Abstracts

Analysis of Nonlinear Termination Networks for Coupled Lossy and Dispersive Transmission Lines (Short Papers)

Based upon an algorithm described in a separate paper, multiple transmission lines with skin effect losses and dispersive characteristics were analyzed by the volume equivalent principle, and the scattering matrix [S omega] and characteristic impedance matrix [Z/sub o/ omega] of the transmission lines were obtained. The [S omega] and [Z/sub0/(omega)] were then transformed by the inverse FFT into the time domain. The scattering matrix representation is multiplicative in nature, which leads to the time domain formulation as a set of convolution integrals. Instead of attempting to solve a set of coupled convolution integral equations by the multivariable Newton-Raphson method, which may occasionally be unstable, we generated a set of object functions and applied a multivariable optimization technique, referred to as the modified Levenberg-Marquardt algorithm, to attain the solutions. The new method, which is quite general, reduces to the special cases derived in many previous publications.

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