Abstracts

The Far Fields Excited by a Point Source in a Passive Dissipationless Anisotropic Uniform Waveguide

A.D. Bresler. "The Far Fields Excited by a Point Source in a Passive Dissipationless Anisotropic Uniform Waveguide." 1959 Transactions on Microwave Theory and Techniques 7.2 (Apr. 1959 [T-MTT]): 282-287.

The direction of the net power flow associated with a propagating mode of an arbitrary passive disspationless anisotropic uniform waveguide may be opposite to its direction of (phase) propagation. It is shown that when a point source is introduced into a waveguide in which this is the case, such propagating modes contribute to the fields excited by this source only in that direction for which their power flow is directed away from the source. In addition it is shown that the nonpropagating modes contribute to the total field only in that direction in which they decay with increasing distance away from the source so that the far fields are given by a superposition of propagating modes only. The proof given makes use of the known properties of the frequency dependence of the physical parameters of any linear passive system in which the causality restriction is satisfied.

❑ Return to main document.