Abstracts

A mode-locked microchip laser optical transmitter for fiber radio

A.J.C. Vieira, P.R. Herczfeld, A. Rosen, M. Ermold, E.E. Funk, W.D. Jemison and K.J. Williams. "A mode-locked microchip laser optical transmitter for fiber radio." 2001 Transactions on Microwave Theory and Techniques 49.10 (Oct. 2001, Part II [T-MTT] (Special Issue on Microwave and Millimeter-Wave Photonics)): 1882-1887.

This paper is concerned with the optical domain generation of high-quality millimeter-wave signals for fiber-radio and other applications. The mode-locked millimeter-wave optical transmitter described is based on simple electrooptic microchip laser technology. The transmitter can be designed to operate from a few gigahertz to 100 GHz and beyond. The residual phase noise of the laser is below -100 dBc/Hz at 1-kHz offset, which makes it well suited for optically fed millimeter-wave wireless applications. A key feature of the transmitter is its simplicity, the very small number of elements it employs and the high level of integration of the millimeter-wave and photonic components that results in a small, rugged, and reliable package. The paper describes the design, fabrication, and experimental evaluation of the transmitter.

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