Abstracts

Wide-Band Waveguide and Ridge Waveguide T-Junctions for Diplexer Applications

H.-W. Yao, A.E. Abdelmonem, J.-F. Liang, X.-P. Liang, K.A. Zaki and A. Martin. "Wide-Band Waveguide and Ridge Waveguide T-Junctions for Diplexer Applications." 1993 Transactions on Microwave Theory and Techniques 41.11 (Dec. 1993 [T-MTT] (1993 Symposium Issue)): 2166-2173.

Scattering parameters of E- and H-plane stepped waveguide and E-plane ridge waveguide stepped T-junctions are obtained using an extension of the three plane mode matching method. An optimization process is applied to find the T-junctions and steps dimensions that yield low reflection coefficient in one of the T-junction arms over a wide frequency band. An example of the design of a wide-band T-junction diplexer is presented. The diplexer filters are inductive window waveguide filters, and are rigorously modeled using mode matching and a novel two-dimensional curve fitting method, which drastically reduces the CPU time for optimization. The diplexer optimization procedure, as well as the filter modeling method, are described. Experimental results on the optimized T-junction and the diplexer are presented; both showed excellent agreement with their computed optimum results, without any adjustments or tuning.

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