Abstracts

Cryogenically Cooled Performance of a Monolithic 44-GHz InP-Based HEMT Low-Noise Amplifier

H. Wang, D.C.W. Lo, R. Lai, C.-C. Yang and J. Berenz. "Cryogenically Cooled Performance of a Monolithic 44-GHz InP-Based HEMT Low-Noise Amplifier." 1995 Microwave and Guided Wave Letters 5.9 (Sep. 1995 [MGWL]): 281-283.

A monolithic 44-GHz low-noise amplifier using 0.1µm pseudomorphic InAlAs/InGaAs/InP HEMT technology and its cryogenically cooled performance are reported. This single-stage MMIC amplifier has a measured noise figure of 2.5 dB with an associated gain of 8 dB at 44.5 GHz with 5-mW dc power consumption at room temperature. The noise temperature of this MMIC LNA decreases to 29 K (0.4-dB noise figure) and the associated gain increases to 10.3 dB when it is cooled down to 80 K under the same bias condition, which correspond to an average noise temperature reduction slope of 0.9 and a gain increase slope of 0.01 dB/°K. To our knowledge, this is the first reported cryogenically cooled noise performance of a monolithic amplifier at this frequency.

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