Abstracts

Waveguide Subsidiary Resonance Ferrite Limiters

J. Helszajn, R.W. Murray, E.G.S. Davidson and R.A. Suttie. "Waveguide Subsidiary Resonance Ferrite Limiters." 1977 Transactions on Microwave Theory and Techniques 25.3 (Mar. 1977 [T-MTT]): 190-196.

This paper gives an analysis of E-plane waveguide ferrite limiters under subsidiary resonance conditions. Since Suhl's high-power damping term is power sensitive, it is necessary to evaluate it in every part of the ferrite structure before forming the dispersion relation. This is done in this paper by dividing the waveguide assembly in small elements transverse and parallel to the direction of propagation and calculating it in each region. The dispersion relation in each section along the direction of propagation is then formed in conjunction with the appropriate Suhl damping constant by establishing the transverse resonance condition. The total output power is obtained by forming the input/output relation for each section one at a time along the structure. The theory has been found useful in describing both the onset of limiting and the dynamic range of a ferrite limiter mounted on one of the narrow walls of the waveguide.

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