

FCC TEST REPORT

For

E-Power Limited

Wireless charger Bluetooth speaker

Model No.: 7197-07, BT801, BT802, BT803, BT804, BT805, BT806, BT807, BT808

Prepared For : E-Power Limited
Address : 7th Floor, NO.A Building, Gangzai Henghongtai Industrial Park, Shajing,
Bao'an District, Shenzhen, Guangdong, China

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Date of Receipt : Sept. 21, 2018
Date of Test : Sept. 21~Oct. 23, 2018
Date of Report : Oct. 23, 2018

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TEST REPORT

Applicant : E-Power Limited
Manufacturer : E-Power Limited
Product Name : Wireless charger Bluetooth speaker
Model No. : 7197-07, BT801, BT802, BT803, BT804, BT805, BT806, BT807, BT808
Trade Mark : N.A.
Rating(s) : Input: DC 5V, 1A(with DC 3.7V, 4000mAh Battery inside)
Wireless output: 5W

Test Standard(s) : FCC Part15 Subpart C 2017, 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 Test

Sept. 21~Oct. 23, 2018

Prepared by



(Engineer / Tangcy Tang)

Reviewer



(Supervisor / Snowy Meng)

Approved & Authorized Signer



(Manager / Sally Zhang)

1. General Information

1.1. Client Information

Applicant	:	E-Power Limited
Address	:	7th Floor, NO.A Building, Gangzai Henghongtai Industrial Park, Shajing, Bao'an District, Shenzhen, Guangdong, China
Manufacturer	:	E-Power Limited
Address	:	7th Floor, NO.A Building, Gangzai Henghongtai Industrial Park, Shajing, Bao'an District, Shenzhen, Guangdong, China
Factory	:	E-Power Limited
Address	:	7th Floor, NO.A Building, Gangzai Henghongtai Industrial Park, Shajing, Bao'an District, Shenzhen, Guangdong, China

1.2. Description of Device (EUT)

Product Name	:	Wireless charger Bluetooth speaker	
Model No.	:	7197-07, BT801, BT802, BT803, BT804, BT805, BT806, BT807, BT808 (Note: All samples are the same except the shell, so we prepare "7197-07" for test only.)	
Trade Mark	:	N.A.	
Test Power Supply	:	AC 240V, 60Hz for adapter/ AC 120V, 60Hz for adapter/ DC 3.7V Battery inside	
Test Sample No.	:	S1(Normal Sample), S2(Engineering Sample)	
Product Description	:	Operation Frequency:	111~205KHz
	:	Modulation Type:	MSK
	:	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, 1000mA
Mobile Phone	:	Samsung Model: S8

1.4. Description of Test Modes

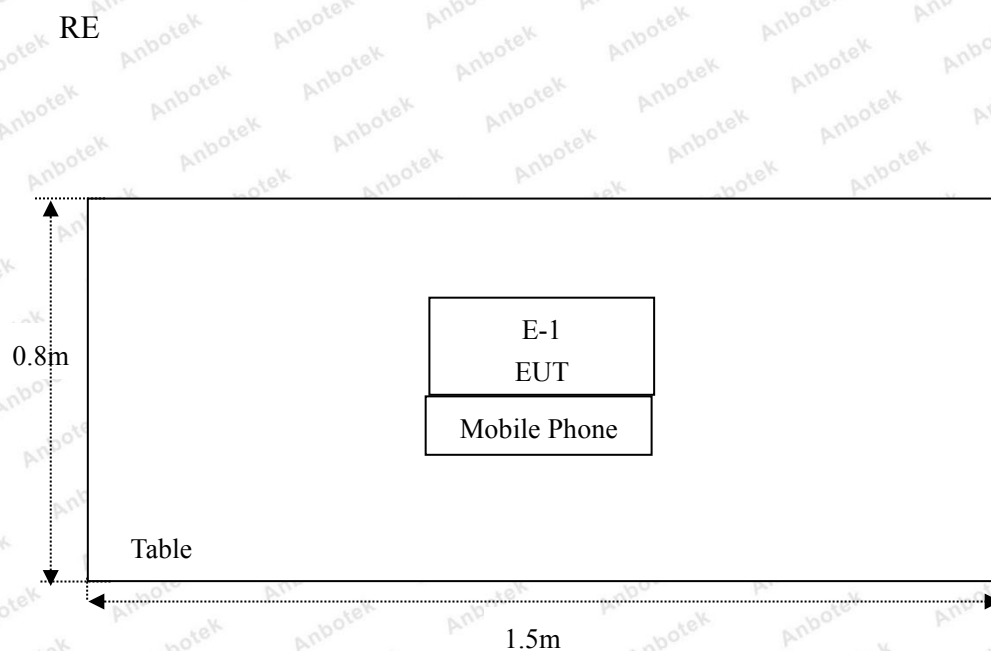
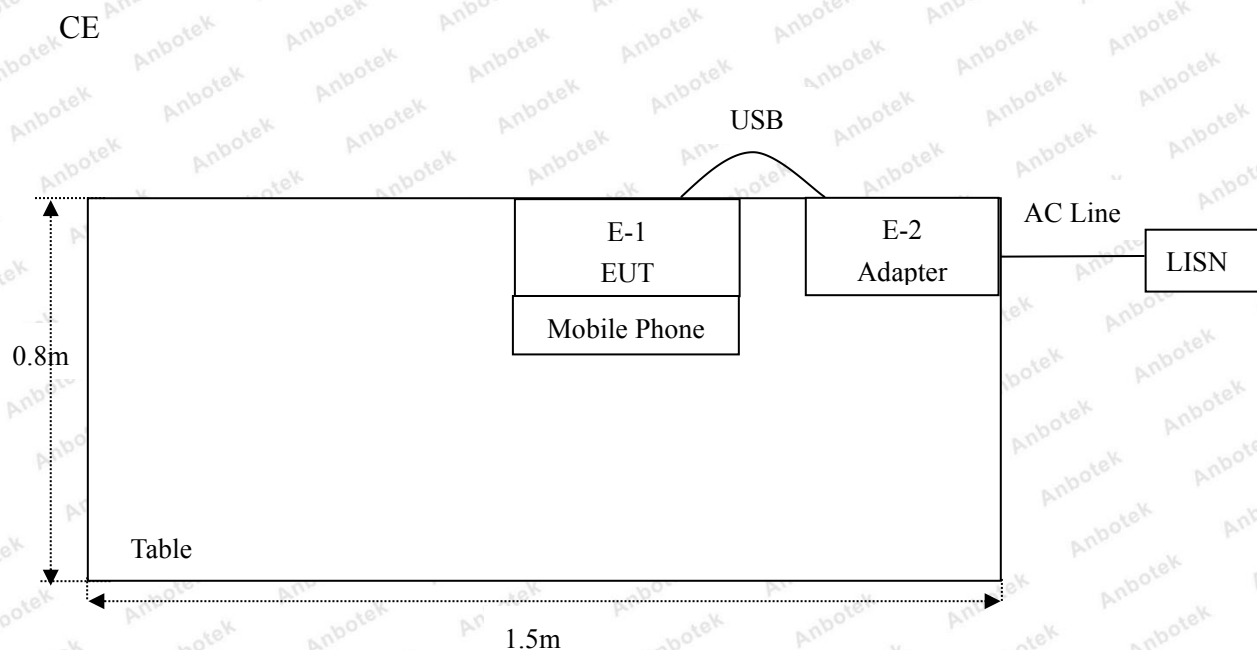
To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration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

Pretest Mode	Description
Mode 1	TX Mode

For Conducted Emission	
Final Test Mode	Description
Mode 1	TX Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	TX Mode

1.5. Description Of Test Setup



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. 17, 2017	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Nov. 17, 2017	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Nov. 17, 2017	1 Year
4.	Spectrum Analysis	Agilent	E4407B	US39390582	Nov. 17, 2017	1 Year
5.	MAX Spectrum Analysis	Agilent	N9020A	MY51170037	Nov. 18, 2017	1 Year
6.	Preamplifier	SKET Electronic	BK1G18G30D	KD17503	Nov. 17, 2017	1 Year
7.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Nov. 20, 2017	1 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Nov. 20, 2017	1 Year
9.	Loop Antenna	Schwarzbeck	HFH2-Z2	100047	Nov. 17, 2017	1 Year
10.	Horn Antenna	Schwarzbeck	BBHA9170	9170-375	Nov. 17, 2017	1 Year
11.	Pre-amplifier	SONOMA	310N	186860	Nov. 17, 2017	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. 18, 2017	1 Year
14.	Power Sensor	DAER	RPR3006W	15I00041SN045	Nov. 17, 2017	1 Year
15.	Power Sensor	DAER	RPR3006W	15I00041SN046	Nov. 17, 2017	1 Year
16.	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Nov. 18, 2017	1 Year
17.	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Nov. 18, 2017	1 Year
18.	Signal Generator	Agilent	E4421B	MY41000743	Nov. 18, 2017	1 Year
19.	DC Power Supply	LW	TPR-6410D	349315	Nov. 01, 2017	1 Year
20.	Constant Temperature Humidity Chamber	Sertep	ZJ-HWHS80B	ZJ-17042804	Nov. 01, 2017	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 registered 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

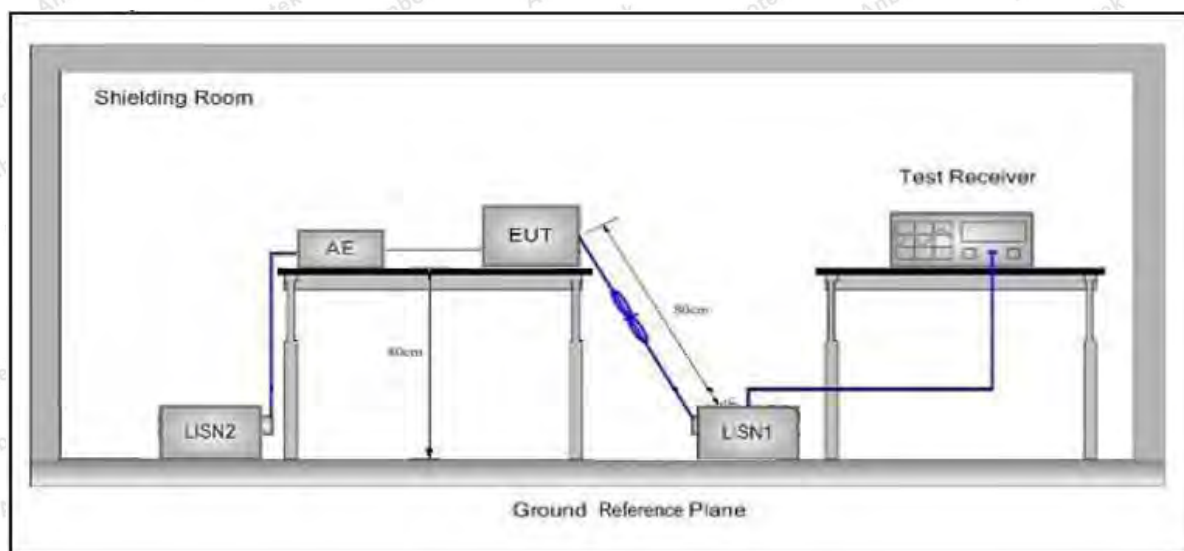
Standard Section	Test Item	Result
FCC Part 15, Paragraph 15.207	Conducted Emission Test	PASS
FCC Part 15, Paragraph 15.209(a)(f)	Spurious Emission	PASS
Part 15.203	Antenna Requirement	PASS

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.

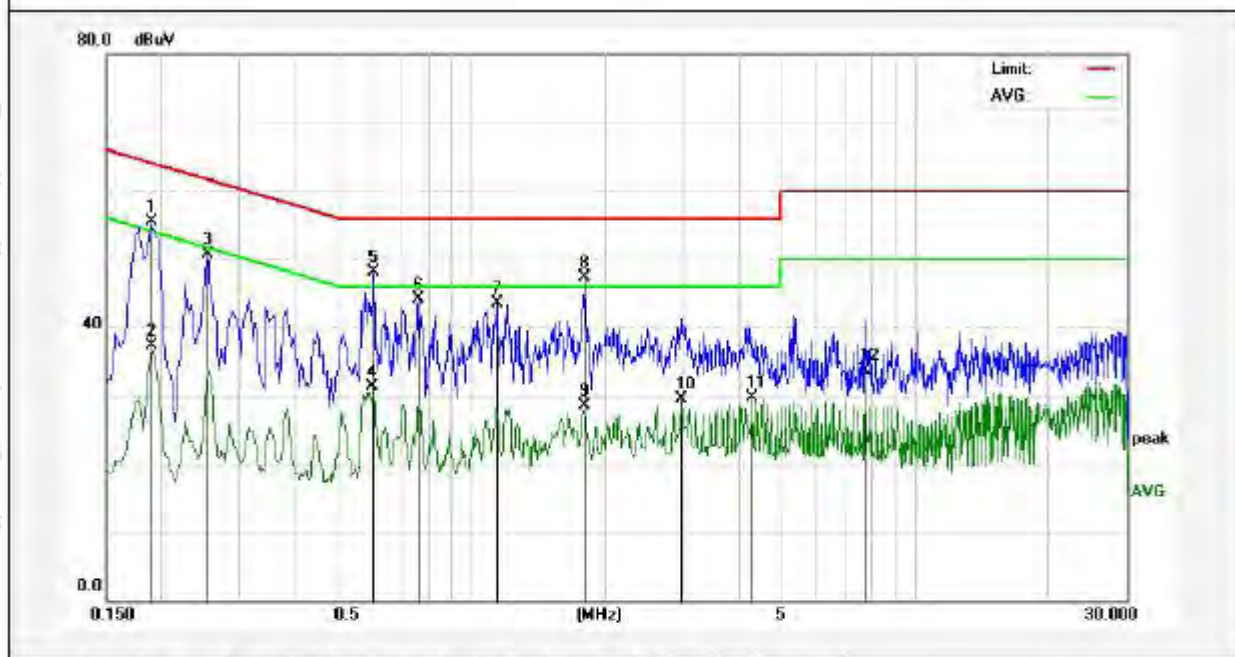
The frequency range from 150kHz to 30MHz is checked.

3.4. Test Data

Please to see the following pages

Conducted Emission Test Data

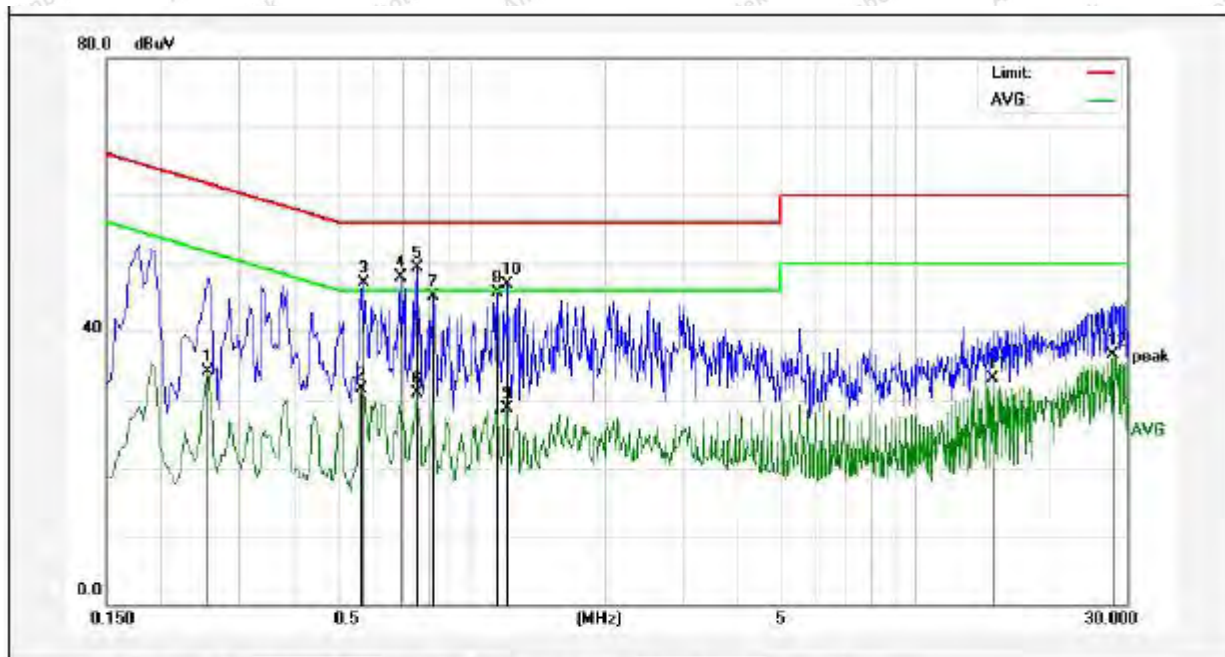
Test Site: 1# Shielded Room
Operating Condition: TX Mode
Test Specification: AC 240V, 60Hz for adapter
Comment: Live Line
Tem.: 23.9°C Hum.: 48%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1900	35.55	19.90	55.45	64.03	-8.58	QP	
2	0.1900	17.35	19.90	37.25	54.03	-16.78	AVG	
3	0.2540	30.79	19.89	50.68	61.62	-10.94	QP	
4	0.5980	11.22	20.01	31.23	46.00	-14.77	AVG	
5	0.6020	28.09	20.01	48.10	56.00	-7.90	QP	
6	0.7620	24.04	20.06	44.10	56.00	-11.90	QP	
7	1.1420	23.30	20.12	43.42	56.00	-12.58	QP	
8	1.8060	27.19	20.14	47.33	56.00	-8.67	QP	
9	1.8060	8.43	20.14	28.57	46.00	-17.43	AVG	
10	2.9660	9.25	20.16	29.41	46.00	-16.59	AVG	
11	4.2940	9.49	20.19	29.68	46.00	-16.32	AVG	
12	7.6940	13.42	20.28	33.70	50.00	-16.30	AVG	

Conducted Emission Test Data

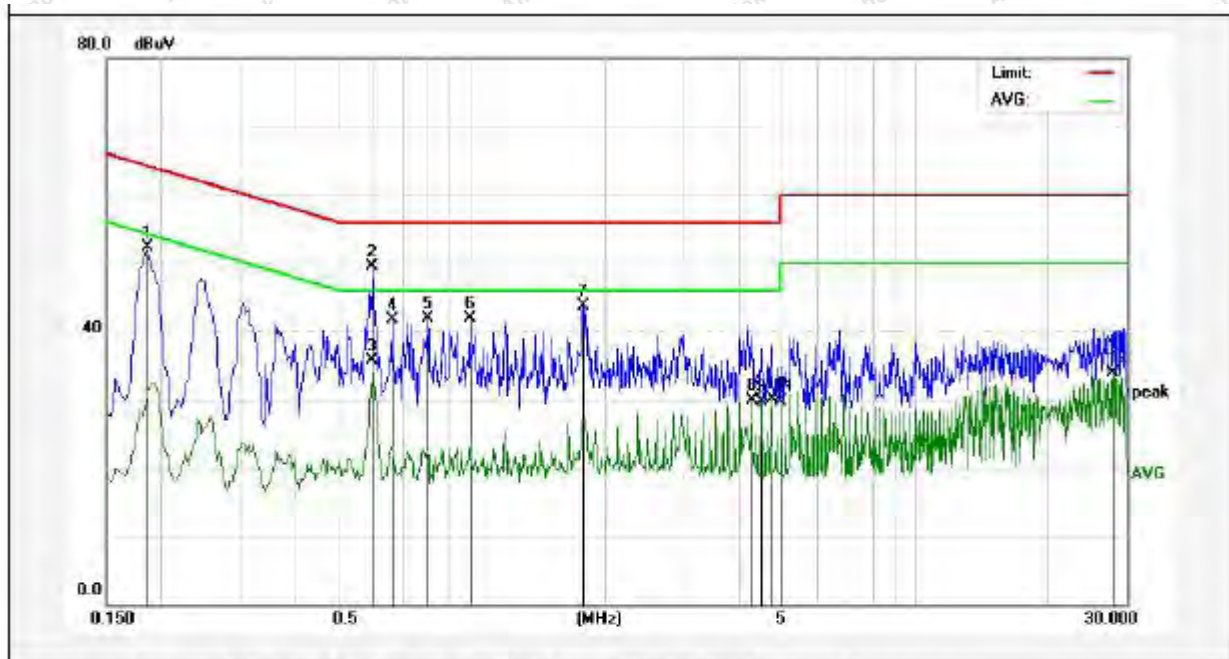
Test Site: 1# Shielded Room
Operating Condition: TX Mode
Test Specification: AC 240V, 60Hz for adapter
Comment: Neutral Line
Tem.: 23.9°C Hum.: 48%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.2540	14.26	19.89	34.15	51.62	-17.47	AVG	
2	0.5660	11.52	20.00	31.52	46.00	-14.48	AVG	
3	0.5740	27.13	20.00	47.13	56.00	-8.87	QP	
4	0.6900	27.79	20.04	47.83	56.00	-8.17	QP	
5	0.7580	29.16	20.06	49.22	56.00	-6.78	QP	
6	0.7580	10.94	20.06	31.00	46.00	-15.00	AVG	
7	0.8220	25.00	20.07	45.07	56.00	-10.93	QP	
8	1.1420	25.66	20.12	45.78	56.00	-10.22	QP	
9	1.1980	8.51	20.12	28.63	46.00	-17.37	AVG	
10	1.2059	26.79	20.12	46.91	56.00	-9.09	QP	
11	15.0060	12.78	20.26	33.04	50.00	-16.96	AVG	
12	27.9780	16.30	20.27	36.57	50.00	-13.43	AVG	

Conducted Emission Test Data

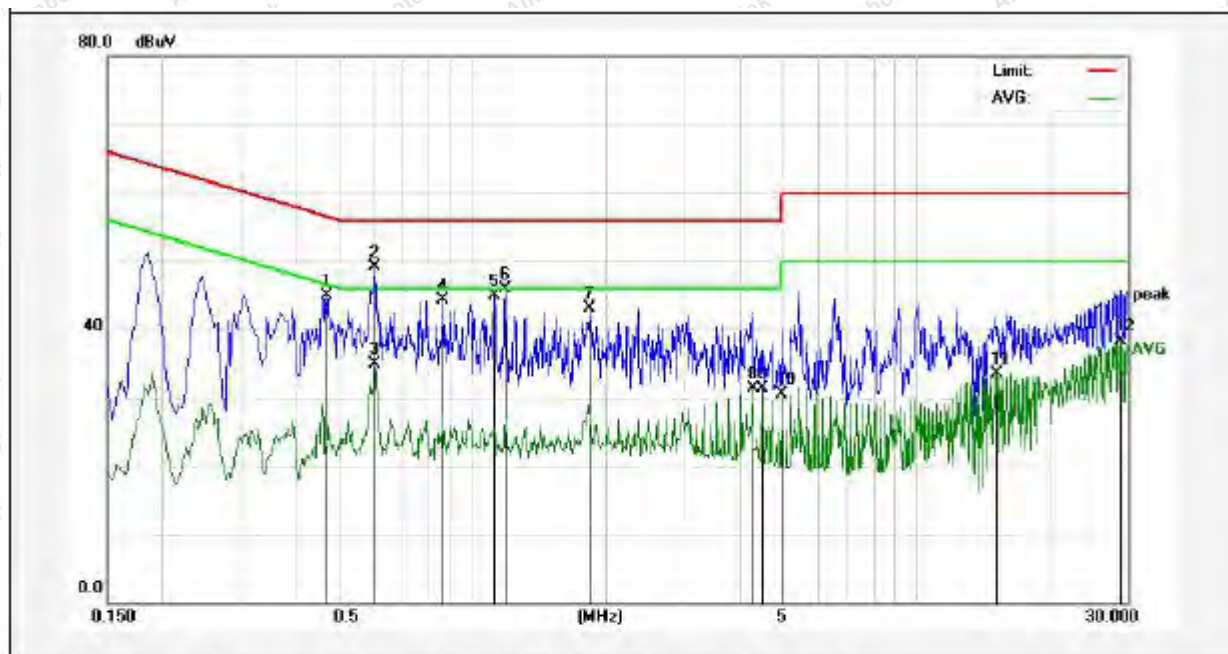
Test Site: 1# Shielded Room
Operating Condition: TX Mode
Test Specification: AC 120V, 60Hz for adapter
Comment: Live Line
Tem.: 23.9°C Hum.: 48%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1860	32.42	19.90	52.32	64.21	-11.89	QP	
2	0.5980	29.59	20.01	49.60	56.00	-6.40	QP	
3	0.5980	15.78	20.01	35.79	46.00	-10.21	AVG	
4	0.6620	21.74	20.03	41.77	56.00	-14.23	QP	
5	0.7980	21.92	20.07	41.99	56.00	-14.01	QP	
6	0.9940	21.82	20.12	41.94	56.00	-14.06	QP	
7	1.7860	23.64	20.14	43.78	56.00	-12.22	QP	
8	4.2740	9.75	20.19	29.94	46.00	-16.06	AVG	
9	4.5100	9.52	20.19	29.71	46.00	-16.29	AVG	
10	4.7500	9.92	20.20	30.12	46.00	-15.88	AVG	
11	4.9860	9.53	20.21	29.74	46.00	-16.26	AVG	
12	27.8780	13.60	20.27	33.87	50.00	-16.13	AVG	

Conducted Emission Test Data

Test Site: 1# Shielded Room
Operating Condition: TX Mode
Test Specification: AC 120V, 60Hz for adapter
Comment: Neutral Line
Tem.: 23.9°C Hum.: 48%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.4700	24.88	19.97	44.85	56.51	-11.66	QP	
2	0.6020	29.13	20.01	49.14	56.00	-6.86	QP	
3	0.6020	14.89	20.01	34.90	46.00	-11.10	AVG	
4	0.8580	24.23	20.08	44.31	56.00	-11.69	QP	
5	1.1220	24.73	20.12	44.85	56.00	-11.15	QP	
6	1.1860	25.74	20.12	45.86	56.00	-10.14	QP	
7	1.8460	22.97	20.14	43.11	56.00	-12.89	QP	
8	4.2700	11.09	20.19	31.28	46.00	-14.72	AVG	
9	4.5060	11.18	20.19	31.37	46.00	-14.63	AVG	
10	4.9820	10.21	20.21	30.42	46.00	-15.58	AVG	
11	15.1820	13.18	20.26	33.44	50.00	-16.56	AVG	
12	28.8100	18.03	20.27	38.30	50.00	-11.70	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

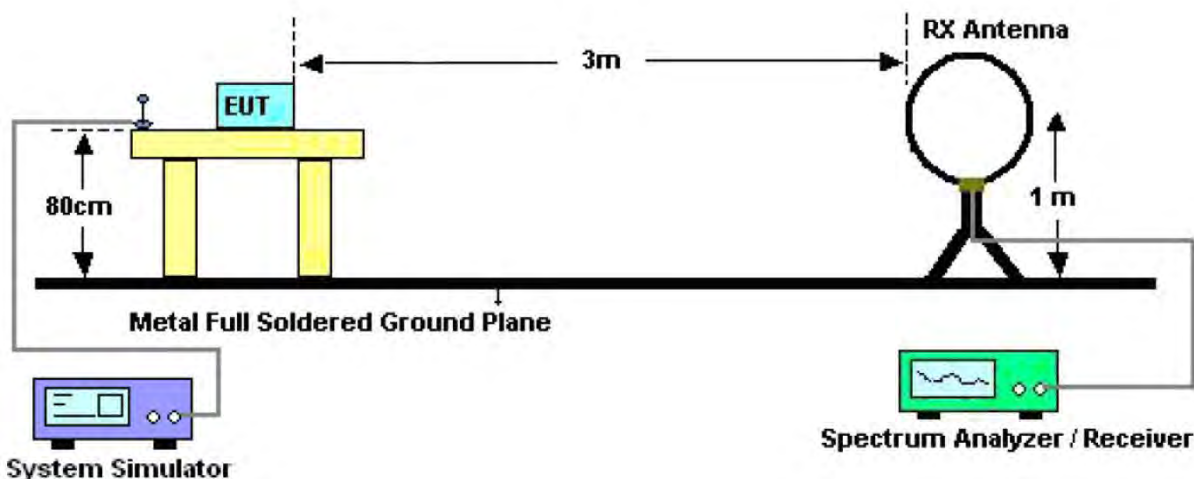


Figure 1. Below 30MHz

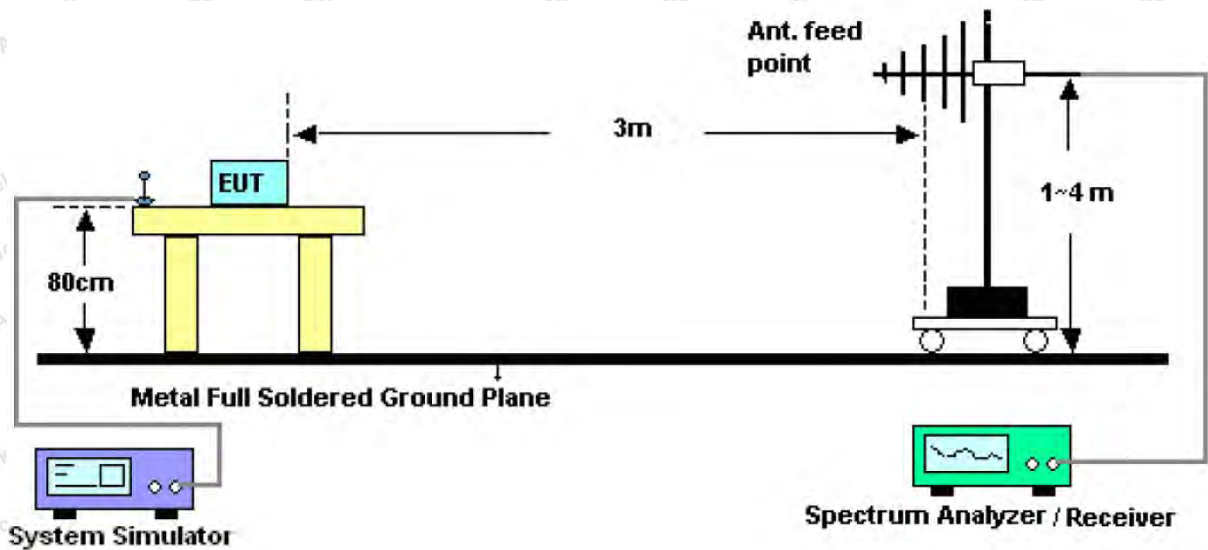


Figure 2. 30MHz to 1GHz

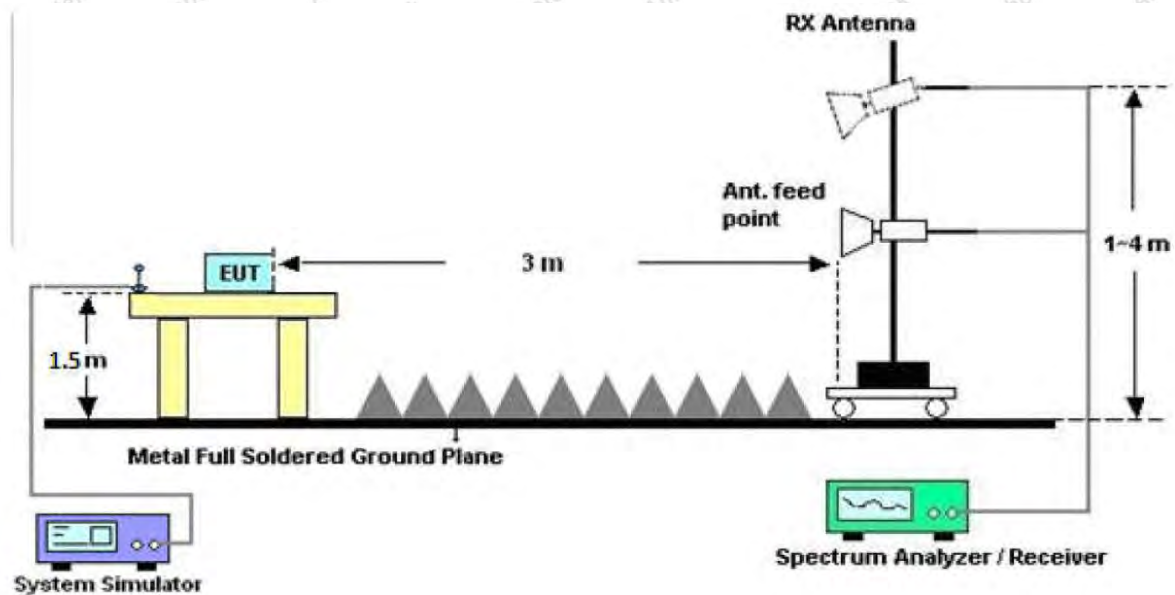


Figure 3. Above 1 GHz

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

Test Results

(Between 9KHz – 30MHz)

Job No.: SZAWW180921002-01

Standard: FCC PART15 C_3m

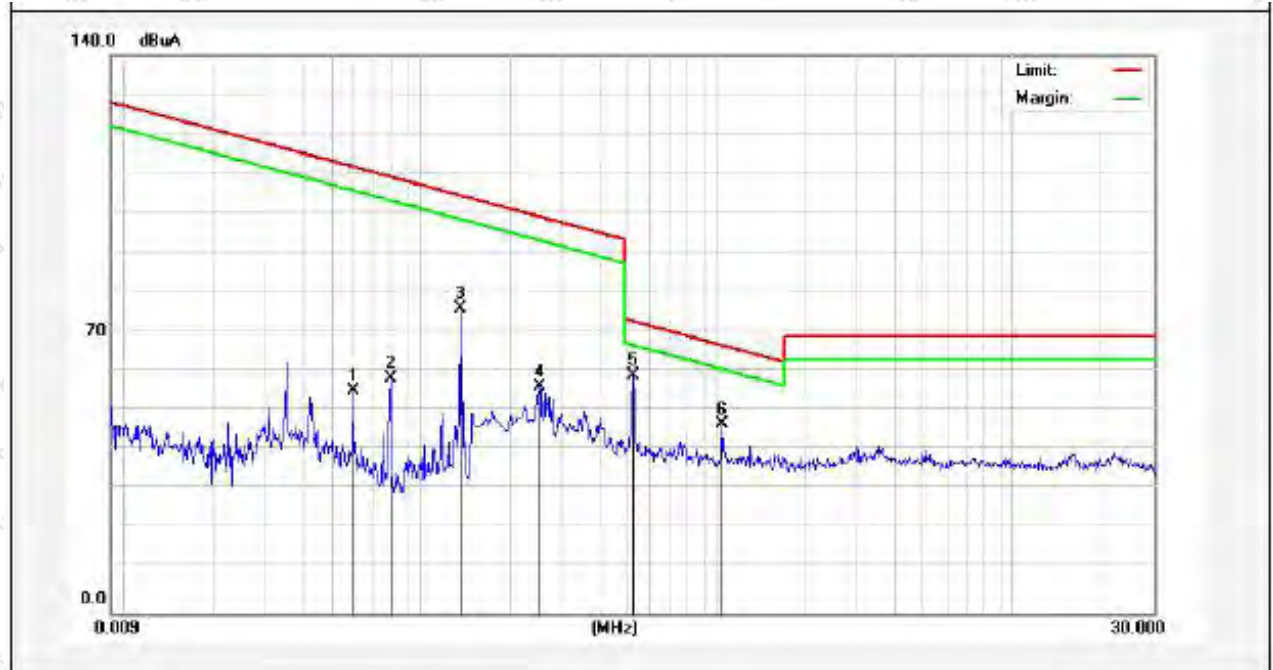
Power Source: DC 3.7V Battery inside

Test item: Radiation Test

Temp.(C)/Hum.(%RH): 24.3°C/55%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 (dgc)
0.0592	42.11	19.28	2.53	0	63.92	132.05	-68.13	Peak	36
0.0592	34.00	19.28	2.53	0	55.81	112.05	-56.24	AV	36
0.0792	48.49	19.30	2.54	0	70.33	129.54	-59.21	Peak	227
0.0792	37.18	19.30	2.54	0	59.02	109.54	-50.52	AV	227
0.1373	62.43	19.53	2.59	0	84.55	124.79	-40.24	Peak	149
0.1373	54.49	19.53	2.59	0	76.61	104.79	-28.18	AV	149
0.2540	43.07	19.53	2.59	0	65.19	119.47	-54.28	Peak	352
0.2540	34.83	19.53	2.59	0	56.95	99.47	-42.52	AV	352
0.5260	36.87	20.34	2.59	0	59.80	73.18	-13.38	QP	185
1.0500	23.90	20.87	2.70	0	47.47	67.18	-19.71	QP	317

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.

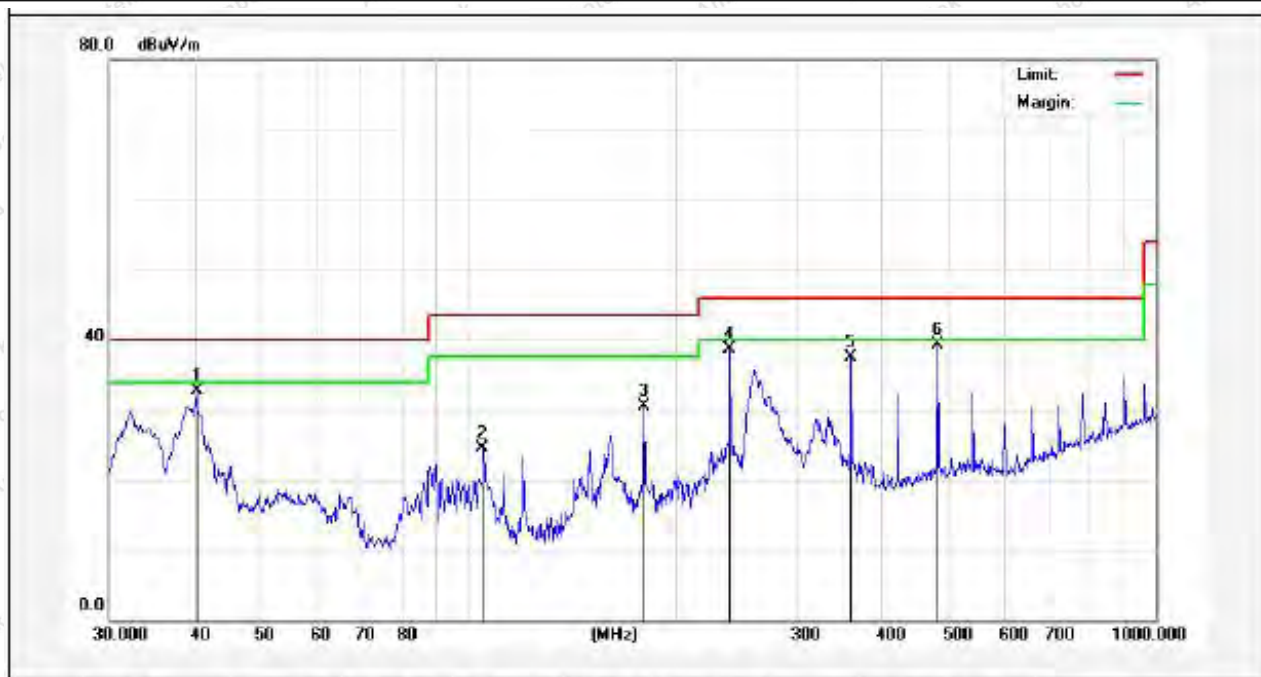
(Between 30MHz ~1000 MHz)

Job No.:	SZAWW180921002-01	Polarization:	Horizontal
Standard:	FCC PART15 C_3m	Power Source:	DC 3.7V Battery inside
Test item:	Radiation Test	Temp.(C)/Hum.(%RH):	24.3°C/56%RH
Test Mode:	Mode 1	Distance:	3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	87.7248	44.51	-22.21	22.30	40.00	-17.70	QP	300	12	
2	119.8556	47.98	-21.32	26.66	43.50	-16.84	QP	300	124	
3	180.0165	44.71	-19.85	24.86	43.50	-18.64	QP	300	231	
4	239.9874	50.03	-17.49	32.54	46.00	-13.46	QP	300	315	
5	360.4476	52.21	-13.65	38.56	46.00	-7.44	QP	300	14	
6	480.5276	51.32	-11.53	39.79	46.00	-6.21	QP	300	341	

Job No.:	SZAWW180921002-01	Polarization:	Vertical
Standard:	FCC PART15 C_3m	Power Source:	DC 3.7V Battery inside
Test item:	Radiation Test	Temp.(C)/Hum.(%RH):	24.3°C/56%RH
Test Mode:	Mode 1	Distance:	3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	40.2757	46.20	-13.43	32.77	40.00	-7.23	QP	300	121	
2	104.9033	39.18	-14.71	24.47	43.50	-19.03	QP	300	245	
3	180.0165	46.32	-15.85	30.47	43.50	-13.03	QP	300	312	
4	239.9874	52.27	-13.49	38.78	46.00	-7.22	QP	300	12	
5	360.4476	50.07	-12.65	37.42	46.00	-8.58	QP	300	124	
6	480.5276	50.76	-11.53	39.23	46.00	-6.77	QP	300	251	

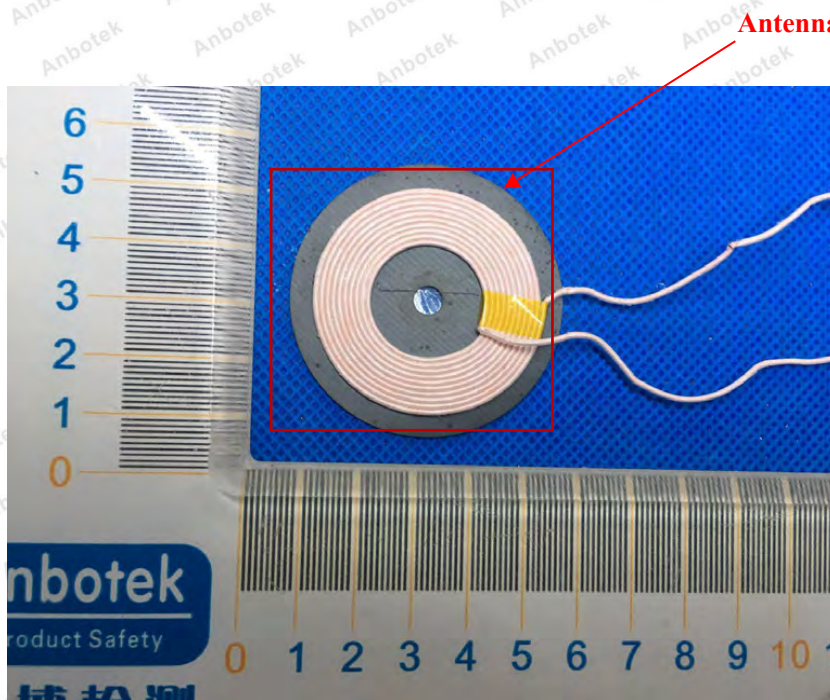
5. Antenna Requirement

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 be replaced by the user, but the use of a standard

5.2. Antenna Connected Construction

The Wireless Charging 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.

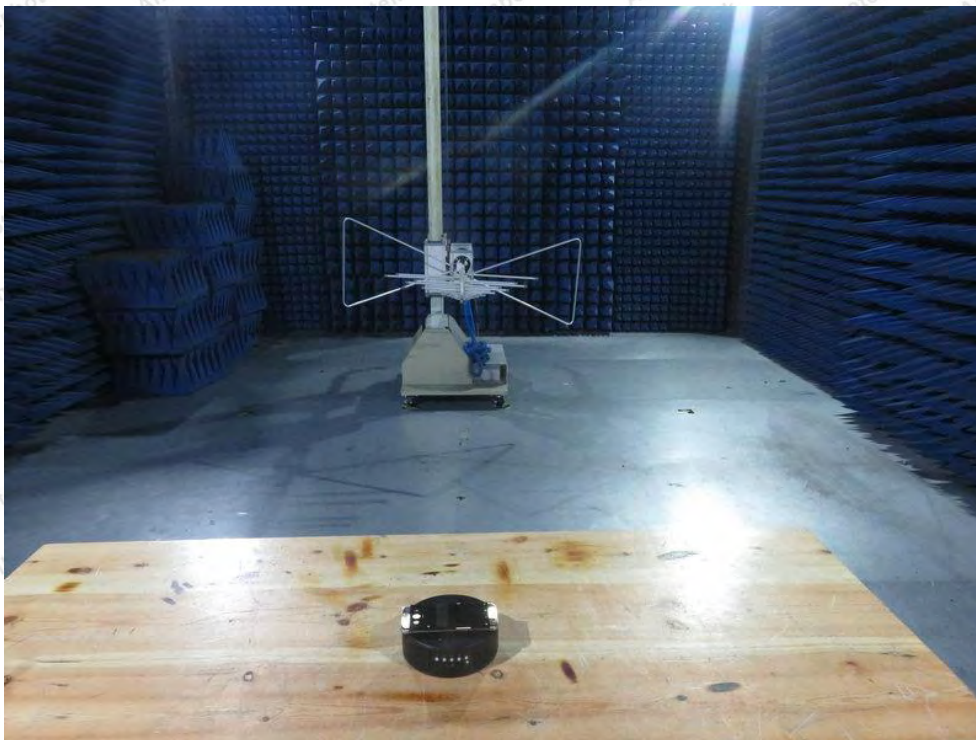


APPENDIX I-- TEST SETUP PHOTOGRAPH

Photo of Conducted Emission Measurement

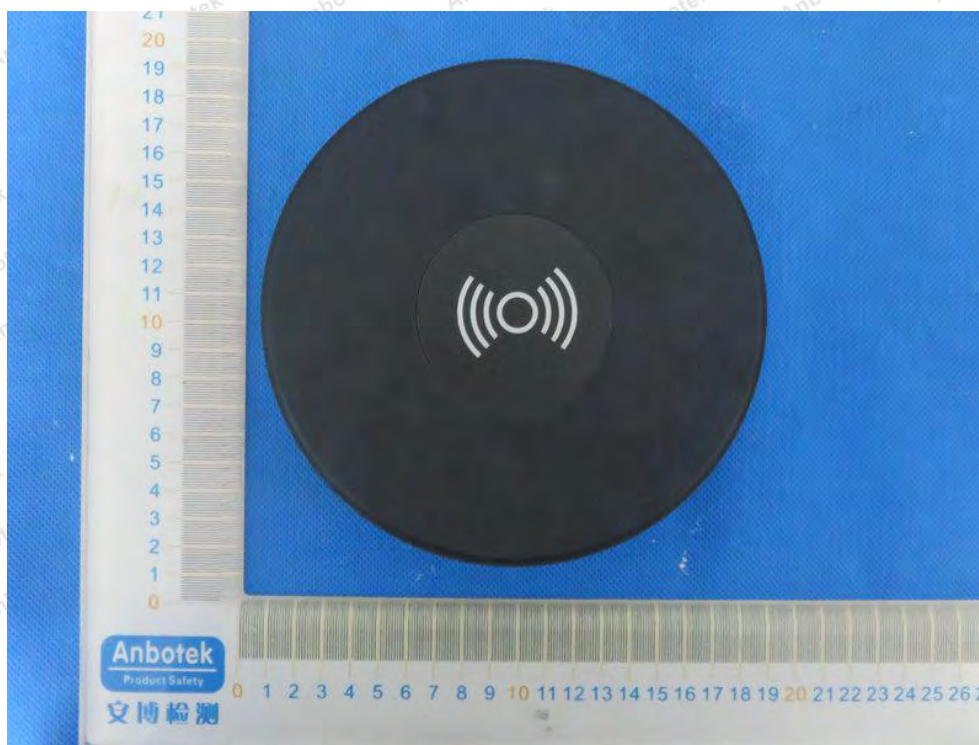


Photo of Radiation Emission Test





APPENDIX II -- EXTERNAL PHOTOGRAPH

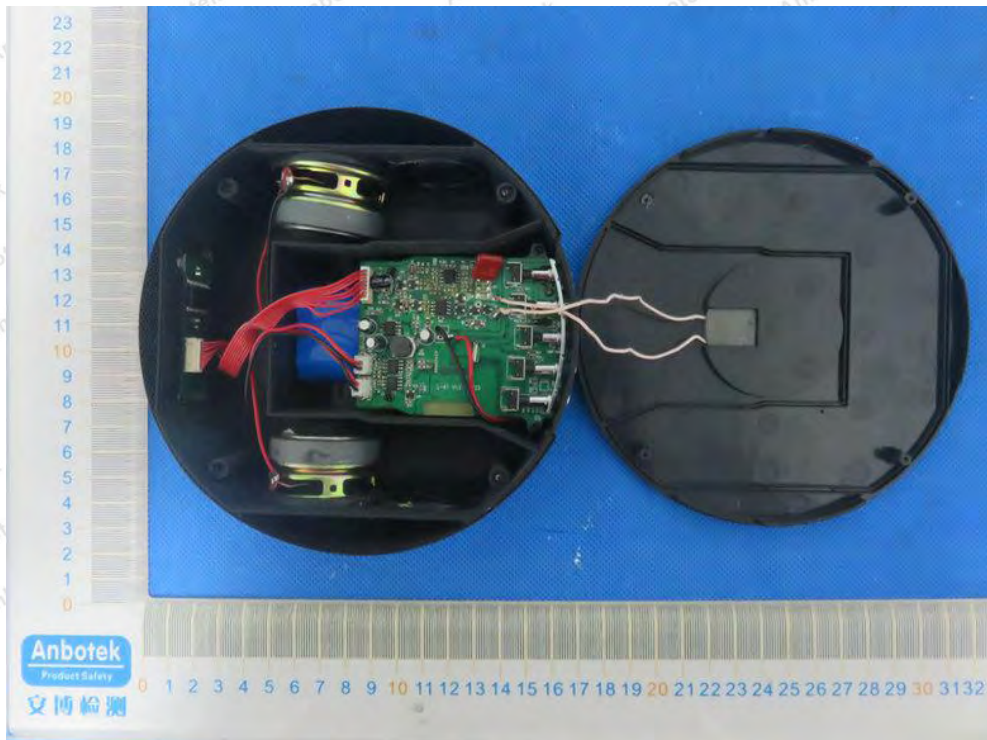
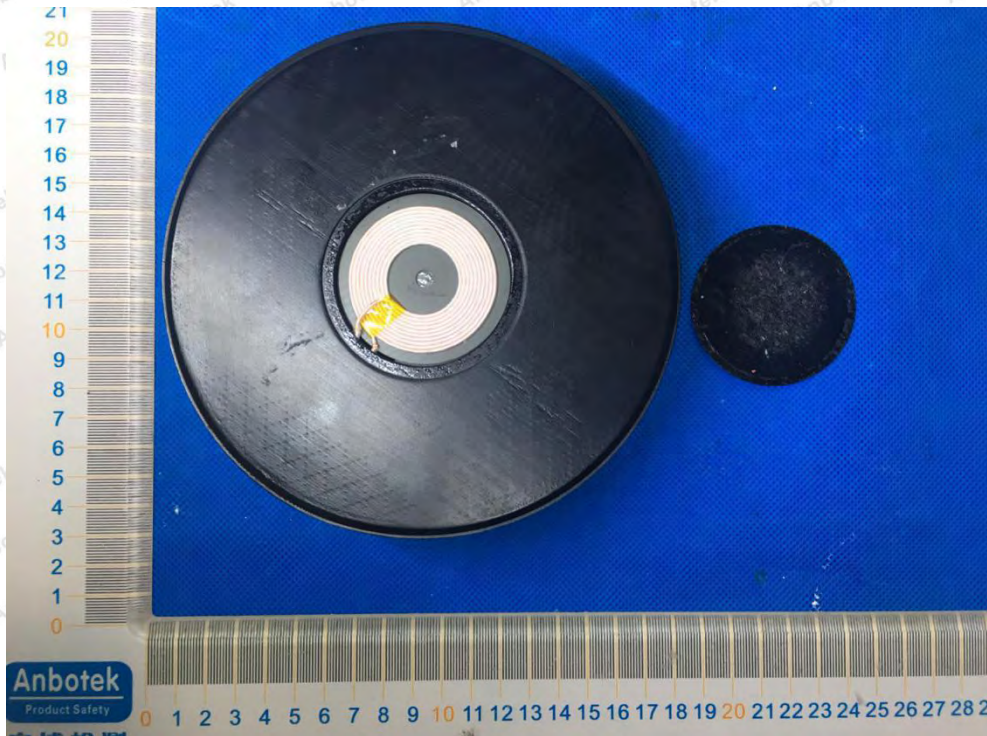


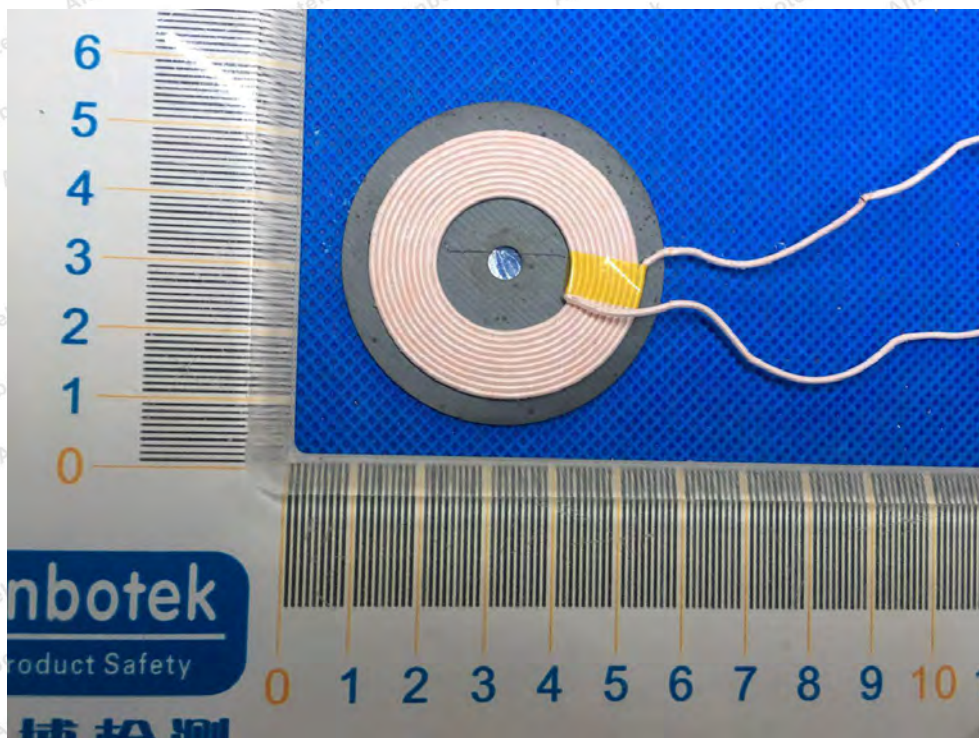




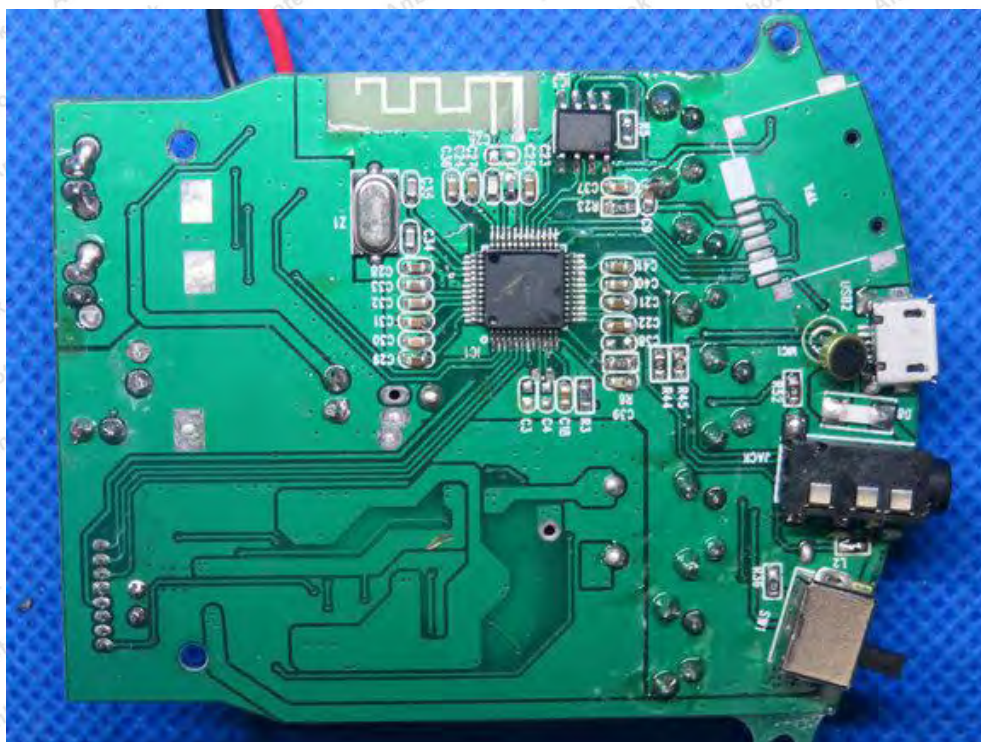


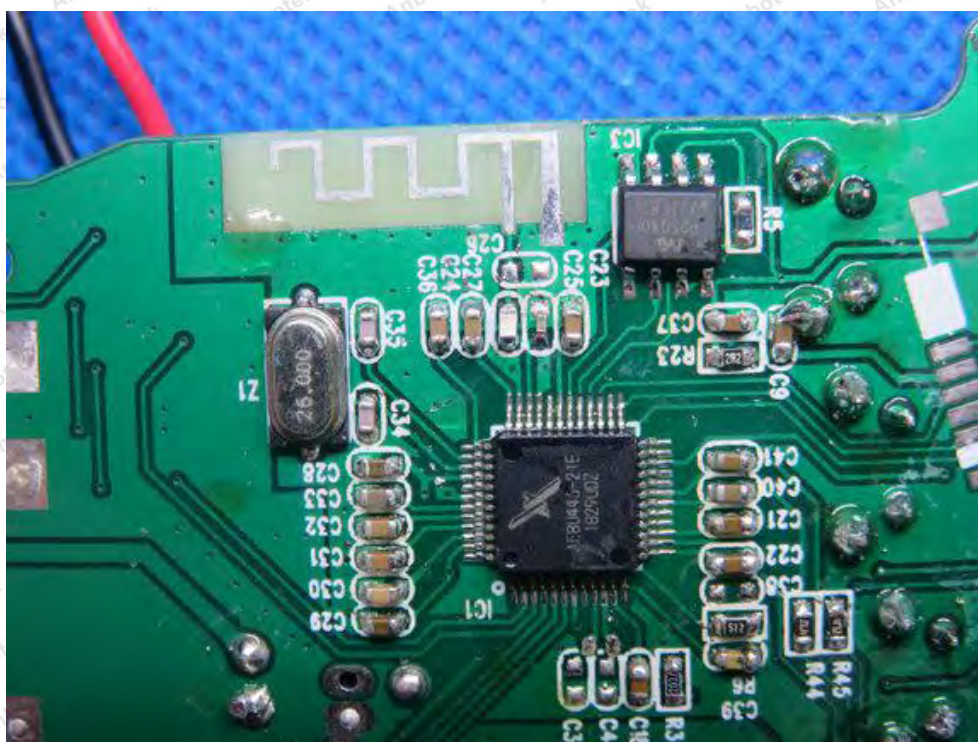
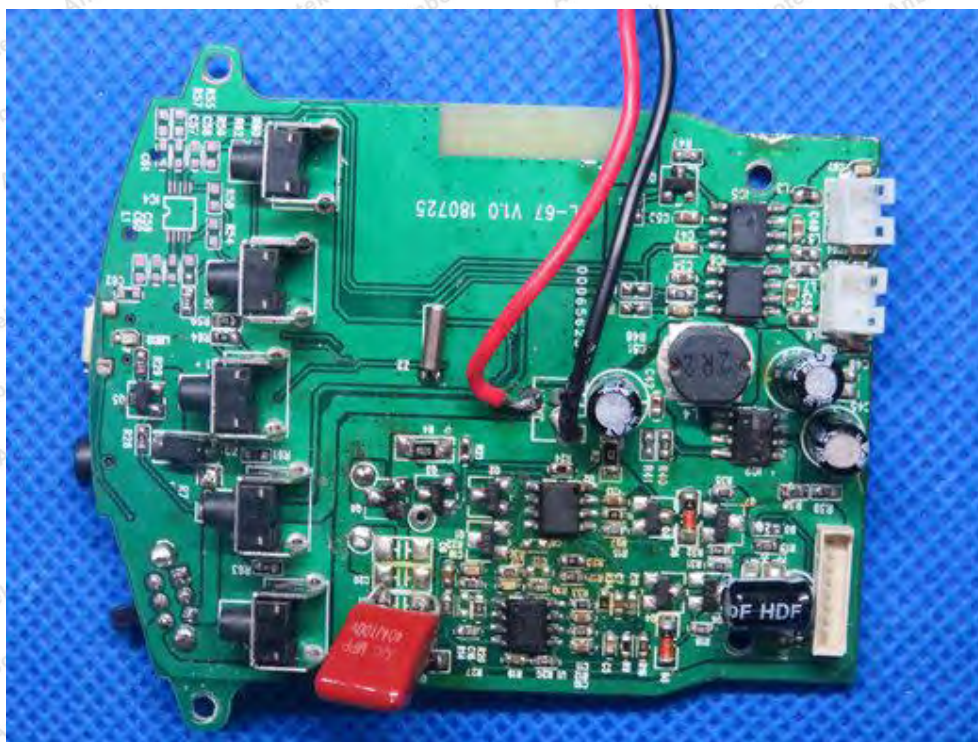
APPENDIX III -- INTERNAL PHOTOGRAPH





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