

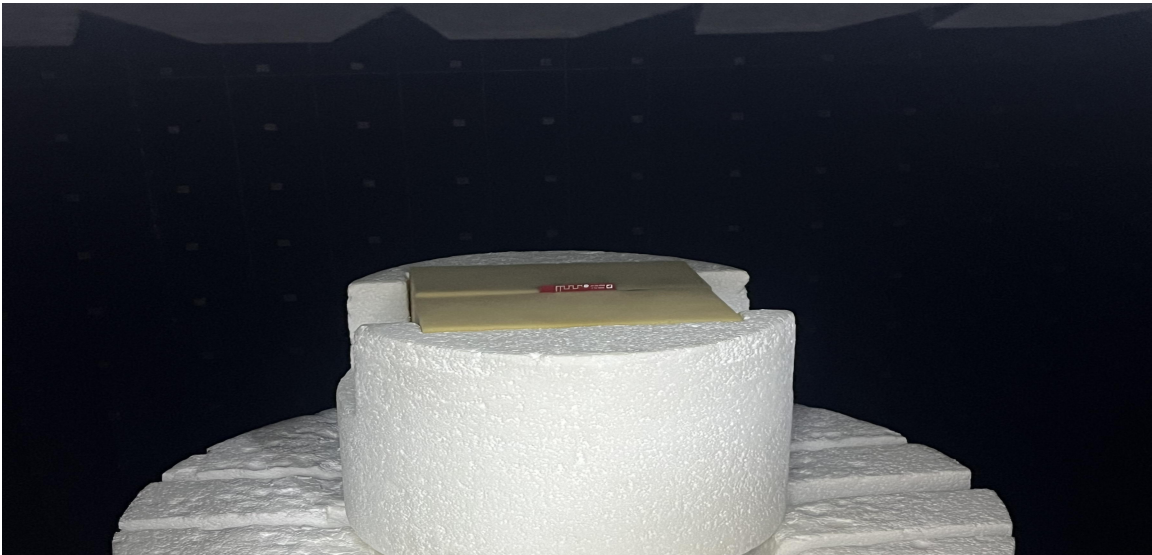
# Antenna test

- 1、 Hardware testing
- 2、 Software testing
- 3、 Data reading

## 1、 Hardware testing

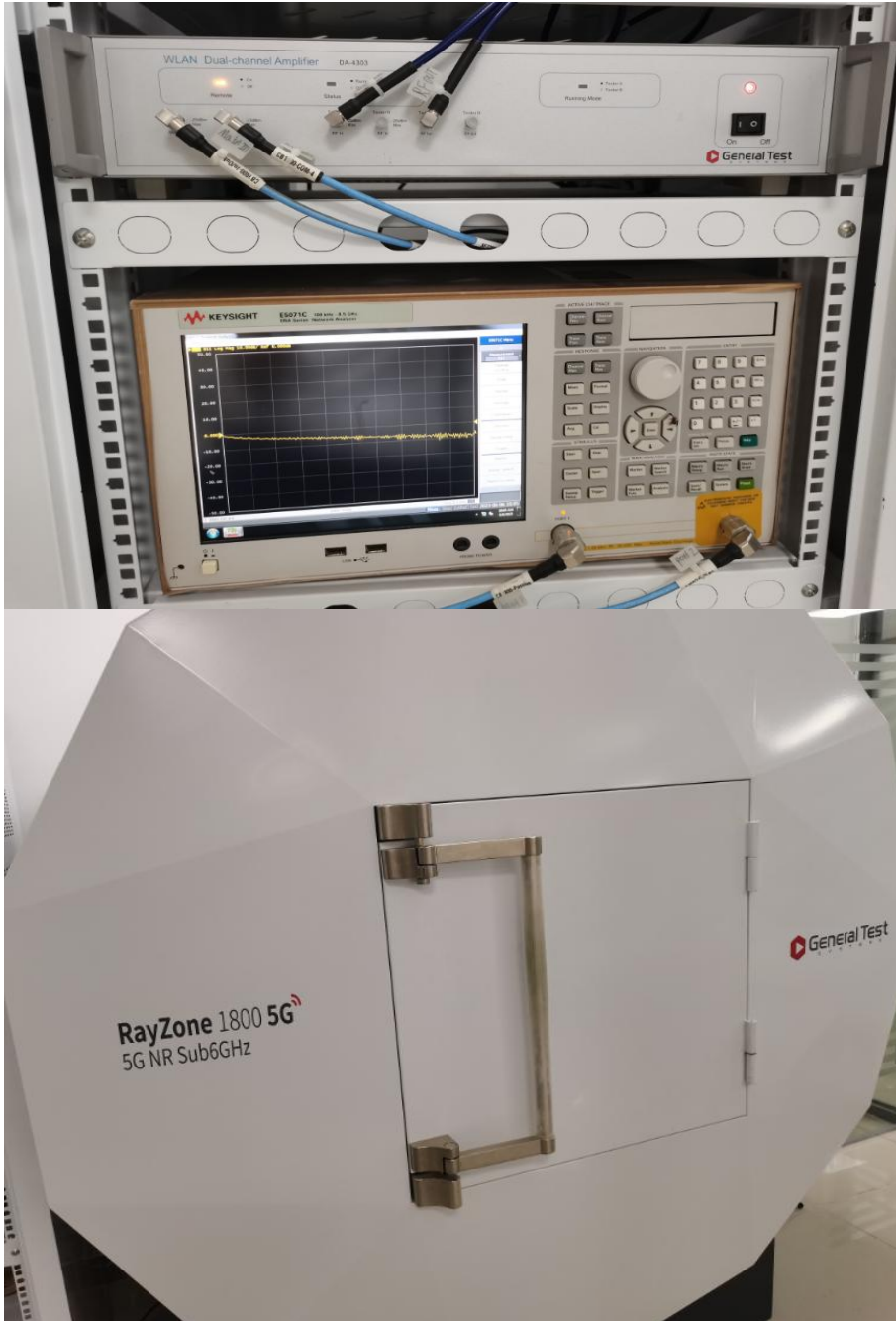
### 1.1 、 PCBA Bare board testing

Solder the RF connection line to the bare board and then connect it to the OTA device. The connection diagram of the RF connection line and the bare board is as shown in the following figure:



## 1.2 Equipment environment

The equipment required for this test includes a computer, a spectrum analyzer, an amplifier and a darkroom, as shown in the following figure:



## 2、Software testing

GT5 MaxSign - RayZone1800NR\_Z

File Window Tools Help

**Test Setup**

Operation: GT5 Temperature: 20 °C Humidity: 50 %  
Test Polar: Both Pole Test Manner: Single Test Position: FS  
Instrument Preset: Once Ring Off End: True Manual Page Max: 10

**Equipment**

Product Series: RayZone  
Instrument: Agilent 5071C  
Instrument Addr: TCP/IP0:K-E5071C-28615.local:inst0:INS  
Working Port: Port1  
Link Port: Port1  
UL Port1: Agilent 5071C  
UL Port2: NULL  
AMP (L): NULL  
Port1: R85 CMW500B37  
Port2: NULL  
UL Port3: NULL  
UL Port4: NULL  
DL Port1: Agilent 5071C  
DL Port2: NULL  
AMP (L): NULL  
Port1: R85 CMW500B37  
Port2: NULL  
DL Port3: NULL  
DL Port4: NULL

**Manual Operation**

Command: Reset Execute

Start Stop

GT5 MaxSign - RayZone1800NR\_Z

File Window Tools Help

**Templates**

Test System: Passive  
Root (Agilent 5071C/Passive)  
TP\_Agilent5071C\_Passive.xml

**Batch Template:**

Root (Agilent 5071C)  
TP\_Agilent5071C\_Passive(1).xml

**Template Details:**

**Parameters (Agilent 5071C/Passive/)**

**Test Setup**

Trace Name: S21  
IF Bandwidth: 6.1 KHz  
Factor Average: 0  
Power: 5 dB  
Test Mode: Log  
Skip Calibration: True  
DUT Type: Linear  
Radiation Test: False  
S11 Calibration File: State01

**Angular Coordinator Setup**

**Phi**

Step: 90

**Theta (Ant No.)**

Start: 0  
End: 180  
Step: 30

**Display Setup**

Display Frequency Mode: Auto  
Display Frequency: MHz

**Frequency List**

Test Method: Linear Import Clear

|   | Start(MHz) | End(MHz) | Step(MHz) |
|---|------------|----------|-----------|
| 1 | 2400       | 2500     | 10        |
| 2 |            |          |           |

**Added Pathloss Correction**

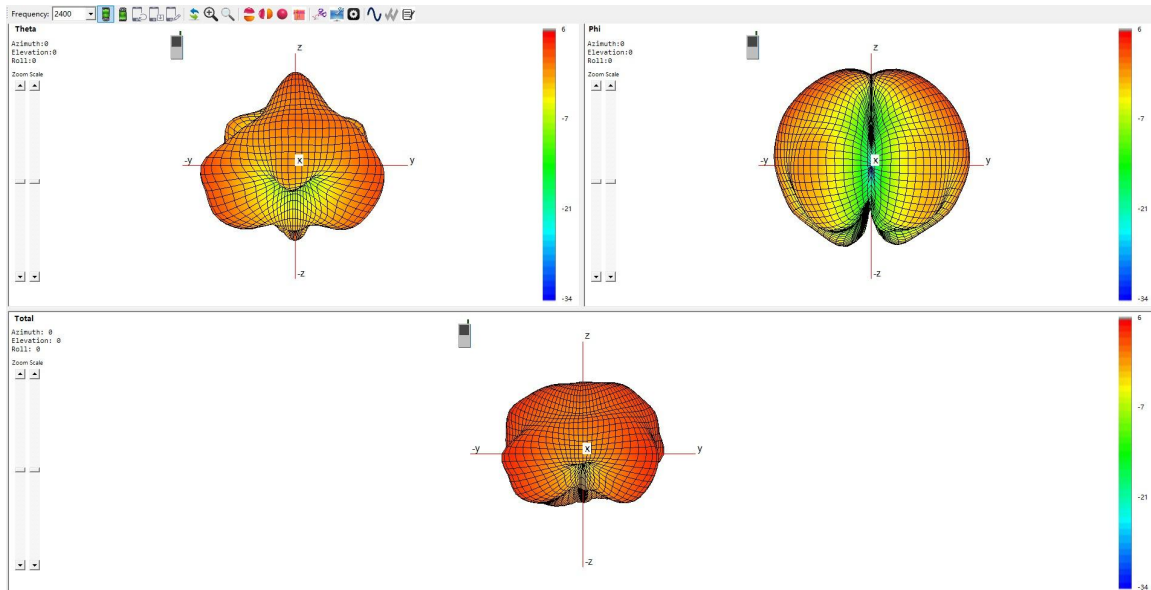
Correction Method: Load File  
Load File: D:\MaxSign\YysData\passive offset\_new.csv Select Clear

Save Save as

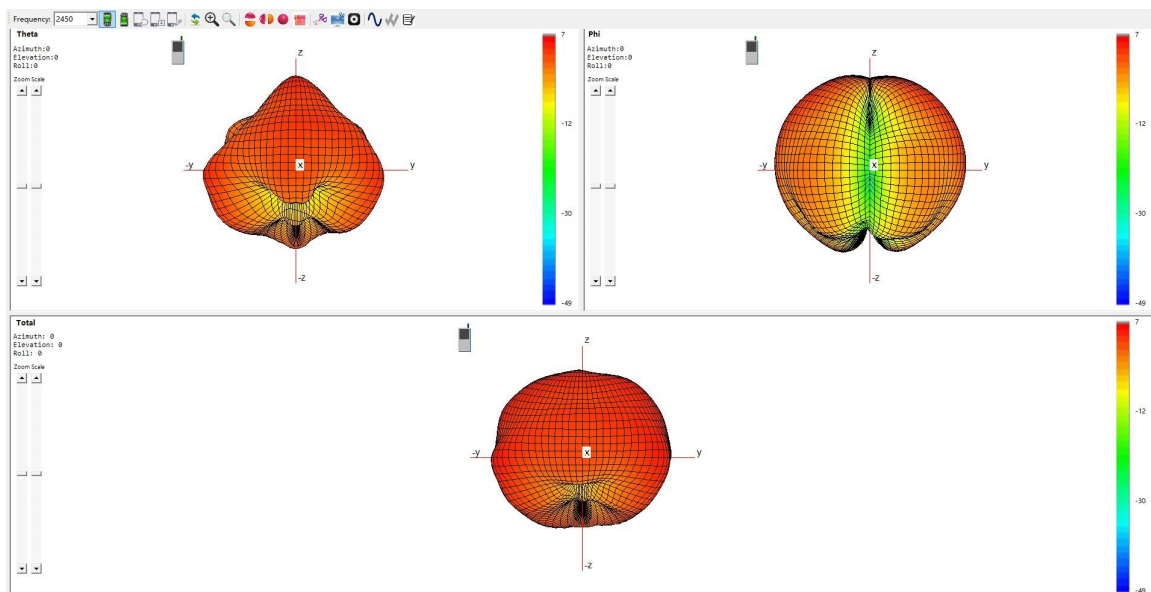
### 3、Data reading

#### 3.1、Scan the 3D radiation map of the antenna

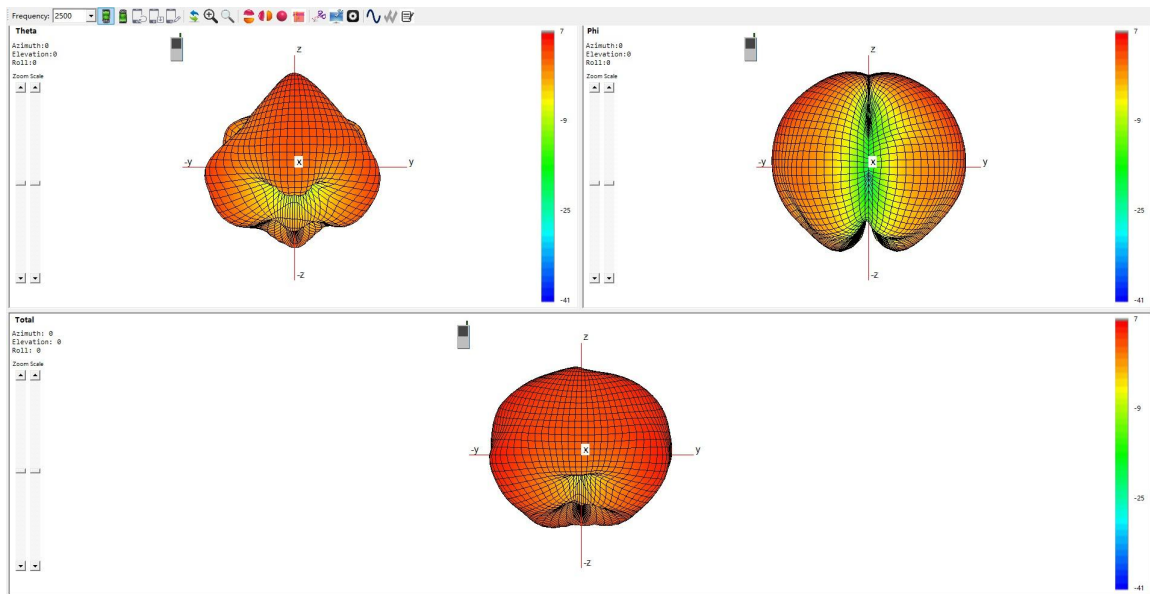
2400MHz:



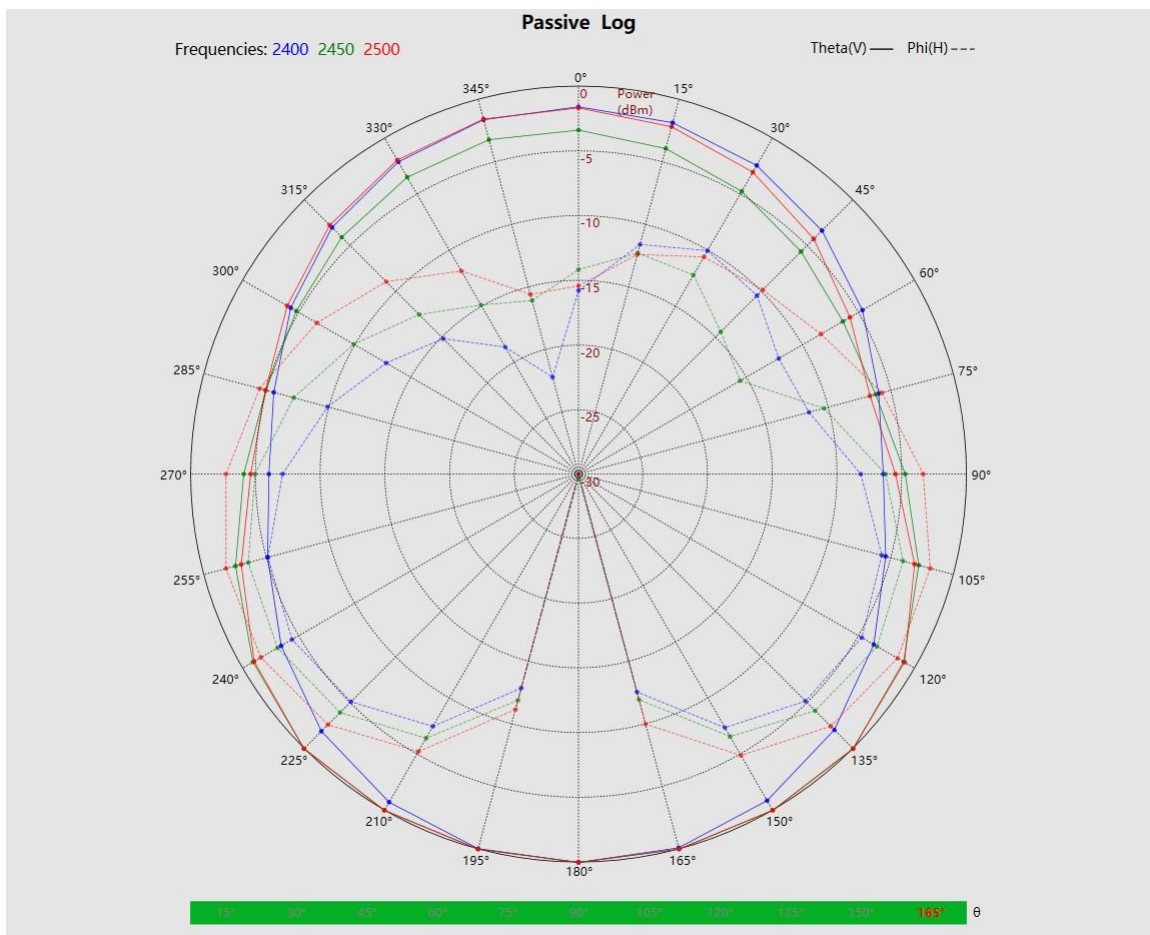
2450MHz:



2500MHz



### 3.2、The 2D radiation pattern of the scanning antenna



3.3、Detailed scan output data results

| Freq<br>(MHz) | Gain<br>(dBi) | Efficiency<br>(dB) | Efficiency<br>(%) |
|---------------|---------------|--------------------|-------------------|
| 2400          | 5.03          | 1.98               | 157.93            |
| 2410          | 5.22          | 2.14               | 163.72            |
| 2420          | 5.54          | 2.51               | 178.23            |
| 2430          | 5.87          | 2.94               | 196.74            |
| 2440          | 6.17          | 3.28               | 212.93            |
| 2450          | 6.46          | 3.66               | 232.15            |
| 2460          | 6.57          | 3.82               | 240.80            |
| 2470          | 6.58          | 3.79               | 239.26            |
| 2480          | 6.55          | 3.79               | 239.38            |
| 2490          | 6.56          | 3.81               | 240.44            |
| 2500          | 6.70          | 3.89               | 244.92            |

Summary

| ITEM             | ANT SPEC                |         |         |
|------------------|-------------------------|---------|---------|
| Model Name       | 2.4G ANT                |         |         |
| Antenna plate    | PCB antenna             |         |         |
| Center Frequency | 2400MHz                 | 2450MHz | 2500MHz |
|                  | 5.03dBi                 | 6.46dBi | 6.70dBi |
| MAX. Gain        | 6.70dBi                 |         |         |
| Polarization     | Horizontal and Vertical |         |         |
| Impedance        | 50Ohm                   |         |         |
| Manufacture      |                         |         |         |

AntennaPhoto&Length(mm)

