



# H.B. Compliance Solutions

## RF Exposure Evaluation Report

For the

**Aira, Inc.**

### 2 Device Integrated Countertop Wireless Charging System

25 April 2025

#### Prepared for:

Aira, Inc.

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#### Prepared By:

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A handwritten signature in black ink, appearing to read 'Hoosamuddin'.

Hoosamuddin Bandukwala



Cert # ATL-0062-E

## 1. Equipment Overview

|                                                      |                                                                                |
|------------------------------------------------------|--------------------------------------------------------------------------------|
| <b>Product Name:</b>                                 | 2 Device Integrated Countertop Wireless Charging System                        |
| <b>Model(s) Tested:</b>                              | T00012                                                                         |
| <b>FCC ID:</b>                                       | 2AWGG-CT-012                                                                   |
| <b>Supply Voltage Input:</b>                         | Primary Power: 120 VAC                                                         |
| <b>Frequency Range:</b>                              | 126 kHz to 229kHz                                                              |
| <b>No. of Channels:</b>                              | 1                                                                              |
| <b>Type(s) of Modulation:</b>                        | Sinewave                                                                       |
| <b>Range of Operation Power:</b>                     | 0.58 mW (Radiated)                                                             |
| <b>Emission Designator:</b>                          | N/A                                                                            |
| <b>Channel Spacing(s)</b>                            | None                                                                           |
| <b>Test Item:</b>                                    | Pre-Production                                                                 |
| <b>Type of Equipment:</b>                            | Fixed                                                                          |
| <b>Measurement Distance declared by manufacturer</b> | 20 cm                                                                          |
| <b>Antenna Requirement (§15.203):</b>                | Type of Antenna: Integral Loop<br>Gain of Antenna: 0dBi                        |
| <b>Environmental Test Conditions:</b>                | Temperature: 15-35°C<br>Humidity: 30-60%<br>Barometric Pressure: 860-1060 mbar |
| <b>Modification to the EUT:</b>                      | None                                                                           |
| <b>Evaluated By:</b>                                 | Staff at H.B Compliance Solutions                                              |
| <b>Test Date(s):</b>                                 | April 22, 2025                                                                 |

## 2. Applicable Standard

According to §1.1307 the criteria listed in table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter. RF exposure is calculated according to KDB680106 D01v04: Wireless Power Transfer.

## 3. Test Limits

Evaluated against exposure limits: General Use  X  or Controlled Use    

### Maximum Permissible Exposure (MPE)

| Frequency range<br>(MHz)                                       | Electric field<br>strength<br>(V/m) | Magnetic field<br>strength<br>(A/m) | Power density<br>(mW/cm <sup>2</sup> ) | Averaging time<br>(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

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 the above table. (Use 300kHz limits for 150kHz)

#### 4. RF Exposure Requirements

This device and the test results is in compliance with item 5.2 of FCC KDB 680106 D01v04 below and can be excluded from submitting an RF exposure evaluation

1. Power transfer frequency is less than 1MHz
2. Output power from each primary coil is less than or equal to 15 watts
3. Client device is placed directly in contact with the transmitter
4. Mobile exposure conditions only (portable exposure conditions are not covered by the exclusion)
5. The aggregate H-field strengths at 20cm surrounding the device from all simultaneous coils are demonstrated to be less than 50% of the MPE Limit.
6. The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils and clients that are able to detect and allow coupling only between individual pairs of coils.

## 5. Test Limits

Evaluated against exposure limits: General Use   X   or Controlled Use     

### Maximum Permissible Exposure (MPE)

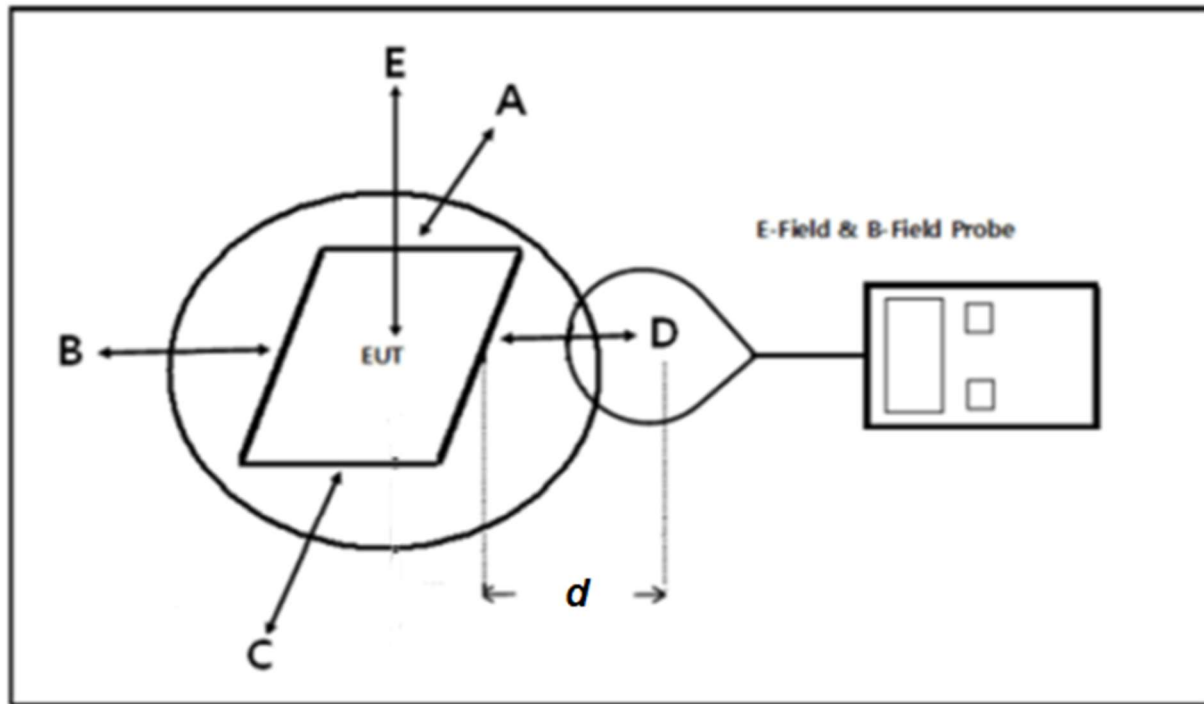
| Frequency range<br>(MHz)                                       | Electric field<br>strength<br>(V/m) | Magnetic field<br>strength<br>(A/m) | Power density<br>(mW/cm <sup>2</sup> ) | Averaging time<br>(minutes) |
|----------------------------------------------------------------|-------------------------------------|-------------------------------------|----------------------------------------|-----------------------------|
| <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

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 the above table. (Use 300kHz limits for 150kHz)

## 6. Measurement Procedure



### Test Setup

1. The RF exposure test was performed in a Shield Room
2. For RF exposure purposes, the E and H field strengths were measured separately with E and H field probes.
3. EUT was placed on a turntable and the measurement probe was placed at the manufacturer's specified distance  $d$  from the center of the probe to the edge of the device.
4. The measurement probe used to search for the highest strength
5. The highest emission level was recorded and compared with the limit for each point (A, B, C, D & E)
6. The EUT were measured according to the KDB 680106d01v04.

## 7. Test Results

| Frequency Range (MHz) | 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) | FCC Limits (A/m) | Mode |
|-----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------|------|
| 0.126                 | 0.327                  | 0.377                  | 0.252                  | 0.291                  | 0.472                  | 1.63             | Idle |
| 0.126                 | 0.161                  | 0.164                  | 0.175                  | 0.142                  | 0.257                  | 1.63             | WPT  |

H-Field Strength from the edges surrounding the EUT

| Frequency Range (MHz) | 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) | FCC Limits (V/m) | Mode |
|-----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------|------|
| 0.126                 | 1.624                  | 1.344                  | 1.513                  | 1.248                  | 2.014                  | 614              | Idle |
| 0.126                 | 1.214                  | 1.322                  | 1.212                  | 1.256                  | 1.785                  | 614              | WPT  |

E-Field Strength from the edges surrounding the EUT

Note: The worst-case data were reported.

The field strength limit refers to Part 1.1310 and the test results of exposure is compliant. 50% of the MPE limit (E-Field: 307 V/m; H-field: 0.815A/m)

*Device meets the RF Exposure limits based on the above measurement.*

## Simultaneous Transmission Evaluation

### Limit

The sum of the ratios of the peak or spatially averaged results to the applicable frequency dependent MPE limits must be <1 at all locations where users and bystanders can be exposed.

### Calculation

| Mode      | 126kHz Power Density/Limit | Bluetooth Power Density/Limit | WiFi Power Density/Limit | $\Sigma$ (Power Density/Limit) of WiFi+126kHz Transmitter | $\Sigma$ (Power Density/Limit) of Bluetooth+125kHz Transmitter |
|-----------|----------------------------|-------------------------------|--------------------------|-----------------------------------------------------------|----------------------------------------------------------------|
| WiFi      |                            |                               | 0.050                    | 0.0501                                                    |                                                                |
| Bluetooth |                            | 0.002                         |                          |                                                           | 0.0021                                                         |
| 126kHz    | 0.0001                     |                               |                          |                                                           |                                                                |

The 125kHz, WiFi and Bluetooth transmitter, the aggregated (power density/limit) is smaller than 1, and the MPE of 2 collocated transmitters is compliant.

**Note:** FCC ID for the pre-certified Wifi/Bluetooth module 2AC7Z-ESPC3MINI1.

BT antenna and Wi-Fi 2.4G Antenna can't transmit simultaneously.

**According to KDB 680106 D01 V04 section 5, b, this device satisfies the following conditions.**

| Requirement of KDB 680106                                                                                                                                                                                                               | Yes/No | Description                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power transfer frequency is less than 1MHz                                                                                                                                                                                              | Yes    | The device operates in frequency range 100 – 200kHz                                                                                                      |
| Output power from each primary coil is less than or equal to 15 watts                                                                                                                                                                   | Yes    | The maximum output power of the primary coil is 15W                                                                                                      |
| The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils and clients that are able to detect and allow coupling only between individual pairs of coils | Yes    | The transfer system includes only single coil that is able to detect receiver device                                                                     |
| Client device is placed directly in contact with the transmitter                                                                                                                                                                        | Yes    | Client device is placed directly in contact with the transmitter                                                                                         |
| Mobile exposure conditions only (portable exposure conditions are not covered by the exclusion)                                                                                                                                         | Yes    | Mobile exposure conditions only                                                                                                                          |
| The aggregate H-field strengths at 20cm surrounding the device from all simultaneous coils are demonstrated to be less than 50% of the MPE Limit.                                                                                       | Yes    | The EUT H-field strengths at 20cm surrounding the device from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE Limit. |

## 8. Test Equipment

| Equipment            | Manufacturer | Model    | Serial # | Last Cal Date | Cal Due Date |
|----------------------|--------------|----------|----------|---------------|--------------|
| Electric Field Probe | ETS Lindgren | HI-6105  | 58758    | Apr-23-25     | Apr-23-28    |
| RF Screen Room       | Lindgren     | 18-2/2-0 | 6500     | NCR           | N/A          |
| Magnetic Field Meter | Combinova    | MFM-1000 | 301      | Apr-17-25     | Apr-17-28    |

Table – Test Equipment List

**\*Statement of Traceability:** Test equipment is maintained and calibrated on a regular basis. All calibrations have been performed by a 17025 accredited test facility, traceable to National Institute of Standards and Technology (NIST)

**END OF TEST REPORT**