Abstracts

A Study of the Noise-Temperature Performance of a Satellite Communications Low-Noise Amplifier Subsystem

M. Kajikawa. "A Study of the Noise-Temperature Performance of a Satellite Communications Low-Noise Amplifier Subsystem." 1982 Transactions on Microwave Theory and Techniques 30.7 (Jul. 1982 [T-MTT] (Joint Special Issue on GaAs IC's)): 1068-1078.

The heart of the low-noise ampfifier (LNA) subsystem is the parametric amplifier which consists of a parametric amplifier proper and a circulator. The LNA subsystem can be simplified into an equivalent circuit, to evaluate its noise-temperature performance by assuming that it consists of a parametric amplifier proper and a circulator, which in its overall sense includes the additional components of the input line as elements in one arm of the circulator. Using this simplified equivalent circuit, the noise-temper ature performance is analyzed theoretically and provides a precise value for the LNA subsystem noise-temperature degradation, the noise-temperature increase of the earth-station receiving system caused by connecting an actual antenna to the subsystem and the measurement error of the HOT/COLD load noise temperature measurement method.

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