Abstracts

Ridge Waveguide Polarizer with Finite and Stepped-Thickness Septum

J. Bornemann and V.A. Labay. "Ridge Waveguide Polarizer with Finite and Stepped-Thickness Septum." 1995 Transactions on Microwave Theory and Techniques 43.8 (Aug. 1995 [T-MTT]): 1782-1787.

This contribution presents new design dimensions for the ridge waveguide septum polarizer. Emphasis is placed first, on including the finite septum thickness in the analysis; second, demonstrating its influence on the polarizer performance; third, including a stepped approach for extremely thick septa; fourth, optimizing components without the need for additional phase-adjusting structures; and fifth, providing the application engineer with some design guidelines. Examples for varying septum thickness and/or number of sections are given for C-, X-, R120-, Ku- and K-band applications. The analysis is based on an efficient mode-matching technique. Evolution-strategy methods are used for optimization. Both algorithms are translated into PC-operational software. Results are compared with previously published theoretical/experimental polarizer data and with a finite-element analysis, and are found to be in good agreement.

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