ABSTRACT

UMTS is one of evolution of third generation (3G) from mobile network, which is result of expansion from GSM technology. UMTS also show request that is more and more grows from the communications world mobile more and more multitude. Improvement transmission of it's the network reaching speed of up to 2 Mbps per user mobile and specifies an global exploration standart.

In this final project will be simulation for uplink transmission at UMTS with SC-FDMA system. SC-FDMA system is considered to be OFDMA system added by DFT operation, where data symbol in time domain is orthogonal transformation to frequency domain by using DFT operation. Scheme of system model at this final project applies Rayleigh Fading and AWGN channel.

Simulation result show that system SC-FDMA with AWGN channel, performance that is good by modulation QPSK with value Eb/No 4.5 dB for having BER 10^{-4} and 6.4 dB for having BER 10^{-5}. While at rayleigh channel, value Eb/No at modulation QPSK at having BER 10^{-4} is 9.5 dB and 16-QAM and 64-QAM is 16 dB and 19 dB. Speed of user higher value is having BER ever greater. In the static condition system reachs having BER 10^{-4} at level Eb/No : 81 dB. While at a speed of 90 km/jam system reachs having BER 10^{-4} at level Eb/No : 19 dB.

Keywords: UMTS, SC-FDMA, DFT, Uplink, QPSK, QAM