



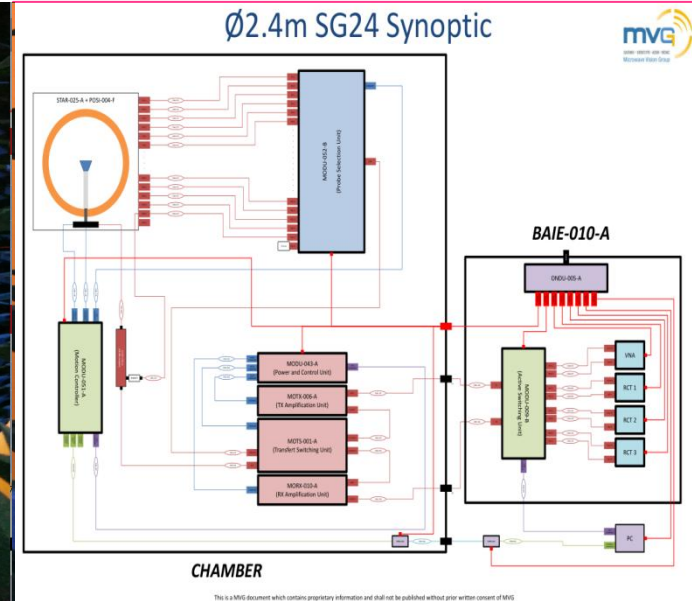
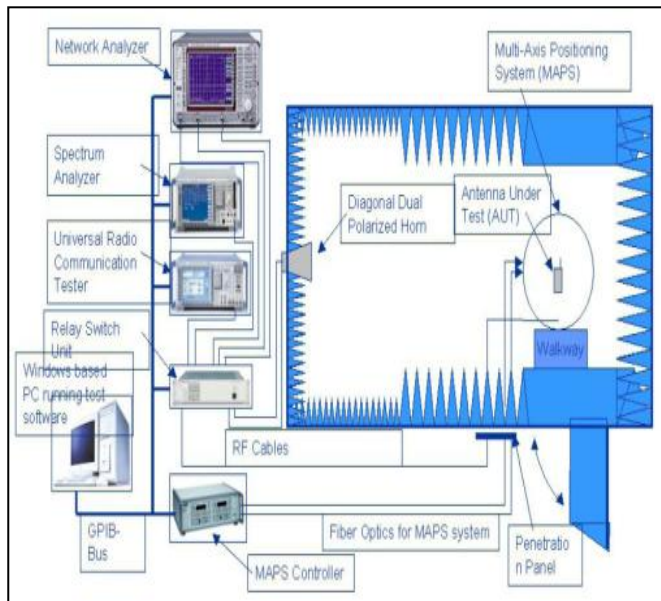
# Antenna Test Report

报告日期：2023年7月6日星期四

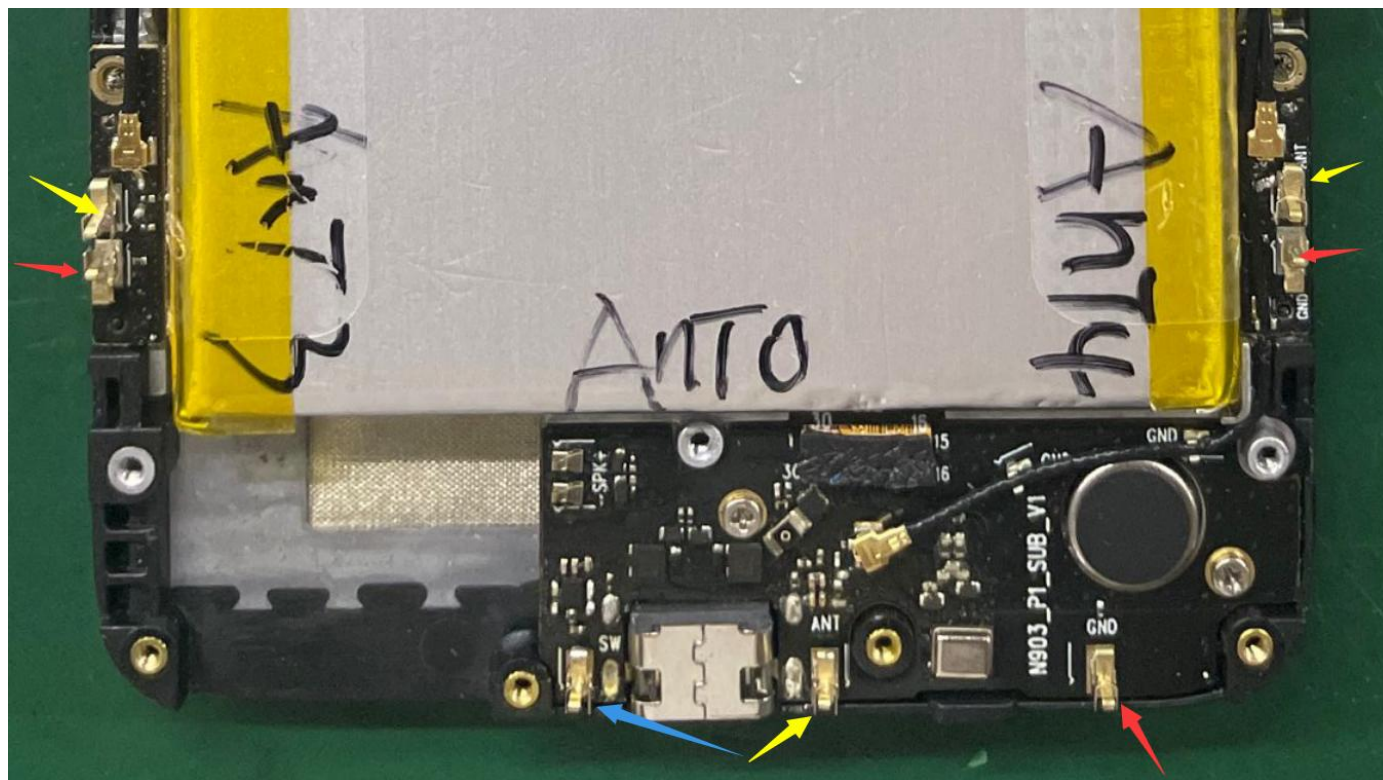
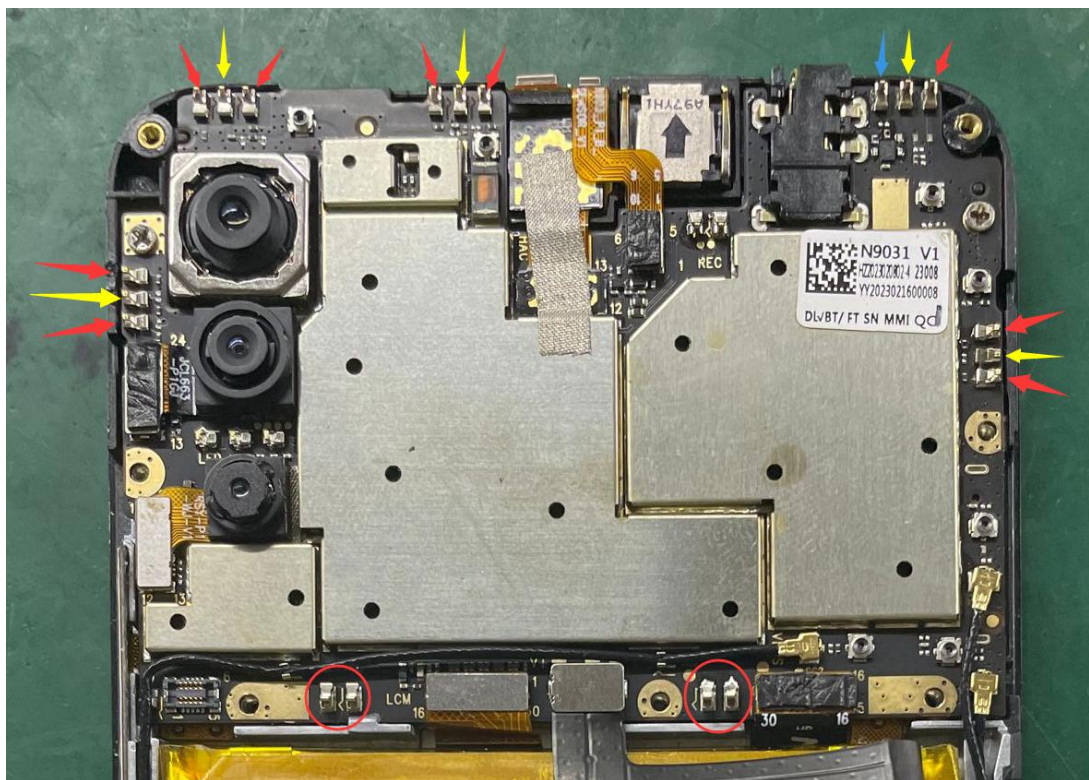


|                                       |      |
|---------------------------------------|------|
| 天线设计频段:<br>antenna design<br>spectrum | 5G   |
| 天线类型:<br>Type of antenna              | PIFA |

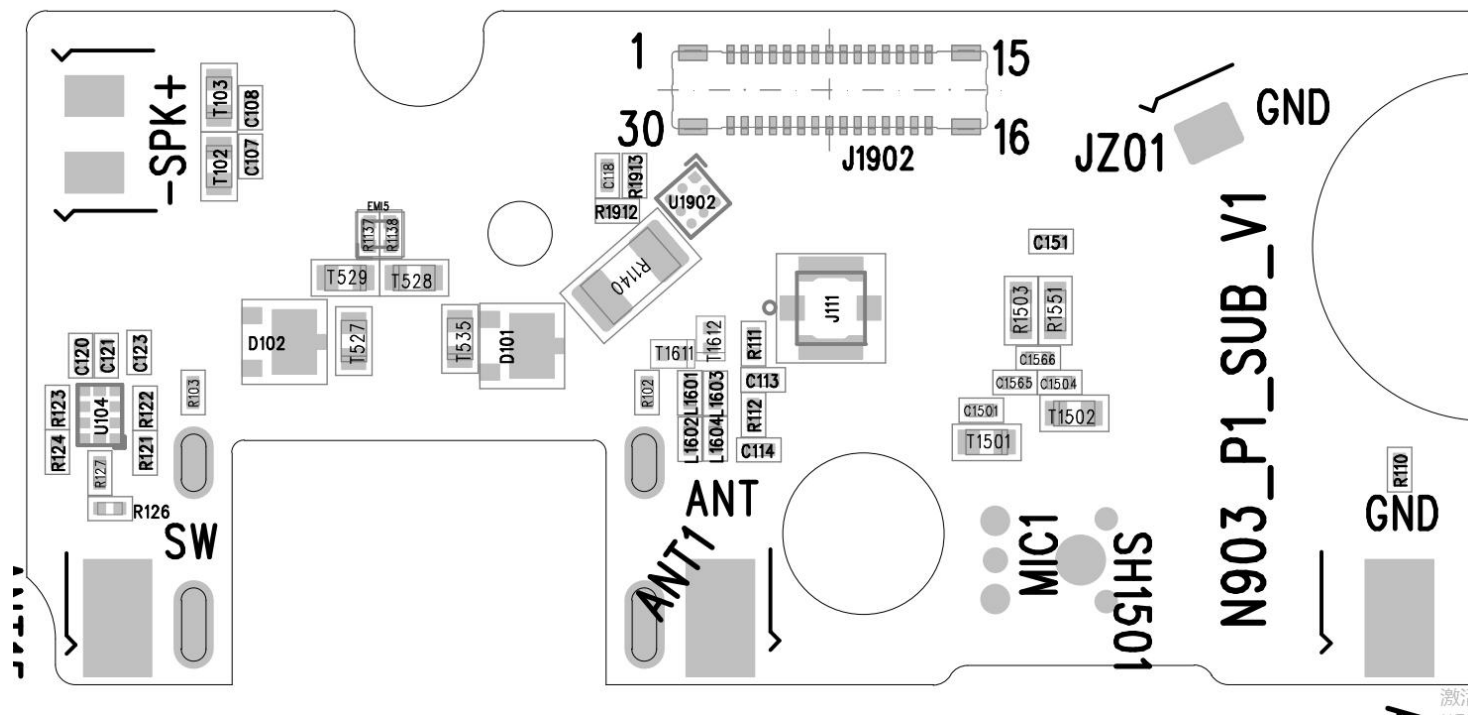
| 报告版本:<br>Report version | 日期<br>Date | 内容<br>Content     |
|-------------------------|------------|-------------------|
| V1.0                    | 2023.03.25 | 天线有源测试报告          |
| V2.0                    | 2023.05.06 | 试产机天线有源测试报告       |
| V3.0                    | 2023.05.22 | 换屏-天线有源测试报告       |
| V4.0                    | 2023.05.26 | 换屏-天线测试报告(更新最终匹配) |
| V5.0                    | 2023.07.06 | 天线有源测试报告(增加无源)    |



3座远场3D全电波微波暗室实验室系统，1座MVG SG24LT（Satmio）近场3D微波暗室实验室系统（与国家相关实验室同步）

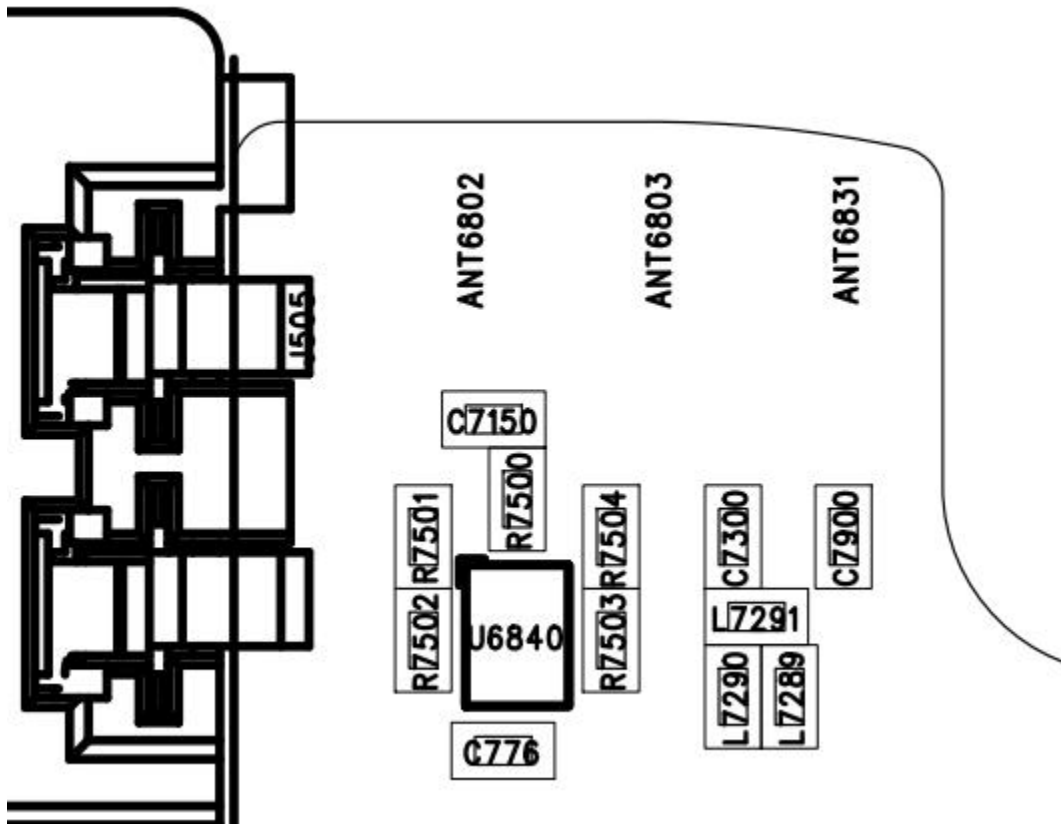


| 位号                  | 匹配值   |
|---------------------|-------|
| C114                | 1.0pF |
| C113                | 6.8nH |
| R111                | 2.7nH |
| R110/R112/R121/R127 | 0Ω    |
| R122                | 18nH  |
| R124                | 5.1nH |
| R123                | 18nH  |
| R126                | NC    |

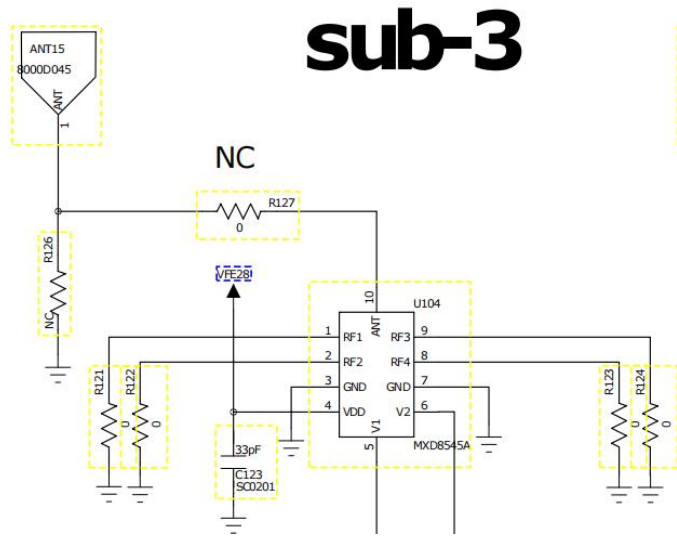
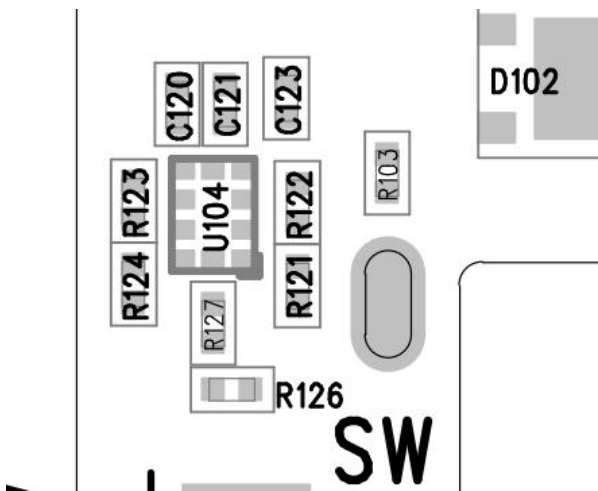




| 位号                      | 匹配值   |
|-------------------------|-------|
| C7300                   | 原匹配   |
| L7291/C7150             | NC    |
| L7289                   | 9.1nH |
| R7500/R7501/L7290/C7900 | 0Ω    |
| R7502                   | 18nH  |
| R7504                   | 5.1nH |
| R7503                   | 18nH  |



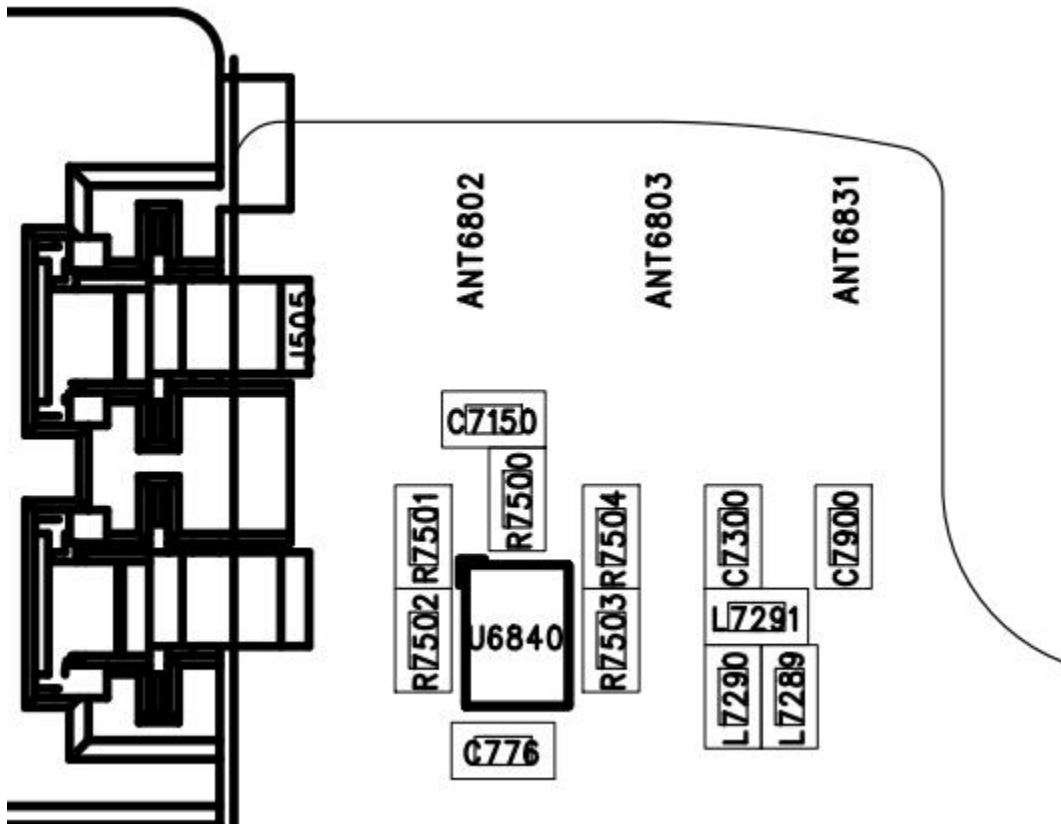
| RF开关通路     | 匹配    | 控制频段                                                        |
|------------|-------|-------------------------------------------------------------|
| RF1 (R121) | 0欧姆   | GSM:900/1800/1900<br>WCDMA:B2/4<br>LTE:B2/4/30/66<br>NR:N41 |
| RF2 (R122) | 18nH  | LTE:B12/17                                                  |
| RF3 (R124) | 5.1nH | GSM:850 BC0<br>WCDMA:B5<br>LTE : B5<br>NR:N5                |
| RF4 (R123) | 18nH  | LTE:B71<br>NR: N71                                          |





ANT1

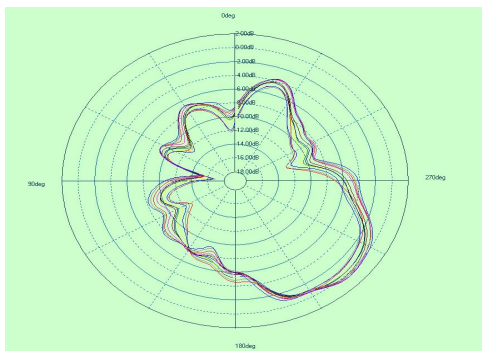
| RF开关通路      | 匹配    | 控制频段                                                        |
|-------------|-------|-------------------------------------------------------------|
| RF1 (R7501) | 0欧姆   | GSM:900/1800/1900<br>WCDMA:B2/4<br>LTE:B2/4/30/66<br>NR:N41 |
| RF2 (R7502) | 18nH  | LTE:B12/17                                                  |
| RF3 (R7504) | 5.1nH | GSM:850 BC0<br>WCDMA:B5<br>LTE : B5<br>NR:N5                |
| RF4 (R7503) | 18nH  | LTE:B71<br>NR: N71                                          |



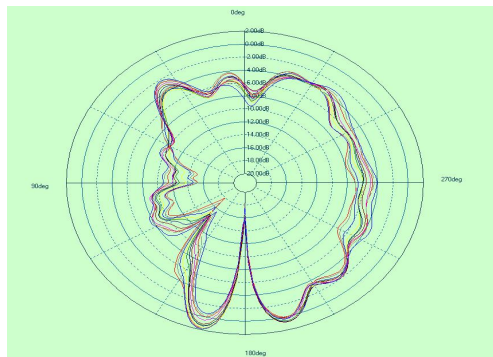


| WIFI 2.4G & BT |            |             |
|----------------|------------|-------------|
| Frequency      | Efficiency | Gain . dB   |
| 2400000000     | 34.95%     | 2.043975173 |
| 2410000000     | 35.01%     | 2.257372696 |
| 2420000000     | 34.84%     | 2.23302284  |
| 2430000000     | 35.78%     | 2.102894401 |
| 2440000000     | 35.80%     | 1.793614268 |
| 2450000000     | 36.09%     | 1.929650744 |
| 2460000000     | 36.59%     | 1.700964431 |
| 2470000000     | 36.86%     | 1.135437588 |
| 2480000000     | 36.39%     | 0.670971248 |
| 2490000000     | 36.42%     | 0.552660158 |
| 2500000000     | 37.54%     | 0.729623465 |

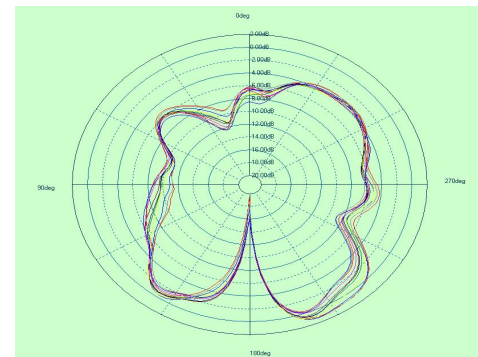
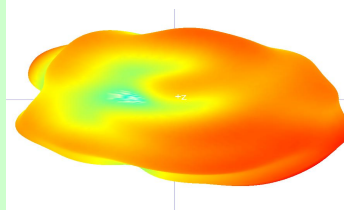
Azimuth 0°



Azimuth 90°



H-Plane (Elevation 90° )

3D view Frequency  
2450MHz

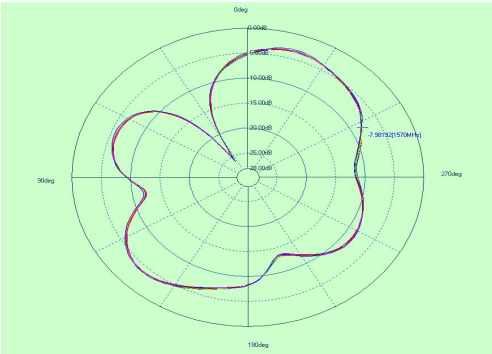
无源报告 测量仪器: Agilent Technologies E5071B 300kHz-8.5GHz ENA Series Network Analyzer 暗室系统: MVG SG24LT (Satmio)



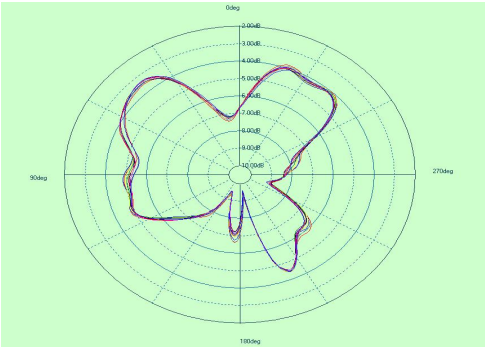


| GPS        |            |              |
|------------|------------|--------------|
| Frequency  | Efficiency | Gain . dB    |
| 1570000000 | 37%        | 0.189429322  |
| 1571000000 | 37%        | 0.180822403  |
| 1572000000 | 37%        | 0.112399886  |
| 1573000000 | 37%        | -0.012709776 |
| 1574000000 | 36%        | -0.119282869 |
| 1575000000 | 36%        | -0.167184585 |
| 1576000000 | 36%        | -0.131928106 |
| 1577000000 | 37%        | -0.046984858 |
| 1578000000 | 37%        | 0.055082552  |
| 1579000000 | 37%        | 0.084686039  |
| 1580000000 | 37%        | 0.070163101  |

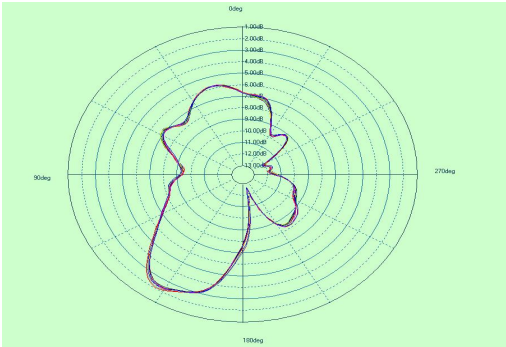
Azimuth 0°



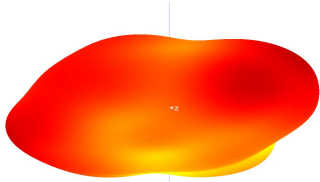
Azimuth 90°



H-Plane (Elevation 90° )



3D view Frequency  
1575MHz

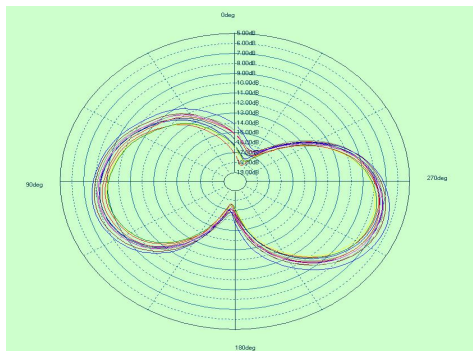


无源报告 测量仪器：Agilent Technologies E5071B 300kHz-8.5GHz ENA Series Network Analyzer 暗室系统：MVG SG24LT（Satmio）

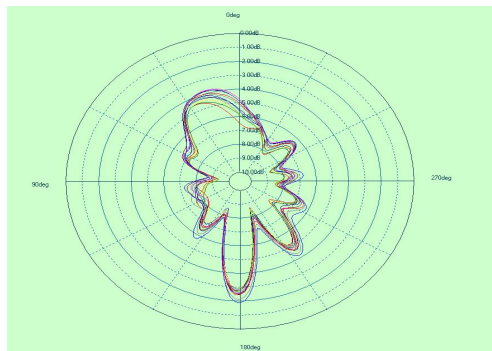
700-960MHz

| Frequency | Efficiency | Gain . dB    |
|-----------|------------|--------------|
| 700000000 | 14.68%     | -2.506812792 |
| 800000000 | 14.38%     | -2.591025496 |
| 820000000 | 15.61%     | -1.883060703 |
| 880000000 | 18.53%     | -2.409810833 |
| 888000000 | 19.76%     | -1.599351153 |
| 896000000 | 20.97%     | -0.948340281 |
| 904000000 | 21.43%     | -1.724331808 |
| 912000000 | 21.19%     | -1.346434496 |
| 920000000 | 21.62%     | -0.882695804 |
| 928000000 | 22.30%     | -1.033760318 |
| 936000000 | 21.87%     | -1.37423822  |
| 944000000 | 20.74%     | -1.994837263 |
| 952000000 | 20.20%     | -2.092949472 |
| 960000000 | 19.46%     | -1.723853447 |

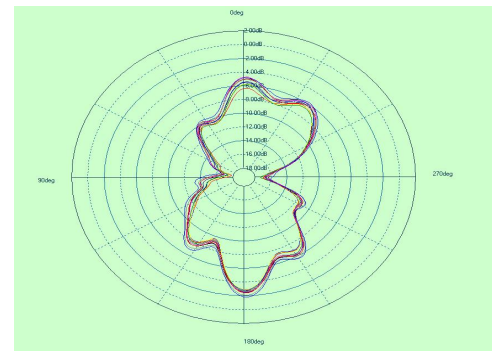
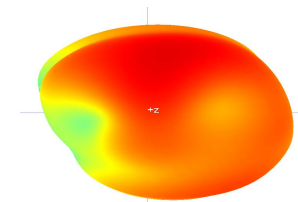
Azimuth 0°



Azimuth 90°



H-Plane (Elevation 90° )

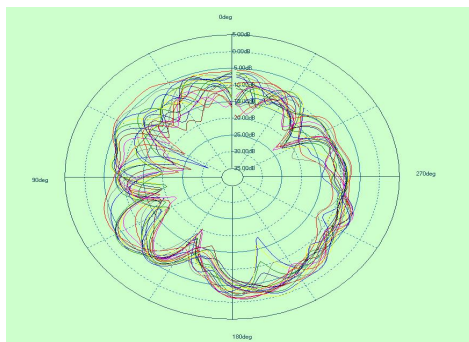
3D view Frequency  
900MHz

无源报告 测量仪器: Agilent Technologies E5071B 300kHz-8.5GHz ENA Series Network Analyzer 暗室系统: MVG SG24LT (Satmio)

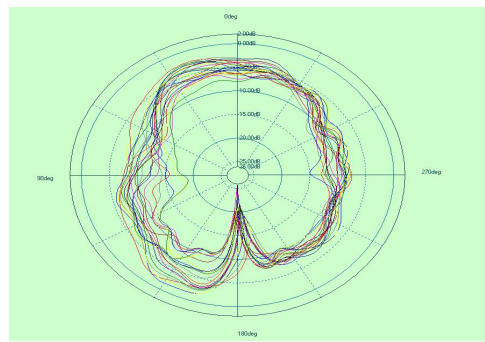
1710-2700MHz

| Frequency  | Efficiency | Gain . dB    |
|------------|------------|--------------|
| 1710000000 | 31.26%     | 0.243460851  |
| 1759500000 | 25.64%     | -0.715088582 |
| 1809000000 | 23.42%     | -0.262057618 |
| 1858500000 | 23.10%     | 0.405349055  |
| 1908000000 | 24.72%     | 0.161876675  |
| 1957500000 | 24.63%     | 0.130720934  |
| 2007000000 | 21.31%     | 0.194871442  |
| 2056500000 | 20.90%     | 0.424945009  |
| 2106000000 | 19.54%     | 0.194574504  |
| 2155500000 | 19.13%     | -0.340086202 |
| 2205000000 | 21.09%     | 0.42105476   |
| 2254500000 | 21.21%     | 0.503550901  |
| 2304000000 | 18.40%     | -0.693432065 |
| 2353500000 | 15.49%     | -2.223655457 |
| 2403000000 | 13.35%     | -2.055457236 |
| 2452500000 | 13.18%     | -1.714419878 |
| 2502000000 | 15.40%     | -1.411508961 |
| 2551500000 | 17.02%     | -0.568127151 |
| 2601000000 | 16.29%     | -0.815657108 |
| 2650500000 | 15.61%     | -1.184298686 |
| 2700000000 | 14.86%     | -1.428485799 |

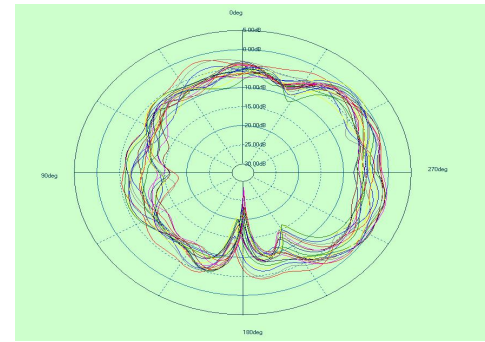
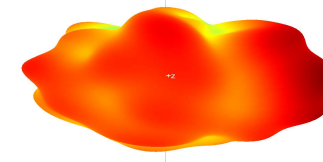
Azimuth 0°



Azimuth 90°



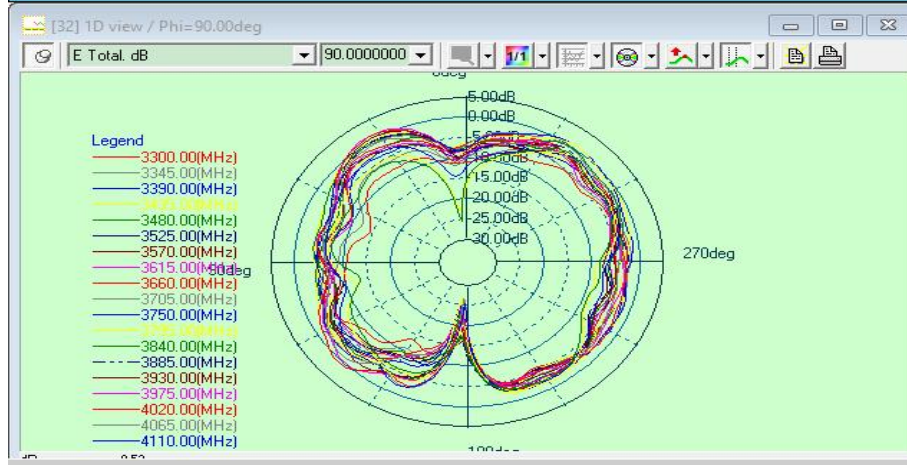
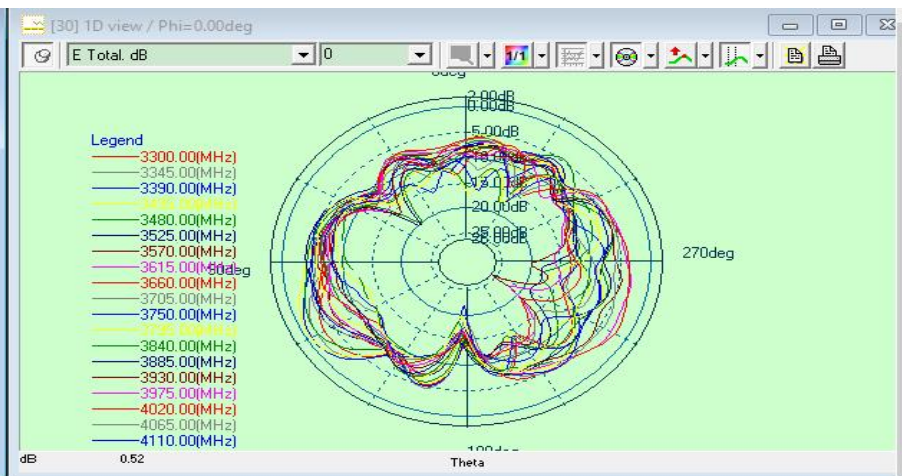
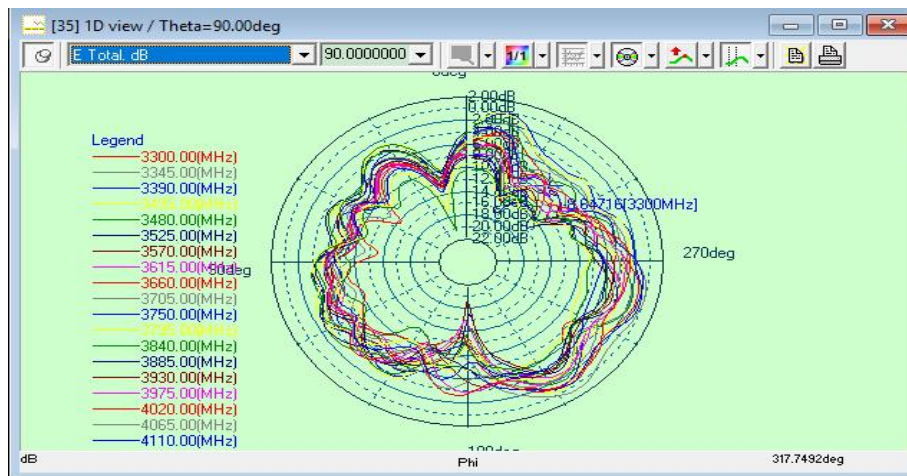
H-Plane (Elevation 90° )

3D view Frequency  
2200MHz

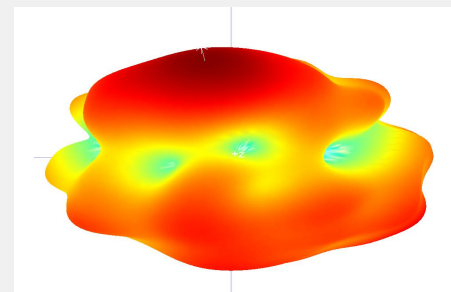
无源报告 测量仪器: Agilent Technologies E5071B 300kHz-8.5GHz ENA Series Network Analyzer 暗室系统: MVG SG24LT (Satmio)

3300-4200MHz

| Frequency  | Efficiency | Gain . dB    |
|------------|------------|--------------|
| 3300000000 | 18.89%     | -2.048674801 |
| 3345000000 | 24.86%     | -0.475895641 |
| 3390000000 | 32.22%     | 0.8166508    |
| 3435000000 | 35.90%     | 0.829489895  |
| 3480000000 | 34.46%     | -0.590567914 |
| 3525000000 | 29.61%     | -0.735782592 |
| 3570000000 | 24.82%     | -1.402672164 |
| 3615000000 | 23.99%     | -1.444187343 |
| 3660000000 | 29.34%     | -0.488278913 |
| 3705000000 | 37.21%     | 0.805818897  |
| 3750000000 | 39.03%     | 0.777607078  |
| 3795000000 | 35.70%     | 0.687180919  |
| 3840000000 | 31.77%     | -0.304370274 |
| 3885000000 | 27.19%     | 0.078795231  |
| 3930000000 | 27.60%     | 0.764902858  |
| 3975000000 | 32.56%     | 1.443771676  |
| 4020000000 | 36.07%     | 1.302405332  |
| 4065000000 | 30.55%     | -0.61752775  |
| 4110000000 | 24.04%     | -1.503724389 |
| 4155000000 | 20.33%     | -1.582146927 |
| 4200000000 | 17.67%     | -1.706242368 |



3800MHz



无源报告 测量仪器: Agilent Technologies E5071B 300kHz-8.5GHz ENA Series Network Analyzer 暗室系统: MVG SG24LT (Satmio)

WIFI距路由器12M信号强度

BT实测

正面无障碍距离：8米

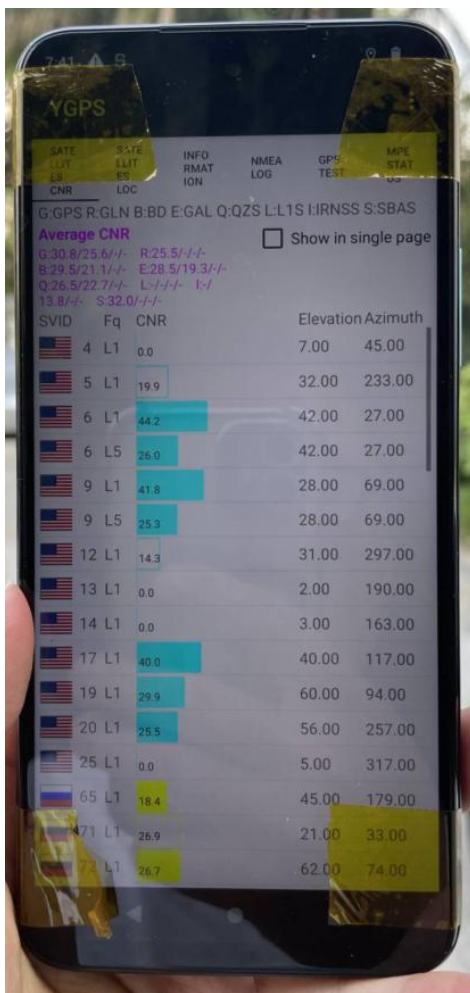
隔人体距离5米

通话3分钟无杂音流畅。



## GPS实测:

白天在公司楼下实测两分钟内定位, 最大星值44.2。



| SVID                                                                                    | Fq | CNR  | Elevation | Azimuth |
|-----------------------------------------------------------------------------------------|----|------|-----------|---------|
|  4    | L1 | 0.0  | 7.00      | 45.00   |
|  5    | L1 | 19.9 | 32.00     | 233.00  |
|  6    | L1 | 44.2 | 42.00     | 27.00   |
|  6    | L5 | 26.0 | 42.00     | 27.00   |
|  9    | L1 | 41.8 | 28.00     | 69.00   |
|  9    | L5 | 25.3 | 28.00     | 69.00   |
|  12   | L1 | 14.3 | 31.00     | 297.00  |
|  13   | L1 | 0.0  | 2.00      | 190.00  |
|  14  | L1 | 0.0  | 3.00      | 163.00  |
|  17 | L1 | 40.0 | 40.00     | 117.00  |
|  19 | L1 | 29.9 | 60.00     | 94.00   |
|  20 | L1 | 25.5 | 56.00     | 257.00  |
|  25 | L1 | 0.0  | 5.00      | 317.00  |



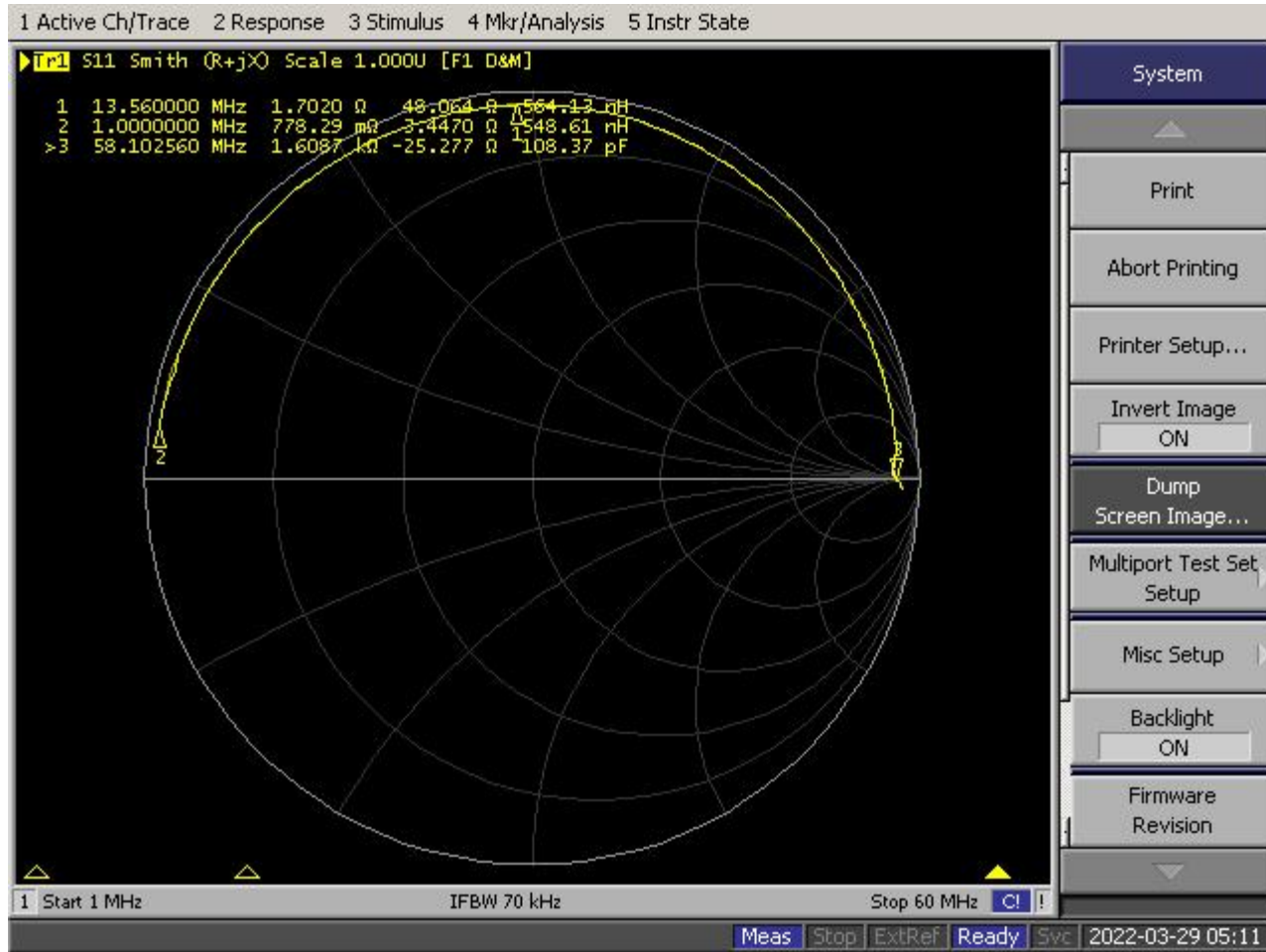
|       |       |
|-------|-------|
|       | 距离    |
| Type1 | 4.5cm |
| Type2 | 4.0cm |
| Type3 | 3.5cm |
| Type4 | 2.5cm |
| 公交卡   | 3.5cm |
| 身份证   | 2.5cm |

测试距离用的垫片



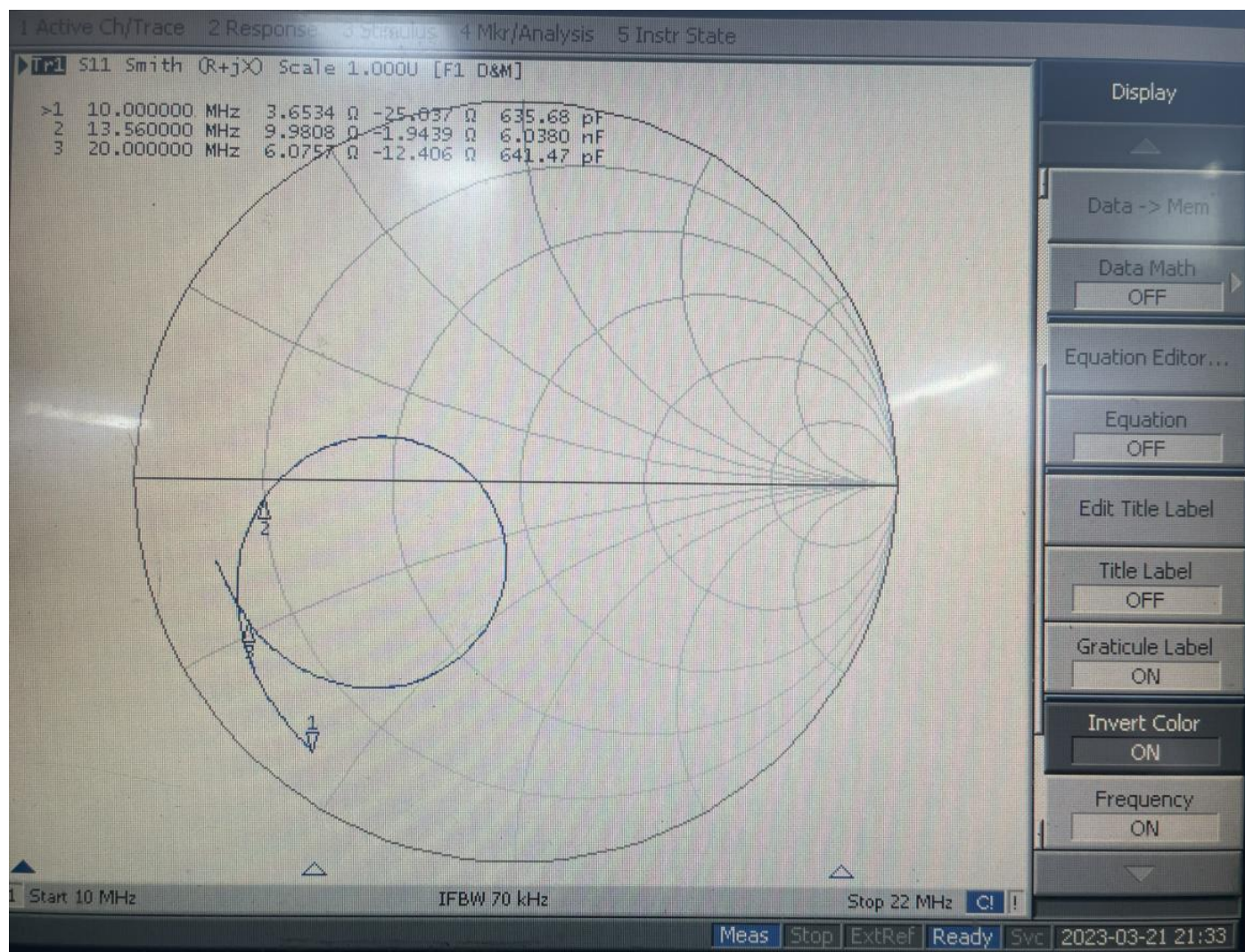


# 本体参数

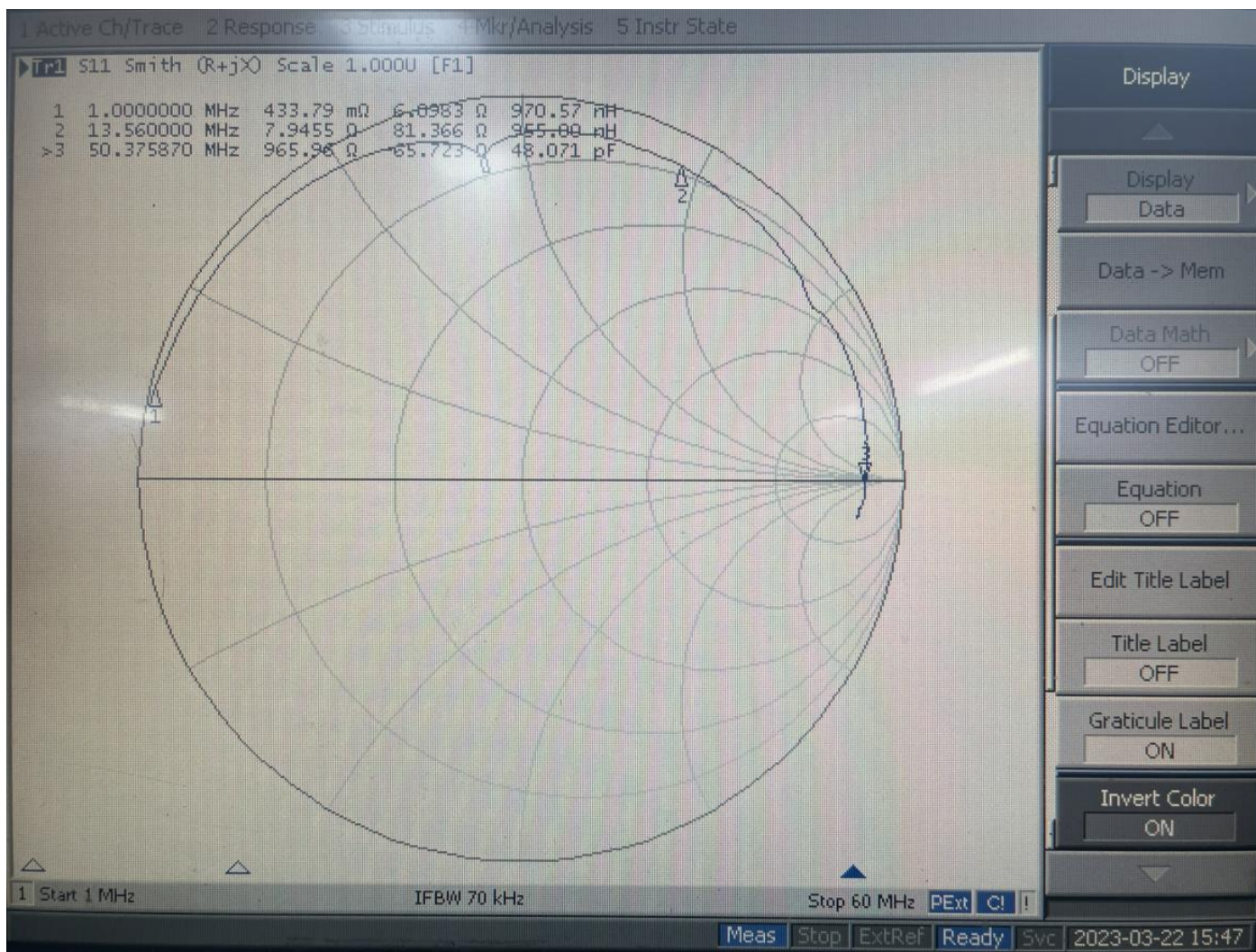


|                    |      |
|--------------------|------|
| R@13.56MHz<br>(Ω)  | 1.70 |
| Lant@1MHz<br>(μH)  | 0.54 |
| Frequency<br>(MHz) | 58.1 |
| Q                  | 17   |

# 阻抗



# 本体参数



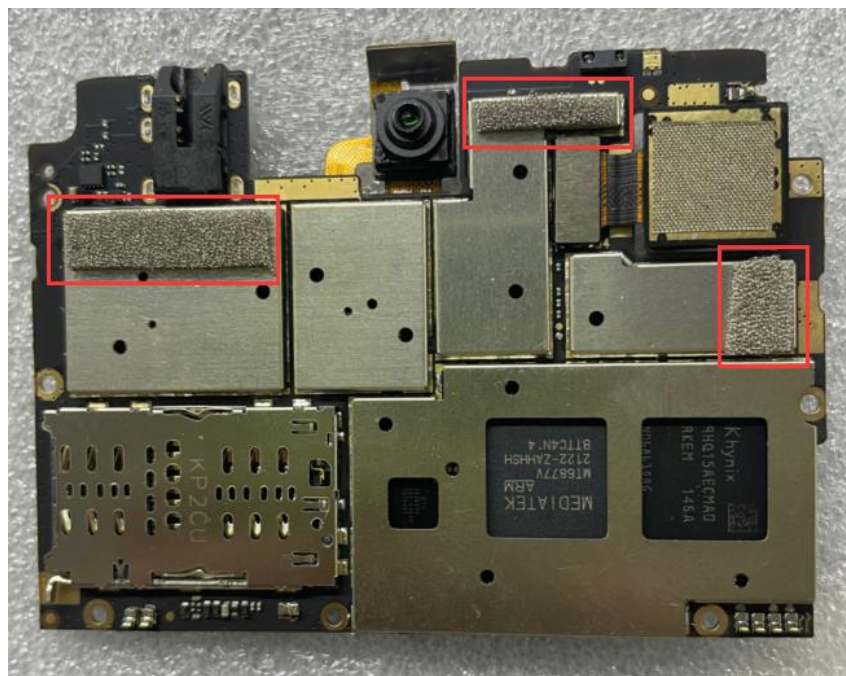
|                    |       |
|--------------------|-------|
| Rs@1MHz<br>(Ω)     | 0.43  |
| Lant@1MHz<br>(uH)  | 0.97  |
| Frequency<br>(MHz) | 50.37 |
| Rp<br>(KΩ)         | 0.96  |



|        |     |
|--------|-----|
| Ls(uH) | 8.7 |
| Rs(mΩ) | 398 |
| 线圈数    | 13  |



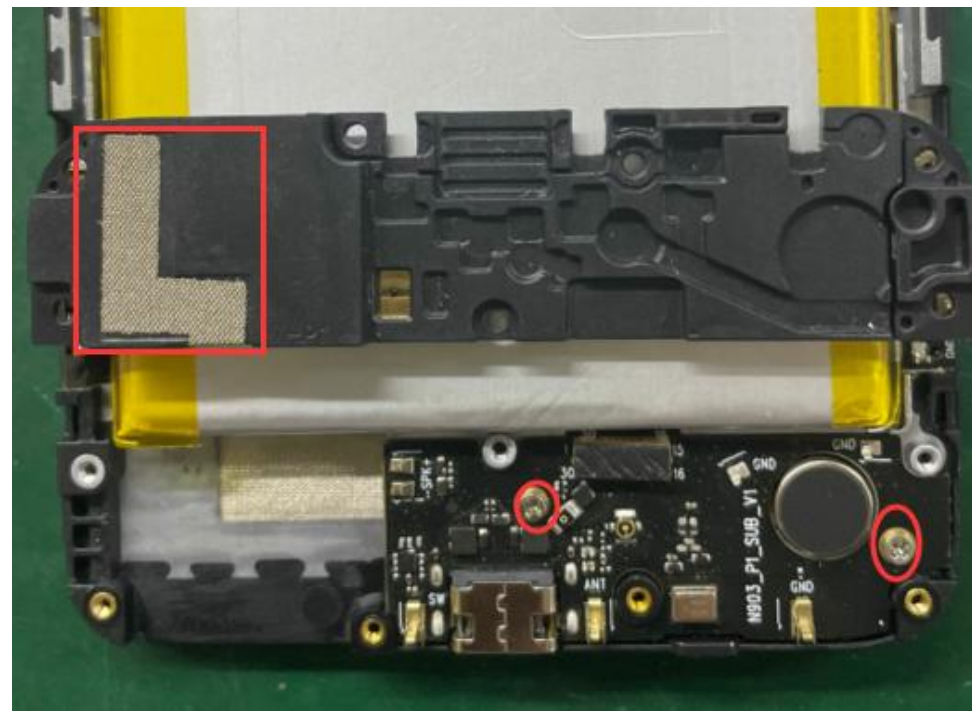
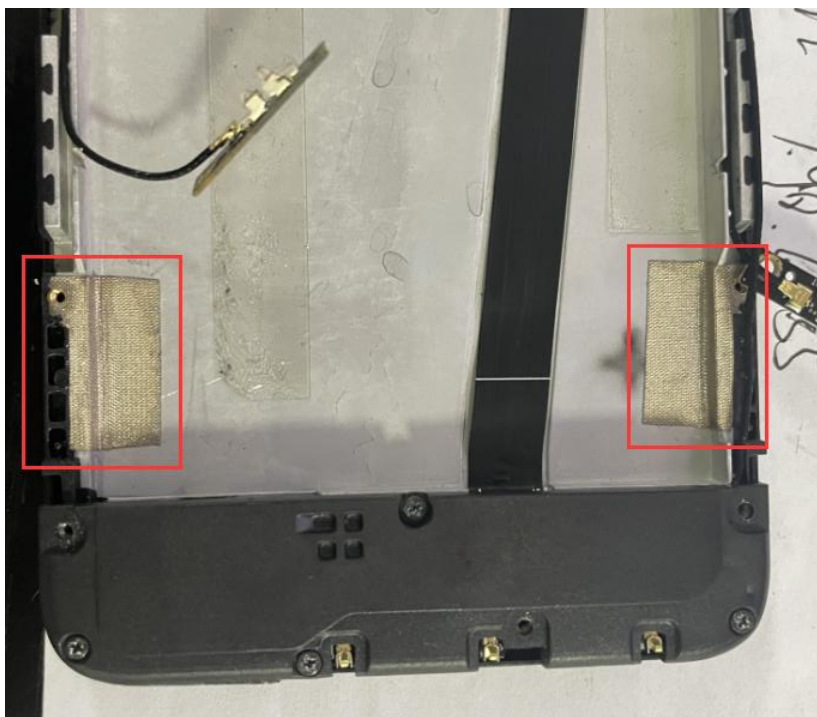
如图：1.贴导电布、导电海绵使屏与金属框并接地,屏正面不贴导电布。  
2.贴导电海绵使主板接地。



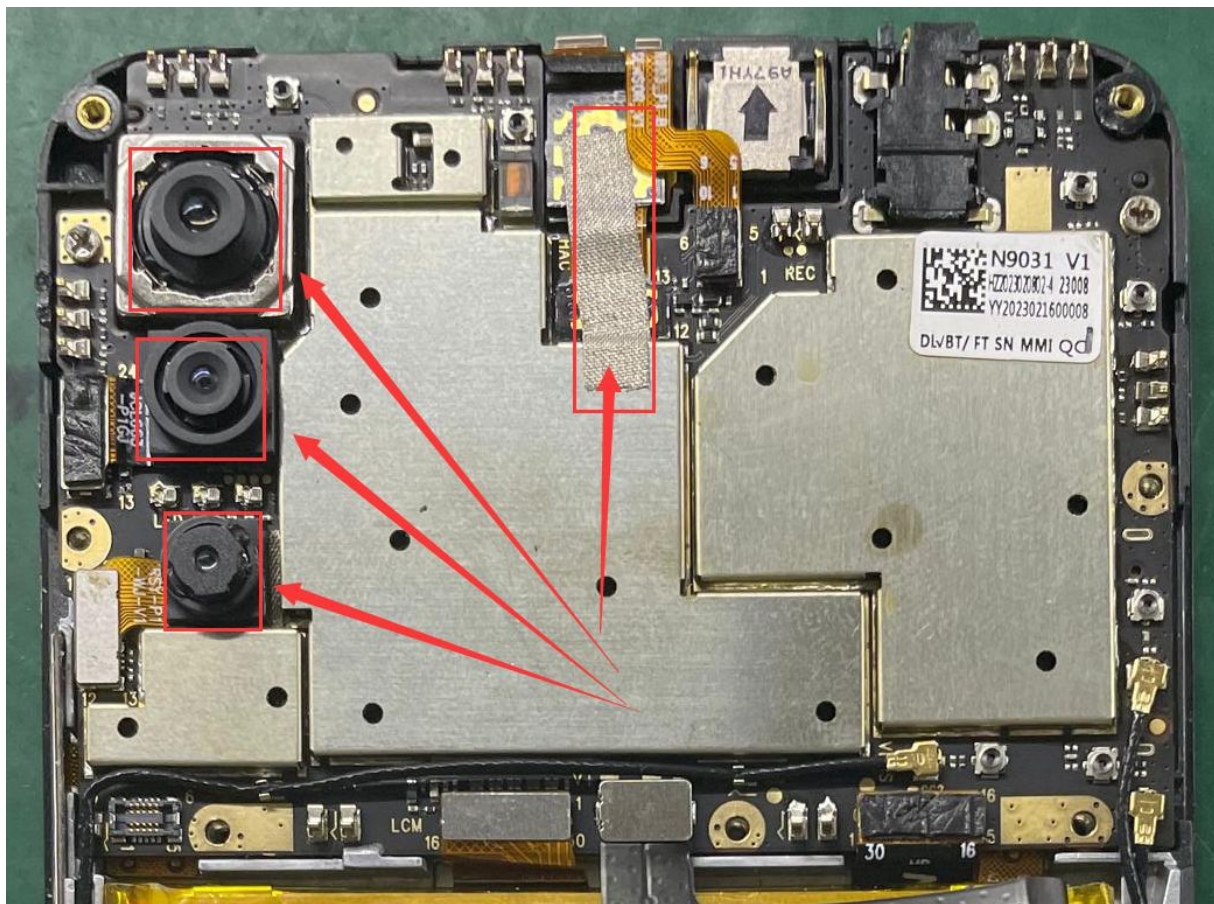


如图：

1. 电池左右两侧小板背面露铜区贴双面导电胶使小板充分接地，导电布不能盖住小板净空区。
2. 喇叭贴导电布接地、马达贴导电双面胶接地。
3. ANT0天线小板背面弹片和两处螺丝位接地。



如图：所有摄像头需接地。前摄贴导电布接地，后摄贴双面导电胶接地。





- 1.以上是暗室有源天线**3D**测试报告。
- 2.如有疑问，请电话联系。



01

报告中天线匹配电路是否改动，天线有关的环境处理是否增加，将直接影响天线性能，请仔细确认查看。

02

贵司如有最新试产或更新产品（如软件，**ESD**，物料等）请尽快提供我司进行验证，以确认天线性能是否有变化影响。

03

倘若贵司需要送第三方检测机构复测或客户测试，请务必先与我司进行天线相关测试确认，因主板•装配的一致性，以及天线组装的差异等因素，均可能导致天线参数的偏差。

# 谢谢

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THANK YOU

如有疑问 请联系我们

日常服务时间：周一至周五 9:00-18:00

总机热线：0755-36615535 销售热线：0755-36615535 传真：0755-82916227

 网址：[www.mayaant.com](http://www.mayaant.com)