

# Antenna Testing Report

**Customer:** apical Technology

**Project Name:** 3837

**Report Number:** SZ24081IB77/SZ24081IA57

**Manufacturer:** Sunnyway Technology(CHINA)

**Address:** Floor 6, Building 5, Nam Tai Inno Park, Guangming District, Shenzhen

**Report version:** July. 30, 2024

**Author:** Yang Jie

| Version | Report date | Remark           |
|---------|-------------|------------------|
| A0      | 2024.7.30   | Latest test data |
| A1      |             |                  |
| A2      |             |                  |
| A3      |             |                  |
| A4      |             |                  |
| A5      |             |                  |
| A6      |             |                  |
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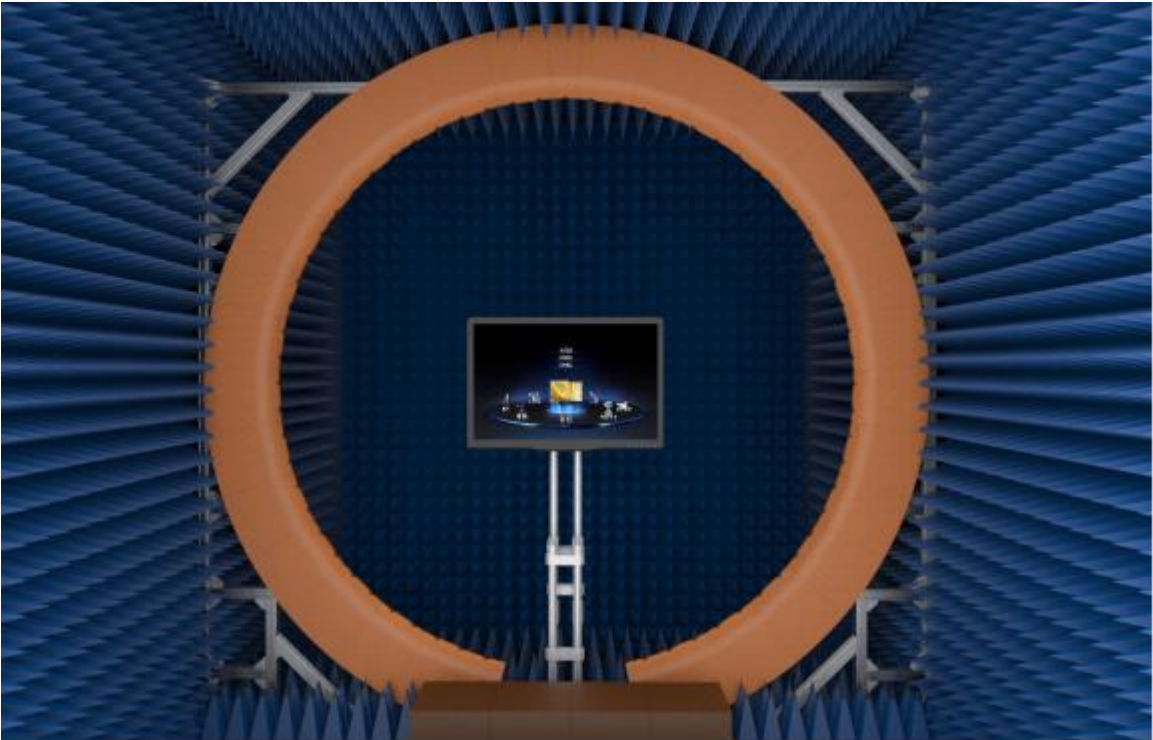
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|                        |                   |
|------------------------|-------------------|
| Prototype status       | Debugging machine |
| Device type            | car recorder      |
| Number of antennas     | WIFI antenna      |
| Frequency band         | 802.11B/G/N       |
|                        |                   |
|                        |                   |
|                        |                   |
|                        |                   |
| Structural style       | FPC+Ceramic       |
| Environment adjustment | No change         |
| Matching modification  | No change         |



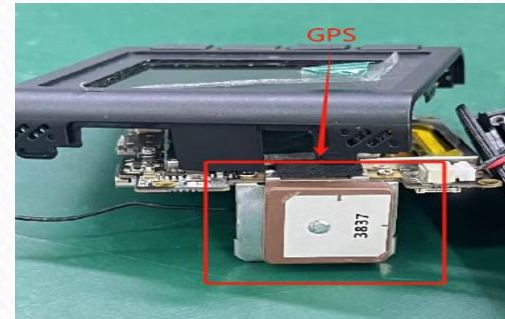
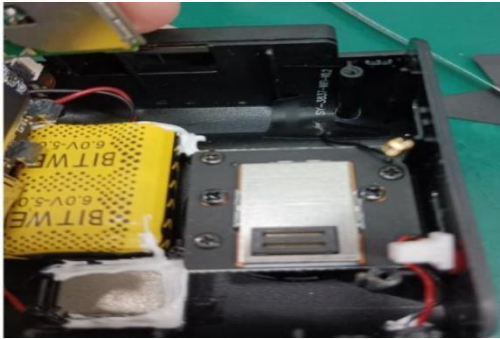
The industry's top 64 sensors OTA chamber

Frequency range: 400MHz-11GHz

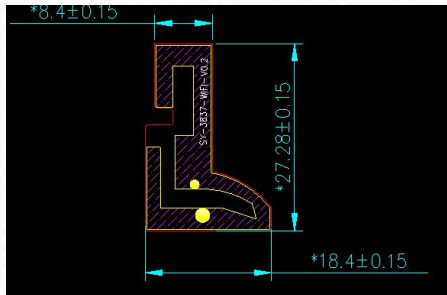
Device Llimitation: 2M

Load-bearing limitation:100KG

| Equipments Items                        | Total Quantity | Quantity for Shanghai R&D | Quantity for Shenzhen R&D | Quantity for ChongQing R&D |
|-----------------------------------------|----------------|---------------------------|---------------------------|----------------------------|
| OTA chamber                             | 10             | 4                         | 5                         | 1                          |
| 5G Tester（SP9500-CTS）                   | 3              | 1                         | 1                         | 1                          |
| R&S Tester（high configuration CMW500）   | 6              | 3                         | 2                         | 1                          |
| Japan Anritsu Tester（Dual Channel 8820） | 4              | 2                         | 2                         | --                         |
| NB-IoT Tester (SP8315)                  | 3              | 1                         | 1                         | 1                          |
| Agilent Tester（8960）                    | 9              | 4                         | 4                         | --                         |
| Agilent Network Analyzer（E5062A）        | 7              | 3                         | 3                         | 1                          |
| Agilent Network Analyzer（E5071C 8.5GHZ） | 11             | 5                         | 5                         | 1                          |
| Agilent Network Analyzer（E5071B 8.5GHZ） | 7              | 3                         | 3                         | 1                          |
| R&S Network Analyzer（ZND）               | 9              | 4                         | 4                         | 1                          |
| R&S Network Analyzer（ZVB）               | 3              | 1                         | 1                         | 1                          |
| OTA head hand / ear hand / arm hand     | 5              | 2                         | 2                         | 1                          |
| GPS/WIFI active test equipment          | 5              | 2                         | 2                         | 1                          |

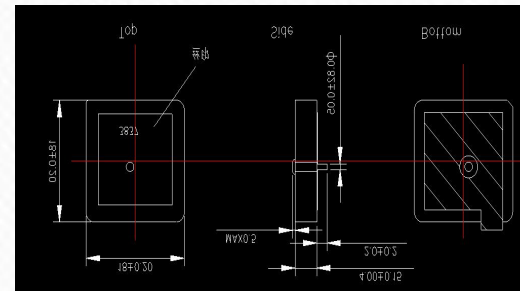


WiFi antenna/Antenna size

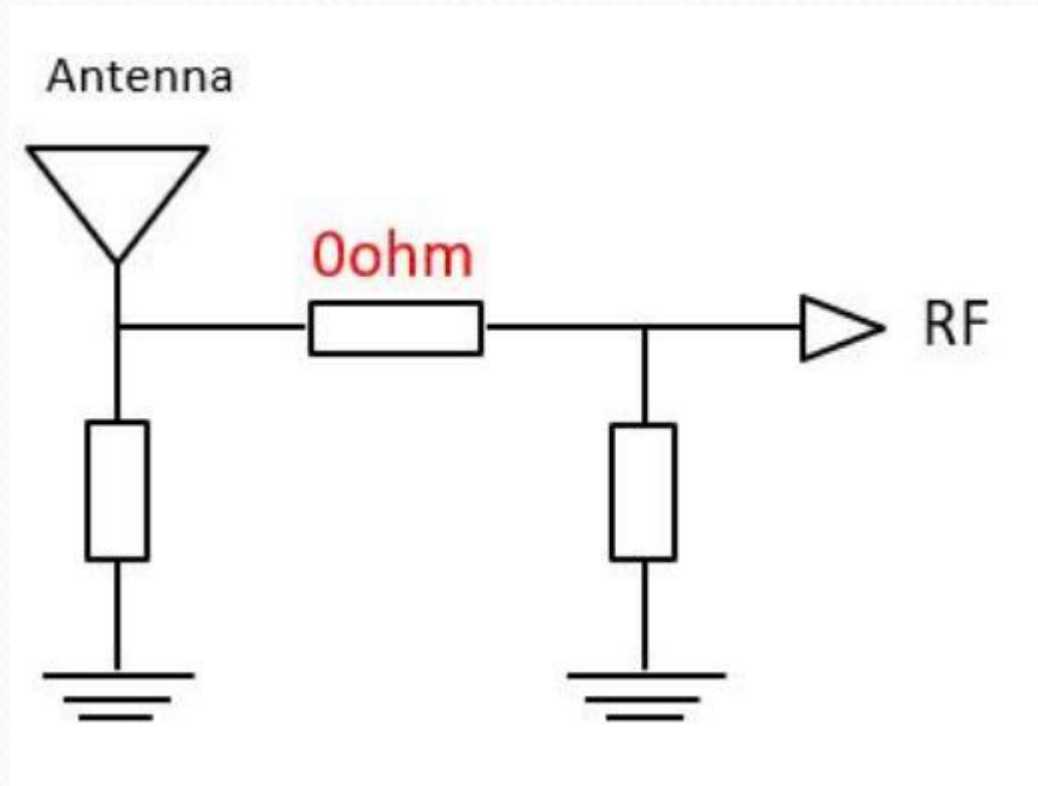


WiFi Antenna type: FPC antenna  
WiFi Antenna model: **SZ24081IB77**

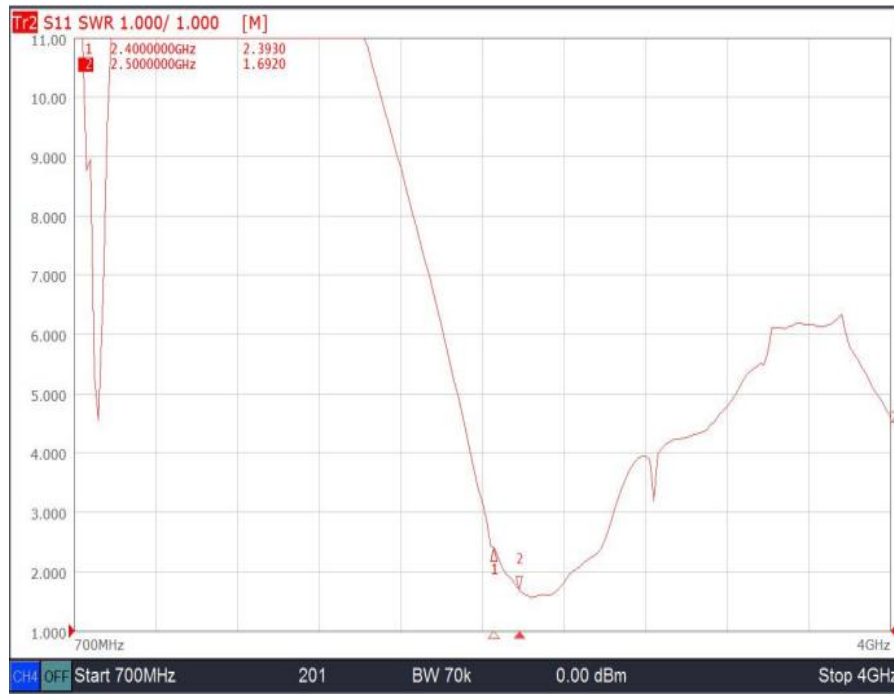
GPS antenna/Antenna size



GPS Antenna type: Ceramic antenna  
GPS Antenna model: **SZ24081IA57**

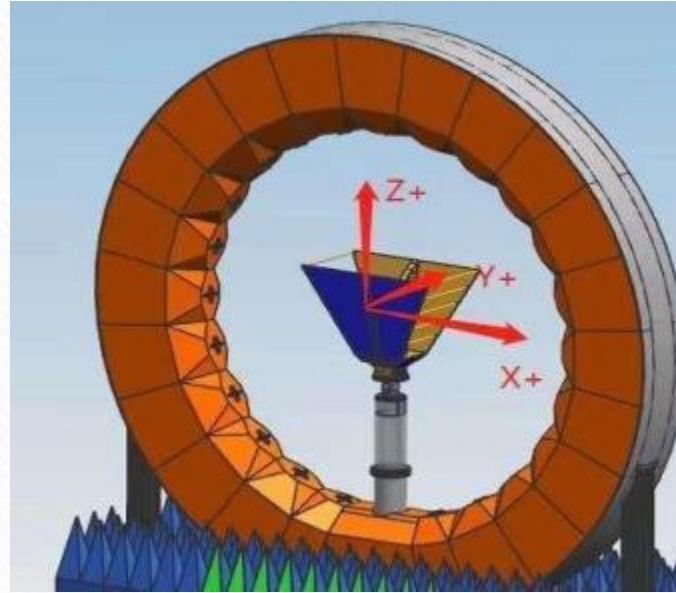


## S11-VSWR

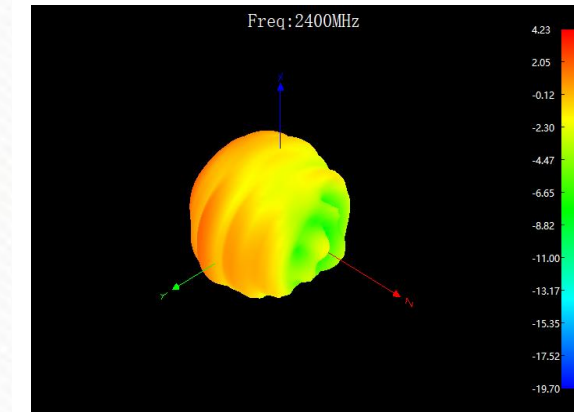


| Frequency/Mhz | MaxGain/dBi | Efficiency / % |
|---------------|-------------|----------------|
| 2400          | 4.23        | 34.09          |
| 2410          | 4.14        | 35.42          |
| 2420          | 3.8         | 35.6           |
| 2430          | 3.76        | 35.71          |
| 2440          | 3.62        | 35.03          |
| 2450          | 3.53        | 36.77          |
| 2460          | 3.27        | 34.27          |
| 2470          | 3.57        | 35.65          |
| 2480          | 3.69        | 35.05          |
| 2490          | 3.7         | 35.02          |
| 2500          | 3.54        | 35.9           |

Machine placement picture

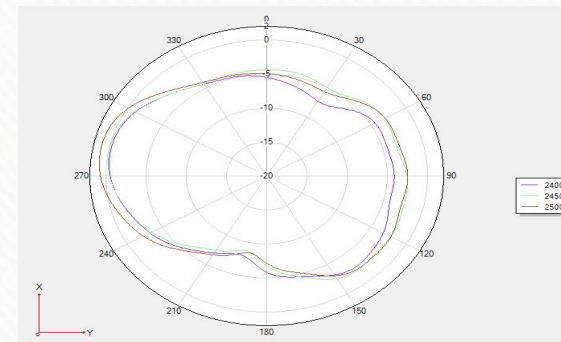
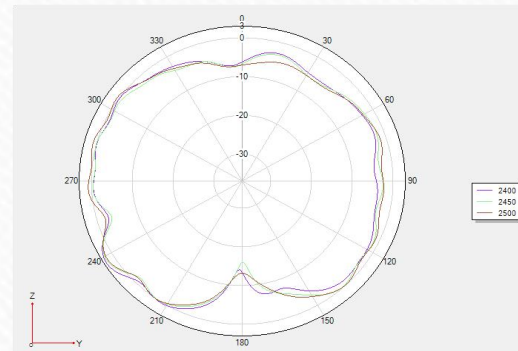
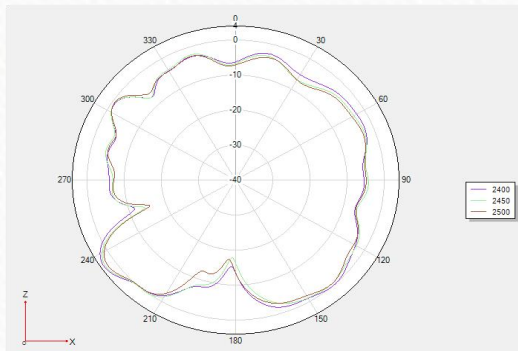


3D



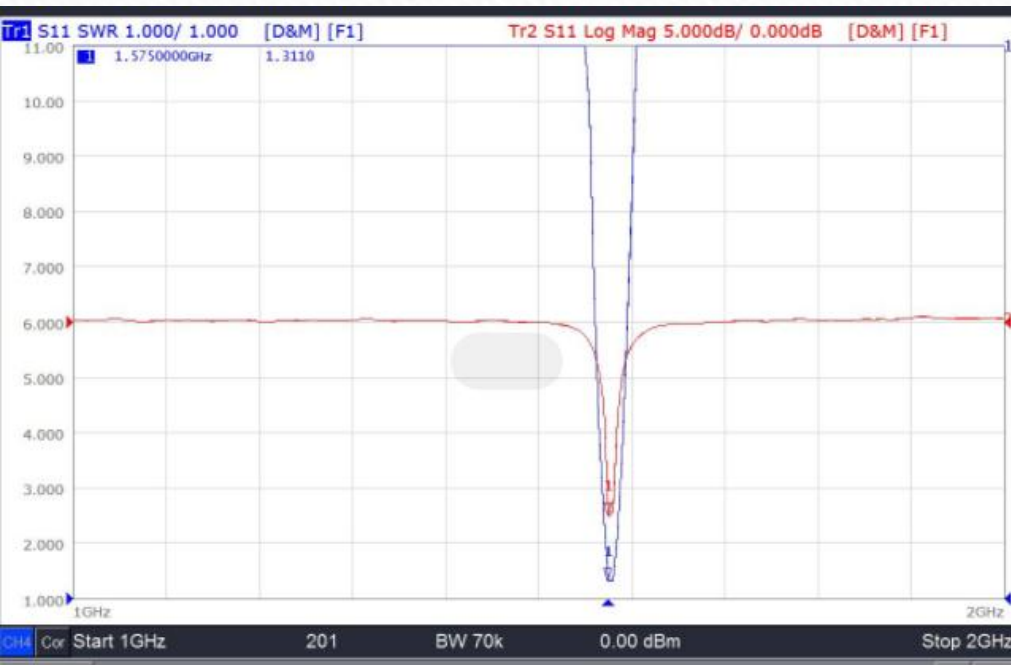
Directional diagram

2D



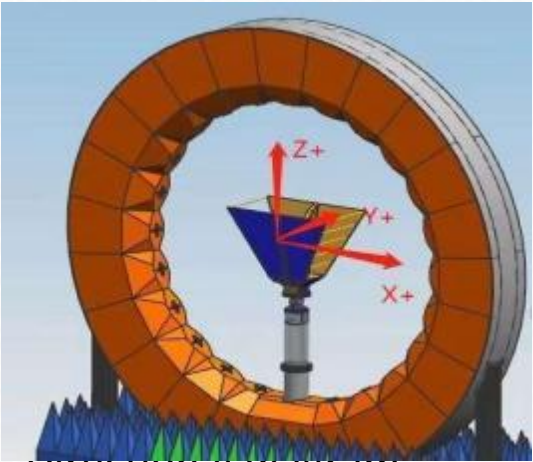
| Measurement | Band              | Channel | Total  |
|-------------|-------------------|---------|--------|
| TRP         | WIFI_B (1M)       | 1       | 14.51  |
| TRP         | WIFI_B (1M)       | 7       | 14.52  |
| TRP         | WIFI_B (1M)       | 13      | 15.3   |
| TIS(EIRP)   | WIFI_B (11M)      | 13      | -78.86 |
| TRP         | WIFI_G (6M)       | 1       | 12.81  |
| TRP         | WIFI_G (6M)       | 7       | 12.62  |
| TRP         | WIFI_G (6M)       | 13      | 12.76  |
| TIS(EIRP)   | WIFI_G (54M)      | 13      | -64.21 |
| TRP         | WIFI_N_ISM (6.5M) | 1       | 11.79  |
| TRP         | WIFI_N_ISM (6.5M) | 7       | 11.25  |
| TRP         | WIFI_N_ISM (6.5M) | 13      | 11.52  |
| TIS(EIRP)   | WIFI_N_ISM (65M)  | 13      | -61.85 |

## S11-VSWR



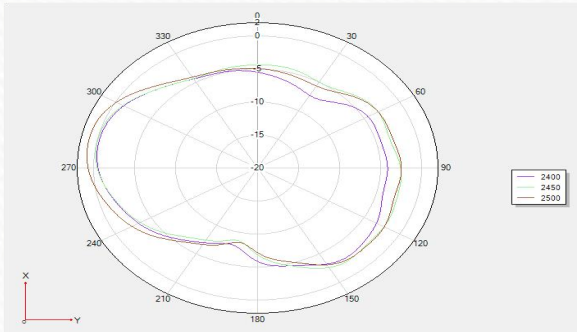
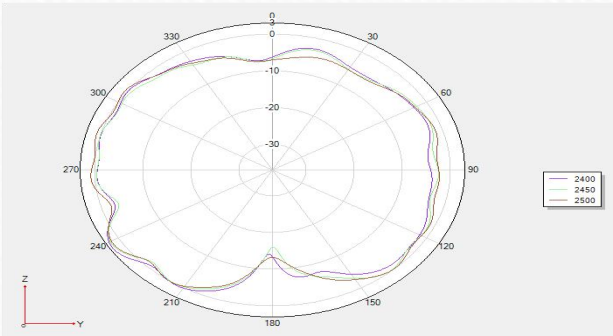
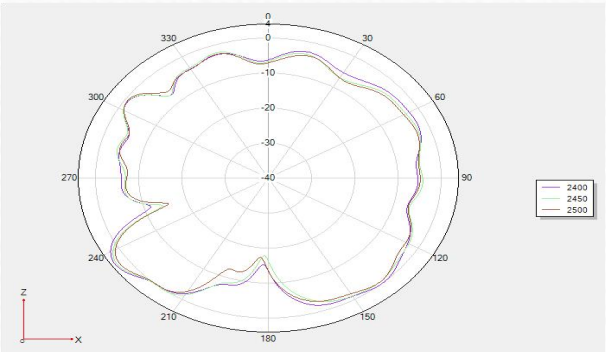
| Frequency/Mhz | MaxGain/dBi | Efficiency / % |
|---------------|-------------|----------------|
| 1570          | -2.06       | 32.28          |
| 1571          | -1.93       | 33.57          |
| 1572          | -1.8        | 34.83          |
| 1573          | -1.66       | 35.89          |
| 1574          | -1.51       | 37.07          |
| 1575          | -1.35       | 37.76          |
| 1576          | -1.22       | 37.93          |
| 1577          | -1.16       | 36.58          |
| 1578          | -1.03       | 36.98          |
| 1579          | 0.32        | 36.48          |

Machine placement picture

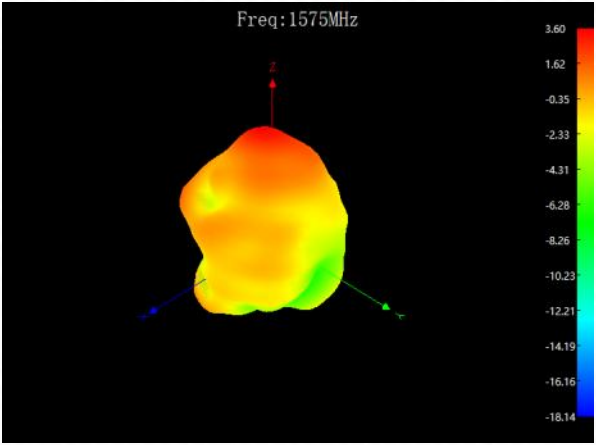
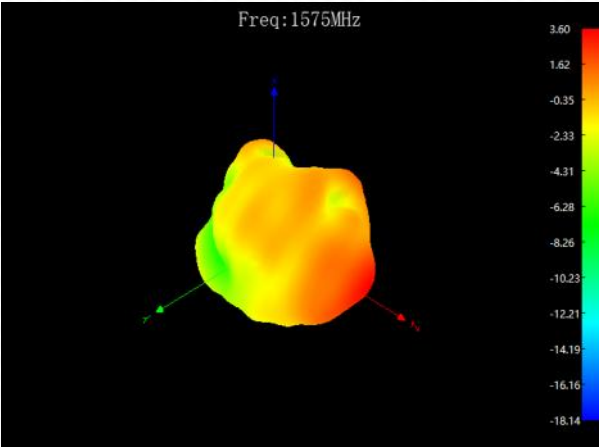


Directional diagram

2D



3D



The above is the latest validation test data.

# Thank You

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