

FCC TEST REPORT

For

BeiHai Innotech Technology Co., Ltd

Wireless Charging Pad

CKWL0507, 33461, 33462, CKWL0507-01, CKWL0507-02,
Model No.: CKWL0507-05, CKWL0507-06, CKWL0507-07, CKWL0507-08,
CKWL0507-09, CKWL0507-10

Prepared For : BeiHai Innotech Technology Co., Ltd
Address : Building No. A02, CECT Industrial Park, BeiHai Industrial Zone, BeiHai,
China

Prepared By : Shenzhen Anbotech Compliance Laboratory Limited
Address : 1/F, Building D, Sogood Science and Technology Park, Sanwei
community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong,
China.518102
Tel: (86) 755-26066440 Fax: (86) 755-26014772

Report Number : SZAWW180531005-01

Date of Test : Jun .01~12, 2018

Date of Report : Jun. 13, 2018

Contents

1. General Information.....	4
1.1. Client Information.....	4
1.2. Description of Device (EUT).....	4
1.3. Auxiliary Equipment Used During Test.....	4
1.4. Description of Test Modes.....	5
1.5. List of channels.....	5
1.6. Description Of Test Setup.....	6
1.7. Test Equipment List.....	7
1.8. Measurement Uncertainty.....	8
1.9. Description of Test Facility.....	8
2. Summary of Test Results.....	9
3. Conducted Emission Test.....	10
3.1. Test Standard and Limit.....	10
3.2. Test Setup.....	10
3.3. Test Procedure.....	10
3.4. Test Data.....	10
4. Radiation Spurious Emission and Band Edge.....	15
4.1. Test Standard and Limit.....	15
4.2. Test Setup.....	15
4.3. Test Procedure.....	16
4.4. Test Data.....	17
APPENDIX I -- TEST SETUP PHOTOGRAPH.....	19
APPENDIX II -- EXTERNAL PHOTOGRAPH.....	21
APPENDIX III -- INTERNAL PHOTOGRAPH.....	25

TEST REPORT

Applicant : BeiHai Innotech Technology Co., Ltd
Manufacturer : BeiHai Innotech Technology Co., Ltd
Product Name : Wireless Charging Pad
Model No. : CKWL0507, 33461, 33462, CKWL0507-01, CKWL0507-02, CKWL0507-05,
CKWL0507-06, CKWL0507-07, CKWL0507-08, CKWL0507-09, CKWL0507-10
Trade Mark : Innotech
Rating(s) : Input: DC 5V, 2A
Output: 5W Max

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 Anbotech 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 Anbotech 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 Anbotech Compliance Laboratory Limited.

Date of Test :

Jun .01~12, 2018

Prepared by :



(Engineer / Oliay Yang)

Reviewer :

(Supervisor / Calvin Liu)

Approved & Authorized Signer :

(Manager / Tom Chen)

1. General Information

1.1. Client Information

Applicant	:	BeiHai Innotech Technology Co., Ltd
Address	:	Building No. A02, CECT Industrial Park, BeiHai Industrial Zone, BeiHai, China
Manufacturer	:	BeiHai Innotech Technology Co., Ltd
Address	:	Building No. A02, CECT Industrial Park, BeiHai Industrial Zone, BeiHai, China

1.2. Description of Device (EUT)

Product Name	:	Wireless Charging Pad	
Model No.	:	CKWL0507, 33461, 33462, CKWL0507-01, CKWL0507-02, CKWL0507-05, CKWL0507-06, CKWL0507-07, CKWL0507-08, CKWL0507-09, CKWL0507-10 (Note: All samples are the same except the appearance, so we prepare "CKWL0507" for test only.)	
Trade Mark	:	Innotech	
Test Power Supply	:	AC 120V, 60Hz for adapter / AC 240V, 60Hz for adapter	
Product Description	:	Operation Frequency:	110-148KHz
	:	Number of Channel:	9 Channels
	:	Modulation Type:	MSK
	:	Antenna Type:	Loop 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	:	M/N: S018BYU1200150 Input: 100-240V~50/60Hz 600mA Output: DC 5V/DC 9V/DC 12V, 3A/2A/1.5A
---------	---	--

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	CH00
Mode 2	CH04
Mode 3	CH08
Mode 4	Keeping TX+Charging mode

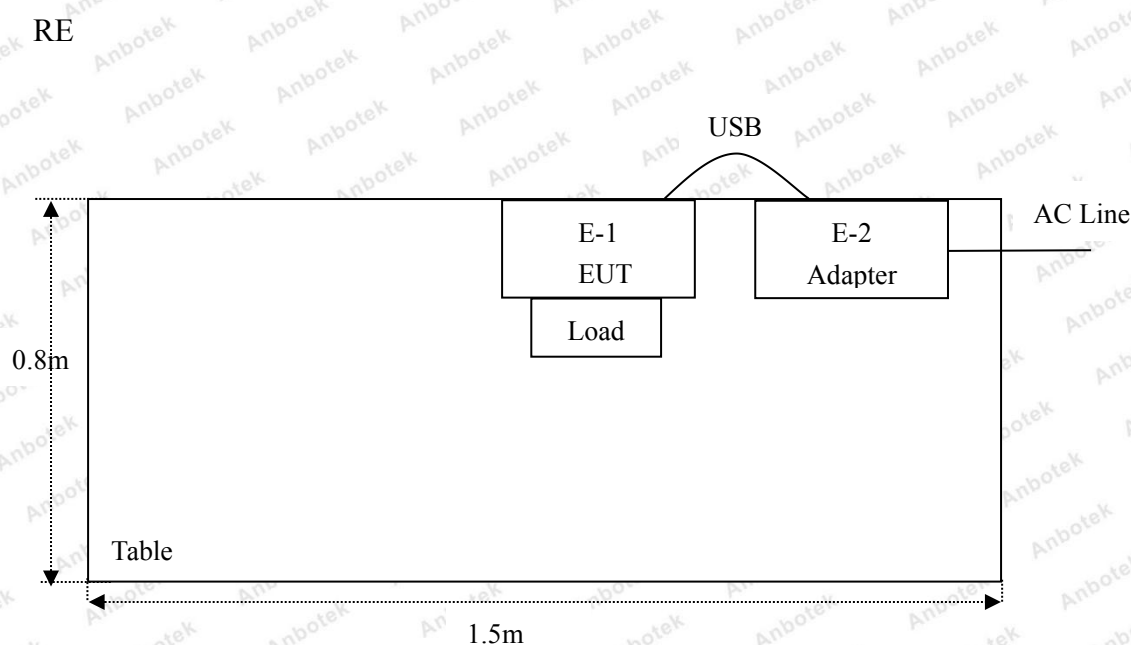
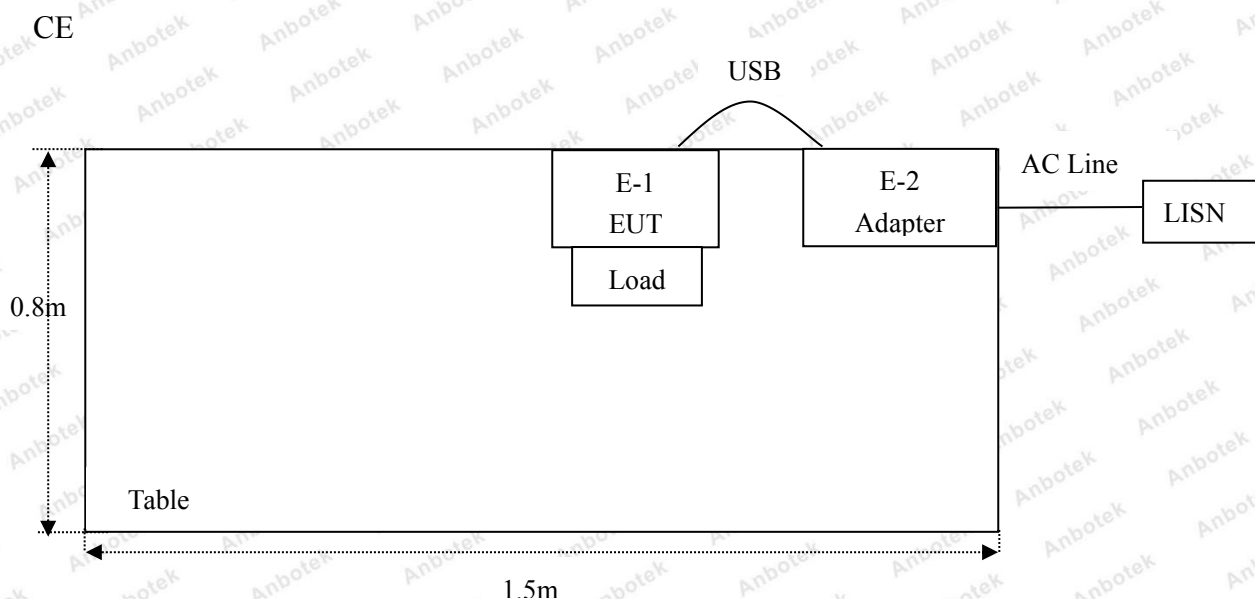
For Conducted Emission	
Final Test Mode	Description
Mode 4	Keeping TX+Charging mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	CH00
Mode 2	CH04
Mode 3	CH08
Mode 4	Keeping TX+Charging mode

1.5. List of channels

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
00	0.110	03	0.125	06	140
01	0.115	04	0.130	07	145
02	0.120	05	0.135	08	148

1.6. Description Of Test Setup



1.7. 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.	Spectrum Analysis	Agilent	N9038A	MY53227295	Nov. 17, 2017	1 Year
6.	Preamplifier	SKET Electronic	BK1G18G30 D	KD17503	Nov. 17, 2017	1 Year
7.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Nov. 17, 2017	1 Year
8.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Nov. 20, 2017	1 Year
9.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Nov. 20, 2017	1 Year
10.	Loop Antenna	Schwarzbeck	HFH2-Z2	100047	Nov. 17, 2017	1 Year
11.	Horn Antenna	Schwarzbeck	BBHA9170	9170-375	Nov. 17, 2017	1 Year
12.	Pre-amplifier	SONOMA	310N	186860	Nov. 17, 2017	1 Year
13.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
14.	RF Test Control System	YIHENG	YH3000	2017430	Nov. 18, 2017	1 Year
15.	Power Sensor	DAER	RPR3006W	15I00041SN045	Nov. 17, 2017	1 Year
16.	Power Sensor	DAER	RPR3006W	15I00041SN046	Nov. 17, 2017	1 Year
17.	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Nov. 18, 2017	1 Year
18.	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Nov. 18, 2017	1 Year
19.	Signal Generator	Agilent	E4421B	MY41000743	Nov. 18, 2017	1 Year
20.	DC Power Supply	LW	TPR-6410D	349315	Nov. 01, 2017	1 Year
21.	Constant Temperature Humidity Chamber	Sertep	ZJ-HWHS80 B	ZJ-17042804	Nov. 01, 2017	1 Year

1.8. Measurement Uncertainty

Radiation Uncertainty	:	Ur = 3.9 dB (Horizontal)
		Ur = 3.8 dB (Vertical)
Conduction Uncertainty	:	Uc = 3.4 dB

1.9. Description of Test Facility

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

FCC-Registration No.: 184111

Shenzhen Anbotech 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 Anbotech 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

All Emissions tests were performed at Shenzhen Anbotech Compliance Laboratory Limited. at 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

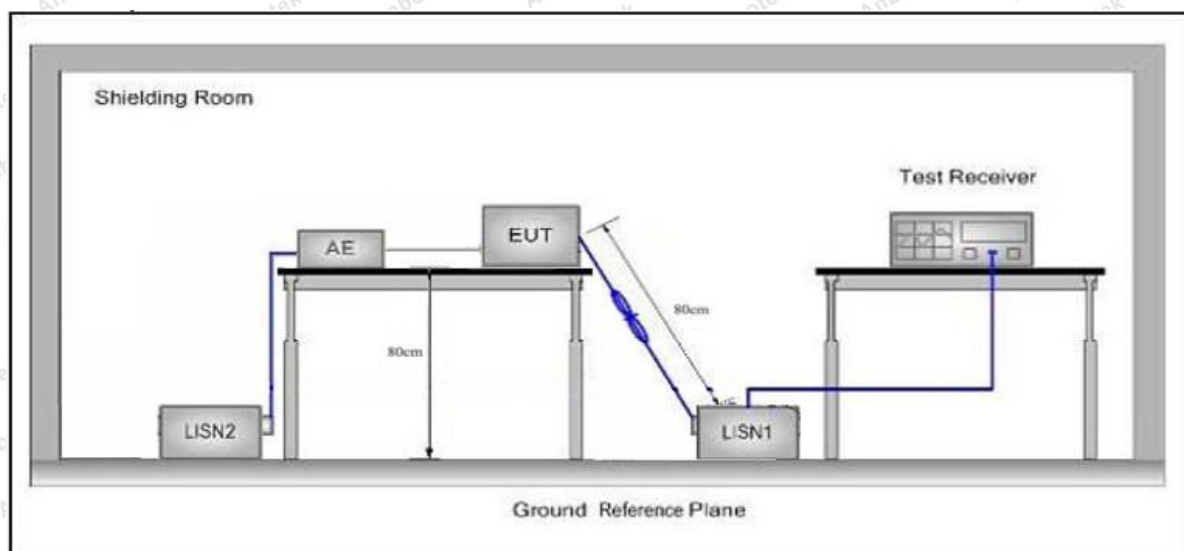
3. Conducted Emission Test

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.

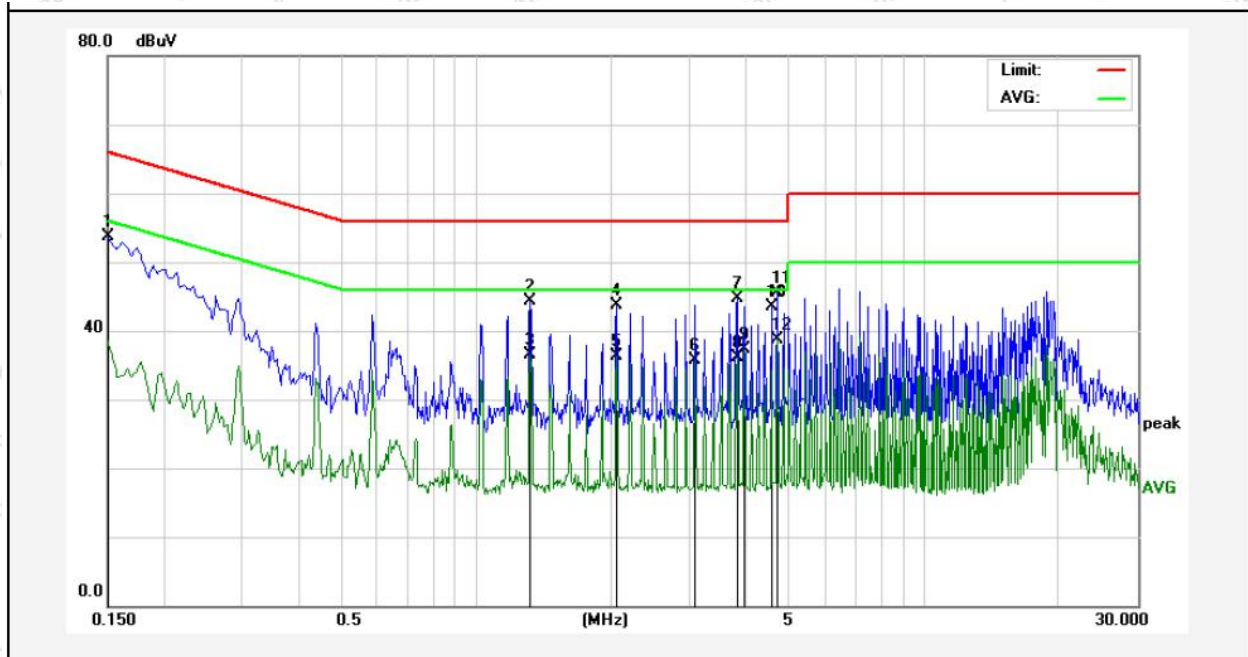
The frequency range from 150kHz to 30MHz is checked.

3.4. Test Data

Please to see the following pages

Conducted Emission Test Data

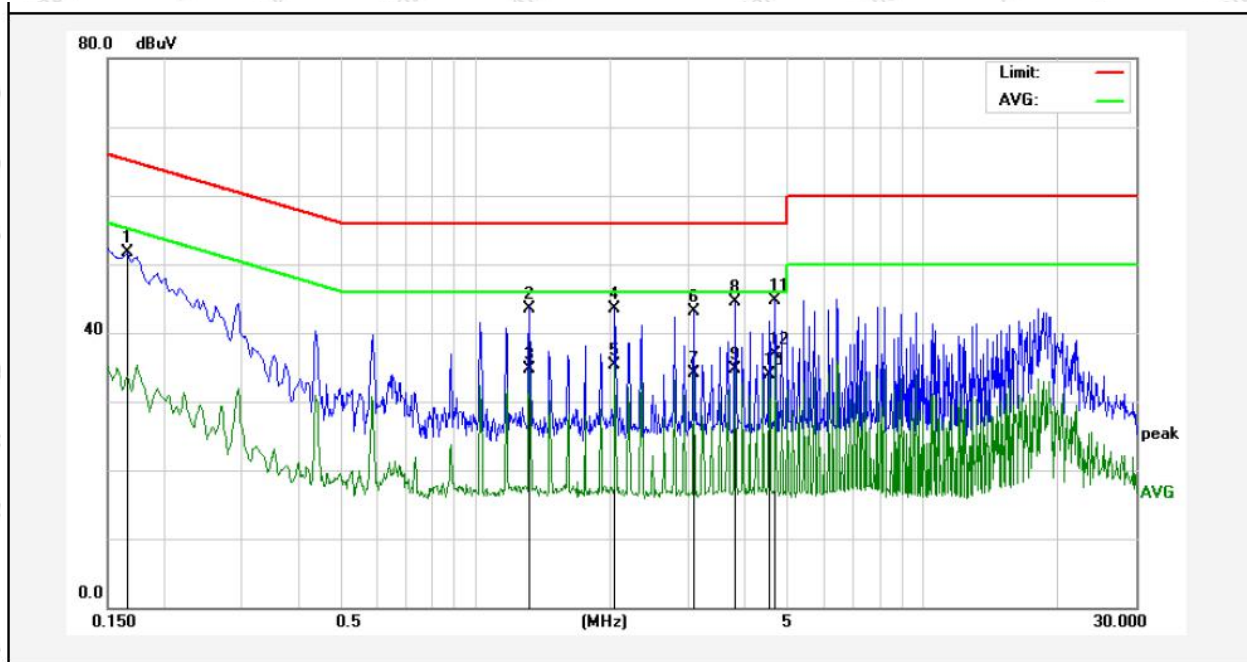
Test Site: 1# Shielded Room
Operating Condition: Keeping TX+Charging mode
Test Specification: AC 120V, 60Hz for adapter
Comment: Live Line
Tem.:22.3℃ Hum.:57%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1500	33.82	19.90	53.72	65.99	-12.27	QP	
2	1.3220	24.13	20.13	44.26	56.00	-11.74	QP	
3	1.3220	16.32	20.13	36.45	46.00	-9.55	AVG	
4	2.0579	23.55	20.14	43.69	56.00	-12.31	QP	
5	2.0579	16.15	20.14	36.29	46.00	-9.71	AVG	
6	3.0860	15.52	20.16	35.68	46.00	-10.32	AVG	
7	3.8220	24.57	20.18	44.75	56.00	-11.25	QP	
8	3.8220	15.94	20.18	36.12	46.00	-9.88	AVG	
9	3.9700	17.04	20.18	37.22	46.00	-8.78	AVG	
10	4.5580	23.41	20.19	43.60	56.00	-12.40	QP	
11	4.7060	25.37	20.20	45.57	56.00	-10.43	QP	
12	4.7060	18.45	20.20	38.65	46.00	-7.35	AVG	

Conducted Emission Test Data

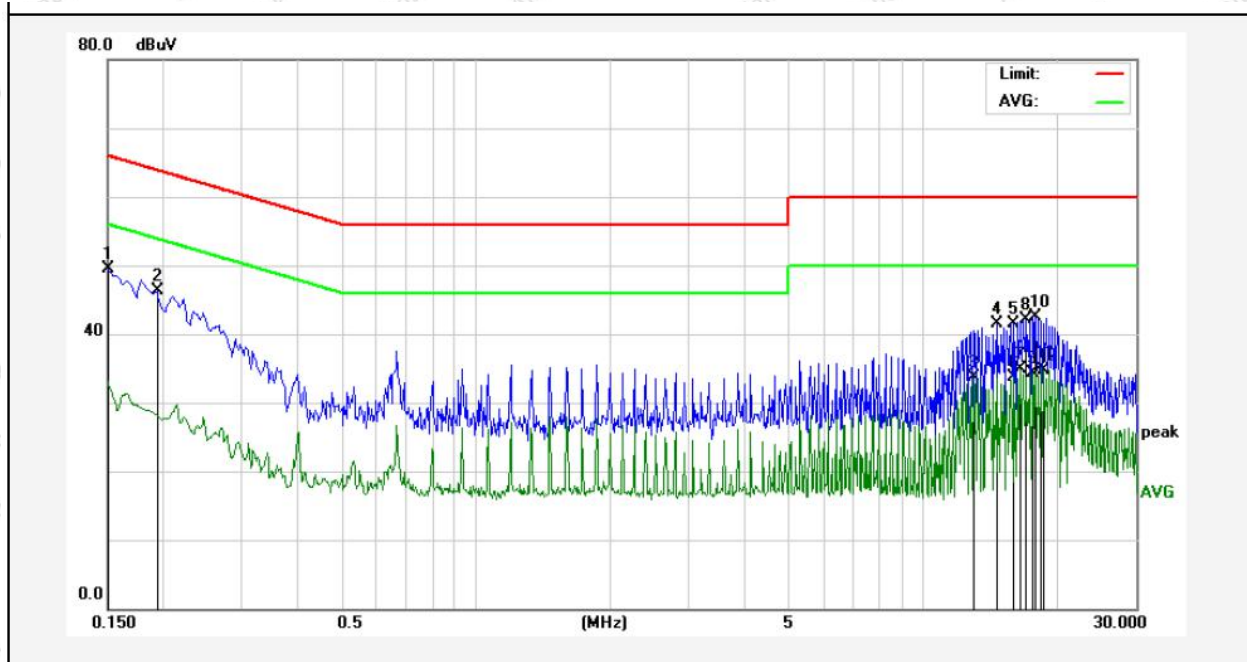
Test Site: 1# Shielded Room
Operating Condition: Keeping TX+Charging mode
Test Specification: AC 120V, 60Hz for adapter
Comment: Neutral Line
Tem.:22.3℃ Hum.:57%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1660	31.76	19.90	51.66	65.15	-13.49	QP	
2	1.3180	23.47	20.13	43.60	56.00	-12.40	QP	
3	1.3180	14.61	20.13	34.74	46.00	-11.26	AVG	
4	2.0540	23.41	20.14	43.55	56.00	-12.45	QP	
5	2.0540	15.16	20.14	35.30	46.00	-10.70	AVG	
6	3.0780	22.87	20.16	43.03	56.00	-12.97	QP	
7	3.0780	14.00	20.16	34.16	46.00	-11.84	AVG	
8	3.8100	24.30	20.18	44.48	56.00	-11.52	QP	
9	3.8100	14.45	20.18	34.63	46.00	-11.37	AVG	
10	4.5460	13.62	20.19	33.81	46.00	-12.19	AVG	
11	4.6900	24.53	20.20	44.73	56.00	-11.27	QP	
12	4.6900	16.70	20.20	36.90	46.00	-9.10	AVG	

Conducted Emission Test Data

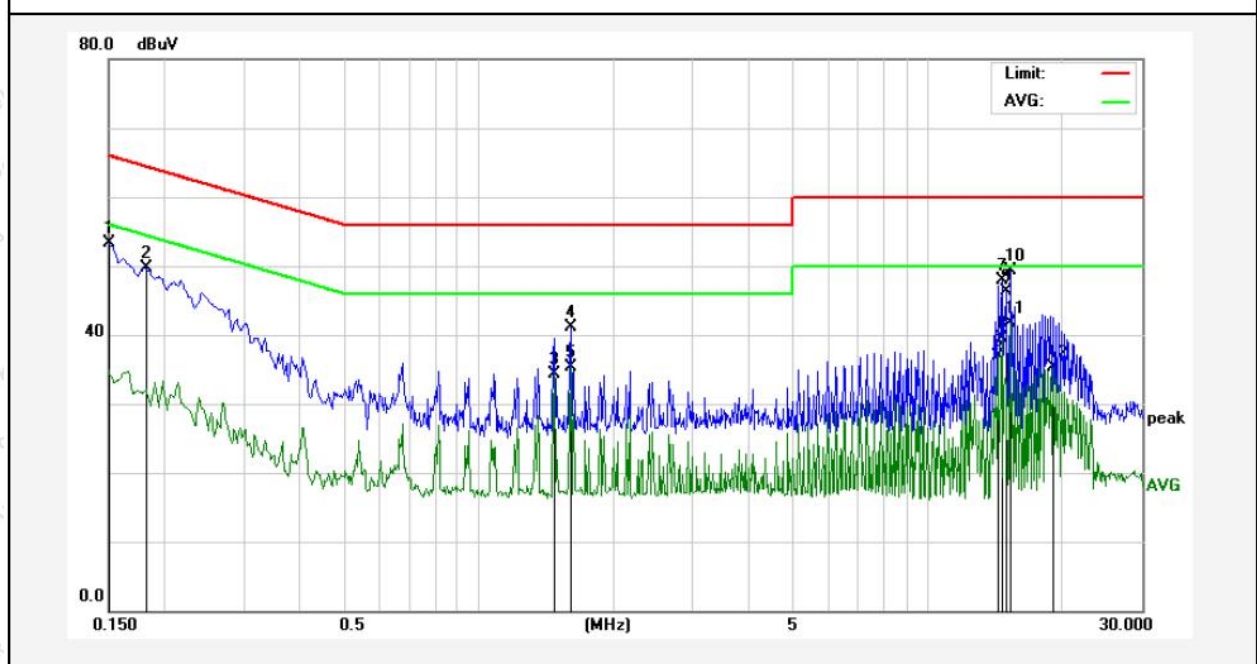
Test Site: 1# Shielded Room
Operating Condition: Keeping TX+Charging mode
Test Specification: AC 240V, 60Hz for adapter
Comment: Live Line
Tem.:22.3℃ Hum.:57%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1500	29.62	19.90	49.52	65.99	-16.47	QP	
2	0.1940	26.36	19.90	46.26	63.86	-17.60	QP	
3	13.0500	13.50	20.29	33.79	50.00	-16.21	AVG	
4	14.6660	21.31	20.27	41.58	60.00	-18.42	QP	
5	15.9980	21.29	20.28	41.57	60.00	-18.43	QP	
6	15.9980	13.42	20.28	33.70	50.00	-16.30	AVG	
7	16.5220	14.60	20.28	34.88	50.00	-15.12	AVG	
8	17.0660	21.80	20.29	42.09	60.00	-17.91	QP	
9	17.5980	14.04	20.30	34.34	50.00	-15.66	AVG	
10	17.8500	22.28	20.31	42.59	60.00	-17.41	QP	
11	18.3860	14.71	20.31	35.02	50.00	-14.98	AVG	
12	18.6660	14.48	20.32	34.80	50.00	-15.20	AVG	

Conducted Emission Test Data

Test Site: 1# Shielded Room
Operating Condition: Keeping TX+Charging mode
Test Specification: AC 240V, 60Hz for adapter
Comment: Neutral Line
Tem.:22.3℃ Hum.:57%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1500	33.40	19.90	53.30	65.99	-12.69	QP	
2	0.1819	29.85	19.90	49.75	64.39	-14.64	QP	
3	1.4740	14.11	20.13	34.24	46.00	-11.76	AVG	
4	1.6019	20.99	20.13	41.12	56.00	-14.88	QP	
5	1.6019	15.25	20.13	35.38	46.00	-10.62	AVG	
6	14.3180	16.71	20.27	36.98	50.00	-13.02	AVG	
7	14.6460	27.63	20.27	47.90	60.00	-12.10	QP	
8	14.6460	19.17	20.27	39.44	50.00	-10.56	AVG	
9	14.9220	26.10	20.26	46.36	60.00	-13.64	QP	
10	15.2980	29.07	20.26	49.33	60.00	-10.67	QP	
11	15.2980	21.38	20.26	41.64	50.00	-8.36	AVG	
12	19.0660	14.99	20.32	35.31	50.00	-14.69	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

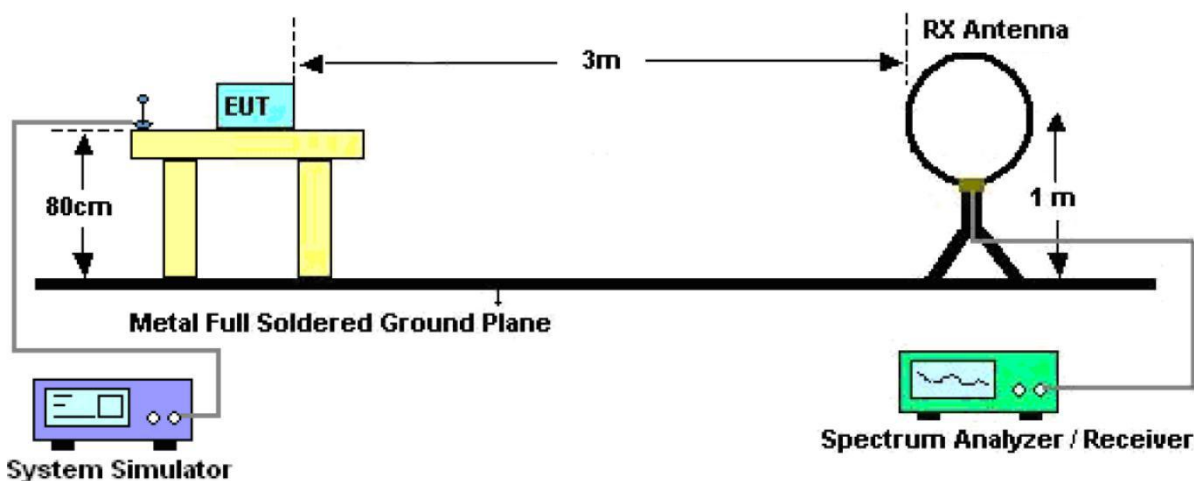


Figure 1. Below 30MHz

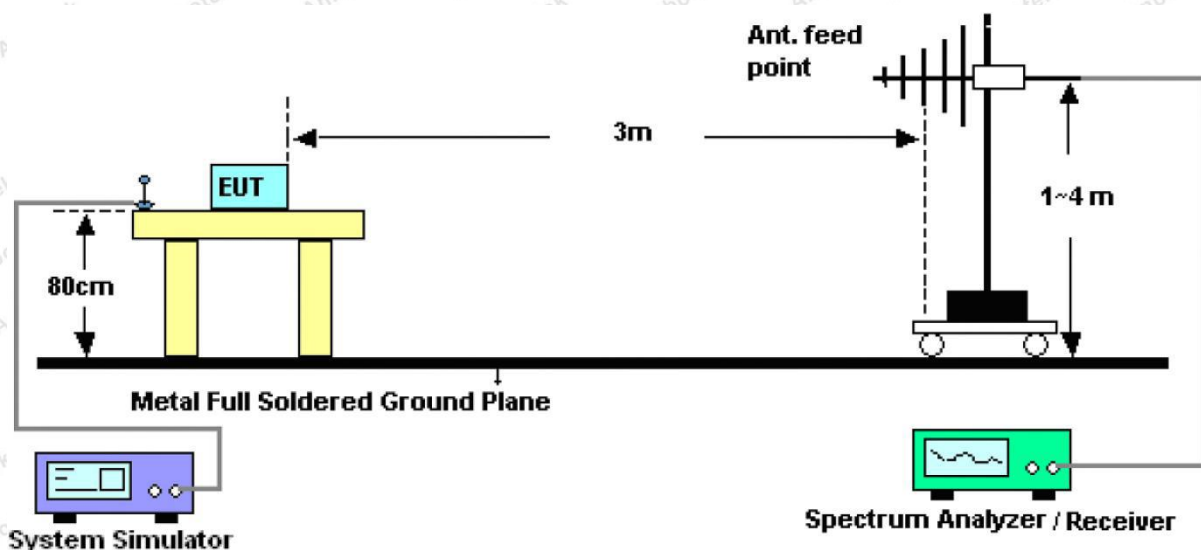


Figure 2. 30MHz to 1GHz

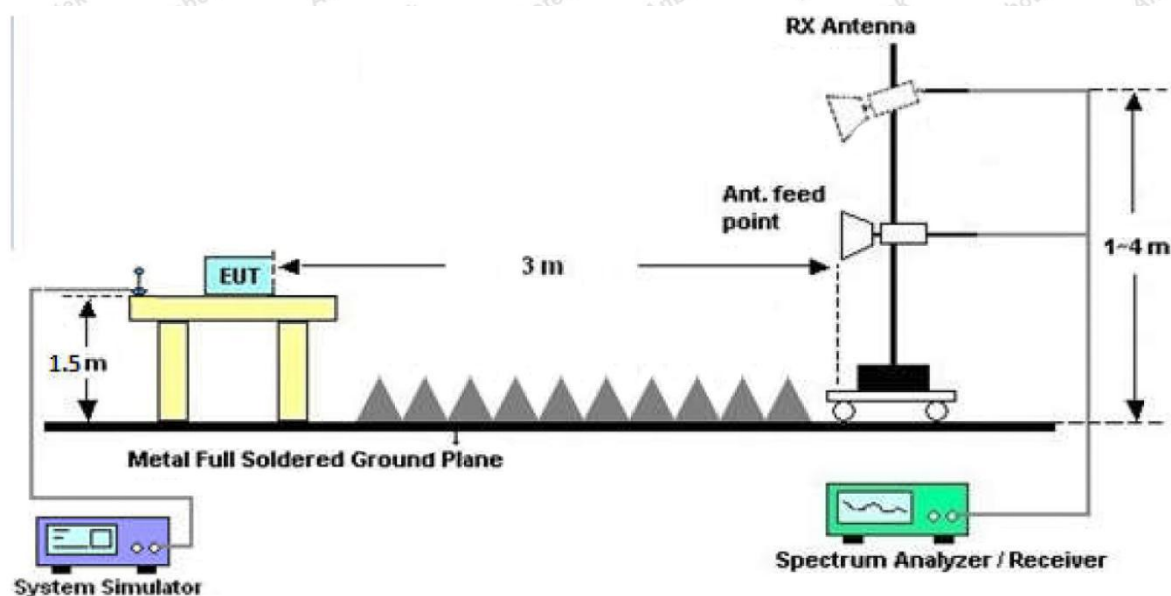


Figure 3. Above 1 GHz

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.: SZAWW180531005-01

Standard: FCC PART15 C_3m

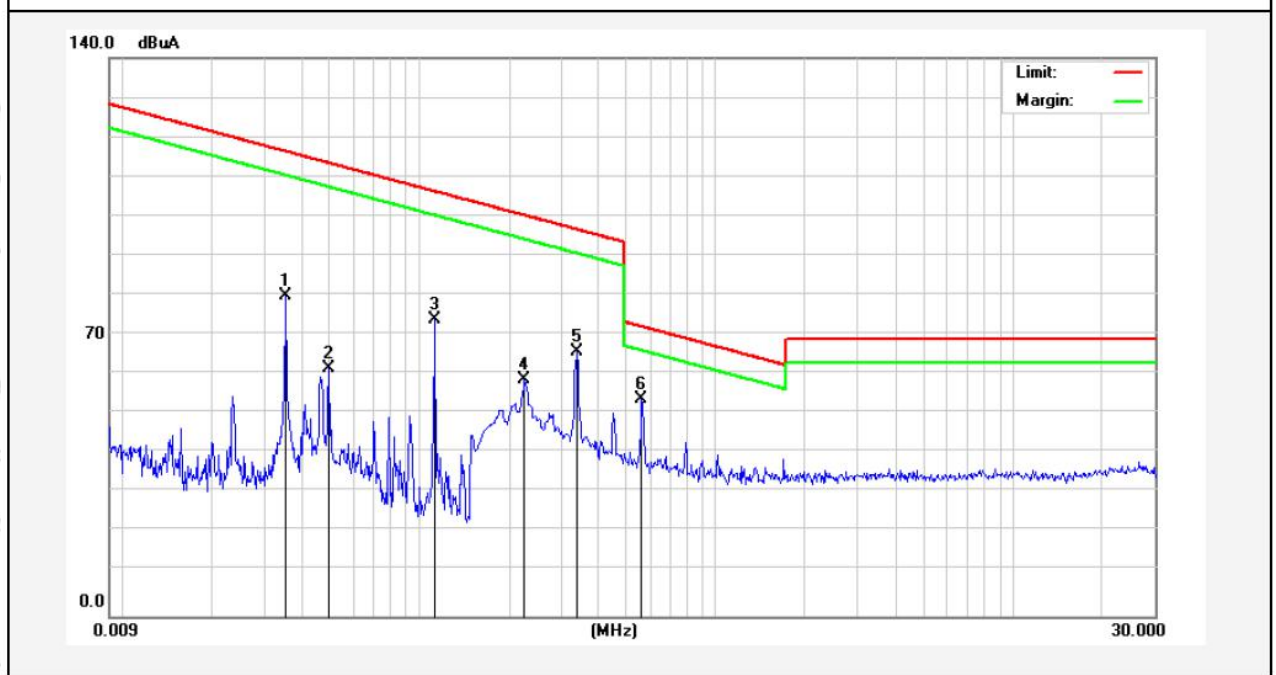
Power Source: AC 120V, 60Hz for adapter

Test item: Radiation Test

Temp.(C)/Hum.(%RH): 24.4(C)/50%RH

Test Mode: Mode 4

Distance: 3m



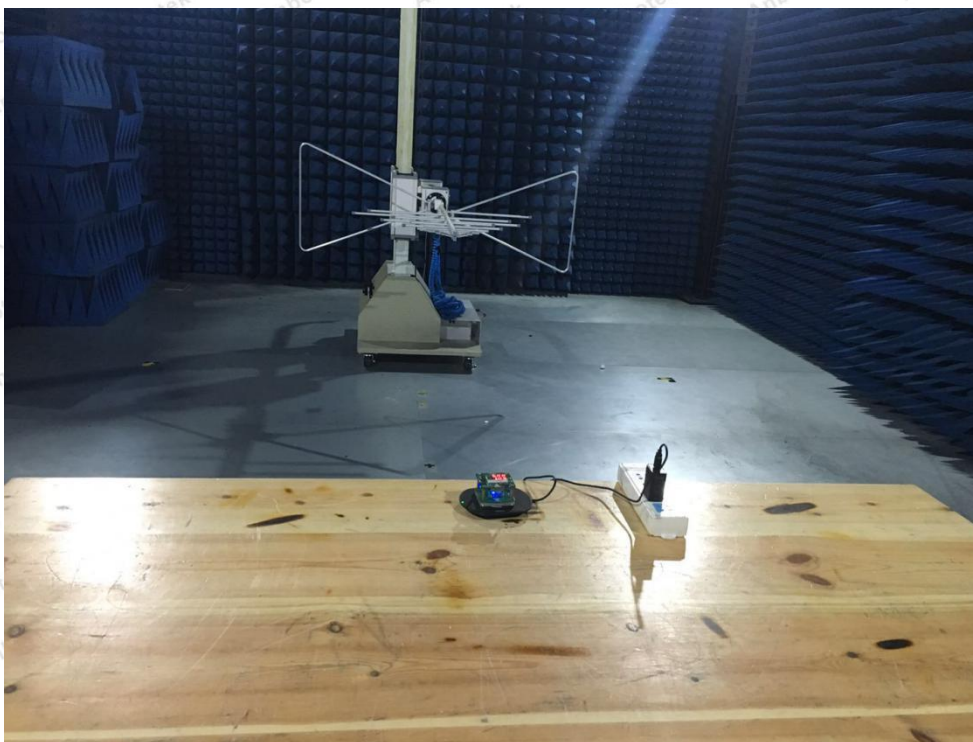
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	degree (dgc)
0.0357	58.61	19.30	2.53	0	80.44	136.54	-56.10	Peak	120
0.0357	57.13	19.30	2.53	0	78.96	116.54	-37.58	AV	120
0.0495	40.43	19.30	2.53	0	62.26	133.66	-71.40	Peak	240
0.0495	37.38	19.30	2.53	0	59.21	113.66	-54.45	AV	240
0.1127	84.72	19.29	2.54	0	106.55	126.53	-19.98	Peak	155
0.1127	80.77	19.29	2.54	0	102.60	106.53	-3.93	AV	155
0.2260	37.46	19.36	2.55	0	59.37	120.50	-61.13	Peak	360
0.2260	34.79	19.36	2.55	0	56.70	100.50	-43.80	AV	360
0.3379	43.77	19.63	2.59	0	65.99	117.02	-51.03	Peak	90
0.3379	41.33	19.63	2.59	0	63.55	97.02	-33.47	AV	90
0.5620	31.39	20.32	2.60	0	54.31	72.61	-18.30	QP	180

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.

Photo of Conducted Emission Measurement



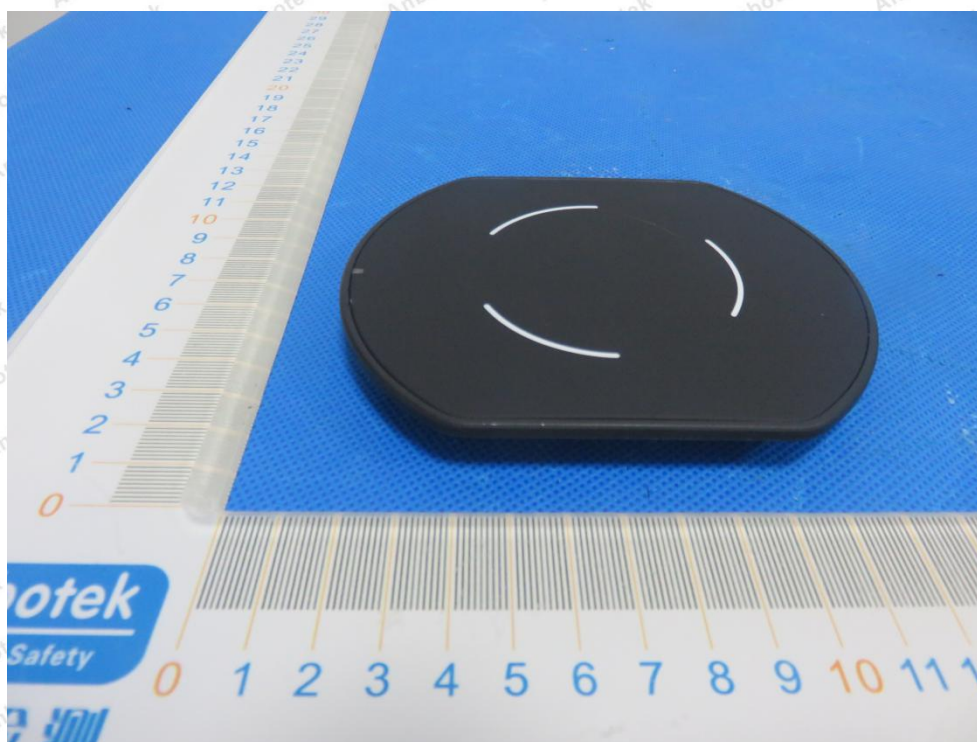
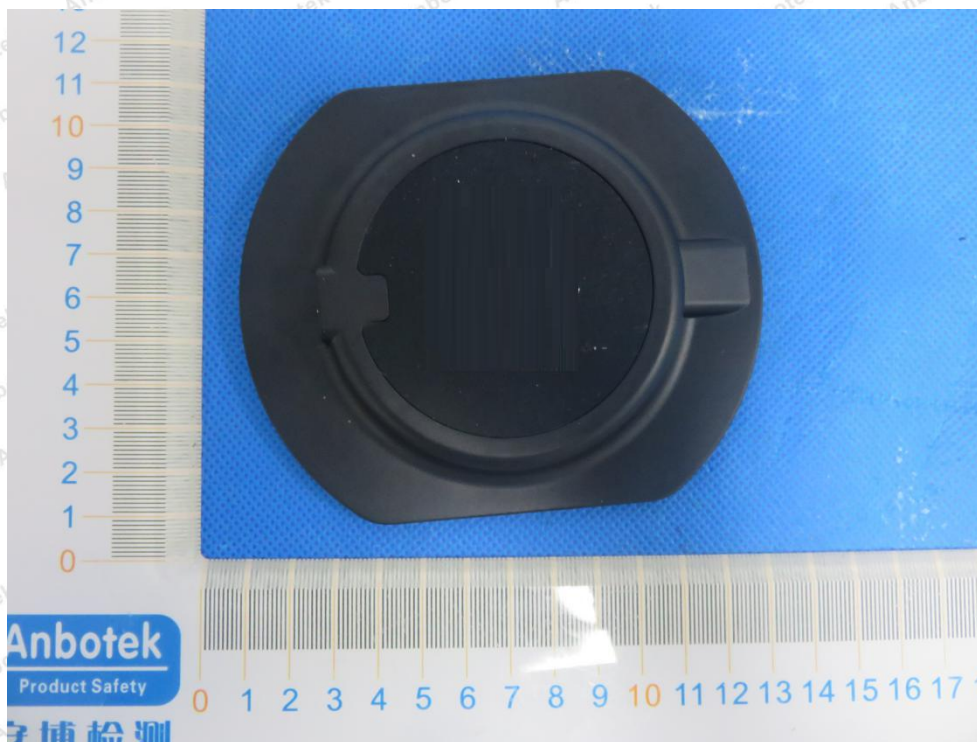
Photo of Radiation Emission Test





APPENDIX II -- EXTERNAL PHOTOGRAPH

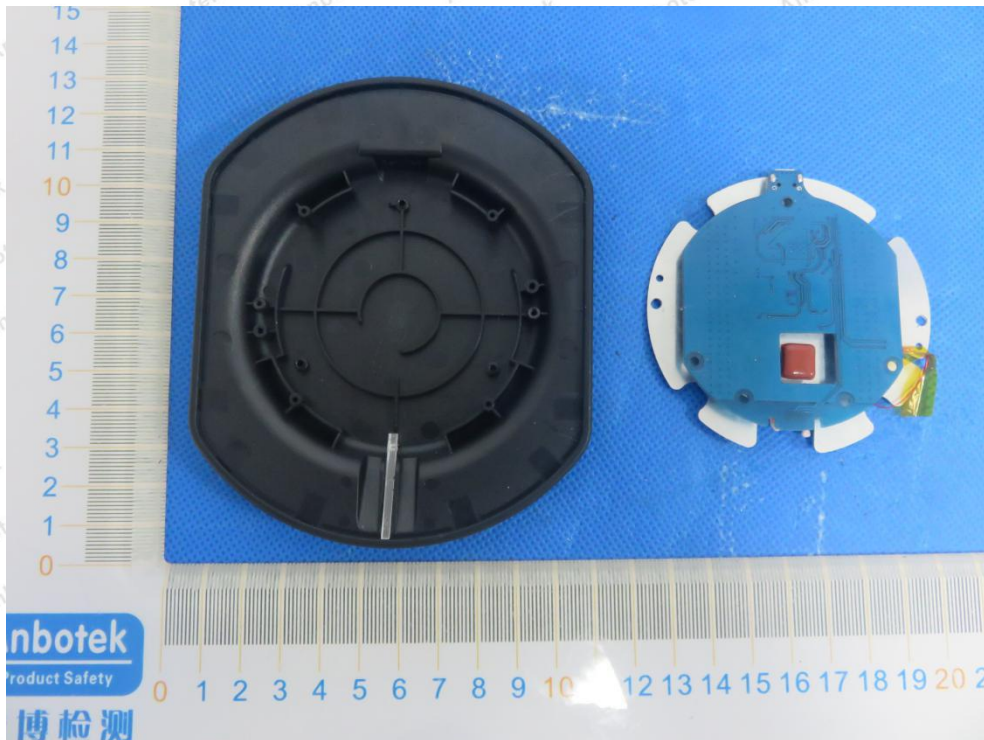
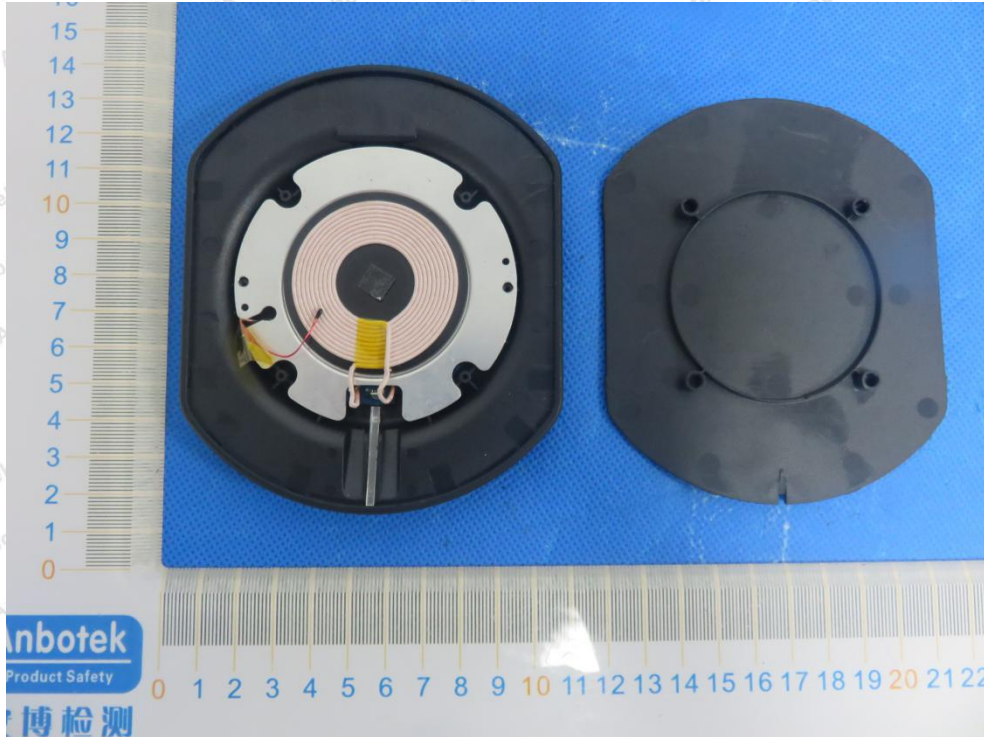


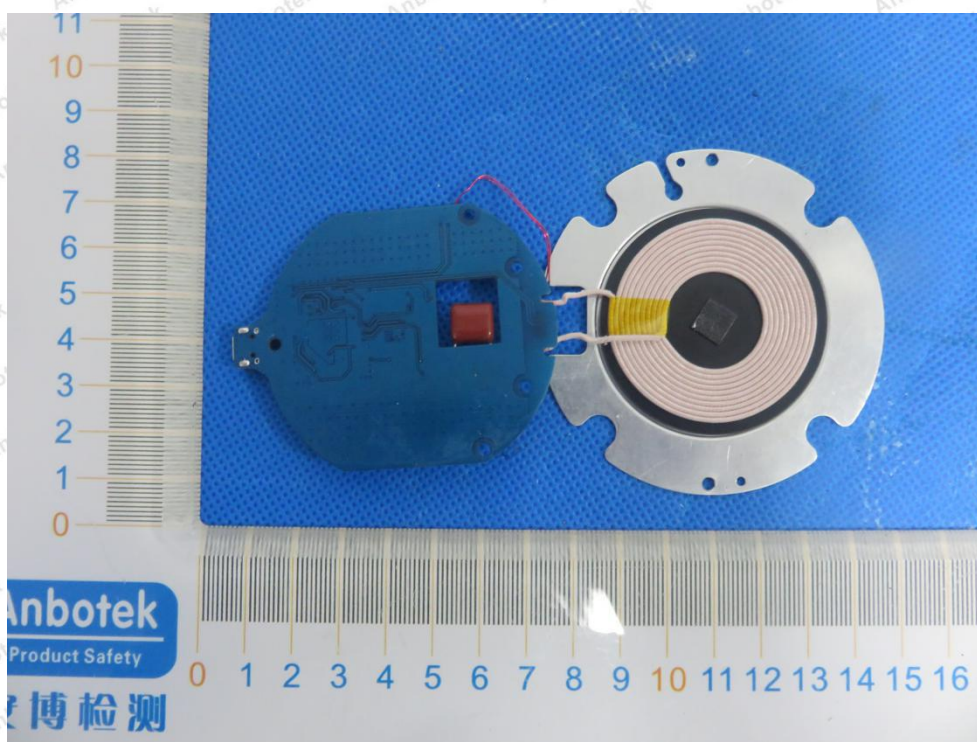


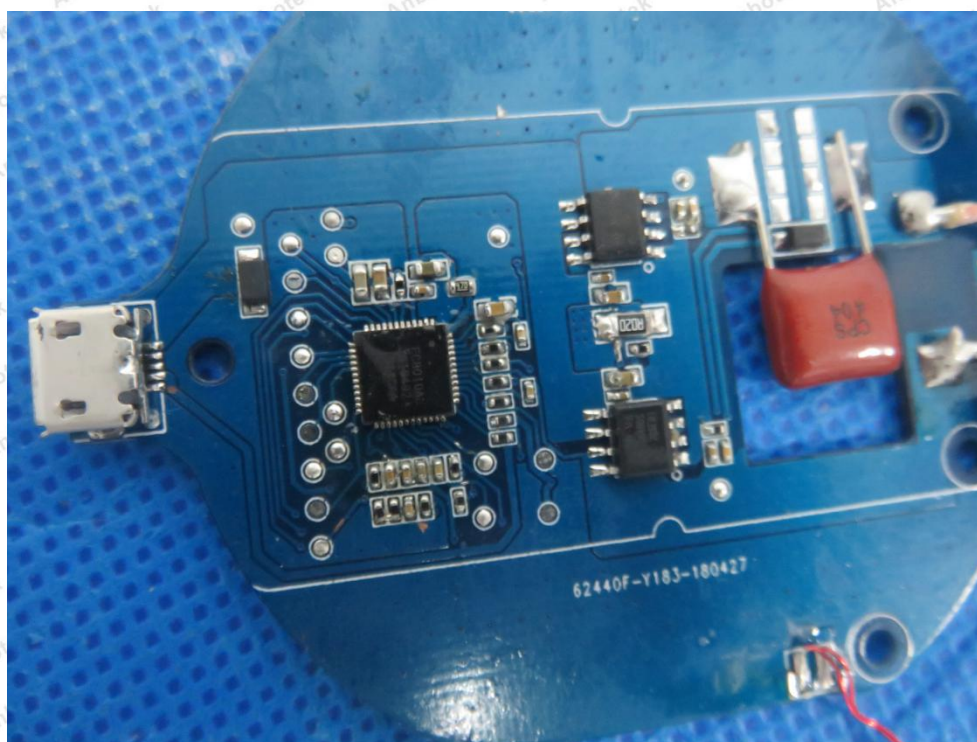




APPENDIX III -- INTERNAL PHOTOGRAPH







End of Report