

Investigation of three level code division multiplexing performance over high speed optical fiber communication system

ABSTRACT

In this research, performance of Three Level Code Division Multiplexing (3LCDM) technique is investigated for high-speed optical fiber communication systems. It is shown that 40 Gb/s (2×20 Gb/s) 3LCDM system performs better than the conventional 40 Gb/s non return to zero (NRZ-OOK) in term the dispersion tolerance. At 40 Gb/s, the lower level displays a nearly analogous behaviour of positive and negative chromatic dispersions tolerance which stands about ± 98 ps/nm while the upper level has chromatic dispersion tolerance of ± 81 ps/nm at BER of 10^{-9} . These values are higher than that of 40 Gb/s conventional NRZ, which is approximately ± 49 ps/nm.

Keyword: Optical communication; 3LCDM; Chromatic dispersion