

Design of dual-band bandpass filter incorporating tri-section SIRs and CPW SIRs

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Abstract

A dual-band microstrip bandpass filter (BPF) designed using half-wavelength ($\lambda/2$) tri-section microstrip stepped impedance resonators (TSSIRs) and quarter-wavelength ($\lambda/4$) coplanar-waveguide (CPW) stepped-impedance resonators (SIRs) is presented. The center frequencies of the passbands are located at commercially practical frequencies (2.45 and 5.25 GHz) for wireless local-area network (WLAN) applications. A pair of TSSIRs in the top layer of the BPF provides a path for the 2.45 and 5.25 GHz signals, and a pair of CPW SIRs in the ground layer furnishes a path for the 5.25 GHz signal. All these resonators are coupled by microstrip feed lines. For passband selectivity improvement, a cross-coupling path is established by connecting an anti-parallel coupled line section to the ends of the input and output feed lines to form the source-load coupling.