

## ABSTRACT

IEEE 802.16e standard is a standard of mobile WiMAX (World Interoperability for Microwave Access) technology that be air interface for BWA application which work in licensed band at frequency range 2-6 GHz and it's very compatible in NLOS (Non-Linear Of Sight) condition. One of technique that can be integrated to mobile WiMAX is adaptive modulation system to adjust its signal modulation schemes depending on SNR condition of radio link in WiMAX system . Adaptive modulation can increase adaptation of bad channel condition and the system will get near to good channel condition. Channel condition can be estimated in receiver by feedback and next step will be done prediction.

In this final project, adaptive modulation simulation is done in Rayleigh channel condition for IEEE 802.16e uplink system with using technique channel prediction based on kalman methode. Kind of modulation and coding scheme that be used in this simulation according 802.16e standard, they are QPSK with *code rate* 1/2 and 3/4 , 16QAM with *code rate* 1/2 and 3/4 , and 64QAM with *code rate* 2/3 and 3/4. Then, analyze the result based on parameter acquired. The important prediction output of transmission parameter is SNR with BER performance.

From Simulation result, proposed adaptive modulation give better performance than fixed modulation for BER  $10^{-3}$  target. If using prediction kalman methode is observed, it produce minimum result of mean error value that is approach or same is zero (0) . If calculated in error pecent is 1.933% for user speed 30 km/jam, so that available optimal prediction result which near get to its estimation value.

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