Abstracts

The development of planar Schottky diode waveguide mixers at submillimeter wavelengths

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This paper reports on progress towards state-of-the-art submillimeter wavelength waveguide mixers using planar Schottky barrier diodes. A double-sideband system noise temperature of 2380 K was measured at 585 GHz with 1.2 mW of local oscillator power using a fixed tuned mixer in which the diode is mounted in a microstrip channel. A system noise temperature of 2550 K was measured with 1.1 mW of LO power using a mixer in which the diode was mounted in a waveguide in front of a tunable backshort. These represent the best planar diode mixer results in this frequency range. Simulations indicate an IF bandwidth in excess of 100% and an RF bandwidth of 40% are achievable using the fixed tuned mixer block design.

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