Analysis OCDMA system bit-error-rate using NAND detection at different data rate

Abstract

In this study, the OCDMA system is analyzed to enhance the Bit-Error-Rate (BER) performance using NAND subtraction detection technique. Enhanced Double Weight (EDW) code is used as a signature address of OCDMA system. The EDW code is enhanced version of Double Weight (DW) code family where the code weight is any odd number and greater than one with ideal cross-correlation. In order to analysis the system BER performance, we have considered both extensive theoretical analysis as well as simulation experiment at different data rate (155 Mbps and 622 Mbps). The optisystem 7.0 version is used as a simulator to simulate the system. The analyzed results ascertained that the NAND subtraction detection technique provides better BER performance as compared to well known existing technique (e.g., Complimentary). The most remarkable feature of NAND subtraction detection technique is that, this technique supports more number of active users than conventional technique under error free transmission condition (Bit-Error-Rate <10-9).

Keywords

Double weight (DW); Enhance double weight (EDW); NAND detection; OCDMA