Abstracts

Ultra-low-noise indium-phosphide MMIC amplifiers for 85-115 GHz

J.W. Archer, R. Lai and R. Gough. "Ultra-low-noise indium-phosphide MMIC amplifiers for 85-115 GHz." 2001 Transactions on Microwave Theory and Techniques 49.11 (Nov. 2001 [T-MTT] (Special Issue on the 2000 Asia-Pacific Microwave Conference)): 2080-2085.

This paper describes a high-performance indium-phosphide monolithic microwave integrated circuit (MMIC) amplifier, which has been developed for cooled application in ultra-low-noise imaging-array receivers. At 300 K, the four-stage amplifier exhibits more than 15-dB gain and better than 10-dB input and output return loss from 80 to 110 GHz. The room-temperature noise figure is typically 3.2 dB, measured between 90-98 GHz. When cooled to 15 K, the gain increases to more than 18 dB and the noise figure decreases to 0.5 dB. Only one design pass was required to obtain very good agreement between the predicted and measured characteristics of the circuit. The overall amplifier performance is comparable to the best ever reported for MMIC amplifiers in this frequency band.

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