ABSTRACT

Telecommunications technology is developing rapidly these days, thus a reliable network that could transfer data at high speed and support service features are required by the user. The need for high data rate has an impact on the increasing needs for a network that could transfer all data from enodeB to core network. RTN device is one of solution that could be used to transfer data from enodeB to core network at high speed up to 1 Gbps.

In this final project, backhaul device used in the LTE network design is RTN 310. Based on calculations, the value generated by the network output is 11,27982895 Gbps, thus obtained 12 hop backhaul needs. There are three scenario used in this study: the first scenario (X2 Mesh and S1 Ring), second scenario (X2 Mesh and S1 Star) and the third scenario (X2 Mesh and S1 Hybrid). The best scenario obtained from simulation results based on owned throughput load and computation of antenna amount needed in designing LTE backhaul network in central Jakarta is the third scenario, which is X2 mesh and S1 hybrid topology (Star with redundancy). From that topology, the total amount of link is 80 and received signal power by an average of -45.96864447 dBm.

The outcome of this study is LTE backhaul network design using RTN 310 that could fulfill user needs in central Jakarta with parameters: free space loss by an average of -117.5154873 dB, emittance 22 dBm, received signal level by an average of -45.05251674 dBm for the first scenario (X2 Mesh and S1 Ring), -46.0257044 dBm for the second scenario (X2 Mesh, S1 Star), and -45.96864447dBm for the third scenario (X2 Mesh, S1 Hybrid).

Keywords: LTE, backhaul, RTN, topology, network throughput, free space loss, received signal level.