Abstracts

Analysis of Linear Noisy Two-Ports Using Scattering Waves

R.P. Hecken. "Analysis of Linear Noisy Two-Ports Using Scattering Waves." 1981 Transactions on Microwave Theory and Techniques 29.10 (Oct. 1981 [T-MTT]): 997-1004.

This paper proposes a new approach to the use of scattering waves for spot noise analysis of linear N-ports. Noise as a stationary, stochastic process is approximated by an infinite series of partial noise waves. This allows the use of the scattering matrix formalism and signal flowgraph theory. The noise waves lead to a new set of three dimensionless, characteristic noise parameters. Methods to determine these parameters are simple. With these parameters, the theory of noise minimization is straightforward and the definition of constant noise circles uncomplicated. The effect of losses in noise matching networks is shown to be more significant in very low noise amplifiers than usually assumed.

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