



REPORT No.: SZ26030405E01

# TEST REPORT

**APPLICANT** : Shenzhen Mingwei Technology Co., Ltd.

**PRODUCT NAME** : ESP C3 Dev Board

**MODEL NAME** : ESP C3

**TRADE NAME** : HACKPACK

**BRAND NAME** : N/A

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

**RECEIPT DATE** : 2026-03-25

**TEST DATE** : 2026-03-26

**ISSUE DATE** : 2026-03-31



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**MORLAB**

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| Change History |            |                   |
|----------------|------------|-------------------|
| Version        | Date       | Reason for change |
| 1.0            | 2026-03-31 | First edition     |

Note: the latest revision of the report supersedes all previous version.



# 1. Technical Information

**Note:** Provide by applicant.

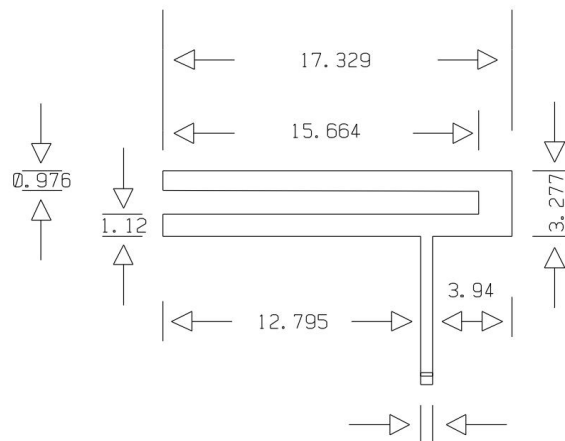
## 1.1. Applicant and Manufacturer Information

|                              |                                                                                                        |
|------------------------------|--------------------------------------------------------------------------------------------------------|
| <b>Applicant:</b>            | Shenzhen Mingwei Technology Co., Ltd.                                                                  |
| <b>Applicant Address:</b>    | 4th Floor, Building 1,Xinghui Industrial City,No.90 Yanluo Highway, Songgang,Bao'an District, Shenzhen |
| <b>Manufacturer:</b>         | Shenzhen Mingwei Technology Co., Ltd.                                                                  |
| <b>Manufacturer Address:</b> | 4th Floor, Building 1,Xinghui Industrial City,No.90 Yanluo Highway, Songgang,Bao'an District, Shenzhen |

## 1.2. Equipment Under Test (EUT) Description

|                      |                 |
|----------------------|-----------------|
| <b>Wireless Type</b> | N/A             |
| <b>Frequency</b>     | 2400MHz-2500MHz |
| <b>Serial Number</b> | N/A             |
| <b>Sample No.</b>    | 1#              |

**Dimension:**





## 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 |

Notes: Any additions, deviation, or exclusions from the method shall be noted in the "Remark".

### 2.2. Test Conditions

Test Environment Conditions:

|                       |         |
|-----------------------|---------|
| Relative Humidity(%): | 25 - 75 |
| Temperature(°C):      | 10 - 30 |

### 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.

## 2.4. Test Results lists

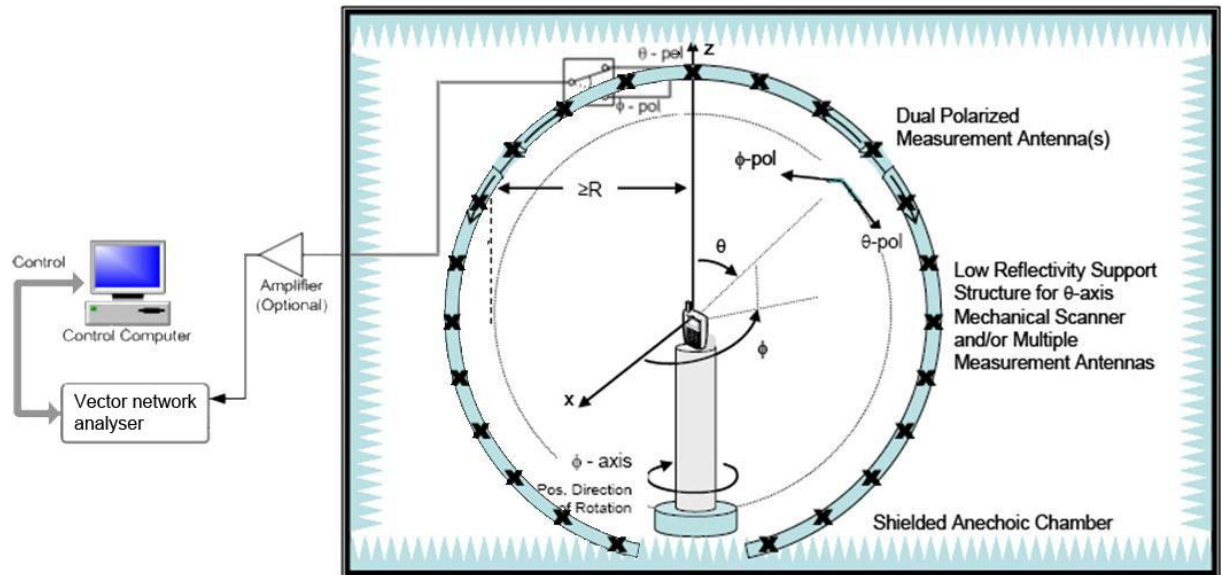
### 2.4.1. Gain

| Frequency<br>(MHz) | Gain(dBi) |
|--------------------|-----------|
| 2400               | 2.29      |
| 2410               | 2.43      |
| 2420               | 2.25      |
| 2430               | 2.05      |
| 2440               | 2.05      |
| 2450               | 1.89      |
| 2460               | 1.83      |
| 2470               | 1.70      |
| 2480               | 1.62      |
| 2490               | 1.69      |
| 2500               | 1.79      |

### 2.4.2. Efficiency

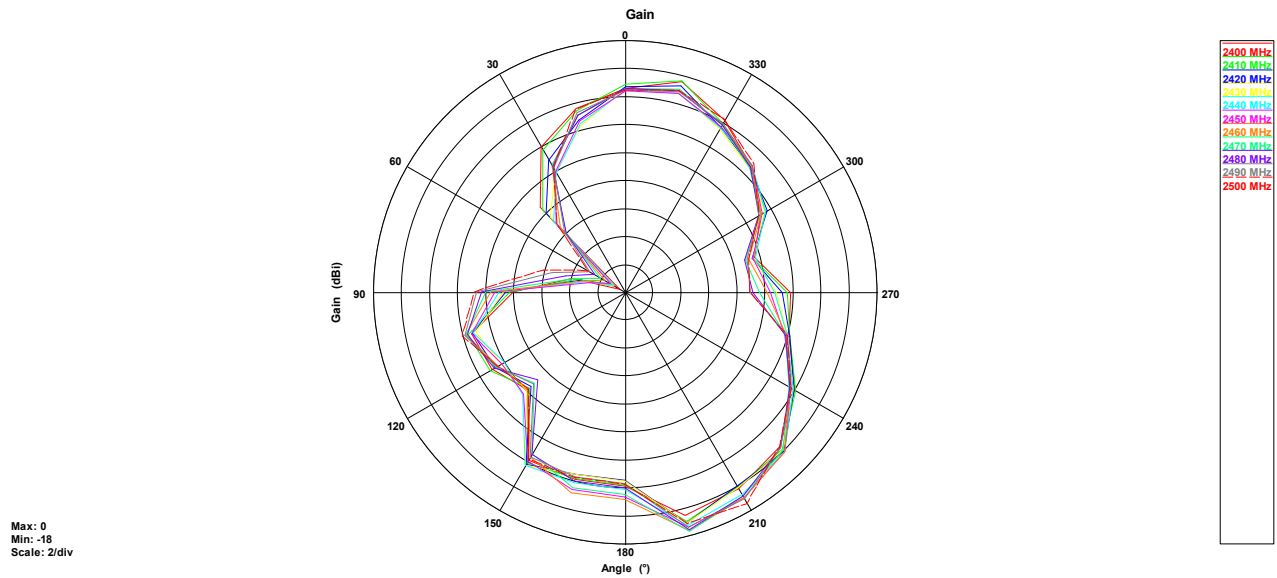
| Frequency<br>(MHz) | Efficiency(%) |
|--------------------|---------------|
| 2400               | 45.88         |
| 2410               | 47.03         |
| 2420               | 45.85         |
| 2430               | 44.35         |
| 2440               | 45.58         |
| 2450               | 45.26         |
| 2460               | 46.05         |
| 2470               | 45.05         |
| 2480               | 44.47         |
| 2490               | 45.32         |
| 2500               | 46.43         |

## Annex A Test Setup Photos

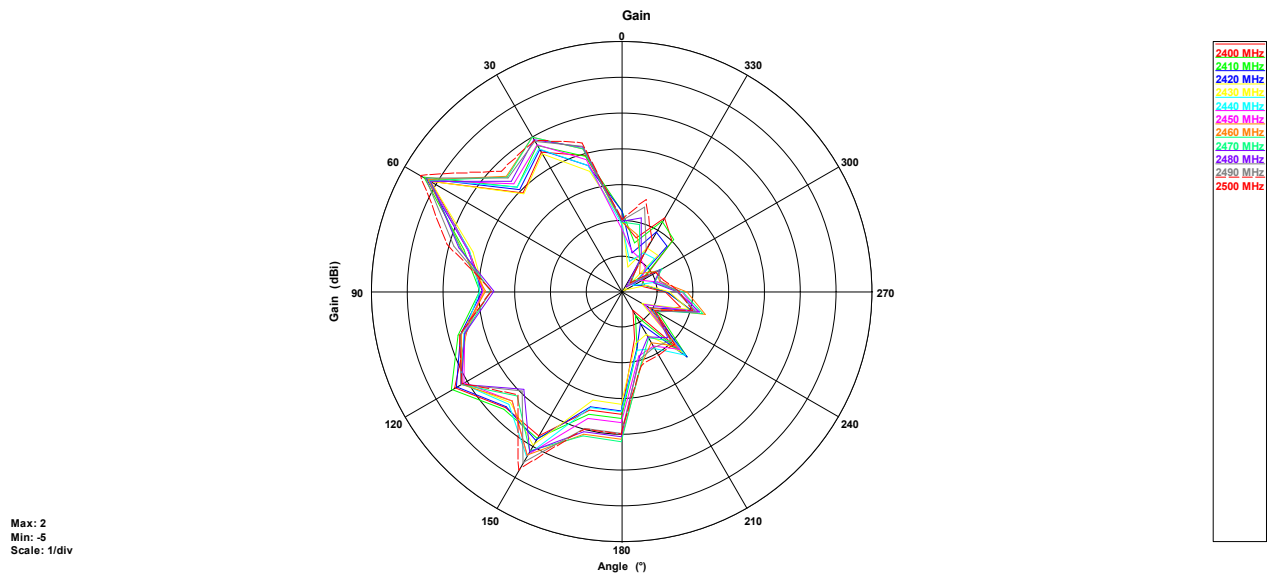


## Annex B Figures

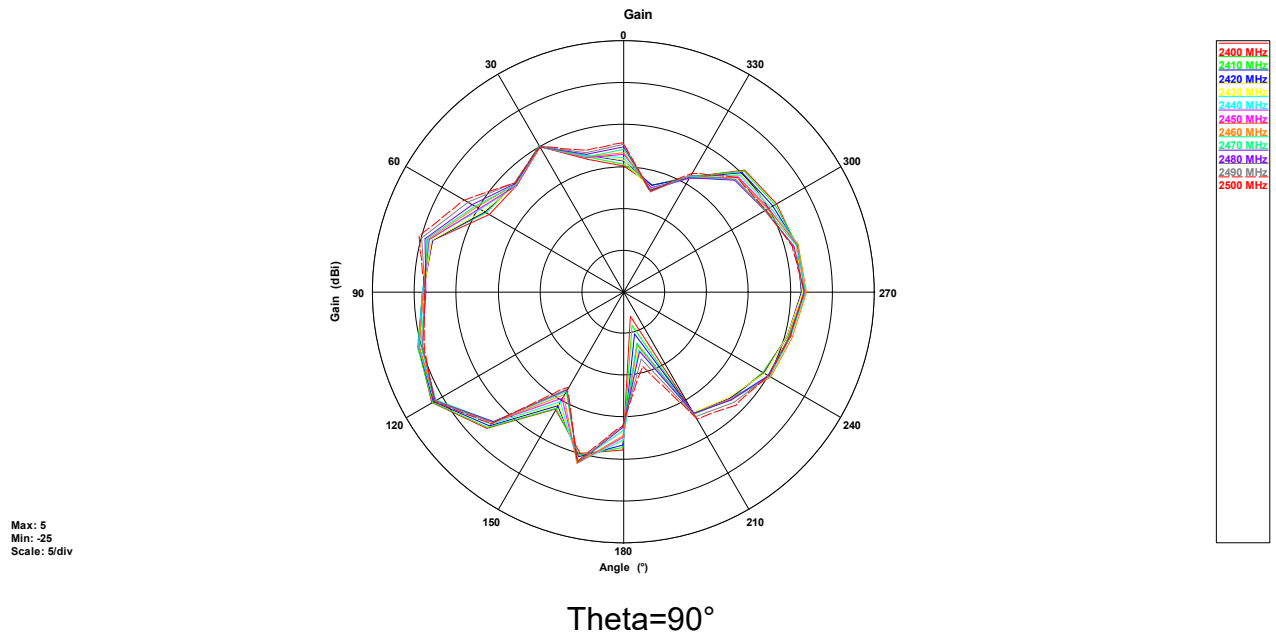
### 1. 2D Radiation Pattern



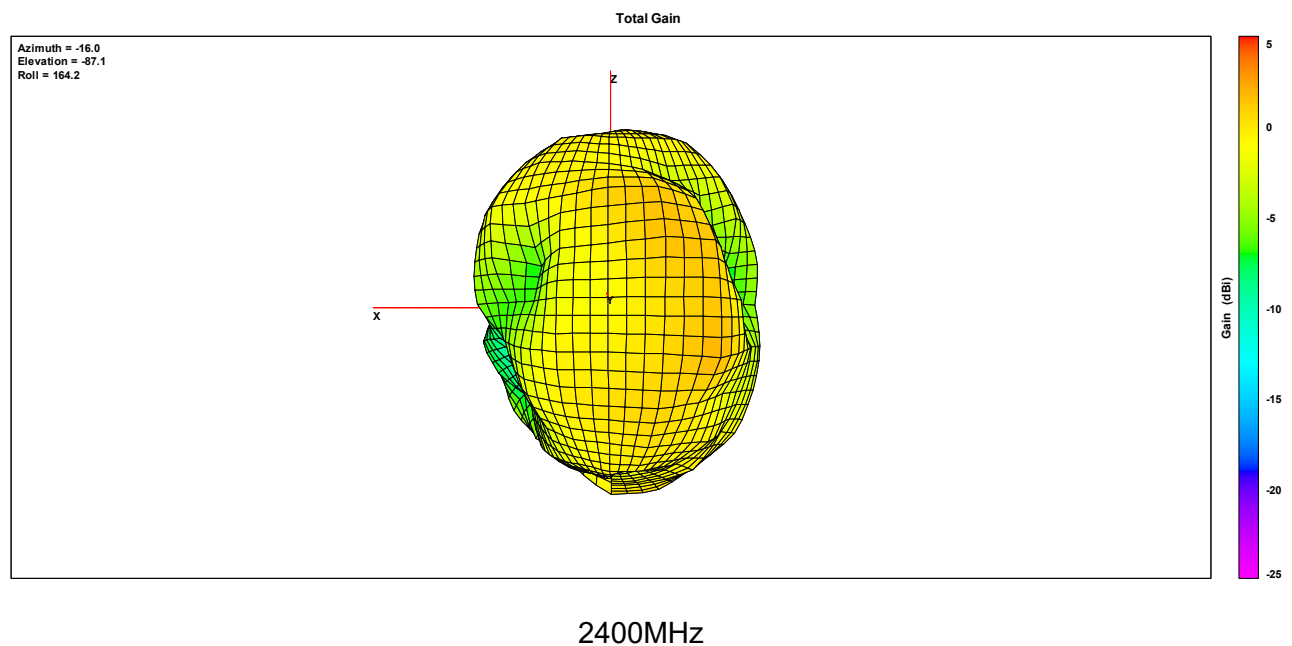
Phi=0°

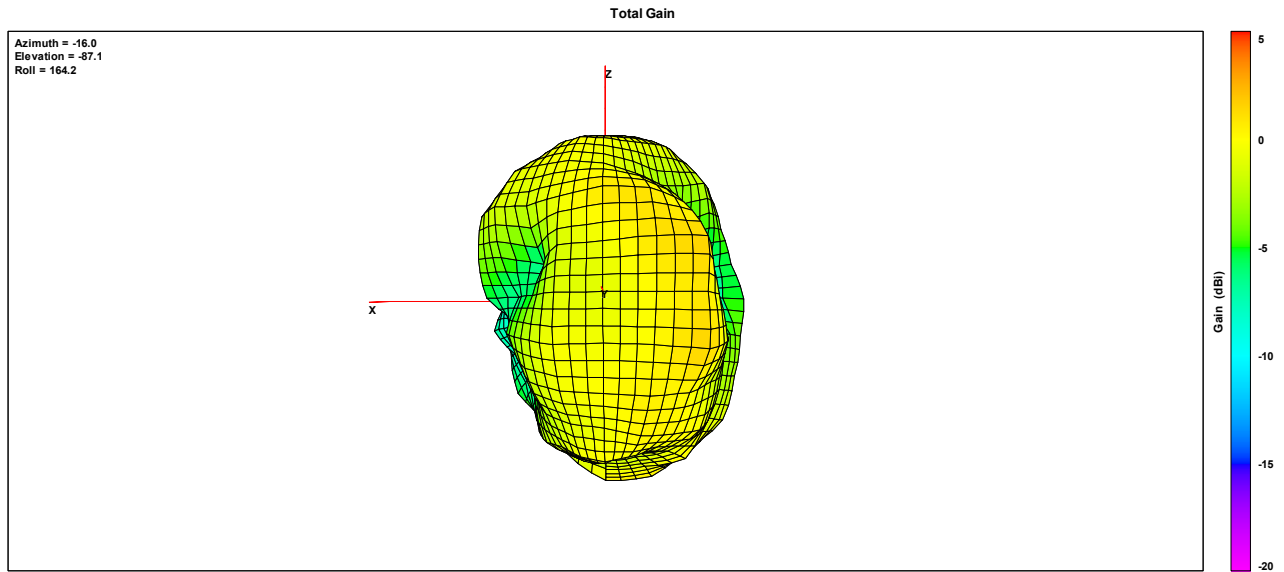


Phi=90°

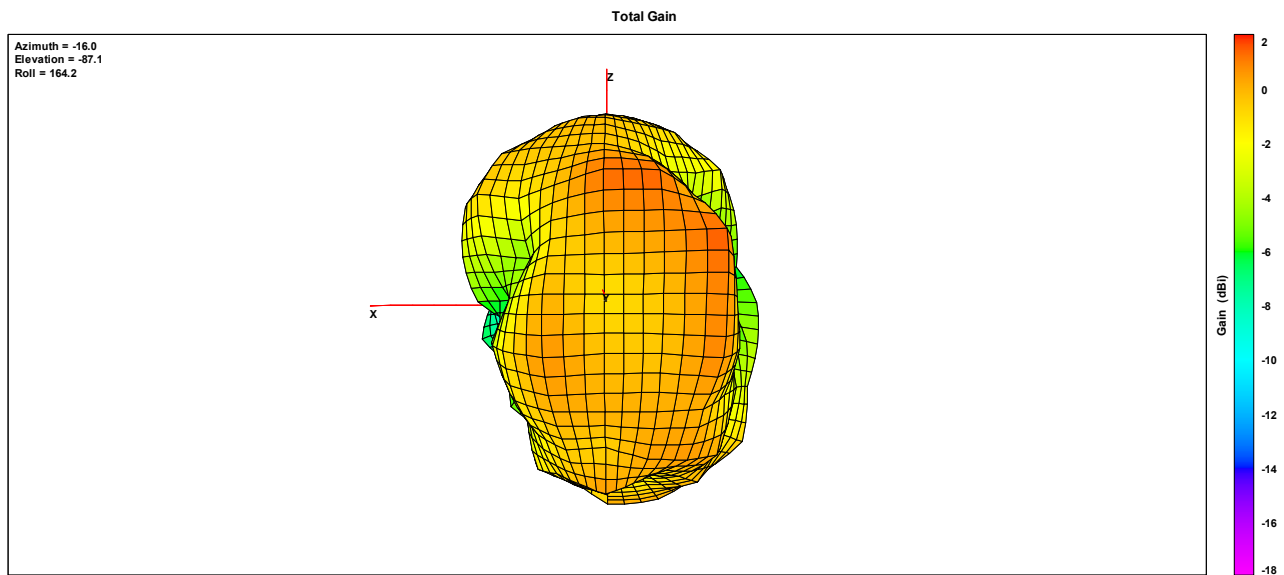


## 2. 3D Radiation Pattern





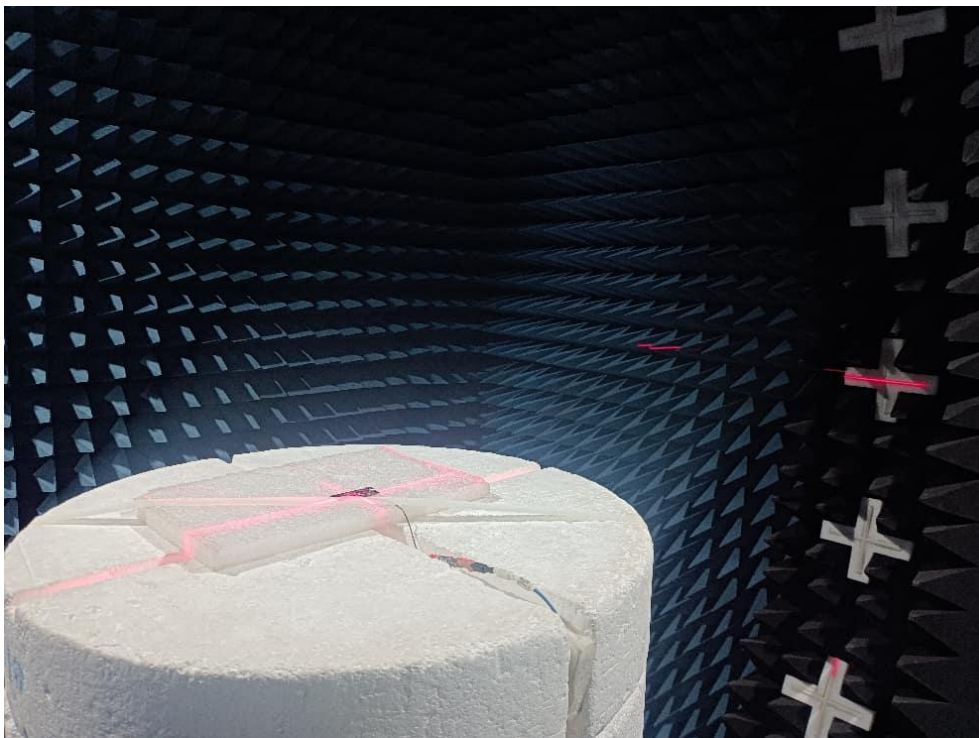
2450MHz



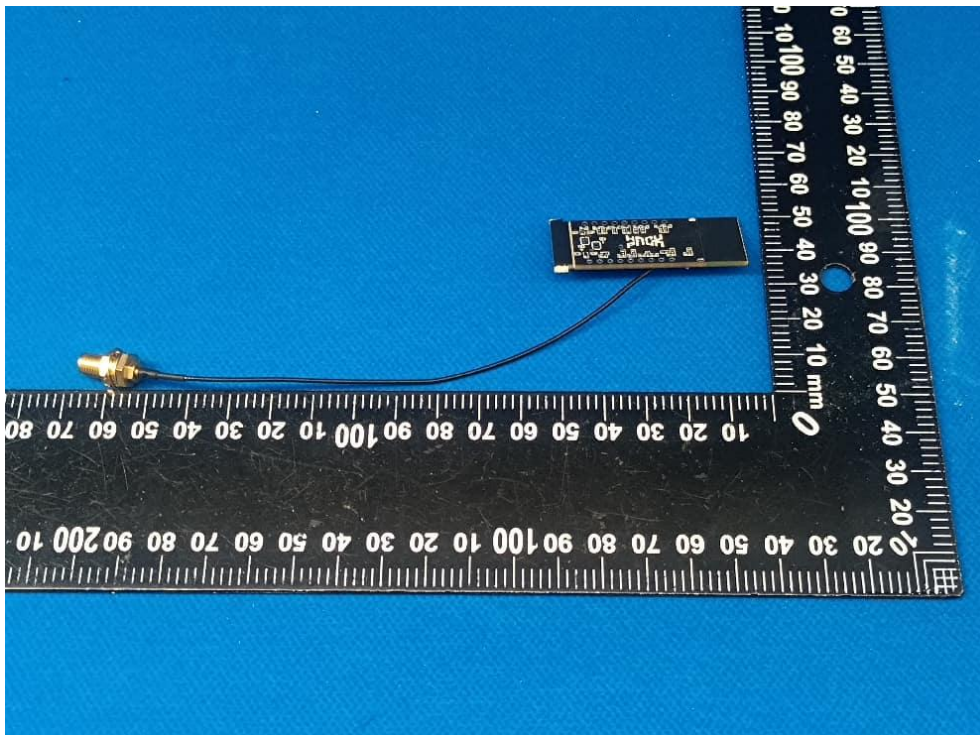
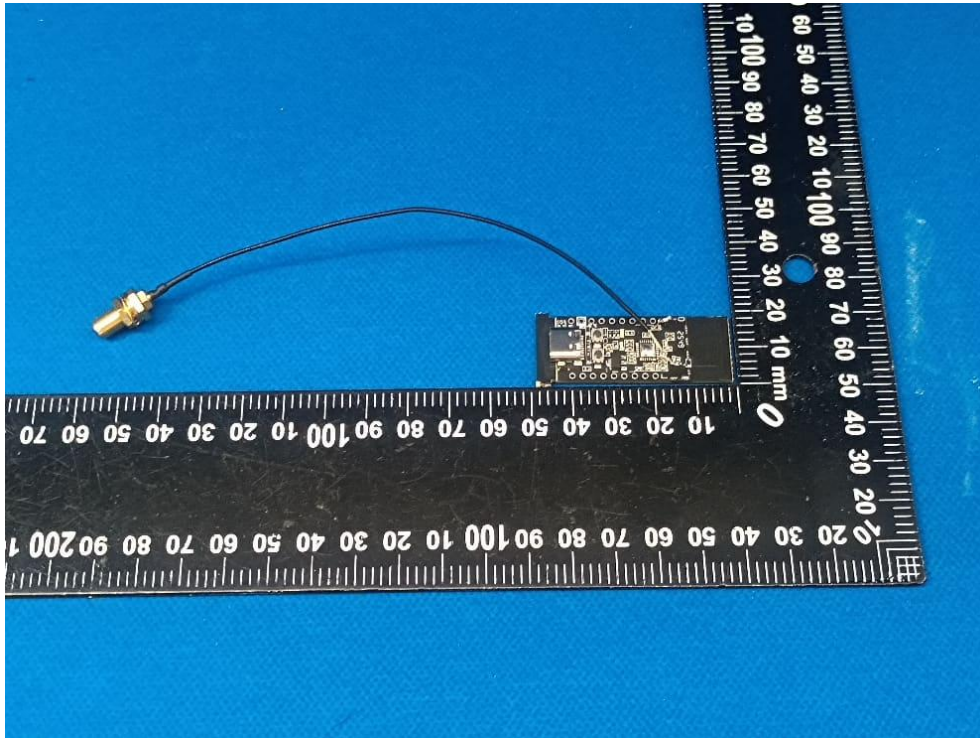
2500MHz

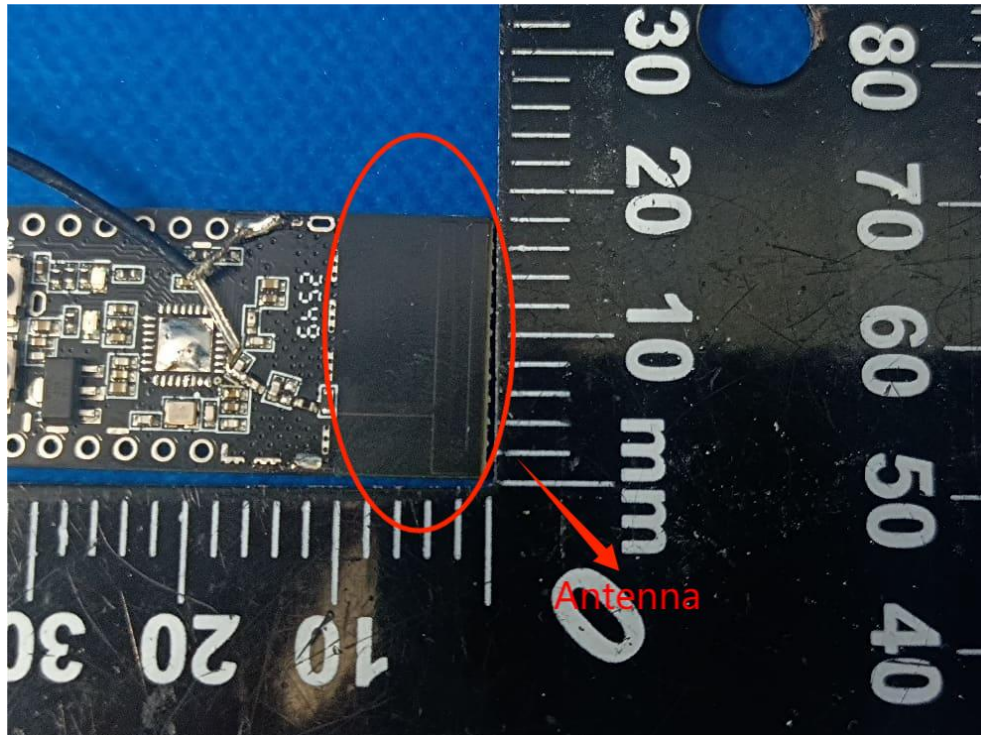
## Annex C EUT Photos

### 1. Test environment



## 2. EUT







## Annex D Testing Laboratory Information

### 1. Identification of the Responsible Testing Laboratory

|                     |                                                                                                                                          |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Laboratory Name:    | Shenzhen Morlab Communications Technology Co., Ltd.                                                                                      |
| Laboratory Address: | FL.1-3, 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                                                                                                                         |

### 2. Identification of the Responsible Testing Location

|          |                                                                                                                                          |
|----------|------------------------------------------------------------------------------------------------------------------------------------------|
| Name:    | Shenzhen Morlab Communications Technology Co., Ltd.                                                                                      |
| Address: | FL.1-3, Building A, FeiYang Science Park, No.8<br>LongChang Road, Block67, BaoAn District, ShenZhen ,<br>GuangDong Province, P. R. China |

### 3. Test Equipment Utilized

#### 3.1 Test Equipments

| No. | Equipment Name   | Serial No.   | Type             | Manufacturer | Cal.Date   | Cal.Due Date |
|-----|------------------|--------------|------------------|--------------|------------|--------------|
| 1   | Network Analyzer | MY46110140   | E5071C           | Agilent      | 2025.05.13 | 2026.05.12   |
| 2   | OTA Chamber      | TJ2235-Q1793 | AMS-8923<br>-150 | ETS          | 2025.11.15 | 2028.11.14   |

#### 3.2 Test Software

| No. | Software Name              | Serial No. | Version                               | Manufacturer |
|-----|----------------------------|------------|---------------------------------------|--------------|
| 1   | Antenna Measurement System | 1685       | EMQuest EMQ-100<br>V 1.13 Build 21267 | ETS          |



## Notes

1. The report shall have report stamp or our company stamp.
2. The report shall be invalid without all the signatures of the editor and approver.
3. The report shall not be changed.
4. Any objections must be raised to Morlab within 15 days since the date when the report is received. It will not be taken into consideration beyond this limit.
5. Conformity declaration:

- ☒ Morlab issues a statement of conformity based on the corresponding standards (default)
- ☐ Morlab issues a statement of conformity based on the applicant requirement

6. Use of uncertainty of measurement for decisions on conformity (decision rule):

No decision rule is specified by the testing standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule).

————— END OF REPORT —————