Abstracts

Time-domain vector-potential analysis of complex RF multilayer structures via segmentation technique

The newly developed time-domain vector potential (TDVP) approach, based on the finite-difference solution of the wave equation for the magnetic vector potential A/spl I.oarr/, is applied to the analysis of multilayer structures typical for RF/microwave printed-circuit boards (PCB), widely used in the personal communication systems (PCS) technology. The transient analysis of complex multiport discontinuities, where cross-talk and resonant phenomena occur, is used to obtain their scattering parameters. The subsequent modeling of the whole unit is carried out by making use of the S-parameter library, prepared by the TDVP algorithm, and, a suitable microwave-circuit simulator, e.g. EESof Touchstone and Libra. The TDVP algorithm is also used to predict the resonant frequencies of patch cavities which are encountered in multilevel multiconductor structures.

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