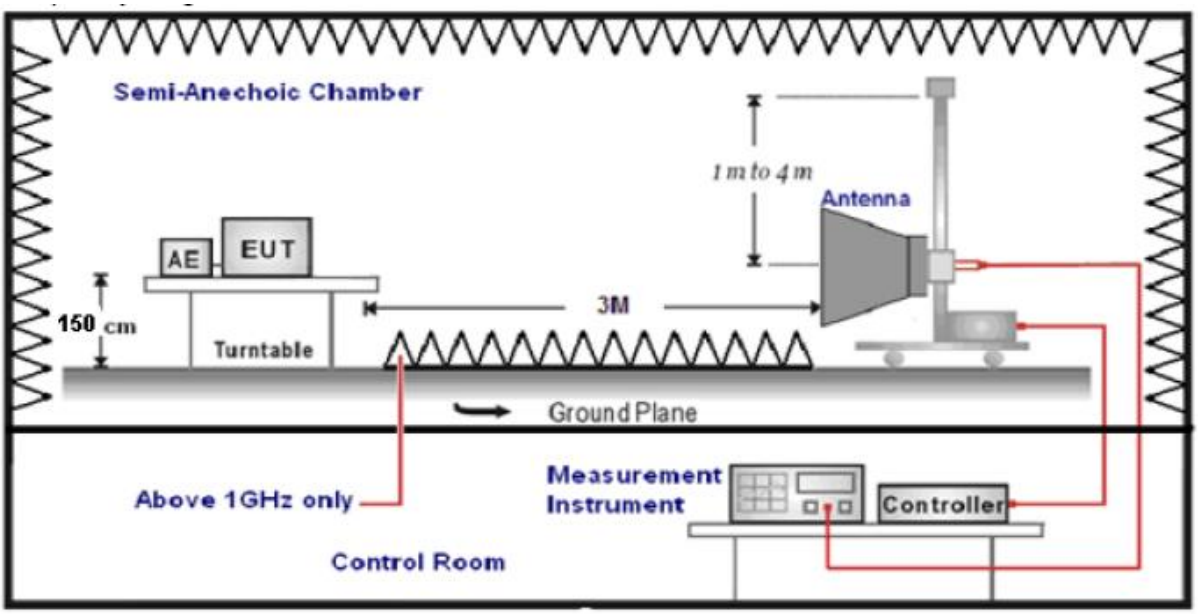
Frequency range 9 KHz – 30MHz



Frequency range 30MHz – 1000MHz



Frequency range above 1GHz-25GHz



TEST PROCEDURE

1.The EUT was placed on a turn table which is 12mm above ground plane when testing frequency range 9 KHz –25GHz.
2.Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0℃ to 360℃ to acquire the highest emissions from EUT.
3.And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4.Repeat above procedures until all frequency measurements have been completed.
5.The EUT minimum operation frequency was 32.768KHz and maximum operation frequency was 205KHz.so radiated emission test frequency band from 9KHz to 1GHz.
6.The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Ultra-Broadband Antenna	3
1GHz-18GHz	Double Ridged Horn Antenna	3
18GHz-25GHz	Horn Anternna	1

7.Setting test receiver/spectrum as following table states:

Test Frequency range	Test Receiver/Spectrum Setting	Detector
9KHz-150KHz	RBW=200Hz/VBW=3KHz,Sweep time=Auto	QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP
1GHz-40GHz	Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto	Peak

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

Transd=AF +CL-AG

RADIATION LIMIT

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission from intentional radiators at a distance of 3 meters shall not exceed the following table. According to § 15.247(d), in any 100kHz bandwidth outside the frequency band in which the EUT is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the100kHz bandwidth within the band that contains the highest level of desired power.
The pre-test have done for the EUT in three axes and found the worst emission at position shown in test setup photos.

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
1.705-30	3	20log(30)+ 40log(30/3)	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

TEST RESULTS

Temperature	23.6℃	Humidity	55.3%
Test Engineer	Moon Tan	Configurations	WPT

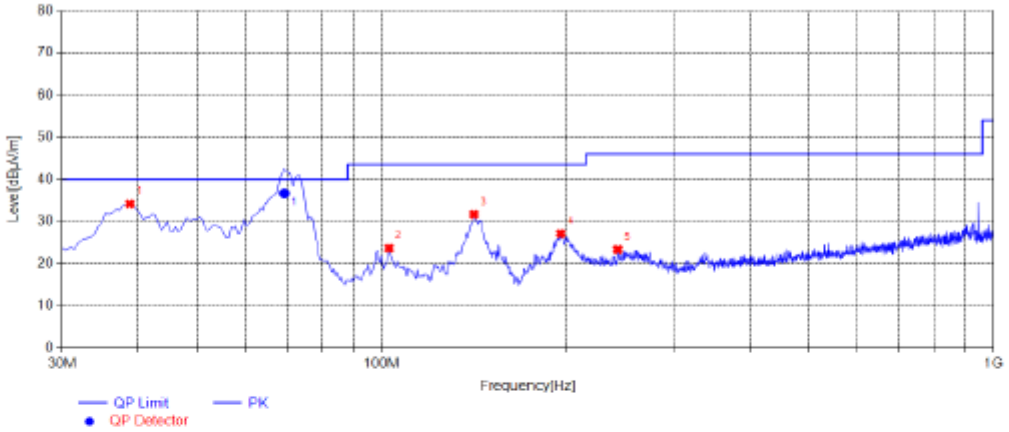
For 9 KHz-30MHz

Frequency (MHz)	Corrected Reading (dBuV/m)@3m	FCC Limit (dBuV/m) @3m	Margin (dB)	Detector	Result
0.147	79.10	104.24	25.14	QP	PASS
0.648	38.70	71.35	32.65	QP	PASS
1.466	43.79	64.26	20.48	QP	PASS
6.013	50.65	91.58	40.93	QP	PASS
9.957	49.88	91.58	41.70	QP	PASS

For 30MHz-1GHz

Horizontal

Test Graph



Suspected List

NO.	Frequency [MHz]	Reading [dBμV/m]	Factor [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	38.7300	43.03	-8.84	34.19	40.00	5.81	100	305	PK	Horizonta	PASS
2	102.7500	32.12	-8.45	23.67	43.50	19.83	100	35	PK	Horizonta	PASS
3	141.5500	44.02	-12.31	31.71	43.50	11.79	100	24	PK	Horizonta	PASS
4	196.3550	36.25	-9.13	27.12	43.50	16.38	100	24	PK	Horizonta	PASS
5	243.4000	31.70	-8.35	23.35	46.00	22.65	100	35	PK	Horizonta	PASS

Quasi-peak Final Data List

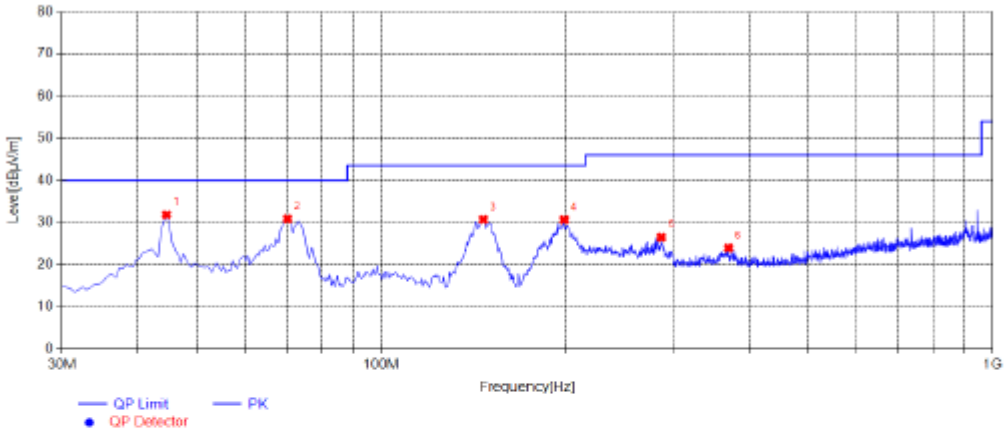
Frequency [MHz]	Reading [dBμV/m]	Factor [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Remark
69.2850	46.66	-9.98	36.68	40.00	3.32	100	305	Horizontal	PASS

Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List

NO.	Frequency [MHz]	Reading [dBμV/m]	Factor [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	44.5500	39.10	-7.26	31.84	40.00	8.16	100	35	PK	Vertical	PASS
2	70.2550	41.68	-10.82	30.86	40.00	9.14	100	145	PK	Vertical	PASS
3	146.8850	43.30	-12.58	30.72	43.50	12.78	100	10	PK	Vertical	PASS
4	199.2650	39.66	-8.99	30.67	43.50	12.83	100	145	PK	Vertical	PASS
5	287.5350	33.85	-7.35	26.50	46.00	19.50	100	215	PK	Vertical	PASS
6	369.9850	29.62	-5.64	23.98	46.00	22.02	100	7	PK	Vertical	PASS

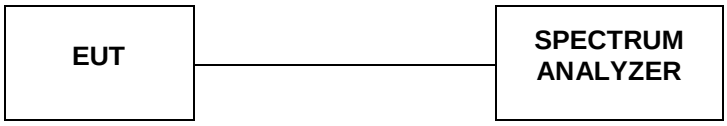
Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Note: All the modes have been tested and recorded worst mode in the report.

4.3. Occupied Bandwidth

TEST CONFIGURATION



TEST PROCEDURE

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that 20dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equip compliance with the 20dB attenuation specification may base on measurement at the intentional radiator's antenna output terminal unless the intentional radiator uses a permanently attached antenna, in which case compliance shall be.deomonstrated by measuring the radiated emissions.

LIMIT

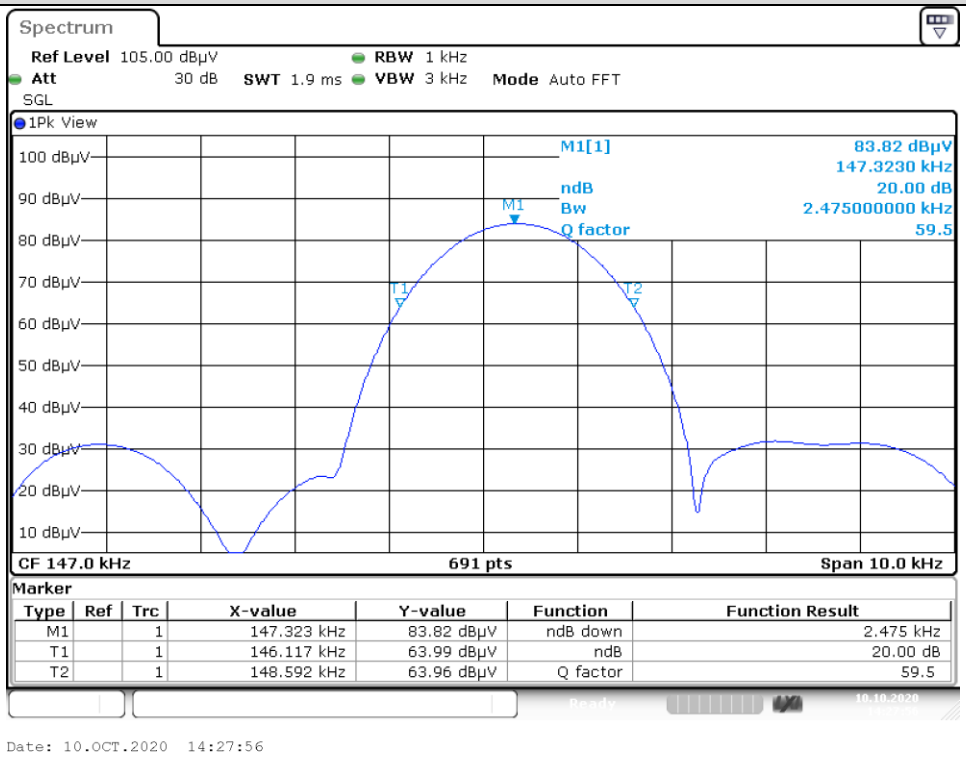
/.

TEST RESULTS

Temperature	24.5℃	Humidity	53.9%
Test Engineer	Moon Tan	Configurations	WPT

Mode	Freq (KHz)	20dB Bandwidth (KHz)	Limit (kHz)	Conclusion
Tx Mode	147.3	2.475	/	PASS

20dB Bandwidth



4.4. Antenna Requirement

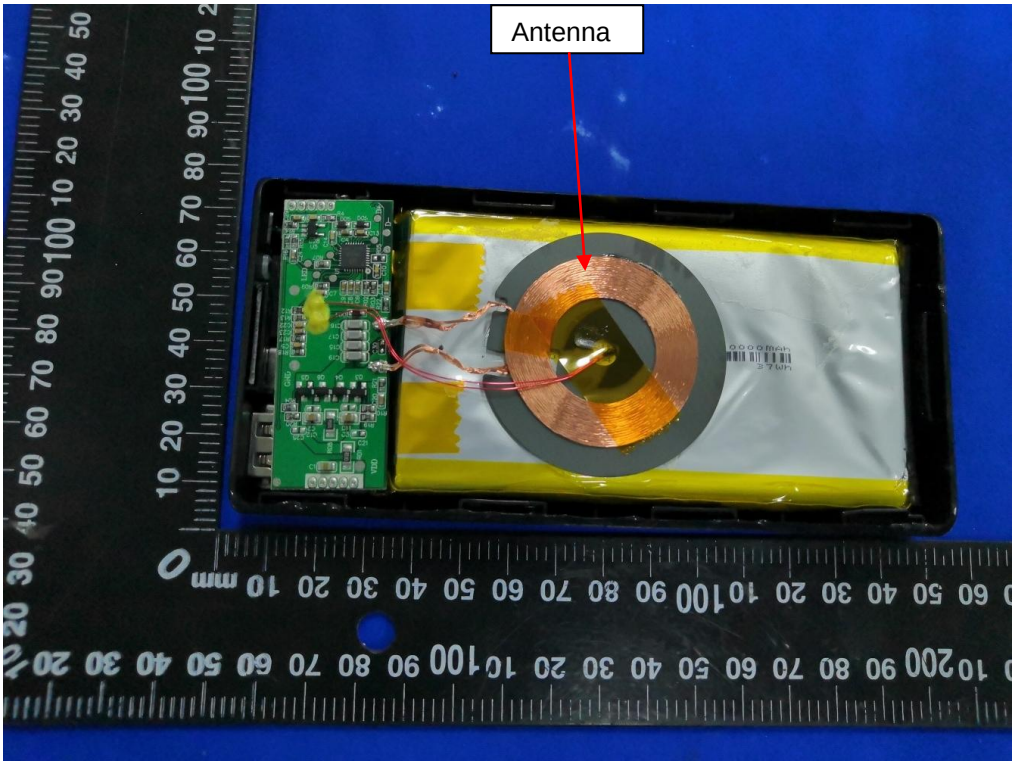
Standard Applicable

Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, 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.

Antenna Information

The antenna used in this product is a Coil Antenna, The directional gains of antenna used for transmitting is 0dBi.



5. Test Setup Photos of the EUT

Photo of Radiated Emissions Measurement

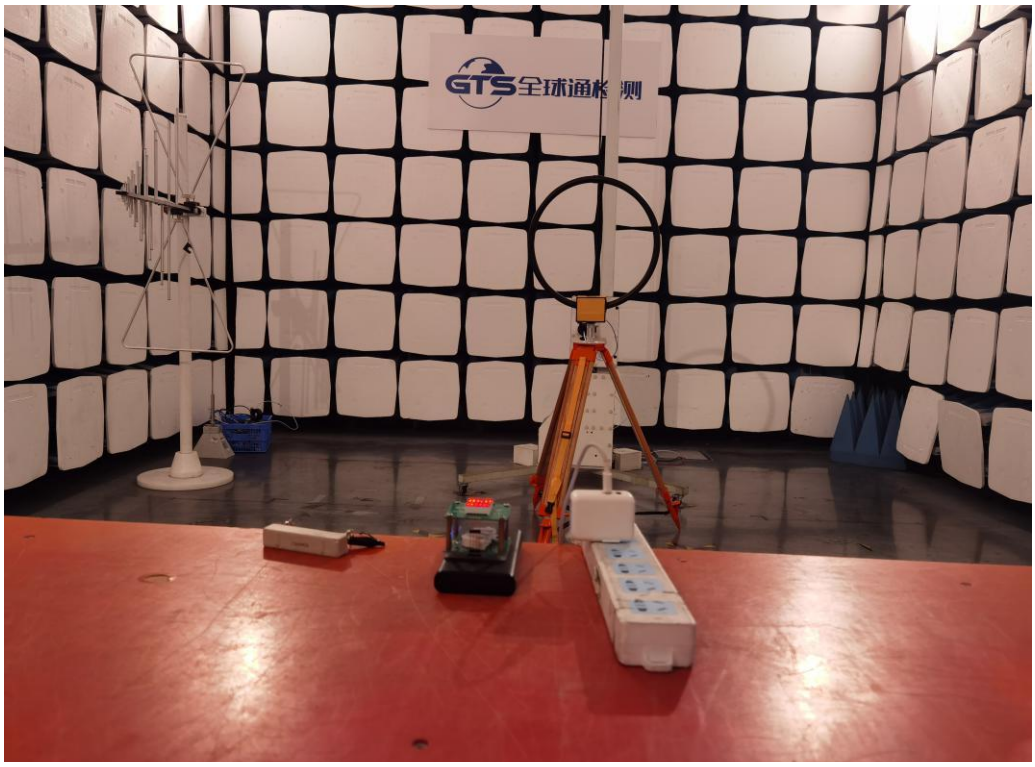


Fig. 1

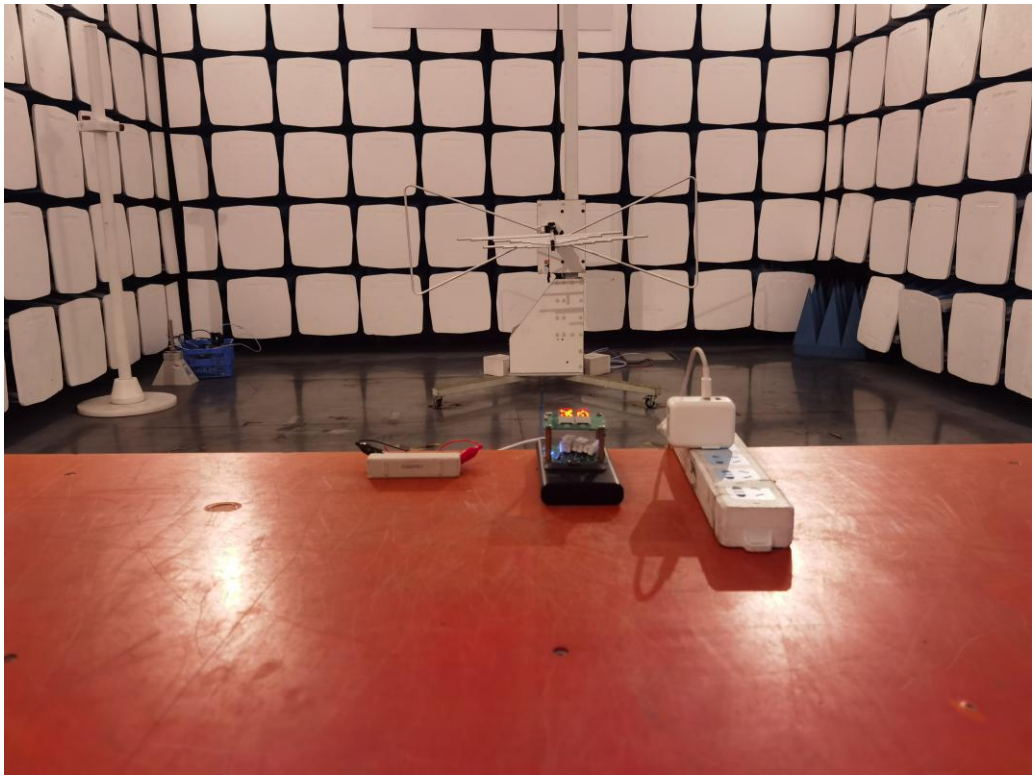


Fig. 2

Photo of Conducted Emissions Measurement

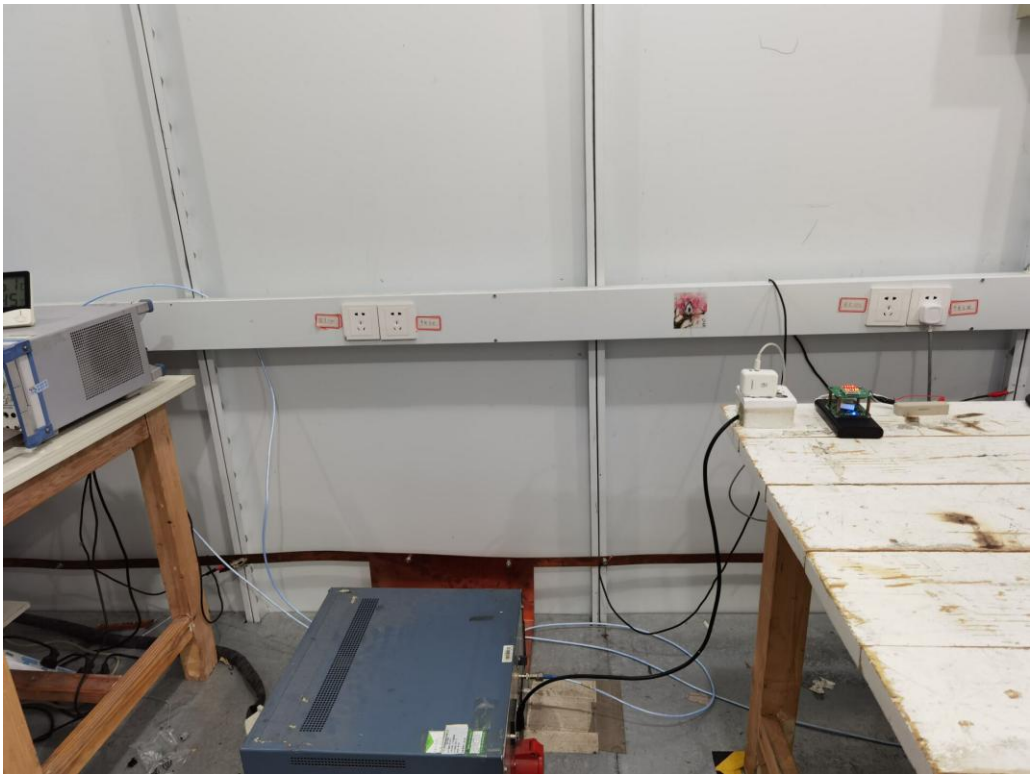


Fig. 3

6. External and Internal Photos of the EUT

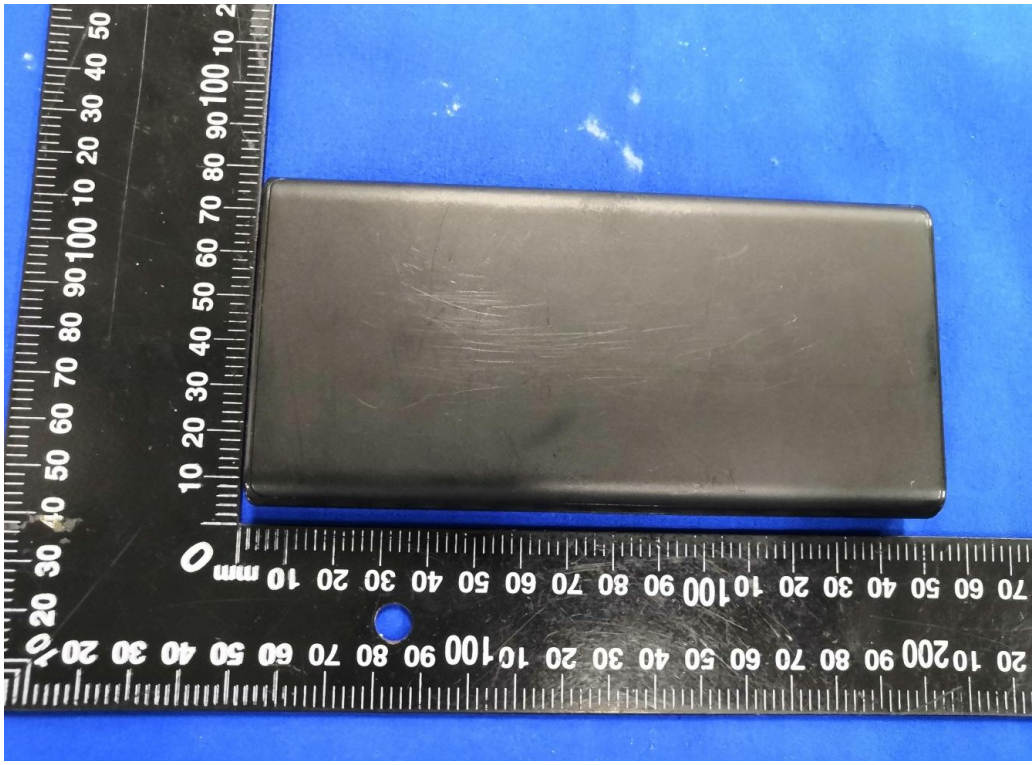


Fig. 1

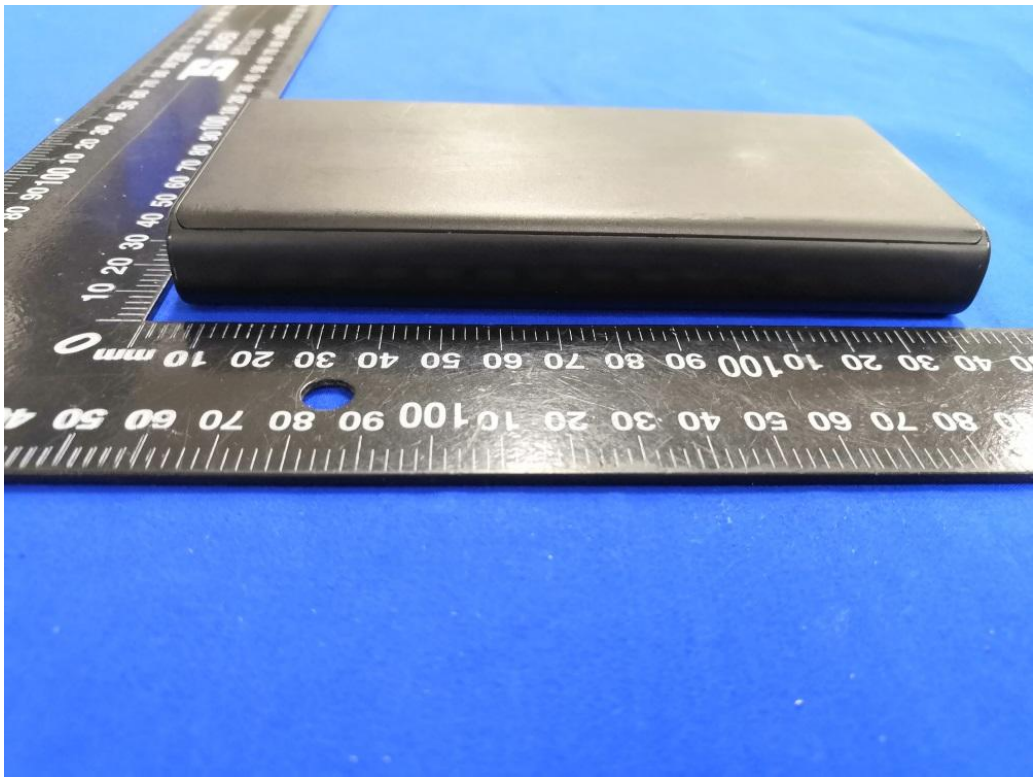


Fig. 2

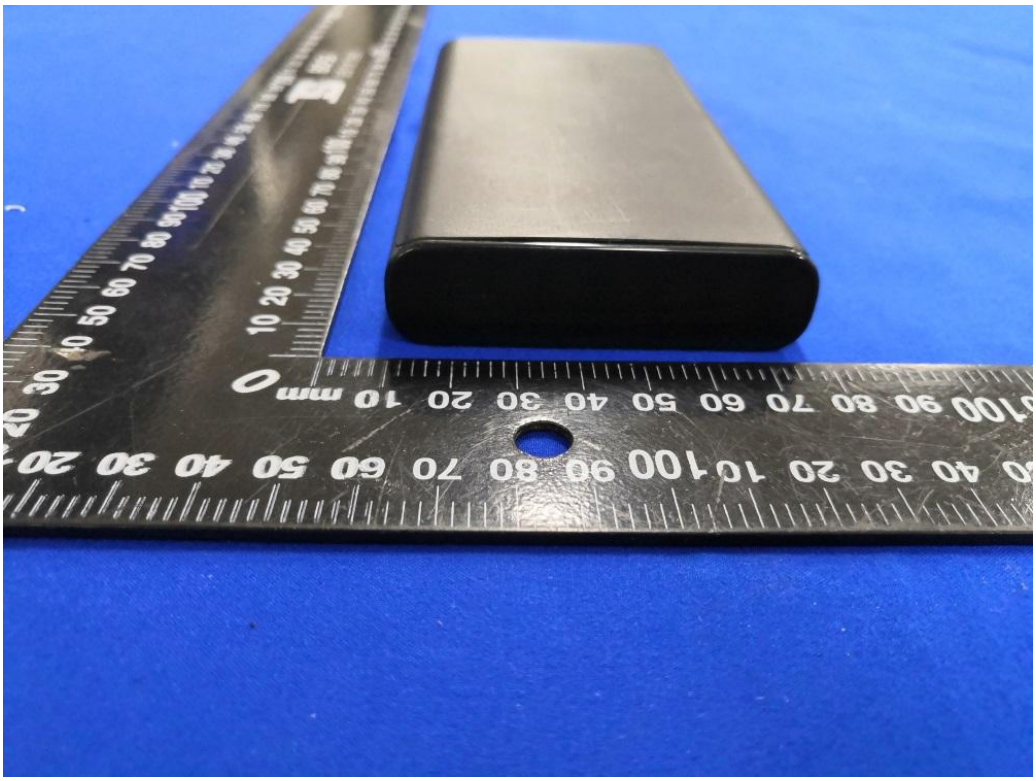


Fig. 3

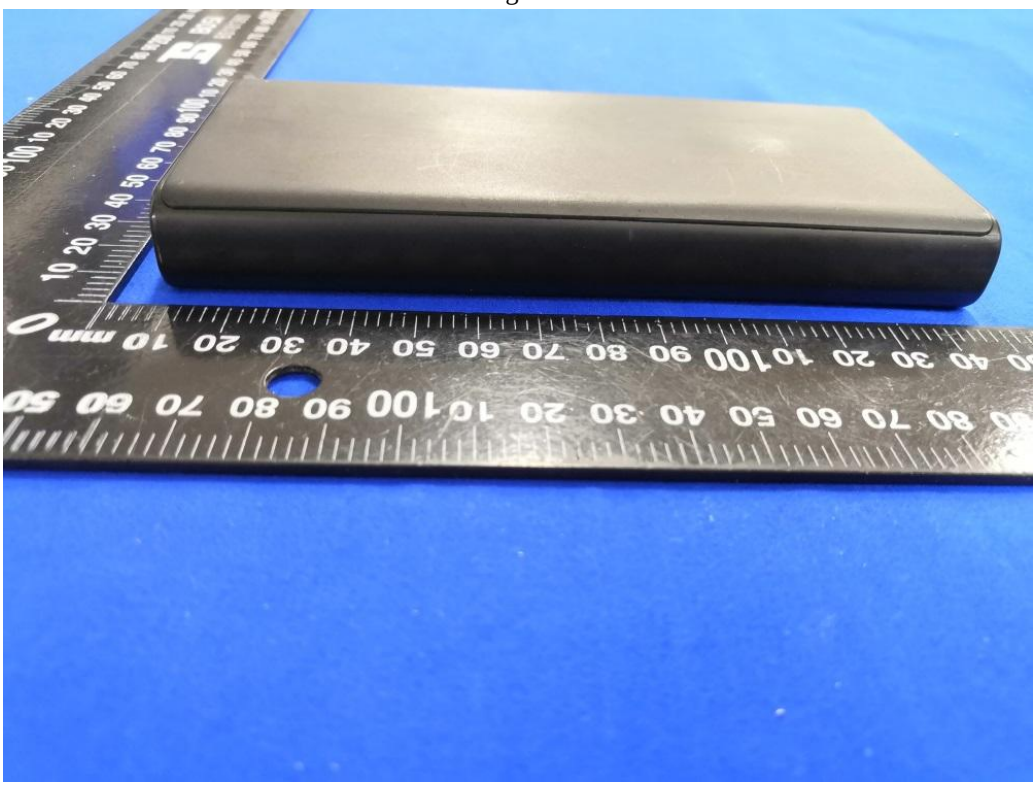


Fig. 4

Fig. 5

Fig. 6

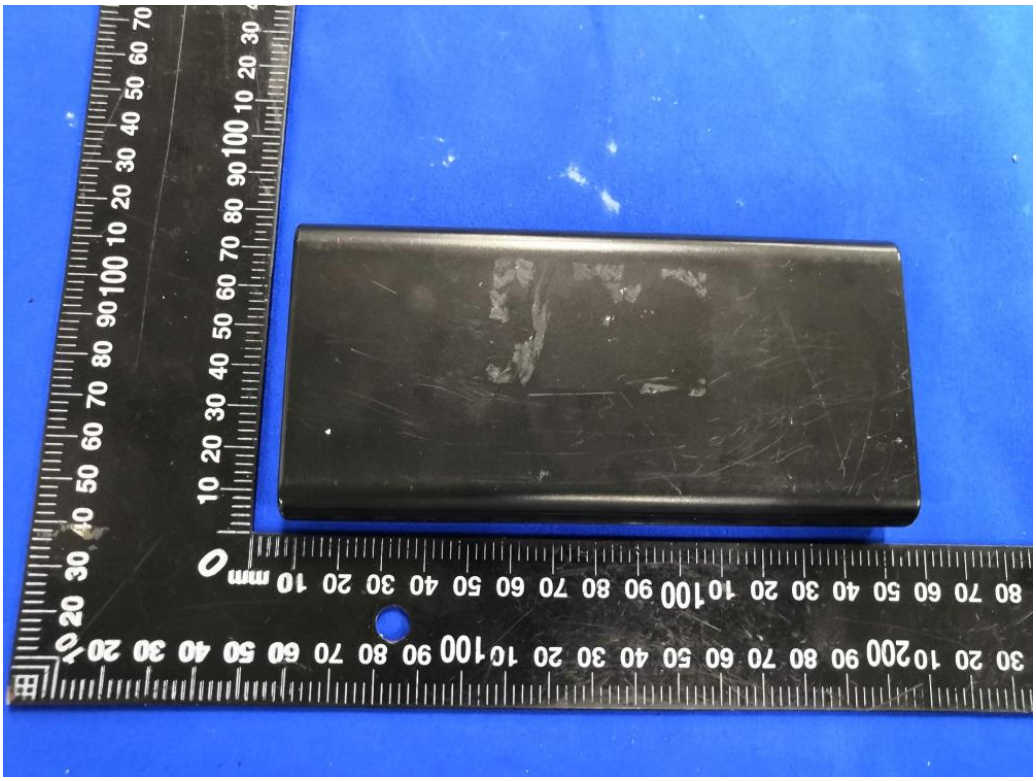


Fig. 7

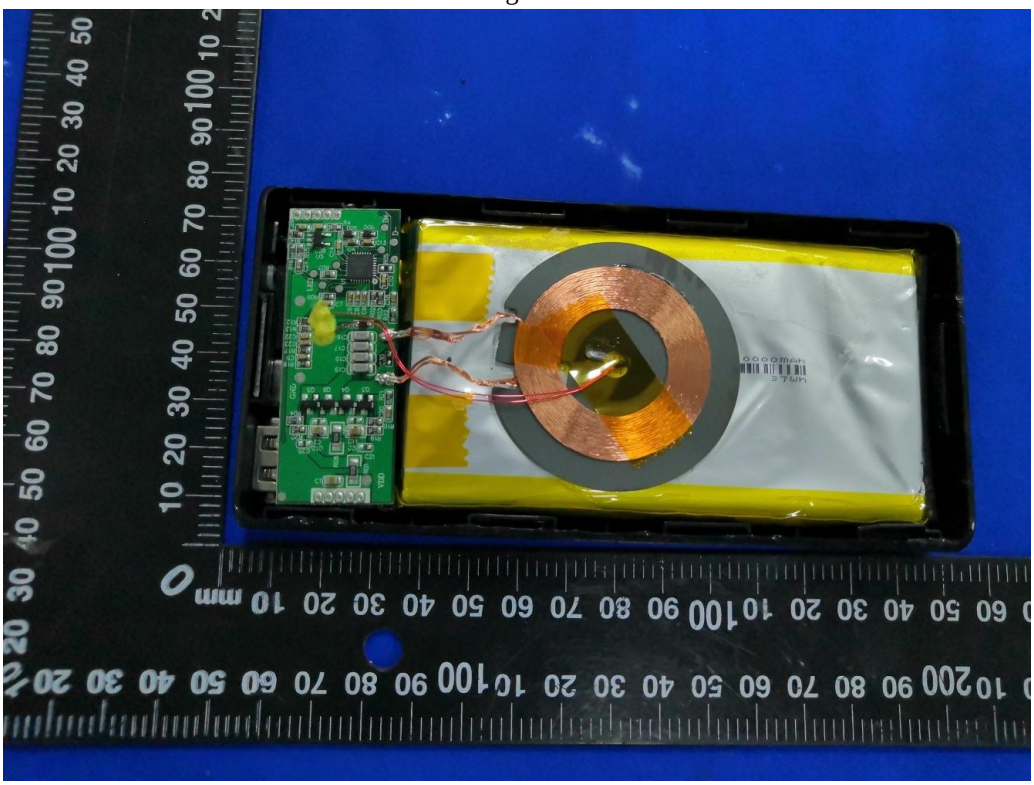


Fig. 8

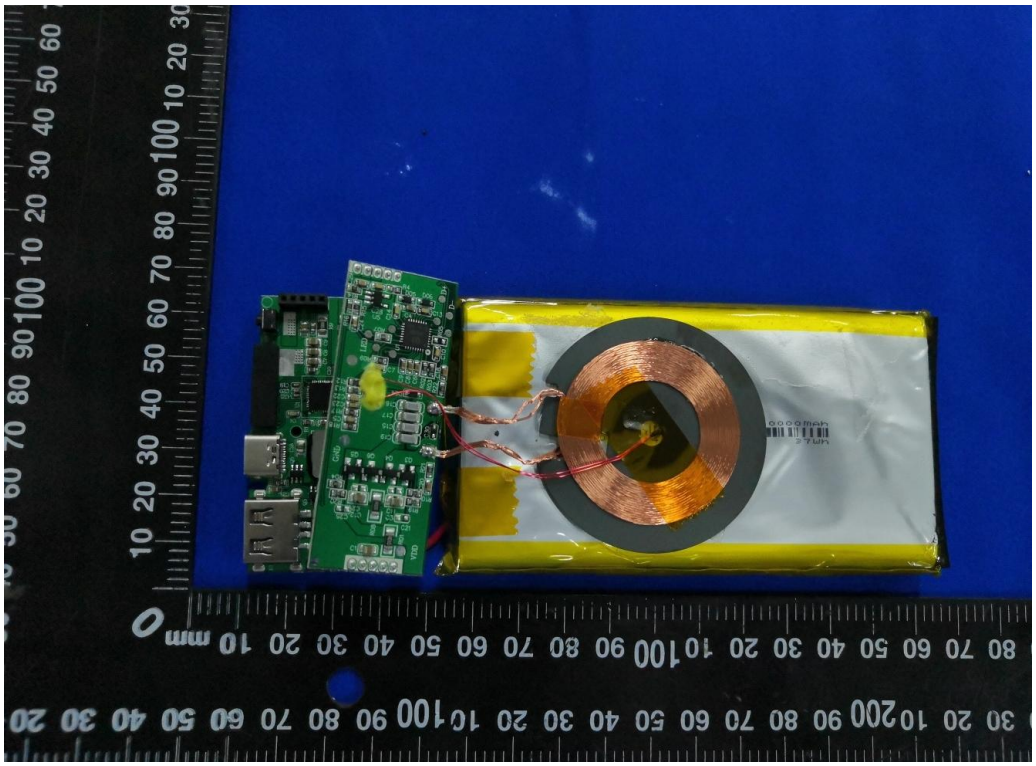


Fig. 9

Fig. 10

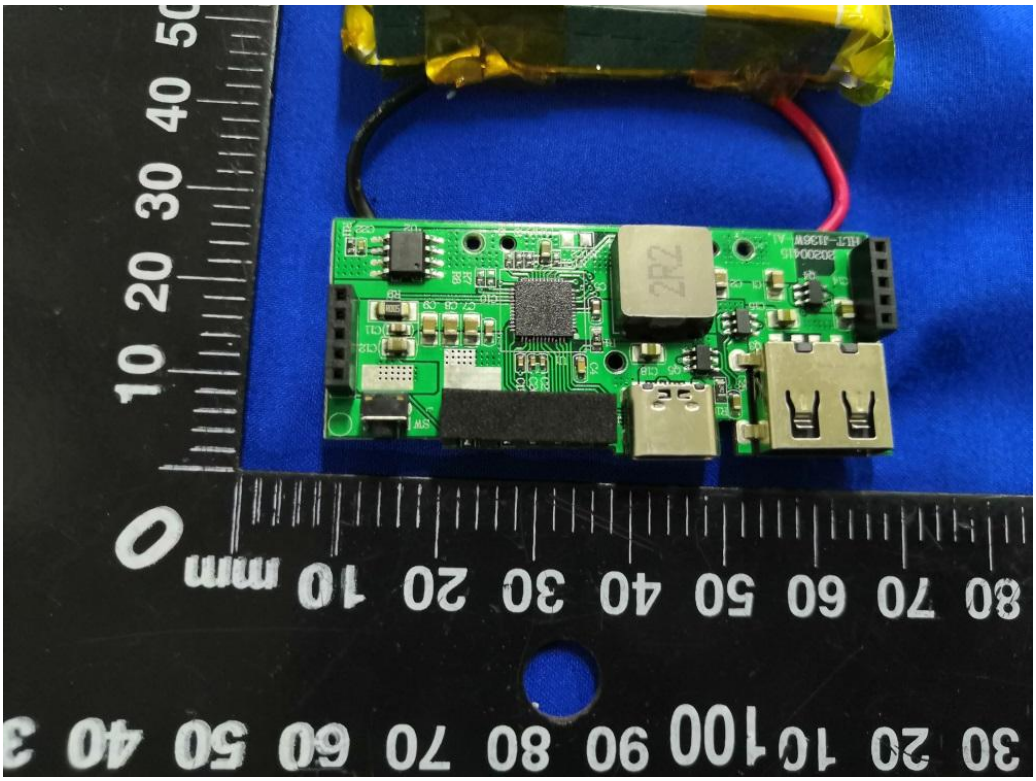


Fig. 11

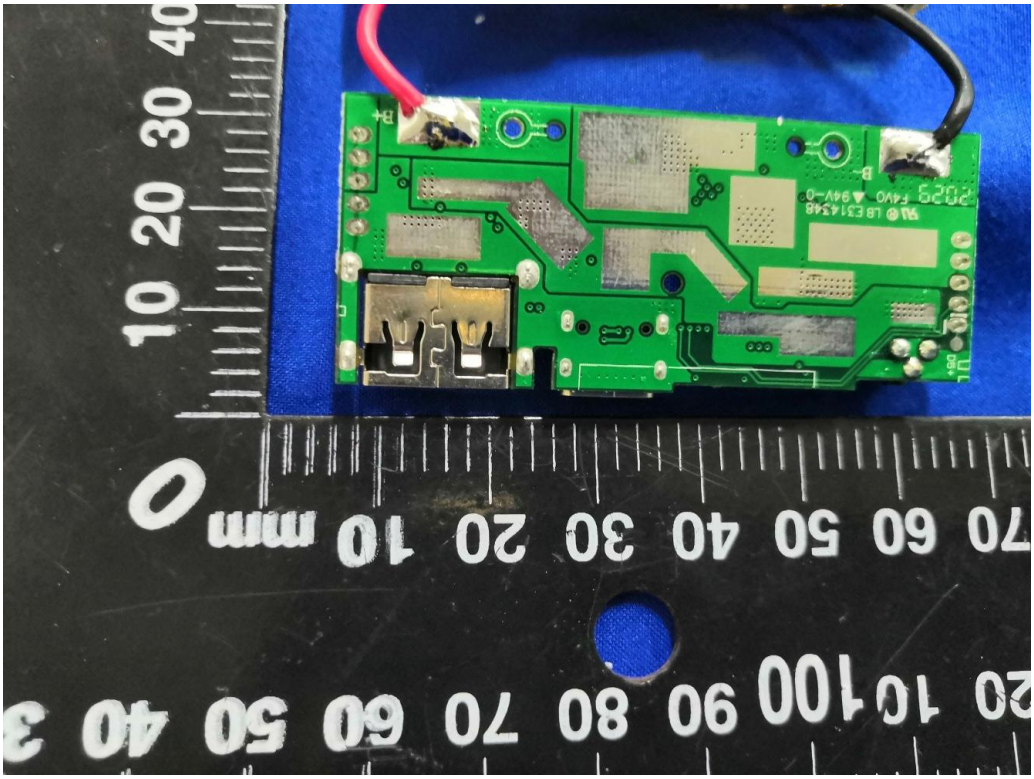


Fig. 12

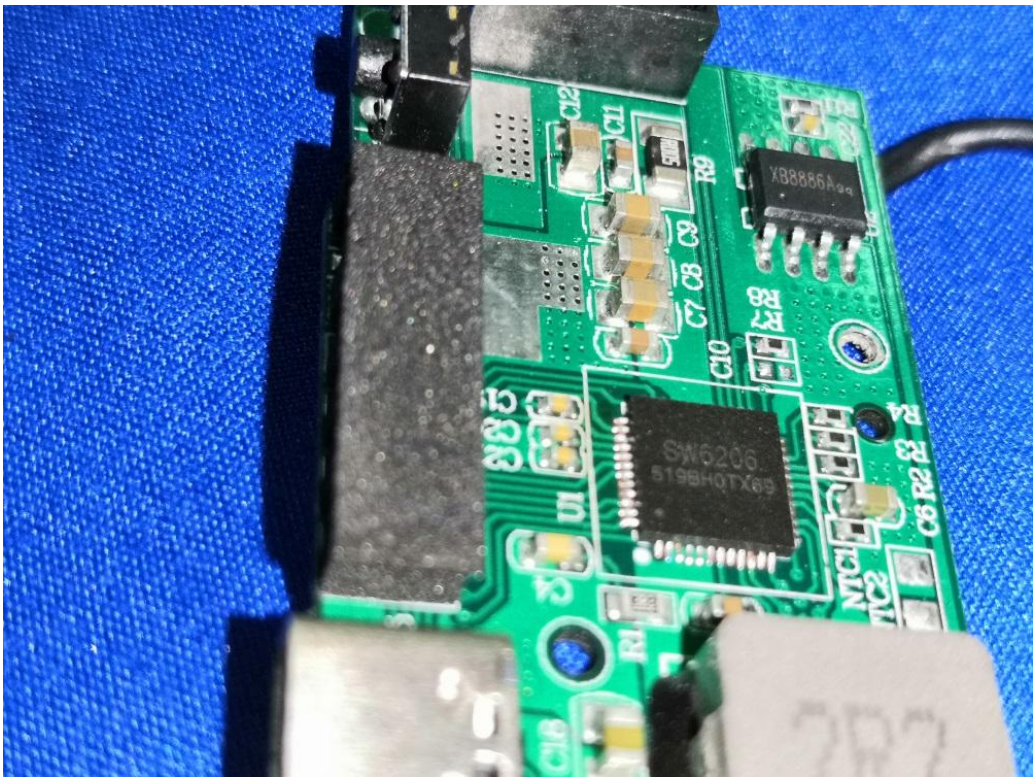


Fig. 13

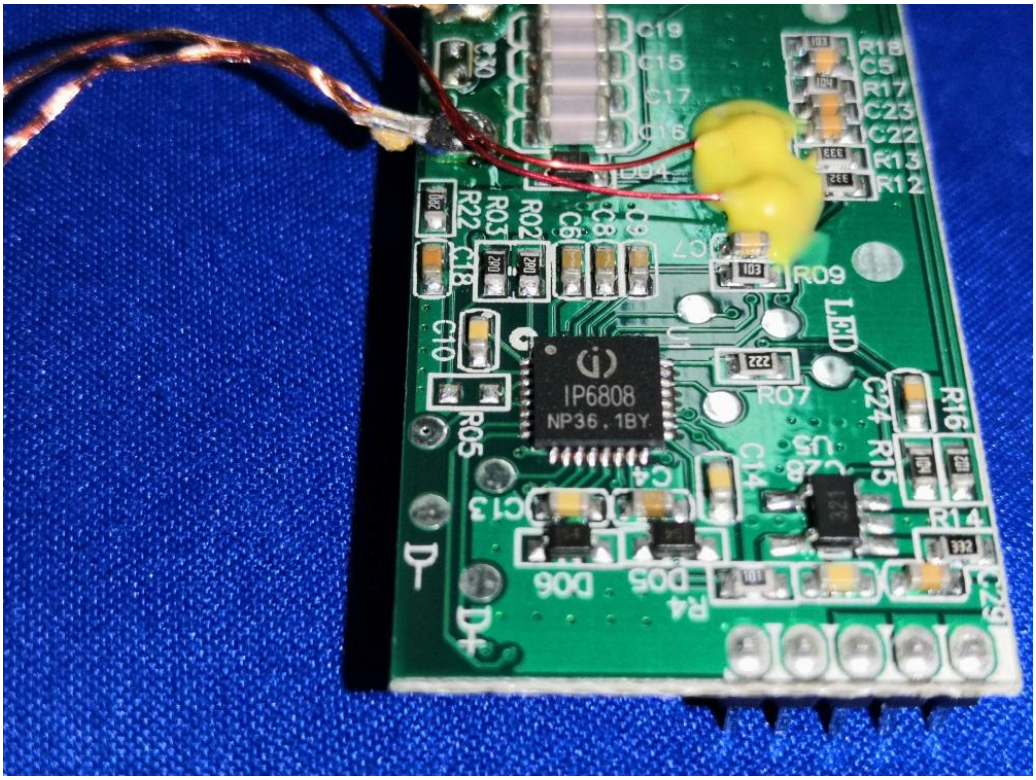


Fig. 14

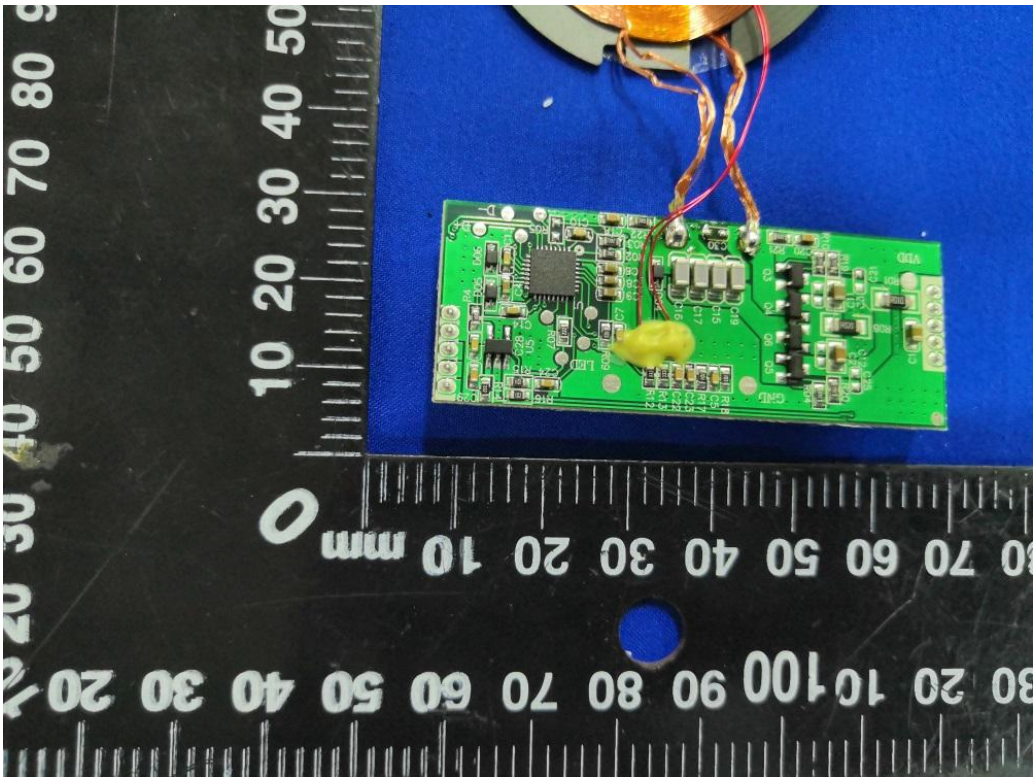


Fig. 15

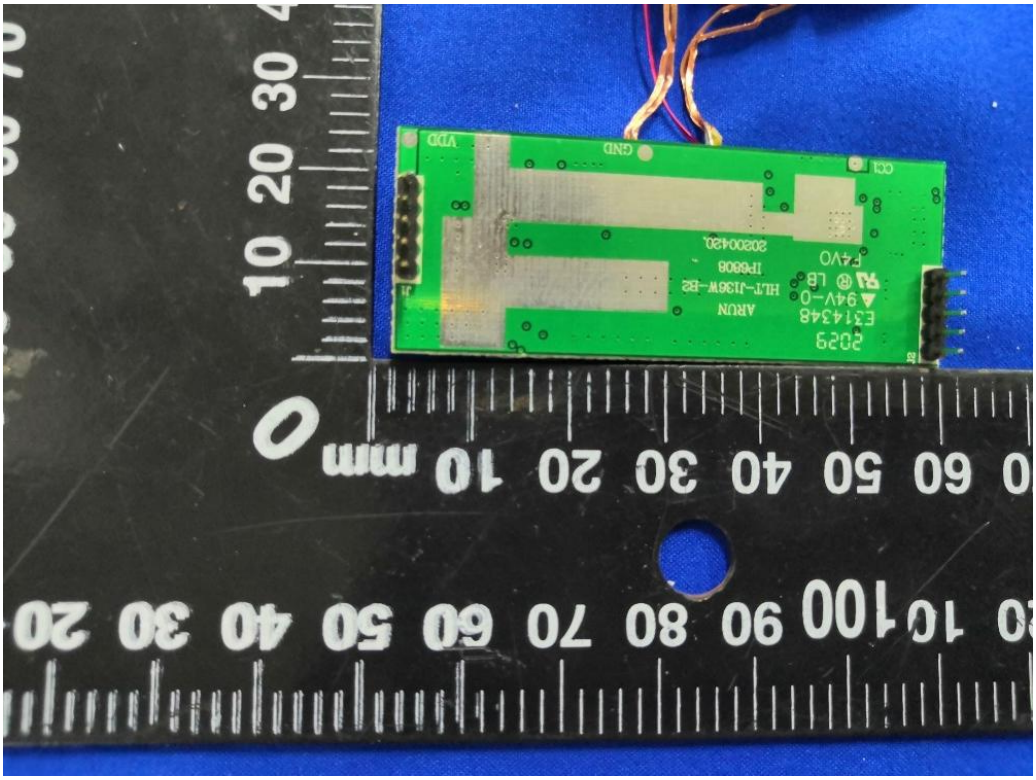


Fig. 16

.....End of Report.....