

SPECIFICATION



深圳市大显科技有限公司

Shenzhen Daxian Technology Co., Ltd.

朝阳TWS-2198 左耳（不可拆版）蓝牙天线

Chaoyang TWS-2198 Left Ear (Non-detachable Version)

BT Antenna

产 品 规 格 书

Product Specification

客 户 connection	朝阳 Chaoyang	频 段 frequency range	2400MHz~2500MHz
项目名称 entry name	TWS-2198	版 本 edition	L19
物料编号 Material No	1T-WS2199-134	颜 色 Color	黑色 Black
客户料号 Customer Item Number	411020000431		
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	2026-07-15		

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

[illegible]

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一 项目说明 Project Description

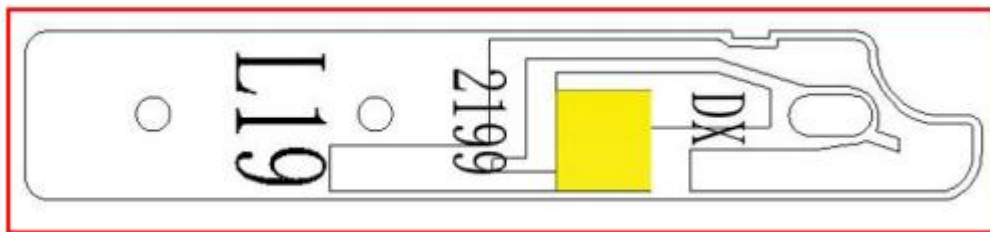
客户名: Customer Name:	朝阳 Chaoyang
整机类型: Type of complete machine:	蓝牙耳机 Bluetooth earphones
天线频段: Antenna band:	2400 ~ 2500 MHz、
天线形式: Antenna form:	FPC
馈电形式: Feed form:	焊接 weld

二 TWS-2198 天线组件 Antenna assembly

1 规格 specifications

本报告主要提供 TWS-2198 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 TWS-2198 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的指标。

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

Frequency Range	Frequency (MHz)	VSWR
BT	2400 ~ 2500	≤ 3

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

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

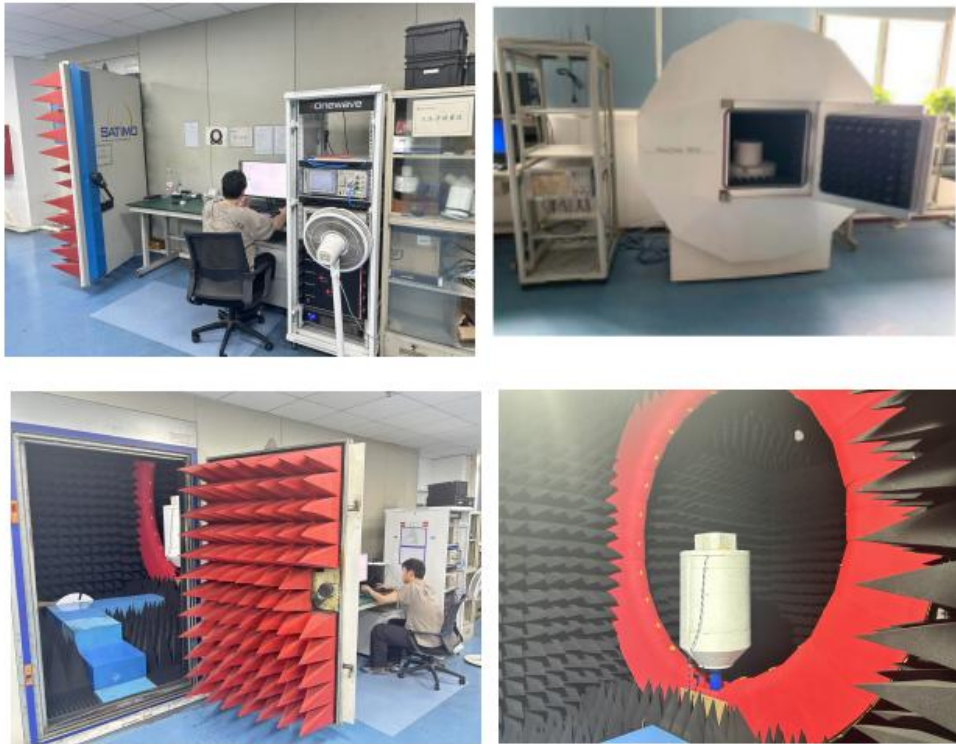


图 2

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 → 测试治具

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

自由空间有源测试不可拆版: **Non-detachable Version for Free Space Active Test**

L (右耳) 自由空间 L (Left Ear), Free Space			
BAND	CH	TRP	TIS
BT	0	5.69	-86.16
	39	6.38	-86.86
	78	6.6	-86.51

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头模有源测试不可拆版: Non-detachable Version for Phantom Head Active Test

L (右耳) 头模状态 L ((Left Ear), Phantom Head Condition)			
BAND	CH	TRP	TIS
BT	0	-0.79	-79.56
	39	0.36	-80.27
	78	-0.62	-79.38

无源效率测试不可拆版: Non-detachable Version for Passive Efficiency Test

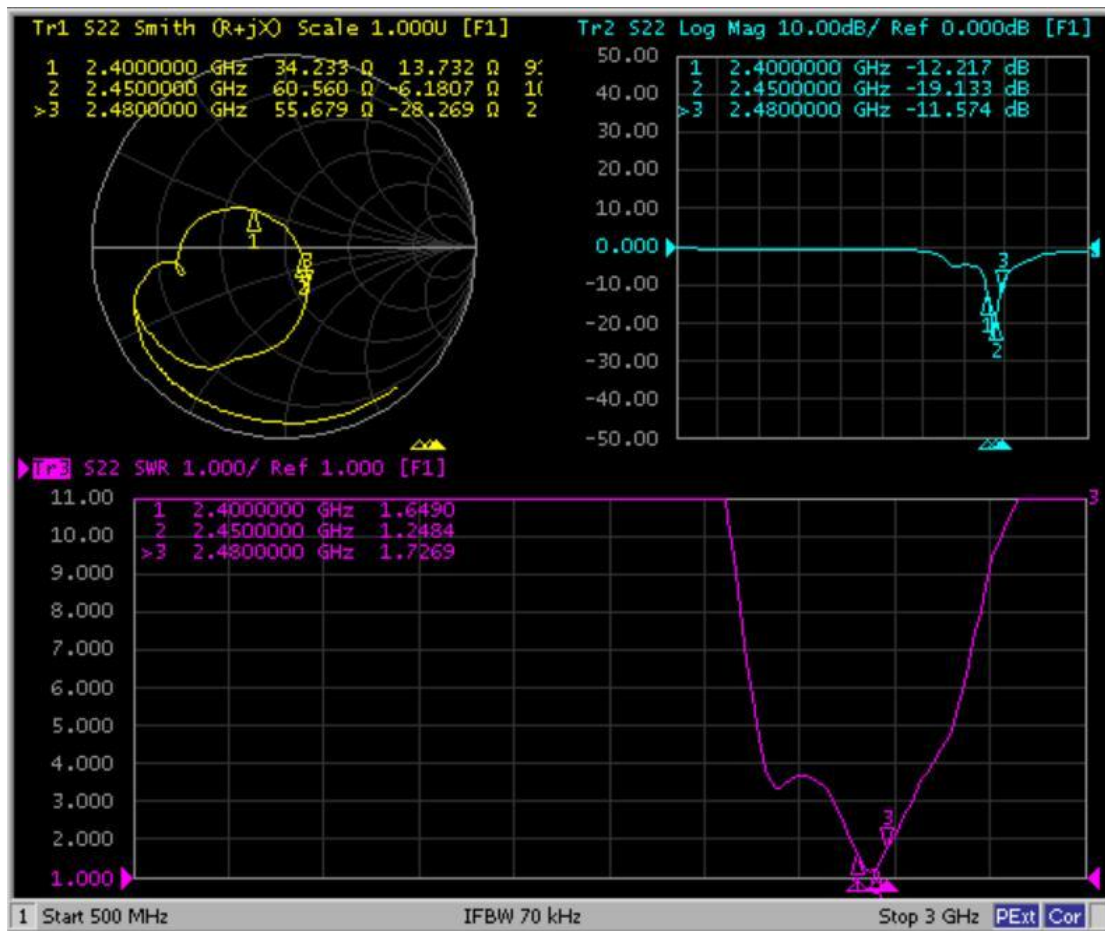
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
2400	17.13	-7.66	-6.45
2410	17.5	-7.56	-6.25
2420	17.91	-7.46	-5.6
2430	18.16	-7.4	-4.62
2440	18.53	-7.32	-4.1
2450	18.78	-7.26	-4.17
2460	18.92	-7.23	-4.54
2470	18.66	-7.29	-4.63
2480	18.5	-7.32	-4.67
2490	18.34	-7.36	-4.84
2500	18.17	-7.4	-4.88

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4、VSWR 参数图不可拆版 Non-detachable Version of VSWR Parameter Plot

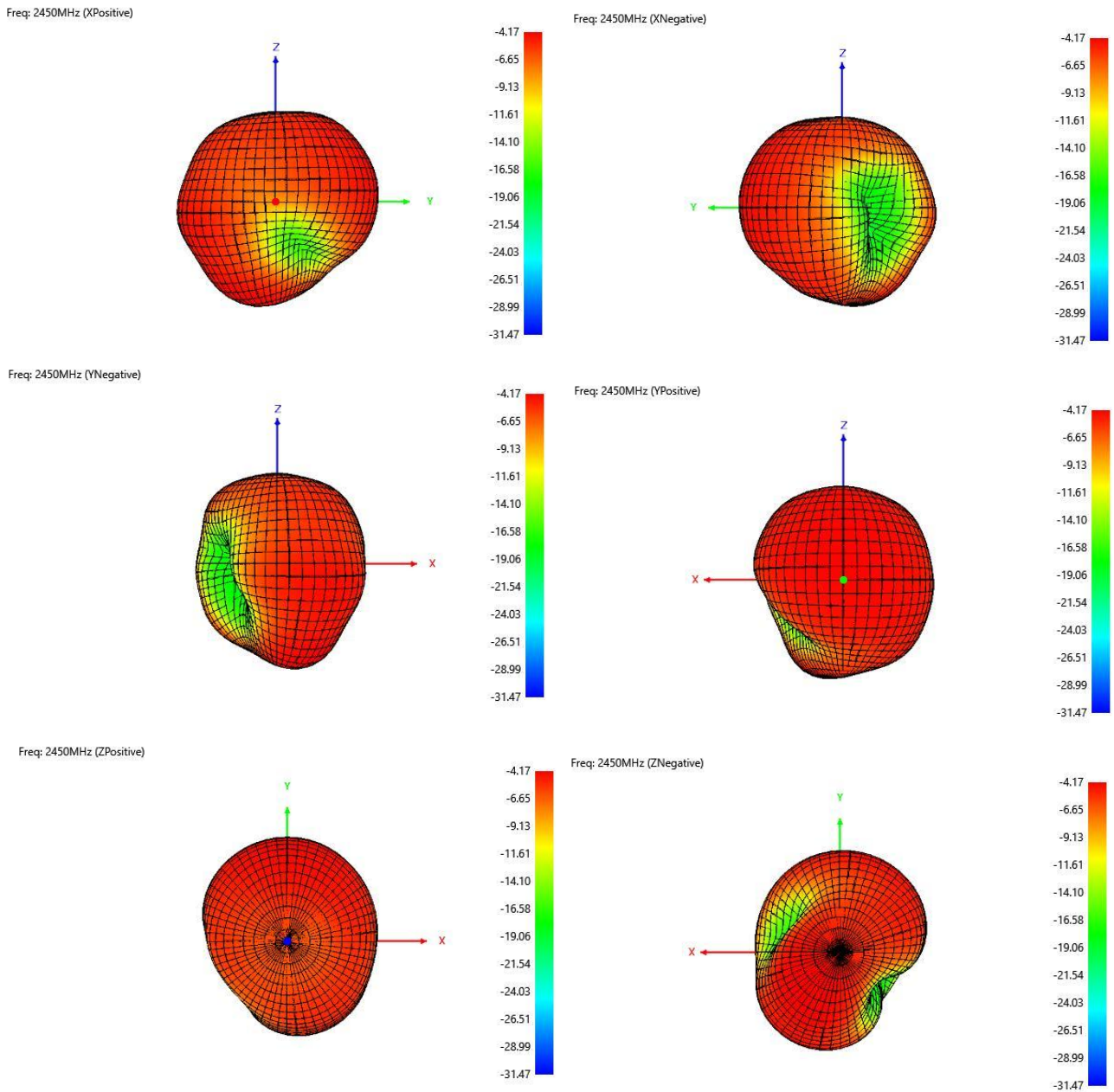


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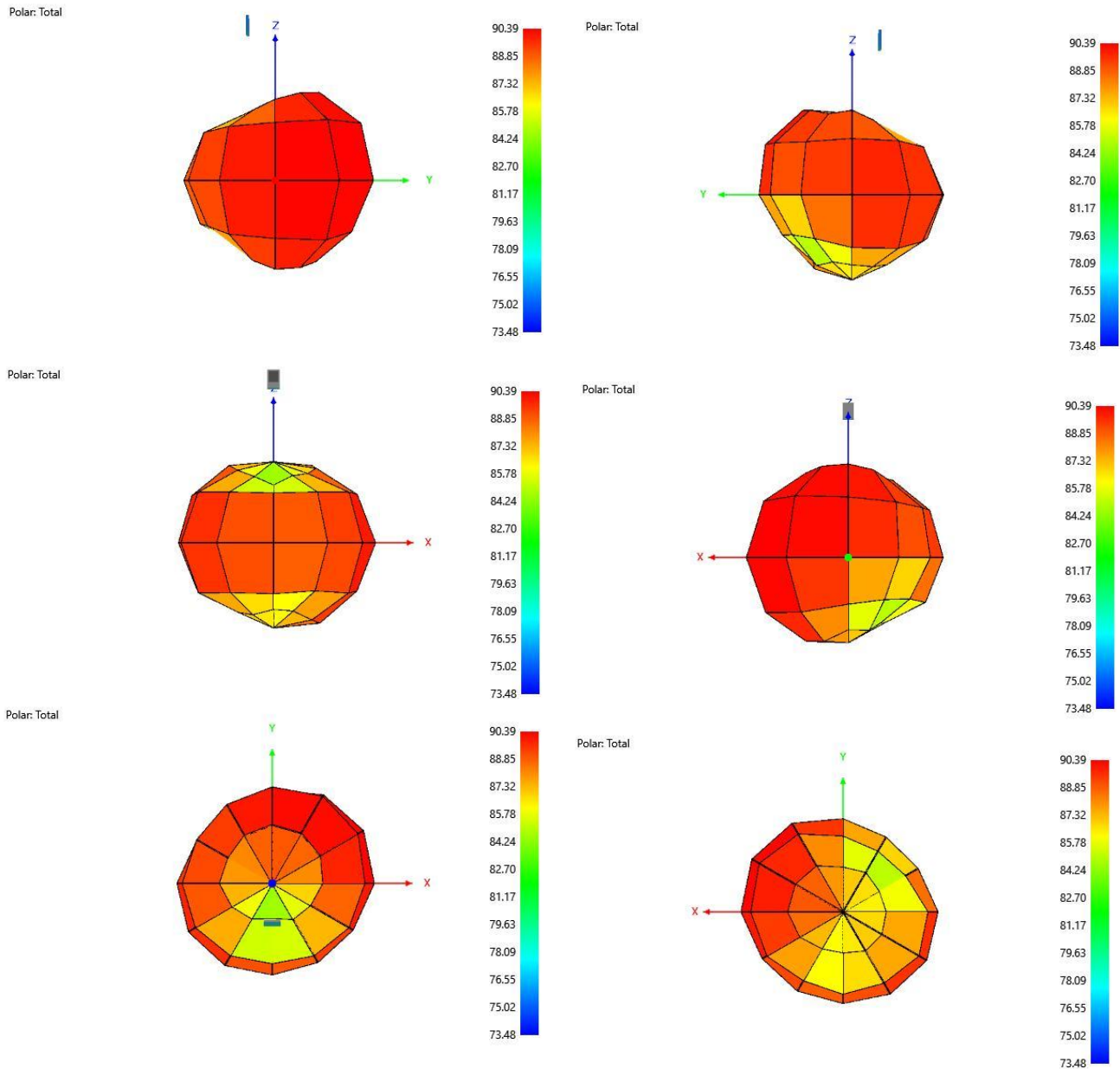
5、无源效率场型图不可拆版 Non-detachable Version of Passive Efficiency Radiation Pattern Plot



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6、有源效率场型图不可拆版 Non-detachable Version of Active Efficiency Radiation Pattern Plot



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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