

ABSTRACT

Facing the globalization era, all organizer of Indonesia telecommunications have committed to support process of national development through prepare a fluent and rely on information tool and infrastructure also the telecommunications system which can coverage Indonesian region. So to overcome limitation and improve mainstay of system, it have been developed technology that is *Synchronous Digital Hierarchy* (SDH) which capable to overcome previous technology insufficiency that is PDH. SDH Transmission represent a synchronize way/standart to transmit digital signal. Synchronize transmission mean transmitter and receiver have same timing condition. For this matter between transmitter and receiver must be always in a synchronize condition , in order to always in the synchronize condition need to taken care of timing difference between transmitter and receiver.

The existing network still using the radio, which it maximum capacity is 252 E1, can not accomodate the channel demand up to 2009 that not only support voice communication but also multimedia communication that need wider bandwidth.

In this final duty conducted a planning of optical communication system link Banjarmasin – Balikpapan – Samarinda which representing configuraton of point to point network using single mode fiber optic with 1550 nm wavelength. The format of transmiton signal is NRZ with Laser Diode (LD) as the optical source and Avalanche Photodiode (APD) as the detector. The type of used cable is direct buried cable. This planning also need 4 piece EDFA (G= 33 dB).