



REPORT No.: SZ22110064E04

# TEST REPORT

**APPLICANT** : Acrox Technologies Co., Ltd

**PRODUCT NAME** : PCB Antenna

**MODEL NAME** : Ant-B2J

**TRADE NAME** : N/A

**BRAND NAME** : N/A

**STANDARD(S)** : IEEE Std 149-2021

**RECEIPT DATE** : 2022-11-04

**TEST DATE** : 2022-11-07

**ISSUE DATE** : 2022-11-17



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**MORLAB**

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# DIRECTORY

|                                                                |    |
|----------------------------------------------------------------|----|
| 1. Technical Information .....                                 | 3  |
| 1.1. Applicant and Manufacturer Information .....              | 3  |
| 1.2. Equipment Under Test (EUT) Description .....              | 3  |
| 2. Test Results .....                                          | 4  |
| 2.1. Applied Reference Documents .....                         | 4  |
| 2.2. Test Conditions .....                                     | 4  |
| 2.3. Measurement Uncertainty .....                             | 4  |
| 2.4. Test Results .....                                        | 5  |
| 2.4.1. Gain .....                                              | 5  |
| 2.4.2. VSWR .....                                              | 5  |
| Annex A Photographs .....                                      | 6  |
| Annex B Figures .....                                          | 7  |
| 1. 2D Radiation Pattern .....                                  | 7  |
| 2. 3D Radiation Pattern .....                                  | 8  |
| 3. VSWR .....                                                  | 10 |
| Annex C Photographs .....                                      | 11 |
| Annex D General Information .....                              | 13 |
| 1.1 Identification of the Responsible Testing Laboratory ..... | 13 |
| 1.2 Identification of the Responsible Testing Location .....   | 13 |
| 1.3 Test Equipments Utilized .....                             | 13 |

| Change History |            |                   |
|----------------|------------|-------------------|
| Version        | Date       | Reason for change |
| 1.0            | 2022-11-17 | First edition     |
|                |            |                   |



# 1. Technical Information

**Note:** Provide by manufacturer.

## 1.1. Applicant and Manufacturer Information

|                              |                                                                      |
|------------------------------|----------------------------------------------------------------------|
| <b>Applicant:</b>            | Acrox Technologies Co., Ltd                                          |
| <b>Applicant Address:</b>    | 4F., No.89, Minshan St., Neihu Dist., Taipei City 114, Taiwan, R.O.C |
| <b>Manufacturer:</b>         | Acrox Technologies Co., Ltd                                          |
| <b>Manufacturer Address:</b> | 4F., No.89, Minshan St., Neihu Dist., Taipei City 114, Taiwan, R.O.C |

## 1.2. Equipment Under Test (EUT) Description

|                      |                     |
|----------------------|---------------------|
| <b>Wireless Type</b> | Bluetooth           |
| <b>Frequency</b>     | N/A                 |
| <b>IMEI</b>          | N/A                 |
| <b>Antenna Type</b>  | Meander PCB antenna |
| <b>Sample No.</b>    | 4#                  |

## 2. Test Results

### 2.1. Applied Reference Documents

Leading reference documents for testing:

| No. | Identity          | Document Title                                     |
|-----|-------------------|----------------------------------------------------|
| 1   | IEEE Std 149-2021 | IEEE Recommended Practice for Antenna Measurements |

### 2.2. Test Conditions

Test Environment Conditions:

|                    |                  |
|--------------------|------------------|
| Relative Humidity: | 25 ... 75 %      |
| Temperature:       | +10 °C to +30 °C |

### 2.3. Measurement Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO. When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% Confidence intervals.

| Item                                                 | Measurement Uncertainty(dB) |
|------------------------------------------------------|-----------------------------|
| Gain                                                 | ±0.5                        |
| VSWR                                                 | ±0.2                        |
| Measurement Uncertainty(95% Confidence Interval) K=2 |                             |



## 2.4. Test Results

### 2.4.1. Gain

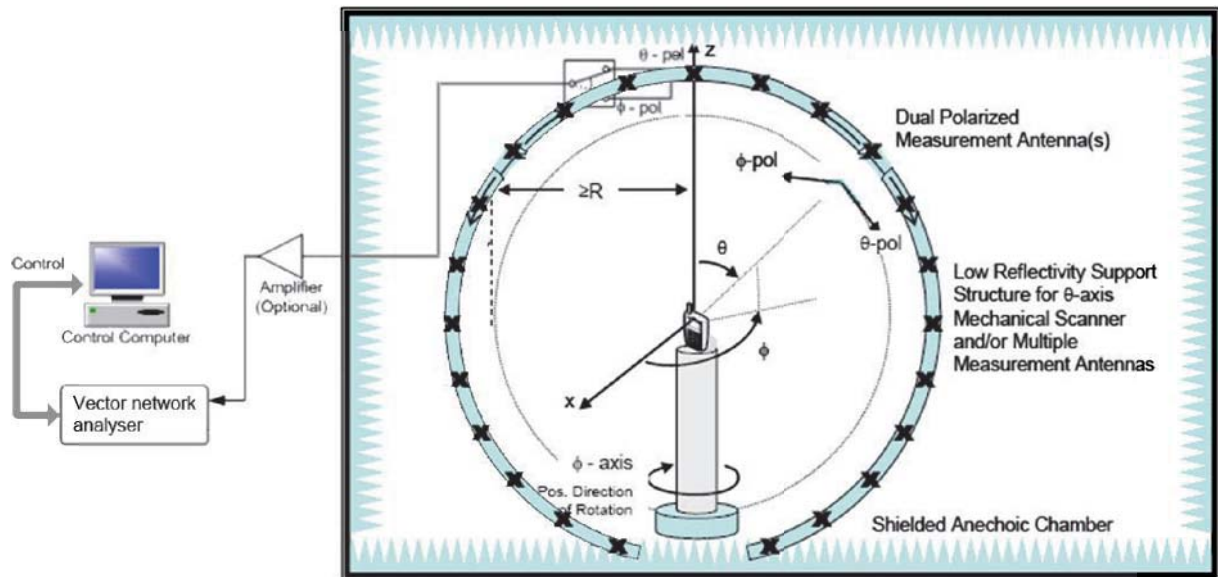
| Frequency (MHz) | Gain(dBi) |
|-----------------|-----------|
| 2400            | 2.99      |
| 2410            | 3.07      |
| 2420            | 2.91      |
| 2430            | 2.77      |
| 2440            | 3.02      |
| 2450            | 3.05      |
| 2460            | 3.17      |
| 2470            | 3.03      |
| 2480            | 2.98      |
| 2490            | 3.10      |
| 2500            | 3.17      |

### 2.4.2. VSWR

| Frequency | VSWR |
|-----------|------|
| 2400MHz   | 2.25 |
| 2440MHz   | 1.99 |
| 2480MHz   | 1.94 |

## Annex A Photographs

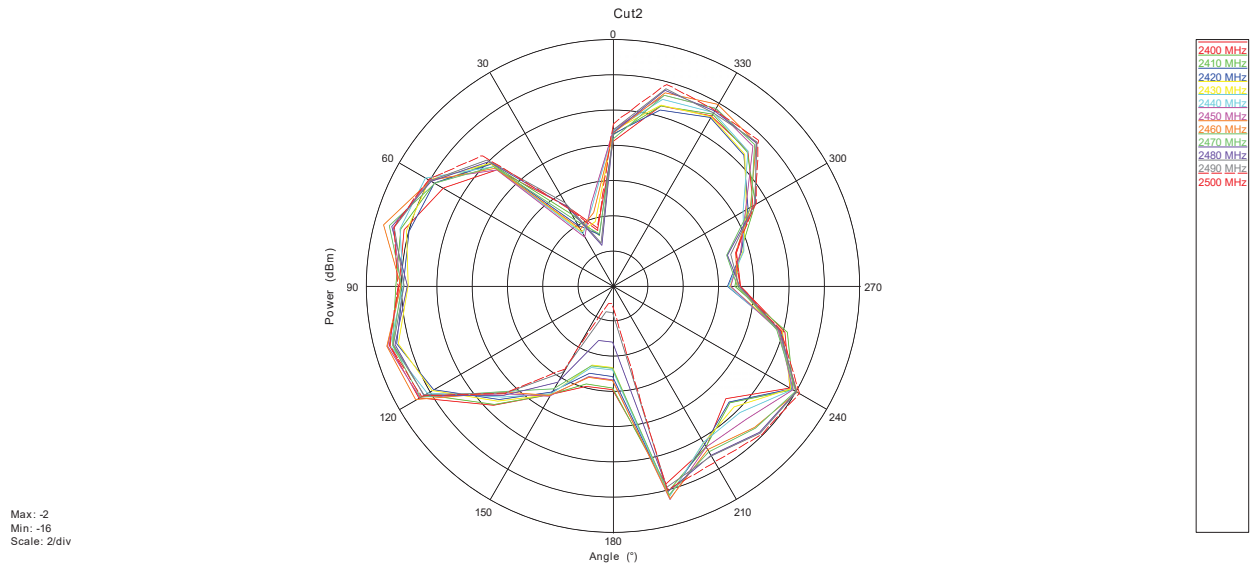
### 1. Test Setup



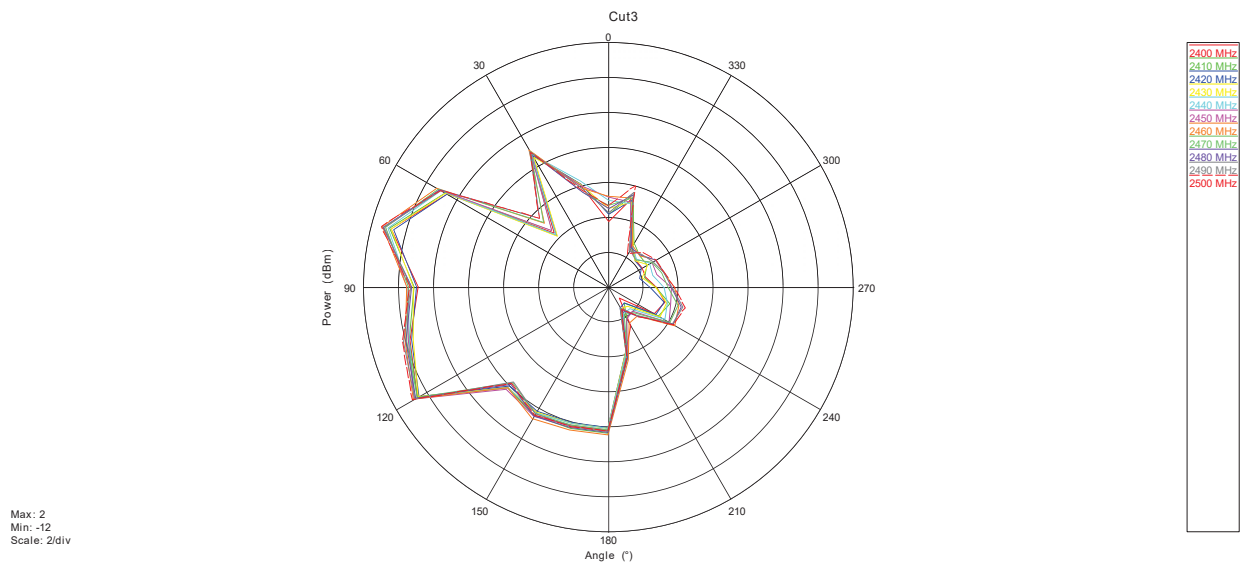
## Annex B Figures

### 1. 2D Radiation Pattern

Phi=0°



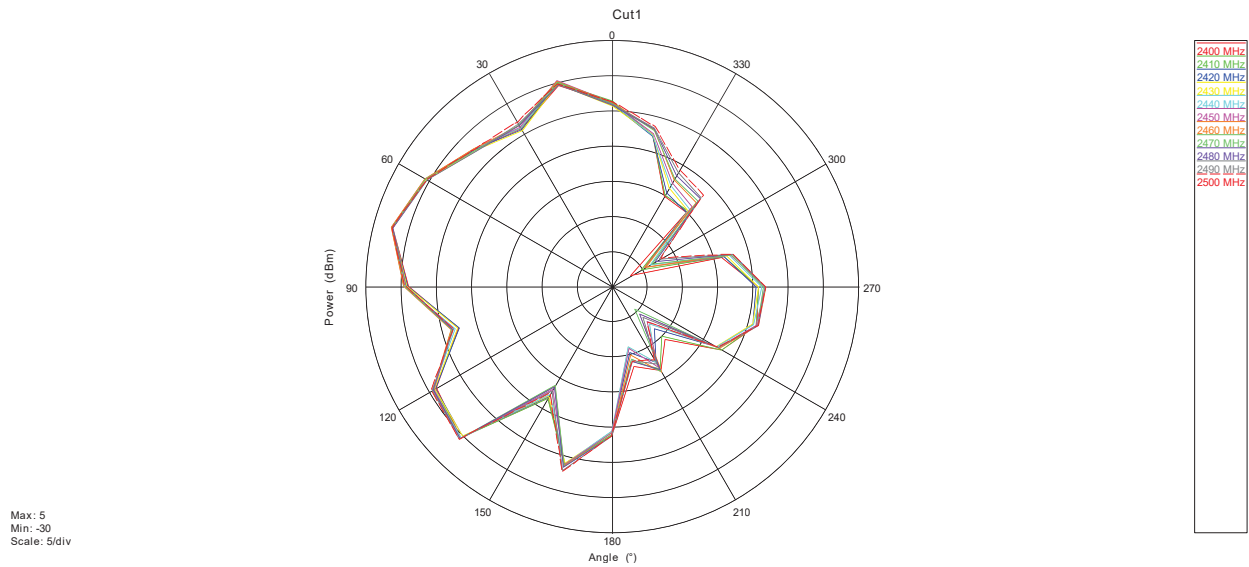
Phi=90°



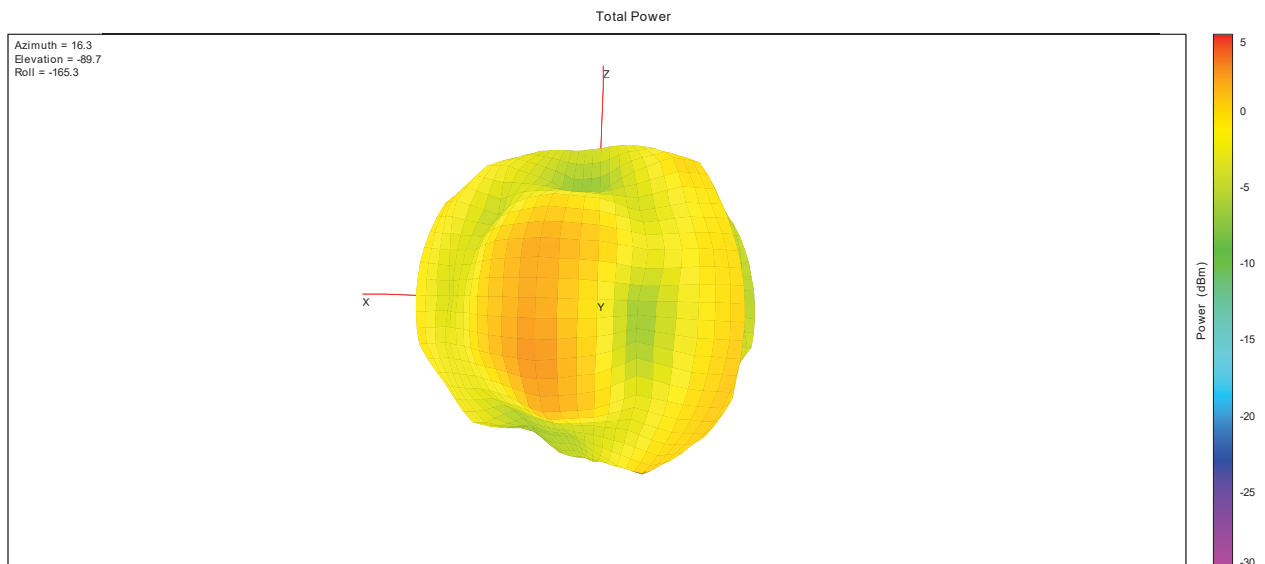


Theta=90°

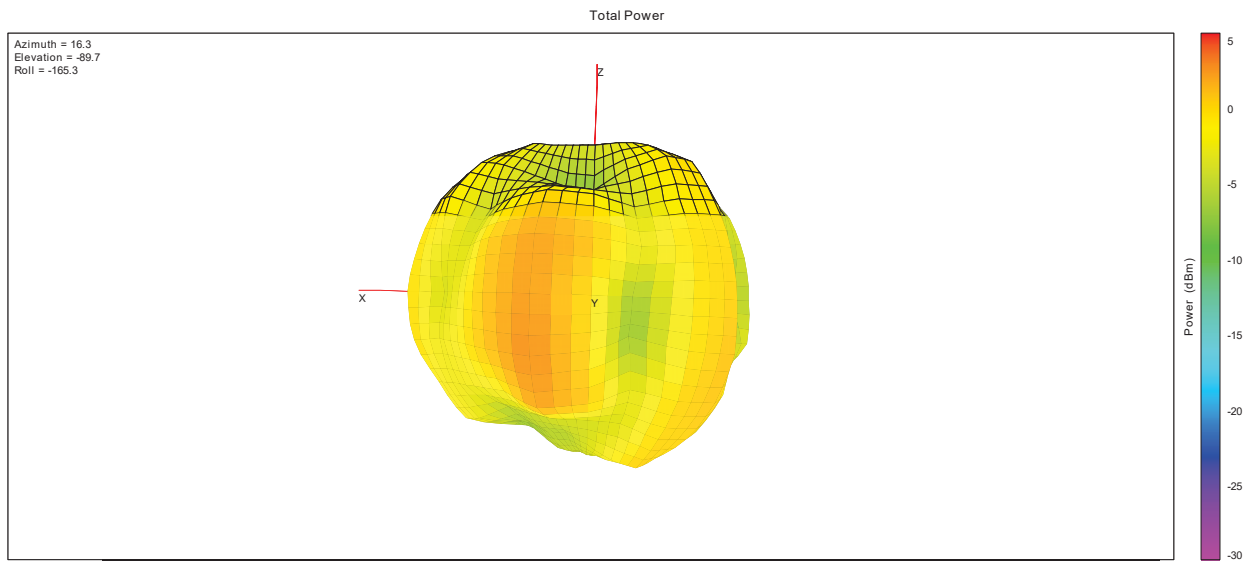
REPORT No.: SZ22110064E04



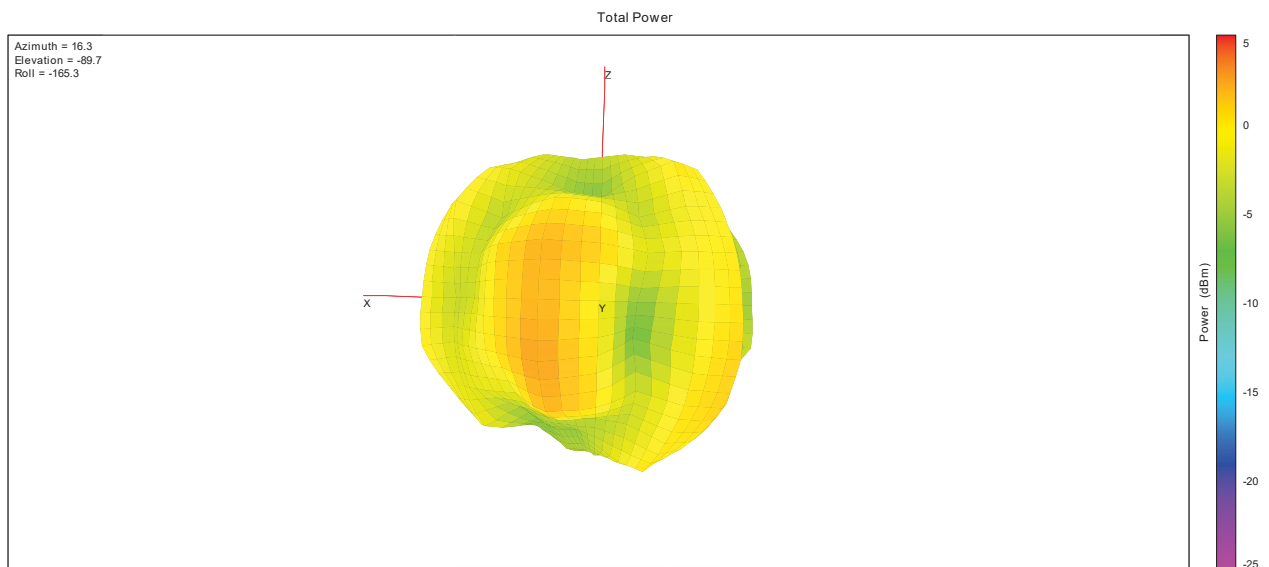
## 2. 3D Radiation Pattern



2400MHz



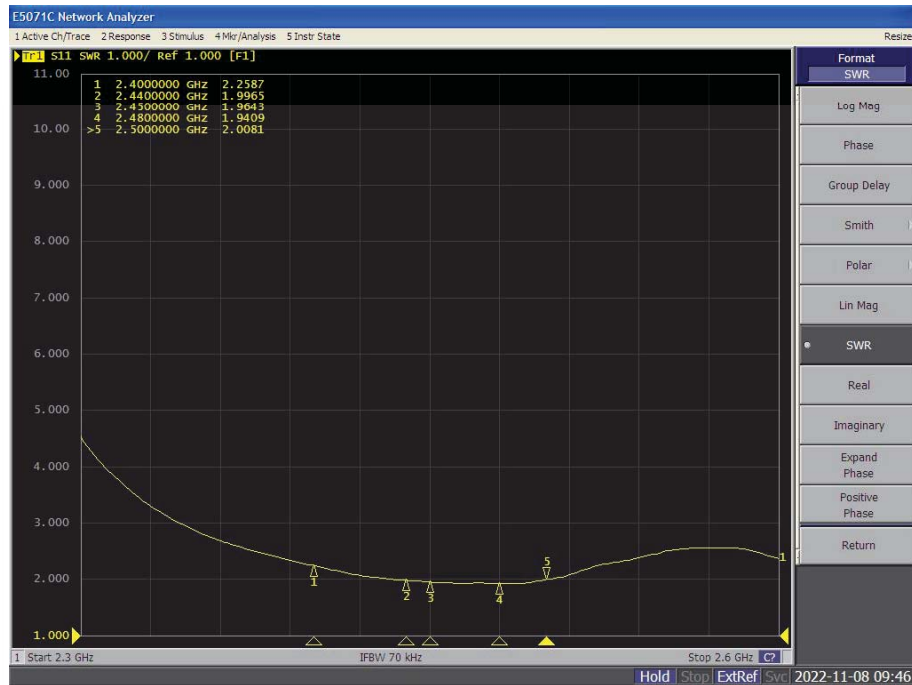
2440MHz



2480MHz

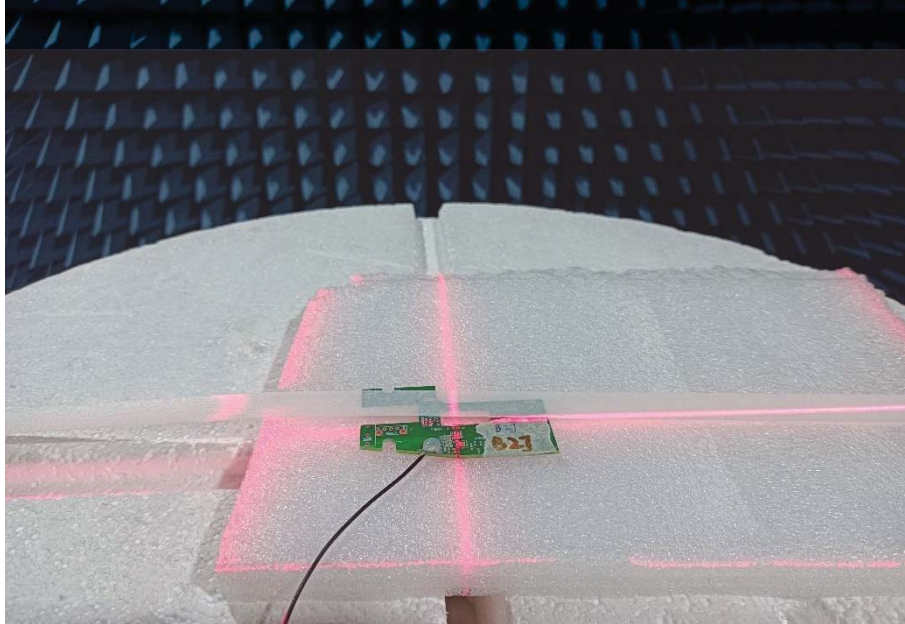


### 3. VSWR

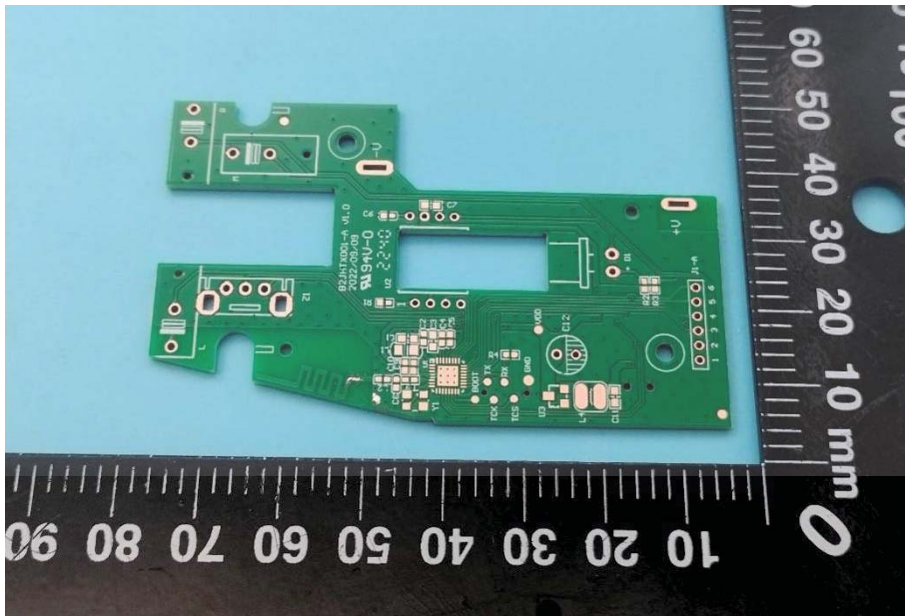


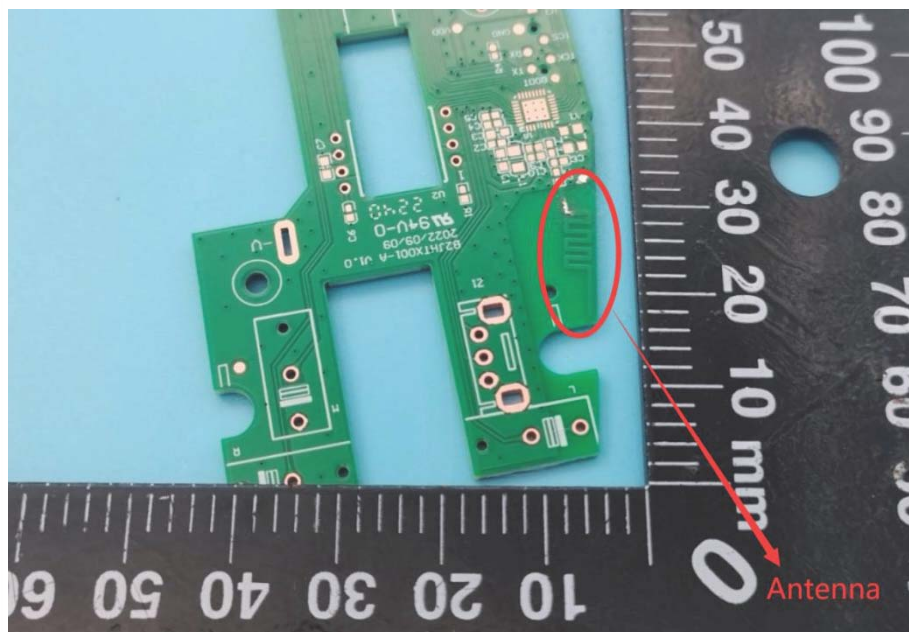
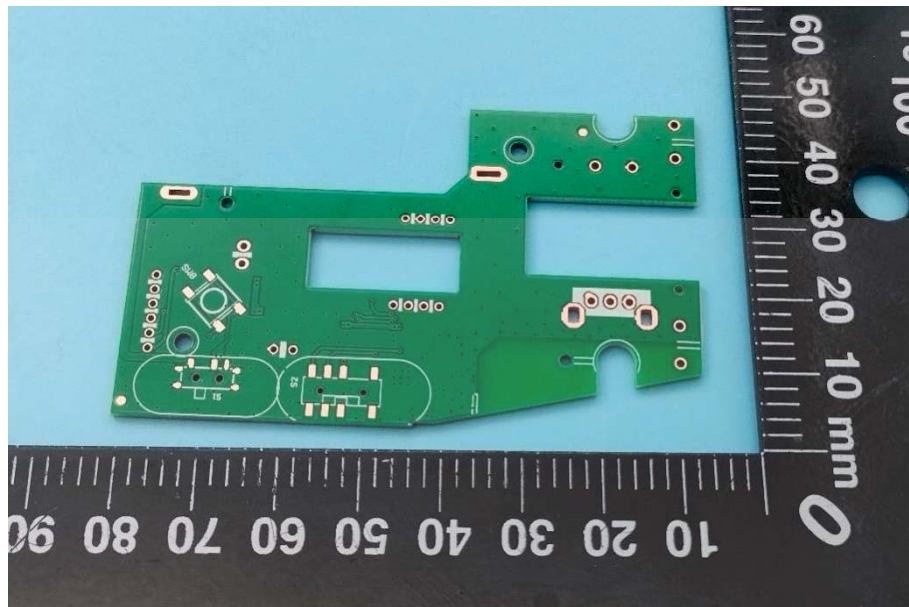
## Annex C Photographs

### 1. Test environment



### 2. EUT







## Annex D General Information

### 1.1 Identification of the Responsible Testing Laboratory

|                     |                                                                                                                                        |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Laboratory Name:    | Shenzhen Morlab Communications Technology Co., Ltd.                                                                                    |
| Laboratory Address: | FL1-3, Building A, FeiYang Science Park, No.8<br>LongChang Road, Block67, BaoAn District, ShenZhen,<br>GuangDong Province, P. R. China |
| Telephone:          | +86 755 36698555                                                                                                                       |
| Facsimile:          | +86 755 36698525                                                                                                                       |

### 1.2 Identification of the Responsible Testing Location

|          |                                                                                                                                        |
|----------|----------------------------------------------------------------------------------------------------------------------------------------|
| Name:    | Shenzhen Morlab Communications Technology Co., Ltd.                                                                                    |
| Address: | FL1-3, Building A, FeiYang Science Park, No.8<br>LongChang Road, Block67, BaoAn District, ShenZhen,<br>GuangDong Province, P. R. China |

### 1.3 Test Equipments Utilized

| No. | Equipement Name                  | Serial No.       | Type                                        | Manufa<br>cturer | Cal.Date   | Cal.Due<br>Date |
|-----|----------------------------------|------------------|---------------------------------------------|------------------|------------|-----------------|
| 1   | Network Analyzer                 | MY46110140       | E5071C                                      | Agilent          | 2022.07.04 | 2023.07.03      |
| 2   | OTA Chamber                      | TJ2235-Q17<br>93 | AMS-8923-1<br>50                            | ETS              | 2020.01.06 | 2023.01.05      |
| 3   | Antenna<br>Measurement<br>System | 1685             | EMQuest<br>EMQ-100<br>V 1.13 Build<br>21267 | ETS              | N/A        | N/A             |

————— END OF REPORT —————

## **1. Test Methods**

The Antenna Gain Test is performed according to The ANSI/IEEE Std 149 12.3.1 Antenna Gain (Small size (< 42cm) Linear Polarization Antennas), using a two-axis support device and one fixed measurement antenna. The EUT is positioned along the required MAPS centerline fixture holder. The EUT is then stepped between 0 and 180 degrees along the theta axis in 15-degree increments. At each theta position, the phi axis is stepped from 0-360 degrees in 15-degree increments. Data is recorded using the Network analyzer for both theta and phi polarizations at each position. Depending on the protocol, an appropriate filter is used in the EMQuest software to process the data. Upon completion of the test, test results (angular dependent EIRP) is calculated at each measurement point and the required value is automatically calculated. This test procedure is repeated for frequency and configuration as required.