ABSTRACT

The development of telecommimications technology is currently growing rapidly, but it is not directly proportional to the number of channels available. In the V2V communication system channel, users on the transmitter and receiver sides moves randomly and surrounded by scatterers that move randomly. One of the problem that arise when transmitters and receivers move results in the Doppler effect. This will affect the increase in the Bit Error Ratio (BER) value on the receiving side. This research uses V2V channel with moving scatterer conditions and uses Zero Forcing (ZF) equalization as a method to mitigate the Doppler effect. This communication system is combined with Filter Bank Multi Carrier (FBMC) system with QAM offset modulation. The process of mitigating the Doppler effect is done by increasing speed on the sending and receiving sides and increasing the number of scatterers. From the simulation results that have been carried out Zero Forcing equalization can mitigate the Doppler effect. During the simulation for Eb/No 15 dB, the BER value decreased without using ZF equalization or using ZF. The BER value at 100 m/s using ZF is $1{,}699x10^{-1}$ *and without using ZF is* $2{,}578x10^{-1}$*. The difference in BER value reduction using ZF and without using ZF at high speed (100 m/s) with 8 scatterers reached 52,84% and the percentage difference using 16 scatterers reached 59,53%. From the simulations that have been carried out, the best BER result are at a speed of 10 m/s with 8 scatterers and using Zero Forcing. While the worst BER performance is at a speed 100 m/s with 16 scatterers and without using Zero Forcing.*

Keywords: *V2V Channel, FBMC, Doppler Effect, Zero Forcing, BER*