Abstracts

Novel techniques for high-capacity 60-GHz fiber-radio transmission systems

L. Noel, D. Wake, D.G. Moodie, D.D. Marcenac, L.D. Westbrook and D. Nesset. "Novel techniques for high-capacity 60-GHz fiber-radio transmission systems." 1997 Transactions on Microwave Theory and Techniques 45.8 (Aug. 1997, Part II [T-MTT]): 1416-1423.

A broad-band 60-GHz fiber-radio transmission experiment has been performed using a combination of novel techniques. The 60-GHz carrier signal was generated using a master/slave (M/S) distributed-feedback (DFB) laser configuration, which gave high purity and high power with very wide frequency tunability. The data path was separated in the wavelength domain from the carrier path so that a remote upconversion scheme could be used to provide a fully transparent link. An electroabsorption modulator (EAM) was used as a full duplex transceiver so that bidirectional optical transmission could be implemented without the need for a laser at the remote site. Transmission of a 120-Mb/s QPSK signal over a fiber span of 13 km and a radio path of 5 m was demonstrated. Furthermore, the downstream optical signal contained the 120-Mb/s QPSK signal multiplexed with 20 channels of TV. The upstream optical signal consisted of 120-Mb/s QPSK data only. Good error performance was simultaneously achieved in both directions.

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