Abstracts

A 547 GHz SIS Receiver Employing a Submicron Nb Junction with an Integrated Matching Circuit

P. Febvre, W.R. McGrath, P. Batelaan, H.G. LeDuc, B. Bumble, M.A. Frerking and J. Hernichel. "A 547 GHz SIS Receiver Employing a Submicron Nb Junction with an Integrated Matching Circuit." 1993 MTT-S International Microwave Symposium Digest 93.2 (1993 Vol. II [MWSYM]): 771-774.

A heterodyne receiver using an SIS waveguide mixer with two mechanical tuners has been built and characterized over a frequency range of 460 GHz to 630 GHz. The mixer uses high current density, 0.25 μm², Nb/AIO/sub x//Nb SIS tunnel junctions with integrated superconductive RF circuits to tune the junction capacitance. A DSB receiver noise temperature as low as 200 ± 17 K has been obtained at 540 GHz. In addition, negative differential resistance has been observed in the DC I-V curve at 487-491 GHz.

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