

Abstracts

The Digital Twin-Ferrite-Toroid Circular Waveguide Phaser (Short Papers)

F.J. Bernues and D.M. Bolle. "The Digital Twin-Ferrite-Toroid Circular Waveguide Phaser (Short Papers)." 1973 Transactions on Microwave Theory and Techniques 21.12 (Dec. 1973 [T-MTT] (1973 Symposium Issue)): 842-845.

A new microwave structure is proposed, consisting of a circular waveguide loaded with two ferrite toroids circumferentially magnetized at remanence in opposite direction. It is shown that nonreciprocal parameters such as differential phase shift can be doubled with respect to the single toroid configuration. A method for biasing the toroids at remanence in opposite directions by means of a single wire passing through the axis of the waveguide is proposed. Modal purity is taken into account in order to select dielectric loading parameters which ensure operation within the modal inversion window in which the TE/sub 01/ mode is dominant. The propagation factor and differential phase shift are computed under these conditions, and their variation with several parameters such as remanent magnetization, toroid location, and toroid thickness is shown.

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