Abstracts

Theoretical Design of Static and Latching Ferrite 3-port and 4-port Symmetrical Waveguide Circulators

L.E. Davis. "Theoretical Design of Static and Latching Ferrite 3-port and 4-port Symmetrical Waveguide Circulators." 1966 G-MTT International Microwave Symposium Digest 66.1 (1966 [MWSYM]): 281-285.

Compact 3-port microwave ferrite circulators have become widely used since 1960, but they have generally been empirically designed and their operation is not well understood. The success of the experimental approach has resulted in less emphasis on the theoretical explanation of these devices, and this situation is now retarding the development of the more complicated 4-port circulators. However, extending the work of Auld and Davies, IBM 7040 computer programs have recently been written in this department that predict and display the swept-frequency performance of 3-port and 4-port waveguide circulators. There are several objectives in this work: (1) to extend these computer programs, and the associated theory, to predict the performance of static and latching ferrite circulators in order that the performance of various ferrite configurations can be assessed and compared before they are built; (2) to optimize the many variables to obtain broadband performance where possible; (3) to build some devices to check the theory; (4) to use the theory to gain some insight into the physical behavior of symmetrical waveguide circulators; (5) to investigate phase shift in these devices.

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