

ABSTRACT

Citylight Residence that is located on Jalan Suryalaya Bandung is an apartment, SOHO, and townhouses which has a complete and modern facilities. PT. Telkom Bandung has the initiative to provide Fiber To The Home (FTTH) using Gigabit Passive Optical Network (GPON) technology to all existing and new residential dwelling to be able to give a good performance on the services provided by PT. Telkom. Citylight Residence itself is a new dwelling which still in developing stage and will implement FTTH.

In this final assignment, the parameters of the feasibility and performance of the system design of FTTH which will be implemented in CityLight 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. This parameter can be seen by making a simulation of a network design in Opti System.

The results of the manual calculation for link power budget parameters –the total attenuation that is produced for the nearest distance- is 3.8566 dB for upstream link and 18.5566 dB for downstream link while the total attenuation for the farthest distance is 4.91825 dB for upstream link and 19.589 dB for downstream link. The results of those calculations are still meet the standard which determined by ITU-T G.984 -followed by PT. Telkom- which is 28 dBm. Based on the total attenuation value for the nearest distance, the result of power receiver is -9.36155 dBm for upstream and -21.5566 dBm for downstream while for the farthest distance is -10.48125 dBm for upstream and -22.589 dBm for downstream. For rise time budget parameters, the result of limitation time is 0.2814 ns for RZ coding and 0.5627 for NRZ coding. Based on the calculation, the results of t_{system} is 0.0626 ns for both upstream and downstream 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 upstream link is approaching zero (0) and for the downstream is 3.414×10^{-132} . Both values are meet the minimum value of BER that is determined for optic which is 10^{-9} .

Keyword : FTTH, GPON, Link Power Budget, Rise Time Budget, Bit Error Rate, CityLight Residence, Opti System