Abstracts

Long-term stabilized millimeter-wave generation using a high-power mode-locked laser diode module

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In this paper, a 60-GHz-band millimeter-wave (mm-wave) signal generation using a new 60-GHz mode-locked laser diode (MLLD) module stabilized by an optical injection will be presented. To modularize the MLLD, the precise position alignments and the fine tuning for the repetition rate is released; moreover, the output optical power of more than 6.0 dBm and the stability over nearly 1500 h are obtained. It is experimentally confirmed that the frequency and power stabilities are several tens of hertz and less than 1 dBm, respectively. The generated 60-GHz-band mm-wave signal with the 3-dB linewidth of less than 300 Hz over a 100-km-long optical fiber link is also successfully demonstrated.

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