Microtest
微测检测

Test Report

FCC ID: 2AG8N-17276

Date of issue: Oct. 10, 2018

Report Number:	MTi180929E182
Sample Description:	Q9 WIRELESS CHARGING PAD
Model(s):	QC0016, QC0016-CCK, QC0016-GYW, E-QI-17276-A
Applicant:	China Etech Groups Ltd
Address:	Room 3A15, Floor4 ,Block C, Bao Yuan HuaFeng Headquater, Economy Building, Xixiang Road, Baoan District, Shenzhen
Date of Test:	Sept. 12, 2018 - Oct. 10, 2018

Shenzhen Microtest Co., Ltd.
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Address: No.102A & 302A, East Block, Hengfang Industrial Park, Xingye Road, Xixiang, Bao'an District, Shenzhen, Guangdong, China

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Test Result Certification

Applicant's name:	China Etech Groups Ltd
Address:	Room 3A15, Floor4 ,Block C, Bao Yuan HuaFeng Headquater, Economy Building, Xixiang Road, Baoan District, Shenzhen
Manufacture's name:	China Etech Groups Ltd
Address:	Room 3A15, Floor4 ,Block C, Bao Yuan HuaFeng Headquater, Economy Building, Xixiang Road, Baoan District, Shenzhen
Product name:	Q9 WIRELESS CHARGING PAD
Trademark:	N/A
Model name:	QC0016, QC0016-CCK, QC0016-GYW, E-QI-17276-A
Standards:	FCC Part 18
Test Procedure:	ANSI C63.4-2014 FCC/OST MP-5:1986

This device described above has been tested by Shenzhen Microtest Co., Ltd. and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

Tested by:	Leo Su	
	Leo Su	Oct. 10, 2018
Reviewed by:	Blue.Zheng	
	Blue Zheng	Oct. 10, 2018
Approved by:	Smith Chen	
	Smith Chen	Oct. 10, 2018

1 GENERAL INFORMATION

1.1 Feature of equipment under test (EUT)

Product name:	Q9 WIRELESS CHARGING PAD
Brand name:	N/A
Model name:	QC0016
Series model:	QC0016-CCK, QC0016-GYW, E-QI-17276-A
Deference in serial model:	The wireless module used in the product is the same, just named and different colors.
Operation frequency:	115 – 205 kHz
Operational mode:	Wireless charging
Modulation type:	Load modulation
Antenna type:	Coil Antenna
Power source:	DC 5V form adapter
Adapter information:	N/A

1.2 Test mode

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.

Test mode	**Description**
Mode 1	Charger mode

Note: The test modes were carried out for all operation modes. The final test mode of the EUT was the worst test mode for EMI, and its test data was showed.

1.3 EUT test setup

See photographs of the test setup in the report for the actual setup and connections between EUT and support equipment.

1.4 Ancillary equipment

Equipment	Model	S/N	Manufacturer
Adapter	QC5800-EU	/	Shenzhen Kosun Industrial Co.,Ltd
Mobile phone	S8	/	SAMSUNG

1.5 Measurement Uncertainty

Measurement Uncertainty for a Level of Confidence of 95 %, U=2xUc(y)

Conducted emission(150kHz~30MHz)	± 2.5 dB
Radiated emission(30MHz~1GHz)	± 4.2 dB
Radiated emission (above 1GHz)	± 4.3 dB
Temperature	±1 degree
Humidity	± 5 %

2 SUMMARY OF TEST RESULT

Item	Description of Test	Result
FCC Part 18		
1	Conducted emission	Pass
2	Radiated emission	Pass
N/A: Not applicable		

3 TEST FACILITIES AND ACCREDITATIONS

3.1 Test laboratory

Test Laboratory	Shenzhen Microtest Co., Ltd
Location	No.102A & 302A, East Block, Hengfang Industrial Park, Xingye Road, Xixiang, Bao'an District, Shenzhen, Guangdong, China
FCC Registration No.:	448573

3.2 Environmental conditions

Temperature:	20ºC~30ºC
Humidity	30%~70%
Atmospheric pressure	98kPa~101kPa

3.3 Measurement uncertainty

Measurement Uncertainty for a Level of Confidence of 95 %, U=2xUc(y)

RF frequency	1 x 10-7
RF power, conducted	± 1 dB
Conducted emission(150kHz~30MHz)	± 2.5 dB
Radiated emission(30MHz~1GHz)	± 4.2 dB
Radiated emission (above 1GHz)	± 4.3 dB
Temperature	±1 degree
Humidity	± 5 %

3.4 Test software

Software Name	Manufacturer	Model	Version
RF Test System	Farad	LZ-RF	Lz_Rf 3A3

4 LIST OF TEST EQUIPMENT

Equipment No.	Equipment Name	Manufacturer	Model	Serial No.	Calibration date	Due date
MTI-E001	Spectrum Analyzer	Agilent	E4407B	MY41441082	2017/10/18	2018/10/17
MTI-E002	CMU 200 universal radio communication tester	Rohde&schwarz	CMU 200	114587	2017/10/18	2018/10/17
MTI-E004	EMI Test Receiver	Rohde&schwarz	ESPI	1000314	2017/10/18	2018/10/17
MTI-E006	Broadband antenna	schwarabeck	VULB9163	872	2017/10/18	2018/10/17
MTI-E007	Horn antenna	schwarabeck	BBHA9120D	1201	2017/10/18	2018/10/17
MTI-E014	amplifier	America	8447D	3113A06150	2017/10/18	2018/10/17
MTI-E015	Conduction Immunity Signal Generator	Schloder	CDG6000	126A1343/2015	2017/10/18	2018/10/17
MTI-E016	Coupled decoupling network	Schloder	CDA M2/M3	A2210332/2015	2017/10/18	2018/10/17
MTI-E032	Comprehensive test instrument	Rohde&schwarz	CMW500	124192	2018/04/13	2019/04/12
MTI-E034	amplifier	Agilent	8449B	3008A02400	2017/10/22	2018/10/21
MTI-E037	Artificial power network	Schwarzbeck	NSLK8127	#841	2017/10/26	2018/10/25
MTI-E040	Spectrum analyzer	Agilent	N9020A	MY49100060	2018/03/05	2019/03/04
MTI-E041	Signal generator	Agilent	N5182A	MY49060455	2018/02/23	2019/02/22
MTI-E042	Analog signal generator	Agilent	E4421B	GB40051240	2018/02/23	2019/02/22
MTI-E043	Power probe	Dare Instruments	RPR3006W	16I00054SNO16	2018/02/28	2019/02/28
MTI-E047	10dB attenuator	Mini-Circuits	UNAT-10+	15542	2018/05/23	2019/05/23
MTI-E049	spectrum analyzer	Rohde&schwarz	FSP-38	100019	2017/10/18	2018/10/17
MTI-E050	PSG Signal generator	Agilent	E8257D	MY46520873	2018/04/24	2019/04/23
MTI-E051	Active Loop Antenna 9kHz - 30MHz	Schwarzbeek	FMZB 1519 B	00044	2018/2/26	2019/02/25
MTI-E052	18-40GHz amplifier	Chengdu step Micro Technology	ZLNA-18-40G-21	1608001	2017/10/18	2018/10/17
MTI-E053	15-40G Antenna	Schwarzbeek	BBHA9170	BBHA9170582	2017/10/18	2018/10/17
MTI-E058	Artificial power network	Schwarzbeck	NSLK8127	#841	2017/12/05	2018/12/04
Note: the calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).						

5 TEST RESULTS

5.1 Conducted emission

5.1.1 Limits

For the following equipment, when designed to be connected to the public utility (AC) power line the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies shall not exceed the limits in the following tables. Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal using a 50 μH/50 ohms line impedance stabilization network (LISN).

Frequency (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.5 -5	56	46
5 -30	60	50

Note: the limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

5.1.2 Test Procedures

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

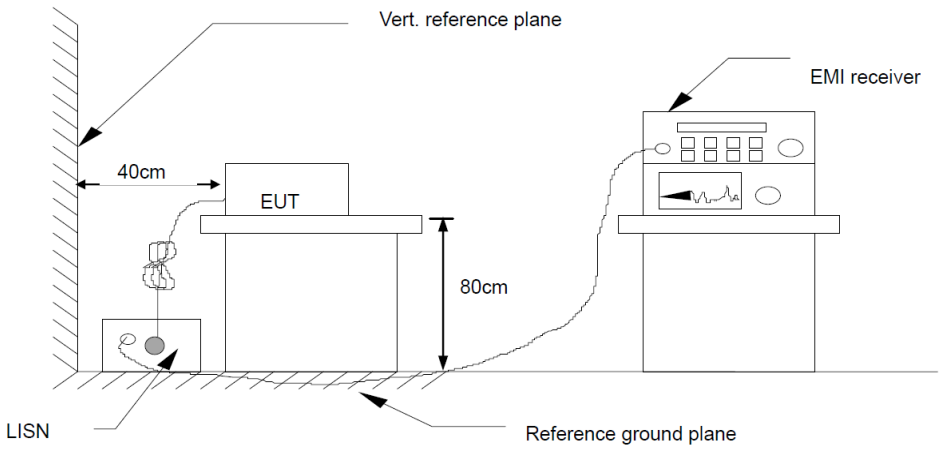
Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN is at least 80 cm from nearest part of EUT chassis.

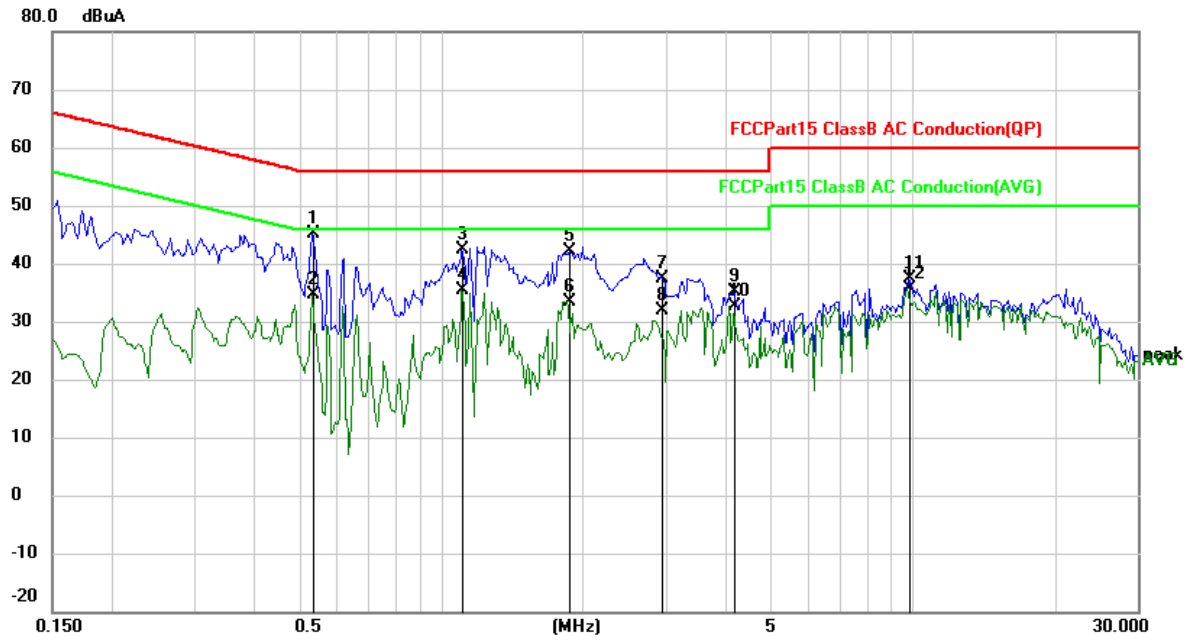
For the actual test configuration, please refer to the related Item – photographs of the test setup.

5.1.3 Test Setup



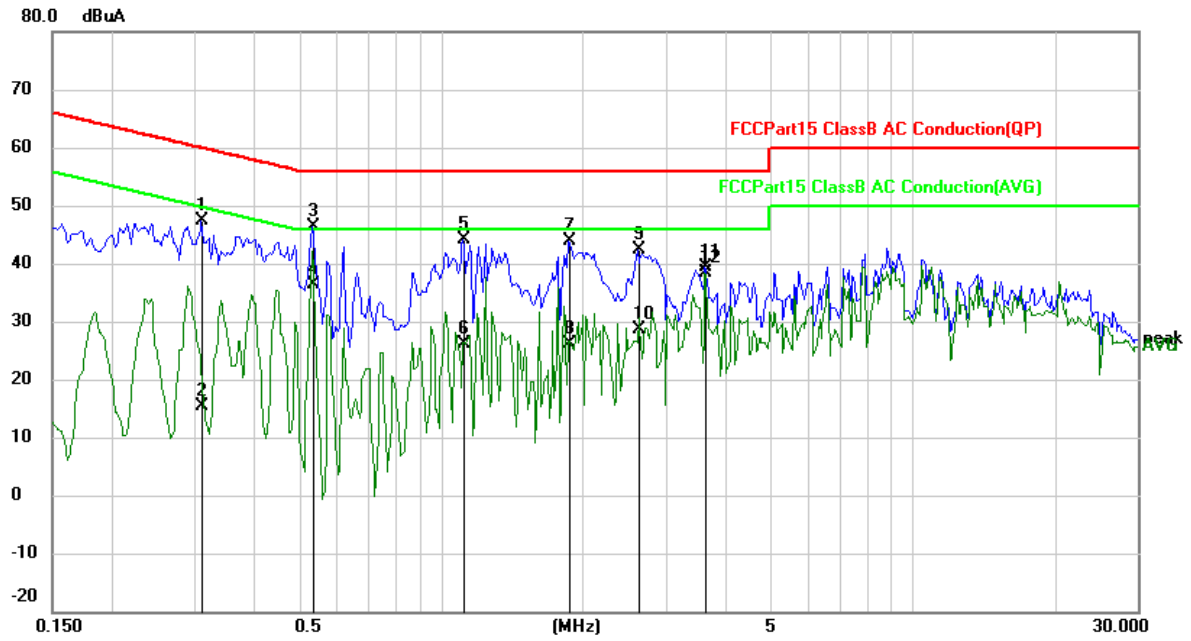
5.1.4 Test Result

Temperature:	27℃	Relative Humidity:	65%
Pressure:	101kPa	Phase:	L
Test voltage:	DC 5V form AC 120V/60Hz	Test mode:	Mode 1



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuA	dBuA	dB	Detector	Comment
1		0.5328	43.56	1.57	45.13	56.00	-10.87	QP	
2		0.5328	33.10	1.57	34.67	46.00	-11.33	AVG	
3		1.1109	40.79	1.58	42.37	56.00	-13.63	QP	
4	*	1.1109	33.87	1.58	35.45	46.00	-10.55	AVG	
5		1.8687	40.65	1.59	42.24	56.00	-13.76	QP	
6		1.8687	31.82	1.59	33.41	46.00	-12.59	AVG	
7		2.9462	36.44	1.04	37.48	56.00	-18.52	QP	
8		2.9462	30.92	1.04	31.96	46.00	-14.04	AVG	
9		4.1718	34.35	0.79	35.14	56.00	-20.86	QP	
10		4.1718	31.83	0.79	32.62	46.00	-13.38	AVG	
11		9.8397	36.93	0.39	37.32	60.00	-22.68	QP	
12		9.8397	35.20	0.39	35.59	50.00	-14.41	AVG	

Temperature:	27℃	Relative Humidity:	65%
Pressure:	101kPa	Phase:	N
Test voltage:	DC 5V form AC 120V/60Hz	Test mode:	Mode 1



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuA	dBuA	dB	Detector	Comment
1		0.3102	45.73	1.57	47.30	59.97	-12.67	QP	
2		0.3102	13.86	1.57	15.43	49.97	-34.54	AVG	
3		0.5328	44.89	1.57	46.46	56.00	-9.54	QP	
4		0.5328	34.70	1.57	36.27	46.00	-9.73	AVG	
5		1.1148	42.52	1.58	44.10	56.00	-11.90	QP	
6		1.1148	24.66	1.58	26.24	46.00	-19.76	AVG	
7		1.8648	42.26	1.59	43.85	56.00	-12.15	QP	
8		1.8648	24.44	1.59	26.03	46.00	-19.97	AVG	
9		2.6148	41.29	1.19	42.48	56.00	-13.52	QP	
10		2.6148	27.38	1.19	28.57	46.00	-17.43	AVG	
11		3.6406	38.40	0.94	39.34	56.00	-16.66	QP	
12	*	3.6406	37.35	0.94	38.29	46.00	-7.71	AVG	

5.2 Radiated emission

5.2.1 Limits

Frequency range (9kHz – 30MHz)

Except as provided elsewhere in this Subpart 18.305 (b), the field strength levels of emissions which lie outside the bands specified in §18.301, unless otherwise indicated, shall not exceed the following table:

Frequency (MHz)	Field Strengths Limit (at 3m) dBμV/m	Detector
0.009-30	103.5	Peak

Remark:

(1) Emission level dBμV/m for 0.009~30MHz = 20log (15) + 40log (300/3) dBμV/m;

(2) Calculated according FCC 18.305.

(3) The smaller limit shall apply at the cross point between two frequency bands.

(4) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

Frequency range (30MHz – 1GHz)

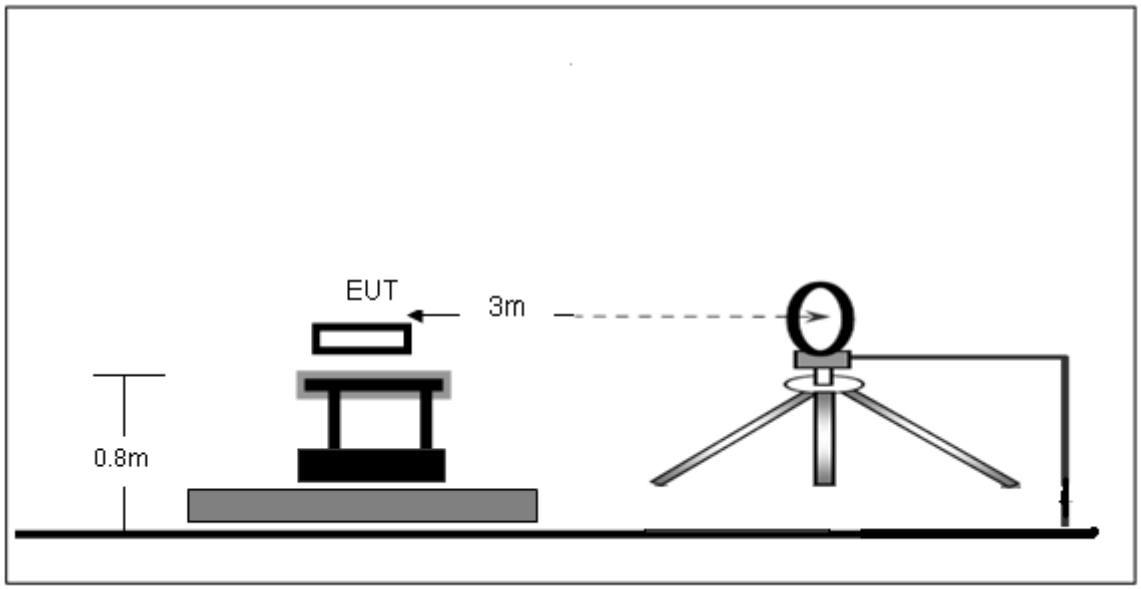
Frequency (MHz)	Class B device (at 3m) dBμV/m	Detector
30-88	40	QP
88-216	43.5	QP
216-1000	46	QP

5.2.2 Test Procedures

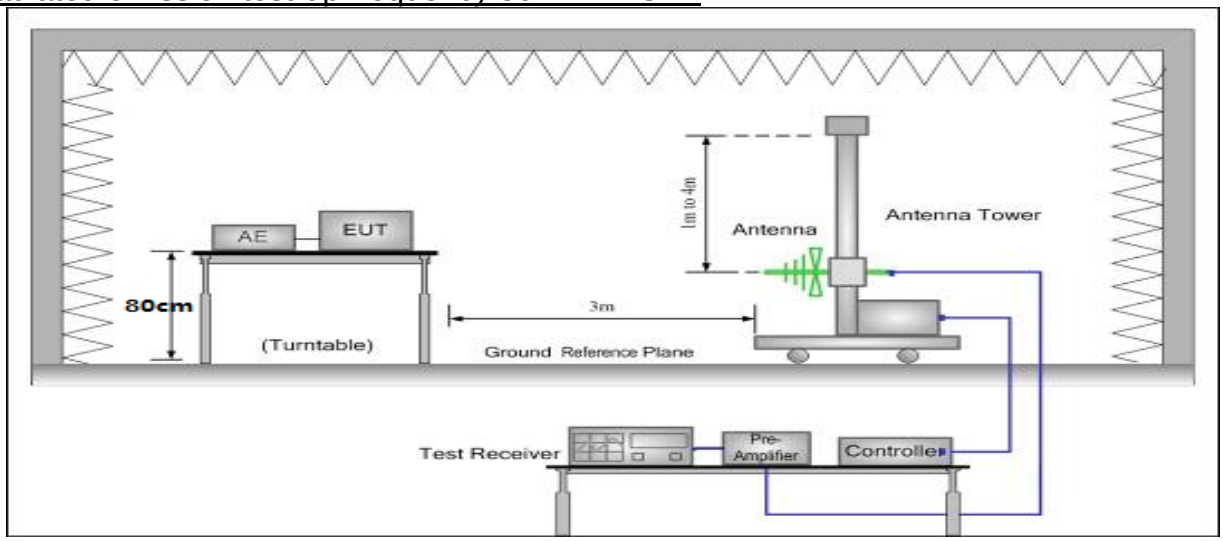
The radiated emission tests were performed in the 3 meters.
The EUT was placed on the top of a rotating table 0.8 meters above the ground. The table was rotated 360 degrees to determine the position of the highest radiation.
The height of the test antenna shall vary between 1m to 4m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
If the peak mode measured value compliance with and lower than quasi peak mode limit, the EUT shall be deemed to meet QP limits and then no additional QP mode measurement performed.
If the peak mode measured value compliance with and lower than average mode limit, the EUT shall be deemed to meet average limits and then no additional average mode measurement performed.
For the actual test configuration, please refer to the related item – EUT test photos.

5.2.3 Test Setup

Radiated emission test-up frequency below 30MHz



Radiated emission test-up frequency 30MHz~1GHz



5.2.4 Test Result

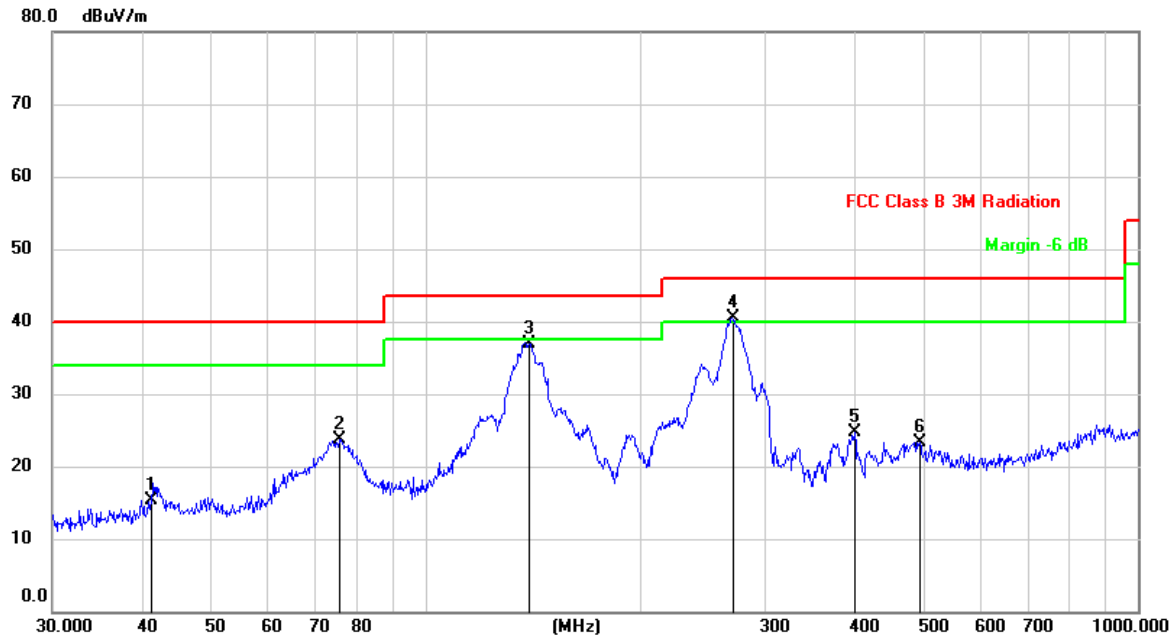
Frequency range (9kHz – 30MHz)

Temperature:	23℃	Relative Humidity:	59%
Pressure:	101kPa	Polarization:	Horizontal
Test voltage:	DC 5V form AC 120V/60Hz	Test mode:	Mode 1

Frequency	Reading Level	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector	Comment
(MHz)	(dBμV)	(dB)	dB/m	(dBμV/m)	(dBμV/m)	(dB)	Type	
0.017	56.05	0.30	20.55	76.90	103.5	-26.60	Pk	Horizontal
0.076	54.16	0.30	20.60	75.06	103.5	-28.44	Pk	Horizontal
0.115	68.73	0.30	20.75	89.78	103.5	-13.72	Pk	Horizontal
1.831	41.24	0.30	20.82	62.36	103.5	-41.14	Pk	Horizontal
8.744	36.62	0.30	20.87	57.79	103.5	-45.71	Pk	Horizontal
15.426	35.53	0.30	20.91	56.74	103.5	-46.76	Pk	Horizontal

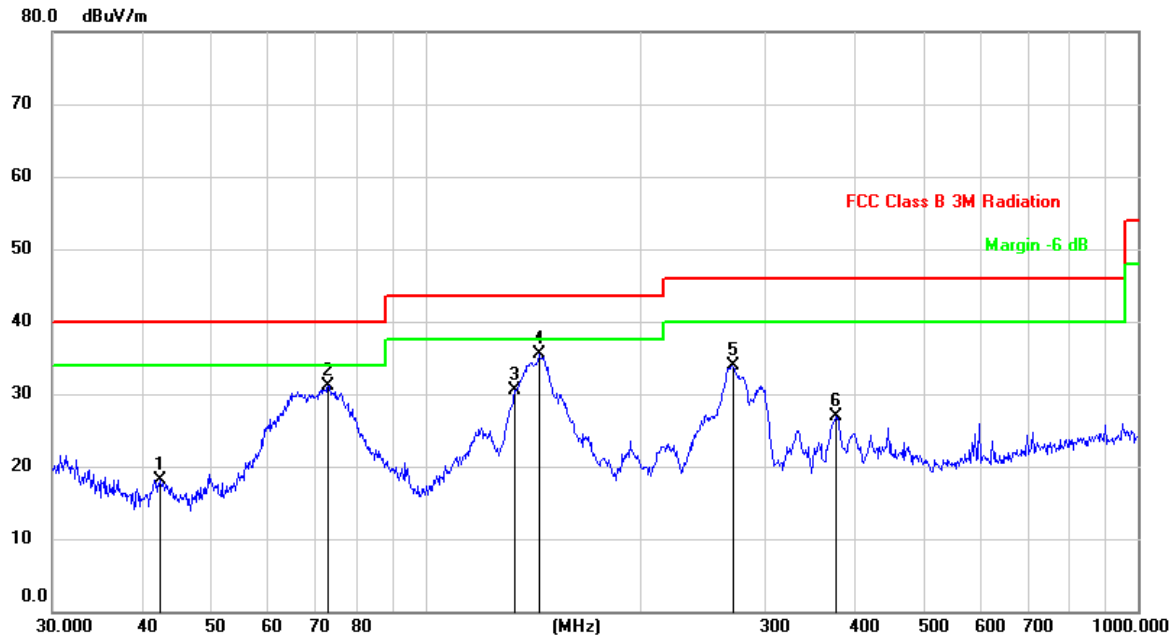
Frequency range (30MHz – 1GHz)

Temperature:	23℃	Relative Humidity:	59%
Pressure:	101kPa	Polarization:	Horizontal
Test voltage:	DC 5V form AC 120V/60Hz	Test mode:	Mode 1



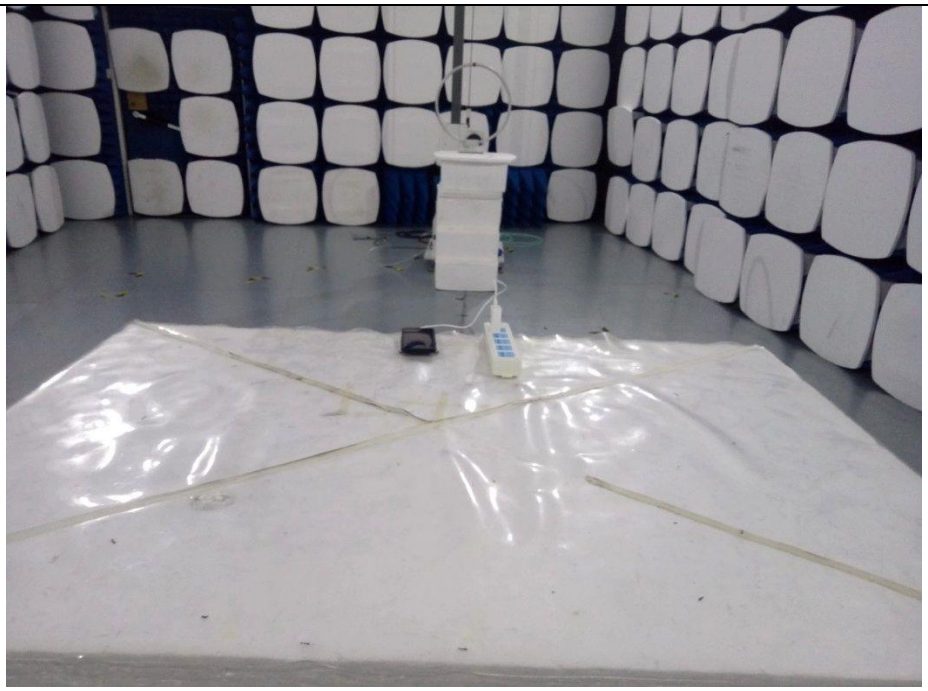
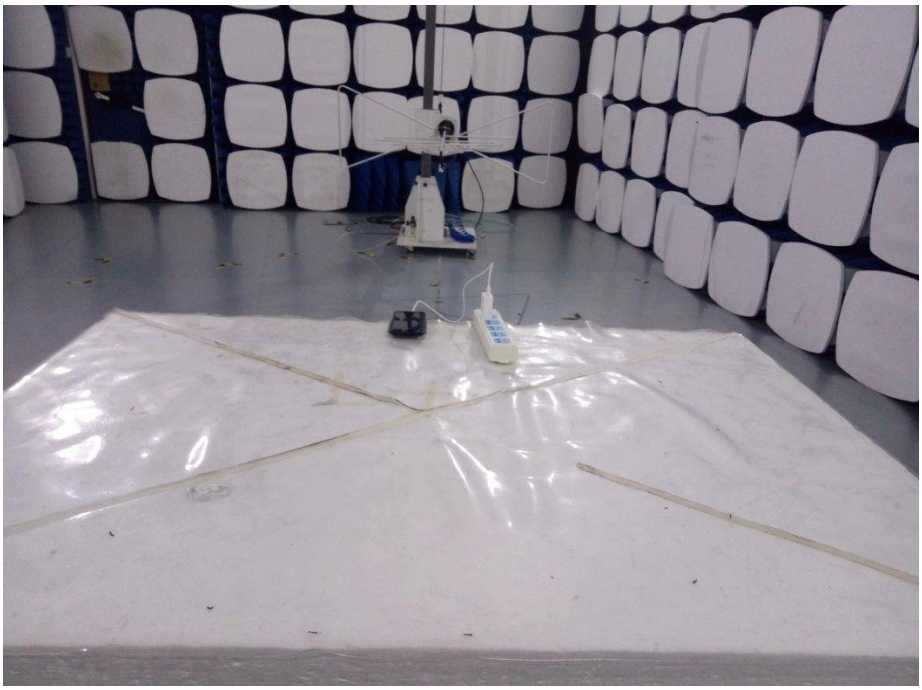
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		41.2764	25.74	-10.41	15.33	40.00	-24.67	QP			
2		75.7113	38.44	-14.73	23.71	40.00	-16.29	QP			
3		139.8508	51.88	-14.90	36.98	43.50	-6.52	QP			
4	*	269.4284	49.97	-9.47	40.50	46.00	-5.50	QP			
5		400.4318	31.32	-6.54	24.78	46.00	-21.22	QP			
6		494.1984	28.56	-5.16	23.40	46.00	-22.60	QP			

Temperature:	23℃	Relative Humidity:	59%
Pressure:	101kPa	Polarization:	Vertical
Test voltage:	DC 5V form AC 120V/60Hz	Test mode:	Mode 1



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		42.4508	28.27	-10.18	18.09	40.00	-21.91	QP			
2		73.1025	44.82	-13.63	31.19	40.00	-8.81	QP			
3		133.6187	44.12	-13.64	30.48	43.50	-13.02	QP			
4	*	144.3348	49.28	-13.71	35.57	43.50	-7.93	QP			
5		269.4284	42.41	-8.59	33.82	46.00	-12.18	QP			
6		377.2590	33.90	-7.02	26.88	46.00	-19.12	QP			

Photographs of the Test Setup

Radiated emission



Conducted emission


Photographs of the EUT

See the APPENDIX 1: EUT PHOTO in the report NO.: MTi180929E182-1

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