

RF Exposure Evaluation

FCC ID: 2BMII-ES0215

1. Client Information

| | | |
|---------------------|---|---|
| Applicant | : | Hanguangyue Xiamen Technology Co., Ltd |
| Address | : | Room 1606, No. 13 Meirensian Yili, Tongan District, Xiamen CHINA 361100 |
| Manufacturer | : | Hanguangyue Xiamen Technology Co., Ltd |
| Address | : | Room 1606, No. 13 Meirensian Yili, Tongan District, Xiamen CHINA 361100 |

2. General Description of EUT

| | | | |
|-------------------------------|----------------------|--|--|
| EUT Name | : | Magnetic Wireless Charger | |
| Model(s) | : | ES0215-WCP-001, ES0215-WCP-002, ES0215-WCP-A01, ES0215-WCP-A02 | |
| Model Difference | : | All these models are identical in the same PCB layout and electrical circuit, the only difference is appearance color. | |
| Product Description | Operation Frequency: | 110~205KHz&360KHz | |
| | Modulation Type: | ASK | |
| | Antenna: | Coil Antenna | |
| Power Supply | : | Input: 5V=2A, 9V=2.2A wireless charging: 15W/10W/7.5W/5W | |
| Software Version | : | N/A | |
| Hardware Version | : | N/A | |
| Connecting I/O Port(S) | : | Please refer to the User's Manual | |

Note: More test information about the EUT please refer the RF Test Report.

TB-RF-074-1.0

RF Exposure Considerations

1. Measuring Standard

KDB 680106 D01 RF Exposure Wireless Charging App v04.

2. Requirements

According to the item 5.2 of KDB 680106 D01v04:

Inductive wireless power transfer applications that meet all of the following requirements are excluded from submitting an RF exposure evaluation:

(1) The power transfer frequency is below 1 MHz.

(2) The output power from each transmitting element (e.g., coil) is less than or equal to 15 watts.

(3) A client device providing the maximum permitted load is placed in physical contact with the transmitter

(i.e., the surfaces of the transmitter and client device enclosures need to be in physical contact)

(4) Only § 2.1091-Mobile exposure conditions apply (i.e., this provision does not cover § 2.1093-Portable exposure conditions).

(5) The E-field and H-field strengths, at and beyond 20 cm surrounding the device surface, are demonstrated to be less than 50% of the applicable MPE limit, per KDB 447498, Table 1. These measurements shall be taken along the principal axes of the device, with one axis oriented along the direction of the estimated maximum field strength, and for three points per axis or until a $1/d$ (inverse distance from the emitter structure) field strength decay is observed. Symmetry considerations may be used for test reduction purposes. The device shall be operated in documented worst-case compliance scenarios

(i.e., the ones that lead to the maximum field components), and while all the radiating structures (e.g., coils

or antennas) that by design can simultaneously transmit are energized at their nominal maximum power.

(6) For systems with more than one radiating structure, the conditions specified in (5) must be met when

the system is fully loaded (i.e., clients absorbing maximum power available), and with all the radiating

structures operating at maximum power at the same time, as per design conditions. If the design allows one

or more radiating structures to be powered at a higher level while other radiating structures are not powered,

then those cases must be tested as well. For instance, a device may use three RF coils powered at 5 W, or

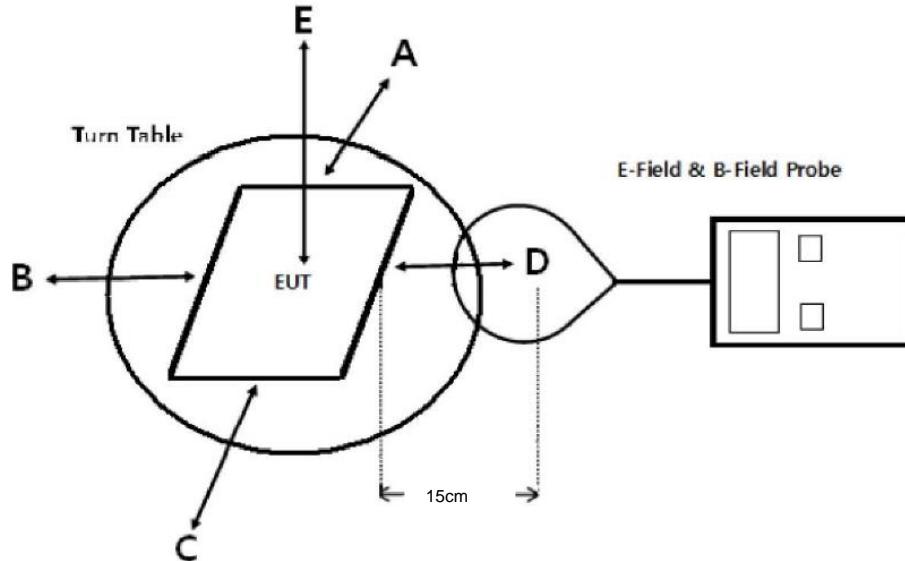
one coil powered at 15 W: in this case, both scenarios shall be tested.

Limits For Maximum Permissible Exposure (MPE)

| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm ²) | Averaging time (minutes) |
|--|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| (A) Limits for Occupational/Controlled Exposures | | | | |
| 0.3-3.0 | 614 | 1.63 | *(100) | 6 |
| 3.0-30 | 1842/f | 4.89/f | *(900/f ²) | 6 |
| 30-300 | 61.4 | 0.163 | 1.0 | 6 |
| 300-1500 | / | / | f/300 | 6 |
| 1500-100,000 | / | / | 5 | 6 |
| (B) Limits for General Population/Uncontrolled Exposure | | | | |
| 0.3-1.34 | 614 | 1.63 | *(100) | 30 |
| 1.34-30 | 824/f | 2.19/f | *(180/f ²) | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | / | / | f/1500 | 30 |
| 1500-100,000 | / | / | 1.0 | 30 |

F=frequency in MHz
 *=Plane-wave equivalent power density
 RF exposure compliance will need to be determined with respect to 1.1307(c) and (d) of the FCC rules. The emissions should be within the limits at 300kHz in Table 1 of 1.1310(use the 300kHz limits for 150kHz:614V/m,1.63A/m).

3. Test Setup



Note: The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface.

4. Test Procedure

- 1) The RF exposure test was performed in anechoic chamber.
- 2) The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface.
- 3) The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E) were completed.
- 4) The EUT was measured according to the dictates of KDB 680106 D01 v04.

Remark:

The EUT's test position A, B, C, D and E is valid for the E and H field measurements.

5. Test Equipment List

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Due Date |
|----------------------|--------------|-----------|------------|---------------|---------------|
| Magnetic field meter | NARDA | ELT-400 | EE030 | Sep. 07, 2024 | Sep. 06, 2025 |

6. Deviation From Test Standard

No deviation

7. Mode of operation during the test / Test peripherals used

| Test Modes: | | |
|-------------|---|--------|
| TM1 | AC/DC Adapter + EUT + Mobile Phone (Battery Status: <1%) | record |
| TM2 | AC/DC Adapter + EUT + Mobile Phone (Battery Status: <50%) | record |
| TM3 | AC/DC Adapter + EUT + Mobile Phone (Battery Status: <99%) | record |

8. Test Result

E-Filed Strength at 15 cm from the edges surrounding the EUT and 15 cm above the top surface

| Charging Battery Level | Frequency Range (MHz) | Measured E-Field Strength Values (V/m) | | | | | E-Field Strength 50% Limits (V/m) | E-Field Strength Limits (V/m) | | |
|------------------------------|-----------------------------|--|--------|--------|--------|--------|--|--|--|--|
| | | Test Position | | | | | | | | |
| | | A | B | C | D | E | | | | |
| 1% | 0.148 | 42.224 | 49.764 | 57.304 | 42.224 | 49.764 | 307.0 | 614.0 | | |
| 50% | 0.148 | 49.387 | 42.978 | 49.764 | 45.617 | 42.978 | 307.0 | 614.0 | | |
| 99% | 0.148 | 61.074 | 50.895 | 44.486 | 38.454 | 43.732 | 307.0 | 614.0 | | |

Note: V/m= A/m *377

H-Filed Strength at 15 cm from the edges surrounding the EUT and 15 cm above the top surface

| Charging Battery Level | unit | Frequenc y Range (MHz) | Measured H-Field Strength Values (A/m) | | | | | H-Field Strength 50% Limits (A/m) | H-Field Strength Limits (A/m) | | |
|------------------------------|------|------------------------------|--|-------|-------|-------|-------|--|--|--|--|
| | | | Test Position | | | | | | | | |
| | | | A | B | C | D | E | | | | |
| 1% | uT | 0.148 | 0.140 | 0.165 | 0.190 | 0.140 | 0.165 | -- | -- | | |
| 1% | A/m | 0.148 | 0.112 | 0.132 | 0.152 | 0.112 | 0.132 | 0.815 | 1.63 | | |
| 50% | uT | 0.148 | 0.164 | 0.143 | 0.165 | 0.151 | 0.143 | -- | -- | | |
| 50% | A/m | 0.148 | 0.131 | 0.114 | 0.132 | 0.121 | 0.114 | 0.815 | 1.63 | | |
| 99% | uT | 0.148 | 0.203 | 0.169 | 0.148 | 0.128 | 0.145 | -- | -- | | |
| 99% | A/m | 0.148 | 0.162 | 0.135 | 0.118 | 0.102 | 0.116 | 0.815 | 1.63 | | |

H-Field Strength at 20cm from the top surface of the EUT

| Charging Battery Level | Unit | Frequency Range (MHz) | Measured H-Field Strength Values (A/m) | | FCC H-Field Strength 50% Limits (A/m) | FCC H-Field Strength Limits (A/m) |
|------------------------------|------|-----------------------------|---|--|---|---|
| | | | Test Position E | | | |
| 1% | uT | 0.148 | 0.176 | | -- | -- |
| 1% | A/m | 0.148 | 0.141 | | 0.815 | 1.63 |
| 50% | uT | 0.148 | 0.140 | | -- | -- |
| 50% | A/m | 0.148 | 0.112 | | 0.815 | 1.63 |
| 99% | uT | 0.148 | 0.124 | | -- | -- |
| 99% | A/m | 0.148 | 0.099 | | 0.815 | 1.63 |

Note: A/m=uT/1.25

E-Filed Strength at 15 cm from the edges surrounding the EUT and 15 cm above the top surface

| Charging Battery Level | Frequency Range (MHz) | Measured E-Field Strength Values (V/m) | | | | | E-Field Strength 50% Limits (V/m) | E-Field Strength Limits (V/m) | | |
|------------------------------|-----------------------------|--|--------|--------|--------|--------|--|--|--|--|
| | | Test Position | | | | | | | | |
| | | A | B | C | D | E | | | | |
| 1% | 0.360 | 42.224 | 49.764 | 57.304 | 42.224 | 47.879 | 307.0 | 614.0 | | |
| 50% | 0.360 | 50.895 | 43.355 | 49.764 | 46.371 | 42.978 | 307.0 | 614.0 | | |
| 99% | 0.360 | 62.205 | 49.764 | 42.224 | 45.617 | 42.224 | 307.0 | 614.0 | | |

Note: V/m= A/m *377

H-Filed Strength at 15 cm from the edges surrounding the EUT and 15 cm above the top surface

| Charging Battery Level | unit | Frequenc y Range (MHz) | Measured H-Field Strength Values (A/m) | | | | | H-Field Strength 50% Limits (A/m) | H-Field Strength Limits (A/m) | | |
|------------------------------|------|------------------------------|--|-------|-------|-------|-------|--|--|--|--|
| | | | Test Position | | | | | | | | |
| | | | A | B | C | D | E | | | | |
| 1% | uT | 0.360 | 0.140 | 0.165 | 0.190 | 0.140 | 0.159 | -- | -- | | |
| 1% | A/m | 0.360 | 0.112 | 0.132 | 0.152 | 0.112 | 0.127 | 0.815 | 1.63 | | |
| 50% | uT | 0.360 | 0.169 | 0.144 | 0.165 | 0.154 | 0.143 | -- | -- | | |
| 50% | A/m | 0.360 | 0.135 | 0.115 | 0.132 | 0.123 | 0.114 | 0.815 | 1.63 | | |
| 99% | uT | 0.360 | 0.206 | 0.165 | 0.140 | 0.151 | 0.140 | -- | -- | | |
| 99% | A/m | 0.360 | 0.165 | 0.132 | 0.112 | 0.121 | 0.112 | 0.815 | 1.63 | | |

H-Field Strength at 20cm from the top surface of the EUT

| Charging Battery Level | Unit | Frequency Range (MHz) | Measured H-Field Strength Values (A/m) | | FCC H-Field Strength 50% Limits (A/m) | FCC H-Field Strength Limits (A/m) |
|------------------------------|------|-----------------------------|---|--|---|---|
| | | | Test Position E | | | |
| 1% | uT | 0.360 | 0.178 | | -- | -- |
| 1% | A/m | 0.360 | 0.142 | | 0.815 | 1.63 |
| 50% | uT | 0.360 | 0.135 | | -- | -- |
| 50% | A/m | 0.360 | 0.108 | | 0.815 | 1.63 |
| 99% | uT | 0.360 | 0.099 | | -- | -- |
| 99% | A/m | 0.360 | 0.079 | | 0.815 | 1.63 |

Note: A/m=uT/1.25

9. Test Set-up Photo

Test Set-up Photo



-----END OF REPORT-----