

SAIP2014



Contribution ID : 196

A single DFB laser for multilevel directly modulated signal for high speed optical fibre communication system

Wednesday 09 Jul 2014 at 14:20 (00h20')

Abstract :

Abstract: Multilevel modulation format that meets the high bandwidth requirements and increases the bit rate is experimentally investigated. A single distributed feedback (DFB) laser at 1550 nm is used to transmission a total of 20 Gb/s of data over an optical fibre link. The data rate is doubled from binary 10 Gb/s by employing a multilevel technique. An economical, all electrical multi-level signal generation technique was designed. The multilevel format transmitter codes two bits in one symbol. This enables an increase in the bit rate of the system, though at the expense of receiver complexity. The two bits coded in a single symbol generate a four level signal that has to be decoded at the receiver. The designed complex receiver section utilizes the offline digital signal processing algorithms to evaluate the system performance through bit error rate (BER) measurements. The system performance was experimentally evaluated on back-to-back transmission. Key terms: Multilevel Digital signal processing BER

Award :

yes

Level :

PhD

Supervisor :

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Paper :

yes

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Session classification : Applied

Track classification : Track F - Applied Physics

Type : Oral Presentation