

ABSTRACT

Nowadays, UWB (Ultra Wide Band) is a technology which is developed to get data access with the highest speed, economic, cheap and can be kept into small product. However, UWB has low power. UWB has been predicted which can change bluetooth position because it has 100 times more fast than bluetooth to transmit data or signal. Frequency spectrum has been settled by FCC (Federal Communication Commission), was 3.1 GHz to 10.6 GHz.

By using wide bandwidth for same period, UWB is able to transmit data until 480 Mbps in 9 meter length with low power to send a million radio energy to all frequency which would be managed by the UWB receiver. It could cause *frequency selective fading* which could destroy information signal. With the result that bandwidth of signal can be more wide than bandwidth of channel. To solve this problem, OFDM (Orthogonal Frequency Division Multiplexing) is used to divide available spectral to be subbands, which each subband bring OFDM signal.

In this final assignment would be analyzed about OFDM UWB multiuser performance based on DS-SS-SSMA. It analysis influences of user additional, variation of fast, and subcarrier additional. AWGN and Rayleigh channels are used at this assignment. Walsh Hadamard is used to be spreading code. The result of system simulation (simulation BER) would be compared with the theoretical of AWGN BER to analyse the differentiate between both of results.

The simulation result of OFDM UWB multiuser performance system based on DS-SS-SSMA which has shown increasing of system performance. By seeing the results, there is better performance system. E_b/N_0 equals to 8 dB to reach out BER target 10^{-4} which was used in additional 8 users and 16 users, and additional of 128 subcarriers and 256 subcarriers. The comparison between AWGN BER in theoretical and simulation have a little difference an results good performance.