

ABSTRACT

Telkom University is one of universities in Indonesia that has number of students increases annually. Data from BAA shows total number of students in the academic year of 2013-2014 is 19.348 students, while in the academic year of 2014-2015 is 23.815 students. To facilitate the increasing number of students, Telkom university builds a new building named Tokong Nanas (Telkom University Lecture Center). Research in April 2015 shows that as a building of lecture center, Tokong Nanas has not been yet covered with WiFi, so that it requires WiFi design to meet the needs.

This research uses capacity planning and coverage planning calculations to determine cell radius, cell area, to get number of access point in each floor in Tokong Nanas building. Number of access point gained, thereafter is simulated uses RPSv5.4 simulator with frequency parameter of 2.4 GHz uses propagation model of COST 231 Multiwall.

Simulation result of access point placement shows in form of graphic information of the average of coverage area, and graphic of SIR value of planning. Research is continued by calculating and analyzing power link budget optic to know how fit and proper the optical transmission from Sisfo central as data center to each floor of Tokong Nanas building.

Result of capacity, coverage planning calculations as well as simulation is there requires adding number of access point and moving access point location so that all area is able to be well covered. There are 3 additional numbers of access points on 1st floor, 1 access point on 2nd floor, 2 access points on 10th floor. Access points on 3rd to 9th floor are moved to get well average value of coverage area. Calculation result of optical reception conducted on optical path Sisfo to Tokong Nanas building on the 1st floor, as an initial termination point, is amounting -5.179525 dBm. While the result from Tokong Nanas 1st floor to the 10th floor of the same building in zone A with line length 0.06570 km gained reception power amounting -5.0229950 dBm. This reception value is the smallest reception value; however it is still in the area of the equipment sensitivity that is between -20 dBm to -3 dBm. This value shows that optical line from Sisfo central to each floor in Tokong Nanas building is in fit and proper conditions to be used.

Keywords: *access point, capacity planning, coverage planning, power link budget optic, WiFi*