

ABSTRACK

The development of information and communication technology is currently increasing every year. In this case, the internet service aspect in the development of the Indonesian Capital City or the new capital is very much needed, to meet internet needs in buildings, FTTH (Fiber to The Home) is needed. FTTH is a telecommunication service infrastructure with a large bandwidth and has a stable and fast connection speed. The use of the FTTH access network in the Indonesian capital area will really help users to access high speed internet services.

Fiber Optic Design at KIPP IKN is regulated in Article 7 paragraph (4) of Law Number 3 of 2022 concerning National Capital, it is necessary to stipulate a Presidential Regulation concerning Details of the Master Plan for the Capital of the Archipelago. The National Capital City called Nusantara, hereinafter referred to as the Archipelago Capital, is a special regional government unit at the provincial level whose territory is the seat of the National Capital City as determined and regulated by Law Number 3 of 2022 concerning the National Capital City.

The parameter values obtained are based on standards set by ITU and PT. Telkom, namely: for the BER (Bit Error Rate) standard which has been set by ITU and PT. Telkom is 1×10^{-9} . For bandwidth standards set by PT. Telkom is 30-1,000 Mbps. The standard maximum attenuation value of the Power Link Budget produced from OLT to ONT is 28 dB with a maximum distance of 17 km in accordance with PT standards. Telkom Indonesia. And finally, the standard Rise Time Budget value is 11.11ns based on provisions from ITU-T and PT. Telkom.

The largest Downstream Power Link Budget is 20.40 dB. Then for the manual Prx (received power) results, the largest Downstream Power Link Budget is -17.40 dBm. The largest Power Link Budget Upstream is 18.63 dB. For manual Prx (received power) results, the largest Upstream Power Link Budget is - 15.63 dBm. Meanwhile, the largest Prx result obtained from the simulation is -4.64 dBm which is located in the first area.

The biggest result from the BER simulation is $6,03476 \times 10^{-37}$, where this value is considered ideal/feasible because it is below the BER standard, namely

1×10^{-9} . Meanwhile, the results of the downstream rise time budget on the farthest ONT in the first section are 0.48 ns and the rise time budget on the furthest ONT in the second section is 0.16 ns, which results meet the standard, namely below 11.11 ns. Meanwhile, the results of the upstream rise time budget calculation also meet the feasibility standards, namely below 11.11 ns.,

Keywords: FTTH, XGPON, Power Link Budget, Rise Time Budget, BER