FCC TEST REPORT

For

Shenzhen Huaqi Technology Co., Ltd.

Wireless charger

Model No.: HQ-D

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 District, Shenzhen, Guangdong, China Tel: (86) 755-26066544 Fax: (86) 755-26014772
Report Number	:	R0217090008W1
Date of Test	:	Sept. 05~14, 2017
Date of Report	:	Sept. 14, 2017

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TEST REPORT

Applicant	:	Shenzhen Huaqi Technology Co., Ltd.
Manufacturer	:	Shenzhen Huaqi Technology Co., Ltd.
Product Name	:	Wireless charger
Model No.	:	HQ-D
Trade Mark	:	
Rating(s)	:	Input: DC 5V, 2A 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 : : Sept. 05~14, 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-D	
Trade Mark	:		
Test Power Supply	:	AC 120V, 60Hz for adapter / AC 240V, 60Hz for adapter	
Product Description	:	Operation Frequency:	104-148KHz
		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 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.

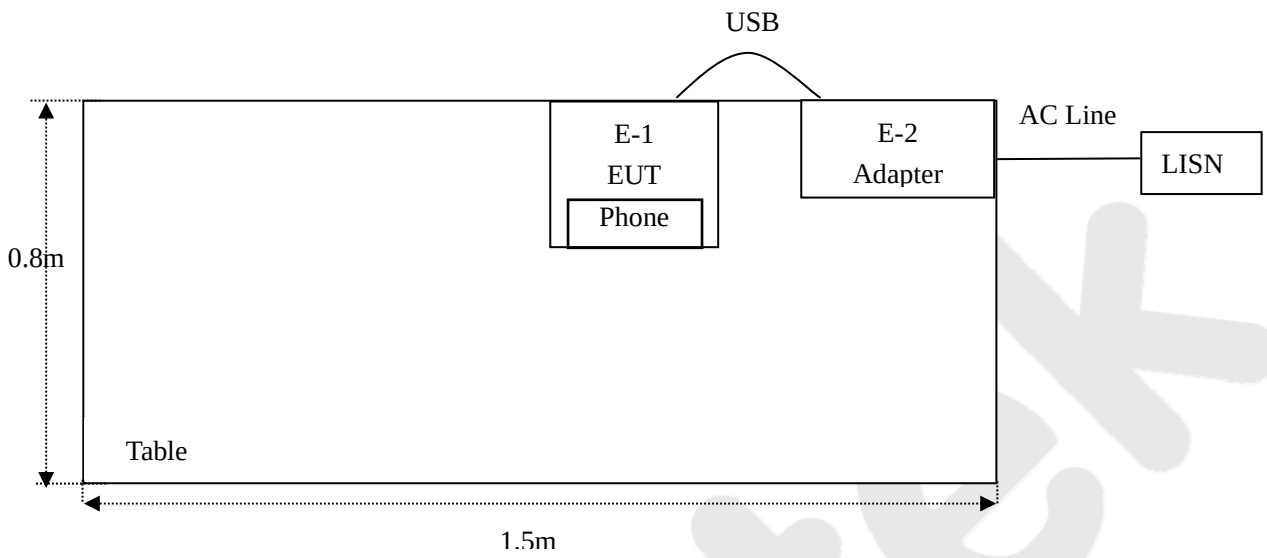
Pretest Mode	Description
Mode 1	CH: Low
Mode 2	CH: Middle
Mode 3	CH: High
Mode 4	Keeping TX mode

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

CE



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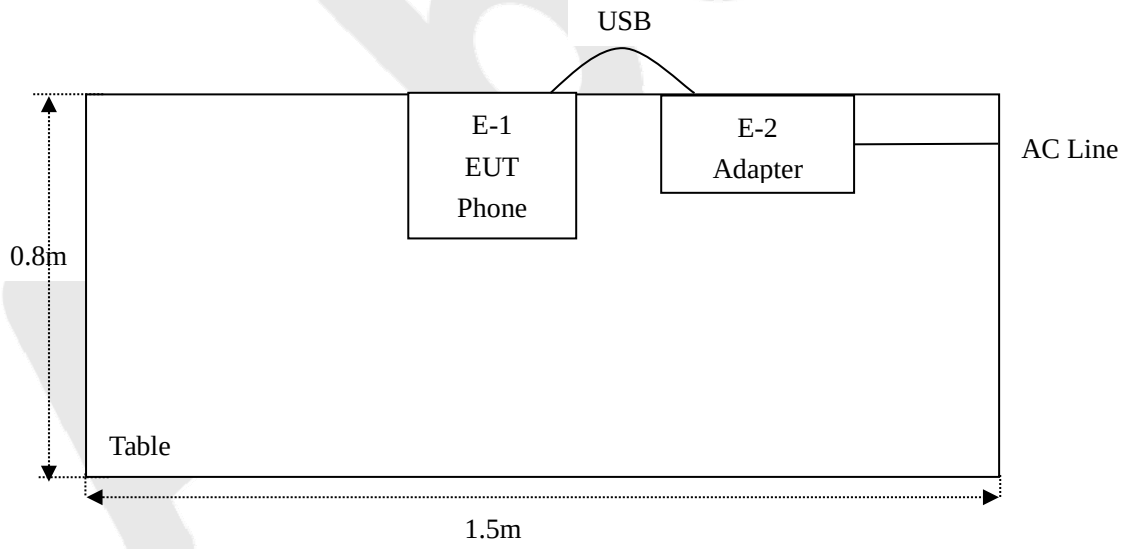


1.6. Test Equipment List

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	BK1G18G30D	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-HWHS80B	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-Designation No.: CN5023

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. Designation CN5023, 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

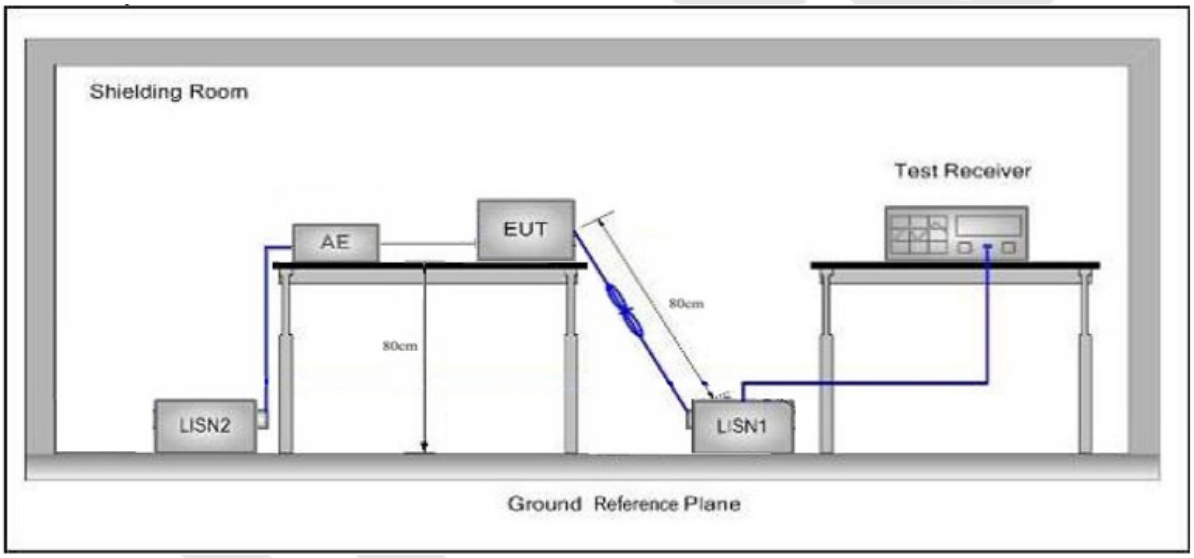
3. Conducted Emission Test

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

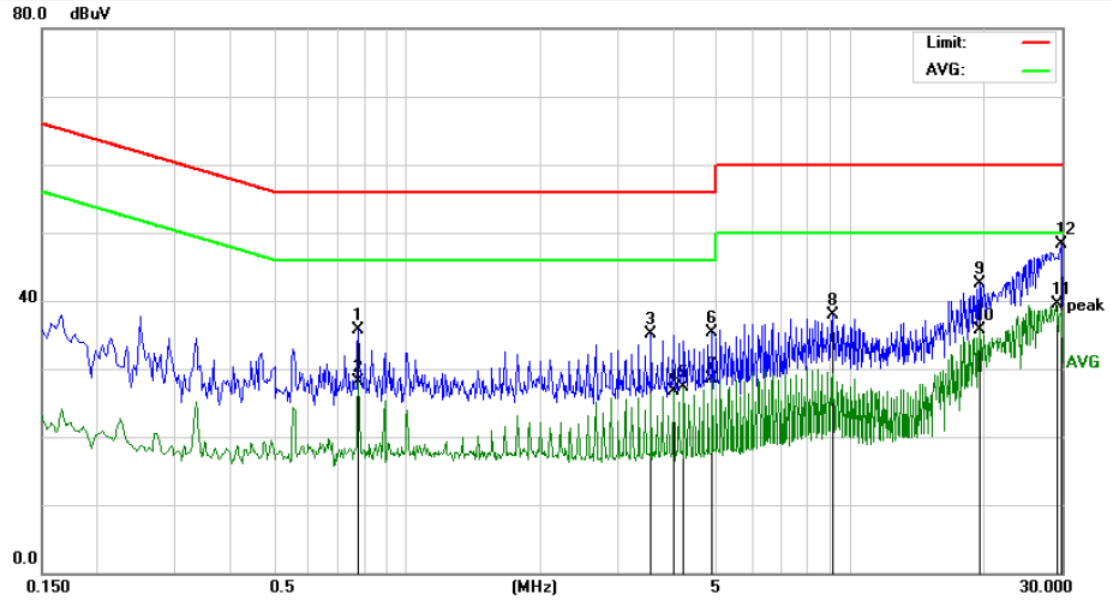
The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted 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

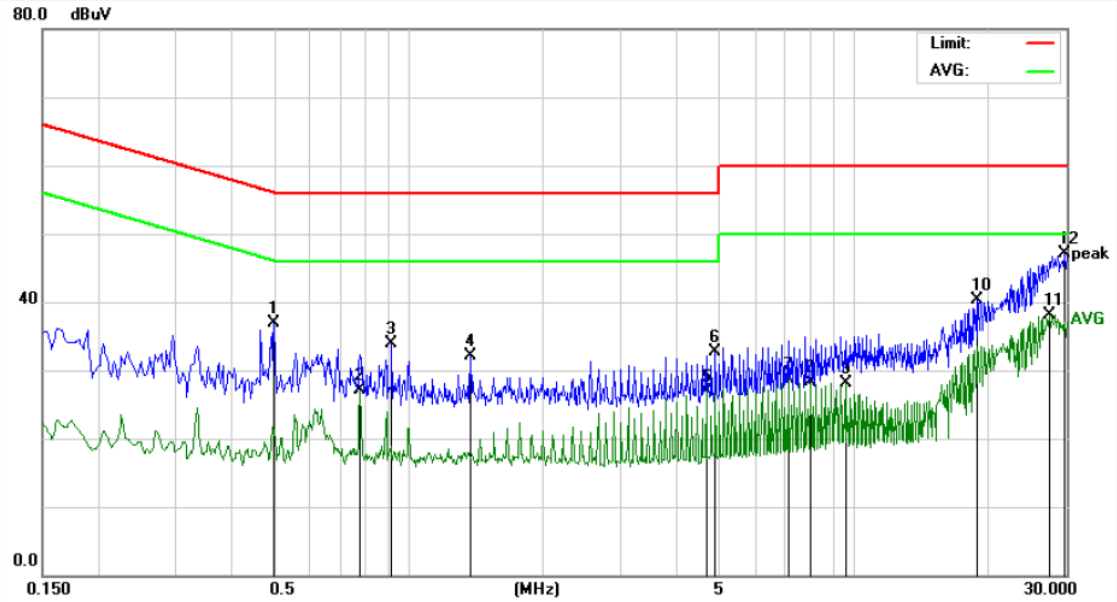
Test Site: 1# Shielded Room
Operating Condition: Keeping TX mode
Test Specification: AC 120V, 60Hz for adapter
Comment: Live Line
Tem.:25℃ Hum.:50%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.7780	15.74	20.06	35.80	56.00	-20.20	QP	
2	0.7780	8.10	20.06	28.16	46.00	-17.84	AVG	
3	3.5540	14.84	20.17	35.01	56.00	-20.99	QP	
4	3.9980	6.44	20.18	26.62	46.00	-19.38	AVG	
5	4.2220	7.21	20.19	27.40	46.00	-18.60	AVG	
6	4.8859	15.20	20.20	35.40	56.00	-20.60	QP	
7	4.8859	8.37	20.20	28.57	46.00	-17.43	AVG	
8	9.1100	17.60	20.32	37.92	60.00	-22.08	QP	
9	19.5500	22.14	20.33	42.47	60.00	-17.53	QP	
10	19.5500	15.31	20.33	35.64	50.00	-14.36	AVG	
11	29.1100	19.16	20.27	39.43	50.00	-10.57	AVG	
12	29.9900	27.96	20.27	48.23	60.00	-11.77	QP	

Conducted Emission Test Data

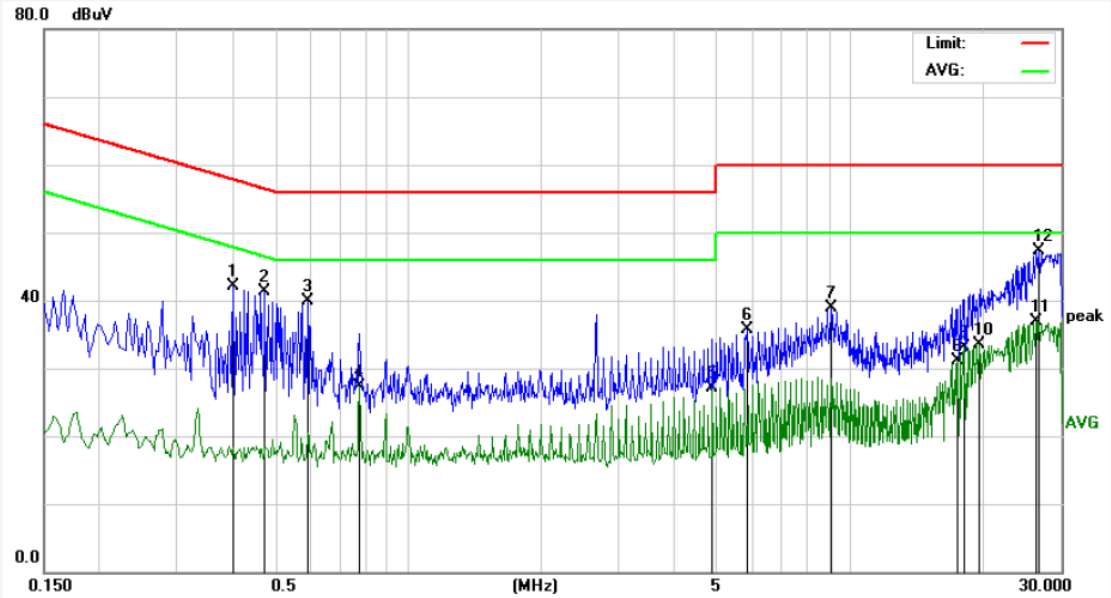
Test Site: 1# Shielded Room
Operating Condition: Keeping TX mode
Test Specification: AC 120V, 60Hz for adapter
Comment: Neutral Line
Tem.:25℃ Hum.:50%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.4980	16.99	19.98	36.97	56.03	-19.06	QP	
2	0.7780	7.01	20.06	27.07	46.00	-18.93	AVG	
3	0.9180	13.85	20.10	33.95	56.00	-22.05	QP	
4	1.3779	11.88	20.13	32.01	56.00	-23.99	QP	
5	4.6660	6.64	20.20	26.84	46.00	-19.16	AVG	
6	4.8900	12.44	20.20	32.64	56.00	-23.36	QP	
7	7.1100	8.52	20.26	28.78	50.00	-21.22	AVG	
8	7.9980	7.95	20.29	28.24	50.00	-21.76	AVG	
9	9.5540	7.82	20.33	28.15	50.00	-21.85	AVG	
10	18.8819	20.04	20.32	40.36	60.00	-19.64	QP	
11	27.4380	17.86	20.28	38.14	50.00	-11.86	AVG	
12	29.7700	26.74	20.27	47.01	60.00	-12.99	QP	

Conducted Emission Test Data

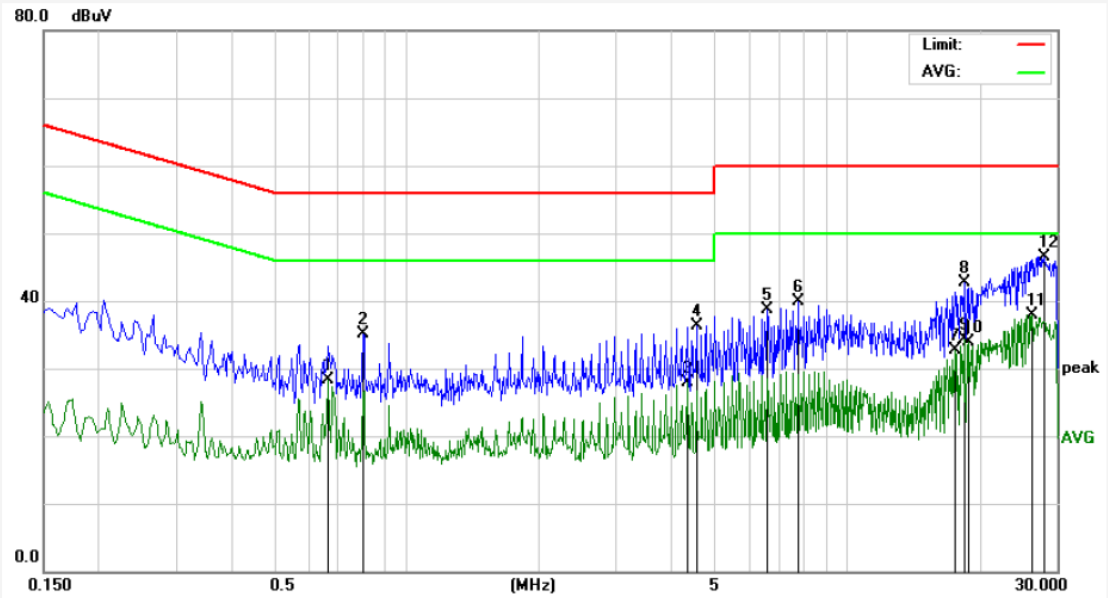
Test Site: 1# Shielded Room
Operating Condition: Keeping TX mode
Test Specification: AC 240V, 60Hz for adapter
Comment: Live Line
Tem.:25℃ Hum.:50%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.4020	22.09	19.94	42.03	57.81	-15.78	QP	
2	0.4740	21.43	19.97	41.40	56.44	-15.04	QP	
3	0.5939	19.98	20.01	39.99	56.00	-16.01	QP	
4	0.7780	7.24	20.06	27.30	46.00	-18.70	AVG	
5	4.8859	6.84	20.20	27.04	46.00	-18.96	AVG	
6	5.8578	15.41	20.23	35.64	60.00	-24.36	QP	
7	9.1059	18.65	20.32	38.97	60.00	-21.03	QP	
8	17.5500	10.82	20.30	31.12	50.00	-18.88	AVG	
9	18.2180	12.80	20.31	33.11	50.00	-16.89	AVG	
10	19.5500	13.24	20.33	33.57	50.00	-16.43	AVG	
11	26.3220	16.70	20.28	36.98	50.00	-13.02	AVG	
12	26.7660	26.97	20.28	47.25	60.00	-12.75	QP	

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	0.6660	8.32	20.03	28.35	46.00	-17.65	AVG	
2	0.7980	14.95	20.07	35.02	56.00	-20.98	QP	
3	4.3420	7.81	20.19	28.00	46.00	-18.00	AVG	
4	4.5700	16.08	20.20	36.28	56.00	-19.72	QP	
5	6.6260	18.49	20.25	38.74	60.00	-21.26	QP	
6	7.7660	19.56	20.28	39.84	60.00	-20.16	QP	
7	17.5940	12.37	20.30	32.67	50.00	-17.33	AVG	
8	18.5020	22.33	20.32	42.65	60.00	-17.35	QP	
9	18.5020	14.08	20.32	34.40	50.00	-15.60	AVG	
10	18.9619	13.65	20.32	33.97	50.00	-16.03	AVG	
11	26.3940	17.69	20.28	37.97	50.00	-12.03	AVG	
12	28.1060	26.20	20.27	46.47	60.00	-13.53	QP	

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

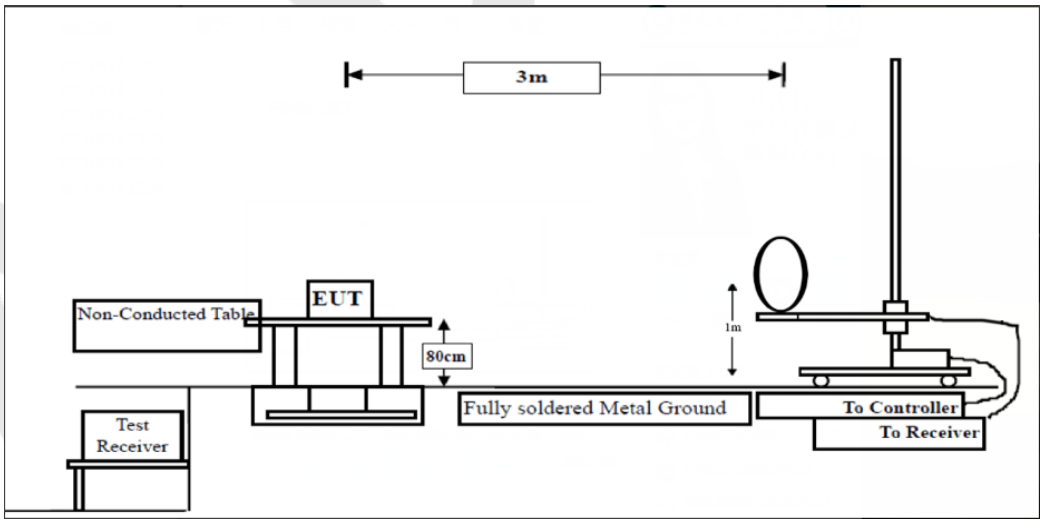


Figure 1. Below 30MHz

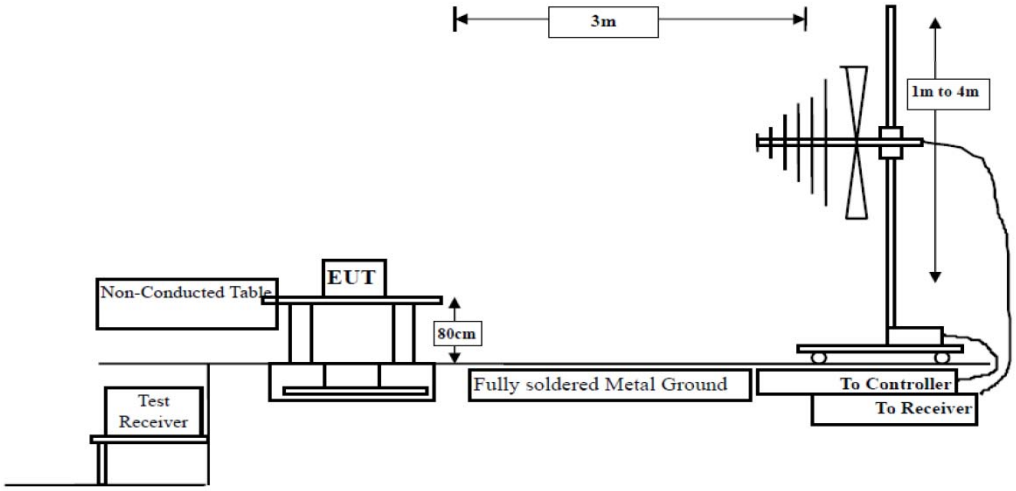


Figure 2. 30MHz to 1GHz

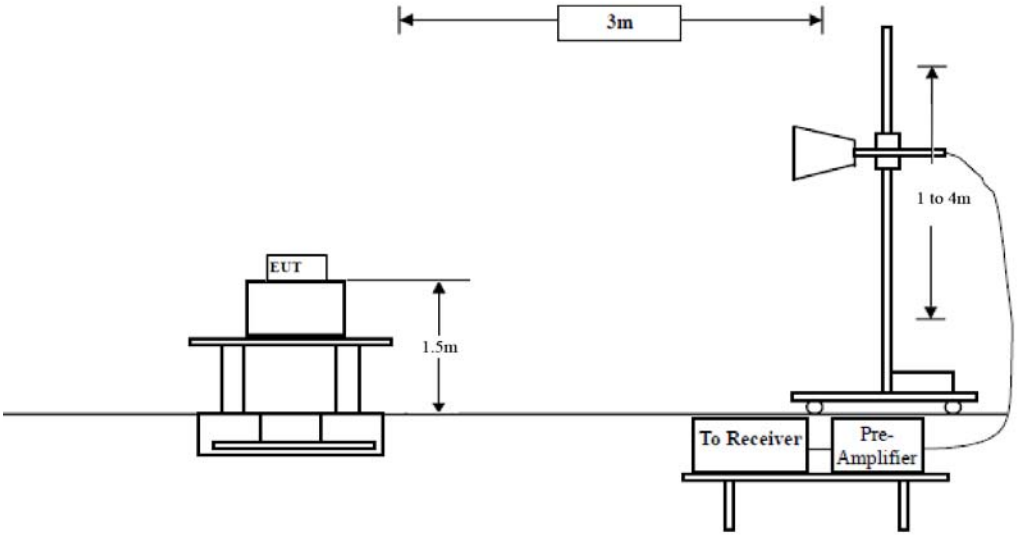


Figure 3. Above 1 GHz

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.

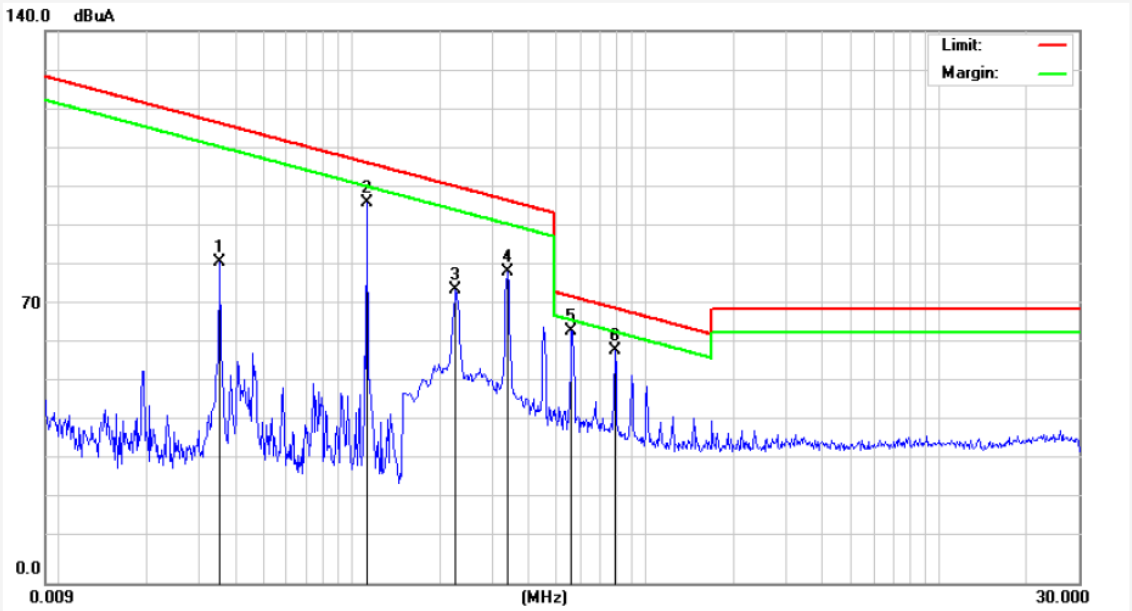
4.4. Test Data

PASS

Test Results

(Between 9KHz – 30MHz)

Job No.:	**0217090008W**		
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**

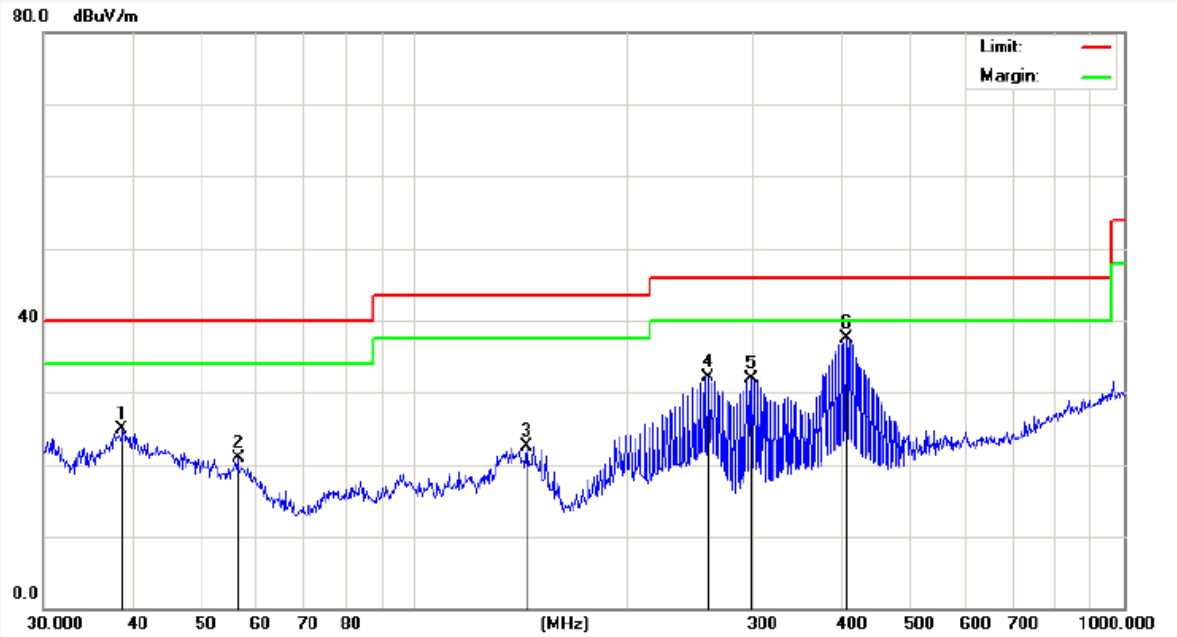


Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	degree (dge)
0.0355	61.02	19.28	2.53	0	82.83	136.54	-53.71	Peak	10
0.0355	58.66	19.28	2.53	0	80.47	116.54	-36.07	AV	10
0.0495	41.74	19.28	2.53	0	63.55	133.66	-70.11	Peak	41
0.0495	40.36	19.28	2.53	0	62.17	113.66	-51.49	AV	41
0.1127	55.02	19.30	2.54	0	76.86	126.53	-49.67	Peak	114
0.1127	52.68	19.30	2.54	0	74.52	106.53	-32.01	AV	114
0.2260	39.31	19.38	2.55	0	61.24	100.50	-39.26	Peak	98
0.2260	37.50	19.38	2.55	0	59.43	100.50	-41.07	AV	98
0.3379	46.79	19.53	2.59	0	68.91	117.02	-48.11	Peak	321
0.3379	44.07	19.53	2.59	0	66.19	97.02	-30.83	AV	321
0.5620	31.61	20.34	2.60	0	54.55	72.61	-18.06	QP	360

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.

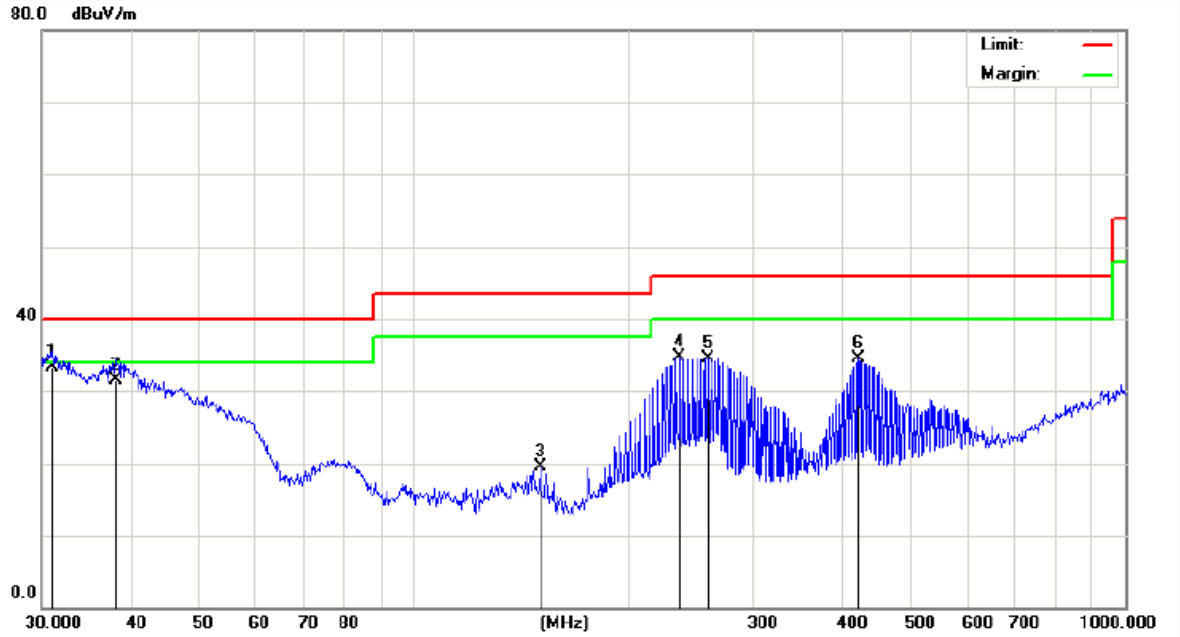
(Between 30MHz –1000 MHz)

Job No.:	**0217090008W**	**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**



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	38.7518	36.65	-11.79	24.86	40.00	-15.14	QP	300	12	
2	56.3948	35.90	-15.05	20.85	40.00	-19.15	QP	300	37	
3	143.8295	46.03	-23.43	22.60	43.50	-20.90	QP	300	124	
4	259.2338	50.98	-18.96	32.02	46.00	-13.98	QP	300	89	
5	298.2681	49.68	-17.73	31.95	46.00	-14.05	QP	300	97	
6	406.0880	50.29	-12.72	37.57	46.00	-8.43	QP	300	127	

Job No.:	**0217090008W**	**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	31.0706	49.78	-16.44	33.34	40.00	-6.66	QP	300	0	
2	38.0783	43.74	-12.28	31.46	40.00	-8.54	QP	300	36	
3	150.5378	37.82	-18.33	19.49	43.50	-24.01	QP	300	144	
4	236.6447	48.96	-14.26	34.70	46.00	-11.30	QP	300	79	
5	259.2338	48.49	-14.00	34.49	46.00	-11.51	QP	300	98	
6	422.0577	45.69	-11.27	34.42	46.00	-11.58	QP	300	122	

APPENDIX I -- TEST SETUP PHOTOGRAPH

Photo of Conducted Emission Measurement

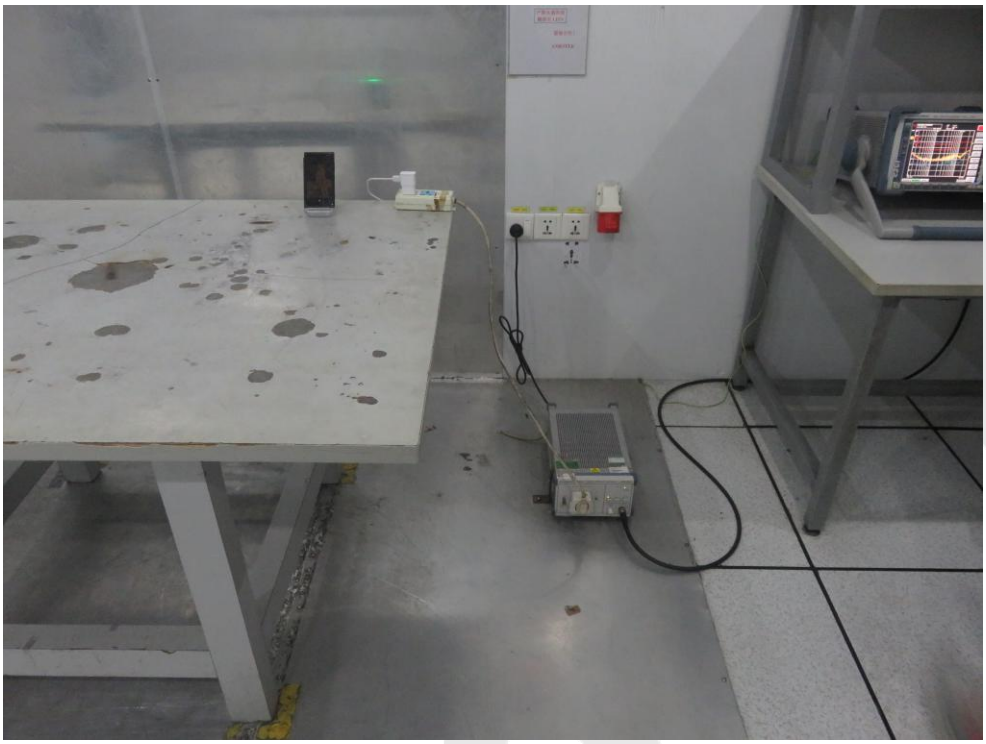
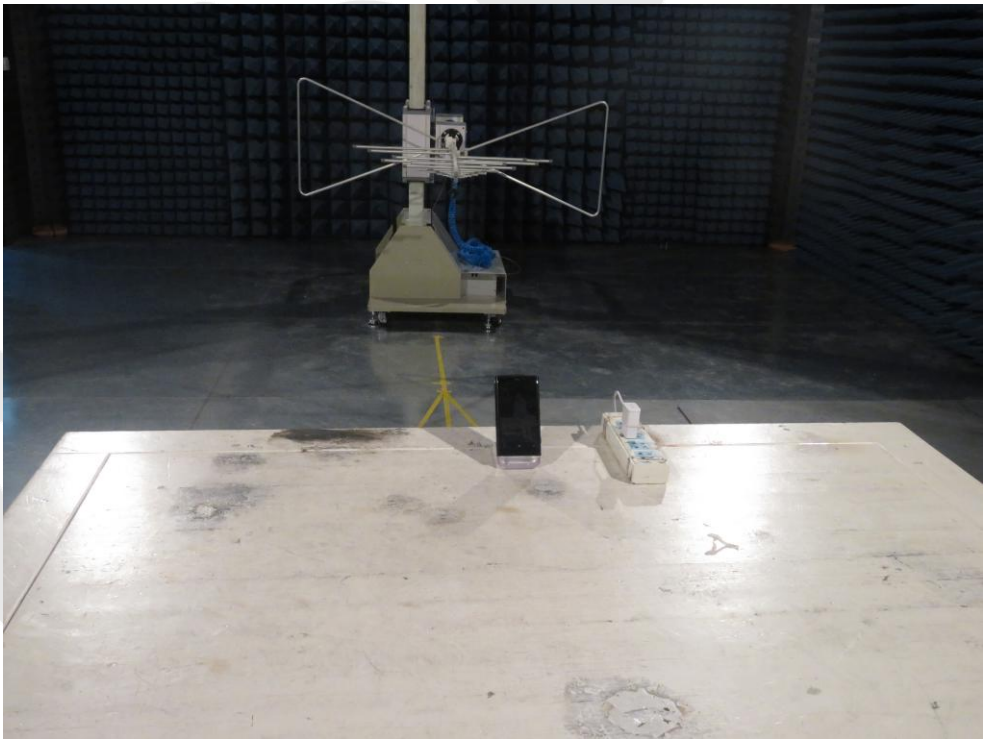
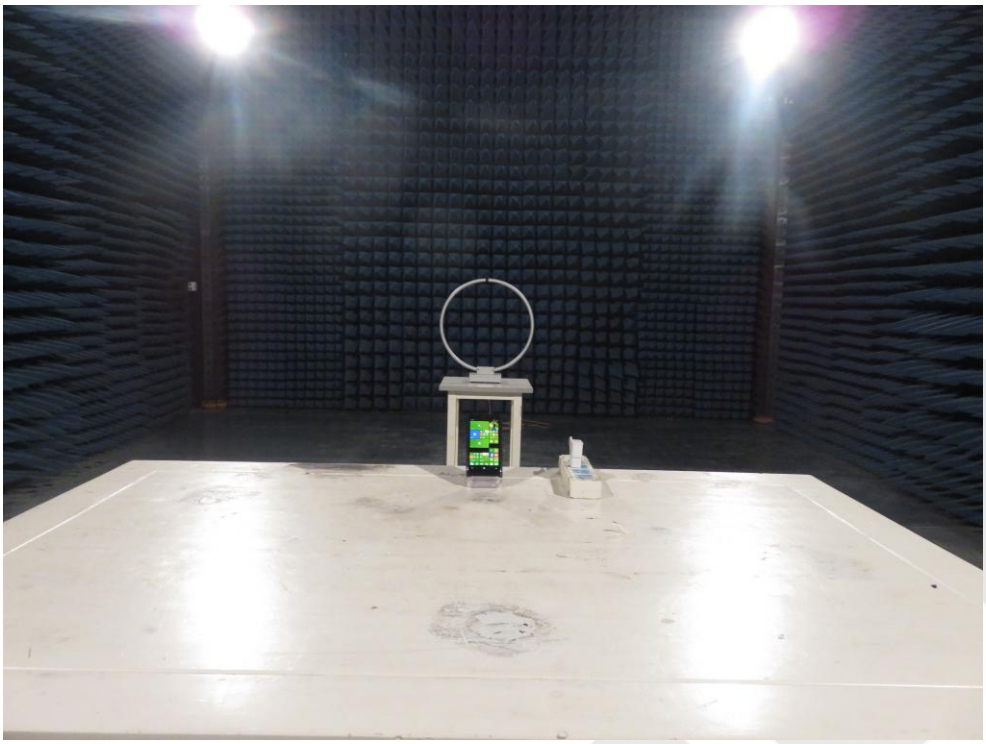
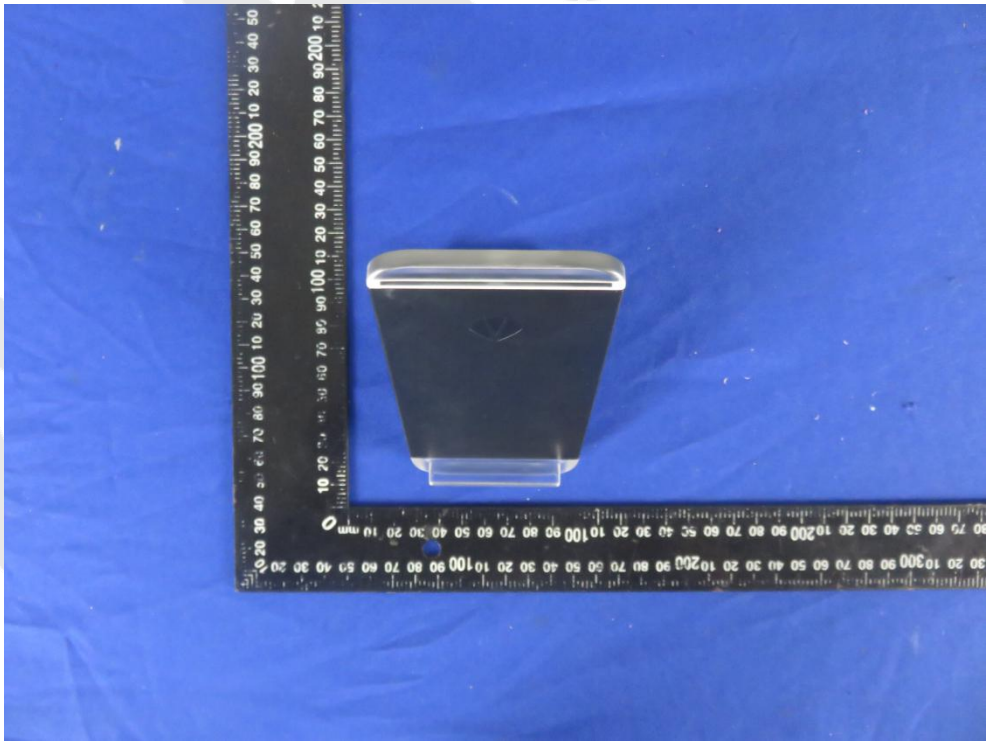


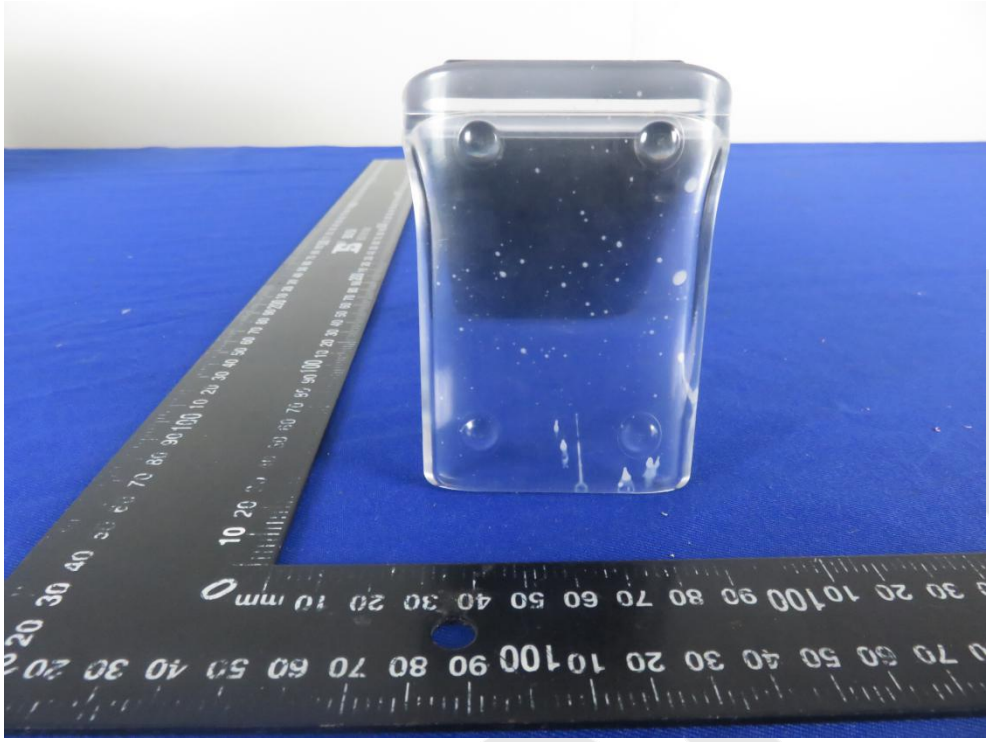
Photo of Radiation Emission Test

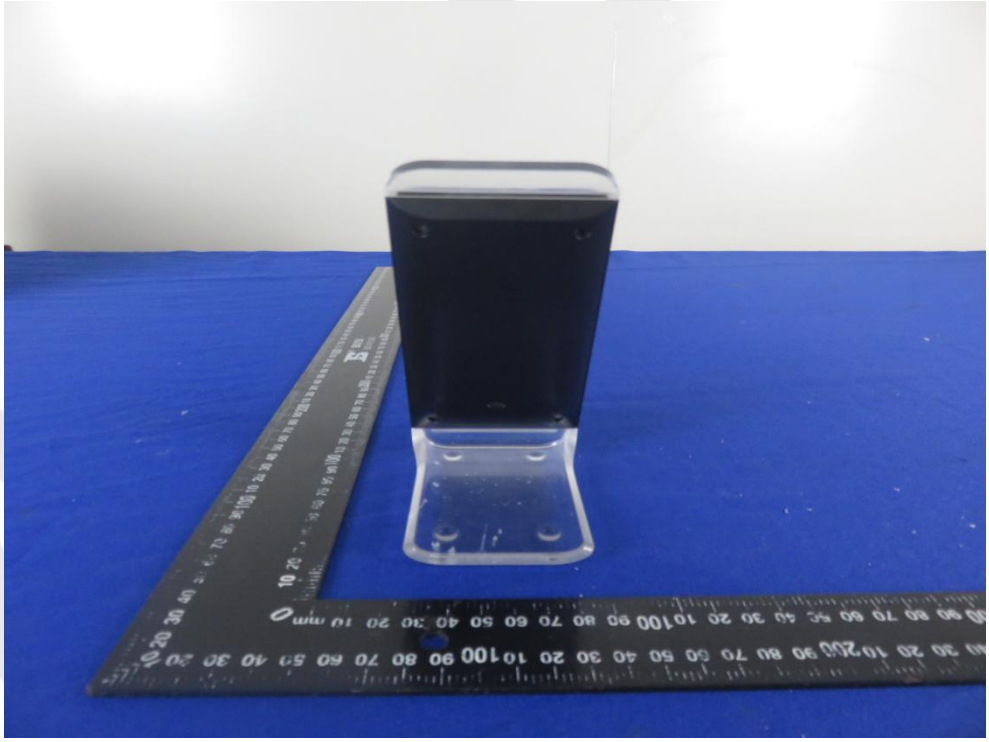


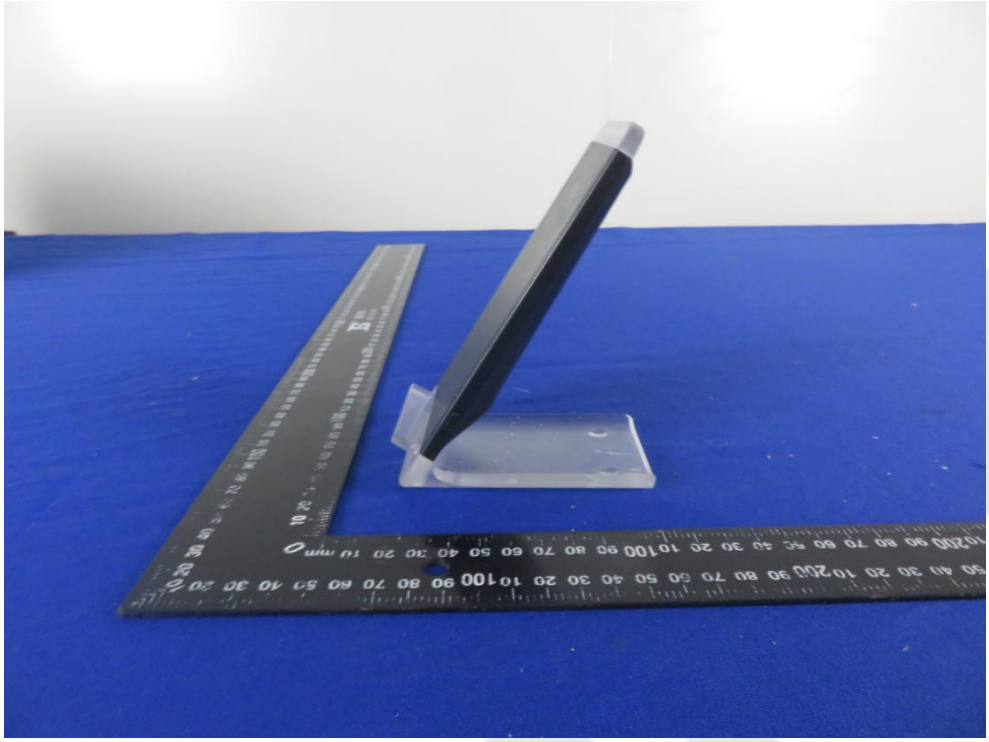


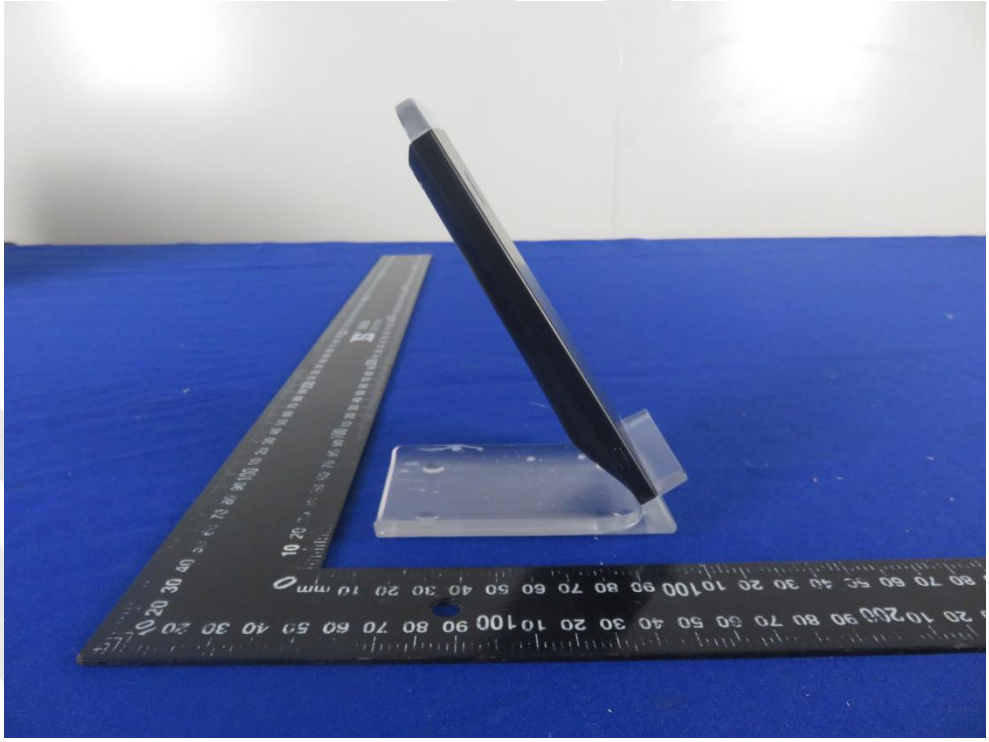
APPENDIX II -- EXTERNAL PHOTOGRAPH

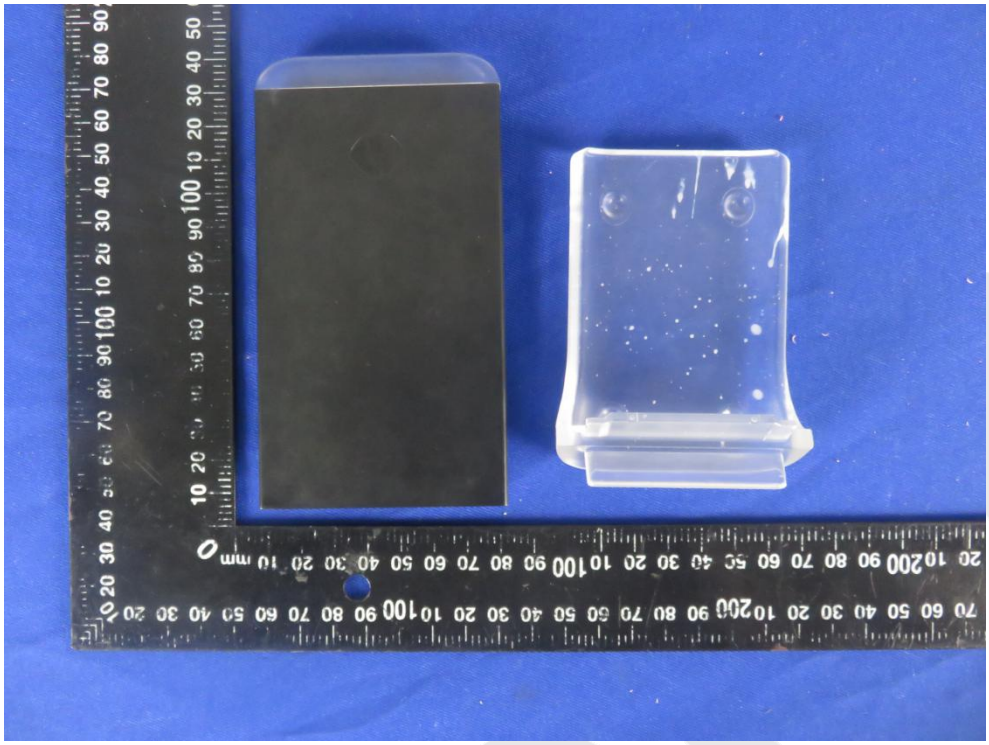


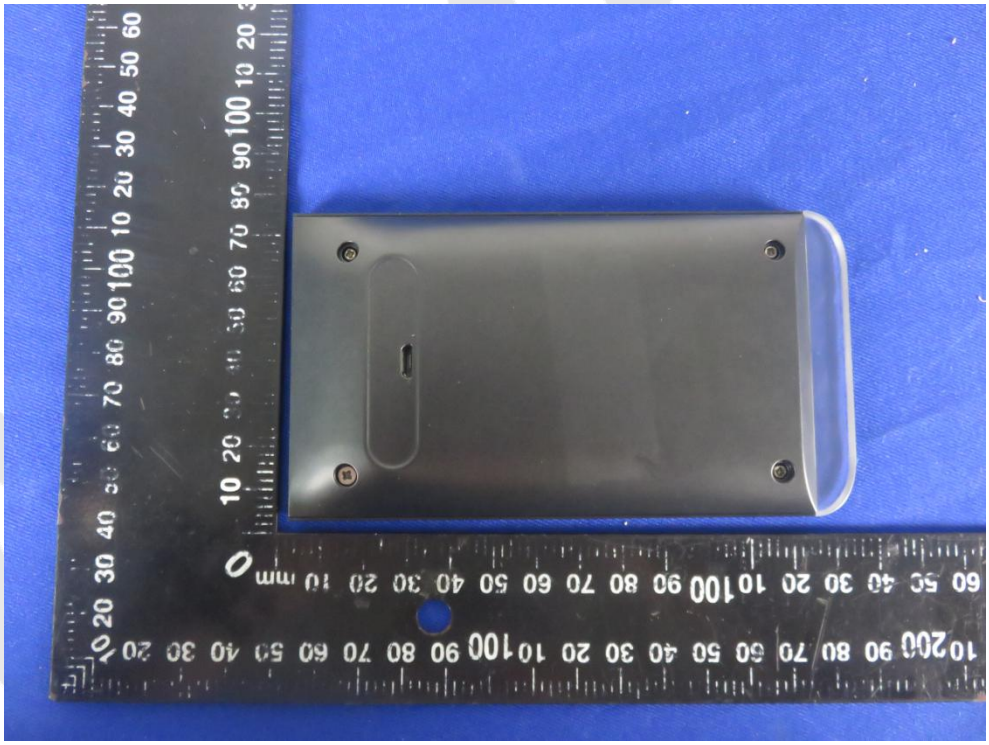


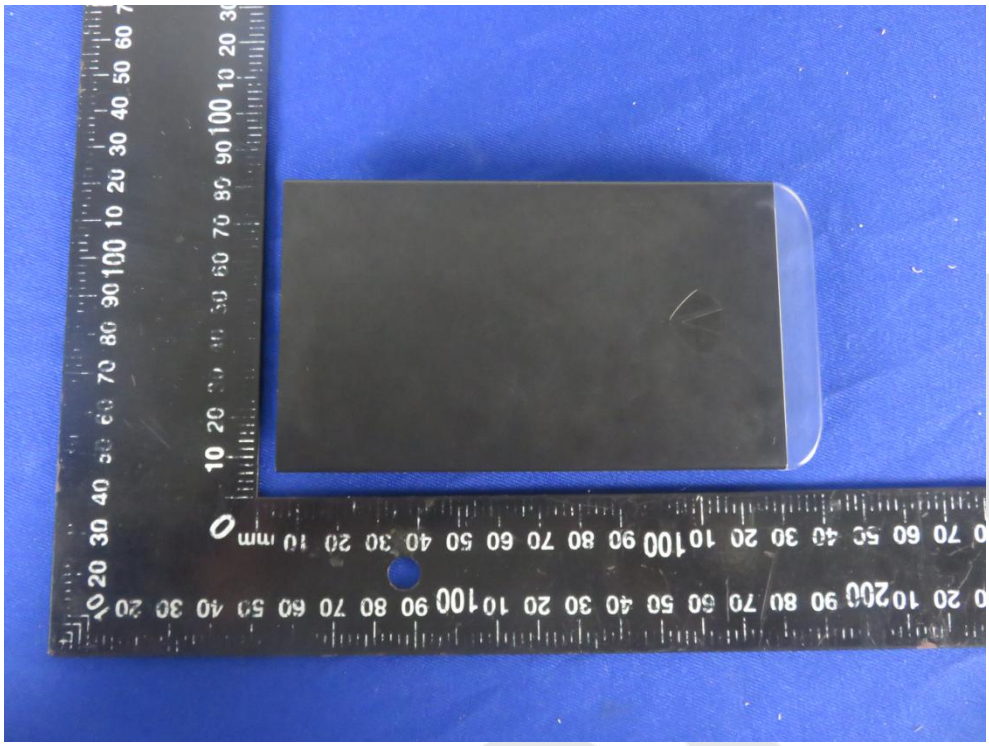


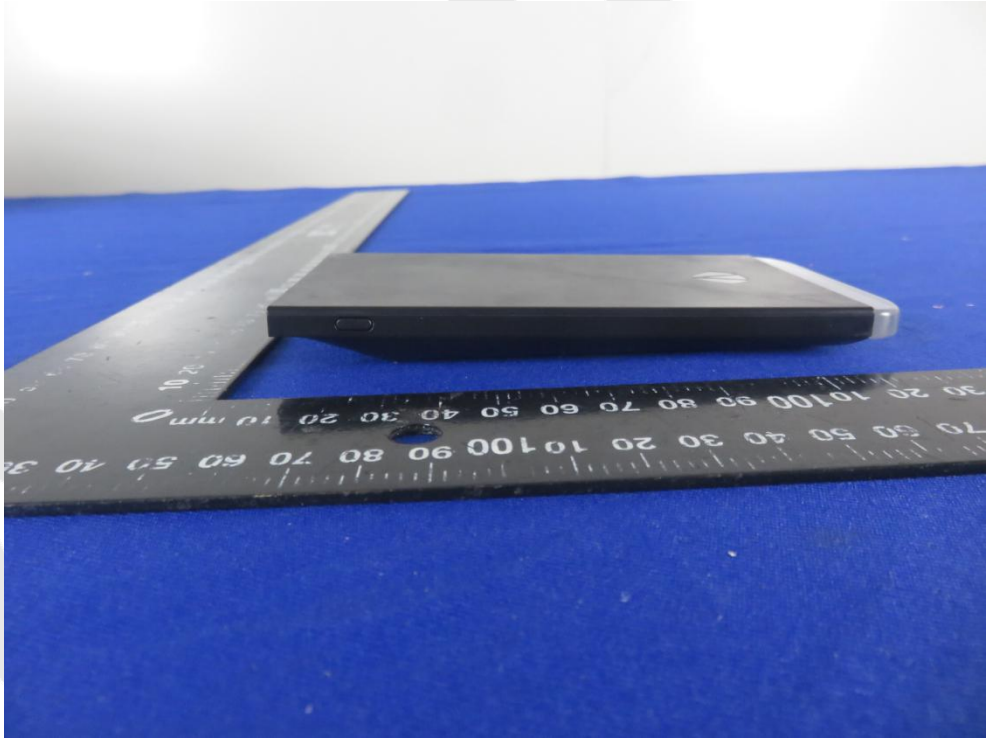


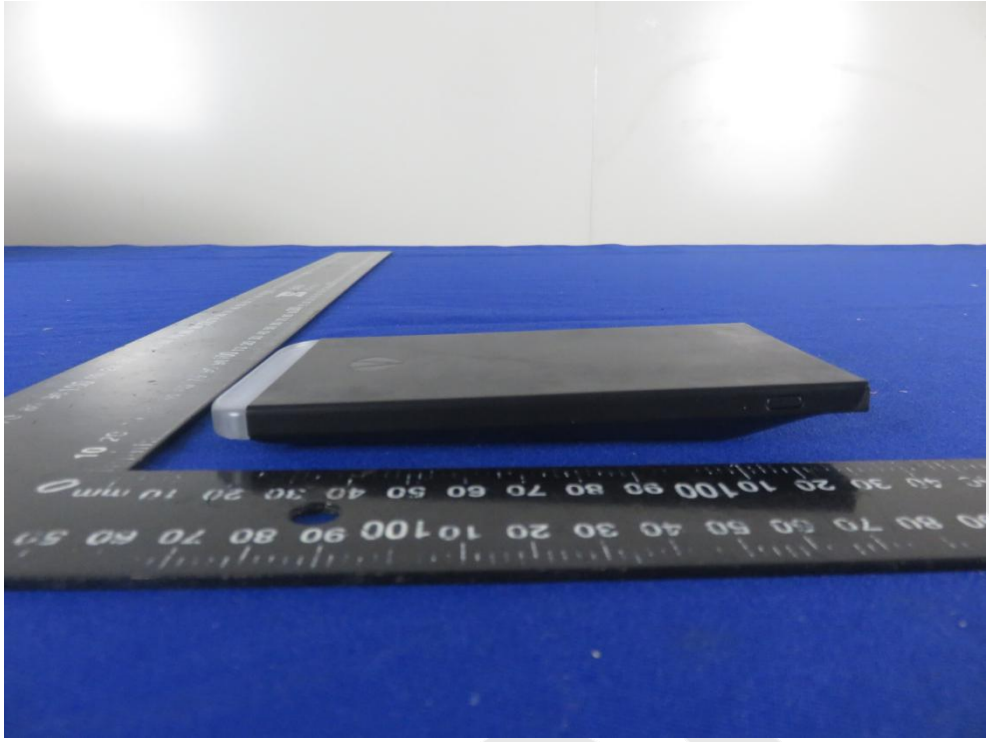


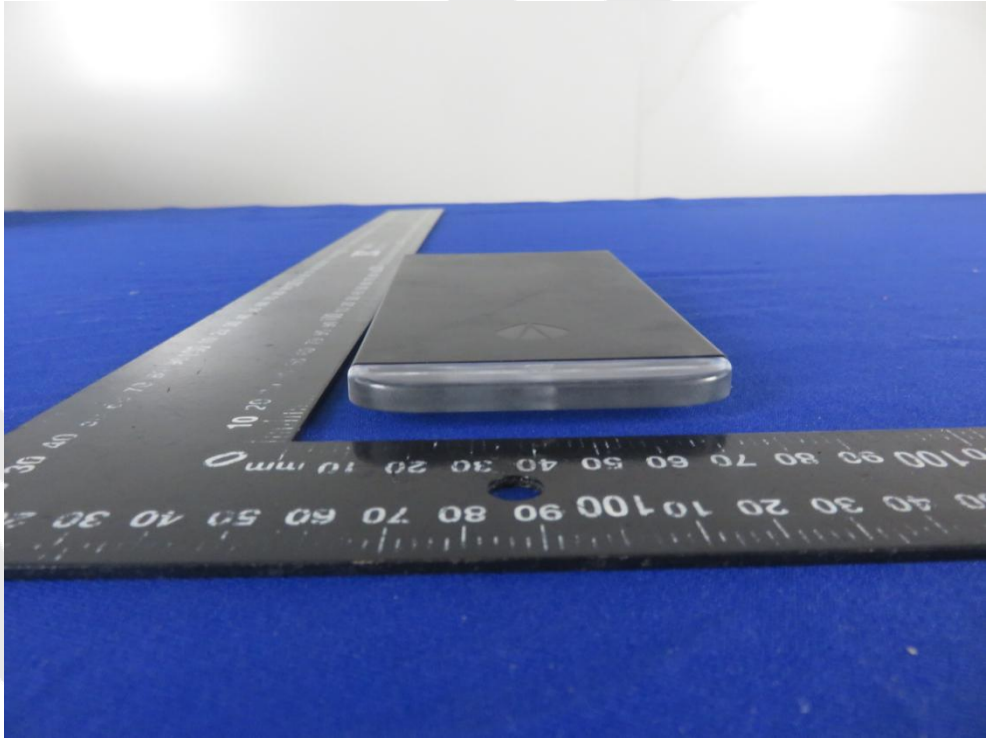


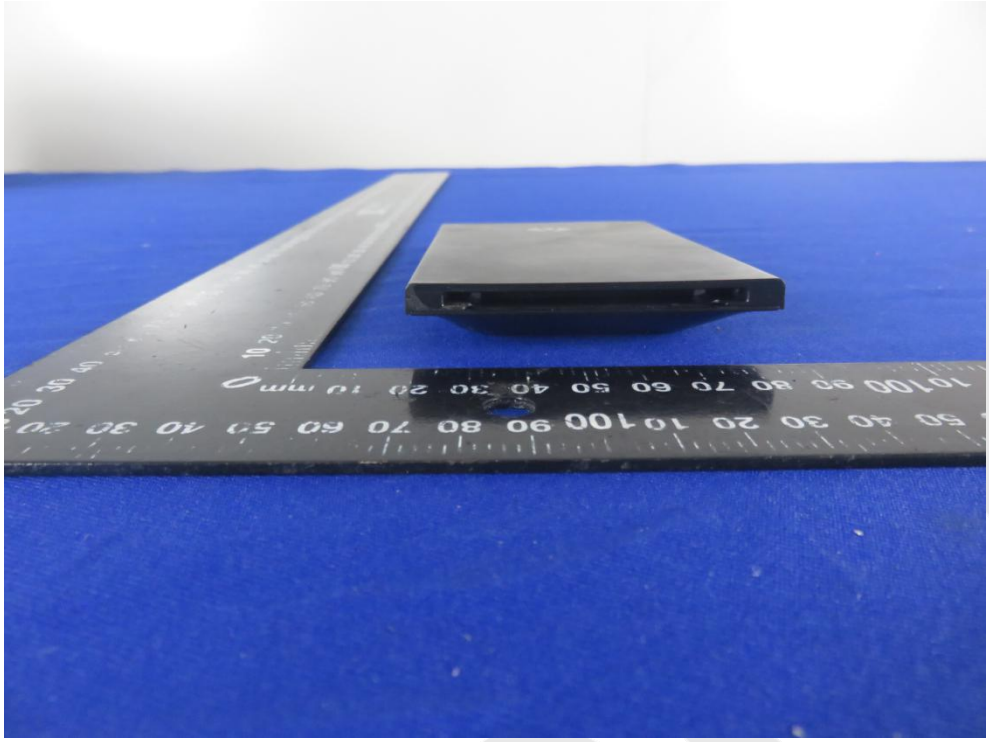




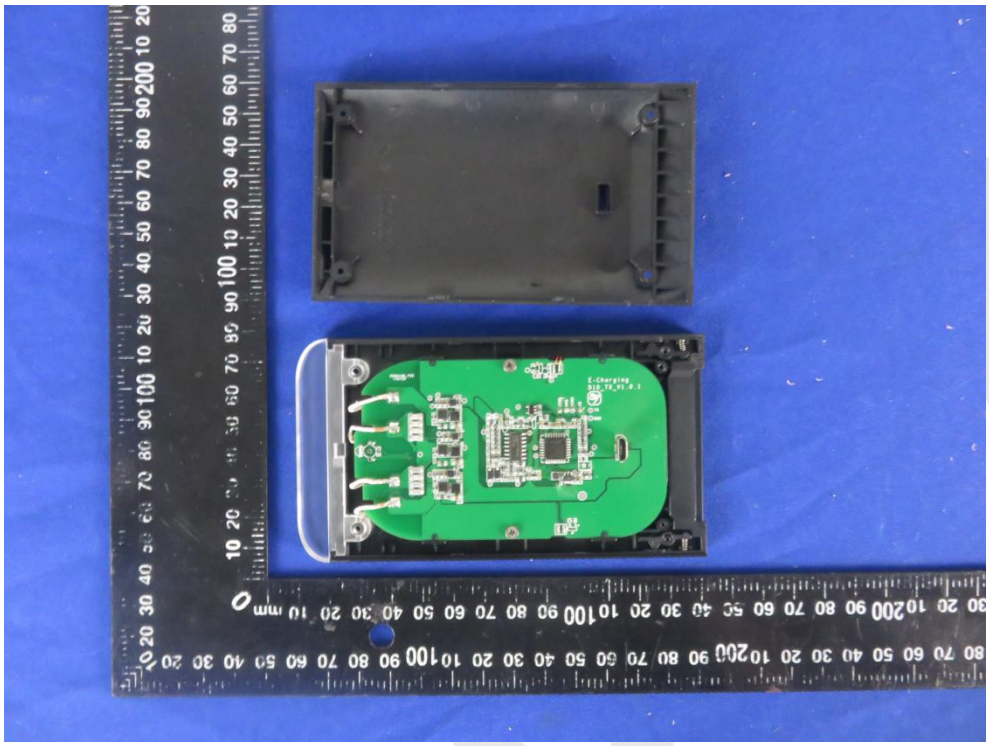


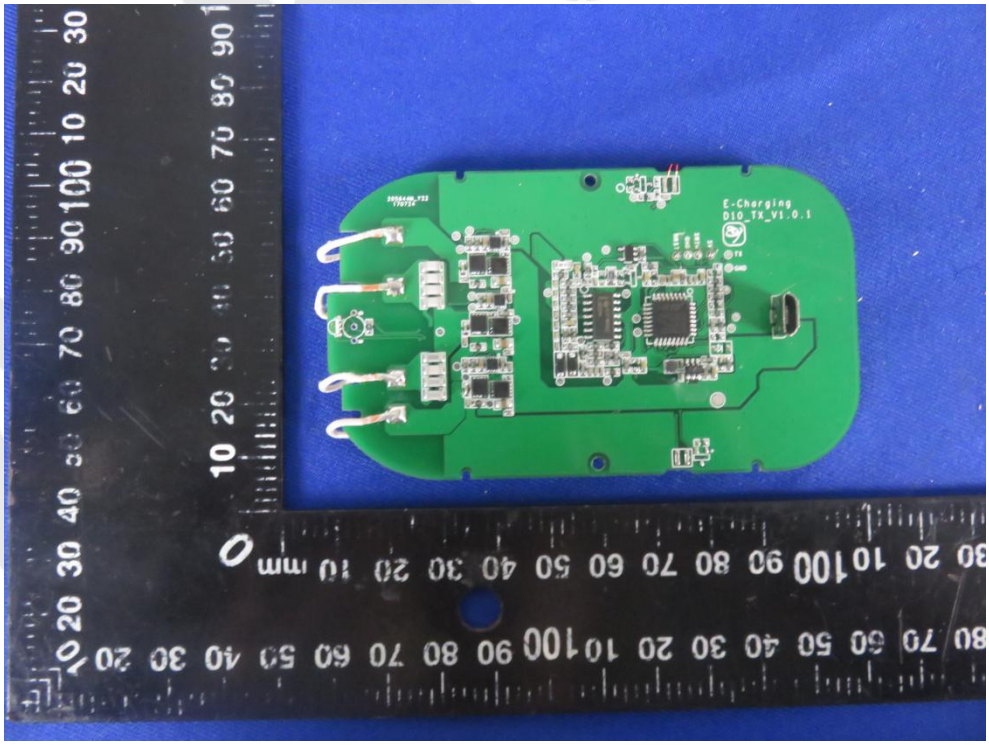


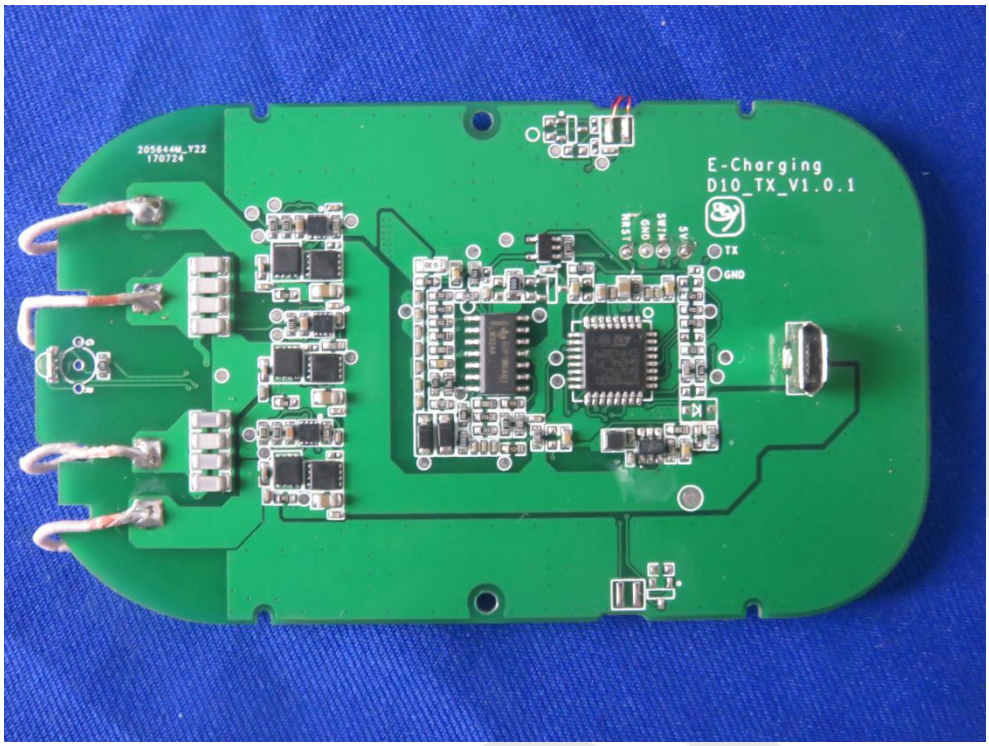
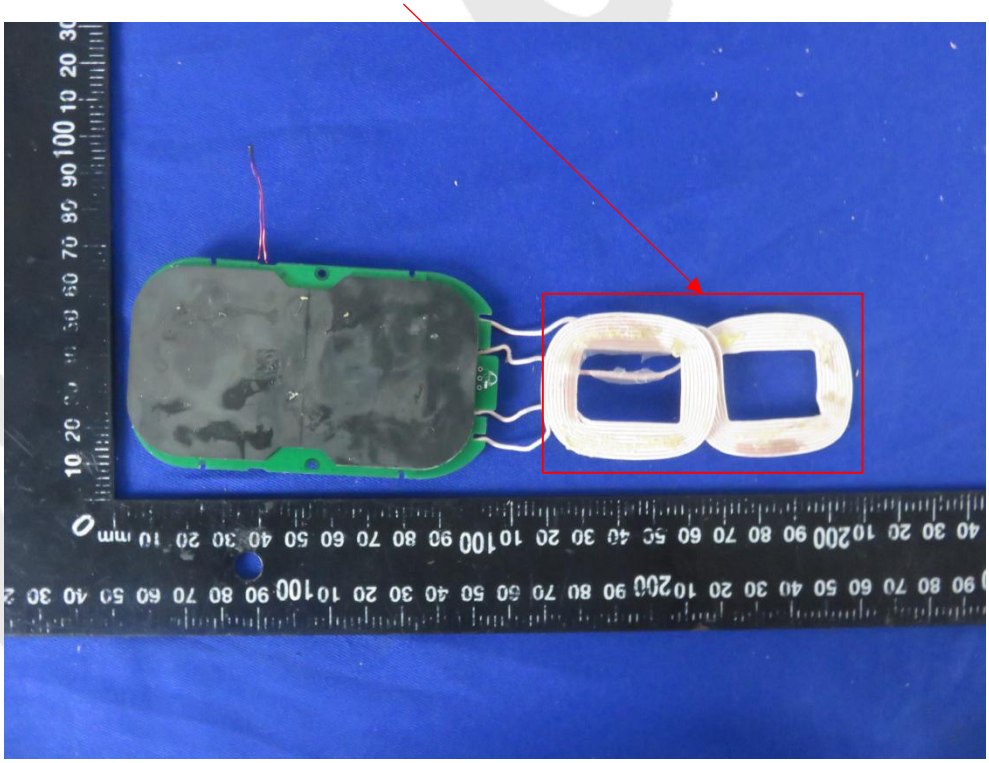
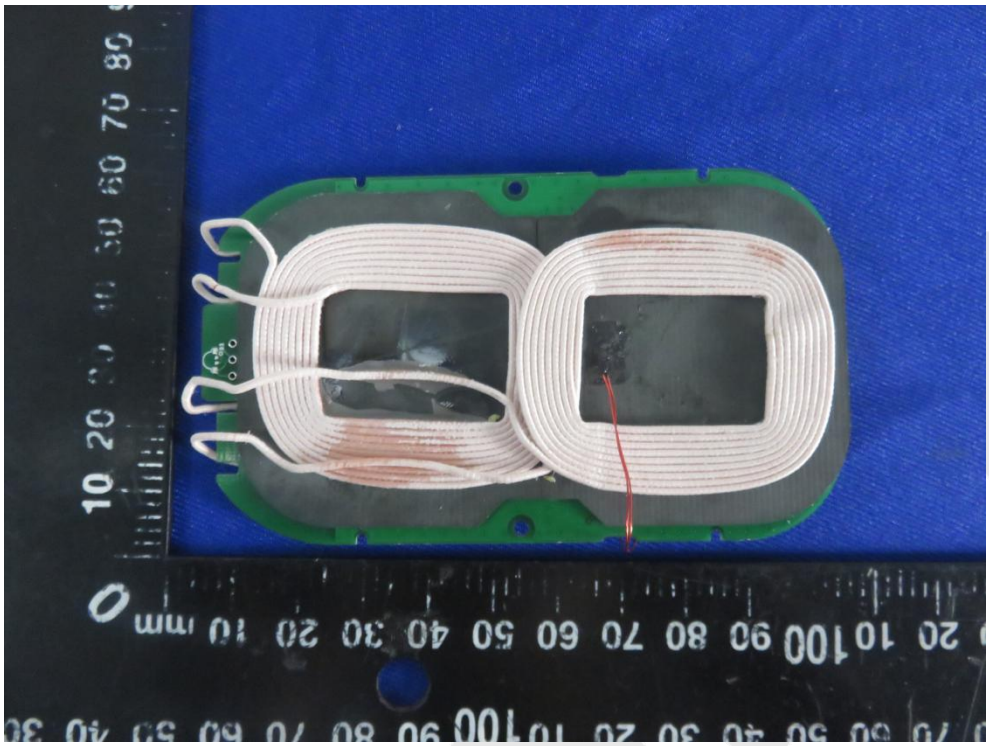




APPENDIX III -- INTERNAL PHOTOGRAPH







Inductive loop coil Antenna