Abstracts

1-M W Four-Port E-Plane Junction Circulator (Correspondence)

E.E. DeCamp, Jr. and R.M. True. "1-M W Four-Port E-Plane Junction Circulator (Correspondence)." 1971 Transactions on Microwave Theory and Techniques 19.1 (Jan. 1971 [T-MTT]): 100-103.

An S-band four-port E-plane waveguide junction circulator has been developed that has a power-handling capability of 1-MW peak and 1-kW average. Improved ferrite materials and dielectric matching techniques have resulted in a device having a high-power insertion loss of 0.5 dB and a biasing magnetic field of 400 G. The E-plane configuration lends itself to a compact lightweight circulator design having a high-power capability greater than the H-plane configuration, since RF breakdown problems are alleviated by locating the ferrite in the region of minimum RF electric field. The final device requires approximately one-tenth the amount of ferrite and permanent magnet material used in comparable differential phase-shift circulators. The size and weight are reduced by a factor of approximately 5.

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