

Abstracts

Millimeter-Wave, Shot-Noise Limited, Fixed-Tuned Mixer

M.T. Faber and J.W. Archer. "Millimeter-Wave, Shot-Noise Limited, Fixed-Tuned Mixer." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1172-1178.

In a companion paper, two computer-controlled measurement systems for testing millimeter-wave Schottky-barrier diode mixers between 90 and 350 GHz have been presented. In this paper, a typical application of the measurement system to the testing and evacuation of a practical W-band, cryogenic, fixed-tuned Schottky diode mixer is used to demonstrate the performance of the instruments. The mixer is shown to have a single-sideband noise temperature of less than 140 K between 98 and 118 GHz and, at 110 GHz, achieves shot-noise limited performance, with a SSB noise temperature of only 81 K and corresponding conversion loss of 5.7 dB.

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