Abstracts

Optical Digital High-Speed Transmission: General Considerations and Experimental Results

W. Albrecht, C. Baack, G. Elze, B. Enning, G. Heydt, L. Ihlenburg, G. Walf and G. Wenke. "Optical Digital High-Speed Transmission: General Considerations and Experimental Results." 1982 Transactions on Microwave Theory and Techniques 30.10 (Oct. 1982 [T-MTT] (Special Issue on Optical Guided Wave Technology)): 1535-1547.

Laboratory experiments on digital optical transmission systems at bit rates of 1 and 2 Gbits/s are described. Systems with graded-index and single-mode fibers in the optical short and long wavelength region were investigated. All systems include complete circuits for clock and signal regeneration. Special emphasis was laid on the development of electronic circuits for gigabit signal processing and on the investigations of the noise sources of the optical channel, which appear especially pronounced in broad-band systems. The experimental results confirm the possibility to set up reliable high-speed optical transmission systems under laboratory conditions with available components. The remaining problems are of optical and not of electronic nature, despite the fact that monolithic integrated circuits for gigabit applications are hardly commercially available today.

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