

# PAPR REDUCTION ANALYSIS USING DISTORTION REDUCTION ALGORITHM ON SC-FDMA SYSTEM

## ABSTRACT

*Single Carrier Frequency Division Multiple Access* (SC-FDMA) is a technique with overall same performance and complexity with *Orthogonal Frequency Division Multiple Access* (OFDMA). The main advantage of SC-FDMA with OFDMA is the lower *Peak to Average Power Ratio* (PAPR). Despite of that, the improvement in SC-FDMA still can be researched by lowering the PAPR.

One of the most effective and simplest methods is clipping. But, the method can produce clipping noise which can degrade the system performance with in-band distortion and out-of-band radiation. A. K. Al-fuhaidy dan Hossam Eldin A. Hassan propose an algorithm that use repeated clipping and filtering with an optimum *Clipping Ratio* (CR) which is selected by simulation so that doesn't make a significant *Bit Error Rate* (BER) degradation. In this final Prospect, the algorithm is applied with different amount of subcarrier, clipping and filtering iteration, and also different *Inverse Fast Fourier Transform* (IFFT) size.

The result of the simulation shows that the *Distortion Reduction* algorithm that use *Repeated Clipping and Filtering* produce 1 dB improvement in PAPR at the smallest probability of *Complementary Cumulative Distribution Function* (CCDF) (0.01%). And the algorithm also doesn't influence BER significantly.

keywords: SC-FDMA, PAPR, *Clipping Ratio*, *Repeated Clipping and Filtering*