

ABSTRACT

Interest in fast, safe and convenient communication and information services every year will continue to increase, even more so the need for urban areas. The Taman Melati Rancaekek Apartment is one of the apartments located in the West Java area, on Jl. Hegarmanah Kab, Sumedang. This apartment has a total of 16 floors. The number of people living in this apartment will refer to the construction of network services.

The method used in this final project is in the form of designing using the GE Smallworld application and calculating the power link budget and bit error rate. As well as simulating using optisystem software. Then, the final resulting value will be compared between the results of manual calculations and the results of calculations using optisystem software. From this design, the results of the calculation of the power link budget and Bit Error Rate from the STO to the Taman Melati Apartment will be obtained.

Based on the results of calculations and simulations that have been carried out, on the 1st to 16th floors using a 1:8 splitter as many as 2 splitters, the results of the calculation of acceptability that meet the ITU-T G984.6 standard are obtained, namely the acceptability of no more than -28 dBm. so that this design is considered feasible. The rise time budget value obtained on the 1st to 16 th floor of the upstream and downstream directions is 0.25 ns the value is less than 0.281 ns and 0.562 ns for NRZ coding.

Keywords: *FTTB, Smallworld, Power Link Budget, Rise Time Budget, BER, Optisystem*