

ABSTRACT

The development of mobile communication technology is very fast now days, especially UMTS / WCDMA. The desire of each user to access or to use WCDMA's services any time and any where, force the UMTS's sub system to be integrated each other. Low Earth Orbit (LEO) is assumed can over come coverage problem, because LEO has larger coverage than BTS in terrestrial. Beside that, LEO is expected can full fill data rate up to 144 Kbps.

In this final project was studied about Mobile Satellite System (MSS) that adopted SW-CDMA (Satellite Wideband CDMA) technology. S-UMTS have downlink operation frequency with range 2170 MHz – 2200 MHz and uplink 1980 – 2025 MHz (IMT 2000 standardization). Even though, placing S-UMTS in Low Earth Orbit have some problem such large Doppler effects that is caused by high satellite velocity and added by user velocity will become a big problem for bad channel propagation condition.

In this final project, the simulation did with Mathlab 7.01. The system performance analyze can be obtain from BER and user downlink throughput. The research environment in this final project can be divided in 3 environment conditions, those are rural, sub urban and urban, and aeronautical is environment condition for special case. In rural and sub urban environment condition can be concluded that S-UMTS have a good performances to serve voice services (data rate up to 12,2 Kbps) with BER target 10^{-3} and to serve data services (data rate up to 144 Kbps) with BER target 10^{-5} . S-UMTS still have good performances to serve user with velocity up to 500 Km/h for even for single user or multi user. In urban area for voice service, S-UMTS only can serve user with velocity less than 60 Km/h and the numbers of user that can be served in once a time are 12 users. And for data services only can be used for no mobility single user.