

深圳市艾汇科技有限公司

Shenzhen Aihui Technology Co., LTD

天线测试报告

Test report

December 25, 2024

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1、项目信息（Model Information）

UC300						
主板Mainboard						
	Frequency band		TypeAntenna	Antenna form	Design area	
			FPCB	PIFA	inner shell	/
	2.4G/5.8GWIFI					

2、无源驻波及匹配 (Passive and Matching)

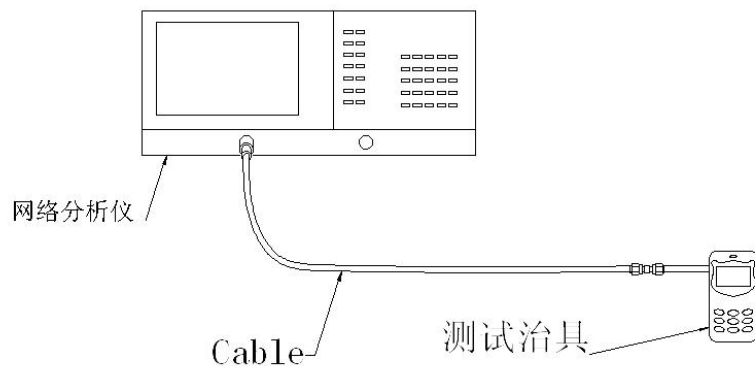
2.1 无源测试示意图 Schematic diagram of passive test

S11测试方法说明 Test method description

测试设备 test equipment:

网络分析仪 network analyzer (**E5071C 30k-8.5Ghz**):

Export from the instrument's test port with a 50-ohm CABLE, connect to the SMA connector of the sample machine after calibration with a calibration piece, and record the return loss and standing wave ratio corresponding to the relevant frequency points.



2.2有源测试示意图Schematic diagram of active test

3D testing system: Shielded anechoic chamber

**Test environment: Temperature $22^{\circ}\text{C} \pm 3^{\circ}\text{C}$,
humidity $50\% \pm 15\%$**

**Test equipment: When testing passive data, use
the network analyzer Agilent
E5071C**

**When testing active data, use the
comprehensive tester 8960/CMW500**

总全向辐射功率 (TIRP)

$$TIRP \equiv \frac{\pi}{2NM} \sum_{i=1}^{N-1} \sum_{j=0}^{M-1} [Eirp_{\theta}(\theta_i, \phi_j) + Eirp_{\phi}(\theta_i, \phi_j)] \sin(\theta_i)$$

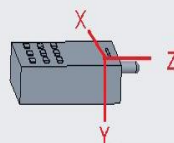
总全向辐射灵敏度 (TIRS)

$$TIRS \equiv \frac{2NM}{\pi \sum_{i=1}^{N-1} \sum_{j=0}^{M-1} \left[\frac{1}{EIS_{\theta}(\theta_i, \phi_j)} + \frac{1}{EIS_{\phi}(\theta_i, \phi_j)} \right]} \sin(\theta_i)$$

E1: XZ的切面 PHI=0

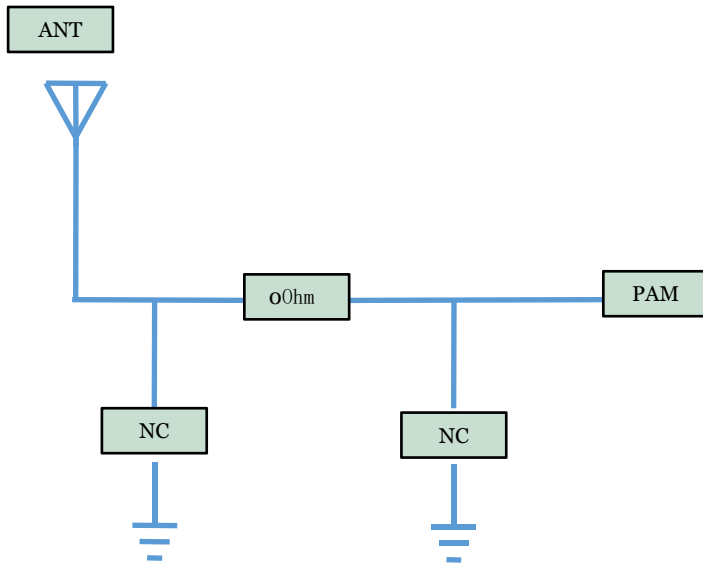
E2: YZ的切面 PHI=90

H: XY的切面 Theta=90



以喇叭天线为参考

2. 3天线匹配 (Matching Circuit)



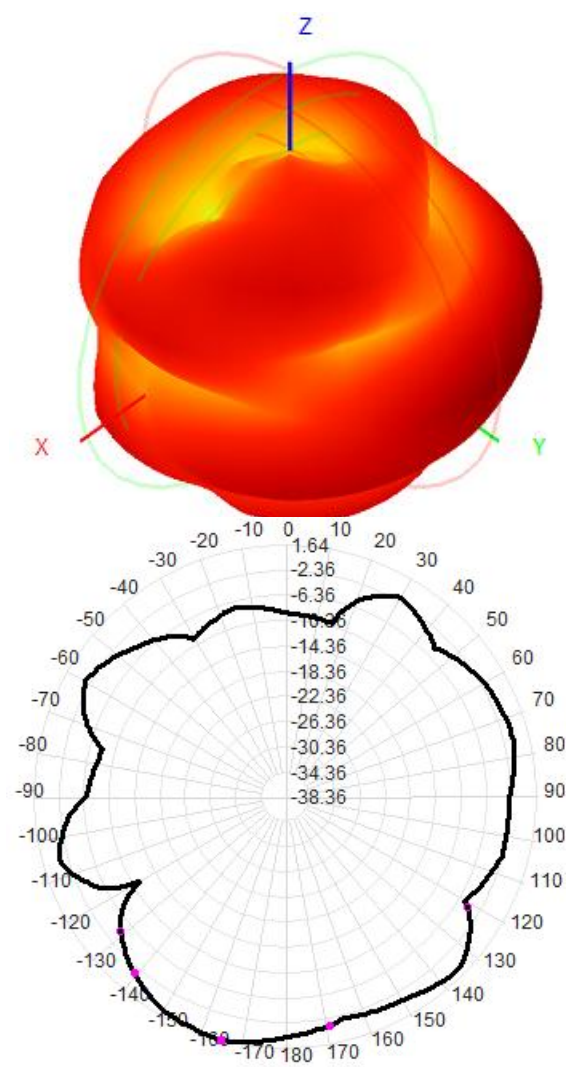
The motherboard matching has not been changed.

4.1 天线有源测试数据Antenna active test data

Frequency Band	2.4WiFi-B			2.4WiFi-G		
channel	L	M	H	L	M	H
TRP	13.92	14.92	14.26	13.22	13.10	13.81
TIS			-76.88			-68.35
Frequency Band	2.4WiFi-N			5.8WiFi-A		
channel	L	M	H	L	M	H
TRP	12.30	12.26	12.72	14.77	15.99	14.59
TIS			-67.52			-68.07



4.2 天线无源数据Antenna passive data



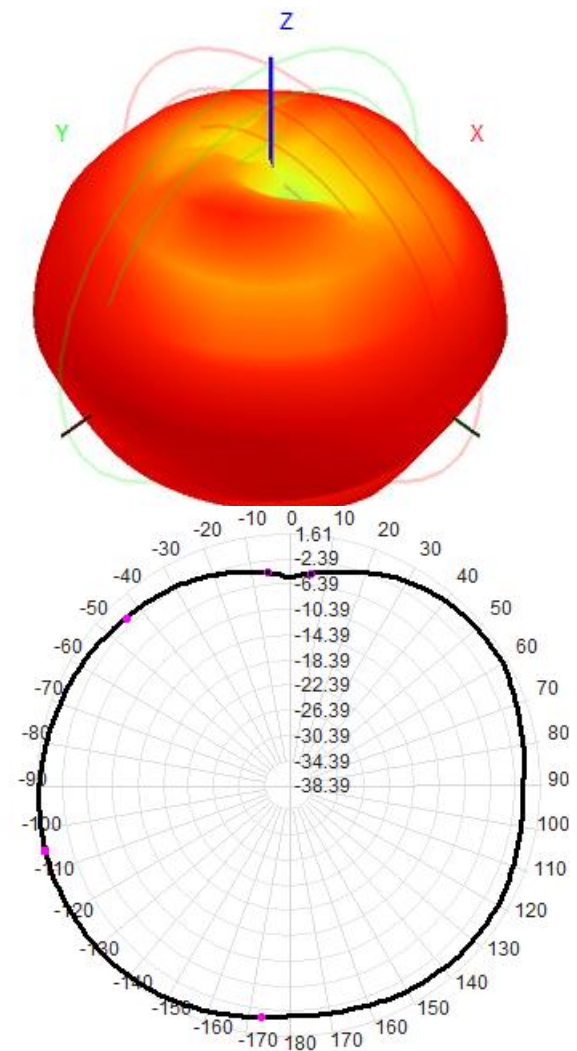
测试数据test data:

BT/WIFI 2.4G

Freq(MHz)	Efficiency (%)	Gain (dBi)
2400	51.38	1.07
2410	51.01	1.21
2420	53.74	1.43
2430	54.32	1.49
2440	55.10	1.64
2450	53.14	1.51
2460	54.33	1.43
2470	52.90	1.40
2480	51.71	1.09
2400	50.27	1.13



4.3 天线无源数据Antenna passive data

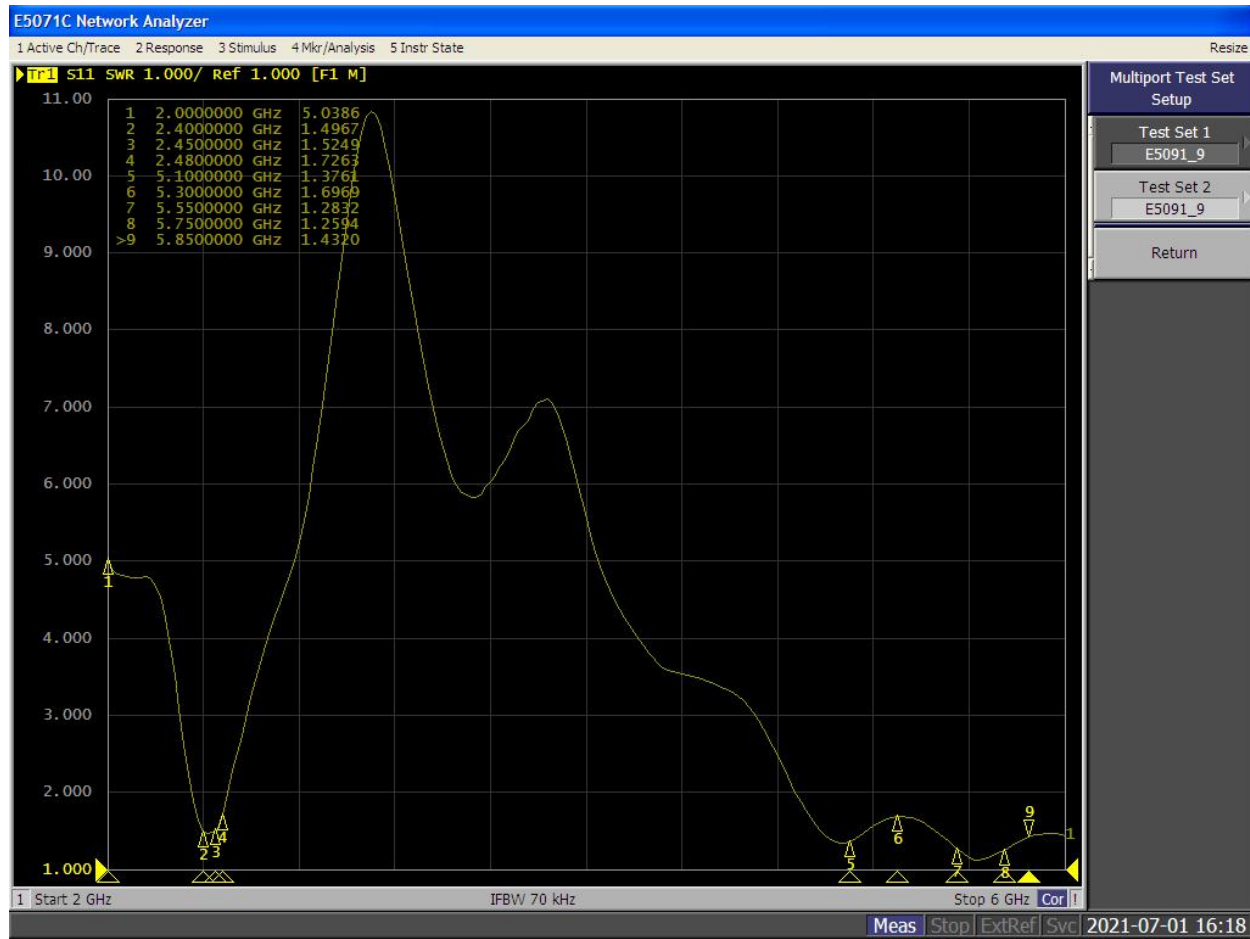


测试数据test data:

WIFI 5G

Freq(MHz)	Efficiency (%)	Gain (dBi)
5000	51.17	1.13
5100	52.39	1.37
5200	53.71	1.49
5300	53.32	1.57
5400	54.03	1.61
5500	53.31	1.54
5600	52.19	1.39
5700	54.36	1.52
5800	52.12	1.42
5850	52.41	1.31

5.1 SWR



6.1 天线装配图Antenna assembly drawing



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Note: 1. This report is based on the actual debugging and testing conditions of the debugging prototype. The environmental treatment, antenna position, and assembly positions of each component cannot be changed at will. 2. If there are any changes in the materials used in the prototype, please promptly feedback to our company for re-verification.

3. List of sensitive components: TP (material, coating, wiring, etc.)

Screen (amplification circuit, LED, ribbon cable design, etc.)

Shell material (antenna assembly method, structural interference, shell material, antenna position, height and area, etc.)

Motherboard (motherboard conduction, RF circuit matching, PA, dual power, filter, LNA, power supply circuit, etc.)

Camera, battery, motor, MIC, fingerprint recognition module, etc

4. Due to the small number or only one sample machine for debugging, some probabilistic issues cannot be fully identified. It is recommended to conduct a small-scale trial production before mass production to check for problem points (such as screen flickering, speaker noise, TP point skipping, black screen freeze, signal drop, etc.)

Thank you