Duty-Cycle Division Multiplexing (DCDM) : towards the largest optical networks capacity.

ABSTRACT

Demultiplexing concept of Duty-Cycle Division Multiplexing (DCDM) technique is tested in the back-to-back connection and after transmission over copper wire and optical fiber. Three different lengths of copper wire are tested with the total loss of 3.3, 6.6, and 9.9 dB respectively. Even though the sampling points and threshold values were not dy- namic, the demultiplexing process for the case of back-to-back, and after transmission over the links with 3.3, and 6.6 dB losses, was successful without experiencing any errors. This can be witnessed when the recovered data is compared against the transmitted bits. However, the errors are recorded in the link with 9.9 dB losses, which was mainly due to the non-optimized sampling points and threshold values. In experiment over 60 km Standard Single Mode Fiber, successful transmission was demonstrated. The receiver sensitivity is calculated off-line by using bit error rate analysis. These results confirm the validity of DCDM demultiplexer structure including the sampling process and the data recovery rules.

Keyword: Optical communication; Multiplexing; Duty-Cycle Division.