

# Miniaturized Two-Section Branch-Line Coupler Using Open-Stub Slow-Wave Structure

## Abstract

This study presents the miniaturization of two-section branch microstrip lines coupler using the slow-wave technique. Regular and miniature branch-line couplers operating at 2.4 GHz are designed, fabricated, tested, and compared. Up to 38% reduced size of the miniature coupler is achieved compared to the conventional coupler. The miniaturized coupler is capable of operating from 1.85 to 3.2 GHz with a bandwidth of 1.35 GHz. Overall, the simulation and measurement results demonstrated a good agreement.

## Keywords

Coupler; Coupling; Insertion loss; Isolation; Microstrip line; Miniature; Open-stub; Return loss; S-parameters; Slow-wave; Two-section branch-line