

ABSTRACT

Benda Baru Residence is located on the Cendana II , South Tangerang is the concept dwelling that need access triple play to support the activities of and facilities provided. PT. Innovate Mas Indonesia plans to hold Fiber To The Home (FTTH) using technology 10-Gigabit-Capable Passive Optical Networks (XGPON) in order to meet the target.

In this final assignment, the parameters of the feasibility and performance of the system design of FTTH which will be implemented in Benda Baru Residence has been calculated. Those parameters are Link Power Budget and Rise Time Budget for the feasibility of the system. The parameters values were manually calculated and have been compared to the results of using the Opti System software. Besides, the other parameter is Bit Error Rate (BER) for the performance of the system. BER can be seen by making a simulation of a network design FTTH in Opti System.

The results of the manual calculation for link power budget parameters the total attenuation for the farthest distance is 25,135 dB for downstream link and 26,236 dB for upstream link. The results of those calculations are still meet the standard which determined by ITU-T G.987 which is -28 dBm. Based on the total attenuation value for the farthest distance, the result of power receiver is -21,135 dBm for downstream link and -23,236 dBm for upstream link. For rise time budget parameters, the result of limitation time is 0,07 ns for NRZ coding and 0,035 for RZ coding. Based on the calculation, the results of t_{system} is 0,0156 ns for both downstream and upstream link. The results of rise time budget considered to be good because the t_{system} smaller than the limitation time for each coding. For the parameter of the performance of the system, BER, which is simulated in Opti System, the result for the downstream link is $1,86632 \times 10^{-21}$ and for the upstream link is zero (0). Both values are meet the maximum value of BER that is determined for optic which is 10^{-9} ..

Keywords : FTTH, XGPON, Link Power Budget, Rise Time Budget, BER