

SPECIFICATION



深圳市大显科技有限公司

Shenzhen Daxian Technology Co., Ltd.

国光 DJ01 WIFI&BT 天线GGEC DJ01 WIFI&BT Antenna

产 品 规 格 书

Product Specification

客 户 connection	国光 GGEC	频 段 frequency range	2400 ~ 2500MHz、5100~6000MHz
项目名称 entry name	DJ01	版 本 edition	V11
物料编号 Material No	1D-J01XX-139	颜 色 Color	白色 white
客户料号 Customer Item Number			
R F 设计 R F Design	胡 鹏 Peng.Hu	结构设计 Structural Design	周锐斌 Ruibin.Zhou
品质经理 Quality Manager	李高亮 GaoLiang.Li	技术总监 Technical Director	张 磊 Lei.Zhang
日 期 Date	2026-09-02		

客户确认:

Customer confirmation:

装配是否符合贵司要求: ☐OK ☐NGWhether the assembly meets your company's requirements: ☐OK ☐NG

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变更履历

Revision history

版本号 Version number	变更内容 Change content	变更理由 Reason for change	发起变更方 Originating Party	日期 Date	修改人 Modified by
A1.0	创建 found			2026-03-19	
A2.0	更新 modi	天线结构变更，天线电性能数据更新 Antenna structure changed, antenna electrical- performance data updated	DX	2026-04-16	
A3.0	更新 modi	天线结构变更，天线电性能数据更新 Antenna structure changed, antenna electrical- performance data updated	DX	2026-06-04	
A4.0	更新 modi	天线结构变更，天线电性能数据更新 Antenna structure changed, antenna electrical- performance data updated	DX	2026-06-16	
A5.0	更新 modi	更新天线版本及天线电性能数据 Update antenna version and antenna electrical- performance data	DX	2026-08-13	
A6.0	更新 modi	天线版本丝印为V11，油墨为白色并更新电性能数据 Antenna silkscreen marked V11 with white ink, and electrical - performance data updated.	DX	2026-09-02	

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一 项目说明 Project Description

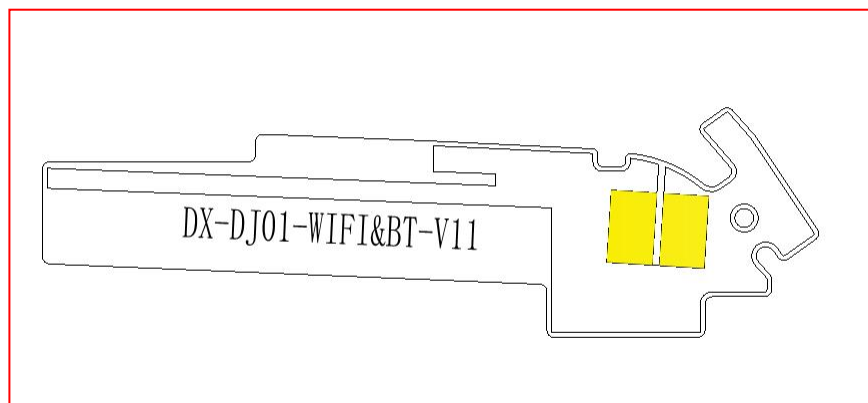
客户名: Customer Name:	国光 GGEC
整机类型: Type of complete machine:	脖挂式耳机（带拍照功能） Neckband headphones (with camera)
天线频段: Antenna band:	2400 ~ 2500MHz、5100-6000MHz
天线形式: Antenna form:	FPC FPC

二 WIFI&BT 天线组件 Antenna assembly

1 规格 specifications

本报告主要提供 DJ01 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 DJ01 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、5100 ~ 6000 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、5100 and 6000 MHz. The following table shows the electrical performance indicators of large display design and mass production antennas.

Frequency Range	Frequency (MHz)	VSWR
WIFI&BT	2400 ~ 2500、5100~6000	≤ 2.5

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 FPC 组成。

The antenna is mainly composed of FPC.

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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

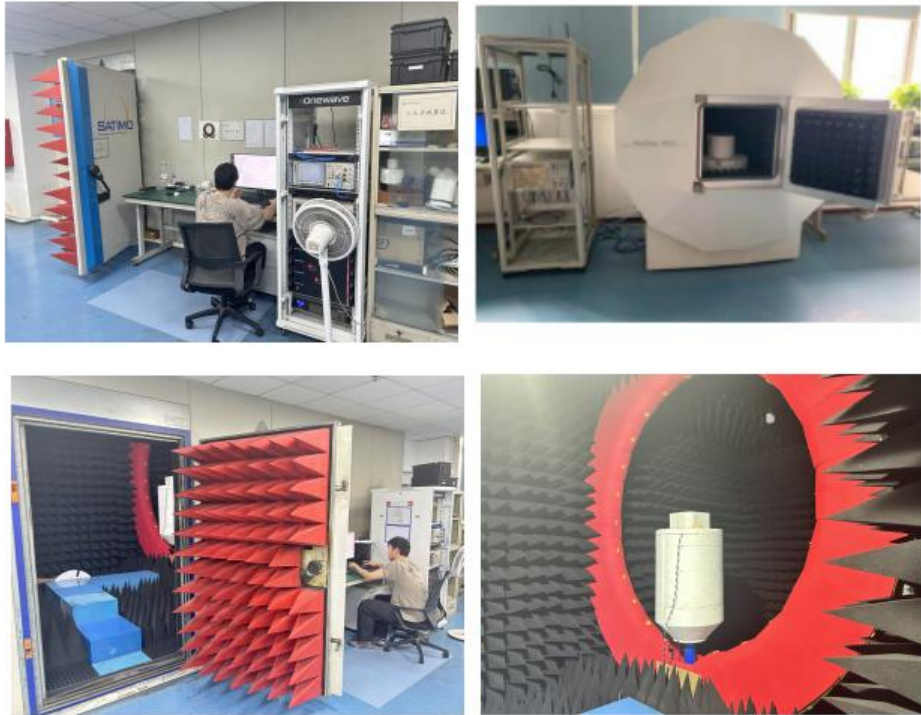


图 2

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

BT—自由空间						
BAND	CH	频点	TRP	TIS	TX 传导	RX 传导
BT	0	2402	6.58	-89.46	13.02	-95.75
	39	2441	7.16	-89.72	12.32	-96
	78	2480	6.45	-89.37	13	-95.75

WIFI-B—自由空间						
BAND	CH	频点	TRP	TIS	TX 传导	RX 传导
WIFI-B	1	2412	10.33	-82.63	16.97	-89
	7	2442	10.78	-82.81	16.69	-89
	13	2472	9.42	-82.78	15.39	-89.25

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WIFI-G—自由空间						
BAND	CH	频点	TRP	TIS	TX 传导	RX 传导
WIFI-G	1	2412	9.89	-69.88	16.15	-76
	7	2442	10.13	-70.21	15.86	-76
	13	2472	9.04	-70.08	14.74	-76.25

WIFI-N—自由空间						
BAND	CH	频点	TRP	TIS	TX 传导	RX 传导
WIFI-N	1	2412	10.62	-65.32	17.13	-71.5
	7	2442	10.71	-65.77	16.86	-71.5
	13	2472	9.87	-65.61	15.81	-72

WIFI-N—自由空间						
BAND	CH	频点	TRP	TIS	TX 传导	RX 传导
WIFI-N	36	5180	11.33	-65.26	16.56	-70
	149	5745	11.62	-66.08	16.72	-70.75
	165	5825	11.17	-65.98	16.32	-71.25

WIFI-A—自由空间						
BAND	CH	频点	TRP	TIS	TX 传导	RX 传导
WIFI-A	36	5180	10.38	-69.65	15.32	-75
	149	5745	10.81	-70.41	15.7	-75.75
	165	5825	10.13	-70.13	15.06	-75.75

BT—头模状态						
BAND	CH	频点	TRP	TIS	TX 传导	RX 传导
BT	0	2402	4.03	-87.11	13.02	-95.75
	39	2441	4.14	-87.42	12.32	-96
	78	2480	3.92	-87.07	13	-95.75

WIFI-B—头模状态						
BAND	CH	频点	TRP	TIS	TX 传导	RX 传导
WIFI-B	1	2412	8.44	-80.18	16.97	-89
	7	2442	8.52	-80.57	16.69	-89
	13	2472	7.33	-80.41	15.39	-89.25

WIFI-G—头模状态						
BAND	CH	频点	TRP	TIS	TX 传导	RX 传导
WIFI-G	1	2412	7.56	-67.38	16.15	-76
	7	2442	7.92	-67.71	15.86	-76
	13	2472	6.93	-67.33	14.74	-76.25

WIFI-N—头模状态						
BAND	CH	频点	TRP	TIS	TX 传导	RX 传导
WIFI-N	1	2412	8.33	-63.08	17.13	-71.5
	7	2442	8.51	-63.47	16.86	-71.5
	13	2472	7.88	-63.26	15.81	-72

WIFI-N—头模状态						
BAND	CH	频点	TRP	TIS	TX 传导	RX 传导
WIFI-N	36	5180	8.66	-62.26	16.56	-70
	149	5745	8.87	-63.02	16.72	-70.75
	165	5825	8.42	-62.97	16.32	-71.25

WIFI-A—头模状态						
BAND	CH	频点	TRP	TIS	TX 传导	RX 传导
WIFI-A	36	5180	7.33	-67.11	15.32	-75
	149	5745	7.94	-67.67	15.7	-75.75
	165	5825	7.25	-67.31	15.06	-75.75

无源效率&增益 Passive efficiency&gain:

自由状态 free space state

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
2400	20.68	-6.84	-0.92	5100	28.61	-5.43	2.82
2410	20.73	-6.83	-0.82	5150	28.72	-5.42	2.95
2420	20.96	-6.79	-0.68	5200	28.85	-5.4	3.68
2430	21.15	-6.75	-0.53	5250	29.12	-5.36	3.56
2440	21.38	-6.7	-0.27	5300	29.45	-5.31	3.26
2450	21.67	-6.64	-0.26	5350	29.68	-5.28	2.79
2460	21.41	-6.69	-0.42	5400	29.89	-5.24	2.58
2470	21.09	-6.76	-0.73	5450	30.13	-5.21	2.92
2480	20.88	-6.8	-1.32	5500	30.36	-5.18	3.11
2490	20.71	-6.84	-1.86	5550	30.04	-5.22	2.93
2500	20.54	-6.87	-2.18	5600	29.77	-5.26	3.14
				5650	29.48	-5.3	3.27
				5700	29.21	-5.34	2.96
				5750	29.03	-5.37	3.23
				5800	28.88	-5.39	3
				5850	28.76	-5.41	3
				5900	28.53	-5.45	3.26
				5950	28.41	-5.47	3.43
				6000	28.33	-5.48	3.53

头模状态 die state

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
2400	11.24	-9.49	-3.3	5100	14.21	-8.47	1.93
2410	11.42	-9.42	-3.25	5150	14.49	-8.39	1.94
2420	11.53	-9.38	-3.32	5200	14.72	-8.32	2.29
2430	11.76	-9.3	-3.43	5250	14.95	-8.25	2.39
2440	11.89	-9.25	-3.51	5300	15.28	-8.16	1.87
2450	12.18	-9.14	-3.68	5350	15.53	-8.09	1.39
2460	11.92	-9.24	-3.91	5400	15.71	-8.04	1.19
2470	11.86	-9.26	-4.07	5450	15.81	-8.01	1.01
2480	11.73	-9.31	-4.44	5500	15.87	-7.99	1.26
2490	11.54	-9.38	-4.73	5550	15.71	-8.04	0.94
2500	11.39	-9.43	-5.31	5600	15.66	-8.05	1.17
				5650	15.42	-8.12	1
				5700	15.08	-8.22	1.02
				5750	14.86	-8.28	1.42
				5800	14.57	-8.37	1.15
				5850	14.38	-8.42	1.04
				5900	14.27	-8.46	1.36
				5950	14.11	-8.5	1.58
				6000	14.02	-8.53	1.66

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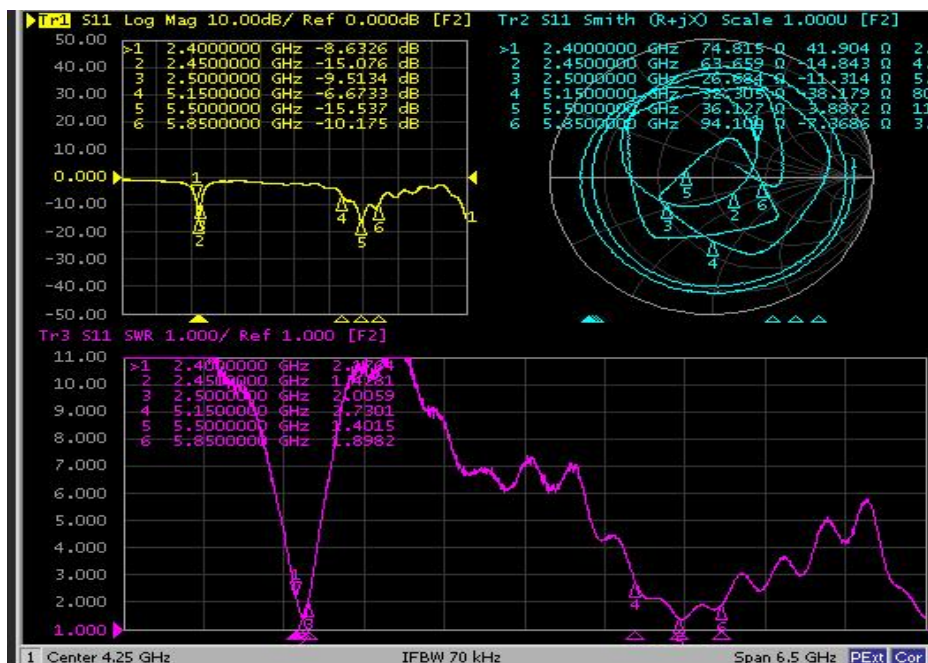
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4、VSWR 参数图 VSWR parameter diagram

自由状态 free space state



头模状态 die state

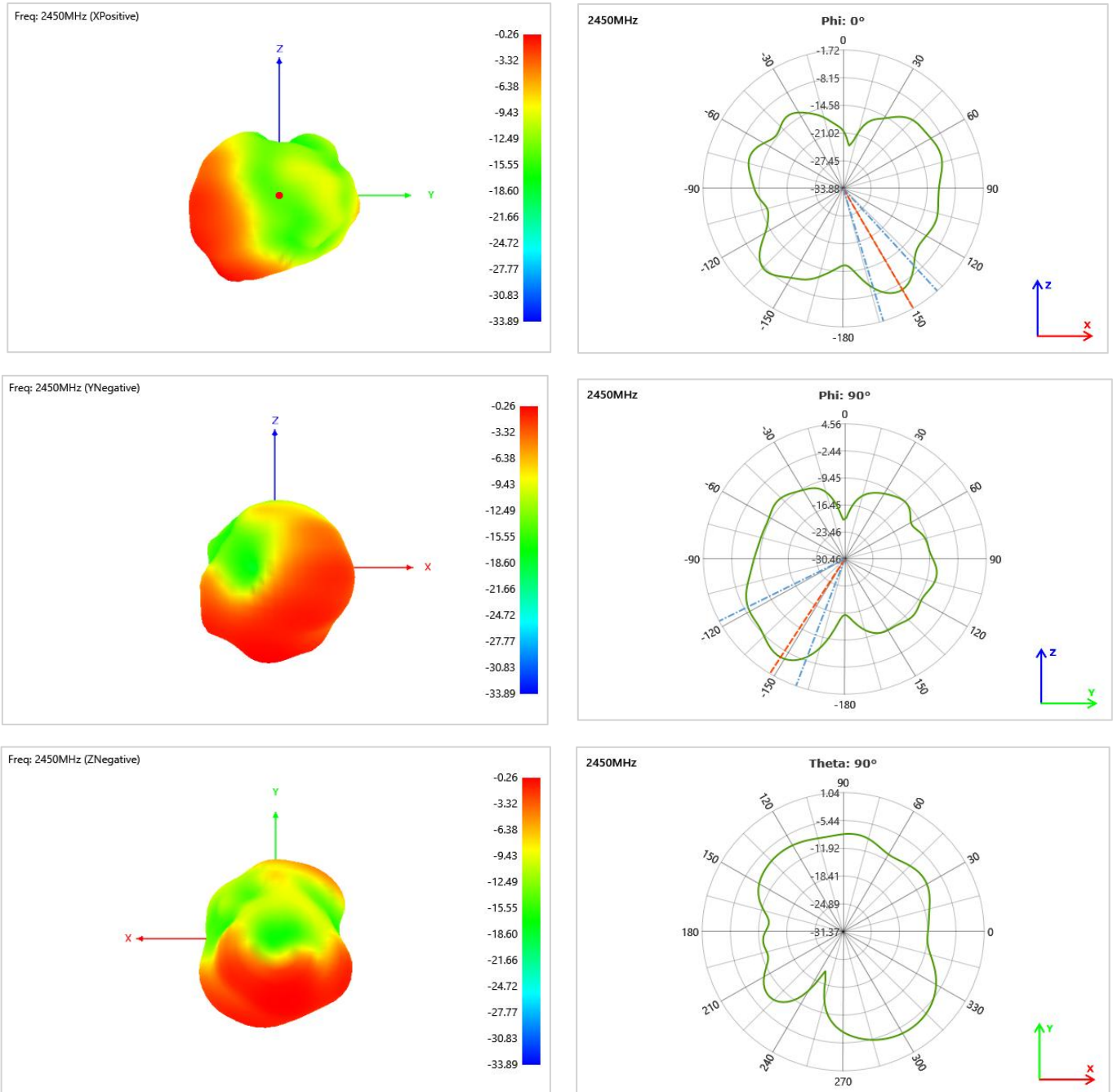


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5、无源效率场型图 Passive efficiency field pattern diagram

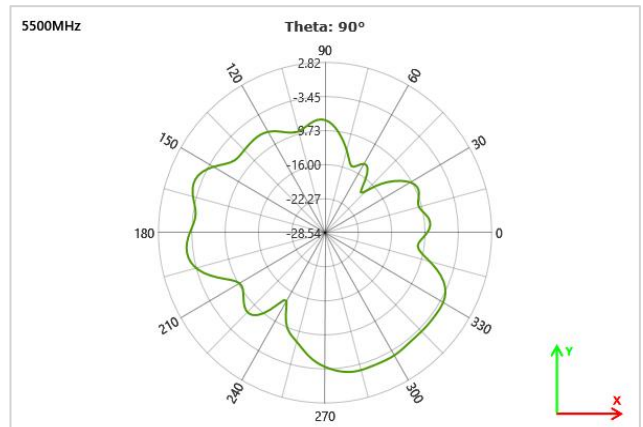
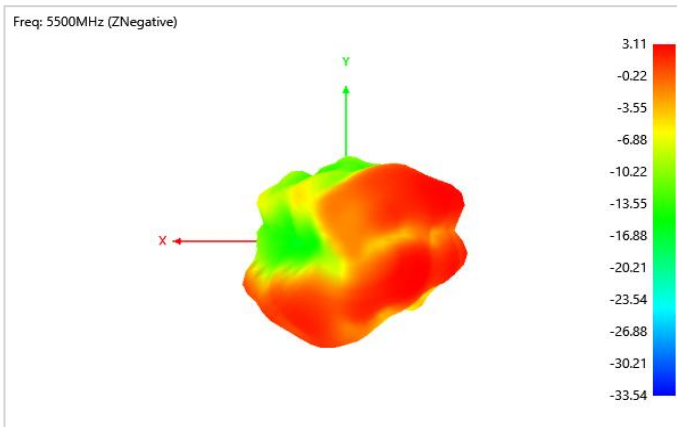
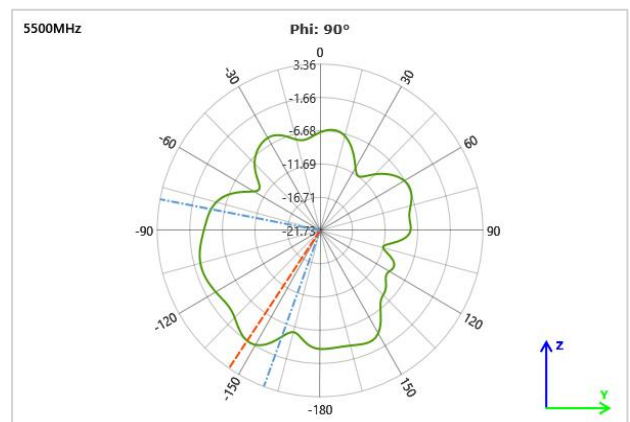
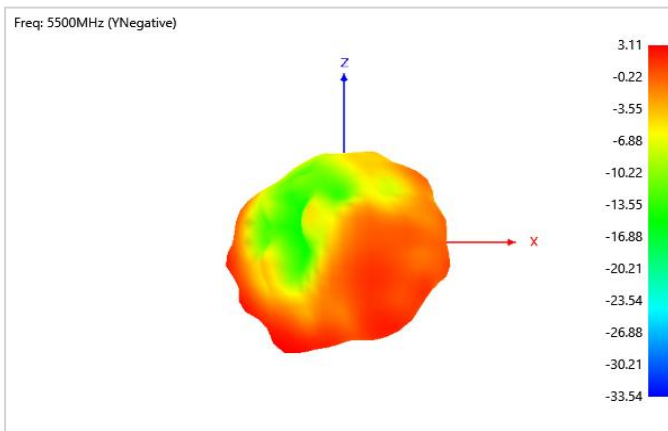
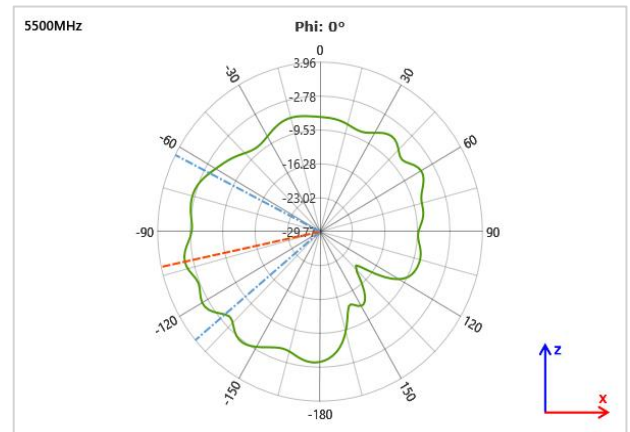
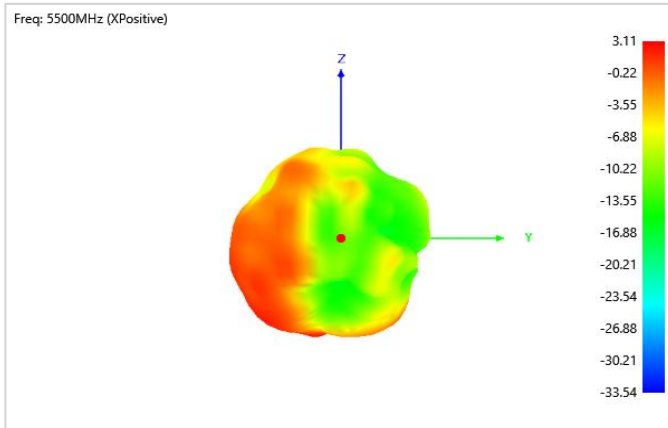
自由状态 free space state 2450MHz



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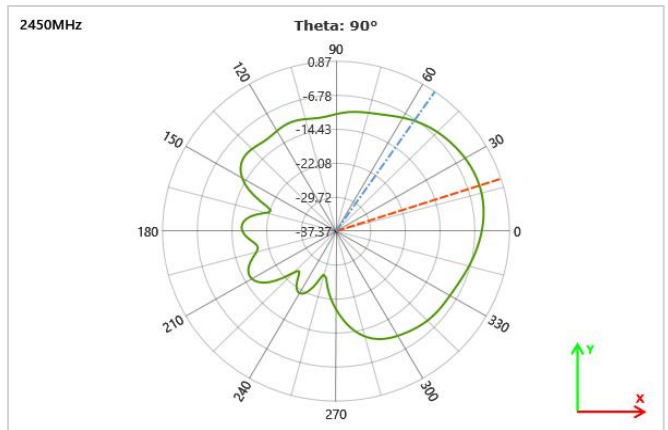
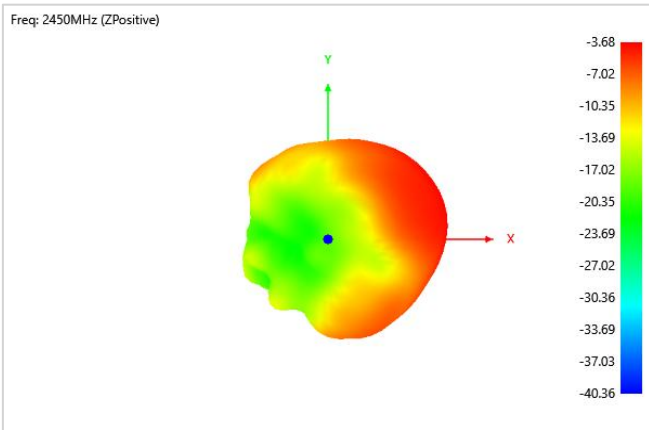
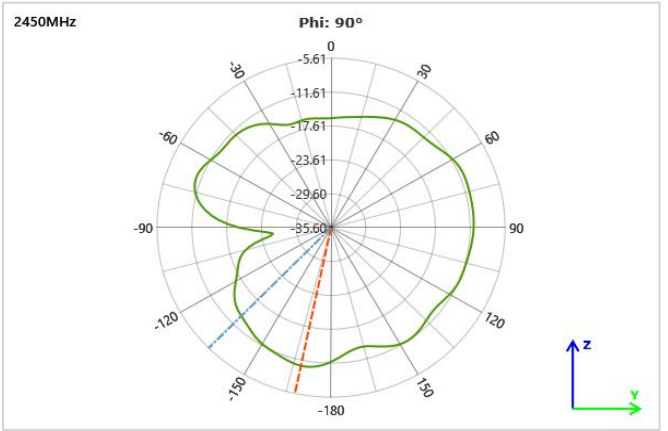
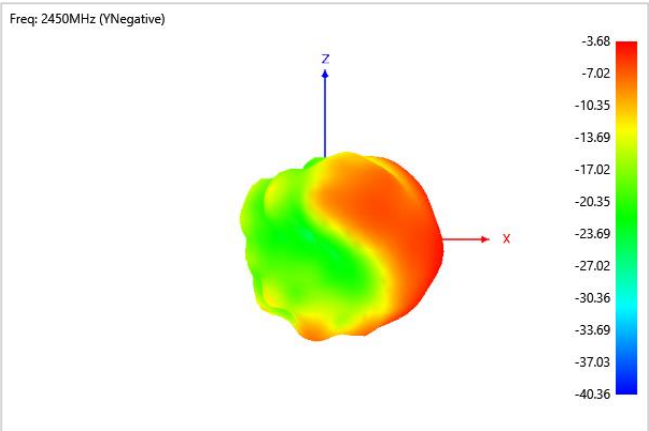
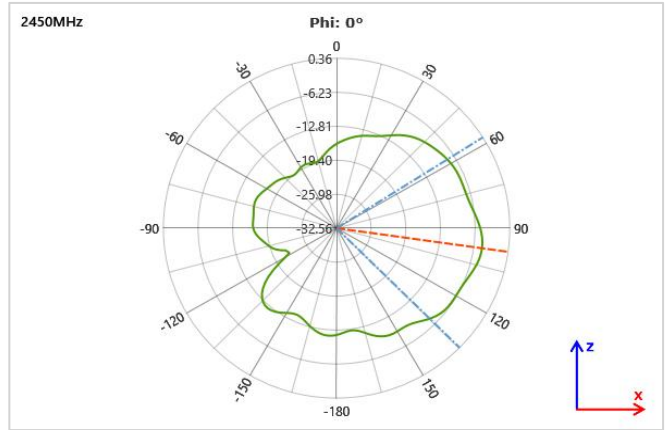
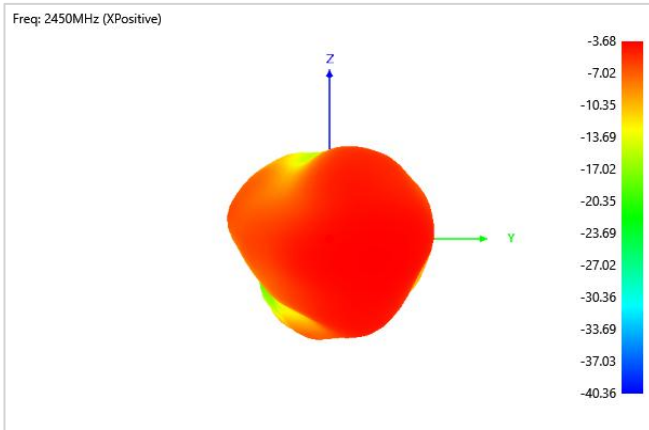
自由状态 free space state 5500MHz



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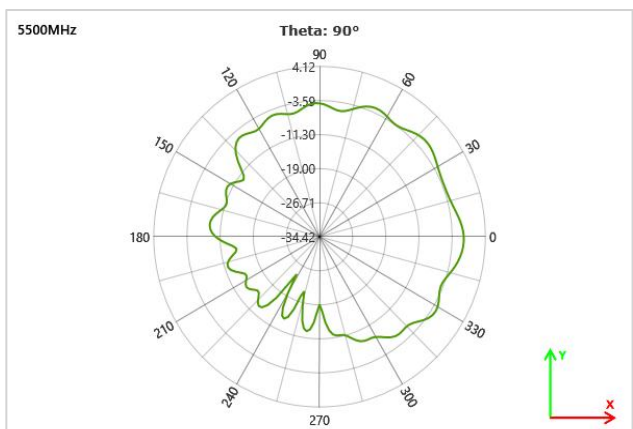
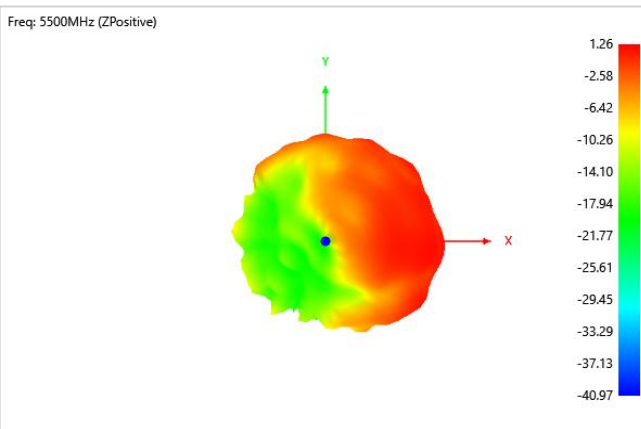
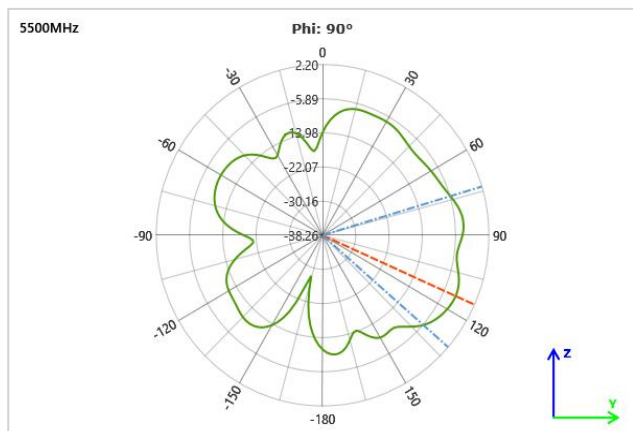
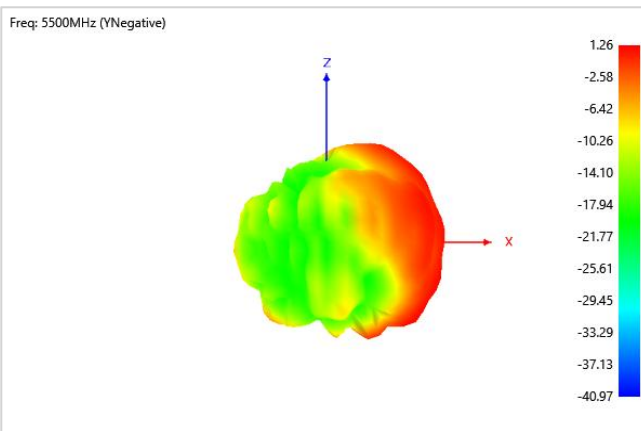
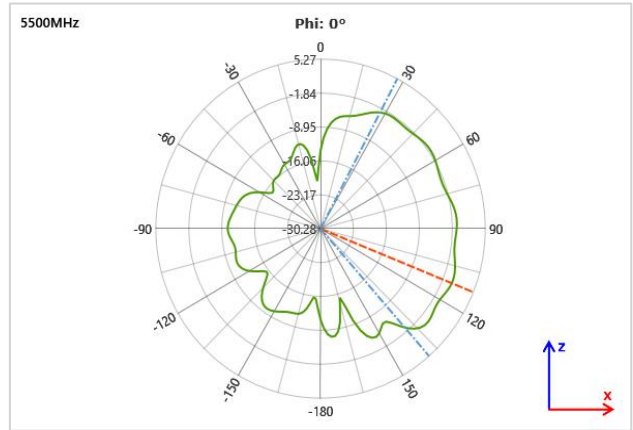
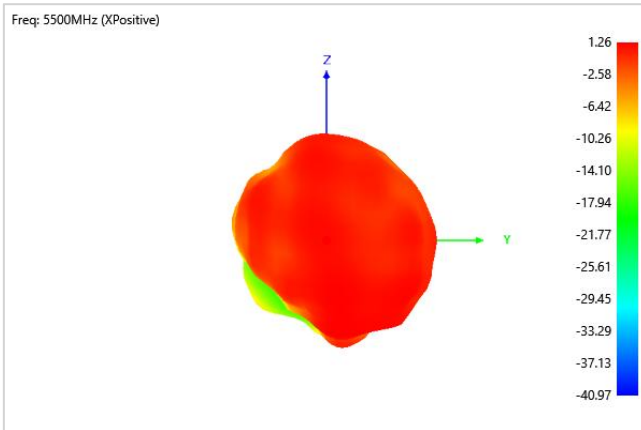
头模状态 die state 2450MHz



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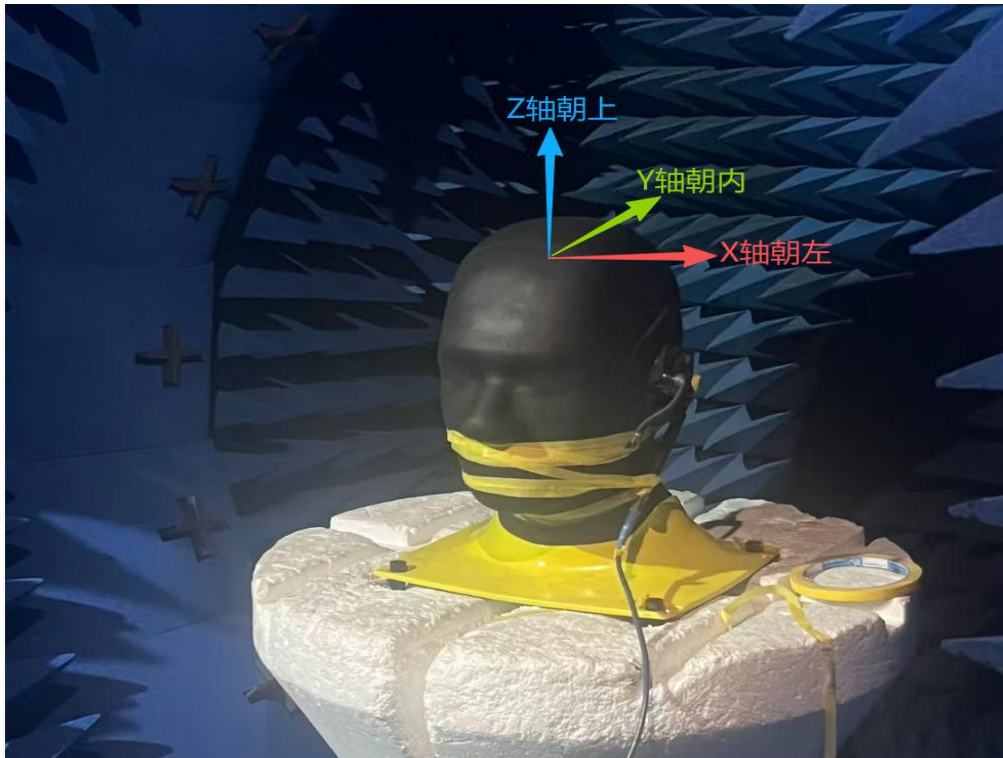
头模状态 die state 5500MHz



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6、暗室坐标系 Darkroom coordinate system



7、结论 conclusion

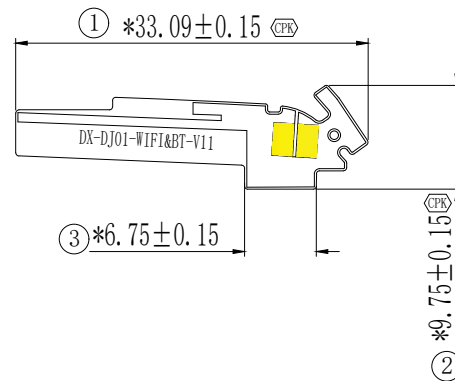
此天线是在客户提供样机基础上设计，电参数和结构性能已达到技术要求，请确认！

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!

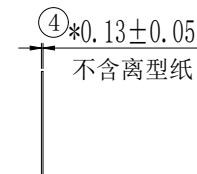
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Shenzhen Daxian Technology Co., Ltd. already possesses the information provided by the proprietary technology, which should be strictly confidential and not allowed to be disclosed to any person or company without the prior written consent of Shenzhen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

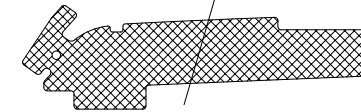
5		6		7		8	
版 本	标 记	更 改 内 容				签 名	日 期



正面



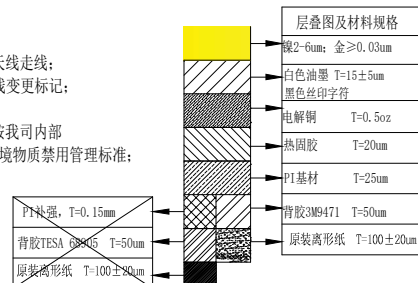
离型纸打断线



反面

技术要求:

1. 正面代表FPC铜铺布线覆盖油墨或覆盖膜部分，背面代表背胶原纸张膜部分；
2. 带“*”尺寸为重点尺寸，带“CPK”需要做CPK的尺寸，“（）”为实配尺寸，“△”为设计变更；
- 未注公差参照公差表；
3. 表面干净，无脏污，无露铜，脱落等不良；
4. 红色线 □ 为FPC的最大外形，绿色线 ■ 为天线走线；黄色线 —— 为离型纸切断线，蓝色线 —— 为天线变更标记；
- 为镀金区，□ 为背胶区，□ 为离型纸手撕位；
5. 满足盐雾实验/附着力学测试等相关可靠性测试，按我司内部可靠性试验标准执行，所有物料均符合我司产品环境物质禁用管理标准；
6. FPC来料按整版方式制作；
7. 产品包装必须干净、整洁，包装过程不允许对产品造成脏污。
- 材料要求，T=0.15mm



层叠图及材料规格	公差表	
铜2-6um; 金≥0.03um	长宽50mm以下规则的外形到外形	±0.15
白色油墨 T=15±5um	长宽50mm以上不规则的外形到外形	±0.20
黑色丝印字符	走线到外形	±0.15
电解铜 T=0.5oz	走线到走线	±0.05
热固胶 T=20um	孔径	±0.10
PI基材 T=25um	孔中心到外形	±0.15
背胶3M9471 T=50um	孔中心到孔中心	±0.10
原装离形纸 T=100±20um	油墨到走线	±0.30
	补焊或背胶到外形	±0.35

机 种	DJ01			名 称	BT天线	审核	周康
项目编码	CD-J01XX-139			R F	胡鹏	批准	张磊
零件编码	1D-J01XX-139-1			结构	周锐斌	日期	2026-08-20
版 本	A1	图框	A4	 深 圳 大 显 科 技 有 限 公 司 Shenzhen Daxian Technology Co., Ltd.			
比 例	1:1	第三视角					
单 位	MM						