

Abstracts

Numerical analysis of complicated waveguide circuits on the basis of generalized scattering matrices and domain product technique

V.P. Chumachenko and V.P. Pyankov. "Numerical analysis of complicated waveguide circuits on the basis of generalized scattering matrices and domain product technique." 2000 *Transactions on Microwave Theory and Techniques* 48.2 (Feb. 2000 [T-MTT] (Mini-Special Issue on Research Reported at the 1999 Radio Frequency Integrated Circuits (RFIC) Symposium)): 305-308.

H- and E-plane waveguide structures having arbitrarily polygonal boundaries and piecewise homogeneous fillings are considered in this paper. A modified version of the generalized scattering matrix (S-matrix) method is applied to their analysis. More specifically, the segmentation of the whole unit is carried out. A homogeneously filled multiangular region, supplied with flanged apertures, is taken as a key building block. The scattering matrix of the block consists of amplitudes of elliptic waves propagating from the apertures in the corresponding half-spaces. Evaluation of the S-matrix is based on the domain product technique (DPT). Numerical examples demonstrating the efficiency, flexibility, and reliability of the approach are also presented.

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