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RF Exposure Evaluation Report

Report No.: CQASZ20240100136E-02
Applicant: Shenzhen Nito Power Source Technology Co., Ltd.
Address of Applicant: 201, No. 8 Building, No. 49 WuheNan Rd., Jinfanghua Electricity industrial Park, Bantian St., Longgang District, Shenzhen
Equipment Under Test (EUT):
Product: Cooling Fan Magnetic Wireless Car Charger Mount
Model No.: JR-ZS387
Test Model No.: JR-ZS387
Brand Name: JOYROOM
FCC ID: 2BA8X-JR-ZS387
Standards: 47 CFR Part 1.1307
47 CFR Part 1.1310
KDB 680106 D01 RF Exposure Wireless Charging Base App v04r01
Date of Receipt: 2024-1-11
Date of Test: 2024-1-11 to 2024-1-17
Date of Issue: 2024-3-18
Test Result : **PASS***

*In the configuration tested, the EUT complied with the standards specified above

Tested By: _____

(Joe Wang)

Reviewed By: _____

(Timo Lei)

Approved By: _____

(Alex Wang)



1 Version

Revision History Of Report

| Report No. | Version | Description | Issue Date |
|----------------------|---------|----------------|------------|
| CQASZ20240100136E-02 | Rev.01 | Initial report | 2024-3-18 |

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3 General Information

3.1 Client Information

| | |
|--------------------------|---|
| Applicant: | Shenzhen Nito Power Source Technology Co., Ltd. |
| Address of Applicant: | 201, No. 8 Building, No. 49 WuheNan Rd., Jinfanghua Electricity industrial Park, Bantian St., Longgang District, Shenzhen |
| Manufacturer: | Shenzhen Nito Power Source Technology Co., Ltd. |
| Address of Manufacturer: | 201, No. 8 Building, No. 49 WuheNan Rd., Jinfanghua Electricity industrial Park, Bantian St., Longgang District, Shenzhen |

3.2 General Description of EUT

| | |
|-------------------|---|
| Product Name: | Cooling Fan Magnetic Wireless Car Charger Mount |
| Model No.: | JR-ZS387 |
| Test Model No.: | JR-ZS387 |
| Brand Name: | JOYROOM |
| Software Version: | V1.0 |
| Hardware Version: | V1.0 |
| EUT Power Supply: | DC 5V = 2A, 9V = 2A , 12V= 2A |

3.3 Product Specification subjective to this standard

| | |
|----------------------------|-------------------|
| Equipment Category: | Non-ISM frequency |
| Operation Frequency range: | 115kHz~205kHz |
| Modulation Type: | Induction |
| Antenna Type: | Induction coil |
| Antenna Gain: | 0dBi |
| Power: | Output: 15W(Max) |

Note:

1. In section 15.31(m), regards to the operating frequency range less 1 MHz.

3.4 Test Environment

| Operating Environment: | |
|------------------------|--|
| Temperature: | 25.5 °C |
| Humidity: | 53 % RH |
| Atmospheric Pressure: | 1009 mbar |
| Test Mode: | |
| Mode a: | Keep the EUT Wireless Out Put for Wireless charge load 5W |
| Mode b: | Keep the EUT Wireless Out Put for Wireless charge load 7.5W |
| Mode c: | Keep the EUT Wireless Out Put for Wireless charge load 10W |
| Mode d: | Keep the EUT Wireless Out Put for Wireless charge load 15W (Max) |

3.5 Description of Support Units

The EUT has been tested with associated equipment below.

1) Support equipment

| Description | Manufacturer | Model No. | Certification | Supplied by |
|----------------------|--------------|-----------------|---------------|-------------|
| Adapter | / | LPL-C010050200Z | / | CQA |
| Wireless charge load | / | / | / | CQA |

2) Cable

| Cable No. | Description | Manufacturer | Cable Type/Length | Supplied by |
|-----------|-------------|--------------|-------------------|-------------|
| / | / | / | / | / |

3.6 Test Location

Shenzhen Huaxia Testing Technology Co., Ltd.

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

3.7 Test Facility

• **A2LA (Certificate No. 4742.01)**

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4742.01.

• **FCC Registration No.: 522263**

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.:522263

3.8 Equipment List

| Test Equipment | Manufacturer | Model No. | Instrument No. | Calibration Date | Calibration Due Date |
|-----------------------|----------------------------------|-----------|----------------|------------------|----------------------|
| Broadband Field Meter | Narda Safety Test Solutions GmbH | NBM-520 | SB9873 | 2023/9/8 | 2024/9/7 |
| Magnetic field probe | HIOKI | 3470 | SB9058/04 | 2023/9/8 | 2024/9/7 |
| E-field probe | Narda | EF0391 | SB9059 | 2023/9/8 | 2024/9/7 |

4 RF Exposure Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

TABLE 1—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 |

Note 1: f = frequency in MHz ; *Plane-wave equivalent power density

Note 2: For the applicable limit, see FCC 1.1310, 680106 D01 RF Exposure Wireless Charging Apps v04

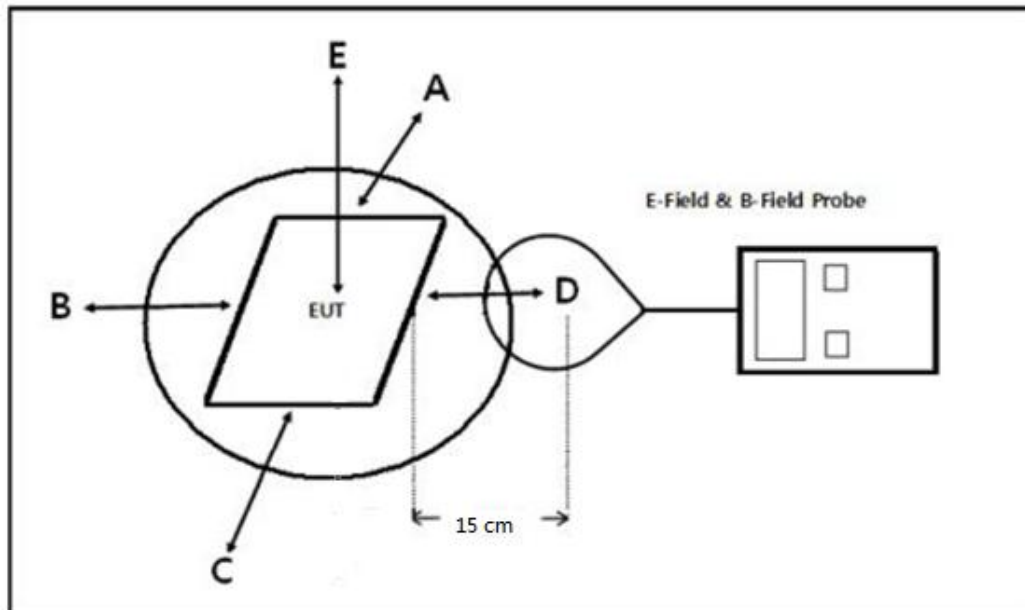
Note 3: Emissions between 100 kHz to 300 kHz should be assessed versus the limits at 300 kHz in Table 1 of Section 1.1310: 614 V/m and 1.63 A/m. A KDB inquiry is required to determine the applicable exposure limits below 100 kHz.

Note 4: The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit .

4.1.2 Test Procedure

For devices designed for typical desktop applications, such a wireless charging pads, RF exposure evaluation should be conducted assuming a user separation distance of 20 cm(Top) and 15cm(Edge). E and H field strength measurements or numerical modeling may be used to demonstrate compliance. Measurements should be made from all sides and the top of the primary/client pair, with the 20 cm(Top) and 15cm(Edge) measured from the center of the probe(s) to the edge of the device.

4.1.3 Test Setup



Note: Perform H-field measurements for each edge/top surface of the host/client pair at every 2 cm, starting from as close as possible out to 20 cm

4.1.4 Test Results

680106 D01 Wireless Power Transfer v04.

- (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 KDB447498, 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.

Test condition: Mode d

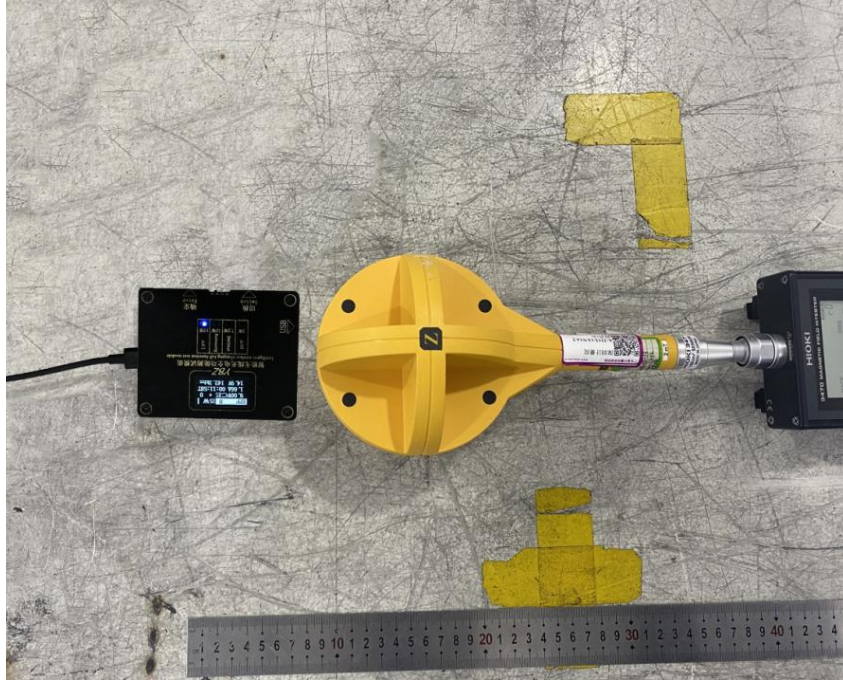
E-field strength test result:

| Frequency Range | Probe Position A (V/m) | Probe Position B (V/m) | Probe Position C (V/m) | Probe Position D (V/m) | Probe Position E (V/m) | Limit (V/m) |
|-----------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------------|
| 115.86kHz | 1.66 | 1.54 | 1.99 | 1.46 | 1.35 | 614 |

H-field strength test result:

| Frequency Range | Probe Position A (A/m) | Probe Position B (A/m) | Probe Position C (A/m) | Probe Position D (A/m) | Probe Position E (A/m) | Limit (A/m) |
|-----------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------------|
| 115.86kHz | 0.47 | 0.39 | 0.51 | 0.48 | 0.50 | 1.63 |

APPENDIX A: PHOTOGRAPHS OF TEST SETUP



*** END OF REROPT ***