Abstracts

An L-Band Ultra-Low-Power-Consumption Monolithic Low-Noise Amplifier

M. Nakatsugawa, Y. Yamaguchi and M. Muraguchi. "An L-Band Ultra-Low-Power-Consumption Monolithic Low-Noise Amplifier." 1995 Transactions on Microwave Theory and Techniques 43.7 (Jul. 1995, Part II [T-MTT] (Special Issue on Emerging Commercial and Consumer Circuits, Systems, and Their Applications)): 1745-1750.

A low-power-consumption variable-gain low-noise amplifier (LNA) is demonstrated. To achieve low noise, low distortion, and low power consumption simultaneously, a cascode connection between an enhancement-mode GaAs MESFET (EFET) and a depletion-mode GaAs MESFET (DFET) is employed. The EFET is superior to the DEFT in its gain and noise figure performance while the DFET offers good intermodulation distortion performance. The advantages of both types of FET's are combined in the developed LNA. It shows excellent performance with an NF of 2.0 dB, a gain of 12.2 dB, and an IP/sub 3/ of 5.1 dBm at 1.9 GHz. The demonstrated performance satisfies the specifications of the Japanese Personal Handy phone System even at the ultra-low power consumption of 2.0 mW.

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