ABSTRACT

Nowadays, technology is developing very quickly. Information and communication technologies into one of fairly rapid development. For that, they need a service that can deliver information or data at high speed, and can accommodate the user capacity in large numbers. Because of that, it may be used a model of telecommunication network LTE (Long Term Evolution). When viewed from the other side, LTE networks require a backhaul that is not only reliable but also efficient in terms capacity, transmission, and implementation to accommodate the access network system of LTE. Backhaul has an important role because it can affect the performance of the LTE network.

In this final project will be planned the microwave link and fiber optic link backhaul for LTE network in the district of Cilincing, Koja, and Tanjung Priok. These three districts were chosen because the region has a quite large population and area and still growing in that condition. In addition, the areas is a tourism and also the industral and trading area which one of fairly large and busy in Jakarta.

Based on the calculation and simulation, microwave links backhaul planning in three districts that have been determined as many as 41 sites to be set up to 33 links with the capacity needs as well as 96.4 Mbps using 23 GHz operating frequency is determined based on the distance of the site plan. Based on that needs, the device specification is used for antenna gain 34.2; 34.9; and 40.1 dBi and minimum received power of -67.5 dBm. In the simulation results, the entire link backhaul microwave achieve availability of > 99.99%, it's due to the value of each site received power is greater than the minimum received power devices.

In terms of link backhaul fiber optic planning, based on the distance between the site that has been specified, the link backhaul FO use the optical type interface short haul (S - 16.1), while based on the total capacity of the entire hub site, then the bit rate or FO capacity on this planning will be used STM – 16 (2064 Mbps). Based on the characteristics of FO cables that have been determined, then the value of the received power (Rx sensitivity) minimum at 18 dBm and maximum at 0 dBm.

Keyword : *backhaul, microwave link, fiber optic link, availability, received power*.