

# RF EXPOSURE Test Report

**Product:** Invisible Wireless Charger

**Trade Mark:** AISEVEN

**Model Number:** H30D

**FCC ID:** 2A3NR-H30D

**Prepared for**

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## TEST RESULT CERTIFICATION

**Applicant's Name**..... : Hong Hao (Shenzhen) Electronic Tech Co., Ltd  
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**Address** ..... : Industrial Zone, Xiangshan community, Xinqiao Town, Bao'an  
Zone, Shenzhen City, China

### Product description

**Product name** ..... : Invisible Wireless Charger

**Model Number** ..... : H30D

**Standards** ..... : FCC CFR 47 PART 1 , 1.1310

**Test procedure**..... : KDB 680106 D01 Wireless Power Transfer v04

This device described above has been tested by Shenzhen HongBiao Certification& Testing Co., Ltd and the test results show that the equipment under test (EUT) is in compliance with the EMC requirements. And it is applicable only to the tested sample identified in the report.

**Date of Test**..... :

**Date (s) of performance of tests**..... : Aug. 07, 2024~Oct. 23, 2024

**Test Result**..... : **Pass**

**Testing Engineer** :

*Zoe Su*

( Z o e S u )

**Technical Manager** :

*Gary Lu*

( G a r y L u )

**Authorized Signatory** :

*Leo Su*

( L e o S u )

[illegible]

# 1 General Description

## 1.1 Description of EUT

|                            |   |
|----------------------------|---|
| Product name:              | Invisible Wireless Charger                              |
| Model name:                | H30D  |
| Series Model:              | N/A   |
| Different of series model: | N/A   |
| Operation frequency:       | 115kHz–205 kHz  |
| Operational mode:          | Wireless charging                                       |
| Modulation type:           | FSK   |
| Antenna type:              | Coil Antenna  |
| Hardware version:          | V1.0  |
| Software version:          | V1.0  |
| Battery:                   | N/A   |
| Power supply:              | Input: DC 9V/2A, 12V/1.5A<br>Wireless Output: 10W (Max) |
| Adapter information:       | N/A   |

## 1.2 Test Mode

| Pretest Test Mode | Description of Mode                  |
|-------------------|--------------------------------------|
| 1                 | AC/DC adapter + Wireless Output: 5W  |
| 2                 | AC/DC adapter + Wireless Output: 10W |
| 3                 | /                                    |

## 1.3 Test Setup

See photographs of the test setup in the report for the actual setup and connections between EUT and support equipment.

## 1.4 Ancillary Equipment

| Equipment | Model        | S/N            | Manufacturer                             |
|-----------|--------------|----------------|--|
| Adapter   | C126         | /              | Shenzhen Tongxingrui Technology Co., Ltd |
| Phone     | iPhone 12pro | VJ9HQY39Q<br>J | Apple Inc.                               |
|           |              |                |  |
|           |              |                |  |

## 2 Test Facilities and Accreditations

### 2.1 Test Laboratory

|                       |   |
|-----------------------|---|
| Test Site             | Shenzhen HongBiao Certification& Testing Co., Ltd   |
| Test Site Location    | Room 102, 201, Building 2, Yuanwanggu RFID Industrial Park, Tongguan Road, Tianliao Community, Yutang Street, Guangming District, Shenzhen, China |
| Telephone:            | (86-755) 2998 9321  |
| Fax:                  | (86-755) 2998 5110  |
| FCC Registration No.: | CN1341  |
| A2LA Certificate No.: | 6765.01   |

### 2.2 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

|                    |              |
|--------------------|--------------|
| Temperature:       | 15°C~35°C    |
| Relative Humidity: | 20%~75%      |
| Air Pressure:      | 98kPa~101kPa |

### 2.3 Measurement Uncertainty

The reported uncertainty of measurement  $y \pm U$ , where expended uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

The data and results quoted in this document are true and accurate values, and uncertainties are not involved in the calculations.

In addition, components and mass production processes that are similar to testing equipment may introduce additional deviations, and the manufacturer is solely responsible for the continued compliance of the equipment.

| Measurement Frequency Range | U, (dB)            | Note |
|-----------------------------|--------------------|------|
| RF frequency                | $2 \times 10^{-5}$ |      |
| E-field                     | $\pm 1.06$ dB      |      |
| H-field                     | $\pm 0.7$ dB       |      |
| Temperature                 | $\pm 1$ degree     |      |
| Humidity                    | $\pm 5$ %          |      |

### 2.4 Test Software

| Software name | Manufacturer                    | Model      | Version |
|---------------|---------------------------------|------------|---------|
| MAGPy V2.6    | Schmid & Partner Engineering AG | MAGPy V2.6 | V2.6    |

### 3 List of Test Equipment

| Item | Equipment No. | Equipment name                               | Manufacturer                    | Model          | Serial No. | Calibration date | Due date   |
|------|---------------|--|---------------------------------|----------------|------------|------------------|------------|
| 1    | HB-E077       | Magnetic Amplitude and Gradient Probe System | Schmid & Partner Engineering AG | MAGPy-8H3D+E3D | 3107       | 2024-03-15       | 2025-03-14 |
| 2    | HB-E078       | Magnetic Amplitude and Gradient Probe System | Schmid & Partner Engineering AG | MAGPy-DAS      | 3097       | 2024-03-15       | 2025-03-14 |

MAGPy probe information:

Magnetic Amplitude and Gradient Probe System of probe MAGPy-8H3D+E3D consists of eight isotropic H-field subprobes and one isotropic E-field subprobe that are all integrated inside the probe head with a flat tip. Each isotropic H-field subprobe comprises three concentric orthogonal loop coil sensors. The isotropic E-field subprobe is composed of three orthogonal sensors (x and y sensors are dipoles and the sensor measuring the z component is a monopole). In total, the MAGPy-8H3D+E3D V2.6 probe is thus composed of nine subprobes and 27 single sensors that measure in the time-domain. The flat-tip probe design brings the sensors closer to the tip (e.g., the closest H-field sensors are now 7.5mm from the tip). The probe specifications are provided in Table 2.1.

| Parameter                           | Specs   |
|-------------------------------------|---|
| PROBE DESIGN                        |   |
| Diameter                            | 60 mm   |
| 8 isotropic <i>H</i> -field sensors | concentric loops of 1 cm <sup>2</sup> arranged at the corner of a cube of 22 mm side length |
| 1 isotropic <i>E</i> -field sensor  | orthogonal dipole/monopole (arm length: 50 mm)  |
| Measurement center                  | 18.5 mm from the probe tip  |
| Temperature range                   | 0–40 °C   |
| Dimensions                          | 110 × 635 × 35 mm<br>(MAGPy-8H3D+E3D V2.6 & MAGPy-DAS V2.6)                                 |
| <i>H</i> -FIELD SPECIFICATION       |   |
| Frequency range                     | 3 kHz–10 MHz  |
| Measurement range                   | 0.1–3200 A/m, 0.12 μT–4 mT  |
| Gradient range                      | 0–80 T/m/T  |
| <i>E</i> -FIELD SPECIFICATION       |   |
| Frequency range                     | 3 kHz–10 MHz  |
| Measurement range                   | 0.08–2000 V/m   |

Table 2.1: MAGPy-8H3D+E3D V2.6 probe specifications

Note: the calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

## 4 RF Exposure

### 4.1 Maximum Permissible Exposure

#### 4.1.1. Limit

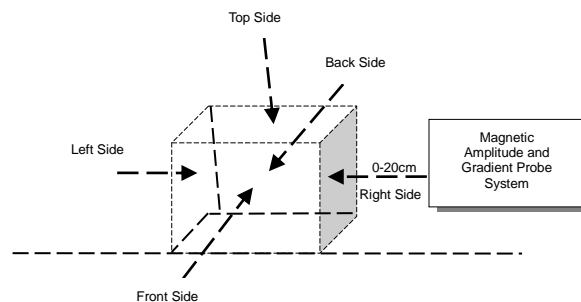
| Frequency range(MHz)                                    | Electric field strength(V/m) | Magnetic field strength(A/m) | Power density(mW/cm2) | Averaging time(minutes) |
|---|------------------------------|------------------------------|-----------------------|-------------------------|
| (A) Limits for Occupational/Controlled Exposure         |                              |                              |                       |                         |
| 0.3-3.0   | 614                          | 1.63                         | *100                  | 6                       |
| 3.0-30  | 1842/f                       | 4.89/f                       | *900/f <sup>2</sup>   | 6                       |
| 30-300  | 61.4                         | 0.163                        | 1.0 6                 | 6                       |
| 300-1500  | /                            | /                            | f/300                 | 6                       |
| 1500-100000   | /                            | /                            | 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 <sup>2</sup>   | 30                      |
| 30-300  | 27.5                         | 0.073                        | 0.2                   | 30                      |
| 300-1500  | /                            | /                            | f/1500                | 30                      |
| 1500-100000   | /                            | /                            | 1                     | 30                      |

f = frequency in MHz \* = Plane-wave equivalent power density

#### 4.1.2. Test Procedures

- The RF exposure test was performed in anechoic chamber.
- 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.
- The highest emission level was recorded and compared with limit.
- The EUT was measured according to the dictates of TCB Workshop "41-Part-18-&-Wireless-Power-Transfer - April 27, 2022"

#### 4.1.3. Test Setup





**4.1.4. Equipment Approval Considerations item 5 b) of KDB 680106 D01 Wireless Power Transfer v04**

| Requirement   | Device  |
|---|---|
| 1. Power transfer frequency is less than 1 MHz.   | Yes. The operating frequencies are:<br>Operating Frequency: 115 kHz – 205 kHz   |
| 2. Output power from each primary coil is less than or equal to 15 watts.   | Yes. The maximum output power is:<br>Wireless Output: 10W (Max)   |
| 3. The system may consist of more than one source primary coils, charging one or more clients. If more than one primary coil is present, the coil pairs may be powered on at the same time.   | Yes. EUT has a source primary coil.   |
| 4. Client device is placed directly in contact with the transmitter.  | No, the client device is not in direct contact with the transmitter.  |
| 5. Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).  | Yes, but the EUT is installed under a table, and the user's legs may come into direct contact with the device for a long time. Therefore, the device is evaluated as a portable WPT device, using a distance of 0mm for evaluation. |
| 6. The aggregate H-field strengths anywhere at or beyond 20 cm surrounding the device, and 20 cm away from the surface from all coils that by design can simultaneously transmit, and while those coils are simultaneously energized, are demonstrated to be less than 50% of the applicable MPE limit. | Yes, The 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 were also evaluated for portable use condition.                                      |

**4.1.5. Test Result**

For portable exposure condition:

Operating modes with client device (1 %, 50%, 99% battery status of client device) have been test, only show the data of worst case of 1% battery status of client device.

H-field measurements taken every 2 cm (starting as close to 20 cm as possible) on each edge/top surface of the host/client pair were also evaluated for portable use conditions. The report reflects data for the worst 0 cm test distance mode only.

Test condition 1: Mode 2 operating mode with client device (1 % battery status of client device)  
-test distance: 0cm

Measurement results directly tested using MAGPy.

| Maximum permissible Exposure |            |                   |               |              |
|------------------------------|------------|-------------------|---------------|--------------|
| Battery levels               | Test sides | Test distance(cm) | E -field(V/m) | H-field(A/m) |
| <1%                          | Top        | 0                 | 30.8          | 0.19         |
| <1%                          | Left       | 0                 | 21.4          | 0.21         |
| <1%                          | Right      | 0                 | 16.4          | 0.25         |
| <1%                          | Front      | 0                 | 48.6          | 0.41         |
| <1%                          | Back       | 0                 | 46.2          | 0.52         |
| <1%                          | Bottom     | 0                 | 59.6          | 0.49         |
| Limit                        |            |                   | 614           | 1.63         |
| Margin Limit (%)             |            |                   | 7.92          | 31.90        |

When setting MAGPy to select compliance location as probe tip, the measured value is extrapolated to 0mm as the result.

| Maximum permissible Exposure |            |                   |               |              |
|------------------------------|------------|-------------------|---------------|--------------|
| Battery levels               | Test sides | Test distance(cm) | E -field(V/m) | H-field(A/m) |
| <1%                          | Top        | 0                 | 35.9          | 0.35         |
| <1%                          | Left       | 0                 | 25.4          | 0.39         |
| <1%                          | Right      | 0                 | 21.6          | 0.33         |
| <1%                          | Front      | 0                 | 54.4          | 0.56         |
| <1%                          | Back       | 0                 | 53.2          | 0.76         |
| <1%                          | Bottom     | 0                 | 61.6          | 0.61         |
| Limit                        |            |                   | 614           | 1.63         |
| Margin Limit (%)             |            |                   | 10.03         | 46.63        |

## 5 Photographs of the Test Setup

MPE



\*\*\*\*\* END OF REPORT \*\*\*\*\*