Abstracts

An 85-116 GHz SIS Receiver Using Inductively Shunted Edge Junctions

S.-K. Pan, A.R. Kerr, M.J. Feldman, A.W. Kleinsasser, J.W. Stasiak, R.L. Sandstrom and W.J. Gallagher. "An 85-116 GHz SIS Receiver Using Inductively Shunted Edge Junctions." 1989 Transactions on Microwave Theory and Techniques 37.3 (Mar. 1989 [T-MTT]): 580-592.

For the most part, SIS receivers have failed by a wide margin to achieve the sensitivity promised by theory. One of the main reasons for this is the difficulty of providing appropriate embedding impedances at the signal and image frequencies and at the higher harmonic sidebands. We describe an SIS mixer with a broad-band integrated tuning structure. The mixer is tunable from 85 to 116 GHz and at 114 GHz has a noise temperature <= 5.6 K DSB and unity DSB conversion gain. The mixer noise temperature is less than or comparable to the photon noise temperature hf/k = 5.5 K. Referred to the mixer input flange, the receiver noise temperature is <=9.5 K DSB when operated with an L-band HEMT IF amplifier. Saturation measurements have been made using CW and broadband noise sources.

❑ Return to main document.