

# FCC ID: 2APXNLACA130

## 1.1. Measuring Standard

FCC CFR 47 Part 1(1.1310) KDB 680106 D01 v03

## 1.2. Requirements

The EUT does comply with item 5(b) of KDB 680106 D01 v03

- 1) Power transfer frequency is less than 1MHz
- 2) Output power from each primary coil is less than or equal to 15 watts.
- 3) The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils and clients that able to detect and allow coupling only between individual pair of coils.
- 4) Client device is inserted in or placed directly in contact with the transmitter.
- 5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion)
- 6) 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.

## 1.3. Test Configuration

- 1) The field strength of both H-field was measured at 15cm using the equipment list above for determining compliance with the MPE requirements of FCC Part 1.1310.
- 2) The RF power density was measured at Under maximum load test
- 3) Maximum H-field measurements were made 15cm from each side of the EUT. Along the side of the EUT and still 15cm away from the edge of the EUT, the field probes were positioned at the location where there is maximum field strength. The maximum H-field is reported below.
- 4) This device uses a wireless charging circuit for power transfer operating at the frequency of 110 – 205 kHz. Thus, the 300kHz limits were used: H-field limit  
1.63 (A/m).

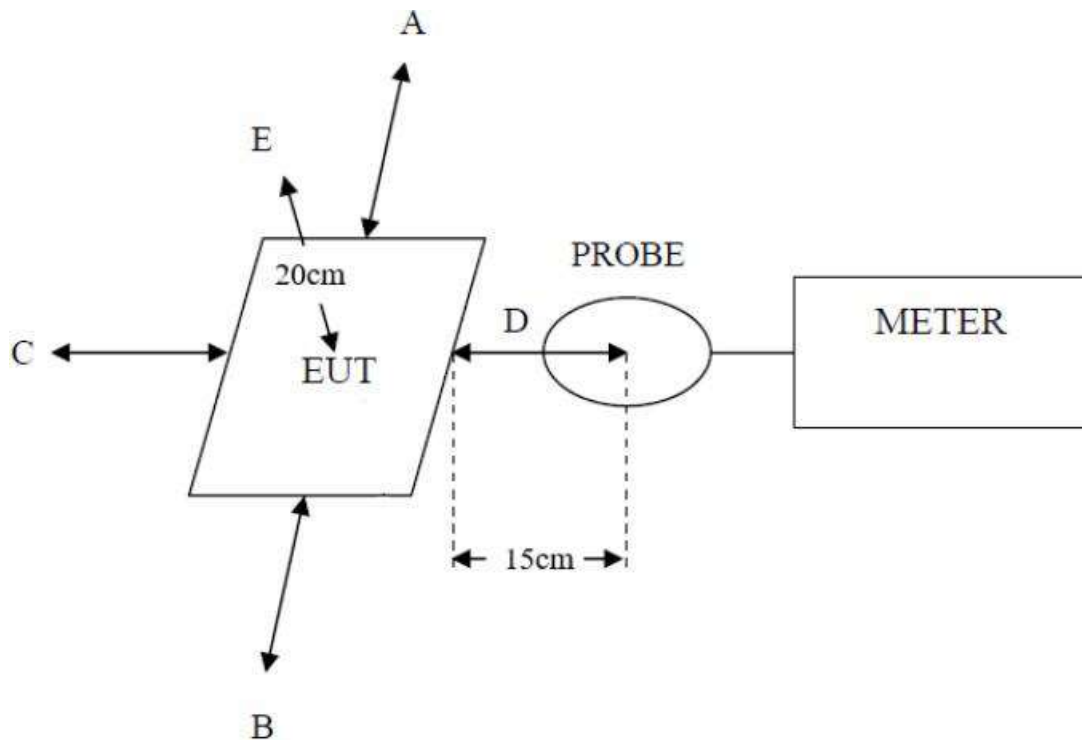
## 1.4. Test Procedure

- 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 v03.

Remark:

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

## 1.5. Test Setup



## 1.6. Limits

| 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 Exposure</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                        |
| 300-1,500  |                               |                               | f/300                               | 6                        |
| 1,500-100,000  |                               |                               | 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                       |
| 300-1,500  |                               |                               | f/1500                              | 30                       |
| 1,500-100,000  |                               |                               | 1.0                                 | 30                       |

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

Remark: Emissions between 100 kHz to 300 kHz should be assessed versus the limits at 300 kHz in Table 1 of Section 1.1310: 1.63 A/m

## 1.7. Measuring Device and Test Equipment

For MPE Measurement

| Item | Equipment                              | Manufacturer | Model No. | Serial No.       | Last Cal.       | Cal. Interval |
|------|--|--------------|-----------|------------------|-----------------|---------------|
| 1.   | H-Field Probe<br>100 cm2 SENSOR        | narda        | D-0010    | BN<br>2300/90.10 | May 20,<br>2019 | 1 Year        |
| 2.   | MAGNETIC FIELD<br>HiTESTER ELT-<br>400 | narda        | D-0009    | BN 2304/03       | May 20,<br>2019 | 1 Year        |

## 1.8. Description of Test Facility

|                 |   |   |
|-----------------|---|---|
| Test Items      | : | H field measurements  |
| Test Laboratory | : | TUV Rheinland (Shenzhen) Co., Ltd.  |
| Site Location   | : | East of F/1, F/2 - F/4, Building 1, Cybio Technology Building, No. 6 Langshan No. 2 Road, North Hi-tech Industry Park, Nanshan District, Shenzhen, P.R. China |

## 1.9. Measuring Results

Table: H-Field Strength at 15 cm from the edges surrounding the EUT and 20cm from the top surface of the EUT

| EUT Test Mode     | Measured H-Field Strength Values (A/m) |                 |                 |                 |                 | 50% Limit (A/m) | Limit (A/m) |
|-------------------|--|-----------------|-----------------|-----------------|-----------------|-----------------|-------------|
|                   | Test Position A                        | Test Position B | Test Position C | Test Position D | Test Position E |                 |             |
| 1% Battery Level  | 0.523                                  | 0.485           | 0.467           | 0.557           | 0.467           | 0.815           | 1.63        |
| 50% Battery Level | 0.438                                  | 0.473           | 0.446           | 0.535           | 0.454           | 0.815           | 1.63        |
| 99% Battery Level | 0.536                                  | 0.496           | 0.478           | 0.528           | 0.477           | 0.815           | 1.63        |

# IC:24654-LACA130

1.10. Measuring Standard  
RSS-102 Issue 5

1.11. 1.11.Requirements

The maximum operating frequency of the device is 205 kHz

Thus, the minimum limit for Canada is  $0.73 / f = 0.73 / 0.205 = 3.56 \text{ A/m} > 0.575 \text{ A/m}$

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1.12. Test Procedure

5) The RF exposure test was performed in anechoic chamber.

6) The aggregate H-field strengths at 10 cm surrounding the device and 10 cm above the top surface

7) The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E) were completed.

Remark:

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

1.13. Limits

**Table 4: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)**

| Frequency Range (MHz)  | Electric Field (V/m rms)  | Magnetic Field (A/m rms)                 | Power Density (W/m <sup>2</sup> ) | Reference Period (minutes) |
|--|---------------------------|--|-----------------------------------|----------------------------|
| 0.003-10 <sup>21</sup>   | 83                        | 90                                       | -                                 | Instantaneous*             |
| 0.1-10   | -                         | 0.73/ f                                  | -                                 | 6**                        |
| 1.1-10   | 87/ f <sup>0.5</sup>      | -  | -                                 | 6**                        |
| 10-20  | 27.46                     | 0.0728                                   | 2                                 | 6                          |
| 20-48  | 58.07/ f <sup>0.25</sup>  | 0.1540/ f <sup>0.25</sup>                | 8.944/ f <sup>0.5</sup>           | 6                          |
| 48-300   | 22.06                     | 0.05852                                  | 1.291                             | 6                          |
| 300-6000   | 3.142 f <sup>0.3417</sup> | 0.008335 f <sup>0.3417</sup>             | 0.02619f <sup>0.6834</sup>        | 6                          |
| 6000-15000   | 61.4                      | 0.163                                    | 10                                | 6                          |
| 15000-150000   | 61.4                      | 0.163                                    | 10                                | 616000/ f <sup>1.2</sup>   |
| 150000-300000  | 0.158 f <sup>0.5</sup>    | 4.21 x 10 <sup>-4</sup> f <sup>0.5</sup> | 6.67 x 10 <sup>-3</sup> f         | 616000/ f <sup>1.2</sup>   |
| Note: f is frequency in MHz.<br>*Based on nerve stimulation (NS).<br>** Based on specific absorption rate (SAR). |                           |  |                                   |                            |

**Table 6: RF Field Strength Limits for Controlled Use Devices (Controlled Environment)**

| Frequency Range (MHz)  | Electric Field (V/m rms) | Magnetic Field (A/m rms)                 | Power Density (W/m <sup>2</sup> ) | Reference Period (minutes) |
|--|--------------------------|--|-----------------------------------|----------------------------|
| 0.003-10 <sup>23</sup>   | 170                      | 180                                      | -                                 | Instantaneous*             |
| 0.1-10   | -                        | 1.6/ f                                   | -                                 | 6**                        |
| 1.29-10  | 193/ f <sup>0.5</sup>    | -  | -                                 | 6**                        |
| 10-20  | 61.4                     | 0.163                                    | 10                                | 6                          |
| 20-48  | 129.8/ f <sup>0.25</sup> | 0.3444/ f <sup>0.25</sup>                | 44.72/ f <sup>0.5</sup>           | 6                          |
| 48-100   | 49.33                    | 0.1309                                   | 6.455                             | 6                          |
| 100-6000   | 15.60 f <sup>0.25</sup>  | 0.04138 f <sup>0.25</sup>                | 0.6455f <sup>0.5</sup>            | 6                          |
| 6000-15000   | 137                      | 0.364                                    | 50                                | 6                          |
| 15000-150000   | 137                      | 0.364                                    | 50                                | 616000/ f <sup>1.2</sup>   |
| 150000-300000  | 0.354 f <sup>0.5</sup>   | 9.40 x 10 <sup>-4</sup> f <sup>0.5</sup> | 3.33 x 10 <sup>-4</sup> f         | 616000/ f <sup>1.2</sup>   |
| Note: f is frequency in MHz.<br>*Based on nerve stimulation (NS).<br>** Based on specific absorption rate (SAR). |                          |  |                                   |                            |

#### 1.14. Measuring Device and Test Equipment

For MPE Measurement

| Item | Equipment                                   | Manufacturer | Model No. | Serial No.       | Last Cal.       | Cal. Interval |
|------|---|--------------|-----------|------------------|-----------------|---------------|
| 1.   | H-Field Probe<br>100 cm <sup>2</sup> SENSOR | narda        | D-0010    | BN<br>2300/90.10 | May 20,<br>2019 | 1 Year        |
| 2.   | MAGNETIC FIELD<br>HiTESTER ELT-<br>400      | narda        | D-0009    | BN 2304/03       | May 20,<br>2019 | 1 Year        |

#### 1.15. Description of Test Facility

|                 |   |   |
|-----------------|---|---|
| Test Items      | : | H field measurements  |
| Test Laboratory | : | Test Laboratory   |
| Site Location   | : | East of F/1, F/2 - F/4, Building 1, Cybio Technology Building,<br>No. 6 Langshan No. 2 Road, North Hi-tech Industry Park,<br>Nanshan District, Shenzhen, P.R. China |

#### 1.16. Measuring Results

Table: H-Field Strength at 10 cm from the edges surrounding the EUT and 10cm from the top surface of the EUT

| EUT Test Mode     | Measured H-Field Strength Values (A/m) |                 |                 |                 |                 | Limit (A/m) |
|-------------------|--|-----------------|-----------------|-----------------|-----------------|-------------|
|                   | Test Position A                        | Test Position B | Test Position C | Test Position D | Test Position E |             |
| 1% Battery Level  | 0.487                                  | 0.468           | 0.569           | 0.558           | 0.685           | 3.56        |
| 50% Battery Level | 0.422                                  | 0.435           | 0.525           | 0.502           | 0.637           | 3.56        |
| 99% Battery Level | 0.496                                  | 0.467           | 0.550           | 0.546           | 0.679           | 3.56        |