39. Title: High Output Power (similar to 400 mu W) Oscillators at around 550GHz Using Resonant Tunneling Diodes with Graded Emitter and Thin Barriers

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Abstract: We report resonant tunneling diode (RTD) oscillators with a high output power of around 400 mu W at frequencies of 530-590 GHz. RTDs with a graded emitter and thin barriers were employed to obtain large negative differential conductance at high frequencies for high output power. An optimized structure of offset slot antennas was also used to maximize the radiation conductance. The highest output power obtained in this study was 420 mu W at 548 GHz for an RTD with a peak current density of 24 mA/mu m(2); the RTD was placed 58 mu m apart from the center of a 130-mu m-long slot antenna.