# TEST REPORT

| | |
|---|---|
| **Applicant:** | CubyFun Inc. |
| **Address:** | Room 402, Block C, No. 1 Chuangjin Building, Xin'an Street, Bao'an District, Shenzhen |
| **Equipment Type:** | Smart Board Game JOYO |
| **Model Name:** | JY01 |
| **Brand Name:** | CubyFun |
| **Test Standard:** | IEEE Std 149-2021 |
| **Sample Arrival Date:** | Feb. 10, 2023 |
| **Test Date:** | Feb. 10, 2023 |
| **Date of Issue:** | Feb. 14, 2023 |

**ISSUED BY:**

Shenzhen BALUN Technology Co., Ltd.

**Tested by:** Mai Jintian **Checked by:** Zou Liu **Approved by:** Tolan Tu

(Testing Director)

**Revision History**

| Version | Issue Date | Revisions |
|---|---|---|
| Rev. 01 | Feb. 14, 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 | CubyFun Inc. |
| Address | Room 402, Block C, No. 1 Chuangjin Building, Xin'an Street, Bao'an District, Shenzhen |

## 2.2 Manufacturer Information

| | |
|---|---|
| Manufacturer | HuiZhou KeWeiHe Electronic Technology Co.Ltd. |
| Address | ShangShiXia Section JinSanJiao, Guang Shan Highway, DongPing Village, ChangNing Town, BoLuo County, HuiZhou City, GuangDong Province, P.R. China |

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

| | |
|---|---|
| EUT Name | Smart Board Game JOYO |
| Model Name Under Test | JY01 |
| Antenna Type | Onboard Antenna |
| Dimensions | 8*4mm |

## 2.4 Ancillary Equipment

Note: Not applicable.

## 2.5 Technical Information

| | |
|---|---|
| Test Frequencies | 2400MHz, 2402MHz, 2404MHz, 2406MHz, 2408MHz, 2410MHz, 2412MHz, 2414MHz, 2416MHz, 2418MHz, 2420MHz, 2422MHz, 2424MHz, 2426MHz, 2428MHz, 2430MHz, 2432MHz, 2434MHz, 2436MHz, 2438MHz, 2440MHz, 2442MHz, 2444MHz, 2446MHz, 2448MHz, 2450MHz, 2452MHz, 2454MHz, 2456MHz, 2458MHz, 2460MHz, 2462MHz, 2464MHz, 2466MHz, 2468MHz, 2470MHz, 2472MHz, 2474MHz, 2476MHz, 2478MHz, 2480MHz, 2482MHz, 2483.5MHz. |

# 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 A.2 | VSWR | -- |
| 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 |

# 4 GENERAL TEST CONFIGURATIONS

## 4.1 Test Condition

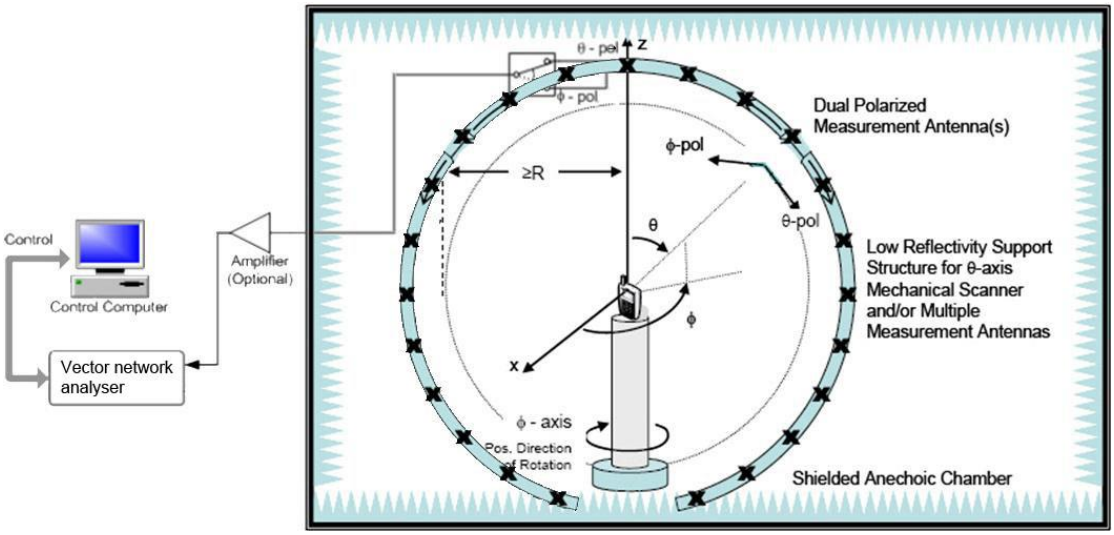
| Environment Parameter | Selected Values During Tests | | | |
|---|---|---|---|---|
| | Ambient Pressure(KPa) | Temperature(℃) | Voltage | Relative Humidity (%) |
| Normal Temperature, Normal Voltage (NTNV) | 101 | 21.8 | N/A | 42 |

## 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 | 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 | 1.09 | 32% |
| 2402MHz | **1.11** | **33%** |
| 2404MHz | 1.11 | 33% |
| 2406MHz | 1.09 | 33% |
| 2408MHz | 1.09 | 33% |
| 2410MHz | 1.07 | 33% |
| 2412MHz | 1.01 | 32% |
| 2414MHz | 0.95 | 32% |
| 2416MHz | 0.99 | 32% |
| 2418MHz | 0.95 | 32% |
| 2420MHz | 0.87 | 31% |
| 2422MHz | 0.82 | 31% |
| 2424MHz | 0.81 | 31% |
| 2426MHz | 0.80 | 31% |
| 2428MHz | 0.76 | 31% |
| 2430MHz | 0.74 | 31% |
| 2432MHz | 0.76 | 31% |
| 2434MHz | 0.79 | 31% |
| 2436MHz | 0.76 | 31% |
| 2438MHz | 0.77 | 31% |
| 2440MHz | 0.81 | 31% |
| 2442MHz | 0.83 | 31% |
| 2444MHz | 0.83 | 32% |
| 2446MHz | 0.87 | 31% |
| 2448MHz | 0.87 | 31% |
| 2450MHz | 0.88 | 31% |
| 2452MHz | 0.88 | 31% |
| 2454MHz | 0.87 | 31% |
| 2456MHz | 0.87 | 31% |
| 2458MHz | 0.88 | 31% |
| 2460MHz | 0.88 | 30% |
| 2462MHz | 0.88 | 30% |
| 2464MHz | 0.90 | 30% |
| 2466MHz | 0.78 | 30% |
| 2468MHz | 0.79 | 30% |
| 2470MHz | 0.80 | 30% |
| 2472MHz | 0.80 | 30% |
| 2474MHz | 0.83 | 30% |

| | | |
|---|---|---|
| 2476MHz | 0.86 | 30% |
| 2478MHz | 0.87 | 30% |
| 2480MHz | 0.86 | 30% |
| 2482MHz | 0.86 | 30% |
| 2483.5MHz | 0.86 | 30% |

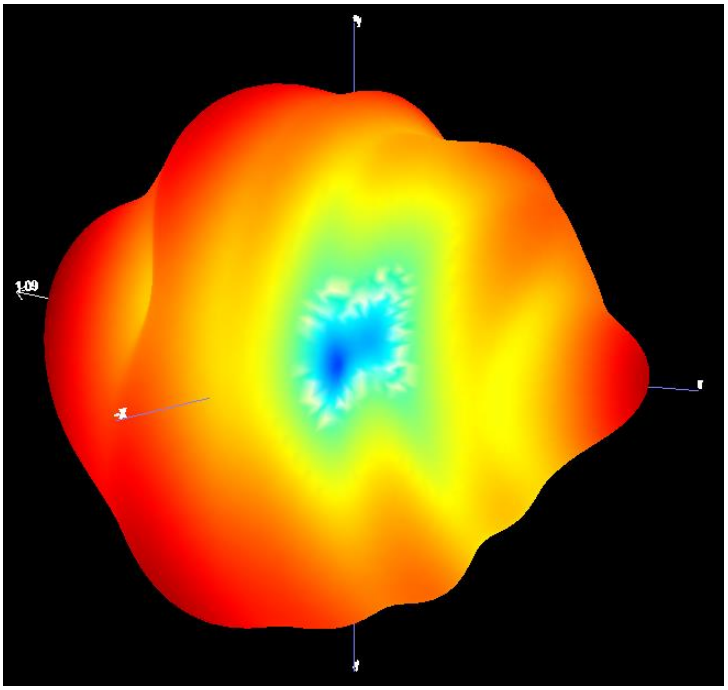
## A.2 VSWR

| Frequency | SWR |
|---|---|
| 2400MHz | 1.67 |
| 2440MHz | 1.80 |
| 2483.5MHz | 1.90 |

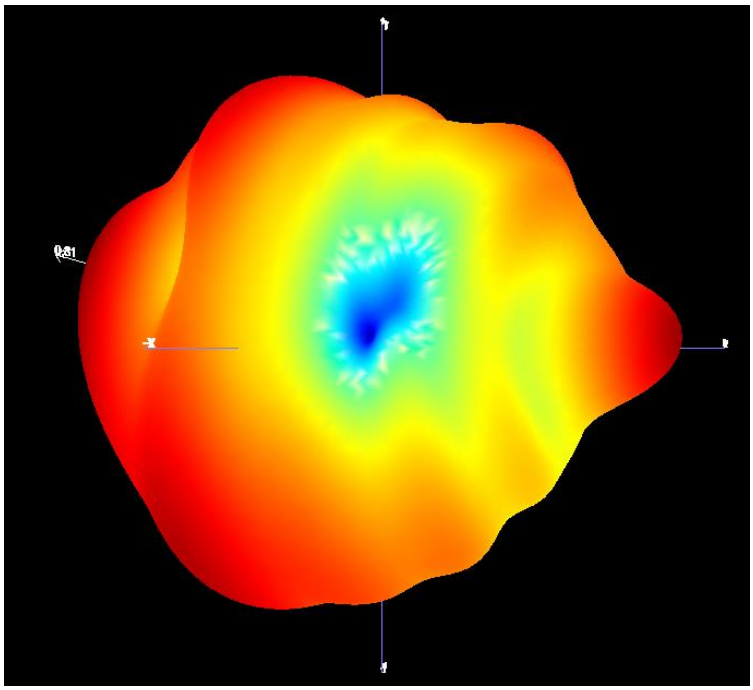
# ANNEX B RADIATION PATTERN

## B.1 3D Pattern

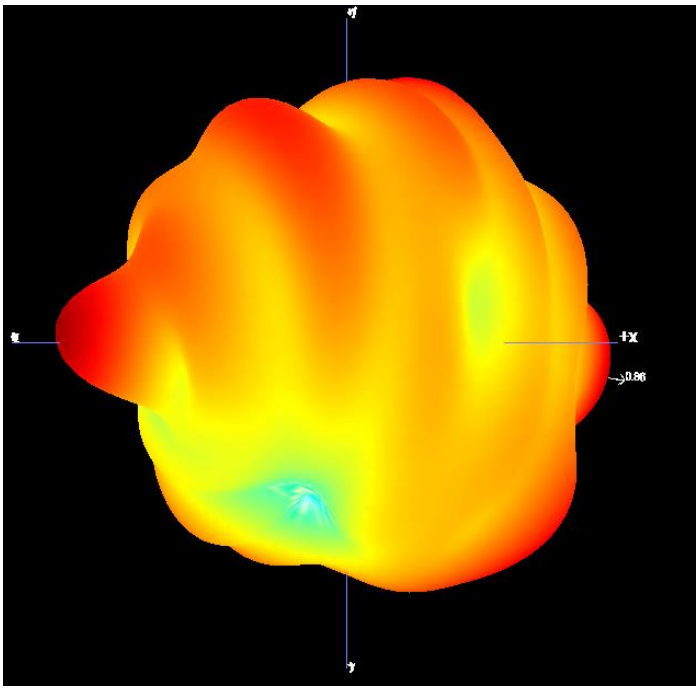
B1.1 3D Pattern for 2400MHz



B1.2 3D Pattern for 2440MHz

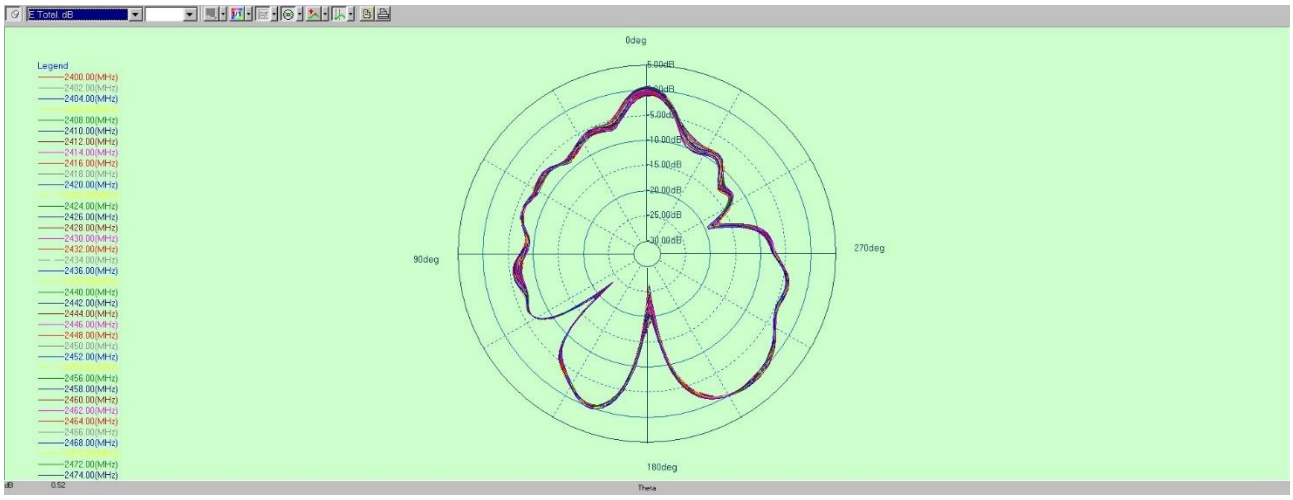


B1.3 3D Pattern for 2483.5MHz

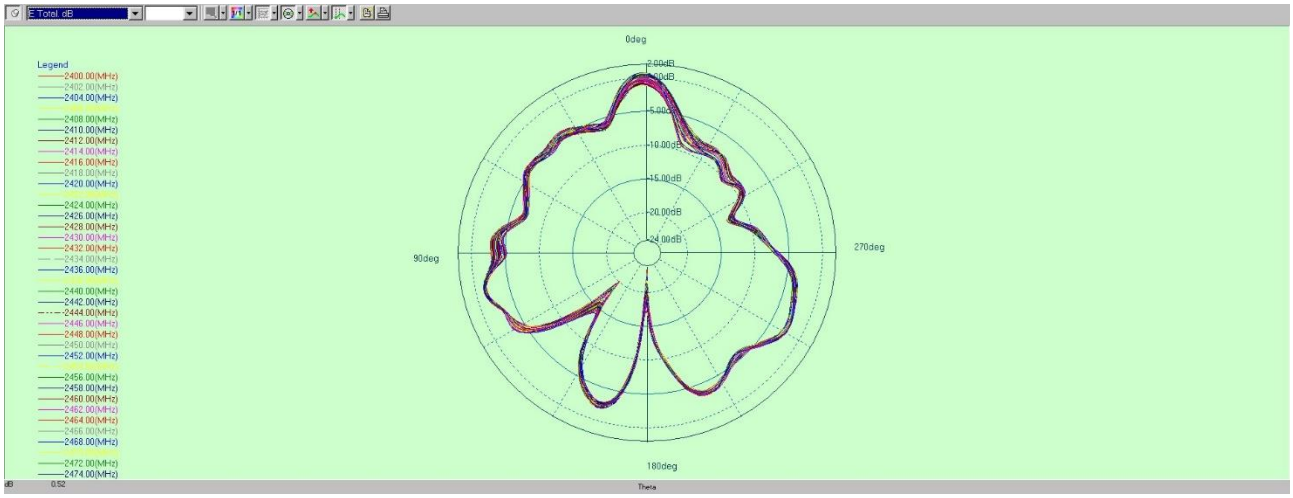


## B.2 1D Radiation Pattern

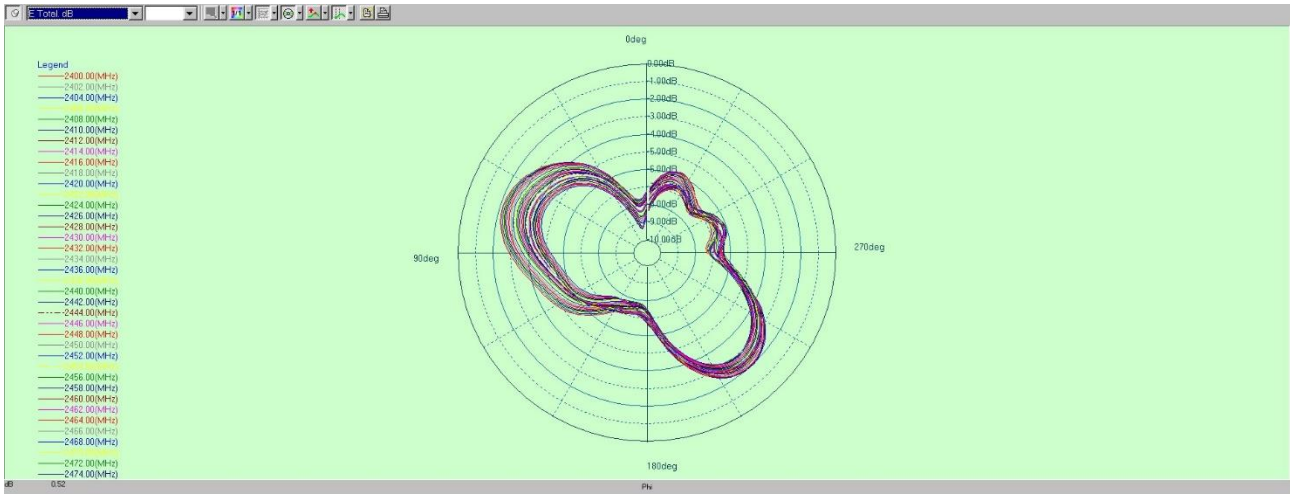
### B2.1 PHI=0



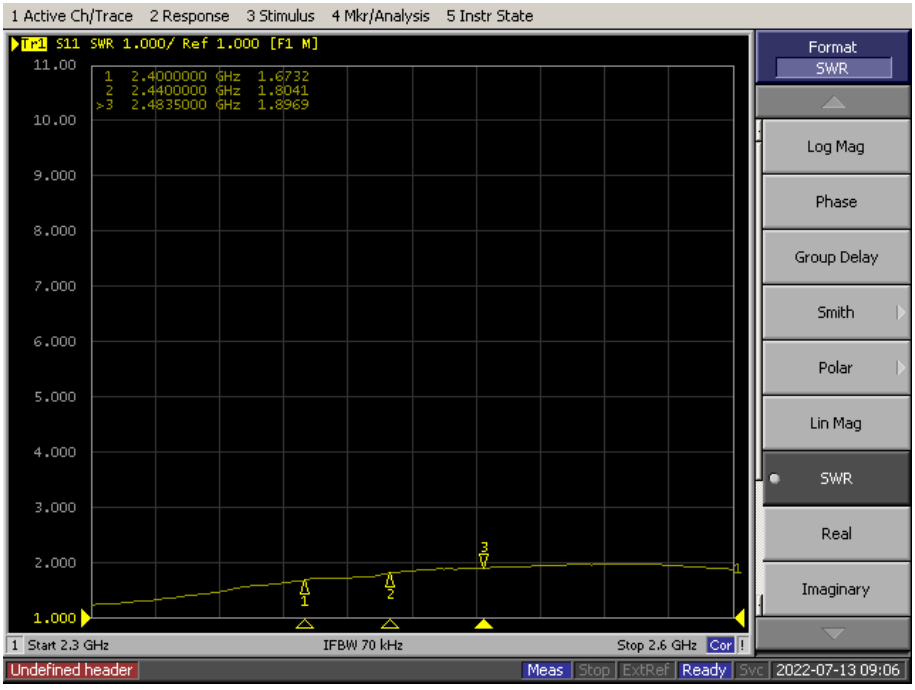

### B2.2 PHI=90



## B2.3 THETA=90




## B2.4 VSWR



# ANNEX C TEST SETUP PHOTOS

Please refer the document “BL-SZ2320350-AO.PDF”.

# ANNEX D EUT PHOTO

Please refer the document “BL-SZ2320350-AA.PDF”.

# Statement

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--END OF REPORT--