

ABSTRACT

High-speed data access traffic is increasing every year, especially for mobile access, therefore the Long Term Evolution (LTE) has emerged as a broadband technology that offers high data rate up to 100 Mbps at *downlink* direction and up to 50 Mbps at *uplink*. Currently, Operator X has implemented LTE technology in several major cities in Indonesia at 900MHz frequency with 5MHz bandwidth. However, LTE network utility that have been implemented on Bandung city is very low. The possible cause is devices that support LTE in the 900 MHz frequency is much less than device that support LTE on 1800 MHz frequency so that the potential of LTE subscribers is not exploited optimally. Whereas, this operator 2G network is currently at 1800MHz frequency with 22,5MHz bandwidth and only have basic services for voice service, SMS (Short Message Service) and data service at low speed, so it can be said that the 1800MHz frequency band is not used to its full potential. And then 2G technology users was predicted to decreased due to increasing handset that has support 3G and LTE technologies.

The most efficient way to solve this problem is doing migration of LTE network in 900MHz frequency to be 1800MHz frequency which currently used DCS1800 technology in order to implement LTE in the greater bandwidth and more efficient in the frequency license lease. In this final project, migration planning on LTE in terms of RF (Radio Frequency) using the coverage and capacity planning method, based on *existing* traffic conditions on that operator (Operator X) on Bandung city area.

The results of the planning of this final project is a need to increase as much as 174 cells in LTE1800 network to get the same coverage with LTE900. Signal levels above -100dBm increased from 96,99% to 97,17% of the total planning area. Bandwidth that can be used in LTE1800 in 2015 amounted to 10MHz and in 2020 can use the bandwidth of 15 MHz by considering the *existing* traffic DCS1800. The increase in the bandwidth used for LTE1800 of a 5MHz to be 10Mhz cause an increase in the average throughput received by the user, from 12,9 Mbps to be 28,19Mbps. As for the peak throughput in a 5 MHz bandwidth can provide 37Mbps and 73 Mbps with 10 MHz bandwidth.

Keywords: Long Term Evolution (LTE), migration, bandwidth, signal level, throughput