ABSTRACT

High Peak to Average Power Ratio (PAPR) of OFDM system result on non linearity effect of High Power Amplifier (HPA), so that the system fails to get the Bit Error Rate (BER) target. Link Adaptation (LA) is one of the techniques which are used to improve efficiency spectrum and maximize throughput on OFDM system. Performance of Link Adaptation enhances SNR margin of combination M-QAM modulation and coding rate with several Back Off (BO) power which is used to get BER target.

At the final project, it will be analyzed that the impact of BO power usage to M-QAM modulation and coding rate on IEEE 802.16d system. The second analysis is knowing the impact of PAPR in applying Link Adaptation strategy by using Look up Table (LUT) method. In purpose to get 10^{-3} of BER target the BO power requirement on every modulation and coding rate is different, so that in applying Adaptive Modulation and Coding (AMC) system is needed adaptive BO power. The last will be analyzed performance of Link Adaptation with Adaptive Power Modulation and Coding (APMC).

From the result of the simulation, some conclusions can be obtained. The first is the impact of BO power will improve with increased modulation and coding rate level. Second, modulation and coding rate don't affect PAPR, the result is required by enhancing SNR margin to take stability of Link Adaptation system to get BER target 10^{-3}. The last conclusion is the performance of APMC system will be optimized if the usage of BO power in minimum posibility for each modulation, where system can reach BER target 10^{-3} in range of 10 dB to 30 dB.

Keywords : LA, BO, PAPR, AMC, APMC