APPROVAL SHEET
承认书

CUSTOMER NAME 客户名称	深圳市华曦达科技股份有限公司 Shenzhen Huaxida Technology Co., LTD
CUSTOMER P/N 客户料号	360500031
PART NAME 品　　名	BT 金属内置天线 BT metal built-in antenna
P/ N 料　　号	YJC-6N000-B580
APPROVAL REV. 版　　次	A0
DELIVERY DATE 送样日期	2024 年 10 月 10 日 October 10, 2024
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APPROVED BY 核　准	肖 汉 Chauhan

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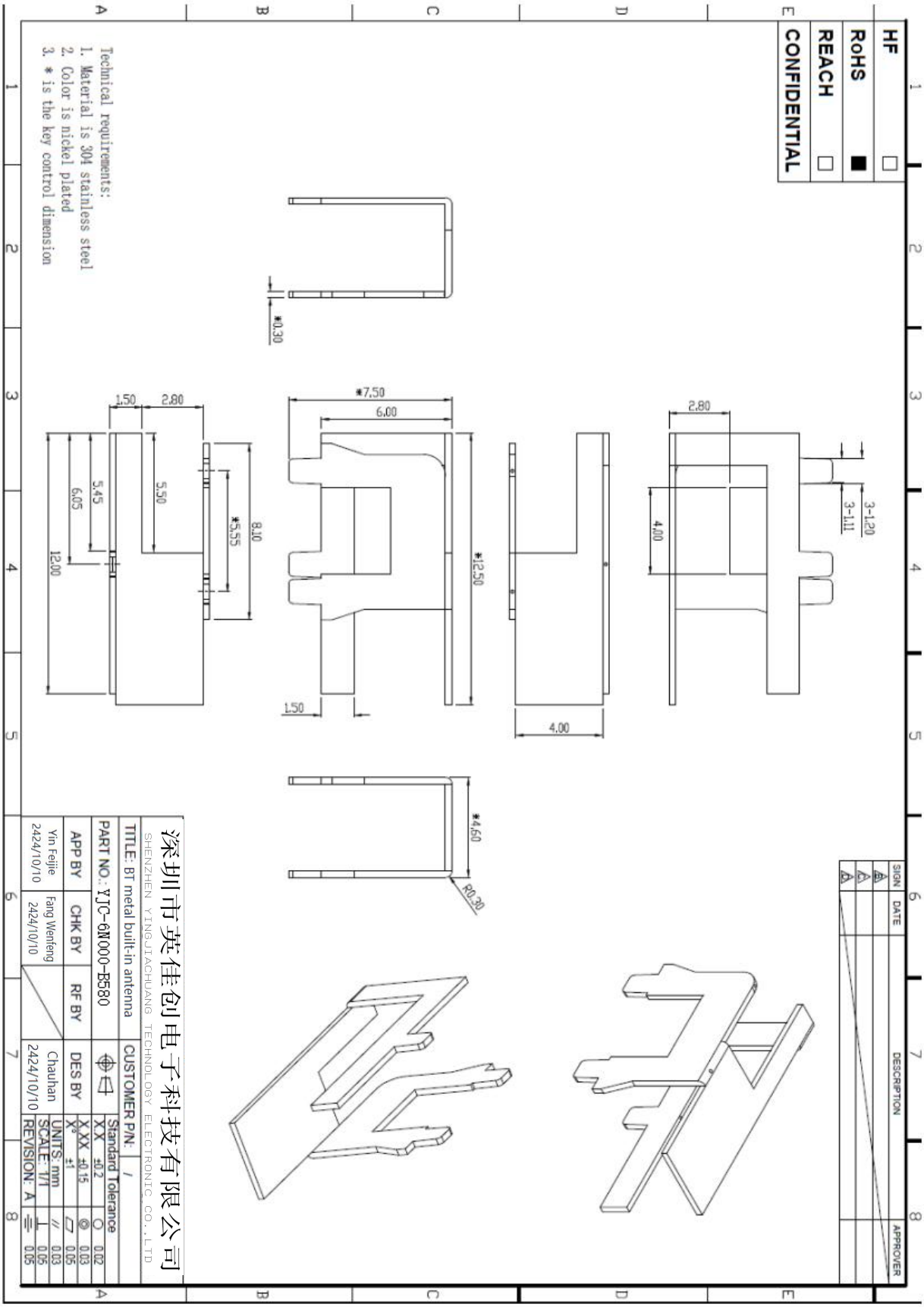
履历表(Resumer)：

版本 Version	变更内容及更改原因 Changes and reasons	发行 publish	发行 publish
A/0	初版发行（Issued）	2024 年 10 月 10 日 （October 10, 2024）	

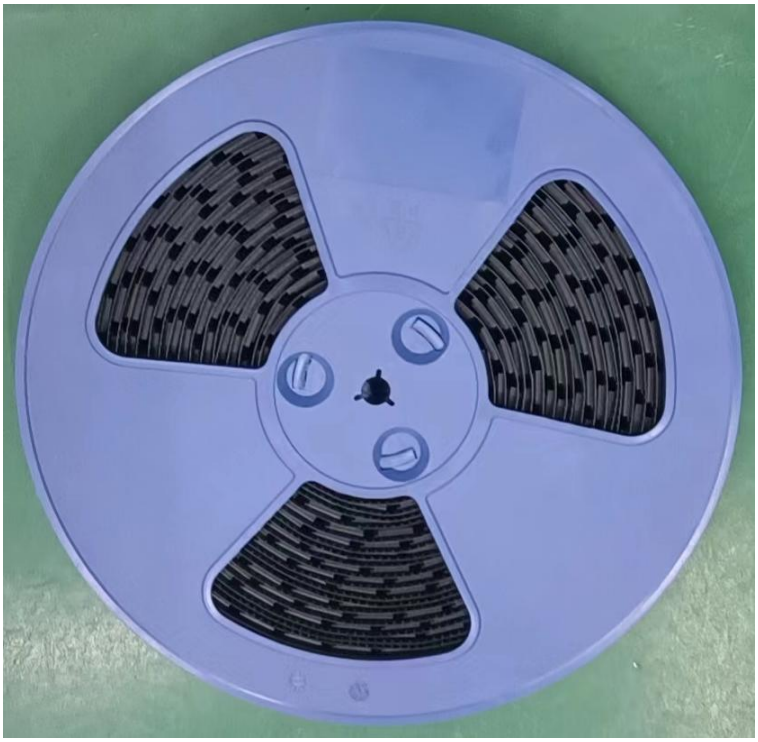
产品平面图(Product plan)：



天线技术参数(Antenna technical parameters)：

电气技术参数(Electrical technical parameters)	
电 性 能 指 标（Electrical Specifications）	
频率范围 （Frequency Range）	2400 -2500MHZ
电压驻波比（VSWR）	＜1.92
输入阻抗（Input Impedance）	50 Ω
方向（Direction）	全向
增益（Gain）	BT: 2.4G≧2. 91dBi
机 械 指 标（Mechanical Specifications）	
材质	304 不锈钢（Stainless steel）
工作温度	-20℃~+70℃
工作湿度	20~80%

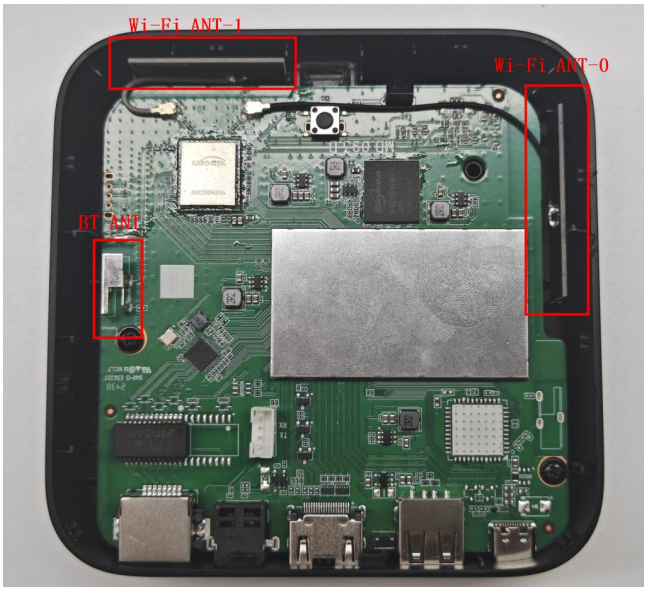
包装方式（The packing way）：



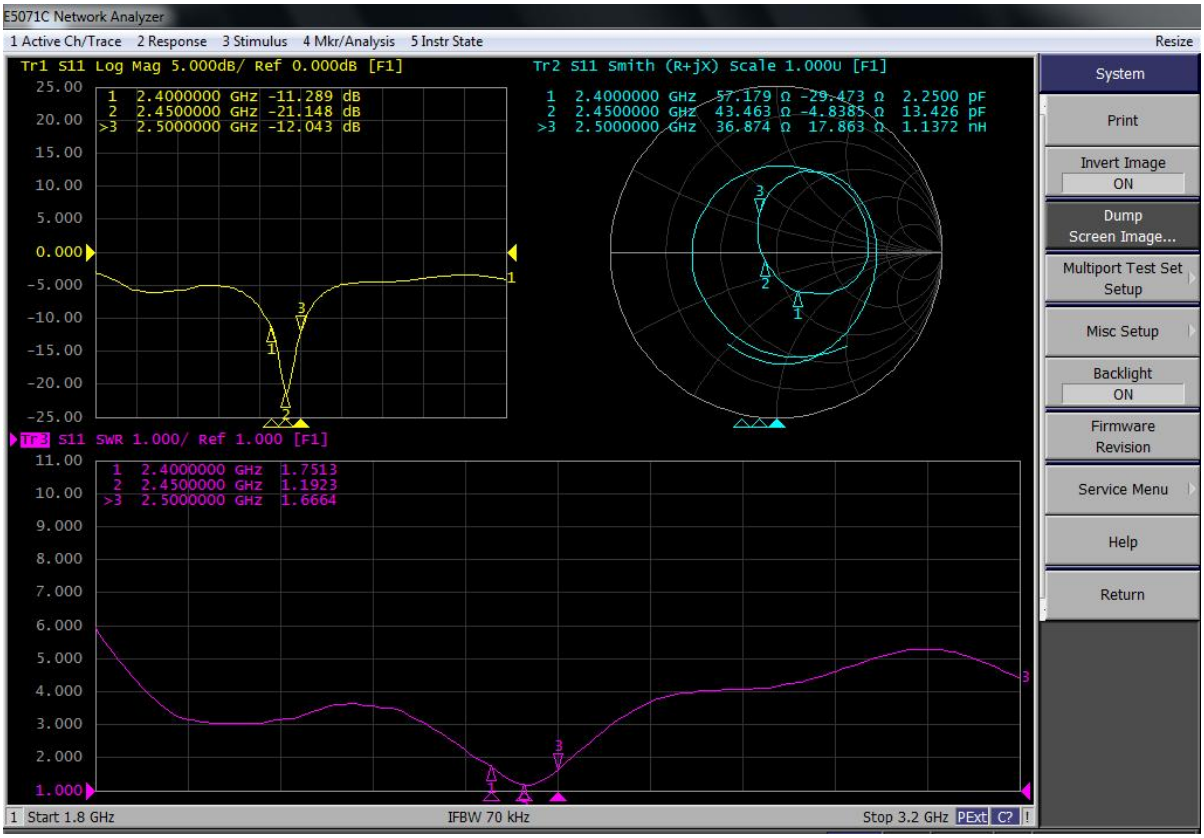
环境性能测试(Environmental performance testing)：

项目(Project)	测试条件(Test condition)	规格(Specification)
储存环境 Storage Conditions	In the absence of specified test temperature, humidity, air pressure is as follows: 在没有指定的情况下测试温度、湿度、气压如下： 1.Temperature is - 30 ℃ ~ + 80 ℃ 1.温度为-30℃～+80℃ 2.Relative humidity of 45% to 85% 2.相对湿度为45%-85% 3. Air pressure is 86 kpa to 106 kpa 3.气压为86kpa-106kpa	Electrical and mechanical properties is normal 电气机械性能正常
高低温试验 high and low temperature test	Between 70 ℃ and -20 ℃ for 5 loops, then 1-2 h under normal conditions, check the appearance quality. 在70℃与-20℃之间进行5次循环，然后在正常条件下1-2H，检查外观质量。	Size should meet the requirements and should satisfy the content with the electrical and mechanical properties 尺寸应满足规定并应满足于机械、电气性能
耐恒定湿热试验 Constant damp and hot resistance test	95 + / - 3% relative humidity, temperature test: 40 ℃. Lasts 2 h after, try to take out the determination of electrical properties, within 5 min after try 1-2 h under article normal thing, check the appearance quality 相对湿度95±3%，试验温度：40℃.持续2H作用后，试品取出后5min之内测定电气性能，试品在正常条件下1-2H，检查外观质量	Size should meet the requirements and should satisfy the content with the electrical and mechanical properties 尺寸应满足规定并应满足于机械、电气性能
振动试验 vibration test	10-55 hz, vibration frequency range of displacement amplitude: 0.35 MM, acceleration amplitude: 50.0 M/S, sweep cycles: 30 times 振频范围10-55HZ，位移幅值：0.35MM， 加速度幅值：50.0M/S，扫频循环次数：30次	Electrical and mechanical properties is normal 电气机械性能正常
跌落试验 fall down test	1 m high altitude in accordance with the perpendicular axis free drop 3 times 1M高空按照互相垂直的轴方向自由跌落3次	Electrical and mechanical properties is normal 电气机械性能正常

天线实物图(Antenna attachment position diagram)：

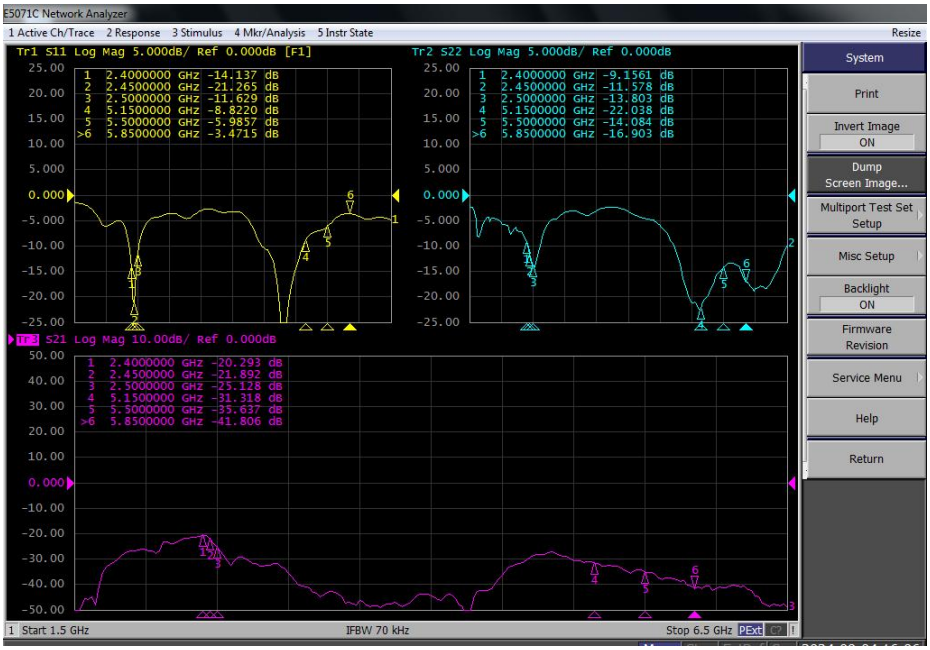


天线性能测试图(Antenna performance test diagram) (BT)：



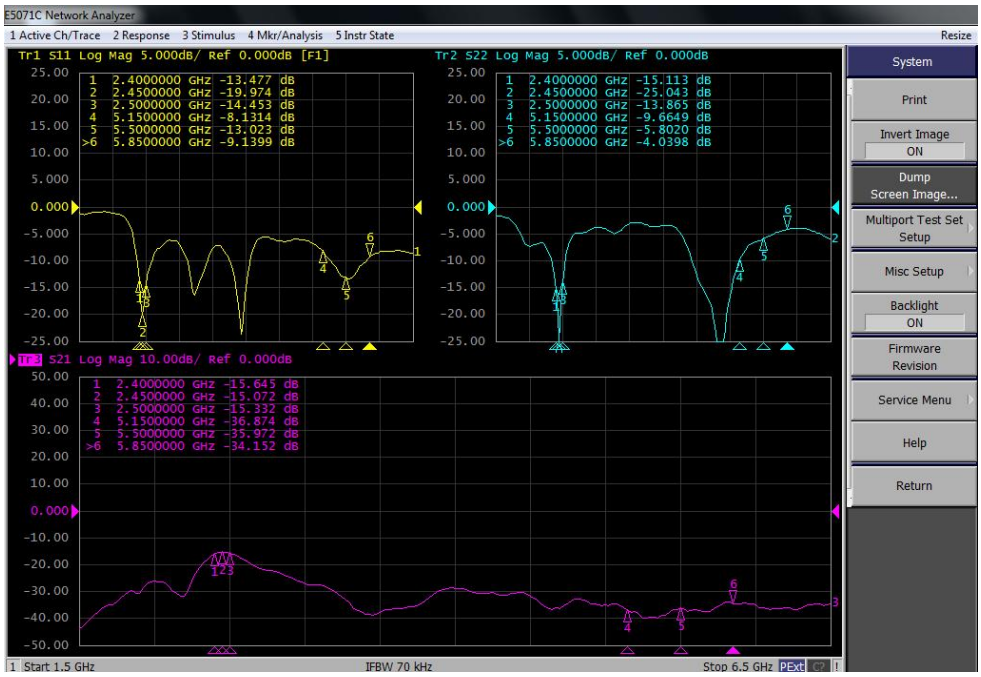
Freq/GHz	2.4	2.45	2.5
VSWR	1.7	1.1	1.6

Wi-Fi Ant-0 & BT Ant Isolation



Freq/GHz	2.4	2.45	2.5	5.15	5.5	5.85
S21/ dB	-20	-21	-25	-31	-35	-41

Wi-Fi Ant-1 & BT Ant Isolation

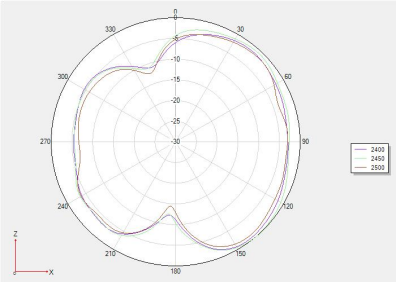


Freq/GHz	2.4	2.45	2.5	5.15	5.5	5.85
S21/ dB	-15	-15	-15	-36	-35	-34

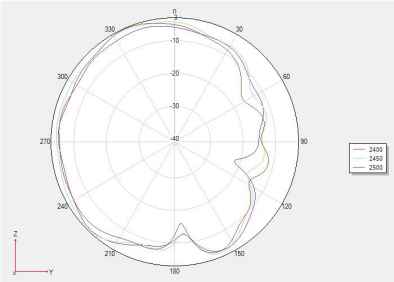
2D、3D 测试数据 Test data(BT) ：

Frequency(MHz)	Efficiency (%)	Gain.(dBi)
2400	61.52	0.67
2410	62.23	0.89
2420	61.38	0.48
2430	62.52	0.28
2440	61.66	0.68
2450	63.24	1.11
2460	61.94	0.8
2470	60.39	0.28
2480	56.89	0.29
2490	52.72	0.38
2500	50.7	-0.03

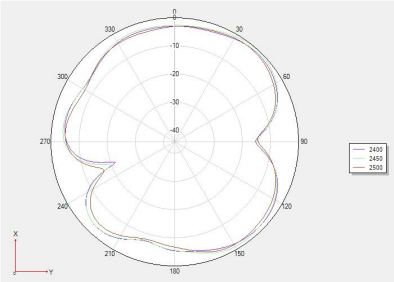
Phi =0 freq=2400MHz



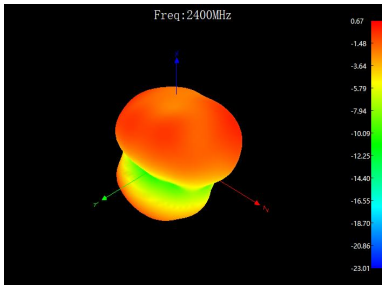
Phi =90 freq=2450MHz



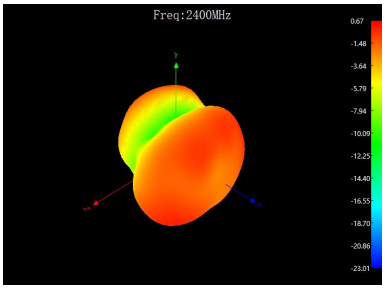
Theta =90 freq=2500MHz



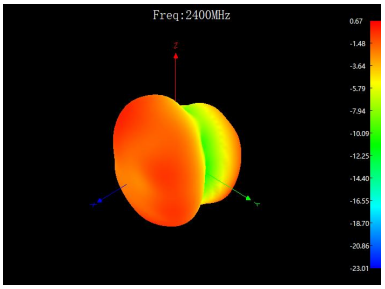
ZXY face @2400MHz



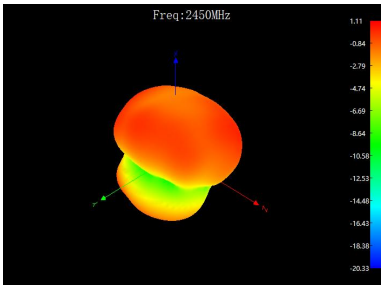
XYZ face @2400MHz



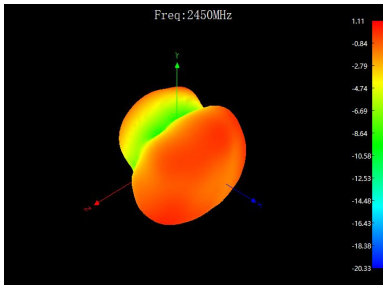
YZX face @2400MHz



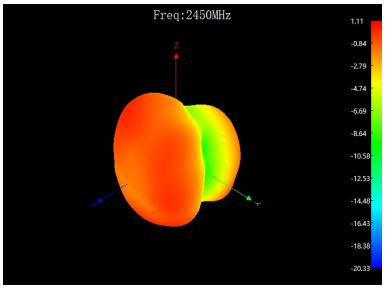
ZXY face @2450MHz



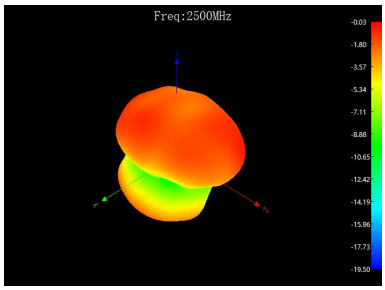
XYZ face @2450MHz



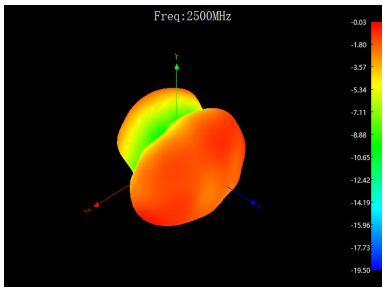
YZX face @2450MHz



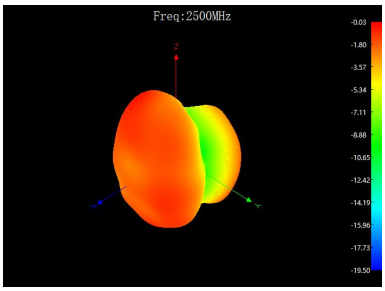
ZXY face @2500MHz



XYZ face @2500MHz



YZX face @2500MHz

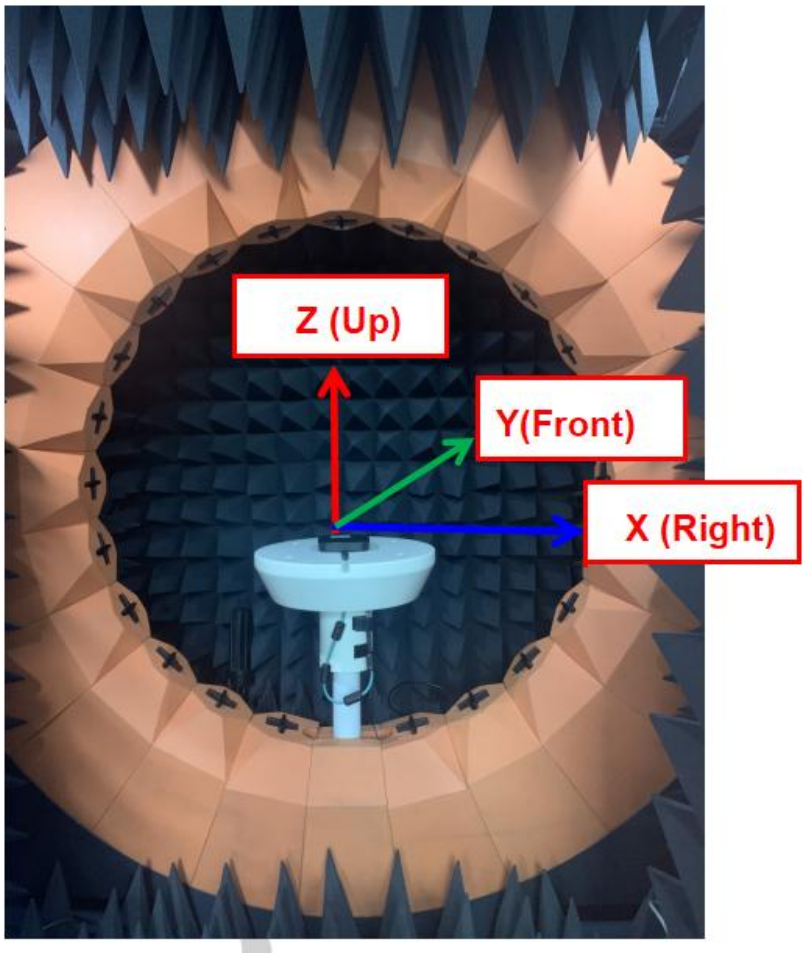


OTA 有源测试数据统计 OTA active test data statistics：

Item	Measurement	Mode	Channel	Frequency	Total
1	TRP	DH1	0	2402	3.89
2	TRP	DH1	9	2411	4.06
3	TRP	DH1	19	2421	4.22
4	TRP	DH1	29	2431	4.13
5	TRP	DH1	39	2441	4.18
6	TRP	DH1	49	2451	3.68
7	TRP	DH1	59	2461	3.58
8	TRP	DH1	69	2471	3.01
9	TRP	DH1	78	2480	2.9
10	TIS	DH1	0	2402	-85.14
11	TIS	DH1	9	2411	-83.6
12	TIS	DH1	19	2421	-86.11
13	TIS	DH1	29	2431	-81.94
14	TIS	DH1	39	2441	-81.11
15	TIS	DH1	49	2451	-86.01
16	TIS	DH1	59	2461	-83.9
17	TIS	DH1	69	2471	-82.2
18	TIS	DH1	78	2480	-82.6
19	TRP	DH3	0	2402	3.03
20	TRP	DH3	9	2411	3.72
21	TRP	DH3	19	2421	3.84
22	TRP	DH3	29	2431	3.85
23	TRP	DH3	39	2441	3.87
24	TRP	DH3	49	2451	3.41

25	TRP	DH3	59	2461	3.36
26	TRP	DH3	69	2471	2.74
27	TRP	DH3	78	2480	2.7
28	TIS	DH3	0	2402	-85.34
29	TIS	DH3	9	2411	-84.03
30	TIS	DH3	19	2421	-86.41
31	TIS	DH3	29	2431	-82.06
32	TIS	DH3	39	2441	-80.6
33	TIS	DH3	49	2451	-86.93
34	TIS	DH3	59	2461	-83.95
35	TIS	DH3	69	2471	-81.6
36	TIS	DH3	78	2480	-82.97
37	TRP	DH5	0	2402	3.98
38	TRP	DH5	9	2411	4.17
39	TRP	DH5	19	2421	4.34
40	TRP	DH5	29	2431	4.25
41	TRP	DH5	39	2441	4.29
42	TRP	DH5	49	2451	3.78
43	TRP	DH5	59	2461	3.68
44	TRP	DH5	69	2471	3.09
45	TRP	DH5	78	2480	2.97
46	TIS	DH5	0	2402	-85.16
47	TIS	DH5	9	2411	-83.74
48	TIS	DH5	19	2421	-86.12
49	TIS	DH5	29	2431	-82.23
50	TIS	DH5	39	2441	-80.5
51	TIS	DH5	49	2451	-86.61
52	TIS	DH5	59	2461	-84.22
53	TIS	DH5	69	2471	-82.67
54	TIS	DH5	78	2480	-82.77

参考坐标系 Reference Coordinate System



	XY	XZ	YZ
0°	Right	Up	Up
90°	Front	Right	Front
180°	Left	Down	Down
270°	Back	Left	Back

盐雾试验记录报告

RD/YW-2024101002

试验日期	2024/10/10	报告编号	2024101002
产品名称	铜件	产品料号	YJC-6N000-B580
供方名称	YJC	试验数量（PCS）	5PCS+5PCS

试验时间： 9 日 8 时 30 分 至 10 日 8 时 30 分，共计 24 小时

试验仪器：盐雾测试机

试验中若有中断其原因为：

试验项目	测试标准	实际数据
盐水浓度	5%（50±0.5g/L）	5%
喷雾量	1.0-2.0ml/80CM^2/H	1.8ml
PH 值	6.5-7.2	7
空气压力	1.00±0.01(kgf/CM$^{2)}$	1
实验室湿度	相对湿度：80%±5%	83%
实验室温度	35℃±1℃	34%
压力桶温度	47℃±1℃	46%
盐水温度	35℃±1℃	35℃

试样处理及判定公式：

1、取出试样用流动冷水轻轻洗涤，以除去试样表面盐类物质，用吹风机冷风档吹干后检查，观察镀层表面蓝色或绿色斑点数量；

2、斑点直径 1-3mm 按 N=3,斑点直径 3-5mm 按 N=10 计算，缺陷等级计算公式 X=N÷S(镀层面积 cm²)

3、缺陷等级 X > 0.25 为不合格；

试验后状态描述：（在放大镜下观察之现象）

X= 0.10

判定标准：

GB/T6461-2002《金属基本体上金属和其它无机覆盖层经试验后的试样和试件的评级》所制定的按照腐蚀面积进行评级的方法。

判定结果： √ 合格 □ 不合格

审核：冯应梅 检验员： 朱攀

ROHS 物料控制报告(ROHS Material control report)

兹证明向贵司交货的零組件、辅助材料所使用的原材料、以及生产工程中的添加剂等均符合 RoHS 限制使用有害物质指令的环保要求（RoHS 指令 2011/65/EU)
This is to certify that the components delivered to your company, the raw materials used for auxiliary materials, and the additives used in the production project all meet the environmental requirements of the RoHS directive on limiting the use of hazardous substances . （RoHS 指令 2011/65/EU)

关于零组件、辅助材料所使用的原材料、包装材料以及和产过程中使用的添加剂等的构成成份报告如下：
The report on the composition of raw materials, packaging materials, and additives used in the manufacturing process for component auxiliary materials is as follows

组成物料名称 Component /Part Name	组成材料 Material Composition	ICP 报告编号 ICP report #	测试机构 Test Org.	测试时间 Test Date	有 害 物 质 含 量(ppm)						是否合格? PASS?
					Cd	Pb	Hg	Cr^{6+}	PBB	PBDE	PASS
金属件	304 不锈钢 Stainless steel	CZXPH24000662006	SGS	24/04/17	ND	ND	ND	ND	ND	ND	PASS