Abstracts

Theoretical and Experimental Study of the Evolution of Fields in an Overdimensioned Waveguide with a Corrugated Surface (Short Papers)

J.P. Fenelon and A. Papiernik. "Theoretical and Experimental Study of the Evolution of Fields in an Overdimensioned Waveguide with a Corrugated Surface (Short Papers)." 1991 Transactions on Microwave Theory and Techniques 39.10 (Oct. 1991 [T-MTT]): 1773-1779.

The field of corrugated waveguides has been extensively investigated over a number of years, as such structures have been used for antenna feeds. To obtain an answer to problems arising in many microwave applications, some labs use overdimensioned corrugated waveguides. In the present work, we propose a theoretical approach with eigenmodes that enables us to determine the values of the limiting frequencies (frequencies of pi modes in the periodic structure) of an overdimensioned parallelepipeds cavity loaded with a thin corrugation as a function of the height of the aperture. In this approach, the electric field is represented by different analytical functions. We compared the theoretical results with the experimental values obtained for different apertures and periodicities, according to the value of the wavelength in comparison with the aperture and the period. Each function is in good agreement in a certain frequency range.

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