Abstracts

Octave-Bandwidth UHF/L-Band Circulator

F. Arams, B. Kaplan and B. Peyton. "Octave-Bandwidth UHF/L-Band Circulator." 1961 Transactions on Microwave Theory and Techniques 9.3 (May 1961 [T-MTT]): 212-216.

Test data are presented on two aluminum-substituted yttrium-iron-garnet (YIG) materials that have low-saturation magnetizations that permit the extension of ferrite devices well into the UHF/VHF region. In particular, one composition has a saturation magnetization of 300 gauss and a line width of 50 oersteds. Measurements are presented that compare the new materials with previously available higher-saturation magnetization materials. A broad-band UHF/L-band four-port circulator that operates over a 2-to-1 frequency band has been developed, using this 300 gauss material. Insertion loss is 1 db or less from 665 to 1320 Mc (with constant magnetic field) and 0.5 db or less from 800 to 1150 Mc. A compact and favorable circulator package design was obtained by using coaxial hybrids and dielectric-loaded strip transmission line. Data on the broad-band magic-tee used in the circulator are included. Isolator measurements down to 200 Mc are reported. Reverse-to-forward magnetic-loss ratios of 36 at 600 Mc and 12 at 300 Mc were obtained.

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