Abstracts

A 200-285-GHz waveguide SIS mixer with an inhomogeneous distributed junction array

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In this paper, we present the experimental results of a waveguide superconductor-insulator-superconductor (SIS) mixer with an inhomogeneous distributed junction array. The mixer consists of five Nb-AlO/sub x/-Nb SIS junctions with different dimensions distributed on a superconducting microstrip. The critical current density of the fabricated junctions was 3100 A/cm/sup 2/. Detailed measurements of the receiver noise temperature have been made in the frequency range from 190 to 284 GHz at 4.2 K. A double-sideband (DSB) receiver noise temperature of 5 hw/k was obtained in the frequency range from 202 to 284 GHz and the lowest DSB receiver noise temperature of 46 K was obtained at 210 GHz.

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