

A Broad-Band, Ultra-Low-Noise Schottky Diode Receiver from 80 to 115 GHz Diode

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A cryogenic 3-mm receiver has been developed which fully utilizes the low-noise potential of Schottky diodes by approaching the shot-noise limit within 10 percent. With a broad-band mixer design which properly terminates the input sidebands and reactively terminates the second harmonic of the local oscillator and its sidebands, the double sideband (DSB) mixer noise temperature is 35 K in the best case. This design has given an average DSB receiver noise temperature of 75 K over the 80 to 115-GHz band with a best noise temperature of 62 K.

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