ABSTRACT

Wireless communication technology has developed rapidly in the past decade. This is evidenced by an increase in the number of subscribers and the many services offered. To meet the increasingly rapid development trend that carried some of transmission technologies in order to find comfort in communicating. Free Space Optics (FSO) is one of the alternative technologies that can be used to meet the demand for greater data communications and data access speeds higher and higher.

In this thesis addressed one of the Free Space Optics technology implementation in backhaul networks for wireless communications. Research will be conducted by means of simulation and focus on the WLAN backhaul network, which is between CBS (Central Base Station) with RAP (Radio Access Point). Research will be simulated using software OptiSystem. Analysis is done is the optimum configuration of the WLAN backhaul using Free Space Optic technology seen from the relationship between distance and CBS with RAP wavelengths used in backhaul networks that implement FSO technology.

From the simulation results and measurements have been performed on the obtained difference in the quality of FSO systems to use different wavelengths differently. FSO system that uses a wavelength of 1550 nm has a better reliability than a system using a wavelength of 785 nm and 850 nm. Where the system with a wavelength of 1550 nm can be used until the fog ligth conditions with damping in the atmosphere due to the influence of turbulence, scattering, and scintillation reach 24.16708921 dB with guarantee BER reaches 10-4.

Key word : *FSO, Line of Sight, CBS,RAP,* turbulance