

ABSTRACT

For now, wireless communication system has come third generation which called 3G. This system use wireless communication standard wide band code division multiple access (WCDMA). WCDMA is direct spread technology, which means that it will spread its transmissions over a wide, 5MHz carrier. WCDMA is the technology used in UMTS, and with data rates up to 2Mbits it has the capacity to easily handle bandwidth-intensive applications such as video, data, and image transmission necessary for mobile internet services.

For services high speed data in real time with good performance and can good work in multipath fading channel used MIMO (Multiple Input Multiple Output) technology so data speed up to 20 MBps. AMC is used to support multiple rate transmission for different types of multimedia services. In AMC, the modulation level and coding rate are set by the channel condition.

This final task analyze and compare performance of WCDMA system with MIMO and AMC that will modelling in mobile propagation channel which distributed Rayleigh Fading. MIMO scheme use Space Time Block Code 2x2

The results show that MIMO technology give improvement performance between 0,7 dB until 1 dB in low speed (3 km/hour) and between 0,7 dB until 1,2 dB in medium speed (30 km/hour), MIMO still not give good performance for system to get BER 10^{-3} . Adaptive modulation algorithm gives improvement performance for WCDMA system with MIMO and fixed modulation. In speed 3 km/hour, adaptive modulation give good performance between 0,8 dB until 11,9 dB for every kind of modulation. In the other way, in speed 30 km/hour, adaptive modulation give good performance in BER 10^{-1} between 3 dB until 18 dB.