

ABSTRACT

Fiber optic network technology currently is highly developed in order to support the performance of telecommunications networks in Indonesia, a fiber optic data transmission speed is high being the right choice for designing technology of *Fiber to the home* (FTTH), FTTH network desperately needed to accommodate potential customer requests regarding bandwidth speeds are great. So FTTH network PT. Telkom Akses in housing Nata Endah Kopo using GPON technologies.

This final project will design a fiber to the home network from Central towards the customers by determining the use, placement, spacing and the specifications of the device. After that the results obtained by the *FTTH network* design used *power link budget and rise time budget*.

From the results of the design indicates that the design for residential nataendah kopo using 1 *ODC*, 33 *ODP*, and 262 create *ONT* using *splitter* 1:4 and 1:8 *splitter*. GPON networks designed has a transmission speed of 1.2 Gbps to *upstream* and 1.5 Gbps for *downstream*. Network performance analysis shows at a wavelength of 1310 nm value *link power budget* of 24.226 dB and links the *rise time budget* of 0.2537 ns. At a wavelength of 1550 nm value *link power budget* of 24.1728 dB and links the *rise time budget* of 0.2513 ns.

Key words: *Fiber to the home (ftth)*, *GPON*, *Power link budget*, *Rise time budget*.