ABSTRACT

Currently PLN has an internal program called Aplikasi Pelayanan Pelanggan

Terpusat. This program will process all customer data scattered across Indonesia

centrally. However, to support this program, needs a reliable communication network.

In eastern Indonesia, its geographical conditions of islands and mountains. If

constructed of optical communication networks, it requires substantial investment.

Communication network that can respond to this challenge is a communication

network via satellite because it can reach remote areas and the performance is pretty

good.

The first step in this final project is the determination of the coordinates of

each remote sites. Then selected corporate applications, regional office use three

applications, namely video conference, internet, and VoIP with a maximum of 2

Mbps data rate. While the branch office is internet and VoIPwith a maximum of 1

Mbps data rate. This network uses FDMA-SCPCwith C-band frequency due to wet

tropical climate of Indonesia. Satellite used is Telkom-1. The analysis conducted in

this design is the bandwitch consumption of DVB for inbound and outbound side, the

minimum power that can be used for inbound communication, performance test hub,

the resume the quality of connectivity to each region and branch office at the time of

inbound and outbound, and utility consumption of bandwidth on transponder

bandwidth.

Results of link budget calculations indicate that inbound and outbound

communication in both region and branch office can be done in 16QAM modulation

with (C/N)_{sys} ranging from 23-28 dB and (Eb/No)_{sys} ranging from 18-23 dB. When

the power used is limited, communication network is still able to run the

communication with (C/N)_{svs} of 13,7 dB and (Eb/No)_{svs} of 12,04 dB with QPSK

modulation. Hub can transmit data rate of 15.750 kbps with QPSK modulastion. The

design sufficient to use a transponder because the bandwidth requirements for the

entire remote is 11.564,95 kHz while the transponder bandwidth provided is 36.000

kHz.

Keywords: DVB, link budget, Telkom-1

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