

SPECIFICATION



深圳市大显科技有限公司
Shenzhen Daxian Technology Co., Ltd.

中山悦辰 Citation Sub2 WIFI-0 天线组件

Richsound Citation Sub2 WIFI0 Antenna assembly

产品规格书

Product Specification

客户 connection	中山悦辰 Richsound	频段 frequency range	2400 ~ 2500MHz 5150 ~ 5850MHz
项目名称 entry name	Citation Sub2	版本 edition	V1.0
物料编号 Material No	2S-8300X-033	颜色 Color	黑色 Black
客户料号 Customer Item Number	101000666		
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	杨进 Jin.Yang	技术总监 Technical Director	张磊 Lei.Zhang
日期 Date	2024-8-6		

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

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一 项目说明 Project Description

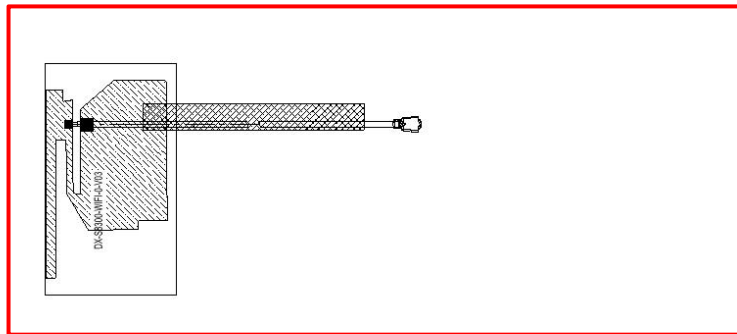
客户名: Customer Name:	中山悦辰 Richsound
整机类型: Type of complete machine:	音箱 loudspeaker box
天线频段: Antenna band:	2400 ~ 2500MHz ; 5150~5850MHz
天线形式: Antenna form:	FPC+同轴线+线材海绵 FPC+coaxial line+wire sponge
馈电形式: Feed form:	焊接 weld
馈脚数量: Number of feed legs:	两个 Two
硬件版本: Hardware version:	/

二 WIFI 0 天线组件 Antenna assembly

1 规格 specifications

本报告主要提供 Citation Sub2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 Citation Sub2 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**。下表是大显设计和量产天线的电性能指标。

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

Frequency Range	Frequency (MHz)	VSWR
WIFI 0	2400~2500	≤ 2
WIFI 0	5150 ~ 5850	≤ 2

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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 FPC+同轴线+线材海绵 组成。

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

2、测试设备 The Equipment of Active Test

Satimo 3D Chamber 6×4×4(m)

Agilent 8960 E5515c

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、Agilent8960 E5515C、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 Test:

		TPR	TIS
802.11b 11M	1	15.57	-83.84
	6	15.57	-83.51
	11	15.22	-83.55
802.11g 54M	1	14.49	-73.17
	6	14.28	-73.19
	11	14.97	-73.21
802.11n MCS7	1	14.51	-71.36
	6	14.34	-71.96
	11	14.02	-71.48
802.11a 54M	36	10.63	-72.52
	149	10.49	-72.62
	161	10.28	-72.84
BT	0	5.36	-86.63
	39	5.24	-87.02
	78	5.44	-86.87

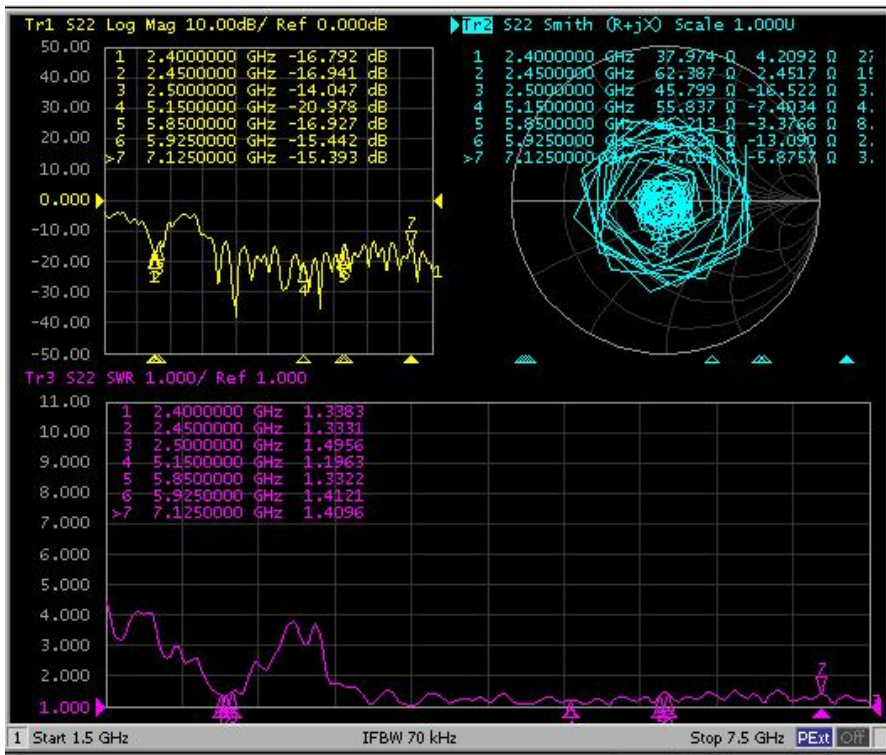
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无源效率&增益 Passive efficiency&gain:

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
2400	46.27	-3.35	1.79
2450	46.47	-3.33	1.65
2500	46.63	-3.31	1.58
5150	46.53	-3.32	2.95
5350	46.68	-3.31	2.81
5500	47.26	-3.26	2.86
5650	47.86	-3.20	2.67
5750	46.97	-3.28	2.71
5850	46.47	-3.33	2.69

4、VSWR 参数图 VSWR parameter diagram



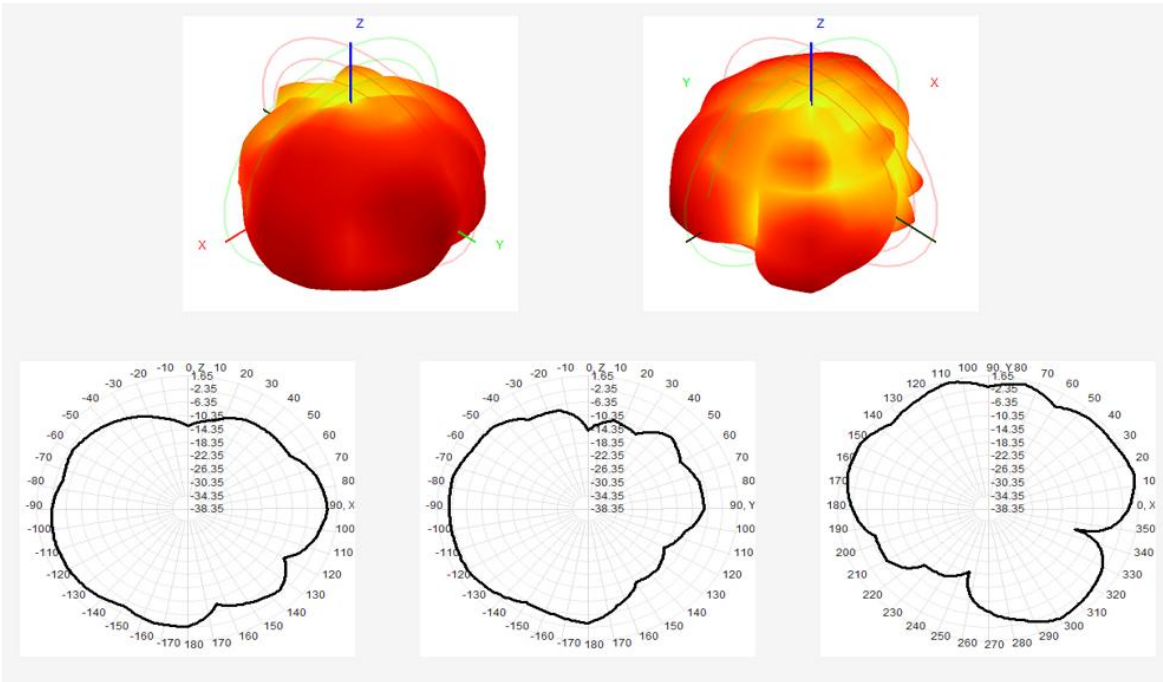
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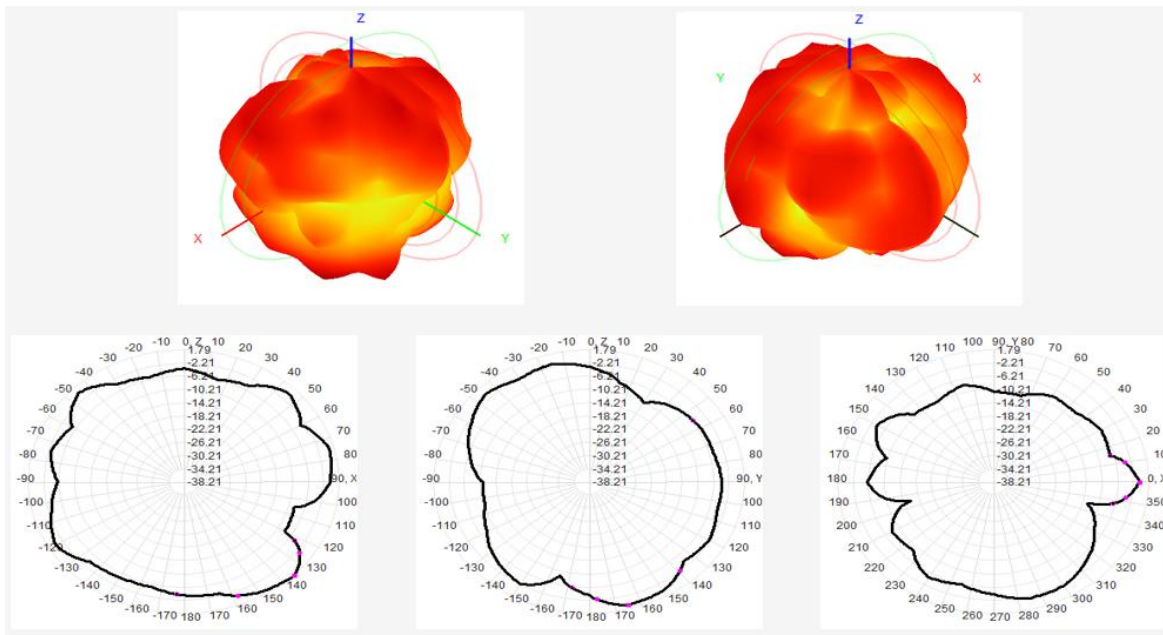
5、无源效率场型图

Passive efficiency field pattern diagram

2450MHz



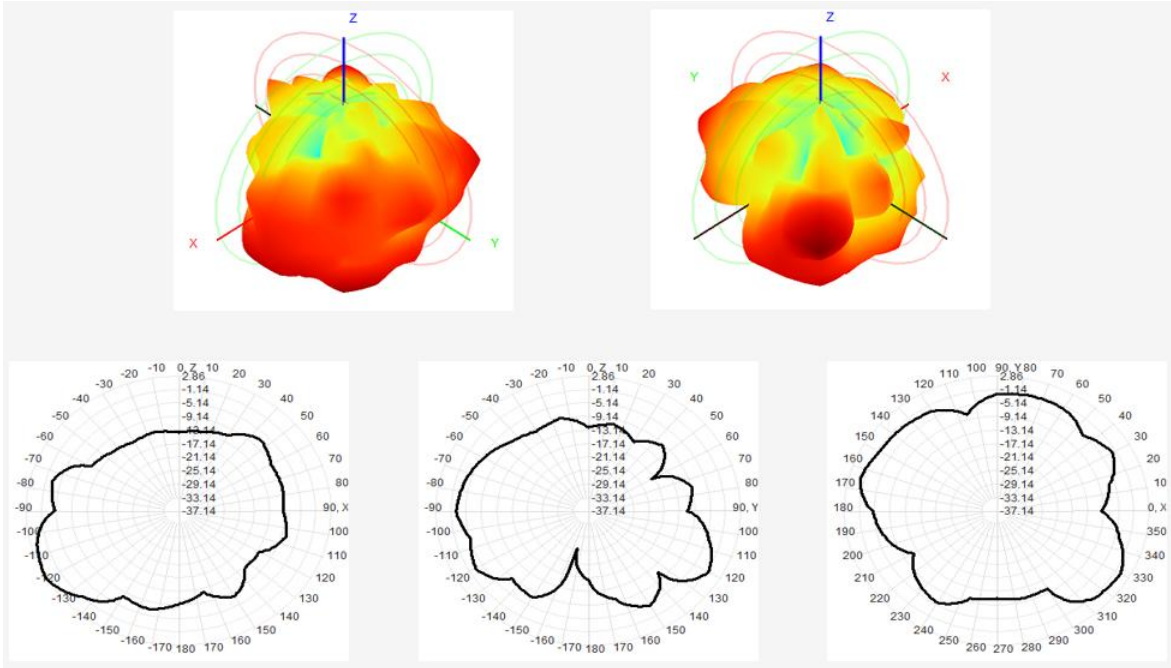
2400MHz



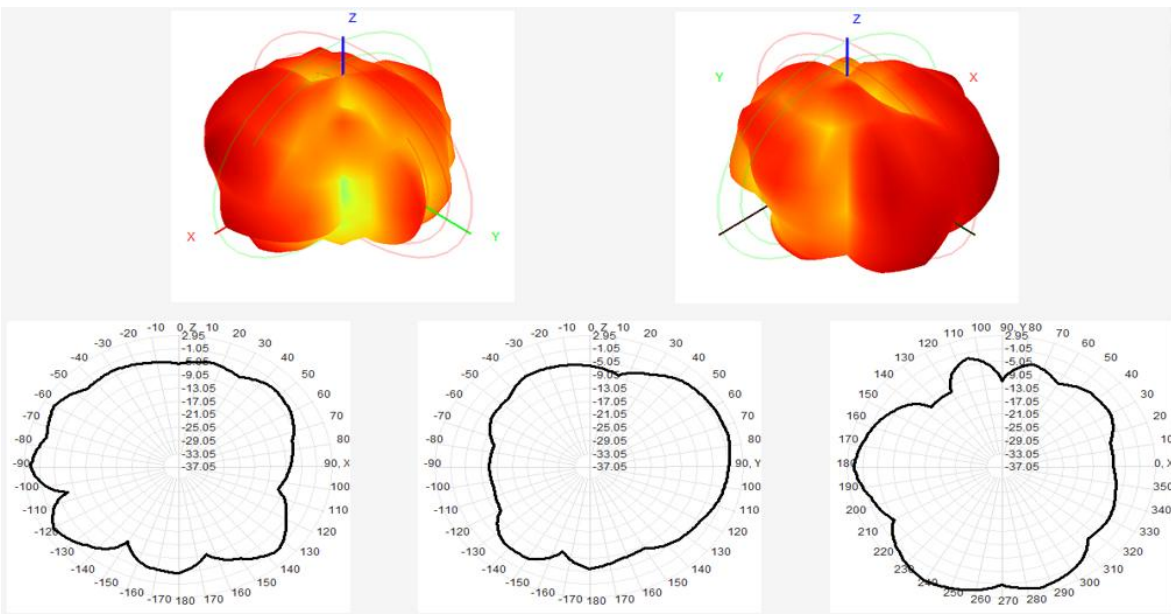
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5500MHz



5150MHz



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6、外场拉距测试 Outfield stretching test

测试方向	前	后	左	右
	测试距离			
2.4G	170米	170米	170米	170米
5.8G	250米	250米	250米	250米

7、结论 conclusion

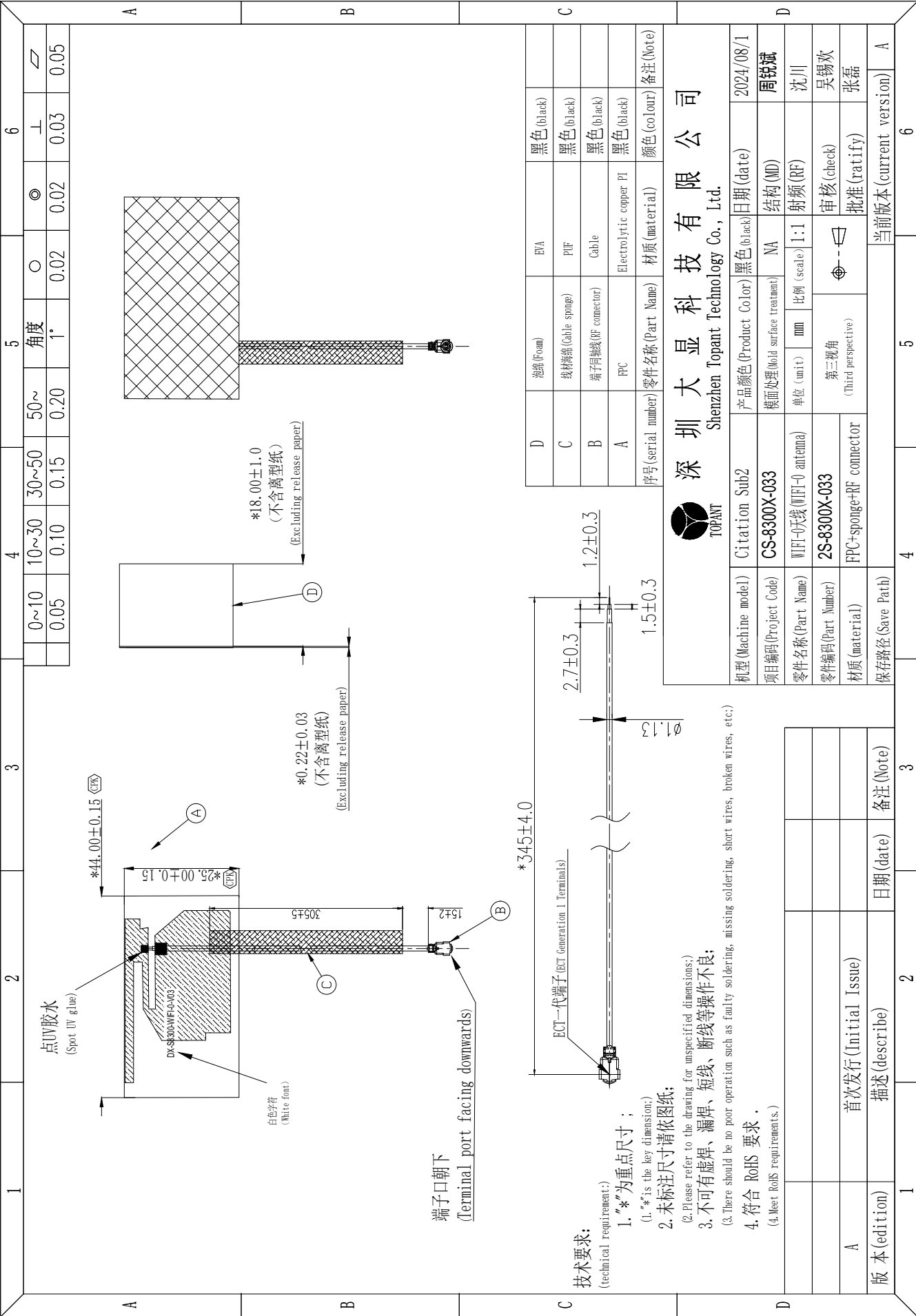
此天线是在客户提供样机基础上设计，电参数和结构性能已达到技术要求，请确认！

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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0~10	10~30	30~50	50~	角度	⊙	⊥
0.05	0.10	0.15	0.20	1°	0.02	0.03
					0.02	0.05

D	泡绵 (Foam)	EVA	黑色 (black)
C	线材海绵 (Cable sponge)	PIF	黑色 (black)
B	端子同轴线 (RF connector)	Cable	黑色 (black)
A	FPC	Electrolytic copper PI	黑色 (black)
序号 (serial number) 零件名称 (Part Name)			颜色 (colour) 备注 (Note)

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Shenzhen Topant Technology Co., Ltd.

机型 (Machine model)	Citation Sub2	产品颜色 (Product Color)	黑色 (black)	日期 (date)	2024/08/1
项目编号 (Project Code)	CS-8300X-033	表面处理 (Mold surface treatment)	NA	结构 (MD)	周锐斌
零件名称 (Part Name)	WiFi-0天线 (WiFi-0 antenna)	单位 (unit)	mm	比例 (scale)	1:1
零件编号 (Part Number)	2S-8300X-033	第三视角 (Third perspective)		射频 (RF)	沈川
材质 (material)	FPC+sponge+RF connector	审核 (check)		批准 (ratify)	吴锡欢
保存路径 (Save Path)		当前版本 (current version)			张磊

技术要求:
(technical requirement):

1. "*" 为重点尺寸;
(1. "*" is the key dimension.)
2. 未标注尺寸请依图纸;
(2. Please refer to the drawing for unspecified dimensions.)
3. 不可有虚焊、漏焊、短线、断线等操作不良;
(3. There should be no poor operation such as faulty soldering, missing soldering, short wires, broken wires, etc.)
4. 符合 RoHS 要求。
(4. Meet RoHS requirements.)

A

首次发行 (Initial Issue)	日期 (date)	备注 (Note)

版本 (edition)	描述 (describe)

深圳市大显科技有限公司

样品测试报告

送样单位:工程

2024年8月1日

品名	WIFI-0天线	批量	5pcs	类别		<input type="checkbox"/> 模具零件	<input type="checkbox"/> 材料评估						
料号	2S-8300X-033	模穴数		<input checked="" type="checkbox"/> 送样评估	<input type="checkbox"/> 其他								
序号	图面规格	量具	测试结果								超差值	判定	
			1	2	3	4	5	6	7	8		OK	NG
1	44.00±0.15	P	44.02	44.06	43.96	44.04	44.09				0	√	
2	25.00±0.15	P	24.96	25.03	25.07	25.04	24.98				0	√	
3	0.22±0.03	C	0.23	0.22	0.23	0.21	0.23				0	√	
4	305±5.00	F	308.00	306.00	3.40	305.00	308.00				0	√	
5	15.00±2.00	P	14.06	13.98	14.69	15.85	16.01				0	√	
6	18±1.00	P	18.26	18.36	18.07	17.92	18.03				0	√	
7	354.00±4.00	F	356.00	355.00	353.00	356.00	355.00				0	√	
8	2.7±0.30	P	2.61	2.73	2.59	2.62	2.77				0	√	
9	1.2±0.30	P	1.08	1.04	1.26	1.12	1.03				0	√	
10	1.5±0.30	P	1.56	1.63	1.42	1.54	1.55				0	√	
11	1.13±0.05	C	1.13	1.12	1.13	1.13	1.13						
量具	目视 E 卡尺 C 千分尺 M 投影仪 P 螺纹规 Pg											最终判定	
代号	网络分析仪 Ne 扭力计 G 万用表 Me 直尺 F											OK	NG
备注:	外观OK.												

表单编号: QR/RD-P01-08

核准:杨进

作成:李朝花

Shenzhen Topant Technology Co., Ltd.

1. Basic information:

 Product Name: WIFI-0天线

 Product no.: 2S-8300X-033

 Sample size : 30 pcs

 Control paramete SIZP
2. Data measurement:

 Test date: 1/Aug/24

ITEM \ NO.	NO.1	NO.2				
spec	44.00±0.15mm	25.00±0.15mm				
USL	44.15	25.15				
LSL	43.85	24.85				
μ	44.00	25.00				
MAX	44.080	25.070				
MIN	43.970	24.980				
1	44.01	25.01				
2	43.99	25.05				
3	44.01	25.05				
4	43.97	25.07				
5	44.07	25.03				
6	43.98	25.02				
7	44.04	24.98				
8	44.02	25.01				
9	44.03	24.98				
10	44.00	25.00				
11	44.06	25.05				
12	44.07	25.02				
13	44.03	25.06				
14	44.02	25.02				
15	43.99	25.05				
16	43.98	25.05				
17	44.02	25.05				
18	44.03	25.00				
19	44.05	24.99				
20	44.02	25.04				
21	43.99	25.07				
22	43.97	25.00				
23	44.01	25.02				
24	44.00	25.05				
25	44.00	25.04				
26	44.00	24.99				
27	43.99	25.04				
28	43.97	24.98				
29	44.08	25.01				
30	44.02	25.00				

3. Data calculation:

No.	No.1	No.2				
Average	44.014	25.024				
σ	0.03	0.03				
Ca	0.09	0.16				
Cp	1.64	1.81				
CPK	1.49	1.52				

4. Conclusion:


THE CAPABILITY OF PROCESS IS PERFECT STATE, MAINTAIN ACTUALITY.

Approved: 杨进

Designed: 李朝花

盐水喷雾试验记录表

编号: QR/QC-WI09-01版本B

试验时间: 2024年8月1日16:00 至8月3日16:00 共计 48 小时					
(喷雾时间) 试验若有中断, 其原因为:					
<input checked="" type="checkbox"/> 盐水试验法: 试验室温度35℃, 饱和空气桶温度47℃ <input type="checkbox"/> 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		判定依据
大显	WIFI-0天线	2PCS			合格 依GB6461-2002标准 等级Ra9
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: 杨进

测试员: 李朝花

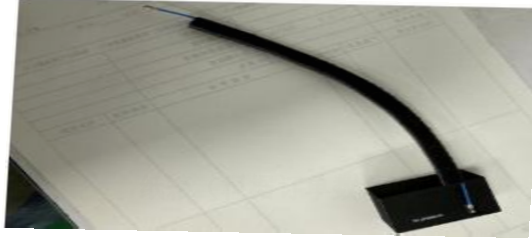
深圳市大显科技有限公司

Shenzhen Daxian Technology Co., Ltd

包装运输存储说明

一、包装规范

1 .FPC+同轴线+线材海绵:



2、装袋，每袋装 100pcs ;每 2000pcs 装 1pcs



每 20 小袋装入 1pcs 纸箱



所附图片仅供参考，以实物为准。

3、 装箱,纸箱规格: 390*305*335, 打包后装箱密封, 贴标签。



二、运输要求:

产品包装件运输时, 应防潮、防破损、防污染。

三、存储要求:

产品包装件应在仓库内堆放, 库房应干燥、通风、清洁。