Abstracts

A W-Band Monolithic Pseudomorphic InGaAs HEMT Downconverter

K.W. Chang, H. Wang, T.H. Chen, K. Tan, J. Berenz, G.S. Dow, A.C. Han, D. Garske and L.C.T. Liu. "A W-Band Monolithic Pseudomorphic InGaAs HEMT Downconverter." 1991 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 91.1 (1991 [MCS]): 55-58.

This paper presents the design, fabrication, and evaluation of a fully integrated W-band monolitic downconverter based on InGaAs pseudomorphic HEMT (PHEMT). The downconverter consists of a two-stage low-noise amplifier (LNA) and a singly balanced HEMT gate diode mixer. Measured results of the complete downconverter show a conversion gain of 5.3 dB and a noise figure of 6.8 dB at 94 GHz. The whole downconverter is a first pass design and has a high circuit yield. Furthermore, this is first reported monolithic downconverter in the W-band frequency range, and represents the state-of-the-art in monolithic millimeter-wave technology.

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