Abstracts

The effect of dielectric loss in FDTD simulations of microstrip structures

D.C. Wittwer and R.W. Ziolkowski. "The effect of dielectric loss in FDTD simulations of microstrip structures." 2001 Transactions on Microwave Theory and Techniques 49.2 (Feb. 2001 [T-MTT]): 250-262.

The importance of dielectric losses in planar microstrip structures is evaluated with the finite-difference time-domain (FDTD) method. This analysis was previously not possible in many FDTD simulators due to a lack of absorbing boundary conditions (ABCs), which appropriately terminate air/dielectric interfaces for which the dielectric is lossy. The newly proposed lossy two-time derivative Lorentzian material (L2TDLM) model ABC allows for these terminations and is presented and implemented here for three-dimensional FDTD simulations. The effect of dielectric losses on several well-known planar microstrip structures is evaluated. It is shown that the inclusion of these losses in FDTD simulations, which is facilitated by the L2TDLM ABC, is, in fact, important to predict the performance of resonant structure on lossy dielectric substrates.

❑ Return to main document.