

## ABSTRACT

User needs of data communication require fast, easy, and mobile process data exchange. To fulfill these needs, 3GPP releases HSDPA (High Speed Downlink Packet Access) technology which is included in 3,5 G. The HSDPA network system quality includes coverage and capacity is influenced by the quality of the signal from node B. The performance of node B can be viewed through throughput, RSCP (Received Signal Code Power), and  $E_c / N_o$  (*Energy per Chip-to-Total Noise*) received by user.

Indoor user in large building like office buildings, shopping centers, often receive bad HSDPA signal quality. It is because of the concrete and steel frame building foundations as building construction. One of the solution to solve the problem is placing indoor picoBTS at area that get bad service.

This final project analyses data services performance (Web browsing and download files) in existing indoor HSDPA Indosat's network, with a case study on the ground floor, 1<sup>st</sup> floor and 2<sup>nd</sup> floor of Bandung Supermall (BSM), and then simulate network optimization with indoor picoBTS placement at some points on each floor.

From the measurement results, the average value is still bad (under KPI) , which is -96,85 dBm for RSCP, -8,12 dB for  $E_c/N_o$ , and 21,91 kbps for throughput. To improve that existing network quality, placement simulation of 2 picoBTS was held on each floor. The simulation's result shows increasing of all parameters value up to KPI standard. The average value from simulation are -34,86 dBm for RSCP, -2,6 dB for  $E_c/N_o$ , and 457,7 kbps for throughput. Those simulation result show that indoor picoBTS was proven to improve the HSDPA network system quality that can be showed through the increasing of parameter RSCP,  $E_c/N_o$ , and throughput value on the 2 indoor picoBTS placement simulation.

Key words: picoBTS, HSDPA, indoor