

|                           |   |
|---------------------------|---|
| Product Name:             | 3-in-1 Magnetic Wireless Charger  |
| Product Model No.:        | ChargeTree Mag<br>stm-931-400Z, stm-931-398Z  |
| Test Auxiliary:           | AC/DC Adapter, Phone, Watch, Earphone   |
| Test Auxiliary Model No.: | HW-050450C00, iPhone 13porMax, Watch Series 8, AirPods 2  |
| Transmitting mode         | Keep the EUT in continuously wireless charging mode   |
| Power supply:             | Input: 9V === 3A, 12V === 2.5A<br>Phone charging output: 15W Max<br>Watch output: 3W Max<br>Earphone output: 5W Max |
| Test Description:         | Phone and Watch and Earphone Battery > 98%, =50% and < 1% are tested, and the worst is < 1%.                        |

| Test Modes: |   |        |
|-------------|---|--------|
| Mode 1      | AC/DC Adapter (9V/3A) + EUT + Phone                       |        |
| Mode 2      | AC/DC Adapter (9V/3A) + EUT + Watch                       |        |
| Mode 3      | AC/DC Adapter (9V/3A) + EUT + Earphone                    |        |
| Mode 4      | AC/DC Adapter (9V/3A) + EUT + Phone + Watch               |        |
| Mode 5      | AC/DC Adapter (9V/3A) + EUT + Phone + Earphone            |        |
| Mode 6      | AC/DC Adapter (9V/3A) + EUT + Watch + Earphone            |        |
| Mode 7      | AC/DC Adapter (9V/3A) + EUT + Phone + Watch + Earphone    |        |
| Mode 8      | AC/DC Adapter (12V/2.5A) + EUT + Phone                    |        |
| Mode 9      | AC/DC Adapter (12V/2.5A) + EUT + Watch                    |        |
| Mode 10     | AC/DC Adapter (12V/2.5A) + EUT + Earphone                 |        |
| Mode 11     | AC/DC Adapter (12V/2.5A) + EUT + Phone + Watch            |        |
| Mode 12     | AC/DC Adapter (12V/2.5A) + EUT + Phone + Earphone         |        |
| Mode 13     | AC/DC Adapter (12V/2.5A) + EUT + Watch + Earphone         |        |
| Mode 14     | AC/DC Adapter (12V/2.5A) + EUT + Phone + Watch + Earphone | Record |
| N/A         |   |        |

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## RF Exposure Evaluation

### 1 Measuring Standard

1.1 KDB 680106 RF Exposure Wireless Charging Apps v03r01

#### 1.2 MEASUREMENT UNCERTAINTY

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

| No. | Item    | Uncertainty         |
|-----|---------|---------------------|
| 1   | H-filed | $\pm 0.93\text{dB}$ |
| 2   | E-filed | $\pm 0.51\text{dB}$ |

### 2 Requirements

According to the item 5 of KDB 680106 v03r01:

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

(1) Power transfer frequency is less than 1MHz.

Yes. The device operates in the frequency 110KHz-205KHz;

(2) Output power from each primary coil is less than or equal to 15 watts.

Yes. The maximum output power of the primary coil is Max 15W;

(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. The transfer system including a charging system with only single primary coils is to detect and allow only between individual of coils;

(4) Client device is placed directly in contact with the transmitter.

Yes. Client device is placed directly in contact with the transmitter

(5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).

Yes. The EUT does not have portable exposure conditions.

(6) The aggregate H-field strengths anywhere at or beyond 15 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. Meet the requirement.

### Limits

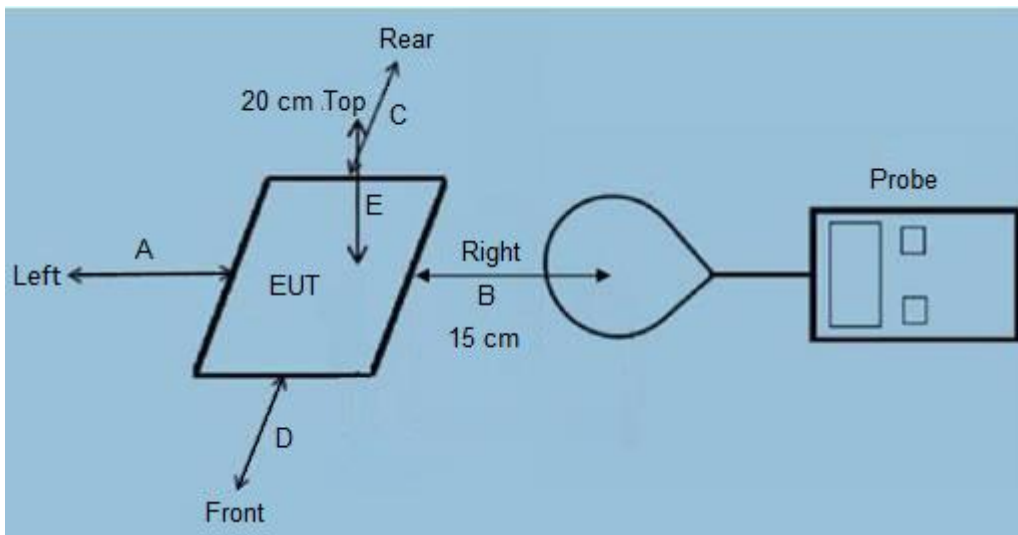
The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

| Frequency range (MHz)  | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm <sup>2</sup> ) | Averaging time (minutes) |
|--|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| <b>(A) Limits for Occupational/Controlled Exposures</b>        |                               |                               |                                     |                          |
| 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                        |
| 300-1500   | /                             | /                             | f/300                               | 6                        |
| 1500-100,000   | /                             | /                             | 5                                   | 6                        |
| <b>(B) Limits for General Population/Uncontrolled Exposure</b> |                               |                               |                                     |                          |
| 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                       |
| 1500-100,000   | /                             | /                             | 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



### 4 Test Procedure

- 1) The RF exposure test was performed in anechoic chamber.
- 2) The measurement probe was placed at test distance (15 cm from all sides and 20 cm from the top) which is between the edge of the charger and the geometric center of probe.
- 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 v03r01.

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

## 5 Test Instruments list

| Test Equipment                             | Manufacturer | Model No.                    | SN.        | Cal.Date<br>(mm-dd-yy) | Cal.Due date<br>(mm-dd-yy) |
|--|--------------|------------------------------|------------|------------------------|----------------------------|
| Exposure Level Tester                      | Narda        | ELT-400                      | 180ZX10220 | Oct. 25, 2022          | Oct. 24 2023               |
| Magnetic field probe<br>100cm <sup>2</sup> | Narda        | ELT probe 100cm <sup>2</sup> | M0675      | Oct. 26, 2022          | Oct. 25 2023               |

## 6 Test Result

### H-Filed Strength at 15 cm from the edges surrounding the EUT (uT)

| Frequency Range<br>(MHz) | Test<br>Position Left | Test<br>Position Right | Test<br>Position Rear | Test<br>Position Front |
|--------------------------|-----------------------|------------------------|-----------------------|------------------------|
| 0.110-0.205              | 0.53                  | 0.52                   | 0.54                  | 0.51                   |

### H-Filed Strength at 15 cm from the edges surrounding the EUT (A/m)

| Frequency Range<br>(MHz) | Test<br>Position Left | Test<br>Position Right | Test<br>Position Rear | Test<br>Position Front | Limits (50%)<br>(A/m) | Limits<br>(A/m) |
|--------------------------|-----------------------|------------------------|-----------------------|------------------------|-----------------------|-----------------|
| 0.110-0.205              | 0.42                  | 0.42                   | 0.43                  | 0.41                   | 0.815                 | 1.63            |

### H-Filed Strength at 20 cm from Top of the EUT (uT)

| Frequency Range<br>(MHz) | Test<br>Position Top |
|--------------------------|----------------------|
| 0.110-0.205              | 0.56                 |

### H-Filed Strength at 20 cm from Top of the EUT (A/m)

| Frequency Range<br>(MHz) | Test<br>Position Top | Limits (50%)<br>(A/m) | Limits<br>(A/m) |
|--------------------------|----------------------|-----------------------|-----------------|
| 0.110-0.205              | 0.45                 | 0.815                 | 1.63            |

Remark: A/m = uT/1.25.

7 Test Set-up Photo

