Abstracts

Non-Leaky Coplanar (NLC) Waveguides with Conductor Backing

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In this paper, we present a structure called a non-leaky coplanar (NLC) waveguide with conductor backing. It is a multilayered structure with two possible configurations. The spectral domain approach with a complex root searching procedure is used to investigate leakage phenomena. The simulation results confirm that the leakage in conductor-backed coplanar waveguide (CBCPW) occurs in the form of wave in the parallel plate waveguide with infinite width. The results show that the leakage in the multilayered structure can be removed if the geometrical and material parameters of the structure are chosen appropriately. Experiments were carried out to investigate the transmission of these structures. It was found that the resonance in the transmission of finite-width conductor-backed coplanar wavegnide (FW-CBCPW) is caused by the energy leakage from the dominant CPW mode. The resonance is eliminated in the NLC waveguides. These NLC waveguides are feasible and practical in the uniplanar MMIC design due to their planar nature.

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