Abstracts

Characterization of the Shielding Effects on the Frequency-Dependent Effective Dielectric Constant of a Waveguide-Shielded Microstrip Using the Finite-Difference Time-Domain Method

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The dispersion behavior of waveguide-shielded microstrip line is investigated using the finite-difference time-domain method. The result is a frequency-dependent effective dielectric constant. Structures having centered strip are examined to determine the effects of a top cover alone and the effects of two symmetrically placed sidewalls. Structures with off-centered strip are used to investigate the effects of a single sidewall alone and the combined effects of a single sidewall plus the top wall. Differences between the effects of a single sidewall alone and those of the two symmetrically placed sidewalls are identified. In addition, new results on the combined effects of the top wall plus one sidewall, which are important when considering the placement of the outermost elements of a packaged circuit, are also discussed.

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