

Test Report



(Supplier's Declaration of conformity)
of

Ningbo Cstar Imp & Exp CO., LTD

Wireless mouse pad charger

Model No.: SW004, 1071-27, 32253

Prepared for : Ningbo Cstar Imp & Exp CO., LTD
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Investment & Innovation Center, Ningbo, China

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Report Number : ES180314006E
Date of Test : March 14, 2018 to March 21, 2018
Date of Report : March 22, 2018

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TEST REPORT DESCRIPTION

Applicant : Ningbo Cstar Imp & Exp CO., LTD
Manufacturer : Ningbo Cstar Imp & Exp CO., LTD
Trade Mark : N/A
EUT : Wireless mouse pad charger
Model No. : SW004, 1071-27, 32253
Power Supply : DC 5V from adapter

Measurement Procedure Used:

FCC Rules and Regulations Part 18 Subpart C
MP-5: 1986

The device described above is tested by EMTEK(SHENZHEN) CO., LTD. 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 EMTEK(SHENZHEN) CO., LTD. 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 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of EMTEK(SHENZHEN) CO., LTD.

Date of Test : March 14, 2018 to March 21, 2018

Test by : Bunny Zhang
/Editor

Prepared by : Jessie Hu
/Supervisor

Approved & Authorized Signer : [Signature]
/Manager



Modified Information

Version	Report No.	Revision Data	Summary
Ver.1.0	ES180314006E	/	Original Version

1. SUMMARY OF TEST RESULTS

EMISSION		
Description of Test Item	Standard & Limits	Results
Conducted Disturbance at Mains Terminals	FCC Part 18 Subpart C FCC OST MP-5: 2015	Pass
Radiated Disturbance	FCC Part 18 Subpart C FCC OST MP-5: 2015	Pass
Note: N/A is an abbreviation for Not Applicable.		

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT : Wireless mouse pad charger

Model Number : SW004, 1071-27, 32253
(Note: The samples are the same except appearance and model number.
So SW004 was selected for full tested.)

Test Voltage : DC 5V

Applicant : Ningbo Cstar Imp & Exp CO., LTD

Address : Floor 4, Building E, No. 655-90, Qiming Road, Yinzhou Investment
&Innovation Center, Ningbo, China

Manufacturer : Ningbo Cstar Imp & Exp CO., LTD

Address : Floor 4, Building E, No. 655-90, Qiming Road, Yinzhou Investment
&Innovation Center, Ningbo, China

Date of Received : March 14, 2018

Date of Test : March 14, 2018 to March 21, 2018

2.2. Input / Output Ports

Port #	Name	Type*	Cable Max. >3m	Cable Shielded	Comments
0	USB Port	I/O	--	--	1 Port

* Note: Use abbreviations:

AC= AC Power Port

DC= DC Power Port

N/E= Non-Electrical

I/O= Signal Input or Output Port (Not Involved in Process Control)

TP= Telecommunication Ports

2.3. Independent Operation Modes

A. On(1. Charging)

B. Stand-By

C. Off

2.4. Test Manner

Test Items	Test Voltage	Operation Modes	Worst case
Conducted Emission	DC 5V	Mode A	N/A
Radiated Emission	DC 5V	Mode A	N/A

2.5. Description of Test Facility

Site Description

EMC Lab.

: Accredited by CNAS, 2016.10.24

The certificate is valid until 2022.10.28

The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2006 (identical to ISO/IEC 17025:2005)

The Certificate Registration Number is L2291.

Accredited by TUV Rheinland Shenzhen 2016.5.19

The Laboratory has been assessed according to the requirements ISO/IEC 17025.

Accredited by FCC, August 03, 2017

Designation Number: CN1204

Test Firm Registration Number: 882943

Accredited by Industry Canada, November 24, 2015

The Certificate Registration Number is 4480A.

Name of Firm

: EMTEK (SHENZHEN) CO., LTD.

Site Location

: Bldg 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

2.6. Test Software

Item	Software
Conducted Disturbance at : Mains Terminals	EMTEK(Ver.CON-03A1)-Shenzhen
Radiated Disturbance :	EMTEK(Ver.RA-03A1)-Shenzhen

2.7. Description of Support Device

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
1.	Phone	HUAWEI.	Honor 4C	N/A	N/A
2.	Wireless Charger Receiver Module	Universal	N/A	N/A	N/A

2.8.Measurement Uncertainty

Test Item	Uncertainty
Conducted Emission Uncertainty	: 2.96dB(9k~150kHz Conduction 1#) 2.74dB(150k~30MHz Conduction 1#)
Radiated Emission Uncertainty (3m Chamber)	: 3.78dB (30M~1GHz Polarize: H) 4.27dB (30M~1GHz Polarize: V)

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1. For Power Line Conducted Emission Measurement

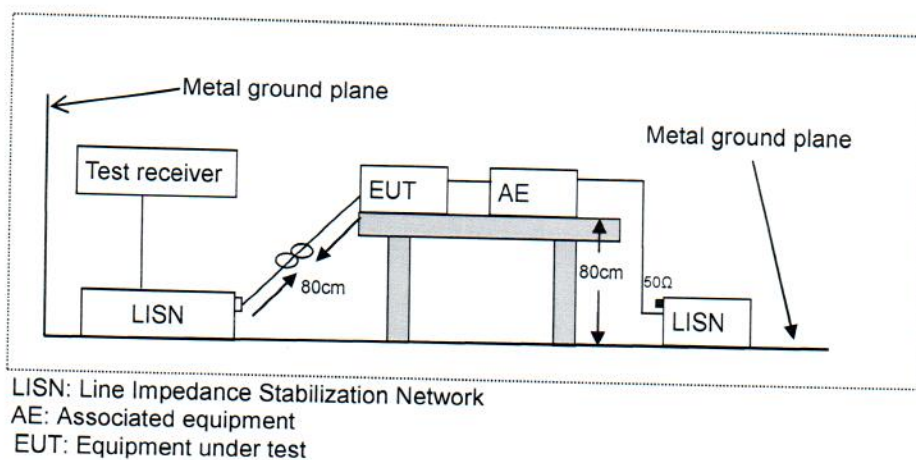
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
<input checked="" type="checkbox"/>	Test Receiver	Rohde & Schwarz	ESCS30	828985/018	May 21, 2017	1 Year
<input checked="" type="checkbox"/>	L.I.S.N.	ROHDE & SCHWARZ	ESH3-Z5	100191	May 20, 2017	1 Year
<input checked="" type="checkbox"/>	50Ω Coaxial Switch	Anritsu	MP59B	M20531	May 21, 2017	1 Year
<input checked="" type="checkbox"/>	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100006	May 20, 2017	1 Year

3.2. For Radiated Emission Measurement

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
<input checked="" type="checkbox"/>	EMI Test Receiver	Rohde & Schwarz	ESCI3	1166.5950K03-1 01384Bw	May 20, 2017	1 Year
<input checked="" type="checkbox"/>	Pre-Amplifier	LUNAR-EM	LNA30M3G-25	J10100000070	May 20, 2017	1 Year
<input checked="" type="checkbox"/>	Bilog Antenna	Schwarzbeck	VULB9163	141	May 20, 2017	1 Year
<input checked="" type="checkbox"/>	Cable	H+B	NmSm-05-QS 4585051 0.5M	N/A	May 21, 2017	1 Year
<input checked="" type="checkbox"/>	Cable	H+B	NmSm-2-QS4 585202 2M	N/A	May 21, 2017	1 Year
<input checked="" type="checkbox"/>	Cable	H+B	NmNm-7-QS4 585701 7M	N/A	May 21, 2017	1 Year

4. POWER LINE CONDUCTED EMISSION MEASUREMENT

4.1. Block Diagram of Test Setup



4.2. Measuring Standard

FCC Part 18 and MP-5

4.3. Power Line Conducted Emission Limits

■ All induction cooking ranges and ultrasonic equipment:

Frequency range (MHz)	Limit dB(μV)	
	Quasi-peak	Average
0.09-0.05	110	---
0.05-0.15	90-80*	---
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

Remark: * Decreases with the logarithm of the frequency.
In the above table, the tighter limit applies at the band edges.

☐ All other part 18 consumer devices:

Frequency range (MHz)	Limit dB(uV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

Remark: * Decreases with the logarithm of the frequency.
In the above table, the tighter limit applies at the band edges.

☐ RF lighting devices:

Frequency range (MHz)	Maximum RF line voltage measured with a 50 uH/50 ohm LISN(uV)
0.45-1.6	1000
1.6-30	3000
Consumer equipment	
0.45-2.51	250
2.51-3.0	3000
3.0-30	250

4.4. EUT Configuration on Measurement

The following equipments are installed on Conducted Emission Measurement to meet FCC requirements and operating in a manner which tends to maximize its emission characteristics in a normal application.

EUT : Wireless mouse pad charger
Model Number : QS458

4.5. Operating Condition of EUT

4.5.1. Setup the EUT as shown on Section 4.1.

4.5.2. Turn on the power of all equipment.

4.5.3. Let the EUT work in measuring mode (Full Load) and measure it.

4.6. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the FCC regulations during conducted emission measurement.

The bandwidth of the Test Receiver is set at 9kHz in 150kHz~30MHz and 200Hz in 9kHz~150kHz.

The frequency range from 9kHz to 30MHz is investigated.

Test results were obtained from the following equation:

$$\text{Emission Level (dB}\mu\text{V)} = \text{LISN Factor (dB)} + \text{Cable Loss (dB)} + \text{Reading (dB}\mu\text{V)}$$

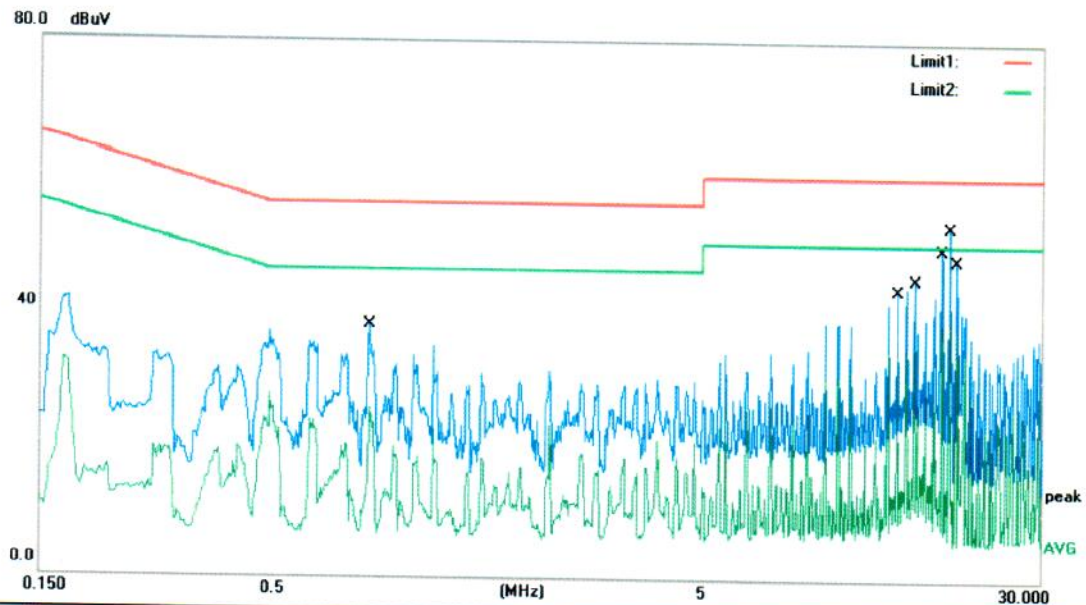
$$\text{Margin (dB)} = \text{Emission Level (dB}\mu\text{V)} - \text{Limit (dB}\mu\text{V)}$$

All the scanning waveform is put in the following pages.

4.7. Measuring Results

Pass.

Please refer to following pages.



Site site #1

Limit: (CE)FCC PART 18C_QP

Mode: Charging

Note:

Phase: L1

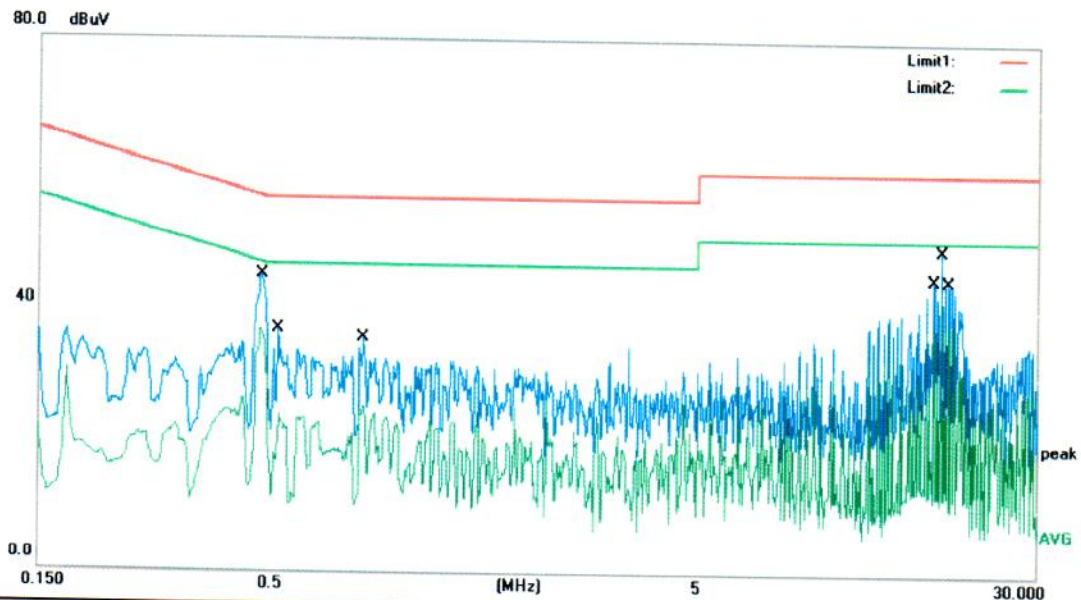
Power: DC 5V

Temperature: 25

Humidity: 55 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.8540	24.76	9.84	34.60	56.00	-21.40	QP	
2		0.8540	15.19	9.84	25.03	46.00	-20.97	AVG	
3		14.0700	30.11	10.09	40.20	60.00	-19.80	QP	
4		14.0700	23.41	10.09	33.50	50.00	-16.50	AVG	
5		15.4340	31.38	10.12	41.50	60.00	-18.50	QP	
6		15.4340	24.09	10.12	34.21	50.00	-15.79	AVG	
7		17.8420	35.62	10.18	45.80	60.00	-14.20	QP	
8		17.8420	27.67	10.18	37.85	50.00	-12.15	AVG	
9	*	18.5220	38.40	10.20	48.60	60.00	-11.40	QP	
10		18.5260	27.80	10.20	38.00	50.00	-12.00	AVG	
11		19.2140	34.28	10.22	44.50	60.00	-15.50	QP	
12		19.2140	26.97	10.22	37.19	50.00	-12.81	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: Washington



Site site #1
 Limit: (CE)FCC PART 18C_QP
 Mode: Charging
 Note:

Phase: **N**
 Power: DC 5V

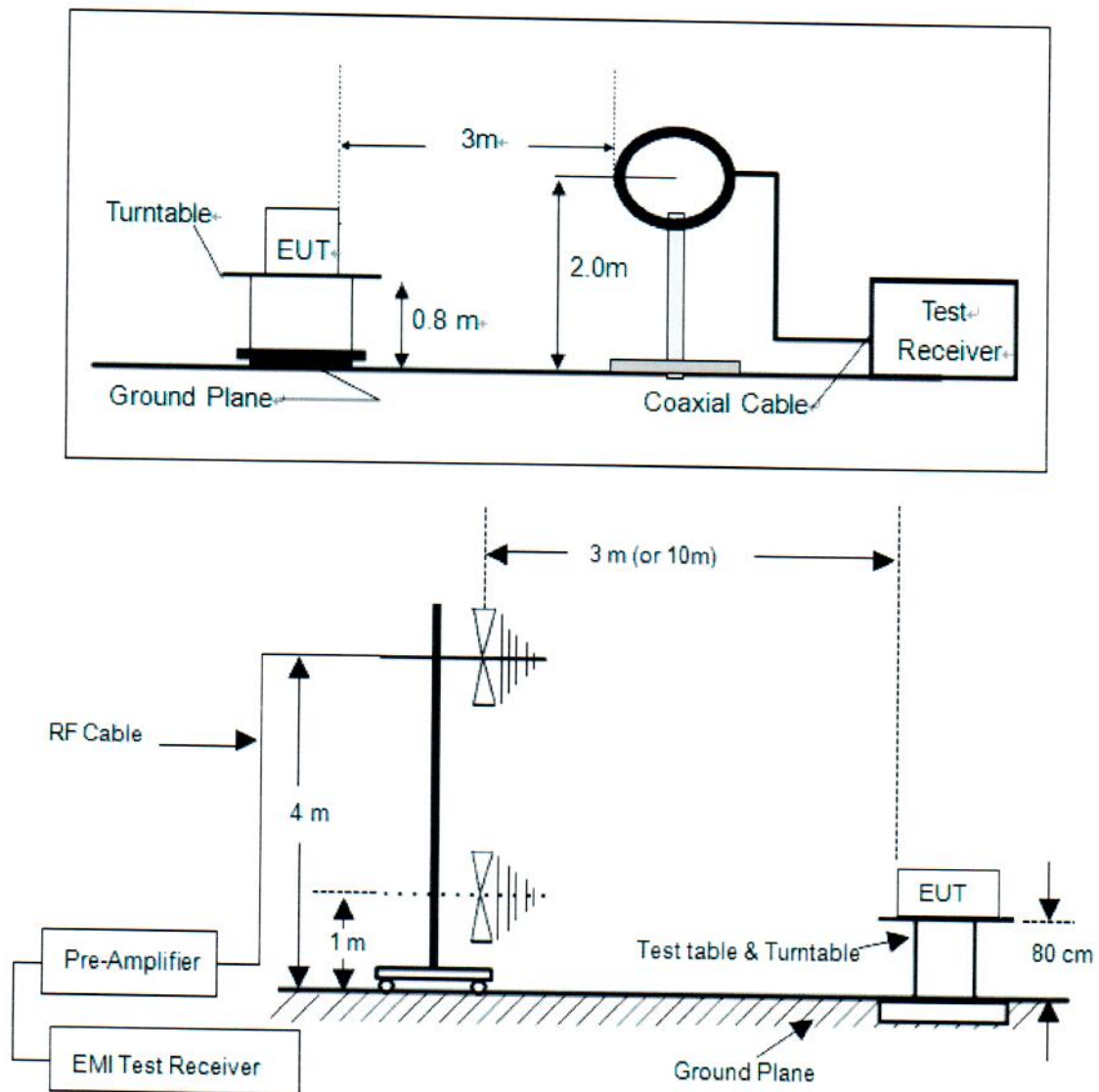
Temperature: 25
 Humidity: 55 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.4900	30.36	9.84	40.20	56.17	-15.97	QP	
2	*	0.4900	26.42	9.84	36.26	46.17	-9.91	AVG	
3		0.5340	22.76	9.84	32.60	56.00	-23.40	QP	
4		0.5340	7.00	9.84	16.84	46.00	-29.16	AVG	
5		0.8420	22.66	9.84	32.50	56.00	-23.50	QP	
6		0.8420	14.96	9.84	24.80	46.00	-21.20	AVG	
7		17.4740	31.13	10.17	41.30	60.00	-18.70	QP	
8		17.4740	26.04	10.17	36.21	50.00	-13.79	AVG	
9		18.1580	34.71	10.19	44.90	60.00	-15.10	QP	
10		18.1580	0.30	10.19	10.49	50.00	-39.51	AVG	
11		18.8140	30.99	10.21	41.20	60.00	-18.80	QP	
12		18.8140	27.77	10.21	37.98	50.00	-12.02	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: Washington

5. RADIATED EMISSION MEASUREMENT

5.1. Block Diagram of Test Setup



5.2. Measuring frequency range

Frequency band in which device operates (MHz)	Range of frequency measurements	
	Lowest frequency	Highest frequency
Below 1.705	Lowest frequency generated in the device, but not lower than 9 kHz.	30 MHz.
1.705 to 30	Lowest frequency generated in the device, but not lower than 9 kHz.	400 MHz.
30 to 500	Lowest frequency generated in the device or 25 MHz, whichever is lower.	Tenth harmonic or 1,000 MHz, whichever is higher.
500 to 1,000	Lowest frequency generated in the device or 100 MHz, whichever is lower.	Tenth harmonic.
Above 1,000do	Tenth harmonic or highest detectable emission.

Remark: 1. The operates frequency of Wireless mouse pad charger is less than 1.705MHz, so the test frequency range is 9KHz to 30MHz.

5.3. Radiated Emission Limits

■ Table 1

Equipment	Operating frequency	RF Power generated by equipment (watts)	Field strength limit (uV/m)	Distance (meters)
<input type="checkbox"/> Any type unless otherwise specified (miscellaneous)	Any ISM frequency	Below 500 500 or more	25 25 x SQRT (power/500)	300 (1)300
	Any NON-ISM frequency	Below 500 500 or more	15 15 x SQRT (power/500)	300 (1)300
<input type="checkbox"/> Industrial heaters and RF stabilized arc welders	On or below 5,725 MHz Above 5,725 MHz	Any Any	10 (2)	1600 (2)
<input type="checkbox"/> Medical diathermy	Any ISM frequency Any non-ISM frequency	Any Any	25 15	300 300
<input type="checkbox"/> Ultrasonic	Below 490 kHz	Below 500 500 or more	2,400/F(kHz) 2,400/F(kHz)x SQRT(power/500)	300 (3)300
	490 to 1,600 kHz Above 1,600 kHz	Any Any	2,400/F(kHz) 15	30 30
■ Induction cooking ranges	Below 90 kHz On or above 90 kHz	Any Any	1,500 300	(4)30 (4)30

- (1) Field strength may not exceed 10 μ V/m at 1600 meters. Consumer equipment operating below 1000 MHz is not permitted the increase in field strength otherwise permitted here for power over 500 watts.
- (2) Reduced to the greatest extent possible.
- (3) Field strength may not exceed 10 μ V/m at 1600 meters. Consumer equipment is not permitted the increase in field strength otherwise permitted here for over 500 watts.
- (4) Induction cooking ranges manufactured prior to February 1, 1980, shall be subject to the field strength limits for miscellaneous ISM equipment.

Note : The field strength limit and distance shown in the following Table 2 are the conversion of the requirement in Table 1.

☐ Table 2

Equipment	Operating frequency	RF Power generated by equipment (watts)	Field strength limit (dBuV/m)	Distance (meters)
Any type unless otherwise specified (miscellaneous)	Any ISM frequency	Below 500	57.5	10

☐ The for RF lighting devices field strength limits

Frequency (MHz)	Field strength limit at 30 meters (μV/m)
Non-consumer equipment:	
30-88	30
88-216	50
216-1000	70
Consumer equipment:	
30-88	10
88-216	15
216-1000	20

Notes: The tighter limit shall apply at the boundary between two frequency ranges.

5.4. EUT Configuration on Measurement

The FCC Class B regulations test method must be used to find the maximum emission during radiated emission measurement.

EUT : Wireless mouse pad charger
Model Number : QS458

5.5. Operating Condition of EUT

5.5.1. Setup the EUT as shown on Section 5.1.

5.5.2. Turn on the power of all equipment.

5.5.3. Let the EUT work in measuring mode (Full Load) and measure it.

5.6. Test Procedure

The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna (loop antenna). The Antenna should be positioned with its plane vertical at the specified distance from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. The center of the loop shall be 2 m above the ground. For certain applications, the loop antenna plane may also need to be positioned horizontally at the specified distance from the EUT.

200Hz for measurements below 150 kHz
9 kHz for measurements from 150 kHz to 30MHz
100 kHz for measurements from 30MHz to 1000MHz

Emission Level (dBμV) = Antenna Factor (dB) + Cable Loss (dB) + Reading (dBμV)
Margin (dB) = Emission Level (dBμV) - Limit (dBμV)

The worst scanning curves are attached in following pages.

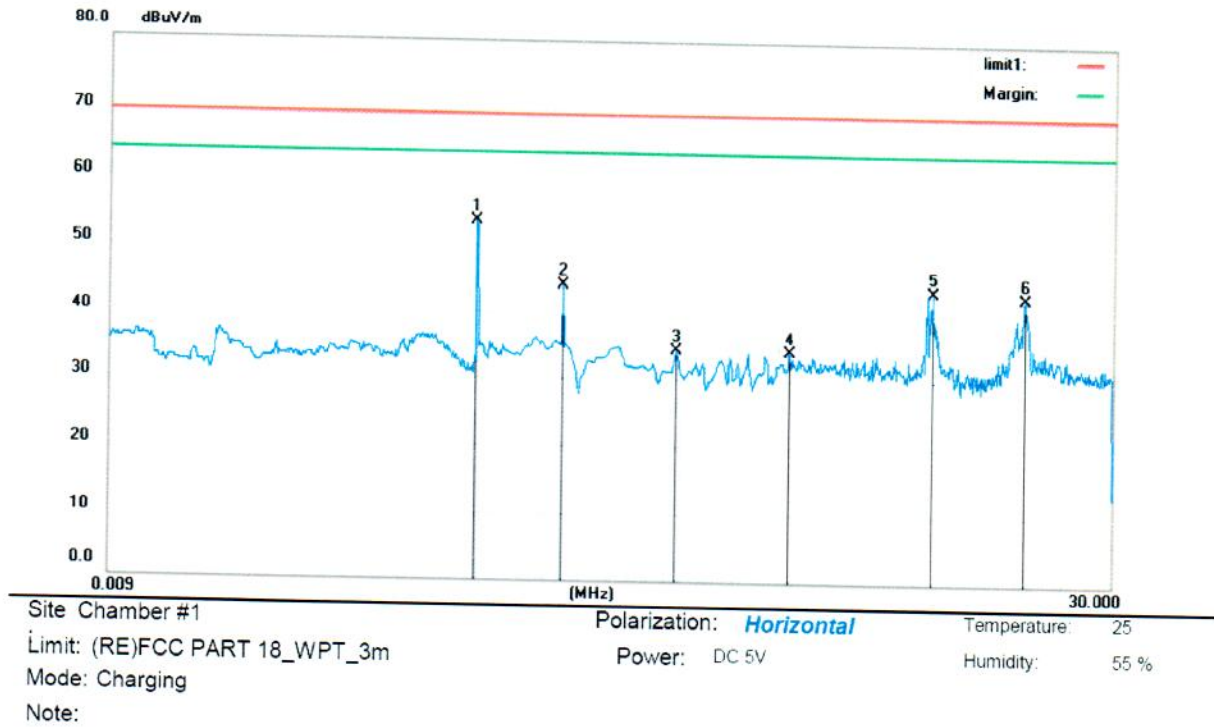
5.7. Measuring Results

PASS.

The frequency range from 9KHz to 30MHz is investigated.

Peak for pre-scan, Average for the final result.

Please refer to following pages.



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree	Detector	Comment
1	*	0.1737	53.24	0.00	53.24	69.50	-16.26			peak	
2		0.3491	43.93	0.00	43.93	69.50	-25.57			peak	
3		0.8787	34.34	0.00	34.34	69.50	-35.16			peak	
4		2.1983	34.05	0.00	34.05	69.50	-35.45			peak	
5		6.9668	43.30	0.00	43.30	69.50	-26.20			peak	
6		14.7645	42.49	0.00	42.49	69.50	-27.01			peak	

*:Maximum data x:Over limit !:over margin

Operator: huang

6. PHOTOGRAPHS

6.1.Photos of Conducted Emission Measurement



6.2.Photos of Radiation Emission Measurement



APPENDIX A: Warning Labels

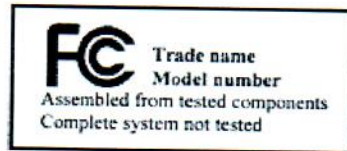
Label Requirements

A Class B digital device subject to Declaration of Conformity of FCC shall carry a label which includes the following statement:

WARNING

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The sample label shown shall be permanently affixed at a conspicuous location on the device and be readily visible to the user at the time of purchase.



APPENDIX B: Warning Statement

Statement Requirements

The operators' manual for a Class B digital device shall contain the following statements or their equivalent:

***** WARNING *****

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

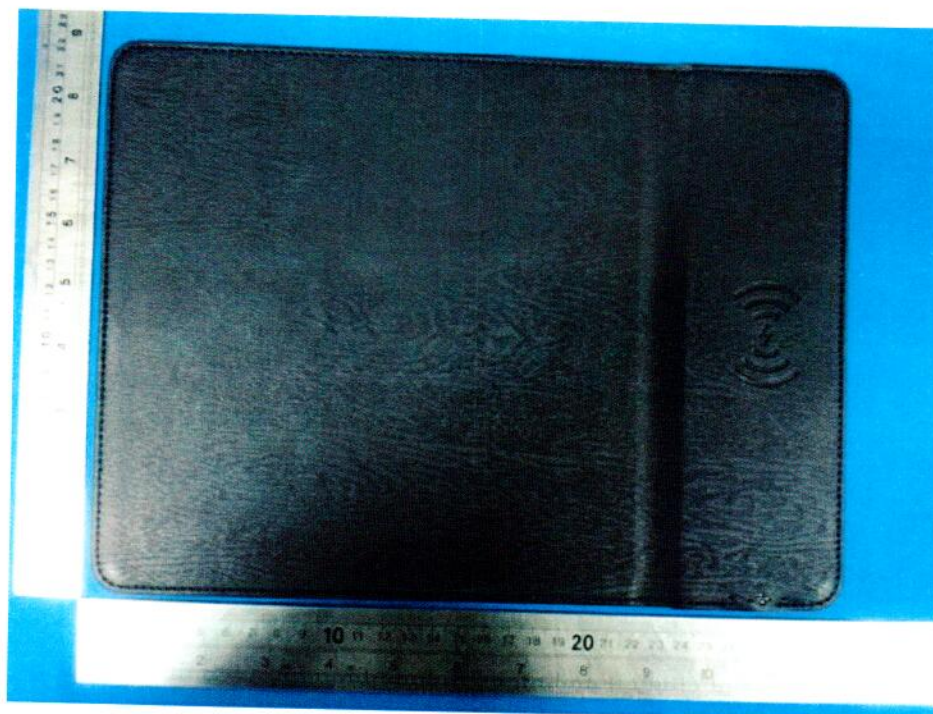
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

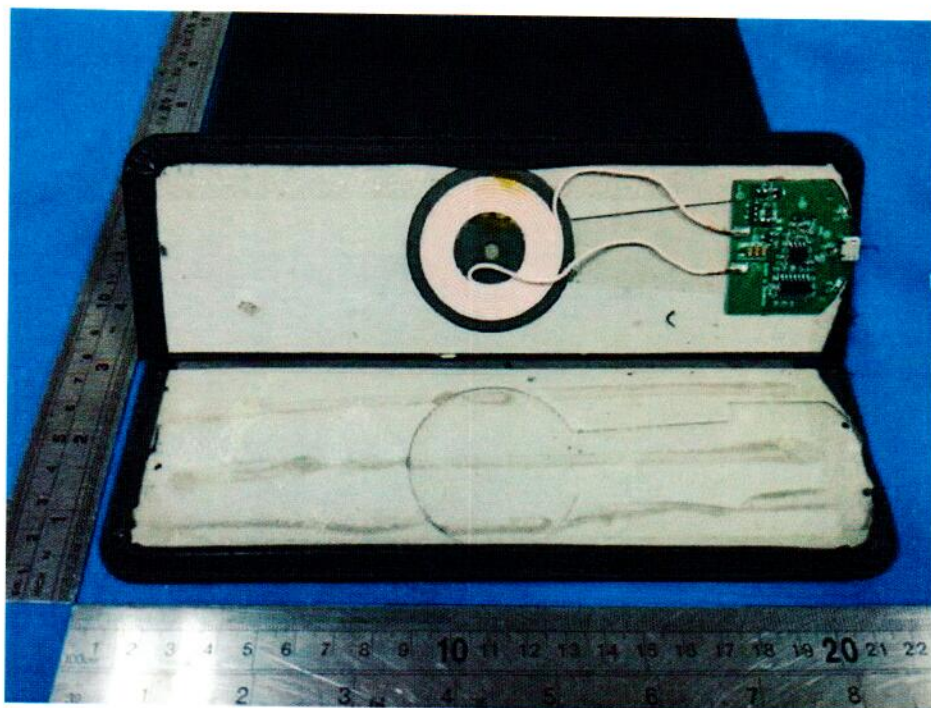
Notice: The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equivalent.

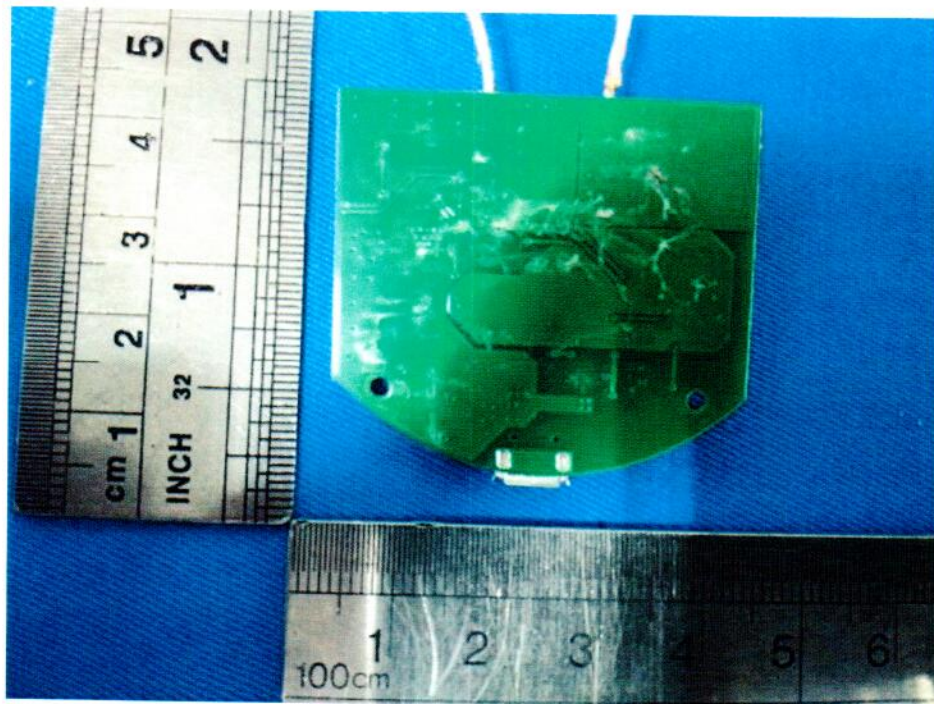
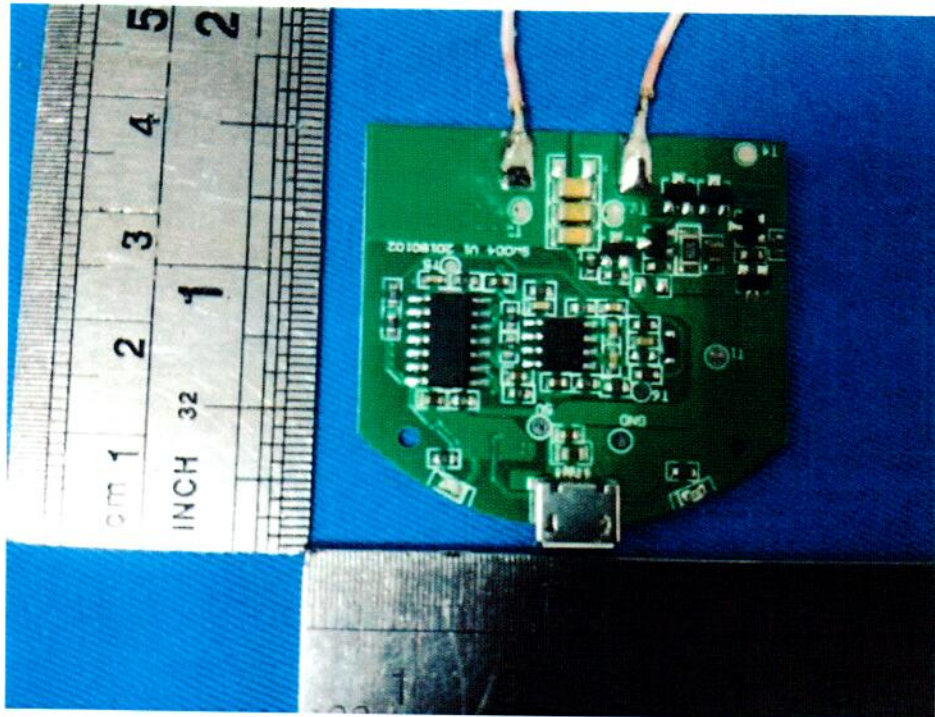
If the EUT was tested with special shielded cables the operators manual for such product shall also contain the following statements or their equivalent:

Shielded interface cables and/or AC power cord, if any, must be used in order to comply with the emission limits.

APPENDIX C: Photos of EUT







-----The end-----