

ABSTRACT

One of the applications of fiber optic cable is in the Fiber To The Home (FTTH) network architecture. FTTH is a fiber optic technology architecture that sends information from the provider to the customer's house. The popular technology used in FTTH networks is Gigabit Passive Optical Network (GPON). This FTTH design was carried out at Bumi Kresna Asri Rancamulya Housing, Pameungpeuk District, Bandung Regency, West Java. The reason for designing in the area is because housing has experienced an additional area or expansion. Therefore it is necessary to build an FTTH network in the new area with a total of 240 houses to be covered by the network.

In this Final Project, FTTH network design is carried out using GPON technology in Bumi Kresna Asri Housing. This design was carried out starting from making the FTTH network design using AutoCAD and Google Earth software. Then a simulation is carried out using the help of Optisystem software. Then calculations and analysis are carried out to determine the feasibility parameters of the FTTH network that has been made to comply with the ITU-T G.984 standard and the provisions of PT Telkom Akses.

Based on the results of calculations and simulations that have been carried out for downstream and upstream, it is obtained that the receiving power (P_{rx}) meets the ITU-T G.984 standard and the provisions of PT Telkom Access, namely not exceeding the detector sensitivity of -28 dBm. The rise time budget value for the farthest and shortest distance is 0,25 ns, the value obtained is below the NRZ coding time limit for downstream of 0,2814 ns and upstream of 0,5627 ns. The BER value with the farthest distance downstream is 6.39764×10^{-126} and upstream is 0, And for the shortest distance in the downstream direction is 2.70245×10^{-137} and upstream is 0, The Q Factor value with the farthest distance downstream is 23,8401 and upstream is 170,943 . And for the shortest distance downstream is 24,9127 and upstream is 193,062.

keywords : FTTH, GPON, ITU-T G.984, *Optisystem*, Perumahan Bumi Kresna Asri