Abstracts

A Low-Noise 47-GHz Mixer Using a Permanent Josephson Junction

J. Edrich. "A Low-Noise 47-GHz Mixer Using a Permanent Josephson Junction." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 706-709.

A new method to produce permanent Josephson junctions for millimeter-wave mixers is reported. In contrast to conventional point contacts which are mechanically unstable and require adjustments after each cooldown, these point contact junctions are set at room temperature, stay mechanically stable, and can be temperature cycled without readjustments. Using these junctions in a modified Sharpless wafer mixer mount, a single-sideband noise temperature of 71 K was measured at 47 GHz. Based on these results, system noise temperatures of less than 100 K are predicted for practical broad-band radiometers, radar, and communications receivers up to at least 100 GHz.

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