



# 承认书

## APPROVAL SHEET

|                             |             |
|-----------------------------|-------------|
| 客户 (Customer)               | 信雅达         |
| 客户型号 (Customer Model)       | S60         |
| 产品 (Product)                | 4G 主天线 内置天线 |
| 客户料号 (Customer Part Number) | S2JD01025X1 |
| 扭飞料号 (Nuphiz Part Number)   | F1-000658   |
| 签发时间 (Issued Date)          | 2024-11-04  |

### 客户 CUSTOMER

|                     |                          |                |
|---------------------|--------------------------|----------------|
| 品质部<br>QUALITY DEPT | 工程部<br>ENGINEER R&D DEPT | 批准<br>APPROVED |
|                     |                          |                |

### 扭飞 Nuphiz

|                   |                          |                |
|-------------------|--------------------------|----------------|
| 制作人<br>WRITTEN BY | 工程部<br>ENGINEER R&D DEPT | 批准<br>APPROVED |
| 陈莎莉               | 谭智杨                      | 叶晓宇            |



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## 规格表

## RF Cable Assembly Specification

| 主要技术指标            |           | Main technical specification |           |
|-------------------|-----------|------------------------------|-----------|
| 频率范围 (MHz)        | 617-2690  | Frequency Range (MHz)        | 617-2690  |
| 特性阻抗 ( $\Omega$ ) | 50        | Impedance                    | 50        |
| 效率                | >10%      | Efficiency                   | >10%      |
| 增益                | 4.19dBi   | Gain                         | 4.19dBi   |
| 物理特性              |           | Physical Properties          |           |
| 线材/颜色             | ----      | Cable Type                   | ----      |
| 连接头               | ----      | Connector                    | ----      |
| 保存温度              | -20℃~+70℃ | Storage Temp                 | -20℃~+70℃ |
| 工作温度              | -20℃~+60℃ | Operating Temp               | -20℃~+60℃ |

## 测试设备和条件

### Test Equipment & Conditions

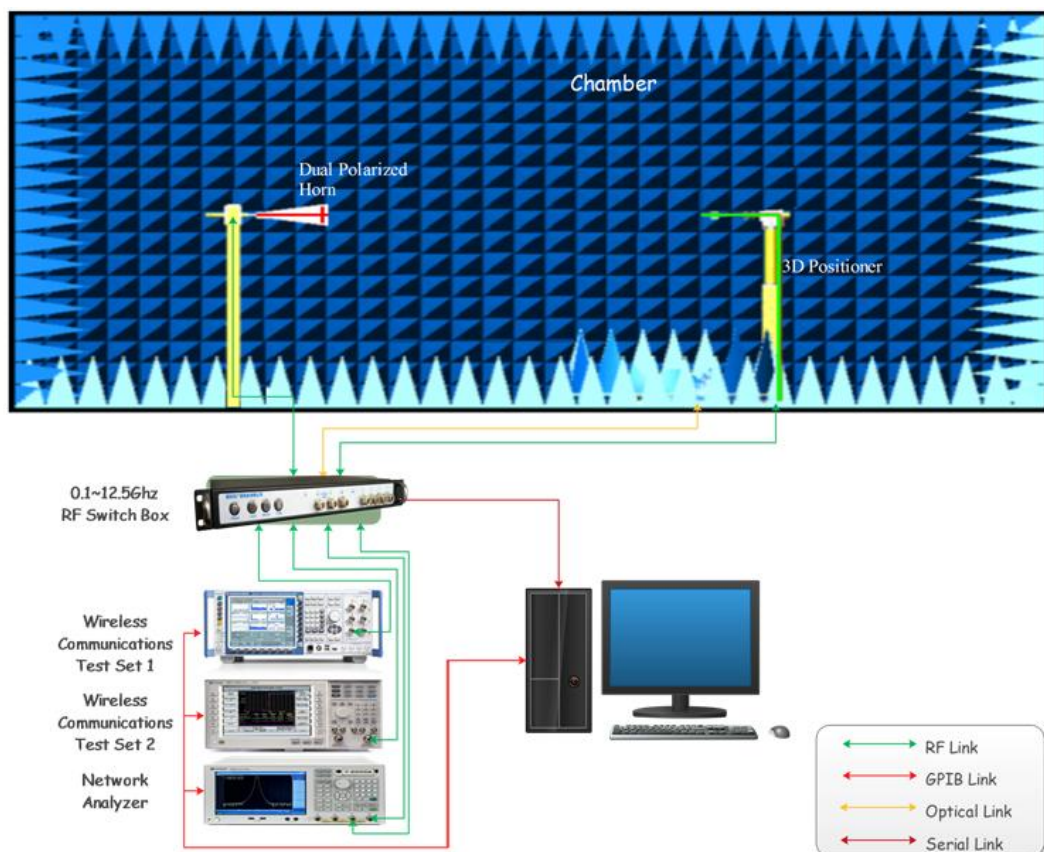
#### 1. Network Analyzers :

Agilent 5071C

#### 2. Communications Test Set:

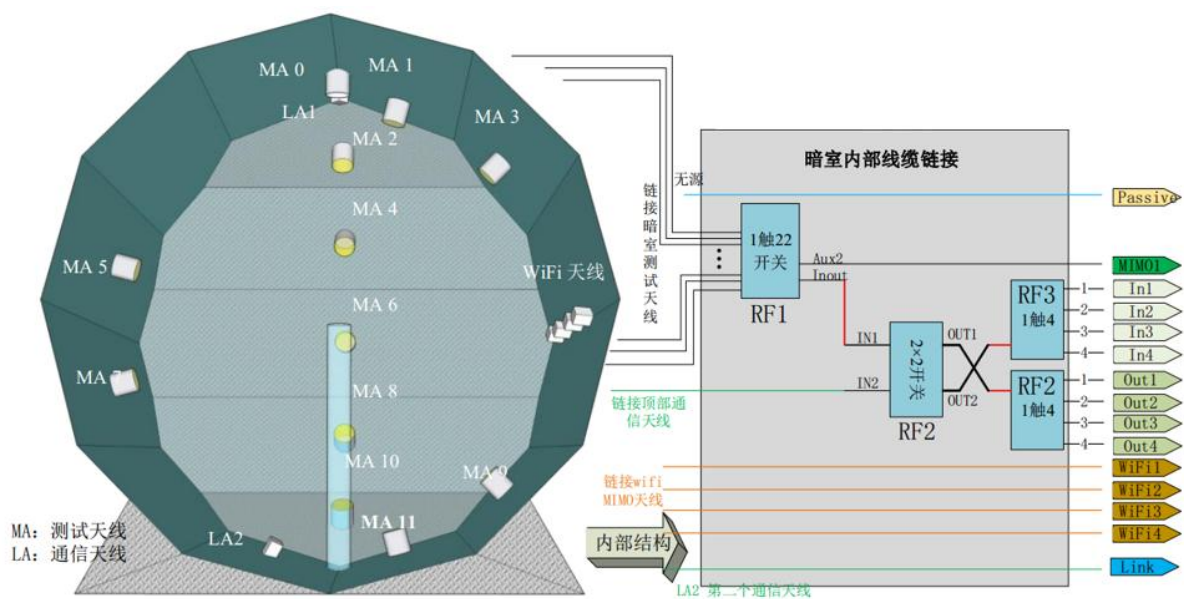
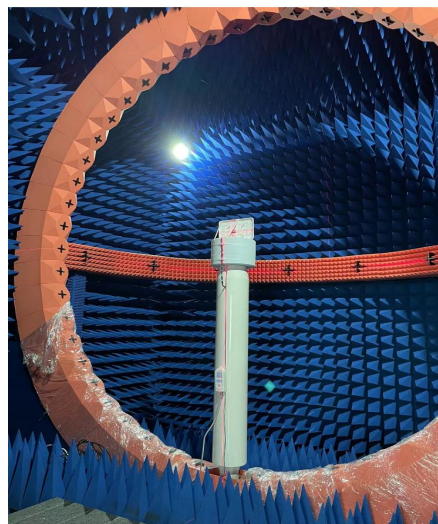
Rohde & Schwarz CWM500

#### 3. 3D Chamber Test System



## 微波测量暗室

## Test the darkroom



## 无源测试 Passive testing

整机 S11 测试:



### 效益&增益

### Efficiency&Gain

| Frequenc<br>y/Mhz | Efficien<br>cy / % | MaxGain/<br>dBi | Frequenc<br>y/Mhz | Efficien<br>cy / % | MaxGain/<br>dBi | Frequenc<br>y/Mhz | Efficien<br>cy / % | MaxGain/<br>dBi | Frequenc<br>y/Mhz | Efficien<br>cy / % | MaxGain/<br>dBi | Frequenc<br>y/Mhz | Efficien<br>cy / % | MaxGain/<br>dBi |
|-------------------|--------------------|-----------------|-------------------|--------------------|-----------------|-------------------|--------------------|-----------------|-------------------|--------------------|-----------------|-------------------|--------------------|-----------------|
| 610               | 7.8                | -4.64           | 850               | 15.63              | -1.7            | 1830              | 26.79              | 0.13            | 2070              | 25.82              | 1.27            | 2400              | 47.64              | 2.17            |
| 620               | 10.35              | -2.98           | 860               | 16.41              | -1.7            | 1840              | 26.67              | 0.35            | 2080              | 24.49              | 0.98            | 2490              | 56.49              | 2.72            |
| 630               | 12.56              | -1.51           | 870               | 17.86              | -1.99           | 1850              | 27.67              | 0.84            | 2090              | 25.23              | 1.11            | 2500              | 57.94              | 2.79            |
| 640               | 14.42              | -1.2            | 880               | 20.14              | -2.02           | 1860              | 27.04              | 0.96            | 2100              | 25.64              | 1.16            | 2510              | 56.62              | 2.86            |
| 650               | 17.3               | -0.44           | 890               | 20.56              | -2.46           | 1870              | 25.7               | 0.76            | 2110              | 25.64              | 1.09            | 2520              | 59.16              | 3.25            |
| 660               | 21.93              | 1.2             | 900               | 22.08              | -2.44           | 1880              | 26.12              | 0.69            | 2120              | 26.18              | 0.93            | 2530              | 57.94              | 3.39            |
| 670               | 27.86              | 1.81            | 910               | 24.72              | -2.31           | 1890              | 25.82              | 0.49            | 2130              | 26.61              | 0.86            | 2540              | 58.48              | 3.71            |
| 680               | 32.36              | 2               | 920               | 27.23              | -2.11           | 1900              | 26.85              | 0.44            | 2140              | 27.35              | 1               | 2550              | 58.21              | 3.93            |
| 690               | 35.97              | 2.77            | 930               | 26.49              | -1.98           | 1910              | 25.59              | 0.35            | 2150              | 27.73              | 1.15            | 2560              | 56.89              | 3.93            |
| 700               | 37.33              | 2.91            | 940               | 27.04              | -1.55           | 1920              | 25.59              | 0.46            | 2160              | 27.16              | 1.24            | 2570              | 56.62              | 4.19            |
| 710               | 37.93              | 2.24            | 950               | 25.35              | -1.8            | 1930              | 24.27              | 0.44            | 2170              | 28.51              | 1.55            | 2580              | 57.41              | 4.21            |
| 720               | 36.39              | 1.84            | 960               | 24.04              | -1.59           | 1940              | 25.47              | 0.72            | 2180              | 28.38              | 1.68            | 2590              | 55.46              | 3.75            |
| 730               | 39.26              | 1.65            | 1710              | 39.63              | 1.02            | 1950              | 21.18              | -0.19           | 2190              | 28.84              | 1.79            | 2600              | 55.72              | 3.44            |
| 740               | 40.93              | 1.79            | 1720              | 39.17              | 0.82            | 1960              | 22.34              | -0.03           | 2200              | 28.91              | 1.74            | 2610              | 55.34              | 3.56            |
| 750               | 41.5               | 2.38            | 1730              | 39.08              | 1.08            | 1970              | 21.04              | -0.3            | 2300              | 35.16              | 2.13            | 2620              | 59.98              | 3.93            |
| 760               | 40.93              | 2.56            | 1740              | 38.55              | 1.2             | 1980              | 22.65              | 0.27            | 2310              | 38.64              | 2.48            | 2630              | 56.23              | 3.56            |
| 770               | 41.4               | 2.53            | 1750              | 37.67              | 1               | 1990              | 21.98              | 0.26            | 2320              | 36.81              | 2.27            | 2640              | 52.48              | 3.34            |
| 780               | 38.37              | 2.29            | 1760              | 36.06              | 0.81            | 2000              | 23.5               | 0.58            | 2330              | 39.81              | 2.53            | 2650              | 48.19              | 3.05            |
| 790               | 36.81              | 2.29            | 1770              | 35.48              | 0.99            | 2010              | 24.6               | 0.58            | 2340              | 40.09              | 2.54            | 2660              | 52.24              | 3.25            |
| 800               | 26.98              | -0.61           | 1780              | 32.14              | 0.69            | 2020              | 26.49              | 0.71            | 2350              | 42.76              | 2.84            | 2670              | 52                 | 3.13            |
| 810               | 22.65              | -1.5            | 1790              | 30.34              | 0.5             | 2030              | 26.79              | 0.74            | 2360              | 40.93              | 2.69            | 2680              | 55.72              | 3.41            |
| 820               | 21.23              | -1.87           | 1800              | 29.17              | 0.53            | 2040              | 26.18              | 0.82            | 2370              | 40.93              | 2.53            | 2690              | 53.09              | 3.01            |
| 830               | 19.28              | -1.95           | 1810              | 29.04              | 0.64            | 2050              | 26.79              | 1.37            | 2380              | 43.55              | 2.48            |                   |                    |                 |
| 840               | 16.87              | -2.02           | 1820              | 27.93              | 0.37            | 2060              | 26.73              | 1.54            | 2390              | 45.19              | 2.3             |                   |                    |                 |



## 有源 OTA 测试数据 Active OTA test data

| Band          | Measurement | Channel | Frequency | Total  |
|---------------|-------------|---------|-----------|--------|
| FDD_B1(10MHz) | TRP         | 18050   | 1925      | 17.85  |
| FDD_B1(10MHz) | TRP         | 18300   | 1950      | 17.22  |
| FDD_B1(10MHz) | TRP         | 18550   | 1975      | 16.65  |
| FDD_B1(10MHz) | TIS         | 550     | 2165      | -93.22 |
| FDD_B2(10MHz) | TRP         | 18650   | 1855      | 18.99  |
| FDD_B2(10MHz) | TRP         | 18900   | 1880      | 18.09  |
| FDD_B2(10MHz) | TRP         | 19150   | 1905      | 16.99  |
| FDD_B2(10MHz) | TIS         | 1150    | 1985      | -94.21 |
| FDD_B3(10MHz) | TRP         | 19250   | 1715      | 18.9   |
| FDD_B3(10MHz) | TRP         | 19575   | 1747.5    | 19.11  |
| FDD_B3(10MHz) | TRP         | 19900   | 1780      | 18.93  |
| FDD_B3(10MHz) | TIS         | 1900    | 1875      | -94.88 |
| FDD_B4(10MHz) | TRP         | 20000   | 1715      | 18.41  |
| FDD_B4(10MHz) | TRP         | 20175   | 1732.5    | 19.14  |
| FDD_B4(10MHz) | TRP         | 20350   | 1750      | 19.83  |
| FDD_B4(10MHz) | TIS         | 2350    | 2150      | -94.52 |

| Band           | Measurement | Channel | Frequency | Total  |
|----------------|-------------|---------|-----------|--------|
| FDD_B5(10MHz)  | TRP         | 20450   | 829       | 15.65  |
| FDD_B5(10MHz)  | TRP         | 20525   | 836.5     | 15.61  |
| FDD_B5(10MHz)  | TRP         | 20600   | 844       | 15.35  |
| FDD_B5(10MHz)  | TIS         | 2600    | 889       | -91.27 |
| FDD_B7(10MHz)  | TRP         | 20800   | 2505      | 19.9   |
| FDD_B7(10MHz)  | TRP         | 21100   | 2535      | 19.6   |
| FDD_B7(10MHz)  | TRP         | 21400   | 2565      | 18.37  |
| FDD_B7(10MHz)  | TIS         | 3400    | 2685      | -94.21 |
| FDD_B8(10MHz)  | TRP         | 21500   | 885       | 15.58  |
| FDD_B8(10MHz)  | TRP         | 21625   | 897.5     | 16.08  |
| FDD_B8(10MHz)  | TRP         | 21750   | 910       | 16.43  |
| FDD_B8(10MHz)  | TIS         | 3750    | 955       | -90.07 |
| FDD_B12(10MHz) | TRP         | 23060   | 704       | 19.14  |
| FDD_B12(10MHz) | TRP         | 23095   | 707.5     | 19.72  |
| FDD_B12(10MHz) | TRP         | 23130   | 711       | 19.13  |
| FDD_B12(10MHz) | TIS         | 5130    | 741       | -92.77 |

| Band           | Measurement | Channel | Frequency | Total  |
|----------------|-------------|---------|-----------|--------|
| FDD_B17(10MHz) | TRP         | 23780   | 709       | 19.35  |
| FDD_B17(10MHz) | TRP         | 23790   | 710       | 19.78  |
| FDD_B17(10MHz) | TRP         | 23800   | 711       | 19.01  |
| FDD_B17(10MHz) | TIS         | 5800    | 741       | -92.11 |
| FDD_B18(10MHz) | TRP         | 23900   | 820       | 15.86  |
| FDD_B18(10MHz) | TRP         | 23925   | 822.5     | 15.42  |
| FDD_B18(10MHz) | TRP         | 23950   | 825       | 15.3   |
| FDD_B18(10MHz) | TIS         | 5950    | 870       | -87.55 |
| FDD_B19(10MHz) | TRP         | 24050   | 835       | 14.83  |
| FDD_B19(10MHz) | TRP         | 24075   | 837.5     | 15.03  |
| FDD_B19(10MHz) | TRP         | 24100   | 840       | 14.49  |
| FDD_B19(10MHz) | TIS         | 6100    | 885       | -89.06 |
| FDD_B25(10MHz) | TRP         | 26090   | 1855      | 18.82  |
| FDD_B25(10MHz) | TRP         | 26365   | 1882.5    | 17.76  |
| FDD_B25(10MHz) | TRP         | 26640   | 1910      | 17.05  |
| FDD_B25(10MHz) | TIS         | 8640    | 1990      | -94.84 |

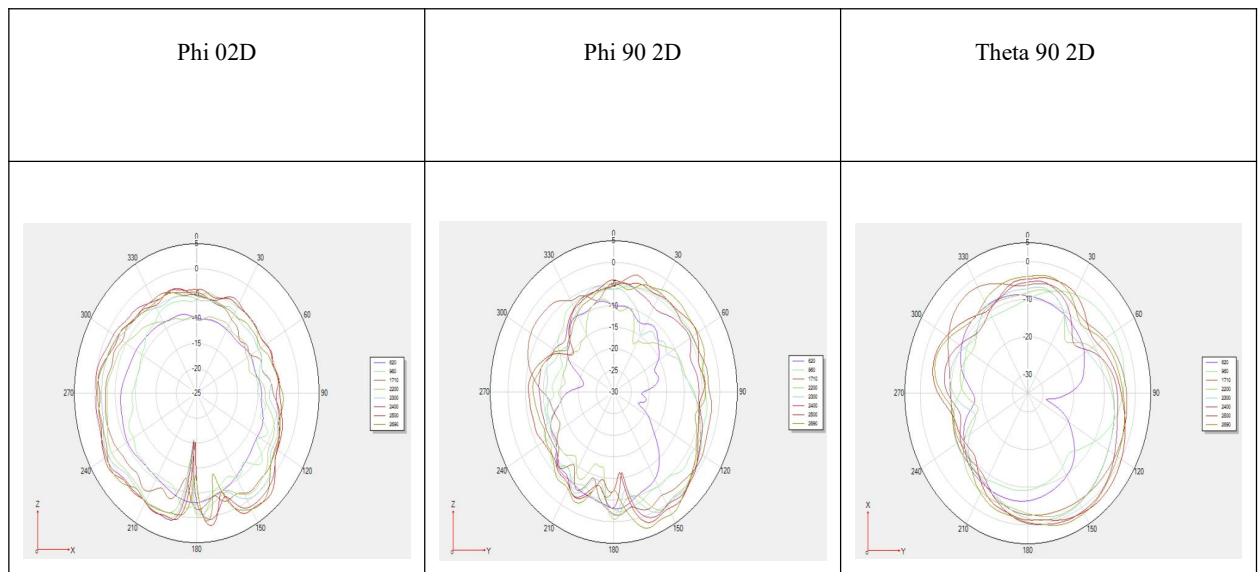
| Band           | Measurement | Channel | Frequency | Total  |
|----------------|-------------|---------|-----------|--------|
| FDD_B26(10MHz) | TRP         | 26740   | 819       | 15.71  |
| FDD_B26(10MHz) | TRP         | 26865   | 831.5     | 14.95  |
| FDD_B26(10MHz) | TRP         | 26990   | 844       | 15.01  |
| FDD_B26(10MHz) | TIS         | 8990    | 889       | -85.21 |
| FDD_B28(10MHz) | TRP         | 27260   | 708       | 18.73  |
| FDD_B28(10MHz) | TRP         | 27360   | 718       | 19.53  |
| FDD_B28(10MHz) | TRP         | 27460   | 728       | 19.81  |
| FDD_B28(10MHz) | TIS         | 9460    | 783       | -88.58 |
| FDD_B66(10MHz) | TRP         | 132022  | 1715      | 18.44  |
| FDD_B66(10MHz) | TRP         | 132322  | 1745      | 19.46  |
| FDD_B66(10MHz) | TRP         | 132622  | 1775      | 19.95  |
| FDD_B66(10MHz) | TIS         | 67036   | 2170      | -94.16 |

| Band     | Measurement | Channel | Frequency | Total   |
|----------|-------------|---------|-----------|---------|
| WCDMA_B5 | TRP         | 4132    | 826.4     | 14.63   |
| WCDMA_B5 | TRP         | 4183    | 836.6     | 14.12   |
| WCDMA_B5 | TRP         | 4233    | 846.6     | 14.33   |
| WCDMA_B5 | TIS         | 4408    | 881.6     | -97.83  |
| WCDMA_B5 | TIS         | 4458    | 891.6     | -97.84  |
| WCDMA_B8 | TRP         | 2712    | 882.4     | 14.66   |
| WCDMA_B8 | TRP         | 2787    | 897.4     | 16.73   |
| WCDMA_B8 | TRP         | 2863    | 912.6     | 17.44   |
| WCDMA_B8 | TIS         | 3012    | 942.4     | -100.24 |
| WCDMA_B8 | TIS         | 3088    | 957.6     | -98.46  |
| WCDMA_B4 | TRP         | 1312    | 1712.4    | 18.59   |
| WCDMA_B4 | TRP         | 1413    | 1732.6    | 19.34   |
| WCDMA_B4 | TRP         | 1513    | 1752.6    | 19.85   |
| WCDMA_B4 | TIS         | 1638    | 2132.6    | -105.92 |
| WCDMA_B4 | TIS         | 1738    | 2152.6    | -105.56 |
| WCDMA_B2 | TRP         | 9262    | 1852.4    | 19.43   |

| Band     | Measurement | Channel | Frequency | Total   |
|----------|-------------|---------|-----------|---------|
| WCDMA_B2 | TRP         | 9400    | 1880      | 18.47   |
| WCDMA_B2 | TRP         | 9538    | 1907.6    | 18.19   |
| WCDMA_B2 | TIS         | 9800    | 1960      | -106.64 |
| WCDMA_B2 | TIS         | 9938    | 1987.6    | -106.22 |
| WCDMA_B1 | TRP         | 9612    | 1922.4    | 18.54   |
| WCDMA_B1 | TRP         | 9750    | 1950      | 16.49   |
| WCDMA_B1 | TRP         | 9888    | 1977.6    | 17.62   |
| WCDMA_B1 | TIS         | 10700   | 2140      | -104    |
| WCDMA_B1 | TIS         | 10838   | 2167.6    | -104.25 |

方向图

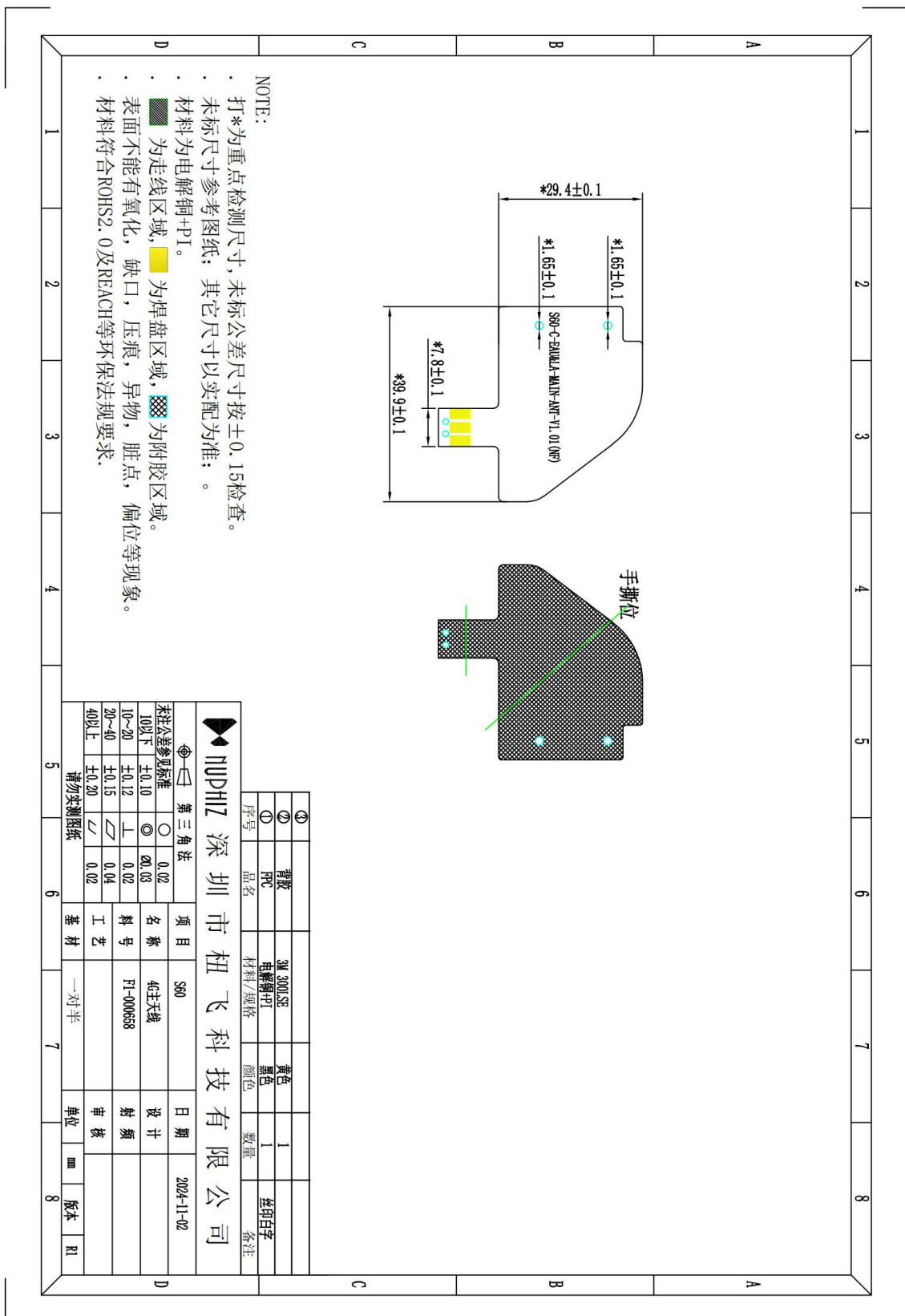
Directional map



## 天线装配图

### Antenna assembly drawing

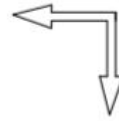




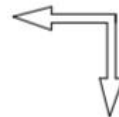


## 产品包装

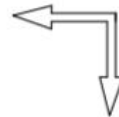
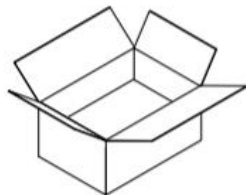
一：天线产品 (Antenna products)



二：用PE封口袋, 数量以 (50 100PCS) 整数装, 具体实际为准 (Put them in PE bags, quantity is packed in (50 100pcs) , Subject to the actual situation)



三：将装好的天线放入纸箱中 (以实际数量为准) (Put the antenna in the carton)



四：封箱, 外箱贴我司生产标签和ROHS标签 (最终以实际情况为准) (Seal the box and paste the production label and RoHS label on the outer box ( actual situation shall prevail))

