Abstracts

2 GHz One Octave-Band 90 Degree Hybrid Coupler Using Coupled Meander Line Optimized by 3-D FEM

H. Tanaka, N. Banba, S. Arai and T. Nishikawa. "2 GHz One Octave-Band 90 Degree Hybrid Coupler Using Coupled Meander Line Optimized by 3-D FEM." 1994 MTT-S International Microwave Symposium Digest 94.2 (1994 Vol. II [MWSYM]): 903-906.

This paper describes a miniaturized 90 degree hybrid coupler using edge-coupled microstrip lines. A high dielectric constant substrate and meandered coupled-line configuration are adopted to realize small size. In the designing, the effects of meandered configuration of microstrip lines with narrow spacing between the neighboring pair lines were calculated directly using three dimensional finite element method (3-D FEM). The calculated results showed that above mentioned highly packed meander structure retains practical 90 degree hybrid coupler performance. A experiment done afterward supported the simulated results. A bandwidth of one octave from 1 GHz to 2 GHz with ± 0.8 dB power dividing balance and 90 ± 3 degrees phase difference were achieved experimentally with dimensions of 3.0 mm x 2.85 mm x 1.0 mm.

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