

## Sample Acknowledgment Letter

Sample Approved Sheet

### XNO-P190 Acknowledgement Letter

customer name      Customer models of Shenzhen Xinnengyuan  
Technology Co., Ltd.      XNO-P190 brand      Ningyi's self-  
produced 2.4G copper tube antenna, L-70mm

Manufacture : Shenzhen Ningyi Technology Co., Ltd.  
Address : 1202B, Comprehensive Building C6, Hengfeng Industrial City, No. 739 Zhoushi Road,  
Hezhou Community, Hangcheng Street, Bao'an District, Shenzhen City

#### Ning Yi Judgment Review Group

| Work out       | Examine and verify | Ratify       | Completion time of the admission letter |
|----------------|--------------------|--------------|-----------------------------------------|
| Zhong Xiaoming | Huang Zhilin       | Dai Tingting | 2025.11.4                               |

#### Xin Neng Yuan (Customer) Judgment and Review Group

Acknowledgement Document Number\_\_ The time when the admission letter is provided

| Admit                                                                                                                                                                                                                                                                        | Examine and verify | Ratify | Recognition date |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|------------------|
|                                                                                                                                                                                                                                                                              |                    |        |                  |
| Review items: <input type="checkbox"/> 3 copies of the letter of acknowledgement <input type="checkbox"/> Specs/Drawings <input type="checkbox"/> examining report <input type="checkbox"/> sample PCS <input type="checkbox"/> safety standard <input type="checkbox"/> HSF |                    |        |                  |
| Review results: <input type="checkbox"/> accept <input type="checkbox"/> qualified acceptance <input type="checkbox"/> refuse                                                                                                                                                |                    |        |                  |

## **Catalogue**

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## 1、Antenna Image

This Report Mainly Introduces the Test of Electrical Performance Parameters of 2.4G Copper Tube Antenna Equipment. 2.4G Copper Tube Antenna Belongs To WiFi 2.4G band. The picture and assembly of the antenna are shown below.



2.4G Copper Tube Antenna + Coaxial Cable Images and Assembly Images

## 2. Introduction to Antenna Test Equipment

The Antenna Input Characteristics Were Tested Using Agilent E5071C and Agilent 5062A Vector Network Analyzers. The radiation pattern of the antenna was measured in a near-field anechoic chamber (Satimo Star Lab 3D) using Agilent 8960E5515 and Agilent E4438C. The test coordinates of the anechoic chamber are as follows:

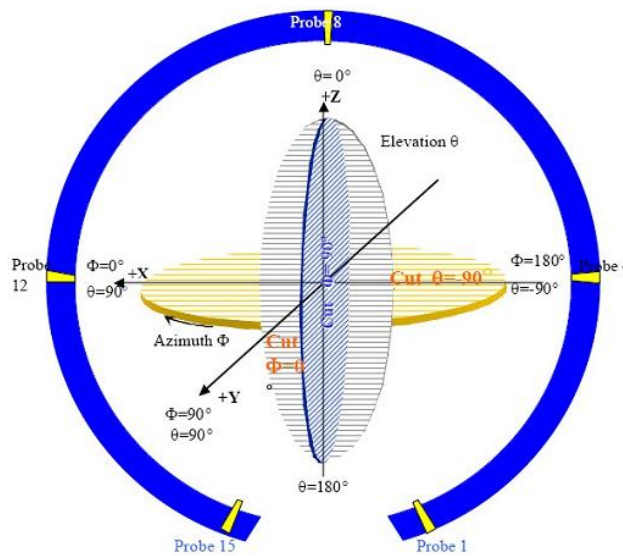
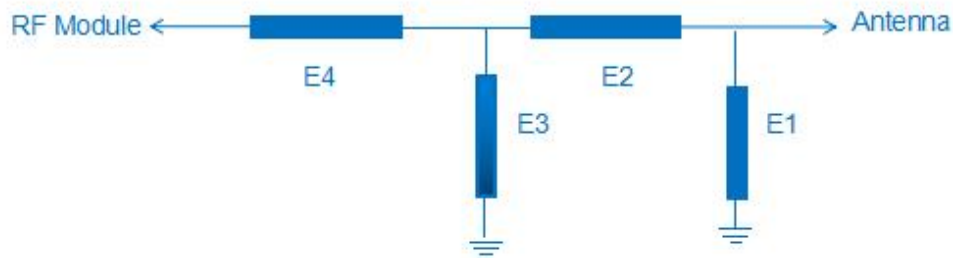


图4 3D微波暗室测试坐标系 (back view)

### 3. Electrical Specifications

#### 3.1 Antenna Matching Circuit



The Antenna Matching Circuit Is the Original Matching Circuit of the Main Board, Without Any Changes.

#### 3.2 S11 Parameter

The Measurement Method Is to Connect a 50-Ohm Coaxial Cable to the Antenna and Then Connect the Coaxial Cable to the Network Analyzer. The instrument is used to measure the S11 parameter. The distance between the device and the metal object is at least 20 cm.

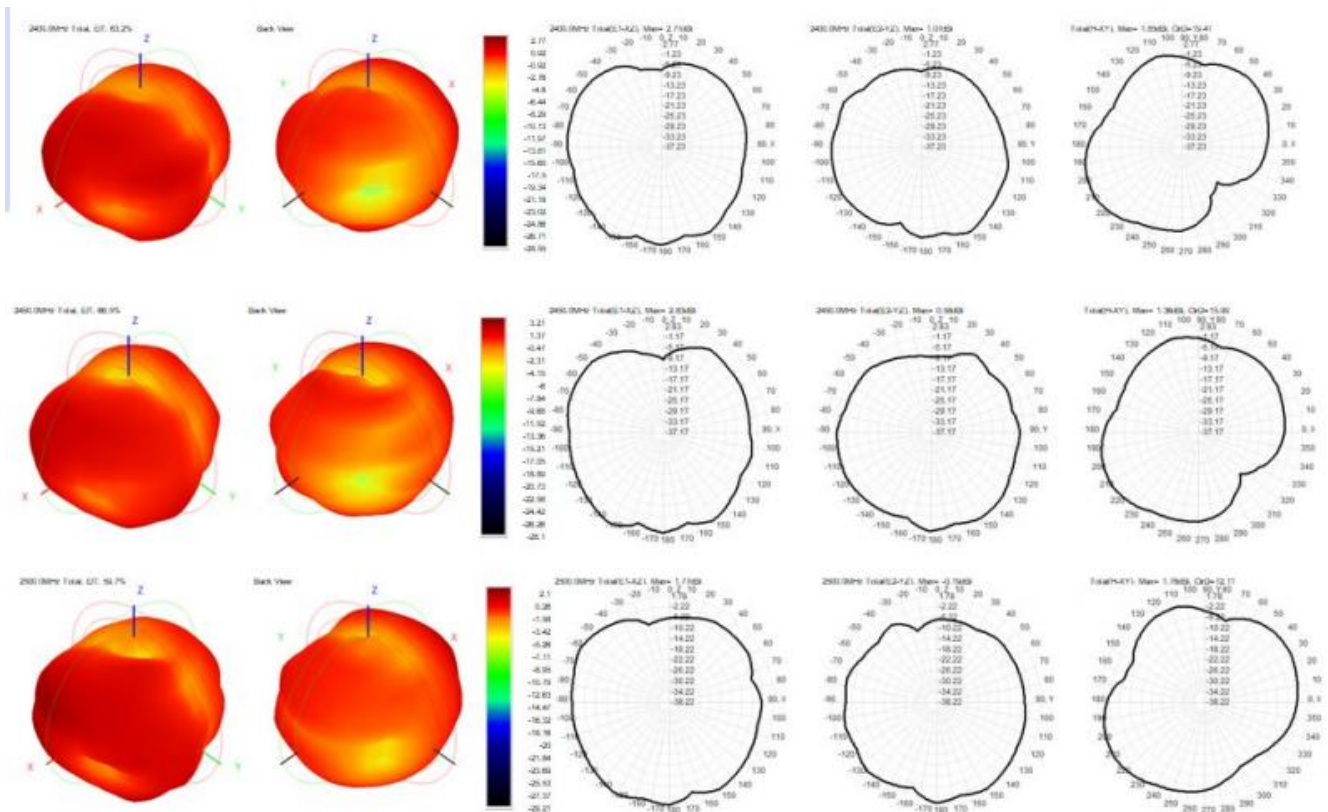
#### 3.3 Antenna VSWR



## 4. Test

### 4.1 Antenna Gain, Efficiency

| Frequency ID    | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     | 11     |
|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Frequency (MHz) | 2400.0 | 2410.0 | 2420.0 | 2430.0 | 2440.0 | 2450.0 | 2460.0 | 2470.0 | 2480.0 | 2490.0 | 2500.0 |
| Gain (dBi)      | 2.77   | 3.19   | 2.93   | 3.21   | 3.11   | 3.21   | 2.98   | 3.16   | 2.64   | 2.26   | 2.10   |
| Efficiency (%)  | 63.24  | 69.18  | 61.91  | 64.06  | 63.29  | 66.55  | 63.76  | 66.47  | 61.00  | 57.35  | 59.72  |



## WiFi

1#

|                 |                   |         |          |          |
|-----------------|-------------------|---------|----------|----------|
| Test Equipment: | R&S CMW500        |         |          |          |
| Test Condition: | 3D chamber        |         |          |          |
| Band            | Wireless Protocol | Channel | TRP(dBm) | TIS(dBm) |
| WIFI-2.4G       | 802.11b<br>(11M)  | 1       | 23.35    | -74.73   |
|                 |                   | 6       | 22.79    | -77.61   |
|                 |                   | 11      | 23.28    | -67.40   |
| WIFI-2.4G       | 802.11g<br>(54M)  | 1       | 20.28    | -73.46   |
|                 |                   | 6       | 21.33    | -69.89   |
|                 |                   | 11      | 21.53    | -72.70   |
| WIFI-2.4G       | 802.11n<br>(MCS7) | 1       | 21.18    | -65.28   |
|                 |                   | 6       | 21.07    | -64.51   |
|                 |                   | 11      | 19.81    | -66.10   |

## WiFi

1#主板芯片传导参数

|                 |                   |         |          |          |
|-----------------|-------------------|---------|----------|----------|
| Test Equipment: | R&S CMW500        |         |          |          |
| Test Condition: | 3D chamber        |         |          |          |
| Band            | Wireless Protocol | Channel | TRP(dBm) | TIS(dBm) |
| WIFI-2.4G       | 802.11b<br>(11M)  | 1       | 24.8     |          |
|                 |                   | 6       | 24.9     |          |
|                 |                   | 11      | 24.9     |          |
| WIFI-2.4G       | 802.11g<br>(54M)  | 1       | 24.5     |          |
|                 |                   | 6       | 24.8     |          |
|                 |                   | 11      | 24.9     |          |
| WIFI-2.4G       | 802.11n<br>(MCS7) | 1       | 24.4     |          |
|                 |                   | 6       | 24.5     |          |
|                 |                   | 11      | 24.4     |          |

## WiFi

2#

|                 |                   |         |       |        |
|-----------------|-------------------|---------|-------|--------|
| Test Equipment: | R&S CMW500        |         |       |        |
| Test Condition: | 3D chamber        |         |       |        |
| Band            | Wireless Protocol | Channel | TX    | RX     |
| WIFI-2.4G       | 802.11b<br>(11M)  | 1       | 21.28 | -64.90 |
|                 |                   | 6       | 20.65 | -62.17 |
|                 |                   | 11      | 21.94 | -65.82 |
| WIFI-2.4G       | 802.11g<br>(54M)  | 1       | 15.59 | -73.49 |
|                 |                   | 6       | 17.11 | -69.88 |
|                 |                   | 11      | 16.84 | -73.11 |
| WIFI-2.4G       | 802.11n<br>(MCS7) | 1       | 16.50 | -66.62 |
|                 |                   | 6       | 16.29 | -64.83 |
|                 |                   | 11      | 15.58 | -65.44 |

## WiFi

2#主板芯片传导参数

|                 |                   |         |      |    |
|-----------------|-------------------|---------|------|----|
| Test Equipment: | R&S CMW500        |         |      |    |
| Test Condition: | 3D chamber        |         |      |    |
| Band            | Wireless Protocol | Channel | TX   | RX |
| WIFI-2.4G       | 802.11b<br>(11M)  | 1       | 23.8 |    |
|                 |                   | 6       | 23.8 |    |
|                 |                   | 11      | 23.5 |    |
| WIFI-2.4G       | 802.11g<br>(54M)  | 1       | 21.3 |    |
|                 |                   | 6       | 21.2 |    |
|                 |                   | 11      | 21   |    |
| WIFI-2.4G       | 802.11n<br>(MCS7) | 1       | 21.4 |    |
|                 |                   | 6       | 21.4 |    |
|                 |                   | 11      | 21   |    |

5. Structural Specification

5.1. Antenna Composition

The copper tube antenna is mainly composed of copper tube antenna and coaxial line.

5.2 Schedule Drawing

