Abstracts

Broadband Quasi-Optical SIS Mixers with Large Area Junctions (Short Papers)

G. Pance and M.J. Wengler. "Broadband Quasi-Optical SIS Mixers with Large Area Junctions (Short Papers)." 1994 Transactions on Microwave Theory and Techniques 42.4 (Apr. 1994, Part II [T-MTT]): 750-752.

A broadband quasi-optical superconducting tunnel junction (SIS) mixer with integrated tuning elements was designed and tested. We are able to achieve very low noise performance using commercially available niobium integrated circuit (IC) technology. The low critical current density (980 A/cm^2) and large area (12 μm^2) of the commercial SIS's is compensated by the abitity to fabricate accurate integrated tuning structures in the mature niobium IC process available from Hypres, Inc. Noise measurements were made in the frequency range from 70 to 105 GHz. The best uncorrected double sideband receiver noise is 38 K at 77 GHz, with receiver noise temperatures less than 100 K from 75 to 102 GHz.

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