ABSTRACT

Every year, there is an increase in demand for services such as internet, telephone, and TV broadcasting, collectively known as triple play. The development of this technology includes the use of Fiber to the Home (FTTH), which is an optical fiber-based communication infrastructure that provides direct access to users' homes. FTTH utilizes GPON (Gigabit Passive Optical Network) technology for device configuration and network architecture.. In the location of Singakerta, situated in the Ubud sub-district, the demand for these services is increasing due to the absence of FTTH networks in the area.

In response to the high demand for network availability, PT. Indonesia Comnets Plus (ICON+), a company specializing in Information and Communication Technology, is planning to implement FTTH (Fiber To The Home) network design using GPON (Gigabit Passive Optical Network) technology and Homepass. This design is tailored according to the analysis of user interest in the region. The Final Project's design employs Google Earth software for planning and simulation using Optisystem to analyze network performance.

Results from the design and simulation indicate that the values obtained are deemed suitable for FTTH-GPON network parameters. For the Power Link Budget, the total attenuation calculation is less than 28 dB, and the received power (Prx) on the customer side is no less than -25 dBm, aligning with ITU-T and ICON+ standards. The Rise Time Budget calculation is considered feasible as the obtained value is less than the specified time limit (Tr) for NZR encoding. The Bit Error Rate (BER) parameter is considered acceptable as the value obtained is less than 10^{-9}, and for the Q-Factor parameter, the value obtained is greater than 6.

Keywords: FTTH, Network design, Network performance analysis, Google Earth, Optisystem, GPON, Singakerta, Ubud, ICON+