Abstracts

S-Band Radiometer Design for High Absolute Precision Measurement

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A radiometer for the remote measurement of absolute sea surface temperature is described. Two requirements are necessary for the attainment of the desired goal of 1 or 2 degrees (K) in absolute accuracy. Although the first is inappropriate for discussion here, it is clear that corrections must be developed to account for perturbations caused by surface effects (roughness, foaming, and salinity changes) and for atmospheric effects (absorption and scattering). The second requirement, namely the development of an instrument capable not only of high relative accuracy (i e., resolution) but also of high absolute precision, is the subject of this paper. The concept underlying the design of an instrument capable of an absolute precision of a few tenths degrees Kelvin in the measurement of brightness temperature at S-band is described. The role of the antenna is discussed and the importance of high ohmic and beam efficiencies is stressed. Finally, a description of the hardware itself is presented, along with the development of a unique cryogenically cooled termination used to calibrate the entire system, including antenna.

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