深圳合立讯科技有限公司

承　　认　　书

SPECIFICATION FOR APPROVAL

客户名称 Customer Name	由我		
客户项目名Customer Project Name	BS348	合立讯项目名 Helixun Project Name	BS348
客户编码 Customer P/N		合立讯料号 Helixun P/N	HLX008-348-V2
频段 Band	2400-25000MHz		
版本号 Version	A0		
设计人信息/Designer Information			
射频工程师 RF Engineer	黄亚飞	电子工程师 EE Engineer	时震浩
结构工程师 ME Engineer	黄亚飞		

合立讯审批/Helixun Approval				客户批准/Customer Approval	
	制作 Prepared By	审核 Checked By	批准 Approval By	审核 Checked By	批准 Approval By
签章 Signature	郭赛赛				
日期 Date	2023-6-26				

修订履历/Change Log				
版本 Version	修订内容 Change Description	责任人 Person in Charge	核准 Approval By	日期 Date

地址：深圳市宝安区西乡街道共乐社区铁仔路九方广场2栋1905　　TEL：0755-23591525　FAX：0755-23591525

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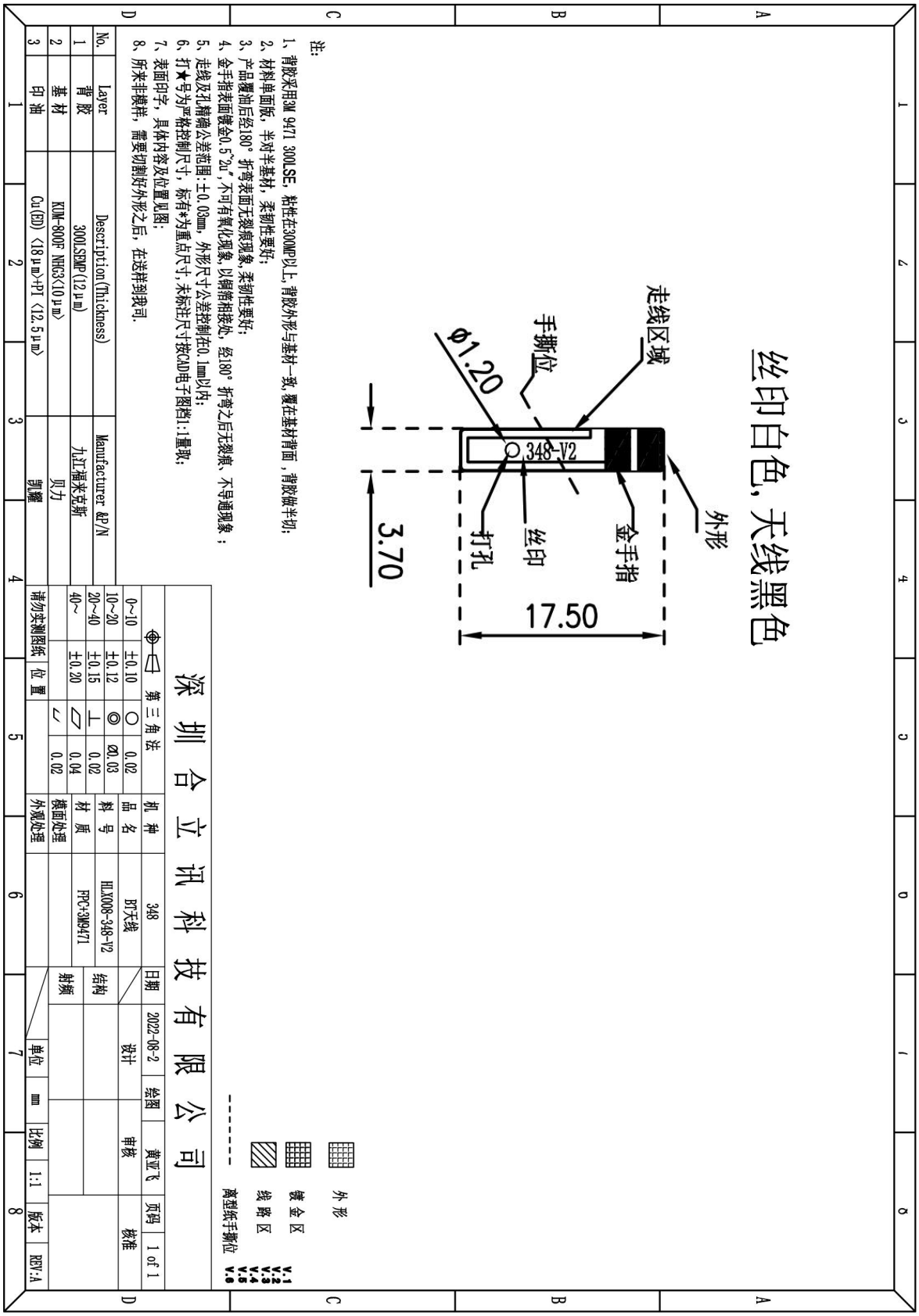
产品图纸或实物图片
Drawing or Product Image



深圳合立讯科技有限公司

样品尺寸测量报告

Sample Dimensions Test Report

客户名称 Customer Name	由我	客户料号 Customer P/N		合立讯料号 Helixun P/N	HLX008-348-V2
测试日期 Test Date	2023-6-26	样品数量 Sample Qty.	3	测试人 Inspector	时震浩
尺寸编号 Dimension No.	标准 Standard	样品 1 Sample 1	样品 2 Sample 2	样品 3 Sample 3	Pass/NG
①长度	17.5±0.2mm	17.7mm	17.5mm	17.9mm	PASS
②宽度	3.7±0.2mm	3.7mm	3.9mm	3.5mm	PASS
③厚度	0.2±0.05mm	0.21mm	0.22mm	0.2mm	PASS
④					
⑤					
⑥					
⑦					
最终结论 Conclusion					PASS
测试人&日期 Inspector & Date	时震浩 2023-6-26		批准&日期 Approval &Date		

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射频性能测量报告

RF Performance Test Report

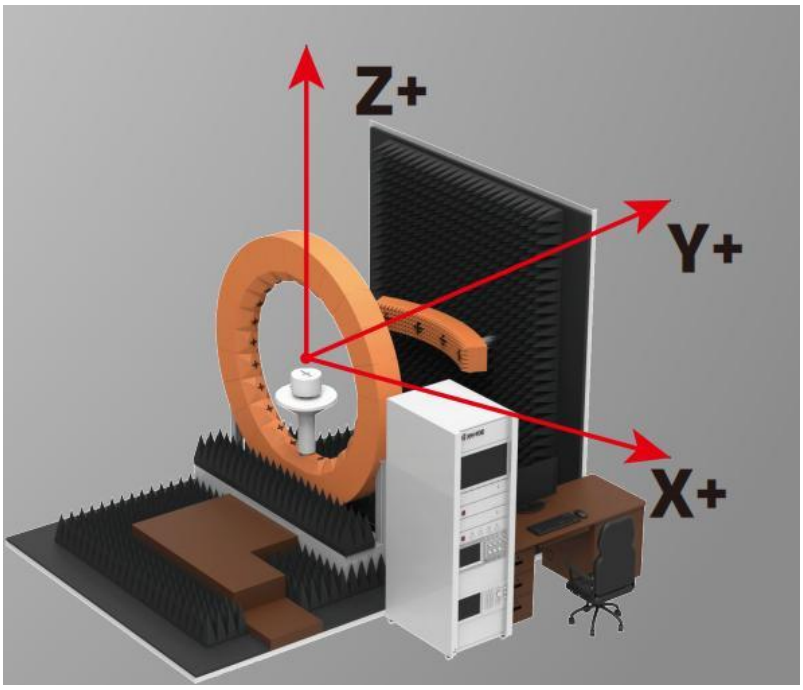
客户名称 Customer Name	由我	项目名称 Project Name	BS348	合立讯料号 Helixun P/N	XLX008-348-V2
频段 Band	2400-2500MHz	测试日期 Test Date	2023-6-26	测试人 Inspector	时震浩

天线测试设备简介

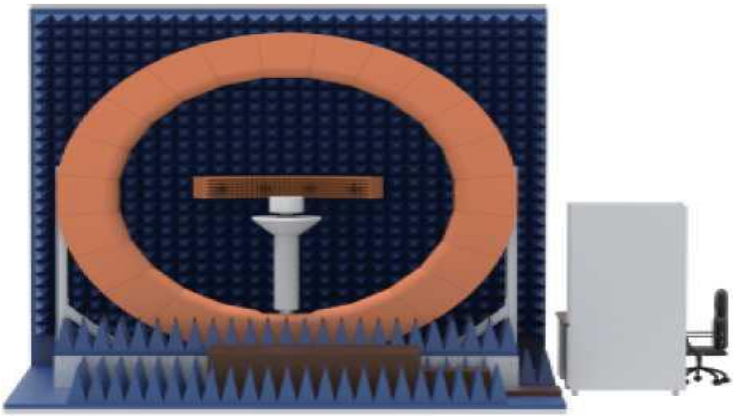
Antenna Test Equipment Introduction

测试天线输入特性使用 **Agilent E5071C and Agilent 5071C** 矢量网络分析仪；辐射特性利用 ETS 三维近场暗室进行测试，并分别使用 CMW500 和 Agilent 5071C 进行了分析。暗房的测试坐标如下：

Test of antenna input characteristics using **Agilent E5071C and Agilent 5071C** vector network analyzer; The radiation pattern of the antenna are tested using the ETS starlab 3D near field Anechoic Chamber, and the instrument is used to agilent8960 E5515 and Agilent E4438C. The test coordinates of the darkroom are as follows:



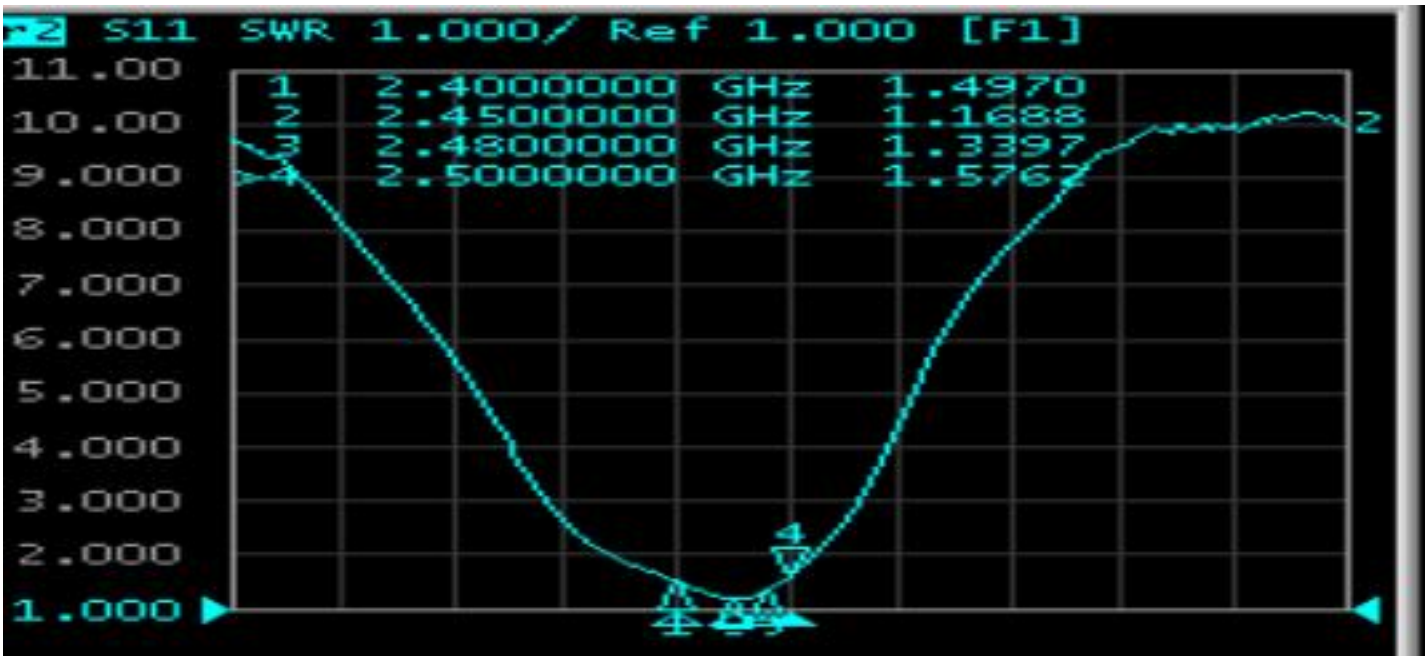
Sequence Number	Test Item	equipment
S parameter	VSWR	Agilent 5071C & Agilent 5071B
OTA Test	TRP&TIS	Agilent 8960 & CMW500 STIMO
Gain & Efficiency	Gain & Efficiency	SATIMO Agilent 5071C



Test Result

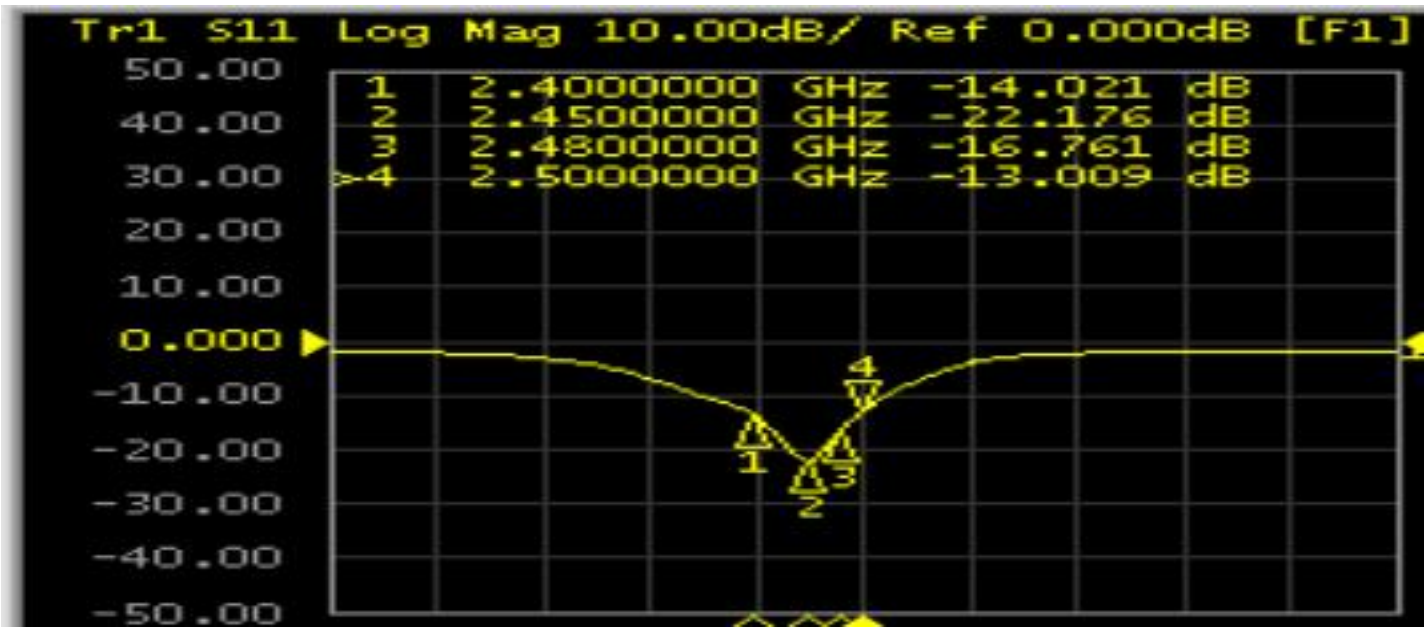
L

S11 Parameter-VSWR



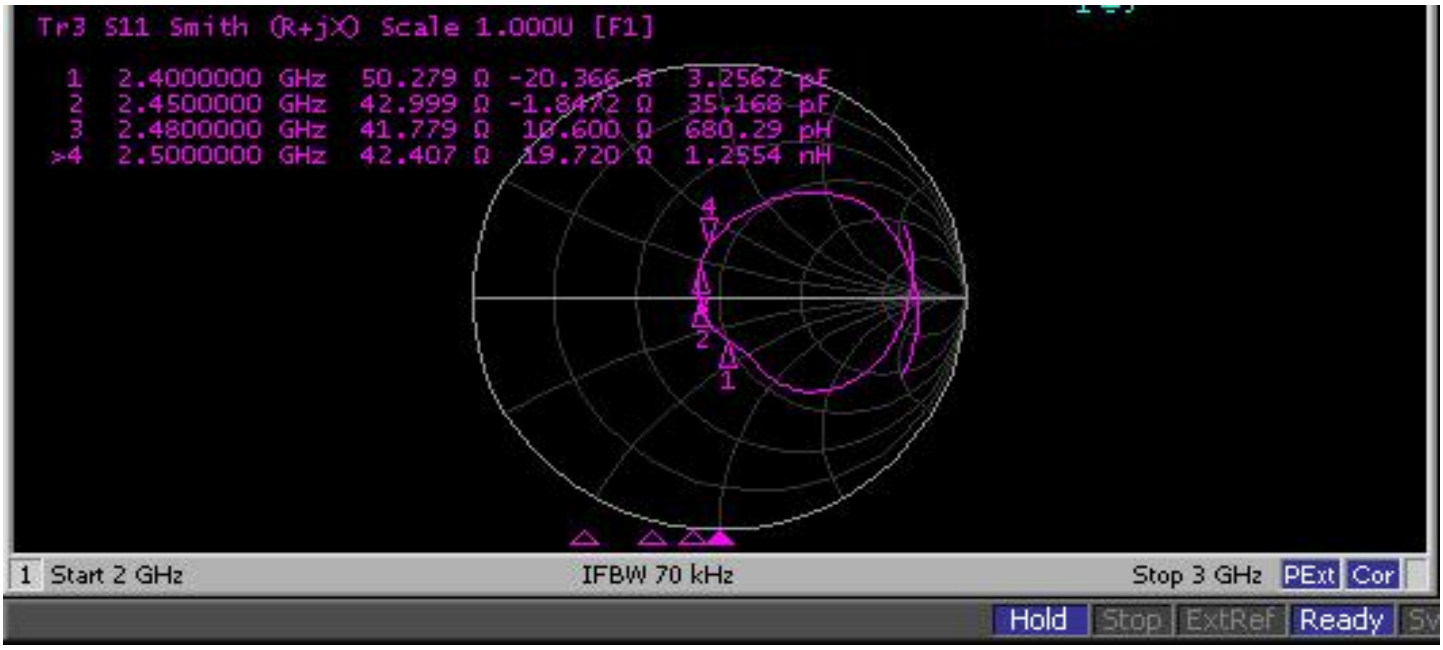
Frequency (MHz)	2400	2450	2480	2500
VSWR	1.49	1.16	1.33	1.57

S11 Parameter-Log Mag



Frequency (MHz)	2400	2450	2480	2500
Log Mag	-14.02	-22.17	-16.76	-13.00

S11 Parameter-Log Mag

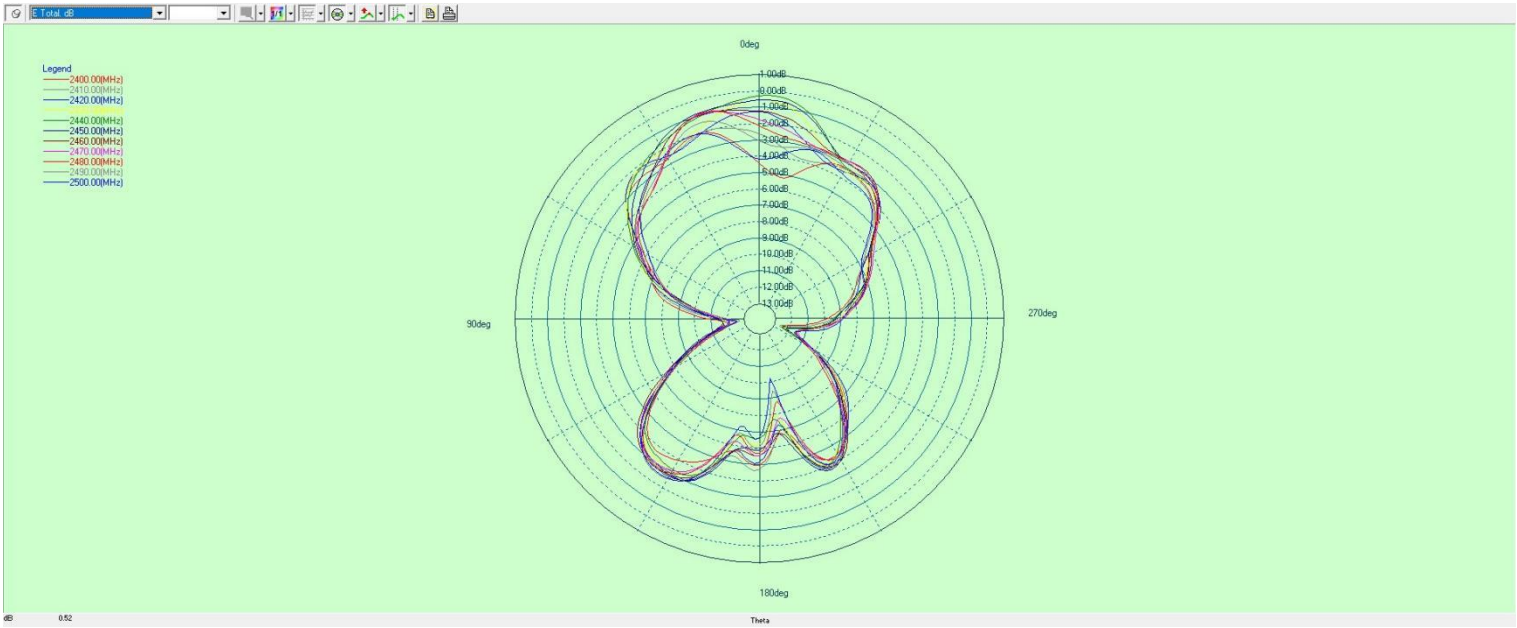


Frequency (MHz)	2400	2450	2480	2500
Smi th(Ω)	50.27	42.99	41.77	42.40

Gain & Efficiency——ANT

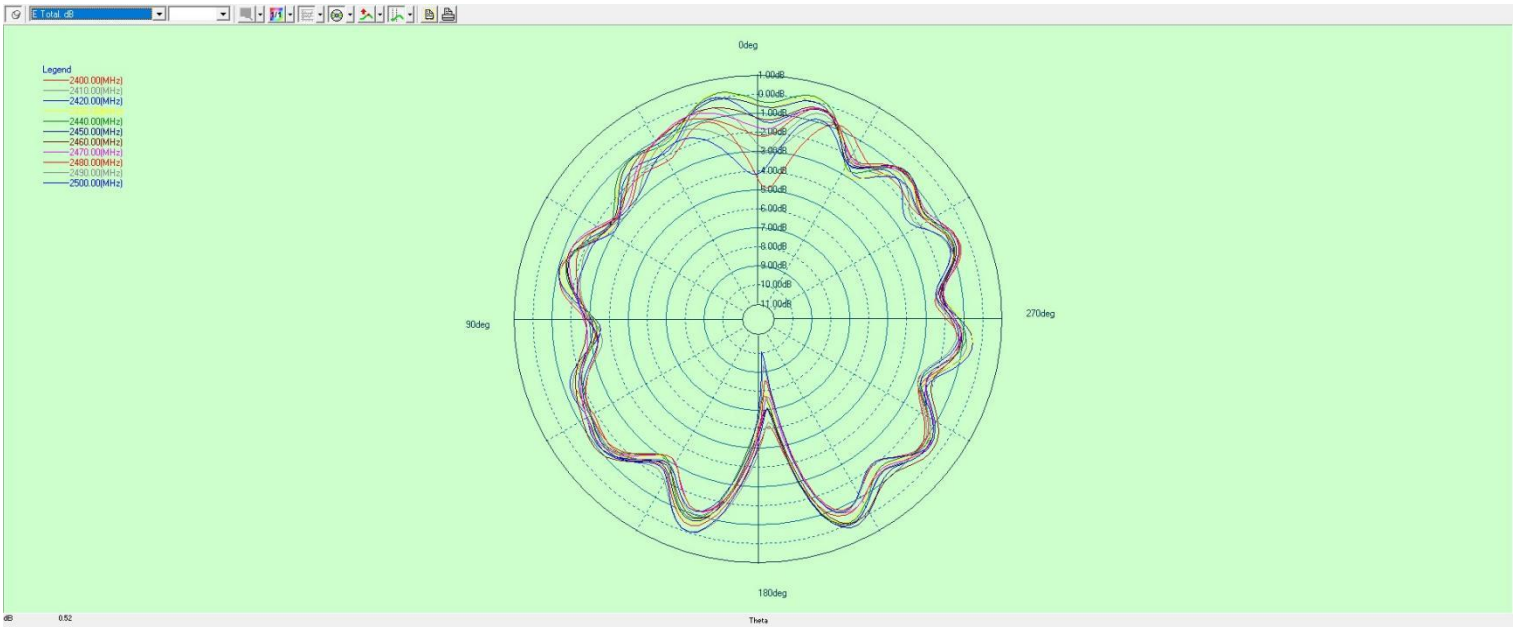
Frequency (MHz)	Efficiency (%)	Peak GAIN (dBi)
2400	28.24%	-1.01
2410	28.65%	-0.26
2420	30.96%	0.35
2430	32.45%	0.55
2440	33.04%	0.82
2450	36.59%	0.94
2460	37.86%	1.02
2470	34.91%	0.76
2480	33.22%	0.43

2D Pattern——BT ANT



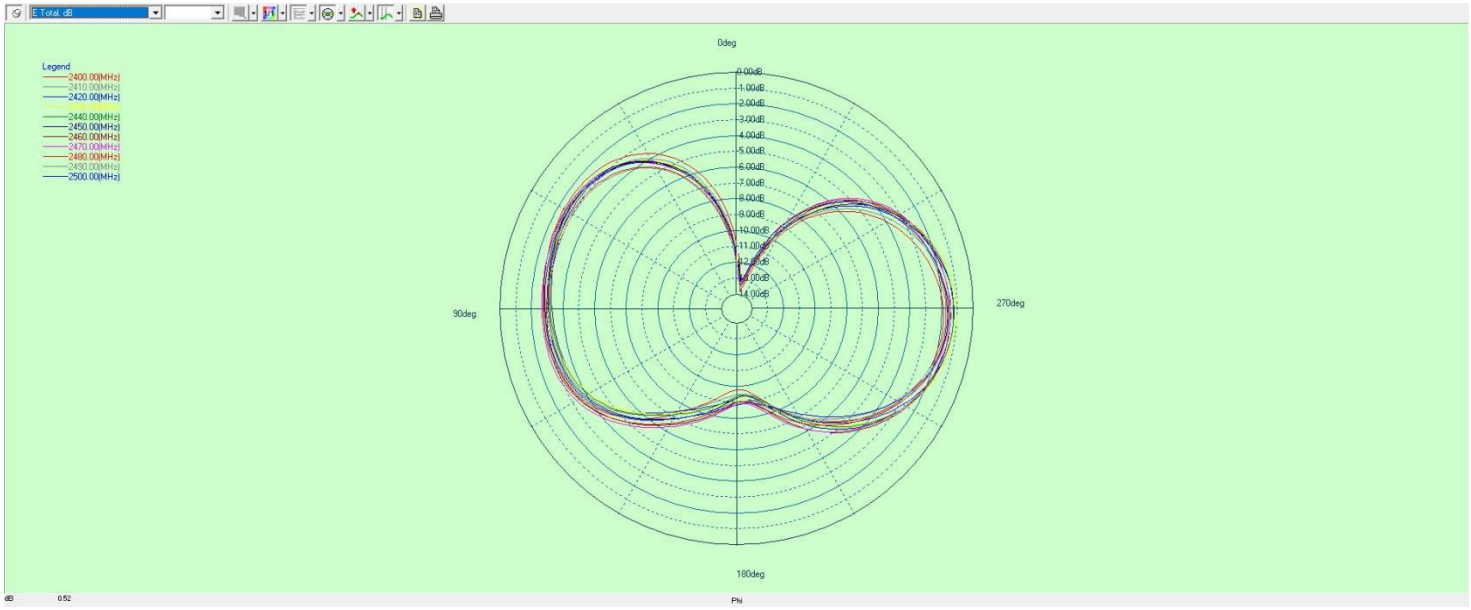
X-Z Plane

2D Pattern——BT ANT



Y-Z Plane

2D Pattern——BT ANT



Y-Z Plane

OTA Data

Test Equipment:	R&S CMW500		
Test Condition:	2D chamber		
Band	Channel	TRP(dBm)	TIS(dBm)
5# BT-L	0	3.12	-86.84
	39	2.99	-87.95
	78	2.70	-86.14

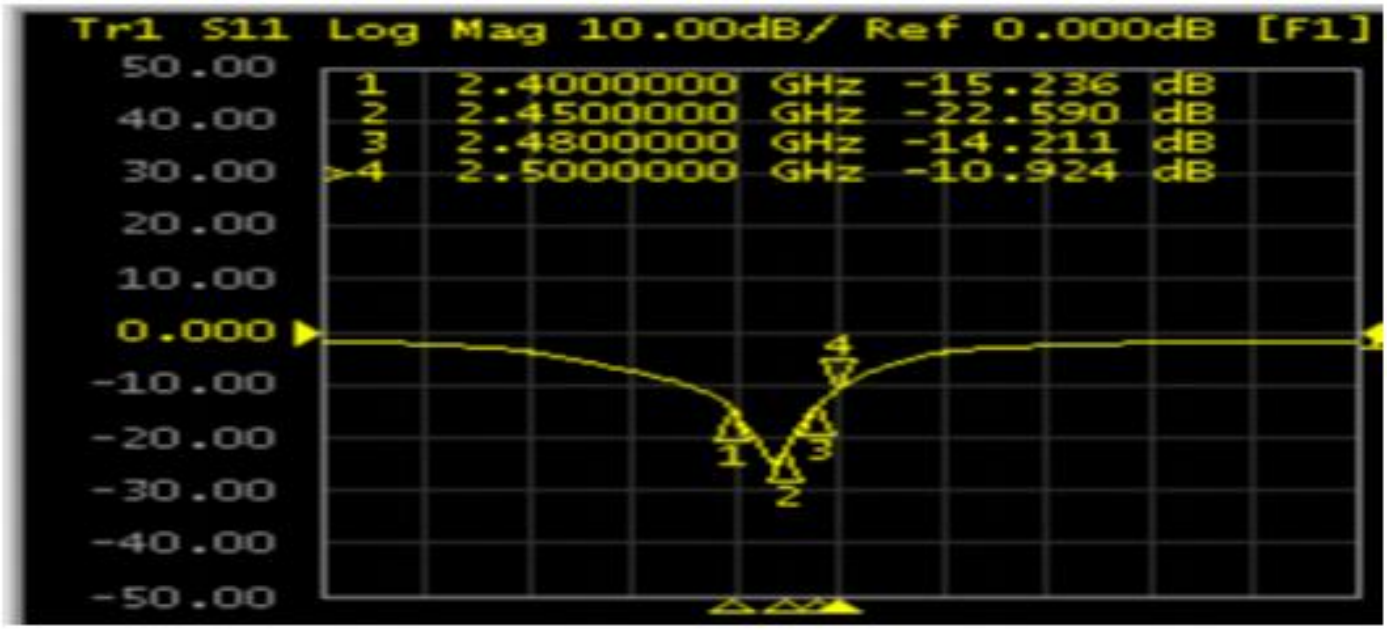
Test Result

R

S11 Parameter-VSWR

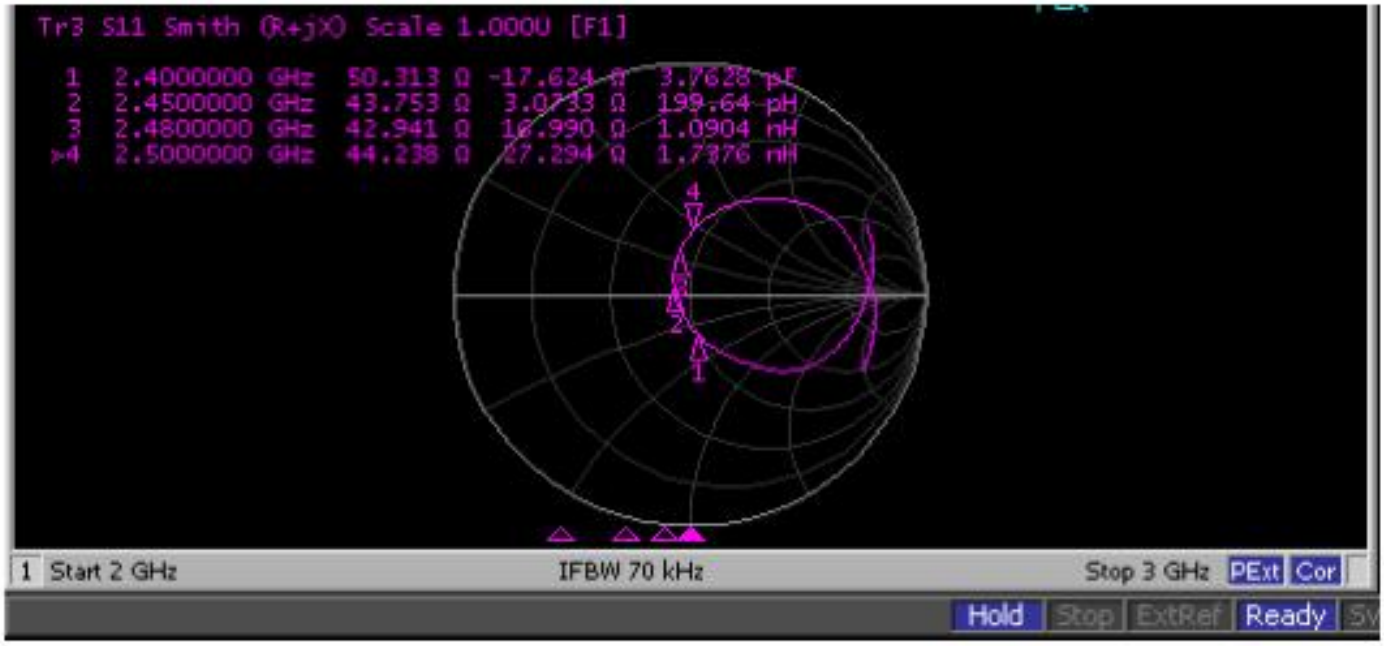
Frequency (MHz)	2400	2450	2480	2500
VSWR	1.41	1.16	1.48	1.79

S11 Parameter-Log Mag



Frequency (MHz)	2400	2450	2480	2500
Log Mag	-15.23	-22.59	-14.21	-10.92

S11 Parameter-VSWR



Frequency (MHz)	2400	2450	2480	2500
Smi th(Ω)	50.31	43.75	42.94	44.23

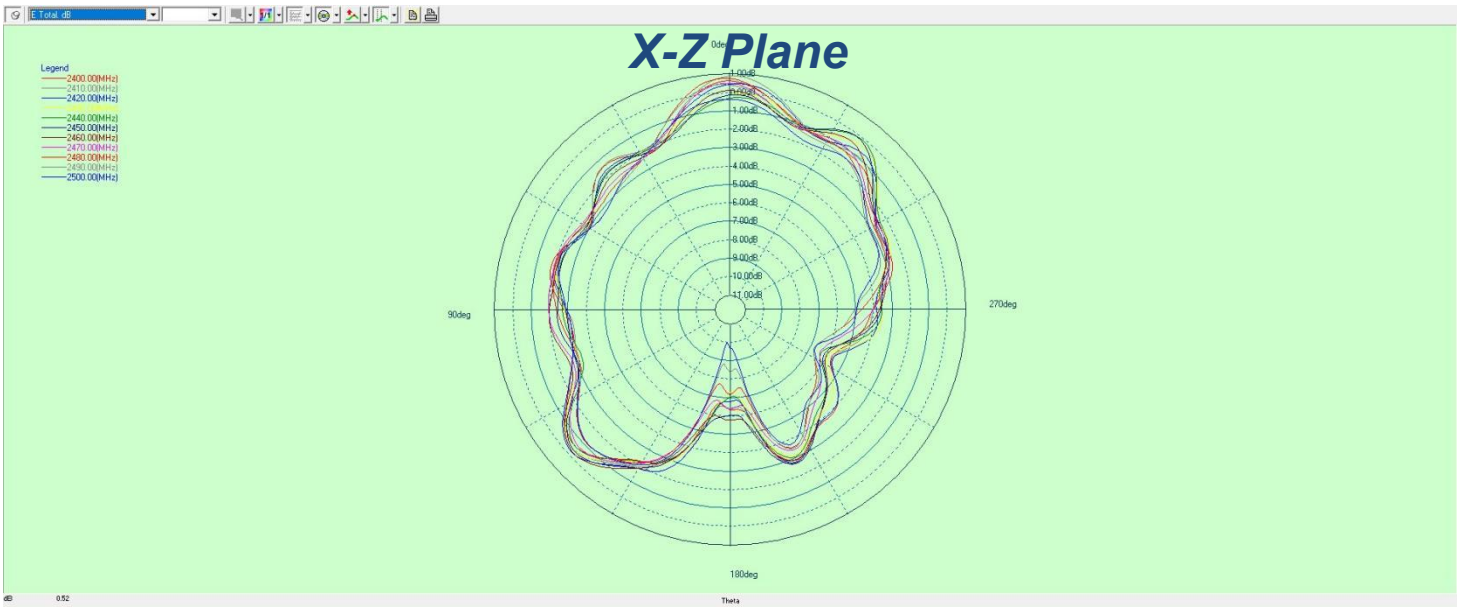
Test Result

Gain & Efficiency——ANT

Frequency (MHz)	Efficiency (%)	Peak GAIN (dBi)
2400	30. 56%	-0. 46
2410	31. 19%	-0. 35
2420	32. 08%	0. 52
2430	34. 87%	0. 66
2440	35. 45%	0. 78
2450	36. 31%	1. 08
2460	35. 02%	1. 20
2470	34. 76%	0. 66
2480	32. 85%	0. 57

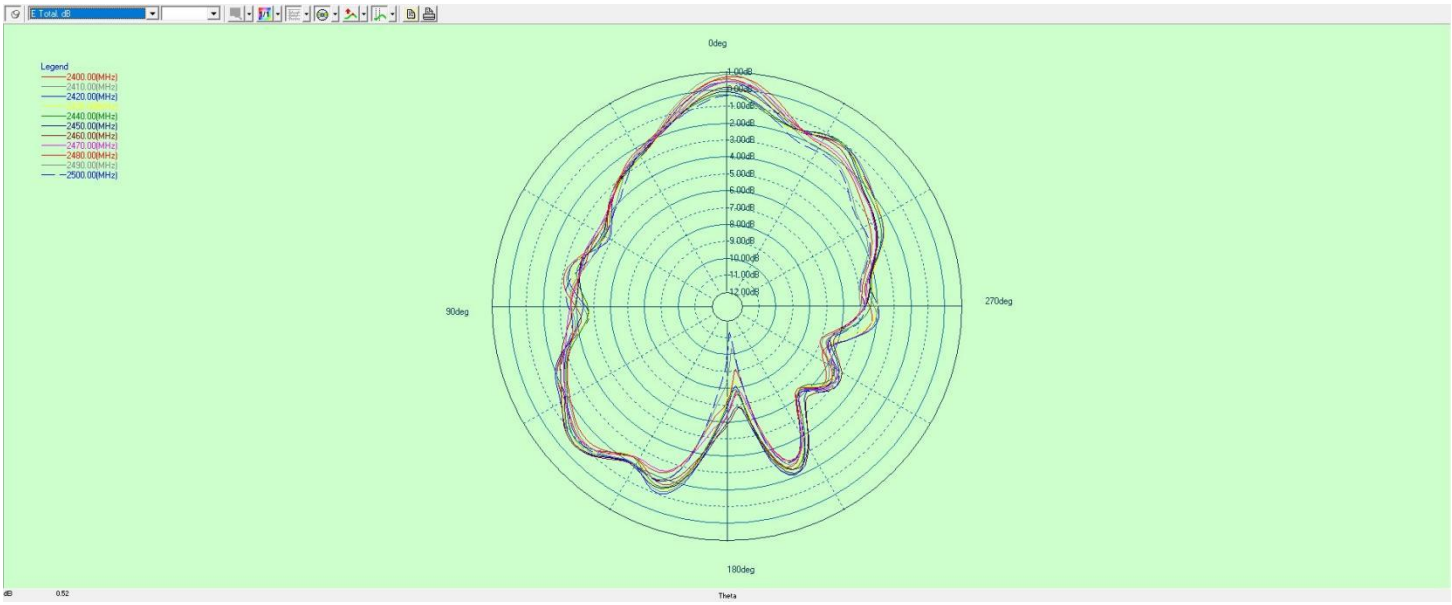
Test Result

2D Pattern——BT ANT



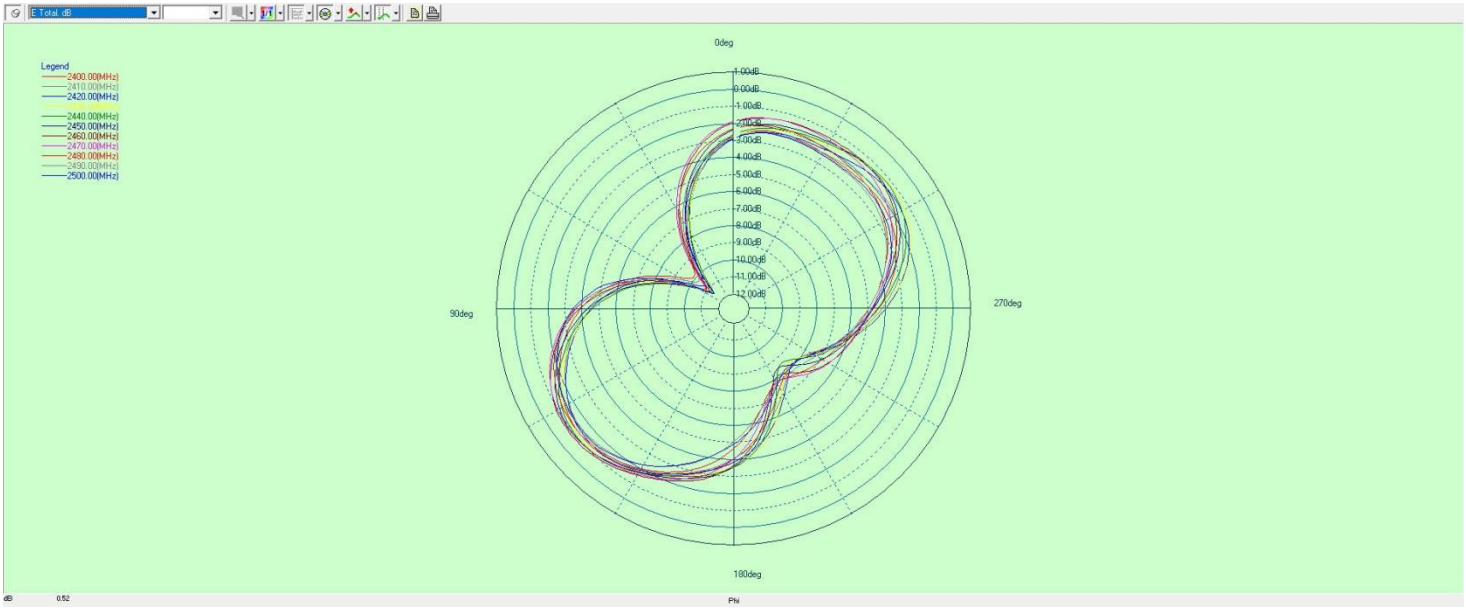
X-Z Plane

2D Pattern——BT ANT



X-Z Plane

2D Pattern——BT ANT



Y-Z Plane

OTA Data

Test Equipment:	R&S CMW500		
Test Condition:	2D chamber		
Band	Channel	TRP(dBm)	TIS(dBm)
3 BT-R	0	3.22	-86.82
	39	3.28	-87.36
	78	3.44	-86.33

深圳合立讯科技有限公司

可靠性测试报告

Reliability Test Report

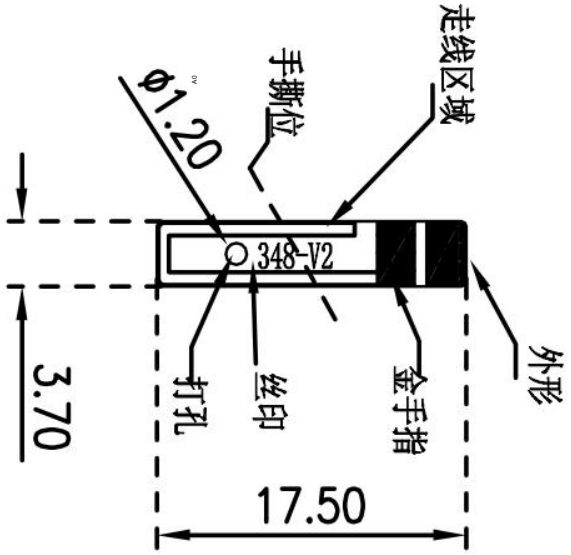
客户名称 Customer Name	由我	客户料号 Customer P/N		合立讯料号 Helixun P/N	HLX008-348-V2	
测试日期 Test Date	2023-6-26	样品数量 Sample Qty.	3	测试人 Inspector	时震浩	
测试项目 Test Item	要求 Requirement	试验设备 testing equipment	样品 1 Sample 1	样品 2 Sample 2	样品 3 Sample 3	判定 PASS/NG
高温存储	在+85℃条件下暴露24H，恢复 2H 后进行测试	恒温恒湿箱	OK	OK	OK	PASS
低温存储	在-40℃条件下暴露24H，恢复 2H 后进行测试	恒温恒湿箱	OK	OK	OK	PASS
高温工作	在+60℃条件下通电工作24H	恒温恒湿箱	OK	OK	OK	PASS
低温工作	在-20℃条件下通电工作24H	恒温恒湿箱	OK	OK	OK	PASS
盐雾试验	(5±0.5)%氯化钠、pH值为 6.5～7.2，实验箱温度(35±2)℃ ☑24H ☐48H	盐雾试验机	OK	OK	OK	PASS
连接器铆压拉拔力	1.13 线径 ≥10N 0.81 线径 ≥8N RG174 ≥60N RG178 ≥50N	推拉力计	/	/	/	/
最终结论 Conclusion						Pass
测试人&日期 Inspector & Date	时震浩 2023-6-26		批准&日期 Approval &Date			

地址：深圳市宝安区西乡街道共乐社区铁仔路九方广场2栋1905 TEL：0755-23591525 FAX：0755-23591525

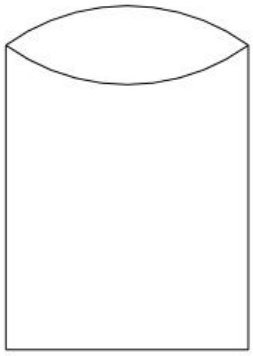
产品包装规范

PACKING CRITERION

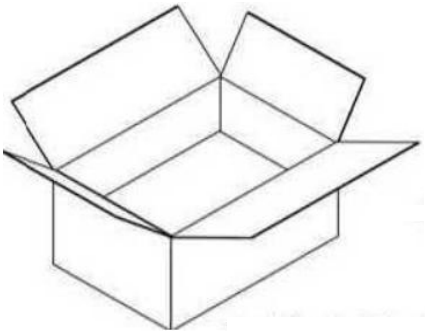
1、单个产品



2、大PE袋包装（整版/单90pcs）　（以实际包装为准）



3、封箱，外箱贴我司生产标签和ROHS标签。（以实际包装为准）



环保要求

Environmental requirements

MSDS（材料安全数据表）	☑提供	☐不提供	☐N/A
COC(环保协议)	☑提供	☐不提供	☐N/A
环保有害物质云仕技术标准	☑提供	☐不提供	☐N/A
具体环保要求	☑符合ROHS2.0 ☑符合加州65	☑符合REACH	☑符合无卤素

安装事宜或其它

Install Wizard or Other

安装过程：

取 1PCS 产品，用手撕下 FPC 背面的离型纸，然后将 FPC 定位孔位置与外壳定位孔位置（定位筋位或定位线）对齐，平整的贴附与外壳上，具体位置如下图所示：

安装过程注意事项：

☑粘贴天线后保证 FPC 完整贴附于外壳；

☑定位孔与外壳定位柱位置对齐；

☑FPC 边缘与外壳边缘对其

☐带端子天线在将端子扣合到主板 PCBA 端时请首先对其端子，然后垂直扣合；

☐拆卸天线端子时需使用工具（如专用撬棍）垂直翘起端子，不可直接拽线拆卸。