

## ABSTRACT

UMTS (Universal Mobile Telecommunication System) is a third generation of cellular technology which has capability to accommodate voice, data, video information. From the offered capacity of UMTS, it has a capability to serve more user due to WCDMA method. Along with the large capacity offered by the RF planning of the transmission link between the Node B to Node B and / or Node B to the RNC and the RNC to the Core network also needs to be taken to ensure that the communication process can go smoothly.

This final task discuss about the UMTS Transmission Network Planning. Or transmission of a UMTS network planning. This planning includes capacity calculations for each link node B, link budget calculation for each hop, Node B – Node B, Node B – RNC and RNC – Core Network topology decision. The design is done using microwave and optical for the physical media. For the topological links that are implemented in this research is a hybrid using a GSM BSC as a major hub, with a combination of tree topology, and mesh to connect between the main hub with the RNC. For the RNC to the Core network links using optical fiber media, Single Mode 1.33 with 1 +1 protection configuration.

This final project has produced a detailed design of UMTS transmission network, from the planning stages of the design capacity till the UMTS transmission medium that is used. The transmission medium that used are microwave and fiber optic. It is expected that this final project can be used as a reference in a transmission network planning in a real condition.