IEICE Trans. on Electronics, E92-C(9): 1137-1143

Symmetric/Asymmetrical SIRs Dual-Band BPF Design for WLAN Applications

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Abstract

This paper presents the dual-band bandpass filters (BPFs) design composed of λ/2 and symmetrically/asymmetrically paired λ/4 stepped impedance resonators (SIRs) for the WLAN applications. The filters cover both the operating frequencies of 2.45 and 5.2GHz. The dual-coupling mechanism is used in the filter design to provide alternative routes for signals of selected frequencies. A prototype filter is composed of λ/2 and symmetrical λ/4 SIRs. The enhanced wide-stopband filter is then developed from the filter with the symmetrical λ/4 SIRs replaced by the asymmetrical ones. The asymmetrical λ/4 SIRs have their higher resonances frequencies isolated from the adjacent I/O SIRs and extend the enhanced filter an upper stopband limit beyond ten time the fundamental frequency. Also, the filter might possess a cross-coupling structure which introduces transmission zeros by the passband edges to improve the signal selectivity. The tapped-line feed is adopted in this circuit to create additional attenuation poles for improving the stopband rejection levels. Experiments are conducted to verify the circuit performance.

Key words：Wide stopband;Dual-band;Resonance spectrum

isolation;WLAN