

Frequency-Dependent and Full Range Tunable Phase Shifter

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Abstract : In this paper, a frequency-dependent and tunable phase shifter is proposed and numerically analyzed. The key devices are the dual-polarization binary phase shift keying modulator (DP-BPSK) and the fiber Bragg grating (FBG). The phase-frequency response of the FBG is employed to determine the frequency-dependent phase shift. The simulation results show that a linear phase shift of the recovered output microwave signal which depends on the frequency of the input RF signal is achieved. In addition, by adjusting the power of the RF signal, the full range phase shift from 0° to 360° can be realized. This structure shows the spurious free dynamic range (SFDR) of $70.90 \text{ dB} \cdot \text{Hz}^{2/3}$ and $72.11 \text{ dB} \cdot \text{Hz}^{2/3}$ under different RF powers.

Keywords : microwave photonics, phase shifter, spurious free dynamic range, frequency-dependent

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