ABSTRACT

Gigabit Passive Optical Network (GPON) and Gigabit Ehternet Passive Optical Network (GEPON) are PON technology considered able to meet the needs of high bandwidth and speed. Both of these tachnologies continue to compete dan develop. Turbo GEPON is one result of the development of GEPON technology introduced by Teknovus company which is then recognized by Broadcomm. Turbo GEPON is considered able to compete with GPON because it has almost the same parameters as GPON, such as splitting ratio, upstream and downstream bandwidth, dan upstream and downstream wavelengths.

In this final project carried out research on the performance of a technology GPON and Turbo GEPON with testing parameter such as power link budget, rise time budget, signal to noise ratio (SNR) and bit error rate (BER). Research carried out by simulating the two of these technologies through a mathematical calculation or simulation software. simulations done using the maximum distance parameter PON access network link length of 20 km, the maximum splitting ratio on each technology are 1:64 with the splitter combination are 1:4 and 1:16.

Result of the testing parameter between GPON and Turbo GEPON technologies shows the value of power link budget as many as -21.7 dBm for the upstream and downstream, rise time budget value of GPON is 0.23685 ns and Turbo GEPON is 0.26401 ns, the SNR value of GPON and Turbo GEPON are 22. 60021 dB for downstream and 24.50568 dB for upstream, and BER value of GPON and Turbo GEPON are 7.81402×10^{-12} *for downstream and* 2.27266×10^{-17} *for upstream. Result comparison of testing parameters between Turbo GEPON and GPON technologies shows that GPON is superior. This is evidenced by the smaller value of rise time budget on GPON compared to Turbo GEPON which are 0.23685 ns in GPON and 0.26401 in Turbo GEPON.*

Keywords : *PON, GPON, GEPON, Turbo GEPON*