

ABSTRACT

Multicarrier Code Division Multiple Access (MC CDMA) is an amalgamation system of Orthogonal Frequency Division Multiplexing (OFDM) and Code Division Multiple Access (CDMA). MC CDMA has several superiorities, but MC CDMA has a weakness also which is Peak to Average Power Ratio (PAPR). PAPR is comparison between peak power and mean power signal after modulation process. PAPR is caused by multicarrier modulation in MC CDMA system that will produce a bigger power than average power if there are some subcarriers have same phase. PAPR will make less power transmission efficiency. So, it is a necessity to reduce PAPR.

This final project analyzes the effect of Orthogonal Binary User (OBU) code to reduce PAPR in MC CDMA system. OBU is a new type of spreading code that found by Radha Poluri and Ali N. Akansu. To comparison, output form OBU code will be compared with output from Walsh-Hadamard (WH) code. Furthermore, for obtain better MC CDMA system performance, this final project will use Multiple Input Multiple Output (MIMO) Space Time Block Code (STBC) technique.

The result of simulation shows MC CDMA system which uses OBU code produce 4 dB PAPR lower than which uses WH code at 10^{-1} probability. In addition, OBU code can produce 1.78 dB improvement MC CDMA system performance than WH code at 10^{-4} BER. MIMO STBC technique also give 3.39 dB improvement for OBU code, and 3.4 dB improvement for WH code than MC CDMA system without STBC technique at 10^{-4} BER.

Keywords : PAPR, MC CDMA, Orthogonal Binary User code, MIMO STBC.