

## **ABSTRACT**

Dormitory building is one of the most crowded and busy place and needed indoor cellular network design, the study was conducted in A and B Telkom University men's dormitory buildings which consists of 4 floors of each building. This is based on the high number of students at the University Telkom inside the building that require Internet access for a variety of lectures purposes, in addition to the construction of the buildings or the walls are thick to causes signal reception in indoor dormitory area worse. Therefore, to overcome these problems the buildings required the design of LTE 1800MHz network and also WiFi 2400MHz for data offload.

LTE and WiFi network design is done to obtain the number of FAP (Femtocell Access Point) LTE and AP (Access Point) Wifi using coverage and capacity calculations. In indoor coverage calculation is used Cost 231 Multiwall propagation model and for simulation program using RPS (Radiowave Propagation Simulator) 5.4. This research was conducted with several scenarios that modeling WiFi 802.11n design, modeling LTE design and modeling WiFi 802.11n network design integrated with LTE design. The analyzed parameters in this study is the receive signal level (RSL) and signal to interference ratio (SIR).

The scenario results which have the most optimal SIR and SRL values is 1 FAP LTE 1800MHz on each floor with 1 WiFi 2.4GHz 802.11n AP on each floor with the result of SIR 10,35 dB and RSL -48,57 dBm.

Keywords : LTE, WiFi 802.11n, FAP, RSL, SIR