

TITLE: Performance analysis of optical code division multiple access networks for multimedia applications using multilength weighted modified prime codes.

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ABSTRACT:

The bit error rate (BER) performance of the incoherent synchronous pulse position modulation optical code division multiple access (PPM-OCDMA) network has been analyzed using a multilength weighted modified prime code (ML-WMPC) for three different multimedia services, such as data, voice, and video. Each service has a different bit rate than the other services and, hence, a different WMPC code length. In the network performance calculations, the multiple access interference (MAI) is included and considered as the only source of noise. In addition, to improve the network performance, the Manchester encoding and the MAI cancellation techniques are used with the WMPC at a higher number of active users. The network performance calculations are introduced in terms of BER for three kinds of PPM-OCDMA receivers, such as a simple receiver, receiver with MAI cancellation (MAIC), and receiver with MAIC and Manchester encoding technique. Finally, the BER calculation has been investigated at different bit rate according to the type of service provided by the network in the presence of the ML-WMPC and the third PPM-OCDMA receiver.