REPORT No.: SZ22110064E01

# TEST REPORT

| | | |
|---|---|---|
| **APPLICANT** | : | Acrox Technologies Co., Ltd |
| **PRODUCT NAME** | : | PCB Antenna |
| **MODEL NAME** | : | Ant-B2A |
| **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 |

Test Personnel: Fang Jinshan

Fang Jinshan(Rapporteur)

Approved by:

Chi Shide(Supervisor)



MORLAB

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# DIRECTORY



| 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

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

## 1.2. Equipment Under Test (EUT) Description

| | |
|---|---|
| **Wireless Type** | Bluetooth |
| **Frequency** | N/A |
| **IMEI** | N/A |
| **Antenna Type** | Meander PCB antenna |
| **Sample No.** | 1# |

# 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

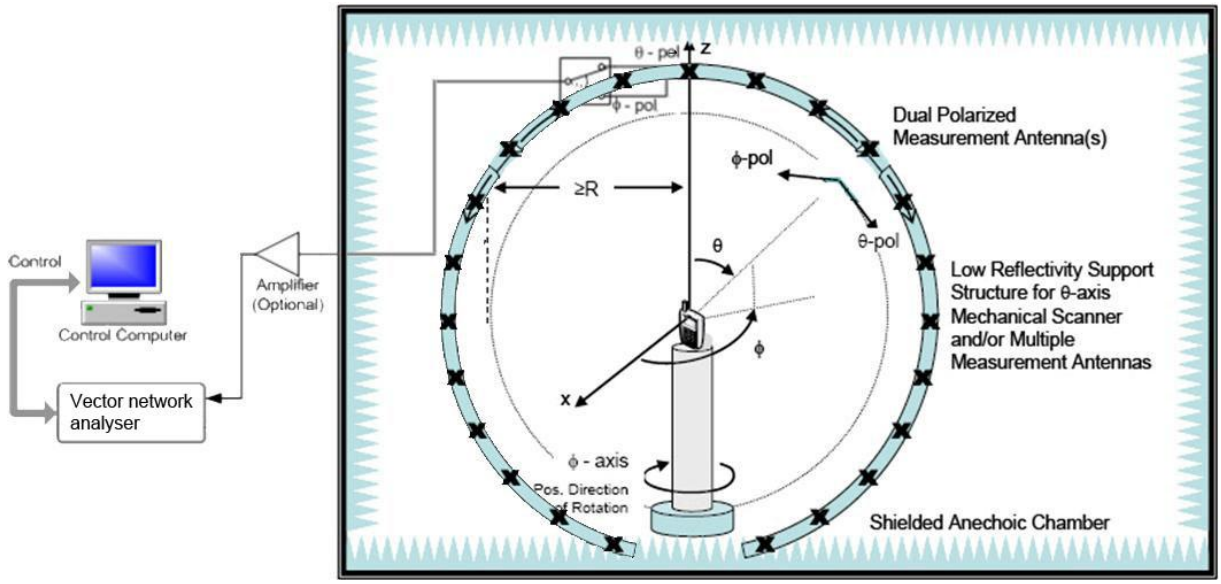
| Frequency (MHz) | Gain(dBi) |
|---|---|
| 2400 | -0.16 |
| 2410 | 0.14 |
| 2420 | -0.18 |
| 2430 | -0.01 |
| 2440 | 0.02 |
| 2450 | 0.10 |
| 2460 | 0.41 |
| 2470 | 0.23 |
| 2480 | 0.41 |
| 2490 | 0.30 |
| 2500 | 0.32 |

### 2.4.2. VSWR

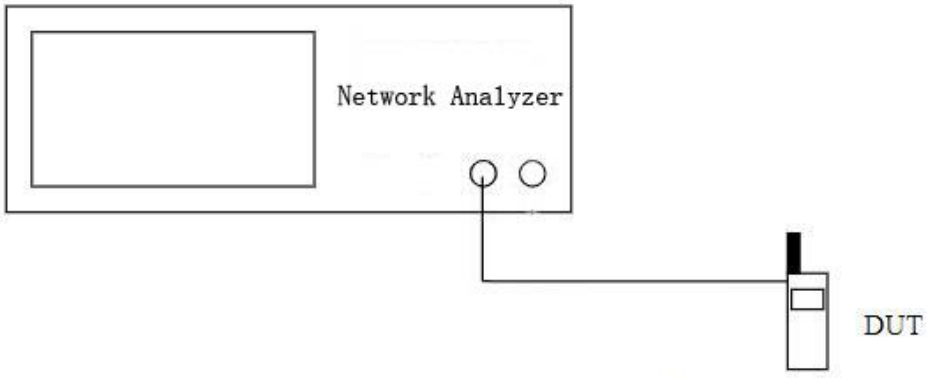
| Frequency | VSWR |
|---|---|
| 2400MHz | 4.34 |
| 2440MHz | 3.82 |
| 2480MHz | 3.27 |

# Annex A Photographs

## 1. Test Setup




## 2. S11 parameter test setup




* Other Configuration please reference the "Annex D: General Information"

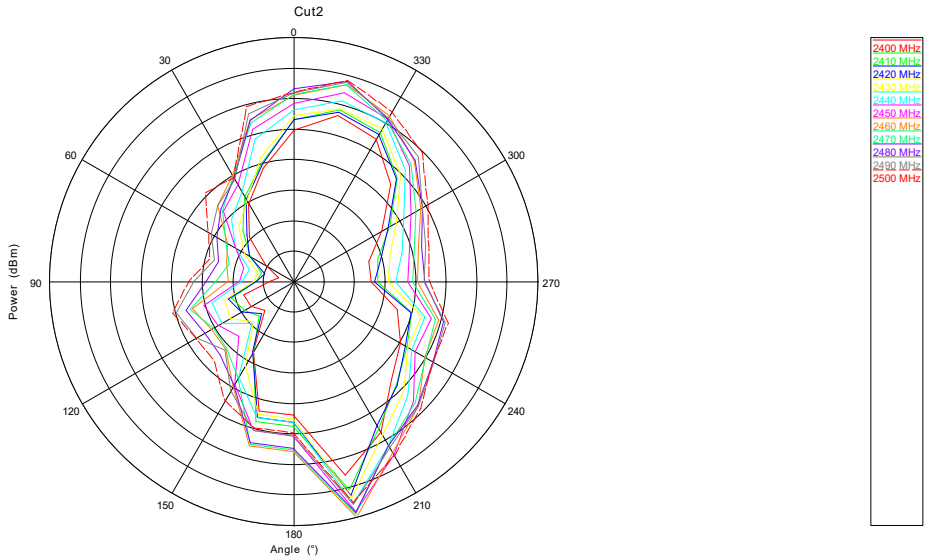
## 3. Setup Description:

Step 1: Fix the DUT on the pole in the center of the aneclroic chamber.
Step 2: The whole antenna unit is connected with the coaxial line at the transmitter end of the anechoic dumber.
Step 3: Close the aneclroic clumber door to avoid the external signal interference.
Step 4: Open the antenna measurement system and can select frequency or angle to test, and import the need frequeircy point to test.
Step 5: After testing, the test system can carry on far-field data conversion

# Annex B Figures

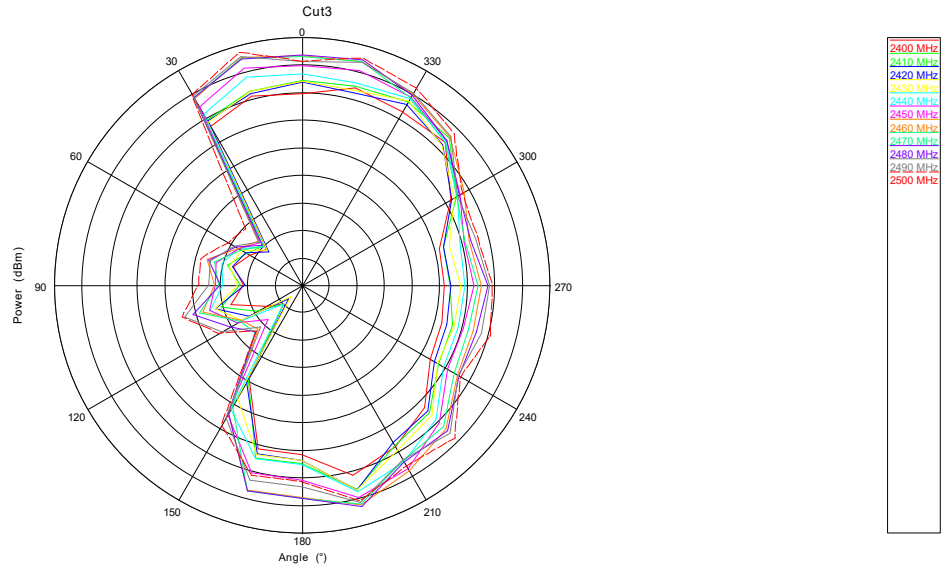
## 1. 2D Radiation Pattern

Phi=0°



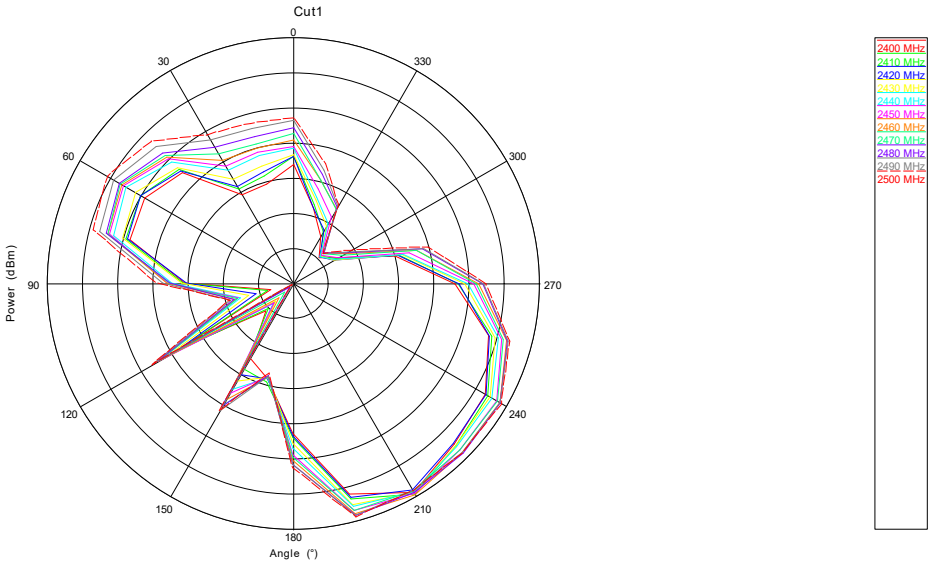

Max: 0
Min: -8
Scale: 1/div

Phi=90°

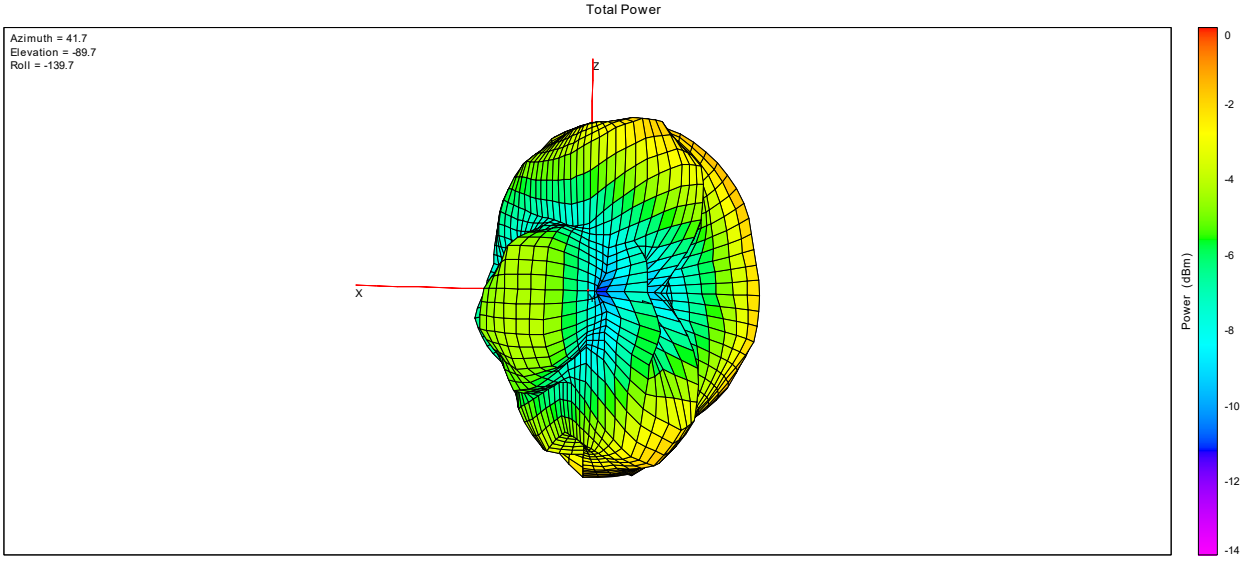



Max: -1
Min: -10
Scale: 1/div

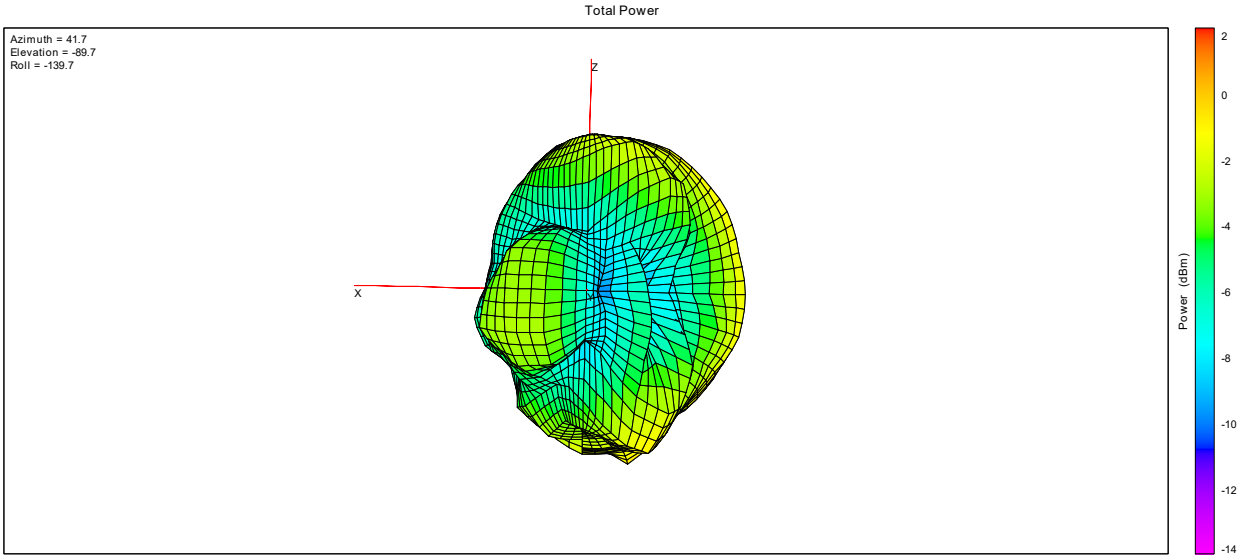
Theta=90°



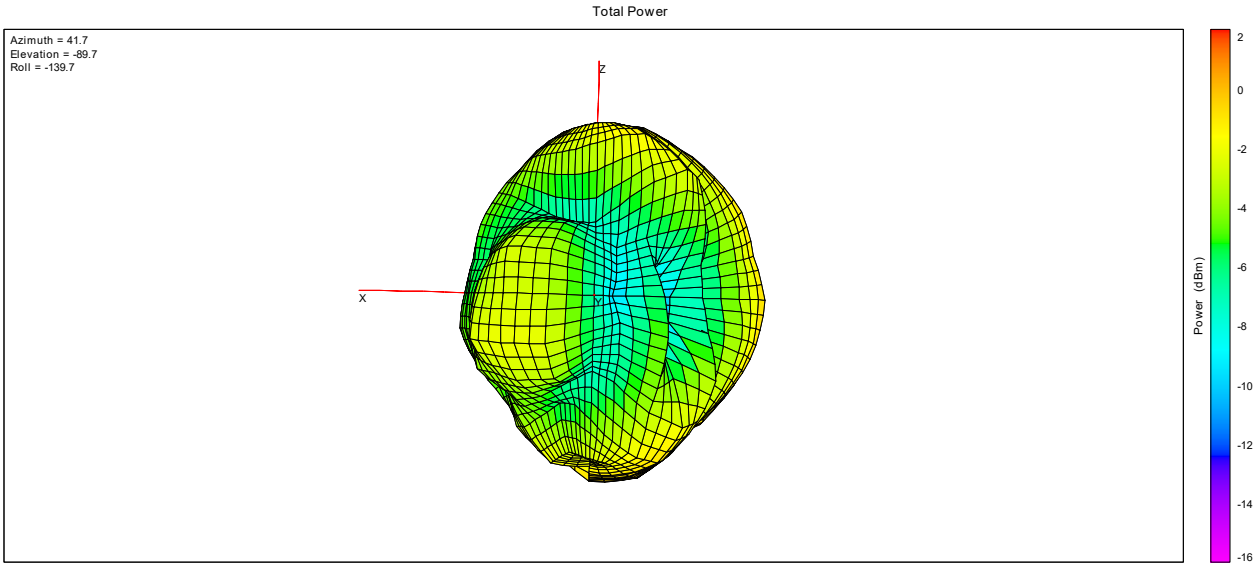

## 2. 3D Radiation Pattern




2400MHz




2440MHz



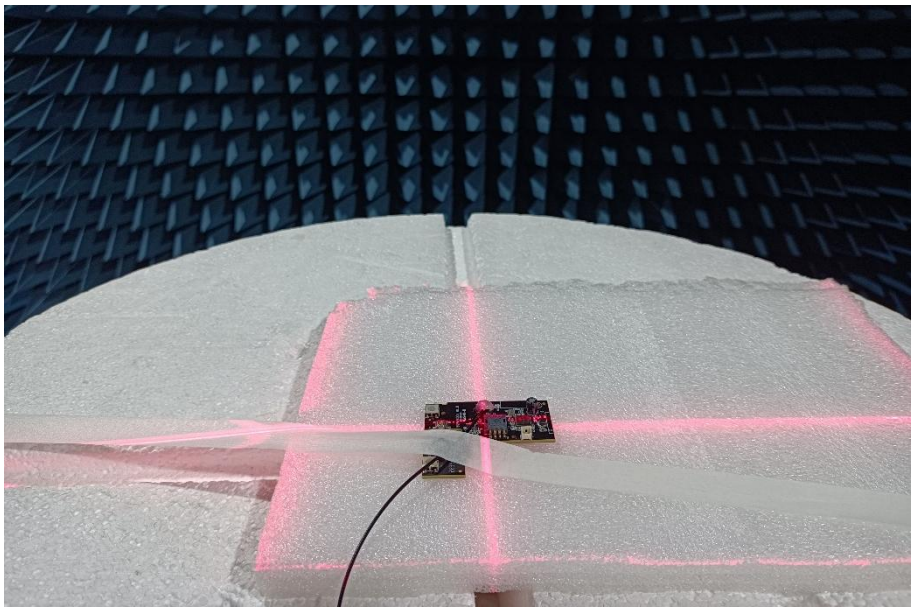

2480MHz

# 3. VSWR

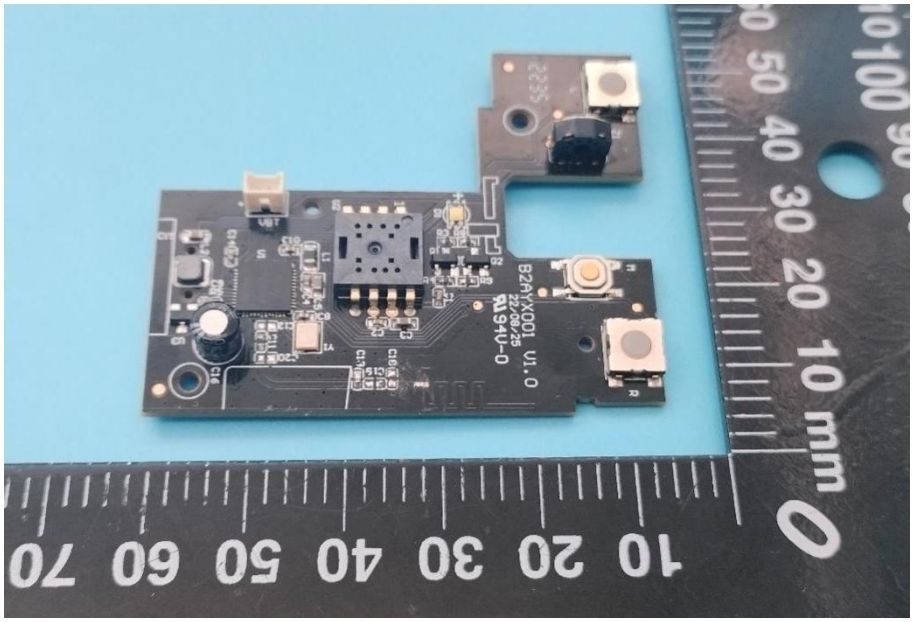

E5071C Network Analyzer
1 Active Ch/Trace 2 Response 3 Stimulus 4 Mkr/Analysis 5 Instr State
Resize
Tr1 S11 SWR 1.000/ Ref 1.000 [F1]
1 2.4000000 GHz 4.3424
2 2.4400000 GHz 3.8212
3 2.4500000 GHz 3.6983
4 2.4800000 GHz 3.2771
>5 2.5000000 GHz 2.9996
11.00
10.00
9.000
8.000
7.000
6.000
5.000
4.000
3.000
2.000
1.000
1 Start 2.3 GHz
IFBW 70 kHz
Stop 2.6 GHz
Format
SWR
Log Mag
Phase
Group Delay
Smith
Polar
Lin Mag
SWR
Real
Imaginary
Expand Phase
Positive Phase
Return
Hold
Stop
ExtRef
Svc
2022-11-08 09:49

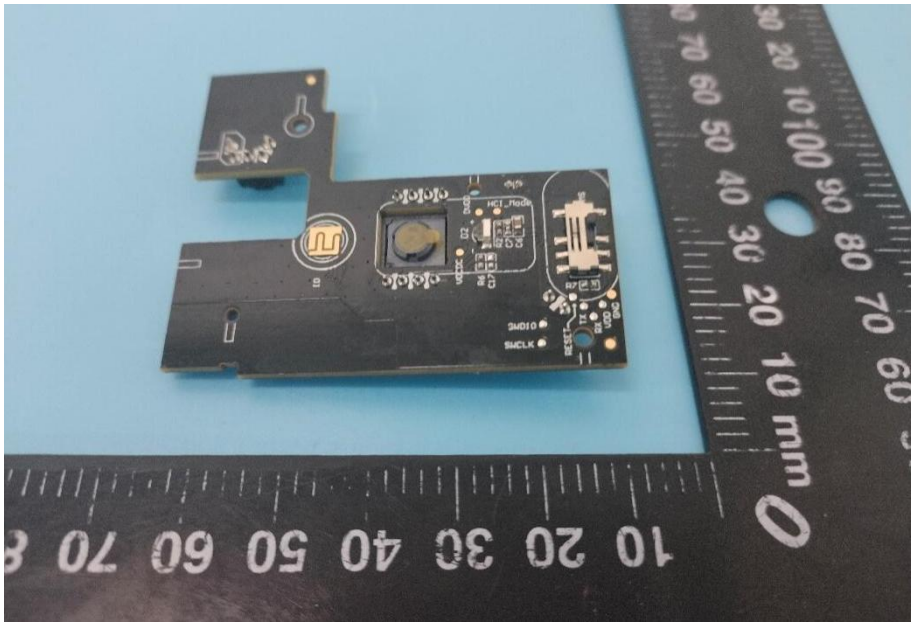
# Annex C Photographs

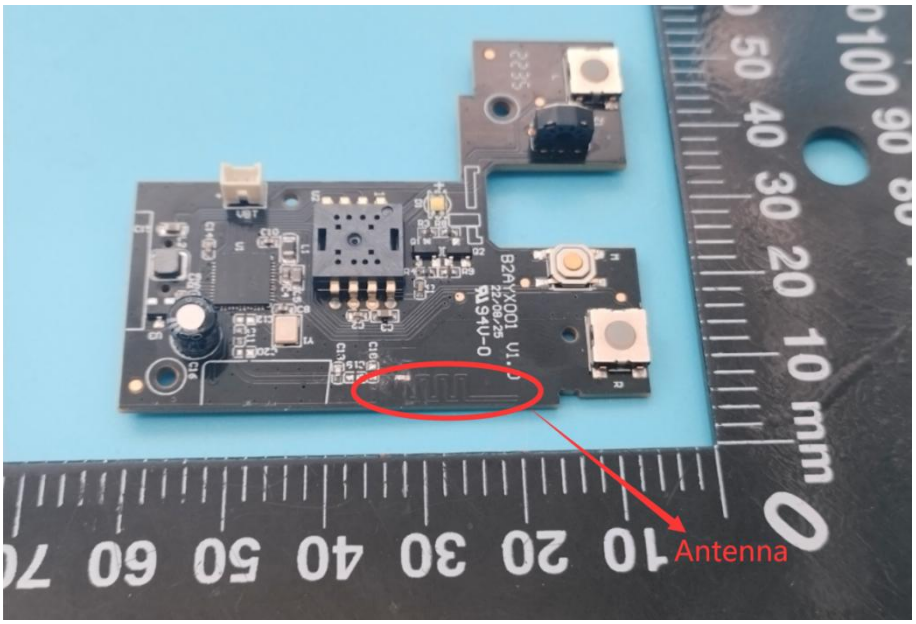
1. Test environment



2. EUT






Antenna

# 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 LongChang Road, Block67, BaoAn District, ShenZhen, 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 LongChang Road, Block67, BaoAn District, ShenZhen, GuangDong Province, P. R. China |

## 1.3 Test Equipments Utilized

| No. | Equipement Name | Serial No. | Type | Manufacturer | Cal.Date | Cal.Due Date |
|---|---|---|---|---|---|---|
| 1 | Network Analyzer | MY46110140 | E5071C | Agilent | 2022.07.04 | 2023.07.03 |
| 2 | OTA Chamber | TJ2235-Q1793 | AMS-8923-150 | ETS | 2020.01.06 | 2023.01.05 |
| 3 | Antenna Measurement System | 1685 | EMQuest EMQ-100 V 1.13 Build 21267 | ETS | N/A | N/A |

## 1.4 Test Condition

| Environment Parameter | Selected Values During Tests | | | |
|---|---|---|---|---|
| | Ambient Pressure(KPa) | Temperature(℃) | Voltage | Relative Humidity (%) |
| Normal Temperature, Normal Voltage (NTNV) | 101 | 21.4 | N/A | 43 |