

W-Band MMIC Direct Detection Receiver for Passive Imaging System

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We have demonstrated for the first time W-band MMIC direct detection receivers for passive millimeter-wave imaging applications. These receivers were developed using InGaAs HEMT based W-band LNA and preamplifier detector MMICs. The first receiver uses a 50 dB gain, 6 dB noise figure amplifier and a Schottky barrier diode waveguide detector. The amplifier uses four W-band MMIC LNAs. The second receiver consists of two 3-stage MMIC LNAs and a MMIC preamplified / detector chip. Individual receiver was integrated with a millimeter-wave camera system. Field imaging acquisition runs were performed using the camera in stepping pushbroom image acquisition mode with excellent results.

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