

ABSTRACT

This final project calculates the parameters of the feasibility and performance of the FTTH design system to be implemented at the Angkasa Indah Permai Housing in Banda Aceh. The parameters that are used to determine the feasibility of the system are the Link Power Budget and Rise Time Budget. The parameter values calculated manually are compared with the results calculated using the OptiSystem. There are also other parameters like Bit Error Rate (BER) and Q-factor for system performance. BER and Q-factor can be seen by simulating the design of the FTTH network on the OptiSystem.

Manual calculation of Link Power Budget, that is, the total attenuation for the closest Downstream is 23.223 dB and the farthest Downstream is 23.307 dB. The attenuation value obtained for the nearest Upstream is 24.403 dB and the farthest Upstream is 24,549 dB. The results of these calculations meet the sensitivity standard set by ITU-T G987.2 which is -28 dBm. Based on the total attenuation, the power received at the nearest Downstream is -26.223 dBm and for the farthest Downstream is -26.307 dBm. While the power received at the nearest Upstream is -27.403 dBm and for the farthest Upstream is -27.549 dBm.

The value of Rise Time Budget, the timeout value is 0.07 ns for NRZ encoding, 0.035 ns for RZ encoding for downstream link, while for upstream link the time limit value is 0.28 ns for NRZ encoding, and 0.14 ns for RZ encoding. The calculation result is 0.05034 ns for downstream link and 0.0501371 ns for upstream link. The result of the calculation of Rise Time Budget obtained a value that is smaller than the time limit of each coding.

Key Word : FTTH, XG-PON, Link Power Budget, Rise Time Budget, BER, Q-factor.