

MPE REPORT

WIRELESS CHARGER RGB LAMP

MODEL No.: N1, N2

FCC ID: 2BKWH-N1

REPORT NO.:NCT24036050E1-3

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Prepared for

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Prepared by

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TEST REPORT DESCRIPTION

Applicant : Shenzhen Zhenzhi Technology Co.,LTD
Address : 6th Floor, Building A, No.16 Xiakeng Dadi Industrial Zone, Tongde Community, Longgang Street, Longgang District, Shenzhen, Guangdong, China
Manufacturer : Shenzhen Zhenzhi Technology Co.,LTD
Address : 6th Floor, Building A, No.16 Xiakeng Dadi Industrial Zone, Tongde Community, Longgang Street, Longgang District, Shenzhen, Guangdong, China
EUT : WIRELESS CHARGER RGB LAMP
Model Name : N1, N2
Trademark : 

Measurement Procedure Used:

FCC Part 1(1.1310) and Part 2(2.1091)
KDB 680106 D01 Wireless Power Transfer v04

The device described above is tested by Shenzhen NCT Testing Technology 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 Shenzhen NCT Testing Technology 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 Shenzhen NCT Testing Technology Co., Ltd.

Test Engineer:



Keven Wu / Engineer

Technical Manager:



Henry Wang / Manager



1. SUMMARY OF TEST RESULT

| EMISSION | | |
|--|--|---------|
| Description of Test Item | Standard & Limits | Results |
| MPE | FCC Part 1(1.1310) and Part 2(2.1091) KDB 680106 D01 Wireless Power Transfer v04 | Pass |
| Note: N/A is an abbreviation for Not Applicable. | | |

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT : WIRELESS CHARGER RGB LAMP

Model Number : N1, N2

Model different : All the same except the model number and Colour

Power Rating : Input : 9V, 2A
Output: 5W/7.5W/10W/15W

Operation : 111-205 KHz
Frequency for WPT

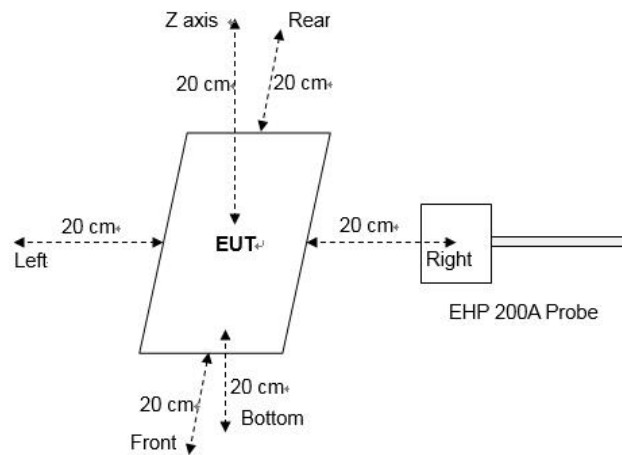
Modulation : MSK

Antenna Type: : Coil Antenna

Date of Received : Aug. 30, 2024

Date of Test : Aug. 30, 2024 to Sep. 11, 2024

2.2. Test Setup



2.3. Description of Test Facility

Site Description

EMC Lab. : Accredited by CNAS, 2022-09-27
The certificate is valid until 2028.01.07
The Laboratory has been assessed and proved to be in compliance with
CNAS-CL01:2006 (identical to ISO/IEC 17025:2017)
The Certificate Registration Number is L8251

Designation Number: CN1347
Test Firm Registration Number: 894804
Accredited by A2LA, June 14, 2023
The Certificate Registration Number is 6837.01

Accredited by Industry Canada, November 09, 2018
The Conformity Assessment Body Identifier is CN0150
Company Number: 30806

Name of Firm : Shenzhen NCT Testing Technology Co., Ltd.
Site Location : A101&2F B2, Fuqiao 6th Area, Xintian Community, Fuhai Street, Baoan
District, Shenzhen, People's Republic of China

2.4. Measurement Uncertainty

| Parameter | Uncertainty |
|------------------------------------|--------------------------|
| RF output power, conducted | ±1.0dB |
| Power Spectral Density, conducted | ±2.2dB |
| Radio Frequency | ± 1 x 10 ⁻⁶ |
| Bandwidth | ± 1.5 x 10 ⁻⁶ |
| Time | ±2% |
| Duty Cycle | ±2% |
| Temperature | ±1°C |
| Humidity | ±5% |
| DC and low frequency voltages | ±3% |
| Conducted Emissions (150kHz~30MHz) | ±3.64dB |
| Radiated Emission(30MHz~1GHz) | ±5.03dB |
| Radiated Emission(1GHz~25GHz) | ±4.74dB |
| Electric Field Emissions | ±0.08V/m |
| Magnetic Field Emissions | ±0.02A/m |
| uT | ±0.01 |

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1. For MPE Measurement

| Used | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|-------------------------------------|---------------------------------------|--------------|-----------|------------|------------|---------------|
| <input checked="" type="checkbox"/> | Exposure Level Tester(9kHz-400KHz) | Narda | EHP-200A | 180ZX00634 | 2024.06.18 | 2025.06.17 |

4. RF EXPOSURE

4.1. Measuring Standard

FCC Part 1(1.1310) and Part 2(2.1091)

4.2. Requirments

Three different categories of transmitters are defined by the FCC in OET Bulletin 65. These categories are fixed installation, mobile, and portable and are defined as follows:

- o Fixed Installations: fixed location means that the device, including its antenna, is physically secured at a permanent location and is not able to be easily moved to another location. Additionally, distance to humans from the antenna is maintained to at least 2 meters.
- o Mobile Devices: a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to be generally used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structures and the body of the user or nearby persons. Transmitters designed to be used by consumers or workers that can be easily re-located, such as a wireless modem operating in a laptop computer, are considered mobile devices if they meet the 20 centimeter separation requirement. The FCC rules for evaluating mobile devices for RF compliance are found in 47 CFR §2.1091.
- o Portable Devices: a portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user. Portable device requirements are found in Section 2.1093 of the FCC's Rules (47 CFR§2.1093).

The FCC also categorizes the use of the device as based upon the user's awareness and ability to exercise control over his or her exposure. The two categories defined are Occupational/ Controlled Exposure and General Population/Uncontrolled Exposure. These two categories are defined as follows:

Occupational/Controlled Exposure: In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means. Awareness of the potential for RF exposure in a workplace or similar environment can be provided through specific training as part of a RF safety program. If appropriate, warning signs and labels can also be used to establish such awareness by providing prominent information on the risk of potential exposure and instructions on methods to minimize such exposure risks.

General Population/Uncontrolled Exposure: The general population / uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity. Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category, and the general population/uncontrolled exposure limits apply to these devices.

4.3. Test configuration and requirement

1. The RF exposure test was performed in anechoic chamber.
2. E and H-field measurements should be made with these devices considered to meet the § 2.1091-Mobile conditions (“generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the RF source's radiating structure(s) and [the nearest person]”).
3. The highest emission level was recorded and compared with limit.
4. The EUT was measured according to the dictates of KDB 680106 D01 Wireless Power Transfer v04.

Requirement for KDB Publication 680106 D01 RF Exposure Wireless Charging App v04

| Condition Requirement | Yes / No | Description |
|--|----------|---|
| Power transfer frequency is less than 1 MHz. | Yes | The power transfer frequency is less than 1 MHz . |
| The output power from each transmitting element (e.g., coil) is less than or equal to 15 watts. | Yes | Output power is 15W Max. |
| 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) | Yes | Need to be in physical contact can charging |
| Only § 2.1091-Mobile exposure conditions apply (i.e., this provision does not cover § 2.1093-Portable exposure conditions). | Yes | Mobile exposure conditions only |
| 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. | Yes | 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. Please refer to the result of Electric Field Emissions and Magnetic Field Emissions. |
| 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. | Yes | The device has only one coil. |

4.4. Limits

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

| Frequency Range(MHz) | Electric Field Strength(V/m) | Magnetic Field Strength(A/m) | Power Density (mW/cm ²) | Averaging Time (minute) |
|---|------------------------------|------------------------------|-------------------------------------|-------------------------|
| Limits for Occupational/Controlled Exposure | | | | |
| 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 |
| 300-1,500 | / | / | f/300 | 6 |
| 1,500-100,000 | / | / | 5 | 6 |

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

| Frequency Range(MHz) | Electric Field Strength(V/m) | Magnetic Field Strength(A/m) | Power Density (mW/cm ²) | Averaging Time (minute) |
|---|------------------------------|------------------------------|-------------------------------------|-------------------------|
| 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 |
| 300-1,500 | / | / | f/1500 | 30 |
| 1,500-100,000 | / | / | 1.0 | 30 |

F=frequency in MHz

*=Plane-wave equivalent power density

According to FCC 680106 D01 RF Exposure Wireless Charging Apps v03r01 Section 3. RF Exposure Requirements clause 3 the Emission-Limits in the frequency range from 100 KHz to 300 KHz should be assessed versus the limits at 300 KHz in Table 1 of CFR 47 - Section1.310 as following (measured distance shall be 15cm from the center of the probe to the edge of the device):

| | E-Field | */* | B-Field |
|-------------------|---------------------------------|-----------------------------------|---------|
| Frequency | V/m | A/m | uT |
| 0.3 MHz – 3.0 MHz | 614 | 1.613 | 2.0 |
| 3.0 MHz – 30 MHz | 824/f (=27.5 _{30MHz}) | 2.19/f (=0.073 _{30MHz}) | -- |

A KDB inquire was required to determine/confirm the applicable limits below 100 KHz.

Description of Support Unit

| Item | Equipment | Mfr/Brand | Model/Type No. | Series No. | Note |
|------|---------------------------|-----------|----------------|------------|-----------|
| E-1 | WIRELESS CHARGER RGB LAMP | N/A | N1 | N/A | EUT |
| E-2 | Phone | iPhone | iPhone 13 | N/A | Auxiliary |
| E-3 | Adapter | Anju | AJ0500200U-QC | N/A | Auxiliary |

Test Mode:

| Test Mode | Description | Remark() |
|--|------------------------|----------|
| Mode 1 | Wireless Output (5W) | 5% |
| Mode 2 | | 50% |
| Mode 3 | | 95% |
| Mode 4 | Wireless Output (7.5W) | 5% |
| Mode 5 | | 50% |
| Mode 6 | | 95% |
| Mode 7 | Wireless Output (10W) | 5% |
| Mode 8 | | 50% |
| Mode 9 | | 95% |
| Mode 10 | Wireless Output (15W) | 5% |
| Mode 11 | | 50% |
| Mode 12 | | 95% |
| Remark: All the modes have tested and recorded the worst in the report | | |

4.5.Measuring Results

For Mobile exposure conditions

Test Mode: Mode 10

| Electric Field Emissions | | | |
|--------------------------|---------------------|------------|--------------|
| Test Position | Measure Value (V/m) | Limit(V/m) | Distance(cm) |
| Top | 0.322 | 614 | 20 |
| Left | 0.313 | 614 | 20 |
| Right | 0.304 | 614 | 20 |
| Rear | 0.267 | 614 | 20 |
| Front | 0.215 | 614 | 20 |
| Magnetic Field Emissions | | | |
| Test Position | Measure Value (A/m) | Limit(A/m) | Distance(cm) |
| Top | 0.0339 | 1.63 | 20 |
| Left | 0.0356 | 1.63 | 20 |
| Right | 0.0301 | 1.63 | 20 |
| Rear | 0.0281 | 1.63 | 20 |
| Front | 0.0296 | 1.63 | 20 |

Test Mode: Mode 11

| Electric Field Emissions | | | |
|--------------------------|---------------------|------------|--------------|
| Test Position | Measure Value (V/m) | Limit(V/m) | Distance(cm) |
| Top | 0.341 | 614 | 20 |
| Left | 0.315 | 614 | 20 |
| Right | 0.286 | 614 | 20 |
| Rear | 0.275 | 614 | 20 |
| Front | 0.182 | 614 | 20 |
| Magnetic Field Emissions | | | |
| Test Position | Measure Value (A/m) | Limit(A/m) | Distance(cm) |
| Top | 0.0384 | 1.63 | 20 |
| Left | 0.0323 | 1.63 | 20 |
| Right | 0.0265 | 1.63 | 20 |
| Rear | 0.0243 | 1.63 | 20 |
| Front | 0.0229 | 1.63 | 20 |

Test Mode: Mode 12

| Electric Field Emissions | | | |
|--------------------------|---------------------|------------|--------------|
| Test Position | Measure Value (V/m) | Limit(V/m) | Distance(cm) |
| Top | 0.307 | 614 | 20 |
| Left | 0.278 | 614 | 20 |
| Right | 0.254 | 614 | 20 |
| Rear | 0.236 | 614 | 20 |
| Front | 0.205 | 614 | 20 |
| Magnetic Field Emissions | | | |
| Test Position | Measure Value (A/m) | Limit(A/m) | Distance(cm) |
| Top | 0.0342 | 1.63 | 20 |
| Left | 0.0311 | 1.63 | 20 |
| Right | 0.0243 | 1.63 | 20 |
| Rear | 0.0226 | 1.63 | 20 |
| Front | 0.0227 | 1.63 | 20 |

5. PHOTOGRAPHS OF TEST SETUP

For Mobile exposure conditions

