Abstracts

155- and 213-GHz AlInAs/GaInAs/InP HEMT MMIC Oscillators

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We report on the design and measurement of monolithic 155- and 213-GHz quasi-optical oscillators using AlInAs/GaInAs/InP HEMT's. These results are believed to be the highest frequency three-terminal oscillators reported to date. The iridium concentration in the channel was 80% for high sheet charge and mobility. The HEMT gates were fabricated with self-aligned sub-tenth-micrometer electron-beam techniques to achieve gate lengths on the order of 50 nm and drain-source spacing of 0.25 µm. Planar antennas were integrated into the fabrication process resulting in a compact and efficient quasi-optical Monolithic Millimeter-wave Integrated Circuit (MMIC) oscillator.

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