

FCC TEST REPORT

For

Boost Auto Parts LLC

Wireless charger modules

Model No.: 9906, MO-QT1283

Prepared For : Boost Auto Parts LLC
Address : Boost Auto Parts 2948 Kirk Road.Suite 106, #324 Aurora Illinois, United States 60502

Prepared By : Shenzhen Anbotech Compliance Laboratory Limited
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Report Number : SZAWW180716006-01
Date of Receipt : Jul. 06, 2018
Date of Test : Jul. 06~Aug. 08, 2018
Date of Report : Aug. 08, 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.....	6
1.5. List of channels.....	6
1.6. Description Of Test Setup.....	7
1.7. Test Equipment List.....	8
1.8. Measurement Uncertainty.....	9
1.9. Description of Test Facility.....	9
2. Summary of Test Results.....	10
3. Conducted Emission Test.....	11
3.1. Test Standard and Limit.....	11
3.2. Test Setup.....	11
3.3. Test Procedure.....	11
3.4. Test Data.....	11
4. Radiation Spurious Emission and Band Edge.....	14
4.1. Test Standard and Limit.....	14
4.2. Test Setup.....	14
4.3. Test Procedure.....	15
4.4. Test Data.....	16
APPENDIX I -- TEST SETUP PHOTOGRAPH.....	20
APPENDIX II -- EXTERNAL PHOTOGRAPH.....	22
APPENDIX III -- INTERNAL PHOTOGRAPH.....	23

TEST REPORT

Applicant : Boost Auto Parts LLC
Manufacturer : Qi Quick Technology Co, Ltd
Product Name : Wireless charger modules
Model No. : 9906, MO-QT1283
Trade Mark : N.A.
Rating(s) : Input: DC 12V, 2A
Output: 10W Max

Test Standard(s) : FCC Part15 Subpart C 2017, Paragraph 15.209
Test Method(s) : ANSI C63.10: 2013

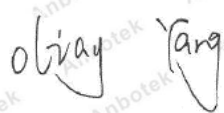
The device described above is tested by Shenzhen Anbotech Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen 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

Jul. 06~Aug. 08, 2018

Prepared by

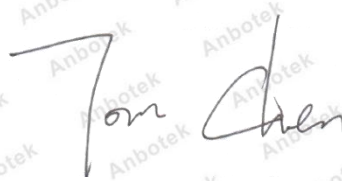

(Engineer / Oliay Yang)

Reviewer




(Supervisor / Calvin Liu)

Approved & Authorized Signer


(Manager / Tom Chen)

1. General Information

1.1. Client Information

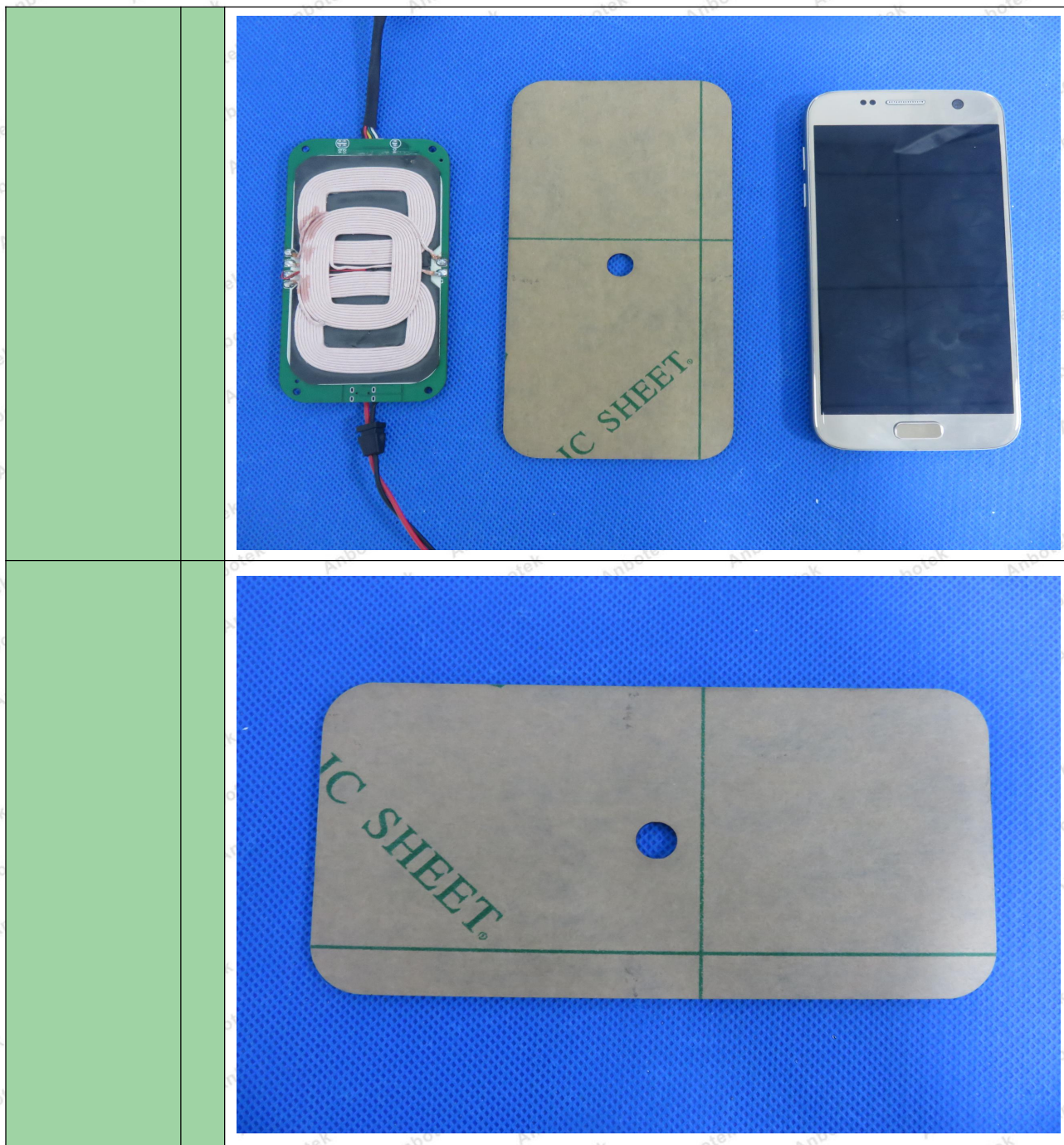
Applicant	:	Boost Auto Parts LLC
Address	:	Boost Auto Parts 2948 Kirk Road.Suite 106, #324 Aurora Illinois, United States 60502
Manufacturer	:	Qi Quick Technology Co, Ltd
Address	:	Room 1204-1210, Floor 12th Jiajun Center, No.8 Changdong Road changping, Dongguan, Guangdong, China

1.2. Description of Device (EUT)

Product Name	:	Wireless charger modules
Model No.	:	9906, MO-QT1283 (Note: All samples are the same except the model number, so we prepare "9906" for test only.)
Trade Mark	:	N.A.
Test Power Supply	:	DC 12V
Test Sample No.	:	S1, S2
Product Description	Operation Frequency:	111-205KHz
	Number of Channel:	20 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	:	Model: A2013 Input: 100-240V 50-60Hz 0.7A Output: 3.6-6.5V=== 3A/ 6.5-9V=== 2A/ 9-12V=== 1.5A
Mobile Phone	:	Manufacturer: SAMSUNG
		M/N: SM-G9550 S/N: R28J636WJ1B CE , FCC, DOC



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	CH01
Mode 2	CH10
Mode 3	CH20
Mode 4	Keeping TX+Charging mode

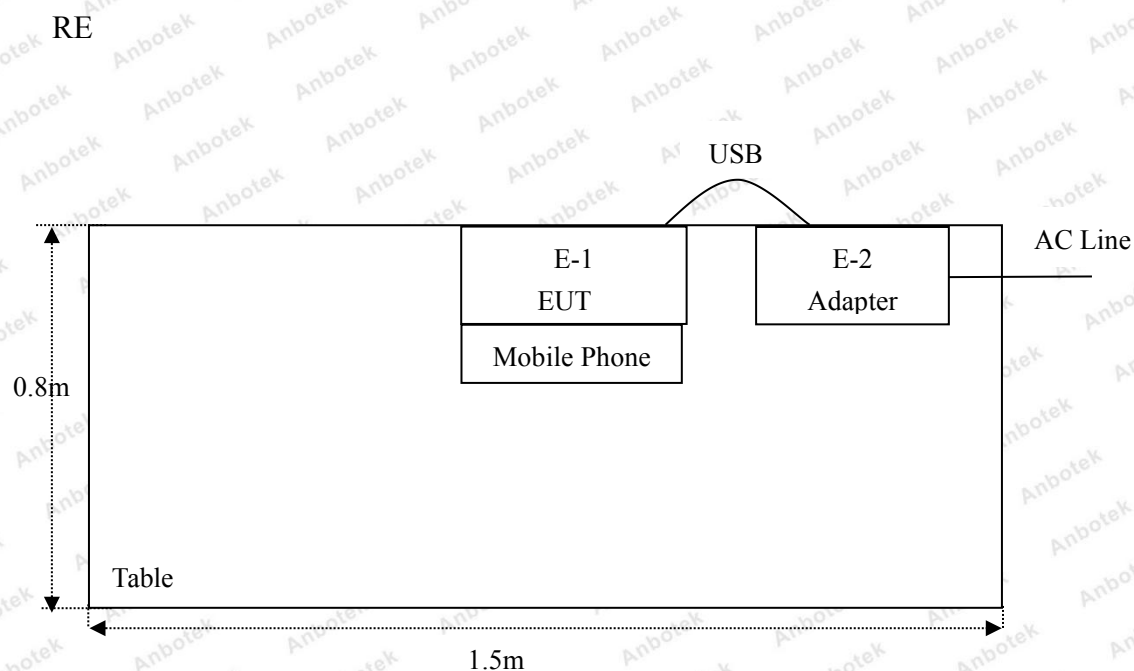
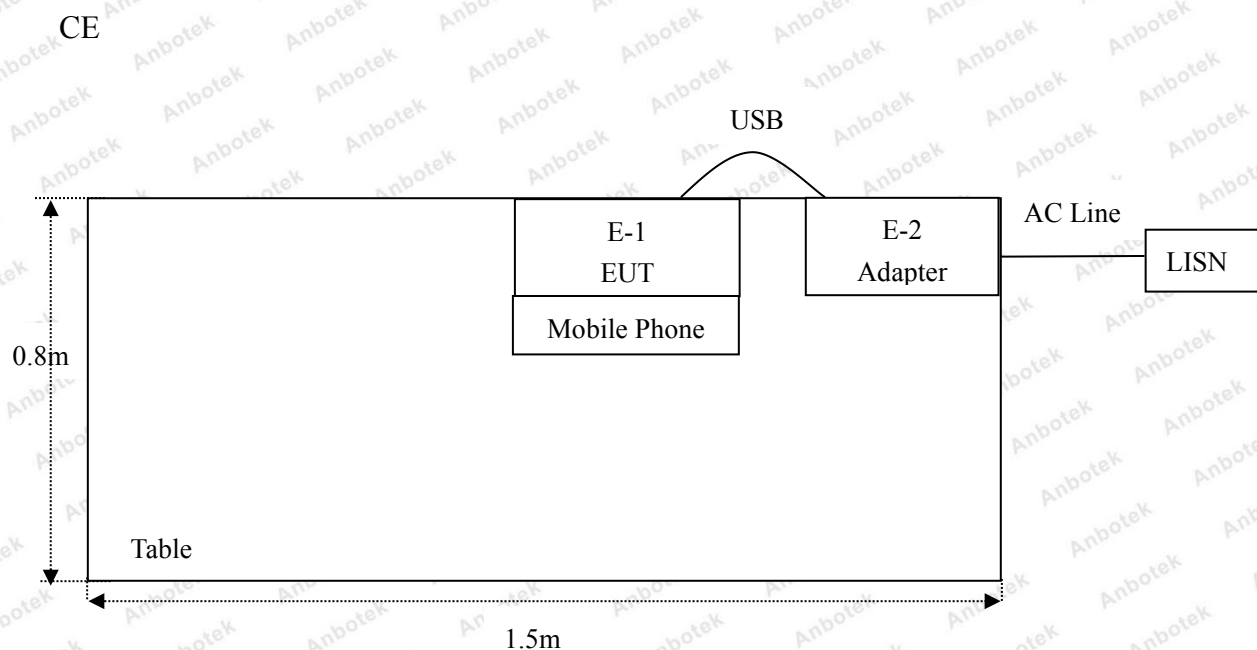
For Conducted Emission	
Final Test Mode	Description
Mode 4	Keeping TX+Charging mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	CH01
Mode 2	CH10
Mode 3	CH20
Mode 4	Keeping TX+Charging mode

1.5. List of channels

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
1	0.111	6	0.135	11	0.160	16	0.185
2	0.115	7	0.140	12	0.165	17	0.190
3	0.120	8	0.145	13	0.170	18	0.195
4	0.125	9	0.150	14	0.175	19	0.200
5	0.130	10	0.155	15	0.180	20	0.205

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	BK1G18G30D	KD17503	Nov. 17, 2017	1 Year
7.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	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-HWHS80B	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

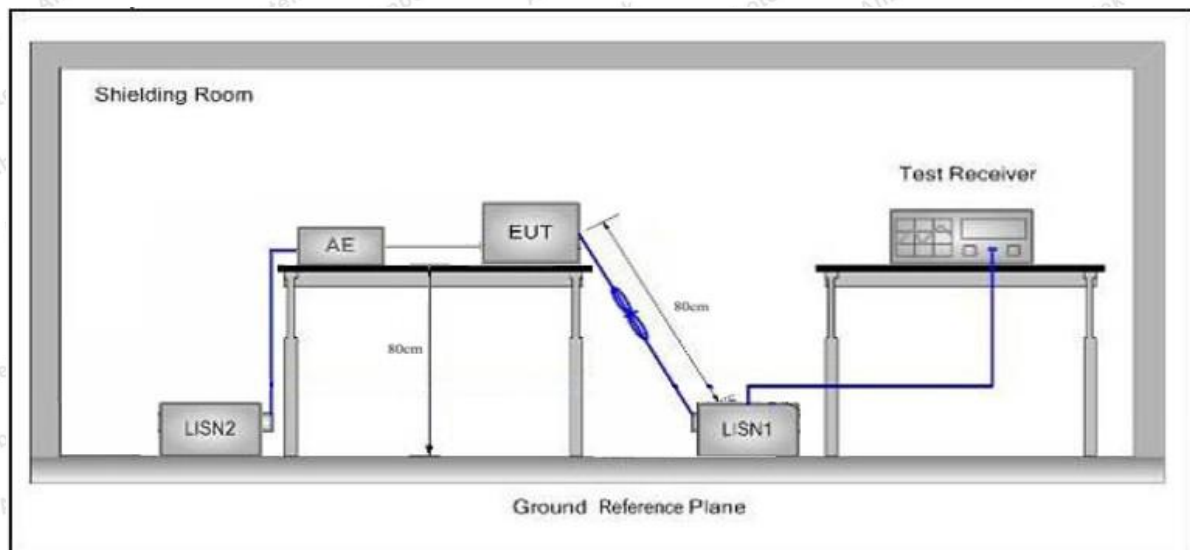
Standard Section	Test Item	Result
FCC Part 15, Paragraph 15.207	Conducted Emission Test	PASS
FCC Part 15, Paragraph 15.209(a)(f)	Spurious Emission	PASS

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.

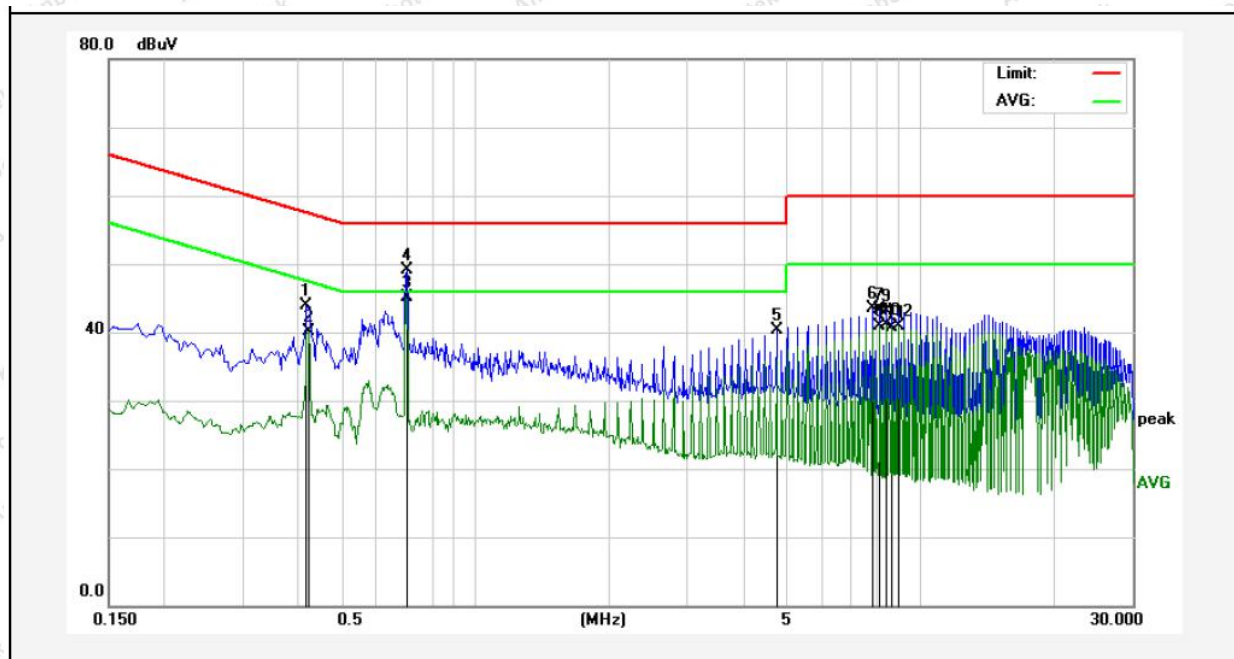
The frequency range from 150kHz to 30MHz is checked.

3.4. Test Data

Please to see the following pages

Conducted Emission Test Data

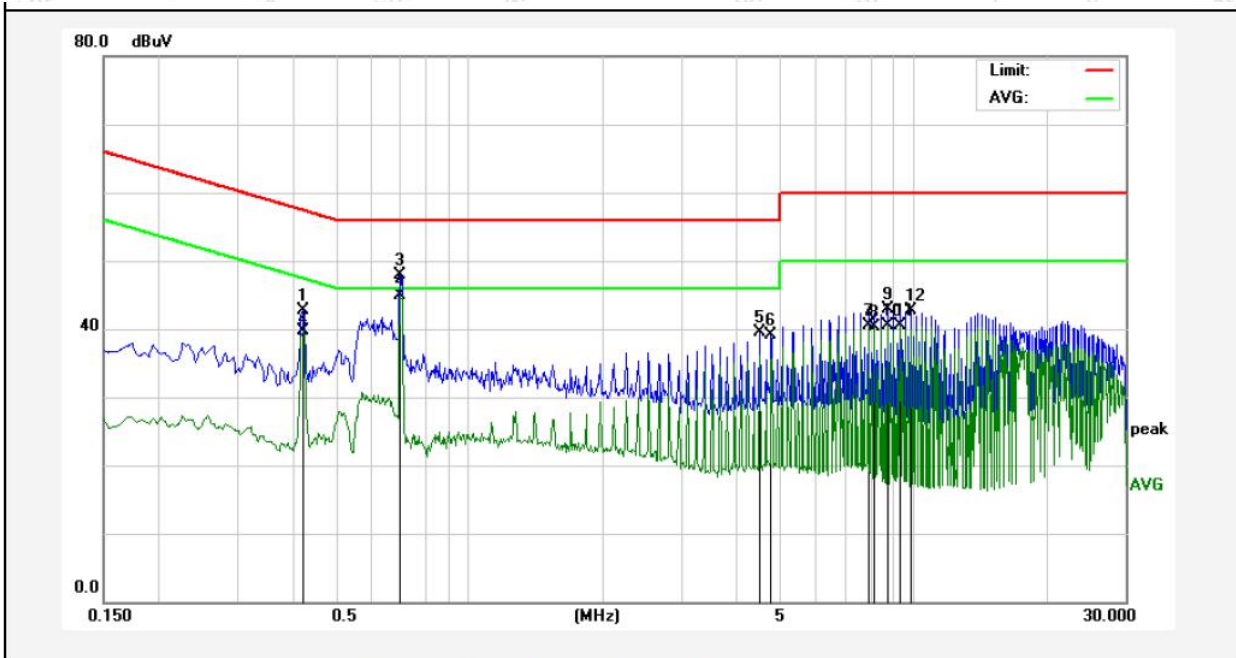
Test Site: 1# Shielded Room
Operating Condition: Keeping TX+Charging mode
Test Specification: DC 12V
Comment: Live Line
Tem.: 22.2°C Hum.: 59%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.4180	24.05	19.94	43.99	57.49	-13.50	QP	
2	0.4220	20.21	19.94	40.15	47.41	-7.26	AVG	
3	0.6980	25.07	20.04	45.11	46.00	-0.89	AVG	
4	0.7019	29.00	20.04	49.04	56.00	-6.96	QP	
5	4.7538	20.13	20.20	40.33	56.00	-15.67	QP	
6	7.8299	23.16	20.28	43.44	60.00	-16.56	QP	
7	8.1099	22.97	20.29	43.26	60.00	-16.74	QP	
8	8.1099	20.65	20.29	40.94	50.00	-9.06	AVG	
9	8.3899	22.87	20.30	43.17	60.00	-16.83	QP	
10	8.3899	20.89	20.30	41.19	50.00	-8.81	AVG	
11	8.6699	20.31	20.30	40.61	50.00	-9.39	AVG	
12	8.9499	20.65	20.31	40.96	50.00	-9.04	AVG	

Conducted Emission Test Data

Test Site: 1# Shielded Room
Operating Condition: Keeping TX+Charging mode
Test Specification: DC 12V
Comment: Neutral Line
Tem.: 22.2°C Hum.: 59%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.4220	22.71	19.94	42.65	57.41	-14.76	QP	
2	0.4220	19.83	19.94	39.77	47.41	-7.64	AVG	
3	0.6980	27.80	20.04	47.84	56.00	-8.16	QP	
4	0.6980	24.91	20.04	44.95	46.00	-1.05	AVG	
5	4.5139	19.33	20.19	39.52	56.00	-16.48	QP	
6	4.7938	18.96	20.20	39.16	56.00	-16.84	QP	
7	7.8979	20.19	20.28	40.47	50.00	-9.53	AVG	
8	8.1819	20.04	20.29	40.33	50.00	-9.67	AVG	
9	8.7459	22.61	20.31	42.92	60.00	-17.08	QP	
10	8.7459	20.21	20.31	40.52	50.00	-9.48	AVG	
11	9.3099	20.22	20.32	40.54	50.00	-9.46	AVG	
12	9.8739	22.38	20.34	42.72	60.00	-17.28	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

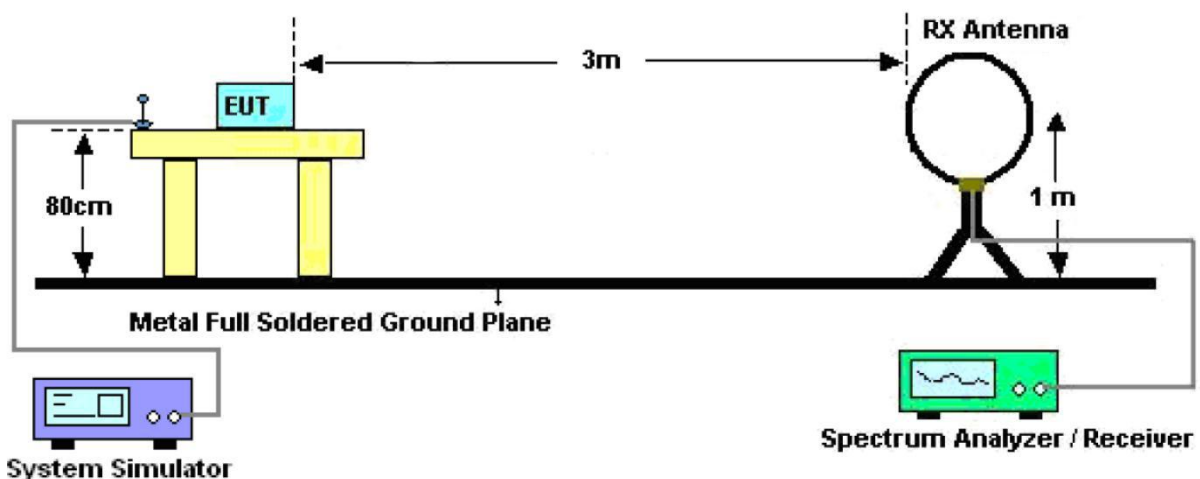


Figure 1. Below 30MHz

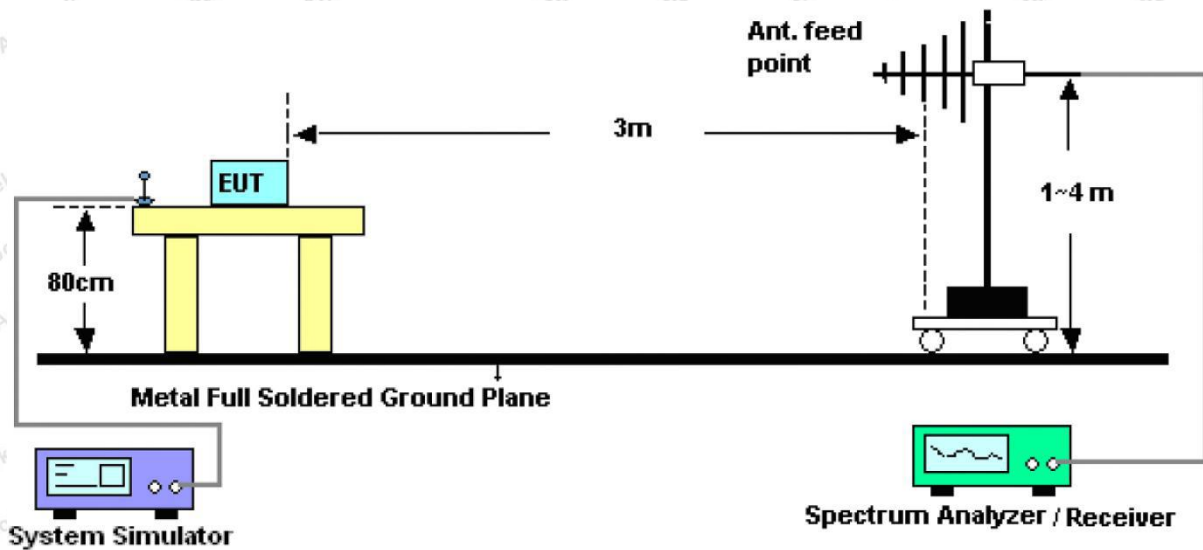


Figure 2. 30MHz to 1GHz

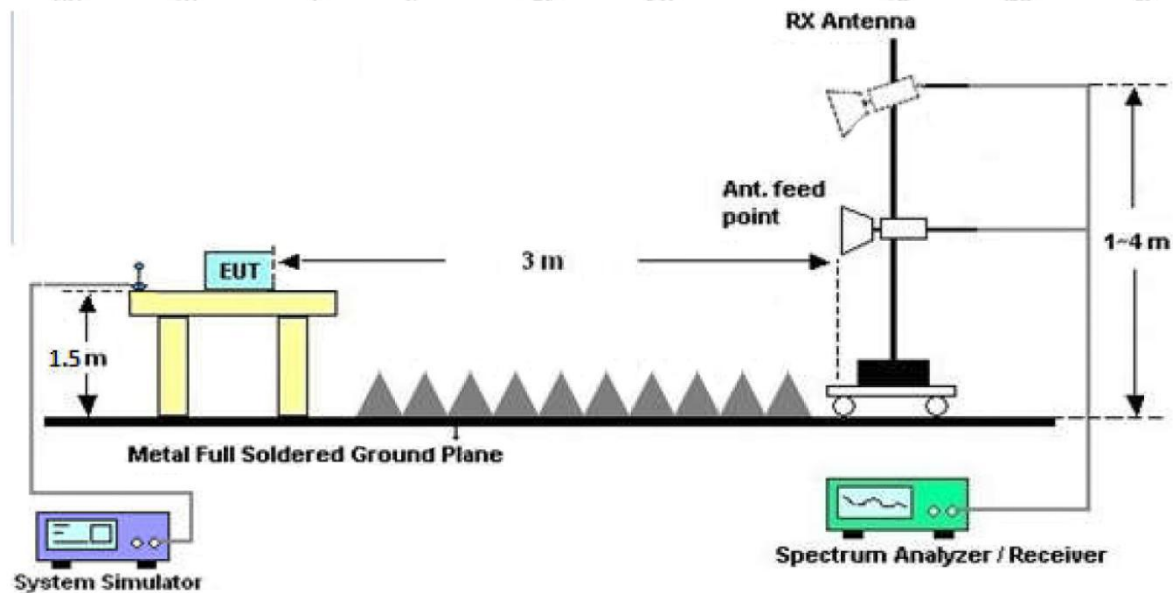


Figure 3. Above 1 GHz

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.: SZAWW180716006-01

Standard: FCC PART15 C_3m

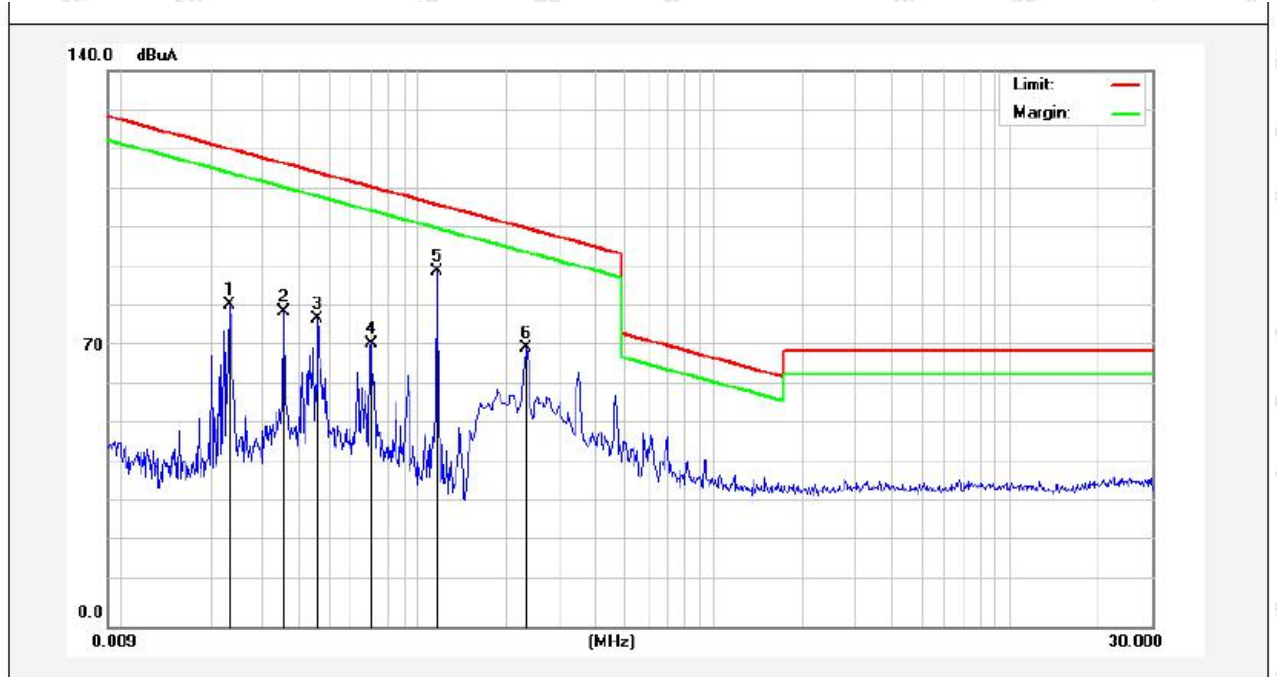
Power Source: DC 12V

Test item: Radiation Test

Temp.(°C)/Hum.(%RH): 25.4(°C)/54%RH

Test Mode: Mode 4

Distance: 3m



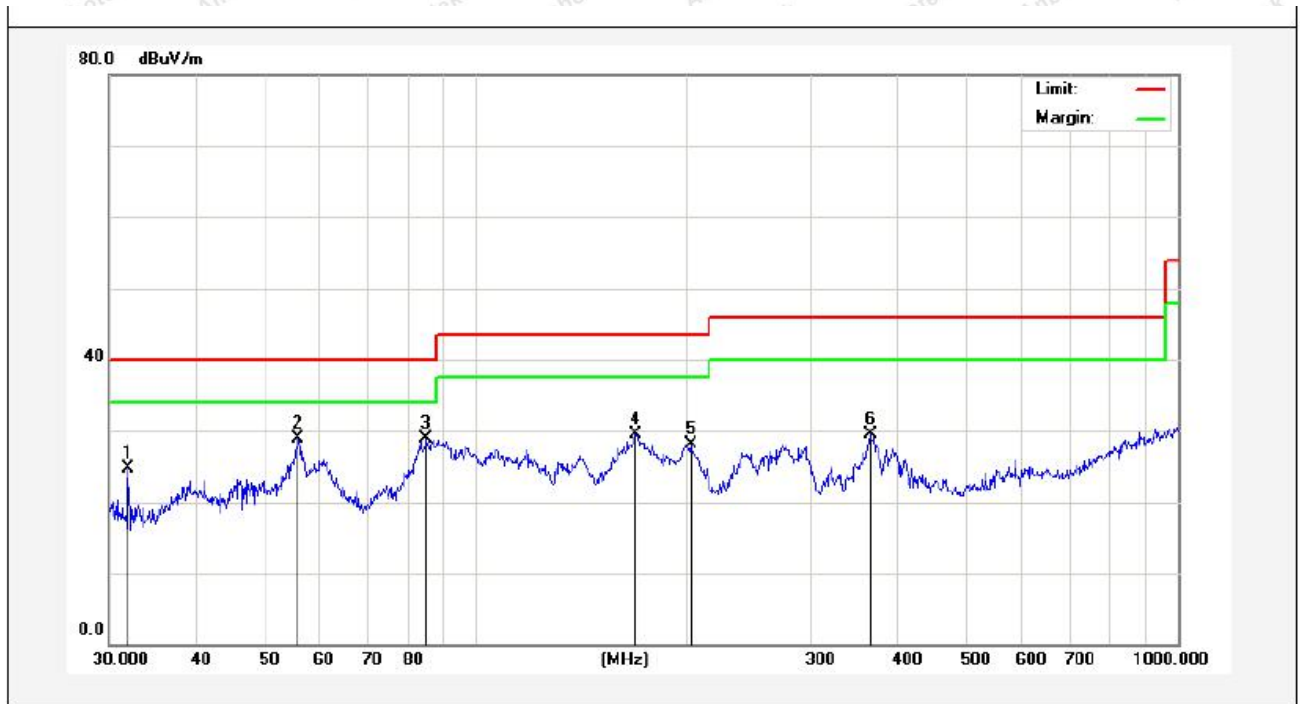
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	degree (dgc)
0.0232	68.32	19.30	2.53	0	90.15	140.22	-50.07	Peak	236
0.0232	59.16	19.30	2.53	0	80.99	120.22	-39.23	AV	236
0.0355	67.73	19.30	2.53	0	89.56	136.27	-46.71	Peak	198
0.0355	57.51	19.30	2.53	0	79.34	116.27	-36.93	AV	198
0.0463	64.70	19.30	2.53	0	86.53	134.15	-47.62	Peak	260
0.0463	55.58	19.30	2.53	0	77.41	114.15	-36.74	AV	260
0.0696	58.73	19.29	2.54	0	80.56	130.43	-49.87	Peak	315
0.0696	49.30	19.29	2.54	0	71.13	110.43	-39.30	AV	315
0.1163	75.14	19.63	2.59	0	97.36	126.04	-28.68	Peak	66
0.1163	67.32	19.63	2.59	0	89.54	106.04	-16.50	AV	66
0.2430	58.43	19.63	2.59	0	80.65	119.95	-39.30	Peak	23
0.2430	47.87	19.63	2.59	0	70.09	99.95	-29.86	AV	23

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)

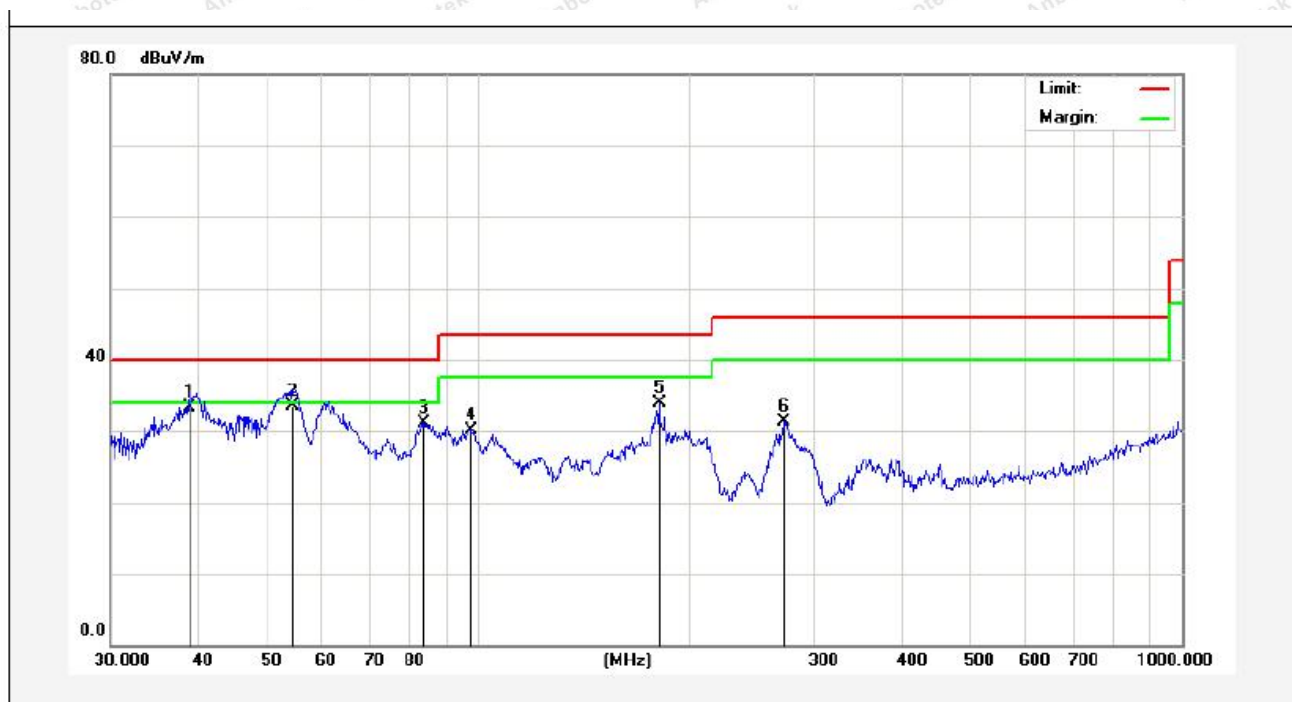
Job No.: SZAWW180716006-01
Standard: FCC PART15 C_3m
Test item: Radiation Test
Test Mode: Mode 4

Polarization: Horizontal
Power Source: DC 12V
Temp.(°C)/Hum.(%RH): 24.3(°C)/55%RH
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	31.9546	42.76	-17.98	24.78	40.00	-15.22	QP	300	0	
2	55.8047	45.59	-16.77	28.82	40.00	-11.18	QP	300	64	
3	84.9995	49.83	-20.95	28.88	40.00	-11.12	QP	300	120	
4	169.0054	49.27	-19.70	29.57	43.50	-13.93	QP	300	177	
5	202.1005	47.01	-18.92	28.09	43.50	-15.41	QP	300	261	
6	364.2595	43.09	-13.58	29.51	46.00	-16.49	QP	300	360	

Job No.: SZAWW180716006-01
Standard: FCC PART15 C_3m
Test item: Radiation Test
Test Mode: Mode 4
Polarization: Vertical
Power Source: DC 12V
Temp.(°C)/Hum.(%RH): 24.3(°C)/55%RH
Distance: 3m

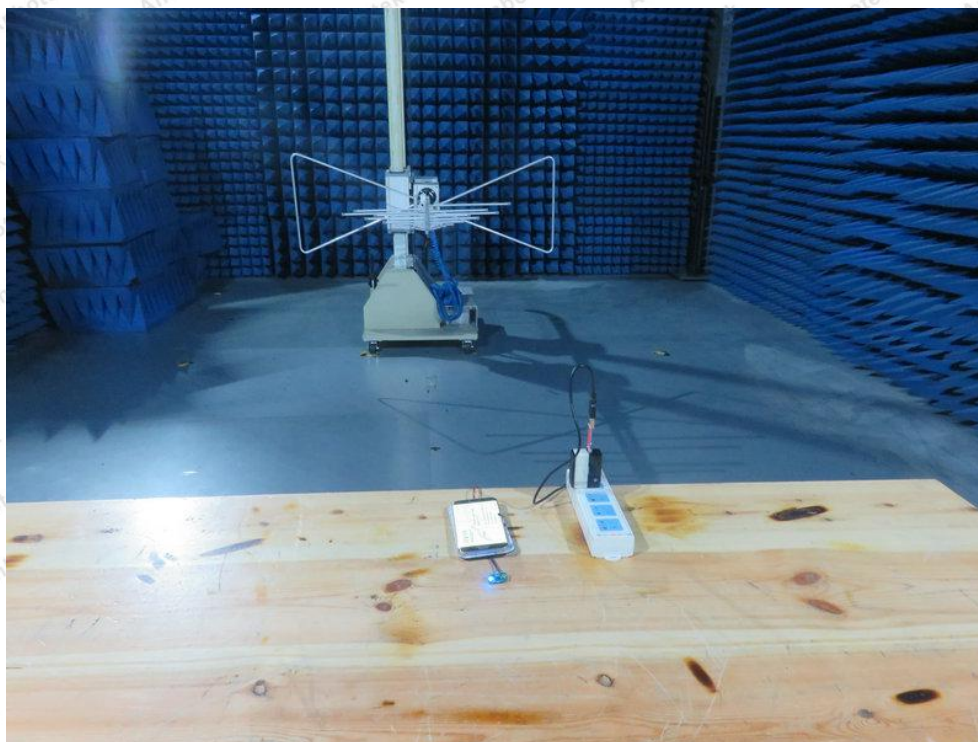


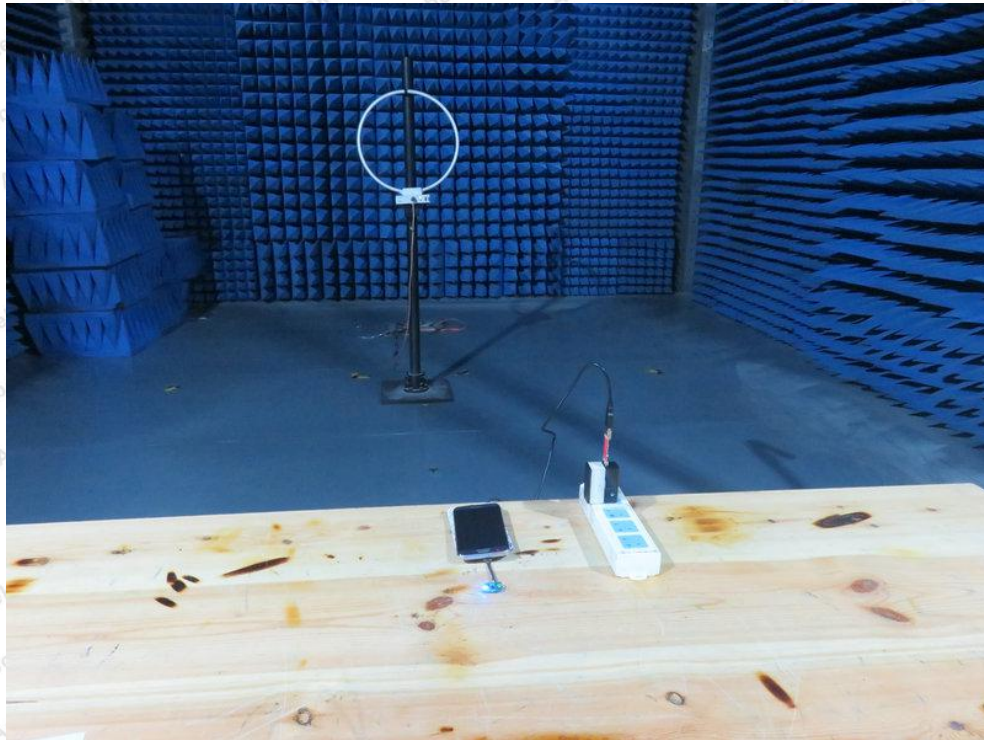
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	38.8878	47.23	-13.97	33.26	40.00	-6.74	QP	300	0	
2	54.4516	49.24	-15.70	33.54	40.00	-6.46	QP	300	63	
3	83.8156	49.58	-18.38	31.20	40.00	-8.80	QP	300	114	
4	97.4560	45.19	-14.99	30.20	43.50	-13.30	QP	300	163	
5	180.6488	49.79	-15.79	34.00	43.50	-9.50	QP	300	267	
6	271.3246	45.64	-14.41	31.23	46.00	-14.77	QP	300	360	

Photo of Conducted Emission Measurement

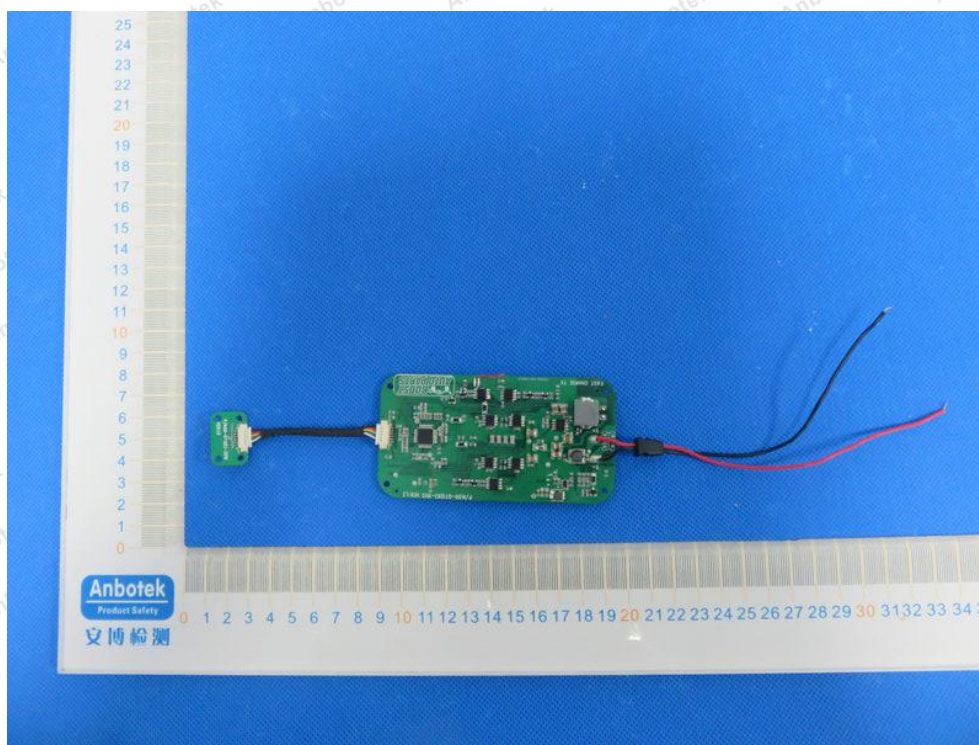
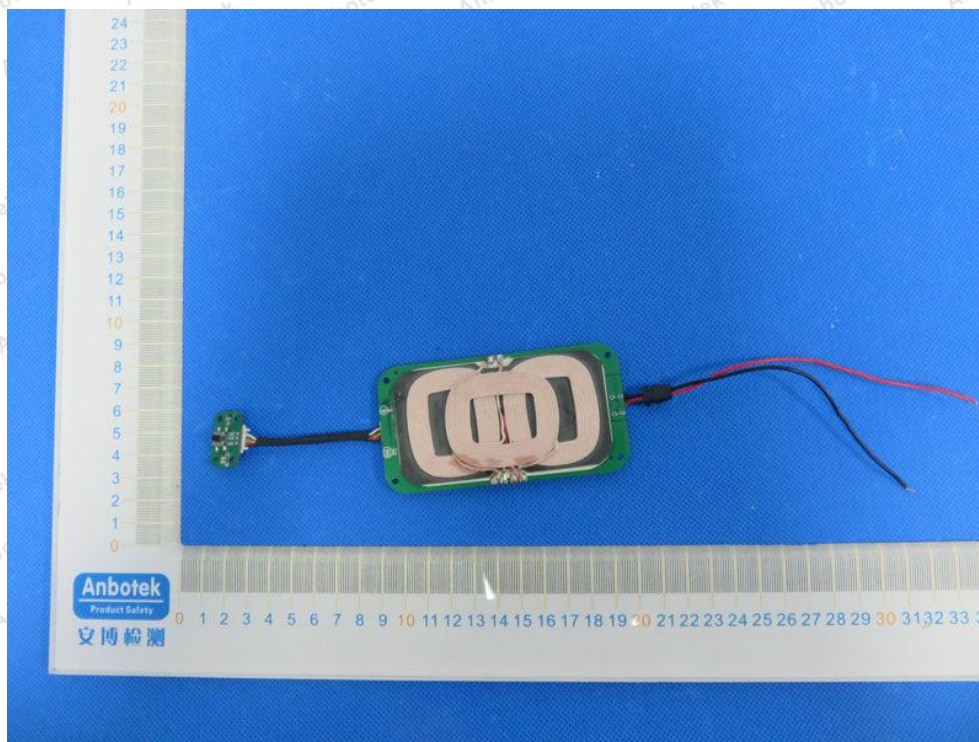


Photo of Radiation Emission Test

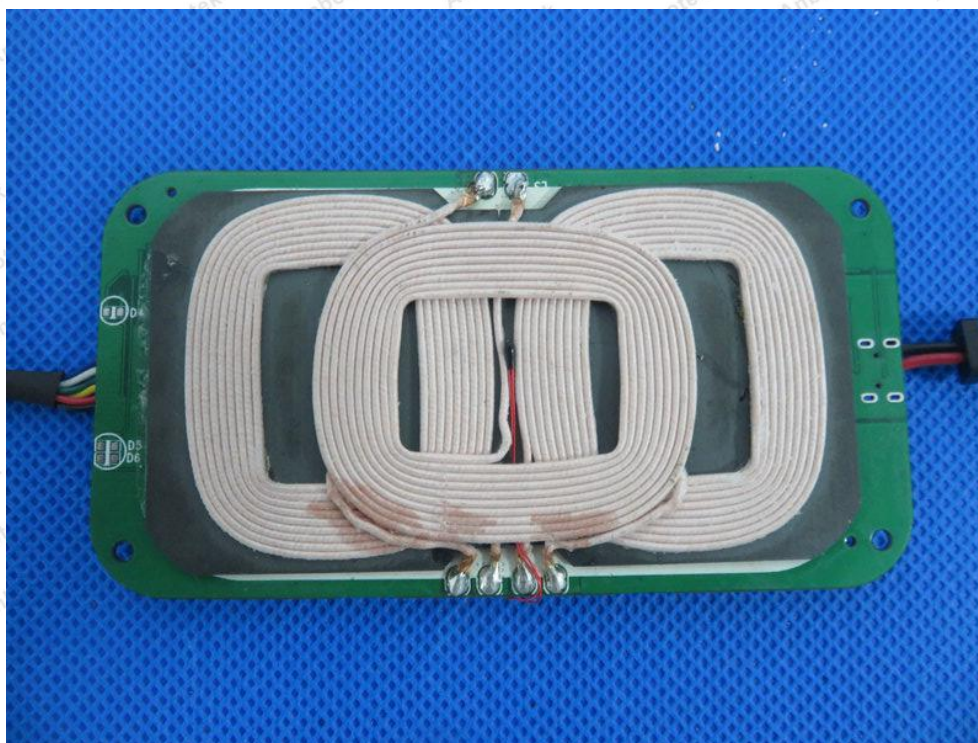
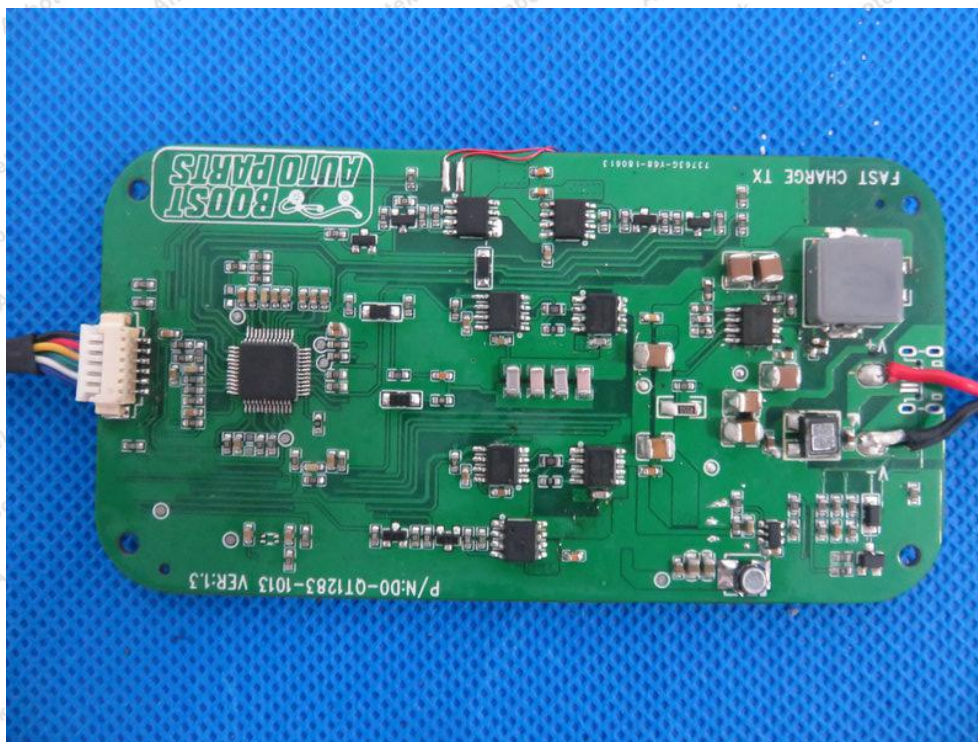




APPENDIX II -- EXTERNAL PHOTOGRAPH



APPENDIX III -- INTERNAL PHOTOGRAPH



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