



TEST REPORT

Product : Remote control
Model Name : RF464E
Report No. : PTC24011111201E-RF01

Prepared for

Shenzhen C&D Electronics Co., Ltd
10/F Tower 1A, Baoneng Science & Technology Park, 1Qingxiang Road, Longhua District,
Shenzhen, Guangdong, China

Prepared by

Precise Testing & Certification Co., Ltd
Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China

TEL: +86-769-3880 8222

FAX: +86-769-3882 6111





1 Test Result Certification

Applicant's name : Shenzhen C&D Electronics Co., Ltd
Address : 10/F Tower 1A, Baoneng Science & Technology Park, 1Qingxiang Road, Longhua District, Shenzhen, Guangdong, China
Manufacture's name : Shenzhen C&D Electronics Co., Ltd
Address : 10/F Tower 1A, Baoneng Science & Technology Park, 1Qingxiang Road, Longhua District, Shenzhen, Guangdong, China
Product name : Remote control
Model name : RF464E
Standards : GB/T 9410-2008; ANSI/IEEE Std 149-1979
Test Date : Jan. 15, 2024 to Jan. 19, 2024
Date of Issue : Jan. 19, 2024
Test Result : Pass

This device described above has been tested by PTC, and the test results show that the equipment under test (EUT) is in compliance with the GB/T 9410 and ANSI/IEEE Std 149 requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of PTC, this document may be altered or revised by PTC, personal only, and shall be noted in the revision of the document.

Test Engineer:

Technical Manager:



Simon Pu / Manager



Revision History of Report

| Vision No. | Date | Revisions | Modifier |
|------------|---------------|---------------|----------|
| 00 | Jan. 19, 2024 | Initial Issue | |



Contents

| | | |
|-----|---|----|
| 1 | Test Result Certification | 2 |
| 2 | Test Summary | 5 |
| 3 | Test Site | 6 |
| 3.1 | Test Facility | 6 |
| 3.2 | Measurement Uncertainty | 6 |
| 3.3 | List Of Test And Measurement Instruments | 6 |
| 3.4 | Test environmental | 6 |
| 3.5 | Test Setup | 7 |
| 4 | EUT Description | 8 |
| 5 | Test Data | 9 |
| 5.1 | Typical free space efficiency and gain | 9 |
| 5.2 | Typical free space radiation pattern | 10 |
| 5.3 | 3D Pattern | 12 |
| 6 | EUT setup photo of free space OTA testing | 14 |
| 7 | EUT appearance | 15 |



2 Test Summary

| Name | Parameter | Method | Standard no. |
|------------------------------|----------------------|--|------------------------|
| Mobile communication antenna | Antenna gain | Generic specification for antennas used in the mobile communications | GB/T 9410-2008 |
| | Radiation pattern | | |
| Antenna | Radiation efficiency | IEEE Standard Test Procedures for Antennas | ANSI/IEEE Std 149-1979 |
| | Gain and directivity | | |



3 Test Site

3.1 Test Facility

| | |
|---------|---|
| Name | Precise Testing & Certification Co., Ltd |
| Address | Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China |

3.2 Measurement Uncertainty

The uncertainty was calculated on the basis of the GUM published by ISO, using the inclusion factor of K=2 and the 95% confidence level to express the extended uncertainty.

| Item | Uncertainty |
|----------------------|-------------|
| Antenna gain | ±0.68dB |
| Radiation efficiency | ±0.68dB |

3.3 List Of Test And Measurement Instruments

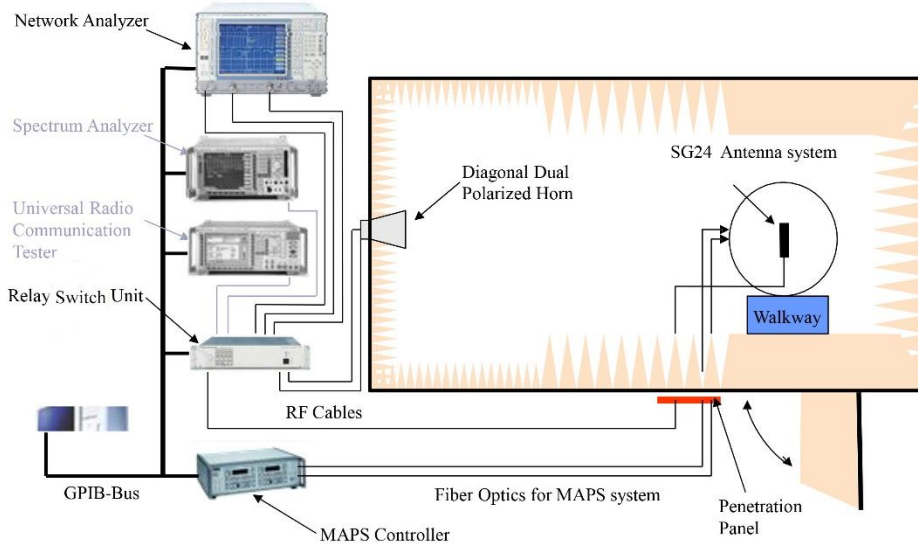
| Name of Equipment | Manufacturer | Serial No. | Last Cal. | Calibration Interval |
|----------------------------|------------------|------------|--------------|----------------------|
| 24 probe microwave chamber | YIHENG ELECTPONC | 4*4*4 | Jan. 10,2024 | 1 Year |
| Network Analyzer | E5071C | Agilent | Jan. 10,2024 | 1 Year |
| XH.PassiveTest 2.7.6 | XH-IOT | / | / | / |

3.4 Test environmental

| Environment Parameter | Selected Values During the Testes | |
|--|-----------------------------------|------------|
| Relative Humidity | 45% to 55% | |
| Value | Temperature(°C) | Voltage(V) |
| NTNV | 20 to 24 | N/A |
| Note: NV: Normal Voltage; NT: Normal Temperature | | |



3.5 Test Setup





4 EUT Description

| | |
|-----------------|--|
| Product Name | Remote control |
| Sample Model | RF464E |
| Size | / |
| Test Item | Antenna gain; Radiation pattern and efficiency |
| Antenna Type | PCB Antenna |
| Frequency Range | 2400MHz-2500MHz |



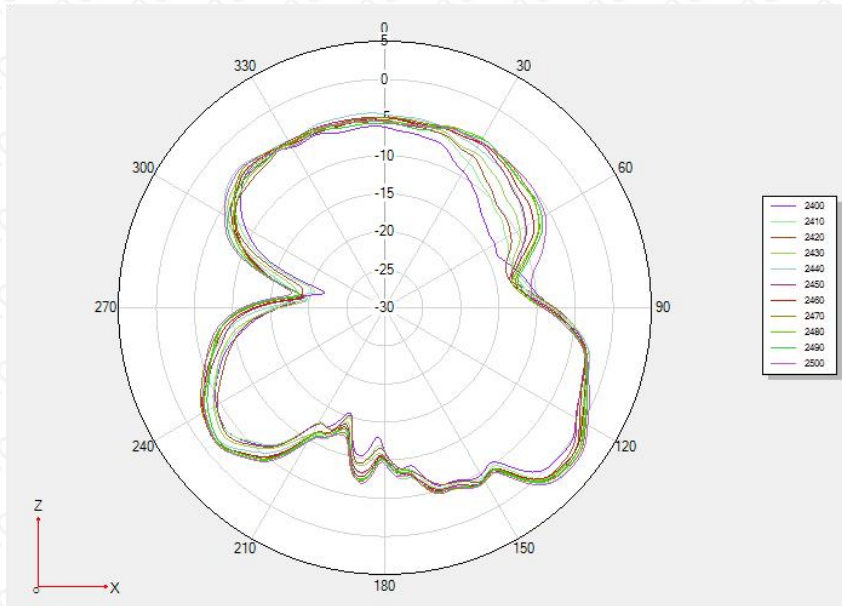
5 Test Data

5.1 Typical free space efficiency and gain

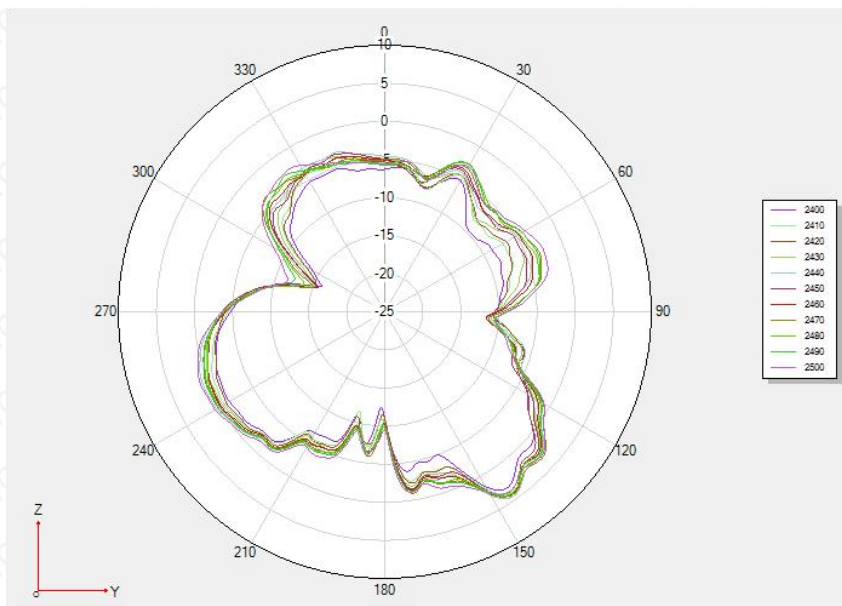
| Frequency/MHz | Efficiency / dB | Efficiency / % | Max Gain/dBi | Avg Gain/dBi |
|---------------|-----------------|----------------|--------------|--------------|
| 2400 | -3.84 | 41.30 | 3.25 | -3.84 |
| 2410 | -3.24 | 47.42 | 4.03 | -3.24 |
| 2420 | -3.13 | 48.64 | 4.30 | -3.13 |
| 2430 | -2.75 | 53.09 | 4.44 | -2.75 |
| 2440 | -2.33 | 58.48 | 4.54 | -2.33 |
| 2450 | -2.39 | 57.68 | 4.26 | -2.39 |
| 2460 | -2.43 | 57.15 | 4.21 | -2.43 |
| 2470 | -2.21 | 60.12 | 4.32 | -2.21 |
| 2480 | -2.19 | 60.39 | 4.12 | -2.19 |
| 2490 | -2.25 | 59.57 | 3.79 | -2.25 |
| 2500 | -2.10 | 61.66 | 3.74 | -2.10 |

5.2 Typical free space radiation pattern

(1) X-Z Plane:
V Phi=0

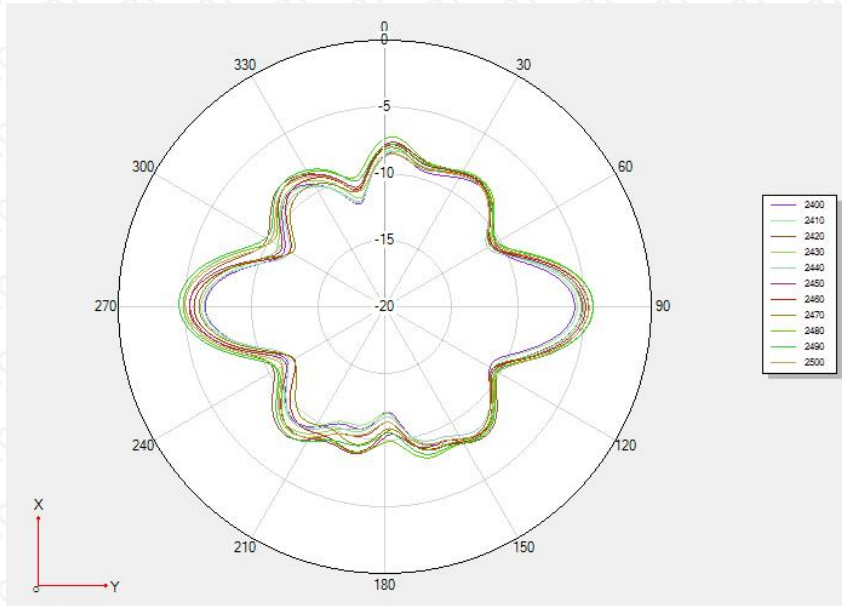


(2) Y-Z Plane:
V Phi=90





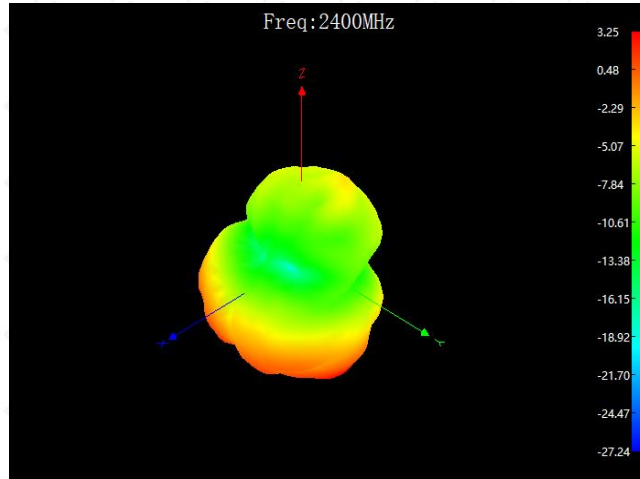
(3)X-Y Plane:
H Theta=90



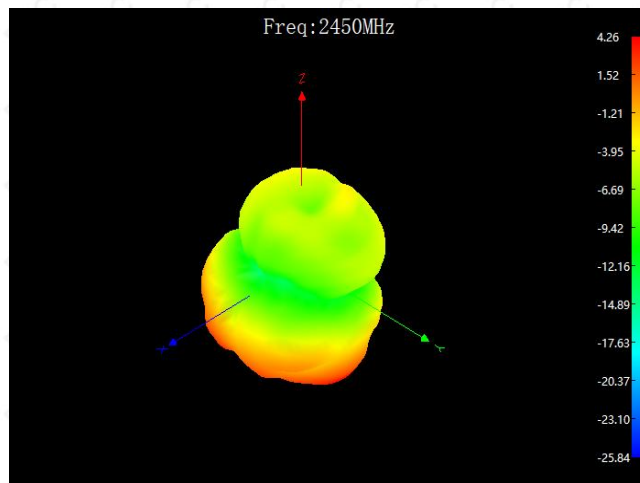


5.3 3D Pattern

3D Pattern for 2400MHz

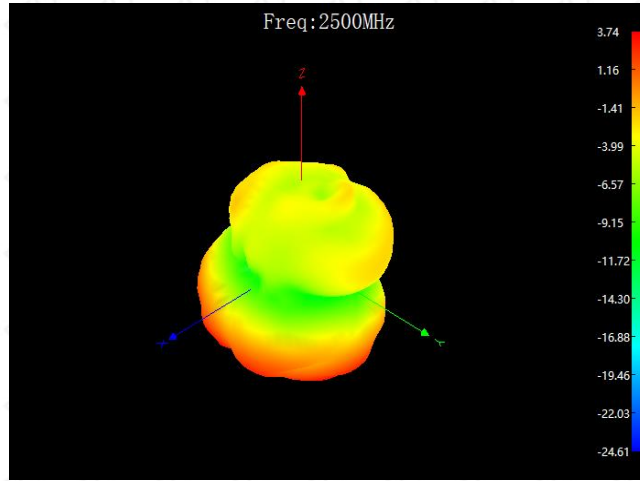


3D Pattern for 2450MHz



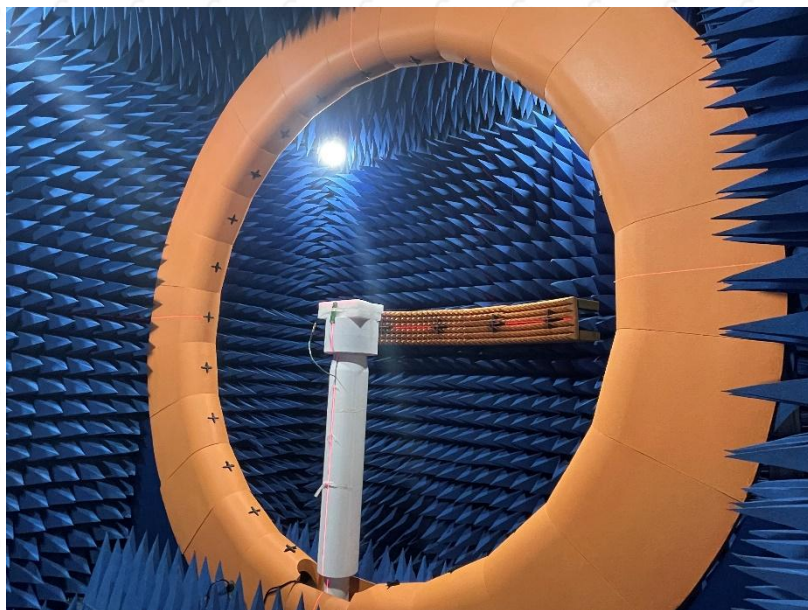
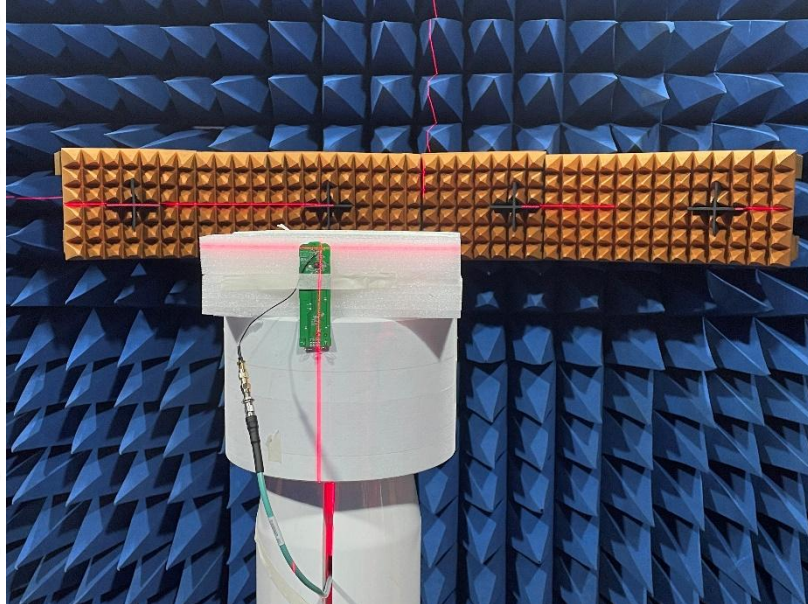


3D Pattern for 2500MHz



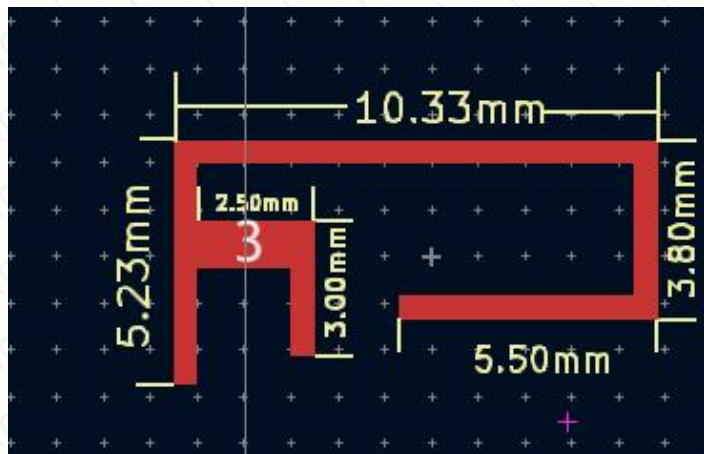
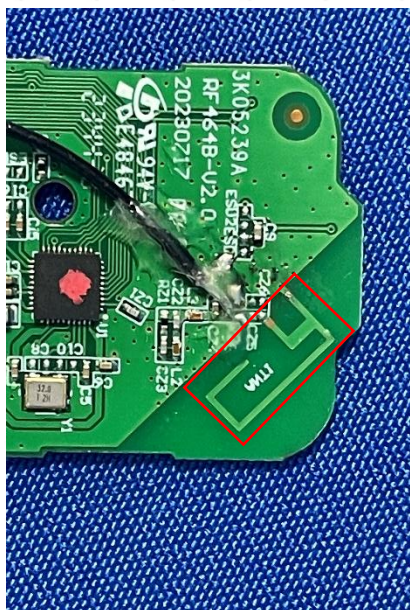


6 EUT setup photo of free space OTA testing





7 EUT appearance



*****THE END REPORT*****