Abstracts

Millimeter-wave power-fading compensation for WDM fiber-radio transmission using a wavelength-self-tunable single-sideband filter

E. Vourc'h, B. Della, D. Le Berre and D. Herve. "Millimeter-wave power-fading compensation for WDM fiber-radio transmission using a wavelength-self-tunable single-sideband filter." 2002 Transactions on Microwave Theory and Techniques 50.12 (Dec. 2002 [T-MTT] (Special Issue on 2002 International Microwave Symposium)): 3009-3015.

Optical single-sideband (OSSB) sources compensate for deleterious chromatic dispersion effects in fiber-radio systems. We utilize the photorefractive properties of iron-doped indium phosphide (InP:Fe) to allow microwave-photonic interactions and design wavelength-independent OSSB filtering. Therefore, a wavelength-self-tunable single-sideband filter is built and characterized up to the millimeter-wave (31.5 GHz) domain. Compensation for fiber-dispersion penalties is achieved, showing photodetected power fluctuation along the fiber as low as 1 dB. In addition, we demonstrate the wavelength-division-multiplexing fiber-radio transmission of two OSSB channels transporting 140-Mbit/s binary phase-shift keying data at a 16 GHz RF over a 14-km fiber length followed by a 3-m radio link.

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