

ABSTRACT

The development of terrestrial television systems in Indonesia started with Digital Terrestrial Video Broadcasting (DVB-T) and then switched to the use of a new standard called Digital Terrestrial Video Broadcasting second Generation (DVB-T2). The implementation of DVB-T2 is used in the Indonesian television system. In this research, DVB-T2 is used in the High Speed Train (HST) communication system. HST is a train with speed above 300 km/h, this can increase the Doppler effect which causes Inter Carrier Interference (ICI) and high multipath causes Inter Symbol Interference (ISI) thus increasing the number of errors at the receiver side. This research will simulate the use of multicarrier Orthogonal Frequency Division Multiplexing (OFDM) with 64-QAM modulation. The channel validation performed is Autocorrelation and Normal Distribution with valid results. As a result of multipath and Doppler effects, the channel gain generated in Line of Sight (LoS) conditions is an amplitude that does not change every time while the amplitude value in Non Line of Sight (NLoS) conditions will change every time. Due to the insignificance of the results on Bit Error Rate (BER) caused by the use of Reed Solomon channel coding and Convolutional Code, this study will focus on the difference in errors obtained at three different speeds of 10 m/s, 50 m/s and 100 m/s with 15 iterations. At a speed of 10 m/s the resulting error difference in iteration 15 is 322 bits better; at a speed of 50 m/s in iteration 15 the resulting error difference is 83 bits better while, at a speed of 100 m/s in iteration 15 the resulting error difference is 414 bits worse due to multipath and Doppler effects.

Keywords: *HST, Doppler Effect, DVB-T2, Error Difference, OFDM, Reed Solomon, Scatterer*