

ABSTRACT

UWB (Ultra Wide-Band) is a wireless application technology that has a great attention in international now and FCC (Federal Communications Commission) has established that UWB's operation frequency are between 3.1 GHz- 10.6 GHz. UWB technology has many advantages such as : very low data rate and low power consumption. Therefore, The application of UWB technology is very good for indoor environment. For efficiency of wide spectrum and robust against narrowband interference, UWB technology needs an appropriate approach. And for indoor wireless communication, UWB technology needs different propagation channel model because in indoor environment the probability of getting multipath signal is huge.

Multiband OFDM UWB approach technique is very appropriate used for bandwidth efficiency that is by OFDM technique and the robust against narrowband interference with multiband. The appropriate channel model is Saleh-Valenzuela channel model. Where the analyzed channel model is multipath channel model, which divided into two categories. They are LOS (Line Of Sight) for channel model 1 (CM1) and NLOS (Non Line Of Sight) for CM2, CM3, and CM4. In this matter LOS mean Tx and Rx in the same room, while NLOS mean Tx and Rx located in different room.

From the simulation result can be seen that MB-OFDM UWB system can give good performance in Saleh-Valenzuela channel model with 128 sub carriers especially in CM1. It proven from simulation to achieve BER 10^{-5} needs SNR 13.8 dB. On the other hand, for 256 sub carriers can give good performance in CM2 and 512 sub carriers can give good performance in CM3 and CM4.

Key Word : OFDM (Orthogonal Frequency Division Multiplexing), UWB (Ultra Wide Band), subcarrier, BER (Bit Error Rate), SNR (Signal to Noise Ratio), Saleh-Valenzuel, CM (Channel Model).