Abstracts

Recent advances in the performance of InP Gunn devices and GaAs TUNNETT diodes for the 100-300-GHz frequency range and above

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Improved heat dissipation in InP Gunn devices resulted in RF power levels exceeding 200, 130, 80, and 25 mW at oscillation frequencies of around 103, 132, 152, and 162 GHz, respectively. Corresponding dc-to-RF conversion efficiencies exceeded 2.3% from 102 to 132 GHz. Power combining increased the available RF power levels to over 300 mW at 106 GHz, around 130 mW at 136 GHz, and more than 125 mW at 152 GHz with corresponding combining efficiencies from 80% to over 100%. Operation in a second harmonic mode yielded RF power levels of more than 3.5 mW at 214 GHz, over 2 mW around 220 GHz as well as over 1 mW around 280, 300, and 315 GHz. RF power levels exceeding 10 mW at 202 GHz, 9 mW around 210 GHz, and 4 mW around 235 GHz were obtained from GaAs TUNNETT diodes in a second harmonic mode as well. Corresponding dc-to-RF conversion efficiencies were around 1% at 202 and 210 GHz.

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