

# TEST REPORT

**Applicant:** Shenzhen Kangyuanxin Communication Techniligy Co., Ltd  
**Address:** 6th Floor, Building 21, Guangqian Industrial Zone, Longzhu 3rd Road, Xili Town, Nanshan District, Shenzhen  
**Equipment Type:** WIFI ANTENNA  
**Model Name:** HSL001  
**Brand Name:** KOYOX  
**Test Standard:** ANSI/IEEE Std 149-1979  
**Test Date:** Sep. 16, 2022  
**Date of Issue:** Sep. 22, 2022

**ISSUED BY:**

Shenzhen BALUN Technology Co., Ltd.

**Tested by:** Mai Jintian

**Checked by:** Tolan Tu

**Approved by:** Wei Yanquan  
(Chief Engineer)

Mai Jintian

Tolan Tu

Wei Yanquan

### Revision History

| Version        | Issue Date           | Revisions            |
|----------------|----------------------|----------------------|
| <u>Rev. 01</u> | <u>Sep. 22, 2022</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 Kangyuanxin Communication Techniligy Co., Ltd                                                     |
| Address   | 6th Floor, Building 21, Guangqian Industrial Zone, Longzhu 3rd Road, Xili Town, Nanshan District, Shenzhen |

### 2.2 Manufacturer Information

|              |                                                                                                            |
|--------------|------------------------------------------------------------------------------------------------------------|
| Manufacturer | Shenzhen Kangyuanxin Communication Techniligy Co., Ltd                                                     |
| Address      | 6th Floor, Building 21, Guangqian Industrial Zone, Longzhu 3rd Road, Xili Town, Nanshan District, Shenzhen |

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

|                       |              |
|-----------------------|--------------|
| EUT Name              | WIFI ANTENNA |
| Model Name Under Test | HSL001       |
| Antenna Type          | PIFA Antenna |
| Dimensions            | 30*3 mm      |

### 2.4 Ancillary Equipment

Note: Not applicable.

### 2.5 Technical Information

|                  |                                                                                                |
|------------------|------------------------------------------------------------------------------------------------|
| Test Frequencies | 2400, 2410MHz, 2420MHz, 2430MHz, 2440MHz, 2450MHz, 2460MHz, 2470MHz, 2480MHz, 2490MHz, 2500MHz |
|------------------|------------------------------------------------------------------------------------------------|

### 3 SUMMARY OF TEST RESULTS

#### 3.1 Test Standards

| No. | Identity               | Document Title                             |
|-----|------------------------|--------------------------------------------|
| 1   | ANSI/IEEE Std 149-1979 | 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 | $\pm 1.92\text{dB}$ |

## 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                          | 25              | N/A     | 50                       |

### 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       | 2022.04.02 | 2023.04.01 |
| 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

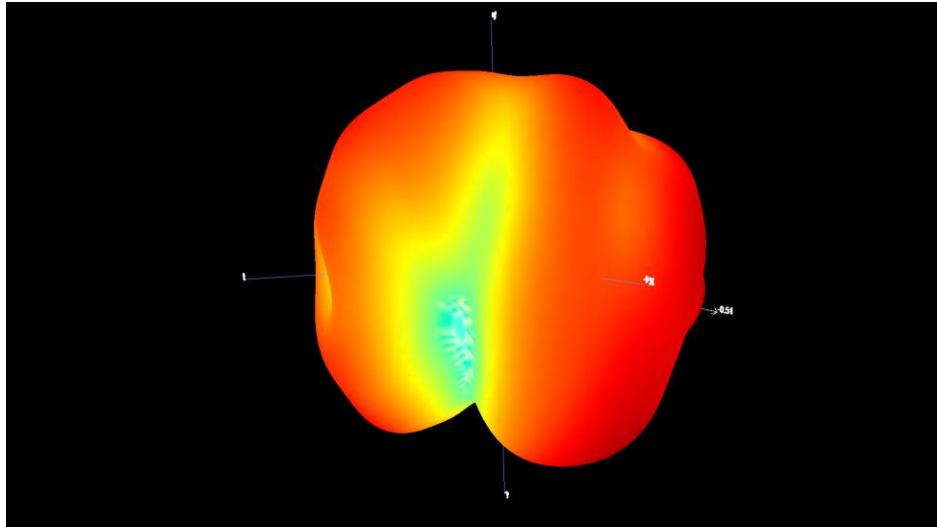
### A.1 Gain and Efficiency

| Frequency | Gain (dBi)  | Efficiency (%) |
|-----------|-------------|----------------|
| 2400MHz   | -0.51       | 28             |
| 2410MHz   | -1.02       | 29             |
| 2420MHz   | -0.87       | 30             |
| 2430MHz   | -0.19       | 32             |
| 2440MHz   | 0.26        | 31             |
| 2450MHz   | 0.64        | 31             |
| 2460MHz   | <b>0.71</b> | 32             |
| 2470MHz   | 0.61        | <b>35</b>      |
| 2480MHz   | 0.50        | 35             |
| 2490MHz   | 0.52        | 34             |
| 2500MHz   | 0.52        | 33             |

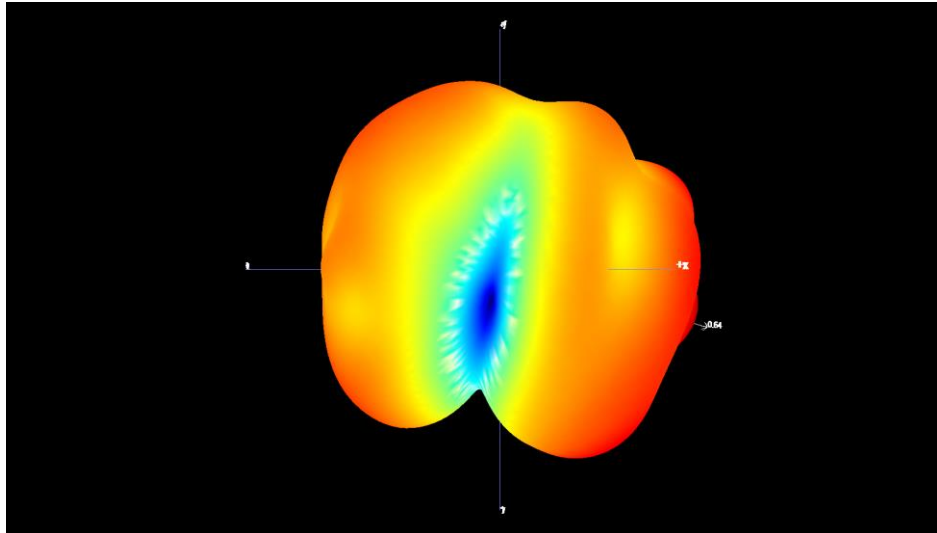
## ANNEX B RADIATION PATTERN

### B.1 3D Pattern

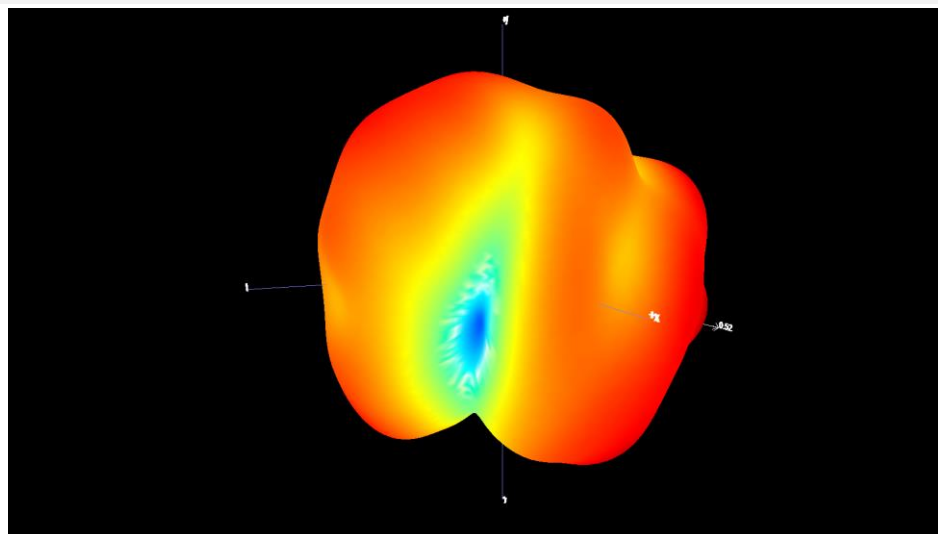
B1.1 3D Pattern for 2400MHz



B1.2 3D Pattern for 2450MHz

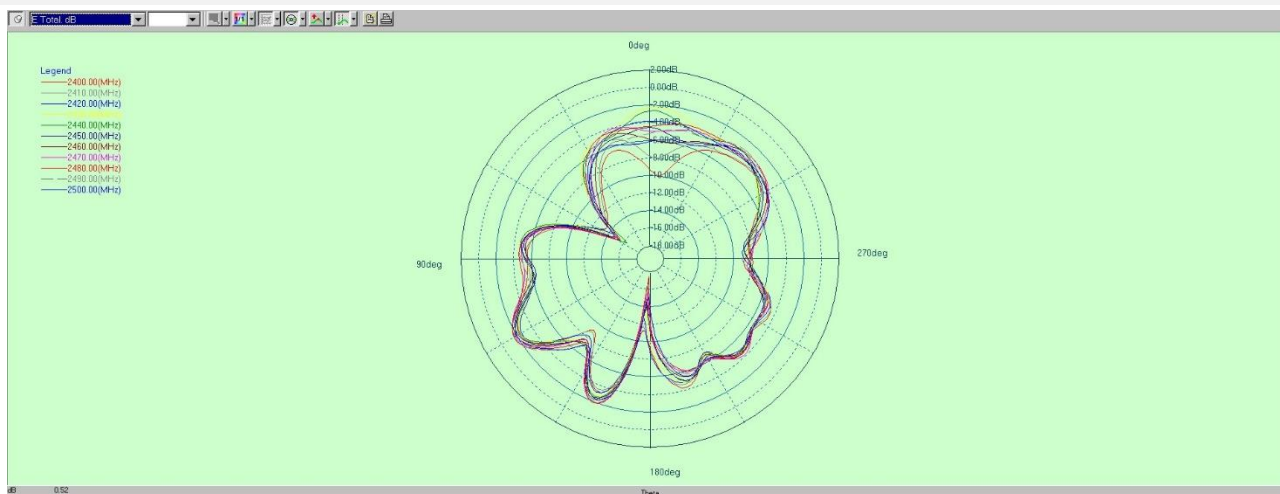


B1.3 3D Pattern for 2500MHz

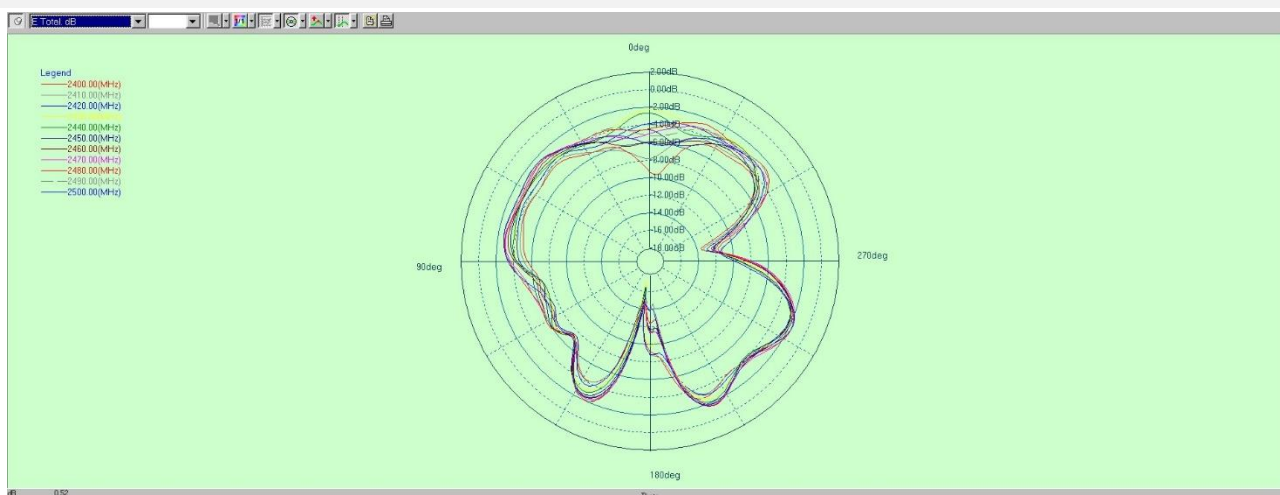


## B.2 1D Radiation Pattern

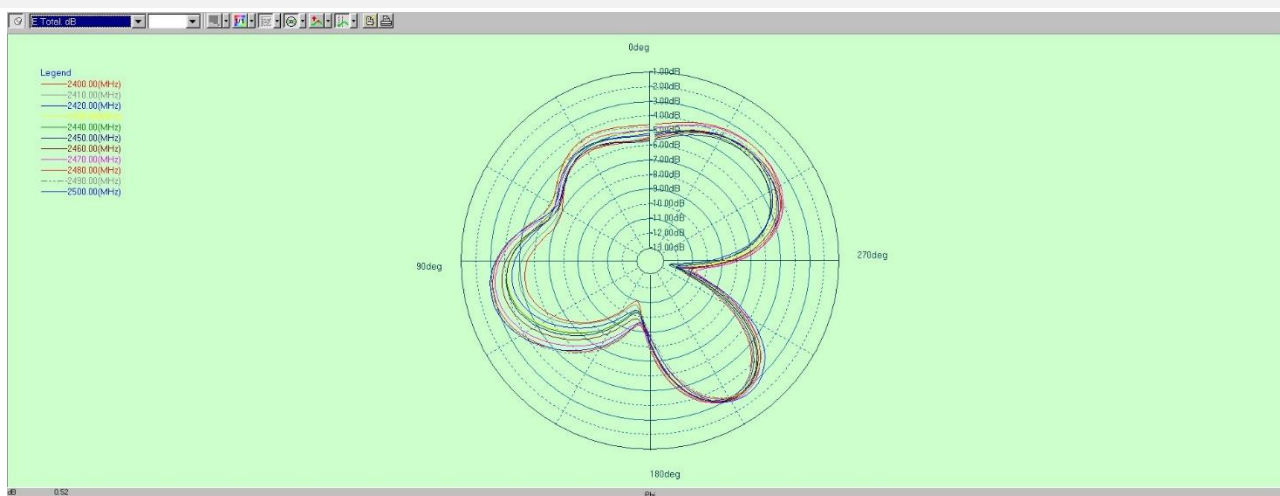
### B2.1 PHI=0



### B2.2 PHI=90



### B2.3 THETA=90



## **ANNEX C TEST SETUP PHOTOS**

Please refer the document “BL-SZ2290557-AO.PDF”.

## **ANNEX D EUT PHOTO**

Please refer the document “BL-SZ2290557-AA.PDF”.

## Statement

1. The laboratory guarantees the scientificity, accuracy and impartiality of the test, and is responsible for all the information in the report, except the information provided by the customer. The customer is responsible for the impact of the information provided on the validity of the results.
2. The report without China inspection body and laboratory Mandatory Approval (CMA) mark has no effect of proving to the society.
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7. Any objection shall be raised to the laboratory within 30 days after receiving the report.

--END OF REPORT--