

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT

OF

Wireless charge pad

Model No.: SW007, 2893, GC1470

Trademark: N/A

FCC ID: 2ABHA0045

Report No.: ES180710005E

Issue Date: July 13, 2018

Prepared for

Ningbo Cstar Imp & Exp CO., LTD Floor 4, Building E, No. 655-90, Qiming Road, Yinzhou Investment &Innovation Center, Ningbo, China

Prepared by

EMTEK(SHENZHEN) CO., LTD.

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

> TEL: 86-755-26954280 FAX: 86-755-26954282

This report shall not be reproduced, except in full, without the written approval of EMTEK(SHENZHEN) CO., LTD.

TRF No: FCC part 15C



VERIFICATION OF COMPLIANCE

| Applicant: | Ningbo Cstar Imp & Exp CO., LTD Floor 4, Building E, No. 655-90, Qiming Road, Yinzhou Investment &Innovation Center, Ningbo, China | | | |
|----------------------|--|--|--|--|
| Manufacturer: | Ningbo Cstar Imp & Exp CO., LTD Floor 4, Building E, No. 655-90, Qiming Road, Yinzhou Investment &Innovation Center, Ningbo, China | | | |
| Product Description: | Wireless charge pad | | | |
| Trade Mark: | N/A | | | |
| Model Number: | SW007, 2893,GC1470 (Note: The samples are the same except difference color of appearance and model number, Here SW007 was selected for full test.) | | | |

We hereby certify that:

The above equipment was tested by EMTEK(SHENZHEN) CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10-2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15C.

Date of Test :

July 10, 2018 to July 13, 2018

Yaping Shen

Prepared/Tested by :

Yaping Shen/Editor

Tee Ha

Reviewer:

Joe Xia/Supervisor

Approved & Authorized Signer :

Lisa Wang/Manager

TRF No: FCC part 15C



Modified Information

| Version | Summary | Revision Date | Report No. |
|---------|-----------------|---------------|--------------|
| Ver.1.0 | Original Report | / | ES180710005E |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |



Table of Contents

| 1 | GENERAL INFORMATION | 5 |
|-------------------|--|----|
| 1.1 1.2 1.3 | PRODUCT DESCRIPTION RELATED SUBMITTAL(S) / GRANT(S) TEST METHODOLOGY | 6 |
| 1.4 | Special Accessories | 6 |
| 1.5 1.6 | EQUIPMENT MODIFICATIONS | |
| | TEST FACILITY. SYSTEM TEST CONFIGURATION | |
| 2 | | |
| 2.1 2.2 2.3 | EUT CONFIGURATION | 7 |
| 2.3 | CONFIGURATION OF TESTED SYSTEM | |
| 3 | SUMMARY OF TEST RESULTS | 8 |
| 4 | DESCRIPTION OF TEST MODES | .9 |
| 5 | CONDUCTED EMISSIONS TEST | 0 |
| 5.1 | Measurement Procedure | 0 |
| 5.2 | TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) | 0 |
| 5.3 5.4 | MEASUREMENT EQUIPMENT USED | |
| 5.5 | MEASUREMENT RESULT | |
| 5.6 | CONDUCTED MEASUREMENT PHOTO | .4 |
| 6 | RADIATED EMISSION TEST1 | 5 |
| 6.1 | MEASUREMENT PROCEDURE | |
| 6.2 | TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) | |
| 6.3 6.4 | MEASUREMENT EQUIPMENT USED | |
| 6.5 | MEASUREMENT RESULT | 8 |
| 6.6 | RADIATED MEASUREMENT PHOTOS | !1 |
| 7 | 20DB BANDWIDTH | 22 |
| 7.1 | 20dB Bandwidth Limit | |
| 7.2 7.3 | TEST INSTRUMENTS | |
| 7.3 7.4 | TEST FROCEDORE | |
| 7.5 | TEST RESULT | |
| 8 | ANTENNA APPLICATION | 24 |
| 8.1 | ANTENNA REQUIREMENT | |
| 8.2 | RESULT | 24 |



1 General Information

1.1 **Product Description**

| Characteristics | Description | |
|----------------------------------|-------------------------|--|
| Product Name | Wireless charge pad | |
| Model number SW007 | | |
| Operation Mode Wireless Charging | | |
| Input Rating DC 5V from adapter | | |
| Power Supply | AC120V/60Hz for adapter | |
| Operating Frequency | 110-159.2KHz | |
| Modulation Technique | Induction | |
| Antenna Type | Induction coil | |



1.2 Related Submittal(s) / Grant(s)

This submittal(s) (test report) is intended for FCC ID: 2ABHA0045 filing to comply with the FCC Part 15, Subpart C Rules.

1.3 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2013). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Special Accessories

Not available for this EUT intended for grant.

1.5 Equipment Modifications

Not available for this EUT intended for grant.

1.6 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. |
| | | Accredited by A2LA, July 31, 2017 The Certificate Number is 4321.01. |
| Name of Firm Site Location | : | EMTEK(SHENZHEN) CO., LTD. Bldg 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China. |
| | | |



2 System Test Configuration

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the fixed in a particular direction according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013.



2.4 Configuration of Tested System

Fig. 2-1 Configuration of Tested System

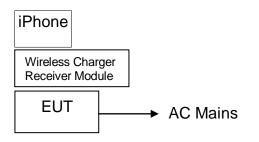


Table 2-1 Equipment Used in Tested System

| Item | Equipment | Trade Mark | Model No. | FCC ID | Note |
|------|---|--------------------|--------------|-----------|-------------------|
| 1. | Wireless charge pad | N/A $SV/007$ 2ABHA | | 2ABHA0045 | EUT |
| 2. | Adapter | N/A | YSV6-0501000 | N/A | Support EUT |
| 3. | iPhone | Apple | A1524 | N/A | Support Equipment |
| 4. | Wireless Charger Receiver Module | Universal | N/A | N/A | Support Equipment |

Note:

(1) Unless otherwise denoted as EUT in [Remark] column, device(s) used in tested system is a support equipment.

3 Summary of Test Results

| FCC Rules | Description Of Test | Result |
|-----------|--------------------------------|-----------|
| §15.207 | AC Power Conducted Emission | Compliant |
| §15.209 | Radiated Emission | Compliant |
| §2.1049 | 20dB Bandwidth | Compliant |
| §15.203 | Antenna Requirement | Compliant |



4 Description of test modes

| Channel | Frequency(KHz) |
|----------------|----------------|
| Low frequency | 110 |
| Mid frequency | 135 |
| High frequency | 159.2 |

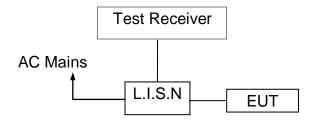


5 Conducted Emissions Test

5.1 Measurement Procedure

- 1. The EUT was placed on a table which is 0.8m above ground plane.
- 2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 3. Repeat above procedures until all frequency measured was complete.

5.2 Test SET-UP (Block Diagram of Configuration)



5.3 Measurement Equipment Used

| Conducted Emission Test Site | | | | | | | |
|------------------------------|-----------------|--------|-----------|------------|------------|--|--|
| EQUIPMENT | MFR | SERIAL | Last Cal. | Due date | | | |
| TYPE | | NUMBER | NUMBER | | | | |
| Test Receiver | Rohde & Schwarz | ESCS30 | 100018 | 05/16/2018 | 05/15/2019 | | |
| L.I.S.N | Rohde & Schwarz | ENV216 | 100017 | 05/16/2018 | 05/15/2019 | | |
| RF Switching Unit | CDS | RSU-M2 | 38401 | 05/16/2018 | 05/15/2019 | | |
| Coaxial Cable | CDS | 79254 | 46107086 | 05/16/2018 | 05/15/2019 | | |

5.4 Conducted Emission Limit

| Conducted Emission | | |
|--------------------|------------|---------|
| Frequency(MHz) | Quasi-peak | Average |
| 0.15-0.5 | 66-56 | 56-46 |
| 0.5-5.0 | 56 | 46 |
| 5.0-30.0 | 60 | 50 |

Note: 1. The lower limit shall apply at the transition frequencies

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.



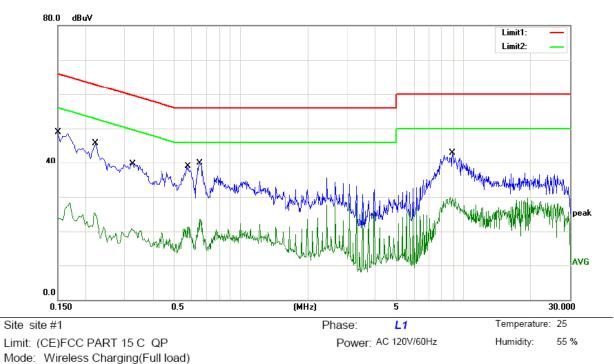
5.5 Measurement Result

| Operation Mode: | ТХ | Test Date : | July 12, 2018 |
|------------------|---------------|---------------|---------------|
| Frequency Range: | 0.15MHz~30MHz | Temperature : | 28 ℃ |
| Test Result: | PASS | Humidity : | 65 % |
| Test By: | Yaping Shen | | |

Pass

We pretested modes (max load, mid load, min load) for EUT. The worst mode (max load) test data see follow the table.





Note:

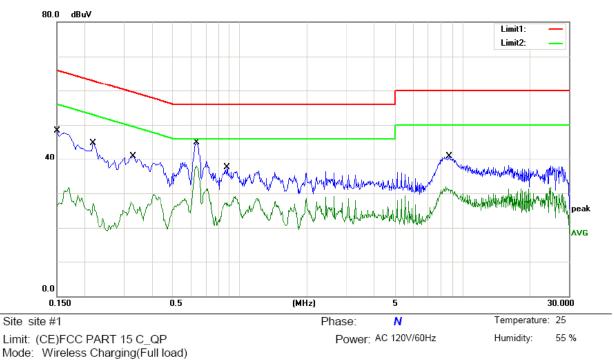
| No. Mk. | Freq. | Reading Level | Correct Factor | Measure- ment | Limit | Over | | |
|---------|--------|------------------|-------------------|------------------|-------|--------|----------|---------|
| | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | 0.1500 | 35.83 | 10.01 | 45.84 | 66.00 | -20.16 | QP | |
| 2 | 0.1500 | 13.81 | 10.01 | 23.82 | 56.00 | -32.18 | AVG | |
| 3 | 0.2220 | 32.65 | 10.04 | 42.69 | 62.74 | -20.05 | QP | |
| 4 | 0.2220 | 15.23 | 10.04 | 25.27 | 52.74 | -27.47 | AVG | |
| 5 | 0.3260 | 26.70 | 10.10 | 36.80 | 59.55 | -22.75 | QP | |
| 6 | 0.3260 | 10.83 | 10.10 | 20.93 | 49.55 | -28.62 | AVG | |
| 7 | 0.5780 | 25.62 | 10.18 | 35.80 | 56.00 | -20.20 | QP | |
| 8 | 0.5780 | 11.12 | 10.18 | 21.30 | 46.00 | -24.70 | AVG | |
| 9 * | 0.6540 | 26.63 | 10.18 | 36.81 | 56.00 | -19.19 | QP | |
| 10 | 0.6540 | 13.36 | 10.18 | 23.54 | 46.00 | -22.46 | AVG | |
| 11 | 8.9140 | 29.73 | 10.21 | 39.94 | 60.00 | -20.06 | QP | |
| 12 | 8.9140 | 19.70 | 10.21 | 29.91 | 50.00 | -20.09 | AVG | |
| | | | | | | | | |

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

Comment: Factor build in receiver.

Operator: Yaping shen





```
Note:
```

| No. Mk. | Freq. | Reading Level | Correct Factor | Measure- ment | Limit | Over | | |
|---------|--------|------------------|-------------------|------------------|-------|--------|----------|---------|
| | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | 0.1500 | 35.23 | 10.01 | 45.24 | 66.00 | -20.76 | QP | |
| 2 | 0.1500 | 17.26 | 10.01 | 27.27 | 56.00 | -28.73 | AVG | |
| 3 | 0.2180 | 31.69 | 10.04 | 41.73 | 62.89 | -21.16 | QP | |
| 4 | 0.2180 | 16.96 | 10.04 | 27.00 | 52.89 | -25.89 | AVG | |
| 5 | 0.3300 | 27.89 | 10.10 | 37.99 | 59.45 | -21.46 | QP | |
| 6 | 0.3300 | 17.36 | 10.10 | 27.46 | 49.45 | -21.99 | AVG | |
| 7 | 0.6380 | 31.67 | 10.18 | 41.85 | 56.00 | -14.15 | QP | |
| 8 * | 0.6380 | 27.80 | 10.18 | 37.98 | 46.00 | -8.02 | AVG | |
| 9 | 0.8780 | 24.32 | 10.18 | 34.50 | 56.00 | -21.50 | QP | |
| 10 | 0.8780 | 18.95 | 10.18 | 29.13 | 46.00 | -16.87 | AVG | |
| 11 | 8.7060 | 27.62 | 10.20 | 37.82 | 60.00 | -22.18 | QP | |
| 12 | 8.7060 | 21.60 | 10.20 | 31.80 | 50.00 | -18.20 | AVG | |

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

Comment: Factor build in receiver.

Operator: Yaping shen





5.6 Conducted Measurement Photo

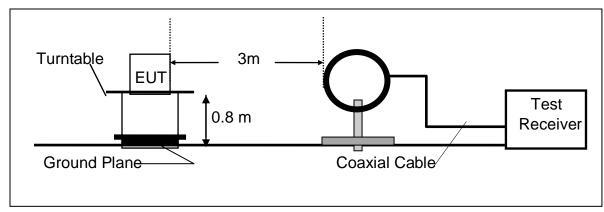


6 Radiated Emission Test

6.1 Measurement Procedure

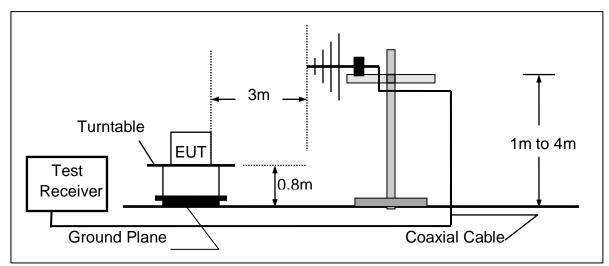
- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 4. Repeat above procedures until all frequency measured were complete.

6.2 Test SET-UP (Block Diagram of Configuration)



(A) Radiated Emission Test Set-Up, Frequency Below 30MHz

(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz





| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Due date |
|-----------------------------------|-----------------|-----------|--------------|------------|------------|
| Test Receiver | Rohde & Schwarz | ESCI | 1166.5950.03 | 05/16/2018 | 05/15/2019 |
| Signal Analyzer | Rohde & Schwarz | FSV30 | 103040 | 05/16/2018 | 05/15/2019 |
| Loop Antenna | Schwarzbeck | FMZB 1519 | 012 | 05/16/2018 | 05/15/2019 |
| Bilog Antenna | Schwarzbeck | VULB9163 | 000141 | 05/16/2018 | 05/15/2019 |
| Power Amplifier | CDS | RSU-M352 | 818 | 05/16/2018 | 05/15/2019 |
| Power Amplifier | HP | 8447F | OPT H64 | 05/16/2018 | 05/15/2019 |
| Color Monitor | SUNSPO | SP-140A | N/A | 05/16/2018 | 05/15/2019 |
| Single Line Filter | JIANLI | XL-3 | N/A | 05/16/2018 | 05/15/2019 |
| Single Phase Power Line Filter | JIANLI | DL-2X100B | N/A | 05/16/2018 | 05/15/2019 |
| 3 Phase Power Line Filter | JIANLI | DL-4X100B | N/A | 05/16/2018 | 05/15/2019 |
| DC Power Filter | JIANLI | DL-2X50B | N/A | 05/16/2018 | 05/15/2019 |
| Cable | Schwarzbeck | PLF-100 | 549489 | 05/16/2018 | 05/15/2019 |
| Cable | Rosenberger | CIL02 | A0783566 | 05/16/2018 | 05/15/2019 |
| Cable | Rosenberger | RG 233/U | 525178 | 05/16/2018 | 05/15/2019 |

6.3 Measurement Equipment Used

6.4 Radiated Emission Limit

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table 15.209(a):

| | FCC Part 15.209 | | | | | | | | | |
|---------------|-----------------|------|--|-------------------------|--|--|--|--|--|--|
| | Field Streng | | Field Strength Limitation Frequency tion at 3m | | | | | | | |
| Frequency | Limitation | l | Meas | urement Dist | | | | | | |
| (MHz) | (uV/m) | Dist | (uV/m) | (dBuV/m) | | | | | | |
| 0.009 - 0.490 | 2400 / F(KHz) | 300m | 10000 * 2400/F(KHz) | 20log 2400/F(KHz) + 80 | | | | | | |
| 0.490 – 1.705 | 24000 / F(KHz) | 30m | 100 * 24000/F(KHz) | 20log 24000/F(KHz) + 40 | | | | | | |
| 1.705 – 30.00 | 30 | 30m | 100* 30 | 20log 30 + 40 | | | | | | |
| 30.0 - 88.0 | 100 | 3m | 100 | 20log 100 | | | | | | |
| 88.0 – 216.0 | 150 | 3m | 150 | 20log 150 | | | | | | |
| 216.0 - 960.0 | 200 | 3m | 200 | 20log 200 | | | | | | |
| Above 960.0 | 500 | 3m | 500 | 20log 500 | | | | | | |



15.205 Restricted bands of operation

| MHz | MHz | MHz | GHz |
|----------------------------|-----------------------|-----------------|------------------|
| 0.090 - 0.110 | 16.42 - 16.423 | 399.9 - 410 | 4.5 - 5.15 |
| ¹ 0.495 - 0.505 | 16.69475 - 16.69525 | 608 - 614 | 5.35 - 5.46 |
| 2.1735 - 2.1905 | 16.80425 - 16.80475 | 960 - 1240 | 7.25 - 7.75 |
| 4.125 - 4.128 | 25.5 - 25.67 | 1300 - 1427 | 8.025 - 8.5 |
| 4.17725 - 4.17775 | 37.5 - 38.25 | 1435 - 1626.5 | 9.0 - 9.2 |
| 4.20725 - 4.20775 | 73 - 74.6 | 1645.5 - 1646.5 | 9.3 - 9.5 |
| 6.215 - 6.218 | 74.8 - 75.2 | 1660 - 1710 | 10.6 - 12.7 |
| 6.26775 - 6.26825 | 108 - 121.94 | 1718.8 - 1722.2 | 13.25 - 13.4 |
| 6.31175 - 6.31225 | 123 - 138 | 2200 - 2300 | 14.47 - 14.5 |
| 8.291 - 8.294 | 149.9 - 150.05 | 2310 - 2390 | 15.35 - 16.2 |
| 8.362 - 8.366 | 156.52475 - 156.52525 | 2483.5 - 2500 | 17.7 - 21.4 |
| 8.37625 - 8.38675 | 156.7 - 156.9 | 2690 - 2900 | 22.01 - 23.12 |
| 8.41425 - 8.41475 | 162.0125 - 167.17 | 3260 - 3267 | 23.6 - 24.0 |
| 12.29 - 12.293 | 167.72 - 173.2 | 3332 - 3339 | 31.2 - 31.8 |
| 12.51975 - 12.52025 | 240 - 285 | 3345.8 - 3358 | 36.43 - 36.5 |
| 12.57675 - 12.57725 | 322 - 335.4 | 3600 - 4400 | (²) |

Remark: 1. Emission level in dBuV/m=20 log (uV/m)

2. Measurement was performed at an antenna to the closed point of EUT distance of meters.

3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of ξ 15.205, and the emissions located in restricted bands also comply with 15.209 limit.



6.5 Measurement Result

We pretested modes (max load, mid load, min load) for EUT. The worst mode worst test frequency(Low frequency: 110KHz)test data see follow the table.

| Operation Mode: | Low frequency | Test Date : | July 12, 2018 |
|------------------------------------|---------------|------------------------|---------------------|
| Frequency Range: | 9KHz~30MHz | Temperature : | 20℃ |
| Test Result: Measured Distance: | PASS 3m | Humidity : Test By: | 55 % Yaping Shen |

| Freq. | Ant.Pol. | Emission Level | Limit 3m | Over | Note |
|-----------|----------|----------------|----------|--------|------|
| (MHz) | H/V | (dBuV/m) | (dBuV/m) | (dB) | |
| 0.1101(F) | Н | 74.12 | 106.77 | -32.65 | PK |
| 0.2202 | Н | 64.37 | 100.75 | -36.38 | PK |
| 0.3303 | Н | 65.42 | 97.23 | -31.81 | PK |
| 0.4404 | Н | 61.89 | 94.73 | -32.84 | PK |
| 0.5505 | Н | 61.77 | 72.79 | -11.02 | PK |
| | | | | | |
| 0.1101(F) | V | 74.32 | 106.77 | -32.45 | PK |
| 0.2202 | V | 63.54 | 100.75 | -37.21 | PK |
| 0.3303 | V | 63.72 | 97.23 | -33.51 | PK |
| 0.4404 | V | 65.88 | 94.73 | -28.85 | PK |
| 0.5505 | V | 62.15 | 72.79 | -10.64 | PK |

Note: (1) All Readings are Peak Value.

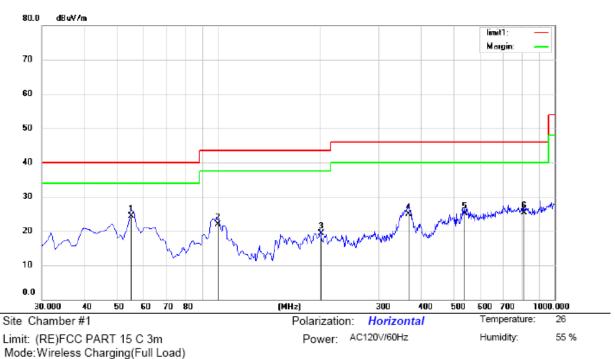
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.

(3) The average measurement was not performed when the peak measured data under the limit of average detection.

(4) EUT lying on the table position is the worst case result in the report.

We pretested modes (max load, mid load, min load) for EUT. The worst mode (max load) and worst test frequency(High frequency: 159.2KHz)test data see follow the page.





Note:

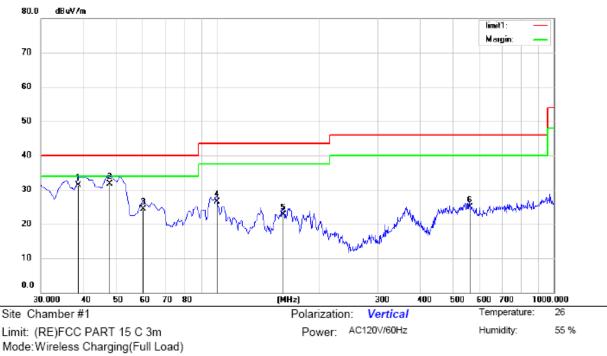
| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure- ment | Limit | Over | | Antenna Height | Table Degree | |
|-----|-----|----------|------------------|-------------------|------------------|--------|--------|----------|-------------------|-----------------|---------|
| | | MHz | dBuV | dB | dBu\//m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | * | 55.2200 | 40.32 | -15.97 | 24.35 | 40.00 | -15.65 | QP | | | |
| 2 | | 99.8400 | 40.50 | -18.65 | 21.85 | 43.50 | -21.65 | QP | | | |
| 3 | | 201.6900 | 36.58 | -17.26 | 19.32 | 43.50 | -24.18 | QP | | | |
| 4 | | 367.5600 | 36.70 | -11.85 | 24.85 | 46.00 | -21.15 | QP | | | |
| 5 | | 541.1900 | 33.00 | -7.98 | 25.02 | 46.00 | -20.98 | QP | | | |
| 6 | | 811.8200 | 28.60 | -3.21 | 25.39 | 46.00 | -20.61 | QP | | | |

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

Comment: Factor build in receiver.

Operator: Yaping shen





Note:

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure- ment | Limit | Over | | Antenna Height | Table Degree | |
|-----|-----|----------|------------------|-------------------|------------------|--------|--------|----------|-------------------|-----------------|---------|
| | | MHz | dBuV | dB | dBu\//m | dBu∀/m | dB | Detector | cm | degree | Comment |
| 1 | | 38.7516 | 48.36 | -17.07 | 31.29 | 40.00 | -8.71 | QP | | | |
| 2 | * | 47.9940 | 47.32 | -15.67 | 31.65 | 40.00 | -8.35 | QP | | | |
| 3 | | 60.0700 | 43.65 | -19.39 | 24.26 | 40.00 | -15.74 | QP | | | |
| 4 | | 99.8400 | 46.80 | -20.26 | 26.54 | 43.50 | -16.96 | QP | | | |
| 5 | | 157.0700 | 43.58 | -20.87 | 22.71 | 43.50 | -20.79 | QP | | | |
| 6 | | 562.5300 | 32.80 | -7.95 | 24.85 | 46.00 | -21.15 | QP | | | |

*:Maximum data

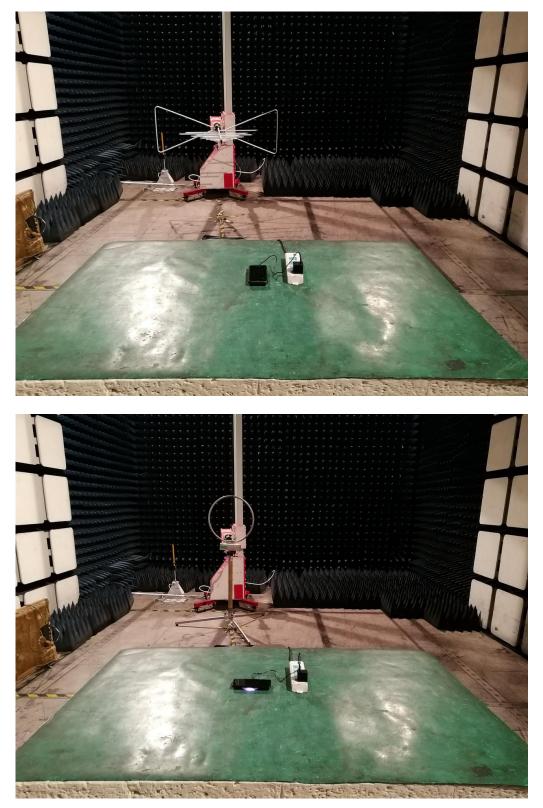
x:Over limit 1:over margin

Comment: Factor build in receiver.

Operator: Yaping shen



6.6 Radiated Measurement Photos



TRF No: FCC part 15C

Page 21 of 28

Report No: ES180710005E Ver.1.0



7 20db Bandwidth

7.1 **20dB Bandwidth Limit**

None: for reporting purposed only.

7.2 Test Instruments

Refer a test equipment and calibration data table in this test report.

7.3 **Test Procedure**

The bandwidth of the fundamental frequency was measured by spectrum analyzer with 10Hz RBW and 30Hz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

7.4 Test Setup

| EUT - | | Spectrum Analyzer |
|-------|--|-------------------|
|-------|--|-------------------|

7.5 Test Result

| Frequency (KHz) | 20dB Bandwidth (Hz) | Results |
|--------------------|------------------------|---------|
| 110.1 | 361.8 | PASS |



20 dB Bandwidth Test plot

| Spect | rum | | | | | | | | | | |
|---------------|--------|------------------|----------------------|---------|--|-----------|------------|---------|----------|--------------|--------------------|
| Ref Le Att | vel - | -30.00 d C | iBm Offset dB SWT | | RBW 10 H VBW 30 H | | e Auto FF1 | г | | | |
| ⊖1Pk M | ax | | | | | | | | | | |
| | | | | | | | M1[1] | | | | 7.58 dBm |
| -40 dBm | n | | | | | | | | | | 9580 kHz |
| | | | | | M1 | | ndB Bw | | | 61.8000 | 20.00 dB |
| -50 dBn | n | | | | -1 | + | Q factor | | | 01.00000 | 304.0 |
| | | | | | r ⁴ | m | | 1 | 1 | 1 | 001.0 |
| -60 dBn | n-+- | | | | the second | <u>}£</u> | <u>h_</u> | | | | |
| | | | | | A₹ _ | 4 | Wa I | | | | |
| -70 dBn | n-+- | | | | ۳ ۲ | + | - Mr. | | | | |
| | | | | Juni | | | | North R | | | |
| -80 dBn | ᡐᡮ | $\sim \sim \sim$ | 2 March | 1. 0 | | <u> </u> | | Sz-1-mA | molin | A Berton | . Main |
| -90 dBr | | | | | | | | | | \$ (10.00 VI | |
| -90 0011 | ' | | | | | | | | | | |
| -100 dB | .m. | | | | | <u> </u> | | | | | |
| | | | | | | | | | | | |
| -110 dB | m+ | | | | | + | | | | | |
| | | | | | | | | | | | |
| -120 dB | -m | | | - | | + | | | | | |
| | | | | | | | | | | | |
| CF 110 |).1 kH | łz | | | 691 | pts | | | | Span | 2.0 kHz |
| Marker | | | | | | | | | | | |
| Type | Ref | Trc | X-valu | ie | Y-value | F | unction | | Function | Result | |
| M1 | | 1 | | 958 kHz | -47.58 d | | ndB down | | | | 361.8 Hz |
| T1 | | 1 | | 234 kHz | -66.70 d | | ndB | | | 2 | 20.00 dB |
| T2 | | 1 | 110.2 | 852 kHz | -68.08 d | 3m | Q factor | | | | 304.0 |
| | |][| | | | | Measuring | | 1 | | 07.2018 4:10:52 |



8 Antenna Application

8.1 Antenna requirement

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

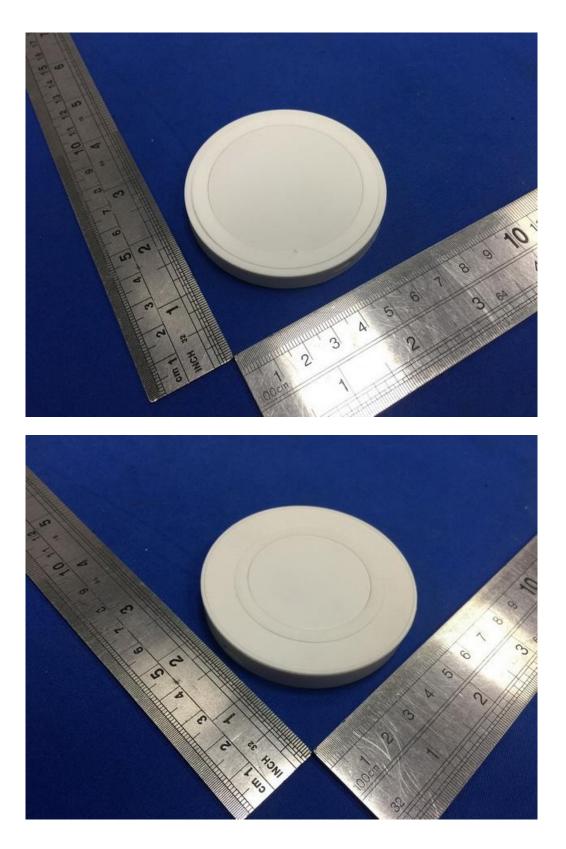
8.2 Result

The EUT's antenna, permanent attached antenna, used an Induction coil and integrated on PCB, The antenna's gain meets the requirement.

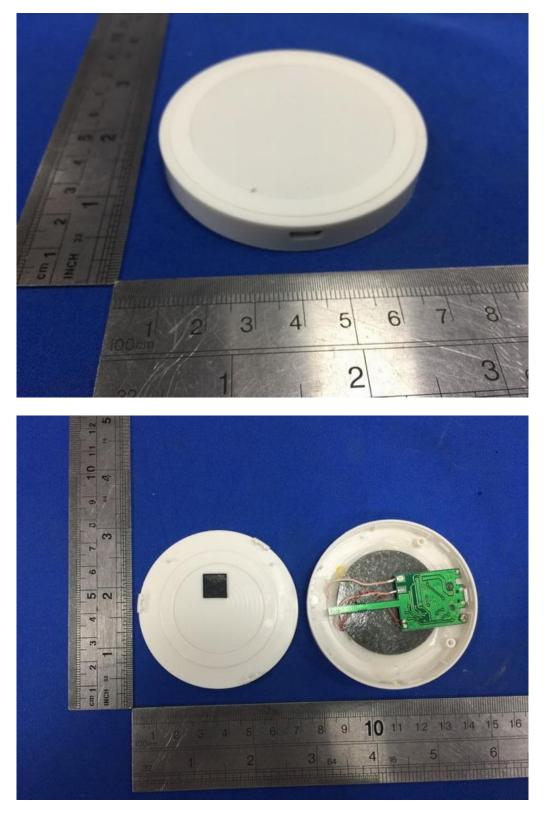


APPENDIX (Photos of EUT)





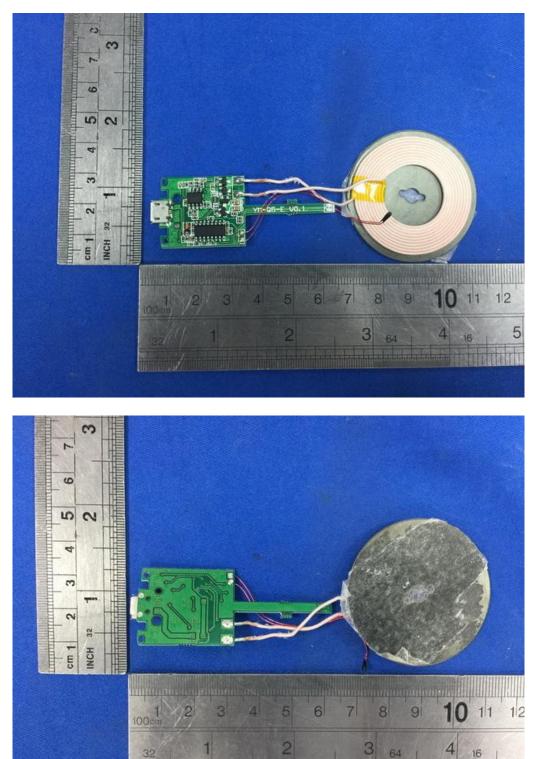




Page 27 of 28

Report No: ES180710005E Ver.1.0





TRF No: FCC part 15C