ABSTRACT

In the middle of telecommunication infrastructures shortages and the increases of the number of wobile wireless system's user, adaptive antenna is becoming solution to be an efficient and effective resource.

This final project have simulated adaptive antenna technology with mobile user environment. Adaptive antenna will maximize user's (Mobile Station) ability to gain transmission power from the Base Transceiver Station (BTS). The antenna will analyze the environment condition and giving a response by matching the radiation form. Here, adaptive antenna is using beamforming technique. Beamforming is done by making a structure of antenna which has radiation form to serve the user (Mobile Station) in a specific location. In this simulation, adaptive algorithm is absolutely needed. Adaptive algorithm used in this simulation is Kalman Algorithm.

The result of this simulation shows that Kalman Algorithm can be used in adaptive antenna technology. User's moving speed is influencing the beam directed to the user. A high speed moving user may cause beam distortion. For 120 km/h speed, the distortion is 26°. In a multiuser condition, there will be a beam coincide in specific user-to-user spatial distance.

Key Word: *Mobile Wireless System*, *Adaptive Antenna*, *Beamforming*, *Kalman* Algorithm.