Abstracts

Symmetry in a High Power Circulator for 35 GHz (Correspondence)

A.P. Darwent. "Symmetry in a High Power Circulator for 35 GHz (Correspondence)." 1967 Transactions on Microwave Theory and Techniques 15.2 (Feb. 1967 [T-MTT]): 120-120.

A ferrite loaded junction circulates at many values of frequency and applied magnetic field, sometimes giving circulation over a useful bandwidth. In the empirical design of a circulator, the various combinations of field and frequency must be found and modified to give circulation at the required frequency. An E-plane junction with a ferrite disk on each narrow wall was selected for high power operation. (Figure 1 shows the final circulator with a permanent magnet.) The best conditions for circulation were found, but results from the three-ports differed substantially with the circulation bands for the three-ports in some cases not overlapping. This asymmetry was independent of mechanical tolerances in waveguide manufacture and cleanliness of ferrite. It was presumably due to differential scatter caused by inhomogeneity of the ferrite material of the linear effects of surface grinding. As it was easier to investigate surface finish effects, three forms of improved finish were devised and tested.

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