ABSTRACT

Orthogonal Frequency Division Multiplexing (OFDM) is a technology which provide high data transfer rate and resistance to multipath fading effects. Highly *Peak-to-Average Power Ratio* (PAPR) is one of the weaknesses in OFDM system caused as a result of the summation subcarrier is modulated in parallel blocks on the transmitter side. PAPR can cause nonlinear distortion effects. Clipping is one way to reduce PAPR is applied on the side of the transmitter. However, it is difficult to reconstruct the signal at the receiver side. In 1999, the *decision algorithm-aided reconstruction* (DAR) be developed to reduce the effects of clipping noise, but the DAR only calculated based on static channel.

In this research, effect of nonlinear distortion can be recognize by using iterative channel estimation and *clipping noise reduction* (CNR) on the receiver side. With a weight equalization method that can be iterated several times minimize *Minimum Square Error* (MSE) between the received signal after block of *Frequency Domain Equalization* (FDE) and the feedback signal after clipping noise reduction process can improve the performance of OFDM. This method is more accurate to prevent the negative effects of clipping noise and to reduce the residual of the clipping noise.

The results can be seen with the use of this method is obtained MSE comparison against *Eb / No* level -12 dB MSE obtained *Eb / No* for QPSK and 16 QAM modulation respectively by 10 dB and 13 dB better 2 dB and 7 dB than clipping method and approach Conventional OFDM scheme with difference of 3 dB. As well as for the BER performance in the range of Eb / No of 50 dB is obtained 10^{-4} to speeds of 70 km / h and 120 km / h compared to regular clipping method that produces BER of 10^{-2}

Keywords: OFDM, PAPR, Clipping, Channel Estimation, MSE