Abstracts

Highly Reliable High-Power 86-GHz Components and Transmitter--Receiver Modules

M. Akaike, H. Kato and N. Kanmuri. "Highly Reliable High-Power 86-GHz Components and Transmitter--Receiver Modules." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 693-701.

The reliability of semiconductor active devices is related to the junction temperature of diodes used. This paper describes the reliability design and performance of 86-GHz active components and transmitter-receiver modules for a guided millimeter-wave transmission system. The components are IMPATT oscillators, IMPATT amplifiers, varactor frequency multipliers, and Schottky-barrier diode upconverters. The maximum output powers of these active devices are calculated for a given mean time between failure (MTBF). Active components and transmitter-receiver modules for 86-GHz operation were manufactured based upon the design with considerations for reliability as well as RF performance.

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