ABSTRACT

IEEE 802.16e standard is a family standard for WiMAX technology (Worldwide Interoperability for Microwave Access) which specially for mobile user and very compatible for N-LOS (Non-Line of Sight) condition. As the expanding of multimedia application, it is claim for the higher throughput for voice, data, or video communication. There are some features that are applied on WiMAX mobile to increase its performance. One of them is Hybrid Automatic Repeat reQuest (H-ARQ).

In a data transmission process, there is always error, it caused by multipath fading. Hybrid ARQ is one of error correction technique in a data transmission with retransmission addition process.

Hybrid ARQ technique has some implemented methods that used in system. In this Final Project, system will be simulated using Chase Combining and Incremental Redundancy method. The modulation is 16QAM and use convolutional encoder with initial code rate R=1/2. The channel model that used in this Final Project is channel with Rayleigh distribution and AWGN channel with single user movement for 0 km/hours, 5 km/hours, 40 km/hours, 60 km/hours and 120 km/hours.

Through this simulation, it can be found out the performance of Hybrid ARQ to WiMAX (IEEE 802.16e) network. From result of the simulation, both of the H-ARQ techniques able to decrease error in the system. For fix condition, Chase Combining method is able to repair power equal to 4.6 dB to get voice service in BER 10^{-3}. While, Incremental Redundancy method is able to fix power equal to 5.36 dB. Moreover, Incremental Redundancy is able to lose error when SNR is below 20 dB. In that way, Incremental Redundancy method is able to repair error better than Chase Combining method. So, Incremental Redundancy is good to be implemented in mobile WiMAX (IEEE 802.16e).