ABSTRACT

Fiber-optic-based broadband access networks are currently widely used by telecommunications services. One of the widely used fiber optic technologies is the XG-PON (10 Gigabit-capable Passive Optical Network) network. XG-PON network performance is greatly influenced by the Optical Network Terminal (ONT) device on the subscriber side. This study aims to analyze the performance of the XG-PON network on the ONT in terms of the type of photodetector used. The research method used is XG-PON network simulation using Optisystem software. The simulated photodetectors are PIN and APD photodetectors. Parameters measured include optical power attenuation, BER value, and distance range. The simulation results show that the use of PPE provides better performance than the PIN photodetector in terms of the BER value. APD is capable of reaching 20 kn with a damping value of 15 dB. Meanwhile, the PIN photodetector is only able to reach a maximum distance of 10 km with an attenuation value of around 10 dB. It can be concluded that the use of APD as a photodetector in ONT can improve the performance of the XG-PON network compared to the PIN photodetector.

Keywords: XG-PON, FTTH, ONT, PIN, APD, Photodetector.