Abstracts

The Precision Measurement of Noise Temperature of Mismatched Noise Generators

D.F. Wait. "The Precision Measurement of Noise Temperature of Mismatched Noise Generators." 1970 Transactions on Microwave Theory and Techniques 18.10 (Oct. 1970 [T-MTT]): 715-724.

By refining the technique and analysis of an earlier paper, it is shown that a compensation method is the basis of the most precise measurement of noise temperature, especially for cryogenic noise generators. The measurement system is adjusted so that it is in thermal equilibrium with the generator under test. As is typical for the compensation method, the generator under test may be mismatched, and the comparison errors and detector limitations can be verified experimentally. For generators with small reflection coefficients (|Gamma| <= 0.1), the comparison error is very close to the theoretical minimum, namely, twice the system resolution. For reflection coefficients as large as 0.5, the comparison error increases in a typical system to about four times the system resolution.

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