ABSTRACT

The growth of mobile phone users is increasing, but there are still many people who have less data services. The geographical location of Bandung which causes like this. Bandung have the contours that is different each another. Where high luminance differences in different districts. There contoured ground like basins or valleys and undulating high ground such as mountains, which causes the BTS can not cover all areas. To adquate the needs of data services and can include Bandung with high speed networks that have required high data rate. Research in this final project make a Wi-Fi network using air balloon that fly in Bandung city using IEEE 802.11n.

The design method wi-fi using a hot-air balloon in a study of this final project is planning base on the coverage and planning base on capacity simulated with software ATOLL. Determining the radius of coverage cells by using free space loss propagation model. While planning based on the capacity to determine the average cell throughput is willing menggunkana offered bit quantity (OBQ). In this final project two scenarios. The first scenario air balloon flying at an altitude of 400 meters and the second 500 meters.

Parameters used in the simulation of this final project is the analysis of signal levels and throughput. Based on analysis of wi-fi balloon is placed on the main square of Bandung with point coordirnat *longitude* 107.607° and *latitude* -6.921°. Based on the two scenarios that have been tested, then the first scenario is better than the second scenario is 400 meters altitude. The data obtained are underserved areas that have had the signal level is less than -90 dBm and 17.6% of Bandung is covered by wi-fi balloons with an area 29,44 km^2. Values have the results downlink throughput 844.42 Mbps and uplink of 144.19 Mbps. For the number of users that can perform high-speed internet access as many as 79 user of the requested 724 user web browsing and for as many as 150 users from 805 users.

Keywords: *coverage planning, capacity planning, throughtput, signal level,* IEEE 802.11n, *free space loss, high speed internet, web browsing, offered bit quantity*.