Abstracts

New Simple Procedure for the Computation of the Multimode Admittance or Impedance Matrix of Planar Waveguide Junctions

A.A. Melcon, G. Connor and M. Guglielmi. "New Simple Procedure for the Computation of the Multimode Admittance or Impedance Matrix of Planar Waveguide Junctions." 1996 Transactions on Microwave Theory and Techniques 44.3 (Mar. 1996 [T-MTT]): 413-418.

Much effort has been devoted in the past to the development of electromagnetic simulation algorithms for waveguide junctions that could at the same time include higher-order mode interactions and lead to computationally efficient codes. Even though this is indeed a classical subject, there is still a strong interest in this area as waveguide systems become increasingly complex, and ever shorter development and manufacturing times are required. In this paper a simple method is described for the evaluation of the multimode network representation of planar waveguide junctions in terms of admittance or impedance parameters. The key feature of the method is that it starts from the wanted final results, the equivalent network representation, in order to obtain an analytic expression for the evaluation of the relevant matrix elements. The procedure is based on general network theory and is equivalent to ideally measuring directly the value of the admittance or impedance elements. In this paper the evaluation procedure is fully described. Measured results of actual hardware are then compared with simulations indicating that the codes developed are indeed very accurate as well as computationally very efficient.

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