Abstracts

Signal Generation Using Pulsed Semiconductor Lasers for Application in Millimeter-Wave Wireless Links

D. Novak, Z. Ahmed, R.B. Waterhouse and R.S. Tucker. "Signal Generation Using Pulsed Semiconductor Lasers for Application in Millimeter-Wave Wireless Links." 1995 Transactions on Microwave Theory and Techniques 43.9 (Sep. 1995, Part II [T-MTT] (Special Issue on Microwave and Millimeter Wave Photonics)): 2257-2262.

We investigate the generation of signals using pulsed semiconductor lasers for application in millimeter-wave (mm-wave) wireless links. The generation of mm-wave harmonic frequencies in both mode-locked and gain-switched lasers is considered and a method to generate mm-wave modulated optical signals with modulation depths approaching 100 % is implemented. The technique uses optical filtering to select only two optical modes in the pulsed laser spectrum that beat together in a high-speed photodiode. The application of this method to the feeding of mm-wave wireless links incorporating microstrip patch antennas is demonstrated. These optically fed links have application in indoor wireless LAN's and optical fiber microcellular systems.

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