

Test Report

Report No.: MTi19122404-4E1

Date of issue: May 09, 2020

Sample Description: Rolled-up Mouse Pad Wireless Charger

Model(s):

Applicant:

Address:

Date of Test: Jan. 03, 2020 - May 09, 2020

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<http://www.mtitest.com>



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TEST REPORT

Applicant's name:

Address:

Manufacture's Name:

Address:

Product name: Rolled-up Mouse Pad Wireless Charger

Trademark:

Model name:

Standards: FCC Part 15 Subpart B

Test methods ANSI C63.4-2014

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:

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May 09, 2020

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May 09, 2020

Approved by:

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May 09, 2020



1 General description

1.1 Description of EUT

Product name:	Rolled-up Mouse Pad Wireless Charger
Model name:	
Series Model:	N/A
Different of series model:	N/A
Power supply:	DC 9V from adapter 120V/60Hz
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	Wireless charging + USB output + Type C output
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 is 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	EQ-24BCN	/	Huizhou Dongyang Yienbi Electronics Co., Ltd.
Load 1	/	/	/
Load 2	/	/	/



2 Summary of Test Result

Item	Description of Test	Result
FCC Part 15 Subpart B		
1	Conducted emission	Pass
2	Radiated emission	Pass

N/A: Mean not applicable.



3 Test Facilities and Accreditations

3.1 Test laboratory

Test Site	Shenzhen Microtest Co., Ltd.
Test Site Location	No.102A & 302A, East Block, Hengfang Industrial Park, Xingye Road, Xixiang, Bao'an District, Shenzhen, Guangdong, China
Telephone:	(86-755)88850135
Fax:	(86-755)88850136
CNAS Registration No.:	CNAS L5868
FCC Registration No.:	448573

3.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15°C~35°C
Humidity	20%~75%
Atmospheric pressure	98kPa~101kPa

3.3 Measurement uncertainty

Measurement Uncertainty for a Level of Confidence of 95 %, $U=2 \times U_c(y)$

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 %

3.4 Test software

Software name	Manufacturer	Model	Version
EMI Measurement Software	Farad	EZ-EMC	V1.1.4.2



4 List of test equipment

Radiation emission							
Item	Equipment name	Equipment No.	Manufacturer	Model	Serial No.	Calibration date	Due date
1	EMI Test Receiver	MTI-E004	Rohde&schwarz	ESPI7	1000314	2019/10/09	2020/10/08
2	Broadband antenna	MTI-E006	schwarabeck	VULB9163	872	2019/10/15	2020/10/14
3	Horn antenna	MTI-E007	schwarabeck	BBHA9120D	1201	2019/10/15	2020/10/14
4	amplifier	MTI-E014	America	8447D	3113A06150	2019/10/09	2020/10/08
5	18-40GHz amplifier	MTI-E052	Chengdu step Micro Technology	ZLNA-18-40G-21	1608001	2019/09/18	2020/09/17
6	15-40G Antenna	MTI-E053	Schwarzbeek	BBHA9170	BBHA9170582	2019/10/25	2020/10/24
Conduction emission							
Item	Equipment name	Equipment No.	Manufacturer	Model	Serial No.	Calibration date	Due date
1	Artificial power network	MTI-E037	Schwarzbeck	NSLK8127	NSLK8127#841	2019/10/09	2020/10/08
2	EMI Test Receiver	MTI-E003	Rohde&schwarz	ESCI	101368	2019/10/09	2020/10/08
3	Artificial power network	MTI-E058	Schwarzbeck	NSLK8127	NSLK8127#841	2019/10/09	2020/10/08

Note: the calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).



5 EMC emission test

5.1 Conducted emission

5.1.1 Limits

Frequency (MHz)	Class A (dB μ V)		Class B (dB μ V)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79	66	66 - 56 *	56 - 46 *
0.5 -5	73	60	56	46
5 -30	73	60	60	50

Note 1: the tighter limit applies at the band edges.

Note 2: 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.

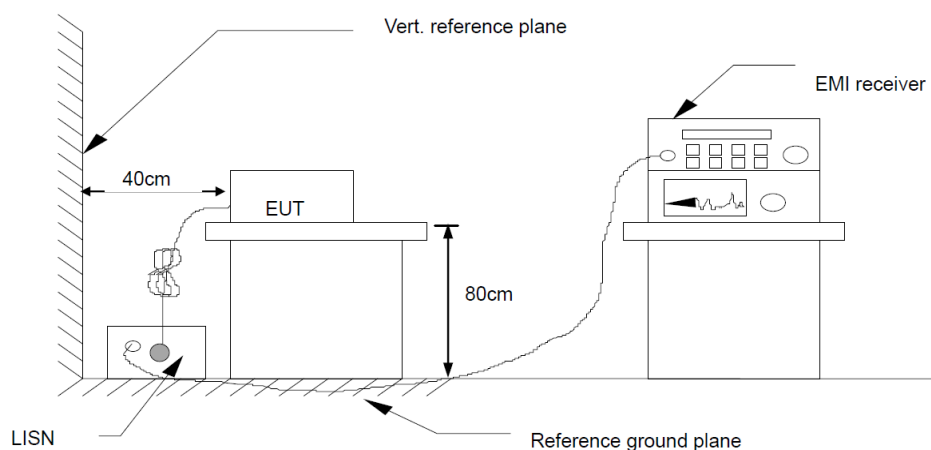
Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

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.

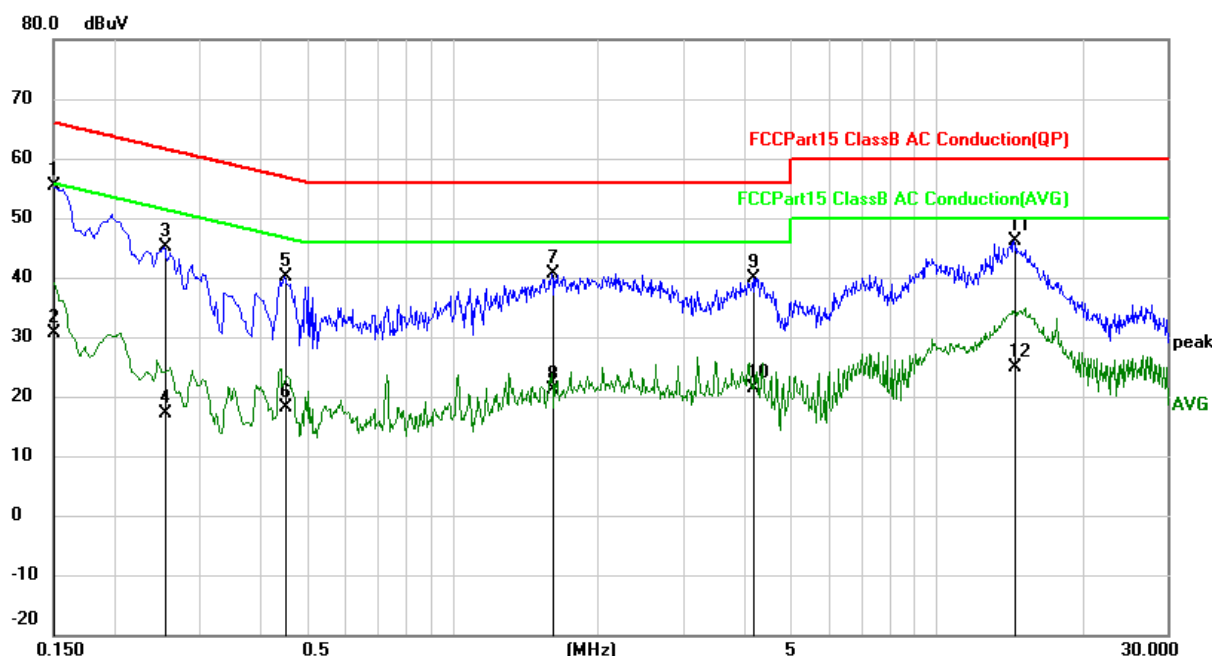
5.1.3 Test Setup



5.1.4 Test Result



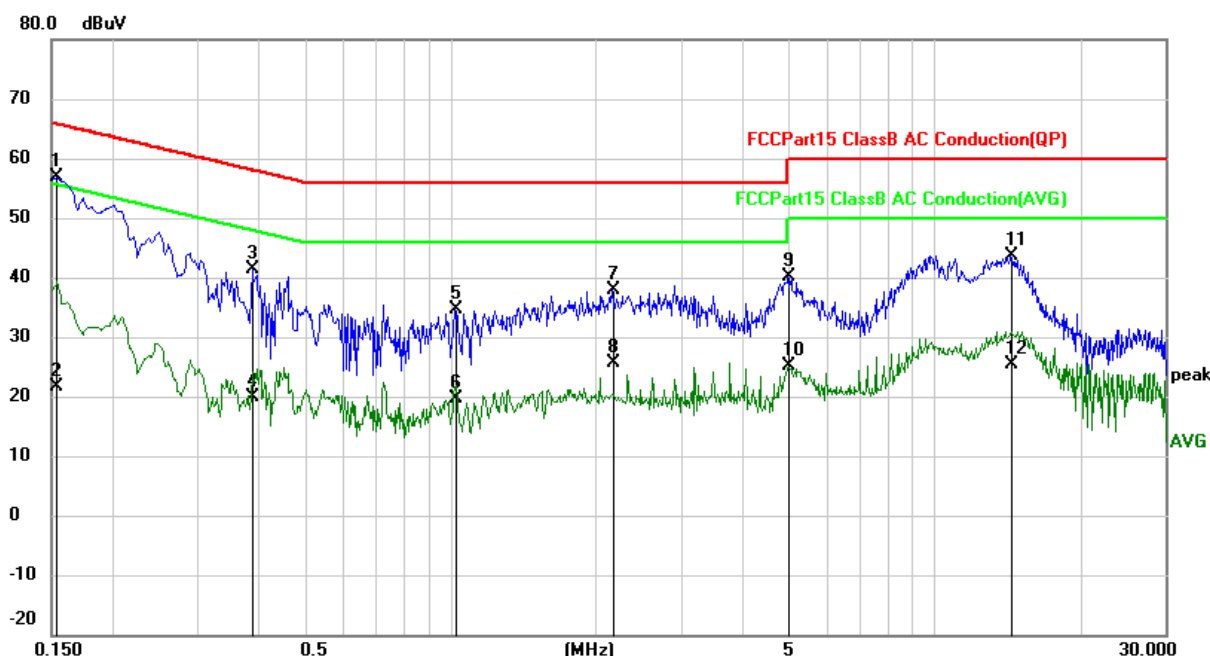
EUT:	Rolled-up Mouse Pad Wireless Charger	Model Name:	LWC-M02
Pressure:	101kPa	Phase:	L
Test voltage:	DC 9V from adapter 120V/60Hz	Test mode:	Mode 1



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1	*	0.1500	45.58	9.73	55.31	66.00	-10.69	QP
2		0.1500	20.90	9.73	30.63	56.00	-25.37	AVG
3		0.2540	35.50	9.73	45.23	61.63	-16.40	QP
4		0.2540	7.52	9.73	17.25	51.63	-34.38	AVG
5		0.4500	30.34	9.88	40.22	56.88	-16.66	QP
6		0.4500	8.35	9.88	18.23	46.88	-28.65	AVG
7		1.6060	30.53	9.99	40.52	56.00	-15.48	QP
8		1.6060	11.16	9.99	21.15	46.00	-24.85	AVG
9		4.1820	29.89	10.05	39.94	56.00	-16.06	QP
10		4.1820	11.37	10.05	21.42	46.00	-24.58	AVG
11		14.4500	35.90	10.28	46.18	60.00	-13.82	QP
12		14.4500	14.54	10.28	24.82	50.00	-25.18	AVG



EUT:	Rolled-up Mouse Pad Wireless Charger	Model Name:	LWC-M02
Pressure:	101kPa	Phase:	N
Test voltage:	DC 9V from adapter 120V/60Hz	Test mode:	Mode 1



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
		MHz	Level	Factor	ment			Detector
			dBuV	dB	dBuV	dBuV	dB	
1	*	0.1539	47.17	9.73	56.90	65.79	-8.89	QP
2		0.1539	11.86	9.73	21.59	55.79	-34.20	AVG
3		0.3899	31.46	9.84	41.30	58.07	-16.77	QP
4		0.3899	10.07	9.84	19.91	48.07	-28.16	AVG
5		1.0260	24.60	9.98	34.58	56.00	-21.42	QP
6		1.0260	9.70	9.98	19.68	46.00	-26.32	AVG
7		2.1660	27.79	10.01	37.80	56.00	-18.20	QP
8		2.1660	15.63	10.01	25.64	46.00	-20.36	AVG
9		5.0020	29.99	10.07	40.06	60.00	-19.94	QP
10		5.0020	15.04	10.07	25.11	50.00	-24.89	AVG
11		14.4380	33.30	10.28	43.58	60.00	-16.42	QP
12		14.4380	15.06	10.28	25.34	50.00	-24.66	AVG



5.2 Radiated emission

5.2.1 Limits

Limits of radiated emission measurement

Frequency (MHz)	Class B device (at 3m) dB μ V/m	Class A device (at 3m) dB μ V/m	Detector
30-88	40	49	QP
88-216	43.5	53.5	QP
216-960	46	56.4	QP
960-1000	54	59.5	QP
Above 1000	54	59.5	AV
Above 1000	74	79.5	PK

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.

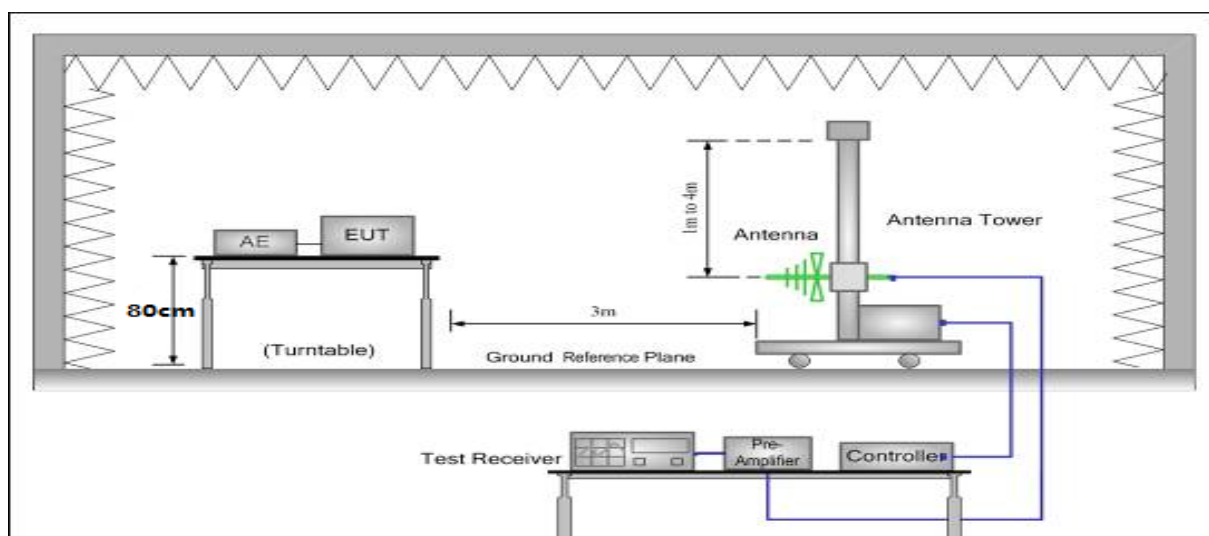
The height of the test antenna shall vary between 1m to 4m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

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



5.2.4 Test Result

Note: the highest working frequency of EUT is below 108MHz.

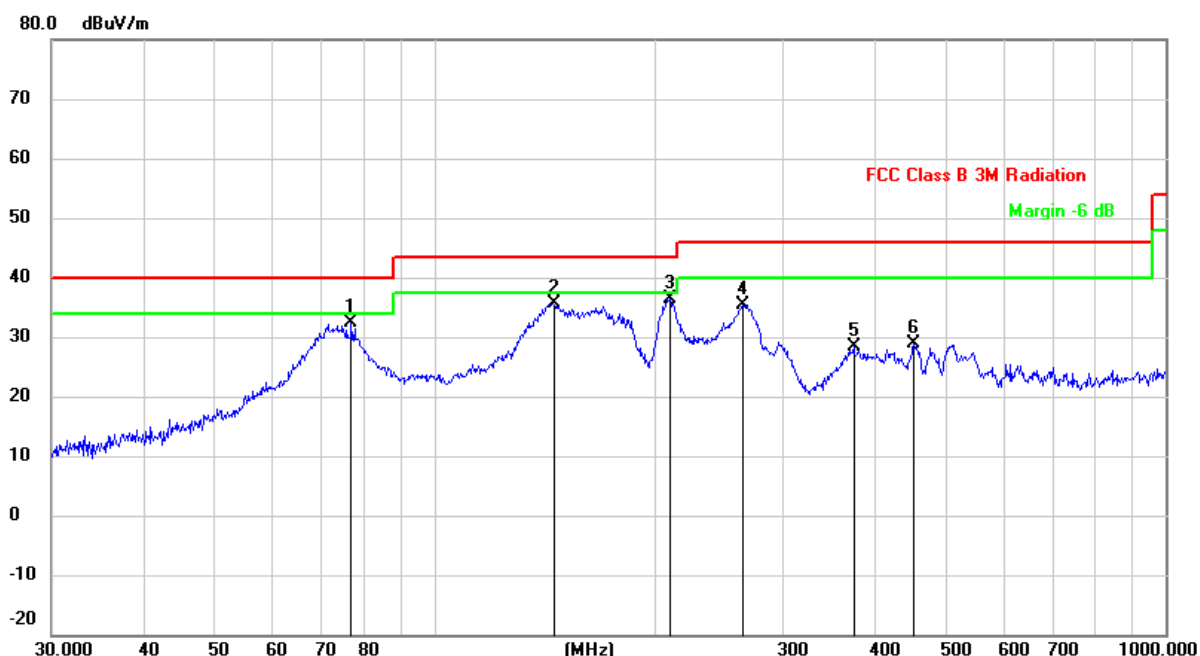
Formula:

Measurement Level (dB μ V/m) = Reading Level (dB μ V/m) + Correct Factor (dB μ V/m)

Margin Level (dB μ V/m) = Measurement Level (dB μ V/m) – Limit Level (dB μ V/m)



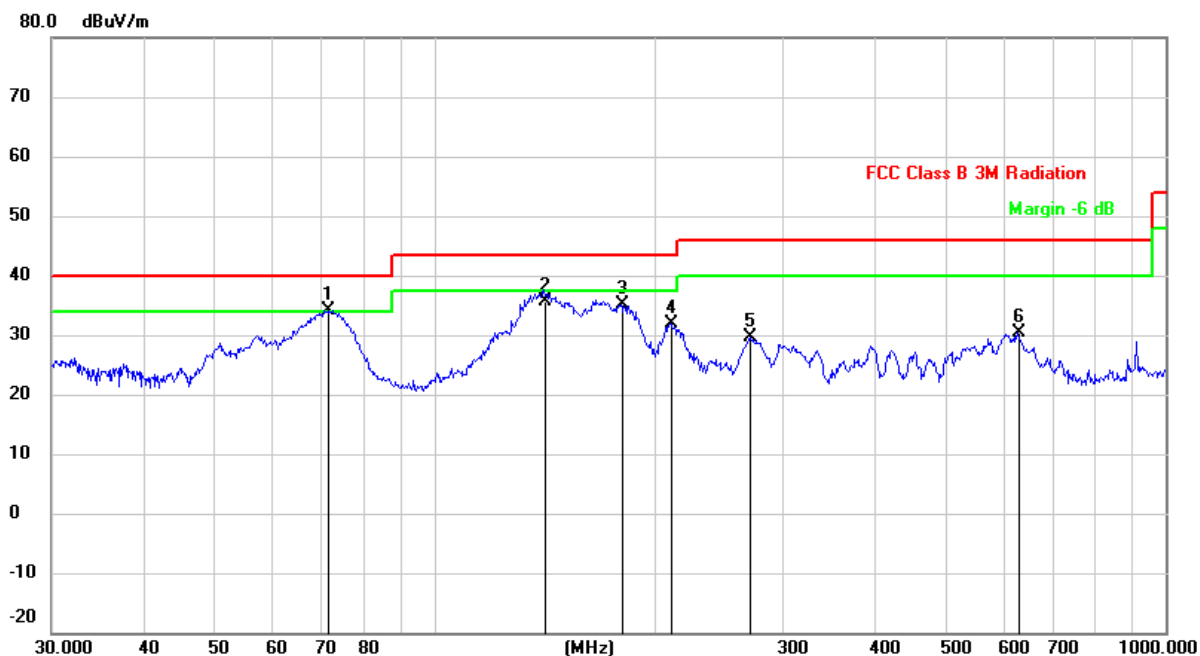
EUT:	Rolled-up Mouse Pad Wireless Charger	Model Name:	LWC-M02
Pressure:	101kPa	Polarization:	Horizontal
Test voltage:	DC 9V from adapter 120V/60Hz	Test mode:	Mode 1



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1		77.0505	49.44	-16.99	32.45	40.00	-7.55	QP
2		145.3506	51.84	-16.24	35.60	43.50	-7.90	QP
3	*	210.0482	49.22	-12.72	36.50	43.50	-7.00	QP
4		263.8190	46.63	-11.14	35.49	46.00	-10.51	QP
5		374.6225	37.33	-8.95	28.38	46.00	-17.62	QP
6		452.7196	37.04	-8.12	28.92	46.00	-17.08	QP



EUT:	Rolled-up Mouse Pad Wireless Charger	Model Name:	LWC-M02
Pressure:	101kPa	Polarization:	Vertical
Test voltage:	DC 9V from adapter 120V/60Hz	Test mode:	Mode 1

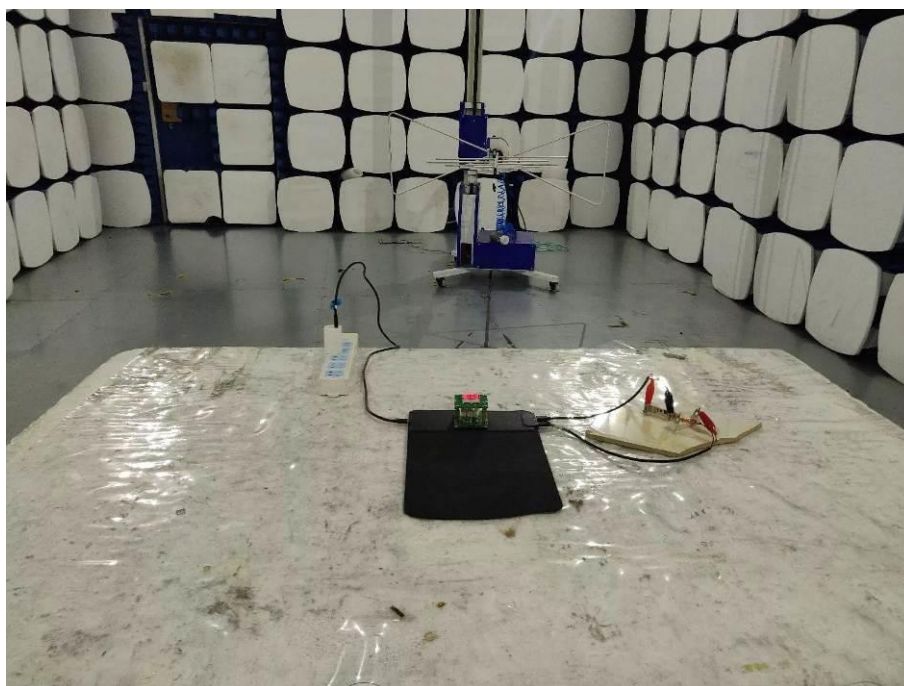


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1	*	71.8320	50.08	-15.89	34.19	40.00	-5.81	QP
2		141.3298	52.03	-16.33	35.70	43.50	-7.80	QP
3		180.0165	50.04	-14.89	35.15	43.50	-8.35	QP
4		210.7860	44.54	-12.72	31.82	43.50	-11.68	QP
5		270.3747	40.80	-11.12	29.68	46.00	-16.32	QP
6		627.2738	35.85	-5.41	30.44	46.00	-15.56	QP



Photographs of the Test Setup

Radiated emission below 1GHz



Conducted emission





Photographs of the EUT

See the APPENDIX 1: EUT PHOTO in the report No.: MTi19122404-4E1-1

----End of Report----