Abstracts

Equivalent Representations of Lossy Nonuniform Transmission Lines

Equivalent transformations, which were recently derived for mixed lumped and distributed circuits, may be extended to circuits consisting of lumped reactance, resistors, and lossy transmission lines. It is shown that circuits consisting of a cascade connection of lumped element sections and lossy uniform transmission lines are equivalent to circuits consisting of a cascade connection of lossy nonuniform transmission lines, lumped elements, and ideal transformers. Furthermore, by considering the limiting case of these transformations, equivalent transformations for circuits consisting of a cascade connection of lumped reactance, resistors, and nonuniform transmission lines are obtained. Exact equivalent circuits of lossy even-order binomial form transmission lines are derived from these equivalent transformations.

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