



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

*TC:* 思骐创新

*MN:* T39B

*RF:* 刘磊确

*MD:* 黄清清

*MP:* 13005478517

*Date:* 2024. 1. 5

*REV :* V1. 0



深圳市星源创科技有限公司

SHENZHEN Xingyuanchuang TECHNOLOGY CO., LTD

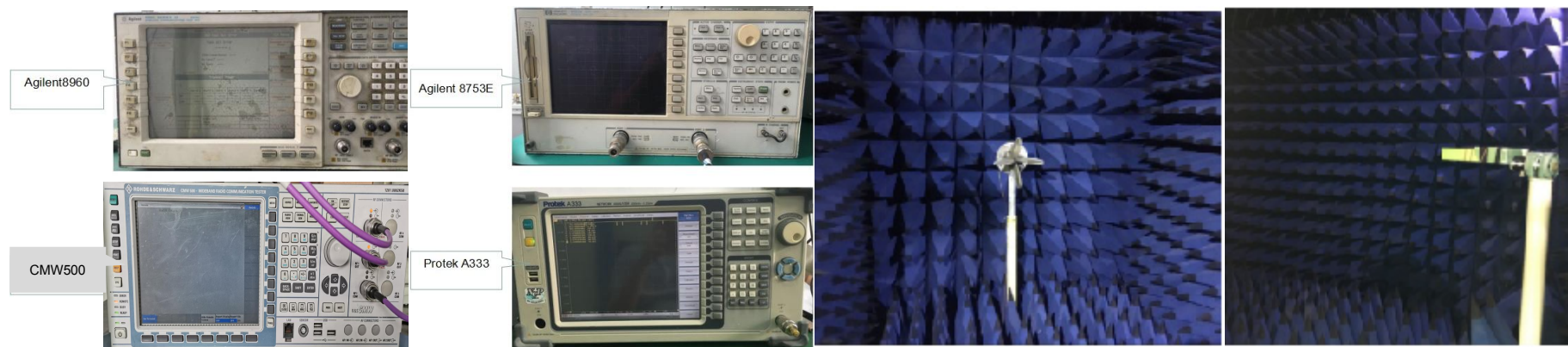
## 测试信息 Test information

| Antenna band |         | Antenna state                        | Antenna form | Matchc hanges | Note |
|--------------|---------|--------------------------------------|--------------|---------------|------|
| Main ANT     | 2G      | 850/1800/1900                        | FPC          | PIFA          | NO   |
|              | 3G      | W2/W4/W5                             |              |               |      |
|              | 4G      | B2/B4/B5/B12/B13/B25/B26/B41/B66/B71 |              |               |      |
| AUX ANT      | BT/WIFI | 2.4/5G                               | FPC          | PIFA          | NO   |
|              | GPS     | 1.575G                               | FPC          | PIFA          | NO   |
|              | DIV     |                                      | FPC          | PIFA          | NO   |

## 测试环境

### Test environment

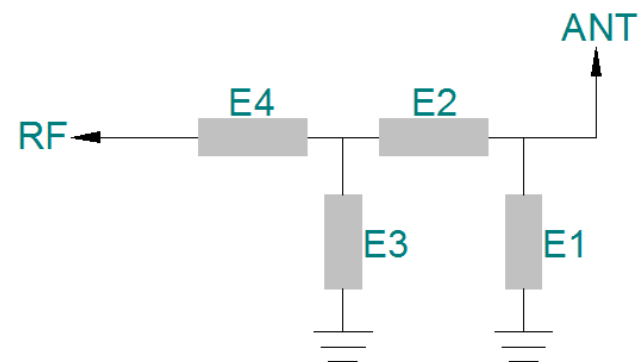
|                      | 测试项目                                        | 测试设备                                                     |
|----------------------|---------------------------------------------|----------------------------------------------------------|
| S参数<br>(S-parameter) | 1. 电压驻波比 (VSWR)<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) |           |           |



深圳市星源创科技有限公司

SHENZHEN Xingyuanchuang TECHNOLOGY CO., LTD

ANTENNA

有源测试数据  
OTA test data

| 2G           |         |       |         |         |       |         |               |       |         |               |       |         |
|--------------|---------|-------|---------|---------|-------|---------|---------------|-------|---------|---------------|-------|---------|
| Band         | GSM850  |       |         | GSM900  |       |         | GSM-1800(DCS) |       |         | GSM-1900(PCS) |       |         |
| Channel      | 128     | 192   | 251     | 1       | 62    | 124     | 512           | 698   | 885     | 512           | 660   | 810     |
| TRP(dBm)     | 27.68   | 27.18 | 27.14   |         |       |         | 26.05         | 26.29 | 27.11   | 26.13         | 25.11 | 24.54   |
| TIS(LCD OFF) |         |       |         |         |       |         |               |       |         |               |       |         |
| TIS(LCD ON)  |         |       | -102.93 |         |       |         |               |       | -104.42 |               |       | -105.32 |
| 3G           |         |       |         |         |       |         |               |       |         |               |       |         |
| Band         | WCDMA-2 |       |         | WCDMA-4 |       |         | WCDMA-5       |       |         |               |       |         |
| Channel      | 9662    | 9800  | 9938    | 1537    | 1675  | 1738    | 4357          | 4400  | 4458    |               |       |         |
| TRP(dBm)     | 18.35   | 18.06 | 18.37   | 18.27   | 18.45 | 19.38   | 17.55         | 17.39 | 16.3    |               |       |         |
| TIS(LCD OFF) |         |       |         |         |       |         |               |       |         |               |       |         |
| TIS(LCD ON)  |         |       | -105.61 |         |       | -102.22 |               |       | -104.73 |               |       |         |





深圳市星源创科技有限公司

SHENZHEN Xingyuanchuang TECHNOLOGY CO., LTD

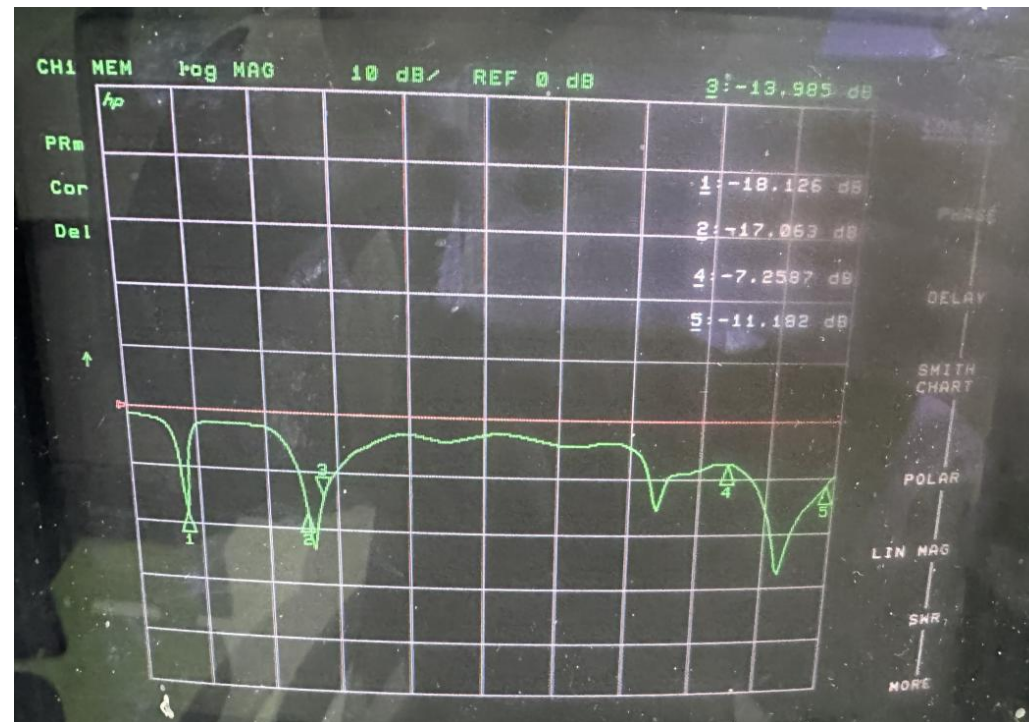
ANTENNA

有源测试数据  
OTA test data

| 4G(FDD 10M)  |             |       |        |             |       |        |             |       |        |             |       |        |
|--------------|-------------|-------|--------|-------------|-------|--------|-------------|-------|--------|-------------|-------|--------|
| Band         | FDD-Band 2  |       |        | FDD-Band 4  |       |        | FDD-Band 5  |       |        | FDD-Band12  |       |        |
| Channel      | 18650       | 18900 | 19150  | 20000       | 20175 | 23050  | 20450       | 20525 | 20600  | 23060       | 23095 | 23130  |
| TRP(dBm)     | 18.55       | 17.42 | 18.85  | 18.28       | 18.48 | 19.5   | 18.27       | 17.41 | 17.85  | 18.03       | 19.46 | 19.42  |
| TIS(LCD OFF) |             |       |        |             |       |        |             |       |        |             |       |        |
| TIS(LCD ON)  |             |       | -92.48 |             |       | -91.18 |             |       | -91.92 |             |       | -92.53 |
| Band         | FDD-Band 13 |       |        | FDD-Band 25 |       |        | FDD-Band 26 |       |        | FDD-Band 66 |       |        |
| Channel      |             | 23230 |        | 8090        | 8365  | 8640   | 8740        | 8865  | 8990   | 66486       | 66886 | 67286  |
| TRP(dBm)     |             | 18.84 |        | 18.27       | 18.85 | 17.42  | 18.36       | 18.87 | 17.87  | 19.19       | 19.82 | 19.82  |
| TIS(LCD OFF) |             |       |        |             |       |        |             |       |        |             |       |        |
| TIS(LCD ON)  |             | -91   |        |             |       | -91.15 |             |       | -91.75 |             |       | -89.87 |
| Band         | FDD-Band 71 |       |        |             |       |        |             |       |        |             |       |        |
| Channel      | 68636       | 68761 | 68886  |             |       |        |             |       |        |             |       |        |
| TRP(dBm)     | 17.48       | 17.64 | 17.34  |             |       |        |             |       |        |             |       |        |
| TIS(LCD OFF) |             |       |        |             |       |        |             |       |        |             |       |        |
| TIS(LCD ON)  |             |       | -89.99 |             |       |        |             |       |        |             |       |        |
| 4G(TDD 20M)  |             |       |        |             |       |        |             |       |        |             |       |        |
| Band         | FDD-Band 38 |       |        | FDD-Band 39 |       |        | FDD-Band 40 |       |        | FDD-Band 41 |       |        |
| Channel      | 37850       | 38000 | 38150  | 38350       | 38450 | 38550  | 38750       | 39150 | 39550  | 39750       | 40620 | 41490  |
| TRP(dBm)     |             |       |        |             |       |        |             |       |        | 18.08       | 20.27 | 21.51  |
| TIS(LCD OFF) |             |       |        |             |       |        |             |       |        |             |       |        |
| TIS(LCD ON)  |             |       |        |             |       |        |             |       |        |             |       | -89.99 |

## 无源测试数据 Passive test data

## ANT1 S11-VSWR&Return Loss



| Frequency (MHZ)  | 1575   | 2400   | 2500   | 5150  | 5850   |
|------------------|--------|--------|--------|-------|--------|
| VSWR             | 1.28   | 1.33   | 1.5    | 2.5   | 1.76   |
| Return Loss (DB) | -18.12 | -17.06 | -13.98 | -7.25 | -11.18 |





深圳市星源创科技有限公司

SHENZHEN Xingyuanchuang TECHNOLOGY CO., LTD

ANTENNA

无源测试数据  
Passive test data

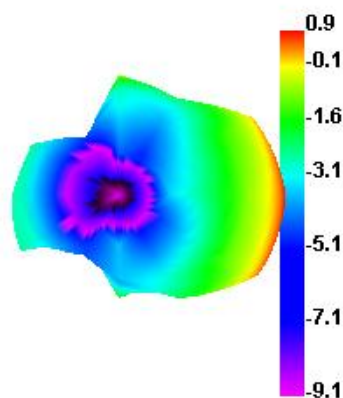
ANT1 GAIN&Efficiency-GPS

| Passive Test For GPS |             |              |               |               |            |             |             |             |
|----------------------|-------------|--------------|---------------|---------------|------------|-------------|-------------|-------------|
| Freq<br>(MHz)        | Effi<br>(%) | Effi<br>(dB) | Gain<br>(dBi) | Gain<br>(dBd) | UHS<br>(%) | DHIS<br>(%) | Max<br>(dB) | Min<br>(dB) |
| 1560                 | 36.14       | -4.42        | 1.04          | -1.11         | 16.42      | 19.719      | 1.04        | -14.68      |
| 1565                 | 36.92       | -4.33        | 1.18          | -0.97         | 16.677     | 20.244      | 1.18        | -14.76      |
| 1570                 | 35.85       | -4.46        | 1.23          | -0.92         | 16.195     | 19.653      | 1.23        | -14.89      |
| 1575                 | 32.94       | -4.82        | 0.87          | -1.28         | 14.821     | 18.117      | 0.87        | -15.99      |
| 1580                 | 29.82       | -5.26        | 0.36          | -1.79         | 13.41      | 16.409      | 0.36        | -16.67      |
| 1585                 | 27.41       | -5.62        | -0.1          | -2.25         | 12.448     | 14.966      | -0.1        | -17.27      |
| 1590                 | 25.84       | -5.88        | -0.45         | -2.6          | 12.007     | 13.832      | -0.45       | -18.12      |

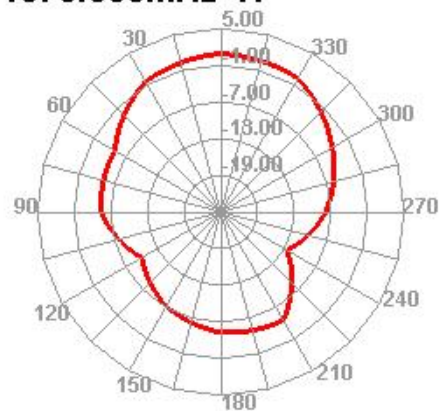
无源测试数据  
Passive test data

ANT1 Direction of figure(GPS)

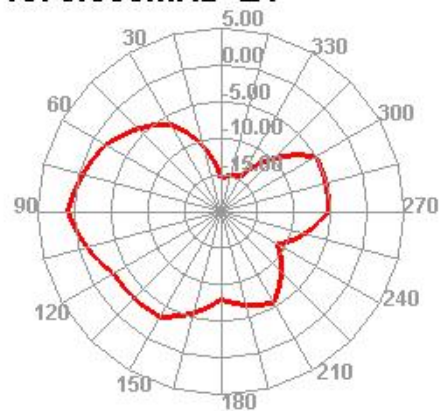
1575.000MHz



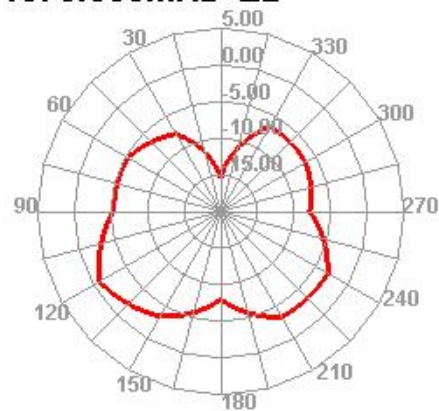
1575.000MHz H



1575.000MHz E1



1575.000MHz E2



无源测试数据  
 Passive test data

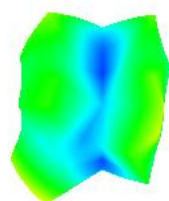
## ANT1 GAIN&amp;Efficiency-WIFI2.4G/BT

| Passive Test For WIFI2.4 |             |              |               |               |            |            |             |             |
|--------------------------|-------------|--------------|---------------|---------------|------------|------------|-------------|-------------|
| Freq<br>(MHz)            | Effi<br>(%) | Effi<br>(dB) | Gain<br>(dBi) | Gain<br>(dBd) | UHS<br>(%) | DHS<br>(%) | Max<br>(dB) | Min<br>(dB) |
| 2400                     | 47.06       | -3.27        | 1.69          | -0.46         | 23.323     | 23.739     | 1.69        | -13.94      |
| 2410                     | 46.4        | -3.33        | 1.76          | -0.39         | 22.862     | 23.541     | 1.76        | -13.76      |
| 2420                     | 48.01       | -3.19        | 2.06          | -0.09         | 23.47      | 24.542     | 2.06        | -13.24      |
| 2430                     | 48.54       | -3.14        | 2.12          | -0.03         | 23.596     | 24.948     | 2.12        | -13.2       |
| 2440                     | 49.55       | -3.05        | 2.01          | -0.14         | 24.064     | 25.483     | 2.01        | -12.64      |
| 2450                     | 48.93       | -3.1         | 1.78          | -0.37         | 23.717     | 25.217     | 1.78        | -12.05      |
| 2460                     | 48.92       | -3.11        | 1.64          | -0.51         | 23.853     | 25.067     | 1.64        | -11.69      |
| 2470                     | 49.73       | -3.03        | 1.73          | -0.42         | 24.317     | 25.409     | 1.73        | -12.11      |
| 2480                     | 50.78       | -2.94        | 1.75          | -0.4          | 24.984     | 25.793     | 1.75        | -12.03      |
| 2490                     | 51.15       | -2.91        | 1.74          | -0.41         | 25.466     | 25.688     | 1.74        | -12.45      |
| 2500                     | 51.11       | -2.92        | 1.54          | -0.61         | 25.677     | 25.429     | 1.54        | -12.95      |

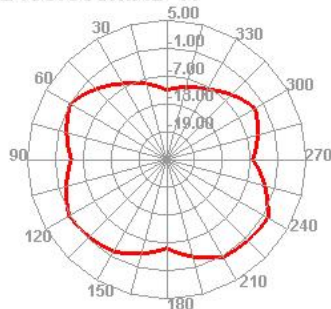
## 无源测试数据 Passive test data

ANT1 Direction of figure(2.4/BT)

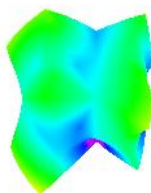
2400.000MHz



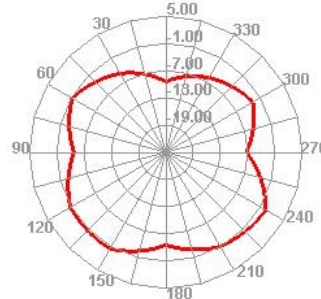
2400.000MHz H



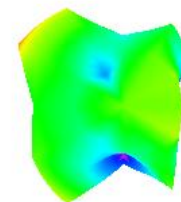
2450.000MHz



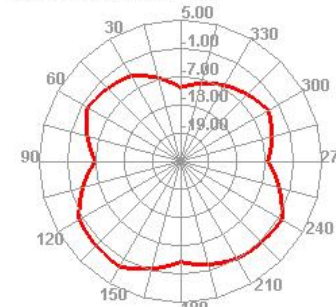
2450.000MHz H



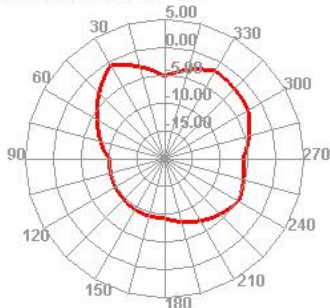
2500.000MHz



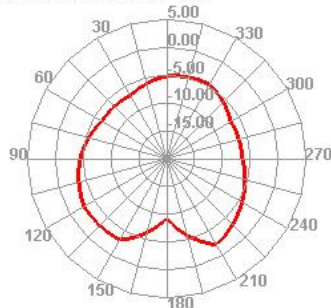
2500.000MHz H



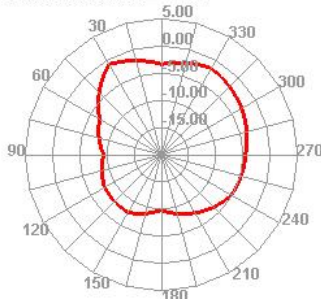
2400.000MHz E1



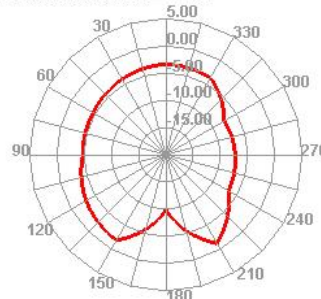
2400.000MHz E2



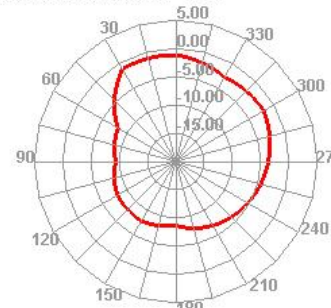
2450.000MHz E1



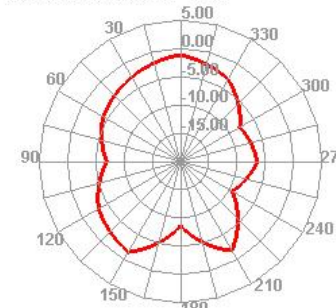
2450.000MHz E2



2500.000MHz E1



2500.000MHz E2



## 无源测试数据 Passive test data

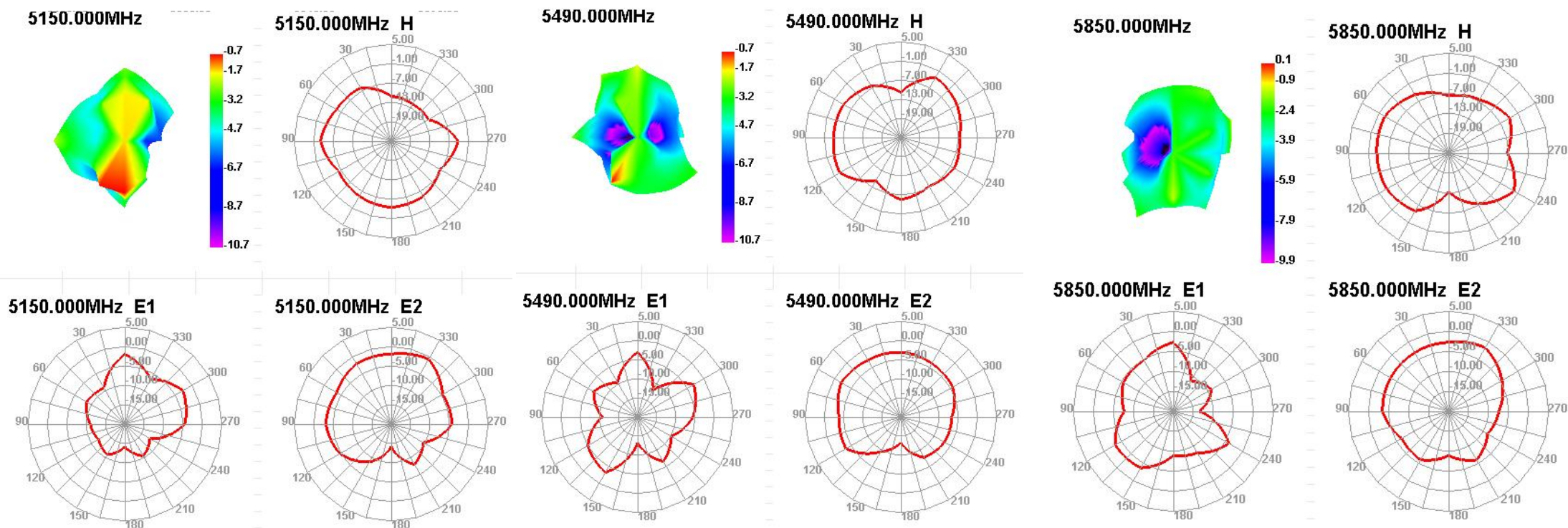
### ANT1 GAIN&Efficiency-WIFI 5G

| Passive Test For WIFI5G |             |              |               |               |            |            |             |             |
|-------------------------|-------------|--------------|---------------|---------------|------------|------------|-------------|-------------|
| Freq<br>(MHz)           | Effi<br>(%) | Effi<br>(dB) | Gain<br>(dBi) | Gain<br>(dBd) | UHS<br>(%) | DHS<br>(%) | Max<br>(dB) | Min<br>(dB) |
| 5150                    | 22.51       | -6.48        | -0.67         | -2.82         | 14.178     | 8.333      | -0.67       | -15.53      |
| 5170                    | 17.58       | -7.55        | -1.54         | -3.69         | 11.018     | 6.557      | -1.54       | -17.92      |
| 5190                    | 22.76       | -6.43        | -0.27         | -2.42         | 14.145     | 8.619      | -0.27       | -18.41      |
| 5210                    | 19.65       | -7.07        | -0.7          | -2.85         | 12.175     | 7.475      | -0.7        | -19.99      |
| 5230                    | 21.8        | -6.62        | 0             | -2.15         | 13.489     | 8.313      | 0           | -18.46      |
| 5250                    | 22.43       | -6.49        | 0.39          | -1.76         | 13.7       | 8.725      | 0.39        | -18.13      |
| 5270                    | 23.83       | -6.23        | 0.62          | -1.53         | 14.383     | 9.444      | 0.62        | -19.23      |
| 5290                    | 25.96       | -5.86        | 0.75          | -1.4          | 15.577     | 10.387     | 0.75        | -19.4       |
| 5310                    | 20.91       | -6.8         | -0.31         | -2.46         | 12.446     | 8.46       | -0.31       | -18.4       |
| 5330                    | 23.72       | -6.25        | 0.31          | -1.84         | 13.953     | 9.765      | 0.31        | -16.79      |
| 5350                    | 22.13       | -6.55        | -0.22         | -2.37         | 12.762     | 9.364      | -0.22       | -17.18      |
| 5370                    | 25.05       | -6.01        | 0.02          | -2.13         | 14.339     | 10.711     | 0.02        | -18.22      |
| 5390                    | 20.53       | -6.88        | -1.1          | -3.25         | 11.699     | 8.831      | -1.1        | -19         |
| 5410                    | 28.06       | -5.52        | 0.26          | -1.89         | 15.667     | 12.397     | 0.26        | -16.19      |
| 5430                    | 22.61       | -6.46        | -0.73         | -2.88         | 12.277     | 10.331     | -0.73       | -15.34      |
| 5450                    | 28.19       | -5.5         | -0.23         | -2.38         | 15.142     | 13.052     | -0.23       | -14.45      |
| 5470                    | 26.33       | -5.8         | -1.02         | -3.17         | 13.996     | 12.336     | -1.02       | -14.24      |
| 5490                    | 29.37       | -5.32        | -0.71         | -2.86         | 15.312     | 14.059     | -0.71       | -13.31      |
| 5510                    | 32.45       | -4.89        | -0.35         | -2.5          | 16.539     | 15.91      | -0.35       | -12.88      |
| 5530                    | 34.33       | -4.64        | 0.04          | -2.11         | 17.309     | 17.02      | 0.04        | -13.33      |
| 5550                    | 38.28       | -4.17        | 0.55          | -1.6          | 19.478     | 18.801     | 0.55        | -14.05      |
| 5570                    | 36.44       | -4.38        | 0.19          | -1.96         | 18.481     | 17.955     | 0.19        | -15.48      |
| 5590                    | 39.33       | -4.05        | 0.57          | -1.58         | 19.716     | 19.616     | 0.57        | -15.53      |
| 5610                    | 37.87       | -4.22        | 0.46          | -1.69         | 18.864     | 19.002     | 0.46        | -15.72      |
| 5630                    | 36.04       | -4.43        | 0.13          | -2.02         | 18.023     | 18.02      | 0.13        | -15.79      |
| 5650                    | 39.78       | -4           | 0.2           | -1.95         | 20.033     | 19.751     | 0.2         | -14.79      |
| 5670                    | 33.08       | -4.8         | -0.82         | -2.97         | 16.519     | 16.565     | -0.82       | -15.13      |
| 5690                    | 39.21       | -4.07        | -0.15         | -2.3          | 19.304     | 19.91      | -0.15       | -13.47      |
| 5710                    | 30.32       | -5.18        | -1.5          | -3.65         | 14.829     | 15.489     | -1.5        | -13.63      |
| 5730                    | 35.97       | -4.44        | -0.61         | -2.76         | 17.594     | 18.378     | -0.61       | -13.67      |
| 5750                    | 30          | -5.23        | -1.1          | -3.25         | 14.602     | 15.401     | -1.1        | -15.82      |
| 5770                    | 32.74       | -4.85        | -0.37         | -2.52         | 15.607     | 17.134     | -0.37       | -14.81      |
| 5790                    | 29.34       | -5.33        | -0.68         | -2.83         | 13.78      | 15.562     | -0.68       | -14.47      |
| 5810                    | 30.98       | -5.09        | -0.36         | -2.51         | 14.55      | 16.43      | -0.36       | -14.17      |
| 5830                    | 30.3        | -5.18        | -0.41         | -2.56         | 14.356     | 15.948     | -0.41       | -14.19      |
| 5850                    | 33.11       | -4.8         | 0.12          | -2.03         | 15.659     | 17.447     | 0.12        | -13.53      |



无源测试数据  
Passive test data

ANT1 Direction of figure(5G)



## GPS搜星测试 GPS star search test

GPS冷启动实测效果以下:

The measured results of GPS cold start are as follows:

CN值40以上3颗

CN值35以上6颗

实际定位10+颗

CN value 40 or above 3 pieces

CN value 35 or above 6 pieces

Actual positioning of 10+ pieces



备注;

GPS搜星测试。会因时间段及地域而存在差异. 以上数据为我司测试（空旷地带）最佳数据

Remark;

GPS star search test. There will be differences due to time periods and regions. The above data are the best data from our test (open area)

## 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 :-42dBm 5G:-54dBm

测试结果如右图

Test environment: open space

Test tool: Wifi Analytical Assistant

Test distance: 10m

Signal strength: 2.4G:-42dBm

5G:-54dBm The test results are as

shown on the right

#### BT

测试环境：开放空间(通道)

测试工具：蓝牙音响

测试距离：15m

结果：播放音乐流畅，无杂音。

#### BT

Test environment: open space  
(channel)

Test tool: Bluetooth speaker

Test distance: 15m

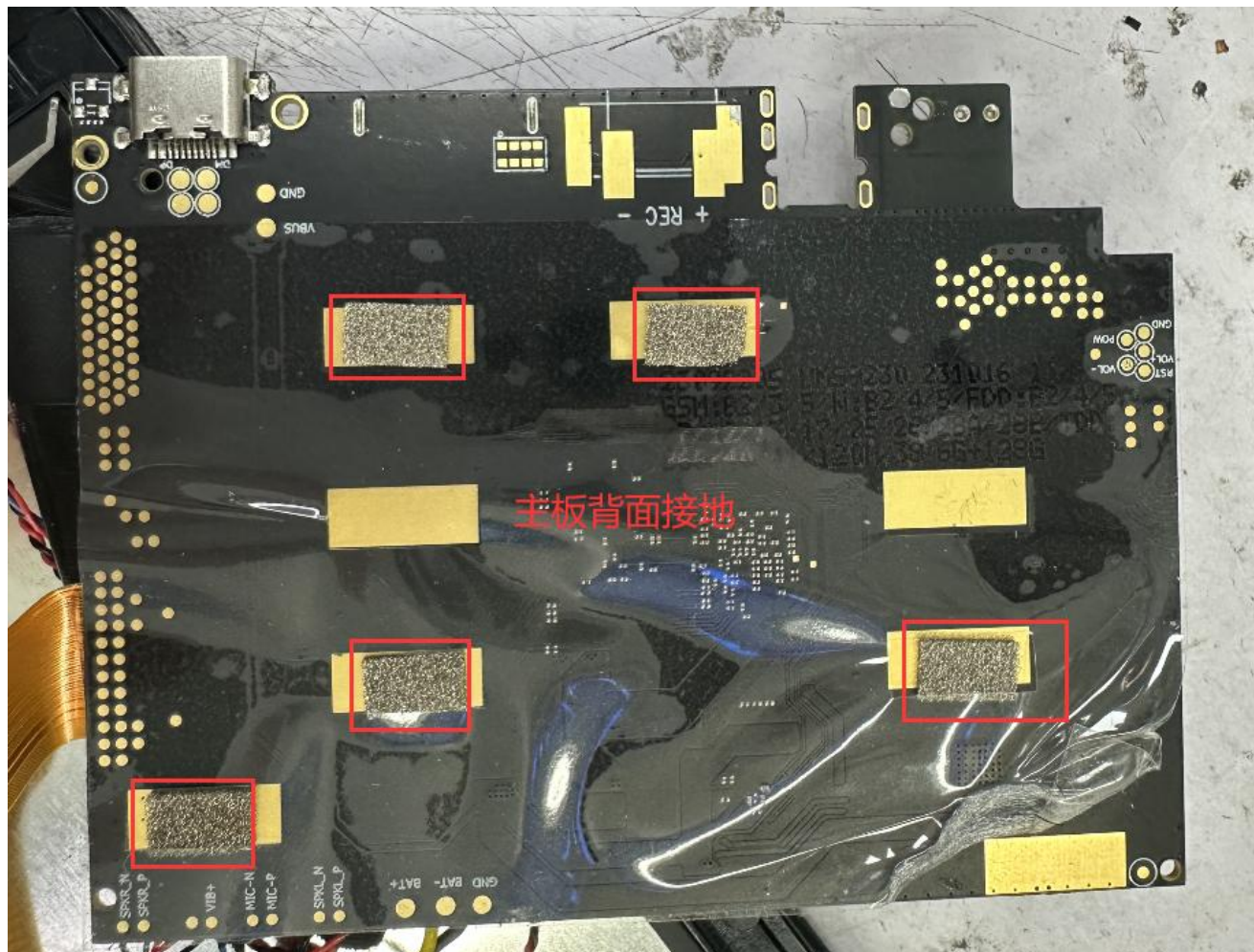
Result: The music is played  
smoothly and without any noise.





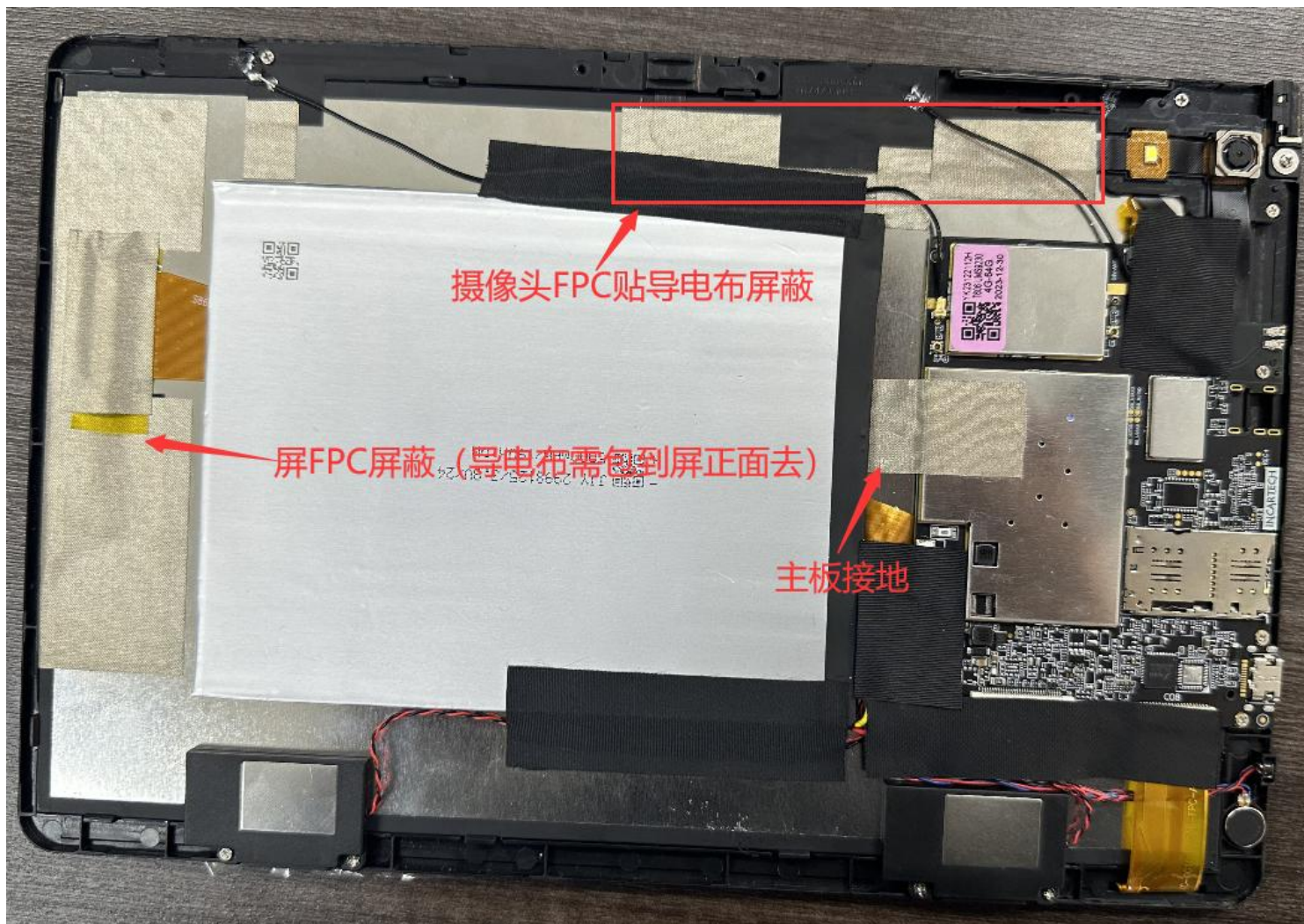
环境处理

Environmental treatment



## 环境处理

Environmental treatment







## W/G/B antennas

