

Branch line coupler using hybrid T-model structure

Abstract

A reduced size branch line coupler (BLC), which does not use bonding wires, lumped elements, or via holes, is reported in this article. The technique presented uses T-model approach, which is a combination of low-impedance and high-impedance quarter wave transmission lines for realizing the proposed structure. The coupler's operating frequency bandwidth is between 2.1 and 2.67 GHz, and its size has been reduced by almost 75.31% compared with the conventional BLC. The S-parameters and the phase difference between the output ports are simulated using CST microwave studio, and the simulation results have been compared with the measurements. The BLC has been designed to operate at 2.5 GHz and fabricated on flame resistance board (FR4 Board). The study shows that there is good agreement between the simulated and measured results. The proposed coupler has promising potentials for beam-forming network applications such as butler matrix due to its smaller size.