

深圳市艾汇科技有限公司

Shenzhen AiHui Technology Co., Ltd.

深圳市宝安区西乡街道南昌社区钜鑫科技产业园CD栋C402
C402, Building CD, Juxin Technology Industrial Park, Nanchang
Community, Xixiang Street, Bao'an District, Shenzhen, China

天线测试报告

Test report

2024年06月22日

目 录 (catalogue) :

- 1.项目信息 (Model Information)
- 2.公司介绍 (Company profile)
- 3.无源驻波及匹配 (Passive and Matching)
- 4.3D有源测试数据 (3D Active Test Data)
- 5.环境处理 (Environmental treatment)
- 6.总结 (Summary)



1、项目信息 (Model Information)

pj01						
主板						
主天线	频段		天线状态	天线形式	设计区域	匹配改动
	WIFI	2.4G/5.8G	FPC	PIFA	内壳	/

2、无源驻波及匹配 (Passive and Matching)

2.1无源测试示意图

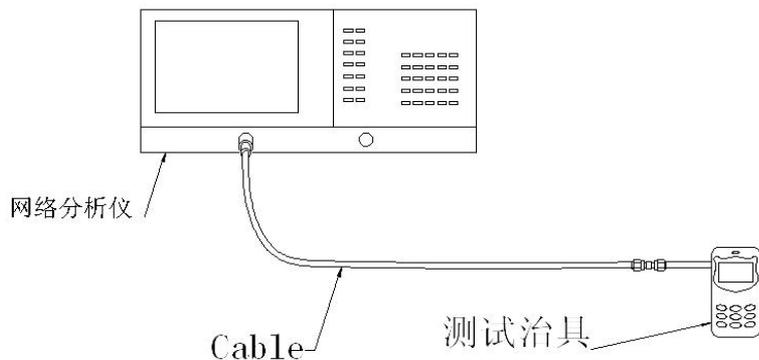
S11测试方法说明

测试设备:

网络分析仪(E5071C 30k-8.5Ghz)

测试方法:

用一根**50欧姆CABLE**电缆从仪器测试端口导出，使用校准件校准后连接样机
制具的**SMA**接头，记录相关频点对应的回波损耗和驻波比。



2.2有源测试示意图

3D测试系统: 屏蔽暗室

测试环境: 温度 $22^{\circ}\text{C} \pm 3^{\circ}\text{C}$, 湿度 $50\% \pm 15\%$

测试设备: 测试无源数据时, 使用网络分析仪 **Agilent E5071C**

测试有源数据时, 使用综测仪**8960/CMW500**

总全向辐射功率 (TIRP)

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

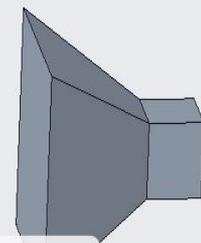
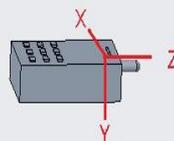
总全向辐射灵敏度 (TIRS)

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

E1: XZ的切面 PHI=0

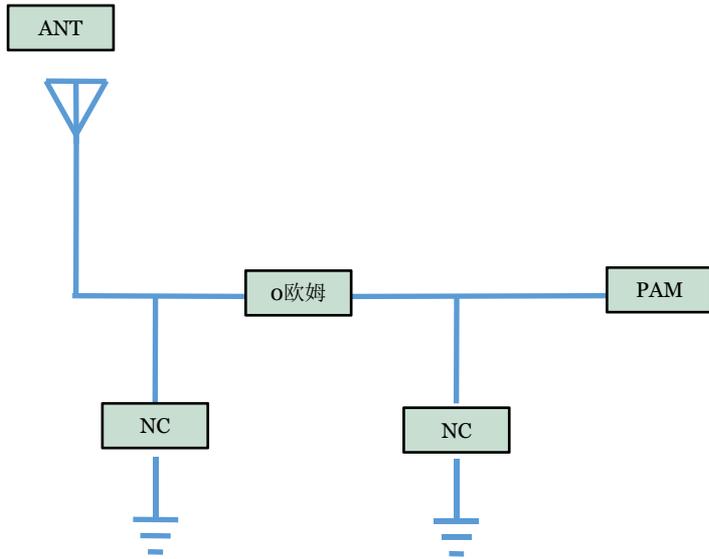
E2: YZ的切面 PHI=90

H: XY的切面 Theta=90



以喇叭天线为参考

2.3 天线匹配 (Matching Circuit)



主板匹配没有做更改。

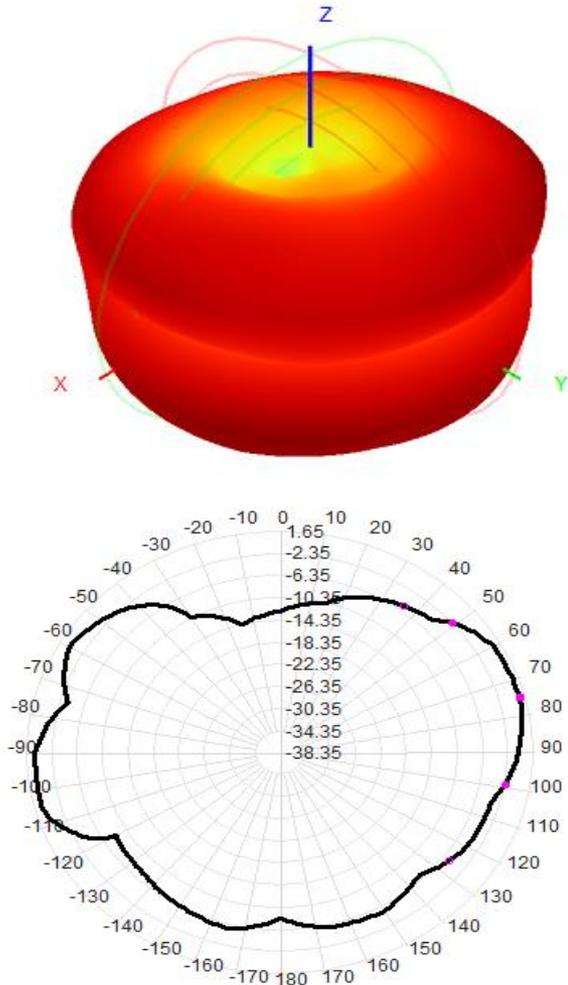
注：原串0欧姆，从天线-----串0欧姆
电阻 -----PA

4.1 Antenna Active Data

Frequency Band	2.4GWIFI-B			2.4WIFI-G		
channel	L	M	H	L	M	H
TRP	13.22	13.66	13.52	12.33	12.41	12.16
TIS	-71.88	-80.99	-81.16	-64.15	-69.71	-69.63
Frequency Band	2.4WIFI-N			5.8WIFI-A		
channel	L	M	H	L	M	H
TRP	11.32	12.22	12.06	12.32	12.41	13.04
TIS	-62.71	-67.15	-68.33	-72.31	-71.44	-72.63



5.1 Antenna Passive Data



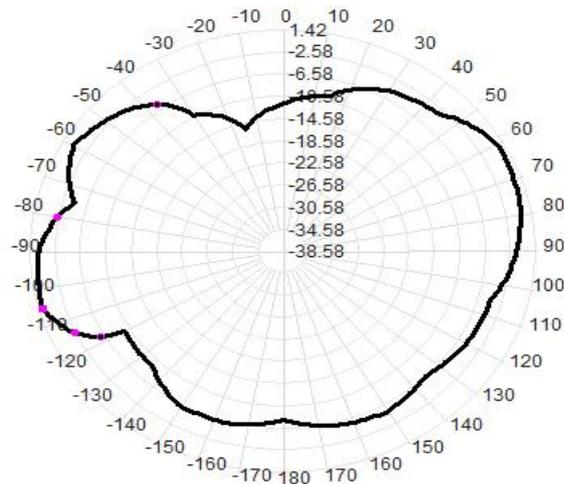
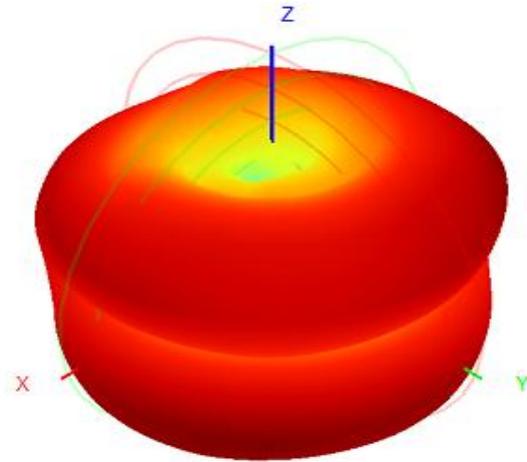
Test Data:

WIFI 2.4G&BT

Freq(MHz)	Efficiency (%)	Gain (dBi)
2400	53.22	1.44
2410	54.63	1.30
2420	52.16	1.42
2430	56.31	1.52
2440	51.95	1.65
2450	57.15	1.47
2460	55.30	1.25
2470	51.41	1.22
2480	52.44	1.30



5.1 Antenna Passive Data

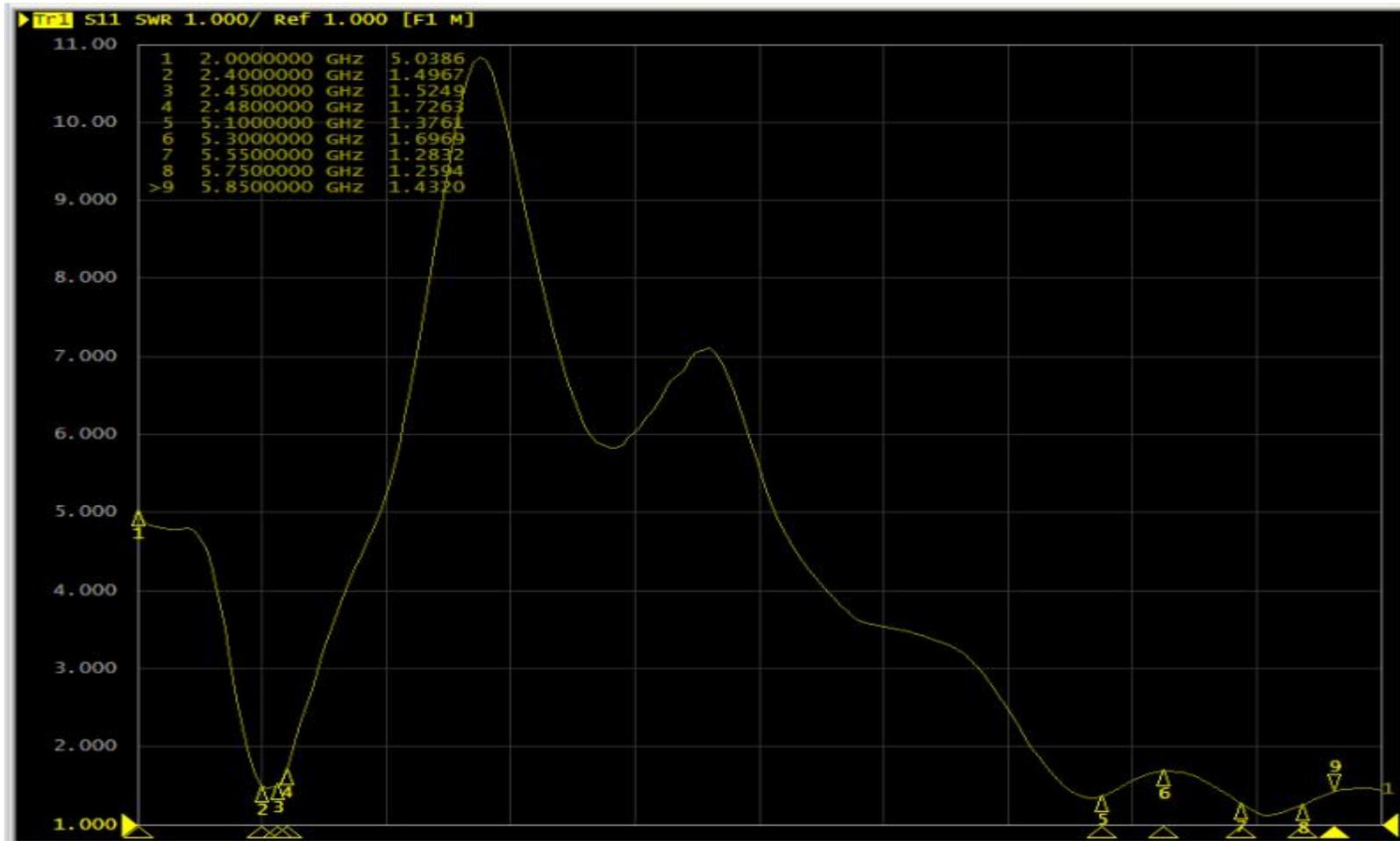


Test Data:

WIFI 5.8G

Freq(MHz)	Efficiency (%)	Gain (dBi)
5000	53.66	1.15
5100	54.22	1.30
5200	54.96	1.25
5300	55.91	1.42
5400	54.81	1.33
5500	57.16	1.26
5600	56.32	1.16
5700	54.63	1.05
5800	54.15	1.06
5850	52.63	1.15

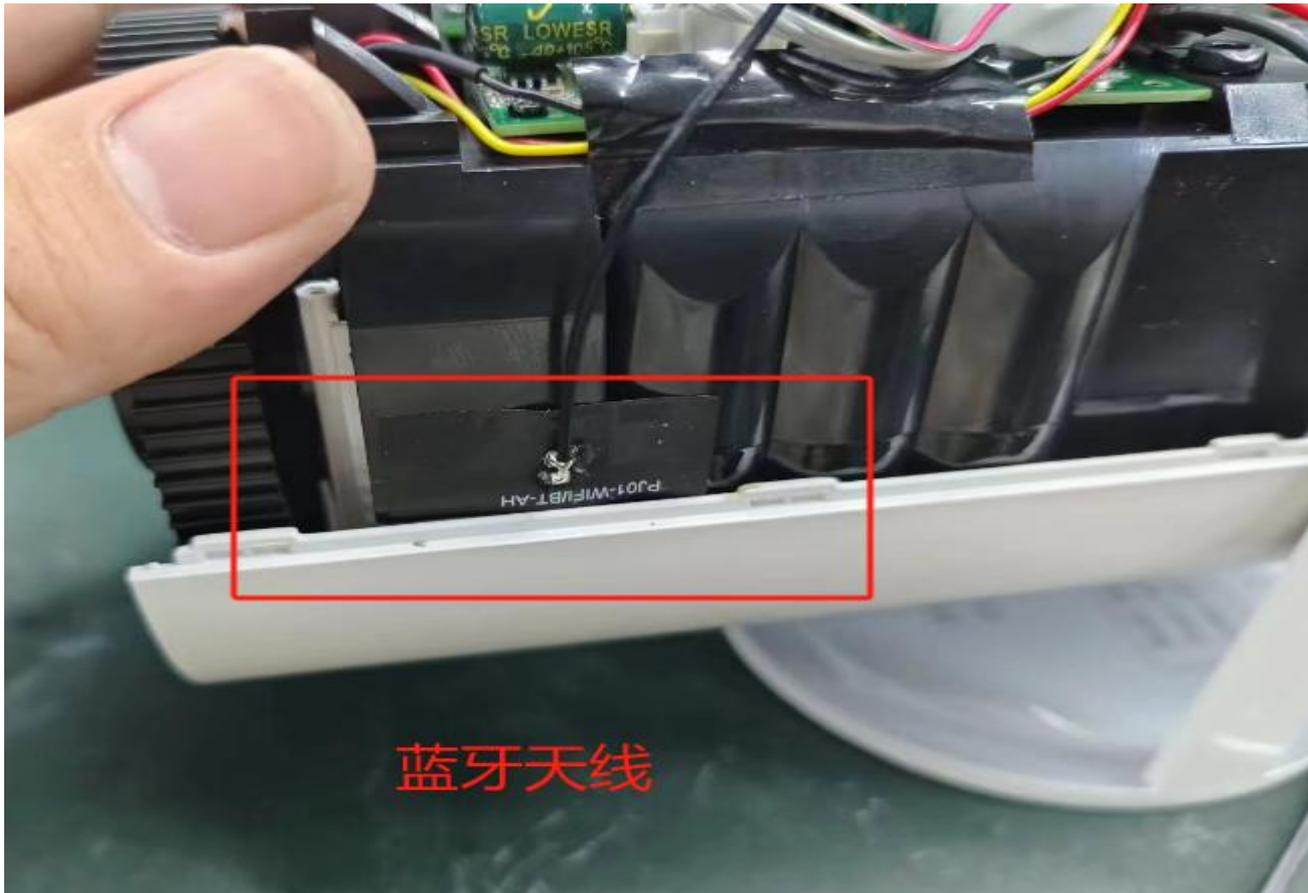
5. 1Antenna SWR



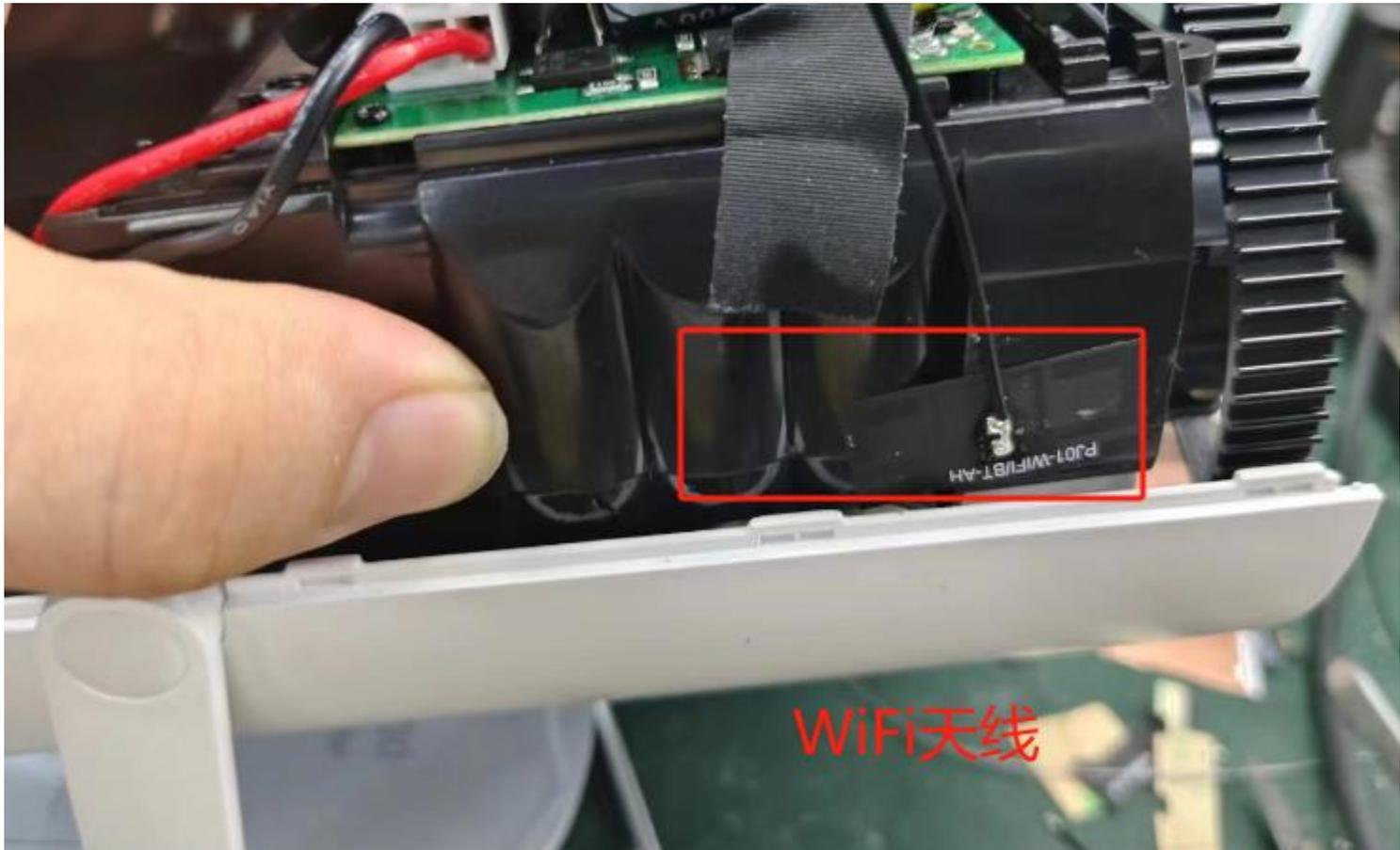
6. Antenna Instal Position



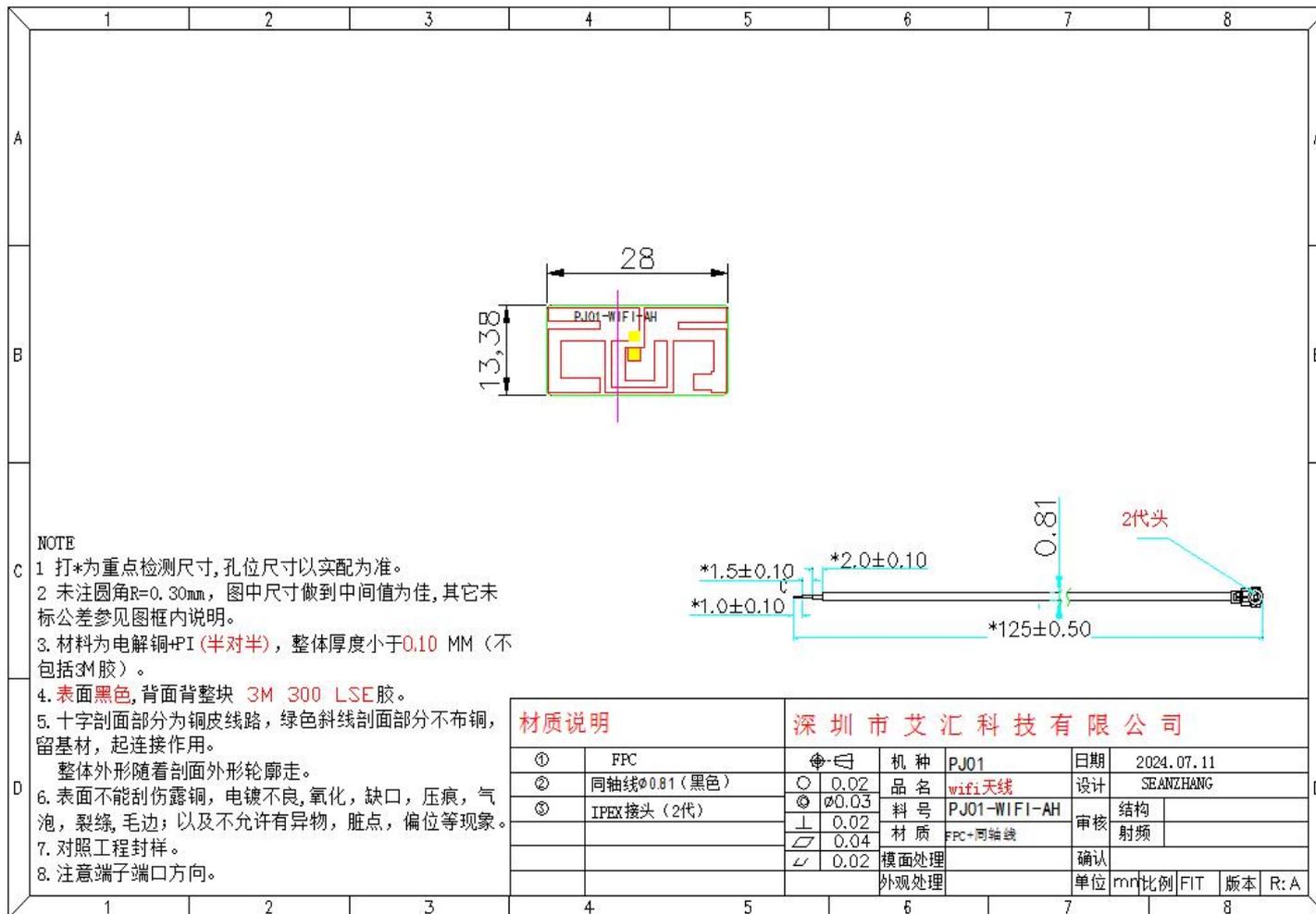
6. 1Antenna Instal Position



6. 1Antenna Instal Position



6.2 Antenna Size



6.2 Antenna Size

