Abstracts

A high-power and high-efficiency monolithic power amplifier at 28 GHz for LMDS applications

M.K. Siddiqui, A.K. Sharma, L.G. Callejo and R. Lai. "A high-power and high-efficiency monolithic power amplifier at 28 GHz for LMDS applications." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2226-2232.

A high-power and high-efficiency monolithic power amplifier operating from 27.5 to 29.5 GHz is presented for local multipoint distribution service. Using 0.15-/spl mu/m InGaAs/AlGaAs/GaAs pseudomorphic high electron-mobility transistor devices, the two-stage power amplifier on 4-mil GaAs substrate demonstrated greater than 16-dB small-signal gain, 32-dBm (1.6 W) power with 35% power-added efficiency. The amplifier attained peak output power of 33.9 dBm (2.4 W) and peak power-added efficiency of 37%. At the peak power level, the amplifier exhibited power densities in excess of 640 mW/mm, which is the highest output power density attained by Ka-band monolithic power amplifiers. At lower drain voltage, the amplifier attained 43% power-added efficiency with 30-dBm output power.

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