

Balanced dual-band BPF using only equal-electric-length SIRS for common-mode suppression

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Abstract

This paper presents a new balanced dual-band bandpass filter (BPF) designed for 2.4/5.2 GHz wireless local area networks (WLANs). Because adopted in the BPF are only bi-section equal-electric-length stepped-impedance resonators (SIRs), whose dimensions can be determined using analytic formulas, the BPF can be easily and efficiently designed. The inner SIRs are designed to resonate only at the odd-mode resonant frequencies of the input and output SIRs but not at the even-mode ones. This leads to wellbehaved differential-mode (DM) transmission and excellent commonmode (CM) suppression for the BPF. Simulated and measured results are found to agree quite well to each other. The measured minimum DM insertion losses in the two passbands are 2.1 and 2.54 dB, whereas the measured CM rejections are higher than 33 dB in the frequency range from 1 to 7GHz.