

产品规格书

Product specification

客户

CUSTOMER:

SHENZHEN FREEDCONN (FDC) Electronics Co., Ltd.

产品名称

PRODUCTS:

321610—X6 SMD

客户料号

PART NO:

产品型号

Spec.:

E. 6. 034

日期

Data:

2024. 7. 23

供应商

SUPPLIER

拟制 PREPARED BY	审核 CHECKED BY	批准 APPROVED BY
马凡	夏兴喜	马冬冬

客户

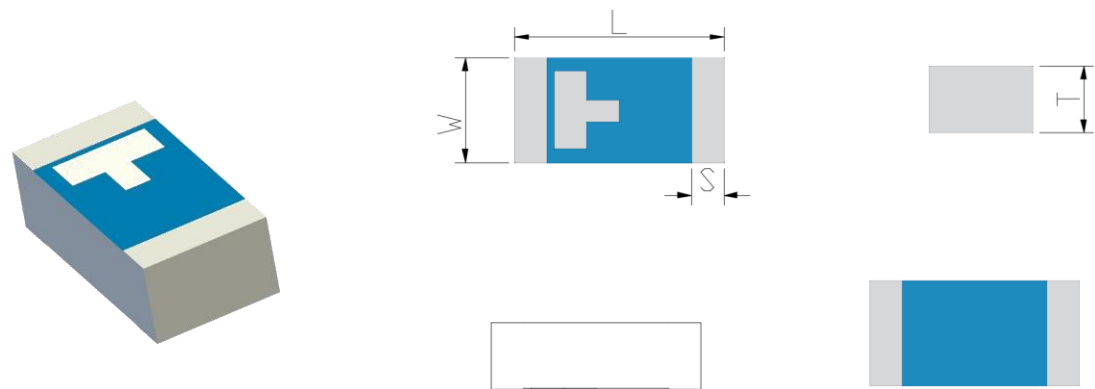
CUSTOMER

承认 ACCEPTED BY	审核 CHECKED BY	批准 APPROVED BY

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HangCheng Road, Xixiang, Baoan, Shenzhen, China

1. 项目信息 Project Information

1.1. 外观尺寸 Appearance and Dimensions



Symbol	Dimension (mm)
L（长度）	3.2± 0.20
W（宽度）	1.6± 0.20
T（厚度）	1.0± 0.20
S（电极宽度）	0.4± 0.20

1.2. 天线净空区面积 antenna Clearance area

在设计天线时，应远离金属部件和不相关的部件，如电池、振荡器、防护罩、摄像头等，为天线留出干净的空间。这个间隔简称为净空区。以下是我们建议预留的净空区面积大小。

When designing the antenna, it should be far away from metal components and irrelevant components such as batteries, oscillators, shields, cameras, etc. to leave a clean space for the antenna. This interval is called clearance area. The following is the size of clearance area we recommend to reserve.

天线型号 (Model)	天线尺寸 (size)	净空区面积 Clearance area L*W(mm)	
A1 (2.4G 单极)	5.5*1.2*1.2	9.1*5.6	
X5 (2.4G 单极)	5.2*2.2*1.0	8.7*6.5	
X6 (2.4G pifa)	3.2*1.6*1.0	7.0*6.0	
D1 (2.4G 单极)	5.2*2.2*1.0	8.7*6.5	
D2 (2.4G 单极)	5.2*2.2*1.0	8.7*6.5	
D3 (2.4G 单极)	3.4*1.7*1.2	7.2*6.5	
F01 (2.4G pifa)	3.2*1.6*0.4	7.0*6.0	
S2 (2.4/5.8G 双频)	7.0*3.0*2.0	9.0*7.0	
U1 (UHF 单极)	15.0*3.0*1.0	19.0*8.0	
G2 (GPS 单极)	8.5*3.0*1.0	13.5*7.5	

Matching circuit

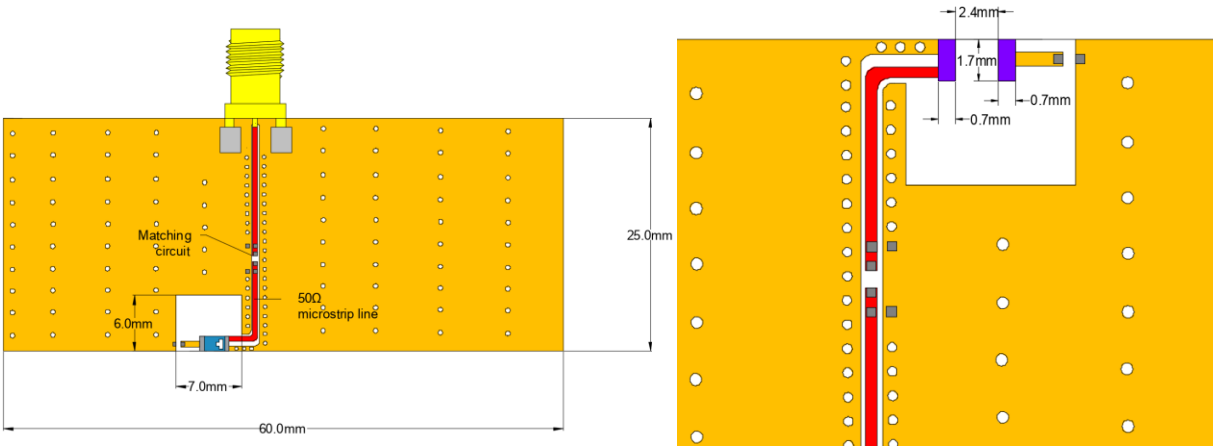
50Ω microstrip line

6mm

7mm

1.3. 天线 Demo 测试板

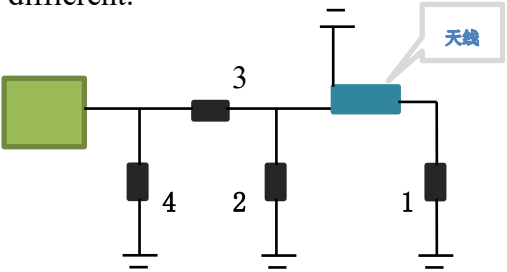
Demo Test Board with Antenna(Unit:mm)



1.4. 匹配电路 Matching Circuit

使用以下推荐的匹配和调谐元件值，在我们的标准 25*60 mm 评估板上，中心频率约为 2440mhz。然而，这些是典型的参考值，当电路板或零件供应商不同时，可能需要更改。

With the following recommended values of matching and tuning components,the center frequencies will be about 2440 MHz at our standard 25*60 mm evaluation board.However,these are typical reference values which may need to be changed when circuit boards or part vendors are different.



系统匹配电路元件(村田)		
System Matching Circuit Component (Murata)		
Location	Desciption	Tolerance
1	0.75pF (0402)	±0.1pF
2	NC	/
3	1.0pF (0402)	±0.1pF
4	NC	/

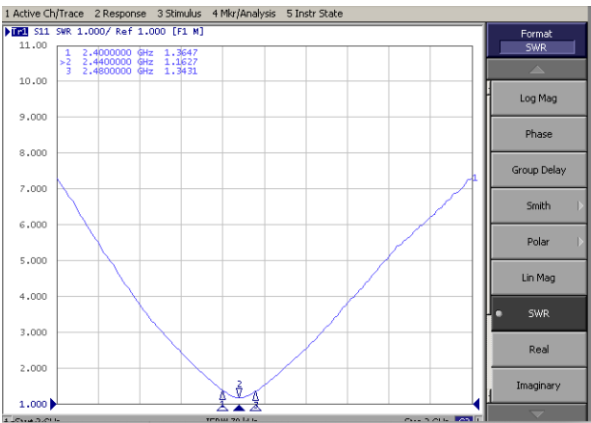
2. 电特性 Electrical Characteristics(25*60mm ground plane)

2.1.电子表格 Electrical Table

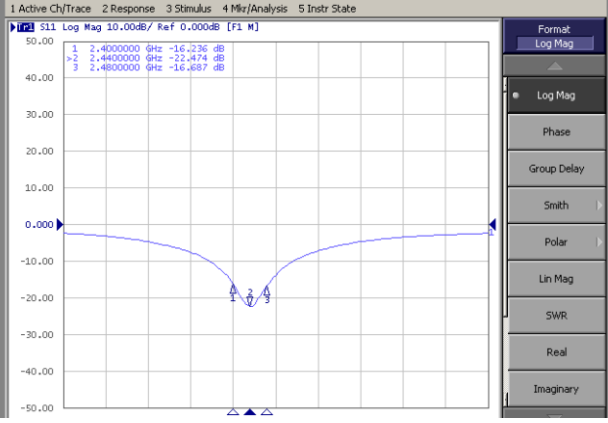
特征 Characteristics		规范 Specifications	单位 Unit
轮廓尺寸 Outline Dimensions		3.2*1.6*1.0	mm
工作频率 Working Frequency		2400-2500	MHz
电压驻波比 VSWR		<2	/
阻抗 Impedance		50	Ω
极化 Polarization			/
增益 Gain	峰值 Peak	2.06	dBi
	效率 Efficiency	50	%

2.2.电压驻波比与 Smith 圆图 VSWR & Smith

VSWR

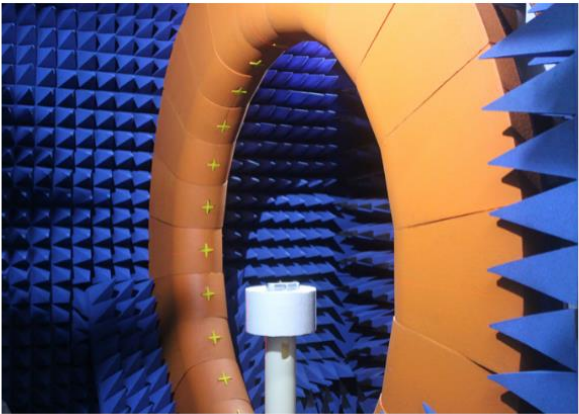


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2.3.天线增益与效率 Gain and Efficiency

测试系统 Test system



24 探头微波暗室

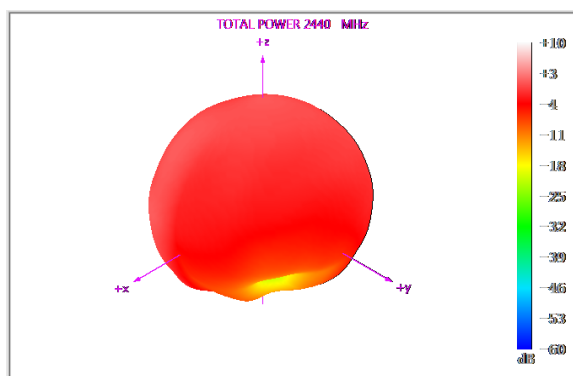
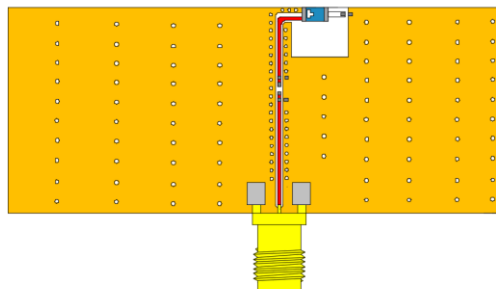
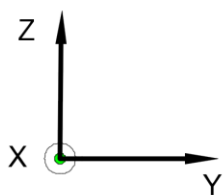
➤ 频率：0.4GHz至6GHz

主要测试指标

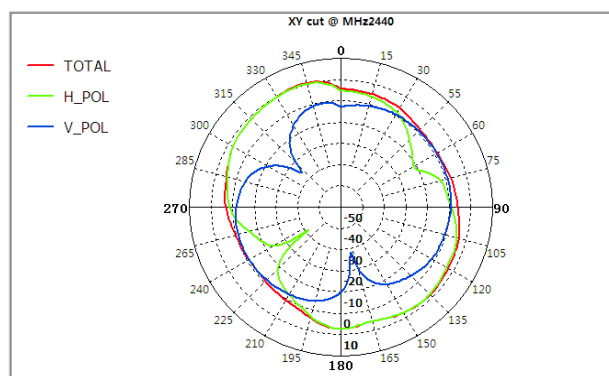
- ◆ 无源指标
 - ◆ 增益
 - ◆ 效率
 - ◆ 3D方向图
- 有源指标
 - TRP总辐射功率
 - TIS总接收灵敏度

Frequency (MHz)	Gain (dBi)	Efficiency (%)
2400 MHz	1. 43	50. 15
2410 MHz	1. 38	50. 78
2420 MHz	1. 49	50. 49
2430 MHz	1. 34	50. 43
2440 MHz	1. 30	50. 04
2450 MHz	1. 57	52. 50
2460 MHz	1. 76	56. 12
2470 MHz	1. 89	57. 29
2480 MHz	2. 05	58. 23
2490 MHz	2. 06	55. 99
2500 MHz	2. 06	53. 66

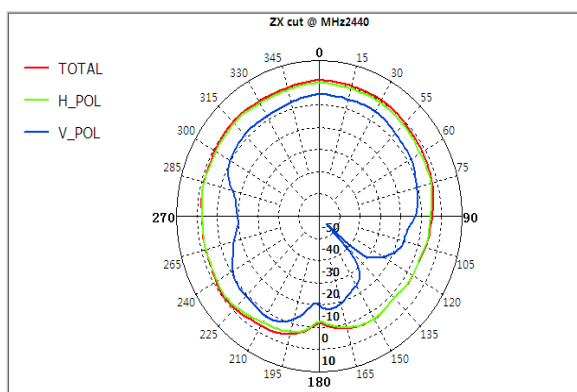
2.4.天线辐射方向图 Antenna radiation pattern



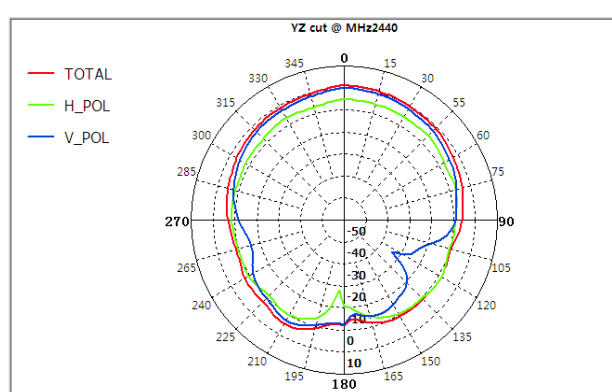
3D-plane@2.44GHz



2D-plane XOY @2.44GHz



2D-plane XOZ@2.44GHz



2D-plane YOZ @2.44GHz