

Demonstration of Raman-based, dispersion-managed VCSEL technology for fibre-to-the-hut application

E.K.Rotich Kipnoo^{ab}D.Kiboi Boiyo^aG.M.Isoe^aT.V.Chabata^aR.R.G.Gamatham^cA.W.R.Leitch^aT.B.Gibbon^a

Abstract

For the first time, we experimentally investigate the use of vertical cavity surface emitting lasers (VCSELs) in the fibre-to-the-home (FTTH) flavour for Africa, known as fibre-to-the-hut. Fibre-to-the-hut is a VCSEL based passive optical network technology designed and optimized for African continent. VCSELs have attracted attention in optical communication due to its vast advantages; low power consumption, relatively cheap costs among others. A 4.25 Gb/s uncooled VCSEL is used in a dispersion managed, Raman assisted network achieving beyond 100 km of error free transmission suited for FTTHut scenario. Energy-efficient high performance VCSEL is modulated using a 2^7-1 PRBS pattern and the signal transmitted on a G.655 fibre utilizing the minimum attenuation window.