FCC TEST REPORT

FCC ID: 2AQUBJT-WT223

Product Name:	Wireless Charger
Trademark:	N/A
Model Number:	JT-WT223 7141-45,12398900
Prepared For : Address :	Joytech Electronics Co., Limited 2nd Fl, Building A, Sheng Heng Ji Industrial Park, Fuyuan 1st road, Fuyong Town, Bao An district, Shenzhen, China
Prepared By : Address :	Shenzhen BCTC Testing Co., Ltd. BCTC Building & 1-2F, East of B Building, Pengzhou Industrial, Fuyuan 1st Road, Qiaotou Community, Fuyong Street, Bao'an District, Shenzhen, China
Test Date:	Jul. 12 - Jul. 20, 2018
Date of Report :	Jul. 20, 2018
Report No.:	BCTC-FY180703801-1E

TABLE OF CONTENTS

TEST REPORT DECLARATION 3
1.GENERAL INFORMATION 4
1.1. Report information 4
1.2. Measurement Uncertainty 4
1.3. Test Facility 4
1.4. Test Uncertainty 4
2.PRODUCT DESCRIPTION 5
2.1. EUT Description 5
2.2. Block Diagram of EUT Configuration 5
2.3. Test Conditions 5
2.4. Description Of Support Units (Conducted Mode) 6
3.TEST RESULTS SUMMARY 6
4.TEST EQUIPMENT USED 7
4.1. For Conducted Emission Test 7
4.2. For Radiated Emission Measurement 7
5.CONDUCTED EMISSION TEST 8
5.1. Block Diagram of Test Setup 8
5.2. Test Standard 8
5.3. Conducted Emission Limit 8
5.4. EUT Configuration on Test 8
5.5. Operating Condition of EUT 9
5.6. Test Procedure 9
5.7. Test Result 9
6.RADIATED EMISSION MEASUREMENT 14
6.1. Block Diagram of Test Setup 14
6.2. Test Standard 15
6.3. EMI Test Receiver Setup 15
6.4. Test Procedure 16
6.5. Test Result 16
7.EUT TEST PHOTOS 22
8.EUT PHOTOS 24

TEST REPORT DECLARATION

Applicant	:	Joytech Electronics Co., Limited
Address	:	2nd Fl, Building A, Sheng Heng Ji Industrial Park, Fuyuan 1st road, Fuyong Town, Bao An district, Shenzhen, China
EUT Description	:	Wireless Charger
Model Number	:	JT-WT223
Serial Model	:	7141-45,12398900

Test Standards:

FCC Part 15 C

This device described above has been tested by BCTC, and the test results show that the equipment under And it is applicable only to the tested sample identified in the report.
This report shall not be reproduced except in full, without the written approval of BCTC, this document may be altered or revised by BCTC, personal only, and shall be noted in the revision of the document.

Prepared by(Engineer):	Eric Yang	Eric Yang
Reviewer(Supervisor):	Rita Xiao	Rita Xiao
Approved(Manager):	Carson Zhang	Carson Zhang

BCTC APPROVED SHENZHEN BCTC TESTING CO., LTD.

1. GENERAL INFORMATION

1.1.Report information

1.1.1.This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that BCTC approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that BCTC in any way guarantees the later performance of the product/equipment.

1.1.2.The sample/s mentioned in this report is/are supplied by Applicant, BCTC therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

1.1.3.Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through BCTC, unless the applicant has authorized BCTC in writing to do so.

1.2.Measurement Uncertainty

Available upon request.

1.3.Test Facility

Site Description

Name of Firm	:	Shenzhen BCTC Testing Co., Ltd.
Site Location	:	BCTC Building & 1-2F, East of B Building, Pengzhou Industrial, Fuyuan 1st Road, Qiaotou Community, Fuyong Street, Bao'an District, Shenzhen, China

1.4.Test Uncertainty

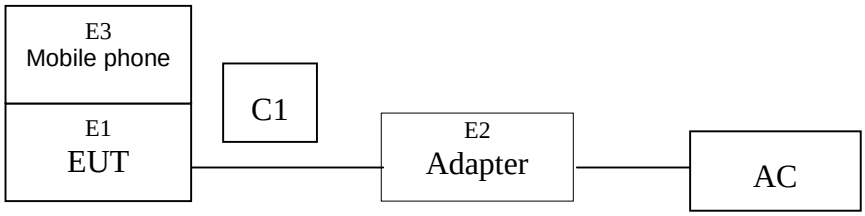
Conducted Emission Uncertainty	=	±2.66dB
Radiated Emission Uncertainty	=	±4.15dB

2. PRODUCT DESCRIPTION

2.1.EUT Description

Description	:	Wireless Charger
Applicant	:	Joytech Electronics Co., Limited 2nd Fl, Building A, Sheng Heng Ji Industrial Park, Fuyuan 1st road, Fuyong Town, Bao An district, Shenzhen, China
Manufacturer	:	Joytech Electronics Co., Limited 2nd Fl, Building A, Sheng Heng Ji Industrial Park, Fuyuan 1st road, Fuyong Town, Bao An district, Shenzhen, China
Model Number	:	JT-WT223
Serial Model	:	7141-45,12398900
Model Difference	:	All the model are the same circuit and RF module, except model names and color.
Power Supply		Input: 5V 2A / 9V 1.67A Output: 5V 1A / 9V 1.1A 5W/ 7.5W/ 10W
Work Frequency	:	100-200KHz

2.2.Block Diagram of EUT Configuration



2.3.Test Conditions

Temperature: 23~25℃

Relative Humidity: 55~63 %

2.4.Description Of Support Units (Conducted Mode)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E1	Wireless Charger	N/A	JT-WT223	N/A	EUT
E2	Adapter	N/A	BCTC-002	N/A	AC100-240V~50/60Hz 0.2A Output: 5.0V⎓ 3.0A 9.0V⎓ 2.0A
E3	Mobile phone	N/A	OPPO R9	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C1	NO	NO	1.0M	USB cable unshielded

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.
(3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

3. TEST RESULTS SUMMARY

Table 1 Test Results Summary

Test Items	Test Results
Conducted disturbance	Pass
Radiated disturbance	Pass

Remark: “N/A” means “Not applicable.”

4. TEST EQUIPMENT USED

4.1.For Conducted Emission Test

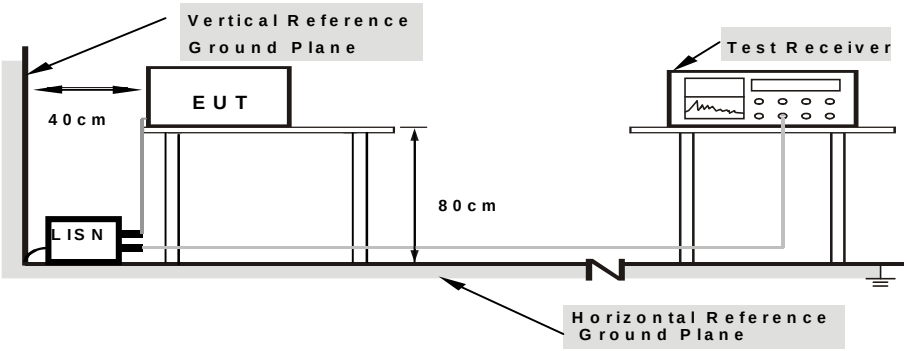
Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Test Receiver	R&S	ESCI	1166.5950K03-101165-ha	2017.08.27	2018.08.26
2	LISN	SCHWARZBECK	NSLK8127	8127739	2017.08.27	2018.08.26
3	LISN	R&S	NSLK8126	8126487	2017.08.27	2018.08.26
4	RF cables	R&S	R204	R20X	2017.08.27	2018.08.26
5	Attenuator	R&S	ESH3-Z2	143206	2017.08.27	2018.08.26

4.2.For Radiated Emission Measurement

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
5	Horn Antenna (14GHz-40GHz)	SCHWARZBECK	BBHA 9170	9170-181	2017.09.03	2018.09.02
6	Amplifier (9KHz-6GHz)	SCHWARZBECK	BBV9744	9744-0037	2017.08.27	2018.08.26
7	Amplifier (1GHz-18GHz)	SCHWARZBECK	BBV9718	9718-309	2017.08.27	2018.08.26
8	Amplifier (18GHz-40GHz)	SCHWARZBECK	BBV 9721	9721-205	2017.08.27	2018.08.26
9	Loop Antenna (9KHz-30MHz)	SCHWARZBECK	FMZB1519B	00014	2017.09.03	2018.09.02
10	RF cables1 (9kHz-1GHz)	R&S	R203	R20X	2017.08.27	2018.08.26
11	RF cables2 (1GHz-40GHz)	R&S	R204	R21X	2017.08.27	2018.08.26
12	Antenna connector	Florida RF Labs	N/A	RF 01#	2017.08.27	2018.08.26
13	Power Metter	ANRITSU	ML2487A	6K00001568	2017.08.27	2018.08.26
14	Power Sensor (AV)	ANRITSU	ML2491A	030989	2017.08.27	2018.08.26
15	Signal Analyzer 9kHz-26.5GHz	Agilent	N9010A	MY48030494	2017.08.27	2018.08.26
16	Test Receiver 20kHz-40GHz	R&S	ESU 40	100376	2017.08.27	2018.08.26
17	D.C. Power Supply	LongWei	PS-305D	010964729	2017.08.27	2018.08.26

5. CONDUCTED EMISSION TEST

5.1.Block Diagram of Test Setup



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure.
The specification used was with the FCC Part 15.207 limits.

(EUT: Wireless Charger)

5.2.Test Standard

FCC§15.207

5.3.Conducted Emission Limit

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.

5.4.EUT Configuration on Test

The following equipments are installed on conducted emission test to meet FCC Part 15.207 requirement and operating in a manner, which tends to maximize its emission characteristics in a normal application.

5.4.1.milestone dual

Model Number: **JT-WT223**

5.5.Operating Condition of EUT

5.5.1.Setup the EUT and simulators as shown in Section 5.1.

5.5.2.Turn on the power of all equipments.

5.5.3.Let the EUT work in test modes (EUT Working) and test it.

5.6.Test Procedure

The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI test receiver (R&S Test Receiver ESHS30) is used to test the emissions form both sides of AC line. The bandwidth of EMI test receiver is set at 9kHz.

The bandwidth of the test receiver (R&S Test Receiver ESHS30) is set at 10KHz.

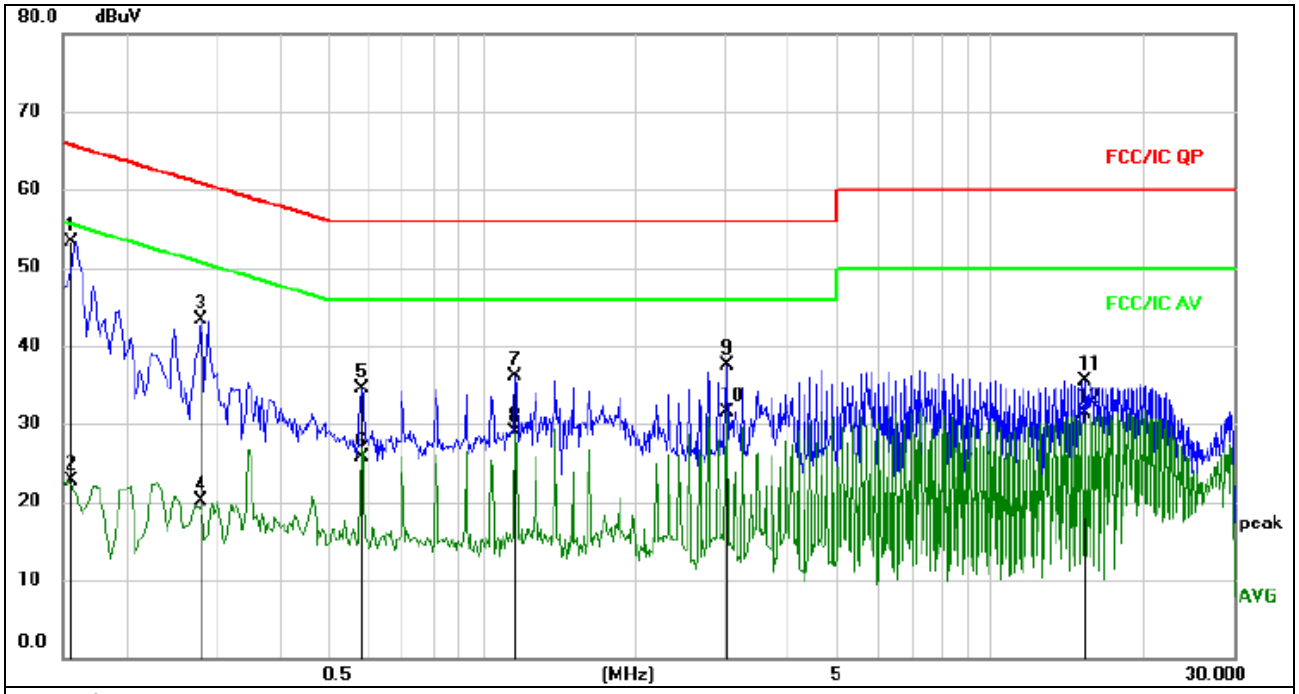
We pretest AC 120V and AC 240V, the worst voltage was AC 120V and the data recording in the report.

5.7.Test Result

PASS

Please refer to the following pages.

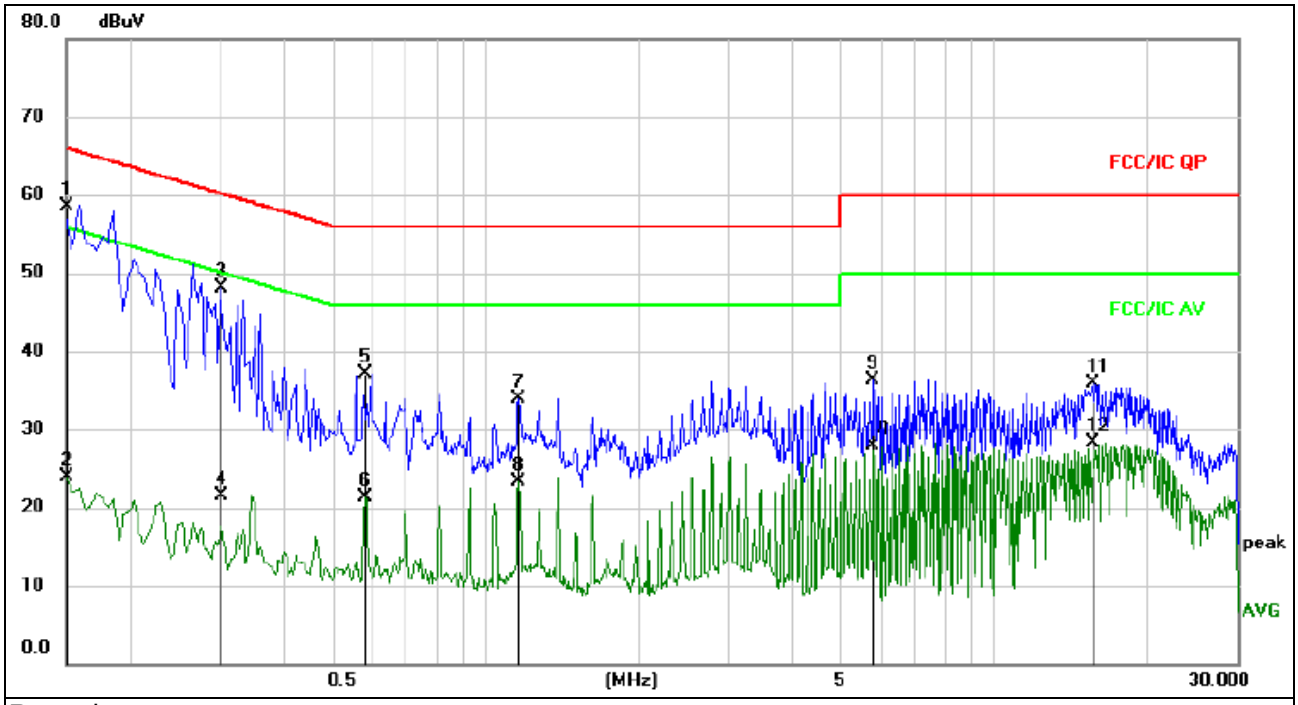
EUT:	Wireless Charger	Model Name :	JT-WT223
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	L
Test Voltage :	DC 5V (form adapter) (adapter intput:AC120V/60Hz)	Test Mode:	Normal Link



Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1548	43.57	9.77	53.34	65.74	-12.40	QP	
2		0.1548	12.86	9.77	22.63	55.74	-33.11	AVG	
3		0.2803	33.49	9.78	43.27	60.81	-17.54	QP	
4		0.2803	10.40	9.78	20.18	50.81	-30.63	AVG	
5		0.5792	24.39	10.12	34.51	56.00	-21.49	QP	
6		0.5792	15.65	10.12	25.77	46.00	-20.23	AVG	
7		1.1595	26.29	9.77	36.06	56.00	-19.94	QP	
8		1.1595	19.18	9.77	28.95	46.00	-17.05	AVG	
9		3.0253	27.77	9.83	37.60	56.00	-18.40	QP	
10		3.0253	21.59	9.83	31.42	46.00	-14.58	AVG	
11		15.3070	25.58	10.01	35.59	60.00	-24.41	QP	
12		15.3070	21.32	10.01	31.33	50.00	-18.67	AVG	

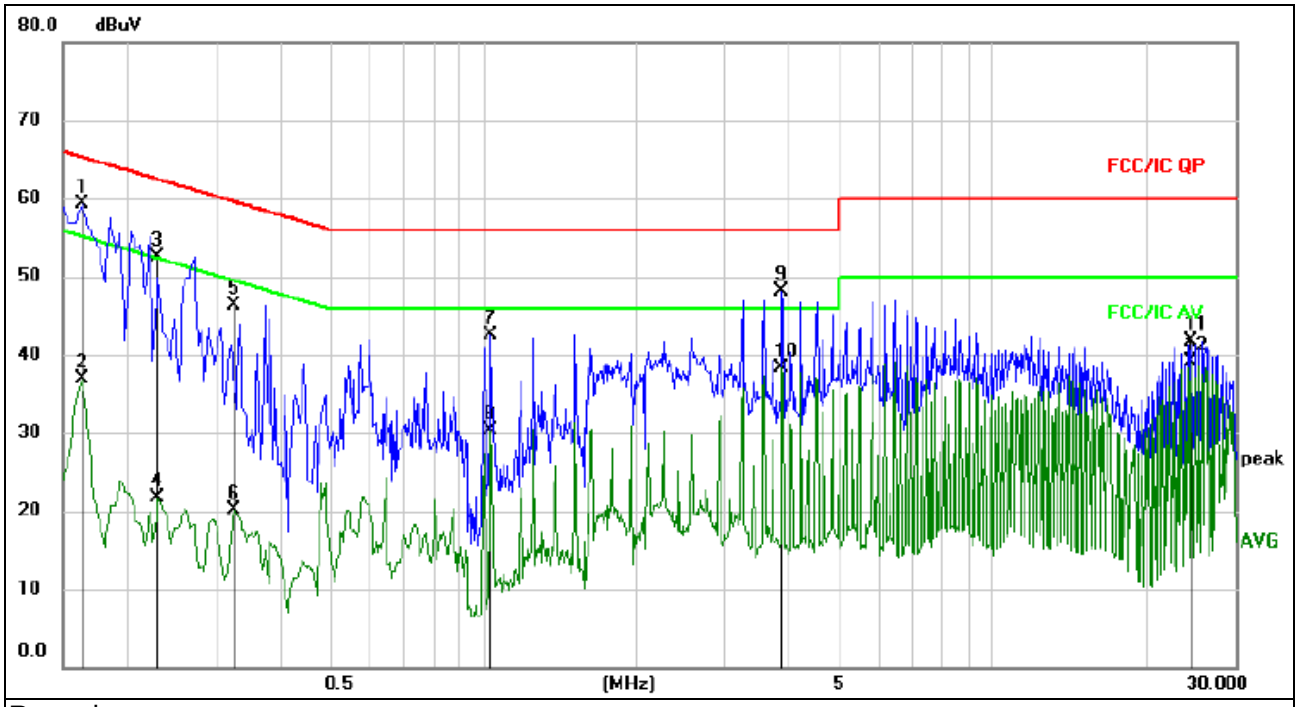
EUT:	Wireless Charger	Model Name. :	JT-WT223
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	N
Test Voltage :	DC 5V (form adapter) (adapter intput:AC120V/60Hz)	Test Mode:	Normal Link



Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1500	48.83	9.77	58.60	66.00	-7.40	QP	
2		0.1500	14.10	9.77	23.87	56.00	-32.13	AVG	
3		0.3019	38.38	9.78	48.16	60.19	-12.03	QP	
4		0.3019	11.77	9.78	21.55	50.19	-28.64	AVG	
5		0.5792	27.03	10.12	37.15	56.00	-18.85	QP	
6		0.5792	11.18	10.12	21.30	46.00	-24.70	AVG	
7		1.1595	24.21	9.77	33.98	56.00	-22.02	QP	
8		1.1595	13.57	9.77	23.34	46.00	-22.66	AVG	
9		5.7743	26.48	9.91	36.39	60.00	-23.61	QP	
10		5.7743	17.93	9.91	27.84	50.00	-22.16	AVG	
11		15.5523	25.92	10.01	35.93	60.00	-24.07	QP	
12		15.5523	18.29	10.01	28.30	50.00	-21.70	AVG	

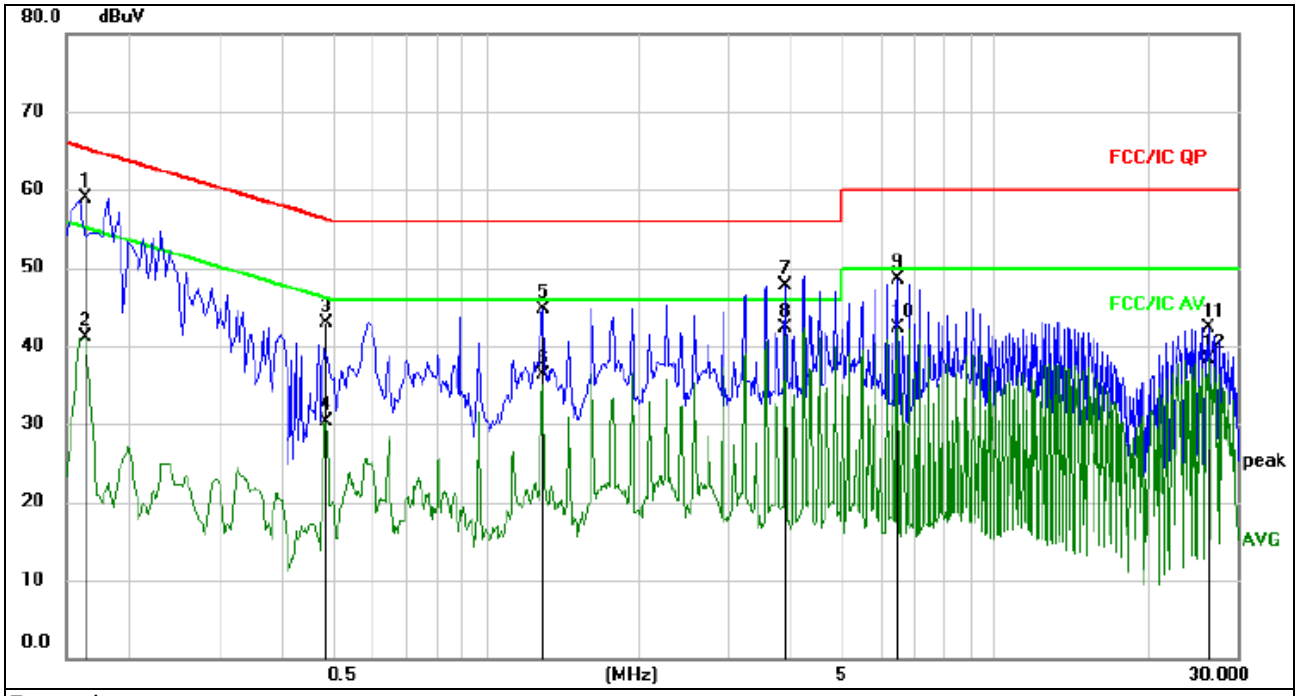
EUT:	Wireless Charger	Model Name :	JT-WT223
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	L
Test Voltage :	DC 9V (form adapter) (adapter intput:AC120V/60Hz)	Test Mode:	Normal Link



Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1633	49.53	9.77	59.30	65.29	-5.99	QP	
2		0.1633	27.04	9.77	36.81	55.29	-18.48	AVG	
3		0.2304	42.72	9.77	52.49	62.44	-9.95	QP	
4		0.2304	11.85	9.77	21.62	52.44	-30.82	AVG	
5		0.3251	36.47	9.76	46.23	59.58	-13.35	QP	
6		0.3251	10.44	9.76	20.20	49.58	-29.38	AVG	
7		1.0375	32.82	9.77	42.59	56.00	-13.41	QP	
8		1.0375	20.49	9.77	30.26	46.00	-15.74	AVG	
9		3.8603	38.26	9.86	48.12	56.00	-7.88	QP	
10		3.8603	28.48	9.86	38.34	46.00	-7.66	AVG	
11		24.5291	31.52	10.12	41.64	60.00	-18.36	QP	
12		24.5291	28.92	10.12	39.04	50.00	-10.96	AVG	

EUT：	Wireless Charger	Model Name. ：	JT-WT223
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase :	N
Test Voltage ：	DC 9V (form adapter) (adapter intput:AC120V/60Hz)	Test Mode：	Normal Link



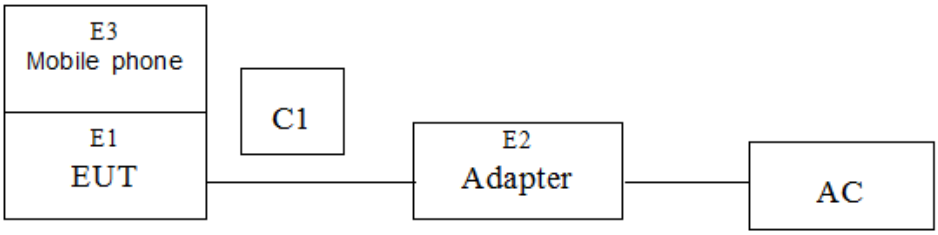
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1633	49.22	9.77	58.99	65.29	-6.30	QP	
2		0.1633	31.27	9.77	41.04	55.29	-14.25	AVG	
3		0.4863	33.12	9.78	42.90	56.23	-13.33	QP	
4		0.4863	20.56	9.78	30.34	46.23	-15.89	AVG	
5		1.2960	35.00	9.78	44.78	56.00	-11.22	QP	
6		1.2960	26.56	9.78	36.34	46.00	-9.66	AVG	
7		3.8808	37.79	9.86	47.65	56.00	-8.35	QP	
8	*	3.8808	32.50	9.86	42.36	46.00	-3.64	AVG	
9		6.4539	38.64	9.91	48.55	60.00	-11.45	QP	
10		6.4539	32.46	9.91	42.37	50.00	-7.63	AVG	
11		26.2782	32.26	10.13	42.39	60.00	-17.61	QP	
12		26.2782	28.19	10.13	38.32	50.00	-11.68	AVG	

6. RADIATED EMISSION MEASUREMENT

6.1.Block Diagram of Test Setup

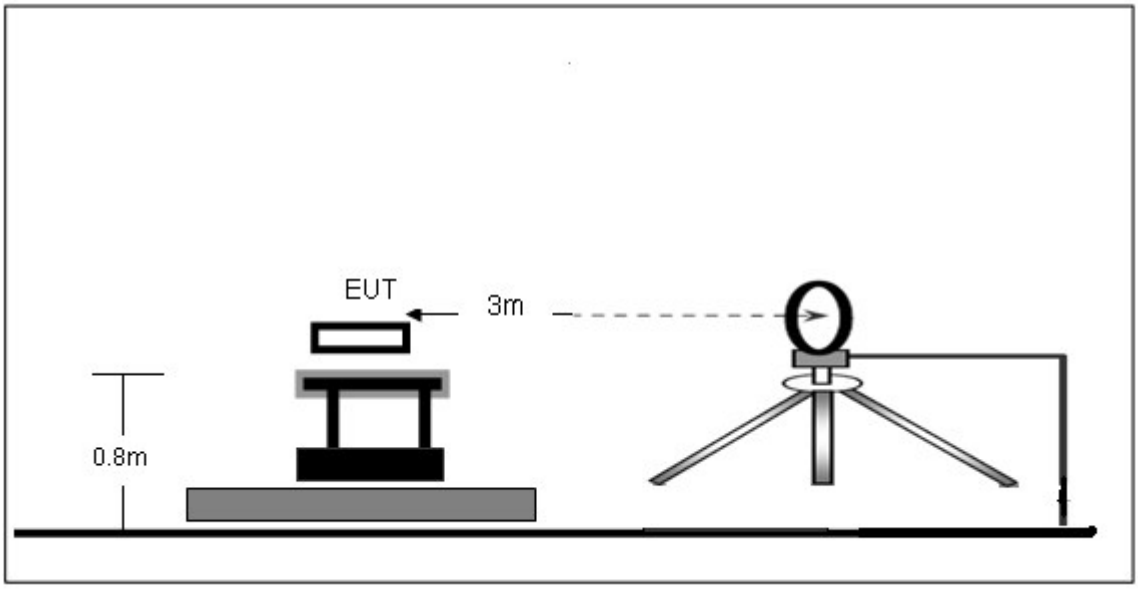
6.1.1.Block Diagram of connection between the EUT and the simulators



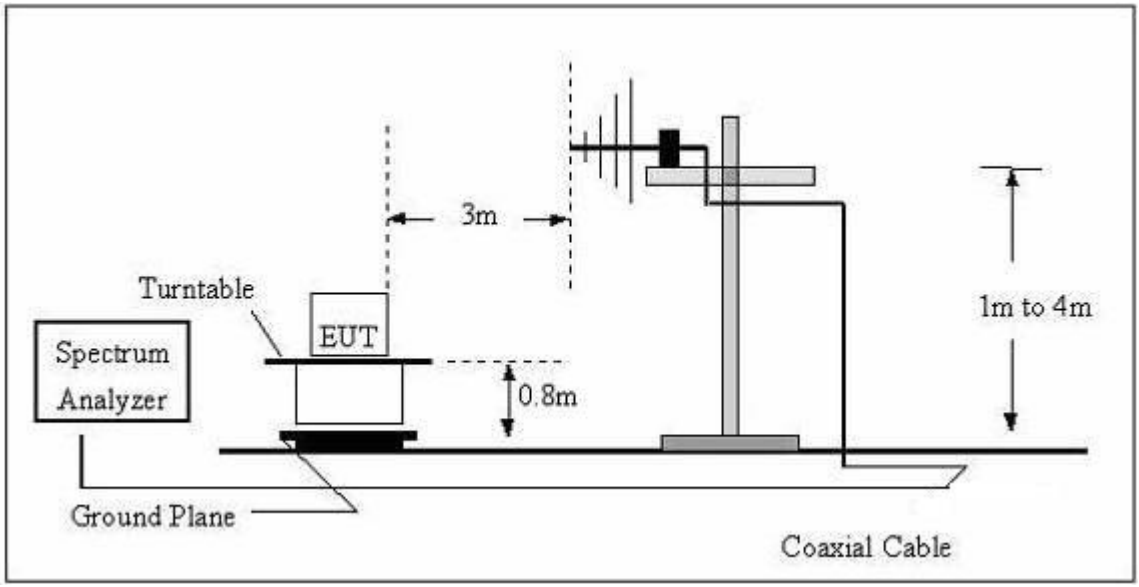
(EUT: **Wireless Charger**)

6.1.2.Anechoic Chamber Test Setup Diagram

（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209 and FCC 15.205 limits.

6.2.Test Standard

FCC §15.209; §15.205

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

6.3.EMI Test Receiver Setup

The system was investigated from 9kHz to1GHz.
During the radiated emission test, the EMI test receiver setup was set with the following configurations:

Frequency Range	RBW	Video B/W	Detector
9 kHz – 150 kHz	200 kHz	1 kHz	QP
150 kHz – 30MHz	9kHz	30kHz	QP
30 MHz – 1000 MHz	120 kHz	300 kHz	QP

Note: For the frequency bands 9-90 kHz and 110-490 kHz, the test was based on average detector.

6.4.Test Procedure

The EUT is placed on a turn table which is 0.8 meter above ground. 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 move up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna (calibrated by dipole antenna) are used as a receiving antenna. Both horizontal and vertical polarization of the antenna are set on measurement.

6.5.Test Result

PASS

Please refer to the following pages.

9kHz-30MHz

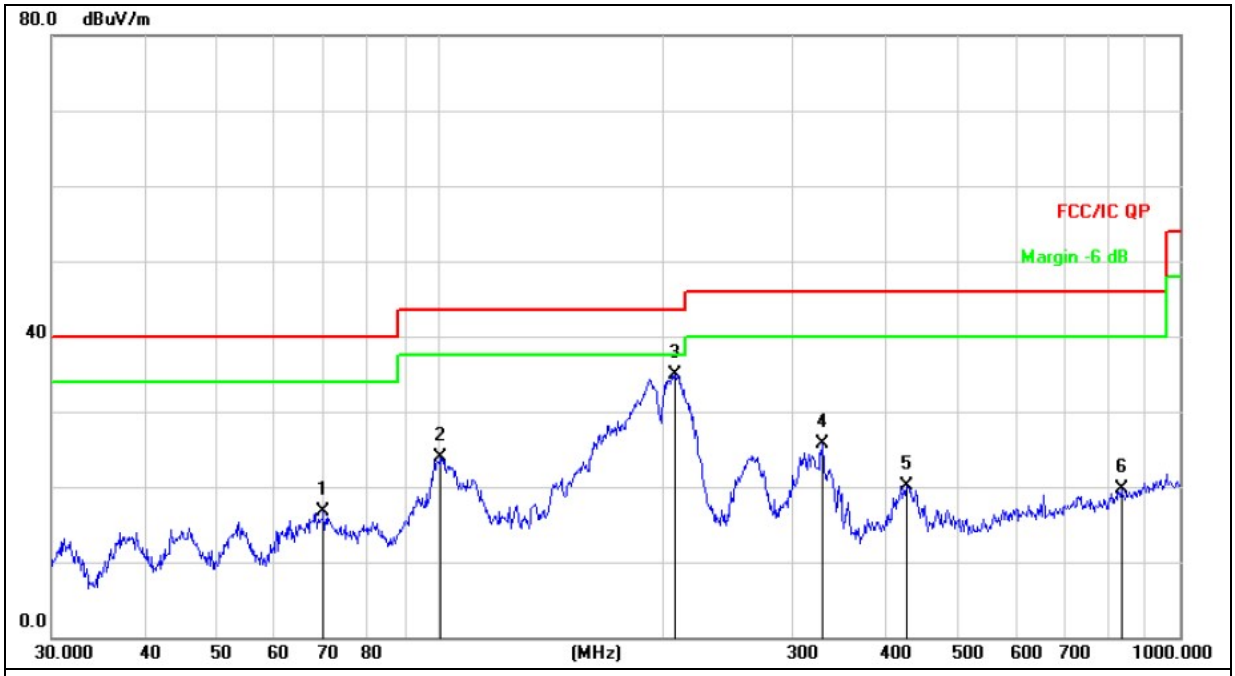
EUT：	Wireless Charger	Model Name ：	JT-WT223
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010 hPa	Polarization :	Horizontal
Test Voltage ：	DC 9V from Adapter (adapter intput:AC120V/60Hz)		
Test Mode ：	Normal Link		

Frequency (kHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
53.2500	38.58	20.15	58.73	132.08	-73.35	PK
53.2500	36.24	20.15	56.39	112.08	-55.69	AV
87.6500	49.86	20.33	70.19	138.75	-68.56	PK
87.6500	46.74	20.33	67.07	108.75	-41.68	AV
123.5000	67.65	20.55	88.20	125.77	-37.57	PK
123.5000	65.74	20.55	86.29	105.77	-19.48	AV
759.6000	31.65	20.64	52.29	69.99	-17.70	QP
853.4500	34.47	21.26	55.73	68.98	-13.25	QP
1329.2600	23.25	22.32	45.57	65.13	-19.56	QP

Note:
Pre-scan in the all of mode, the worst case in of was recorded.
Factor = antenna factor + cable loss – pre-amplifier.
Margin = Emission Level- Limit.

30MHz-1GHz

EUT:	Wireless Charger	Model Name :	JT-WT223
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	1010 hPa	Polarization :	Vertical
Test Voltage :	DC 5V Form Adapter (adapter intput:AC120V/60Hz)		
Test Mode :	Normal Link		



Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

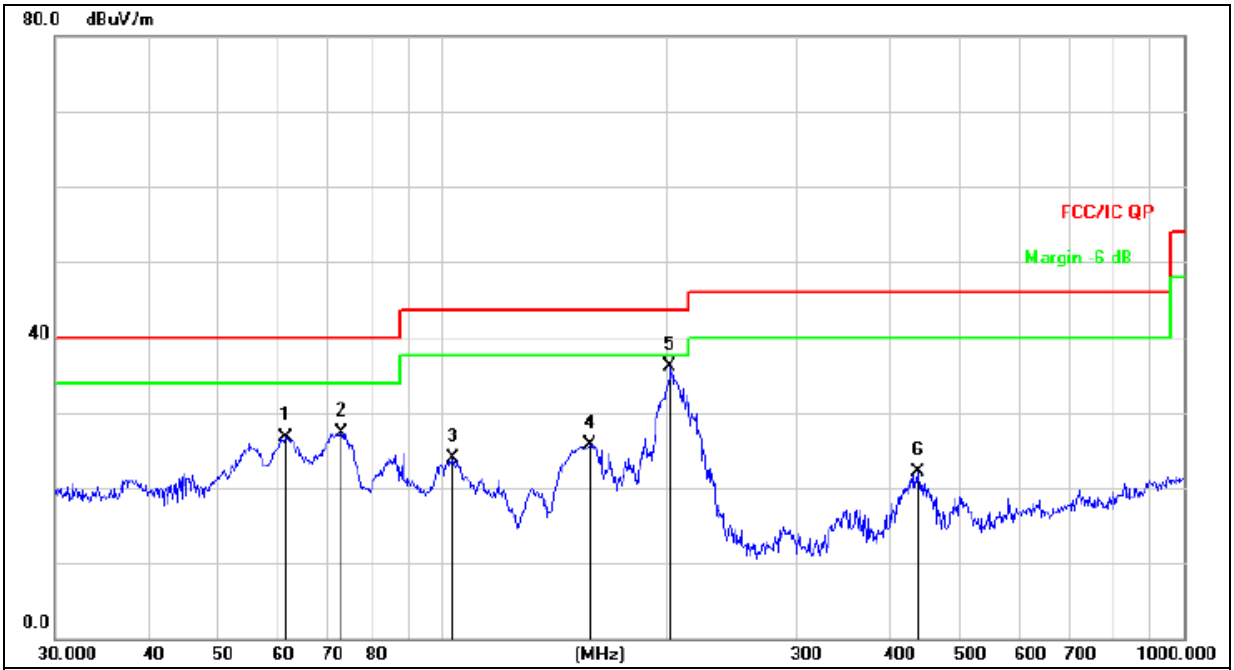
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		60.7044	44.60	-15.73	28.87	40.00	-11.13	QP
2		106.0126	40.17	-15.67	24.50	43.50	-19.00	QP
3		158.6677	44.78	-19.06	25.72	43.50	-17.78	QP
4	*	205.6751	48.73	-16.25	32.48	43.50	-11.02	QP
5		455.9058	29.90	-10.59	19.31	46.00	-26.69	QP
6		948.7610	24.15	-1.98	22.17	46.00	-23.83	QP

EUT：	Wireless Charger	Model Name ：	JT-WT223
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010 hPa	Polarization :	Horizontal
Test Voltage ：	DC 5V Form Adapter (adapter intput:AC120V/60Hz)		
Test Mode ：	Normal Link		

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		45.2166	31.15	-14.03	17.12	40.00	-22.88	QP
2		107.1337	36.96	-15.69	21.27	43.50	-22.23	QP
3		160.3456	48.05	-19.06	28.99	43.50	-14.51	QP
4	*	204.9551	52.70	-16.25	36.45	43.50	-7.05	QP
5		349.2500	37.56	-12.22	25.34	46.00	-20.66	QP
6		996.4996	23.20	-1.60	21.60	54.00	-32.40	QP

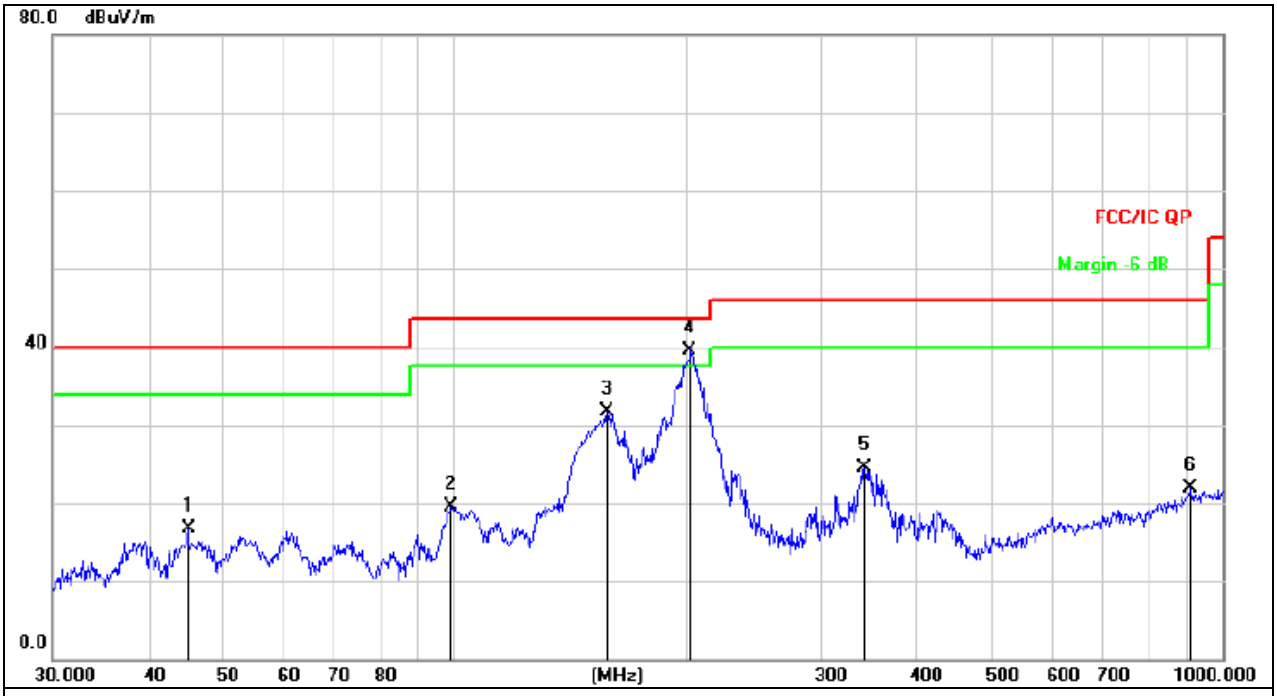
EUT：	Wireless Charger	Model Name ：	JT-WT223
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010 hPa	Polarization :	Vertical
Test Voltage ：	DC 9V Form Adapter (adapter intput:AC120V/60Hz)		
Test Mode ：	Normal Link		



Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		61.5617	42.55	-15.90	26.65	40.00	-13.35	QP
2		73.1025	45.62	-18.22	27.40	40.00	-12.60	QP
3		103.4419	39.55	-15.61	23.94	43.50	-19.56	QP
4		158.1123	44.74	-19.05	25.69	43.50	-17.81	QP
5	*	202.8103	52.39	-16.26	36.13	43.50	-7.37	QP
6		437.1198	32.88	-10.78	22.10	46.00	-23.90	QP

EUT:	Wireless Charger	Model Name :	JT-WT223
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	1010 hPa	Polarization :	Horizontal
Test Voltage :	DC 9V Form Adapter (adapter intput:AC120V/60Hz)		
Test Mode :	Normal Link		

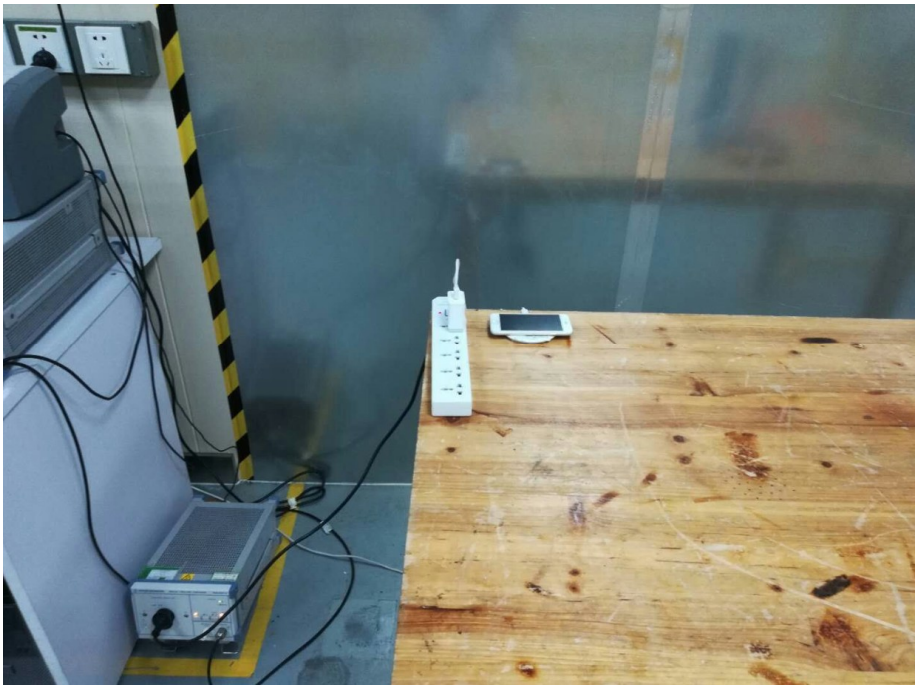


Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		45.0583	30.84	-14.04	16.80	40.00	-23.20	QP
2		99.1797	35.25	-15.70	19.55	43.50	-23.95	QP
3		158.1123	50.69	-19.05	31.64	43.50	-11.86	QP
4	*	202.8104	55.86	-16.26	39.60	43.50	-3.90	QP
5		341.9786	37.11	-12.65	24.46	46.00	-21.54	QP
6		906.4824	24.18	-2.30	21.88	46.00	-24.12	QP

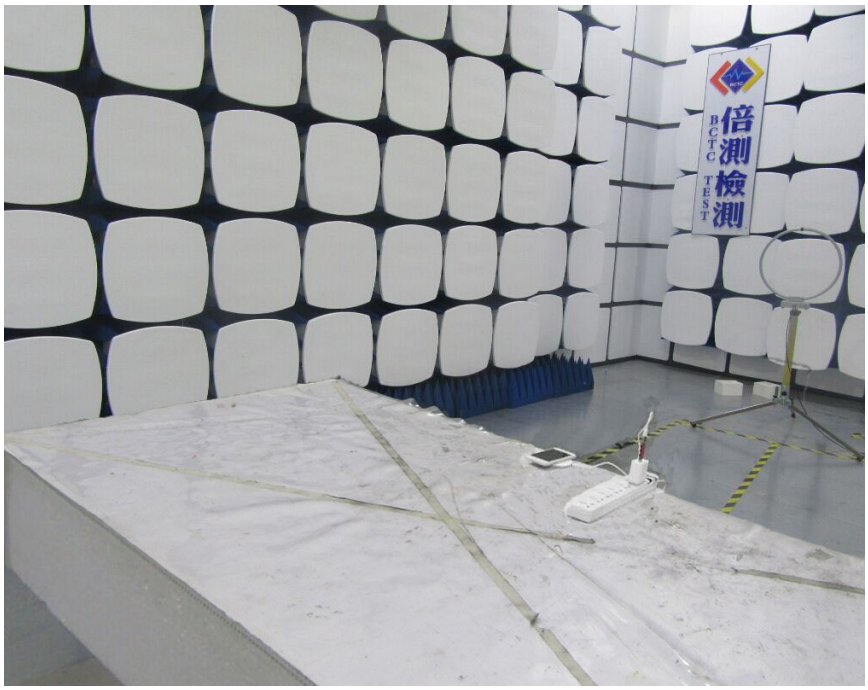
7. EUT TEST PHOTOS

Conducted Measurement Photos

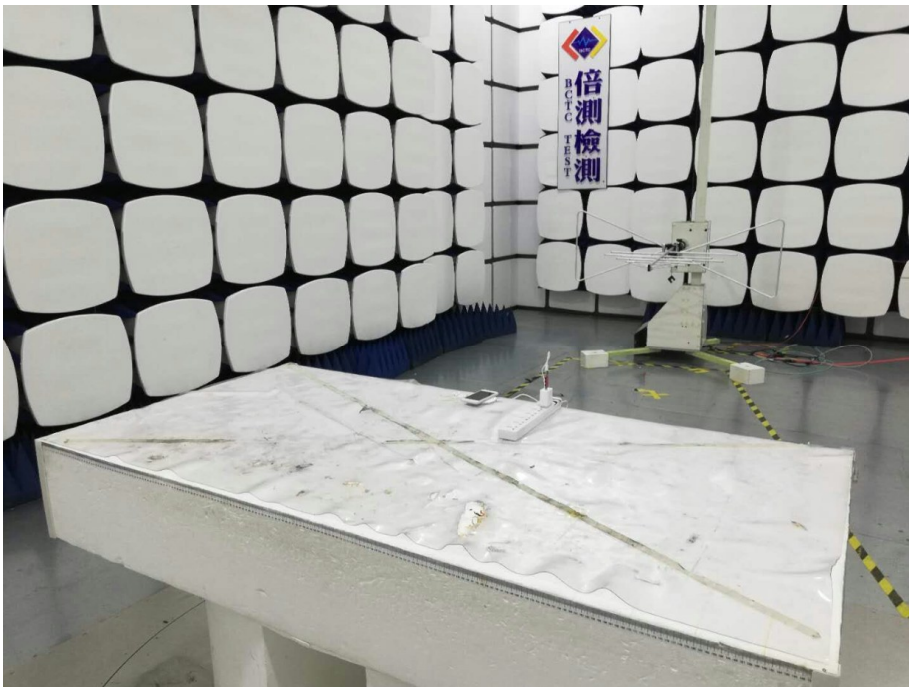


Radiated Measurement Photos

9KHz-30MHz



30MHz-1GHz



8. EUT PHOTOS

※※※※※ **END OF REPORT** ※※※※※