

An integrated OADM based on Bragg trans-reflectance in 1550 nm VCSEL optical fibre access networks

D. KiboiBoiyo^{ab}E.K.Rotich Kipnoo^{bc}T.B.Gibbon^b

<https://doi.org/10.1016/j.jjleo.2018.09.153>Get rights and content

Abstract

We experimentally demonstrate an all passive OADM using a single BGF, a pair of optical circulators and the low cost and energy efficient VCSELs. In this study, double reflection due to Bragg effect on a single fibre grating has been used to create drop and add multiplexers at 1549.9 nm wavelength with 31.4 dB wavelength isolation ratio. In performance evaluation at the 10^{-9} BER threshold level, a 0.3 dB add and drop receiver penalty for a 8.5 Gb/s data signal is incurred while a 0.8 dB transmission penalty is incurred for ~25.5 km fibre distance. Using optical trans-reflectance, this paper, provides a less costly and less power consuming channel management using OADMs for high speed VCSEL transmission.