

PIN versus Avalanche photodiode gain optimization in zero cross correlation optical code division multiple access system

Abstract

In this paper, we show details of zero cross correlation (ZCC) code development and investigate performance by measuring bit-error-rates compared to other optical code division multiple access (OCDMA) codes using Avalanche photodiode (APD) and PIN photodetector. We present a configuration to determine how optical OCDMA systems can be applied with PIN and APD photodetector. Analysis of Avalanche photodiode gain optimization is discussed in ZCC code system. We also present analytical and numerical theoretical results for data transmission of spectrally encoded incoherent OCDMA signal and how signal-noise is being affected by using these two photodetectors.