

## ABSTRACT

The use of dual play and triple play services for resident customers who still use MSAN technology is considered unable to provide sufficient bandwidth due to increased access of the services and the use of cooper cable in its secondary segment. This forces network migration to customers and FTTH is the best solution for this problem.

In this Final Project, will focuses on 2 active MSANs and still has customers who have not turned to FTTH yet, at Baturaden and Buana Citra Ciwastra Housing, as well as following the closest cable route as a reference starting from STO to customers. The design process will follow the design flow of PT. Telkom Akses, starting from Desktop Survey, High Level Design, Field Survey, Low Level Design, Design Approval, Field Build Out and As-Built Recording using Google Earth Pro and GE Smallworld softwares for design completion and also OptiSystem 7.0 for design simulation as well as analysis using manual calculation of PLB and RTB in accordance with ITU-T G.984 and PT. Telkom Akses that the distance between OLT and ONT is not more than 20 km and the receiving power is not less than  $-28$  dBm.

In the design of Baturaden obtained power value  $-20.632$  for downstream side, and  $-5.581$  for upstream side, whereas in designing Buana Citra Ciwastra got power value  $-21.772$  for downstream side and  $-6.721$  for upstream side. While for RTB standard of feasibility value obtained  $0.282$  ns on the downstream side and  $0.564$  on the upstream side and still pass the feasibility of both system designs for Baturaden and Buana Citra Ciwastra which obtained  $0.254$  ns and  $0.2535$  ns. This value is still below the encoding value limit, so the designs are considered feasible to be implemented.

**Keywords:** Dual Play, Triple Play, Migration, MSAN, FTTH, PLB, RTB.