

## ABSTRACT

The surge of smartphone users who need to access real-time data to make some *NodeB* someday will experience *overload*, forcing service providers to expand their networks. The expansion of the network to cope with this problem, one of which is to implement *2nd carrier* in each sector on *nodeB*. *2nd carrier* implementation of the simulation analysis on *UMTS / HSDPA* on the research carried out on one of the network operators in Indonesia, PT. XL Axiata TBK used to increase the area of coverage and quality of a *nodeB* throughput.

In this thesis, an analysis of existing areas followed by some sort *NodeB* which have high *utilization* by looking at the parameters of *Power*, *Code*, and *Channel Element*, but without changing the parameters of the simulation tests performed on the expansion of network planning software to implement *2nd carrier* *Atoll* the *NodeB* that have high utilization, and by using two scenarios for comparison.

From the analysis of the research that has been done, the value obtained from the simulation coverage. There is no difference between scenarios I and II in terms of the signal level as it uses the same power. From the simulation results obtained throughput for voice service, the average value of DL / UL in the scenario I reach 373 kbps, while in the second scenario reaches 363 kbps. Then, in the Mobile Internet Access service, the average value of DL and UL in the first scenario is 2538 kbps and 423 kbps, while in the second scenario reaches 3179 kbps and 529 kbps. This suggests that the second scenario is better than the scenario I have in addition to throughput superior mobile internet access around 600kbps, more efficient use of power also because the sharing of the carrier.

Keywords: *UMTS, HSDPA, utilization, expansion, NodeB, Power, Code, Channel Element.*