Abstracts

Summary of Measurement Techniques of Para-Metric Amplifier and Mixer Noise Figure

R.D. Haun, Jr.. "Summary of Measurement Techniques of Para-Metric Amplifier and Mixer Noise Figure." 1960 Transactions on Microwave Theory and Techniques 8.4 (Jul. 1960 [T-MTT]): 410-415.

Expressions are derived for the noise factor of a frequency mixing circuit under two different operating conditions: 1) single-sideband operation with input only in a band of frequencies at omega/sub 1/; and 2) double-sideband radiometer operation with incoherent inputs in the bands both at frequency omega/sub 1/ and at omega/sub 2/=omega/sub 3/-omega/sub 1/. In both cases, the output is taken only at omega/sub 1/. It is shown that the noise figure for radiometer double-sideband operation is not always 3 db less than for single-sideband operation. It is also shown that it is possible to obtain an output signal-to-noise ratio which is greater than the input signal-to-noise ratio for coherent double-sideband operation. Methods are analyzed for measuring the effective noise temperature of this circuit by using a broad-band noise source.

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