ABSTRACT

Fiber to the home (FTTH) is a fiber optic network architecture that distributes optical signal formats from the center of the provider to home customers (home) near customers using optical fiber as the medium of delivery. In its development, FTTH can use 10-Gigabit Capable Passive Optical Network (XGPON) technology to meet people's needs for bandwidth and data speeds. In previous studies, FTTH was designed using GPON and XGPON technology by calculating and simulating to obtain LPB, RTB and BER values.

In this final project has been carried out the fiber network design to the home (FTTH) using 10-Gigabit Capable Passive Optical Network (XGPON) technology which was applied in the Pertamina Complex South Tangerang. The design is to design the network to the customer's home and analyze the feasibility parameters of the system by calculating and simulating from OLT to the furthest FAT. The feasibility parameters analyzed were LPB, RTB, SNR, Q factor, and BER.

Based on the results obtained from the simulation calculation, the farthest upstream LPB value is 21,809 and the nearest upstream is 20,513, the farthest downstream is 20,279 and the nearest downstream is 20,513. SNR downstream direction is 28.167dB for the nearest and 27.612dB for the furthest. The SNR value in the upstream direction is 22,522 dB for the furthest and 24,134 dB for the closest. BER 1,112 x 10-27 for the furthest downstream, 2,848 x 10-30 for the closest and 1,388 x 10-11 for the farthest upstream and 5,2287 x 10-11 for the closest. The Q factor value is 10.383 for the furthest downstream, 11.387 for the nearest and 6.522 for the furthest upstream and 8.5955 for the closest and for LPB 50.05 for the furthest downstream, 50.01 for the nearest downstream and 50.01 for the furthest upstream, 49.97 for nearest upstream.

Keywords: FTTH, FDT, FAT, LPB, RTB, SNR, Q factor, BER, GPON, XGPON, downstream, upstream.