Abstracts

Power-amplifier modules covering 70-113 GHz using MMICs

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A set of W-band power amplifier (PA) modules using monolithic microwave integrated circuits (MMICs) have been developed for the local oscillators of the far-infrared and sub-millimeter telescope (FIRST). The MMIC PA chips include three driver and three PAs, designed using microstrip lines, and another two smaller driver amplifiers using coplanar waveguides, covering the entire W-band. The highest frequency PA, which covers 100-113 GHz, has a peak power of greater than 250 mW (25 dBm) at 105 GHz, which is the best output power performance for a monolithic amplifier above 100 GHz to date. These monolithic PA chips are fabricated using 0.1-/spl mu/m AlGaAs/InGaAs/GaAs pseudomorphic T-gate power high electron-mobility transistors on a 2-mil GaAs substrate. The module assembly and testing, together with the system applications, is also addressed in this paper.

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