Abstracts

Accurate Wide-Range Design Equations for the Frequency-Dependent Characteristic of Parallel Coupled Microstrip Lines

In this paper, closed-form expressions are presented which model the frequency-dependent even- and odd-mode characteristics of parallel coupled microstrip lines with hitherto unattained accuracy and range of validity. They include the effective dielectric constants, the characteristic impedances using the power-current formulation, as well as the open-end equivalent lengths for the two fundamental modes on coupled microstrip. The formulas are accurate into the millimeter-wave region. They are based on an extensive set of accurate numerical data which were generated by a rigorous spectral-domain hybrid-mode approach and are believed to represent a substantial improvement compared to the state-of-the-art and with respect to the computer-aided design of coupled microstrip filters, directional couplers, and related components.

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