Abstracts

A 140-170-GHz low-noise uniplanar subharmonic Schottky receiver

G.P. Gauthier, J.-P. Raskin and G.M. Rebeiz. "A 140-170-GHz low-noise uniplanar subharmonic Schottky receiver." 2000 Transactions on Microwave Theory and Techniques 48.8 (Aug. 2000 [T-MTT]): 1416-1419.

A 150-GHz Schottky diode subharmonic receiver based on a coplanar-waveguide-fed double-folded-slot (DFS) antenna is presented in this paper. The DFS antenna is placed on an extended hemispherical high-resistivity silicon substrate lens to achieve a high directivity and a high coupling to a Gaussian beam efficiency. The uniplanar receiver results in a 12/spl plusmn/0.5-dB measured double-sideband conversion loss at 144-152 GHz for a 8-10 mW local-oscillator power at 77 GHz, and has a wide-hand /spl les/13-dB conversion loss over 30 GHz of bandwidth (140-170 GHz). The measured conversion loss includes silicon lens absorption and reflection losses, as well as IF mismatch losses. The applications are in new small aperture (7.5-cm lenses) collision-avoidance radars at 150 GHz.

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