

## ABSTRACT

One of the places that have potential to do design of the cellular network is the lecture building, the study was conducted at the new lecture building (Tokong Nanas building) of Telkom University consisting of 10 floors. This is because too many students, faculty and community Telkom University who were inside the building, in the other hand to the construction or walls of the building are thick, causing the signal reception in the *indoor* area becomes less good. To overcome these problems, it is necessary to design Long Term Evolution-*Advanced* (LTE-A) and WiFi 802.11n network existing

The planning method used to determine the number of Femtocell Access Point and WiFi access points using the calculation of coverage and capacity, propagation models are used COST 231 Multiwall and simulation software that will use the RPS 5.4 (Radio Propagation Simulator). This research designed in 3 scenarios, there are WiFi 802.11n existing Condition, FAP LTE-A 1800 MHz only and Wifi 802.11n with additional FAP LTE-A. Analysis of the results of network planning is done by evaluating the receive signal level (RSL) and signal to interference (SIR) parameter

The best result in the design is the result of cellular networks LTE-A at a frequency of 1800 MHz without 802.11n WiFi existing network which the result of SIR is 17,51 dB and RSL is -58,51, but the optimally design is Wifi 802.11n existing with additional FAP LTE-A which the result of SIR is 6,81 dB and the RSL is -55,68 dBm

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