FCC TEST REPORT

Client Name	:	Dongguan Tyjin Electronics Co., Ltd.
Address	:	Shitouling Industrial Zone, Wulian Village, Fenggang Town, Dongguan, 523690 China
Product Name	:	Wireless Charging Pad
Date	:	Jun. 12, 2019

Shenzhen Anbotek Compliance Laboratory Limited

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TEST REPORT

Applicant	:	Dongguan Tyjin Electronics Co., Ltd.
Manufacturer	:	Dongguan Tyjin Electronics Co., Ltd.
Product Name	:	Wireless Charging Pad
Model No.	:	C-083, IHQI1000
Trade Mark	:	N.A.
Rating(s)	:	Input: DC 5V, 2A, 9V, 1.67A Output: 5W/7.5W/10W

Test Standard(s)	**:**	**FCC Part15 Subpart C 2018, Paragraph 15.209**
Test Method(s)	**:**	**ANSI C63.10: 2013**

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart C requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Receipt	Apr. 30, 2019
Date of Test	Apr. 30~Jun. 05, 2019
Prepared By	(Engineer / Dolly Mo)
Reviewer	(Supervisor / Snowy Meng)
Approved & Authorized Signer	(Manager / Sally Zhang)

Anbotek (SZ) Compliance Laboratory Limited Anbotek Product Safety * Approved *

Address: 1/F, Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.
Tel:(86)755-26066440 Fax:(86)755-26014772 Email:service@anbotek.com
Hotline 400-003-0500 www.anbotek.com

1. General Information

1.1. Client Information

Applicant	:	Dongguan Tyjin Electronics Co., Ltd.
Address	:	Shitouling Industrial Zone, Wulian Village, Fenggang Town, Dongguan, 523690 China
Manufacturer	:	Dongguan Tyjin Electronics Co., Ltd.
Address	:	Shitouling Industrial Zone, Wulian Village, Fenggang Town, Dongguan, 523690 China
Factory	:	Dongguan Tyjin Electronics Co., Ltd.
Address	:	Shitouling Industrial Zone, Wulian Village, Fenggang Town, Dongguan, 523690 China

1.2. Description of Device (EUT)

Product Name	:	Wireless Charging Pad	
Model No.	:	C-083, IHQI1000 (Note: All samples are the same except the model name, so we prepare "C-083" for test only.)	
Trade Mark	:	N.A.	
Test Power Supply	:	AC 240V, 60Hz for adapter/ AC 120V, 60Hz for adapter/	
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)	
Product Description	:	Operation Frequency:	110.1~205KHz
		Modulation Type:	ASK
		Antenna Type:	Inductive loop coil Antenna
		Antenna Gain(Peak):	0 dBi
Remark: 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.			

1.3. Auxiliary Equipment Used During Test.

Adapter	:	Manufacturer: ZTE
		M/N: STC-A2050I1000USBA-C S/N: 201202102100876 Input: 100-240V~ 50/60Hz, 0.3A Output: DC 5V, 2000mA

1.4. Description of Test Modes

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	Full load, Wireless charger module

For Conducted Emission	
Final Test Mode	Description
Mode 1	Full load, Wireless charger module

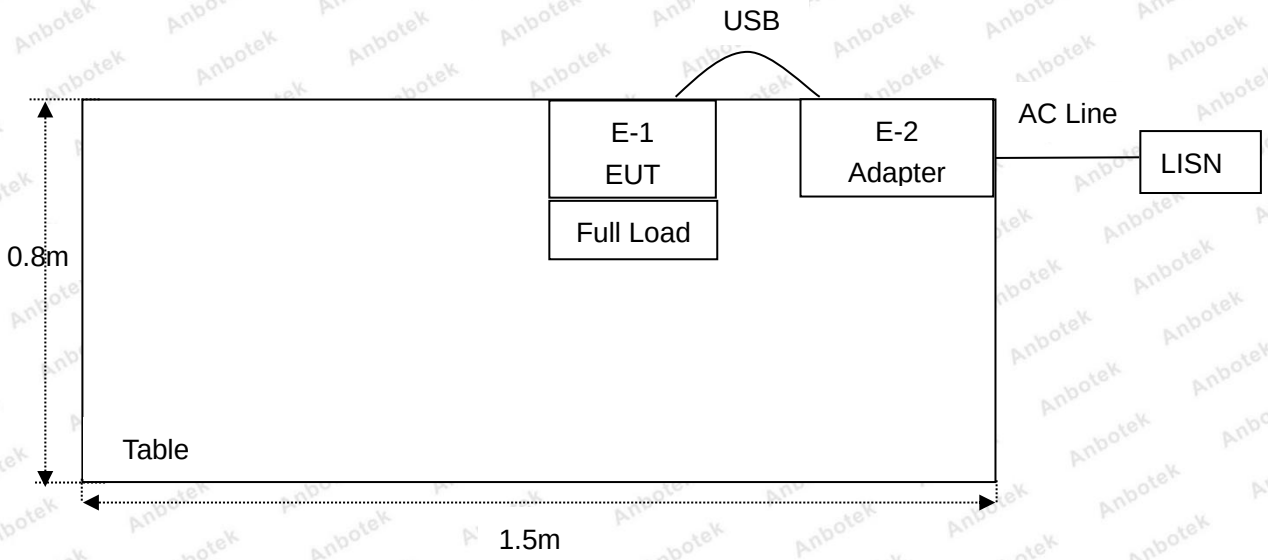
For Radiated Emission	
Final Test Mode	Description
Mode 1	Full load, Wireless charger module

Note: (1)Test channel is 0.1184MHz.

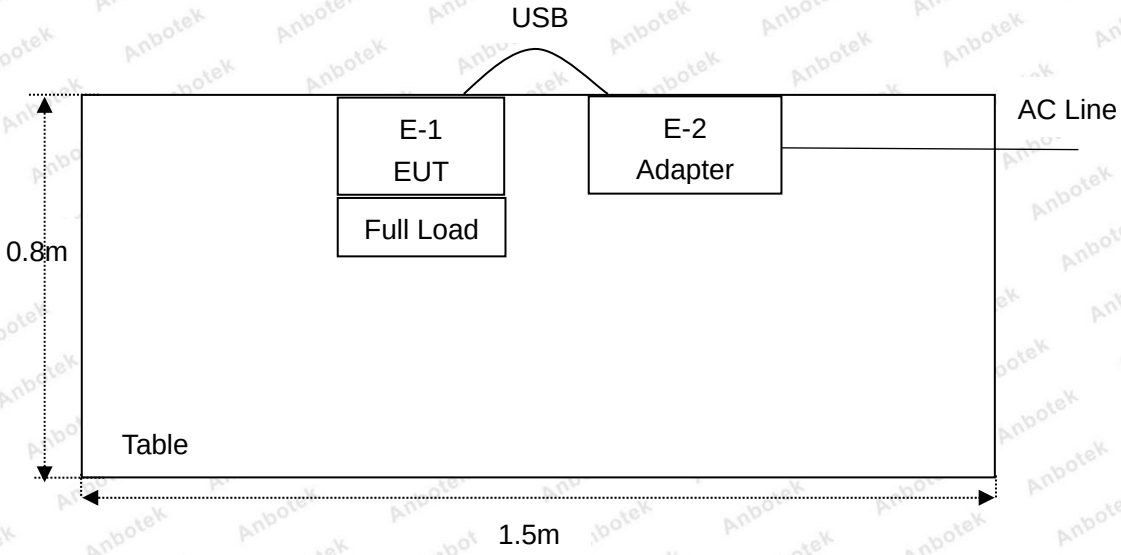
(2)All the situation(full load, half load and empty load) has been tested,only the worst situation (full load) was recorded in the report.

1.5. Description Of Test Setup

CE



RE



1.6. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	100055	Nov. 26, 2018	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESPI3	101604	Nov. 05, 2018	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Nov. 05, 2018	1 Year
4.	Spectrum Analysis	Agilent	E4407B	US39390582	Nov. 05, 2018	1 Year
5.	MAX Spectrum Analysis	Agilent	N9020A	MY51170037	Nov. 05, 2018	1 Year
6.	Preamplifier	SKET Electronic	BK1G18G30D	KD17503	Nov. 05, 2018	1 Year
7.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Nov. 20, 2018	1 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Nov. 19, 2018	1 Year
9.	Loop Antenna	Schwarzbeck	FMZB1519B	00053	Nov. 20, 2018	1 Year
10.	Horn Antenna	A-INFO	LB-180400-KF	J211060628	Nov. 20, 2018	1 Year
11.	Pre-amplifier	SONOMA	310N	186860	Nov. 05, 2018	1 Year
12.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
13.	RF Test Control System	YIHENG	YH3000	2017430	Nov. 05, 2018	1 Year
14.	Power Sensor	DAER	RPR3006W	15I00041SN045	Nov. 05, 2018	1 Year
15.	Power Sensor	DAER	RPR3006W	15I00041SN046	Nov. 05, 2018	1 Year
16.	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Nov. 05, 2018	1 Year
17.	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Nov. 05, 2018	1 Year
18.	Signal Generator	Agilent	E4421B	MY41000743	Nov. 05, 2018	1 Year
19.	DC Power Supply	LW	TPR-6420D	374470	Oct. 31, 2018	1 Year
20.	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ-KHWS80B	N/A	Nov. 01, 2018	1 Year

1.7. Description of Test Facility

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

FCC-Registration No.: 184111

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registed and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 184111, July 31, 2017.

ISED-Registration No.: 8058A-1

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A-1, June 13, 2016.

Test Location

Shenzhen Anbotek Compliance Laboratory Limited.

1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518102

2. Summary of Test Results

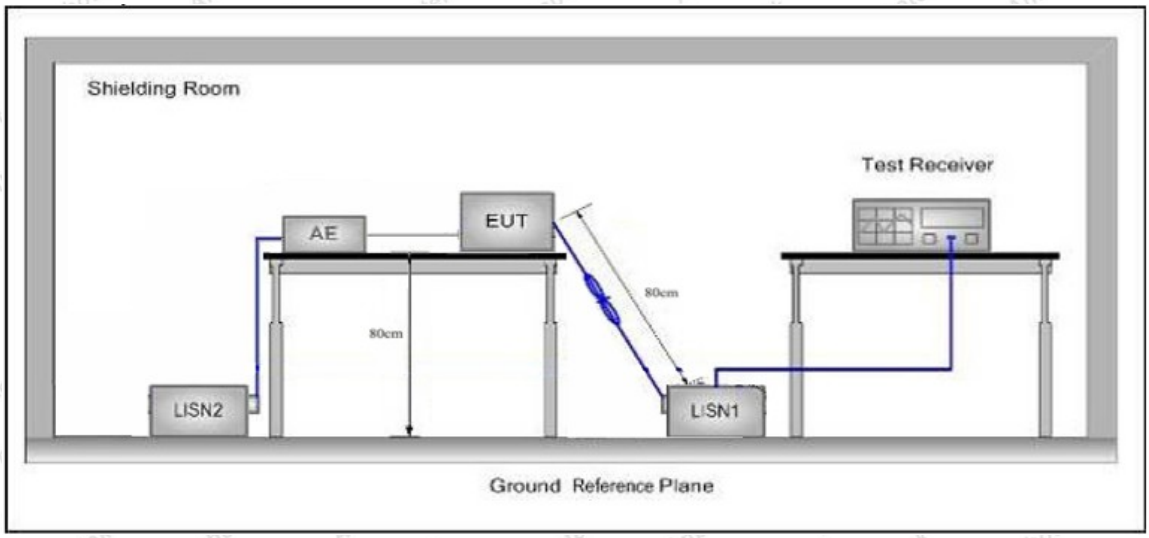
Standard Section	Test Item	Result
FCC Part 15, Paragraph 15.207	Conducted Emission Test	PASS
FCC Part 15, Paragraph 15.209(a)(f)	Spurious Emission	PASS
Part 15.203	Antenna Requirement	PASS

3. Conducted Emission Test

3.1. Test Standard and Limit

Test Standard	FCC Part15 Section 15.207		
Test Limit	Frequency	Maximum RF Line Voltage (dBuV)	
		Quasi-peak Level	Average Level
	150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
	500kHz~5MHz	56	46
	5MHz~30MHz	60	50
Remark: (1) *Decreasing linearly with logarithm of the frequency. (2) The lower limit shall apply at the transition frequency.			

3.2. Test Setup



3.3. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.10-2013 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9kHz.

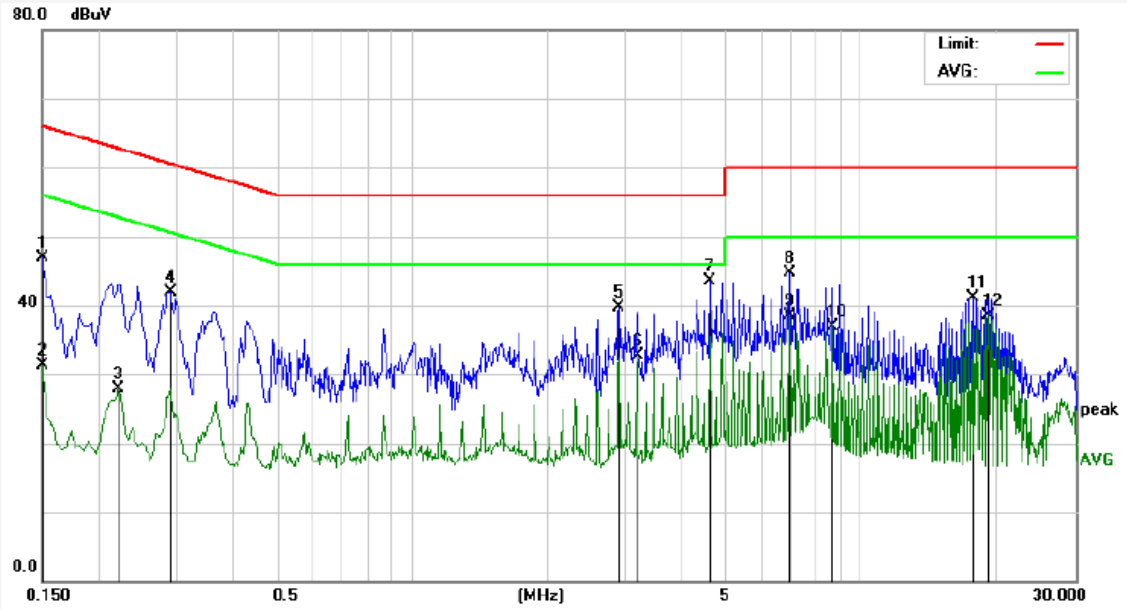
The frequency range from 150kHz to 30MHz is checked.

3.4. Test Data

Please to see the following pages

Conducted Emission Test Data

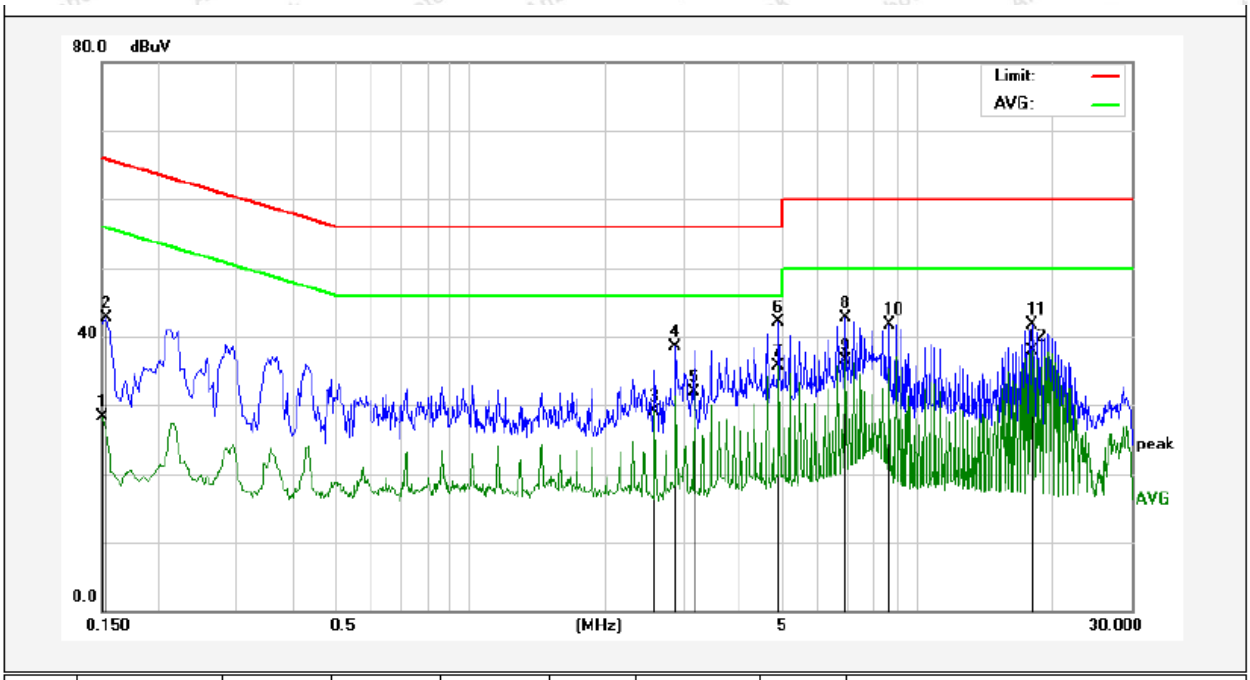
Test Site: 1# Shielded Room
Operating Condition: Mode 1
Test Specification: AC 240V, 60Hz for adapter
Comment: Live Line
Tem.: 22.6℃ Hum.: 53%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1500	26.95	19.90	46.85	65.99	-19.14	QP	
2	0.1500	11.46	19.90	31.36	55.99	-24.63	AVG	
3	0.2220	8.01	19.90	27.91	52.74	-24.83	AVG	
4	0.2900	22.08	19.89	41.97	60.52	-18.55	QP	
5	2.8860	19.51	20.16	39.67	56.00	-16.33	QP	
6	3.1740	12.62	20.16	32.78	46.00	-13.22	AVG	
7	4.6140	23.35	20.20	43.55	56.00	-12.45	QP	
8	6.9220	24.41	20.26	44.67	60.00	-15.33	QP	
9	6.9220	18.15	20.26	38.41	50.00	-11.59	AVG	
10	8.6540	16.70	20.30	37.00	50.00	-13.00	AVG	
11	17.7380	20.78	20.30	41.08	60.00	-18.92	QP	
12	19.1780	18.08	20.33	38.41	50.00	-11.59	AVG	

Conducted Emission Test Data

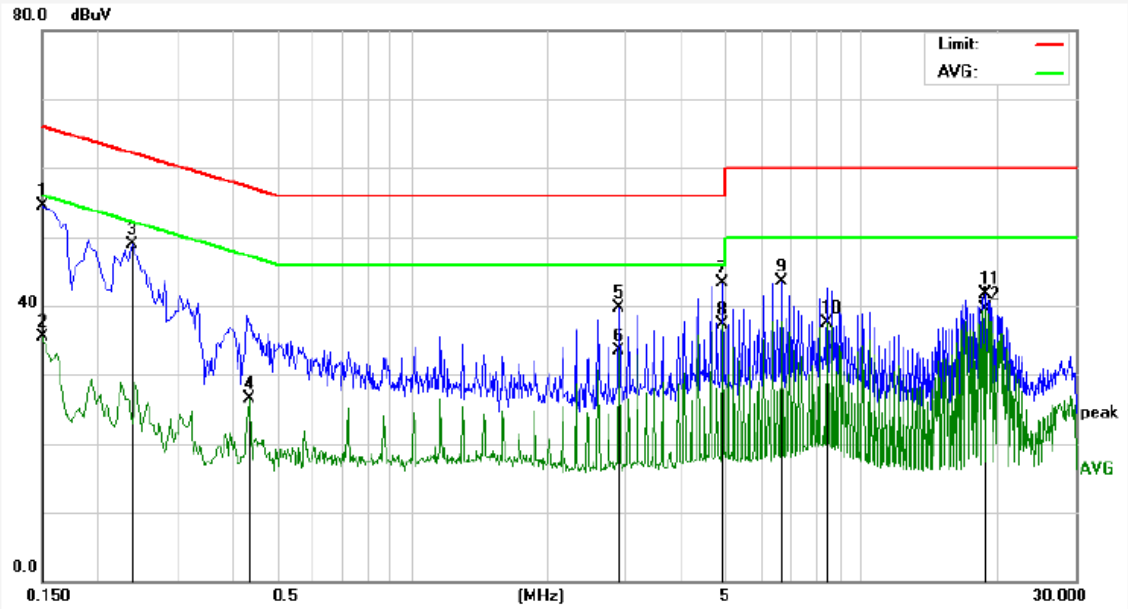
Test Site: 1# Shielded Room
Operating Condition: Mode 1
Test Specification: AC 240V, 60Hz for adapter
Comment: Neutral Line
Tem.: 22.6℃ Hum.: 53%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1500	8.44	19.90	28.34	55.99	-27.65	AVG	
2	0.1539	22.77	19.90	42.67	65.78	-23.11	QP	
3	2.5940	9.02	20.15	29.17	46.00	-16.83	AVG	
4	2.8780	18.42	20.16	38.58	56.00	-17.42	QP	
5	3.1660	11.84	20.16	32.00	46.00	-14.00	AVG	
6	4.8940	21.91	20.20	42.11	56.00	-13.89	QP	
7	4.8940	15.57	20.20	35.77	46.00	-10.23	AVG	
8	6.9100	22.36	20.26	42.62	60.00	-17.38	QP	
9	6.9100	16.24	20.26	36.50	50.00	-13.50	AVG	
10	8.6380	21.50	20.30	41.80	60.00	-18.20	QP	
11	17.9980	21.41	20.31	41.72	60.00	-18.28	QP	
12	17.9980	17.62	20.31	37.93	50.00	-12.07	AVG	

Conducted Emission Test Data

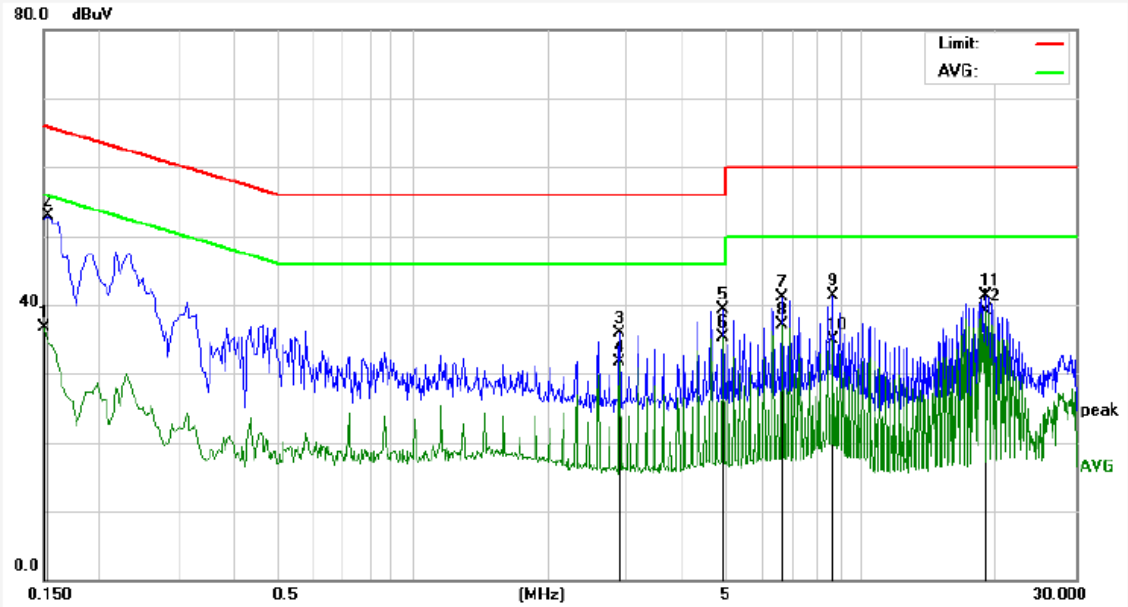
Test Site: 1# Shielded Room
Operating Condition: Mode 1
Test Specification: AC 120V, 60Hz for adapter
Comment: Live Line
Tem.: 22.6℃ Hum.: 53%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1500	34.54	19.90	54.44	65.99	-11.55	QP	
2	0.1500	15.61	19.90	35.51	55.99	-20.48	AVG	
3	0.2380	29.03	19.89	48.92	62.16	-13.24	QP	
4	0.4340	6.56	19.95	26.51	47.18	-20.67	AVG	
5	2.8940	19.47	20.16	39.63	56.00	-16.37	QP	
6	2.8940	13.43	20.16	33.59	46.00	-12.41	AVG	
7	4.9180	23.14	20.20	43.34	56.00	-12.66	QP	
8	4.9180	17.07	20.20	37.27	46.00	-8.73	AVG	
9	6.6540	23.34	20.25	43.59	60.00	-16.41	QP	
10	8.3860	17.30	20.30	37.60	50.00	-12.40	AVG	
11	18.9340	21.45	20.32	41.77	60.00	-18.23	QP	
12	18.9340	19.13	20.32	39.45	50.00	-10.55	AVG	

Conducted Emission Test Data

Test Site: 1# Shielded Room
Operating Condition: Mode 1
Test Specification: AC 120V, 60Hz for adapter
Comment: Neutral Line
Tem.: 22.6℃ Hum.: 53%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1500	16.80	19.90	36.70	55.99	-19.29	AVG	
2	0.1539	33.10	19.90	53.00	65.78	-12.78	QP	
3	2.8860	15.72	20.16	35.88	56.00	-20.12	QP	
4	2.8860	11.60	20.16	31.76	46.00	-14.24	AVG	
5	4.9100	19.09	20.20	39.29	56.00	-16.71	QP	
6	4.9100	15.06	20.20	35.26	46.00	-10.74	AVG	
7	6.6420	20.93	20.25	41.18	60.00	-18.82	QP	
8	6.6420	16.77	20.25	37.02	50.00	-12.98	AVG	
9	8.6620	20.99	20.30	41.29	60.00	-18.71	QP	
10	8.6620	14.54	20.30	34.84	50.00	-15.16	AVG	
11	18.9100	21.06	20.32	41.38	60.00	-18.62	QP	
12	18.9100	18.85	20.32	39.17	50.00	-10.83	AVG	

4. Radiation Spurious Emission and Band Edge

4.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.209 and 15.205				
Test Limit	Frequency (MHz)	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz~0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz~88MHz	100	40.0	Quasi-peak	3
	88MHz~216MHz	150	43.5	Quasi-peak	3
	216MHz~960MHz	200	46.0	Quasi-peak	3
	960MHz~1000MHz	500	54.0	Quasi-peak	3
	Above 1000MHz	500	54.0	Average	3
		-	74.0	Peak	3

Remark:
(1)The lower limit shall apply at the transition frequency.
(2) 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

4.2. Test Setup

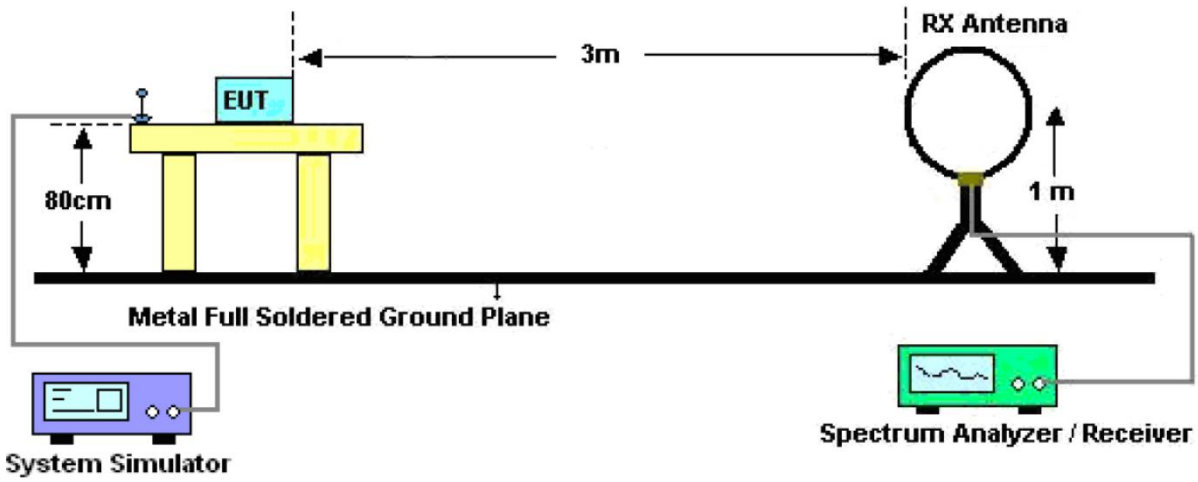


Figure 1. Below 30MHz

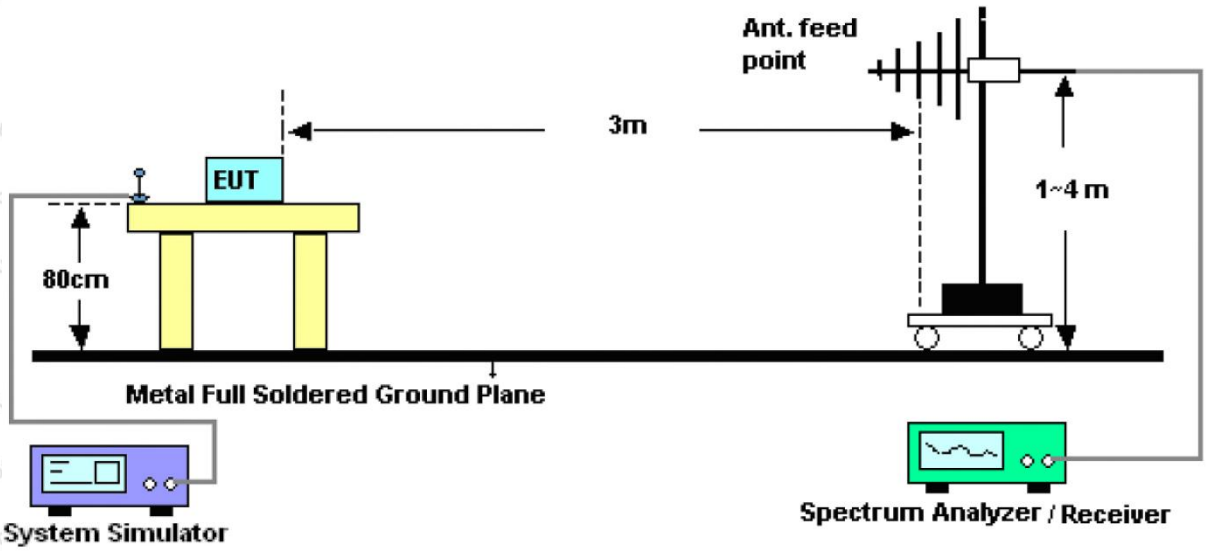


Figure 2. 30MHz to 1GHz

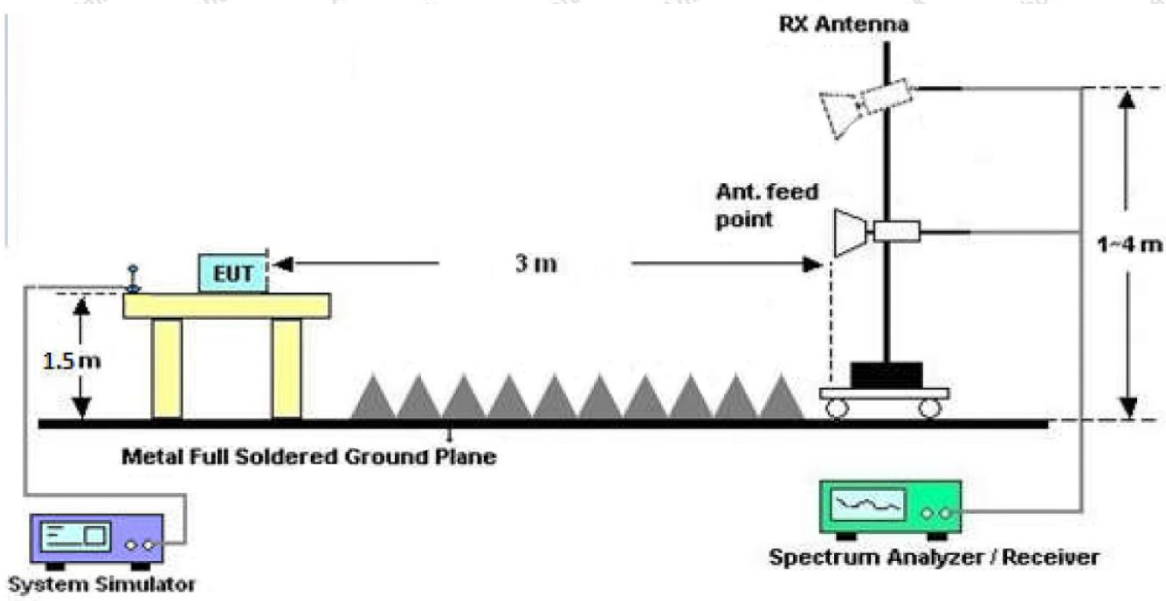


Figure 3. Above 1 GHz

4.3. Test Procedure

For below 1GHz: The EUT is placed on a turntable, which is 0.8m above the ground plane.

For above 1GHz: The EUT is placed on a turntable, which is 1.5m above the ground plane.

The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Rotated the EUT through three orthogonal axes to determine the maximum emissions, both horizontal and vertical polarization of the antenna are set on test. The EUT is tested in 9*6*6 Chamber. The device is evaluated in xyz orientation.

For 9kHz to 150kHz, Set the spectrum analyzer as:
RBW = 200Hz, VBW =1kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 150kHz to 30MHz, Set the spectrum analyzer as:
RBW = 9KHz, VBW =30kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 30MHz to 1000MHz, Set the spectrum analyzer as:
RBW = 100kHz, VBW =300kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

4.4. Test Data

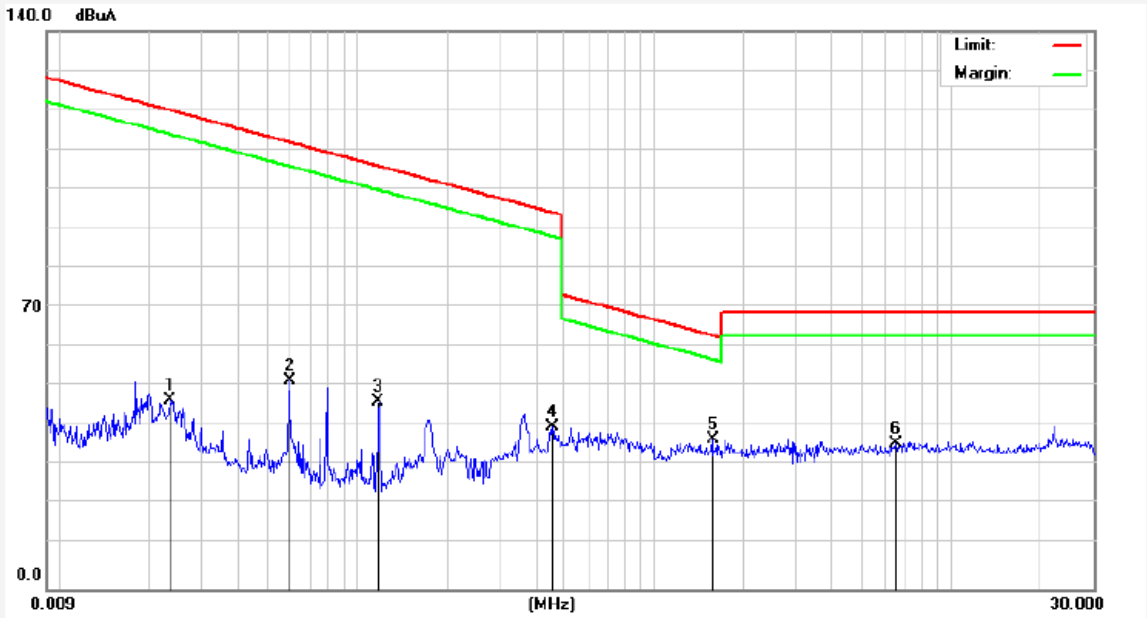
PASS

Note: The data is in TX mode, and this is the worst mode.

Test Results

(Between 9KHz – 30MHz)

Job No.:	**SZAWW190430002-01**		
Standard:	**FCC PART15 C _3m**	**Power Source:**	**AC 120V, 60Hz for adapter**
Test item:	**Radiation Test**	**Temp.(C)/Hum.(%RH):**	**24.3℃/54%RH**
Test Mode:	**Mode 1**	**Distance:**	**3m**

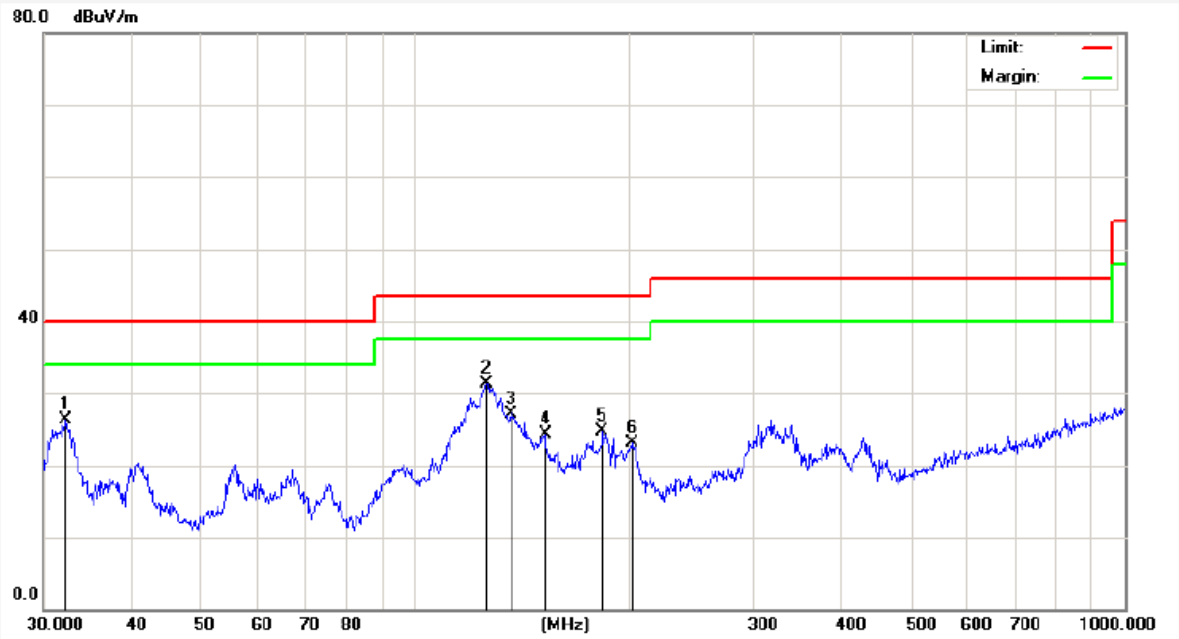


Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	degree (dge)
0.0234	34.80	19.28	2.53	0	56.61	140.07	-83.46	Peak	312
0.0234	25.53	19.28	2.53	0	47.34	120.07	-72.73	AV	312
0.0592	39.50	19.30	2.54	0	61.34	132.05	-70.71	Peak	72
0.0592	30.61	19.30	2.54	0	52.45	112.05	-59.60	AV	72
0.1184	33.77	19.30	2.54	0	55.61	126.07	-70.46	Peak	124
0.1184	25.38	19.30	2.54	0	47.22	106.07	-58.85	AV	124
0.4540	27.71	19.53	2.59	0	49.83	114.46	-64.63	Peak	251
0.4540	18.57	19.53	2.59	0	40.69	94.46	-53.77	AV	251
1.5700	15.59	19.53	2.59	0	37.71	63.69	-25.98	QP	159
6.5259	14.42	19.53	2.59	0	36.54	69.54	-33.00	QP	271

Remark: According to FCC PART 15.209 (d), the emission limits for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz, Radiated emission limits in these three bands are based on measurements employing an average detector.

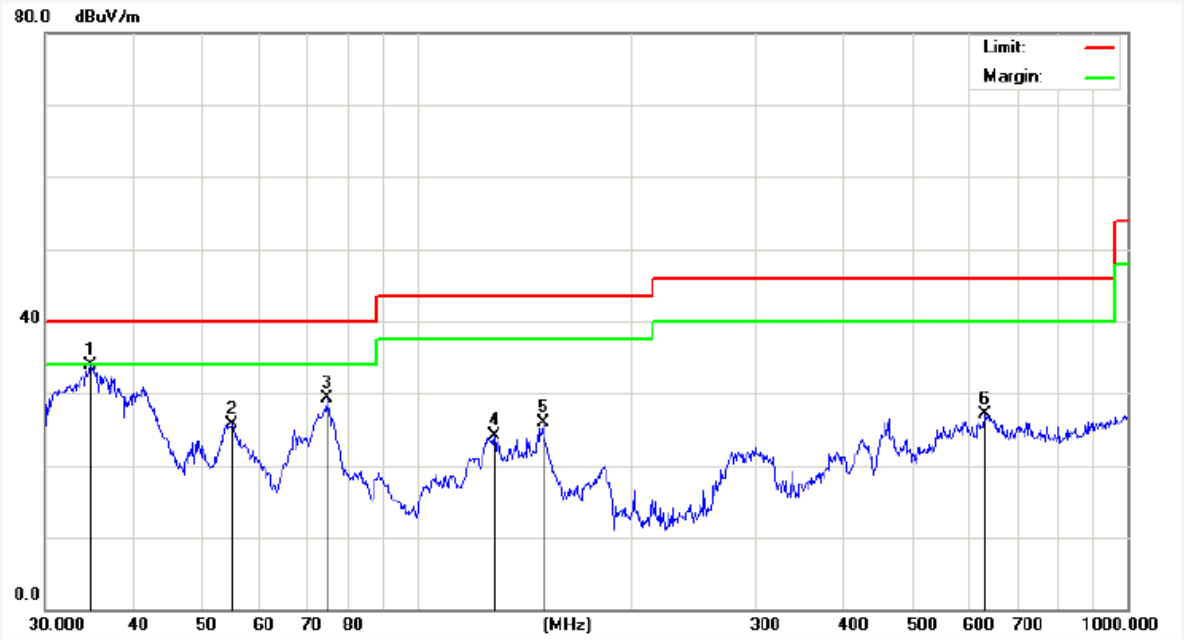
(Between 30MHz –1000 MHz)

Job No.:	**SZAWW190430002-01**	**Polarization:**	**Horizontal**
Standard:	**FCC PART15 C _3m**	**Power Source:**	**DC 3.7V Battery inside**
Test item:	**Radiation Test**	**Temp.(C)/Hum.(%RH):**	**23.7℃/51%RH**
Test Mode:	**Mode 1**	**Distance:**	**3m**



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	32.2925	45.26	-18.92	26.34	40.00	-13.66	QP	300	152	
2	126.3286	54.91	-23.62	31.29	43.50	-12.21	QP	300	81	
3	136.4598	50.80	-23.60	27.20	43.50	-16.30	QP	300	282	
4	152.6641	47.56	-23.20	24.36	43.50	-19.14	QP	300	44	
5	183.8440	46.55	-21.78	24.77	43.50	-18.73	QP	300	237	
6	202.8104	43.93	-20.77	23.16	43.50	-20.34	QP	300	176	

Job No.:	**SZAWW190430002-01**	**Polarization:**	**Vertical**
Standard:	**FCC PART15 C _3m**	**Power Source:**	**DC 3.7V Battery inside**
Test item:	**Radiation Test**	**Temp.(C)/Hum.(%RH):**	**23.7℃/51%RH**
Test Mode:	**Mode 1**	**Distance:**	**3m**



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	34.7602	51.70	-17.89	33.81	40.00	-6.19	QP	300	272	
2	55.0274	42.80	-17.04	25.76	40.00	-14.24	QP	300	27	
3	74.6569	51.67	-22.28	29.39	40.00	-10.61	QP	300	342	
4	128.5630	42.74	-18.65	24.09	43.50	-19.41	QP	300	172	
5	150.5378	45.15	-19.31	25.84	43.50	-17.66	QP	300	128	
6	629.4772	36.88	-9.86	27.02	46.00	-18.98	QP	300	52	

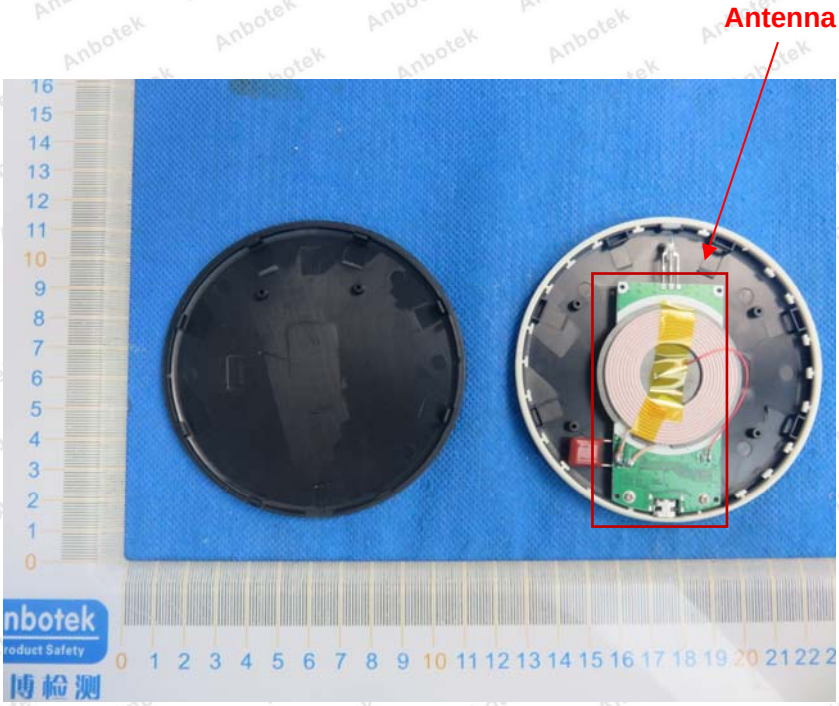
5. Antenna Requirement

5.1. 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

5.2. 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.

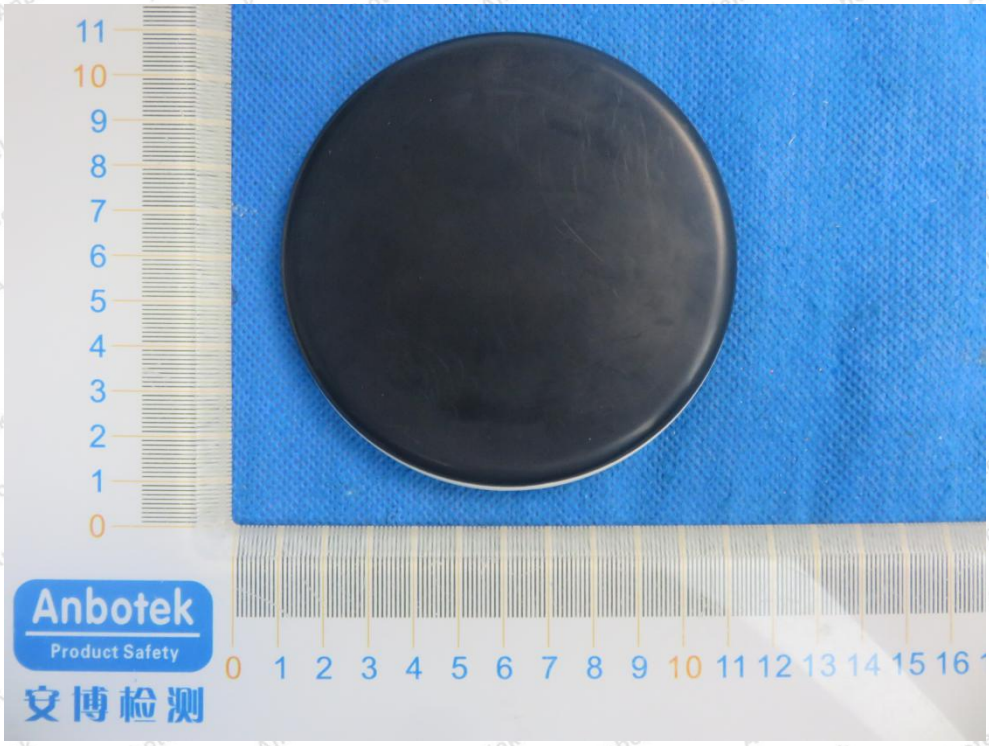


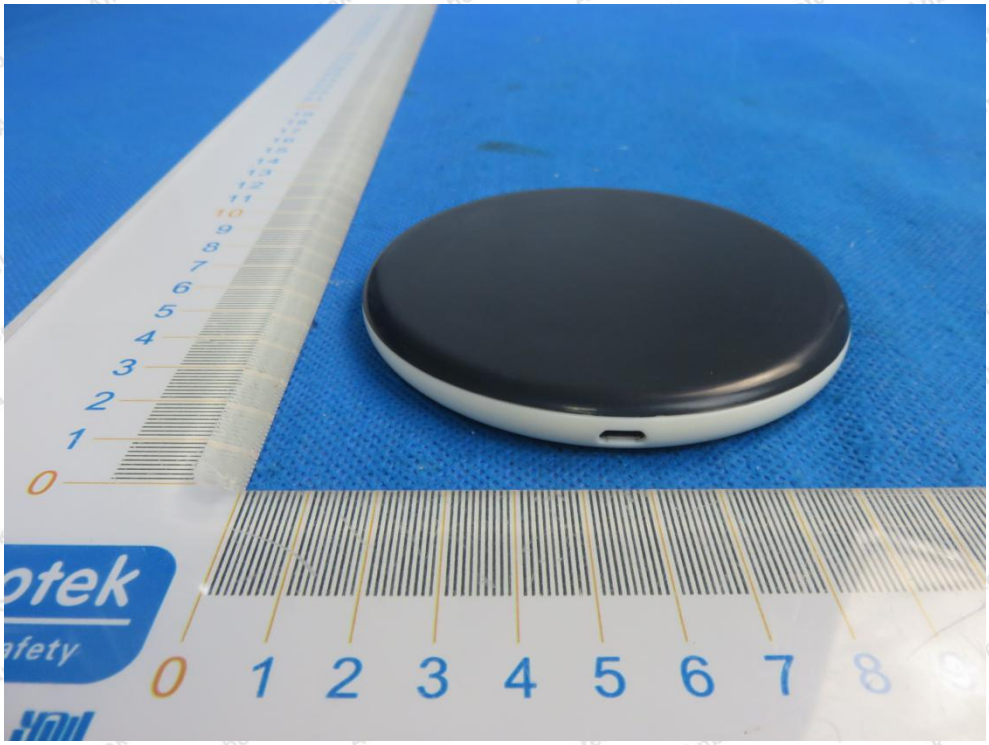
APPENDIX I -- TEST SETUP PHOTOGRAPH

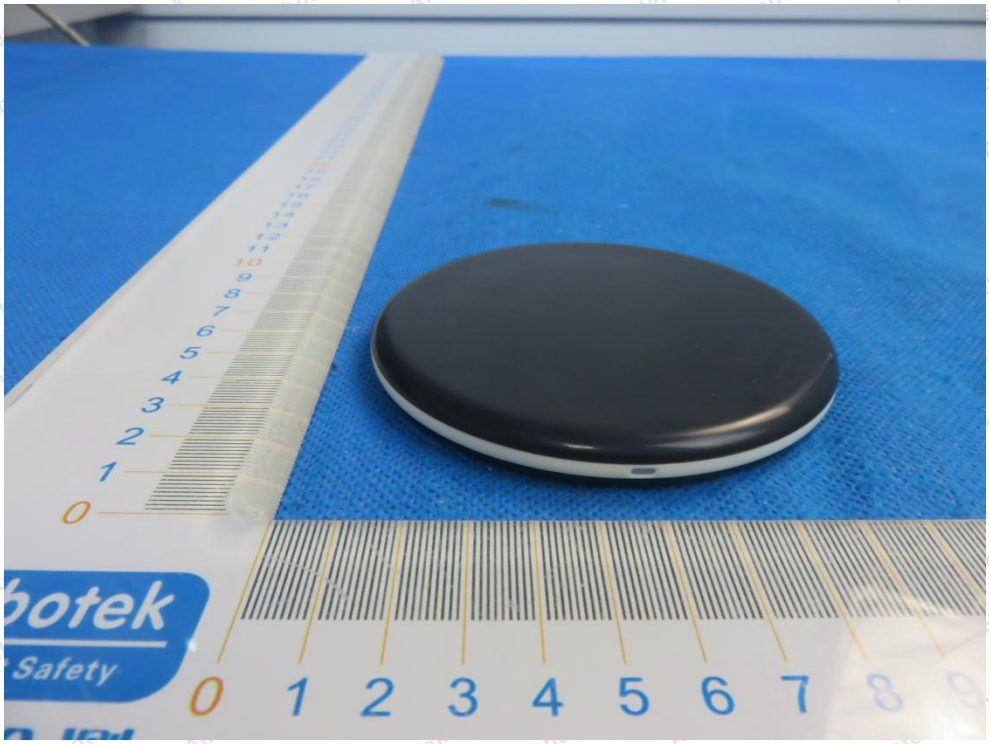
Photo of Conducted Emission Measurement

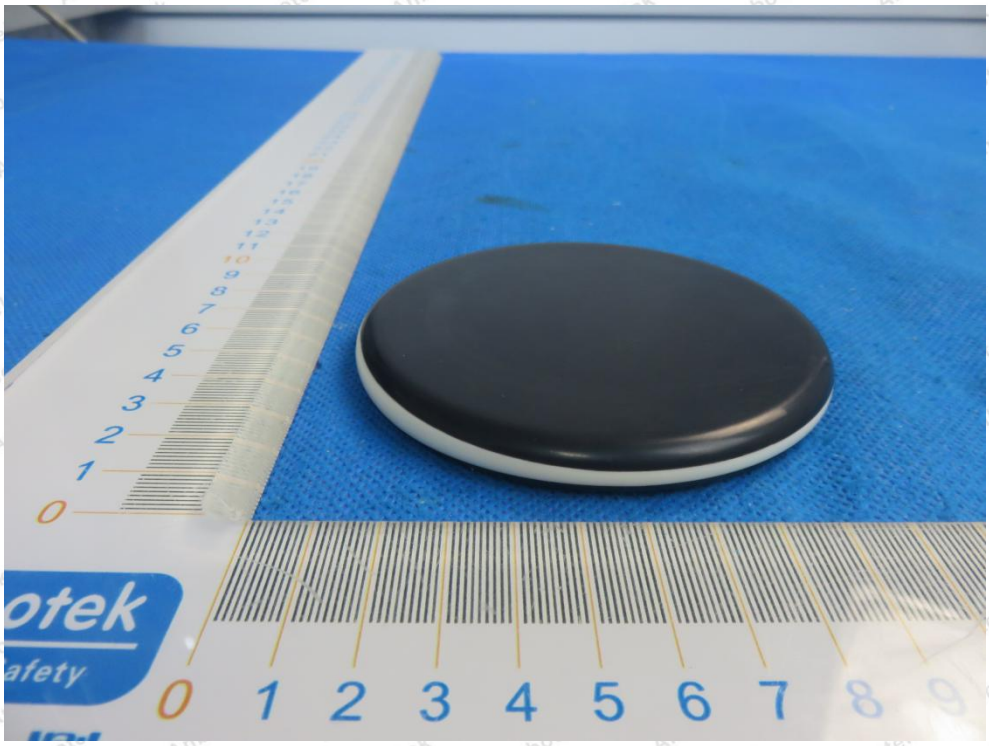
Photo of Radiation Emission Test

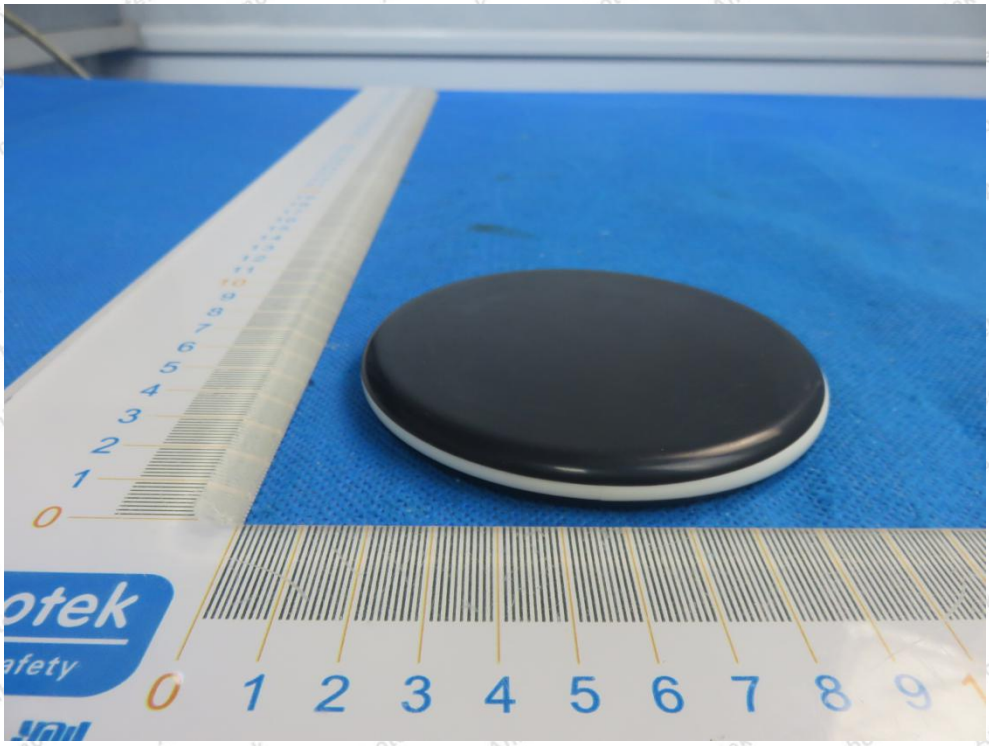
APPENDIX II -- EXTERNAL PHOTOGRAPH



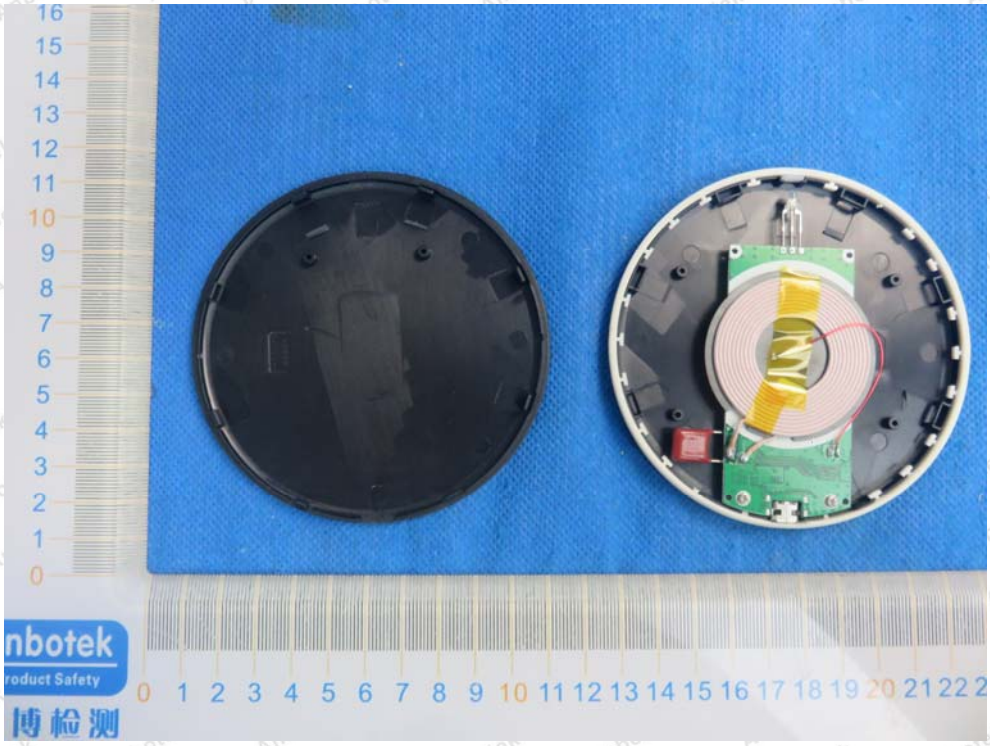


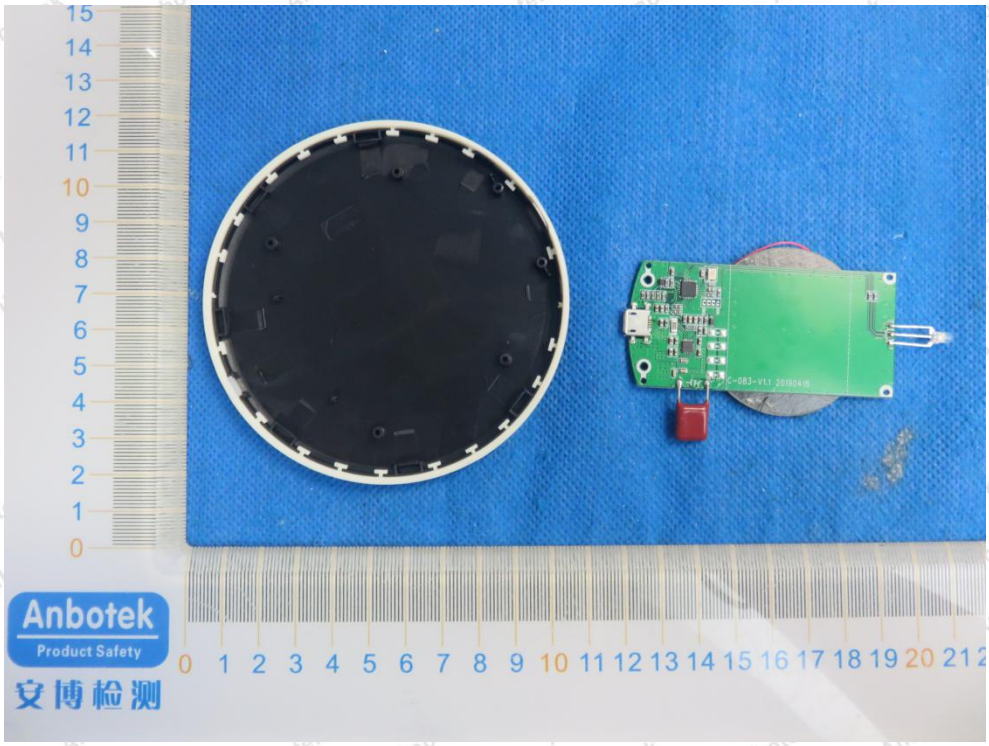


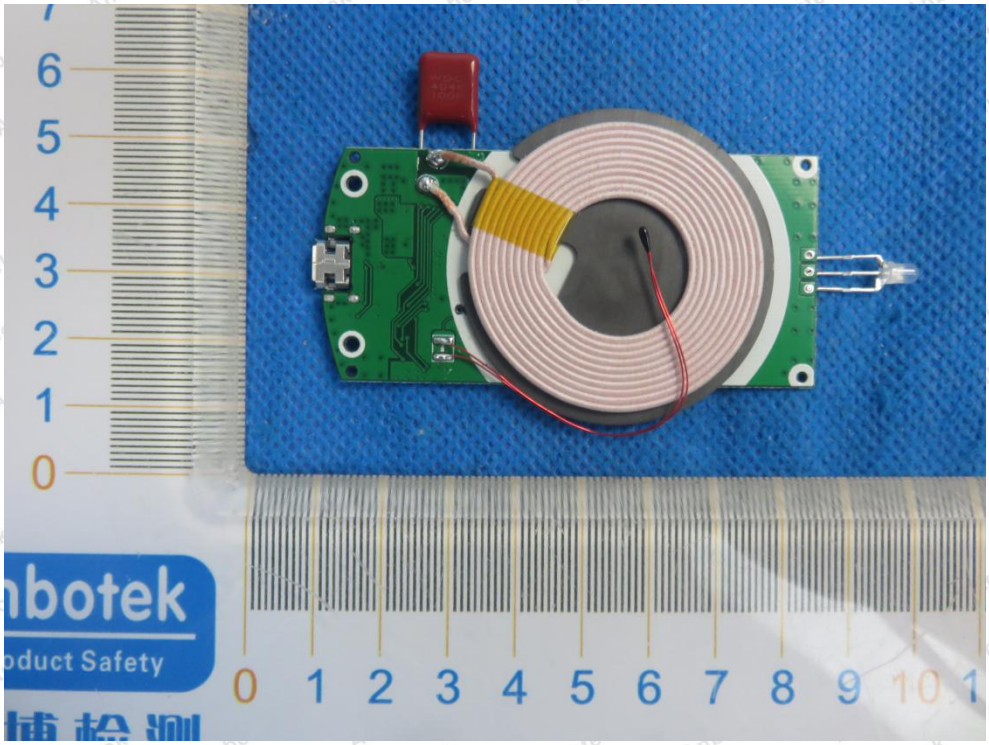


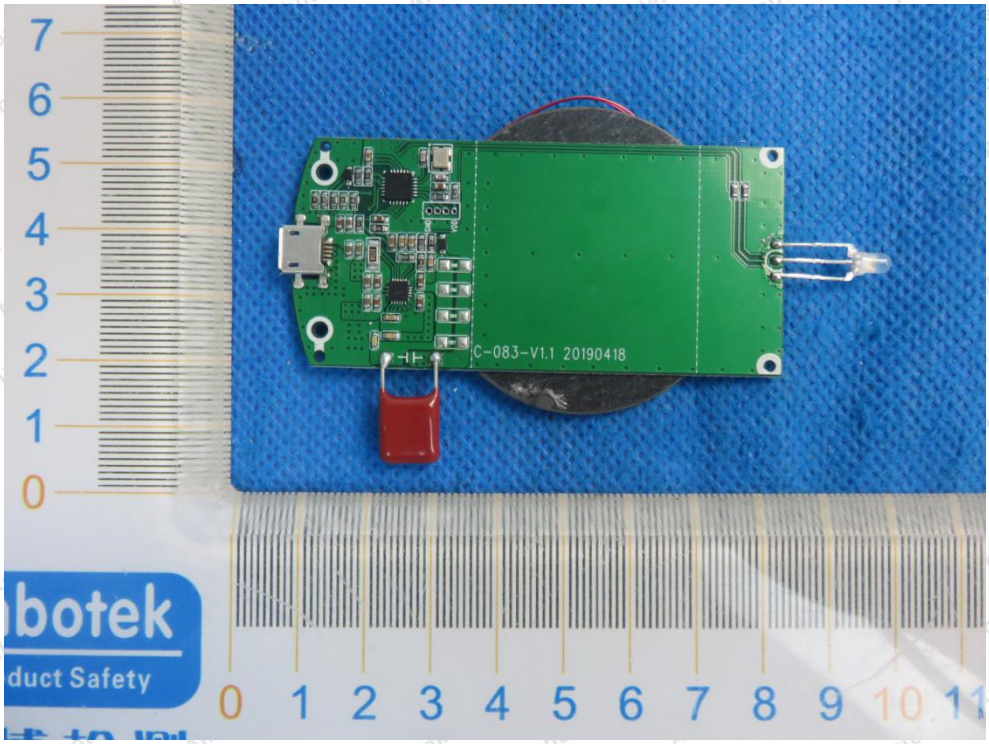


APPENDIX III -- INTERNAL PHOTOGRAPH





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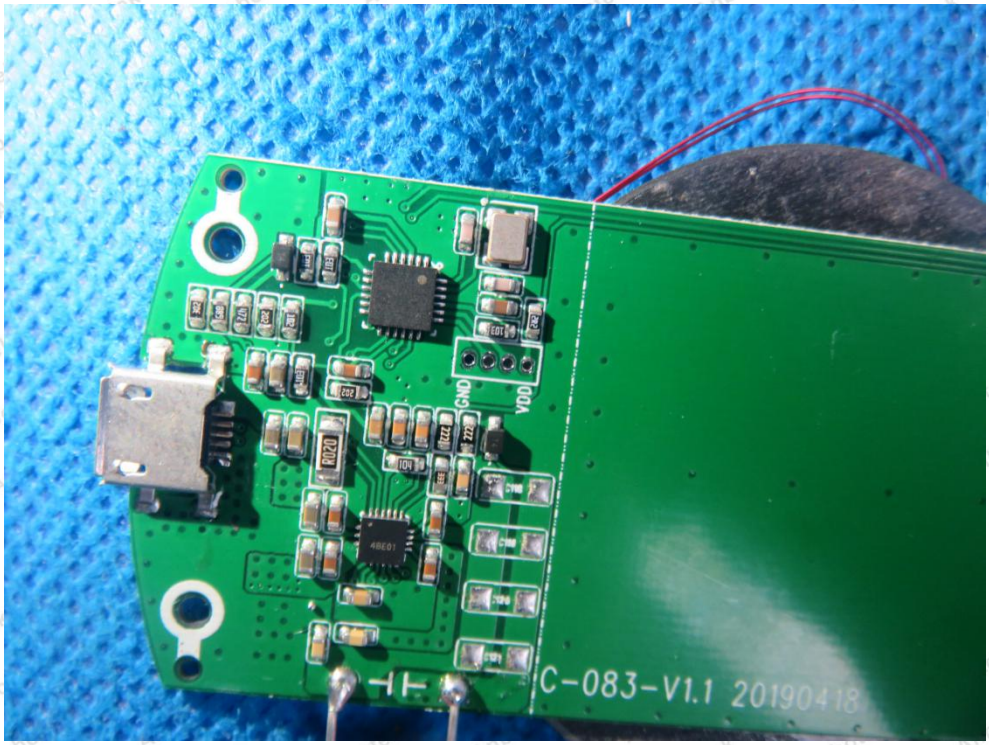

---------- End of Report ----------