Abstracts

Optical microwave generation and transmission experiments in the 12- and 60-GHz region for wireless communications

R.-P. Braun, G. Grosskopf, H. Heidrich, C. von Helmolt, R. Kaiser, K. Kruger, U. Kruger, D. Rohde, F. Schmidt, R. Stenzel and D. Trommer. "Optical microwave generation and transmission experiments in the 12- and 60-GHz region for wireless communications." 1998 Transactions on Microwave Theory and Techniques 46.4 (Apr. 1998 [T-MTT]): 320-330.

Experiments on the optical generation and transmission of millimeter-wave radio signals are reported. The millimeter-wave signals are generated by heterodyning the optical spectral lines of a mode-locked laser (MLL) or of two or more semiconductor lasers at an optic/millimeter-wave converter (OMC). 70-, 140-, and 155-Mb/s data transmission experiments have been carried out successfully in optical single-channel and multichannel systems at radio frequencies of 12 GHz and 58-70 GHz. Bit-error-rate measurements yielded error-free transmission and no error floor was observed. A monolithically integrated tunable optical-signal source was developed and used for generating the millimeter-wave signals. This technology promises a high cost-saving potential for applications in radio-over-fiber systems.

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