ABSTRACT
Along with increases internet access and broadband connectivity, then the need of large bandwidth and high speed internet access being increased. Fiber optics is the cable that used to transmit data with high speed access. FTTH networks used to transmit data to the customer's House, where the House is located in the optical conversion customers. GPON technology used to sends data using passive splitter.
This study compared the performances of FTTH network with GPON technology by using passive Splitter 1:8 to 1:16 passive Splitter. The performance of both network will be tested in terms of link power budget, rise time budget, and Bit Error rate. These parameters will be analyzed to obtain results of the comparison between 2 passive Splitter is more optimally used in residential areas Grand Safira. In designing these FTTH GPON network, using OptiSystem simulator. Based on network observation on OptiSystem simulator to the farthest ONT distance on the BER values obtained downstream and upstream of 0.
The results of these two values indicate the parameter BER meets ITU-T is maximum 10-9. From the parameter power link budget total for downstream attenuation is 10.102 dB, while the upstream 10.678 dB, value is less than 28 dB. The results time is below of the limited receiver time with the results of rise time. The results of comparison passive Splitter network 1:8 is more optimal seen from the results that 3.78 x 10-15 BER meet the standard of ITU-T is at least 10-9. Based on the parameter link attenuation results total power budget is 27.732 dB, value is less than the standarITU-T to used PT.Telkom that is 28 dB. The rise time results tsystem value below the value at the limited time receiver.

Keyword : FTTH,GPON, Power Link Budget, Rise Time Budget, OptiSystem