



项目名称 (Project Name) : DX4000 (LOB) -WIFI/BT/GPS

天线型号 (Antenna model) : ZTX-DX4000-W/B/G

A

物料编码 (Item number) : E. 03. 00781

MPN 码 (MPN) : B0680322D

日期 (Date) : 2022-12-1

设计公司: 福州中天迅通信技术有限公司

Design company: Fuzhou zhongtianxun communication technology Co., Ltd

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A1	2022-8-23	规格书制定。 First issue.
A2	2022-12-1	性能优化; FPC 线路更新; 丝印第一行去掉 “-ANT” 离型纸及背胶更新。 Performance optimization; The FPC is updated; Remove the “-ANT” release paper from the first line of silk screen and update the adhesive.



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1 名词解释 (Explanation of Nouns)

dB _i	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 Frequency Band	频率 Frequency
WIFI/BT/GPS	1575MHz; 2400–2500MHz, 5150–5850MHz。



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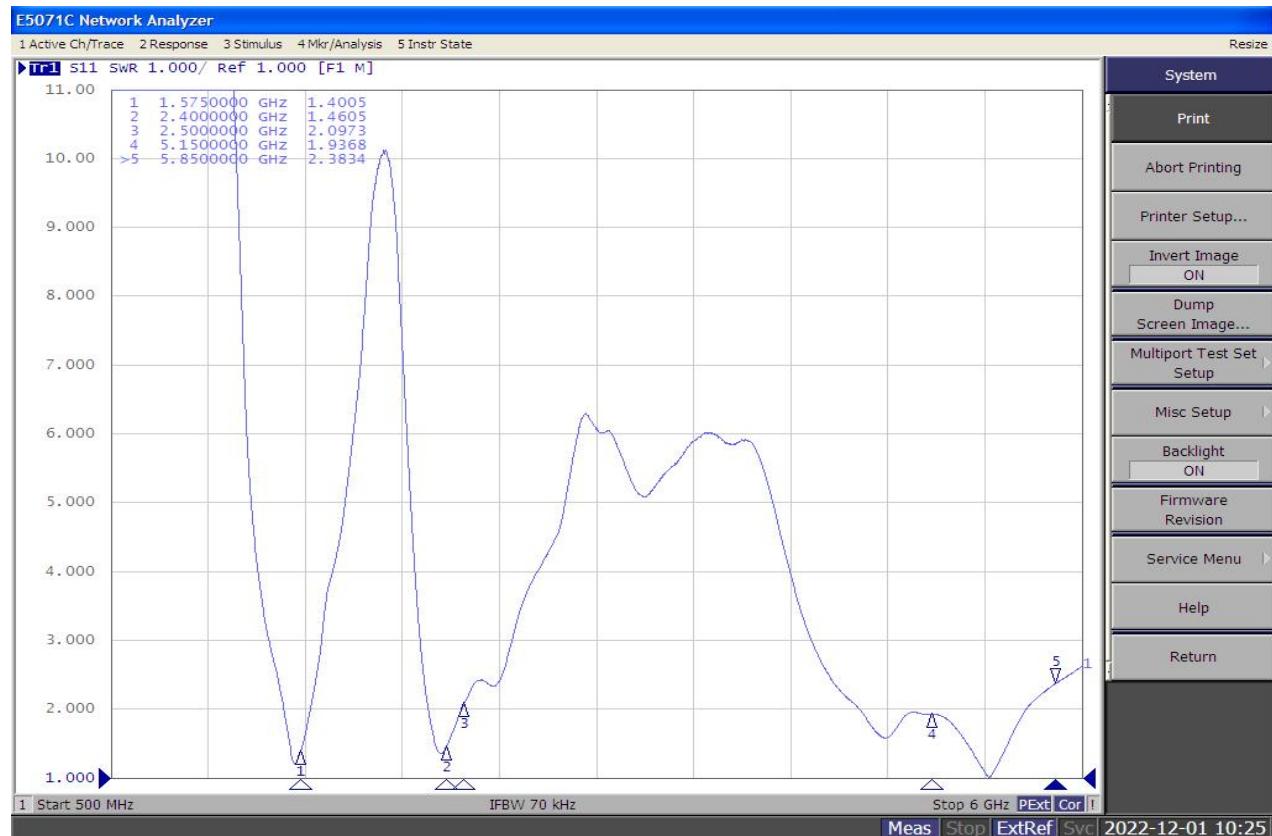


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4. 测试指标和数据图表 (Test project)

4. 1 驻波图 (VSWR)



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4.2 无源效率 (Antenna passive test)

chNo	Freq	Gain	Efficiency_Pcent
1	1550	0.77848173	53.77802486
2	1555	0.788493411	54.55722409
3	1560	0.751092919	55.29521169
4	1565	0.68239031	55.37959649
5	1570	0.603778605	54.78775788
6	1575	0.583353014	53.89716541
7	1580	0.510420594	52.09480179
8	1585	0.580890388	50.57687639
9	1590	0.537485893	49.6661364
10	1595	0.575302907	49.58962995
11	1600	0.920392448	55.56632056
12	2400	0.696950353	36.49416106
13	2410	0.65107838	37.49165672
14	2420	0.792974128	38.25120401
15	2430	0.841146981	37.76136262
16	2440	0.627577596	36.05069638
17	2450	0.548366835	36.39402169
18	2460	0.270754346	34.91105411
19	2470	0.027718602	34.14565363
20	2480	-0.313171712	31.97296373



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21	2490	-0.6227737	30.35015284
22	2500	-0.684236077	30.08217559
23	5150	-2.088795546	17.57717446
24	5190	-1.290726931	19.21841041
25	5230	-0.802542843	22.25484108
26	5270	-0.524163832	24.62564226
27	5310	-0.395825963	25.47199442
28	5350	0.364350492	29.42432248
29	5390	0.562970358	27.48636498
30	5430	-1.202442327	26.08482879
31	5470	-0.517760022	29.20375866
32	5510	-1.255885409	23.15779588
33	5550	-1.628313887	23.12862435
34	5590	-2.041342023	18.79581429
35	5630	-3.096099273	15.86287193
36	5670	-1.26919036	18.07923748
37	5710	-1.667608856	17.88706264
38	5750	-1.204460227	16.56846798
39	5790	-1.183760639	16.71540815
40	5830	-2.689528079	16.36724466
41	5850	-2.604948317	18.8682792



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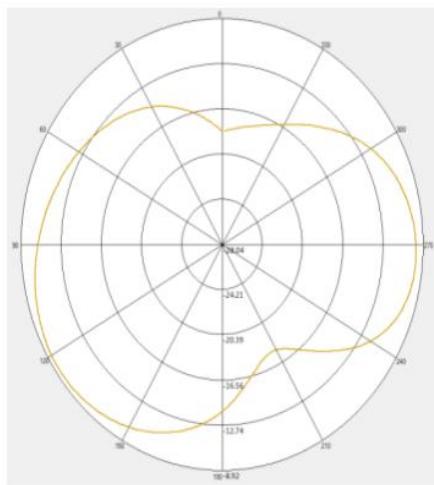
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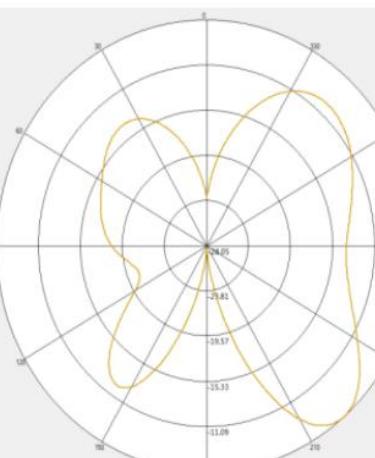
4.3 2D 方向图 (2D directional diagram)

1575MHz

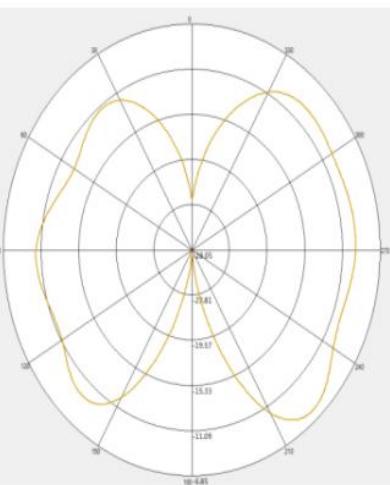
XOY面



XOZ面

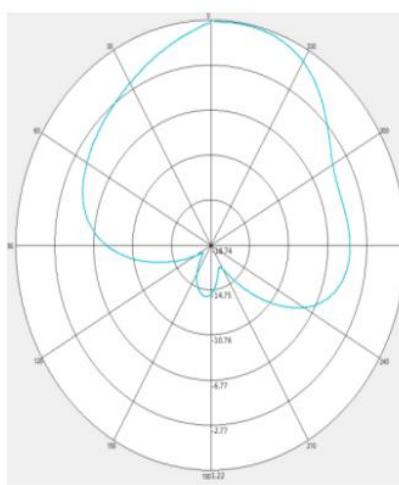


YOZ面

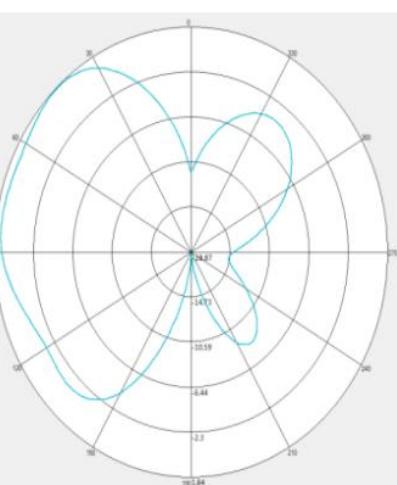


2450MHz

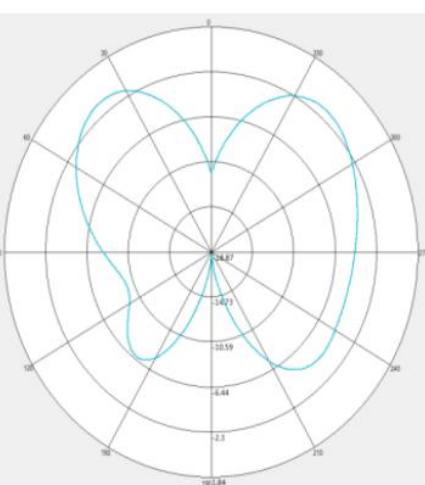
XOY面



XOZ面



YOZ面



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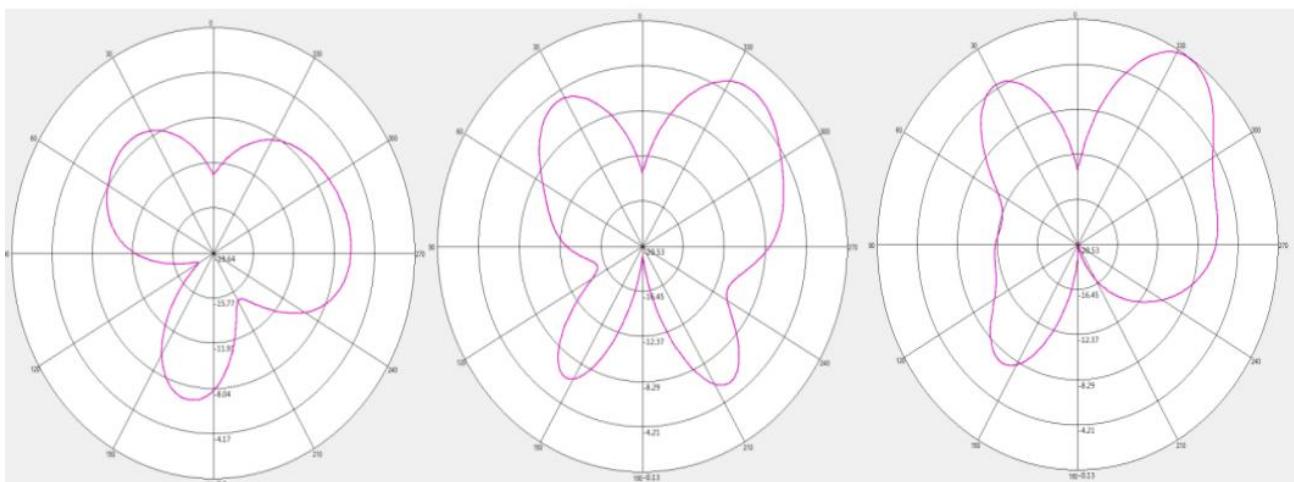
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5510MHz

XOY面

XOZ面

YOZ面



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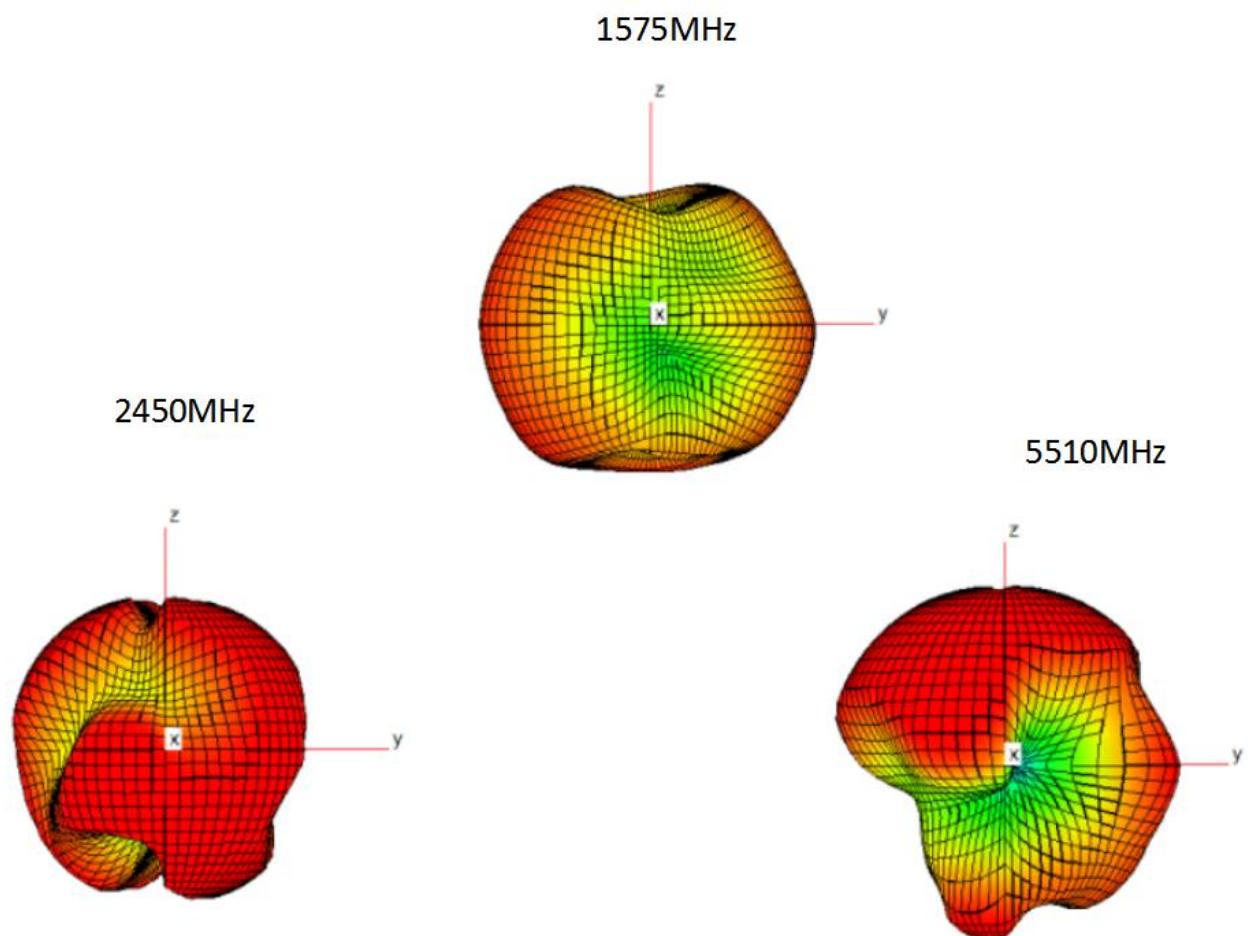
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4.4 3D 方向图 (3D directional diagram)



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4.5 有源数据 (Active test data)

频段	参数\信道	1	6	11
WIFI-11B	TRP	12.57	11.40	12.62
	TIS	-78.33	-76.06	-74.96
频段	参数\信道	1	6	11
WIFI-11G	TRP	12.73	11.71	12.46
	TIS	-66.19	-65.71	-63.92
频段	参数\信道	1	6	11
WIFI-11GN	TRP	11.38	10.8	10.94
	TIS	-63.00	-62.03	-61.88



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4.6 装配图 (Environment treatment)



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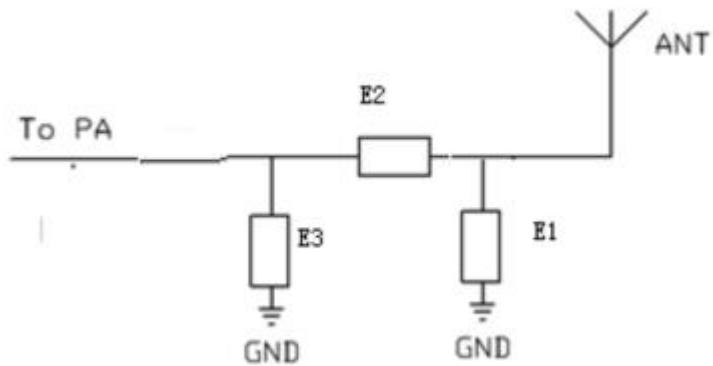
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5. 匹配说明 (Matching circuit)



Matching description	WIFI/BT/GPS
E1	NC
E2	0 Ω
E3	NC

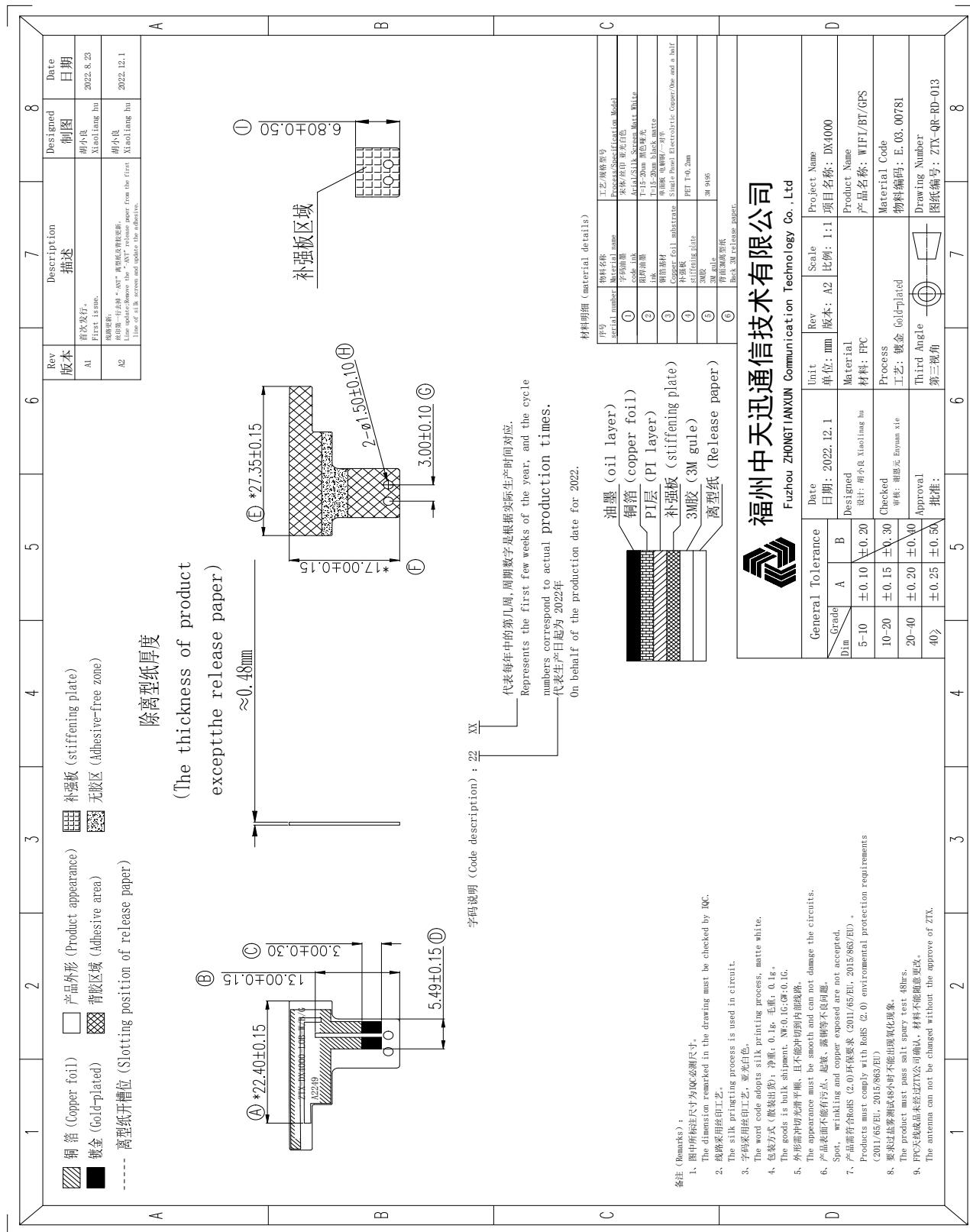


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6. 天线外形图 (Mechanical Specification)

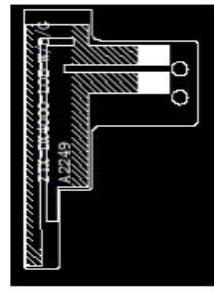




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7. 包装作业指导 (The packing way)

作业指导书																																				
产品名称	产品型号	文件编号	版本	工序序号/名称	工时工时	日产量																														
三合一	DX4000-L0B	ZTX-QD-WI-024	A1	包装	/	/																														
作业方法(自检该工序作业合格后,方能流入下一道工序)						注意事项:																														
<p>1. 产品采用单PCS出货, 每 (100pcs) 产品用90*130mmPE封口膜</p> <p>2. 每个160*240mmPE开口胶袋装10小袋 (1000PCS), 尾数除外;</p> <p>3. 条码标签贴于外箱时, 应尽量平整, 避免起翘剥落客户入库。</p> <p>4. 条码需清晰可扫描</p> <p>5. 在装好产品的箱子上将外箱标签及物料追溯码, RoHS贴于外箱的右上角, 打印标签内容包括 (生产家, 型号, 产品名称, 客户编码, 数量, 订单号, 日期, QA检验,)</p>																																				
																																				
																																				
<p>图1: 确认数量</p> <p>图2: 每10小袋用大PE袋包装</p>																																				
<table border="1"> <tr><td>IPN码:XXXXXXXXXX</td><td>物料编号</td><td>物料名称及规格</td><td>用量</td><td>工/支装治具</td></tr> <tr><td>产品名称:XXXXXXXXXX</td><td>纸箱 (45*32.5*21) cm</td><td>1</td><td>1</td><td>电子称</td></tr> <tr><td>料码:XXXXXXXXXXXX</td><td>PE封口袋 (90*130) mm</td><td>200</td><td>200</td><td>封口机</td></tr> <tr><td>数量: 1000pcs</td><td>PE开口袋 (160*240) mm</td><td>20</td><td>20</td><td></td></tr> <tr><td>重量: XX g</td><td></td><td></td><td></td><td></td></tr> <tr><td>周期: XXXXX</td><td></td><td></td><td></td><td></td></tr> </table>							IPN码:XXXXXXXXXX	物料编号	物料名称及规格	用量	工/支装治具	产品名称:XXXXXXXXXX	纸箱 (45*32.5*21) cm	1	1	电子称	料码:XXXXXXXXXXXX	PE封口袋 (90*130) mm	200	200	封口机	数量: 1000pcs	PE开口袋 (160*240) mm	20	20		重量: XX g					周期: XXXXX				
IPN码:XXXXXXXXXX	物料编号	物料名称及规格	用量	工/支装治具																																
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料码:XXXXXXXXXXXX	PE封口袋 (90*130) mm	200	200	封口机																																
数量: 1000pcs	PE开口袋 (160*240) mm	20	20																																	
重量: XX g																																				
周期: XXXXX																																				
<p>图4: 贴外箱标签, 封箱</p> <p>图3: 小标签及追溯码</p>																																				
版本	修订内容			修订日期	修订人																															
制订	胡小良	审核	易爱玲	品质确认	胡春梅	张武民																														



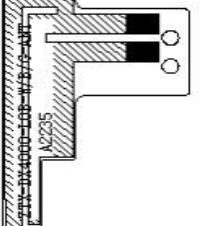
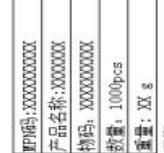
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SOP						
product name	product model	File Number	version	Process number/name	process man-no	Daily output
WIFI/BT/GPS	DX4000 (LOB)	ZTX-QD-WI-024	A1	package	/	/
Packaging process		Precautions				
		<ol style="list-style-type: none"> The products are shipped in a single PCS, and each (100pcs) product is packed in a 90*130mm PE sealing plastic bag; Each 160*240mm PE open plastic bag is packed in 10 sachets (1000PCS), except the mantissa; Except for the label, the outer box cannot be shipped with any silk screen (ie blank carton); Put the packaged products into cartons, and confirm the quantity of each box according to the order quantity requirements to ensure that the quantity of each box is correct. Put the outer box label and material traceability code, RoHS on the upper right corner of the outer box on the box with the product, and the printed label content includes (manufacturer, model, product name, customer code, quantity, order number, date , QA inspection) 				
		<p>Picture 2: Every 10 sachets are packed in large PE bags</p>				
<p>Figure 1: Confirmed quantity</p>						
<p>Picture 4: Attach the outer box label and seal the box</p>		<p>Figure 3: Small label and traceability code</p>				
<p>version</p>		<p>modify the content</p>				
<p>Formulate</p>		Xiaoliang hu	Review	Ailing yi	Quality confirmation	
<p>Approve</p>		Yumin zhang	Revised by	Chunmei hu		



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