# Abstracts

## Sensitivity of the Total Power Radiometer with Periodic Absolute Calibration

*M.S. Hersman and G.A. Poe. "Sensitivity of the Total Power Radiometer with Periodic Absolute Calibration." 1981 Transactions on Microwave Theory and Techniques 29.1 (Jan. 1981 [T-MTT]): 32-40.*

The total power radiometer is an attractive choice for imaging applications due to its high sensitivity and simple configuration. However, available theoretical results are inadequate to allow an accurate radiometer performance prediction in the presence of receiver gain fluctuations and other receiver characteristics with nonuniform fluctuation power spectra. An improved analysis of the total power radiometer Delta T is presented in terms of the receiver output fluctuation power spectral density and a transfer function due to postdetection filtering and periodic calibration. Verification of this analysis is obtained by measuring the fluctuation power spectrum of a 94-GHz receiver and comparing the predicted Delta T with a direct measurement. Numerical results including application to an example radiometer system are presented. These results indicate that the total power radiometer should function well in short integration time, periodically calibrated radiometer systems.

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