

Comparative performance of hybrid SCM SAC-OCDMA system using complementary and AND subtraction detection techniques

ABSTRACT

This paper presents the comparative performance of two detection schemes based on subtraction detection technique for a hybrid scheme of subcarrier multiplexed spectral-amplitude-coding optical code division multiple access (SCM SAC-OCDMA) system. SAC-OCDMA systems are receiving more attention because of their ability to completely eliminate multi access interference by using code sequences with fixed in-phase cross correlation. On the other hand, the SCM scheme is capable of improving the channel data rate of OCDMA systems. This hybrid scheme is proposed for the benefit of combining the advantages of both schemes. Consequently, the hybrid system is robust against interference and is much more spectrally efficient. Double weight code family is a new code structure used for SAC-OCDMA system. The experimental simulation results show that the proposed new AND subtraction detection technique improve the system performance significantly.

Keyword: Hybrid SCM SAC-OCDMA; Subtraction detection technique; Multi access interference; Optical communication system