ABSTRACT

Doing communication at sea by a gadget is quite difficult to do. The mobile phones can not be functioned by the passenger, due to the range of base stations which is on land and the user is at the middle sea, with such conditions it is difficult to make a call, SMS, and get internet. However, with the current technological developments several passenger ships have provided BTS whose an Indonesia mobile operator. Currently, the passengers can do communicate used by their gadgets despite they are at the middle sea. But it has not been utilized to the maximum, because just only the passengers who carry a cell phone and only the passengers who use the SIM card from that cellular operator which can take advantage of the BTS. Generalizing facilities, internet via WiFi network would be a solution, then the passengers which is using laptops or the passengers who are not engaging the provider's, they can still get the advantage.

Therefor, it needed a coverage area WiFi planning that will be used for WiFi network that will be used on ship's cabin then the availability area would reached 90% of a ship's cabin. Planning WiFi was used two methods to obtain what access point is needed, based on capacity planning which was adjusted to demand budget of passengers and based on link budget which was adjusted to the broad of coverage area and link budget that was resulted which was calculated by propagation model COST 231-Multiwall or Model Walfisch-Ikegami as a method and was utilized by MAPL (Maximum Allowed Path Lost) as the calculating link budget.

The results of calculation and design of network were simulated by software simulation radio propagation and was expected resultant of coverage area which WiFi was installed on ship’s cabin was obtained optimal results and area availability was reached 90% of a ship's cabin, then the passengers will get internet facility conveniently via the WiFi network.

The result of link budget, capacity planning, and analysis of simulation was obtained, on the first floor was required 1 access point to be installed and the result of radius cell was 68 m and 91,7% of the first floor area was covered with a signal strength above -72 dBm and the average of signal strength was -56,31 dBm. On the second floor was required 1 access point to be installed and the result of radius cell was 62 m and 89,9% of the second floor area was covered with a signal strength above -72 dBm and the average of signal strength was -56,16 dBm. On the third floor was required 1 access point to be installed and the result of radius cell was 58 m and 95,7% of the third floor area was covered with a signal strength above -72 dBm and the average of signal strength was -53,77 dBm. On the fourth floor was required 1 access point to be installed and the result of radius cell was 69 m and 100% of the fourth floor area was covered with a signal strength above -72 dBm and the average of signal strength was -49,76 dBm.

Key word : *COST 231-Multiwall* Propagation Model, MAPL (*Maximum Allowed Path Lost*), *coverage area WiFi.*