

Bit Error Rate (BER) Performance of Coherent Homodyne BPSK-OCDMA Network for Multimedia Applications

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Abstract : In this paper, the structure of a coherent homodyne receiver for the Binary Phase Shift Keying (BPSK) Optical Code Division Multiple Access (OCDMA) network is introduced based on the Multi-Length Weighted Modified Prime Code (ML-WMPC) for multimedia applications. The Bit Error Rate (BER) of this homodyne detection is evaluated as a function of the number of active users and the signal to noise ratio for different code lengths according to the multimedia application such as audio, voice, and video. Besides, the Mach-Zehnder interferometer is used as an external phase modulator in homodyne detection. Furthermore, the Multiple Access Interference (MAI) and the receiver noise in a shot-noise limited regime are taken into consideration in the BER calculations.

Keywords : OCDMA networks, bit error rate, multiple access interference, binary phase-shift keying, multimedia

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