Abstracts

A Wideband Monolithic Submillimeter-Wave Quasi-Optical Power Meter

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A novel monolithic power meter has been developed for submillimeter-wave applications (100GHz to 10THz). The detector is a 4x4 mm Bismuth bolometer integrated on a 1.2 µm thick dielectric membrane. This approach results in a wideband high-responsivity detector. The power meter is simple to fabricate, inexpensive, and can be easily calibrated using a low-frequency network. Quasi-optical measurements at 185GHz show that the bolometer is polarization independent, acts as a lambertian surface, and could be modelled by a simple transmission line model. The measured low-frequency responsivity for a 70Omega bolometer, at a bias of 1V. and a video modulation of 300Hz, is around 1V/W. The NEP of the detector is around 3nWHz/sup -1/2/. Potential application areas are antenna coupling efficiency measurements and absolute power measurements at submillimeter wavelengths.

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