

## ABSTRACT

By the increasing of technology especially in telecommunication field, the demand of faster and more efficient transmission system has increasing progressively. In the Sumatra island has been built a fiber optics communication system which called High Performances Back Bone (HPBB) Sumatera. This system is point to point configuration so there is no alternative system in case any trouble appear. Therefore, a planning of new transmission network is needed as an alternative link of Padang - Baturaja which able to configuring SHR (Self Healing Ring) with the existing link.

At this final duty conducted a planning of optical communication system through the cities along Padang - Baturaja with configuration of point to point network using single mode fiber optic with 1550 nm wavelength. The format of transmission signal is NRZ with Laser Diode (LD) as the optical source and Avalanche Photodiode (APD) as the detector. This final duty is using SDH (Synchronous Digital Hierarchy) network system with link capacity STM – 4.

This planning is need 2 pieces equipment of STM – 4 with capacity 504 E1. The number of repeater use is based by the power receive at the repeater. This planning is need 6 pieces of EDFA and one attenuator. The rise time from calculation is less than rise time system so the system has fulfill the condition to working with a good performance.

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