

# KC.IA.00395 ( 1.02.23.0086-WIFI/GPS )

## Antenna Specification

### 1. Application:

This application shall apply for antenna unit which shall be used such as automotive, conventional communications, smart home, etc..

### 1. Electrical Specification:

*Those specifications were specially defined for customer's model, and all characteristics were measured under the model's handset testing jig .*

#### 2-1. Frequency Band:

| Frequency Band   | MHz                         |
|------------------|-----------------------------|
| GPS/WIFI2.4/5.8G | 1575.42/2400-2500/5150-5850 |


#### 2-2. Impedance

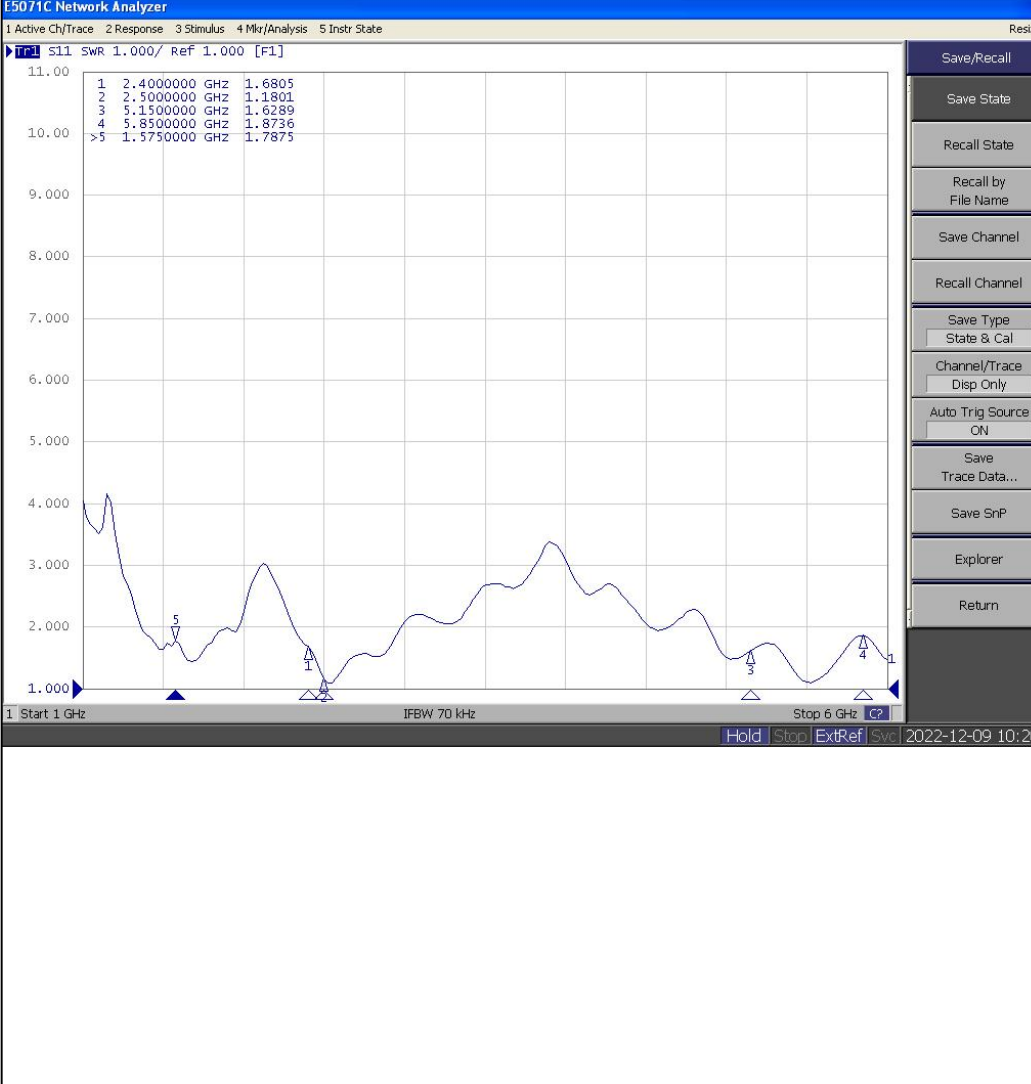
50 ohm nominal


#### 2-3. VSWR

##### 2-3-1.Measurement frequency points and VSWR value

| Frequency Band(MHz)   | 1575.42 | 2400 | 2500 | 5150 | 5850 |
|-----------------------|---------|------|------|------|------|
| 2-3-3. Typical Value: | 1.6     | 1.2  | 1.6  | 1.8  | 1.7  |

|   |                 |  |
|---|-----------------|--|
| UNLESS OTHER SPECIFIED TOLERANCES ON :<br>X=±            X.X=±            X.XX=±<br>ANGLES=±            HOLEDIA=± |                 | <br><b>TOXU TECHNOLOGY CO., LTD.</b>  |
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| <p>2-3-4 Measuring Method</p> | <ol style="list-style-type: none"> <li>1. A 50Ω coaxial cable is connected to the antenna. Then this cable is connected to a network analyzer to measure the VSWR.</li> <li>2. Keeping this jig away from metal at least 20 cm</li> </ol>  |        |                 |     |   |           |        |   |           |        |   |           |        |   |           |        |   |           |        |
|-------------------------------|--|--------|-----------------|-----|---|-----------|--------|---|-----------|--------|---|-----------|--------|---|-----------|--------|---|-----------|--------|
| <p>2-3-5 Picture</p>          |  <table border="1" data-bbox="406 481 702 582"> <thead> <tr> <th>Point</th> <th>Frequency (GHz)</th> <th>SWR</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2.4000000</td> <td>1.6805</td> </tr> <tr> <td>2</td> <td>2.5000000</td> <td>1.1801</td> </tr> <tr> <td>3</td> <td>5.1500000</td> <td>1.6289</td> </tr> <tr> <td>4</td> <td>5.8500000</td> <td>1.8736</td> </tr> <tr> <td>5</td> <td>1.5750000</td> <td>1.7875</td> </tr> </tbody> </table> | Point  | Frequency (GHz) | SWR | 1 | 2.4000000 | 1.6805 | 2 | 2.5000000 | 1.1801 | 3 | 5.1500000 | 1.6289 | 4 | 5.8500000 | 1.8736 | 5 | 1.5750000 | 1.7875 |
| Point                         | Frequency (GHz)  | SWR    |                 |     |   |           |        |   |           |        |   |           |        |   |           |        |   |           |        |
| 1                             | 2.4000000  | 1.6805 |                 |     |   |           |        |   |           |        |   |           |        |   |           |        |   |           |        |
| 2                             | 2.5000000  | 1.1801 |                 |     |   |           |        |   |           |        |   |           |        |   |           |        |   |           |        |
| 3                             | 5.1500000  | 1.6289 |                 |     |   |           |        |   |           |        |   |           |        |   |           |        |   |           |        |
| 4                             | 5.8500000  | 1.8736 |                 |     |   |           |        |   |           |        |   |           |        |   |           |        |   |           |        |
| 5                             | 1.5750000  | 1.7875 |                 |     |   |           |        |   |           |        |   |           |        |   |           |        |   |           |        |

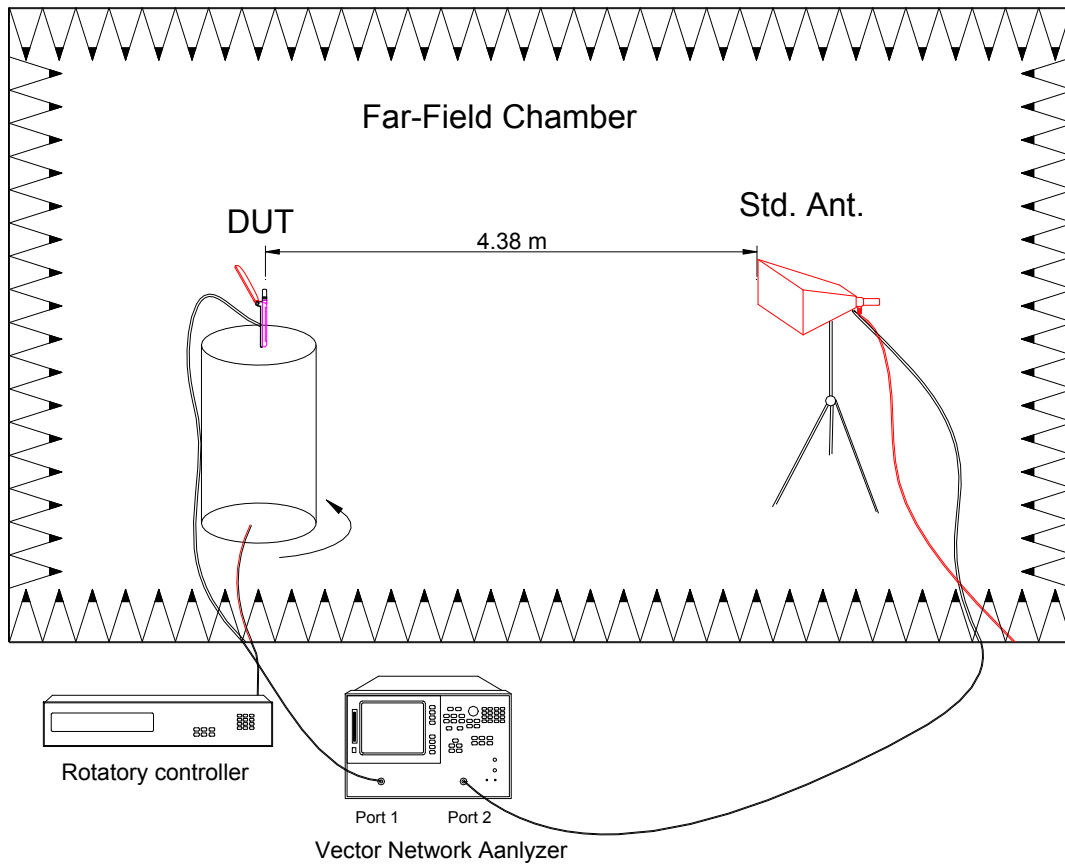
|   |                               |   |   |
|---|-------------------------------|---|---|
| <p>UNLESS OTHER SPECIFIED TOLERANCES ON :<br/> <b>X=±</b>      <b>X.X=±</b>      <b>X.XX=±</b><br/> <b>ANGLES=±</b>      <b>HOLEDIA=±</b></p> |                               |    | <p><b>TOXU TECHNOLOGY CO., LTD.</b></p> |
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|   |                               |   | <p><b>P0</b></p>                        |

## 2-4. Efficiency and Gain

### 4-5.1 Measure method

1. Using a low loss coaxial cable to link a standard handset jig
2. Fixed this handset jig on chamber's rotator plane
3. Linking jig into network analyzer port and using a probing horn antenna to collect data.
4. Using another standard gain horn antenna to calibrated those data

### 4-5.2 Chamber definition



1. An anechoic chamber (7mx4mx3m) which satisfied far-field condition was applied to avoid multi-path effect
2. The quiet room region is 40cmx40cmx40cm at the center of rotator
3. The distance between DUT and standard antenna is 4.38 m
4. Probing antenna (9120D horn antenna) and standard gain horn antenna (BBHA9120 LPF 700MHz ~6GHz)

|   |                 |  |                                  |
|---|-----------------|--|----------------------------------|
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| $X = \pm$                                 | $X.X = \pm$     |  |                                  |
| ANGLES = $\pm$                            |                 | HOLEDIA = $\pm$  |                                  |
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## 2-4-1 Efficiency and Gain

### GPS/BD

| Frequency/Mhz | MaxGain/dBi | Efficiency / % |
|---------------|-------------|----------------|
| 1559          | 3.74        | 55.72          |
| 1560          | 3.79        | 57.02          |
| 1561          | 3.72        | 56.23          |
| 1562          | 3.68        | 55.59          |
| 1563          | 3.68        | 55.08          |
|               |             |                |
| 1573          | 3.94        | 54.33          |
| 1574          | 3.97        | 53.33          |
| 1575          | 4.02        | 52.84          |
| 1576          | 4.13        | 52.97          |
| 1577          | 4.22        | 53.46          |


### WIFI2.4G

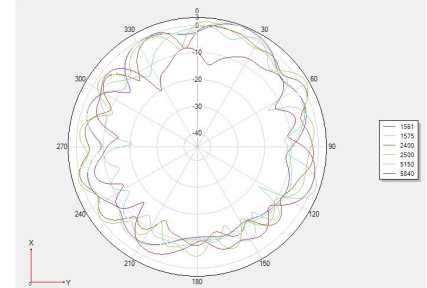
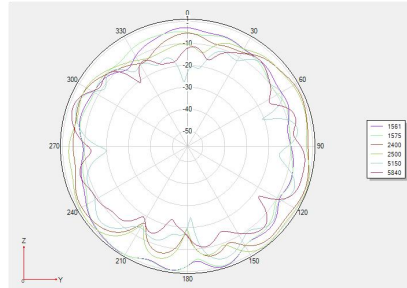
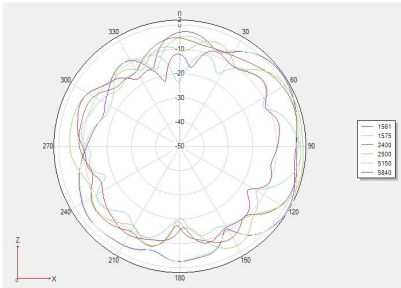
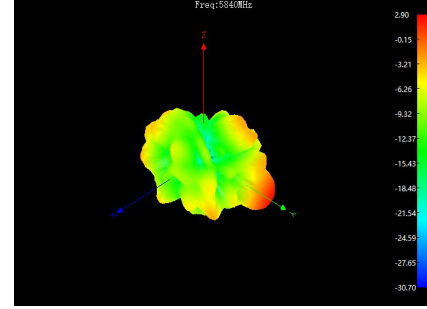
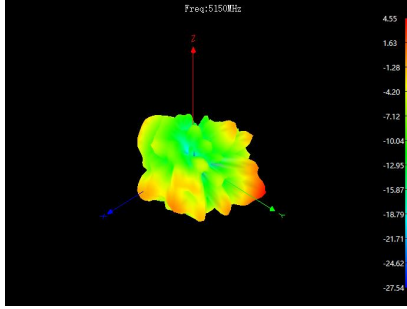
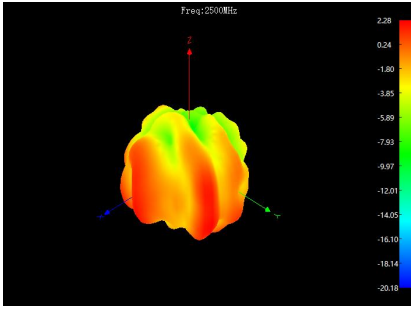
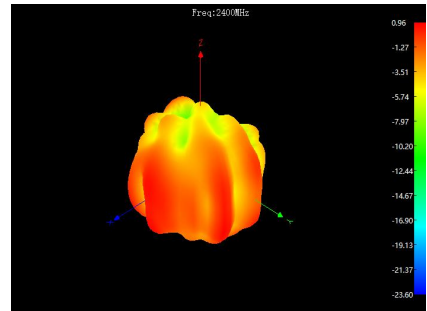
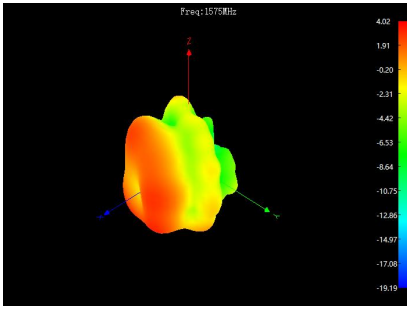
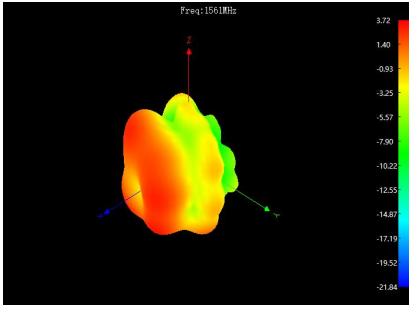
| Frequency/Mhz | MaxGain/dBi | Efficiency / % |
|---------------|-------------|----------------|
| 2400          | 0.96        | 50.74          |
| 2410          | 1.61        | 53.45          |
| 2420          | 1.76        | 54.77          |
| 2430          | 1.88        | 52.17          |
| 2440          | 1.87        | 52.17          |
| 2450          | 1.5         | 50.18          |
| 2460          | 1.59        | 50.64          |
| 2470          | 1.76        | 50.74          |
| 2480          | 1.95        | 53.25          |
| 2490          | 2.51        | 54.57          |
| 2500          | 2.28        | 49.03          |


### WIFI5.8G

| Frequency/Mhz | MaxGain/dBi | Efficiency / % |
|---------------|-------------|----------------|
| 5150          | 4.55        | 45.64          |
| 5180          | 3.87        | 45.06          |
| 5210          | 3.88        | 45             |
| 5240          | 3.7         | 45.7           |
| 5270          | 3.57        | 45.53          |
| 5300          | 4.23        | 48.44          |
| 5330          | 3.88        | 48.58          |
| 5360          | 4.29        | 50.48          |
| 5390          | 4.24        | 49.31          |
| 5420          | 3.39        | 46.49          |
| 5450          | 2.97        | 45             |
| 5480          | 2.36        | 45.35          |

| Frequency/Mhz | MaxGain/dBi | Efficiency / % |
|---------------|-------------|----------------|
| 5510          | 1.85        | 44.32          |
| 5540          | 2.09        | 46.77          |
| 5570          | 2.61        | 45.55          |
| 5600          | 2.99        | 49.77          |
| 5630          | 2.9         | 47.66          |
| 5660          | 2.9         | 48.65          |
| 5690          | 3.12        | 51.88          |
| 5720          | 3.57        | 52.91          |
| 5750          | 3.02        | 51.13          |
| 5780          | 3.19        | 52.59          |
| 5810          | 2.88        | 53.33          |
| 5840          | 2.9         | 45.94          |


|  |                        |  |
|--|------------------------|--|
| UNLESS OTHER SPECIFIED TOLERANCES ON :   |                        |  <b>TOXU TECHNOLOGY CO., LTD.</b>   |
| $X = \pm$ $X.X = \pm$ $X.XX = \pm$<br><b>ANGLES</b> = $\pm$ <b>HOLEDIA</b> = $\pm$ |                        |  |
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|  |                        |  |
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| <b>TITLE : KC.IA.00395 Antenna Specification</b>   |                        | <b>SPEC REV.</b>   |
|  |                        | <b>P0</b>  |

## Test scenario and antenna locatio

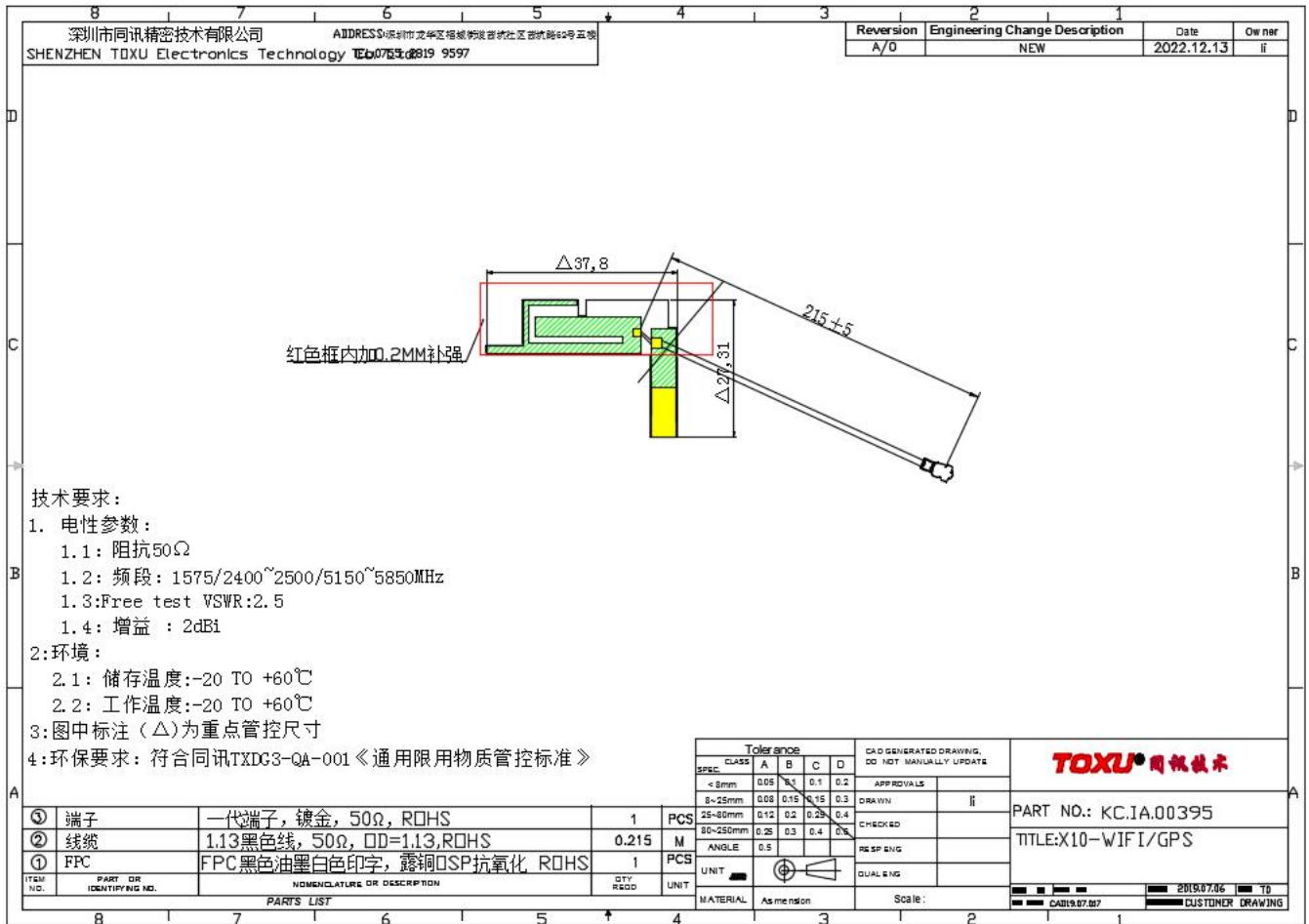


|   |                 |  |
|---|-----------------|--|
| UNLESS OTHER SPECIFIED TOLERANCES ON :    |                 | <br><b>TOXU TECHNOLOGY CO., LTD.</b>  |
| X=±                                       | X.X=±           |  |
| ANGLES=±                                  | HOLEDIA=±       |  |
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| TITLE : KC.IA.00395 Antenna Specification |                 | SPEC REV.  |
|   |                 | P0   |

### 3. Mechanical Specification:

#### 3-1. Mechanical Configuration (Unit: mm)

The appearance of the antenna is according to drawing



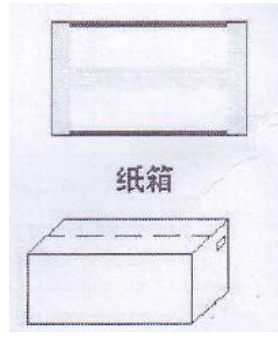
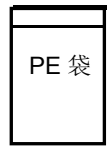
#### 3-2. Connector appearance:

IPEX

|   |                 |  |                           |
|---|-----------------|--|---------------------------|
| UNLESS OTHER SPECIFIED TOLERANCES ON :    |                 |  | TOXU TECHNOLOGY CO., LTD. |
| $X = \pm$                                 | $X.X = \pm$     |  |                           |
| ANGLES = $\pm$                            |                 | HOLEDIA = $\pm$  |                           |
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|   |                 |  | P0                        |

### 4.包装规格:

|                                       |         |      |             |
|---------------------------------------|---------|------|-------------|
| 产品料号: <b>XXX</b>                      |         |      |             |
| 产品型号: <b>XXX</b>                      |         |      |             |
| 一、标签要求:                               |         |      |             |
| 需方                                    | XXX     |      |             |
| 供方                                    | XXXXX   |      |             |
| 物料编码                                  | XX      |      |             |
| 产品型号                                  | XX      |      |             |
| 数量/单                                  | XXX PCS | 出厂日期 | X 年 X 月 X 日 |
| 备注/其他                                 |         |      |             |
| 二、装箱要求:                               |         |      |             |
| 作业说明:                                 |         |      |             |
| 1. 内包装:                               |         |      |             |
| 产品 <b>XXpcs</b> 一袋, 放入小 <b>PE 袋</b> ; |         |      |             |
| 2. 外包装:                               |         |      |             |
| <b>XxPCS</b> 一箱;                      |         |      |             |
| 3. 注意事项:                              |         |      |             |
| a. 是否要增设隔板、珍珠棉;                       |         |      |             |
| b. 标签的帖附, 如 <b>ROHS</b> 等;            |         |      |             |



|  |                        |  |
|--|------------------------|--|
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| <b>X=±</b>                                       | <b>X.X=±</b>           |  |
| <b>ANGLES=±</b>                                  | <b>HOLEDIA=±</b>       |  |
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|  |                        | <b>P0</b>  |