Abstracts

Conversion Loss and Noise of Microwave and Millimeterwave Mixers: Part 1--Theory

D.N. Held and A.R. Kerr. "Conversion Loss and Noise of Microwave and Millimeterwave Mixers: Part 1--Theory." 1978 Transactions on Microwave Theory and Techniques 26.2 (Feb. 1978 [T-MTT]): 49-55.

An analysis is presented for the conversion loss and noise of microwave and millimeter-wave mixers. The analysis includes the effects of nonlinear capacitance, arbitrary embedding impedances, nonideality of microwave diodes, and shot, thermal, and scattering noise generated in the diode. Correlation of down-converted components of the time-varying shot noise is shown to explain the "anomalous" noise observed in millimeter-wave mixers. Part 1 of the paper presents the theoretical basis for predicting mixer performance, while Part 2 compares theoretical and experimental results for mixers operating at 87 and 115 GHz.

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