Abstracts

A Continuously Tunable 65--115-GHz Gunn Oscillator

J.E. Carlstrom, R.L. Plambeck and D.D. Thornton. "A Continuously Tunable 65--115-GHz Gunn Oscillator." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): 610-619.

A phase-locked second harmonic Gunn oscillator, mechanically tunable from 65 to 115 GHz, has been developed for use as a local oscillator (LO) in millimeter radio astronomy. The oscillator's output power is greater than 2 mW over most of its operating range, and exceeds 10 mW from 80 to 102 GHz. Its frequency can be electronically tuned approximately ±200 MHz by varying the bias voltage on the Gunn diode it is phase locked by exploiting this bias tuning. The oscillator consists of a commercially available, packaged GaAs Gunn diode which is mounted in a coaxial resonator of adjustable length. Descriptions of the mechanical design and phase-lock circuit are given. Extensive experimental measurements of the tuning range and power output for oscillators with different resonator dimensions also are reported.

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