

ABSTRACT

Nowaday, in mobile communication industry, multimedia and mobile data which require high performance of data velocity to be the focus of development, and *WideBand Code Division Multiple Access* (WCDMA) cellular system are offered as one of solution to prevent this matter. WCDMA (WideBand Code Division Multiple Access) is multiple access technology which is predicted will change the popularity of GSM, GPRS, even CDMA technology such as 1Xtreme, HDR, 1XMC.

In this final project, it is brought about study of UMTS radio network planning which cover traffic prediction; link budget and propagation signal aspect; cell plan which cover area coverage analysis, capacity, and performancy; techniques in system optimalitation; and the desicion of optimal site position.

To decide the traffic of each service, it is used OBQ in the amount of 99.63 kbps/km² for urban area, 24.25 kbps/km² for suburban, and 5.05 kbps/km² for rural ones. To make the costumer which locate in the top of site still get signal, so the radius coverage must be bigger than the site radius. It can be happened by making the loading factor value in 60% and antenna height in 30m, 50m 60m for urban, suburban, an rural area. Node B as the result of the planning is 34, for each radius of urban, suburban, and rural area are 2.27 km, 4.61 km, and 10.11 km. From the node B position of the result planning, it is not all of node B are made the new tower, there is some of it still use the existing BTS. The election of tower use Breadth First Search (BFS) algorithm. Existing tower which is reuseable are in the amount of 20 which consist of 6 for urban area, 6 for suburban, and 8 for rural ones.