ABSTRACT

IEEE 802.16e standard is the WiMAX (Worldwide Interoperability for Microwave Access) especially designed for fixed and mobile customers. It is compatible for Non Line Of Sight condition. IEEE 802.16e works in the bandwidth of 2 – 6 GHz and has the data speed of approximately 3 – 5 Mbps. 802.16e is used for Wireless MAN (Metropolitan Area Network) communication that is suitable for BWA (Broadband Wireless Access) application.

IEEE 802.16e technology is still not implemented and still has no standard. Because of that, researches and simulations should be done towards the existing standards. With the results, it is hoped that the 802.16e technology can be accommodated.

In this final assignment, a simulation of power control technique and its connection of the use of adaptive modulation technique have been done towards IEEE 802.16e. Canal prediction would be used as the parameter determining the kind of modulation used. The modulations provided in this simulation are the adaptive form of QPSK, 16 QAM, and 64 QAM. The power control technique is used to ensure no interference can happen towards other users. The mechanism of power control technique is independently constructed and not connected to the mechanism of the adaptive modulation technique. One of the similarities of the two techniques is that they have to be able to work in a fading environment. The transmission performance parameter of the simulation is the BER.

The usage of power control technique will have effects whether the user is stationary or mobile. The power control done by the BTS is done with the purpose of improving the coverade up to 800 meters for the QPSK. With the BTS optimum step size of 2dB, the BER performance is improved to the order of 10^{-4}.