Abstracts

Boundary-Integral Equation Analysis of a Novel Monolithic CPW/TFMS 3-dB Quadrature Hybrid

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A novel 3-dB quadrature hybrid design for coplanar MMICs is presented. The boundary integral equation method (BIEM) is applied to analyze it and results are compared against measurements. The novelty of the structure is the incorporation of thin-film microstrip (TFMS) lines into a design which is compatible with coplanar waveguide (CPW). Analysis focuses on the 6-conductor coupled line section of the structure which presents typical problems in analysis of realistic non-standard, multi-conduct or transmission line cross-sections: very large ratio of largest to smallest relevant dimension, narrow and broadside coupled strips, slanted faces of electro-plated strips, sharp edges and finite width dielectric films. Features of the BIEM implementation which are required to extend its applicability from canonical examples to such problems are discussed.

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