Abstracts

High-Power Y-Junction E-Plane Circulator (Correspondence)

W.H. Wright, Jr. and J.W. McGowan. "High-Power Y-Junction E-Plane Circulator (Correspondence)." 1968 Transactions on Microwave Theory and Techniques 16.8 (Aug. 1968 [T-MTT]): 557-559.

A symmetrical, Y-junction, E-plane circulator, capable of handling in excess of 500 kW peak and 670 watts average power, is described. The circulator operates at a frequency of 9375 MHz. A circular hole with a length equal to the broad dimension of the waveguide forms the junction of the three waveguide ports. Ferrite discs are mounted at the center of the junction on the narrow wall of the waveguide. The magnetic biasing field is applied along the axis of the discs. Materials tested were pure, 2 percent dysprosium-doped, 4 percent dysprosium-doped, 8 percent dysprosium-doped, and 4 percent dysprosium with 30 percent gadoliohium-doped polycrystalline YIG. The insertion loss and the isolation at the power levels mentioned depended on the material used. Measurements at high power showed an insertion loss of 0.8 dB and an isolation of 15 to 16 dB to be the best obtainable results using 4 percent dysprosium with 30 percent gadolinium-doped material. Data on insertion loss as a function of peak power are presented.

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