

## ABSTRACT

*Fiber to the Home* (FTTH) is a fiber optic network which connecting the residence user directly. Capacity of the cable termination shelter in the residential area no longer enough to accommodate the potential predicted demand for new internet subscribers in the year 2013 reaches 527 subscribers. Thus, PT.TELKOM will design Taman Kopo Indah 5 residential to be a fiber to the home access by using GPON technology.

Designing begins by forecasting a number of customers who will use GPON technology in residential areas Taman Kopo Indah 5. Then the result will be used to design FTTH network by determining the utilization, device placement, distance, and device specification. Afterward, FTTH network architecture should be analyzed based on LPB and RTB.

The designing output showed that Taman Kopo Indah 5 residence use an ODC, 73 ODP and 486 ONT with 34 pieces of splitter 1:4 and 73 pieces of 1:8 splitter. Based on the calculation of power line budget feasibility, total attenuation for farthest distance are about 22.37 dB for downlink and 22.68 dB for uplink. It is still in tolerance specified by ITU-T G.984 28dB. The results of feasibility regarding to calculation of rise time budget available for the downlink with a total bitrate of 2.4 Gbps, farthest customers generate  $T_{total} = 0.2628$  ns.  $T_{total}$  still under  $T_{sistem}$  value of 0.2917 ns. While uplink with the bitrate by 1.2 Gbps, farthest customers generate  $T_{total}$  for = 0.2503 ns.  $T_{total}$  remained is below the value of 0.5833 ns. Thus the system still comply rise time budget with NRZ encoding.

Keyword : FTTH, GPON, *Power Link Budget*, *Rise Time Budget*.