Abstracts

Accurate Quasi-TEM Spectral Domain Analysis of Single and Multiple Coupled Microstrip Lines of Arbitrary Metallization Thickness

J.-T. Kuo. "Accurate Quasi-TEM Spectral Domain Analysis of Single and Multiple Coupled Microstrip Lines of Arbitrary Metallization Thickness." 1995 Transactions on Microwave Theory and Techniques 43.8 (Aug. 1995 [T-MTT]): 1881-1888.

The quasi-TEM spectral domain approach (SDA) is extended to rigorously and efficiently analyze single and multiple coupled microstrip lines of arbitrary metallization thickness. The charge distributions on both the horizontal and vertical conductor surfaces are modeled by global basis functions. This results in a relatively small matrix for accurate determination of the line parameters of coupled thick microstrips. A convergence study is performed for the results of a pair of coupled lines with crucial structural parameters to explore the conditions for obtaining reliable solutions using the technique. Results for thick microstrips are validated through comparison with those from available measurements and another theoretical technique. The soundness of the technique is further demonstrated by looking into the trend of the results obtained by a simplified model in which the structural parameters are pushed, step by step, to the numerical extremities. Variations of circuit parameters of a four-line coupled microstrip structure due to the change of finite metallization thickness are presented and discussed.

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