



深圳市星源创科技有限公司

SHENZHEN Xingyuanchuang TECHNOLOGY CO., LTD

# 天线测试报告

Antenna Test Report

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Date: 2024. 11.28

*REV :V1.0*



## 测试信息

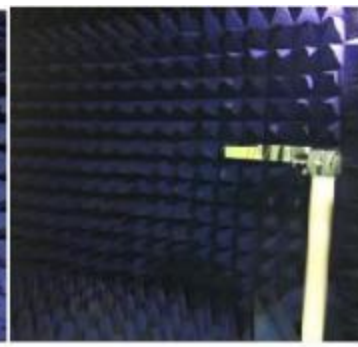
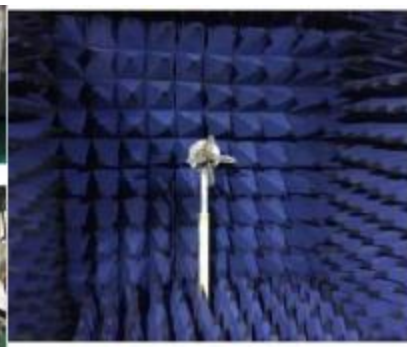
Test information

| Antenna band |         | Antenna state | Antenna form | Match changes | Note |
|--------------|---------|---------------|--------------|---------------|------|
| Main ANT     | 2G      |               |              |               |      |
|              | 3G      |               |              | NO            |      |
|              | 4G      |               |              |               |      |
| AUX ANT      | BT/WIFI | 2.4G/5G       | FPC          | PIFA          | NO   |
|              | GPS     |               | FPC          | PIFA          | NO   |
|              | DIV     |               |              |               | NO   |

## 测试环境

### Test environment

|                      | 测试项目                                        | 测试设备                                                     |
|----------------------|---------------------------------------------|----------------------------------------------------------|
| S参数<br>(S-parameter) | 1. 电压驻波比 (VSWR)<br>2. 回波损耗 (Rrtun Loss)     | 网络分析仪: Agilent8753ES                                     |
| 2. 有源测试<br>(Active)  | 1. 发射功率 (TRP)<br>2. 接收灵敏度 (TIS)<br>3. 屏灭/屏亮 | 1. 暗室: 5*3*3m (3D) Chamber<br>2. 综测仪: Agilent8960 CMW500 |
| 3. 无源测试<br>(Passive) | 1. 天线增益 (Gain)<br>2. 天线效率 (Efficiency)      | 1. 暗室: 5*3*3m (3D) Chamber<br>2. 网络分析仪: Agilent 8753ES   |

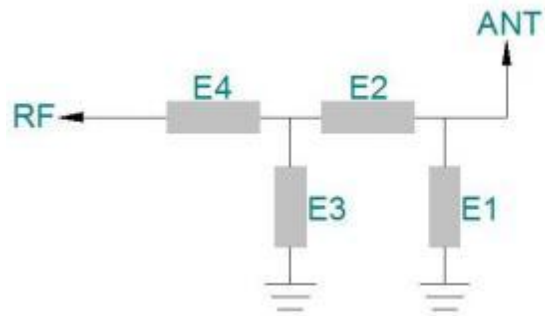


## 天线位置

Antenna position



## 匹配电路 Matching circuit



|          | 电容 ( PF ) | 电感 ( NH ) |
|----------|-----------|-----------|
| E1(0402) |           |           |
| E2(0402) |           |           |
| E3(0402) |           |           |
| E4(0402) |           |           |

匹配电路原理图&位号图



## 有源测试数据 Active test data

| 802.11b | Frequency | TRP         |       | TIS          |        |
|---------|-----------|-------------|-------|--------------|--------|
|         | 2412      | CH1 11Mbps  | 12.42 | CH1 11Mbps   | -80.54 |
|         | 2437      | CH6 11Mbps  | 12.73 | CH6 11Mbps   | -80.33 |
|         | 2467      | CH11 11Mbps | 11.67 | CH11 11Mbps  | -80.23 |
| 802.11a |           | TRP         |       | TIS          |        |
|         | 5180      | CH36 6Mbps  | 11.56 | CH36 54Mbps  | -70.59 |
|         | 5300      | CH60 6Mbps  | 11.51 | CH60 54Mbps  | -70.53 |
|         | 5805      | CH161 6Mbps | 11.34 | CH161 54Mbps | -70.22 |



## Wifi/BT天线实测

### Wifi Antenna test

#### WIFI

测试环境：开放空间

测试工具：Wifi Analytical Assistant

测试距离：10m

信号强度：2.4G :-33dBm 5G: -52dBm

测试结果如右图



#### BT

测试环境：开放空间(通道)

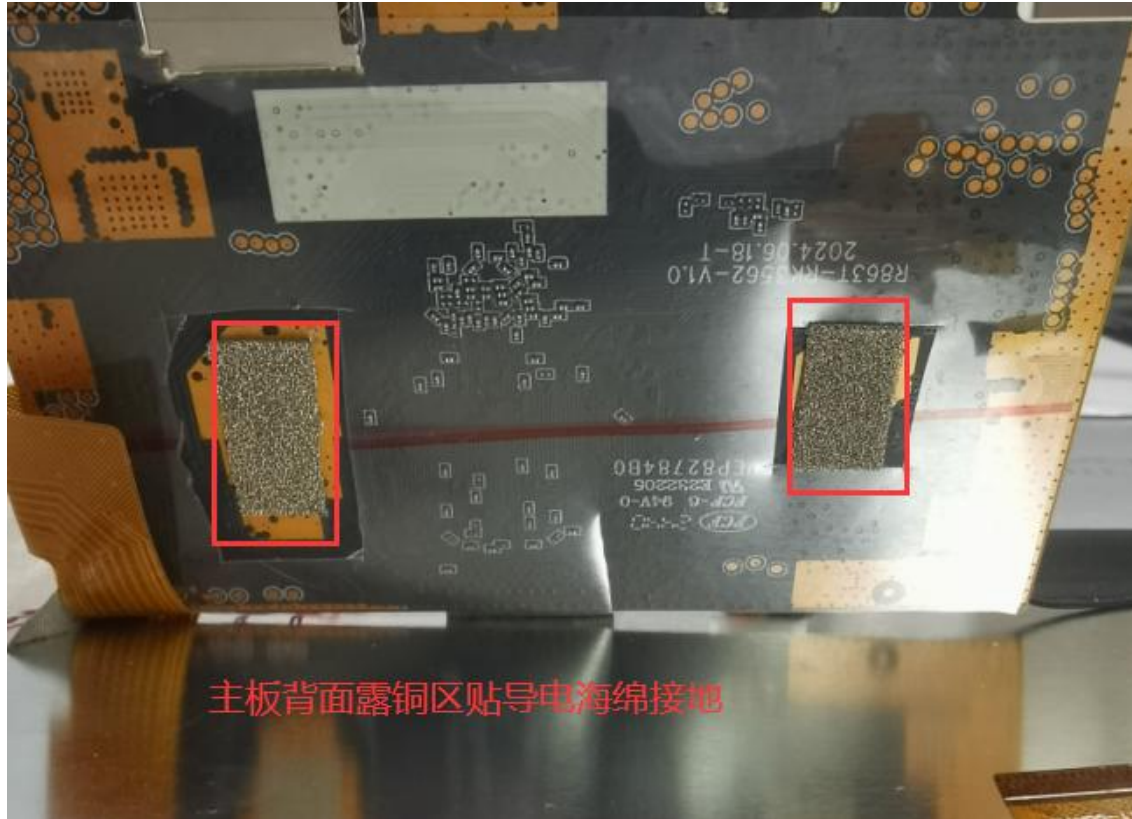
测试工具：蓝牙音响

测试距离：10m

结果：播放音乐流畅，无杂音。

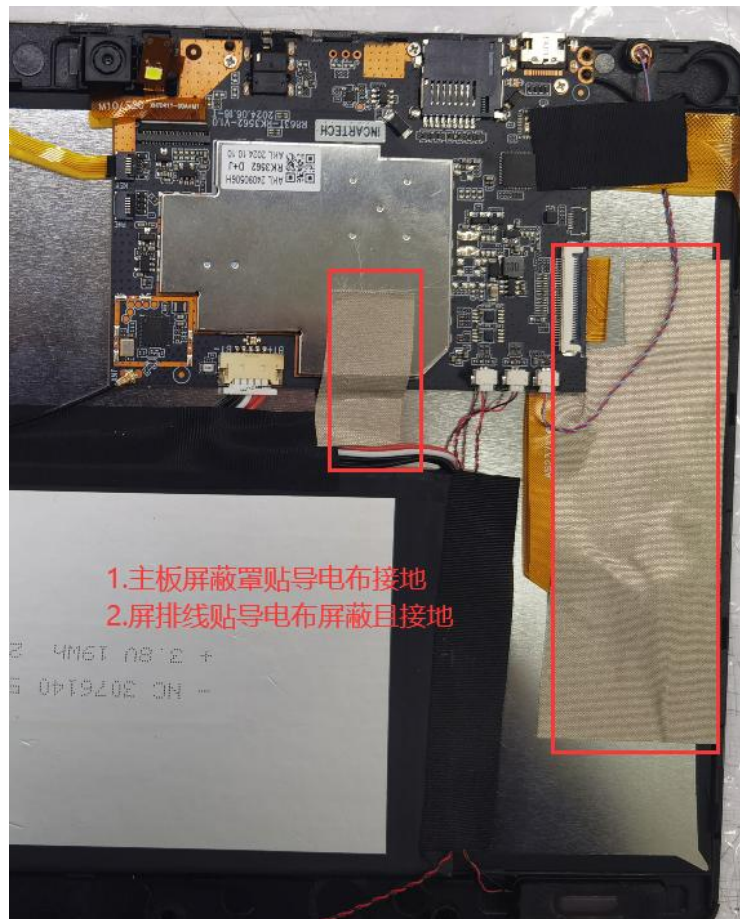
## 环境处理

Environmental treatment



## 环境处理

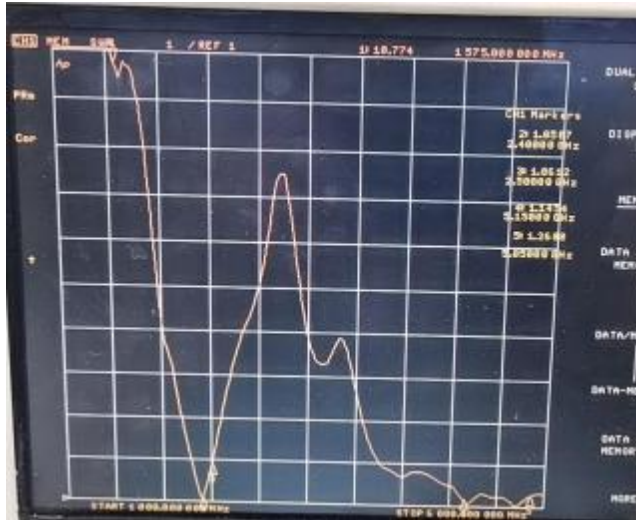
Environmental treatment



无源测试数据

Passive test data

ANT1 S11-VSWR&Return Loss



| Frequency (MHZ)  | 2400   | 2450 | 2483   | 5150   | 5490 | 5850   |
|------------------|--------|------|--------|--------|------|--------|
| VSWR             | 1.05   |      | 1.86   | 1.14   |      | 1.26   |
| Return Loss (DB) | -32.10 |      | -10.42 | -23.37 |      | -18.53 |

无源测试数据

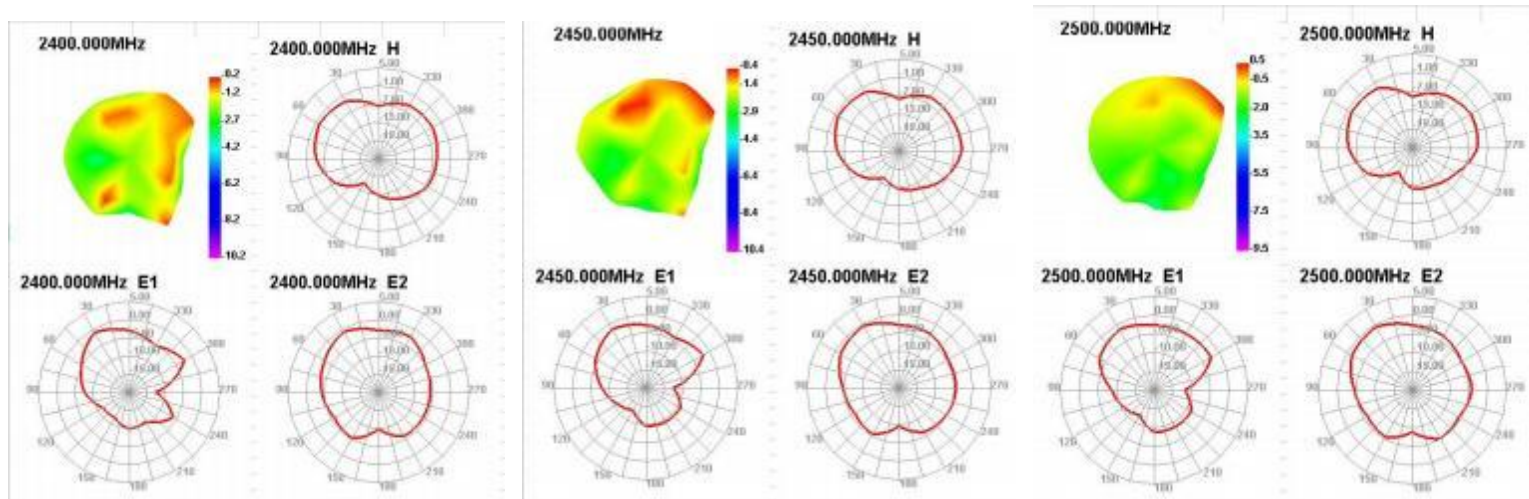
ANTI GAIN&amp;Efficiency-WIFI2.4G/BT

Passive test data

| Passive Test For WIFI2.4 |             |              |               |               |            |            |
|--------------------------|-------------|--------------|---------------|---------------|------------|------------|
| Freq<br>(MHz)            | Effi<br>(%) | Effi<br>(dB) | Gain<br>(dBi) | Gain<br>(dBd) | UHS<br>(%) | DHS<br>(%) |
| 2400                     | 40.06       | -3.97        | -0.17         | -2.32         | 25.051     | 15.011     |
| 2410                     | 37.52       | -4.26        | -0.65         | -2.8          | 23.508     | 14.008     |
| 2420                     | 39.68       | -4.01        | -0.47         | -2.62         | 24.75      | 14.926     |
| 2430                     | 40.02       | -3.98        | -0.52         | -2.67         | 25.093     | 14.924     |
| 2440                     | 39.43       | -4.04        | -0.47         | -2.62         | 24.87      | 14.559     |
| 2450                     | 38.58       | -4.14        | -0.39         | -2.54         | 24.409     | 14.171     |
| 2460                     | 38.9        | -4.1         | -0.06         | -2.21         | 24.58      | 14.318     |
| 2470                     | 40.59       | -3.92        | 0.31          | -1.84         | 25.643     | 14.948     |
| 2480                     | 42.13       | -3.75        | 0.57          | -1.58         | 26.599     | 15.531     |
| 2490                     | 42.88       | -3.68        | 0.66          | -1.49         | 26.972     | 15.911     |
| 2500                     | 40.52       | -3.92        | 0.46          | -1.69         | 25.513     | 15.005     |

无源测试数据  
Passive test data

ANT1Direction of figure(2.4/BT)



无源测试数据

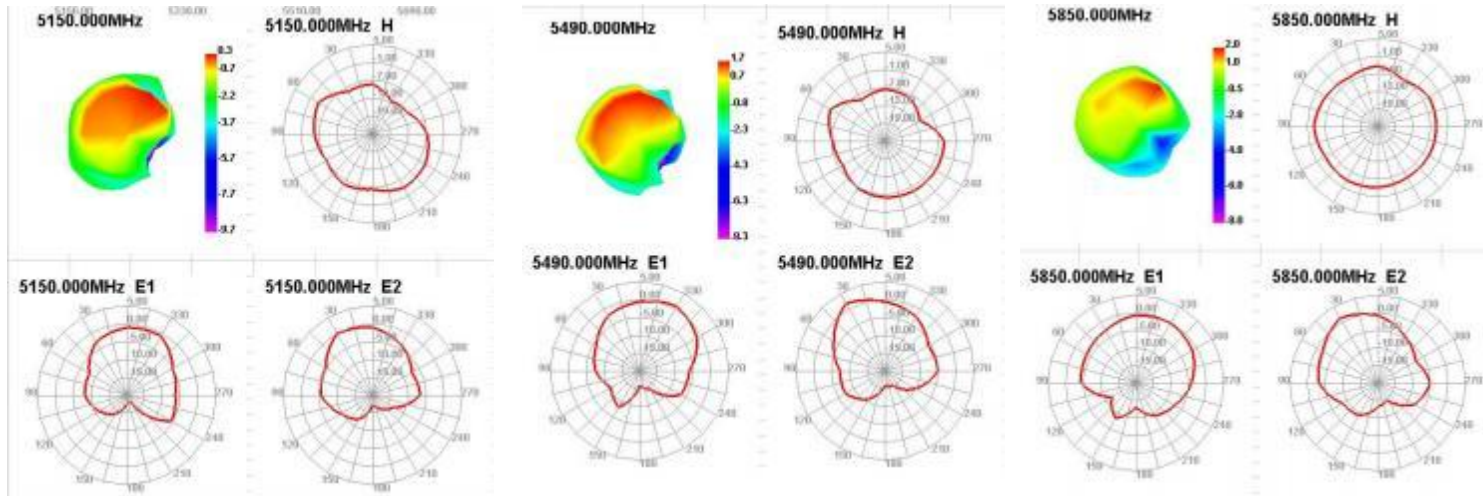
Passive test data

## ANT1 GAIN&Efficiency-WI FI5G

| Passive Test For WIFI5G |          |           |            |            |         |          |
|-------------------------|----------|-----------|------------|------------|---------|----------|
| Freq (MHz)              | Effi (%) | Effi (dB) | Gain (dBi) | Gain (dBd) | UHS (%) | DHIS (%) |
| 5150                    | 22.83    | -6.41     | 0.29       | -1.86      | 17.047  | 5.784    |
| 5170                    | 24.42    | -6.12     | 0.52       | -1.63      | 18.373  | 6.049    |
| 5190                    | 24.47    | -6.11     | 0.39       | -1.76      | 18.246  | 6.223    |
| 5210                    | 28.91    | -5.39     | 0.93       | -1.22      | 21.506  | 7.402    |
| 5230                    | 26.15    | -5.82     | 0.46       | -1.69      | 19.708  | 6.446    |
| 5250                    | 30.3     | -5.19     | 1.08       | -1.07      | 23.142  | 7.159    |
| 5270                    | 29.37    | -5.32     | 0.82       | -1.33      | 22.382  | 6.983    |
| 5290                    | 31.76    | -4.98     | 1.24       | -0.91      | 23.941  | 7.818    |
| 5310                    | 29.36    | -5.32     | 0.93       | -1.22      | 22.172  | 7.187    |
| 5330                    | 29.46    | -5.31     | 1.06       | -1.09      | 22.561  | 6.894    |
| 5350                    | 30.6     | -5.14     | 1.26       | -0.89      | 23.576  | 7.022    |
| 5370                    | 29.3     | -5.33     | 1.05       | -1.1       | 22.234  | 7.067    |
| 5390                    | 27.55    | -5.6      | 0.83       | -1.32      | 20.656  | 6.891    |
| 5410                    | 31.54    | -5.01     | 1.56       | -0.59      | 23.889  | 7.649    |
| 5430                    | 29.86    | -5.25     | 1.56       | -0.59      | 22.943  | 6.916    |
| 5450                    | 30.89    | -5.1      | 1.71       | -0.44      | 23.703  | 7.19     |
| 5470                    | 31.02    | -5.08     | 1.64       | -0.51      | 23.458  | 7.565    |
| 5490                    | 30.15    | -5.21     | 1.73       | -0.42      | 22.803  | 7.346    |
| 5510                    | 32.34    | -4.9      | 2.13       | -0.02      | 24.844  | 7.497    |
| 5530                    | 31.58    | -5.01     | 2.04       | -0.11      | 24.362  | 7.217    |
| 5550                    | 34.89    | -4.57     | 2.46       | 0.31       | 26.711  | 8.182    |
| 5570                    | 31.15    | -5.07     | 1.85       | -0.3       | 23.632  | 7.517    |
| 5590                    | 32.68    | -4.86     | 2.03       | -0.12      | 24.906  | 7.771    |
| 5610                    | 29.56    | -5.29     | 1.68       | -0.47      | 22.637  | 6.921    |
| 5630                    | 31.69    | -4.99     | 1.98       | -0.17      | 24.226  | 7.466    |
| 5650                    | 29.56    | -5.29     | 1.72       | -0.43      | 22.523  | 7.033    |
| 5670                    | 29.35    | -5.32     | 1.62       | -0.53      | 22.378  | 6.975    |
| 5690                    | 28.92    | -5.39     | 1.69       | -0.46      | 22.121  | 6.795    |
| 5710                    | 26.27    | -5.8      | 1.16       | -0.99      | 19.983  | 6.291    |
| 5730                    | 31.05    | -5.08     | 1.95       | -0.2       | 23.516  | 7.533    |
| 5750                    | 26.28    | -5.81     | 1.48       | -0.67      | 19.817  | 6.445    |
| 5770                    | 30.14    | -5.21     | 2.19       | 0.04       | 22.826  | 7.31     |
| 5790                    | 27.08    | -5.67     | 1.67       | -0.48      | 20.518  | 6.561    |
| 5810                    | 30.41    | -5.17     | 1.85       | -0.3       | 22.955  | 7.45     |
| 5830                    | 29.83    | -5.25     | 1.57       | -0.58      | 22.36   | 7.472    |
| 5850                    | 33.83    | -4.71     | 2.05       | -0.1       | 25.277  | 8.549    |

无源测试数据  
Passive test data

ANT1 Direction of figure(5G)

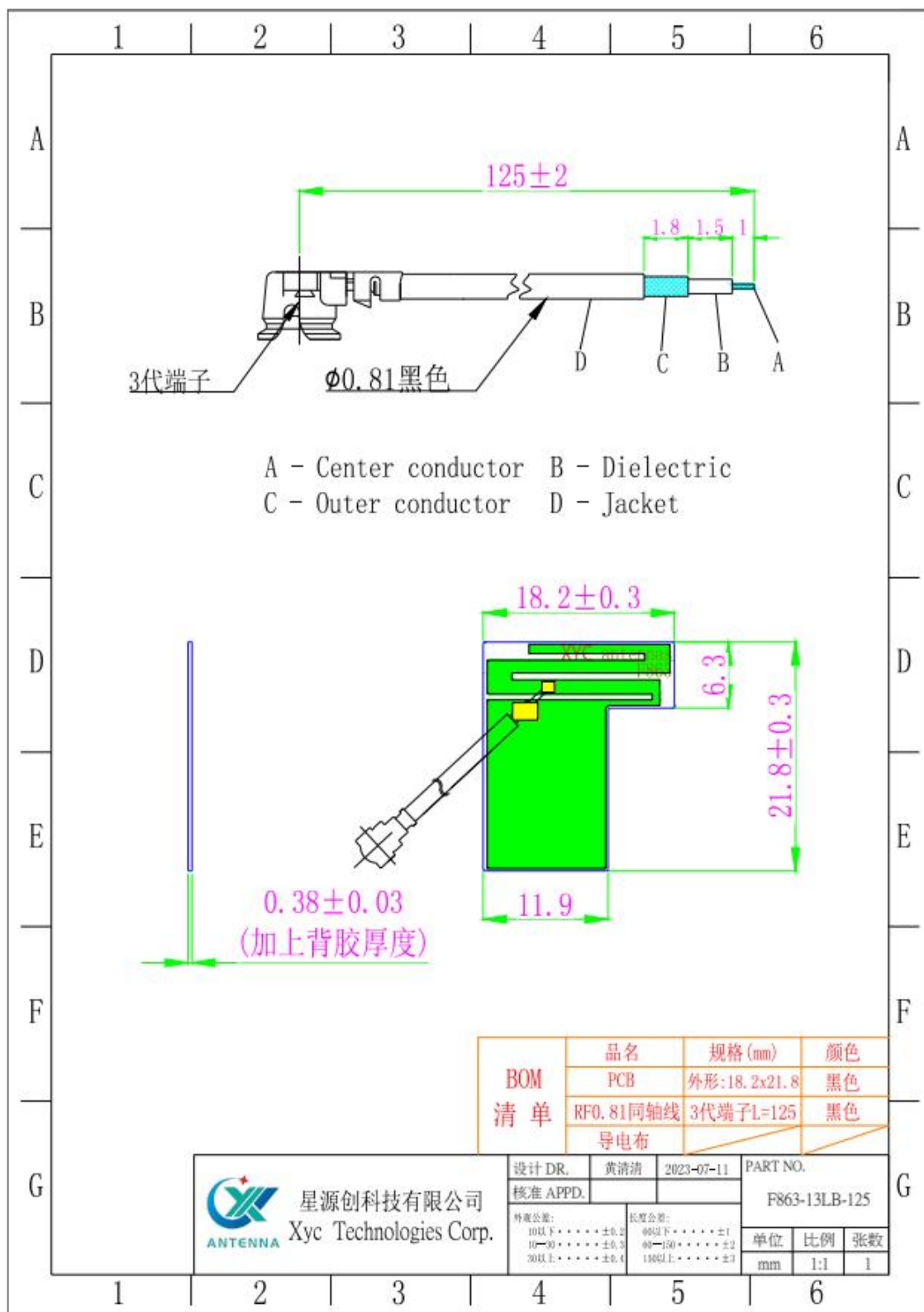




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## Antenna Assembly



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