Abstracts

A Monolithic V-band Upconverter Using 0.2 µm InGaAs/GaAs Pseudomorphic HEMT Technology (1992 [MCS])

H. Wang, B. Nelson, L. Shaw, R. Kasody, Y. Hwang, W. Jones, D. Brunone, M. Sholly, J. Maguire and T. Best. "A Monolithic V-band Upconverter Using 0.2 µm InGaAs/GaAs Pseudomorphic HEMT Technology (1992 [MCS])." 1992 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 92.1 (1992 [MCS]): 197-200.

A monolithic approach to V-band upconverter development has the advantages of lighter weight and lower cost over conventional hybrid approachs for high volume insertions into transmitter systems. This paper will present the design and performance of a complete monolithic upconverter macrocell using 0.2 µm InGaAs/GaAs pseudomorphic HEMT technology. Individual components, including a 2-10 GHz IF amplifier, a V-band upconverting mixer and a V-band amplifier are also described. The measured results demonstrate a conversion gain of 10 dB at V-band by injecting a 2-10 GHz IF frequency with an LO drive of 10 dBm at 54 GHz. This is the first reported monolithic upconverter with good performance and bandwidth at this frequency.

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