

ABSTRACT

Fx Plaza Sudirman is located in Jakarta , precisely in Senayan area. This area is located of the Golden Triangle in Jakarta. PT. Telkom already using fiber optic to backbone network for Jakarta area. Now, FX Sudirman using GPON (Gigabit Passive Optical Network) Technology, but this technology is inadequate for needs bandwidth greater, therefore it will be designed FTTB using WDM -PON (Wavelength Division Multiplex Passive Optical Network) .

In this final project has been predicted about demand forecasting for next 10 years and then carried out FTTB network with WDM-PON technology by looking at parameters such as Power Link Budget, Rise Time Budget, and attenuation. The value of parameters are then compared with the standard value that is owned by PT. Telkom Indonesia . In addition it will be carried out observations of nonlinear effects that often occurred .

Forecasting results for forecasting demand as a macro in the Fx Sudirman Plaza in 2024 is 677,128 Mbps. Results for forecasting demand as a micro in the Fx Sudirman Plaza in 2024 is 723,96 Mbps. The results showed that the design of Fx Sudirman Plaza use 1 piece ODC, 43 pieces ODP , 45 pieces Filters and 339 pieces ONT. Power Link Budget test result show that attenuation that produced for uplink 6,48 dB and for downlink is 6,53dB, the attenuation is still below the standard WDM - PON according ITU - T G.984 by 28 dB and standards issued by Telkom by 26 dB . Rise Time Budget test results for downlink with bitrate of 1,25 Gbps, with furthest customer is produced total time 0.25 ns . This total time is below than the value of the system time of 0.56 ns . For uplink with bitrate of 1,25 Gbps with furthest customer is produce total time of 0.25 ns . This total time is below than the value of time system 0.56 ns . Four Wave Mixing (FWM) and Stimulated Raman Scattering (SRS) does not affect to design network, because the furthest design only 2,3 km.

Keyword : FTTB, WDM-PON, Four Wave Mixing, Stimulated Raman Scattering