

3×2.5Gb/s optical absolute polar duty cycle division multiplexing transmission systems

ABSTRACT

The authors propose a new multiplexing and demultiplexing technique based on return-to-zero (RZ) duty cycle division, which is called absolute polar duty cycle division multiplexing (APDCDM). The new technique allows for more efficient use of time slots as well as spectrum. In this paper three users operating at the same speed of 2.5 Gb/s are multiplexed in electrical domain. The performance comparison is made against 7.5 Gb/s return-to-zero time division multiplexing (TDM) system. The experimental simulation results show that although APDCDM has the same receiver sensitivity as TDM but it is able to support higher distance and higher bit rate than TDM.

Keyword: Multiplexing; Duty cycle; Optical communications