Abstracts

A K-band subharmonic down-converter in a GaAs metamorphic HEMT process

B. Matinpour, N. Lal, J. Laskar, R.E. Leoni, III and C.S. Whelan. "A K-band subharmonic down-converter in a GaAs metamorphic HEMT process." 2001 MTT-S International Microwave Symposium Digest 01.2 (2001 Vol. II [MWSYM]): 1337-1339 vol.2.

In this paper, we present the first implementation of a K-band subharmonic down-converter fabricated in a 0.18-/spl mu/m GaAs Metamorphic High Electron Mobility Transistor (MHEMT) process. The low noise and high gain characteristics of the MHEMTs at K-band allow for the integration of a single-stage amplifier with a subharmonic mixer resulting in low-power broadband performance. The subharmonic mixer exhibits conversion loss of 13 dB and IIP3 of +8 dBm from 23 to 30 GHz. With the addition of the amplifier, the down-converter exhibits a conversion loss of 3 dB, noise figure of 5 dB, and IIP3 of -5 dBm from 26 to 30 GHz. The single-stage amplifier exhibits InP-like performance with gain of 11 dB, NF of 1.5 dB, and dc power consumption of 15 mW.

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