Abstracts

A 60 GHz-Band Low Noise HJFET Amplifier Module for Wireless LAN Applications

K. Maruhashi, M. Funabashi, T. Inoue, M. Madihian and M. Kuzuhara. "A 60 GHz-Band Low Noise HJFET Amplifier Module for Wireless LAN Applications." 1996 MTT-S International Microwave Symposium Digest 96.1 (1996 Vol. I [MWSYM]): 13-16.

A 60 GHz-band low noise amplifier (LNA) module has been developed based on 0.15µm AlGaAs/InGaAs heterojunction FET (HJFET) technologies. A two-stage MMIC amplifier was designed and fabricated, which exhibited a noise figure less than 3dB with a gain higher than 10dB over 59.5 to 61.5GHz range. For the module fabrication, two MMIC chips were mounted in a WR-15 waveguide housing. The four-stage amplifier module demonstrated a noise figure of 4dB and a gain higher than 24dB from 59 to 60GHz. To our knowledge, this is the best reported noise figure including a microstrip-to-waveguide transition loss, using GaAs-based MMICs operating at this frequency range. The measured output power for the module at 1dB gain compression point was 4dBm. Temperature test from -20 to 70° C revealed very small noise figure and gain variations of 0.35dB and 0.62dB, respectively.

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