ABSTRACT

BPS (Central Statistics Agency) said that the number of passengers throughout 2020 experienced a decline due to the increasing the Covid-19 pandemic, the number of train passengers for Jabodetabek was 154,591 (thousand) passengers and non-Jabodetabek were 28.805 (thousand).

Optical backbone technology can be used on (SDH) Synchronous Digital Hierarchy STM-64 DWDM (Dense Wavelength Division Multiplexing), access network technology using XG-PON, and LTE (Long Term Evolution) core network technology using EPC. The design is made with parameters of delay, power link budget, Q-factor, rise-time, SNR, and BER with the standard provisions of ITU-T G.987, ITU-T G696.1 AND 3GPP TS23,203.

The design require one EPC in Jakarta. Delay on Downstream side link of 1.569633952 ms. The downstream link is obtained at the STO Pagaden – Site 26_KROYAML with LPB of -19,83 dBm, Q-factor 8.960069158, BER 1.64x10^{-19} and RTB 0.046097749 ns. For upstream link, total delay obtained is 1.569123599 ms, lowest LPB is obtained at additional site 14 - STO CIKINI with LPB of -19,62 dBm, Q-factor 6.76041511, BER 1.02x10^{-12}, and RTB 0.046097724. And lowest backbone link, LPB is -23,67 dBm, Q-factor is 11.08921015, BER is 7.133x10^{-29}, and RTB is 0.044821906 ns.

Keyword : *LTE (Long Term Evolution), Backhaul, Backbone, EPC, XG-PON, DWDM.*