

ABSTRACT

Users of data services have become the main thing in communicating between humans. Gedung Materawu is one place that is widely used by students to support learning. This research was carried out on the Manterawu building because the number of users that did not make the network stability unstable. The shape of the building and the blocking walls can also reduce the reception of signal quality to the user.

The propagation model used is COST 231 Multiwall Indoor, because this model is suitable for calculating the signal strength emitted when there is a wall in the range area. Parameters needed for designing indoor cellular networks are coverage, capacity, and throughput for analyzing LTE-A networks. Performance analysis through several stages, namely data collection, traffic data collection and analysis, network planning based on capacity, network planning based on coverage area, and finally conducting test results of planning.

On the results of this LTE-A planning, the throughput value is 32.9 for downloads and 39.48 for uploads. The best RSRP in scenario 1 is -42.81 dBm on the 3rd floor and the best RSRP on scenario 2 is -43.34 dBm on the 4th floor. While the worst RSRP on scenario 1 is -67.35 dBm on the 5th floor and scenario 2 is -64.43 dBm on floor 1. Then, for the best SIR obtained values of 10.63 dB on floor 5 for scenario 1 and 13.55 dB on floor 5 for scenario 2. In this scenario one and two used 2 femtocells on each floor with a different position configuration. Based on the simulation results, it is concluded that scenario 2 is more recommended than scenario 1 because it has a greater RSRP and SIR value.

Keyword : LTE-A, Femtocell, FAP, RPS, HeNB