

Duty-cycle division multiplexing (DCDM)

ABSTRACT

A multiplexing technique, which is based on duty-cycle division, is proposed. The channel multiplexing and demultiplexing are performed electrically at the single user bit rate, which is very economic. In a three-user system (3×10 Gb/s), the simulation results show that the best receiver sensitivity value achieved is -30.1 dBm with an optical signal-to-noise ratio (OSNR) of 22.3 dB, while the chromatic dispersion tolerance ranges from 192 to 280 ps/nm. Migration from 30 to 120 Gb/s is achieved with the penalty of 6.4 and 5.2 dB in the receiver sensitivity and OSNR, respectively, for the worst user.

Keyword: Optical communication; Multiplexing; Duty-cycle division