ABSTRACT

Wireless communication continues to develop and participate in supporting technological developments in other fields, such as transportation. In wireless communication technology, signal processing continues to develop to be able to fulfill existing data communication services. In the process of sending wireless communication signals used can experience certain phenomena, such as modulation, interference or other factors. This research aims to find out how to model multipath fading communication channels with mobile station conditions that move and cause Doppler effects on transmitted Orthogonal Frequency Division Multiplexing (OFDM) signals. Knowing the effect of Multipath Fading on OFDM signals with Doppler effects that occur due to the speed of mobile station movement. This research is simulated by sending a signal in the form of an array of data bits modulated with Binary Phase Shift Keying (BPSK) using the OFDM multiplexing technique with two scenarios. In the first scenario, where the channel has a mobile station with 3 different speeds at 11, 22 and 33 m/s. After simulation, the smallest Bit Error Rate (BER) result with a value of -0.93 is obtained at the lowest test speed at 11 m/s. As for 269 bit errors as the best result, it was produced in the first scenario also at the lowest mobile station speed. In the second scenario, where the communication channel has a variable number of scatter at 4, 7 and 10 points. Overall, the BER and bit error generated in the simulation program are of good value in the channel with 4 scatterers in the communication channel. The best BER value is -0.97 at 0 dB and 185 bit error at 10 dB in the channel with 4 scatterers.

Keywords*: Channel Modeling, Doppler Effect, Multipath, OFDM*