

Experimental demonstration of variable weight SAC-OCDMA system for QoS differentiation

Abstract

In this paper the experimental and simulation results of variable-weight spectral amplitude coding optical code division multiple access (VW-SAC-OCDMA) system is demonstrated. In the proposed system, three users with weights of 6, 4 and 2 each operating at data rate of 1.25 Gb/s represent video, data and voice services, respectively. Results show that for back-to-back system minimum average power of -20 dBm per chip is required to maintain the acceptable performance. Transmission up to 60 km of fiber is demonstrated. Using mathematical approximation the capacity of VW-SAC-OCDMA system is demonstrated.

Keyword: Variable weight code; Optical code division multiple access; QoS differentiation; Optical fiber communication