

## **Abstract**

UMTS (Universal Mobile Telecommunication System) is one of the Third Generation Communication System which integrates many technologies that have been achieved in telecommunication field today. Its data rate access is 144 Kbps on macro cell area, 384 Kbps on micro cell area and 2Mbps on piko cell.

The main purpose of the third generation (3G) cellular communication is to integrate many telecommunication services like high speed data access, video traffic, and multimedia vastly just like voice signal service. One of the most interesting approaches to 3G is to combines air interface wideband CDMA (WCDMA) with GSM network that has been standardized. In implementing 3G, which use basic network GSM, an up grading technique is needed to optimize the performance so that it will support the implementation process of 3G. This final project is discussing about UMTS planning at Telkomsel Banjarmasin area.

The process of UMTS implementation on GSM network is done by adding UTRAN which consist of Node B and RNC, based on the existing instrument ability that results the prediction of total customer in Banjarmasin by 2012 for urban area 30,646 users, 13,063 users for suburban area. With offer traffic is 2,696.87 kbps/cell and cell radius each, is 1.298 km and 1,586 km. it needs 19 Node B and one RNC with 25% of cell loading. After the counting finish, the Node B will be placed by using Genetic Algorithm for the optimal results.