ShenZhen Aihui Technology Co., Ltd

Antenna Technical Specifications

Vendor Name	ShenZhen Aihui Technology Co., Ltd				
Customer Name	ZHINIU				
Sample Name	Dual-Band Antenna				
Part Number					
Specification	AH with 1st Generation Connector, 150mm (1.13)				
Inspection Item	Performance	Total Appearance	structure	Others	Inspection Result
Remark					
QA Audit		Engineer Audit	Cao Yang	Sales Confirm	
The following are filled by Customer					
Customer Evaluation					
Signation/ Chapter by Customer	date:2022.12.30				

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Antenna Test Report

Test by： ShenZhen Aihui Technology Co., Ltd			
Material	FPC + Coaxial Cable		
Antenna Type	**MonopoleType**	**Polarization mode**	**Linear**
Application			
Band		**VSWR**	**≤1.5**
Power	**Max：2W**	**Impedance**	**50Ω**
Gain（dBi）	≥1.5dBi ± 0.5dBi		
Test Equipment	**HPE5071C、Shielding Room、3D automatic turntable**		

Antenna Description:：

1. Grounding processing and picture description: no

2. Need to change the motherboard to match: no

- Test voltage: 3.6V, check the antenna contact is good before testing.
- The RF cable of the integrated tester is kept in a natural state and can not be curled.

Specification:test the specified power level, all indicators must conform to the specifications.

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1. Project Images

1.1 Purpose

The purpose of this section is to standardize the specifications and testing methods for the mobile communication terminal antennas produced by Shenzhen Aihui Technology Co., Ltd. This standardization aims to minimize errors caused by variations in testing conditions and methods.

1.2 Product Categories and Overview

Product Model Overview

This report provides an overview of the electrical results for the antenna designed as part of the FPC (Flexible Printed Circuit) project. The antenna is designed for the following frequency bands:

2.4G/5.8G **Dual-Band**

1.3 Basic Parameters and Experimental Equipment Description

Basic Parameters

Electrical Performance Specifications	
Operating Frequency Range	2400-2500MHz 4900-5850MHz
Voltage Standing Wave Ratio	2400-2500 MHz: < 1.5 4900-5850 MHz: < 1.5
Antenna Gain	2400-2500 MHz: 1.5dBi ± 0.5dBi 4900-5850 MHz: 1.5dBi ± 0.5dBi
Radiation Efficiency	2400-2500MHz: > 50% 4900-5850 MHz: > 50%
Impedance	50 ohm
Product Materials Description	
FPC	**Electrolytic Copper + PI (Polyimide)**
Coaxial Cable	Braided Wire
Product Environmental Conditions	
Operating Temperature	- 30℃ ~ + 85 ℃
Storage Temperature	- 30℃ ~ + 85 ℃

Experimental Equipment Description

List	Testing project	Equipment
1. S Parameters	1.Return loss 2. VSWR at	Network analyzer: Agilent 8753ES
2. Coupling power test	1. Transmission power 2. Receiving sensitivity	Comprehensive tester: Agilent 8960 E5515C

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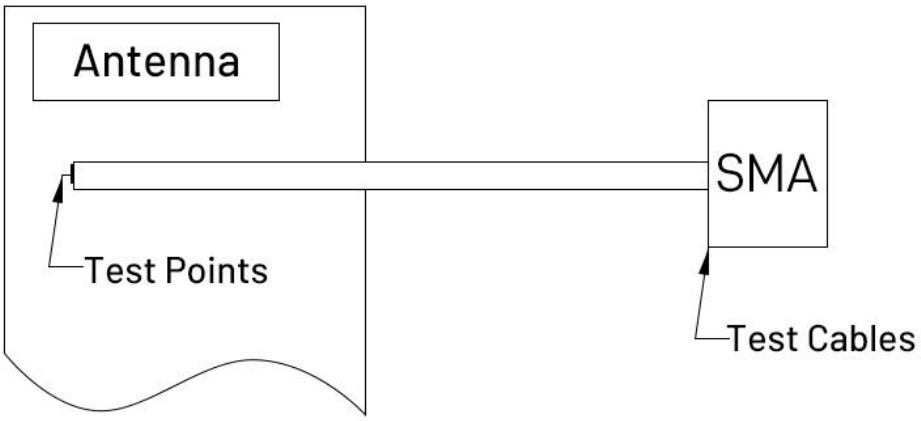
3. Radiation pattern and gain	1. Radiation pattern 2. Antenna gain	1. Darkroom： 7x4x3 m (3D) 2. Network analyzer ： Agilent 8753ES

Note: The final prototype of the antenna, validated by the customer, will be retained by our company for at least one year to facilitate the analysis and resolution of any anomalies encountered during mass production, ensuring the quality of the shipped antennas.

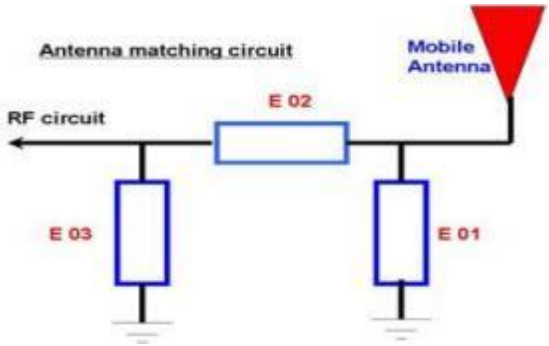
2. Testing Fixtures

Purpose: To measure the passive parameters of the antenna as accurately as possible.

Fabrication Method: The testing fixture for the phone consists of a 50-ohm coaxial cable. One end of the cable is connected to the test point at the rear end of the matching circuit on the phone's mainboard (at the front end of the RF test port), while the other end is connected to an SMA connector. The schematic diagram is as follows:



3. Antenna Matching Circuit



Antenna Matching Circuit/Modify

E01	E02	E03
No	No	No

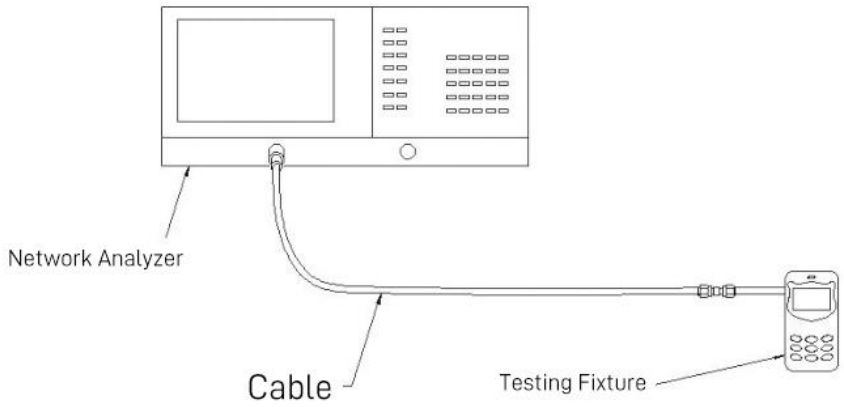
Note: No modifications to the matching circuit

4. S11 Testing

4.0 S11 Testing Method Description

Test Equipment: Network Analyzer (E5071C)
Testing Method: Connect a 50-ohm coaxial cable from the test port of the instrument. After calibration using a calibration kit, connect the cable to the SMA connector of the phone fixture. Record the return loss and VSWR corresponding to the relevant frequency points.

The test schematic diagram is as follows:



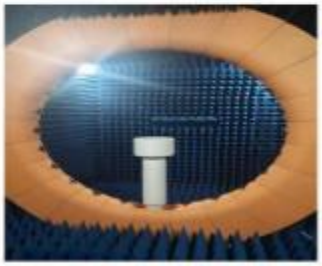
Test Schematic Diagram

5. Anechoic Chamber Test Equipment and Data

5.0 Test Equipment

Testing System: Shielded Anechoic Chamber
Testing Environment: Temperature 22 ℃ ± 3℃, Humidity 50% ± 15%
Testing Equipment: For measuring passive data, use the Network Analyzer Agilent E5071C

For measuring active data, use the CMW500 Communication Test Set.



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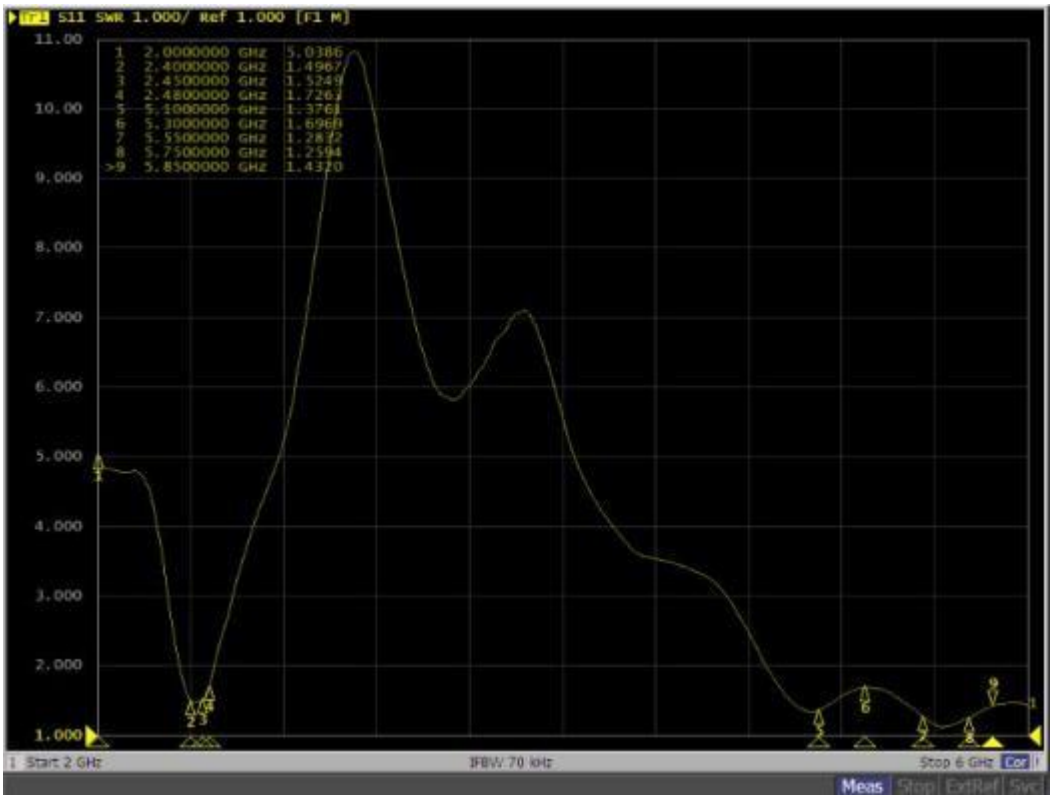
5.1 Passive VSWR of the Antenna



5.2 Passive Test Data of the Antenna

Test Data:		
Frequency(MHZ)	Efficiency（%）	Gain（dbi）
2400	60.3	1.24
2410	62.4	1.30
2420	59.6	1.28
2430	58.7	1.62
2440	59.3	1.59

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2450	55.6	1.65
2460	52.6	1.35
2470	54.6	1.25
2480	58.3	1.30
2490	56.1	1.20
2500	57.3	1.14

Frequency(MHZ)	Efficiency（%）	Gain（dbi）
4900	59.8	1.33
5000	58.7	1.25
5100	59.3	1.65
5200	60.5	1.39
5300	61.4	1.25
5400	62.3	1.44
5500	63.5	1.36
5600	64.5	1.30
5700	59.6	1.42
5800	57.6	1.23

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5850	55.3	1.05

6. Antenna Assembly Diagram

7. Complete Assembly Diagram

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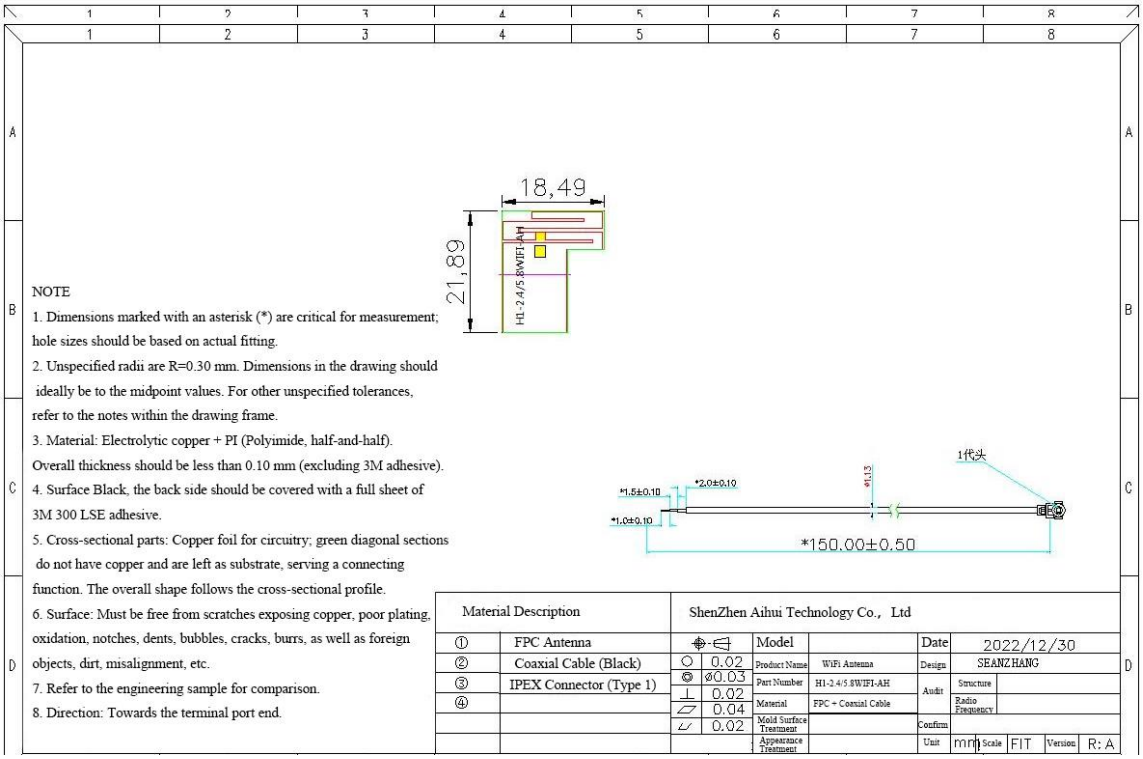
8. Antenna Mass Production Specifications

During mass production of the antenna, VSWR is used as the standard for production testing.

Based on the specific differences of the project, the following standards are provided:

Frequency	Mass Production Standards
2400-2500MHZ	VSWR（Mass Production Performance）<VSWR(Accepted Performance)+0.5
4900-5850MHZ	

9. Structural Drawings



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