Abstracts

Novel modal analysis of a circular-to-rectangular waveguide T-junction and its application to design of circular waveguide dual-mode filters

Ke-Li Wu, Ming Yu and Apu Sivadas. "Novel modal analysis of a circular-to-rectangular waveguide T-junction and its application to design of circular waveguide dual-mode filters." 2002 Transactions on Microwave Theory and Techniques 50.2 (Feb. 2002 [T-MTT]): 465-473.

This paper describes a novel modal analysis of a circular-to-rectangular waveguide T-junction and its application to the design of circular waveguide dual-mode filters with a sidewall coupling iris. The analysis is based on the newly developed finite plane-wave series-expansion technique and the concept of the extended boundary condition. The combination of the two concepts greatly facilitates the modal analysis of complex boundary value problems and eliminates the numerical integration. The proposed modal analysis has been verified both by experiments and commercial software for a wide range of parameters. Design examples of I/O structures for a set of channel filters demonstrate the great value of the new modal analysis scheme in practical applications.

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