

# 天线测试报告

|                          |                                                                                                      |
|--------------------------|------------------------------------------------------------------------------------------------------|
| Manufacturer:            | Shenzhen Zer Life Technology Co., Ltd.                                                               |
| Address of Manufacturer: | 406 Qingyi Optoelectronic Bldg, High-tech Industrial Park, Langshan 2nd Rd, Nanshan, Shenzhen, China |

客户名称：哲耳

项目名称：宠物定位器

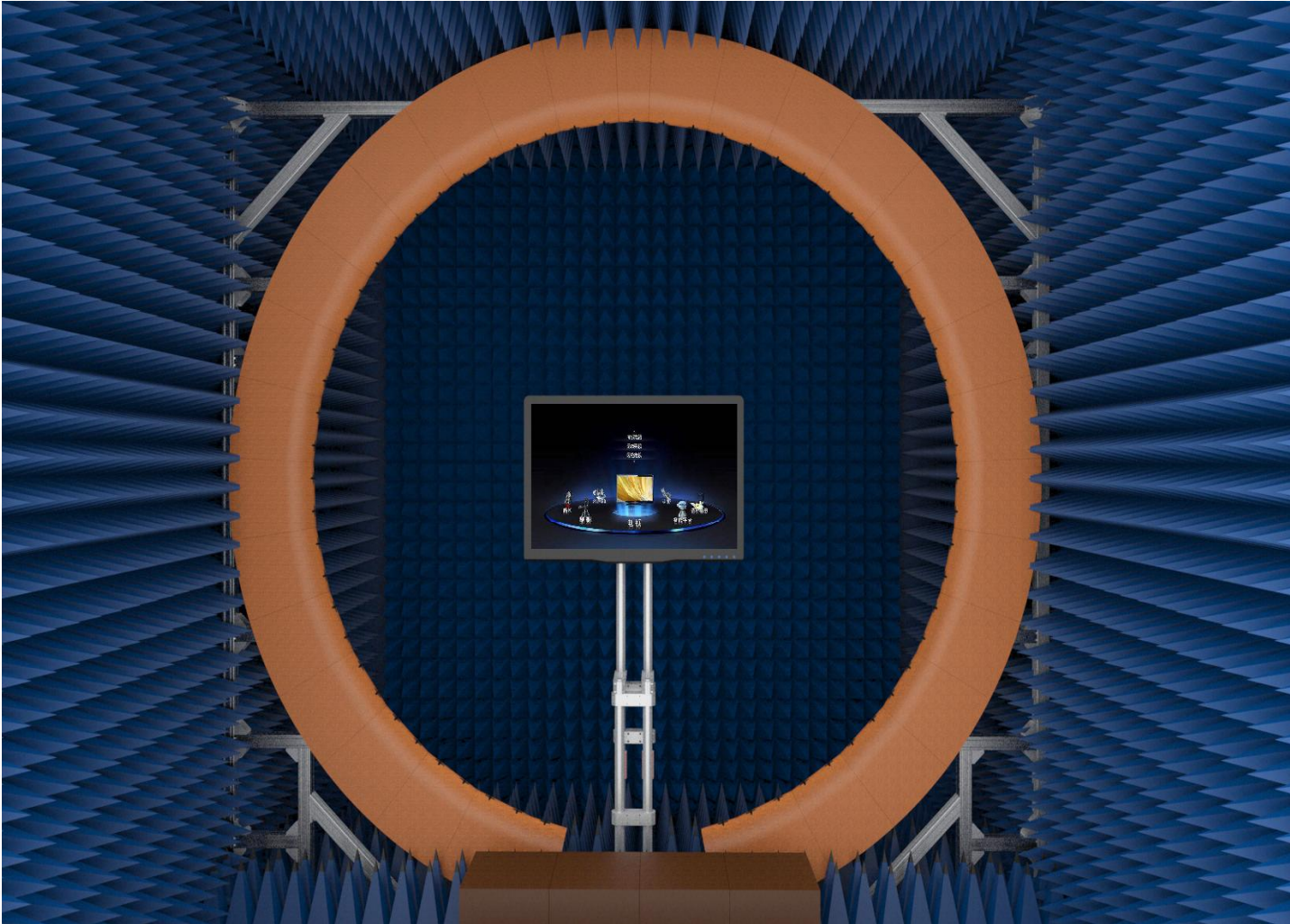
报告版本：2025. 11. 12 A8

研 发：付雄

| 版本 | 时间           | 更新说明          |
|----|--------------|---------------|
| A0 | 2024. 11. 13 | 初版无源调试数据      |
| A1 | 2024. 11. 25 | 根据客户方案调试      |
| A2 | 2025. 2. 11  | 改板后调试         |
| A3 | 2025. 4. 15  | 中框调试          |
| A4 | 2025. 5. 12  | 打样样品优化测试数据    |
| A5 | 2025. 5. 28  | 第二版打样天线测试数据   |
| A6 | 2025. 11. 6  | 有源数据测试        |
| A7 | 2025. 11. 10 | 补测手模测试数据      |
| A8 | 2025. 11. 12 | 补测B20版本天线手模数据 |
| A9 |              |               |

|                            |  |
|----------------------------|--|
| 1. 履 历 .....               |  |
| 2. 项 目 概 况 .....           |  |
| 3. 公 司 及 测 试 环 境 简 介 ..... |  |
| 4. 天 线 装 配 位 置 .....       |  |
| 5. W I F I 相 关 数 据 .....   |  |
| 6. G P S 相 关 数 据 .....     |  |
| 7. 整 机 环 境 处 理 .....       |  |
| 8. 总        结 .....        |  |

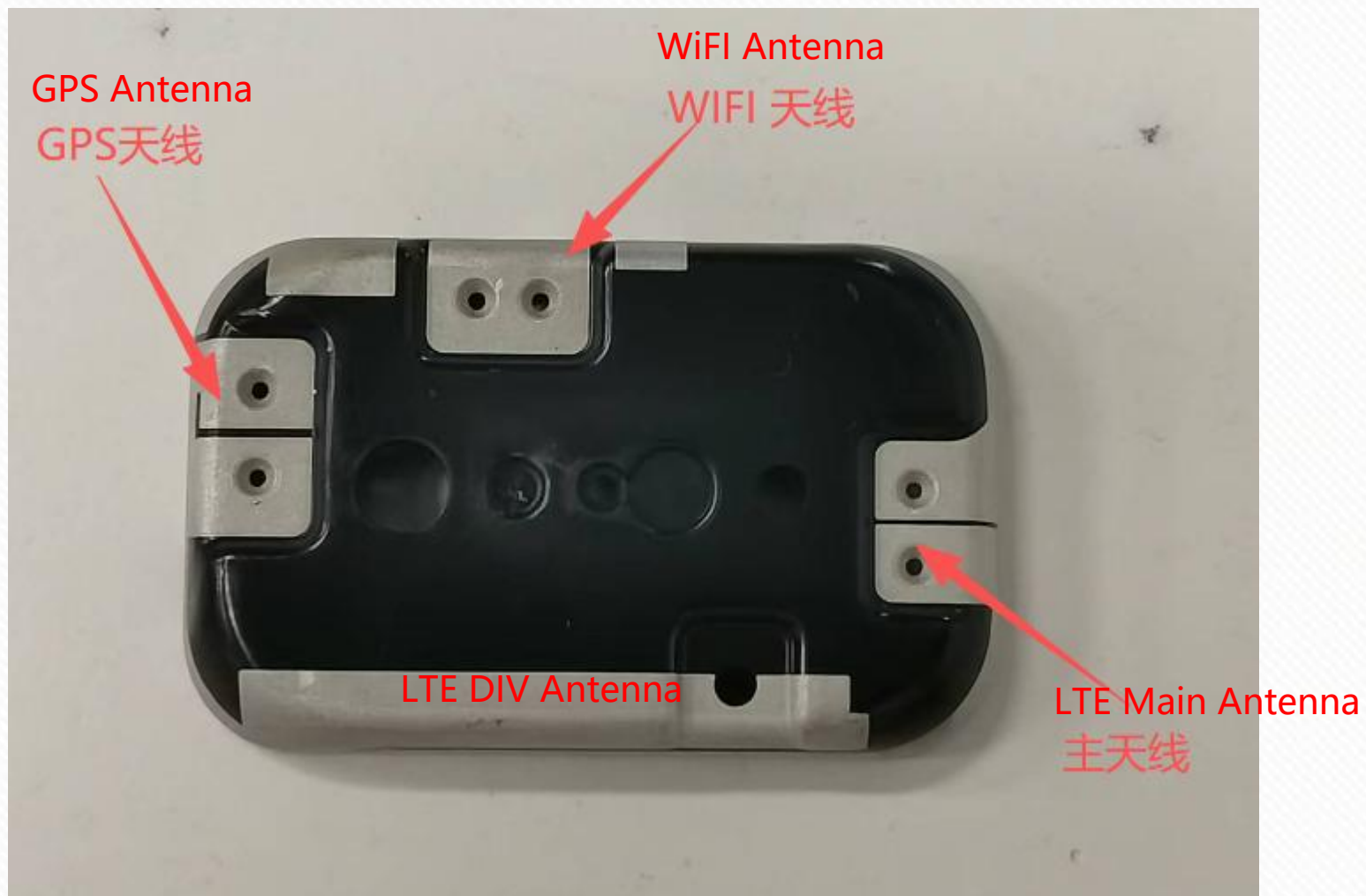
|      |                                |                                                                                                |
|------|--------------------------------|------------------------------------------------------------------------------------------------|
| 样机状态 | 无源调试机                          | 项目样机图：<br> |
| 产品类型 | 宠物定位器                          |                                                                                                |
| 天线数量 | 主天线 + L1/L5天线+2. 4GWIFI/5GWIFI |                                                                                                |
| 天线频段 | 2G: N/A                        |                                                                                                |
|      | 3G:N/A                         |                                                                                                |
|      | 4G-LTE:Fdd 2/4/12              |                                                                                                |
|      | 5G-NR:N/A                      |                                                                                                |
|      | GPS L1/L5+2. 4GWIFI            |                                                                                                |
| 结构形式 | LDS天线                          |                                                                                                |
| 环境处理 | 有改动                            |                                                                                                |
| 匹配电路 | 包含B12有做改动，不包含B12未做改动           |                                                                                                |



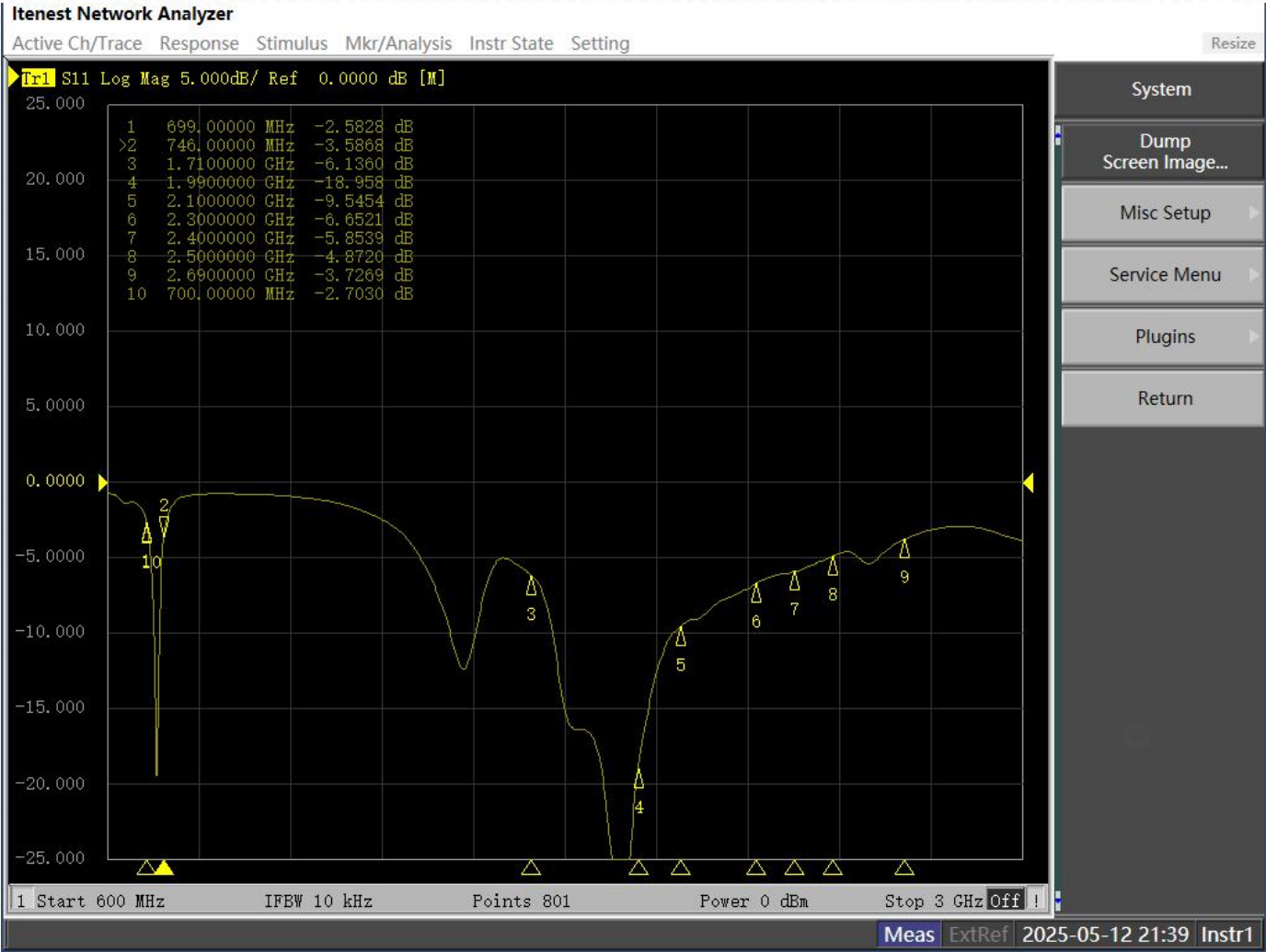
行业顶尖OTA暗室：

64探头；长/宽/高均为6米；待测项目尺寸可到2米

| 设备名称                     | 总数量 | 上海研发中心数量 | 深圳研发中心数量 | 重庆研发中心数量 |
|--------------------------|-----|----------|----------|----------|
| OTA实验室                   | 10座 | 4座       | 5座       | 1座       |
| 5G 综测仪（SP9500-CTS）       | 3台  | 1台       | 1台       | 1台       |
| R&S 综测仪（高配CMW500）        | 7台  | 3台       | 3台       | 1台       |
| 日本安立综测仪（双通道8820）         | 4台  | 2台       | 2台       | —        |
| NB-IoT综测仪（SP8315）        | 3台  | 1台       | 1台       | 1台       |
| 安捷伦综测仪（8960）             | 9台  | 4台       | 4台       | 1台       |
| 安捷伦网络分析仪（E5062A）         | 7台  | 3台       | 3台       | 1台       |
| 安捷伦网络分析仪（E5071C 8.5GHZ ） | 11台 | 5台       | 5台       | 1台       |
| 安捷伦网络分析仪（E5071B 8.5GHZ ） | 10台 | 5台       | 5台       | 1台       |
| R&S网络分析仪（ZND）            | 10台 | 5台       | 4台       | 1台       |
| R&S网络分析仪（ZVB）            | 3台  | 1台       | 1台       | 1台       |
| OTA人头手/耳蜗/手臂             | 5套  | 2套       | 2套       | 1套       |
| GPS/WIFI有源测试设备           | 5套  | 2套       | 2套       | 1套       |



S11-VSWR:



# 主天线数据 (B12)

LTE Main antenna

无源测试数据：

| Frequency/Mhz | Gain / dBi | Efficiency / % |
|---------------|------------|----------------|
| 680           | -15.27     | 2.97           |
| 690           | -14.39     | 3.64           |
| 700           | -14.20     | 3.8            |
| 710           | -12.25     | 5.95           |
| 720           | -11.14     | 7.7            |
| 730           | -9.71      | 10.68          |
| 740           | -9.72      | 10.66          |
| 750           | -10.66     | 8.59           |

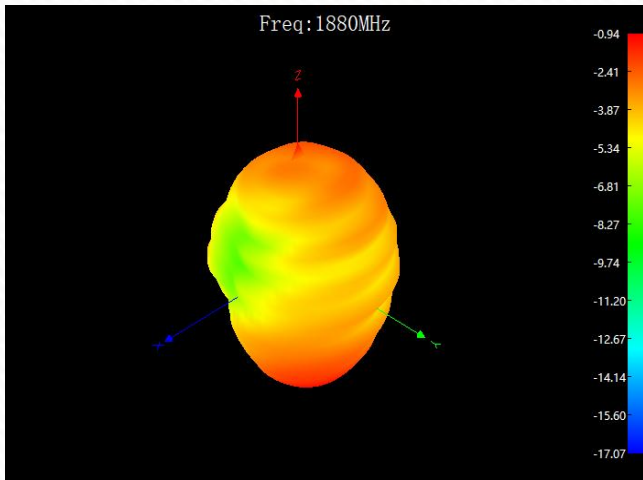
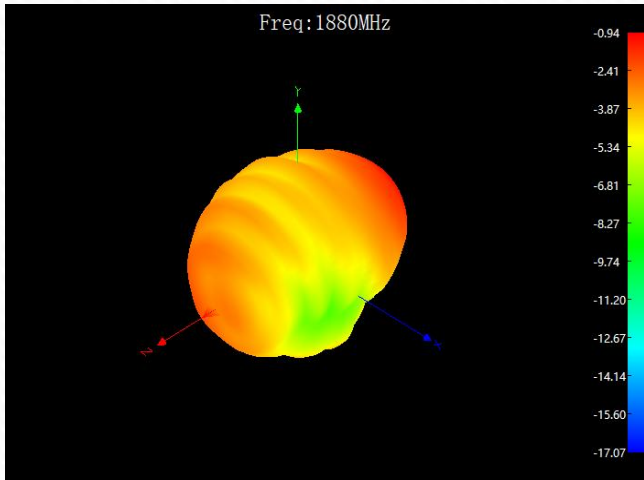
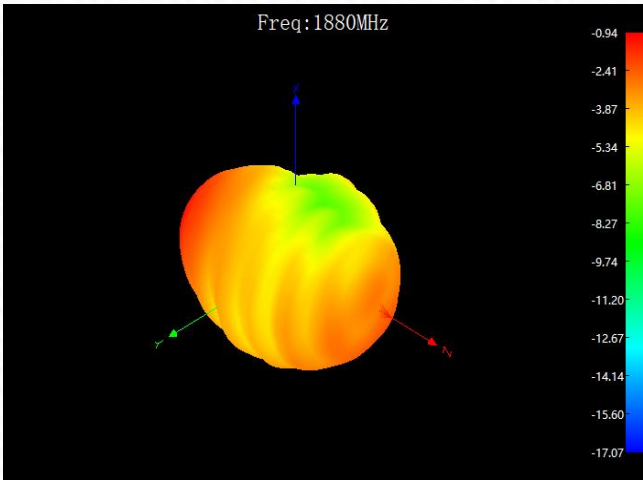
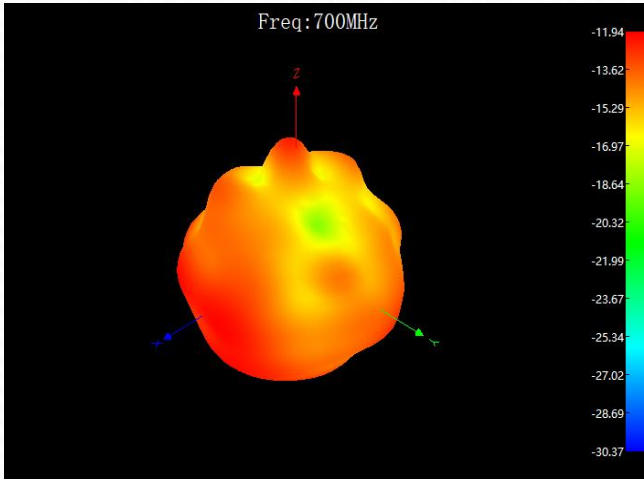
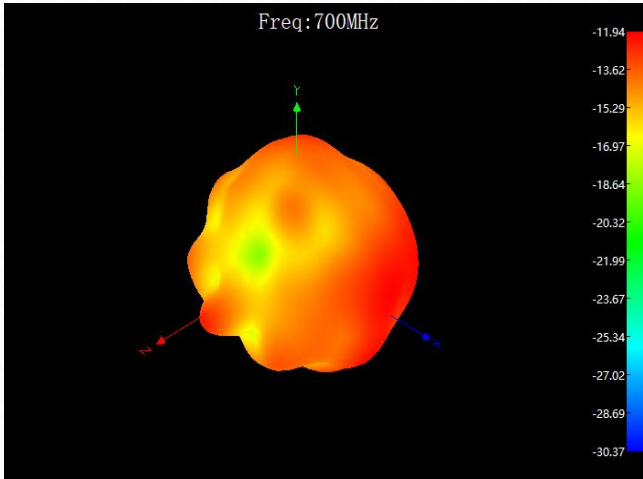
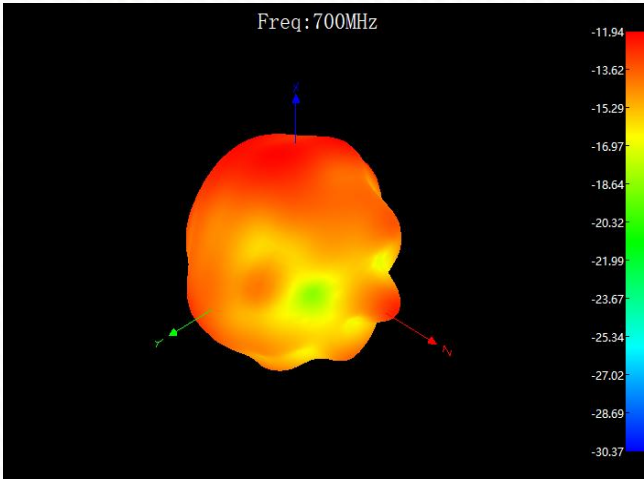
| Frequency/Mhz | Gain / dBi | Efficiency / % |
|---------------|------------|----------------|
| 1700          | -6.11      | 24.49          |
| 1710          | -6.09      | 24.62          |
| 1720          | -5.94      | 25.44          |
| 1730          | -5.57      | 27.72          |
| 1740          | -5.53      | 28             |
| 1750          | -5.32      | 29.38          |
| 1760          | -4.49      | 35.56          |
| 1770          | -3.33      | 46.45          |
| 1780          | -2.96      | 50.58          |
| 1790          | -2.6       | 54.95          |
| 1800          | -2.62      | 54.7           |
| 1810          | -2.34      | 58.34          |
| 1820          | -2.74      | 53.21          |
| 1830          | -2.6       | 54.95          |
| 1840          | -2.5       | 56.23          |
| 1850          | -2.57      | 55.34          |
| 1860          | -2.82      | 52.24          |
| 1870          | -3.62      | 43.45          |
| 1880          | -3.46      | 45.08          |
| 1890          | -3.54      | 44.26          |
| 1900          | -3.78      | 41.88          |
| 1910          | -4.31      | 37.07          |
| 1920          | -3.92      | 40.55          |
| 1930          | -4.44      | 35.97          |
| 1940          | -4.02      | 39.63          |
| 1950          | -4.59      | 34.75          |
| 1960          | -3.81      | 41.59          |
| 1970          | -4.52      | 35.32          |
| 1980          | -3.68      | 42.85          |
| 1990          | -4.65      | 34.28          |

| Frequency/Mhz | Gain / dBi | Efficiency / % |
|---------------|------------|----------------|
| 2000          | -4.07      | 39.17          |
| 2010          | -4.54      | 35.16          |
| 2020          | -4.01      | 39.72          |
| 2030          | -4.46      | 35.81          |
| 2040          | -3.7       | 42.66          |
| 2050          | -4.49      | 35.56          |
| 2060          | -4.04      | 39.45          |
| 2070          | -4.41      | 36.22          |
| 2080          | -3.52      | 44.46          |
| 2090          | -4.11      | 38.82          |
| 2100          | -3.09      | 49.09          |
| 2110          | -3.24      | 47.42          |
| 2120          | -2.9       | 51.29          |
| 2130          | -3.26      | 47.21          |
| 2140          | -3.14      | 48.53          |
| 2150          | -3.45      | 45.19          |
| 2160          | -3.23      | 47.53          |
| 2170          | -3.64      | 43.25          |

# 主天线数据 (B12)

LTE Main antenna

3D图：



手模状态测图片



# 主天线数据 (B12)

LTE Main antenna

有源测试数据：

自由空间

| Band | Channel | TRP(dBm) |
|------|---------|----------|
| B2   | 18601   | 18.18    |
|      | 18900   | 18.18    |
|      | 19199   | 18.63    |
|      | 1199    | -112.12  |
| B4   | 19951   | 14.17    |
|      | 20175   | 15.36    |
|      | 20339   | 17.78    |
|      | 2339    | -96.95   |
| B12  | 23011   | 5.24     |
|      | 23095   | 5.44     |
|      | 23179   | 6.9      |
|      | 5179    | -96.58   |

手模状态

| Band | Channel | TRP(dBm) |
|------|---------|----------|
| B2   | 18601   | 17.08    |
|      | 18900   | 16.77    |
|      | 19199   | 17.31    |
|      | 1199    | -109.31  |
| B4   | 19951   | 9.61     |
|      | 20175   | 11.81    |
|      | 20339   | 13.44    |
|      | 2339    | -105.69  |
| B12  | 23011   | 5.16     |
|      | 23095   | 6.36     |
|      | 23179   | 8.39     |
|      | 5179    | -97.27   |

# 主天线数据 (B20)

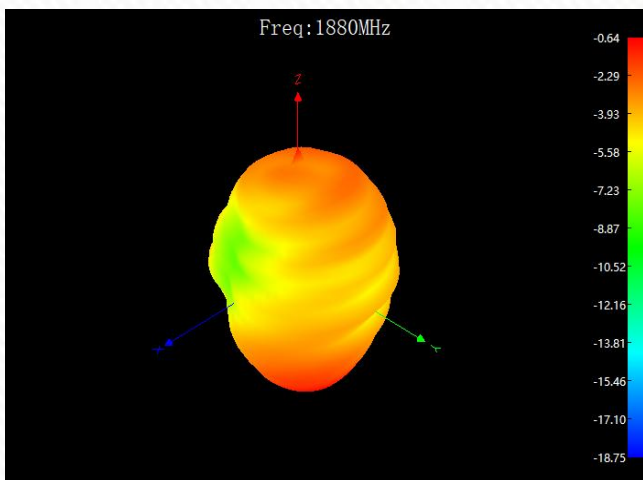
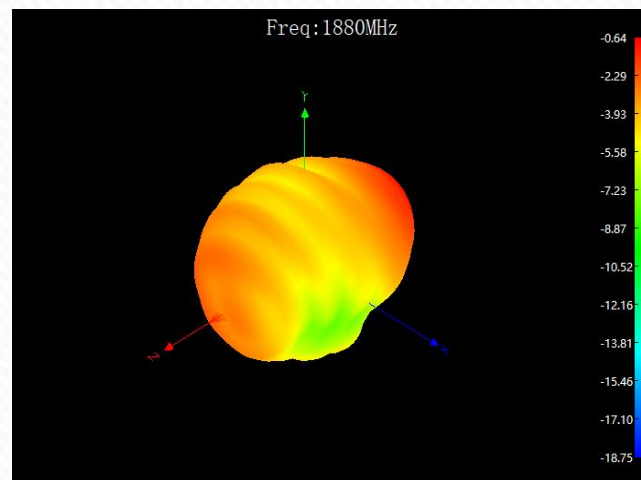
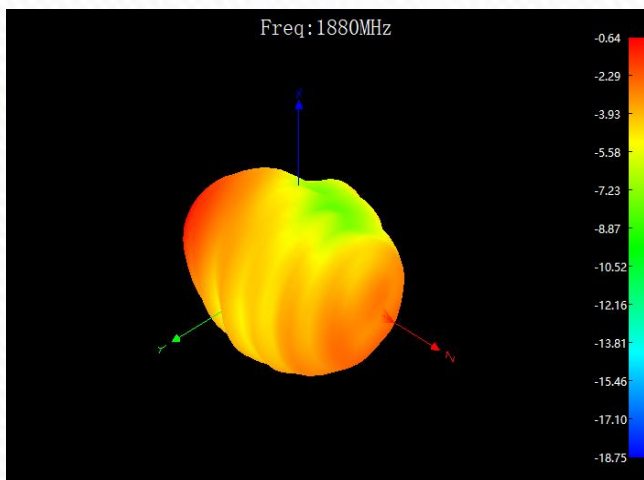
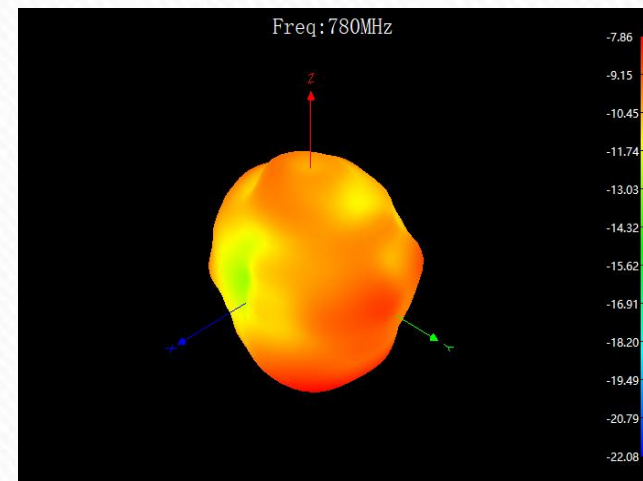
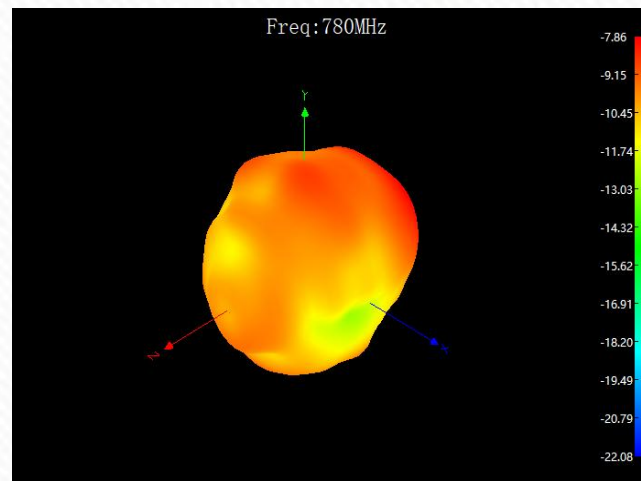
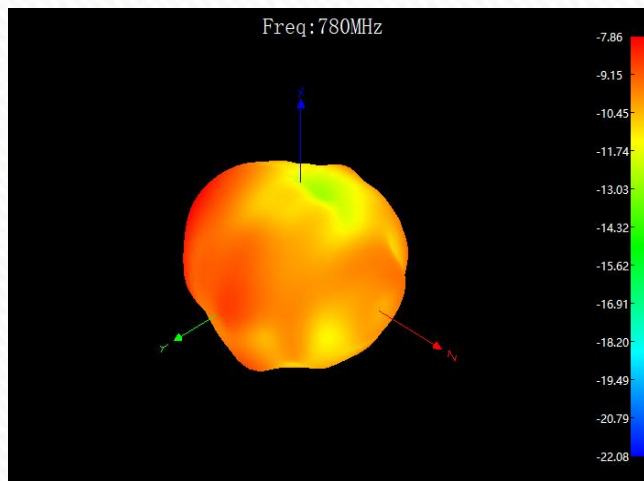
LTE Main antenna

无源测试数据：

| Frequency/Mhz | Gain / dBi | Efficiency / % |
|---------------|------------|----------------|
| 780           | -10.04     | 9.9            |
| 790           | -9.79      | 10.49          |
| 800           | -9.80      | 10.47          |
| 810           | -10.88     | 8.17           |
| 820           | -11.68     | 6.79           |
| 830           | -12.53     | 5.58           |
| 840           | -12.83     | 5.21           |
| 850           | -13.03     | 4.98           |
| 860           | -13.81     | 4.16           |
| 870           | -13.70     | 4.27           |
| 880           | -13.82     | 4.15           |

| Frequency/Mhz | Gain / dBi | Efficiency / % |
|---------------|------------|----------------|
| 1700          | -5.6       | 27.54          |
| 1720          | -4.72      | 33.73          |
| 1740          | -3.92      | 40.55          |
| 1760          | -3.48      | 44.87          |
| 1780          | -3.05      | 49.55          |
| 1800          | -2.72      | 53.46          |
| 1820          | -2.93      | 50.93          |
| 1840          | -3.02      | 49.89          |
| 1860          | -3.1       | 48.98          |
| 1880          | -3.28      | 46.99          |
| 1900          | -3.5       | 44.67          |
| 1920          | -3.42      | 45.5           |
| 1940          | -3.5       | 44.67          |
| 1960          | -3.37      | 46.03          |
| 1980          | -3.37      | 46.03          |
| 2000          | -3.58      | 43.85          |
| 2020          | -3.49      | 44.77          |
| 2040          | -3.53      | 44.36          |
| 2060          | -3.47      | 44.98          |
| 2080          | -3.5       | 44.67          |
| 2100          | -3.67      | 42.95          |
| 2120          | -3.71      | 42.56          |
| 2140          | -3.63      | 43.35          |
| 2160          | -3.68      | 42.85          |
| 2180          | -3.86      | 41.11          |
| 2200          | -3.67      | 42.95          |

3D图：



# 主天线数据 (B20)

LTE Main antenna

有源测试数据：

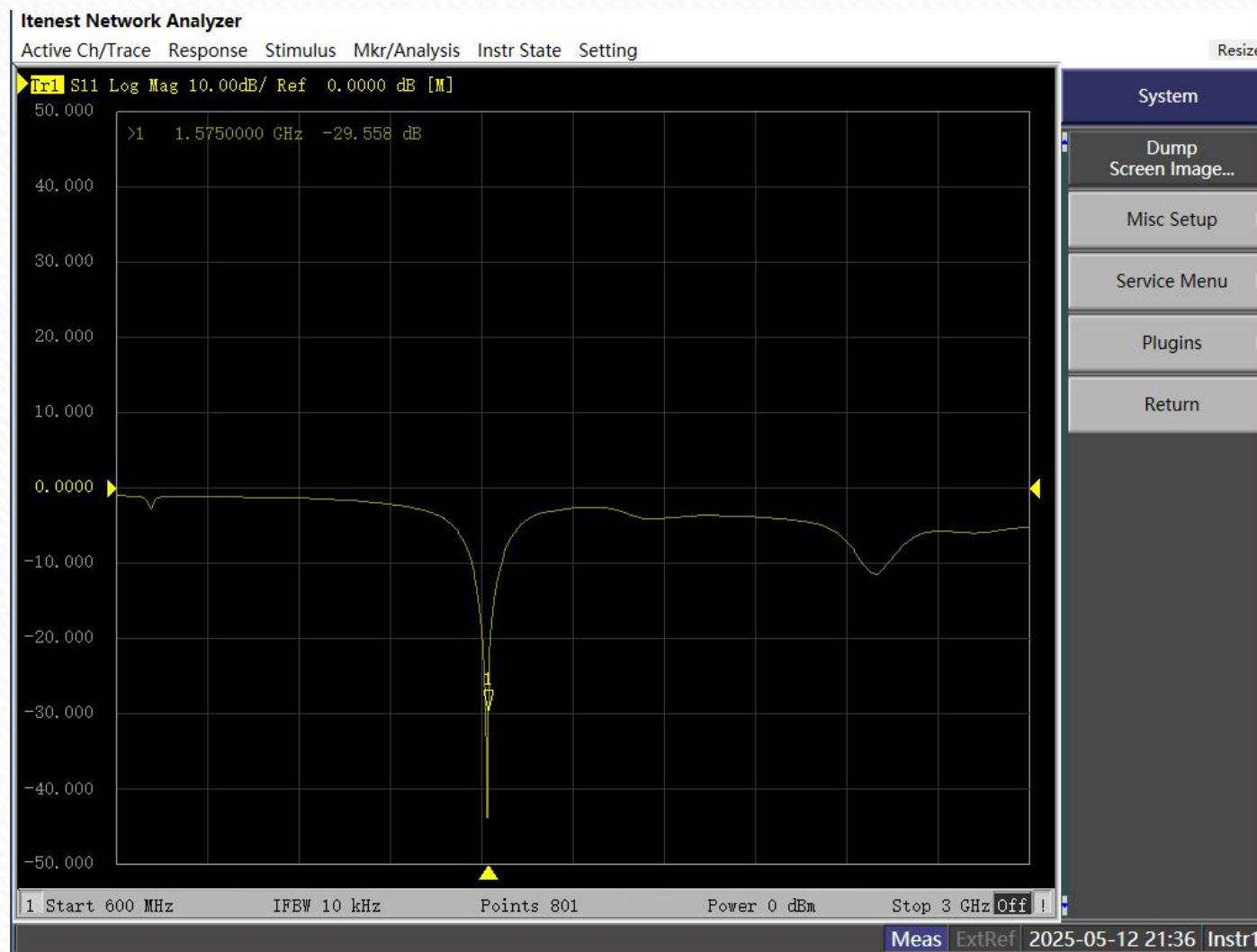
手模状态

| Band | Channel | TRP(dBm) |
|------|---------|----------|
| B20  | 24151   | 12.34    |
|      | 24300   | 11.73    |
|      | 24449   | 11.72    |
|      | 6449    | -102.89  |

# L1/L5天线数据

GPS antenna

S11-VSWR:



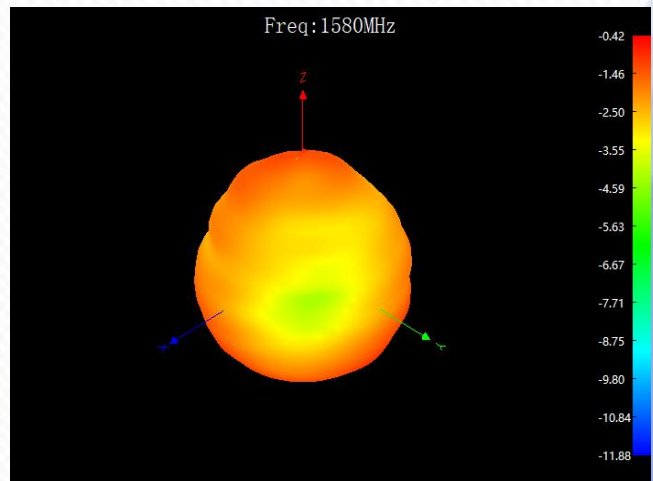
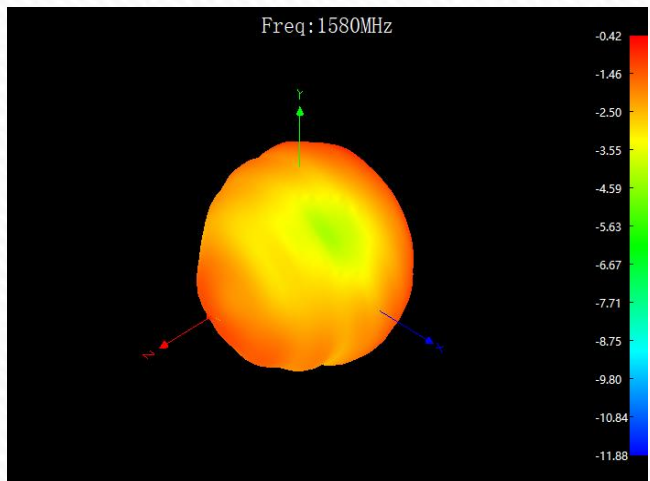
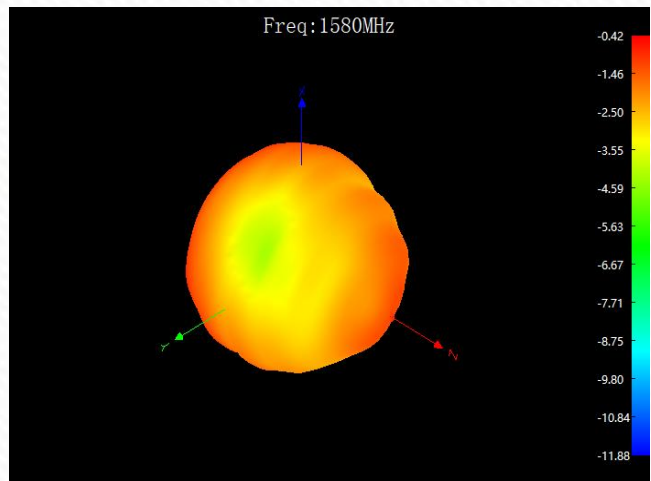
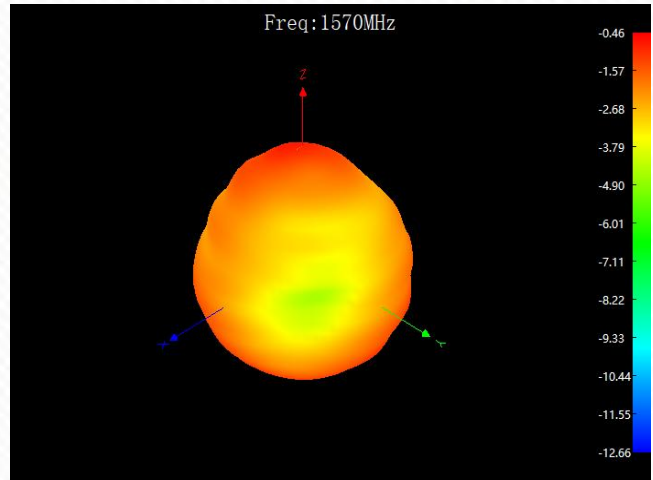
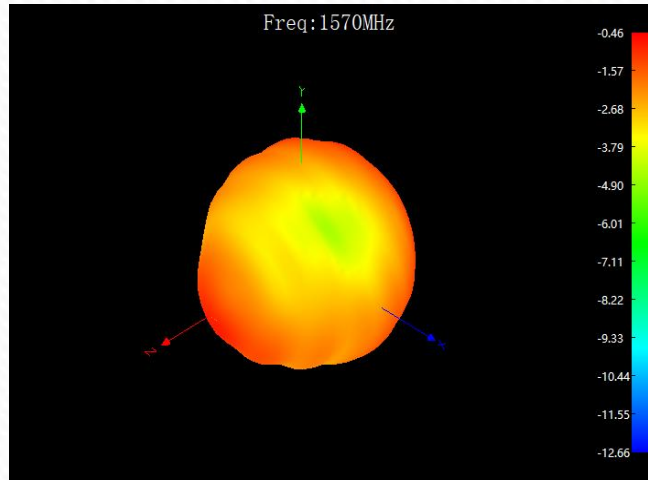
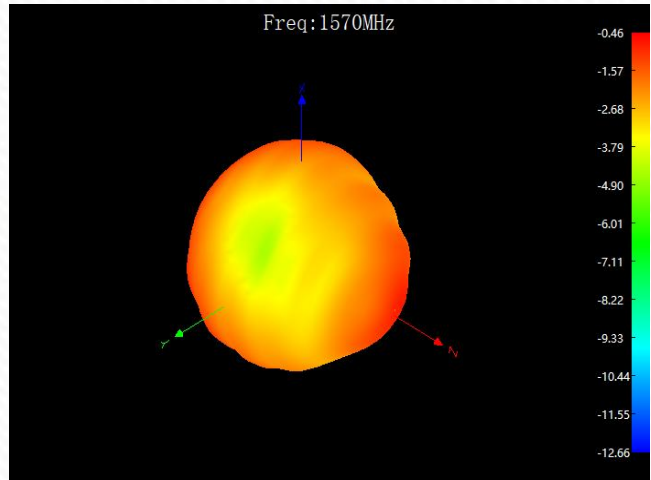
无源测试数据：

| Frequency/Mhz | Gain / dBi | Efficiency / % |
|---------------|------------|----------------|
| 1500          | -5.54      | 27.93          |
| 1510          | -5.22      | 30.06          |
| 1520          | -4.97      | 31.84          |
| 1530          | -4.84      | 32.81          |
| 1540          | -4.56      | 34.99          |
| 1550          | -4.6       | 34.67          |
| 1560          | -3.78      | 41.88          |
| 1570          | -3.33      | 46.46          |
| 1580          | -3.38      | 45.95          |
| 1590          | -3.60      | 43.63          |
| 1600          | -3.73      | 42.36          |

# GPS天线数据

GPS antenna

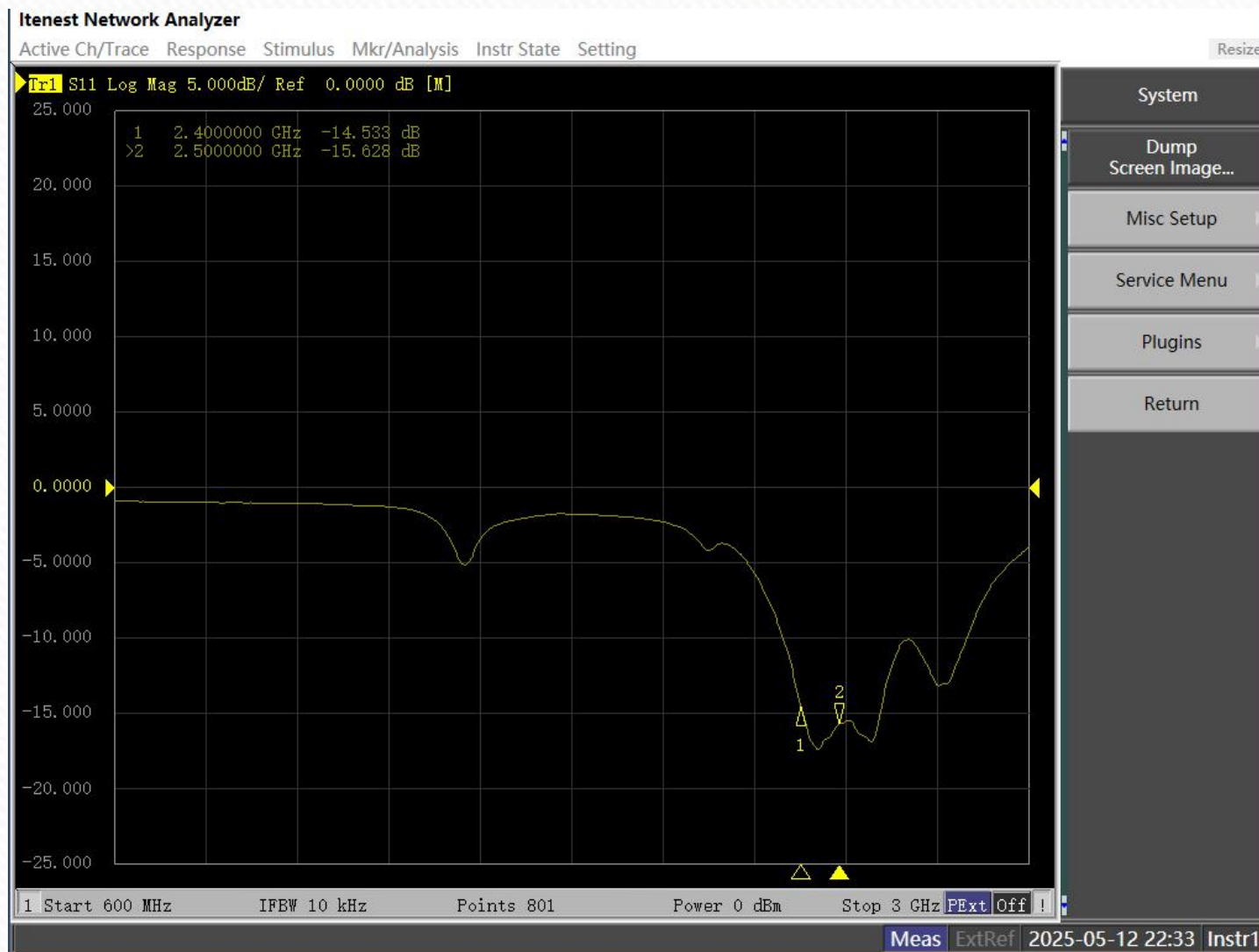
3D图：



# WIFI天线数据

WiFi antenna

S11-VSWR:

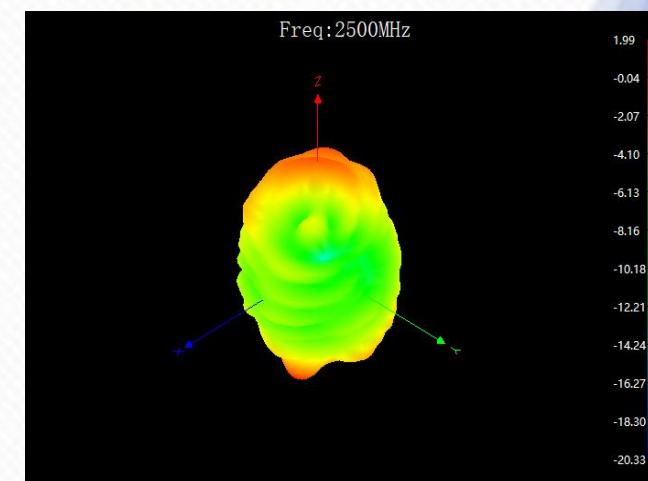
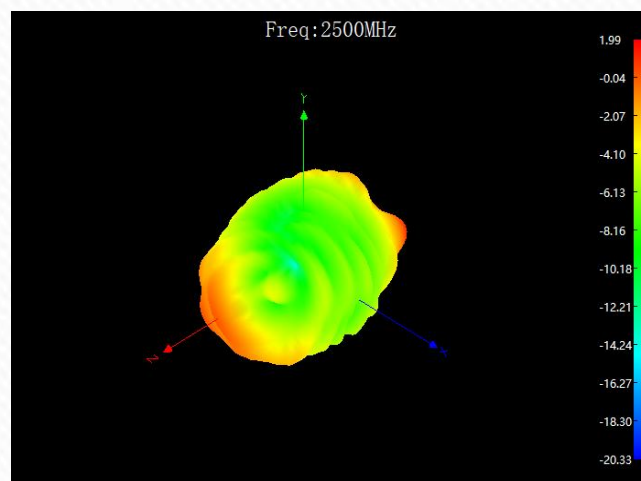
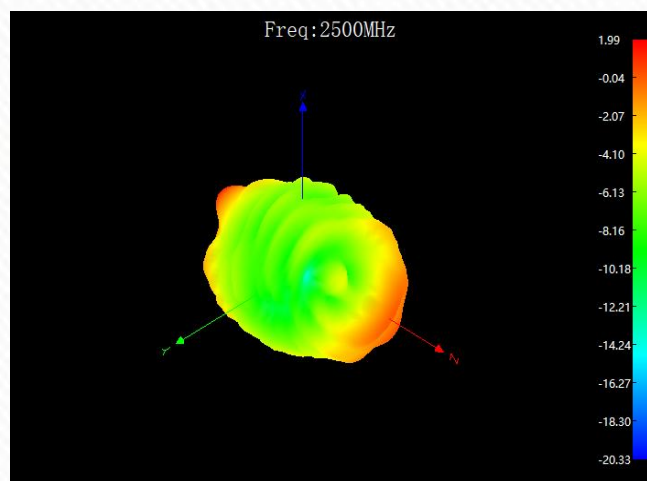
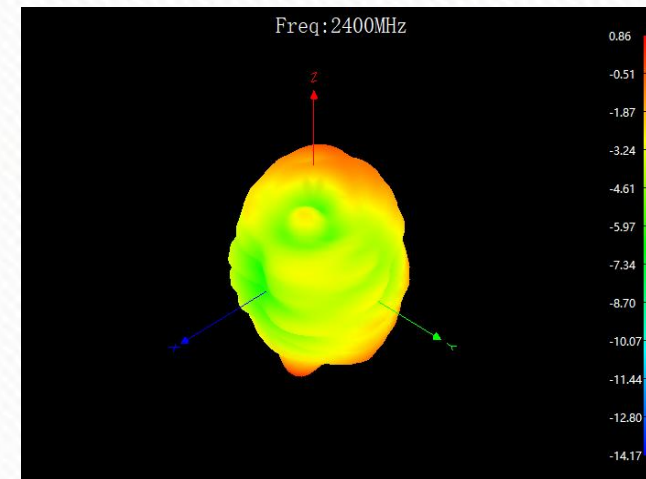
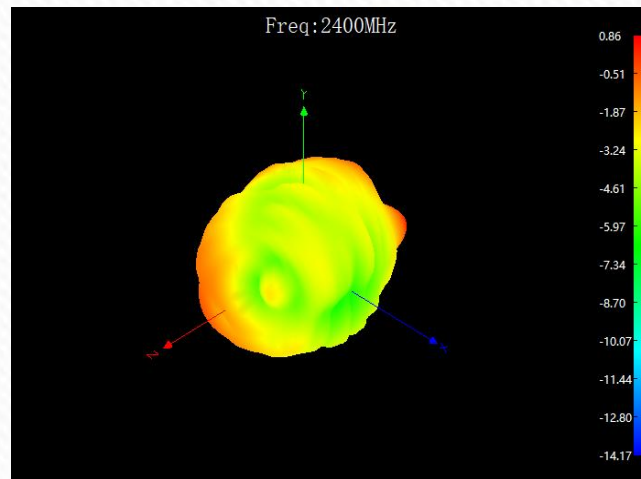
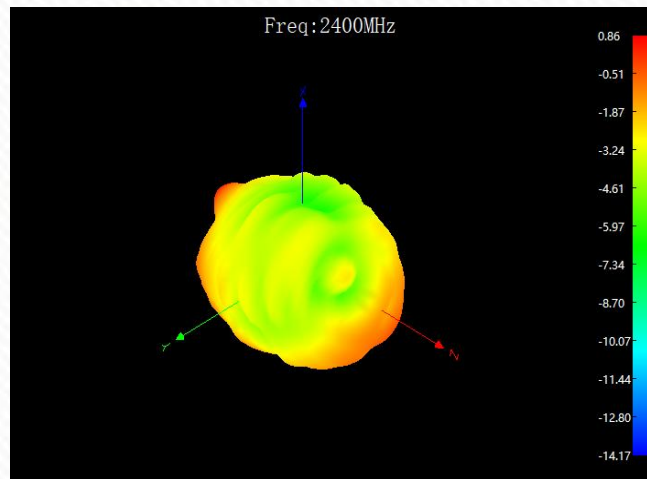


WiFi antenna

无源测试数据：

| Frequency/Mhz | Gain / dBi | Efficiency / % |
|---------------|------------|----------------|
| 2400          | -4.67      | 34.12          |
| 2410          | -4.86      | 32.66          |
| 2420          | -4.87      | 32.61          |
| 2430          | -4.85      | 32.71          |
| 2440          | -4.95      | 31.99          |
| 2450          | -5.01      | 31.55          |
| 2460          | -5.16      | 30.48          |
| 2470          | -4.99      | 31.72          |
| 2480          | -5.00      | 31.65          |
| 2490          | -5.08      | 31.05          |
| 2500          | -4.98      | 31.77          |

无源测试数据：



- 1.天线版本: LDS样品
- 2.匹配改动: 未做改动
- 3.环境处理: 未做改动
- 4.当前小结: 打样样品测试数据
- 5.后续计划:

# Thank You

**上海研发中心：**上海市青浦区高光路215弄99号4号楼1楼

**深圳研发中心：**深圳市光明区南太云创谷中心5栋6楼

**重庆研发中心：**重庆市渝北区仙桃数据谷东路19号ARM生态产业园1F

**惠州工厂地址：**惠州市惠城区水口街道青荔二路15号雄韬科技城8栋4-6层



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