ABSTRACT

The growth of human's needs of communication is increase rapidly moreover for wireless technology. To handle this user's needs, wireless technology is also developed in quality and quantity. One of the steps of wireless technology development is by developing its modulation technique. Multicarrier Code Division Modulation Access (MC-CDMA) is a modulation technique that mix strong point between Orthogonal Frequency Division Multiplexing (OFDM) and Code Division Multiple Access (CDMA). By that mixing, MC-CDMA becomes better to reduce Multiple Access Interference (MAI) and Inter Symbol Interference (ISI) and to maintain the performance of bit error rate. So MC-CDMA emerges as a multiple access technique that is good for high data rate communication.

In this final project, MC-CDMA system is designed and implemented based on FPGA (Field Programmable Gate Array) using FFT 64 points built by two stage of processing with radix 8. It will be gotten a system prototype which can be applied for making MC-CDMA chip. This FPGA uses high level language called by VHDL (Very High Speed Description Language). System designed and implemented on FPGA is standardized to WLAN 802.11b.

From this research on base band MC-CDMA, the performance of each block can be showed from the simulation on Modelsim. Simulation result shows the same input and output from transmitter block and receiver block. From the synthesis result, the used of FPGA resource can be showed from the synthesis on Xilinx. This baseband MC-CDMA design 24% of occupied slices and 1% for used of IOB. It also can work on maximum frequency of 105,972 MHz.

Key word : MC-CDMA, FPGA, VHDL