

SPECIFICATION



深圳市大显科技有限公司

Shenzhen Daxian Technology Co., Ltd.

国光 PBU2 WIFI2 天线组件

GGEC PBU2 WIFI2 Antenna assembly

产 品 规 格 书

Product Specification

客 户 connection	国光 GGEC	频 段 frequency range	2400MHz ~ 2500MHz 5150MHz~5850MHz
项目名称 entry name	PBU2	版 本 edition	V03
物料编号 Material No	3P-BU2XX-159	颜 色 Color	黑色+灰色 Black +Gray
客户料号 Customer Item Number			
R F 设计 R F Design	沈 川 Chuan.Shen	结构设计 Structural Design	周锐斌 Ruibin.Zhou
品质经理 Quality Manager	李崇瑞 ChongRui.Li	技术总监 Technical Director	张 磊 Lei.Zhang
日 期 Date	2026-03-31		

客户确认:

Customer confirmation:

装配是否符合贵司要求: ☐OK ☐NG

Whether the assembly meets your company's requirements: ☐OK ☐NG

深圳市大显科技有限公司

Shenzhen DaXian Technology Co., Ltd.

深圳市龙岗区布吉镇吉华路 513 号上水径村(国防培训基地
对面) 达成工业园综合楼 7 楼

TEL:0755-28576002

FAX:0755-84276383

上海分部: 上海市张江高科技园区集成电路产业区龙东大道
3000 号 8 号楼 201 室

TEL:021-61630552

FAX:755-84276383

Buji Town, Longgang District, Shenzhen, China Jihua Road 513,
Shangshuijing Village (opposite the national defense
training base) Dacheng Industrial Park, Building 7.

TEL:0755-28576002

FAX:0755-84276383

Room201, Building8, LongDongRoad3000#, Semiconductor Industry
Park, ZhangJiang Hitech Zone, ShangHai

TEL:021-61630552

FAX:755-84276383

变更履历 Revision history

[illegible]

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一 项目说明 Project Description

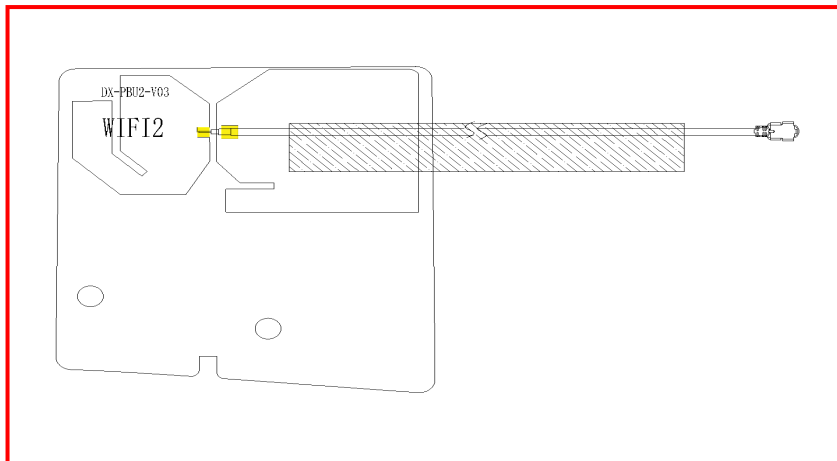
客户名: Customer Name:	国光 GGEC
整机类型: Type of complete machine:	音箱 loudspeaker box
天线频段: Antenna band:	2400MHz ~ 2500MHz 5150MHz~5850MHz
天线形式: Antenna form:	PCB+同轴线+线材海绵 PCB+coaxial line+wire sponge
馈电形式: Feed form:	焊接 weld
硬件版本: Hardware version:	/

二 WiFi2 天线组件 Antenna assembly

1 规格 specifications

本报告主要提供 PBU2 项目天线的各项电气和结构性能参数的测试状况。下图为大显设计的天线图片。

This report mainly provides the testing status of various electrical and structural performance parameters of the antenna for the PBU2 project. The following image shows an antenna with a large display design.



天线外观图

antenna appearing diagram

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1.1 电气规格标准 Electrical specifications and standards

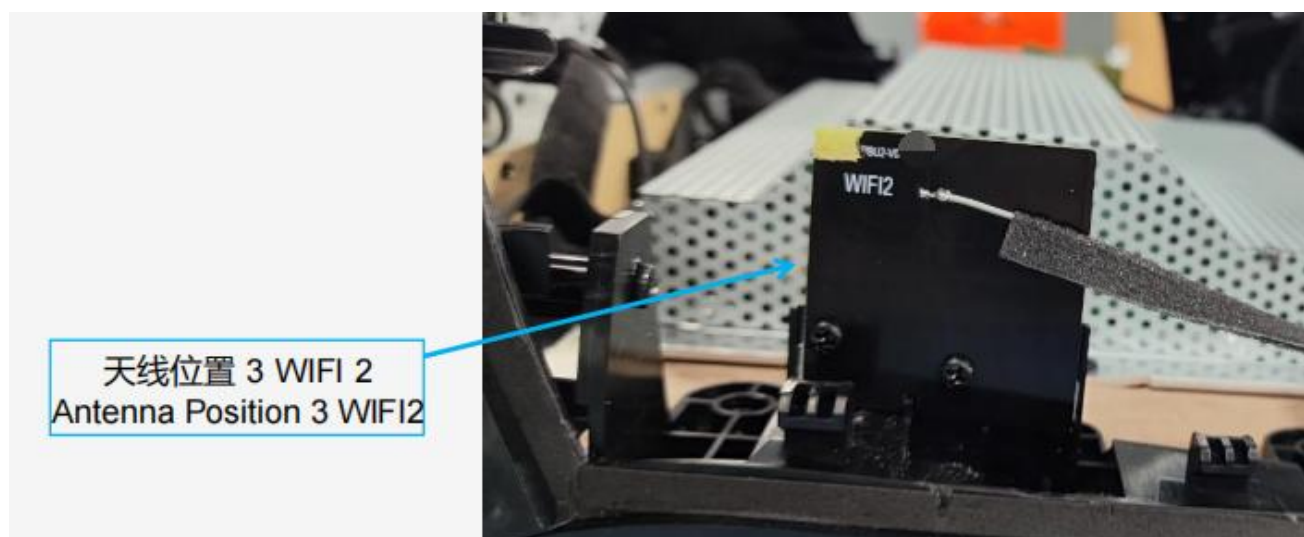
1.1.1 电性能指标 Electrical performance index

天线工作频段在 2400 ~ 2500 MHz、5150 ~ 5850 MHz。下表是大显设计和量产天线的电性能的指标。

The operating frequency band of the antenna is between 2400 and 2500 MHz、5150 and 5850 MHz. The following table shows the electrical performance indicators of large display design and mass production antennas.

Frequency Range	Frequency (MHz)	VSWR
WiFi2	2400 ~ 2500 5150~5850	≤ 2

1.1.2 天线位置布局 Antenna Location Layout



1.2 结构规格标准 Structural specifications and standards

1.2.1 天线组成 Antenna composition

天线主要是由 PCB+同轴线+线材海绵 组成。

The antenna is mainly composed of PCB+coaxial line+wire sponge.

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2、测试设备 The Equipment of Active Test

Satimo 3D Chamber $4 \times 4 \times 4$ (m)

CMW500 E5071C

Network analyzer-R&S ZVL

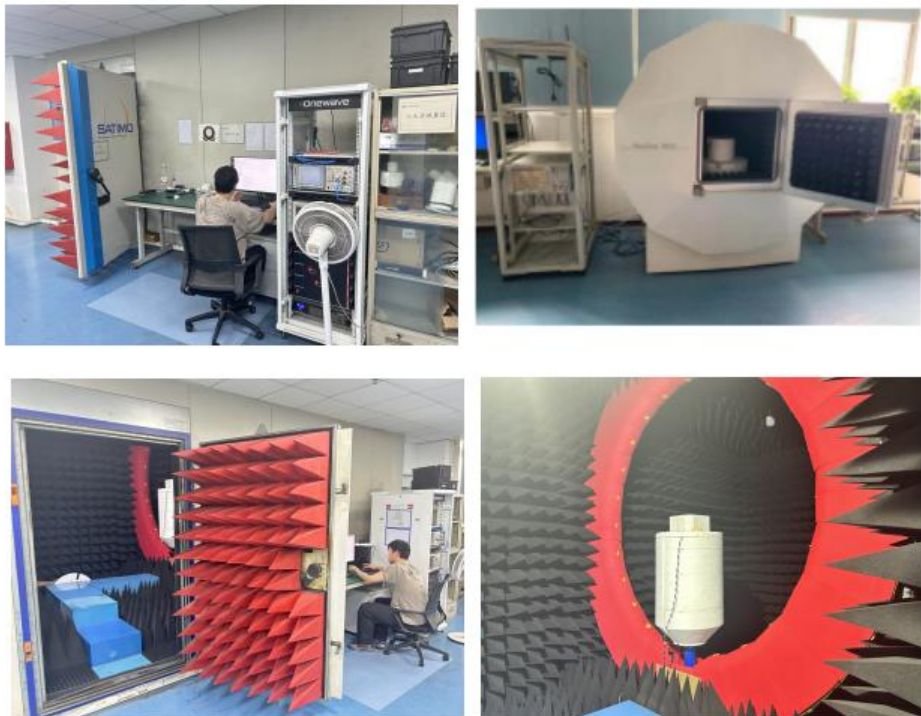


图 2

Figure 2

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3 测试 test

3.1 驻波(VSWR)的测试 Test of standing wave (VSWR)

3.1.1 测试连接: VSWR 测试装置依次的连接为: R&S ZVL 网络分析仪 → 测试线 → 测试治

Test connection: The VSWR test device is sequentially connected as follows: R&S ZVL network analyzer → test line → test fixture

实测(附图)Actual measurement (attached drawing)

3.2 增益及效率、功率 (TRP)、灵敏度 (TIS) 的测试

Gain and efficiency, power (TRP), sensitivity (TIS) testing

3.2.1 测试的场地 Test site:

大显微波暗室。测试频率范围为 400MHz—6GHz, 静区范围为 50cm 圆周, 反射率小于 -50 dB。

Large display microwave anechoic chamber. The test frequency range is 400MHz - 6GHz, the static zone range is 50cm circumferential, and the reflectivity is less than -50dB.

3.2.2 测试的仪表 Tested Instruments:

R&S ZVL 网络分析仪、CMW500 E5071C、标准喇叭天线、法国 SATIMO-SG24SYSTEM 系统、打印机等。

R&S ZVL network analyzer, Agilent 8960 E5515C, standard horn antenna, French SATIMO-SG24SYSTEM system, printer, etc.

3.2.3 测试数据 : 在微波暗室中, 测试的功率和灵敏度相关的数值如下表

Test data: In a microwave anechoic chamber, the values related to the power and sensitivity tested are shown in the table below

OTA 有源测试 OTA active testing

	Channel	TPR (dBm)	TIS (dBm)
802.11b 11M	1	14.67	-86.13
	6	14.88	-86.93
	11	14.71	-86.38
802.11g 54M	1	13.52	-73.27
	6	13.77	-73.65
	11	13.62	-73.47
802.11n MCS7	1	12.71	-71.42
	6	12.86	-71.86
	11	12.61	-71.26
802.11a 54M	40	9.58	-74.43
	149	9.85	-74.64
	161	9.65	-74.29

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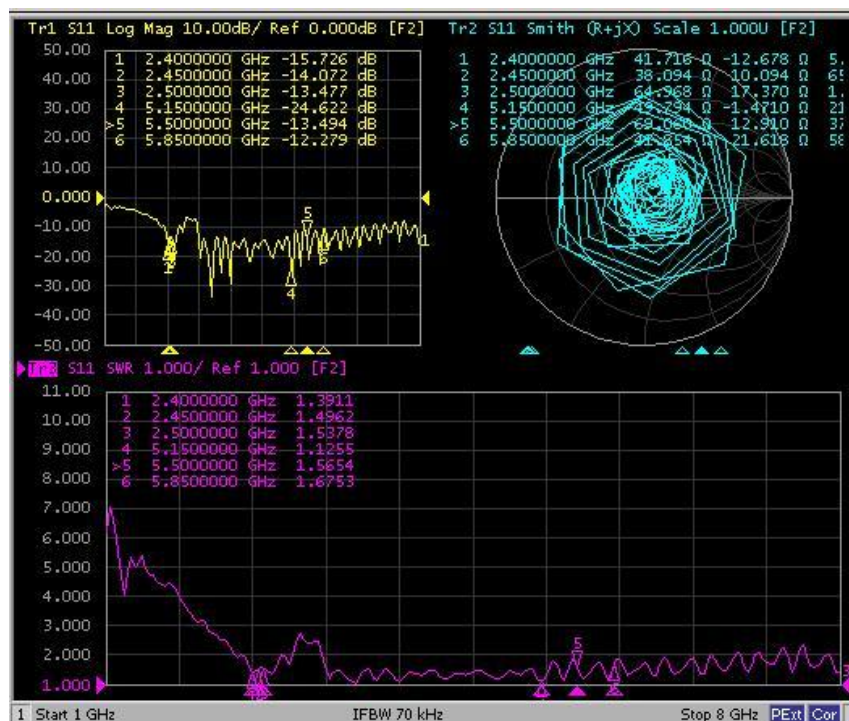
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无源效率&增益 Passive efficiency&gain:

	Efficiency (%)	Efficiency (dB)	Gain (dBi)
2400	45.16	-3.45	1.71
2450	45.71	-3.40	1.91
2500	45.32	-3.44	1.64
5150	41.28	-3.84	2.32
5300	41.74	-3.79	2.59
5500	42.63	-3.72	2.71
5700	42.44	-3.70	2.63
5850	41.87	-3.78	2.47

4、VSWR 参数图 VSWR parameter diagram



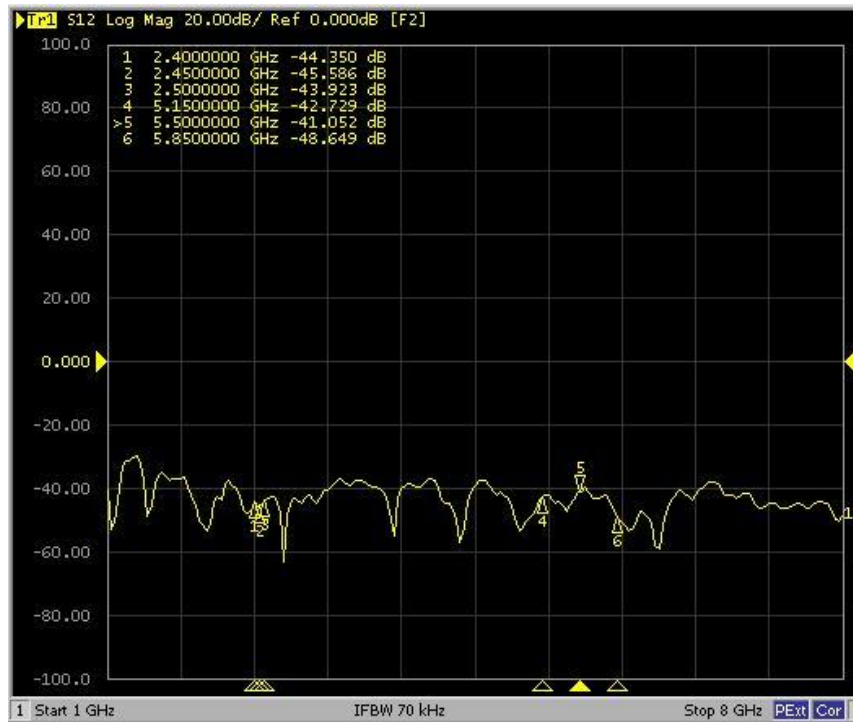
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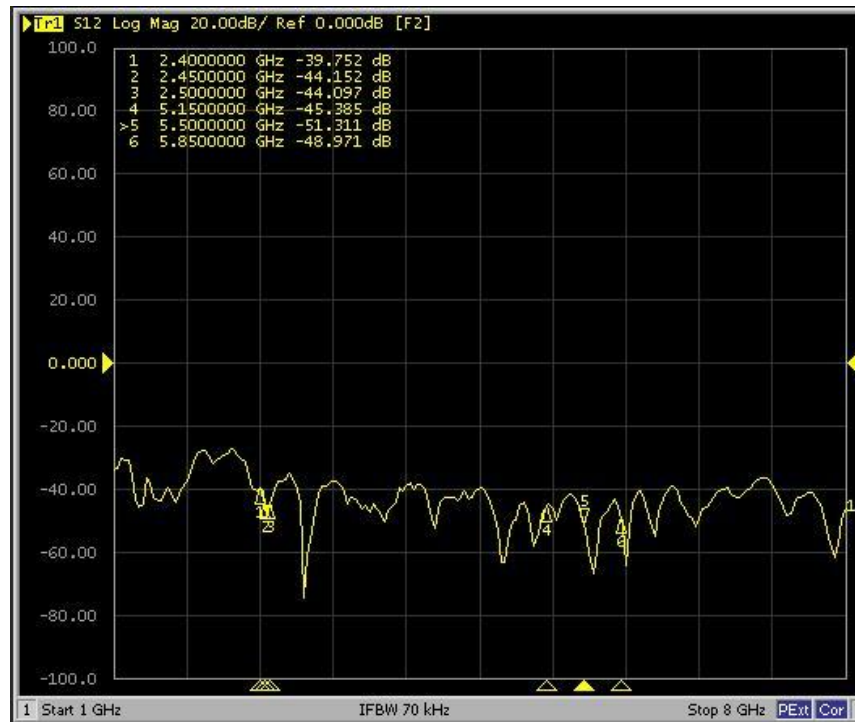
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天线隔离度 Antenna Isolation:

BT and WIFI 2



WIFI1 and WIFI 2



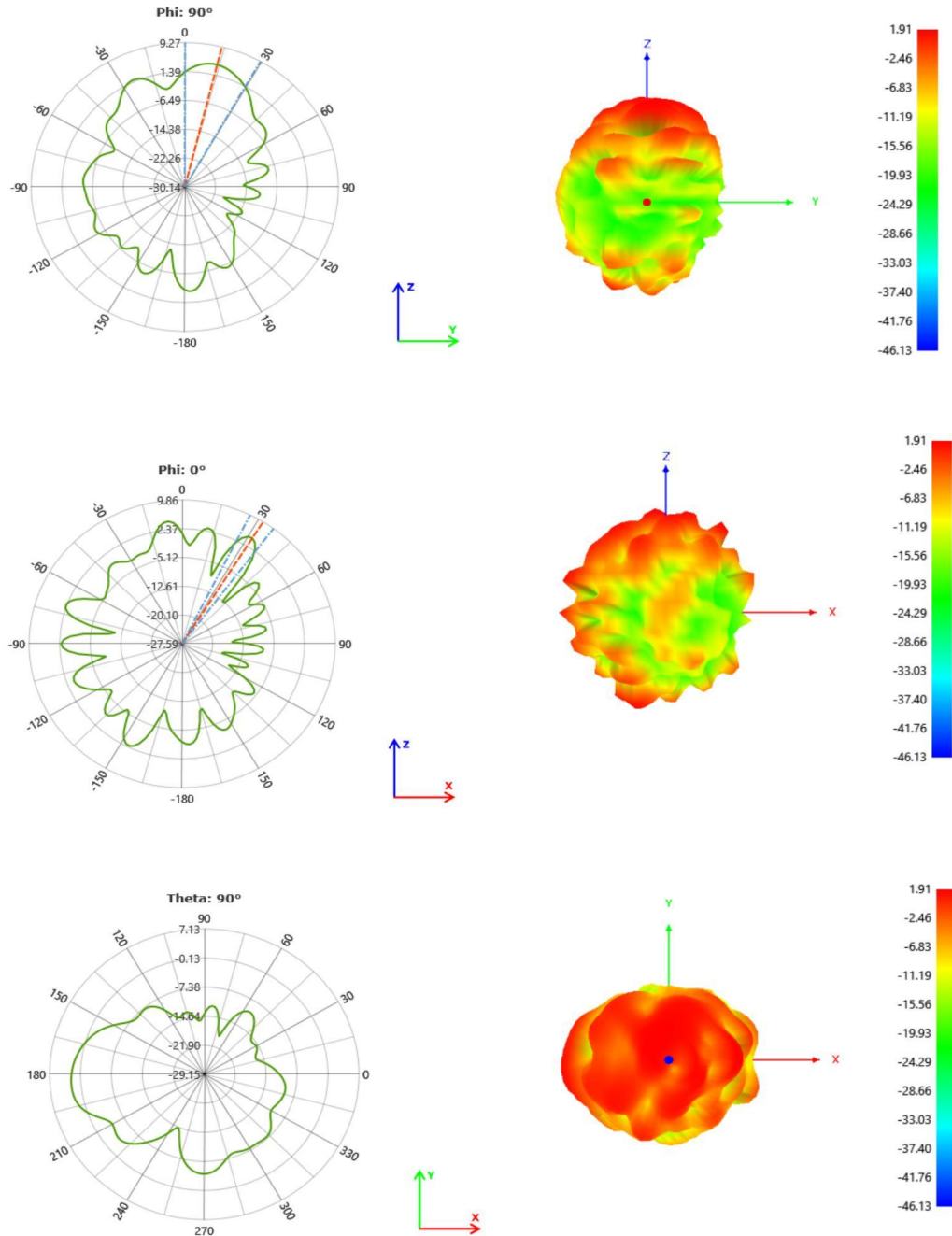
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5、无源效率场型图 Passive efficiency field pattern diagram

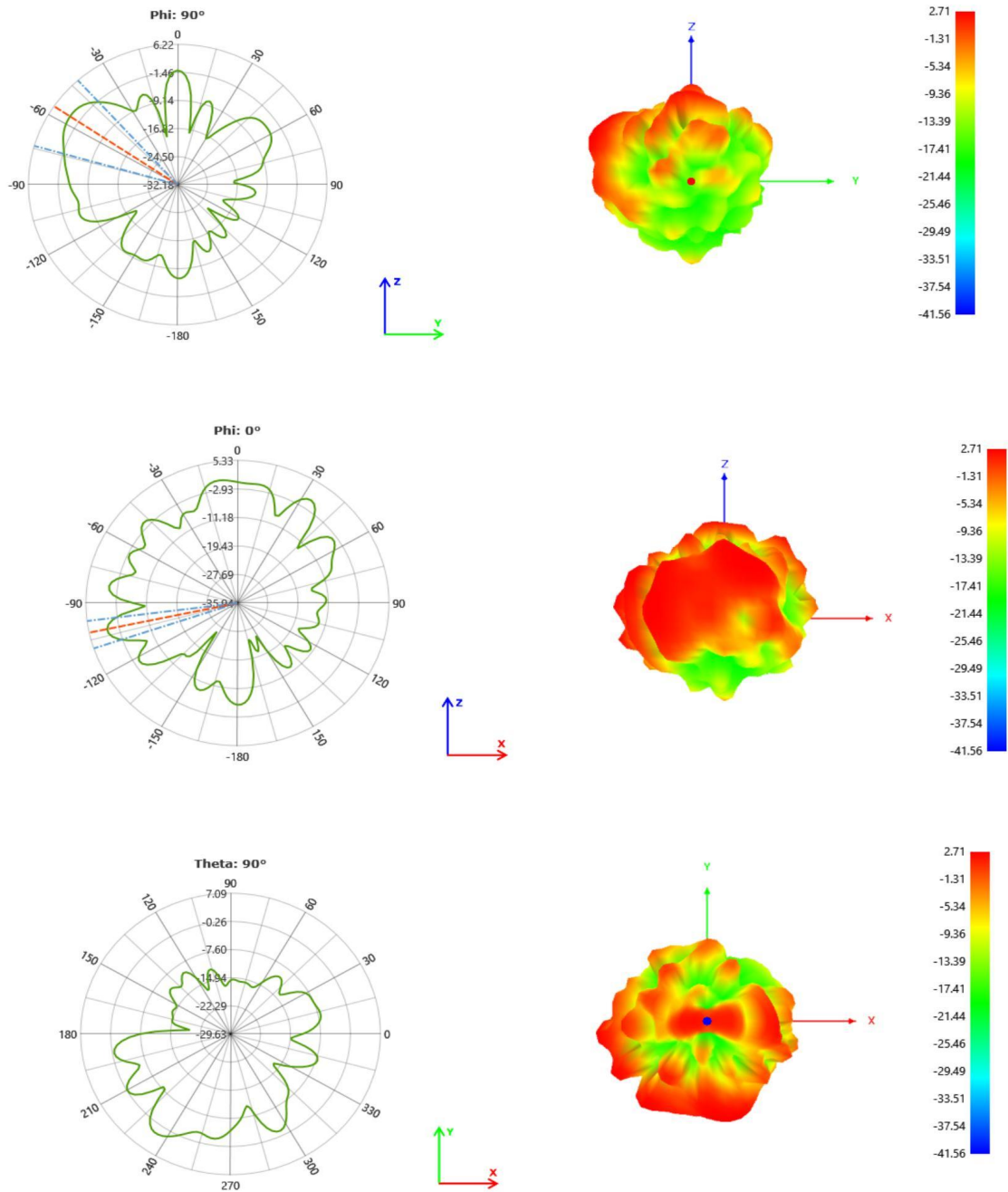
2450MHz



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5500MHz



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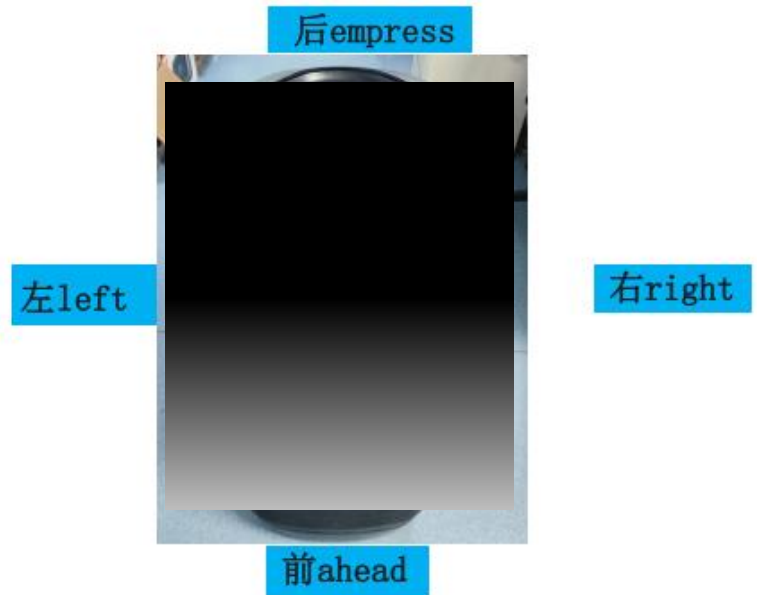
拉距测试 (Pull distance test) :

测试时间 (Testing time) : 2026/03/26

测试场地 (test site) : 深圳铁岗水库附近 (Near Tiegang Reservoir, Shenzhen)

测试手机 (Test Cell Phones) : Iphone 16 Pro

测试路由器 (Tested on) : Asus-RT-AC86U Router



测试方向 Test direction	前 ahead	后 empress	左left	右right
测试距离Test Distance				
BT	100M	100M	100M	100M
WIFI 2.4G	140M	140M	140M	140M
WIFI 5.8G	255M	255M	255M	255M

Aura Cast 测试

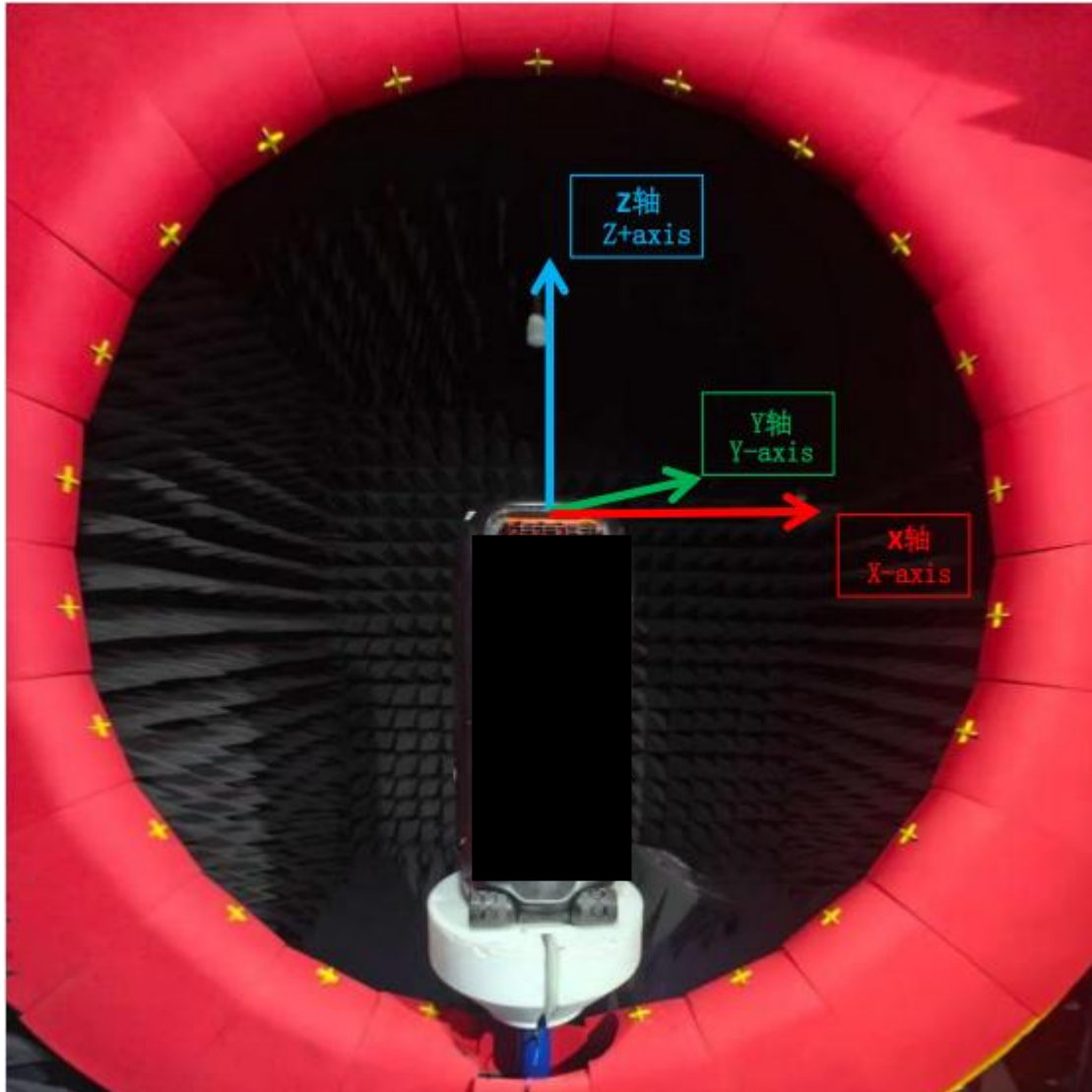
苹果手机 16 Pro							
1#为主机 2#为副机							
	主机0°		主机90°		主机180°		主机270°
副机0°	65米	副机0°	65米	副机0°	65米	副机0°	65米
副机90°	65米	副机90°	65米	副机90°	65米	副机90°	65米
副机180°	65米	副机180°	65米	副机180°	65米	副机180°	65米
副机270°	65米	副机270°	65米	副机270°	65米	副机270°	65米

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7、暗室坐标系 Darkroom coordinate system



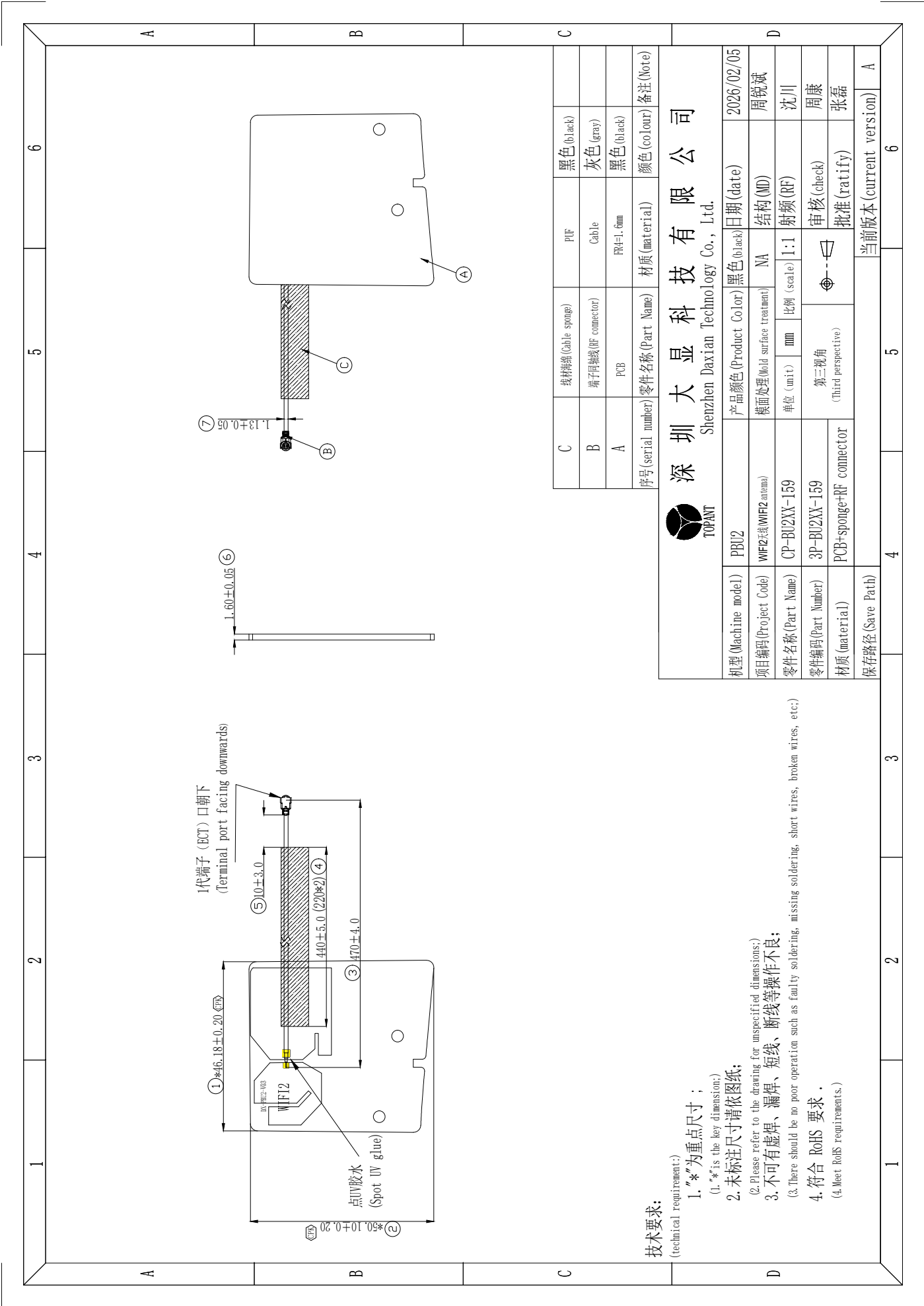
8、结论 conclusion

此天线是在客户提供样机基础上设计，电参数和结构性能已达到技术要求，请确认！

This antenna is designed based on the prototype provided by the customer. The electrical parameters and structural performance have met the technical requirements, please confirm!

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技术要求:

(technical requirement:)

- 1."*"为重点尺寸；
2. 未标注尺寸请依图纸；
3. 不可有虚焊、漏焊、短线、断线等操作不良；
4. 符合 RoHS 要求。



深圳大显科技有限公司

Shenzhen Daxian Technology Co., Ltd.

C	线材海绵 (Cable sponge)	P/F	黑色 (black)
B	端子引线 (RF connector)	Cable	灰色 (gray)
A	PCB	FR4=1.5mm	黑色 (black)
序号 (serial number) 零件名称 (Part Name)		材质 (material)	颜色 (colour) 备注 (Note)

机型 (Machine model)	PBU2	产品颜色 (Product Color)	黑色 (black)	日期 (date)	2026/02/05
项目编码 (Project Code)	WIFI2无线 (WIFI2 antenna)	表面处理 (Mold surface treatment)	NA	结构 (MD)	周锐斌
零件名称 (Part Name)	CP-BU2XX-159	单位 (unit)	mm	比例 (scale)	1:1
零件编码 (Part Number)	3P-BU2XX-159	第三视角 (Third perspective)	审核 (check)	射频 (RF)	沈川
材质 (material)	PCB+sponge+RF connector	第三视角 (Third perspective)	批准 (ratify)	周康	张磊
保存路径 (Save Path)	当前版本 (current version)				A

深圳大显科技有限公司

Shenzhen Topant Technology Co., Ltd.

CPK Report							
Part Number(料号)	3P-BU2XX-159			Vendor(供应商)		大显	
Description(零件名称)	PBU2 WIFI2天线			Inspected(确认者)		李崇瑞	
Tool Number(模号)	/			Inches/MM(英寸/毫米)		mm	
Cavity(穴号)	/			Material Name(材质名称)		PCB+泡棉+端子+线材	
				Material Code(材质牌号)		/	
Revision(版本)	V03			Date(日期)		2026.02.05	
Dim. Designator(尺寸序号)	1	2					
Nominal(公称尺寸)	46.18	50.10					
+ Tolerance(正公差)	0.20	0.20					
- Tolerance(负公差)	-0.20	-0.20					
Upper Limit(规格上限)	46.38	50.30					
Lower Limit(规格下限)	45.98	49.90					
1	46.16	50.11					
2	46.16	50.17					
3	46.17	50.15					
4	46.06	50.17					
5	46.13	50.12					
6	46.19	50.16					
7	46.17	50.17					
8	46.09	50.18					
9	46.15	50.11					
10	46.17	50.13					
11	46.11	50.17					
12	46.16	50.15					
13	46.17	50.17					
14	46.14	50.14					
15	46.20	50.17					
16	46.13	50.12					
17	46.17	50.17					
18	46.22	50.13					
19	46.21	50.09					
20	46.15	50.15					
21	46.13	50.17					
22	46.08	50.11					
23	46.17	50.17					
24	46.15	50.13					
25	46.18	50.16					
26	46.24	50.10					
27	46.19	50.15					
28	46.17	50.02					
29	46.16	50.17					
30	46.11	50.15					
31	46.16	50.17					
32	46.15	50.15					
MAX.	46.24	50.18					
MIN.	46.06	50.02					
AVERAGE	46.16	50.14					
STDEV	0.04	0.03					
CP	1.72	1.99					
Cpk	1.52	1.56					
TOOLING(测量工具)	2.5次元	2.5次元					

审核：李崇瑞

制表：李朝花

日期:2026.02.05

深圳大显科技有限公司
Shenzhen Topant Technology Co., Ltd.
盐雾测试报告

编号: QR/QC-WI09-01版本B

试验时间: 2026年01月29日11:00 至01月31日11:00 共计 48 H					
(喷雾时间) 试验若有中断, 其原因为:					
☒ 盐水试验法: 试验室温度35℃, 饱和空气桶温度47℃ ☐ 腐蚀试验法: 试验室温度35℃, 饱和空气桶温度47℃					
1. 氯化钠品质	99.50%		2. 纯净水品质	纯净水	
3. 喷雾采取PH值	雾化前6.5~7.2		4. 试验液PH值	6.0	
5. 压力表	1.0 Kgf/cm		6. 试验室相对湿度	30%	
7. 试验室温度	35 °C		8. 压力桶温度	47 °C	
9. 盐水浓度	5±0.1 %		10. 其他		
供应商名称	产品品名	试样数量	试验样品		试验结果 判定依据
大显	PBU2 WIFI2天线	2PCS			合格 依GB6461-2002标准判定 (外观无氧化、无镀层脱落、无腐蚀)
判定: 1. 依标准样品判定 2. 依GB6461-2002标准判定 3. 依不良限度样品判定 4. 依其他方法判定					
备注: 试验结束后, 如果试样状态允许, 可不经清洗进行检查。如果污垢和盐类沉积物等掩盖了缺陷而使检查难以进行时, 宜用蘸有中性肥皂液的海绵对表面进行擦拭, 然后用水漂洗。但在此过程中不应施加压力, 以免洗掉腐蚀产物而造成评级偏高。清洗液不应覆盖层产生任何破坏。中途或定期检查时不允试清洗试样, 否则影响测试结果					

审核: 李崇瑞

测试员: 李朝花

深圳大显科技有限公司
Shenzhen Topant Technology Co., Ltd.

端子拉力测试报告

试验日期 Date:	2026.01.29	测试项目 test item:	端子拉力测试	试验编号No.	QC20260129002			
试验时间 Time:	12月15日12:00							
试验过程有无端子脱落不良								
1	客户 Customer	国光	示图： 					
2	品名 Item name	PBU2 WIFI2天线 (一代端子)						
3	料号 Product number	3P-BU2XX-159						
4	数量 Quantity	3PCS						
5	试验条件 Test Conditions							
5.1	基准	端子公母对插拉力 ≥1.2kg	判断					
			PASS					
拉力测试数据		样品1	样品2	样品3	Max	Min	AVG	判定
		1.35	1.29	1.41	1.41	1.29	1.35	OK
备注:								

表单编号：QR\QC-P02-05

核准：李崇瑞

试验员：李朝花

产品材料宣告表 Product material declaration

Part Number (料号)			3P-BU2XX-159			Description (零件名称)				PBU2 WIFI2天线				Vendor (供应商)				深圳市大显科技有限 公司				Written By (制作)		李朝花	
序号	物料编号/名称	均质名称	型号	原材料商	报告编号	检测机构	RoHS/电池指令 (Directive 2006/66/EC)/包装指令 (94/62/EC) 测试结果 (Testing Result)				测试结果				备注	报告插入		MSDS	检测日期	有效时间					
							Pb	Cd	Hg	Cr (VI)	PBBs	PBDEs	DEHP	BBP							DBP	DIBP	F	Br	C1
1	PCB	基材	FR-4.1	国纪	SHAEC25018891237 SHAEC25018891213	SGS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2025/7/30	有效期一年		
2		阻焊油墨	PSM-800FSDM-A	优立	ETR25501383 ETR25501384	SGS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	431	ND	2025/5/50	有效期一年			
3		文字油墨	ZSR-150	川裕	ETR25901252M01 ETR25901254M01	SGS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	625	ND	2025/9/11	有效期一年			
6	焊料	锡线	无铅锡线	大本	SZXP25000282404 SZXP25000282402	SGS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2025/2/18	有效期一年			
7		胶水	UV胶	NLX-314	诺力兴	CANEC25003489502 WTH25H06162211C	SGS/VTI	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2025/3/4 2025/6/24	有效期一年			
8	黑色海绵	黑色泡棉	PU	永迪	A2250668424101001 A2250668424101006	CTI	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2025/9/18	有效期一年			
9		背胶	压敏胶带	皇冠	CANEC25019110630	SGS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2025/8/13	有效期一年			
10	CABLE线	外绝缘	FEP灰	神宇	SHAEC25003788349 SHAEC25003796317	SGS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	> 1000000	ND	ND	ND	2025/3/3	有效期一年			
11		内绝缘	NP-3180	神宇	SHAEC25029870131 SHAEC25029870127	SGS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	> 1000000	ND	278	ND	2025/11/18	有效期一年			
12		编织网/导体	镀锡铜线	明星	A2250174863101001E	CTI	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	2025/3/19	有效期一年			
13	PLUG 1代	端子	C5210	JX	SZXP25002798119	SGS	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	2025/8/8	有效期一年			
14		胶芯	PP	南亚	A2250694110101001E A225080408610100401E A22508040861010040E	CTI	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	42	ND	ND	ND	2025/9/17 2025-11-06	有效期一年			
15		镀镍	Ni	侨福	CANEC25002136405	SGS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2025/2/14	有效期一年			
16		镀金	Au	侨福	CANEC25002136401	SGS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2025/2/22	有效期一年		

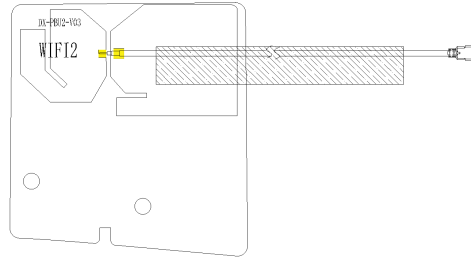
批准:李崇瑞

制作: 李朝花

日期:2026.01.29

一、包装方式 Packing method:

1 .PCB+同轴线+线材海绵 PCB+ coaxial cable + cable sponge:



2、装袋，每袋装100cs ;每10袋 装 1pcs 纸箱（根据订单数量可调整）.

Bagging, each bag is 100cs; Packed in 1pcs carton per 10 bags (adjustable according to the order quantity).



每 10 小袋装入 1pcs纸箱
Every 10 small bags are
packed into a 1pcs carton.



所附图片仅供参考， 以实物为准

The attached pictures are for reference only, subject to the real thing.

二、运输要求 Transport requirements:

产品包装件运输时，应防潮、防破损、防污染。

When the product package is transported, it should be moisture-proof, damage-proof and pollution-proof.

三、存储要求 Storage requirements:

产品包装件应在仓库内堆放，库房应干燥、通风、清洁。

Product packages should be stacked in the warehouse, which should be dry, ventilated and clean.

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Confidentiality requirements

Shenzhen Daxian Technology Co., Ltd. already possesses the information provided by the proprietary technology, which should be strictly confidential and not allowed to be disclosed to any person or company without the prior written consent of Shenzhen Daxian Technology Co., Ltd