Abstracts

Broad-Band Ferrite Rotators Using Quadruply-Ridged Circular Waveguide

H.N. Chait and N.G. Sakiotis. "Broad-Band Ferrite Rotators Using Quadruply-Ridged Circular Waveguide." 1959 Transactions on Microwave Theory and Techniques 7.1 (Jan. 1959 [T-MTT]): 38-41.

It has been shown that the rotation of the plane of polarization of a wave propagating in a magnetized unbounded ferrite medium should be independent of frequency. However this is not the case when a ferrite rod of small diameter is placed within a waveguide. For example, if a ferrite rod one-quarter inch in diameter in a fifteen-sixteenth inch diameter circular waveguide is used, the rotation will change by a factor of four to one over the frequency band from 8000 to 10,000 mc. This variation in rotation is substantially due to the waveguide characteristics, and can be minimized by lowering the cutoff frequency of the waveguide. Various methods of lowering the cutoff of circular waveguide are compared. Data on the broadbanding of the rotation by dielectric loading and also by the use of quadruply-ridged circular waveguide is shown. An experimental study showing the effect of the ridge width and height on the cutoff of the circular waveguide and the frequency dependence of the rotation is discussed.

❑ Return to main document.