Abstracts

Subtle Differences in System Noise Measurements and Calibration of Noise Standards (Nov. 1962 [T-MTT])

T. Mukaihata, B.L. Walsh, Jr., M.F. Bottjer and E.B. Roberts. "Subtle Differences in System Noise Measurements and Calibration of Noise Standards (Nov. 1962 [T-MTT])." 1962 Transactions on Microwave Theory and Techniques 10.6 (Nov. 1962 [T-MTT]): 506-516.

Stringent system requirements and the lack of accurate standards have been the source of many controversies in low-noise receiver measurements. Some of the critical measurement problems where subtle errors commonly arise, and their significance in automatic noise temperature monitoring systems have been investigated at L-, S-, and X-band frequencies. Problems of interest include the following: 1) difficulty in determining losses associated with low-noise systems and measuring equipment, 2) differences in noise figure measurements depending upon the use of gated or nongated receivers, 3) discrepancies in excess noise ratios of secondary standard argon gas tubes, 4) non-uniformity in the output noise power of such gas tubes due to critical coupling from the gas tube proper to the waveguide (or coaxial) output flange. As a partial solution to these problems noise standards at liquid nitrogen temperature in coax and waveguide were developed at the aforementioned bands.

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