Abstracts

Power Leakage, Characteristic Impedance, and Leakage-Transition Behavior of Finite-Length Stub Sections of Leaky Printed Transmission Lines

N.K. Das. "Power Leakage, Characteristic Impedance, and Leakage-Transition Behavior of Finite-Length Stub Sections of Leaky Printed Transmission Lines." 1996 Transactions on Microwave Theory and Techniques 44.4 (Apr. 1996 [T-MTT]): 526-536.

Power leakage and leakage transition phenomena in finite-length stub sections are studied for slot- as well as strip-type leaky transmission lines. A three-dimensional (3-D) method of moments is used for the rigorous analysis of the stub sections. The results reveal several important characteristics of power leakage in printed circuits that are not obtainable from the two-dimensional (2-D) analyses of ideal infinite-length lines. A new definition of the characteristic impedance for a leaky printed transmission line is proposed, which is shown to correctly model the impedance behavior of the finite-length sections. It is noted that the standard definitions of characteristic impedance, commonly used for nonleaky transmission lines, may not apply to practical circuits when leakage exists. Further, the leakage transition behavior in the finite-length sections, operated around a "mode-transition" region, is explained from the 3-D analysis results. Leakage analyses of ideal infinite-length lines can not model such transition excitation in finite-length circuits.

❑ Return to main document.