Abstracts

A surface impedance approach for modeling transmission line losses in FDTD

W. Thiel. "A surface impedance approach for modeling transmission line losses in FDTD." 2000 Microwave and Guided Wave Letters 10.3 (Mar. 2000 [MGWL]): 89-91.

The author presents a concept for an ultrawide-band modeling of transmission line losses in the three-dimensional (3-D) finite-difference time-domain (FDTD) scheme. The approach makes use of the surface impedance boundary condition (SIBC) employing a two-port model for a lossy conducting layer with some modifications at the edges of the metal lines. Using this model, the frequency-dependent inner inductance as well as the resistive losses are included up to very high frequencies. Furthermore, the thickness of the metallization can also be extended over several cells, and the real current distribution on the surface can be considered. For validation, the attenuation coefficient and the effective permittivity of a coplanar line are compared to results achieved from the mode-matching technique.

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