

SPECIFICATION



深圳市大显科技有限公司

Shenzhen Daxian Technology Co., Ltd.

墩拓 Sense Lite 左耳蓝牙耳机

DoingTop Sense Lite Left Ear Bluetooth Antenna

产 品 规 格 书

Product Specification

客 户 connection	墩拓 DoingTop	频 段 frequency range	2350 ~ 2550MHz
项目名称 entry name	Sense Lite	版 本 edition	V1.0
物料编号 Material No	1O-WS007-087	颜 色 Color	黑色 Black
客户料号 Customer Item Number			
R F 设计 R F Design	靳 群 Qun.Jin	结构设计 Structural Design	周锐斌 Ruibin.Zhou
品质经理 Quality Manager	胡子寅 ZiYin.Hu	技术总监 Technical Director	张 磊 Lei.Zhang
日 期 Date	2024-12-03		

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

深圳市大显科技有限公司

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一 项目说明 Project Description

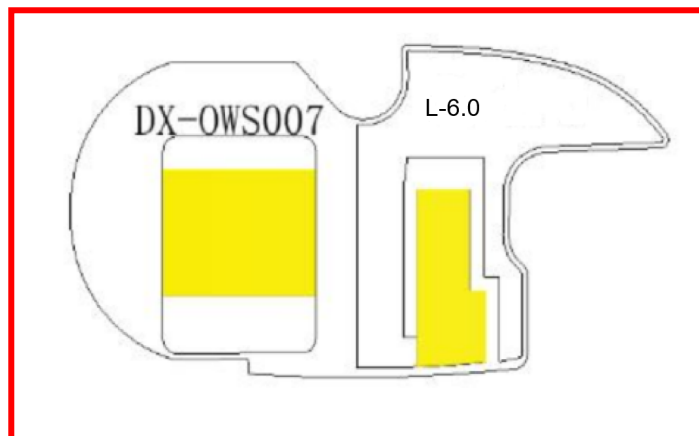
客 户 名: Customer Name:	墩拓 DoingTop
整机类型: Type of complete machine:	蓝牙耳机 Bluetooth headset
天线频段: Antenna band:	2350 ~ 2550MHz
天线形式: Antenna form:	FPC
馈电形式: Feed form:	焊接 soldered
馈脚数量: Number of feed legs:	2 个 Two

二 BT 天线 BT Antenna

1 规格 specifications

本报告主要提供 Sense Lite 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 Sense Lite 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 **2350 ~ 2550 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 2350 and 2550 MHz. The following table shows the electrical performance indicators of large display design and mass production antennas.

Frequency Range	Frequency (MHz)	VSWR
BT	2350 ~ 2550	≤ 2

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 $6 \times 4 \times 4$ (m)

Agilent 8960 E5515c

Network analyzer-R&S ZVL



图 2

Figure 2

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、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 bel

OTA 有源测试 OTA Active Test:

L 边 自由空间状态 L-edge Free space state		
Band	TRP	TIS
0	4.11	-85.45
39	3.32	-84.62
78	2.32	-83.45

L 边 头模状态 L-side Head mold status		
Band	TRP	TIS
0	-2.11	-78.78
39	-2.87	-78.18
78	-3.65	-77.04

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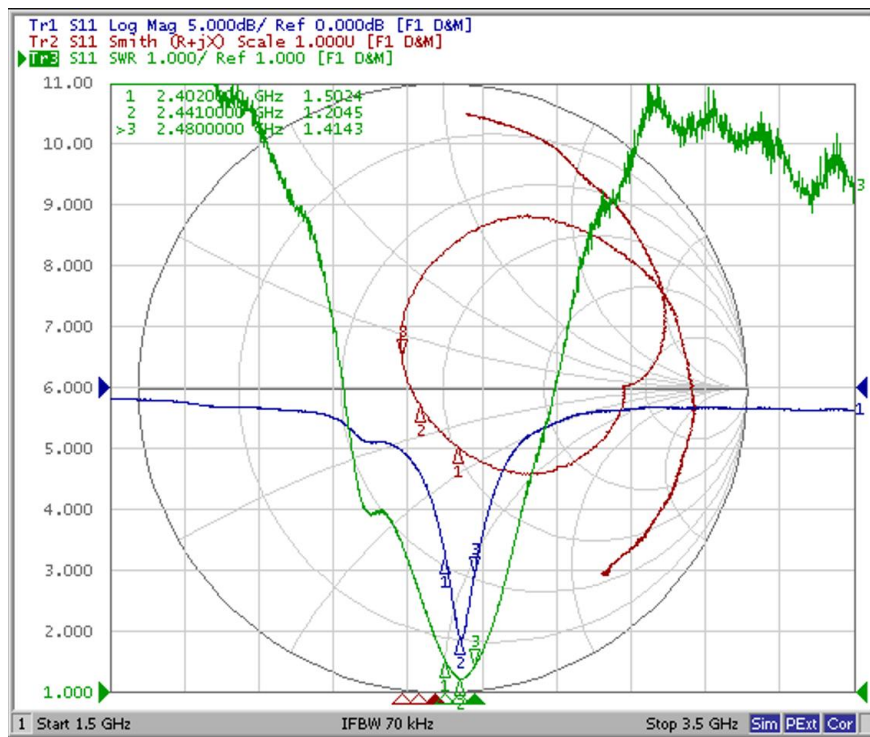
无源效率&增益 Passive efficiency&gain:

L边—自由空间状态 L-edge Free space			
Frequency(MHz)	Gain(dBi)	Efficiency(dB)	Efficiency(%)
2350	-4.91	-8.15	15.32
2360	-4.78	-8.01	15.81
2370	-4.63	-7.94	16.06
2380	-4.43	-7.83	16.47
2390	-4.19	-7.68	17.07
2400	-3.99	-7.61	17.35
2410	-3.91	-7.54	17.62
2420	-3.86	-7.39	18.26
2430	-3.83	-7.31	18.56
2440	-3.61	-7.28	18.71
2450	-3.31	-7.12	19.42
2460	-3.34	-7.06	19.69
2470	-3.42	-7.07	19.61
2480	-3.52	-7.12	19.4
2490	-3.67	-7.22	18.97
2500	-3.72	-7.39	18.24
2510	-3.79	-7.51	17.73
2520	-3.88	-7.62	17.29
2530	-4.01	-7.82	16.51
2540	-4.16	-7.99	15.88
2550	-4.24	-8.24	15.01

L边—头模状态 L-side Head mold			
Frequency(MHz)	Gain(dBi)	Efficiency(dB)	Efficiency(%)
2350	-7.3	-12.34	5.83
2360	-7.22	-12.19	6.04
2370	-7.19	-12.11	6.15
2380	-7.16	-11.99	6.32
2390	-7.04	-11.91	6.45
2400	-7.02	-11.88	6.49
2410	-7.03	-11.86	6.51
2420	-7.2	-11.79	6.62
2430	-7.28	-11.83	6.56
2440	-7.14	-11.87	6.5
2450	-6.85	-11.79	6.62
2460	-6.9	-11.8	6.6
2470	-6.96	-11.85	6.53
2480	-7.06	-11.91	6.44
2490	-7.16	-11.99	6.33
2500	-7.11	-12.11	6.15
2510	-7.02	-12.21	6.01
2520	-6.91	-12.28	5.92
2530	-6.89	-12.42	5.73
2540	-6.94	-12.49	5.63
2550	-6.85	-12.62	5.48

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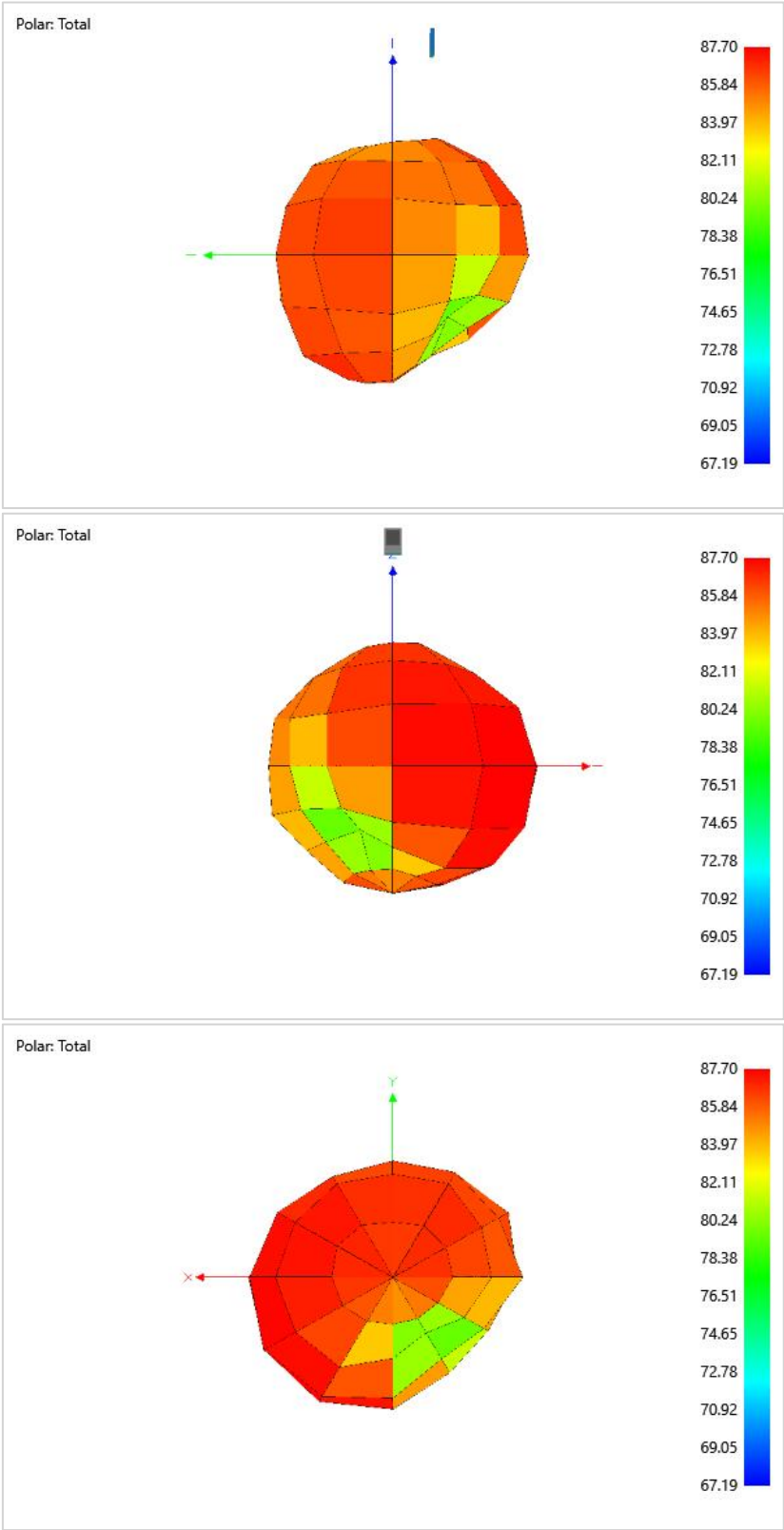
4、VSWR 参数图 VSWR parameter diagram



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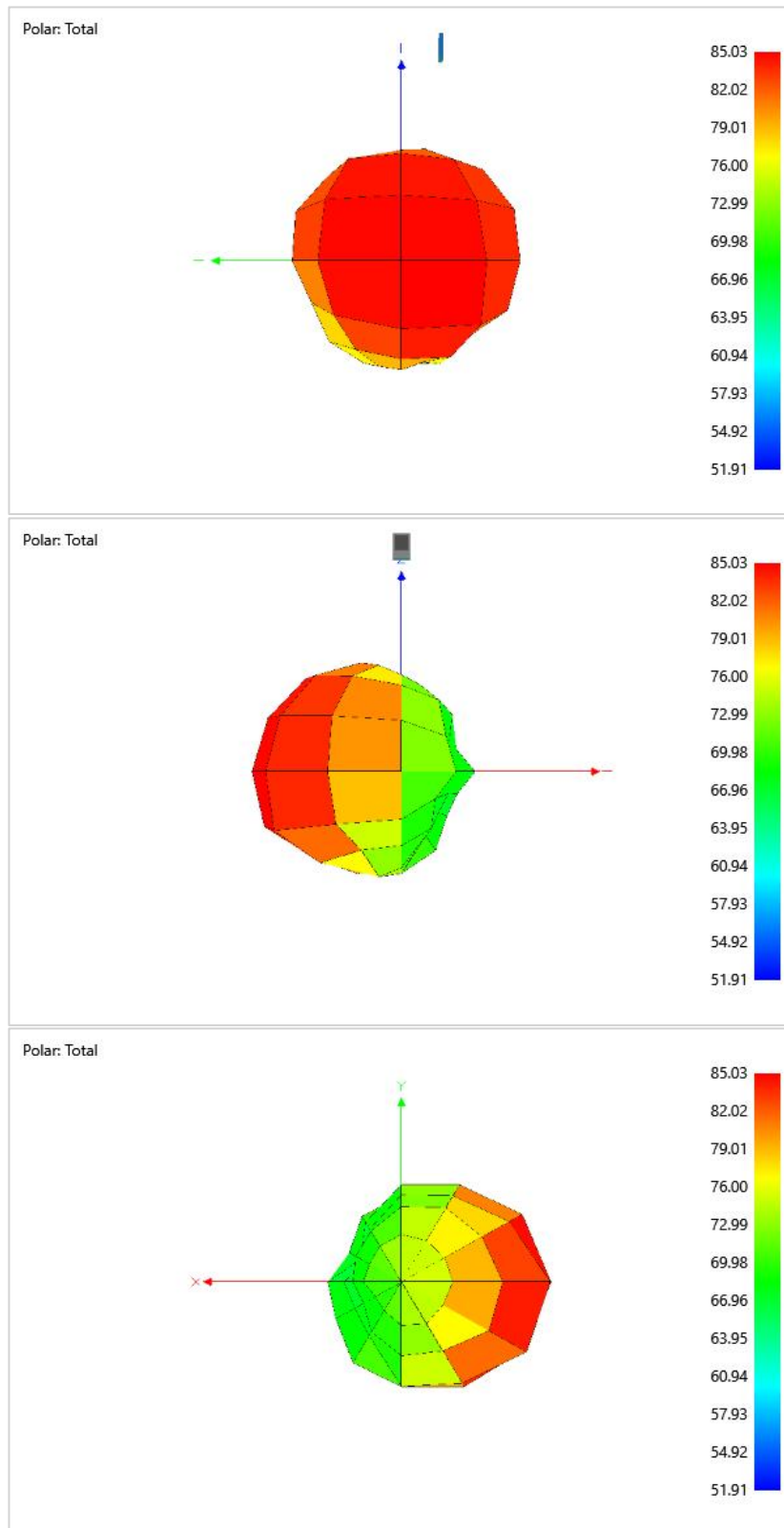
5、有源 OTA 测试 3D 辐射场型图-: Active OTA Test 2D/3D Radiation Field Patterns:

L 边 自由空间状态 L-edge Free space state



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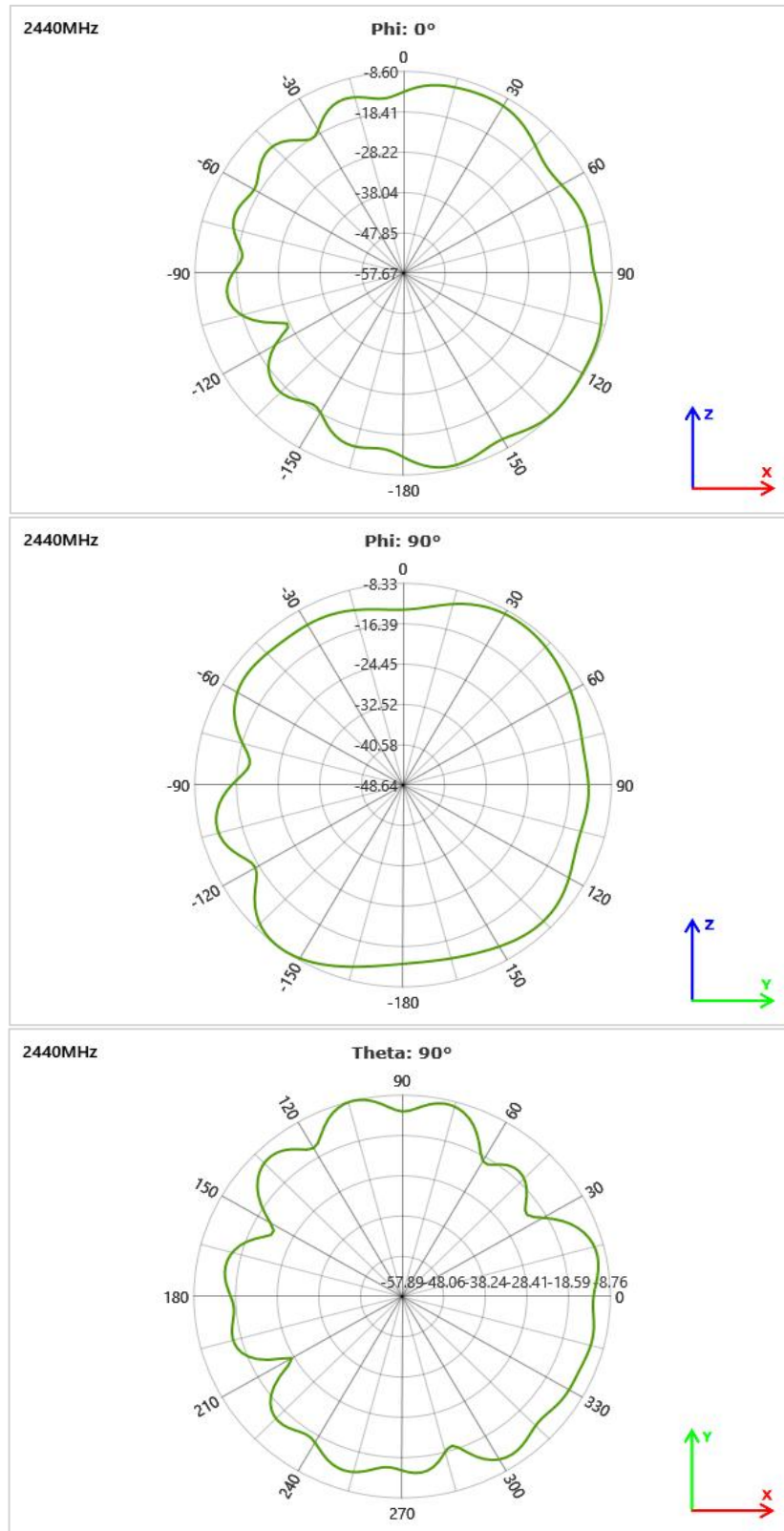
L 边 头模状态 L-side Head mold status



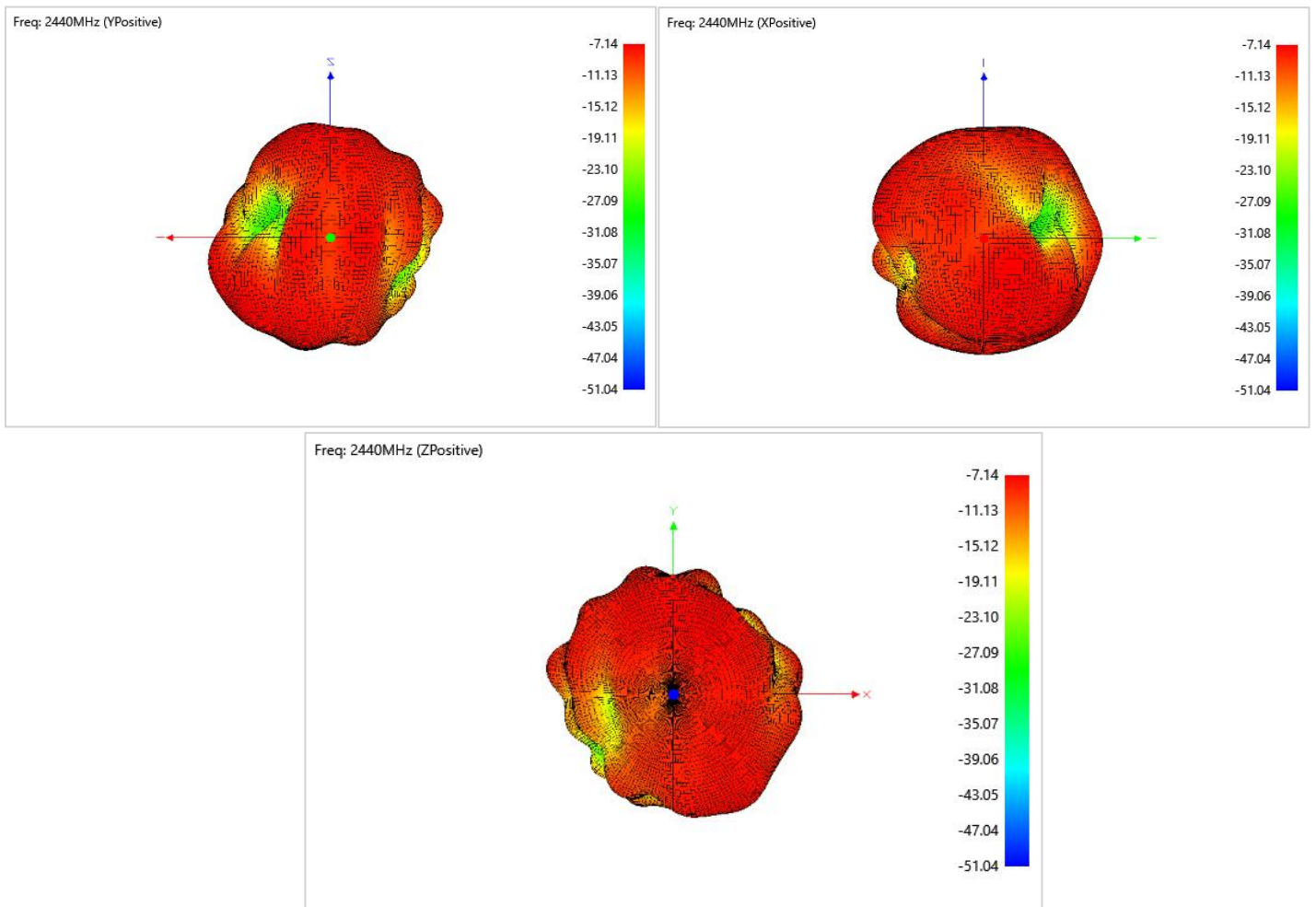
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6、无源场型图-L 边 头模状态

Passive field pattern diagram: L-side Head mold status



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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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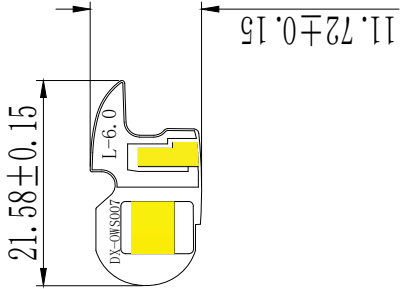
1		2	3		4		5		6	
					0~10	10~30	30~50	50~	角度 (Angle)	⊙
					0.05	0.10	0.15	0.20	1°	0.02
										⊥
										0.03
										0.05

A

B

C

D

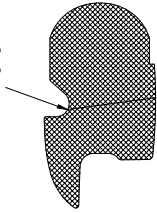


正面 (TOP)

注:

- (Note:)
1. “*”为重点尺寸；
 1. “*” for the key size;
 2. FPC材料: 电解铜, 一对半；
 - (2. FPC Material Science: A pair of half base copper foil)
 3. 反面背胶3M9471；
 - (3. 3m300 series double-sided adhesive tape is pasted on the back of the product)
 4. 未标公差尺寸, 模具冲出尺寸公差为±0.15；
 - (4. No tolerance dimension is marked, and the tolerance of die stamping dimension is ± 0.15)
 5. 画 为镀金区, 画 为铜箔区, 画 的为背胶区.
 - (5. Gold plated area, Copper foil area, Gum;)

Release paper interruption line



反面 (BOT)

 深圳大显科技有限公司 Shenzhen Daxian Technology Co., Ltd.									
机 型 (Machine model)	Sense Lite (MS007)		产品颜色 (Product Color)		黑色 (black)		日期 (date)		2024/12/03
	项目编码 (Project Code)		表面处理 (Weld surface treatment)		NA		结构 (MD)		RuibinZhou
	零件名称 (Part Name)		单位 (unit)	mm	比例 (scale)	1:1	射频 (RF)		PengHu
	零件编号 (Part Number)		第三视角 (Third perspective)		审核 (check)		批准 (ratify)		KangZhou
	材质 (material)		PI Electrolytic copper		保存路径 (Save Path)		当前版本 (current version)		LeiZhang
版 本 (edition)	描述 (describe)		日期 (date)		备注 (Note)		A		