Abstracts

Packaged Printed Transmission Lines: Modal Phenomena and Relation to Leakage

L. Carin, G.W. Slade, K.J. Webb and A.A. Oliner. "Packaged Printed Transmission Lines: Modal Phenomena and Relation to Leakage." 1993 MTT-S International Microwave Symposium Digest 93.3 (1993 Vol. III [MWSYM]): 1195-1198.

The dispersion curves of the modes in shielded printed transmission lines often interact with the dispersion curves of box (package) guided modes in a classical coupled-mode manner. It is shown here that this effect is related directly to the phenomenon of leakage. We show that the dominant mode associated with a shielded printed transmission line can interact with box guided modes in a coupled-mode manner only if the corresponding dominant mode is leaky when the same transmission line is placed on a substrate of infinite transverse extent. Furthermore, we demonstrate that the modes of a shielded transmission line may support fields that are "leaky" in the sense that they are not confined to the designed guiding region (strip or slot), even though all the modes of the structure have either purely real or imaginary propagation wavenumbers. Numerical and experimental results are presented to show the effects of these phenomena.

❑ Return to main document.