Abstracts

Dissipative Parameters in Ferrites and Insertion Losses in Waveguide Y-Circulators Below Resonance

R. Roveda, C. Borghese and G. Cattarin. "Dissipative Parameters in Ferrites and Insertion Losses in Waveguide Y-Circulators Below Resonance." 1972 Transactions on Microwave Theory and Techniques 20.2 (Feb. 1972 [T-MTT]): 89-96.

Extensive microwave loss measurements have been performed at frequencies from 1.3 to 11 GHz on below-resonance waveguide Y circulators loaded with a wide variety of ferrite and garnet compositions. Dissipative internal and external magnetic parameters have been measured on the same compositions. Also, dielectric loss measurements have been carried out. Two classes have been distinguished, defined by the following conditions: omega/sub M//omega <= 0.8 and 0.85 <= omega/sub M//omega <= 1.05. It is inferred that the (insertion loss) IL of such devices is independent of Delta H and mainly depends on the internal dissipative susceptibility x/sub i/" and on the dielectric loss tan delta. The relation of the IL versus x/sub i/" and tan delta in the case omega/sub M//omega <= 0.8 is independent of frequency and given by the semiempirical equation IL= 10 log/sub 10/ (1-2.85 x/sub i/" - 1.60 tan delta - 0.017)/sup -1/.

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