Abstracts

Fast and efficient mode-matching analysis of ridged circular waveguide polarizers

J. Bornemann, S. Arnari, J. Uher and R. Vahldieck. "Fast and efficient mode-matching analysis of ridged circular waveguide polarizers." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1799-1802.

A fast and efficient mode-matching technique is applied to the analysis and design of polarizer components in ridged circular waveguide technology. Two different structures (the septum polarizer and the longitudinal-ridge polarizer) are investigated with respect to the validity of approximating the rectangular-cross-section septa by conically shaped ridges in theory. Measurements of two different prototypes demonstrate, first, that the axial ratio response is not potentially critical to this approximation and, second, that some differences occur with respect to return loss and isolation performance, but that these difference have only been encountered beyond the 25 dB margin. A CPU time comparison with HFSS results in a ten-minutes-versus-three-hours advantage of the mode-matching technique.

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