# TEST REPORT

| | |
|---|---|
| **Applicant:** | ShenZhen Rapoo Technology Co., Ltd. |
| **Address:** | 22, Jinxiu Road East, Pingshan District, Shenzhen, China |
| **Equipment Type:** | WiredWireless Gaming Mouse |
| **Model Name:** | VT9PRO |
| **Brand Name:** | RAPOO |
| **Test Standard:** | IEEE Std 149-2021 |
| **Sample Arrival Date:** | Jul. 27, 2023 |
| **Test Date:** | Jul. 31, 2023 |
| **Date of Issue:** | Aug. 11, 2023 |

**ISSUED BY:**

Shenzhen BALUN Technology Co., Ltd.

**Tested by:** Mai Jintian **Checked by:** Xia Long **Approved by:** Tolan Tu (Testing Director)

Mai Jintian Xia Long Tolan Tu

**Revision History**

| Version | Issue Date | Revisions |
|---|---|---|
| Rev. 01 | Aug. 11, 2023 | Initial Issue |

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# 1 GENERAL INFORMATION

## 1.1 Test Laboratory

| | |
|---|---|
| Name | Shenzhen BALUN Technology Co., Ltd. |
| Address | Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China |
| Phone Number | +86 755 6685 0100 |

## 1.2 Test Location

| | |
|---|---|
| Name | Shenzhen BALUN Technology Co., Ltd. |
| Location | ☑ Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China |
| | ☐ 1/F, Building B, Ganghongji High-tech Intelligent Industrial Park, No. 1008, Songbai Road, Yangguang Community, Xili Sub-district, Nanshan District, Shenzhen, Guangdong Province, P. R. China |

# 2 PRODUCT INFORMATION

## 2.1 Applicant Information

| | |
|---|---|
| Applicant | ShenZhen Rapoo Technology Co., Ltd. |
| Address | 22, Jinxiu Road East, Pingshan District, Shenzhen, China |
| Contact Person | guirongtang |
| Telephone Number | 13873962693 |
| E-mail Address | tangguirong@rapoo.com |

## 2.2 Manufacturer Information

| | |
|---|---|
| Manufacturer | ShenZhen Rapoo Technology Co., Ltd. |
| Address | 22, Jinxiu Road East, Pingshan District, Shenzhen, China |

## 2.3 General Description for Equipment under Test (EUT)

| | |
|---|---|
| EUT Name | WiredWireless Gaming Mouse |
| Model Name Under Test | VT9PRO |
| Antenna Type | PCB Antenna |
| Dimensions | 8*4 mm |

## 2.4 Ancillary Equipment

Note: Not applicable.

## 2.5 Technical Information

| | |
|---|---|
| Frequency Range | 2402MHz ~ 2480MHz |
| Test Frequencies | 2402MHz, 2412MHz, 2422MHz, 2432MHz, 2442MHz, 2452MHz, 2462MHz, 2472MHz, 2480MHz |

# 3 SUMMARY OF TEST RESULTS

## 3.1 Test Standards

| No. | Identity | Document Title |
|---|---|---|
| 1 | IEEE Std 149-2021 | IEEE Standard Test Procedures for Antennas |

## 3.2 Test Verdict

| Report Section | Description | Remark |
|---|---|---|
| ANNEX A.1 | Gain and Efficiency | -- |
| ANNEX B | Radiation Pattern | -- |

## 3.3 Test Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

| Item | Uncertainty |
|---|---|
| Gain | ±1.92dB |
| VSWR(S11) | ±0.61 |

# 4 GENERAL TEST CONFIGURATIONS

## 4.1 Test Condition

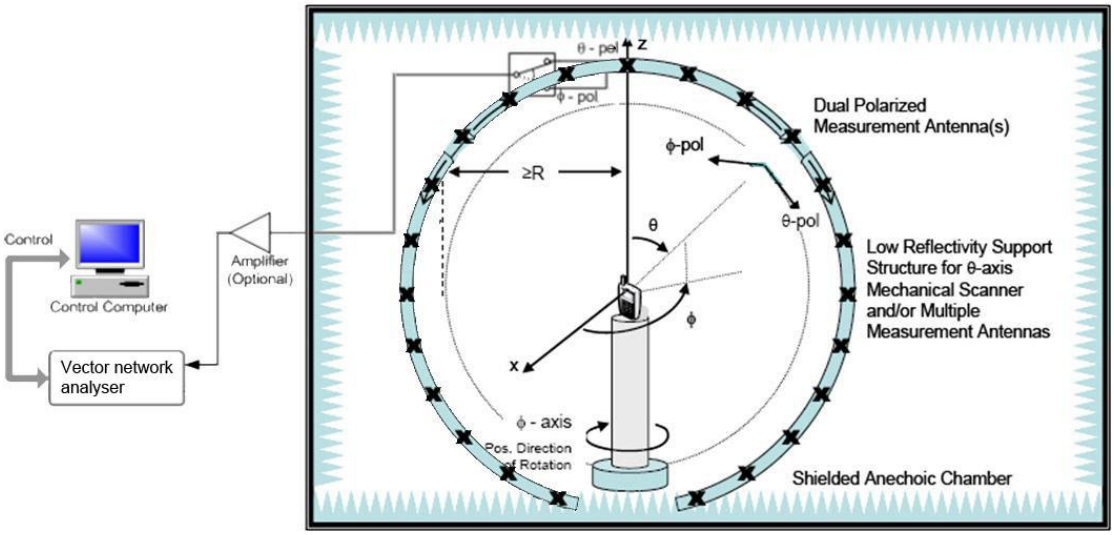
| Environment Parameter | Selected Values During Tests | | | |
|---|---|---|---|---|
| | Ambient Pressure(KPa) | Temperature(℃) | Voltage | Relative Humidity (%) |
| Normal Temperature, Normal Voltage (NTNV) | 101 | 21.7 | N/A | 51 |

## 4.2 Test Equipment List

| Description | Manufacturer | Model | Serial No. | Cal. Date | Cal. Due |
|---|---|---|---|---|---|
| SG24 Multi-probe Antenna Measurement System | SATIMO | SG24-L | 1101855-0001 | 2021.11.12 | 2024.11.11 |
| Vector Network Analyzer | Agilent | E5071B | MY42404001 | 2023.03.26 | 2024.03.25 |
| Description | Manufacturer | Name | | Version | |
| Test Software | MVG | SPM | | V 1.8 | |

## 4.3 Test Setup

### 4.3.1 Antenna gain, efficiency and radiation pattern test setup



# ANNEX A TEST RESULTS

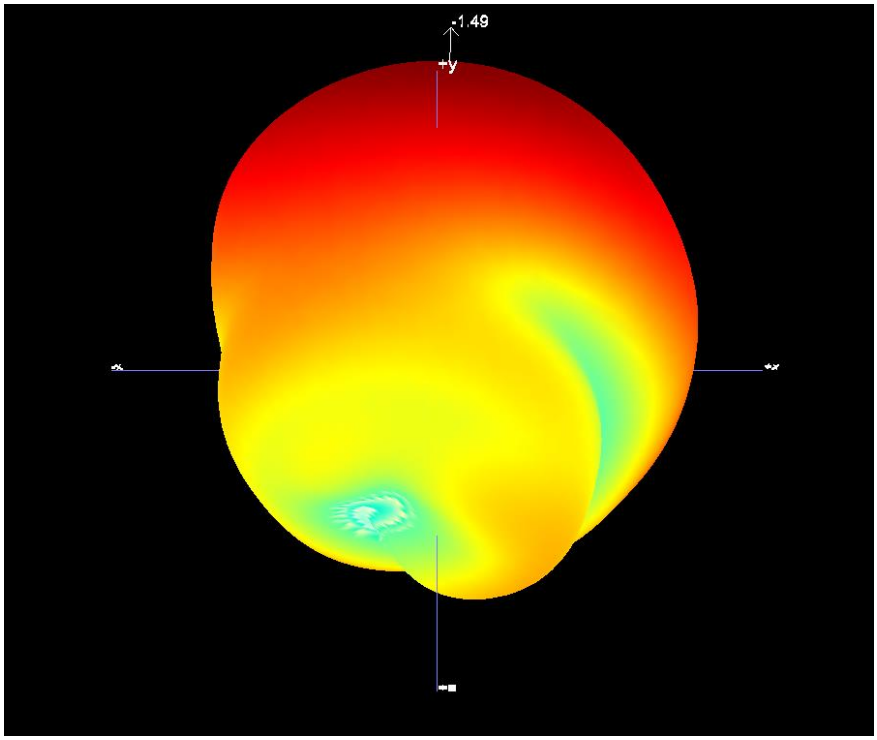
## A.1 Gain and Efficiency

| Frequency | Gain (dBi) | Efficiency (%) |
|---|---|---|
| 2402MHz | -1.49 | 19 |
| 2412MHz | -1.10 | 21 |
| 2422MHz | -0.68 | 22 |
| 2432MHz | -0.26 | 23 |
| 2442MHz | 0.05 | 25 |
| 2452MHz | 0.68 | 27 |
| 2462MHz | **0.80** | 29 |
| 2472MHz | 0.71 | 30 |
| 2480MHz | 0.75 | **31** |

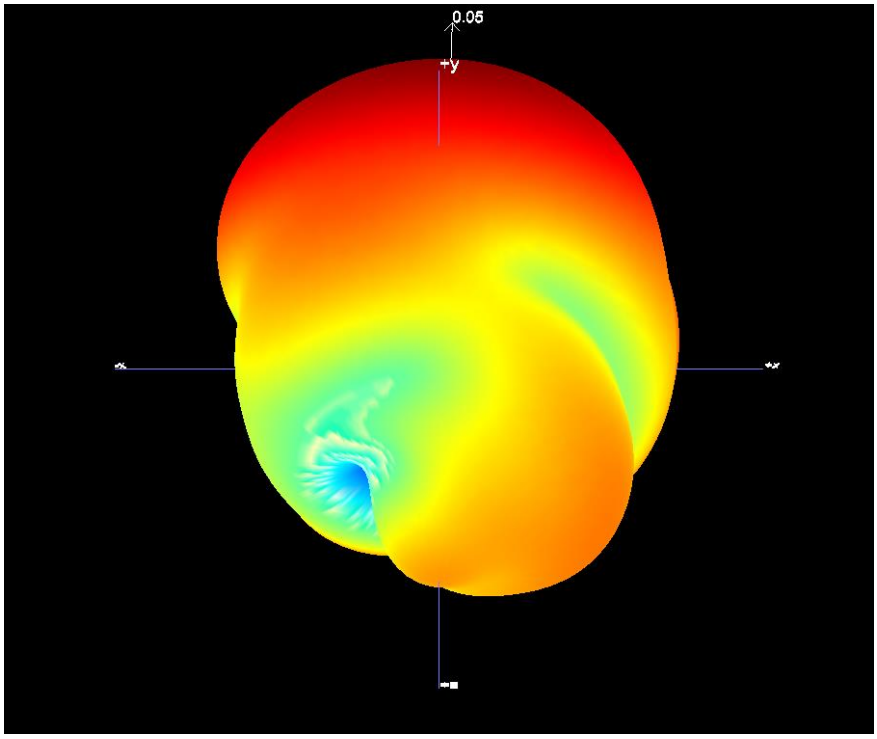
# ANNEX B RADIATION PATTERN

## B.1 3D Pattern

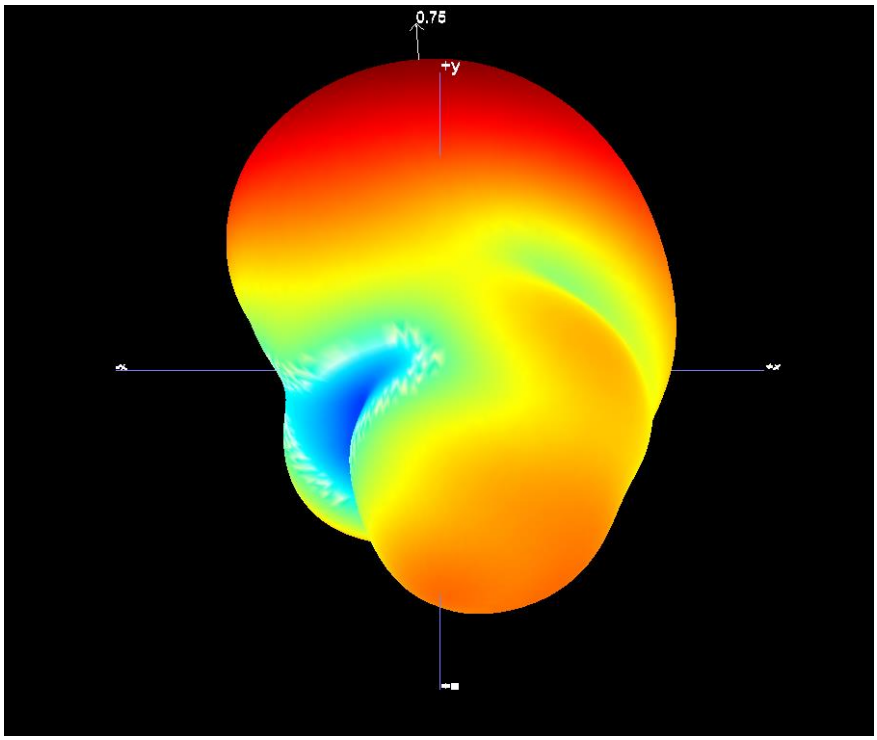
B1.1 3D Pattern for 2402MHz




B1.2 3D Pattern for 2442MHz

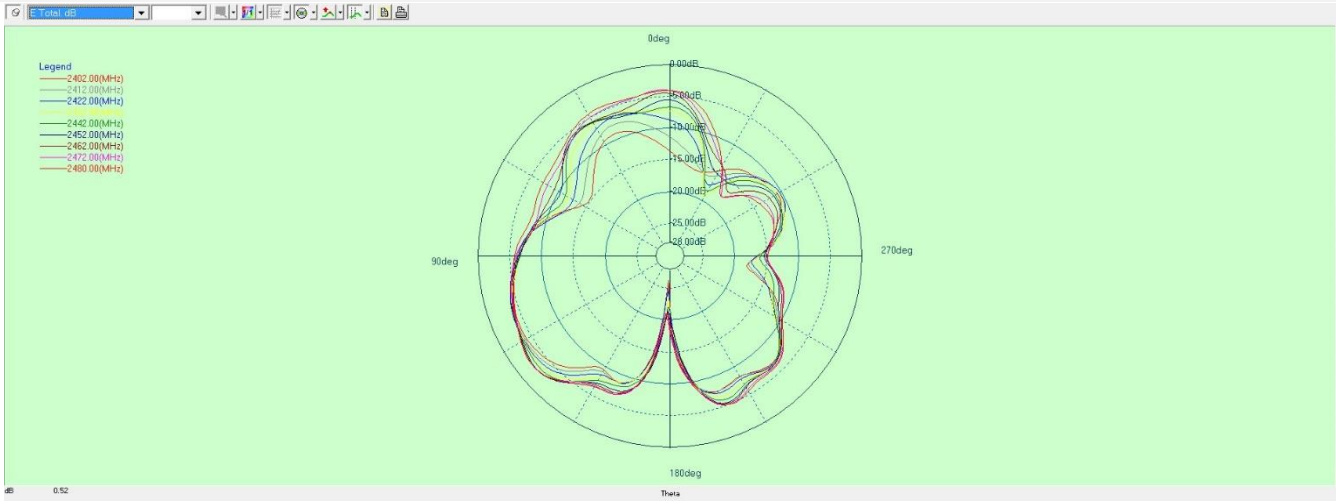


B1.3 3D Pattern for 2480MHz

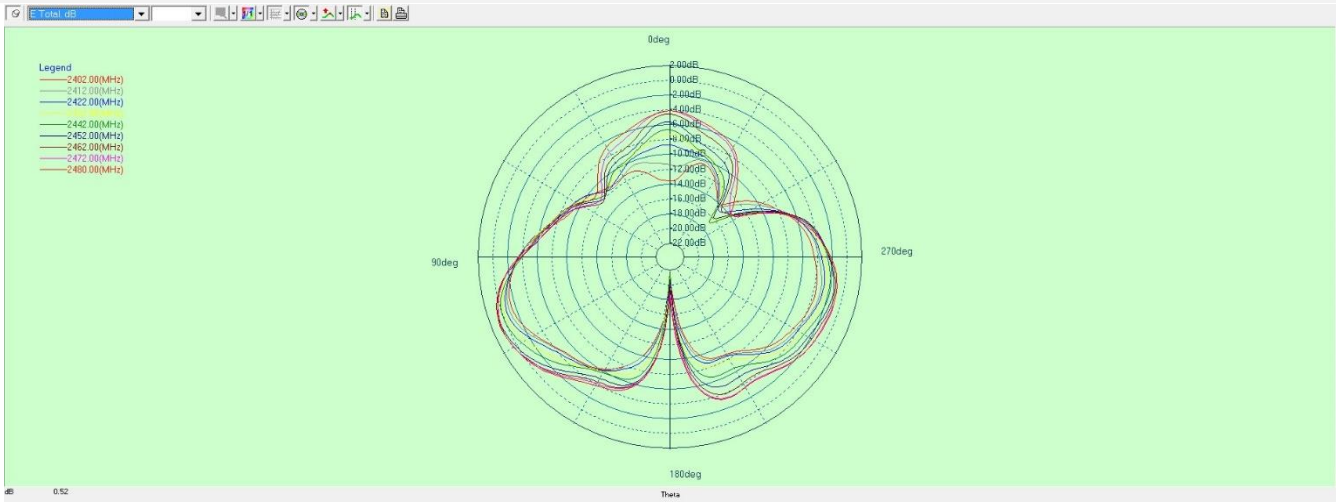


## B.2 1D Radiation Pattern

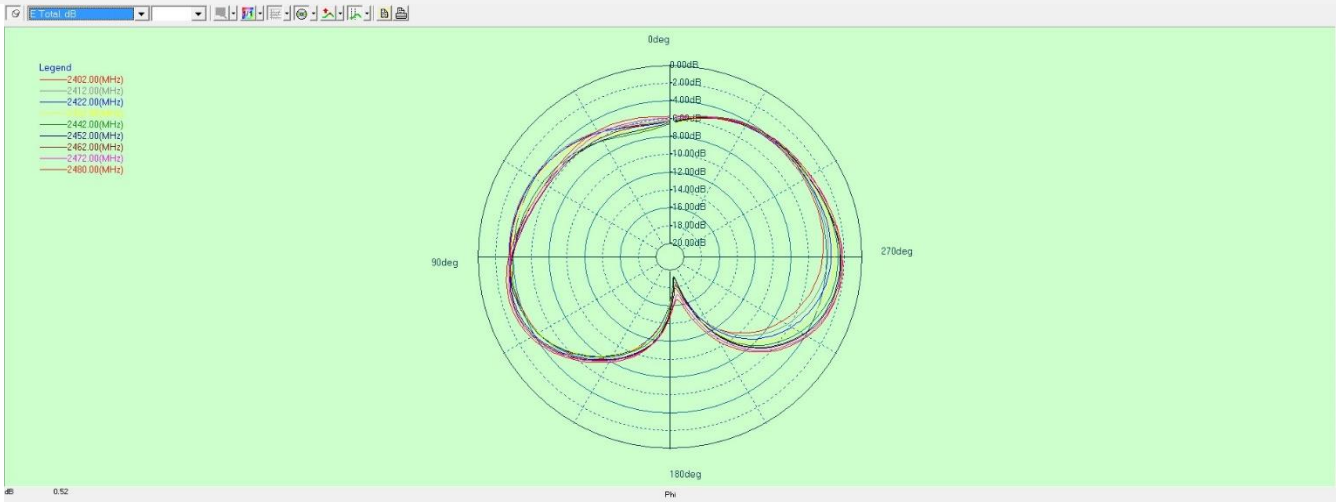
B2.1 PHI=0



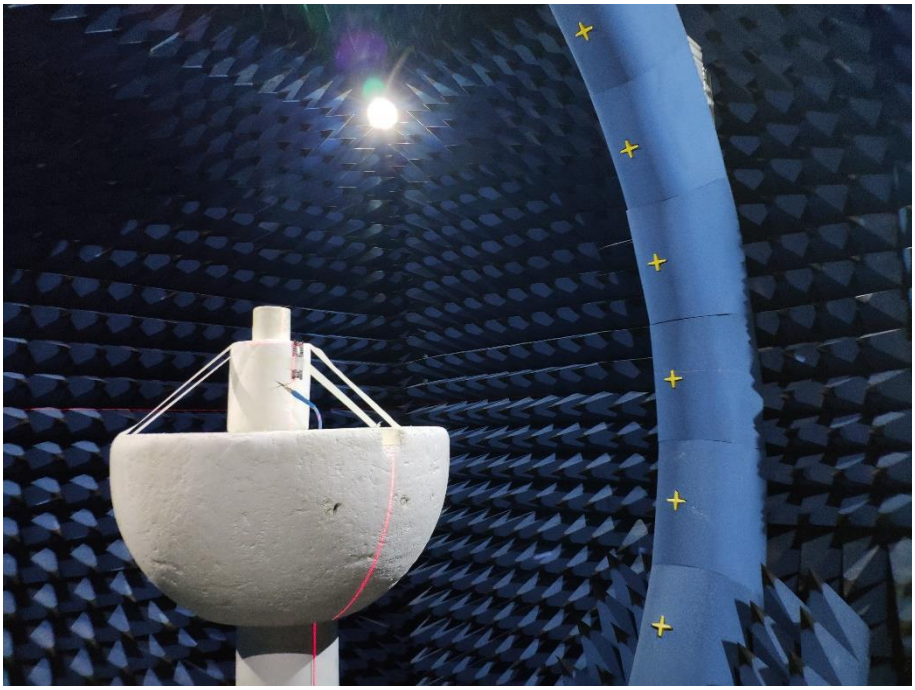

B2.2 PHI=90

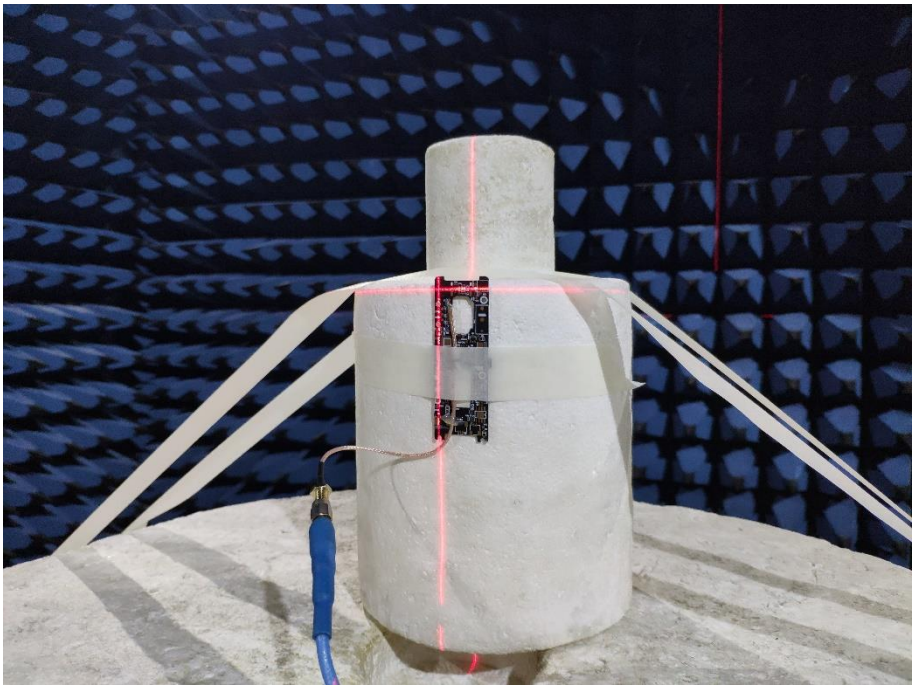



B2.3 THETA=90

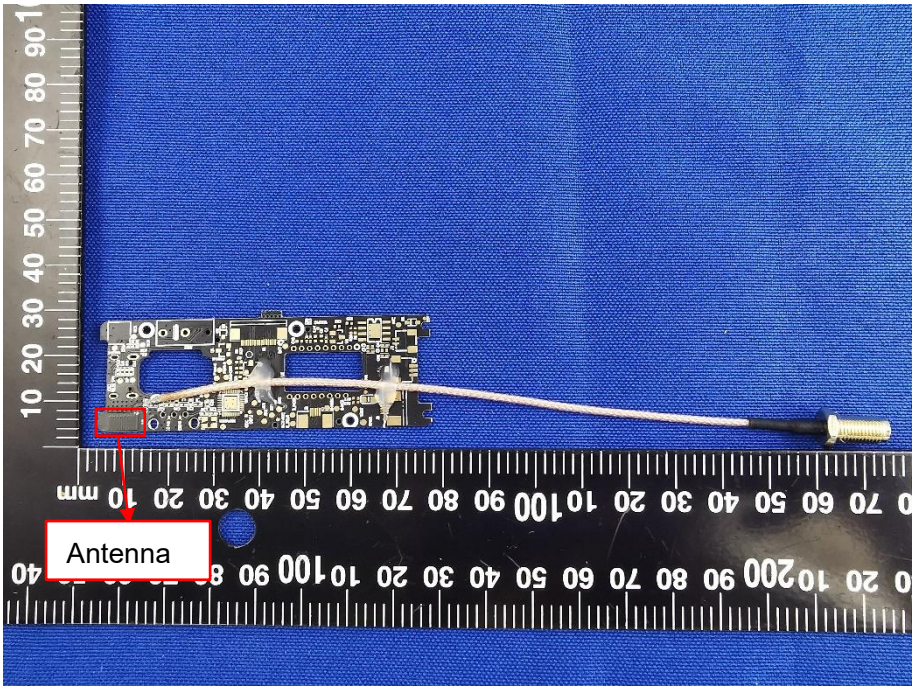


# ANNEX C TEST SETUP PHOTO





# ANNEX D EUT PHOTO



# Statement

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--END OF REPORT--