ABSTRACT

An alternative method for providing additional multiplexing at a single wavelength is by using CDMA technique which originating from spread spectrum communication technique. The CDMA technique can be implemented directly in the optical domain. In this system, all user use the same frequency or same wavelength, when we use more user can affects system performance.

In the analysis, the CDMA system was considered for optical synchronous system using *optical orthogonal code* (OOC). The use of OOC can suppress intersymbol interference (ISI) that are capable of producing error and show the improvement in system performance like *bit error rate* (BER) until 10^{-22}. The performance degradation is also influenced by other factors such spreading code property, synchronous/ asynchronous operating mechanism, channel and receiver structure.

The result by using the right OOC structure can have a smaller BER for a same number of users.The BER can influence other factors such as receiver sensitivity and optical link transmission.