

ABSTRACT

Radio over Fiber (RoF) technology is a technology by which microwave signals are distributed by means of optical components and techniques. It can be implemented together with many kinds of radio network, one of them is *Wireless Local Access Network* (WLAN). On *WLAN over fiber*, RoF is integrated with *Orthogonal Frequency Division Multiplexing* (OFDM) which combined with other modulation technic. This Final Project is discussing about modulation and demodulation of OFDM that combined with QAM-16 on WLAN IEEE 802.11g standard.

The simulation of OFDM – QAM-16 was done using C++ programming language, starting from the transmitter, AWGN channel model through to *receiver*. Some scallings on IEEE 802.11g standard are used in this simulation. In order to verified the calculation of the simulation, a comparation between the output of the simulation and theoritical calculation using Matlab software was done. After that, OFDM – QAM-16 system performance was measured by calculating Bit *Error* Rate (BER) for every E_b/N_0 that used.

The result of this simulation was a visualization of waveforms from OFDM – QAM-16 system on WLAN IEEE 802.11g standard, from transmitter through the receiver. It was also known that multi-modulation technic such as OFDM – QAM-16 implementation had a better performance than compare to the one that only implemented QAM-16.

Keywords: WLAN, OFDM, QAM-16, C++