Abstracts

Design and Measurements of a Novel Subharmonically Pumped Millimeter-Wave Mixer Using Two Single Planar Schottky-Barrier Diodes

S.D. Vogel. "Design and Measurements of a Novel Subharmonically Pumped Millimeter-Wave Mixer Using Two Single Planar Schottky-Barrier Diodes." 1996 Transactions on Microwave Theory and Techniques 44.6 (Jun. 1996 [T-MTT]): 825-831.

A novel design of a subharmonically pumped millimeter-wave mixer operating at room temperature was developed and realized. The double sideband conversion loss and mixer noise temperature were measured to be 6.2 dB and 930 K, respectively, at a local oscillator frequency of 73 GHz and an IF of 1.5 GHz. These results are comparable to the best published results measured for subharmonically pumped mixers at similar frequencies. The mixer shows good performance even at IF's up to 9.5 GHz resulting in a useful RF range from 136 GHz to 156 GHz. For the first time a subharmonically pumped millimeter-wave mixer was designed without the use of any scale model measurements or other high-frequency measurements. The whole design process occurred on the basis of computer simulations. Two single Iow-capacitance planar air-bridge type Schottky-Barrier diodes are used as the mixing elements.

❑ Return to main document.