

# TEST REPORT

**Applicant:** Shenzhen Boyi Innovation Technology Co., Ltd  
**Address:** North, 5 / F, Building 3, Tea West, Zone A, Huafeng  
First Science Park, Hangcheng Street, Baoan  
District, Shenzhen  
**Equipment Type:** BYKC68MS-AK  
**Model Name:** BYKC-FRS8X-VER1.2  
**Brand Name:** Boyi scientific and technological innovation  
**Test Standard:** IEEE Std 149-2021  
**Sample Arrival Date:** May 08, 2024  
**Test Date:** May 08, 2024  
**Date of Issue:** May 09, 2024

**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            |
|----------------|---------------------|----------------------|
| <u>Rev. 01</u> | <u>May 09, 2024</u> | <u>Initial Issue</u> |

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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 | <input checked="" type="checkbox"/> Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China                                                        |
|          | <input type="checkbox"/> 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 Boyi Innovation Technology Co., Ltd                                                                       |
| Address          | North, 5 / F, Building 3, Tea West, Zone A, Huafeng First Science Park, Hangcheng Street, Baoan District, Shenzhen |
| Contact Person   | Wang Weiyuan                                                                                                       |
| Telephone Number | 18675575732                                                                                                        |
| E-mail Address   | saparkwang2008@126.com                                                                                             |

### 2.2 Manufacturer Information

|              |                                                                                                                    |
|--------------|--------------------------------------------------------------------------------------------------------------------|
| Manufacturer | Shenzhen Boyi Innovation Technology Co., Ltd                                                                       |
| Address      | North, 5 / F, Building 3, Tea West, Zone A, Huafeng First Science Park, Hangcheng Street, Baoan District, Shenzhen |

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

|                       |                   |
|-----------------------|-------------------|
| EUT Name              | BYKC68MS-AK       |
| Model Name Under Test | BYKC-FRS8X-VER1.2 |
| Antenna Type          | PCB Antenna       |
| Dimensions            | 19.0*3.5 mm       |

### 2.4 Ancillary Equipment

Note: Not applicable.

### 2.5 Technical Information

|                 |                   |
|-----------------|-------------------|
| Frequency Range | 2402MHz ~ 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         |
|-----------|---------------------|
| VSWR(S11) | $\pm 0.61$          |
| Gain      | $\pm 1.92\text{dB}$ |

## 4 GENERAL TEST CONFIGURATIONS

### 4.1 Test Condition

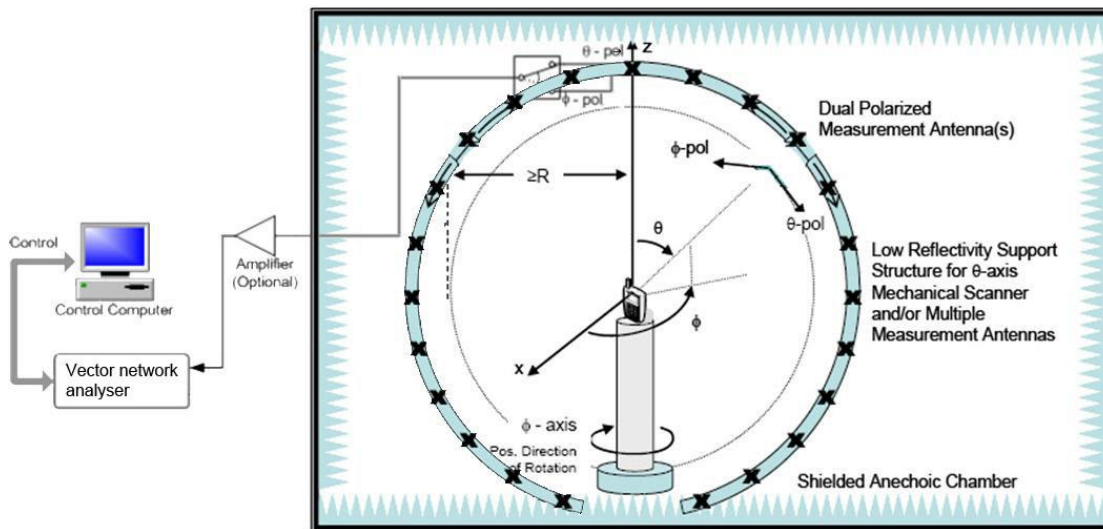
| Environment<br>Parameter                           | Selected Values During Tests |                  |         |                          |
|----------------------------------------------------|------------------------------|------------------|---------|--------------------------|
|                                                    | Ambient<br>Pressure (KPa)    | Temperature (°C) | Voltage | Relative<br>Humidity (%) |
| Normal<br>Temperature,<br>Normal Voltage<br>(NTNV) | 101                          | 21.5             | N/A     | 43                       |

### 4.2 Test Equipment List

| Description                                       | Manufacturer | Model  | Serial No.       | Cal. Date  | Cal. Due   |
|---------------------------------------------------|--------------|--------|------------------|------------|------------|
| SG24 Multi-probe<br>Antenna Measurement<br>System | SATIMO       | SG24-L | 1101855-<br>0001 | 2021.11.12 | 2024.11.11 |
| Vector Network<br>Analyzer                        | Agilent      | E5071B | MY42404001       | 2024.01.16 | 2025.01.15 |
| 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



## 4.4 Test Frequencies

|                  |                           |
|------------------|---------------------------|
| Test Frequencies | 2402MHz, 2440MHz, 2480MHz |
|------------------|---------------------------|

## ANNEX A TEST RESULTS

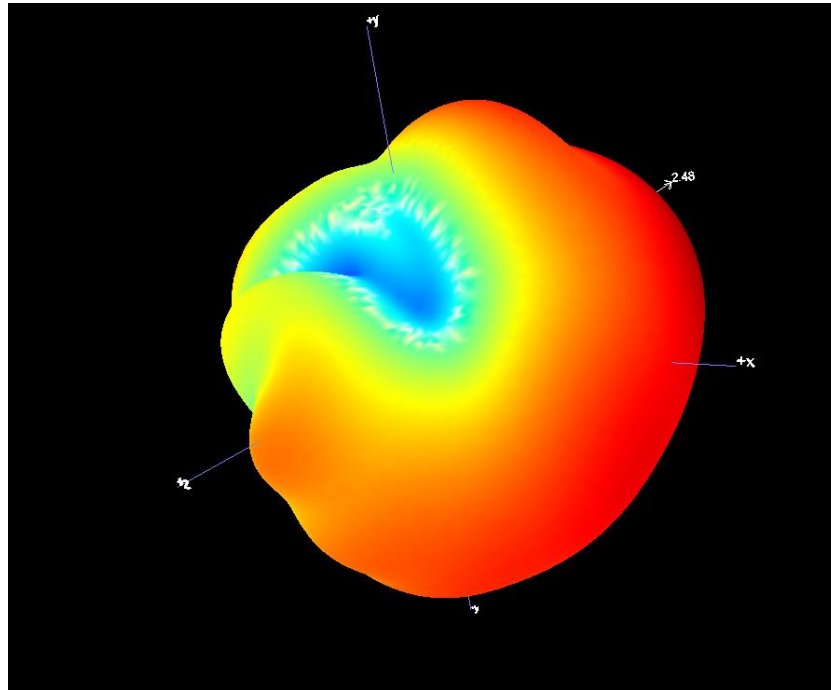
### A.1 Gain and Efficiency

| Frequency | Gain (dBi)  | Efficiency (%) |
|-----------|-------------|----------------|
| 2402MHz   | <b>2.48</b> | <b>41</b>      |
| 2440MHz   | 2.31        | 38             |
| 2480MHz   | 1.55        | 36             |

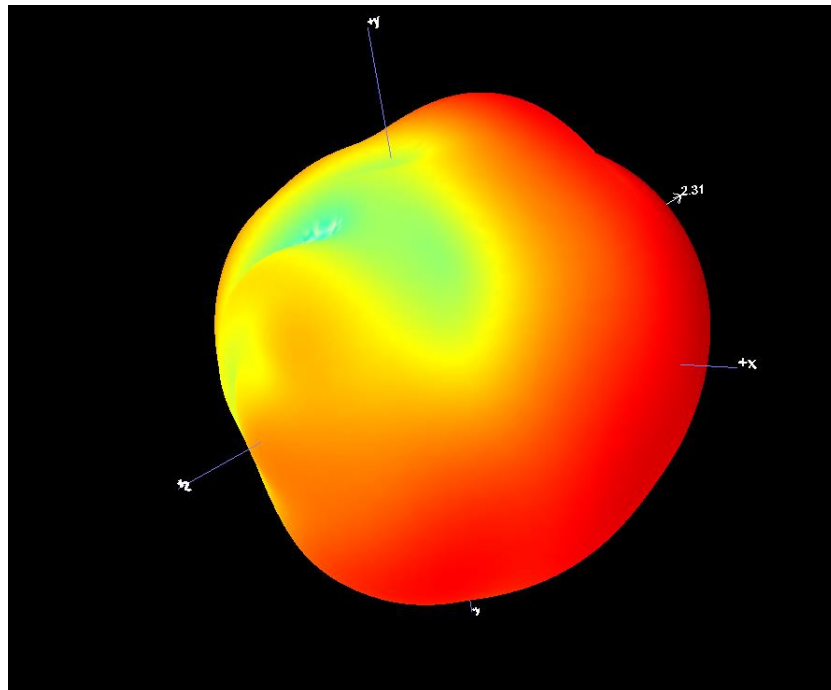
## ANNEX B RADIATION PATTERN

### B.1 3D Pattern

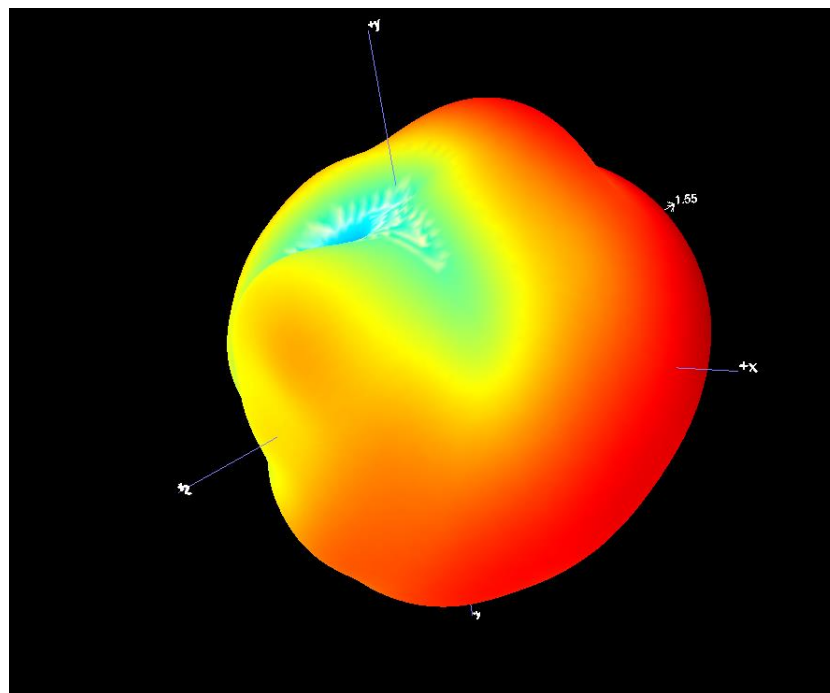
B1.1 3D Pattern for 2402MHz



B1.2 3D Pattern for 2440MHz



B1.3 3D Pattern for 2480MHz



## B.2 1D Radiation Pattern

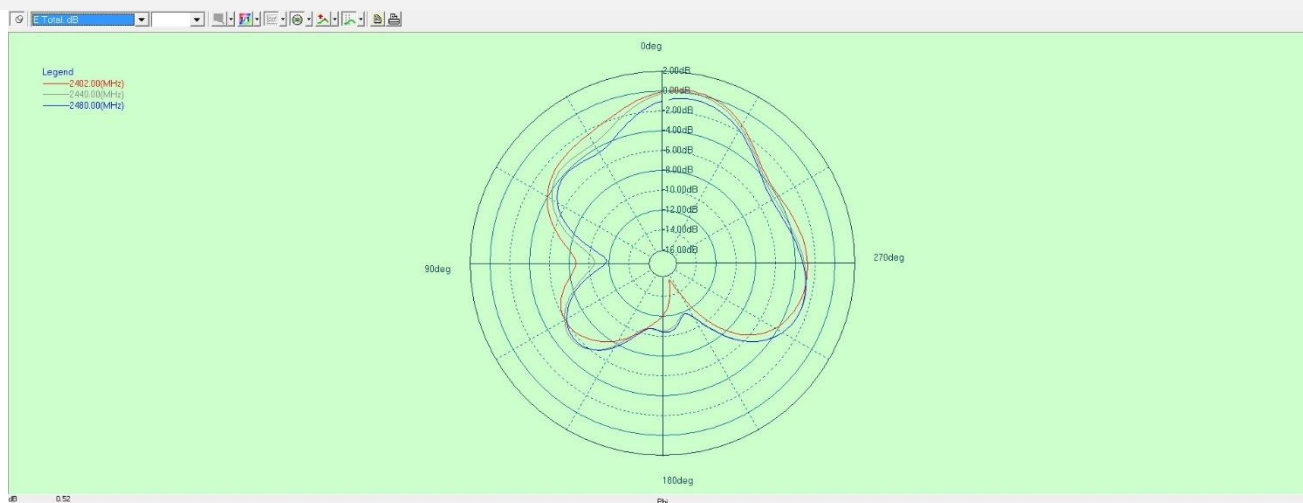
### B2.1 PHI=0



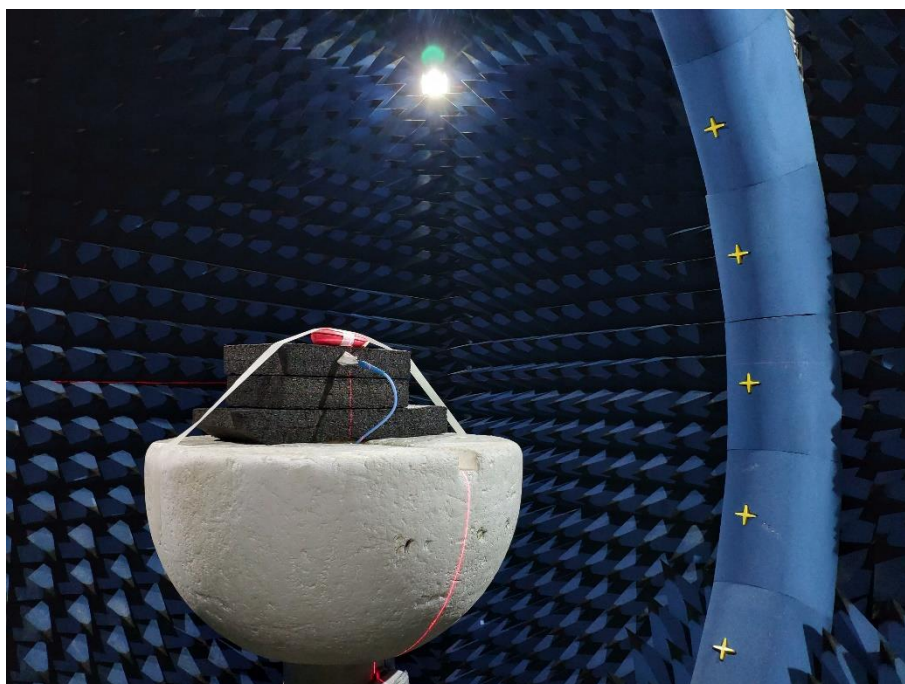
### B2.2 PHI=90



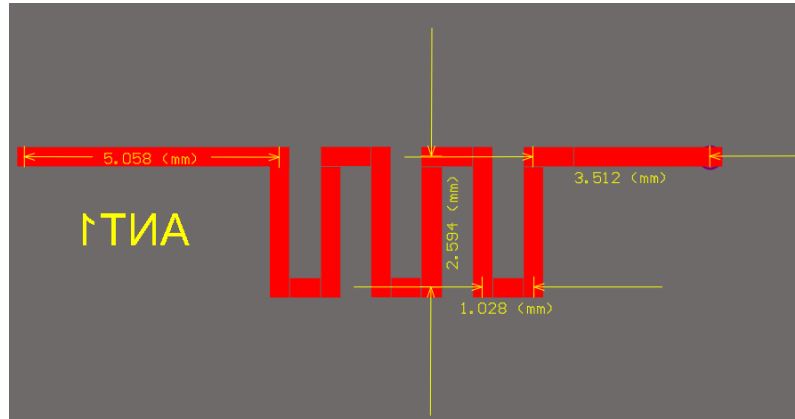
### B2.3 THETA=90



## ANNEX C TEST SETUP PHOTO



## ANNEX D EUT PHOTO



## Statement

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7. Any objection shall be raised to the laboratory within 30 days after receiving the report.

--END OF REPORT--