



福州中天迅通信技术有限公司

Fuzhou ZHONGTIANXUN Communication Technology Co., Ltd

项目名称(Project Name): DX4000-MAIN

天线型号(Antenna model): ZTX-DX4000-MAIN-ANT

B

物料编码(Item number): F.00000601

MPN 码 (MPN) : B0680317D

日期 (Date) : 2023-3-22

设计公司: 福州中天迅通信技术有限公司

Design company: Fuzhou zhongtianxxun communication technology Co., Ltd

设计人员: 谢恩元

Designer: Enyuan xie

电 话: 18718685346

Tel: 18718685346

测试人员: 谢恩元

Tester: Enyuan xie

电 话: 18718685346

Tel: 18718685346



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| 版本<br>version | 日期<br>date | 状态<br>status                                                                                                    |
|---------------|------------|-----------------------------------------------------------------------------------------------------------------|
| A1            | 2022-7-28  | 规格书制定。<br>First issue.                                                                                          |
| A2            | 2022-8-12  | 增加性能数据，更新结构图纸。<br>Add performance data and update structural drawings.                                          |
| A3            | 2022-10-19 | FPC 外形，线路，同轴线长度更新；性能数据更新。<br>Update the shape, line and coaxial line length of FPC;<br>Performance data update. |
| A4            | 2022-3-22  | FPC 外形，线路更新；第二行丝印由“A”改为“B”。<br>Shape, line update; The second line is<br>silk-screened byChange "A" to "B".     |





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## 1 名词解释 (Explanation of Nouns)

|       |                                         |
|-------|-----------------------------------------|
| dBi   | Decibel relative isotropic antenna      |
| Tx    | Transmit frequency                      |
| Rx    | Receive frequency                       |
| TRP   | Total Radiated Power                    |
| TIS   | Total Isotropic Sensitivity             |
| VSWR  | Voltage Standing Wave Ratio             |
| GSM   | Global Service for Mobile communication |
| DCS   | Digital Communication System            |
| CDMA  | Code Division Multiple Access           |
| WCDMA | Wideband Code Division Multiple Access  |

## 2 测试设备 (Test equipment)

矢量网络分析仪 (Vector network analyzer)

安捷伦 8753E (Agilent 8753E)

频谱分析仪 (Frequency analyzer)

综合测试仪 (General-purpose tester)

安捷伦 8960 E5515C

标准高性能无反射屏蔽暗室 (High performance no-reflection shielding darkroom)

ETS

8m\*4m\*4m

## 3 适用频段 (Applied frequency band)

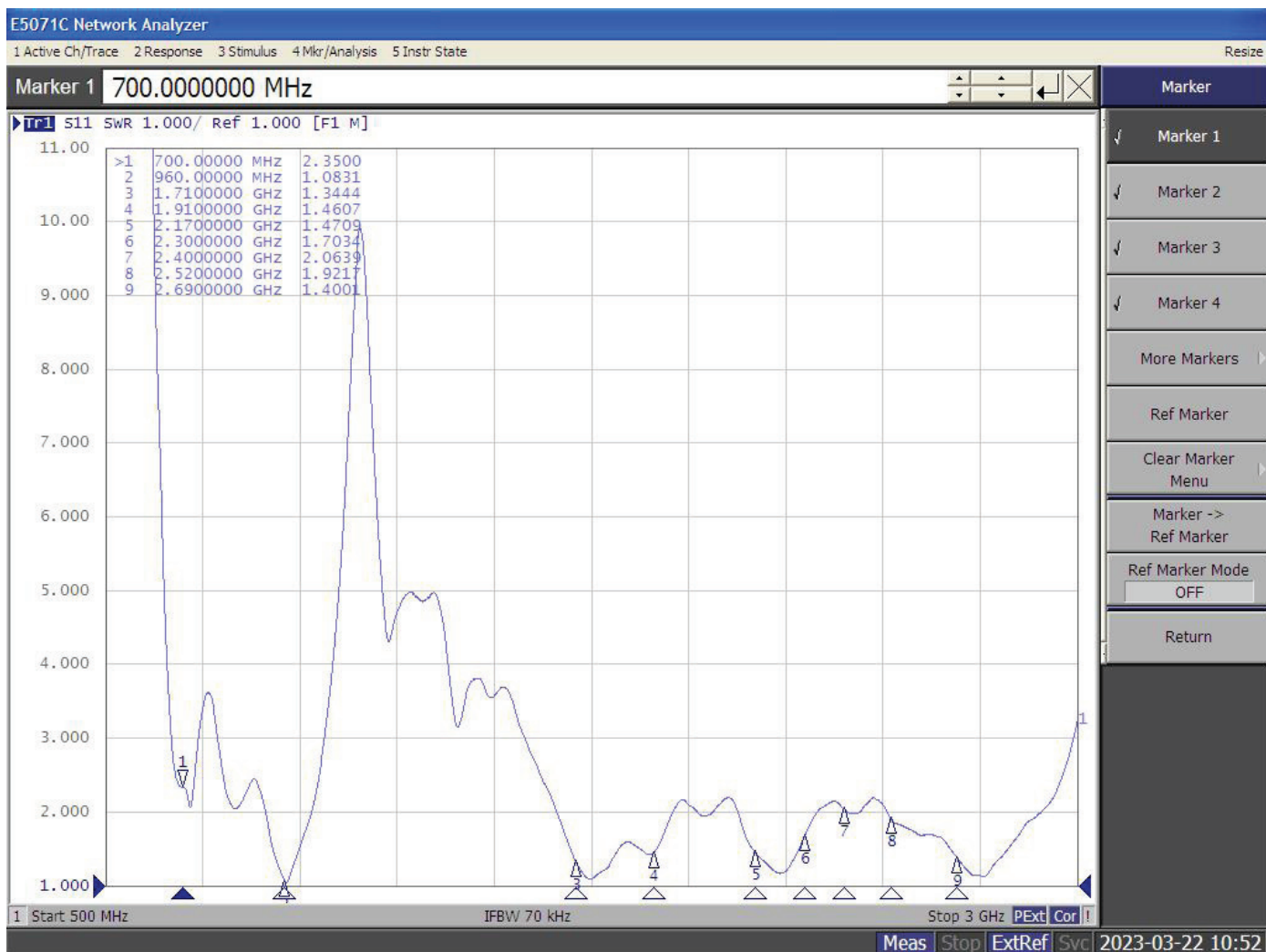
| 频段             | 频率           |
|----------------|--------------|
| Frequency Band | Frequency    |
| MAIN           | 700-2690MHz。 |





## 4. 测试指标和数据图表 (Test project)

### 4.1 驻波图 (VSWR )





4.2 无源效率 (Antenna passive test)

| chNo | Freq | Gain         | Efficiency_Pcent |
|------|------|--------------|------------------|
| 1    | 700  | -1.628400433 | 26.96908092      |
| 2    | 720  | -1.391049781 | 27.71896352      |
| 3    | 740  | -3.170943525 | 19.16582441      |
| 4    | 760  | -4.550024059 | 15.00305807      |
| 5    | 780  | -3.716557632 | 17.95210924      |
| 6    | 800  | -3.512093826 | 19.43712877      |
| 7    | 820  | -2.110770609 | 24.91299075      |
| 8    | 840  | -1.29059875  | 30.71907919      |
| 9    | 860  | -0.058915746 | 31.47722718      |
| 10   | 880  | -0.471577154 | 26.61123618      |
| 11   | 900  | 0.19495204   | 26.31130133      |
| 12   | 920  | -0.770196167 | 21.51108249      |
| 13   | 940  | 0.210705041  | 27.64803618      |
| 14   | 960  | 0.290660377  | 27.05972434      |
| 15   | 1710 | 1.697775277  | 50.41655721      |
| 16   | 1730 | 0.805308568  | 46.20549499      |
| 17   | 1750 | 1.22015835   | 46.67359863      |
| 18   | 1770 | 1.225412279  | 47.48893146      |





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|    |      |              |              |
|----|------|--------------|--------------|
| 19 | 1790 | 1. 816174684 | 49. 46525703 |
| 20 | 1810 | 2. 196457552 | 53. 24187725 |
| 21 | 1830 | 2. 703733528 | 60. 14625048 |
| 22 | 1850 | 2. 303819684 | 55. 09506894 |
| 23 | 1870 | 1. 905817574 | 53. 27142027 |
| 24 | 1890 | 1. 556013123 | 52. 9656014  |
| 25 | 1910 | 1. 399494569 | 48. 51589967 |
| 26 | 1930 | 1. 132346974 | 50. 07384198 |
| 27 | 1950 | 1. 501934297 | 51. 21673795 |
| 28 | 1970 | 1. 532035695 | 51. 26552286 |
| 29 | 1990 | 2. 219607657 | 51. 21904057 |
| 30 | 2010 | 2. 103482033 | 47. 54248498 |
| 31 | 2030 | 2. 761556172 | 48. 07336681 |
| 32 | 2050 | 2. 390977899 | 46. 73630471 |
| 33 | 2070 | 2. 223026338 | 42. 40365268 |
| 34 | 2090 | 1. 50292359  | 39. 1741002  |
| 35 | 2110 | 0. 976131992 | 37. 59999245 |
| 36 | 2130 | 0. 823918623 | 41. 02200639 |
| 37 | 2150 | 1. 14846657  | 45. 6656236  |



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|    |      |               |              |
|----|------|---------------|--------------|
| 38 | 2170 | 1. 236270655  | 45. 91348463 |
| 39 | 2300 | -0. 021882481 | 33. 5851579  |
| 40 | 2320 | -0. 124241457 | 31. 62588127 |
| 41 | 2340 | -0. 565001654 | 29. 18171372 |
| 42 | 2360 | -0. 278202904 | 29. 34922832 |
| 43 | 2380 | -0. 441625261 | 30. 62283067 |
| 44 | 2400 | 0. 218774524  | 34. 13580629 |
| 45 | 2500 | 0. 967418564  | 40. 72814391 |
| 46 | 2520 | 1. 686608496  | 42. 23577275 |
| 47 | 2540 | 2. 731995614  | 39. 33399913 |
| 48 | 2560 | 2. 865586114  | 39. 23852531 |
| 49 | 2580 | 2. 381661523  | 36. 1824314  |
| 50 | 2600 | 1. 976610879  | 33. 95951748 |
| 51 | 2620 | 1. 571939356  | 32. 11850877 |
| 52 | 2640 | 1. 716488666  | 35. 71435467 |
| 53 | 2660 | 1. 802636775  | 40. 48577081 |
| 54 | 2680 | 2. 352659032  | 42. 48716448 |
| 55 | 2690 | 2. 498458764  | 44. 3841865  |





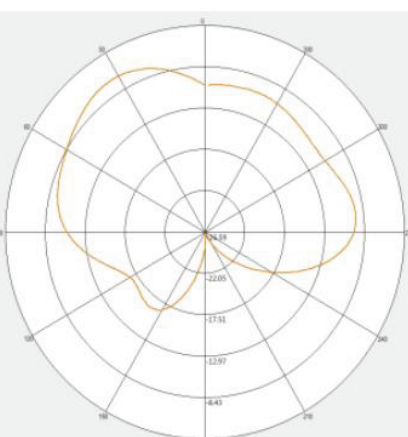
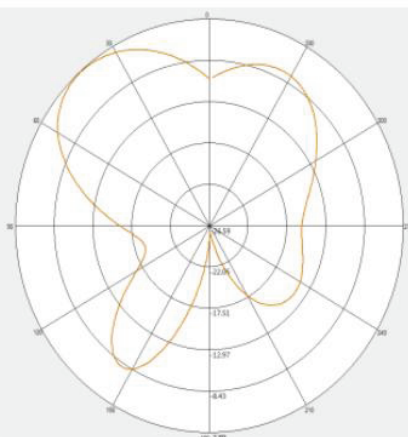
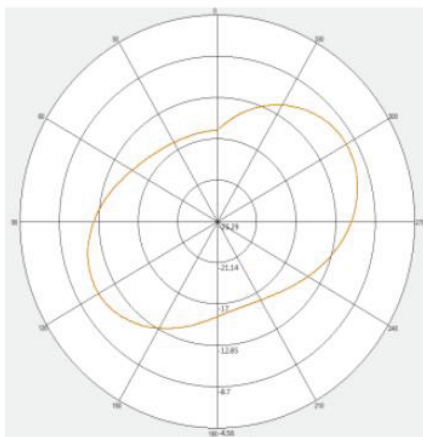
#### 4.4 2D 方向图 (2D directional diagram)

800MHz

XOY

XOZ

YOZ

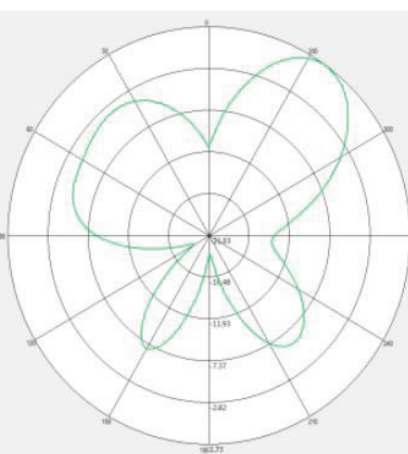
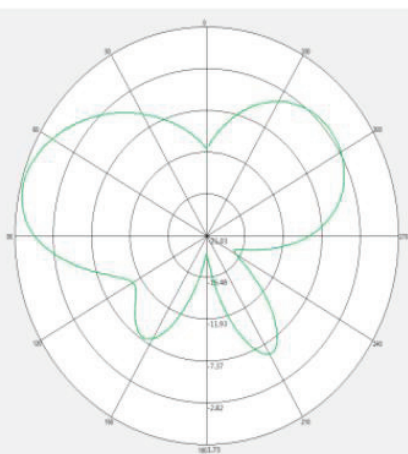
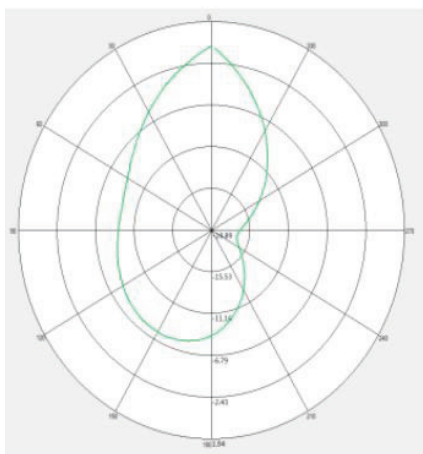


1860MHz

XOY

XOZ

YOZ





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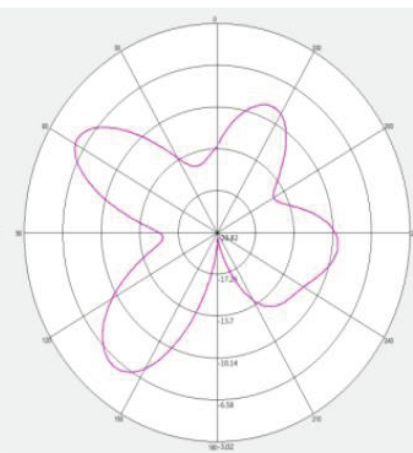
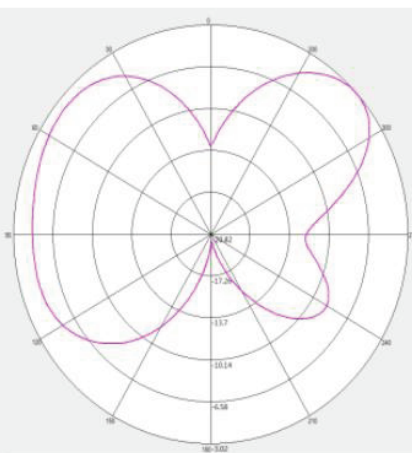
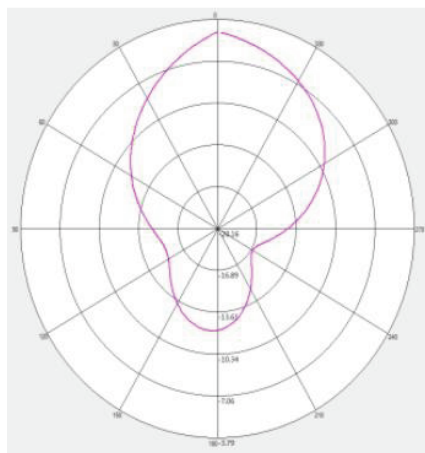
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2500MHz

XOY

XOZ

YOZ

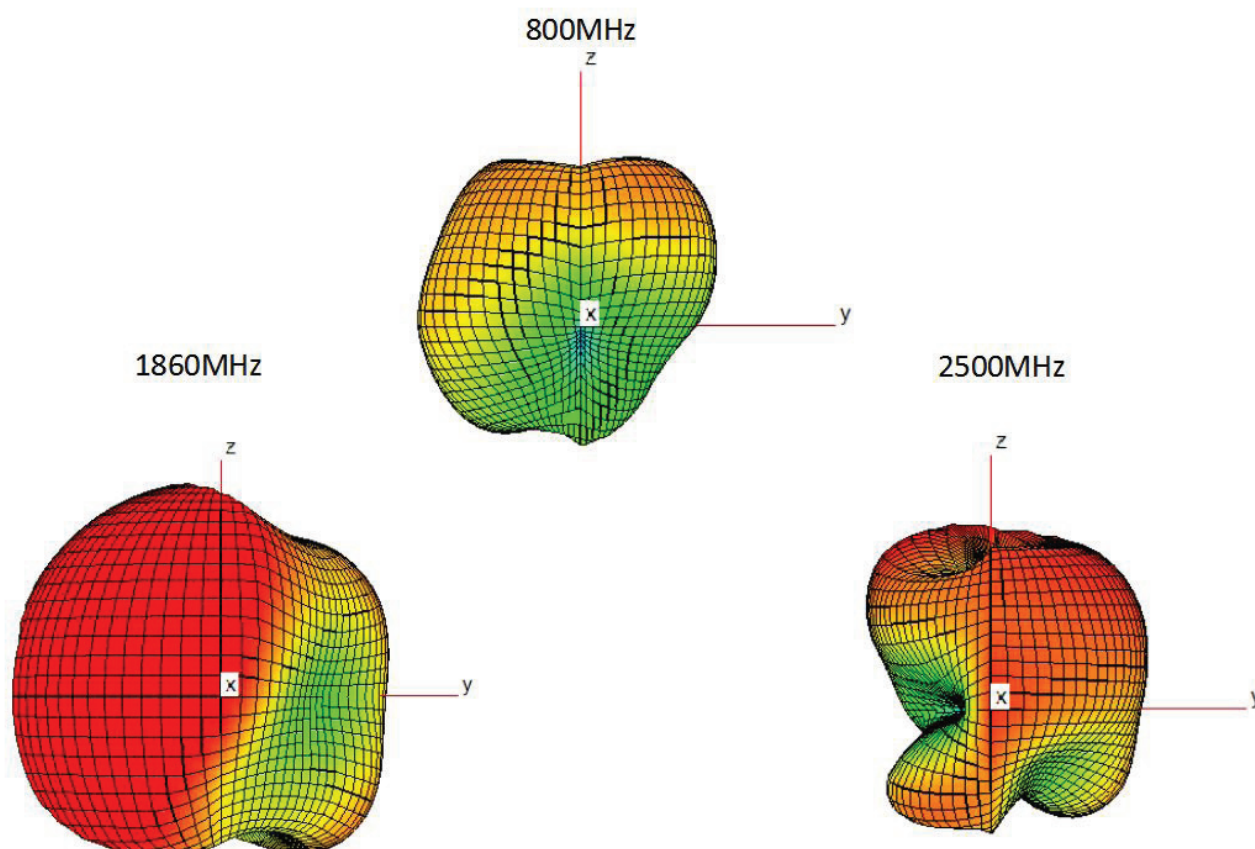


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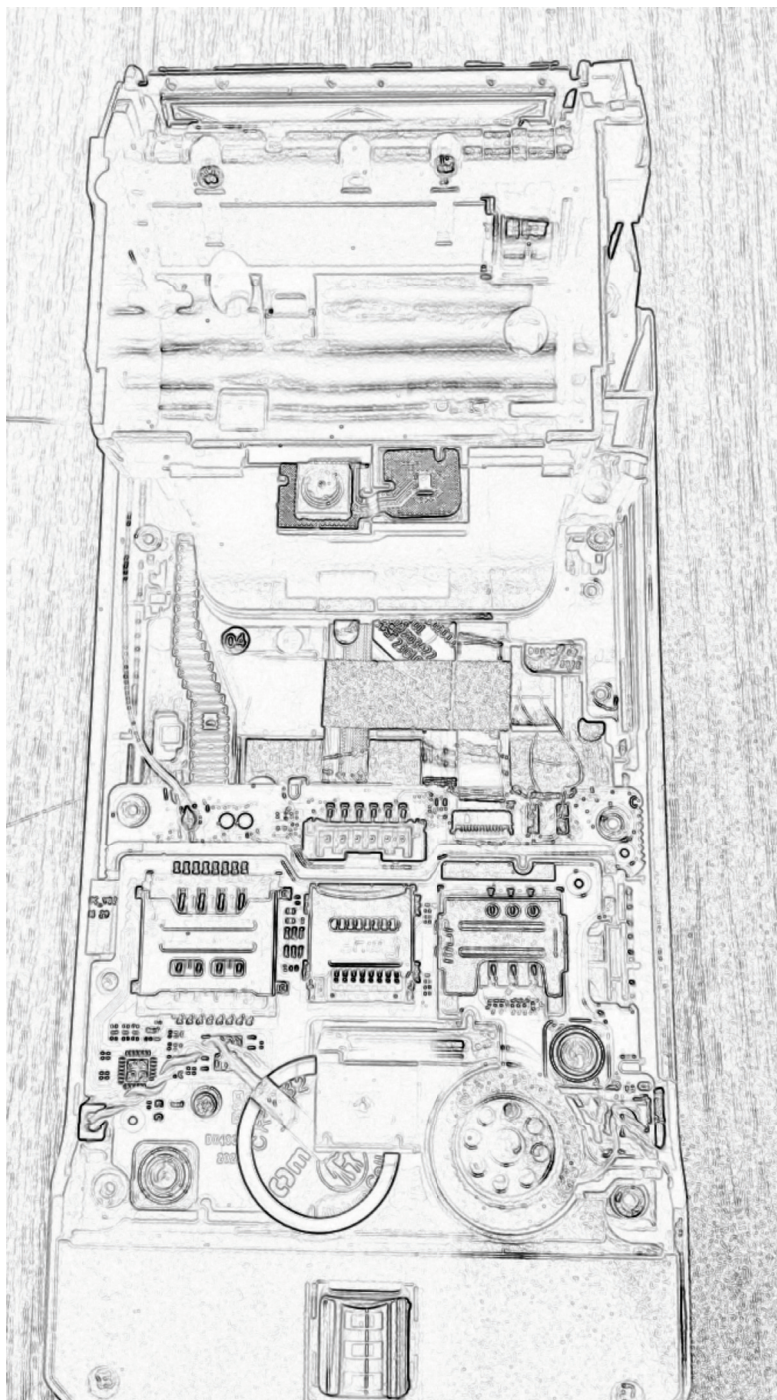


#### 4.5 3D 方向图 (3D directional diagram)



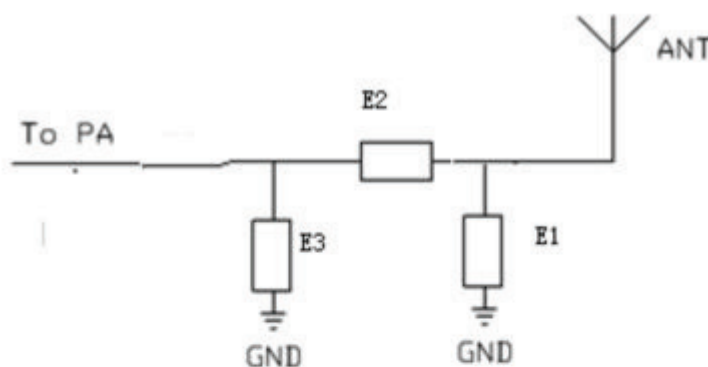


#### 4.6 装配图 (Environment treatment)





## 5. 匹配说明 (Matching circuit)



| Matching description | LTE |
|----------------------|-----|
| E1                   | NC  |
| E2                   | 1NH |
| E3                   | NC  |

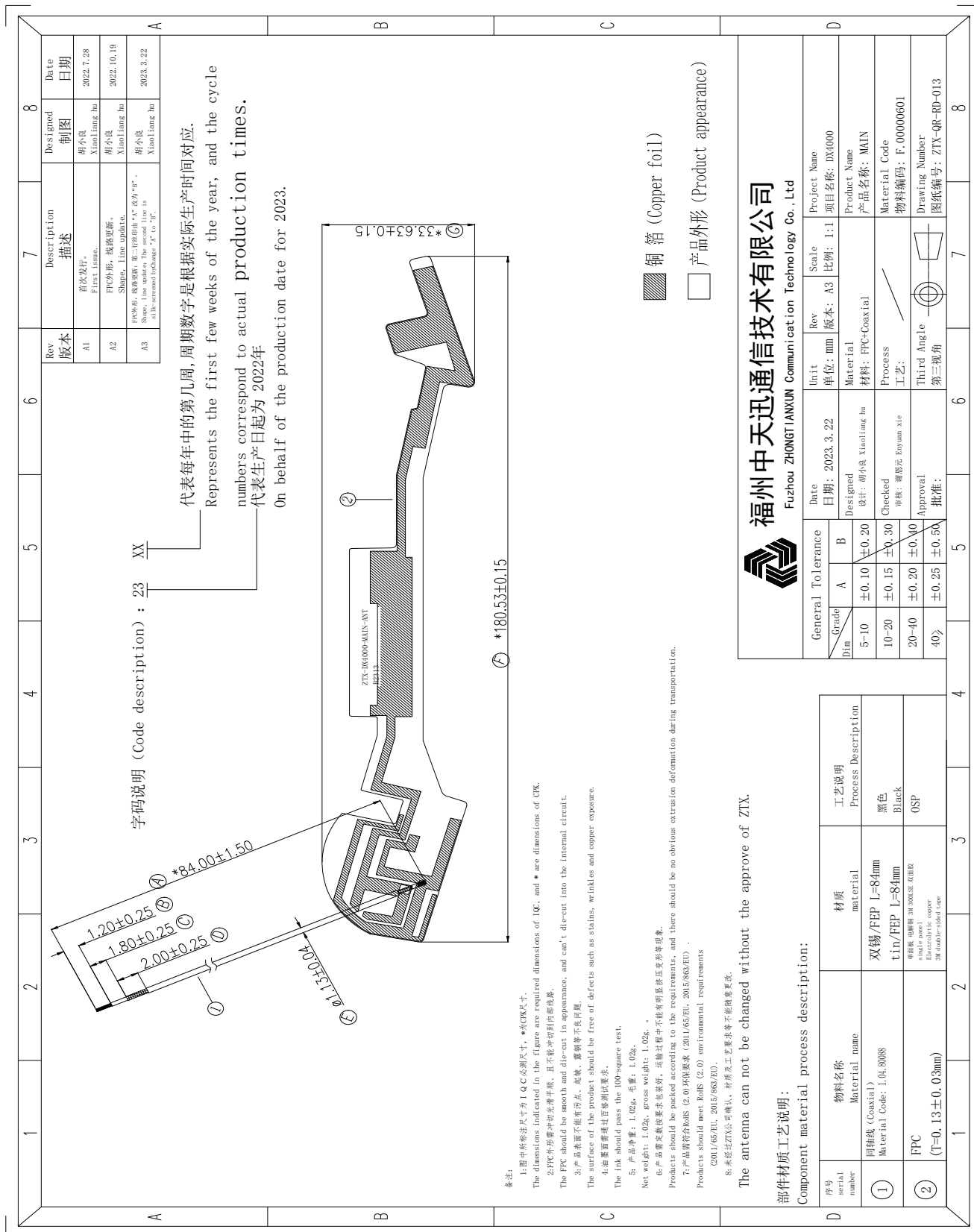




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## 6. 天线外形图 (Mechanical Specification)



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7. 包装作业指导 (The packing way)

|                                                                        |      |      |        |                                                             |               |
|------------------------------------------------------------------------|------|------|--------|-------------------------------------------------------------|---------------|
| 福州中天迅通信技术有限公司<br>Fuzhou ZHONGTIANXUN Communication Technology Co., Ltd |      | 包装规范 |        |                                                             |               |
| 产品名称                                                                   | MAIN | 产品型号 | DX4000 | 工序序号/名称                                                     | 版本            |
|                                                                        |      |      |        | 包装                                                          | A1            |
|                                                                        |      |      |        | 文件编号                                                        | ZTX-QD-WI-023 |
|                                                                        |      |      |        | 仪器校准及要求:                                                    |               |
|                                                                        |      |      |        | 1. 测试设备必须校准;                                                |               |
|                                                                        |      |      |        | 2. 重新连接接口后或连续测试不稳定时,需对仪器进行校正;                               |               |
|                                                                        |      |      |        | 3. 测试产品时保证天线垂直,并远离人体或金属物体30cm以上;                            |               |
|                                                                        |      |      |        | 操作防护要求:                                                     |               |
|                                                                        |      |      |        | 1. 作业人员需带手套进行作业, (特殊产品需带手套);                                |               |
|                                                                        |      |      |        | 2. 检测过程中检测产品做到轻拿轻放;                                         |               |
|                                                                        |      |      |        | 3. 操作测试台时, 严格按照操作规范使用, 避免伤手;                                |               |
|                                                                        |      |      |        | 6S要求:                                                       |               |
|                                                                        |      |      |        | 1. 保持检测现场台面整洁, 无尘、水、油污;                                     |               |
|                                                                        |      |      |        | 2. 物料摆放整齐, 标识清楚;                                            |               |
|                                                                        |      |      |        | 注意事项: 1. 客户物料编码和数量是否正确, 标签必须用机打印的 2. 内标签、外标签、出货报告、送货单内容需一致。 |               |
|                                                                        |      |      |        | 3. 如是试产物料或有变更均需贴相应标识, 尾数箱需贴尾数标识, 内附检验报告等                    |               |
|                                                                        |      |      |        | 物料名称                                                        | 物料代码          |
|                                                                        |      |      |        | PE开口袋                                                       | 1. 12. 000030 |
|                                                                        |      |      |        | PE封口袋                                                       | 1. 12. 000023 |
|                                                                        |      |      |        | 纸板                                                          | 1. 13. 000003 |
|                                                                        |      |      |        | 纸箱                                                          | 1. 12. 000086 |
|                                                                        |      |      |        | 标签                                                          |               |
|                                                                        |      |      |        | 橡皮筋                                                         |               |
|                                                                        |      |      |        | 版本                                                          | 修订内容          |
|                                                                        |      |      |        | 制订                                                          | 审核            |
|                                                                        |      |      |        | 胡小良                                                         | 易爱玲           |
|                                                                        |      |      |        | 批准                                                          | 张武民           |



图1: 确认数量



图2: 封口PE袋包装/贴标签



图3: 封口PE袋包装/贴标签



图4: 装箱



图5: 贴外箱标签/附出货检验报告



图6: 封箱



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Figure 1: Confirmed quantity

