Abstracts

An Approximate Solution to Some Ferrite Filled Waveguide Problems with Longitudinal Magnetization

S.S. Sandler. "An Approximate Solution to Some Ferrite Filled Waveguide Problems with Longitudinal Magnetization." 1961 Transactions on Microwave Theory and Techniques 9.2 (Mar. 1961 [T-MTT]): 162-168.

An approximate solution for the field structure and propagating modes in parallel plane, circular, and coaxial ferrite filled waveguide is presented. Bundles of plane waves are assumed to propagate in these structures which bounce back and forth along the guide. The solutions are classified into two types depending on the negative or positive equality of the incident and reflected waves. In the case of the circular guide the waves form a cone, and in the coaxial guide they form a frustum of a cone about the axis. The elemental plane waves are also assumed to satisfy Polder's relation and the boundary conditions at the guide walls. Simple relations are obtained with this equivalence for the propagation constant and the field. Comparison to rigorous theory is made in the case of the parallel plane and circular guide. Some experimental verification is presented for the completely filled coaxial waveguide.

❑ Return to main document.