

A REVIEW OF PEAK WINDOWING PAPR REDUCTION ALGORITHM OF OFDM

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ABSTRACT- Orthogonal Frequency division multiplexing (OFDM) is very important modulation scheme of wireless communication system. Since very large Peak to Average Power Ratio (PAPR) diminishes efficiency of radio frequency amplifier so this is important to reduce problem. With the help of this paper, we will investigate several parameters which effect the PAPR of OFDM system. This paper depicts the review of several papers on peak windowing PAPR reduction algorithm.

Keywords: OFDM, PAPR, IFFT.

I. INTRODUCTION

OFDM is generally preferred for high speed wireless communication because of its capabilities in dealing against multipath propagation. This modulation scheme is very spectrum efficient. OFDM has already been preferred by several applications which are as follows:

1. Digital Audio broadcasting(DAB)[1]
2. Digital Video Broadcasting (DVB)[1]

This paper shows the literature review of several papers of peak windowing. This manuscript is prepared as: Section II. depicts literature-review and Section III. conclusion.

II. LITERATURE REVIEW

Singh and Fidele et al. [1] proposed a method which is based upon the investigation of peak windowing method and clipping technique along with the important parameters for the analysis of PAPR and BER. The simulation results are presented using MATLAB which depicts the PAPR reduction of 4 dB at 10^{-3} probability & enhancement of signal to noise ratio (SNR) of 2 dB at 10^{-3} probability.

In [2], authors suggested a technique which is a combination of clipping and windowing and it was found very easy to implement this proposed method. This technique clips the signal of OFDM to the predefined and each sample of clipping noise is multiplied by function called as window. It was found that the proposed scheme is much better in comparison with clipping and filtering technique. MATLAB has been preferred for the simulations.

Cheaito and Louet et al.[3] studied the effect of the width of window preferred in the term of Error Vector-Magnitude (EVM) and adjacent channel Power Ratio (ACPR) and gain in PAPR lessening. Depend upon the results obtained very good compromises among the criteria achieved in comparison with requirements of standard.

Singh et al.[4] studied the effect several functions of window clipping & filtering depend upon lessening of PAPR in OFDM system. Outcomes depict, there exists good diminishing of Out of Band Radiation in case of blackmann & hann window along with justification of several values.

Nair et al. [5] studied the crest factor reduction (CFR) depend upon the method of peak windowing along with digital-predistortions (DPD) method after utilizing generalized memory polynomials (GMP_{DPD}). The effect on power amplifier is also stated. The results depict CFR diminishes the PAPR of the signal.

Nair et al [6] investigate the window depend upon CFR method in conjunction with volterra depend upon digital predistortion (DPD) method on Doherty power amplifier (V-DPD). PAPR diminishing, spectral regrowth and EVM has been utilized to obtain the performance of projected work. The results clearly show that CFR and V-DPD reduce the PAPR.

Chen et al. [7] proposed the novel peak windowing method for the enhancement after taking care of peaks which are very closed. Results obtained after simulations shows that the projected method outperform already existing method in obtaining lowest out of the band radiations after proving the in band constraint of distortion.

Ojima and Hattori [8] proposed a new system which reduce the PAPR with the combination of carrier interferometry (CI) codes of spreading and peak windowing after employed a signal of clipping and filtering.

Table 1 Summary of the research work done by authors for peak windowing algorithm

S.No	Authors	Inference
1	Singh and Fidele et al. [1]	The projected method showed the improvement in the PAPR reduction and SNR improvement in comparison with the clipping and peak window technique.
2	In [2]	In the proposed work, weighted OFDM along with hanning window and hadamard transform is better for PAPR reduction.
3	Cheaito and Louet et al.[3]	The Window Function width must be chosen to maximize PAPR lessening gain.
4	Singh et al.[4]	Among all the window the performance of blackman window is very considerable.

5	Nair et al. [5]	The efficiency of power should be improved after using CFR method.
6	Nair et al [6]	It has depicted efficiency in the term of power should be improved by using CFR method.
7	Chen et al. [7]	Better performance can be achieved when large length of window is applied.
8	Ojima and Hattori [8]	At 10^{-3} , 7dB PAPR reduction is achieved within the range of 1 dB increment of Eb/No at 10^{-4} .

III. CONCLUSION

The high PAPR is most important problem of communication system. Hence, several methods have been proposed by researchers based upon peak windowing techniques. This review manuscript has shown many PAPR reduction methods. So, many factors are responsible for the reduction of PAPR using peak windowing technique which should be taken into consideration while implementing any PAPR reduction algorithm.

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