

## **ABSTRACT**

Ultra Wideband (UWB) technology has been introduced as one of the technology for wireless application which provide high data rate service. Due to multipath component in Saleh Valenzuela channel, each pulse will interfere each other resulting ISI, which give rise to error probability detection in receiver.

The random time varying fading channel model enable receiver to be equipped with an equalizer which able to adopt the channel characteristic, that is adaptive equalizer. LMS is one of the algorithm used for adaptive equalizer application, where it is used to minimize MSE criterion between the desired output of the equalizer and the actual output.

In this final project, the performances of adaptive equalizer using LMS algorithm in DS-UWB communication system are analyzed. UWB system which is used refer to IEEE 802.15.3a standart, with BPSK modulation. It is desired that LMS algorithm bring to the system improvement. The parameter which are analyzed in this final project including Saleh Valenzuela channel model and the number of step size, where they will influence the performance and how long should the equalizer take to convergence.

From the simulation result, we can see that saleh Valenzuela channel model 1 using LMS algorithm in DS-UWB system provide the best performance, that is  $10^{-5}$  BER in 17.9 dB SNR. The optimum step size factor act as the trade-of between the time to convergence and the system performance with the 0.001 step size value and the required pilot training are 64 bits

**Key Words :** DS-UWB, Adaptive Equalizer, LMS, Saleh Valenzuela