

ABSTRACT

The need for services in the field of information and communication technology is increasing every year. The type of service required is no longer limited to voice but evolved into triple play services (voice, data, and video). With the rapid development, it takes a large capacity also to serve these needs, with the ability of XGPON technology capable of providing 100Mbps speed to customers.

The new housing complex is built so much that making the need for Internet services at home is increasingly sought after by customers. One of them is Residential Benda Baru located in the city of South Tangerang. Optical fibers that become the material of choice have the advantage to be able to bring information in a large capacity and strong against interference. Calculation this time the author does not just make the design of FTTH alone but the author also compares the calculations that have been done manually with the results of simulation calculations using optisystem. All calculations are later adjusted to the standards of ITU-T and Innovate-Indonesia.

The results of the link power budget simulation calculation, namely the total attenuation generated for the farthest distance is obtained the power received value is -24.88 dBm for the downstream link and -23.52 dBm for the upstream link. The results of these calculations still meet the standards set by ITU-T G.984 which are then followed by P.T. Innovate Indonesia is -28 dBm. For rise time budget value, the time limit value is 0.14 for RZ coding and 0.28 for NRZ coding. From the results of the calculation, it is found that t_{system} is 0.049 for downstream and upstream. RTB results are good because the t_{system} is smaller than the time limit of each coding. For the bit error rate parameter the value generated from the simulation calculation is 4.5×10^{-30} for downstream and 2.3×10^{-20} for upstream. Both values meet the minimum value of BER set for optics, which is equal to 10^{-9} . All of these values meet the eligibility standards of ITU-T G.984.

Keyword : FTTH, XGPON, optisystem