Abstracts

Design and Measurements of a 210 GHz Subharmonically Pumped GaAs MMIC Mixer

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A MMIC mixer chip incorporating a separately biased pair of antiparallel GaAs air-bridge Schottky diodes has been developed and tested at 210 GHz. The MMIC wafer is housed in a simple crossed waveguide mount with E-plane coupling probes to couple in the 105 GHz local oscillator and the 210 GHz signal. RF and intermediate frequency matching and filtering is provided on chip as well as separate DC bias paths for each diode. The MMIC chip is described and the measured mixer performance is presented. The measured noise and conversion loss are within 3.5 dB of the best reported subharmonic mixers using individually optimized and mounted planar or whisker contacted diodes at this frequency. The performance of a set of antiparallel diodes, identical to those used in the MMIC but flip chip mounted in a non MMIC subharmonic mixer mount, is also presented and compared with planar diodes made with a different anode deposition process in the same mixer mount.

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