Abstracts

A 640 GHz planar-diode fundamental mixer/receiver

P.H. Siegel, I. Mehdi, R.J. Dengler, T.H. Lee, D.A. Humphrey, A. Pease, Ralph Zimmermann and P. Zimmermann. "A 640 GHz planar-diode fundamental mixer/receiver." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 407-410.

The design and performance of a 640 GHz solid-state receiver using a fundamental planar-Schottky-diode mixer, InP Gunn diode oscillator, whisker-contacted Schottky-varactor-diode sextupler and folded-Fabry-Perot diplexer are reported. A best mixer noise temperature of 1640 K DSB, conversion loss of 8.1 dB, has been achieved at room temperature at an IF of 8 GHz and the noise is below 2100 K DSB from 1.5-11 GHz IF. Measurements employing a commercial 4-8 GHz Miteq amplifier and external bias T yield a double sideband receiver noise temperature below 3100 K from 2-8 GHz with a best value of 2720 K at 4 GHz. Measured local oscillator power was only 350 microwatts measured on a Keating acousto-optic power meter. These results are believed to represent the best reported performance for a room-temperature planar-Schottky diode receiver at this frequency.

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