ABSTRACT

The IEEE 802.16e standard, known as Mobile WiMAX, is an improvement of previous WiMAX standard to support user mobility. Mobile WiMAX conform the capability of portable and mobile application which optimize the previous standard performance to resolve dynamic mobile wireless channel. To resolve dynamic mobile wireless channel, an accurate channel model is required, so that the mobile wireless network could be well planned.

In this Final Project, the writer learns about channel modeling algorithm for mobile WiMAX system using one of empiric channel models, SUI (Stanford University Interim) channel model. This model is believed to be accurate to describe mobile wireless channel because it calculate the dispersive characteristic of channel and cover all terrain types. That channel characteristic will possibly be found at mobile wireless communication.

The effects of system parameters, such as Doppler spread and delay spread, are investigated using computer simulations by help of Matlab R2007a. Simulation results show that good channel performance cannot be reached without using frequency domain equalization. Therefore, writer uses adaptive linear equalizer using training signal to improve the channel performance.

With that type of frequency domain equalization, channel performance significantly improved, especially to channel with large delay spread. The channel performance is not decrease significantly in low speed mobility user. In high speed mobility user, the channel performance is decrease drastically. Channel performance in high speed mobility can be improved by time domain equalization.

Key Words: Mobile WiMAX, SUI, channel, equalization, delay spread, Doppler spread.