

FCC TEST REPORT

For

ShenZhen Mossloo Industrial CO, LTD.

Power bank

Model No.: MSL-W005Q

Prepared For : ShenZhen Mossloo Industrial CO, LTD.
Address : Road One No.4, Science Industrial Park, Shangxue Village, Bantian Street,
Longgang District, Shenzhen,China

Prepared By : Shenzhen Anbotek Compliance Laboratory Limited
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Report Number : SZAWW180315008-01
Date of Test : Mar. 15~30, 2018
Date of Report : Mar. 30, 2018

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TEST REPORT

Applicant : ShenZhen Mossloo Industrial CO, LTD.
Manufacturer : ShenZhen Mossloo Industrial CO, LTD.
Product Name : Power bank
Model No. : MSL-W005Q
Trade Mark : N.A.
Rating(s) : Input: DC 5V, 1A (With DC 3.7V, 3000mAh Battery inside);
Output: DC 5V, 1A

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 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 : Mar. 15~30, 2018

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 Mossloo Industrial CO, LTD.
Address	:	Road One No.4, Science Industrial Park, Shangxue Village, Bantian Street, Longgang District, Shenzhen,China
Manufacturer	:	ShenZhen Mossloo Industrial CO, LTD.
Address	:	Road One No.4, Science Industrial Park, Shangxue Village, Bantian Street, Longgang District, Shenzhen,China

1.2. Description of Device (EUT)

Product Name	:	Power bank	
Model No.	:	MSL-W005Q	
Trade Mark	:	N.A.	
Test Power Supply	:	AC 120V, 60Hz for adapter/AC 240V, 60Hz for adapter DC 3.7V Battery inside	
Product Description	:	Operation Frequency:	110-205KHz
	:	Number of Channel:	20 Channels
	:	Modulation Type:	MSK
	:	Antenna Type:	Inductive loop coil Antenna
	:	Antenna Gain(Peak):	1 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	:	Manufacturer: SAMSUNG M/N: ETA-U90CBC S/N: RT6FB17ZS/B-E Input: 100-240V~50/60Hz 0.35A Output: DC 5V, 2000mA
Adapter	:	Manufacturer: ZTE M/N: STC-A2050I1000USBA-C S/N: 201202102100876 Input: 100-240V~50/60Hz 0.3A Output: DC 5V, 1000mA

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

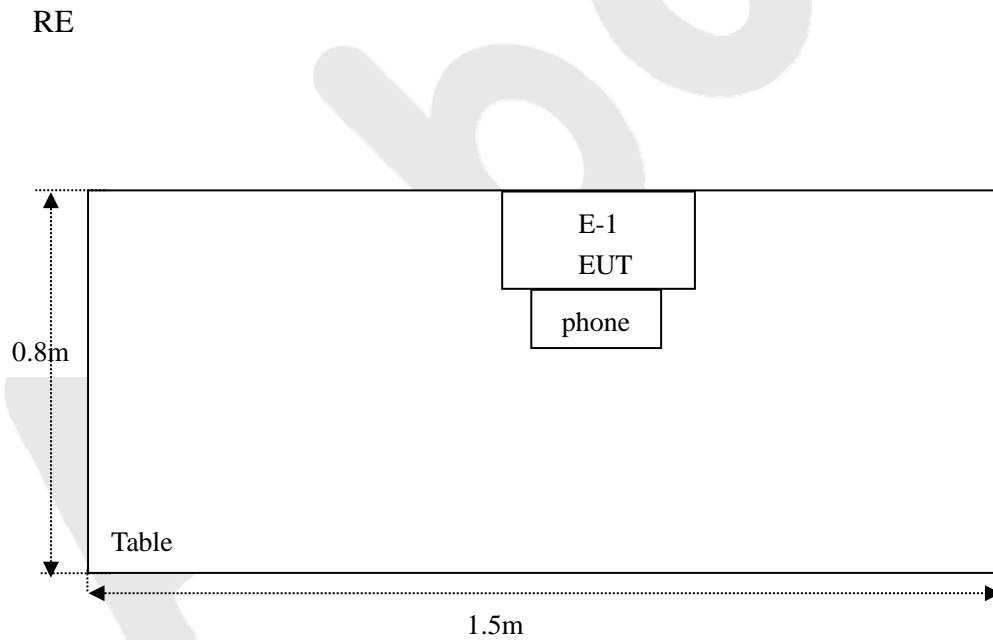
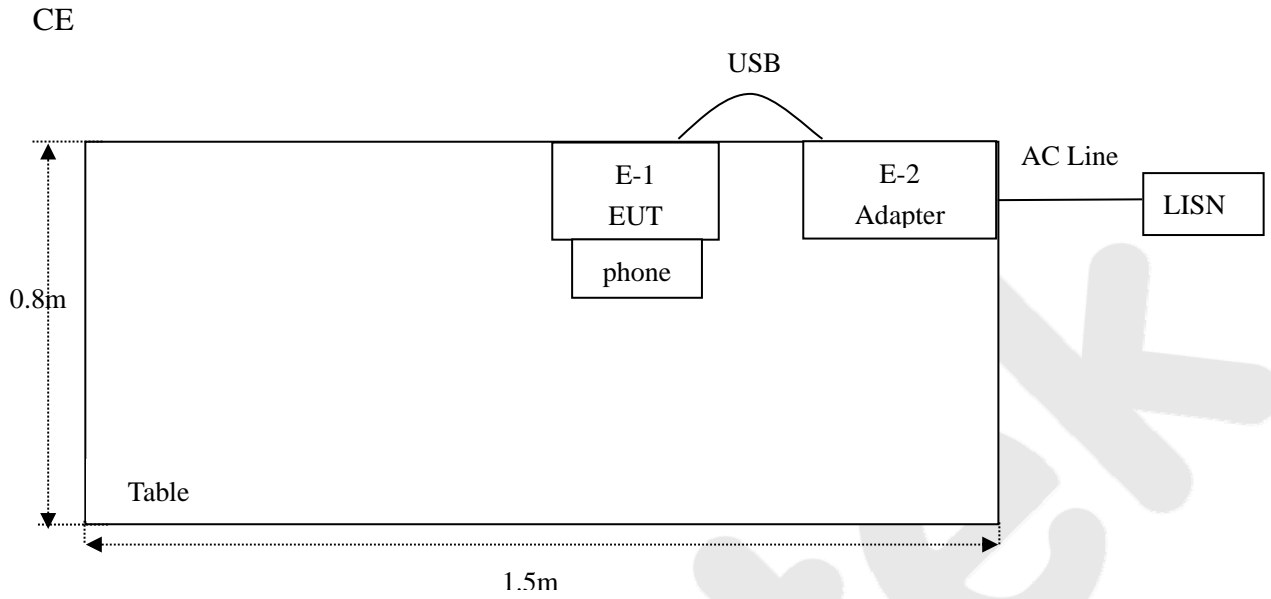
For Conducted Emission	
Final Test Mode	Description
Mode 4	Keeping TX+Charging mode

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	0.110	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	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.	Inductive loop coil 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 = 4.1 dB (Horizontal)
		Ur = 4.3 dB (Vertical)
Conduction Uncertainty	:	Uc = 3.4dB

1.9. 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 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

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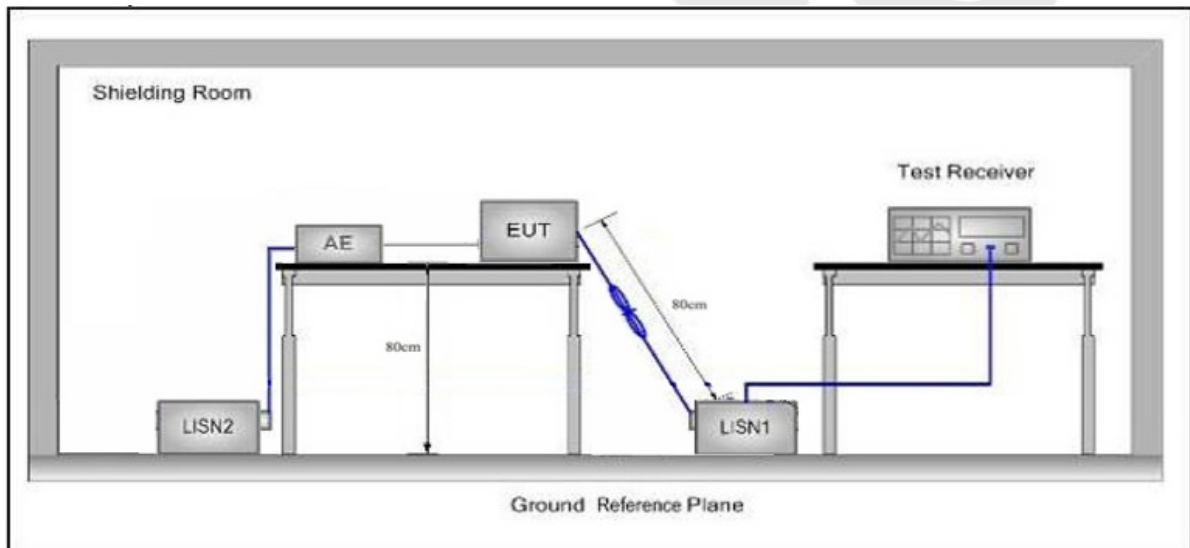
3. Conducted Emission Test

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.

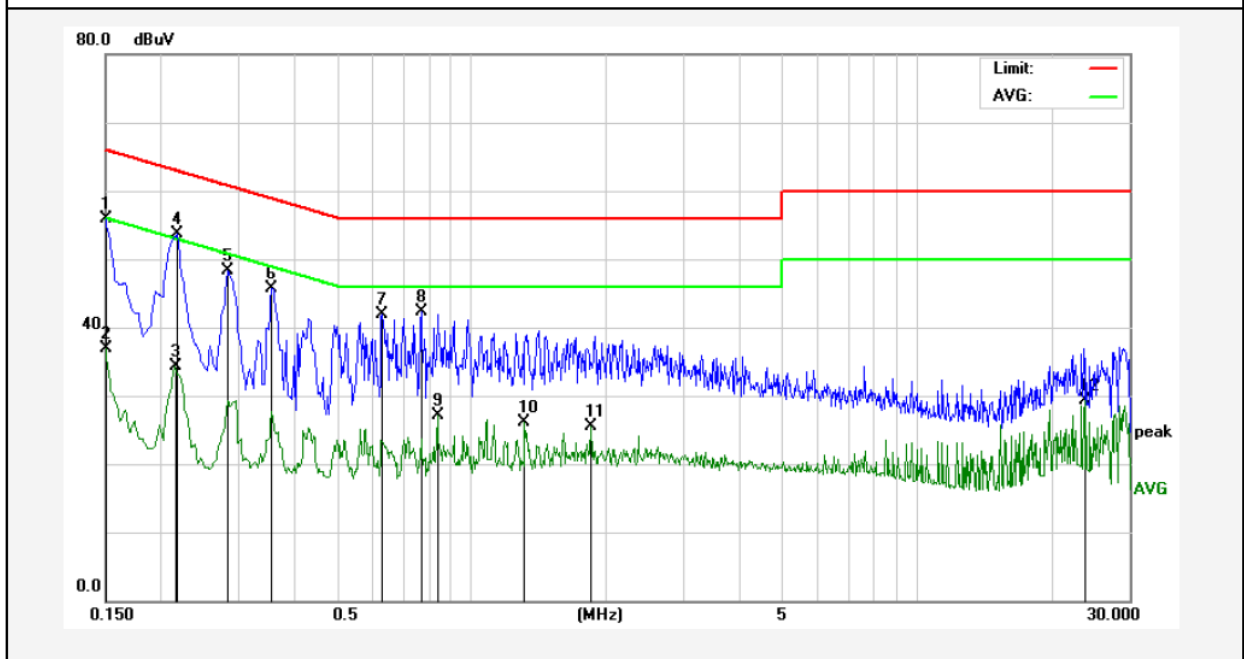
The frequency range from 150kHz to 30MHz is checked.

3.4. Test Data

Please to see the following pages

Conducted Emission Test Data

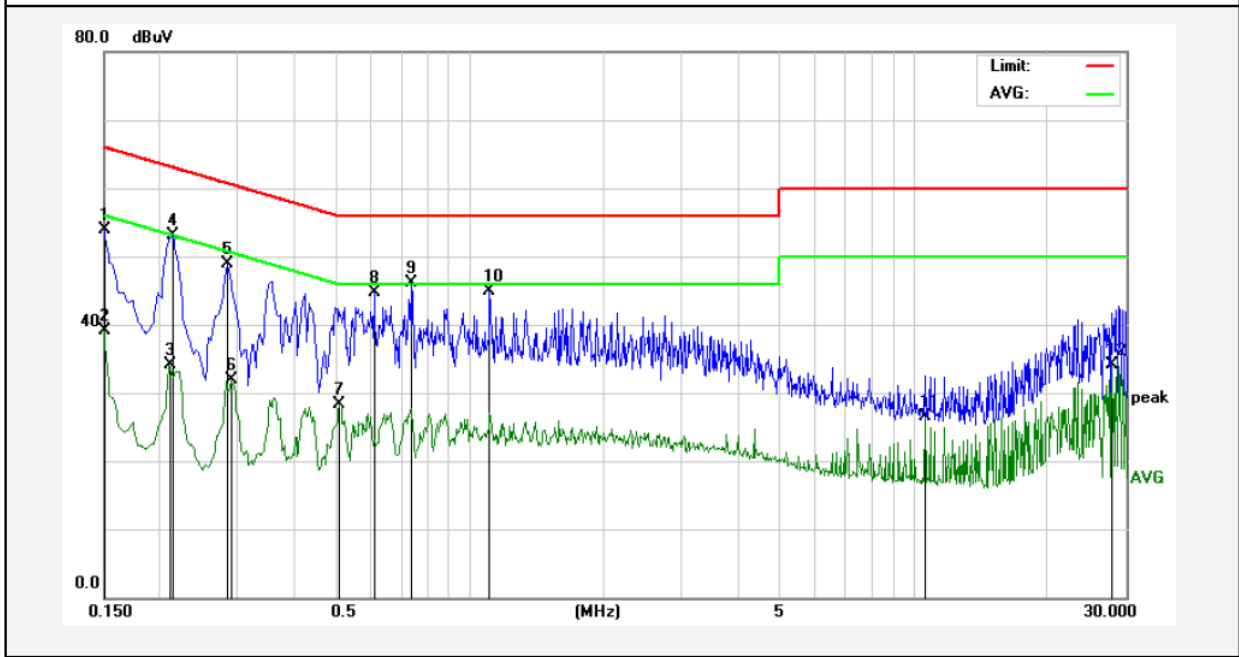
Test Site: 1# Shielded Room
 Operating Condition: Keeping TX+Charging mode
 Test Specification: AC 120V, 60Hz for adapter
 Comment: Live Line
 Tem.:22.5°C Hum.:59%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1500	35.96	19.90	55.86	65.99	-10.13	QP	
2	0.1500	17.00	19.90	36.90	55.99	-19.09	AVG	
3	0.2140	14.32	19.90	34.22	53.04	-18.82	AVG	
4	0.2180	33.72	19.90	53.62	62.89	-9.27	QP	
5	0.2819	28.43	19.89	48.32	60.76	-12.44	QP	
6	0.3540	25.79	19.91	45.70	58.87	-13.17	QP	
7	0.6300	21.89	20.02	41.91	56.00	-14.09	QP	
8	0.7700	22.33	20.06	42.39	56.00	-13.61	QP	
9	0.8380	7.00	20.08	27.08	46.00	-18.92	AVG	
10	1.3140	6.00	20.13	26.13	46.00	-19.87	AVG	
11	1.8500	5.37	20.14	25.51	46.00	-20.49	AVG	
12	23.9580	8.92	20.29	29.21	50.00	-20.79	AVG	

Conducted Emission Test Data

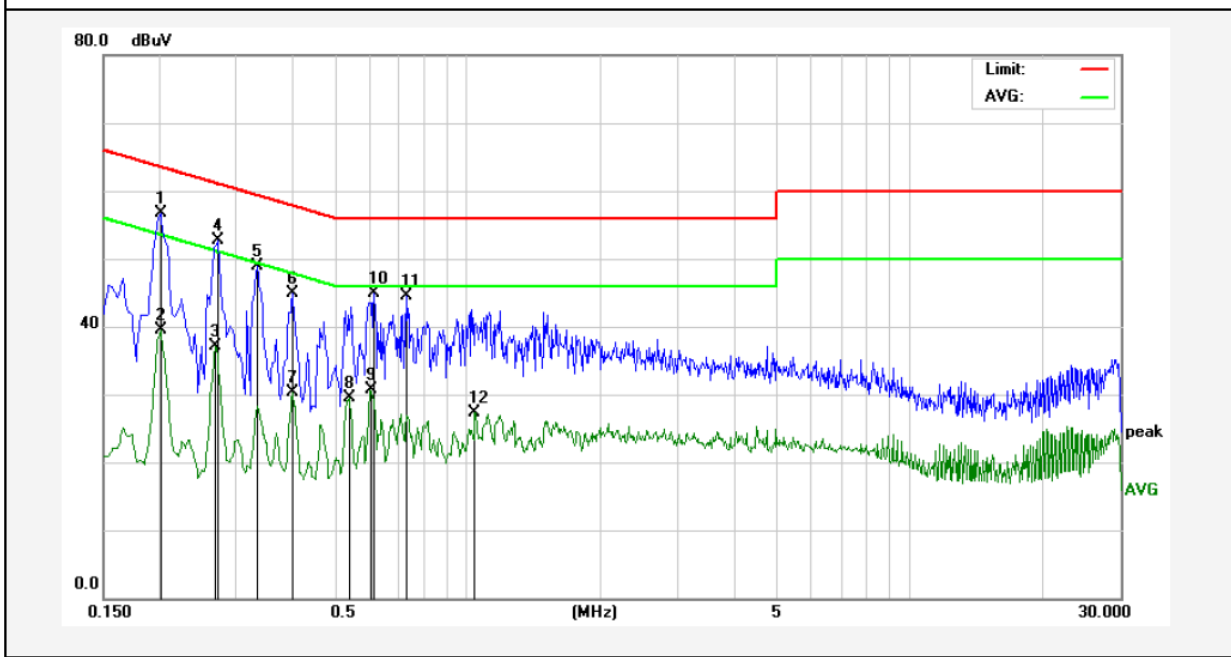
Test Site: 1# Shielded Room
 Operating Condition: Keeping TX+Charging mode
 Test Specification: AC 120V, 60Hz for adapter
 Comment: Neutral Line
 Tem.:22.5°C Hum.:59%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1500	34.00	19.90	53.90	65.99	-12.09	QP	
2	0.1500	19.26	19.90	39.16	55.99	-16.83	AVG	
3	0.2100	14.27	19.90	34.17	53.20	-19.03	AVG	
4	0.2140	33.27	19.90	53.17	63.04	-9.87	QP	
5	0.2860	28.95	19.89	48.84	60.64	-11.80	QP	
6	0.2900	12.02	19.89	31.91	50.52	-18.61	AVG	
7	0.5100	8.39	19.98	28.37	46.00	-17.63	AVG	
8	0.6100	24.78	20.01	44.79	56.00	-11.21	QP	
9	0.7420	26.01	20.05	46.06	56.00	-9.94	QP	
10	1.1100	24.80	20.12	44.92	56.00	-11.08	QP	
11	10.5860	6.22	20.33	26.55	50.00	-23.45	AVG	
12	27.9980	13.78	20.27	34.05	50.00	-15.95	AVG	

Conducted Emission Test Data

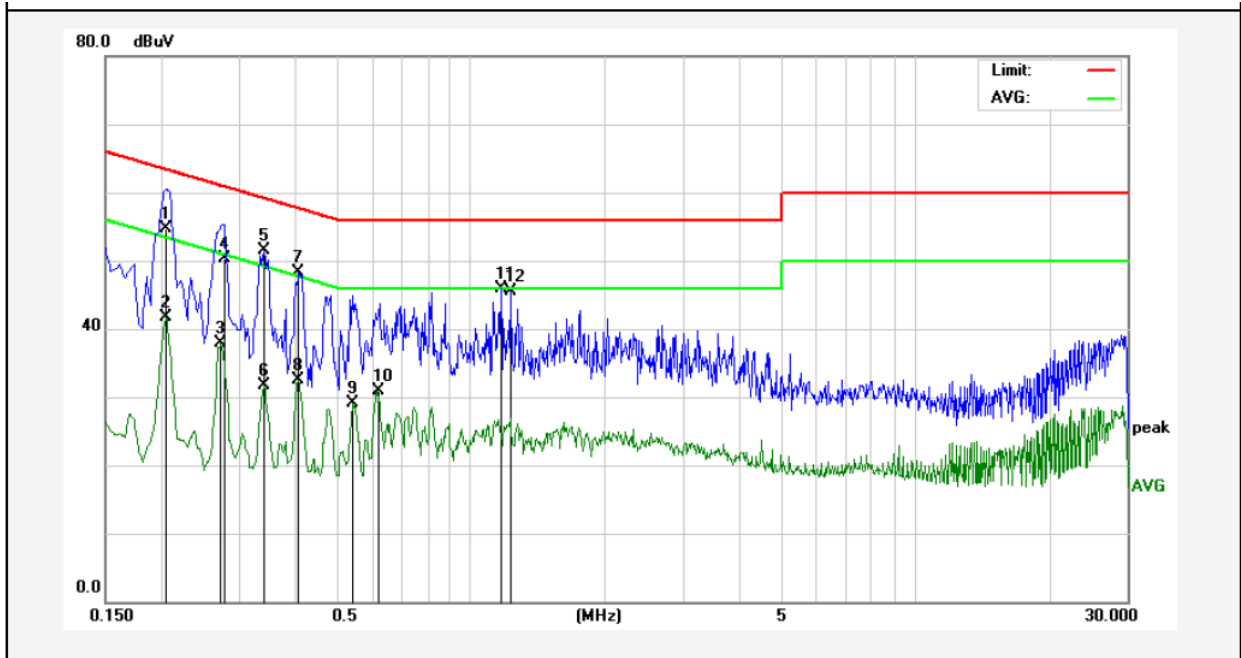
Test Site: 1# Shielded Room
 Operating Condition: Keeping TX+Charging mode
 Test Specification: AC 240V, 60Hz for adapter
 Comment: Live Line
 Tem.:22.5°C Hum.:59%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.2020	36.89	19.90	56.79	63.52	-6.73	QP	
2	0.2020	19.69	19.90	39.59	53.52	-13.93	AVG	
3	0.2700	17.18	19.89	37.07	51.12	-14.05	AVG	
4	0.2740	32.78	19.89	52.67	60.99	-8.32	QP	
5	0.3339	29.02	19.91	48.93	59.35	-10.42	QP	
6	0.4020	25.02	19.94	44.96	57.81	-12.85	QP	
7	0.4020	10.32	19.94	30.26	47.81	-17.55	AVG	
8	0.5420	9.60	19.99	29.59	46.00	-16.41	AVG	
9	0.6020	10.64	20.01	30.65	46.00	-15.35	AVG	
10	0.6140	24.82	20.01	44.83	56.00	-11.17	QP	
11	0.7300	24.38	20.05	44.43	56.00	-11.57	QP	
12	1.0420	7.12	20.12	27.24	46.00	-18.76	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.:22.5°C Hum.:59%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.2060	34.77	19.90	54.67	63.36	-8.69	QP	
2	0.2060	21.82	19.90	41.72	53.36	-11.64	AVG	
3	0.2740	18.01	19.89	37.90	50.99	-13.09	AVG	
4	0.2779	30.33	19.89	50.22	60.88	-10.66	QP	
5	0.3420	31.52	19.91	51.43	59.15	-7.72	QP	
6	0.3420	11.70	19.91	31.61	49.15	-17.54	AVG	
7	0.4100	28.38	19.94	48.32	57.65	-9.33	QP	
8	0.4100	12.50	19.94	32.44	47.65	-15.21	AVG	
9	0.5420	9.08	19.99	29.07	46.00	-16.93	AVG	
10	0.6140	10.83	20.01	30.84	46.00	-15.16	AVG	
11	1.1660	25.71	20.12	45.83	56.00	-10.17	QP	
12	1.2260	25.46	20.12	45.58	56.00	-10.42	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
	Above 1000MHz	500	54.0	Quasi-peak	3
			74.0	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

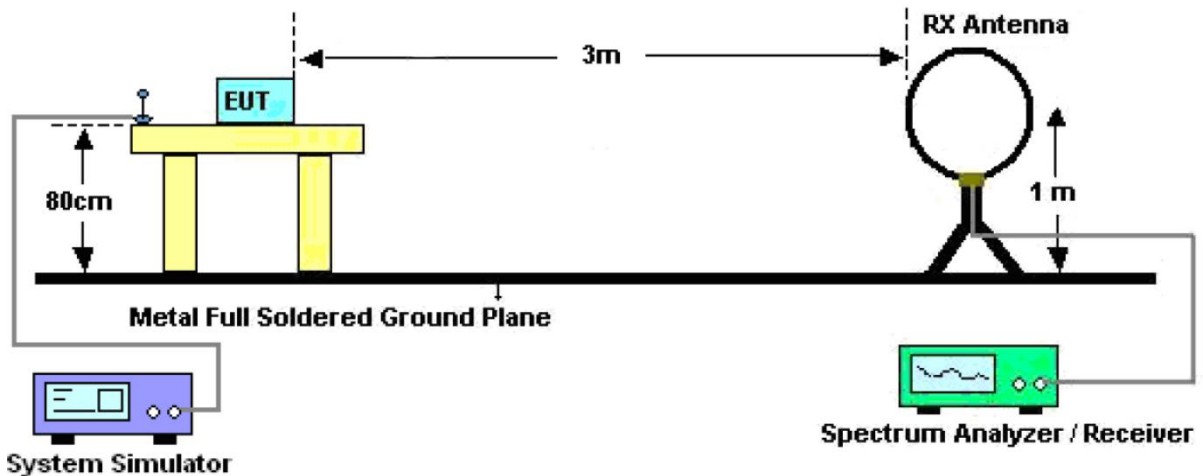


Figure 1. Below 30MHz

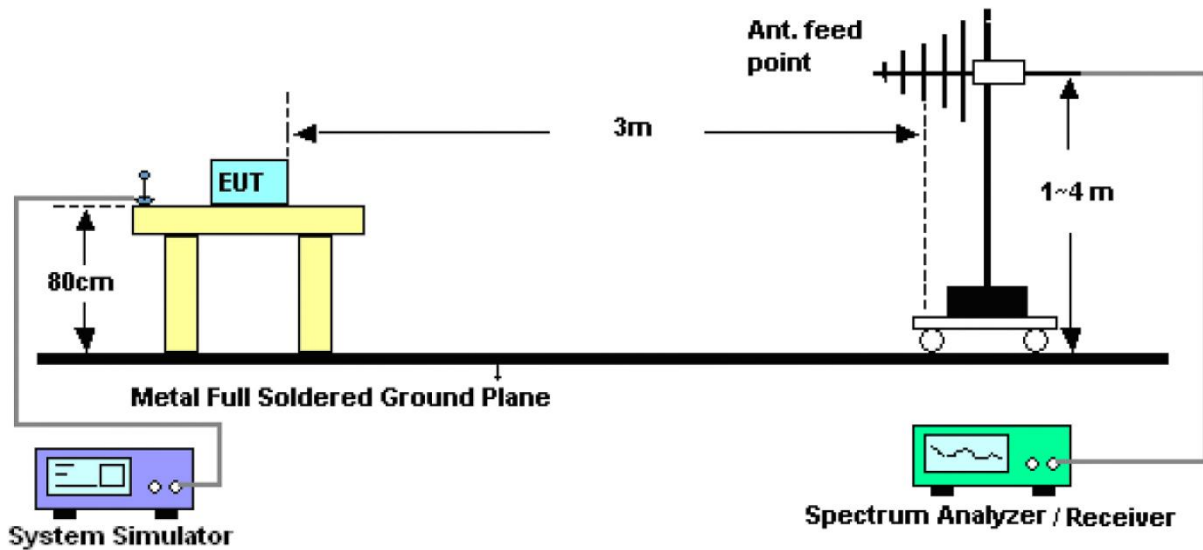


Figure 2. 30MHz to 1GHz

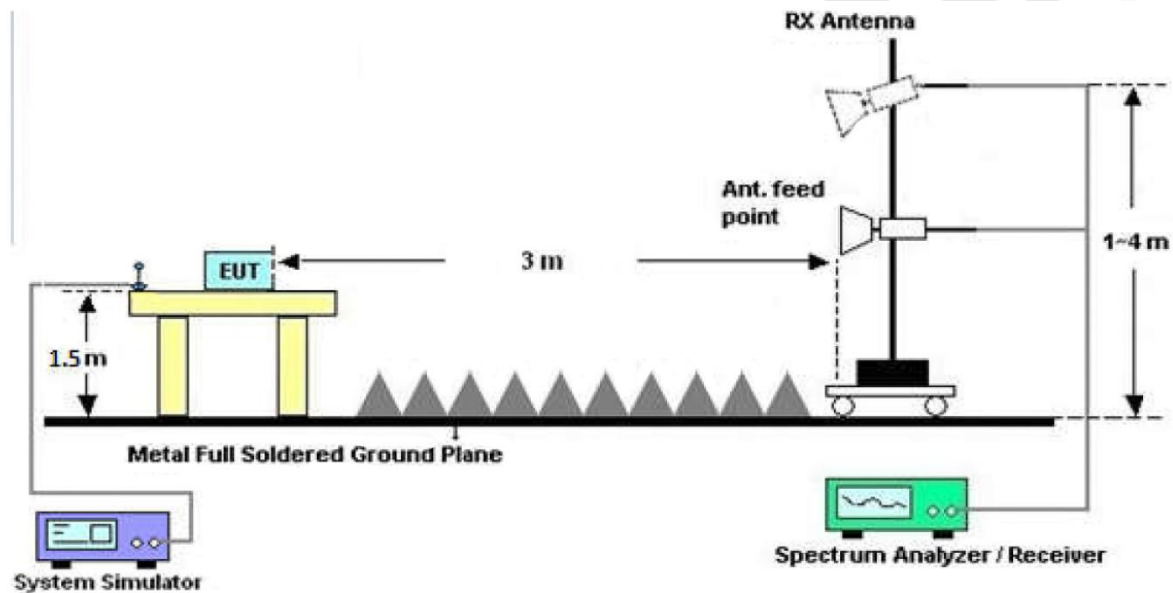


Figure 3. Above 1 GHz

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

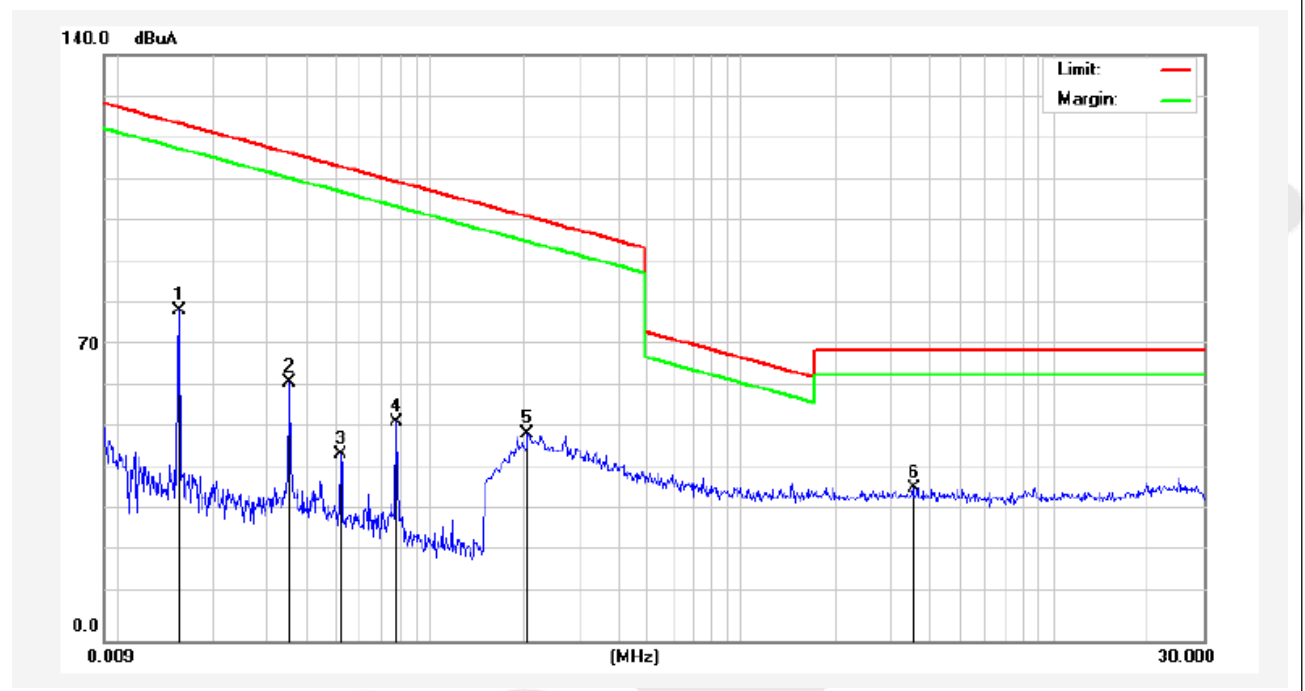
PASS

Anbotek

Test Results

(Between 9KHz – 30MHz)

Job No.:	SZAWW180315008-01		
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

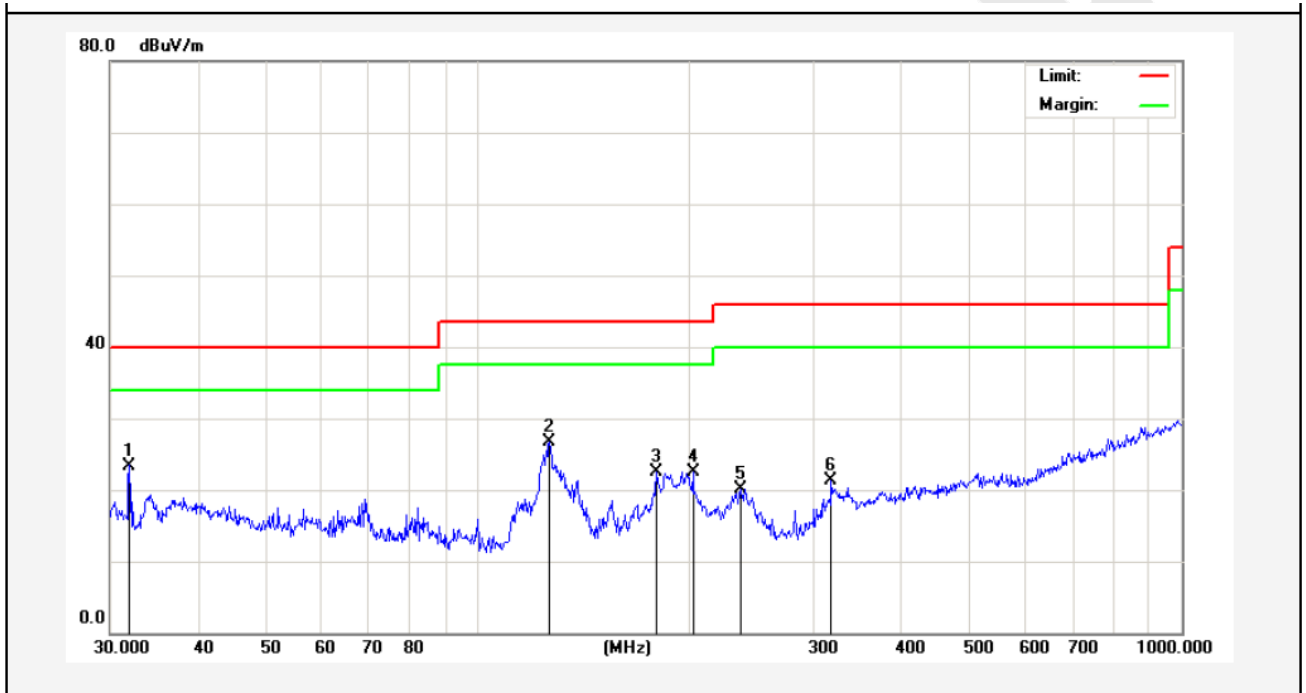


Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	degree
									(dge)
0.0157	63.83	19.27	2.53	0	85.63	143.52	-57.89	Peak	240
0.0157	57.29	19.27	2.53	0	79.09	123.52	-44.43	AV	240
0.0354	48.06	19.30	2.53	0	69.89	136.50	-66.61	Peak	115
0.0354	39.90	19.30	2.53	0	61.73	116.50	-54.77	AV	115
0.0518	34.86	19.32	2.54	0	56.72	133.21	-76.49	Peak	120
0.0518	22.92	19.32	2.54	0	44.78	113.21	-68.43	AV	120
0.0781	40.89	19.35	2.55	0	62.79	129.66	-66.87	Peak	124
0.0781	30.34	19.35	2.55	0	52.24	109.66	-57.42	AV	124
0.2060	31.74	19.62	2.59	0	53.95	121.28	-67.33	Peak	256
0.2060	27.37	19.62	2.59	0	49.58	101.28	-51.70	AV	256
3.5420	13.40	20.73	2.60	0	36.73	69.54	-32.81	QP	0

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.

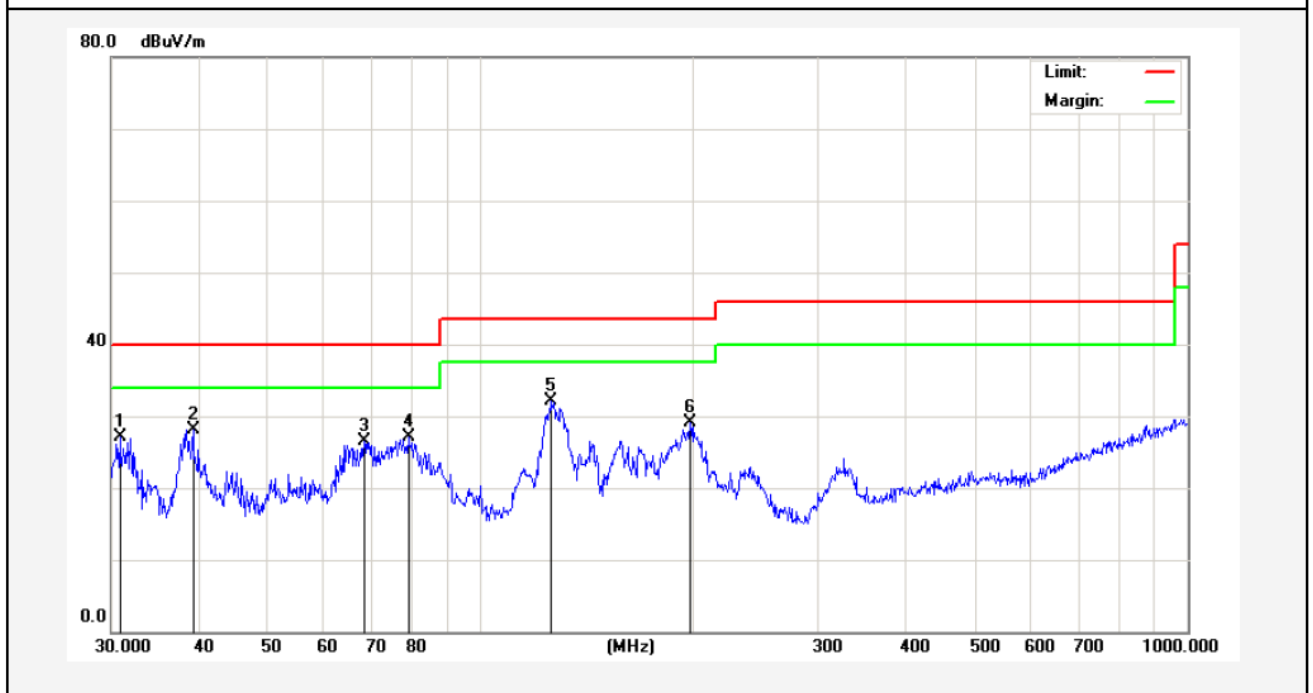
(Between 30MHz –1000 MHz)

Job No.:	SZAWW180315008-01	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:	Mode 4	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	41.38	-17.98	23.40	40.00	-16.60	QP	300	32	
2	126.3286	48.22	-21.57	26.65	43.50	-16.85	QP	300	164	
3	179.3863	42.28	-19.83	22.45	43.50	-21.05	QP	300	197	
4	202.1005	41.37	-18.92	22.45	43.50	-21.05	QP	300	221	
5	235.8164	37.96	-17.87	20.09	46.00	-25.91	QP	300	263	
6	317.7011	36.78	-15.54	21.24	46.00	-24.76	QP	300	324	

Job No.:	SZAWW180315008-01	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:	Mode 4	Distance:	3m



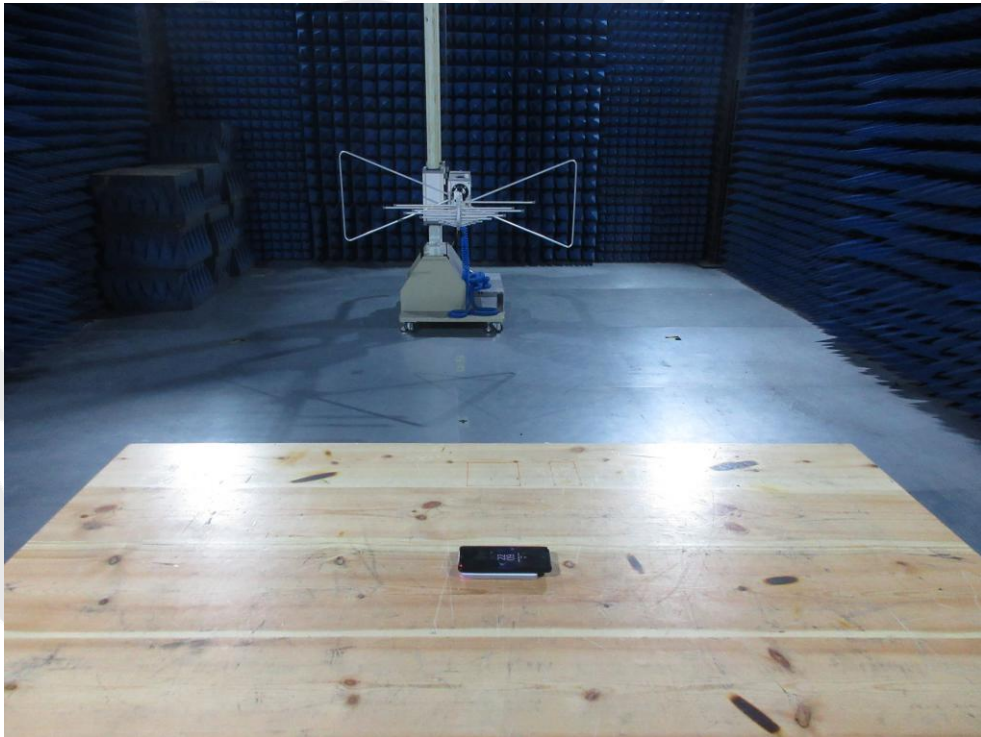
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	30.8535	44.38	-17.31	27.07	40.00	-12.93	QP	300	14	
2	39.1616	41.98	-13.82	28.16	40.00	-11.84	QP	300	67	
3	68.3908	45.69	-19.20	26.49	40.00	-13.51	QP	300	119	
4	78.9652	47.13	-19.95	27.18	40.00	-12.82	QP	300	246	
5	125.8864	48.36	-16.20	32.16	43.50	-11.34	QP	300	291	
6	197.8928	44.07	-14.88	29.19	43.50	-14.31	QP	300	347	

APPENDIX I -- TEST SETUP PHOTOGRAPH

Photo of Conducted Emission Measurement



Photo of Radiation Emission Test



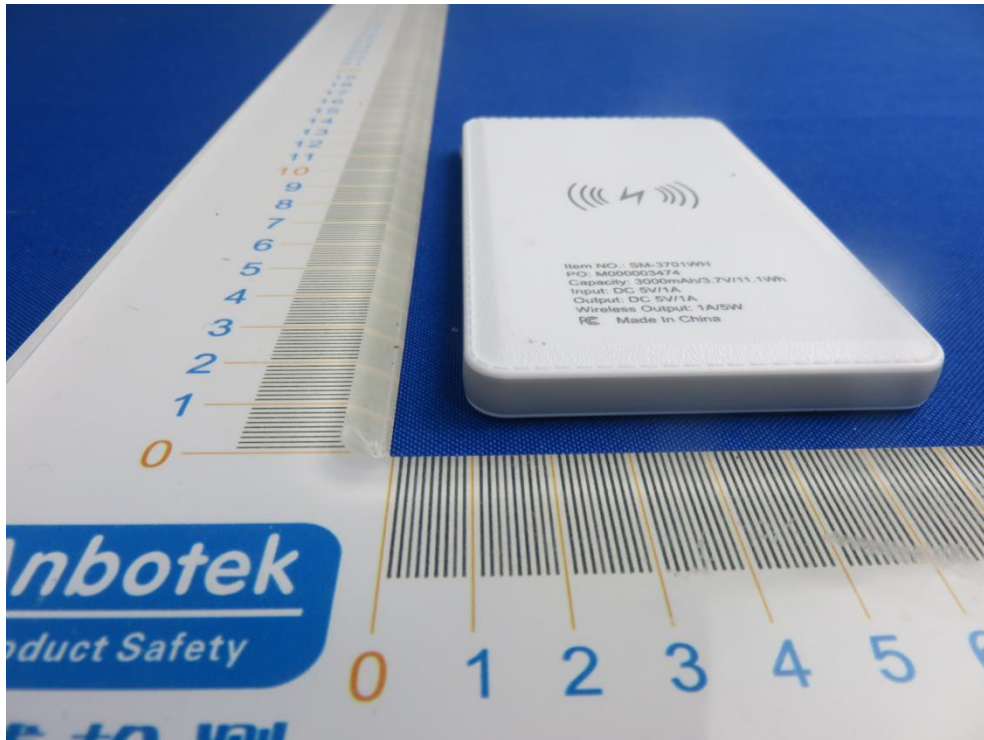


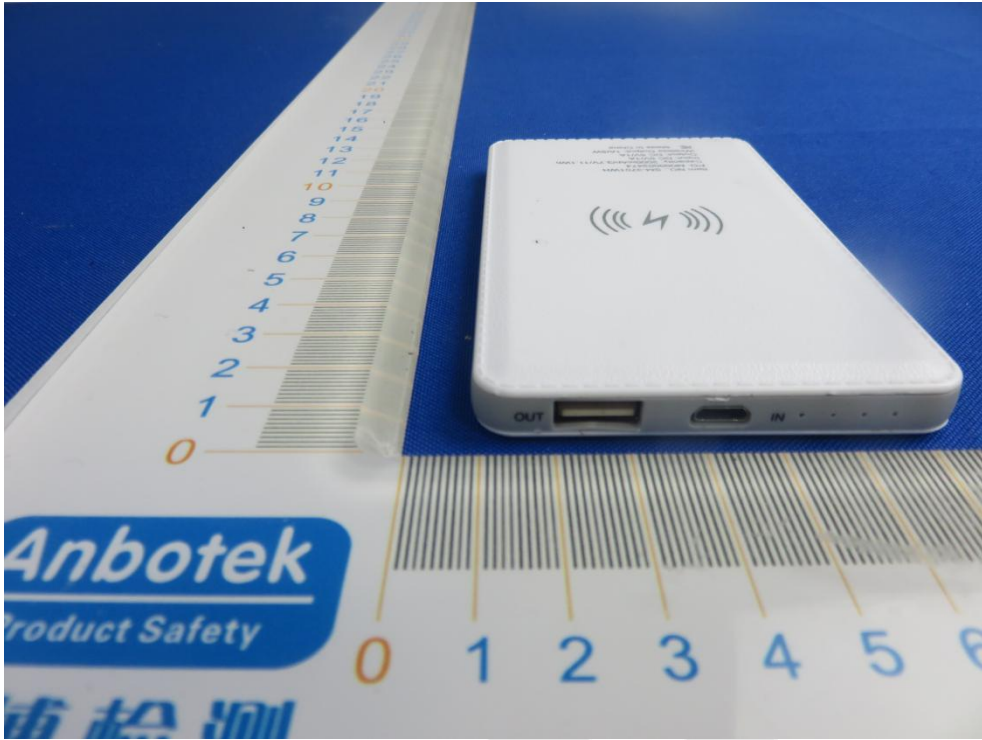
Anbotek

APPENDIX II -- EXTERNAL PHOTOGRAPH



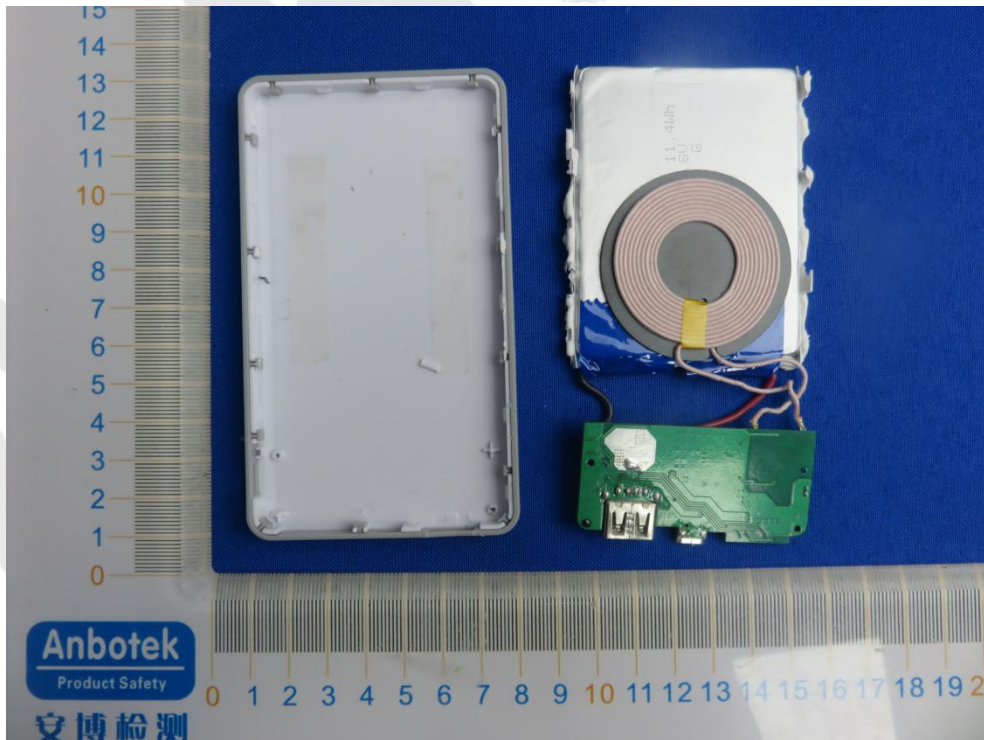


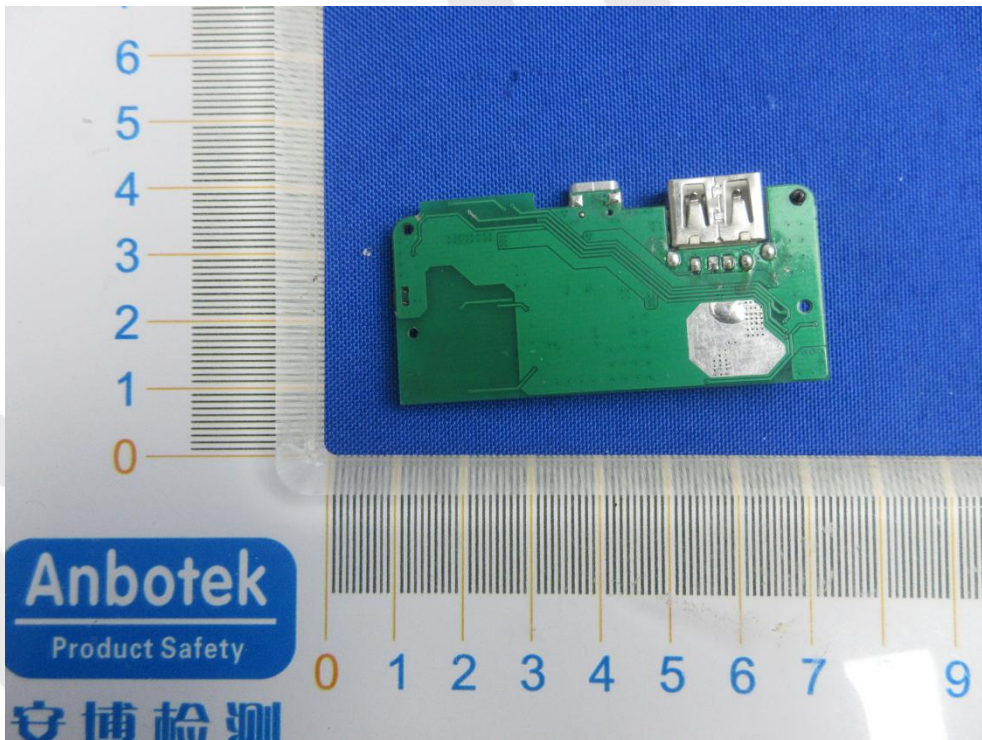
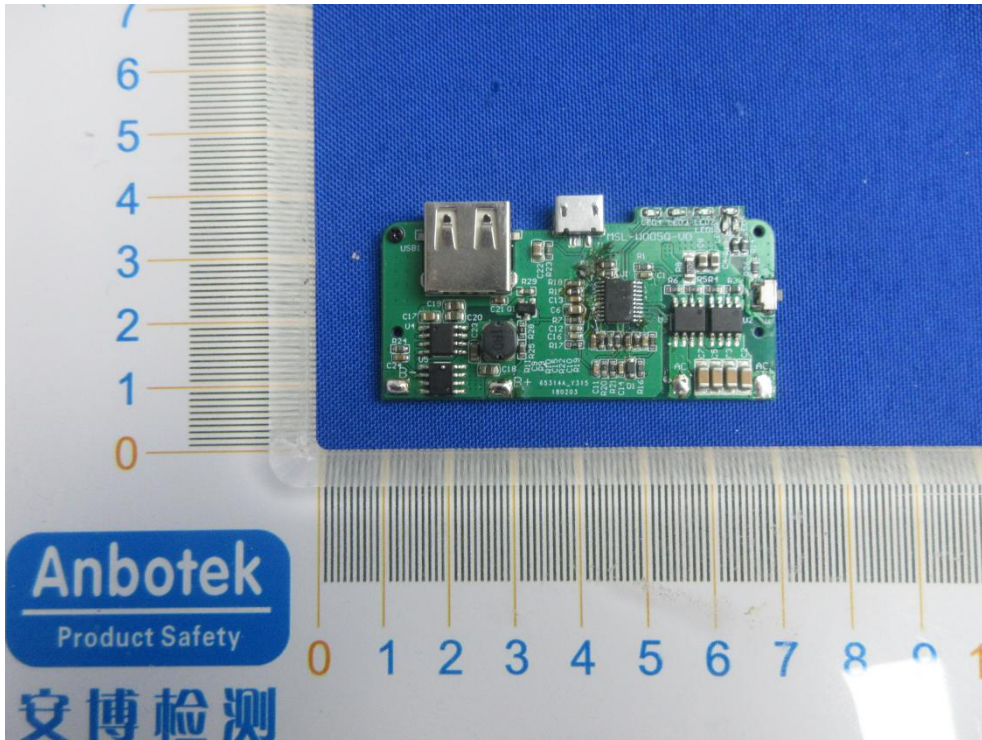


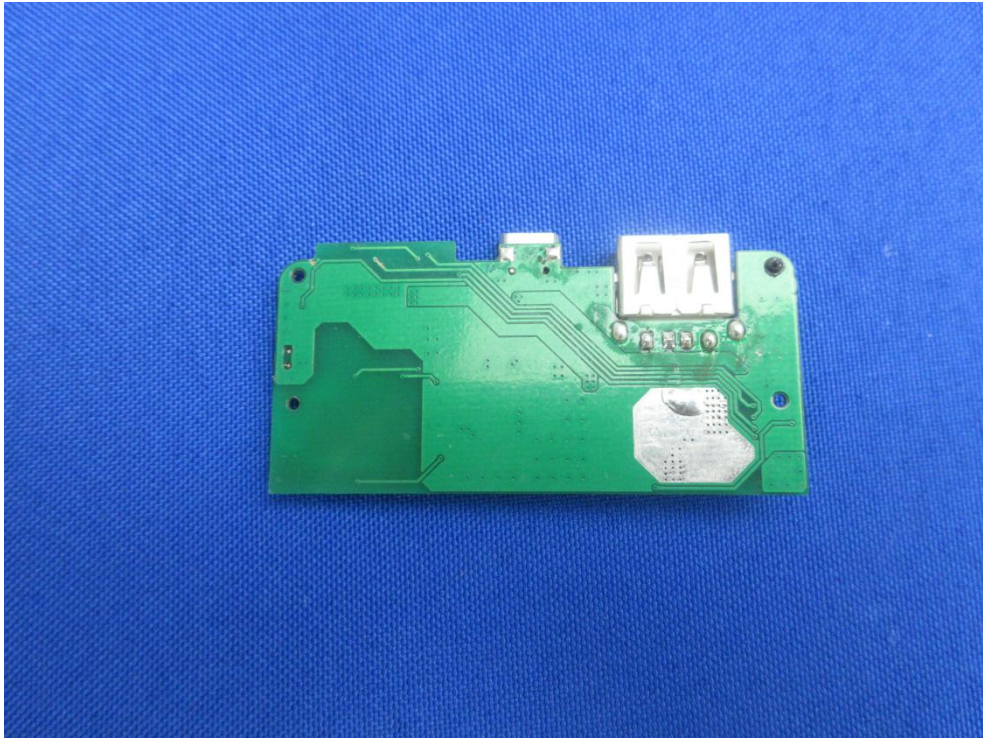


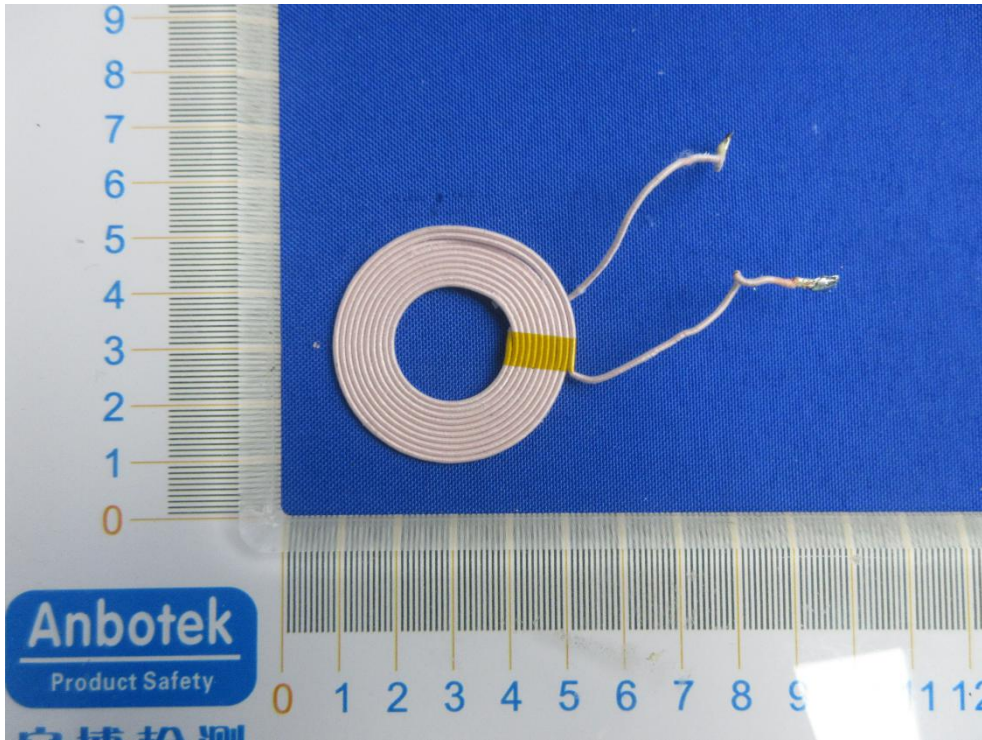
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APPENDIX III -- INTERNAL PHOTOGRAPH









End of Report