

ABSTRACT

Perumahan Kenari is a new residential area located in the Kebon Kopi region, South Cimahi, Cimahi City. In this housing development, there will be a total of 62 housing units. The developers of Kenari Housing recognize the importance of internet access in today's world, which is why they have chosen Indihome as their service provider. Therefore, the developers have submitted a request to PT. Telkom Akses to provide internet access in their housing project. The focus of our final project is on the planning and construction of the FTTH network in collaboration with Telkom Akses, ensuring its efficient and standardized implementation.

The design and construction of the network in Perumahan Kenari utilize GPON technology, which is currently relevant and offers downstream speeds of 2.4 Gbps and Upstream speeds of 1.25 Gbps. To connect the entire residential area, a total length of 4.18 km of cable is required. This includes 2.5 km from the Central Optical System (STO) to the Optical Distribution Cabinet (ODC), 1.65 km from ODC to the farthest Optical Distribution Point (ODP), and 0.03 km from ODP to the Optical Network Termination (ONT). In this design, we utilize 9 ODPs to cover the 62 houses in Perumahan Kenari.

Based on mathematically calculated received power levels, the closest distances for downstream and Upstream are -17.821 dBm and -17.982 dBm, respectively. Meanwhile, the received power levels for the farthest distances are -17.850 dBm for downstream and -18.143 dBm for Upstream. The simulation results show that the received power levels for the closest distances are -19.215 dBm for downstream and -19.432 dBm for Upstream, while for the farthest distances, they are -19.323 dBm for downstream and -19.658 dBm for Upstream. These calculations were performed to ensure that the designed and constructed network complies with the ITU-T G.984 standards. After evaluating the calculation and simulation results, it can be concluded that the built network meets the established standards.

Keyword : FTTH, GPON, BoQ, OptiSystem, Link Power Budget