Abstracts

Noise Analysis of Microwave Circuits with General Topology

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A method for noise analysis of microwave multiports with general internal topology is presented. The multiport circuit is seperated into the connection circuit and the circuit elements. Based upon the digraph representation of the connection circuit the scattering matrix of the connection circuit is computed from the fundamental cut set matrix and the fundamental loop matrix of the connection circuit. From this and the S-parameters of the circuit elements and the correlation spectra of the internal noise sources the S-matrix of the multiport and the correlation matrix of its external equivalent noise sources may be determined directly. Circuit elements may be noisy two-terminal elements as well as noisy n-terminal elements and noisy multiports.

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