

深圳市沃莱特电子有限公司

Shenzhen World Elite Electronic Co. LTD.

样品承认书

SAMPLE APPROVAL SHEET

部品信息：Product Information:

客户（Customer）	广州番禺巨大汽车音响设备有限公司 Guangzhou Panyu Juda Car Audio Equipment Co., Ltd.
部品名称（Material Description）	VX989 BT 天线 VX989 BT Antenna
客户料号（Customer's Part number）	
部品规格（Specifications）	FPC（32.29*12.68mm）+黑色同轴线（φ1.13*155mm）+焊接 FPC（32.29*12.68mm）+Black Coaxial Cable（φ1.13*155mm）+Welding
料号（Supplier's Part number）	136-VX989-10A
送样日期（Date）	2025-6-6

签核：Supplier:

拟制 Prepared By	审核 Checked By	批准 Approved By
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客户签核：Customer Approval:

承认 Accepted By	审核 Checked By	批准 Approved By
承认结果：Results: ☐ 完全接受（Full Approval） ☐ 条件接受（Conditional Approval） ☐ 不合格（Unqualified） ☐ 其它（Others）：		

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目录 Contents

1、规格 Specification.....	3
1.1 电气规格标准 Electrical specification standard.....	3
1.1.1 电性能指标 Electrical Specifications.....	3
1.1.2 匹配电路图 Antenna Matching Network.....	3
2、测试 Test.....	3
2.1 无源 S11 参数的测试 Test of passive S11.....	4
2.1.1 测试连接 Test connection.....	4
2.1.2 无源 S11 Passive S11.....	4
2.2 增益及效率的测试 Gain and efficiency test.....	4
2.2.1 测试的场地 Test Position.....	4
2.2.2 测试的仪表 Test equipment.....	4
2.2.3 测试结果 Results Summary.....	5
2.2.4 无源辐射方向图 Radiation Pattern Results.....	5
3、结论 Conclusion.....	6
4、产品结构图纸 Part Drawing.....	7

1 规格 Specification

本报告主要提供天线 VX989 BT 天线 各项电气和结构性能参数的测试状况。

This report mainly provides the testing status of various electrical and structural performance parameters of VX989 BT Antenna.



图 1 天线 Antenna

1.1 电气规格标准 Electrical specification standard

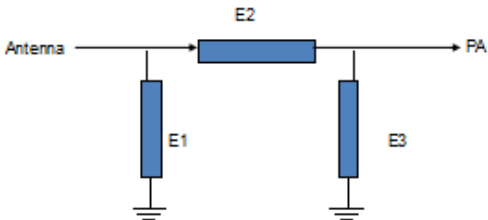
1.1.1 电性能指标 Electrical Specifications

天线工作频段在 2400-2500MHz。下表是我司设计天线的电性能的指标。

The antenna operates in the 2400-2500 MHz. The following table is the electrical performance index of the antenna designed by our company.

天线 Antenna	VX989 BT 天线 VX989 BT Antenna
频段 Frequency Range	2400-2500MHz
驻波比 VSWR	< 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 Antenna Matching Network



Element	Value
E1(0402)	N/A
E2(0402)	N/A
E3(0402)	N/A

2 测试 Test

天线用客户提供的样机进行调试及测试。

The antenna was debugged and tested with the prototype provided by the customer.

2.1 无源 S11 的测试 Test of passive S11

2.1.1 测试连接 Test connection

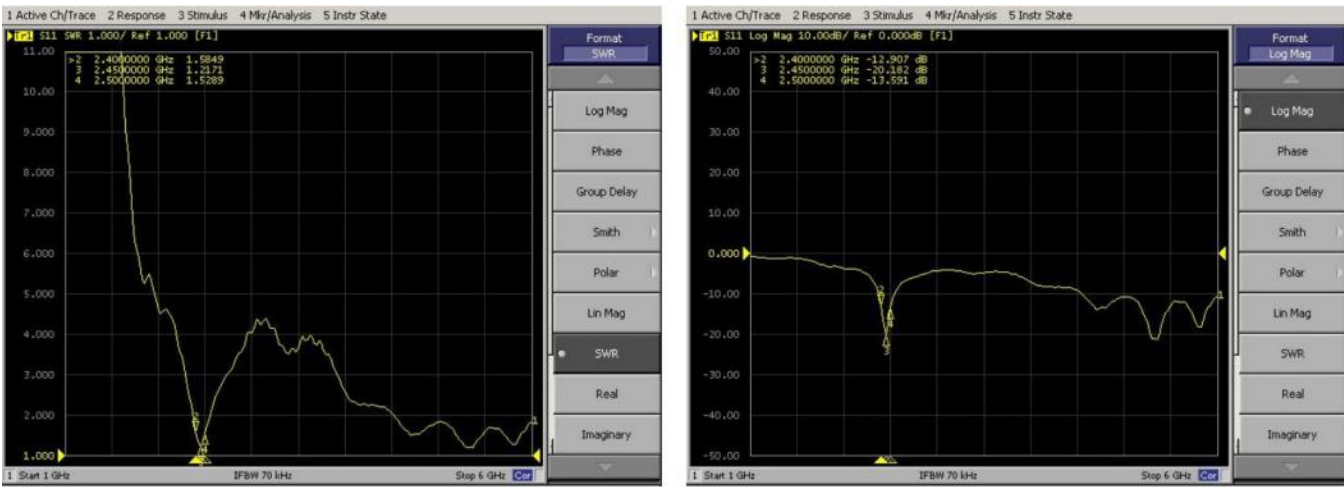
无源 S11 测试装置依次的连接为：网络分析仪→测试线→测试治具。
The passive S11 test device is connected as follows: Network Analyzer → Test Line → Test Fixture.

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 相关波形图如下图所示。

The following table shows the standing wave ratio values of the edge frequency points of the antenna operating frequency band. The waveform of Return Loss and VSWR obtained by the test is shown as follows.

Frequency(MHz)	2400	2450	2480
VSWR	1.58	1.21	1.52
Return Loss	-12.90	-20.18	-13.59



2.2 增益及效率的测试 Gain and efficiency test

2.2.1 测试的场地 Test Position

微波暗室：测试频率范围为 400MHz—6GHz
Microwave anechoic chamber, the test frequency range is 400MHz-6GHz.

2.2.2 测试的仪表 Test equipment

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

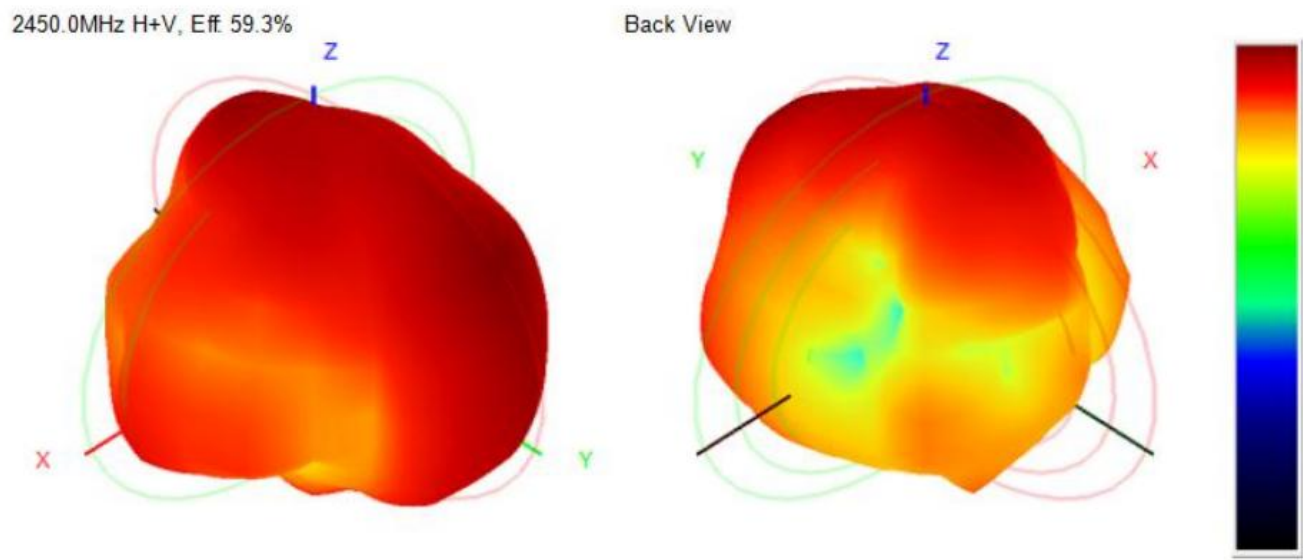
2.2.3 测试结果 Results Summary

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.

In the microwave anechoic chamber, the measured values related to efficiency and gain are shown in the table below.

Frequency(MHz)	Gain(dBi)	Efficiency(%)
2400	2.46	54.83
2410	2.60	55.69
2420	2.74	56.83
2430	2.83	57.64
2440	2.90	58.72
2450	2.95	59.28
2460	2.89	59.73
2470	2.96	58.11
2480	2.87	59.16
2490	2.64	58.88
2500	2.54	57.49

2.2.4 无源辐射方向图 Radiation Pattern Results



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，请确认！

This antenna is designed on the basis of the prototype provided by the customer. The above electrical performance parameters are tested under the environmental treatment conditions of the test prototype. The electrical parameters and structural performance have met the technical requirements. Please confirm!

4、产品结构图 Part Drawing

