Abstracts

Characteristics of Coupled Microstrip Transmission Lines-I: Coupled-Mode Formulation of Inhomogeneous Lines

M.K. Krage and G.I. Haddad. "Characteristics of Coupled Microstrip Transmission Lines-I: Coupled-Mode Formulation of Inhomogeneous Lines." 1970 Transactions on Microwave Theory and Techniques 18.4 (Apr. 1970 [T-MTT]): 217-222.

This paper consists of two parts. In Part I, coupled-mode theory is employed to determine the effects of reflection at the various ports and unequal inductive and capacitive coupling coefficients on the coupling and directivity of two coupled lines. Since couplers utilizing microstrip lines generally have unequal inductive and capacitive coupling coefficients, the results presented here should be useful in explaining the behavior of microstrip coupled lines. It is shown how the difference in the coupling coefficients leads to finite directivity and, under certain conditions, to "codirectional" instead of "contradirectional coupling." In Part II, the coupling coefficients and other parameters of various microstrip-line geometries are presented. Using these parameters in the results obtained here leads to an improved understanding of and design criteria for coupled microstrip lines.

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