Abstracts

Full-duplex fiber-optic RF subcarrier transmission using a dual-function modulator/photodetector

A. Stohr, K. Kitayama and D. Jager. "Full-duplex fiber-optic RF subcarrier transmission using a dual-function modulator/photodetector." 1999 Transactions on Microwave Theory and Techniques 47.7 (Jul. 1999, Part II [T-MTT] (Special Issue on Microwave and Millimeter-Wave Photonics)): 1338-1341.

An electroabsorption waveguide device is presented as a dual-function modulator/photodetector for application as a cost-effective full-duplex transceiver in radio-frequency (RF) fiber-optic links. The spectral modulation and detection properties of the dual-function transceiver are characterized experimentally. Extinction ratio, insertion loss, and responsivity are 12 dB, 7 dB, and 0.8 A/W, respectively. Modulation and detection bandwidths are both in excess of 17 GHz. By employing a dual-lightwave technique, optimum modulation and detection performance is simultaneously achieved. Furthermore, full-duplex error-free optical transmission of RF subcarrier-multiplexed signals over 10 km nondispersion shifted single-mode fiber is demonstrated and a point-to-multipoint optical ring architecture is proposed.

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