Abstracts

A Finite Element Analysis of Planar Circulators Using Arbitrarily Shaped Resonators

R.W. Lyon and J. Helszajn. "A Finite Element Analysis of Planar Circulators Using Arbitrarily Shaped Resonators." 1982 Transactions on Microwave Theory and Techniques 30.11 (Nov. 1982 [T-MTT]): 1964-1974.

A planar circulator consists, in general, of three transmission tines, connected through suitable matching networks to a magnetized ferrite resonator having three-fold symmetry. This paper describes a finite element analysis which enables the Z-matrix of a planar circulator using arbitrary shaped resonators to be calculated. This technique allows quite general computer programs to be written which permit tables of circulation solutions to be calculated. Results for junctions using disk, triangular, and irregular hexagonal resonators are included in the text. The frequency response of junction circulators using various configurations whose magnetic variables have been chosen so that they operate over the widely used tracking interval has also been evaluated. The optimum response is in each case associated with a unique coupling angle.

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