Abstracts

A Novel Strip-Line Circulator (Correspondence)

M.D. Bonfeld, D.F. Linn and M. Omori. "A Novel Strip-Line Circulator (Correspondence)." 1966 Transactions on Microwave Theory and Techniques 14.2 (Feb. 1966 [T-MTT]): 98-99.

A circulator with strip-line inputs has been developed which incorporates a single disk of yttrium aluminum iron garnet (YAIG) on one side of the center conductor and a large, metallic short circuit on the other side. The short circuit can be the magnet necessary to bias the garnet to the optimum field for broadband circulation. The basic design is shown in Fig. 1. The center conductor junction is round with alumina loaded quarter-wave transformer coupling to the 50-omega input lines. Compared to a standard circulator with two YAIG disks operating in the same frequency range, the center conductor diameter is somewhat larger and the transformers of lower impedance. The metallic disk is smaller than the center conductor diameter and is one of the factors which determine the resonant frequency of the junction. The performance of a typical unit is plotted in Fig. 2, This isolation characteristic is double humped and ranges from 30 to 40 dB across a 13.7 percent frequency band. The insertion loss is 0.2 dB across the same band.

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