Abstracts

Anomalous Propagation, Loss and Radiation Effects in Open Waveguides with Gyrotropic Media

P. Baccarelli, C. Di Nallo, F. Frezza, A. Galli and P. Lampariello. "Anomalous Propagation, Loss and Radiation Effects in Open Waveguides with Gyrotropic Media." 1996 MTT-S International Microwave Symposium Digest 96.1 (1996 Vol. I [MWSYM]): 283-286.

A complete investigation of the electromagnetic behavioral features is presented for a class of open waveguides employing gyrotropic substrates, which find applications in various microwave and millimeter-wave devices. Referring to a representative nonreciprocal open structure with transversely-magnetized ferrite, a rigorous analysis is led first to derive the dispersion properties for the modal spectrum in the lossless case, emphasizing particular propagation properties. Losses in the anisotropic medium are then taken into account, and the consequent important modifications are illustrated. Moreover, different kinds of complex solutions are studied as concerns their physical nature. Interesting practical implications are thus derived by evaluating, in connection with proper sources, the effective contributions of such complex waves to radiation phenomena.

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