

Hybrid OCDMA over WDM system using modified double weight (MDW) code for optical access network

Abstract

In this paper a hybrid optical code division multiple access (OCDMA) over wavelength division multiplexing (WDM) network is proposed to support large number of subscribers. The system combines two different techniques, namely OCDMA and WDM for supporting many subscribers simultaneously. We used modified double weight (MDW) codes as a signature address in designing the system because this code can accommodate more number of simultaneous active users under considerable standard bit error rate (e.g. $\leq 10^{-9}$). The induced MDW code for hybrid system can eliminate multiuser interference fully and increase the bit-error-rate performance compared to other codes at the same time. We ascertained by simulation results that the proposed scheme provides very good performance and enhance the network capability. Therefore, this system can be considered as a promising solution for the next generation optical access network.