

深圳市沃莱特电子有限公司

样品承认书

SAMPLE APPROVAL SHEET

部品信息 Product Information :

客户 (Customer)	Acoustic Innovation (Huizhou) Co., Ltd.
部品名称 (Material Description)	BTA-1548 BT Antenna
客户料号 (Customer's Part number)	
部品规格 (Specifications)	FPC (50.64*26.98mm) + black coaxial cable (φ0.81*58mm) + second-generation connector + soldering
料号 (Supplier's Part number)	136-A1548-10A
送样日期 (Date)	2025-8-8

签核：

Prepared By	Checked By	Approved By
张登桥	李岳鹏	张相亭

客户签核：

Prepared By	Checked By	Approved By
承认结果： ☒ 完全接受 (Full Approval) ☐ 条件接受 (Conditional Approval) ☐ 不合格 (Unqualified) ☐ 其它 (Others) :		

本样品承认书我司确保属实，如经贵司研发部门确认签核后，请以最快速度回传给我司。如有其它原因，请以

书面形式通知我。

This sample approval sheet is guaranteed to be true. If it is confirmed by your R&D department, please send it back to us as soon as possible. If there are other reasons, please inform us in writing.

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1 规格 SPEC

本报告主要提供天线 BTA-1548 BLE 天线 各项电气和结构性能参数的测试状况。

This report mainly provides the test status of various electrical and structural performance parameters of the antenna

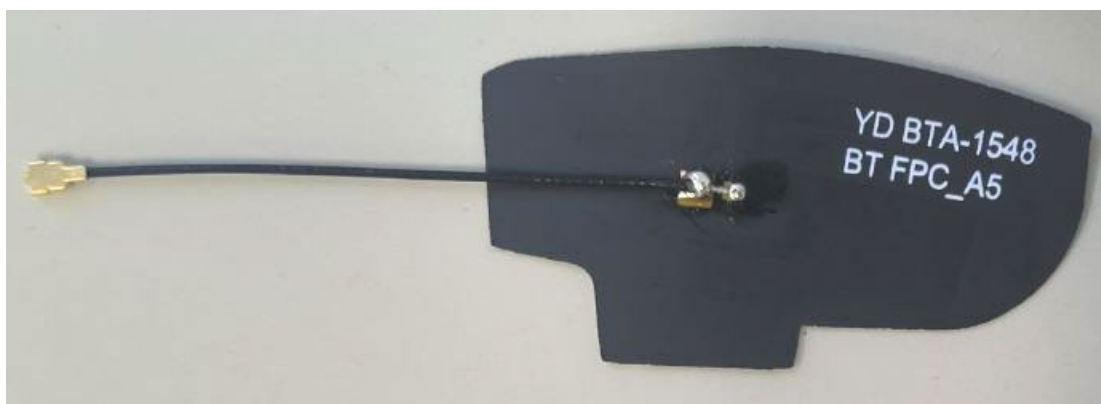


图 1 天线 Antenna

1.1 电气规格标准 Electrical Specifications

1.1.1 电性能指标 Electrical Performance Specifications

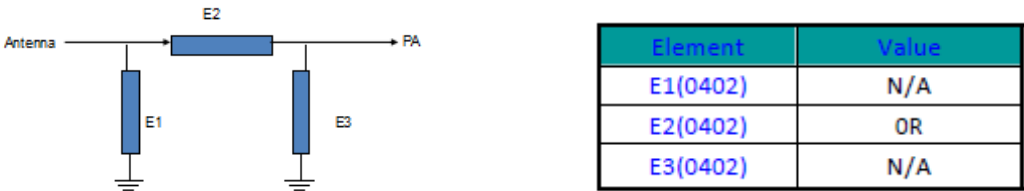
天线工作频段在 2400-2480MHz 。下表是我司设计天线的电性能指标。

The antenna operates in the 2400-2480MHz frequency band. The following table lists the electrical performance specifications of our designed antennas.

天线 Antenna	BTA-1548 BT Antenna
频段 frequency band	2400-2480MHz
驻波比 Standing Wave Ratio	< 2

效率 Efficiency	> 50%
阻抗 Impedance	50 ohm
极化方式 Polarization	线极化 Linear polarization

1.1.2 匹配电路图 Matching circuit diagram



2 测试 Testing

天线用客户提供的样机进行调试及测试。

The antenna is debugged and tested using the prototype provided by the customer.

2.1 无源 S11 的测试 Passive S11 test

2.1.1 测试连接 Test the connection

无源 S11 测试装置依次的连接为：网络分析仪→测试线→测试治具。

The passive S11 test device is connected in the following order:
network analyzer → test line → test fixture.

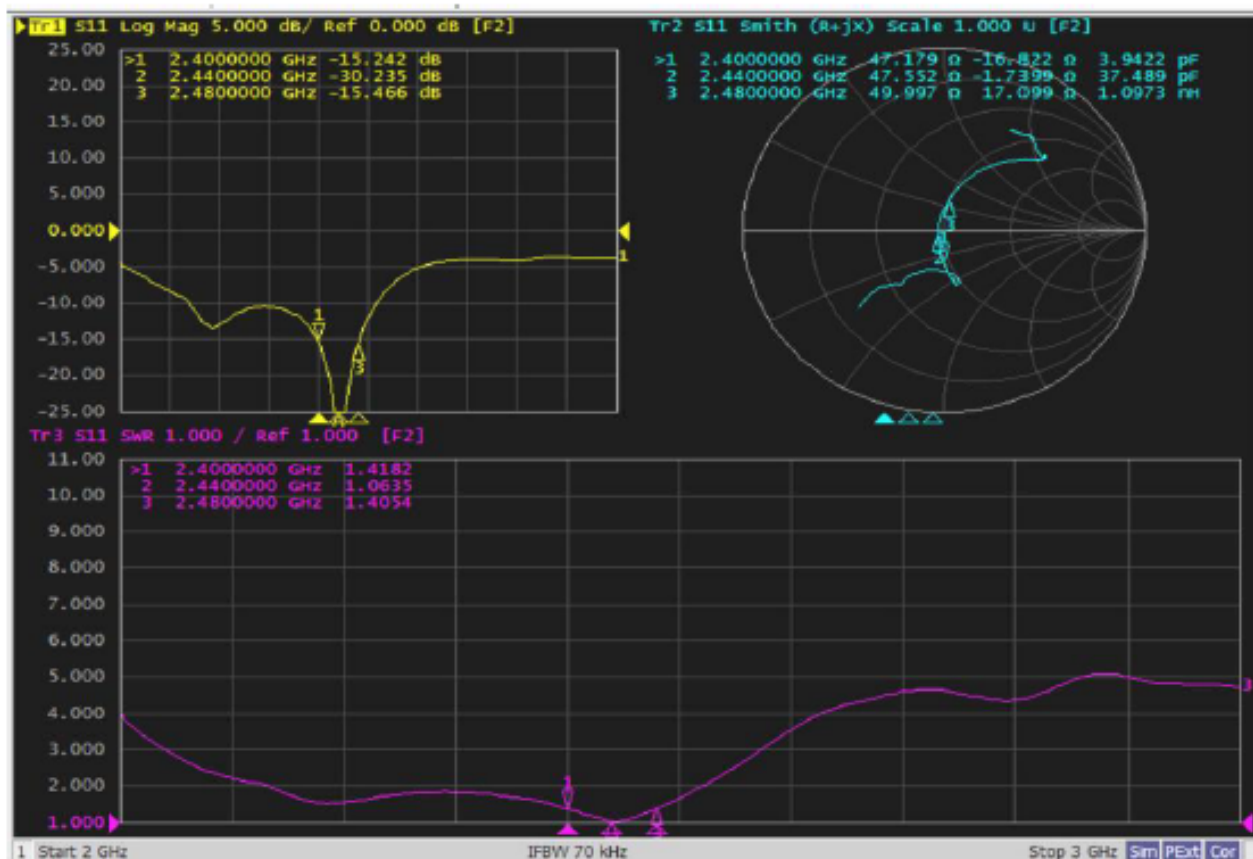
2.1.2 无源 S11 Passive S11

下表所示为天线工作频段边缘频点的驻波比数值。测试所得的 Return Loss, VSWR 相关波形

The following table shows the VSWR values at the edge of the antenna's operating frequency band.

图如下图所示。The figure is shown below.

频率 (MHz)	2400	2440	2480
VSWR	1.41	1.06	1.4
Return Loss	-15.24	-30.23	-15.46



2.2 增益及效率的测试 Gain and Efficiency Testing

2.2.1 测试的场地 Test Site

微波暗室：测试频率范围为 400MHz—6GHz

Microwave Anechoic Chamber: Test frequency range 400 MHz–6 GHz

2.2.2 测试的仪表 Test Instruments

网络分析仪、标准喇叭天线、多探头近场天线测试系统、测试电脑等。

Network analyzer, standard horn antenna, multi-probe near-field antenna test system, test computer, etc.

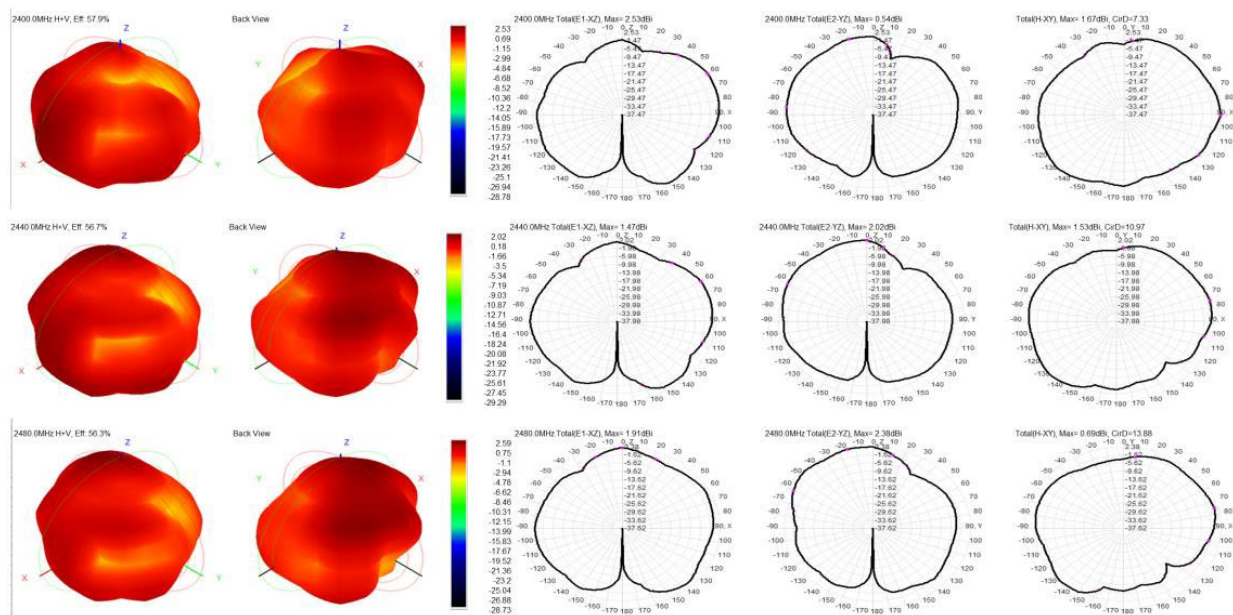
2.2.3 测试结果 Test Results

在微波暗室中，测试的与效率及增益相关的数值如下表所示

The following table shows the values related to efficiency and gain measured in a microwave anechoic chamber.

Frequency(MHz)	Gain(dBi)	Directivity(dBi)	Efficiency(%)
2400	3.14	5.97	52.20%
2410	2.85	5.58	53.30%
2420	2.58	5.25	54.20%
2430	2.33	5.00	54.00%
2440	2.16	4.81	54.30%
2450	1.87	4.54	54.10%
2460	2.17	4.91	53.30%
2470	2.59	5.24	54.30%
2480	2.74	5.40	54.20%
2490	2.68	5.38	53.60%
2500	2.71	5.41	53.80%

2.2.4 无源辐射方向图 Passive radiation pattern



2.3 有源测试 Active Testing

2.3.1 测试结果 Test Results

Channel	TRP (dBm)	TIS (dBm)
0	0.44	-93.26
39	0.40	-92.34
78	0.63	-92.17

2.4 测试环境 Test environment

Testing Condition

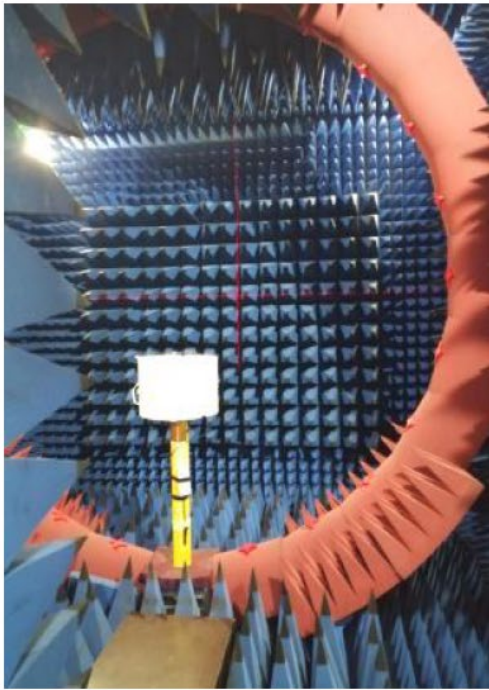
Environment Parameter	Ambient Pressure	Temperature	Voltage	Relative Humidity
Normal Temperature. Normal Voltage (NTNV)	100 to 102 Kpa	23.0°C	AC 220V	55.5%

List of Equipment

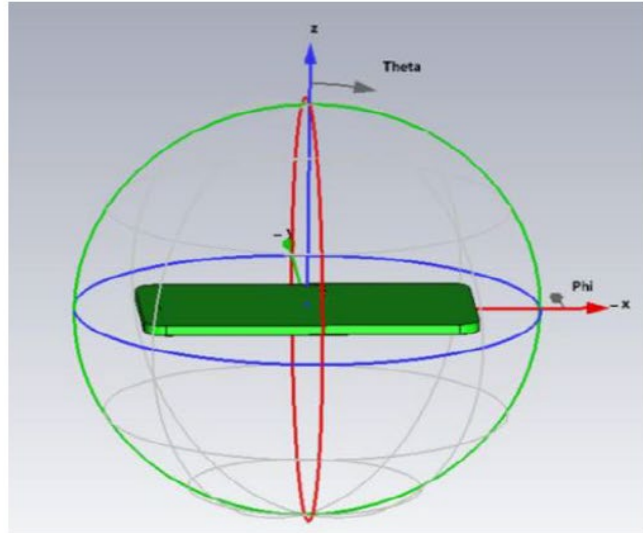
DescmDtion	Manufacturer	Model	Serial No	Cal. Date	Cal. Due
Network Analyzer	Agilent	E5071B	ITM00940714	2024.11.04	1 year
CMW500 WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW500	174937	2024.11.04	1 year

Test set up

4*4*3.5 TEM24 多探头测试系统



Typical Setup for TEM24



Test Personnel/Engineer: _____李岳鹏_____

Test Date(s): _____20250808_____

3、结论 Conclusion

此天线是在客户提供样机基础上设计，上述电性能参数基于测试样机环境处理条件下测试，电参数和结构性能已达到技术要求。

This antenna was designed based on a customer-provided prototype. The electrical performance parameters listed above were tested under the test prototype's environmental conditions. The electrical parameters and structural performance have met the technical requirements.