

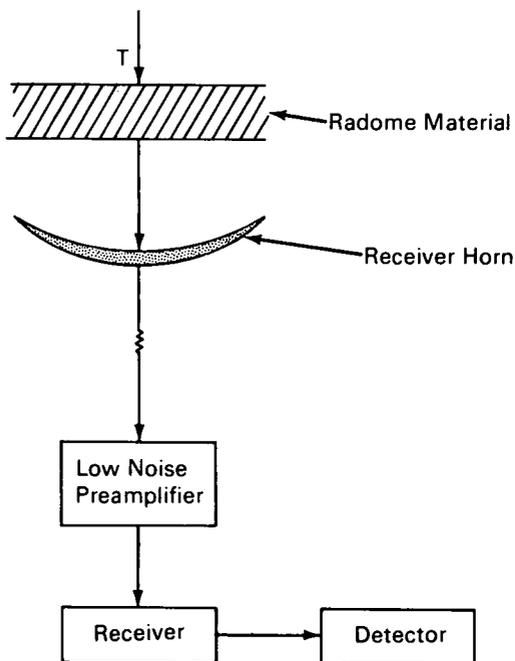
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A Radiometric Method for Measuring the Insertion Loss of Radome Materials

A radome which protects an antenna from adverse weather conditions degrades the performance of the communications receiving system by the intrinsic nature of the radome insertion loss. In low noise



Simplified Block Diagram of Radiometer System for Radome Material Evaluation

systems the degradation is greatly increased due to the thermal radiation from the radome material. The radome material must be chosen to minimize the degradation produced by the insertion loss and the thermal radiation.

The radiometer system shown in the simplified block diagram measures the effective noise temperature directed towards the sky, with and without the radome placed over the antenna horn. The experimental data is then translated into a computer format; with the additional transmission line insertion loss data obtained from an independent set of measurements, a computer calculates the insertion loss of the radome material. An overall accuracy of 0.001 db per 0.1 db is possible when special care is taken in the experimental procedure. An error analysis has indicated that the system temperature measurement is the most sensitive parameter which affects the value of the insertion loss.

Note:

Requests for further information may be directed to:

Technology Utilization Officer
 NASA Pasadena Office
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Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: C. T. Stelzried and B. L. Seidel of Caltech/JPL under contract to NASA Pasadena Office (NPO-11423)

Category 02