Abstracts

Full-Wave Characterization of the Mode Conversion in a Coplanar Waveguide Right-Angled Bend

M.-D. Wu, S.-M. Deng, R.-B. Wu and P. Hsu. "Full-Wave Characterization of the Mode Conversion in a Coplanar Waveguide Right-Angled Bend." 1995 Transactions on Microwave Theory and Techniques 43.11 (Nov. 1995 [T-MTT]): 2532-2538.

A full-wave algorithm is proposed to analyze thoroughly a 90° bend of coplanar waveguide (CPW). Based on the mixed potential integral equation (MPIE) formulation, the equivalent magnetic current distribution on the apertures is solved by the moment method using overlapping rooftop basis functions and the Galerkin weighting procedure. The matrix pencil approach is then utilized to do the de-embedding procedure and extract both the coplanar and slotline modes scattering off the asymmetric discontinuity. Experiments are performed to measure the scattering parameters and the results verify the accuracy of the present algorithm. The full 4x4 scattering matrix between these two modes is presented and from which, the occurrence of the mode conversion is investigated. The mode conversion is noticed to become almost complete at certain frequencies, which may be useful in the design of CPW to coupled slotline transition.

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