

FCC TEST REPORT

For

Shenzhen Huaqi Technology Co., Ltd.

Wireless charger

Model No.: HQ-F

Prepared For : Shenzhen Huaqi Technology Co., Ltd.
Address : Rm 810, Nanyuan Commercial Building, Minbao Road, Minzhi Street,
Longhua District, Shenzhen, China

Prepared By : Shenzhen Anbotek Compliance Laboratory Limited
Address : 1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan
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Report Number : R0217100018W1
Date of Test : Oct. 11~25, 2017
Date of Report : Oct. 25, 2017

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. Description Of Test Setup.....	6
1.6. Test Equipment List.....	7
1.7. Measurement Uncertainty.....	8
1.8. 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.....	21
APPENDIX II -- EXTERNAL PHOTOGRAPH.....	23
APPENDIX III -- INTERNAL PHOTOGRAPH.....	26

TEST REPORT

Applicant : Shenzhen Huaqi Technology Co., Ltd.
Manufacturer : Shenzhen Huaqi Technology Co., Ltd.
Product Name : Wireless charger
Model No. : HQ-F

Trade Mark : 
Rating(s) : Input: DC 12V, 1.5A
Output: DC 5V, 0.98A

Test Standard(s) : FCC Part15 Subpart C 2016, 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 : Oct. 11~25, 2017

Prepared by :



Winkey Wang

(Tested Engineer / Winkey Wang)

Reviewer :

Tangcy. T.

(Project Manager / Tangcy. T)

Approved & Authorized Signer :

Tom Chen

(Manager / Tom Chen)

1. General Information

1.1. Client Information

Applicant	:	Shenzhen Huaqi Technology Co., Ltd.
Address	:	Rm 810, Nanyuan Commercial Building, Minbao Road, Minzhi Street, Longhua District, Shenzhen, China
Manufacturer	:	Shenzhen Huaqi Technology Co., Ltd.
Address	:	Rm 810, Nanyuan Commercial Building, Minbao Road, Minzhi Street, Longhua District, Shenzhen, China

1.2. Description of Device (EUT)

Product Name	:	Wireless charger	
Model No.	:	HQ-F	
Trade Mark	:		
Test Power Supply	:	AC 120V, 60Hz for adapter / AC 240V, 60Hz for adapter	
Product Description	:	Operation Frequency:	110-145KHz
		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

Mobile Phone	:	Model No.: NOKIA Lumia 920 Manufacturer: Windows Phone
Adapter	:	Manufacturer: Samsung M/N: ETA-U90CBC S/N: RT6FB17ZS/B-E Input: AC 100-240V, 50-60Hz, 0.35A Output: DC 5V, 2A

1.4. Description of Test Modes

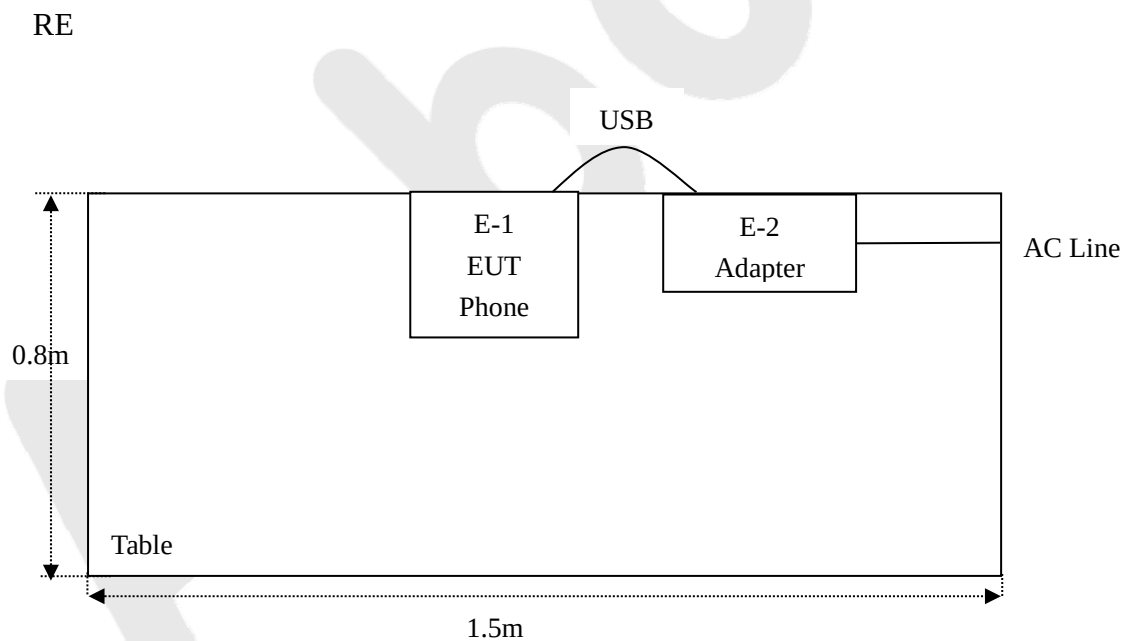
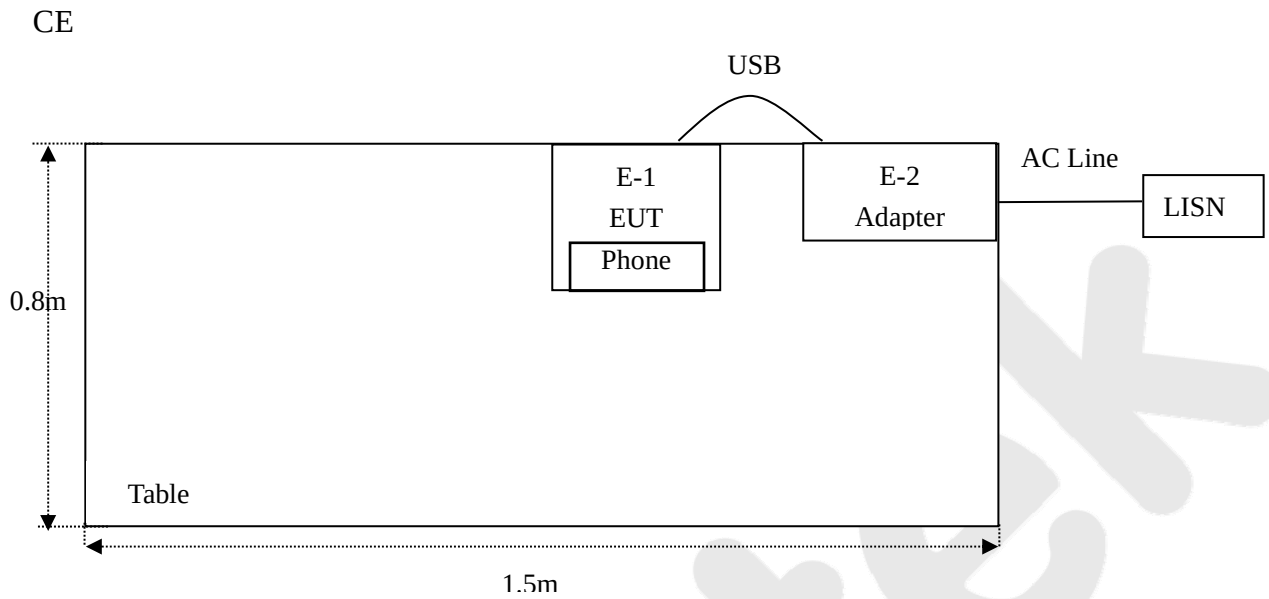
To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration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

Pretest Mode	Description
Mode 1	CH: Low
Mode 2	CH: Middle
Mode 3	CH: High
Mode 4	Keeping TX mode

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

For Radiated Emission	
Final Test Mode	Description
Mode 1	CH: Low
Mode 2	CH: Middle
Mode 3	CH: High

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	May 27, 2017	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	May 27, 2017	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	May 27, 2017	1 Year
4.	Spectrum Analysis	Agilent	E4407B	US39390582	May 27, 2017	1 Year
5.	Preamplifier	SKET Electronic	BK1G18G30 D	KD17503	May 27, 2017	1 Year
6.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	May 27, 2017	1 Year
7.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	May 31, 2017	1 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	May 31, 2017	1 Year
9.	Loop Antenna	Schwarzbeck	HFH2-Z2	100047	Apr. 03, 2017	1 Year
10.	Pre-amplifier	SONOMA	310N	186860	May 27, 2017	1 Year
11.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
12.	Power Sensor	DAER	RPR3006W	15I00041SN045	May 27, 2017	1 Year
13.	Power Sensor	DAER	RPR3006W	15I00041SN046	May 27, 2017	1 Year
14.	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	May 27, 2017	1 Year
15.	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	May 27, 2017	1 Year
16.	Signal Generator	Agilent	E4421B	MY41000743	May 27, 2017	1 Year
17.	DC Power supply	IVYTECH	IV6003	1601D6030007	May 26, 2017	1 Year
18.	TEMP&HUMI PROGRAMMABLE CHAMBER	Sertep	ZJ-HWHS80 B	ZJ-17042804	Mar. 03, 2017	1 Year

1.7. Measurement Uncertainty

Radiation Uncertainty	:	Ur = 4.1 dB (Horizontal)
		Ur = 4.3 dB (Vertical)
Conduction Uncertainty	:	Uc = 3.4dB

1.8. 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

All Emissions tests were performed at
Shenzhen Anbotek Compliance Laboratory Limited. at 1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong, China

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

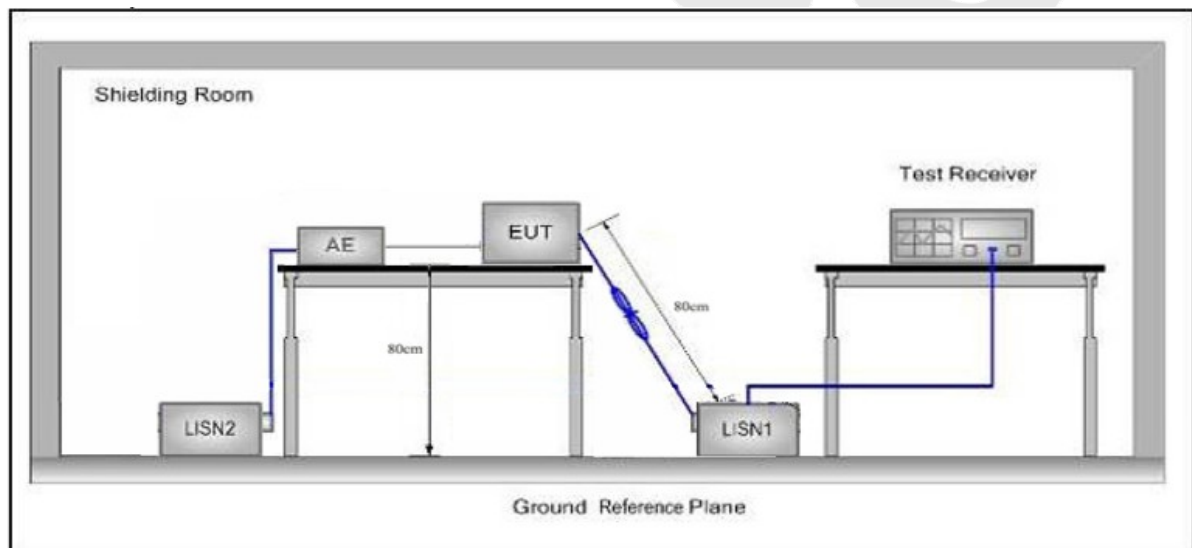
3. Conducted Emission Test

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.

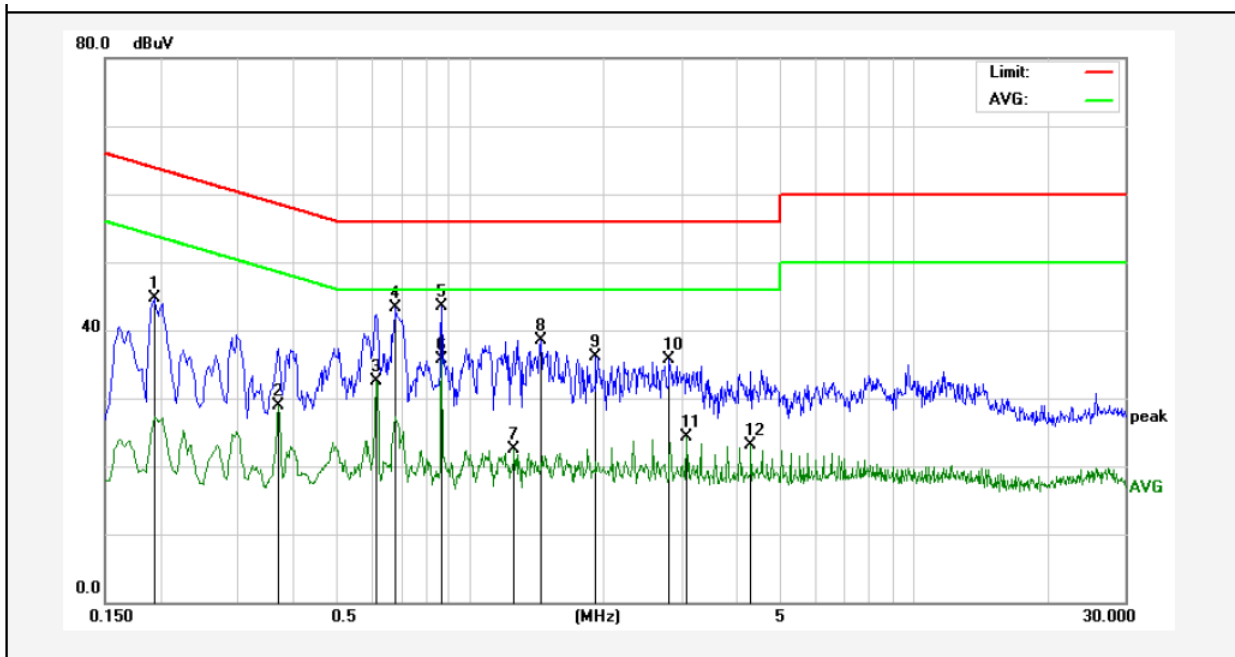
The frequency range from 150kHz to 30MHz is checked.

3.4. Test Data

Please to see the following pages

Conducted Emission Test Data

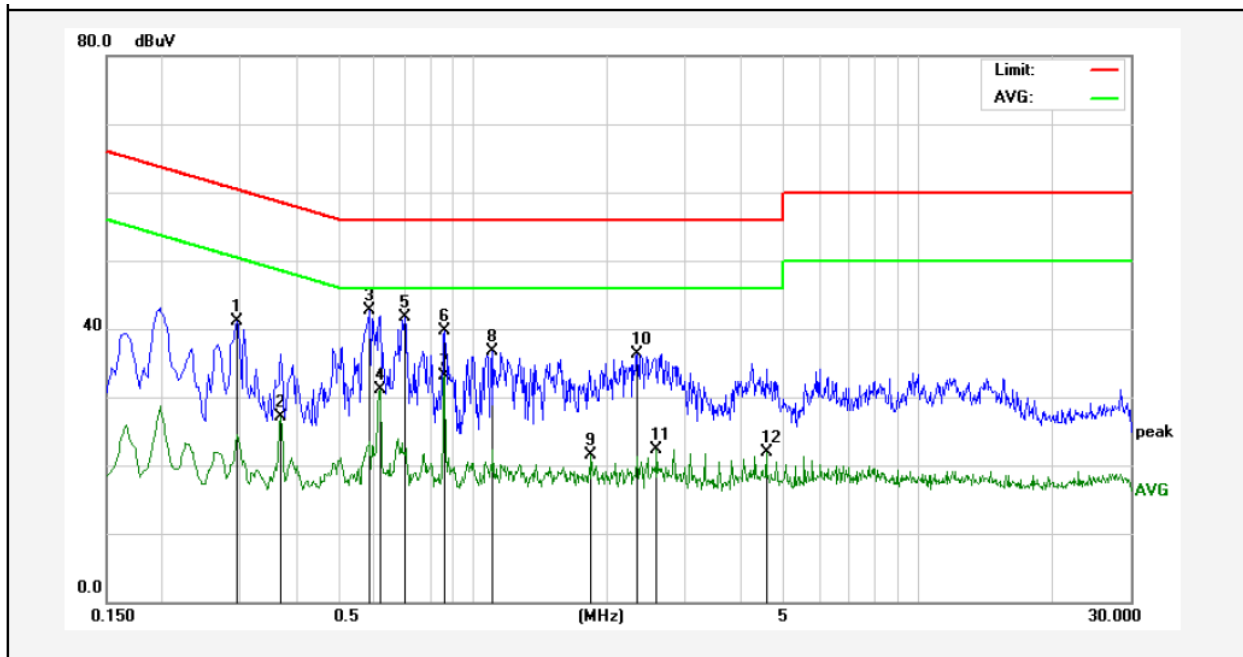
Test Site: 1# Shielded Room
Operating Condition: Keeping TX mode
Test Specification: AC 120V, 60Hz for adapter
Comment: Live Line
Tem.:25℃ Hum.:50%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1940	24.80	19.90	44.70	63.86	-19.16	QP	
2	0.3700	8.93	19.92	28.85	48.50	-19.65	AVG	
3	0.6140	12.40	20.01	32.41	46.00	-13.59	AVG	
4	0.6820	23.21	20.03	43.24	56.00	-12.76	QP	
5	0.8620	23.39	20.08	43.47	56.00	-12.53	QP	
6	0.8620	15.66	20.08	35.74	46.00	-10.26	AVG	
7	1.2579	2.28	20.13	22.41	46.00	-23.59	AVG	
8	1.4420	18.44	20.13	38.57	56.00	-17.43	QP	
9	1.9260	15.87	20.14	36.01	56.00	-19.99	QP	
10	2.8140	15.64	20.16	35.80	56.00	-20.20	QP	
11	3.0780	4.10	20.16	24.26	46.00	-21.74	AVG	
12	4.3100	2.90	20.19	23.09	46.00	-22.91	AVG	

Conducted Emission Test Data

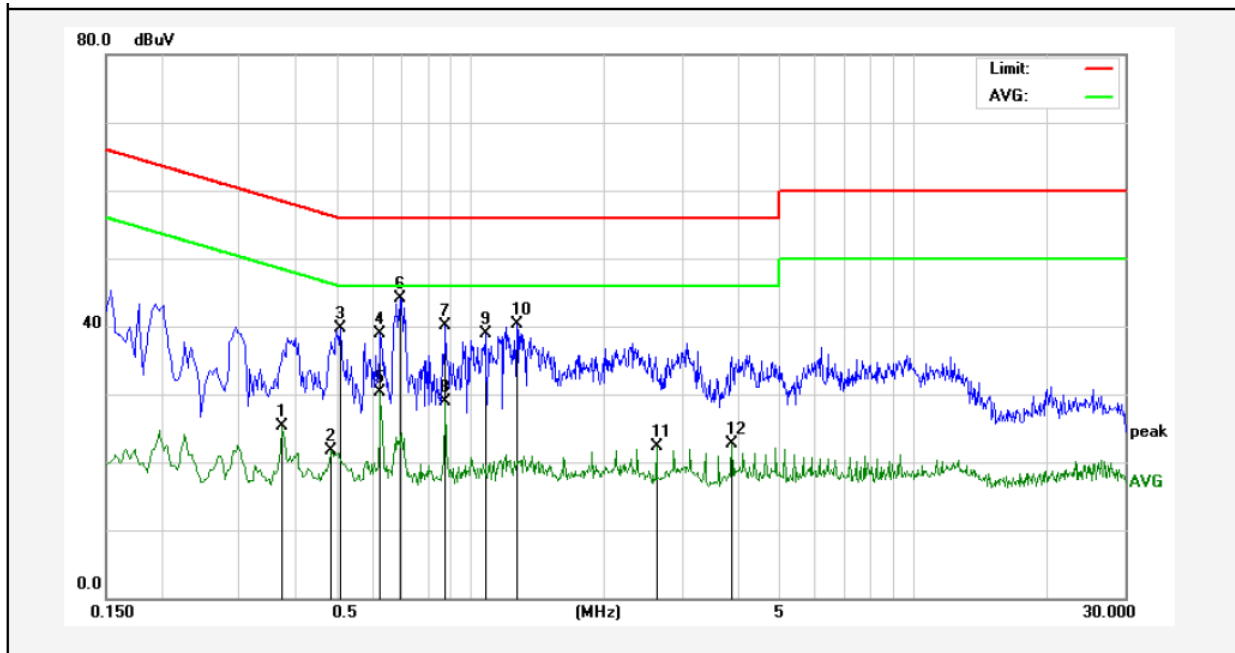
Test Site: 1# Shielded Room
Operating Condition: Keeping TX mode
Test Specification: AC 120V, 60Hz for adapter
Comment: Neutral Line
Tem.:25℃ Hum.:50%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.2940	21.27	19.89	41.16	60.41	-19.25	QP	
2	0.3700	7.17	19.92	27.09	48.50	-21.41	AVG	
3	0.5860	22.61	20.01	42.62	56.00	-13.38	QP	
4	0.6180	11.03	20.02	31.05	46.00	-14.95	AVG	
5	0.7019	21.67	20.04	41.71	56.00	-14.29	QP	
6	0.8620	19.56	20.08	39.64	56.00	-16.36	QP	
7	0.8620	13.11	20.08	33.19	46.00	-12.81	AVG	
8	1.1100	16.64	20.12	36.76	56.00	-19.24	QP	
9	1.8460	1.33	20.14	21.47	46.00	-24.53	AVG	
10	2.3380	16.25	20.15	36.40	56.00	-19.60	QP	
11	2.5860	2.25	20.15	22.40	46.00	-23.60	AVG	
12	4.5580	1.64	20.19	21.83	46.00	-24.17	AVG	

Conducted Emission Test Data

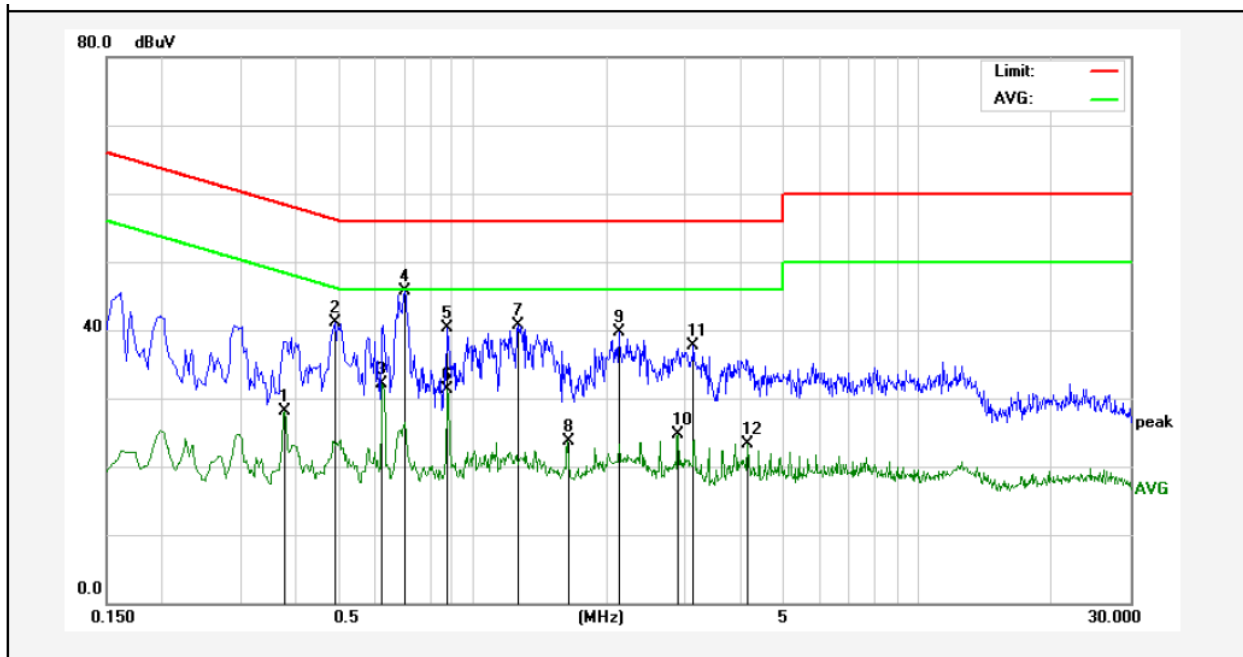
Test Site: 1# Shielded Room
Operating Condition: Keeping TX mode
Test Specification: AC 240V, 60Hz for adapter
Comment: Live Line
Tem.:25℃ Hum.:50%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.3740	5.45	19.92	25.37	48.41	-23.04	AVG	
2	0.4860	1.75	19.97	21.72	46.24	-24.52	AVG	
3	0.5100	19.66	19.98	39.64	56.00	-16.36	QP	
4	0.6260	18.90	20.02	38.92	56.00	-17.08	QP	
5	0.6260	10.31	20.02	30.33	46.00	-15.67	AVG	
6	0.6940	24.12	20.04	44.16	56.00	-11.84	QP	
7	0.8780	20.09	20.09	40.18	56.00	-15.82	QP	
8	0.8780	8.78	20.09	28.87	46.00	-17.13	AVG	
9	1.0780	18.87	20.12	38.99	56.00	-17.01	QP	
10	1.2700	20.18	20.13	40.31	56.00	-15.69	QP	
11	2.6300	2.17	20.15	22.32	46.00	-23.68	AVG	
12	3.8820	2.61	20.18	22.79	46.00	-23.21	AVG	

Conducted Emission Test Data

Test Site: 1# Shielded Room
Operating Condition: Keeping TX mode
Test Specification: AC 240V, 60Hz for adapter
Comment: Neutral Line
Tem.:25℃ Hum.:50%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.3780	8.14	19.93	28.07	48.32	-20.25	AVG	
2	0.4900	21.17	19.98	41.15	56.17	-15.02	QP	
3	0.6260	12.14	20.02	32.16	46.00	-13.84	AVG	
4	0.7019	25.61	20.04	45.65	56.00	-10.35	QP	
5	0.8740	20.29	20.09	40.38	56.00	-15.62	QP	
6	0.8780	11.28	20.09	31.37	46.00	-14.63	AVG	
7	1.2660	20.55	20.13	40.68	56.00	-15.32	QP	
8	1.6340	3.61	20.13	23.74	46.00	-22.26	AVG	
9	2.1260	19.59	20.14	39.73	56.00	-16.27	QP	
10	2.8900	4.63	20.16	24.79	46.00	-21.21	AVG	
11	3.1300	17.53	20.16	37.69	56.00	-18.31	QP	
12	4.1460	3.18	20.18	23.36	46.00	-22.64	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

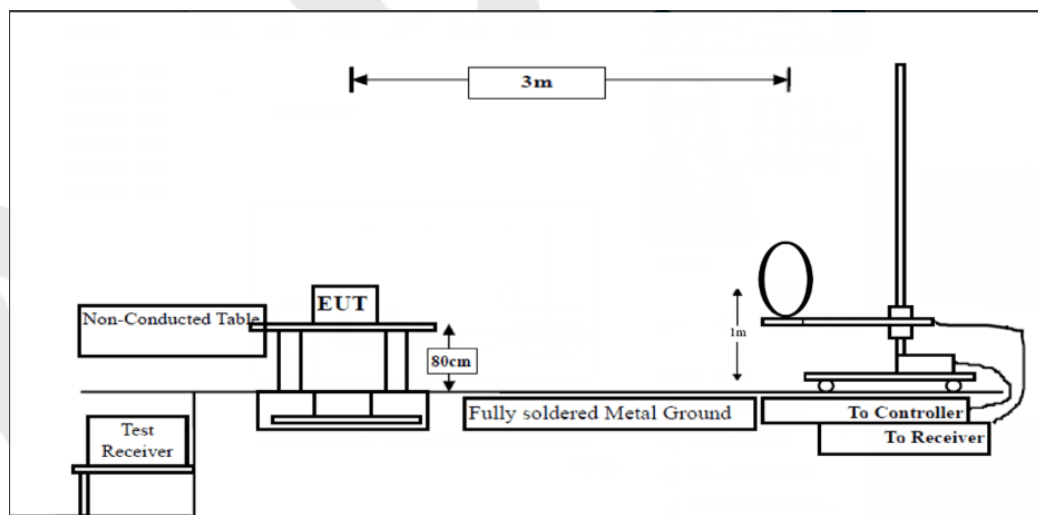


Figure 1. Below 30MHz

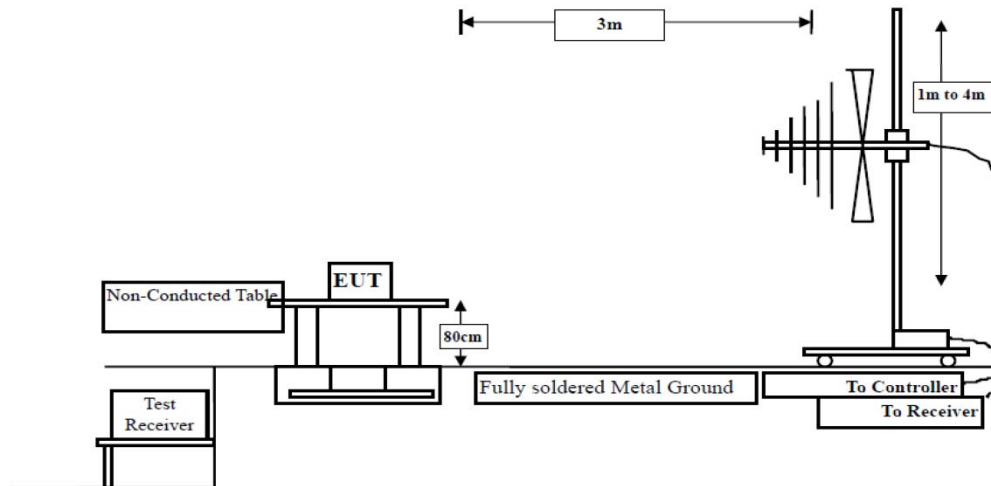


Figure 2. 30MHz to 1GHz

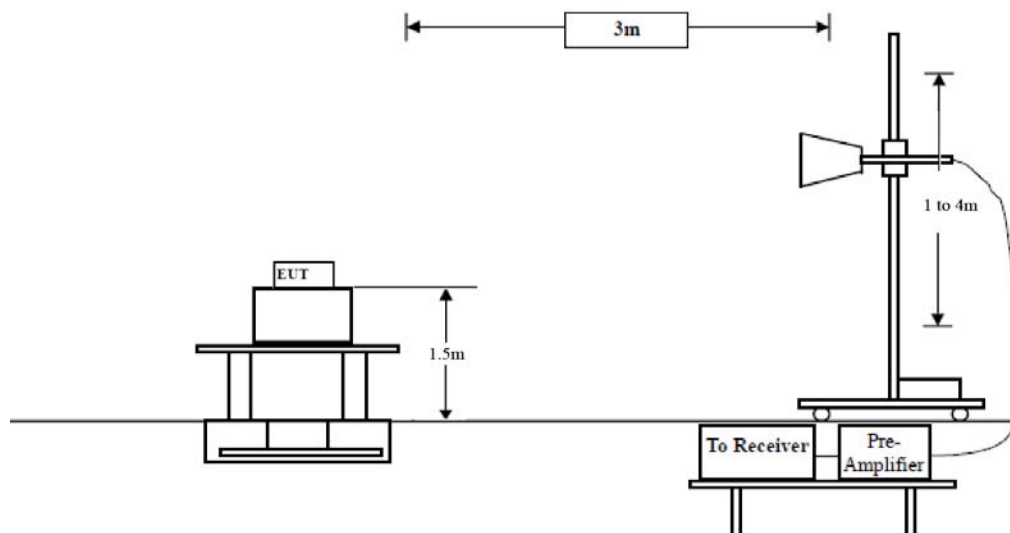


Figure 3. Above 1 GHz

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

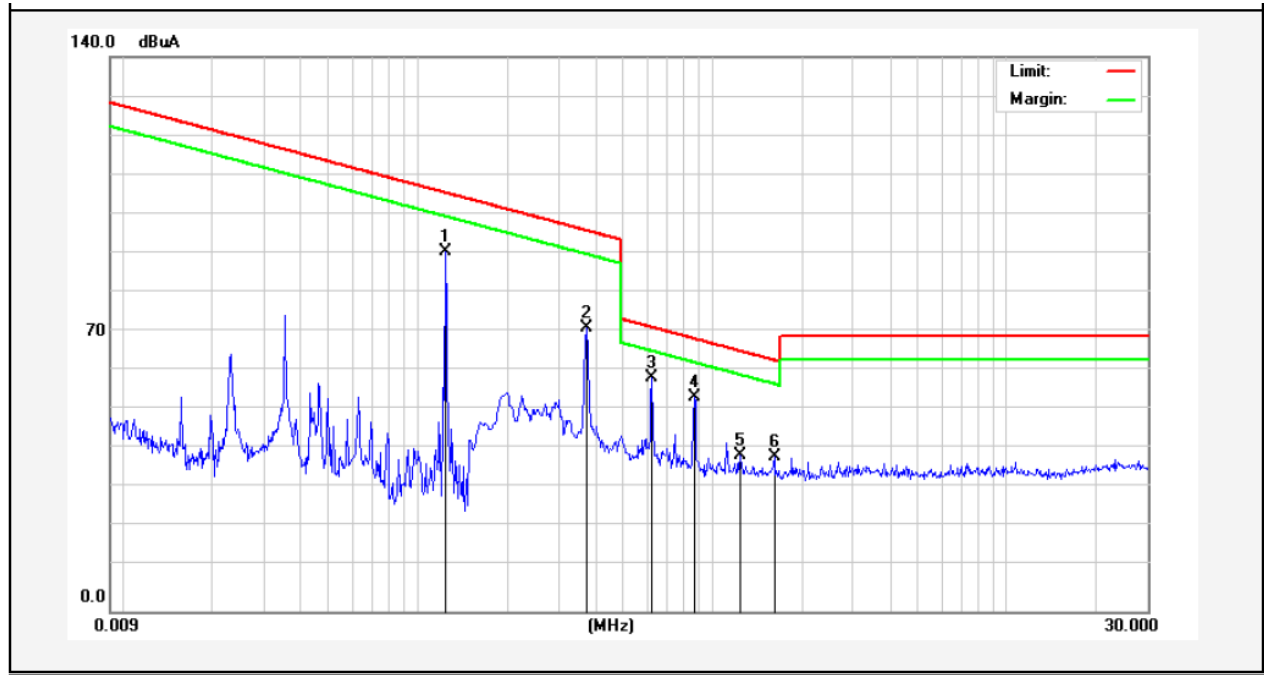
During the test, pre-scan the X, Y, Z modulation, and found the X modulation which is worse case.

Anbotek

Test Results

(Between 9KHz – 30MHz)

Job No.: 0217100018W1
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: TX Mode Distance: 3m



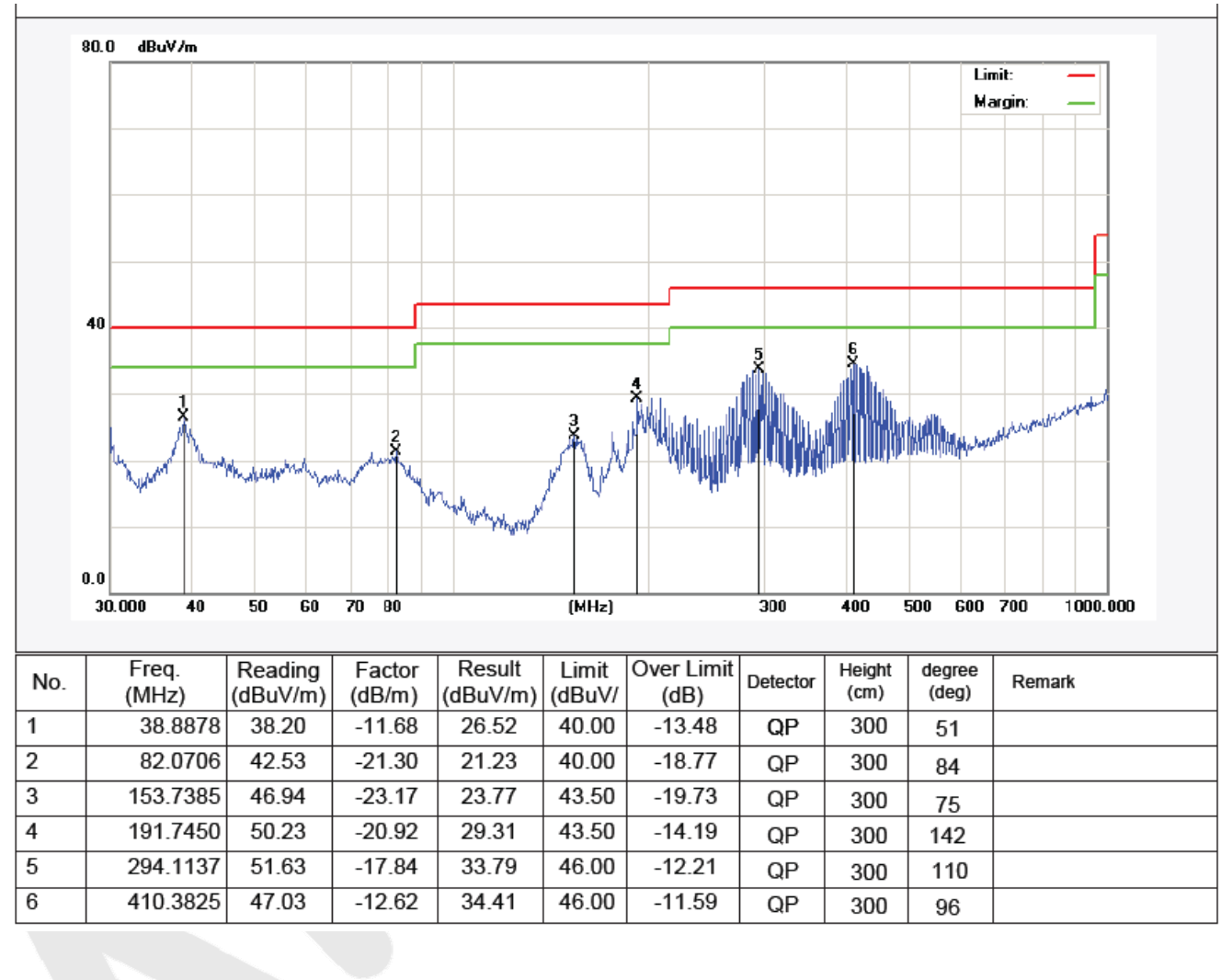
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	degree (dge)
0.1253	73.84	19.30	2.54	0	95.68	125.61	-29.93	Peak	41
0.1253	68.60	19.30	2.54	0	90.44	105.61	-15.17	AV	41
0.3740	57.62	19.53	2.59	0	79.74	116.14	-36.40	Peak	53
0.3740	49.47	19.53	2.59	0	71.59	96.14	-24.55	AV	53
0.6260	35.04	20.35	2.62	0	58.01	71.67	-13.66	Peak	144
0.8780	29.82	20.55	2.71	0	53.08	68.73	-15.65	Peak	144
1.6300	16.23	21.03	2.90	0	40.16	63.36	-23.20	Peak	321
20.8860	11.94	21.34	4.68	0	37.96	69.54	-31.58	Peak	222

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.

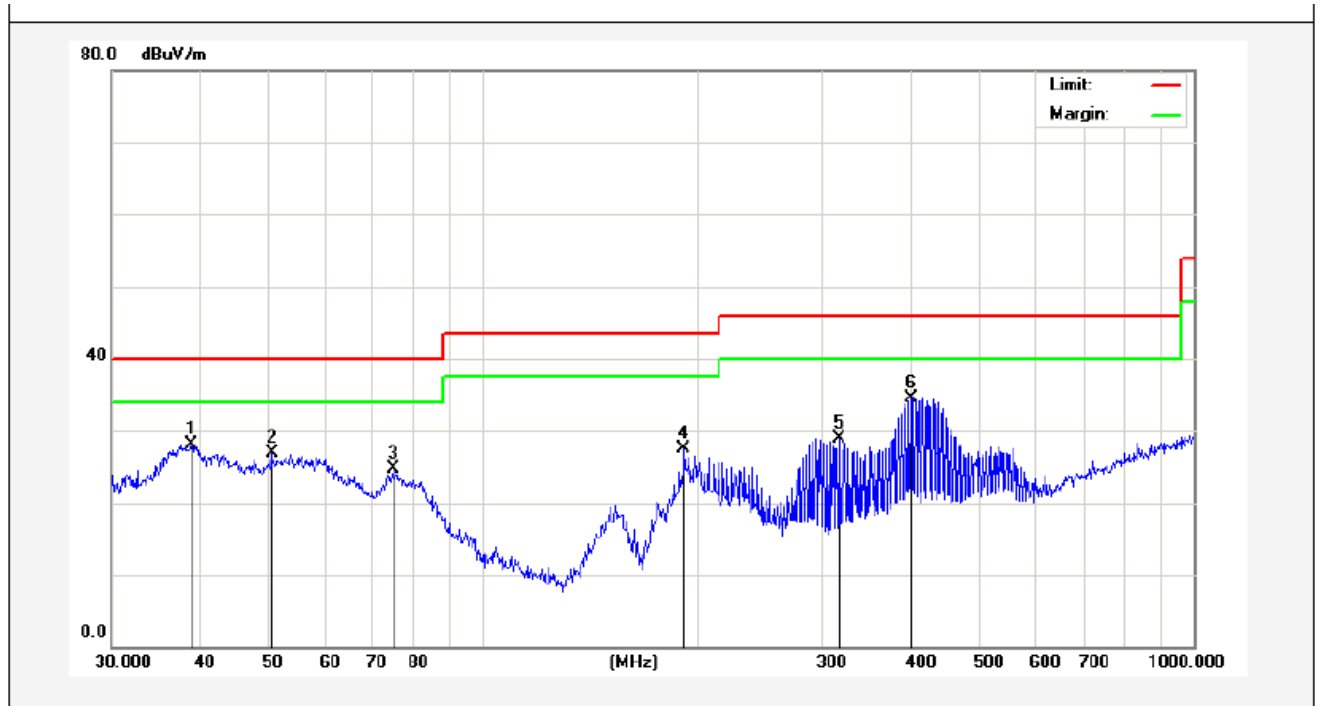
Note: The test data are expressed in the worst direction of the test results

(Between 30MHz -1000 MHz)

Job No.:	0217100018W1	Polarization:	Horizontal
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:	TX Mode	Distance:	3m



Job No.:	0217100018W1	Plarization:	Vertical
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:	TX Mode	Distance:	3m



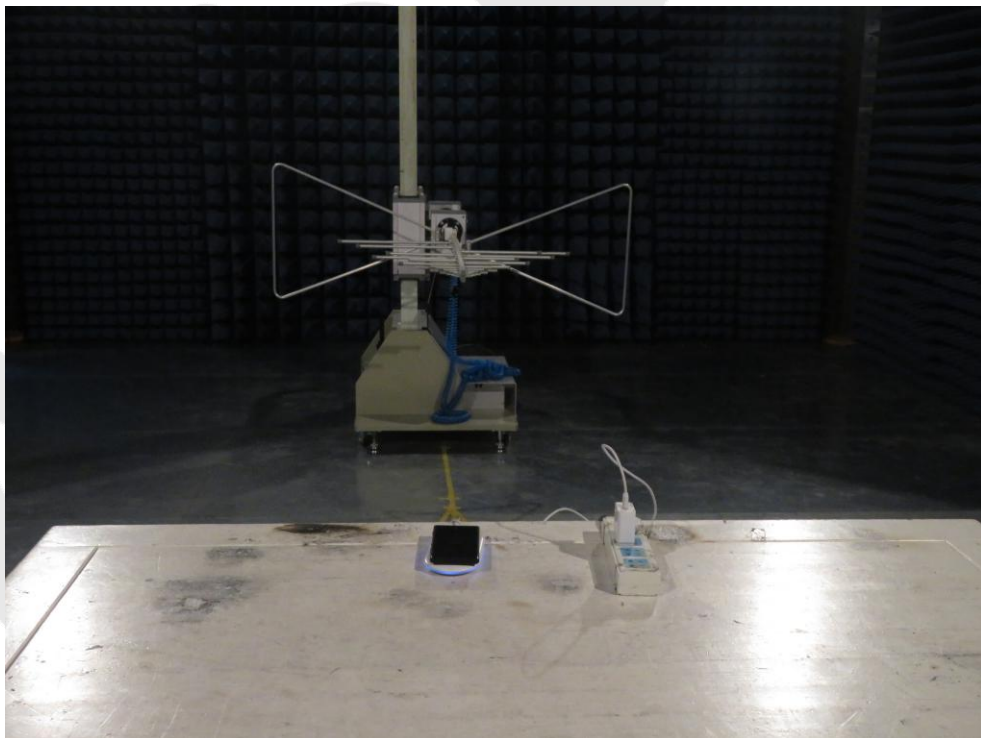
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	38.8878	39.86	-11.68	28.18	40.00	-11.82	QP	300	44	
2	50.4089	41.41	-14.60	26.81	40.00	-13.19	QP	300	95	
3	74.6569	45.28	-20.53	24.75	40.00	-15.25	QP	300	47	
4	191.7450	43.41	-15.92	27.49	43.50	-16.01	QP	300	154	
5	316.5890	43.32	-14.33	28.99	46.00	-17.01	QP	300	123	
6	400.4319	46.38	-11.86	34.52	46.00	-11.48	QP	300	99	

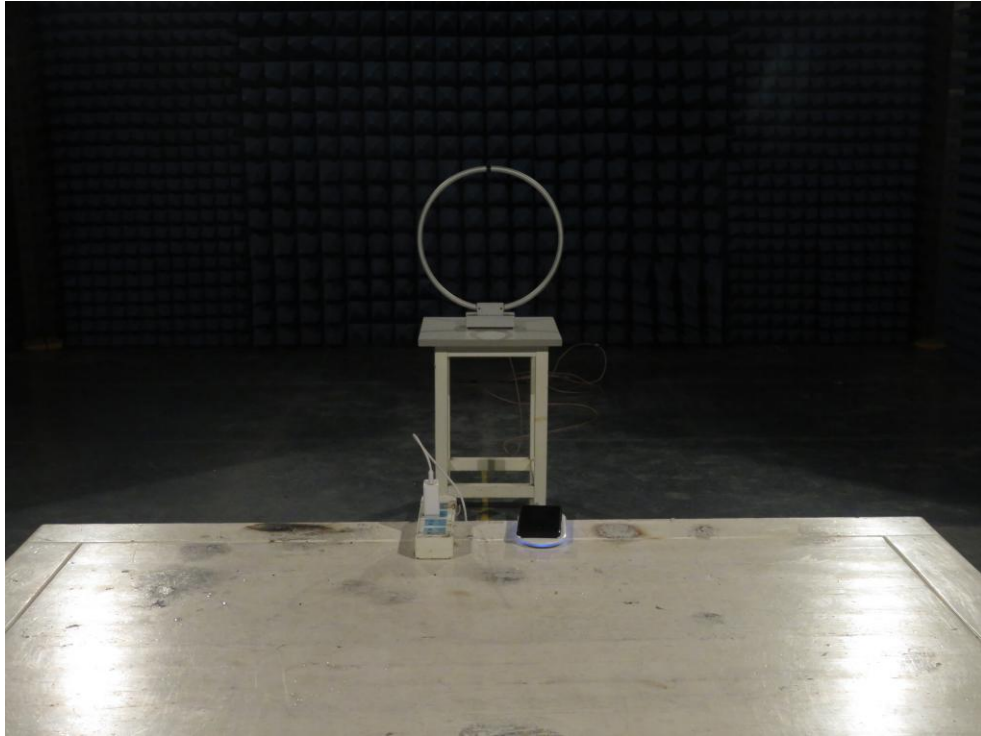
APPENDIX I -- TEST SETUP PHOTOGRAPH

Photo of Conducted Emission Measurement



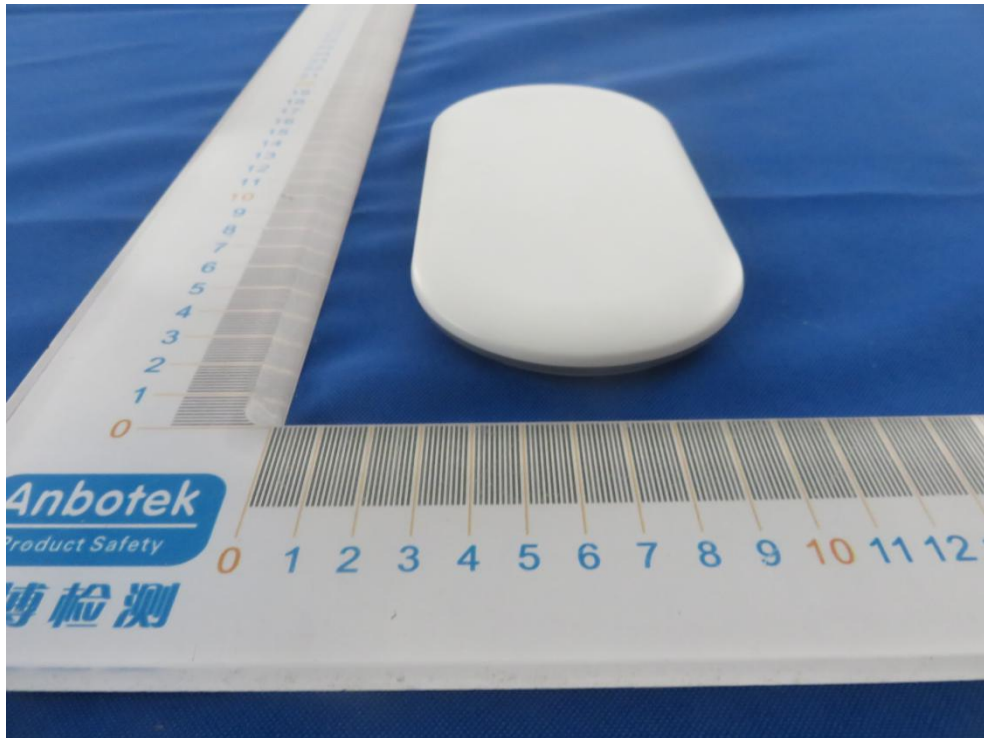
Photo of Radiation Emission Test

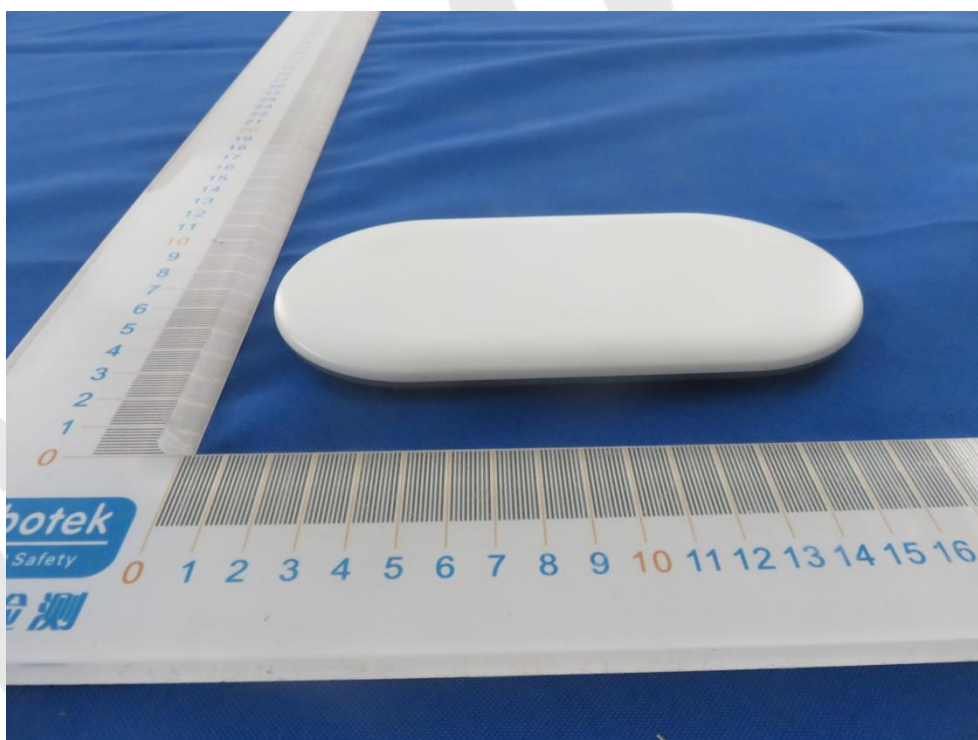
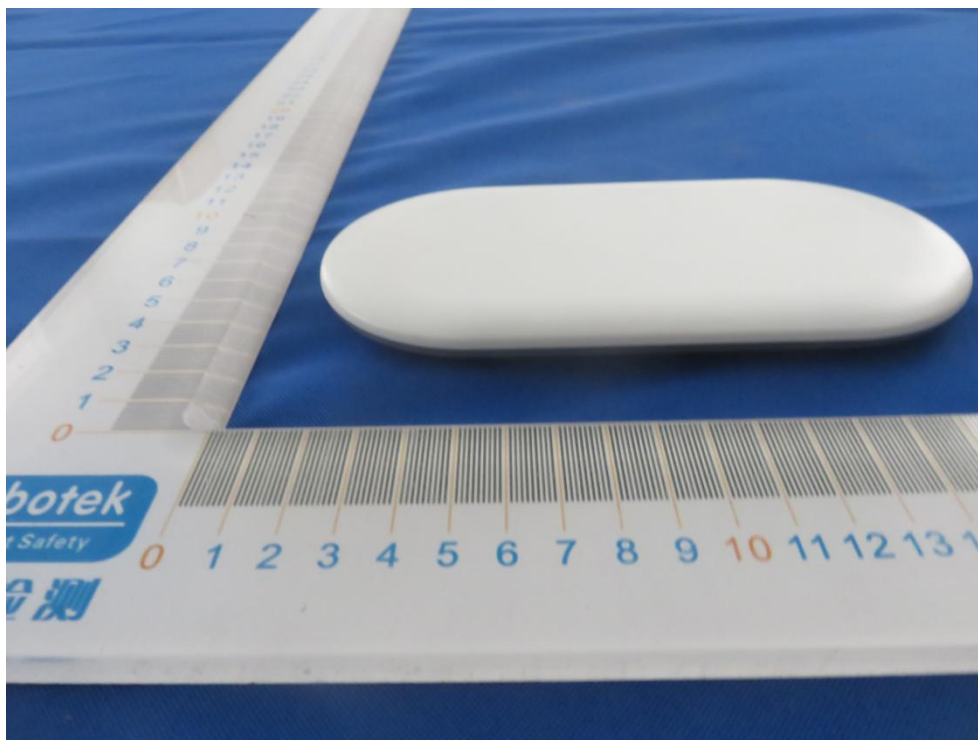




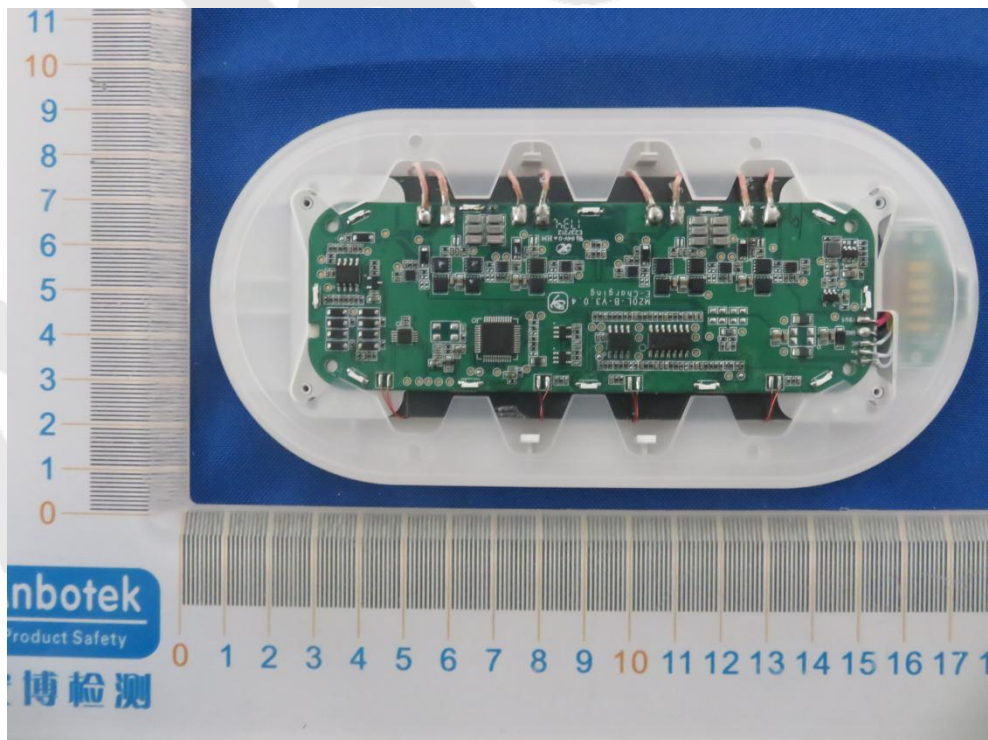
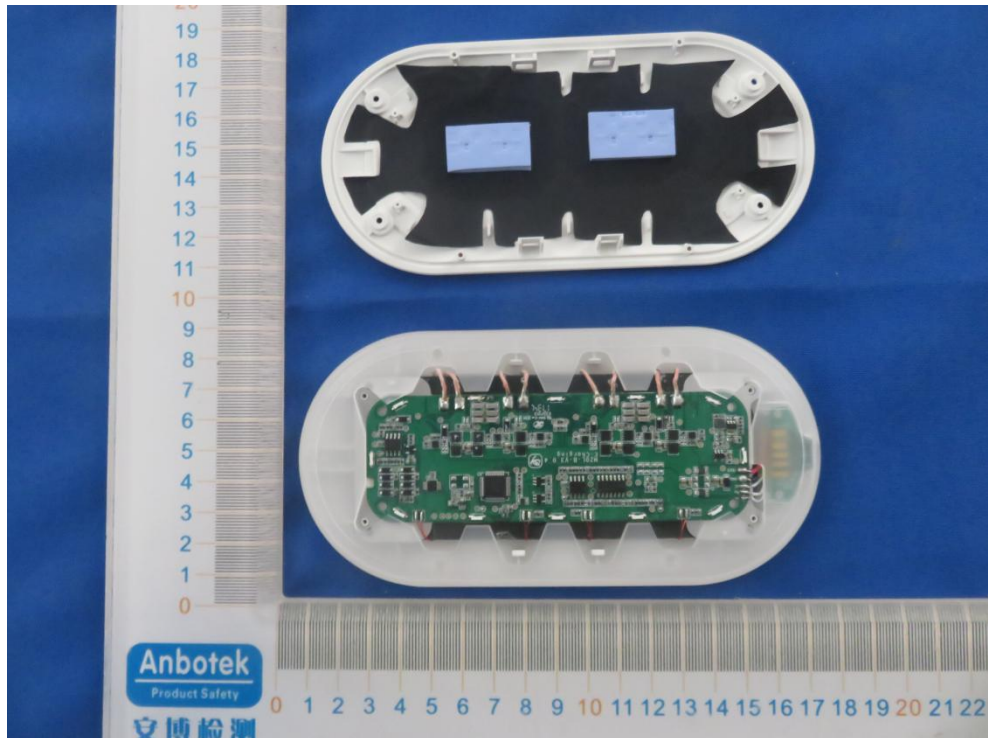
APPENDIX II -- EXTERNAL PHOTOGRAPH

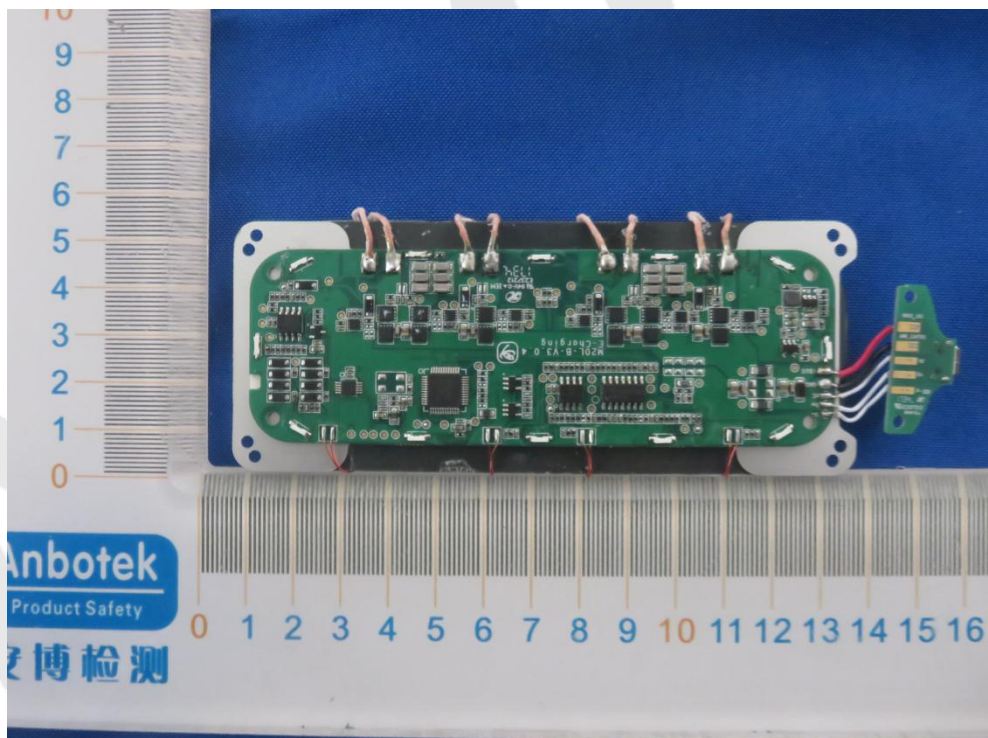
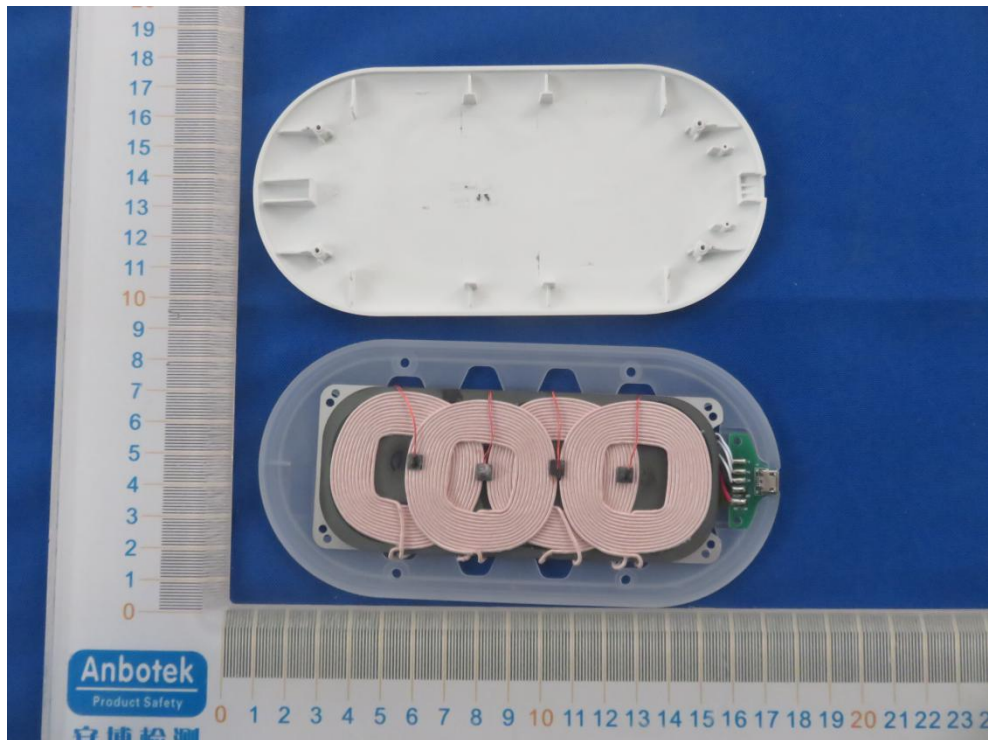


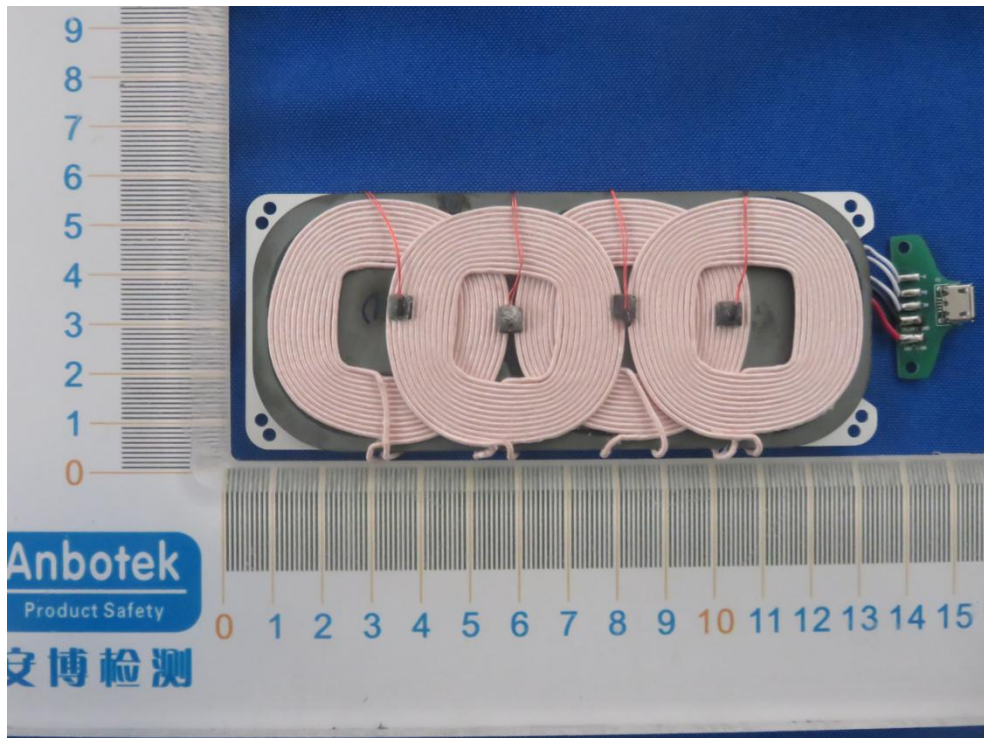




APPENDIX III -- INTERNAL PHOTOGRAPH







Inductive loop coil Antenna

