

ABSTRACT

This study focuses on the comparison of Fiber to the home (FTTH) and Fiber to the building (FTTB) networks at the IT Telkom Purwokerto DSP building using 10-Gigabyte Passive Optical Network (XGPON) technology. The purpose of this study is to review the performance between the FTTH and FTTB networks in high-rise buildings. The parameters used include Link Power Budget, Rise Time Budget, Q Factor and Bit Error Rate (BER). The results of theoretical calculations and simulations on the FTTH network, the Link Power Budget parameter is -22.75 dBm and the simulation is -21.35 dBm. The calculation of the Rise Time Budget using Non Return Zero (NRZ) coding obtained a value of 0.04 ns (threshold of 0.07 ns). The simulation results obtained a Q Factor value of 12.13 and a BER value of 3.68703×10^{-34} , and the results of theoretical calculations for a Q Factor value of 7.62 and a BER value of 1.22832×10^{-14} . The results of theoretical calculations and simulations on the FTTB network, the Link Power Budget parameter is -11.62 dBm and the value in the simulation is -11.29 dBm. Calculation of the Rise Time Budget using NRZ coding, the Rise Time Budget value is 0.04 ns (threshold is 0.07 ns). The results of the calculation of the Q Factor value of 6.31 and a BER value of 1.42864×10^{-10} , while the simulation results obtained a Q Factor value of 4.58 and a BER value of 1.92987×10^{-6} . Bill Of Quantity calculations show that the FTTH network requires much more devices and longer cables than the FTTB network in the building. Therefore, it can be concluded that the FTTH network using XGPON technology has better performance than the FTTB network but requires more expensive equipment costs.

Keywords: FTTH, FTTB, XGPON, Link Power Budget, Rise Time Budget, Q Factor, BER.