

## 论文

### 一种新型X波段基片集成波导双模带通滤波器

秦培元;石小林;梁昌洪;吴边

(西安电子科技大学 天线与微波技术重点实验室, 陕西 西安 710071)

#### 摘要:

提出一种具有对称传输零点的基片集成波导双模带通滤波器. 该滤波器含有两个双模矩形基片谐振腔, 通过在谐振腔中引入电感不连续性, 可以产生简并模式的耦合; 每个谐振腔中不同模式间的相位差在通带两边各引入了一个传输零点, 极大地改善了阻带特性. 采用该方法设计了一个新型X波段双模带通滤波器, 仿真与测试结果吻合.

关键词: 基片集成波导 双模谐振器 传输零点

### Novel X-band dual-mode bandpass filter based on the substrate integrated waveguide

(Key Lab. of Antennas and Microwave Technology, Xidian Univ., Xi'an 710071, China)

(Key Lab. of Antennas and Microwave Technology, Xidian Univ., Xi'an 710071, China)

#### Abstract:

This paper presents a novel dual-mode filter with symmetric transmission zeros based on the substrate integrated waveguide(SIW). This filter contains two dual-mode SIW rectangular cavities. By making use of the inductive discontinuities in an SIW cavity, two coupling degenerate modes can be excited. Due to the phase difference between the two modes in each cavity, two transmission zeros on each side of the passband are created, so the out-of-band rejection of the filter is significantly increased. An SIW dual-mode filter with a center frequency of 12GHz has been fabricated and measured using the proposed method. Experimental results agree well with the simulation results.

Keywords: substrate integrated waveguide dual mode resonator transmission zero

收稿日期 2008-06-26 修回日期 网络版发布日期

DOI:

基金项目:

国家自然科学基金资助(60501023,60901031)

通讯作者: 秦培元

作者简介:

#### 参考文献:

[1] Levy R, Snyder R V, Matthaei G. Design of Microwave Filters [J]. IEEE Trans on Microwave Theory Tech, 2002, 50(3): 783-793.

[2] 吴边, 梁昌洪, 陈亮, 等. 一种开口环缺陷地面结构复合左右手传输线 [J]. 西安电子科技大学学报, 2008, 35(2): 254-257.

Wu Bian, Liang Changhong, Chen Liang, et al. Composite Right/left-handed transmission Line Based on Split-ring Resonator DGS [J]. Journal of Xidian University, 2008, 35(2): 254-257.

[3] Mira F, San Blas A A. Fast and Accurate Analysis and Design of Substrate Integrated Waveguide (SIW) Filters [EB/OL]. [2008-03-10]. <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=4405153&isnumber=4405082>.

## 扩展功能

### 本文信息

Supporting info

PDF(639KB)

[HTML全文](1KB)

参考文献[PDF]

参考文献

### 服务与反馈

把本文推荐给朋友

加入我的书架

加入引用管理器

引用本文

Email Alert

文章反馈

浏览反馈信息

### 本文关键词相关文章

▶ 基片集成波导

▶ 双模谐振器

▶ 传输零点

### 本文作者相关文章

▶ 秦培元

▶ 石小林

▶ 梁昌洪

▶ 吴边

### PubMed

Article by Qin,P.Y

Article by Dan,X.L

Article by Liang,C.H

Article by Wu,b

[4] Zhang Yulin, Hong Wei, Wu Ke, et al. Novel Substrate Integrated Waveguide Cavity Filter with Defected Ground Structure [J]. IEEE Trans on Microwave Theory Tech, 2005, 53(4): 1280-1287.

[5] Liu Bing, Hong Wei, Wang Yuanqing, et al. Half Mode Substrate Integrated Waveguide (HMSIW) 3-dB Coupler [J]. Half Mode Substrate Integrated Waveguide (HMSIW) 3-dB Coupler [J]. IEEE Microwave Wireless Components Letters, 2007, 17(1): 22-24.

[6] Huang T H, Chang C S, Chen H J, et al. Simple Method for A K-Band SIW Filter with Dual-Mode Quasi-Elliptic Function Response [J]. Microwave and optical Technology Letters, 2007, 49(6): 1246-1248.

[7] Chen H C, Tzuang C-K C. All-Planar Dual-Mode Asymmetric Filters at Ka-Band [J]. IEEE Microwave Wireless Components Letters, 2003, 13(3): 111-113.

[8] Chen Xiaoping, Hao Zhangcheng, Hong Wei, et al. Planar Asymmetric Dual-Mode Filters Based on Substrate Integrated Waveguide [C] //2005 IEEE MTT-S International. New York: IEEE, 2001: 1764-1769.

[9] Cassivi Y, Wu Ke. Low Cost Microwave Oscillator Using Substrate Integrated Waveguide Cavity [J]. IEEE Trans on Microwave Wireless Components Letters, 2003, 13(2): 48-50.

[10] Guglielmi M, Jarry P, Kerherve E, et al. A New Family of All-inductive Dual-mode Filters [J]. IEEE Trans on Microwave Theory Tech, 2001, 49(10): 1764-1769.

[11] 李浩, 华光, 陈继新, 等. 基片集成波导和微带转换器的理论与实验研究 [J]. 电子学报, 2003, 31(12): 2002-2004.

Li Hao, Hua Guang, Chen Jixin, et al. Theoretical and Experiment Investigation on the Transition between the Substrate Integrated WaveGuide (SIW) and Microstrip [J]. Acta Electronica Sinica, 2003, 31(12): 2002-2004.

本刊中的类似文章

1. 吴边;梁昌洪;陈亮;李刚 .一种开口环缺陷地面结构复合左右手传输线 [J]. 西安电子科技大学学报, 2008,35(2): 254-257
2. 朱永忠<sup>1,2</sup>;谢拥军<sup>1</sup>;谢文宣<sup>3</sup>;李亚峰<sup>1</sup>.准椭圆函数滤波器的边带优化设计[J]. 西安电子科技大学学报, 2009,36(3): 448-467

文章评论

序号	时间	反馈人	邮箱	标题	内容
1	2009-10-21	caragon	caragon@googlemail.com		?? £????????????????????f???ugg ukugg saleugg bootsUGG Bailey Buttonsupra shoesnike dunkMBT Shoes Cheap UGG Bailey Buy UGG Button