

ABSTRACT

With the rapid development of the society's need for data speeds, large capacity is required also to able to serve the needs of the technology of GPON (Gigabit Passive Optical Network) is currently based on fiber optic cable is being developed to be better, one of the developed technology is currently the XG-PON technology. XG-PON (10-Gigabit-Capable Passive Optical Network) is a technology development of GPON. XG-PON are expected to transmit data transmission more effectively and optimally. XG-PON is one of the technologies developed by ITU-T (International Telecommunication Union). On the system of communication optical fiber light source is a device that acts as a sender (transmitter) of information signals. Types of transmitters in fiber optic communication systems there are two laser and LED.

This research discuss about laser transmitter performance analysis on technology 10-Gigabit-capable Passive Optical Network (XG-PON) by using two receivers are APD and PIN. Parameters used in this research include power budget (LPB), rise time budget (RTB) and bit error rate (BER) based on simulation result. This research be done by simulating using optical simulation software to make it easier the process of data analysis.

The result of this research is downstream and upstream receiving power has received power level above the sensitivity of photodetector APD and PIN. BER values on upstream and downstream obtained on the APD and PIN photodetector with the farthest distance of 60 km there is no BER value that meets the desired value limit. Of a total of 66 data retrieval on the downstream and upstream, it can be inferred that APD is better than the PIN.

Keywords: XG-PON (10-Gigabit-capable Passive Optical Network), transmitter, optical simulation software.