Abstracts

Fullwave Analysis of Three and Four-Port Rectangular Waveguide Junctions

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An efficient and accurate technique for the analysis of three- and four-port rectangular waveguide junctions is presented. The technique is based on a generalization of the admittance matrix concept of circuit theory and yields a multimodal description of junctions by means of their generalized admittance matrix. The elements of this matrix are analytically obtained. The multimodal description of three- and four-port junctions allows us to link them with other junctions and/or discontinuities by considering the interactions of the fundamental and higher order modes, thus achieving a fullwave characterization of composite structures. The technique is verified by comparing its results with available measurements of E- and H-plane T-junctions. The E-/H-plane three-port junction which is seldom used, is also analyzed. Finally, the four-port structure Magic-T is considered and an analysis of the relative convergence problem for this structure is presented.

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