Abstracts

An Accurate, Field Matching Analysis of Waveguides of Complex Cross-Sectional Geometry Loaded with Magnetized Ferrite Rods

M. Okoniewski and J. Mazur. "An Accurate, Field Matching Analysis of Waveguides of Complex Cross-Sectional Geometry Loaded with Magnetized Ferrite Rods." 1991 MTT-S International Microwave Symposium Digest 91.1 (1991 Vol. I [MWSYM]): 181-184.

In this contribution we present developments to our technique of analysis of complex waveguides. We may now analyze waveguides having complicated cross-sectional geometry and comprising circularly--cylindrical ferrite-dielectric rods magnetized in a longitudinal direction. This class of waveguides includes rectangular waveguides loaded with ferrite rods, which have not, to the best knowledge of authors, been rigorously analyzed yet, despite their wide spread usage in devices. We also present experimental data validating our theory, and examples of potentially useful structures which can be treated by our method (e.g. ferrite loaded waveguides of crossed-rectangular and finned - circular cross sections). The inner products encountered in the method are computed via FFT which resulted in 3-fold increase of computational speed and 2-fold reduction of computer storage.

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