ABSTRACT

Many students of Electrical Engineering Faculty at Telkom University do their activity in N Building. Many users in N Building are difficult to Access 4G LTE because N Building location is far enough from the nearest eNB and surrounded by large bulidings. The coordinate point of N Building is (-6°58'35.89" , 107°37'46.64") and the altitude is 2190 feet. Size of N Building is 1978.29 meters square. N Building's Geographic location is surrounded by O Building, P Building, Serba Guna Building, and Student Centre.

Two scenarios of Drive Test were conducted in order to know the existing LTE coverage condition of N Building. First scenario is outdoor Drive Test and the second scenario is indoor Drive Test. The result of Drive Test show that the indicator coverage condition in existing area of N Building at poor to intermediate (-110 dBm to -85 dBm). In the outdoor area, the value of mean RSRP is -93.65 dBm and the value of mean CINR is 0.67 dB. In the indoor area, the value of mean RSRP is -95.46 dBm and the value of mean CINR is 2.04 dB. In this Relay simulation, atoll will be use as outdoor simulation and RPS will be use as indoor simulation.

Relay simulation is needed to improve the quality of RSRP and CINR in the coverage side. At outdoor simulation, relay node is located at the outside of N Building depend on the bad indicator at that location. In indoor simulation, relay node placed sequentially start from coverage causes by outdoor relay node until the coverage area in the whole of N Building have a good indicator level. 3 antennas of relay node are needed according to the calculation of link Budget. Simulation result of outdoor scenario are -83.79 dBm of mean RSRP and 5.12 dB of mean CINR. At the indoor scenario the mean value result of RSRP is -57.17 dBm and 21.13 dB in CINR.

Key Word : LTE, eNB, Coverage, Relay, RSRP, CINR