

基于开环双模谐振器的双频带滤波器

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A Novel Dual-Band Filter Based on Dual-Mode Open-Loop Resonator

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摘要

基于新型的带开路枝节的双模开环谐振器, 设计了应用于无线局域网(WLAN) IEEE 802.11 b/a (2.4/5.2 GHz) 的双频带微带滤波器. 双模开环谐振器的奇模和偶模谐振频率, 分别由开环结构和开路枝节负载激励产生. 双频带滤波器由两个双模开环谐振器电磁混合耦合实现, 具有4个传输零点. 滤波器的两个通带分别由双模谐振器的基频和一次杂散频率产生. 为了满足输入和输出阻抗匹配要求, 并改善双频段的通带特性, 采用锥形渐变线 0° 馈电方式. 双频带滤波器的频率响应特性 S_{11} 和 S_{21} 的电磁仿真和实测结果非常吻合, 两个通带均呈现很好的通带特性和隔离效果.

关键词: [双模](#); [开环谐振器](#); [双频](#); [带通滤波器](#); [渐变线馈电](#)

Abstract:

Based on a new open-stub loaded dual-mode open-loop resonator, a dual-band microstrip filter is designed for applications of wireless local area networks (WLAN) IEEE 802.11b/a (2.4/5.2 GHz). The odd-mode and even mode resonant frequencies of the dual-mode open-loop resonator are created by structures of open-loop and loaded open-stub separately. A dual-band filter is realized by two electrically and magnetically mixed coupling resonators with four transmission zeros. Two passbands of the filter are produced by the basic resonant frequency and the one-order spurious frequency. In order to match the input and output impedances and to improve performance of two passbands, a taper-line is used to feed the coupling resonator in terms of 0° . Electromagnetic simulation frequency responses S_{11} and S_{21} of the dual-mode filter show agreements with experimental results, indicating good passband characteristics and isolation between two passbands.

Keywords: [dual-mode](#); [open-loop resonator](#); [dual-band](#); [band pass filter \(BPF\)](#); [taper-line feed](#)

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