Abstracts

Dispersion and Attenuation Characteristics of Coplanar Waveguides with Finite Metallization Thickness and Conductivity

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A new approach of modifying the conventional spectral domain approach is proposed for an analysis of the coplanar waveguide whose signal strip and ground planes have finite thickness and conductivity. By introducing suitable equivalent sources in the slot and signal strip regions, the problem can be significantly simplified by reducing the two-dimensional numerical integration into the one-dimensional one, thus it can be treated as easily as the conventional spectral-domain approach. By this modified approach, both the phase constant and attenuation constant can be determined simultaneously without using the assumption that the metallization thickness is much larger or smatler than the skin depth. In this work, comparison with published theoretical and experimental results is presented to check the accuracy of the new approach's results. In particular, the effective dielectric constant epsilon /sub eff/ and attenuation constant alpha of a coplanar waveguide with finite metallization thickness and finite conductivity are discussed in detail, together with the current distributions along the signal strip and ground planes.

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