

ABSTRACT

Long Term Evolution (LTE) is a technology that can provides high data rate because of the OFDMA technology within LTE. But, eventhough intersymbol intereference (ISI) is reduced by OFDMA, the value of interference is still high which will disturb user's performance in cell edge and lower the cell capacity.

In capacity planning, this study is using Single User throughput method to calculate the throughput that would be needed in the coming years based on forecasting calculation. On the other hand, coverage planning is using Okumura-Hatta propagation model for Link Budget calculation because it is compatible with the frequency that being used on this project, which is 700 Mhz.

From the results of the planning that has been done, the amount of throughput that will be needed in Banda Aceh city for 5 next year is 402.567 Mbps, with the forecastin number of LTE subscribers is up to 11857 users. Cell number that will be needed to provide optimal service throughout the city of Banda Aceh is 10 cells by using an 120° antenna sector, with each cell radius for Dense Urban areas (0.43 Km), Urban area (0.61 Km), and Sub Urban area of (1.16 Km). The simulation proved that LTE network with fractional frequency reuse makes a better result than LTE with total noise + interference value of LTE FFR is -63.18 dBm and LTE with frequenct reuse 3 is -59.01 dBm.

Keywords : LTE, *Single User Throughput*, *Fractional Frequency Reuse*, *noise + interference*.