ABSTRACT

Along with the development of technology circulating in society, information and entertainment that is acceptable and has high performance is definitely needed. To fulfill this, a network is needed that supports this performance. Currently, the network that is able to provide the best performance is fiber optic. Technological developments also have a big influence on the development of fiber optic communications, starting from the development of GPON to XGPON technology. GPON (Gigabit Passive Optical Network) technology which provides a transmission bandwidth of up to 2.5 Gbps which has developed into XGPON (10 Gigabit Passive Optical Network) with the addition of a large bandwidth capacity of up to 10 Gbps.

In this final assignment, comparison results are carried out using GPON and XGPON technology. These parameters are Power Link Budget, Rise Time Budget for system feasibility and Q Factor, Bit Error Rate (BER) for system performance using Optisystem Software and systematic calculations.

From the results that have been analyzed with Optisystem and mathematical calculations, it is proven that the XGPON network is suitable for future implementation in Agrarian Plot housing, because it meets the network standards set by PT. Telkom with a BER value of 7.40885 × 10−194, the Power Link Budget is worth -12.503dBm, Rise Time Budget is 0.320078 ns and Qfactor is 29.6778, while GPON has a BER value of 1.2159× 10−235, Power Link Budget is -15.653, Rise Time Budget is 0.79789ns and Qfactor is 32.7567.

Key Word : *FTTH, GPON, XGPON, Power Link Budget, Rise Time Budget,BER,Optisystem*