

# Antenna Specification 天线规格书

|                              |                                                                       |
|------------------------------|-----------------------------------------------------------------------|
| 制造商名称:<br>Manufacturer:      | 万物相连通讯襄阳有限公司<br>All things connected Communications Xiangyang Limited |
| 产品名称:<br>Part Description:   | <b>Built-in antenna</b> 内置天线                                          |
| 规格型号:<br>Model No:           | WWXL6010352                                                           |
| 制造商P/N:<br>Manufacturer P/N: | ANT00233-1A                                                           |
| 日期:<br>Issued Date:          | 2023. 11. 30                                                          |

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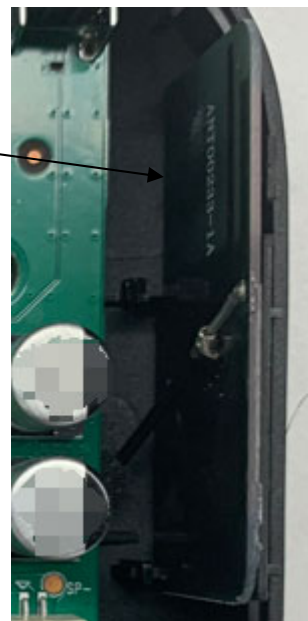
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# Specification for Antenna

## 天线规格书

### 一、Antenna attachment position diagram

Antenna attachment position  
diagram

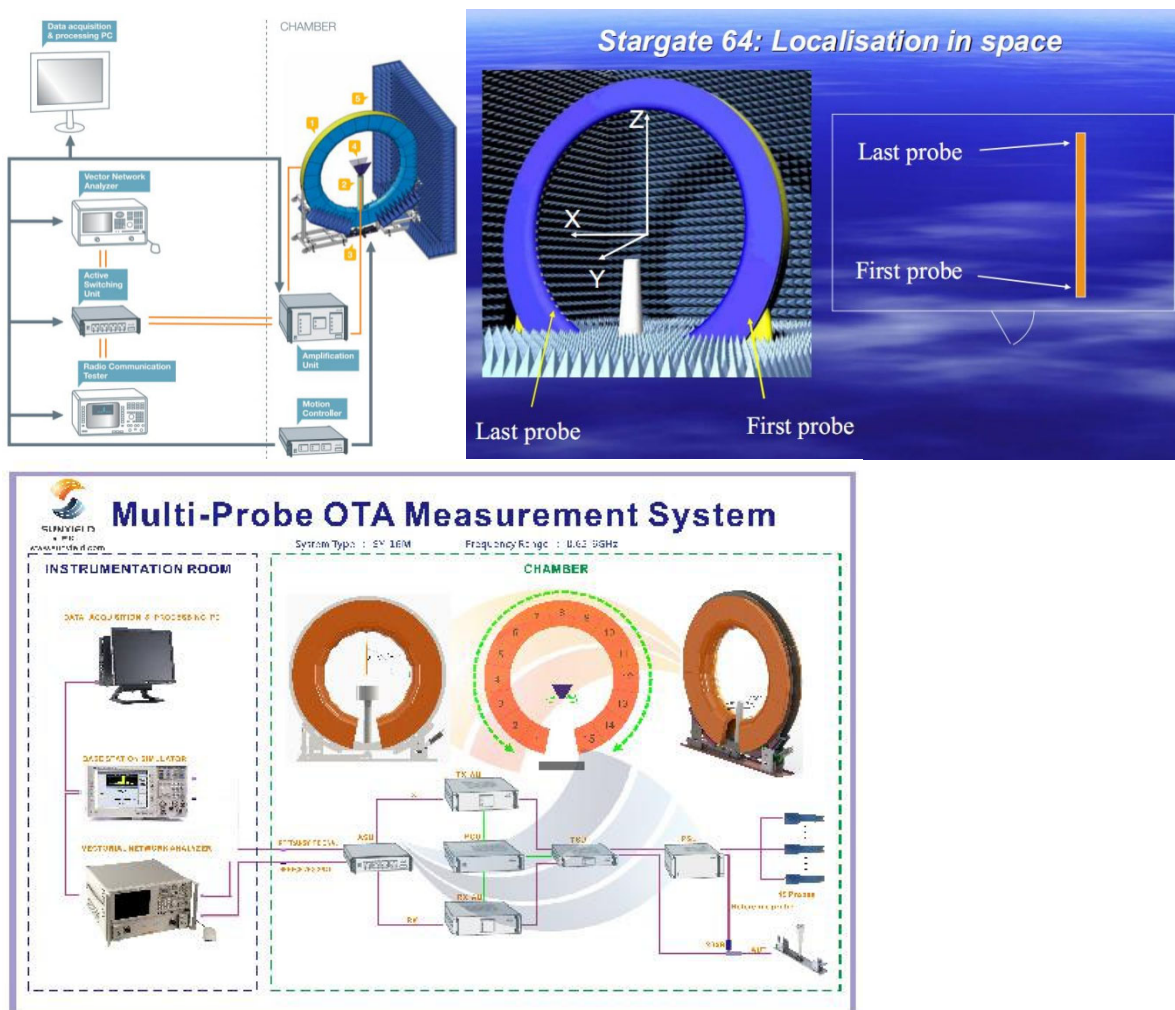


### 二、Test parameters产品测试参数

|                                             |                        |                                |                                                     |
|---------------------------------------------|------------------------|--------------------------------|-----------------------------------------------------|
| 产品名称Name内置天线（WWXL6010352）                   |                        | 型号 ModelType                   |                                                     |
| 电气参数ELECTRICAL SPECTFICATIONS               |                        | 机械参数 MECHANICAL SPECTFICATIONS |                                                     |
| 频率范围 FrenquencyRange 2400-2500/5150-5850MHz |                        | 尺寸Dimensions                   | 43*23*1.0mm                                         |
| 输入阻抗 Impedance                              | 50 $\Omega$            | 连接器型号Connector                 | IPEX                                                |
| 驻波比 VSWR                                    | $\leq 2.0$             | 线长linelength                   | 100 $\pm$ 2mm<br>1.13 Low loss line black<br>低损耗线黑色 |
| 增益 Gain                                     | $\geq 1.28/1.63$ dBi   | 效率 Efficiency                  | $\geq 52.19\%$                                      |
| 极化方式 Polarization                           | linear Vertical<br>线极化 | 工作温度WorkingTemperature         | -45 $^{\circ}$ C - +85 $^{\circ}$ C                 |
| 辐射方向 Radiation                              | Omnidirectional        | 存放温度Limit Temperature          | -45 $^{\circ}$ C - +85 $^{\circ}$ C                 |

|  |    |  |  |
|--|----|--|--|
|  | 全向 |  |  |
|--|----|--|--|

### 三、Antenna test environment 天线测试环境

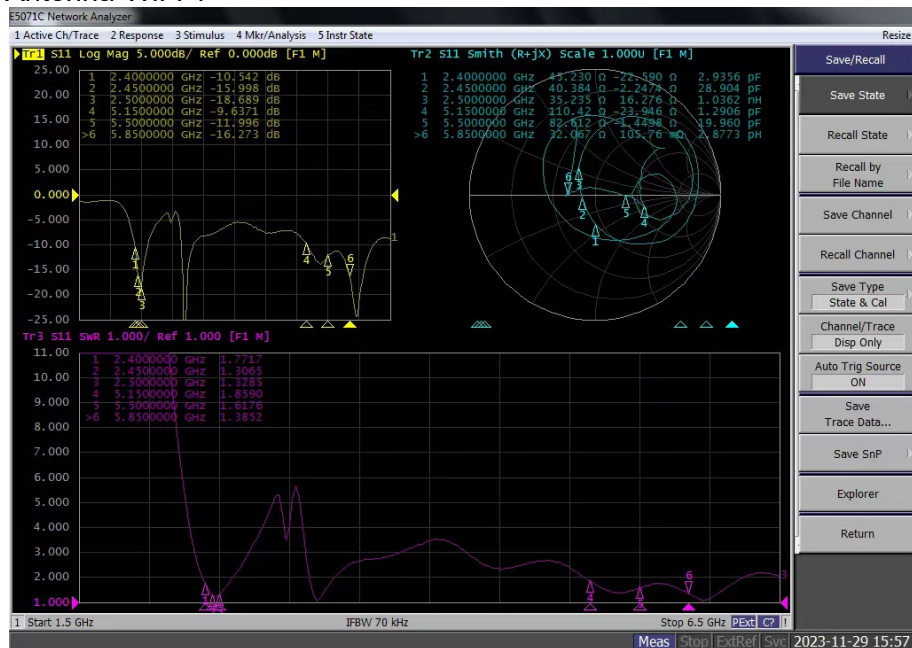


|                              |                                                                                                                                  |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| test macro 测试系统:             | SY-16M Antenna measurement system 天线测量系统                                                                                         |
| testing environment<br>测试环境: | temperature 温度 $22^{\circ}\text{C} \pm 3^{\circ}\text{C}$ , humidity 湿度 $50\% \pm 15\%$                                          |
| testing equipment 测<br>试设备:  | Agilent 5071C<br>Agilent 8960 Comprehensive measuring instrument 综测仪<br>Agilent CMW500 4G Comprehensive measuring instrument 综测仪 |

#### 四、Antenna Passive Parameters 天线无源参数:

##### 1、VSWR驻波比图:

##### Antenna-WiFi 1



##### V.S.W.R

|          |     |      |     |      |     |      |
|----------|-----|------|-----|------|-----|------|
| Freq/GHz | 2.4 | 2.45 | 2.5 | 5.15 | 5.5 | 5.85 |
| VSWR     | 1.7 | 1.3  | 1.3 | 1.8  | 1.6 | 1.3  |

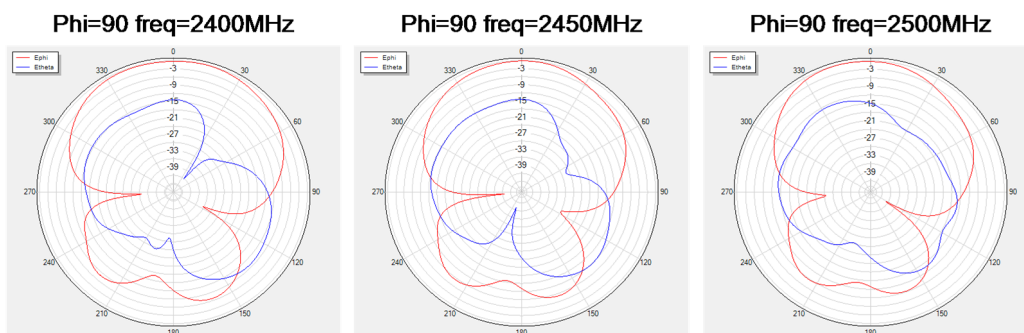
## 2、Gain and Efficiency增益和效率:

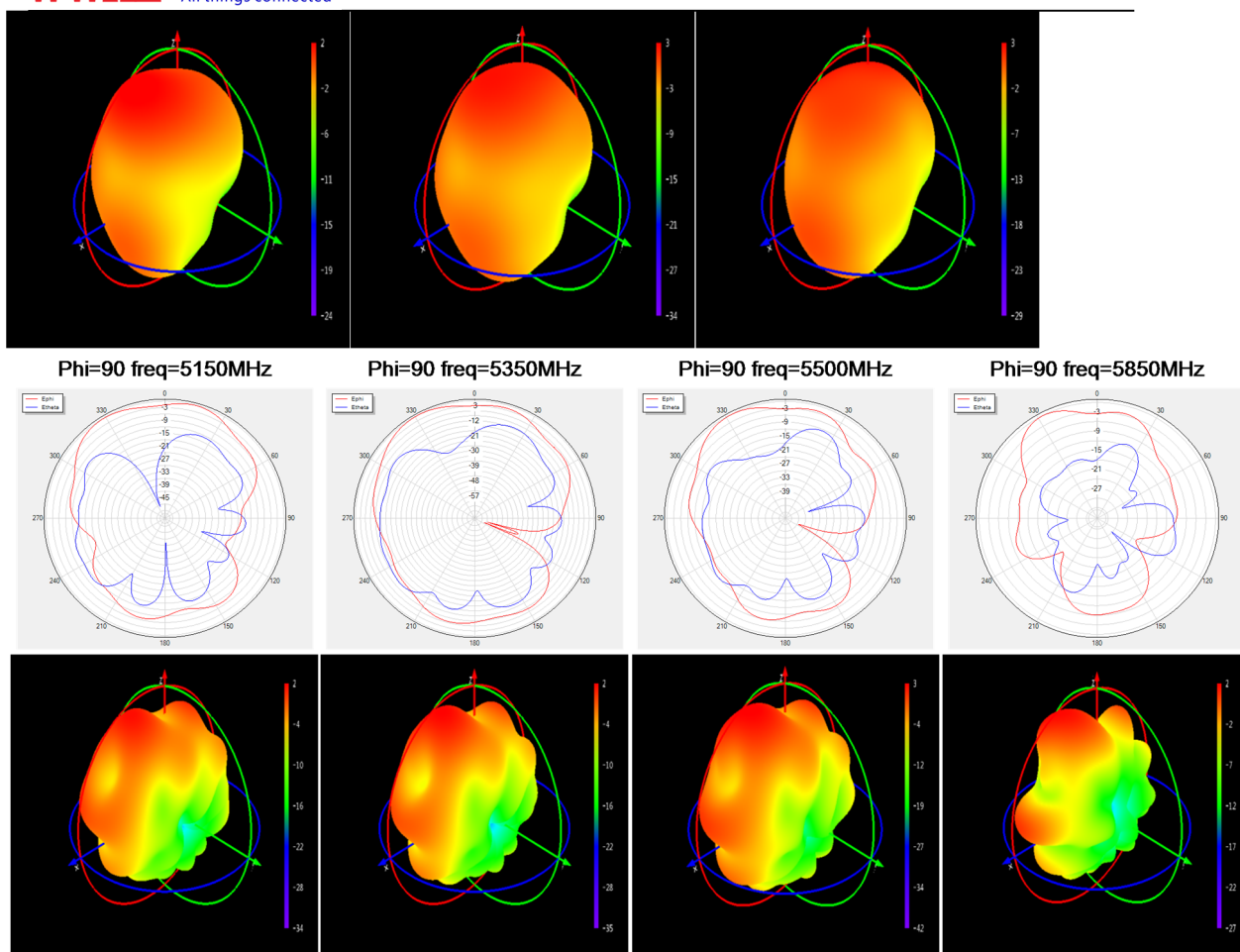
### Antenna pattern-WiFi 1

| Gain&Efficiency&PhaseCenter<br>增益、效率和相位中心 |                  |                     |                          |                  |                     |                          |                  |                     |
|-------------------------------------------|------------------|---------------------|--------------------------|------------------|---------------------|--------------------------|------------------|---------------------|
| frequency<br>频率<br>(MHz)                  | gain 增<br>益(dBi) | efficiency<br>效率(%) | frequency<br>频率<br>(MHz) | gain 增<br>益(dBi) | efficiency<br>效率(%) | frequency<br>频率<br>(MHz) | gain 增<br>益(dBi) | efficiency<br>效率(%) |
| 2400                                      | 1.28             | 52.32               | 5150                     | 1.63             | 56.73               | 5700                     | 2.63             | 57.79               |
| 2410                                      | 1.45             | 53.75               | 5200                     | 1.76             | 57.39               | 5750                     | 2.44             | 56.32               |
| 2420                                      | 1.63             | 54.39               | 5250                     | 1.9              | 58.23               | 5800                     | 2.47             | 57.06               |
| 2430                                      | 1.88             | 54.88               | 5300                     | 2.01             | 58.7                | 5850                     | 1.83             | 52.19               |
| 2440                                      | 2.07             | 55.1                | 5350                     | 2.05             | 58.7                |                          |                  |                     |
| 2450                                      | 2.34             | 56.64               | 5400                     | 2.13             | 58.38               |                          |                  |                     |
| 2460                                      | 2.56             | 57.41               | 5450                     | 2.12             | 57.35               |                          |                  |                     |
| 2470                                      | 2.61             | 56.39               | 5500                     | 2.29             | 57.67               |                          |                  |                     |
| 2480                                      | 2.62             | 55.24               | 5550                     | 2.32             | 56.68               |                          |                  |                     |
| 2490                                      | 2.58             | 54.18               | 5600                     | 2.4              | 56.33               |                          |                  |                     |
| 2500                                      | 2.56             | 53.1                | 5650                     | 2.57             | 57.44               |                          |                  |                     |

## 3、2D/3D directional diagram 2D/3D方向图:

### Antenna pattern-WiFi 1





#### 4、Active parameter有源数据

Test tools: Microwave Anechoic Chamber+ROHDE&SCHWARZ CMW 500

Standard:As shown in the table

Testing Environment: Same as passive test

Test mode: 802.11b 11Mbps BW 20M

Standard: TRP≥10dbm TIS≤-60dbm

| Test            | Wifi 2G TRP |       |       | Test            | Wifi 2G TIS |       |        |
|-----------------|-------------|-------|-------|-----------------|-------------|-------|--------|
| CH              | 1           | 6     | 11    | CH              | 1           | 6     | 11     |
| Frequency (MHz) | 2412        | 2437  | 2462  | Frequency (MHz) | 2412        | 2437  | 2462   |
| TRP(dBm)        | 21.78       | 22.03 | 21.58 | TIS(dBm)        | -90.41      | -90.6 | -90.64 |

Test mode: 802.11g 54Mbps BW 20M  
Standard: TRP≥10dbm TIS≤-60dbm

| Test            | Wifi 2G TRP |       |       |  | Test            | Wifi 2G TIS |        |        |
|-----------------|-------------|-------|-------|--|-----------------|-------------|--------|--------|
| CH              | 1           | 6     | 11    |  | CH              | 1           | 6      | 11     |
| Frequency (MHz) | 2412        | 2437  | 2462  |  | Frequency (MHz) | 2412        | 2437   | 2462   |
| TRP(dBm)        | 20.2        | 19.92 | 19.43 |  | TIS(dBm)        | -77.59      | -77.92 | -77.91 |

Test mode: 802.11NMCS7 BW 20M  
Standard: TRP≥10dbm TIS≤-60dbm

| Test            | Wifi 2G TRP |       |       |  | Test            | Wifi 2G TIS |        |        |
|-----------------|-------------|-------|-------|--|-----------------|-------------|--------|--------|
| CH              | 1           | 6     | 11    |  | CH              | 1           | 6      | 11     |
| Frequency (MHz) | 2412        | 2437  | 2462  |  | Frequency (MHz) | 2412        | 2437   | 2462   |
| TRP(dBm)        | 17.96       | 18.57 | 17.99 |  | TIS(dBm)        | -74.36      | -73.94 | -73.66 |

Test mode: 802.11axHE11 BW 40M  
Standard: TRP≥10dbm TIS≤-60dbm

| Test            | Wifi 2G TRP |       |       |  | Test            | Wifi 2G TIS |        |        |
|-----------------|-------------|-------|-------|--|-----------------|-------------|--------|--------|
| CH              | 1           | 6     | 11    |  | CH              | 1           | 6      | 11     |
| Frequency (MHz) | 2412        | 2437  | 2462  |  | Frequency (MHz) | 2412        | 2437   | 2462   |
| TRP(dBm)        | 14.9        | 14.89 | 14.42 |  | TIS(dBm)        | -65.89      | -65.66 | -65.63 |

## Wi-Fi 5G TRP&TIS

Test mode: 802.11a54Mbps BW 20M  
Standard: TRP≥10dbm TIS≤-60dbm

| Test            | Wifi 5G TRP |       |       |       |  | Test            | Wifi 5G TIS |        |        |        |
|-----------------|-------------|-------|-------|-------|--|-----------------|-------------|--------|--------|--------|
| CH              | 36          | 64    | 149   | 161   |  | CH              | 36          | 64     | 149    | 161    |
| Frequency (MHz) | 5180        | 5320  | 5745  | 5805  |  | Frequency (MHz) | 5180        | 5320   | 5745   | 5805   |
| TRP(dBm)        | 18.44       | 18.98 | 20.66 | 20.11 |  | TIS(dBm)        | -77.38      | -75.48 | -77.94 | -77.05 |

Test mode: 802.11nMCS7 BW 20M  
Standard: TRP≥10dbm TIS≤-60dbm

| Test            | Wifi 5G TRP |       |       |       |  | Test            | Wifi 5G TIS |        |        |        |
|-----------------|-------------|-------|-------|-------|--|-----------------|-------------|--------|--------|--------|
| CH              | 36          | 64    | 149   | 161   |  | CH              | 36          | 64     | 149    | 161    |
| Frequency (MHz) | 5180        | 5320  | 5745  | 5805  |  | Frequency (MHz) | 5180        | 5320   | 5745   | 5805   |
| TRP(dBm)        | 17.01       | 17.96 | 18.67 | 19.24 |  | TIS(dBm)        | -71.31      | -73.86 | -73.83 | -72.99 |

Test mode: 802.11axHE11 BW 40M  
Standard: TRP≥10dbm TIS≤-60dbm

| Test            | Wifi 5G TRP |       |       |       |  | Test            | Wifi 5G TIS |        |        |        |
|-----------------|-------------|-------|-------|-------|--|-----------------|-------------|--------|--------|--------|
| CH              | 36          | 64    | 149   | 161   |  | CH              | 36          | 64     | 149    | 161    |
| Frequency (MHz) | 5180        | 5320  | 5745  | 5805  |  | Frequency (MHz) | 5180        | 5320   | 5745   | 5805   |
| TRP(dBm)        | 12.95       | 12.97 | 14.76 | 14.33 |  | TIS(dBm)        | -64.83      | -65.18 | -65.35 | -64.43 |

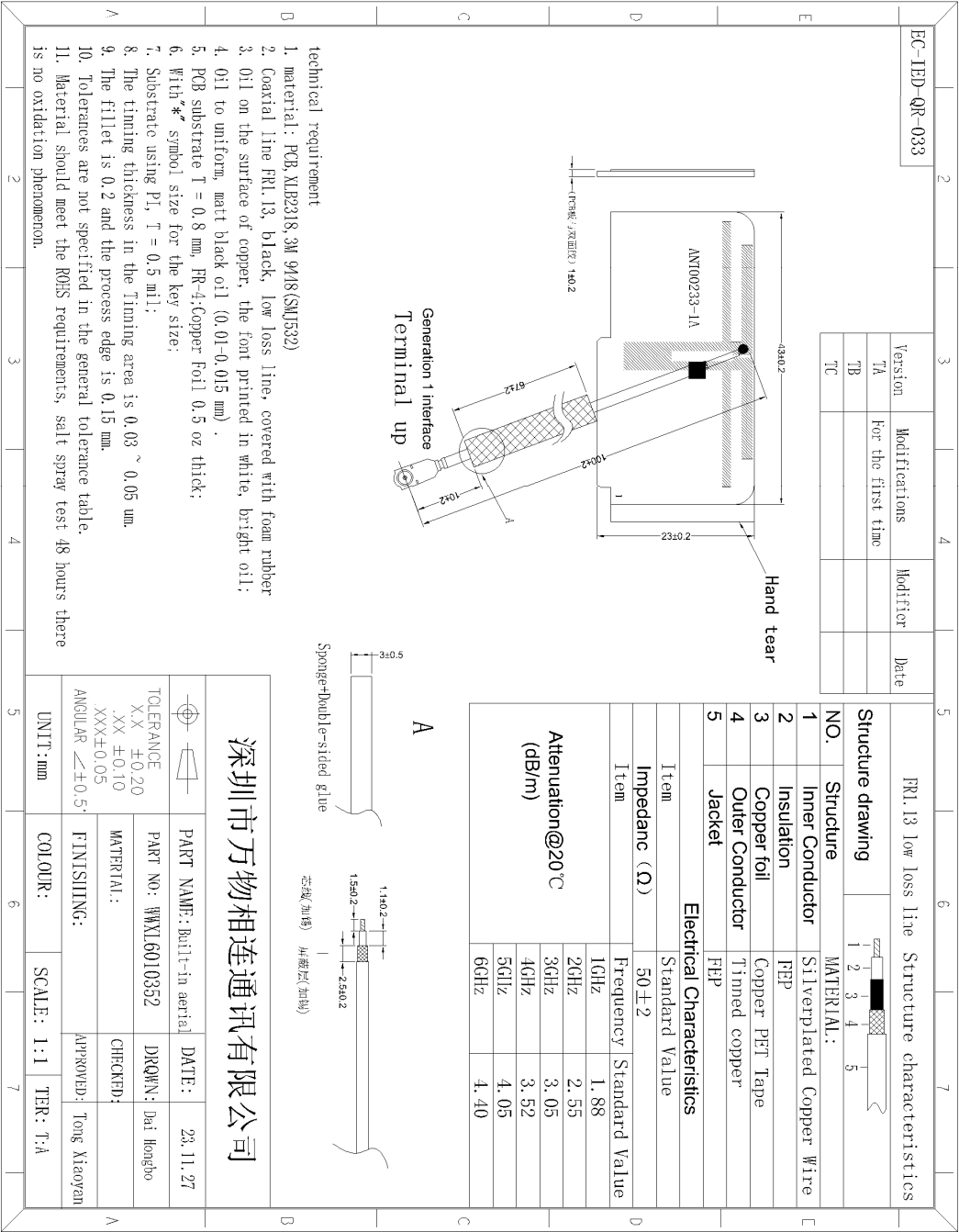
## 五、Product characteristics产品特点

1. Choose high-quality RF cable with small attenuation选用优质射频电缆，自身衰减小；
2. Stable performance性能稳定；
3. Stable performance频带内驻波良好。

六、Drawing产品结构图

由 Autodesk 教育版产品制作

由 Autodesk 教育版产品制作



由 Autodesk 教育版产品制作

由 Autodesk 教育版产品制作