

# MPE TEST REPORT

Report No.: SHE24050068-01DE

Date: 2024-06-07

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**Applicant** : AiRISTA Flow, Inc.

**Address of Applicant** : 1966 Greenspring Drive, Suite 125  
Timonium, Maryland 21093.

**Product Name** : BLE BEACONING GATEWAY + AOA

**Brand Name** : AiRISTA Flow

**Model Name** : BGU.AOA.C

**Sample Acquisition Method** : Sent by Client

**Sample No.** : E24050068-02#02

**FCC ID** : TA7-BGU-AOA

**Standard** : FCC Part 2.1091

**Date of Receipt** : 2024-05-24

**Date of Test** : 2024-05-28~ 2024-06-07

**Date of Issue** : 2024-06-07

**Remark:**

*This report details the results of the testing carried out on one sample, the results contained in this report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.*

Prepared by:



(Erik Yang)

Reviewed by:



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Approved by:



(Authorized signatory: Echo Mu)

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## 1 General Information

### 1.1 Testing Laboratory

|              |   |
|--------------|---|
| Company Name | ICAS Testing Technology Service (Shanghai) Co., Ltd.    |
| Address      | No.1298, Pingan Road, Minhang District, Shanghai, China |
| Telephone    | 0086 21-51682999  |
| Fax          | 0086 21-54711112  |
| Homepage     | www.icasiso.com   |

### 1.2 Environmental conditions

|                                   |          |
|-----------------------------------|----------|
| Temperature (°C)                  | 18-25    |
| Humidity (%RH)                    | 40-65    |
| Barometric Pressure (mbar)        | 960-1060 |
| Ambient noise & Reflection (W/kg) | < 0.012  |

### 1.3 Details of Application

|                           |   |
|---------------------------|---|
| Applicant Company Name    | AiRISTA Flow, Inc.  |
| Address                   | 1966 Greenspring Drive, Suite 125 Timonium, Maryland 21093. |
| Contact Person            | Patrick Jenkins   |
| Telephone                 | (443) 212-4251  |
| Email                     | Patrick.Jenkins@Airista.com                                 |
| Manufacturer Company Name | AiRISTA Flow, Inc.  |
| Address                   | 1966 Greenspring Drive, Suite 125 Timonium, Maryland 21093. |
| Factory Company Name      | AiRISTA Flow, Inc.  |
| Address                   | 1966 Greenspring Drive, Suite 125 Timonium, Maryland 21093. |

### 1.4 Details of EUT

|                   |                                      |                 |
|-------------------|--------------------------------------|-----------------|
| Product Name      | BLE BEACONING GATEWAY + AOA          |                 |
| Brand Name        | AiRISTA Flow                         |                 |
| Test Model Name   | BGU.AOA.C                            |                 |
| FCC ID            | TA7-BGU-AOA                          |                 |
| Mode of Operation | WLAN 802.11b/g/n(HT20/40) for 2.4GHz |                 |
|                   | Bluetooth BLE Version 5.0            |                 |
|                   | Band                                 | Frequency (MHz) |
| Frequency Range   | 802.11b/g/n(HT20/40)                 | 2400~2483.5     |
|                   | Bluetooth                            | 2400~2483.5     |
| Modulation Type   | DSSS/OFDM for WLAN 2.4GHz            |                 |

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|                  |   |
|------------------|---|
|                  | GFSK for Bluetooth  |
| Antenna Type     | (CC2642R1F) BLE1: Internal Antenna<br>(CC2642R1F) BLE2: AOA Antenna<br>(RTL8720DN) BLE: PCB Antenna |
| Antenna Gain     | (CC2642R1F) BLE1: 2.5dBi<br>(CC2642R1F) BLE2: -1.18dBi<br>(RTL8720DN) BLE&2.4GWiFi: 0.43dBi         |
| Hardware Version | 1.0   |
| Software Version | 1002.2338   |

## 2 Maximum Permissible Exposure (MPE)

### 2.1 Limits

According to FCC Part 1.1307, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the commission's guidelines.

TABLE 1—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 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

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## 2.2 Assessment methods

Calculation Formula from FCC OET 65:

$$S = \frac{P * G}{4 * \pi * R^2}$$

Where:

S = Power Density (mW/cm<sup>2</sup>)

P = Input Power of the Antenna (mW)

G = Antenna Gain Relative to an Isotropic Antenna

R = Distance from the Antenna to the Point of Investigation (cm)

## 2.3 Test Result

| Operation Mode   | Frequency Range (MHz) | Max Conducted Power (dBm) | Antenna Gain (dBi) | Max EIRP (mW) | Power Density at R = 20 cm (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) |
|------------------|-----------------------|---------------------------|--------------------|---------------|--|-----------------------------|
| WLAN 2.4GHz      | 2400~2483.5           | 17.90                     | 0.43               | 68.08         | 0.013542   | 1.0                         |
| (RTL8720DN) BLE  | 2400~2483.5           | 6.61                      | 0.43               | 5.06          | 0.001006   | 1.0                         |
| (CC2642R1F) BLE1 | 2400~2483.5           | -1.20                     | 2.5                | 1.35          | 0.000268   | 1.0                         |
| (CC2642R1F) BLE2 | 2400~2483.5           | -0.94                     | -1.18              | 0.61          | 0.000122   | 1.0                         |

## 2.4 Results for transmit simultaneously

| Configurations                                    | Transmit Simultaneously | Limit |
|---|-------------------------|-------|
| WLAN 2.4GHz+(CC2642R1F) BLE1+(CC2642R1F) BLE2     | 0.013932                | 1.0   |
| (RTL8720DN) BLE+(CC2642R1F) BLE1+(CC2642R1F) BLE2 | 0.001396                | 1.0   |

### Note(s):

1. For 300 – 1,500MHz: Power Density limit is 1.5 mW/cm<sup>2</sup>
2. For 1,500 – 100,000MHz: Power Density limit is 1.0 mW/cm<sup>2</sup>
3. MPE Ratios are Calculated as [(MPE1/Limit) + (MPE2/Limit) + .....] ≤ 1

## 2.5 Conclusion

The Power Density at the position which is 20 cm far from the EUT is smaller than the General Population/Uncontrolled Exposure limit.

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## 3 Appendixes

### 3.1 Sample Photograph



Front of the sample



Rear of the sample

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Left of the sample



Right of the sample

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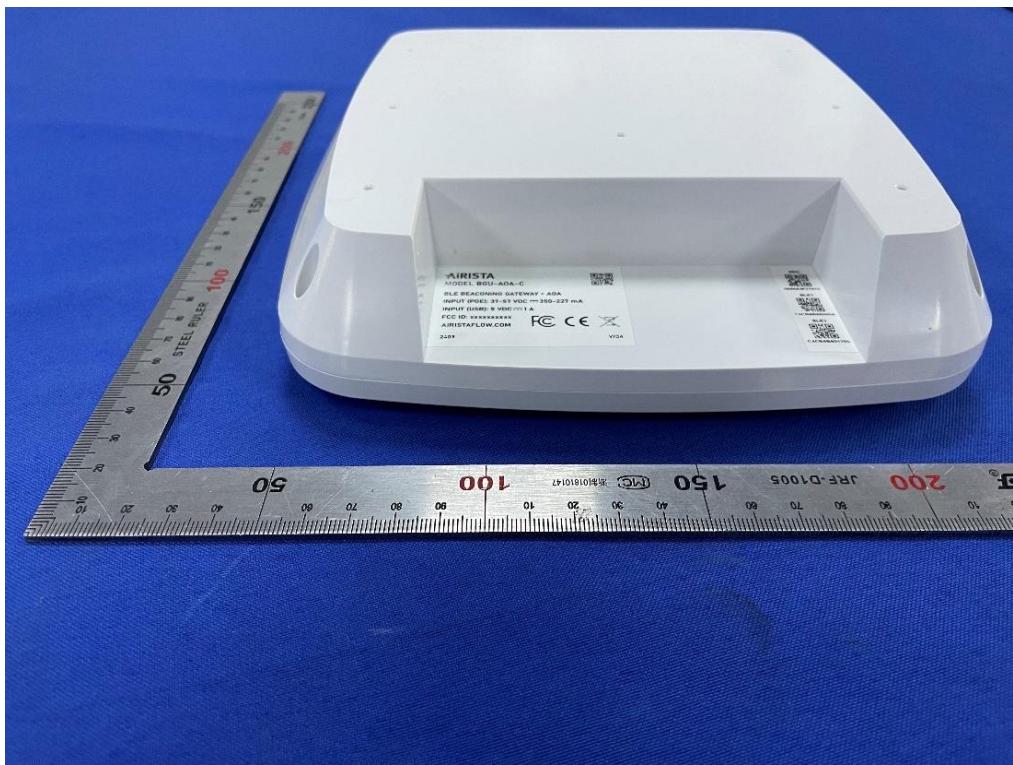
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Top of the sample



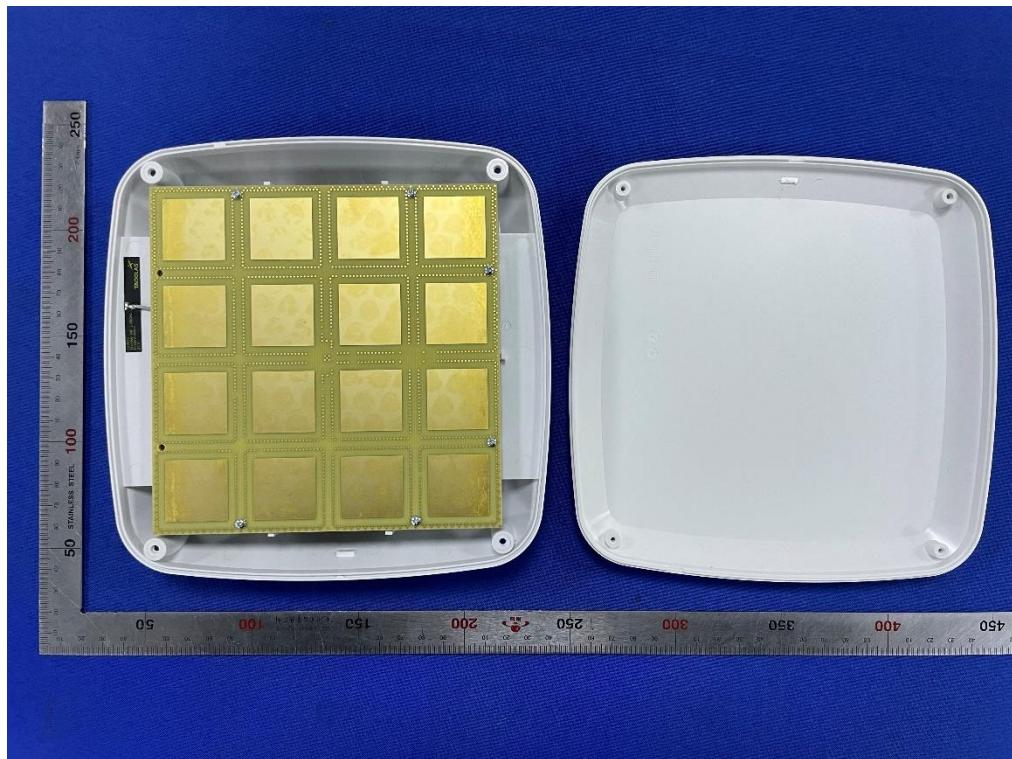
Bottom of the sample

# MPE TEST REPORT

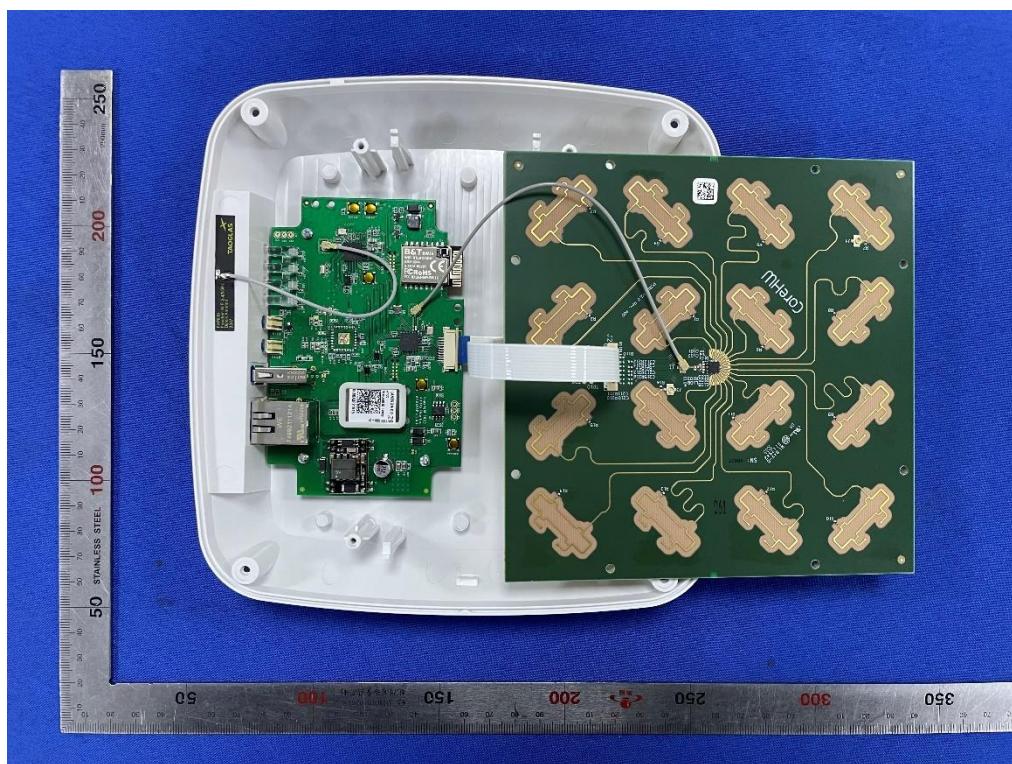
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Open-1 of the sample



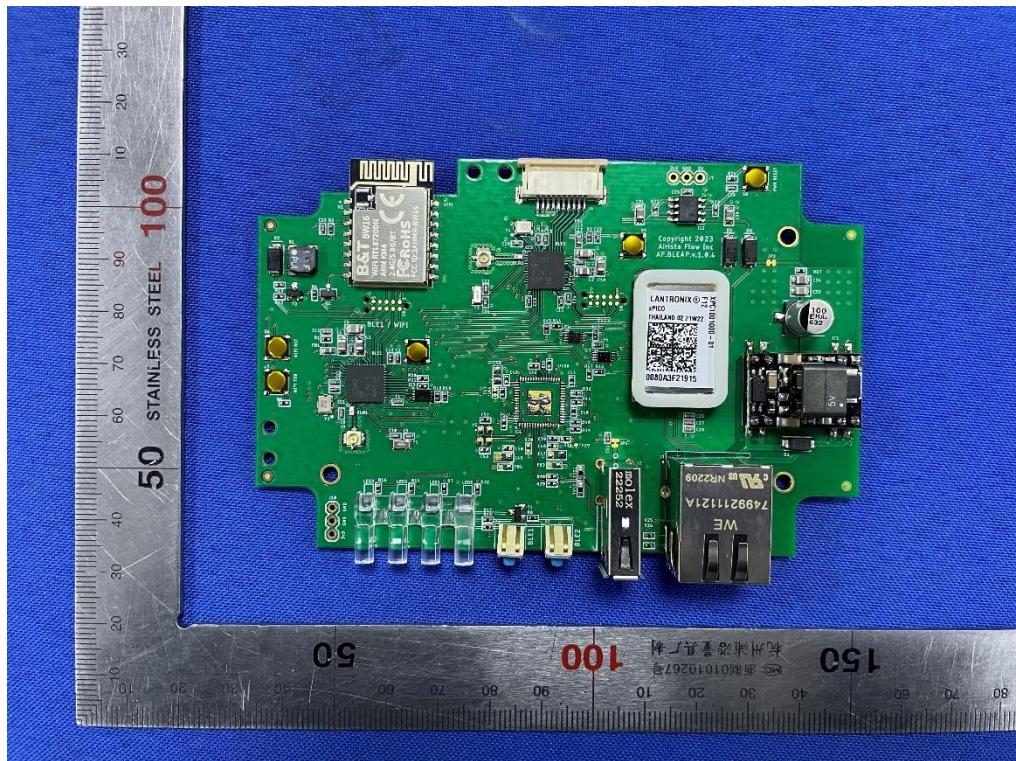
Open-2 of the sample

# MPE TEST REPORT

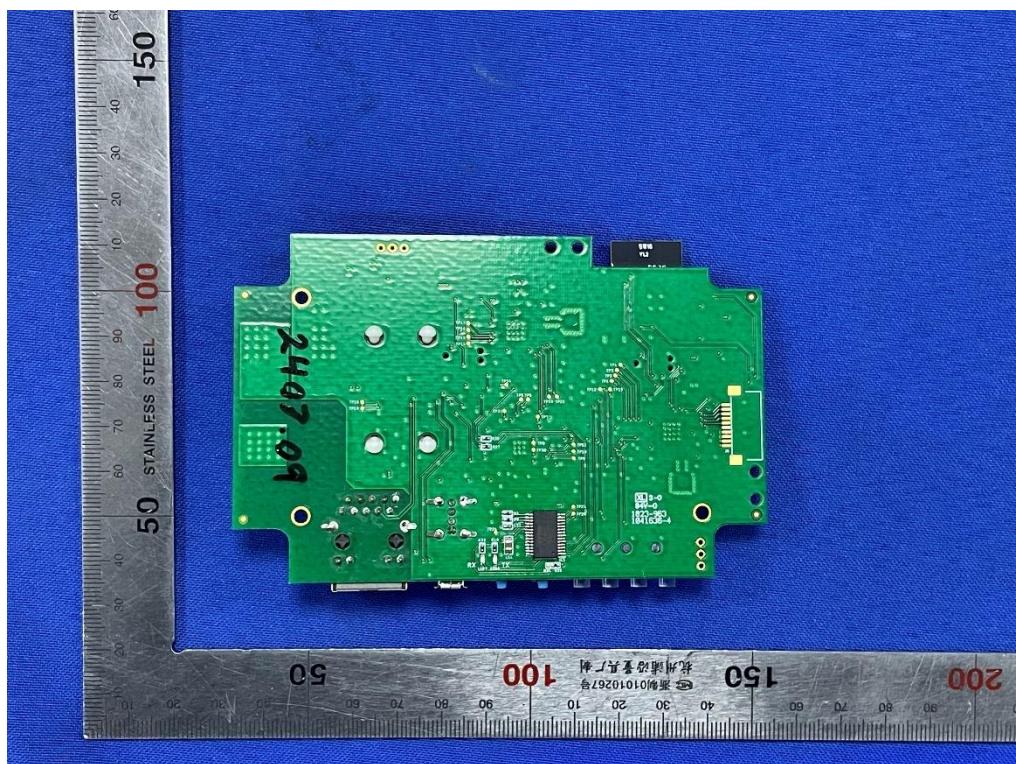
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Internal-1 of the sample



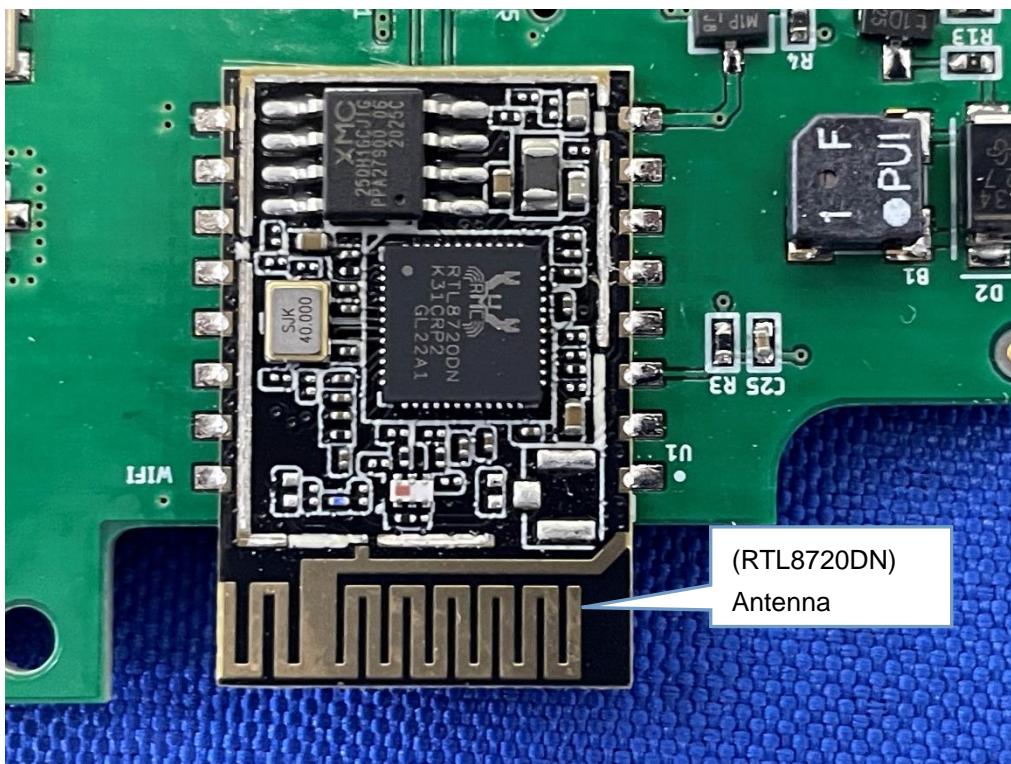
Internal-2 of the sample

# MPE TEST REPORT

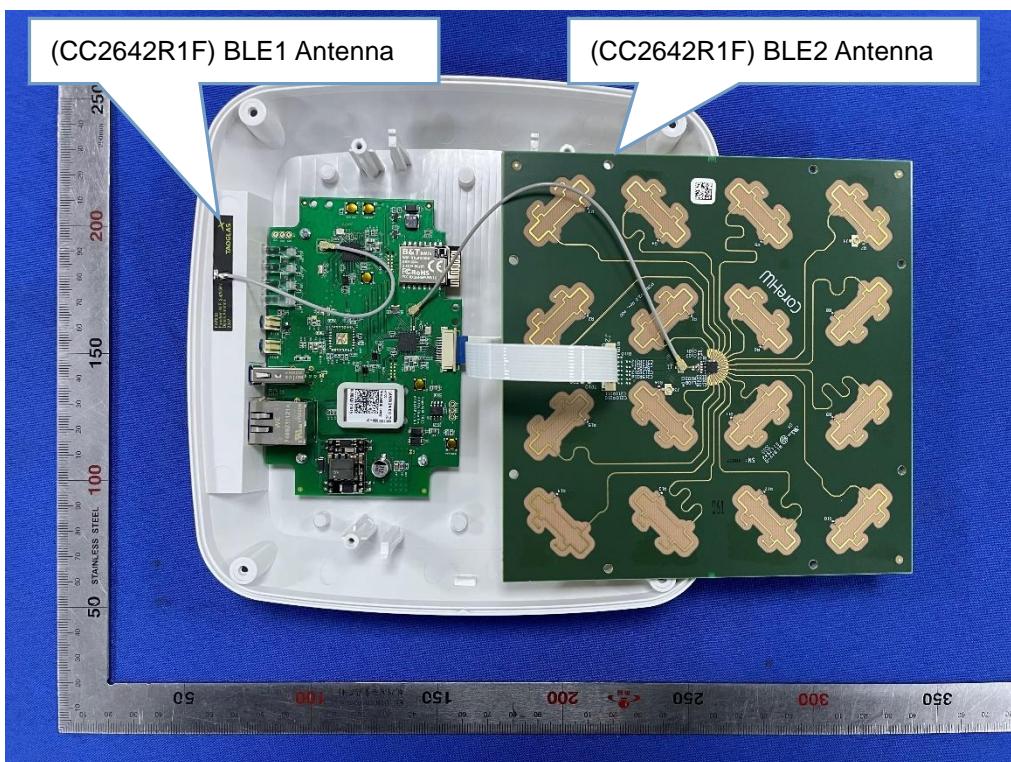
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Internal-3 of the sample



Antenna Position

\*\*\*End of the report\*\*\*