

ABSTRACT

Next Generation Passive Optical Network (NG-PON2) is the development of PON technology that has a minimum data speed of 40 Gbps to transmit a certain amount of data or information with a long distance. To meet the requirements of these technologies required optical amplifiers to reduce the amount of power lost due to a weakening signal when sending data. The amplifier used is EDFA and Hybrid Optical Amplifier. This research analysis comparison of EDFA and Hybrid Optical Amplifiers that can be implemented system TWDM-PON based on NG-PON2. System design is done using data speeds of 80 Gbps with each channel having a data speed of 10 Gbps on 8 channels, with a channel spacing used at 100 GHz. The distance used in this simulation is 60 km using amplifier that is EDFA and Hybrid Optical Amplifier. The research scenario is done by varying the number of Optical Network Units (ONU) using two schemes, namely scenarios without boosters and scenarios with boosters. Based on the results, simulation it has been carried out the best value on the downstream transmission of the type of EDFA amplifier with the value of received power = -19.184 dBm, Q Factor = 7.975 and BER = 5.852×10^{-16} . As for upstream transmission is Hybrid Optical Amplifier with received power value of 9.025 dBm, Q Factor = 69.64 and BER = 0. Based on these values, Hybrid Optical Amplifier boosters are superior when implemented TWDM-PON systems based on NG-PON2.

Keywords: NG-PON2, TWDM-PON, EDFA, Hybrid Optical Amplifier, BER