

A STUDY ON PAPR REDUCTION USING VARIOUS CODES IN OFDM

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ABSTRACT-OFDM is well known as orthogonal frequency division multiplexing. In order to enhance the performance of OFDM system several kind of coding methods have been used. But OFDM system always suffers the problem of high peak to average power ratio (PAPR). With the assistance of this research manuscript, we will analyze many methods related to coding in the field of OFDM.

Keywords: IFFT, OFDM, PAPR.

I. INTRODUCTION

OFDM [1] is the main choice for very high transmission speed. It also falls in the category of multi-carrier transmission where actually, single stream of data is send over many lower rate subcarriers. It is generally preferred for very high speed communication because of its strong nature for ISI.

This research paper demonstrates the literature review of several papers of coding methods for PAPR reduction. This manuscript is prepared as: Section II. depicts literature-review and Section III. conclusion.

II. LITERATURE REVIEW

Joshi et al. [1] proposed PAPR reduction using DHT pre-coding and performance analysis with the help of BER. This coded-OFDM (COFDM) utilized IEEE 802.11a and reed Solomon (RS) codes with convolutional codes for the concatenation and Turbo codes were used for the purpose of channel coding.

Dey and Islam [2] projected a technique which was based upon block coding data of input and introducing errors prior to the sending iteratively till PAPR went just below earlier value of threshold.

Koudougnon [3] proposed a technique for the diminishing of PAPR with the assistance of encoding and companding method. Many codes were utilized like BCH, RS codes and Reed-Muller. The study and effect of many modulations have been observed. The authors observed that PAPR diminished to less than 1 dB with the help of reed-muller codes.

In [4], authors explained PTS algorithm with turbo coding. Observation of PAPR along with PTS and without the PTS algorithm had been performed. The Simulink had been used for the purpose of implementation.

In [5], authors demonstrated coded OFDM method along with LDPC-RS in concatenation with PTS. This particular design improved BER performance in comparison with conventional RS convolutional codes and projected modified PTS method diminished the complexity in the term of diminished addition and multiplications. Also, maintain same PAPR reduction.

In [6], authors explained the easy cyclic coding (CC) method having rate of code 4/7 and also 11/15. The projected coding method depicted decent reduction with any particular length of the sequences of data. The results were confirmed and shown for the IFFT of 16 points and 64 points. Authors also added some parity bits to the data bits. These bits can correct up-to to 1bit error.

In [7], authors explained weighting factor (WF) estimation method for the controlling phase which was depend upon peak power reduction (PPR) of turbo-coded signals of OFDM.

Table 1 Summary of the research work done by authors for various codes in OFDM

S.No	Authors	Inference
1	Joshi et al. [1]	The proposed method depicted that 64-QAM and 16-QAM was enhanced for DHT precoded system.
2	Dey and Islam [2]	In the proposed work, BER had been enhanced and PAPR diminished for OFDM.
3	Koudougnon [3]	Authors showed that all codes used with companding technique and provided small PAPR. In the future, author main aim will be on BER.
4	In [4]	Authors examined simulation for the diminishing of PAPR for 16-QAM OFDM which was turbo coded with 64 sub-carriers.
5	In [5]	Authors proposed LDPC-RS coded OFDM system which enhanced error correction capability.
6	In [6]	Coding is very easy and has decent reduction in PAPR.
7	In [7]	Projected method obtained decent BER performance.

III. CONCLUSION

Many methods have been projected by the researchers which are based upon coding. Now, the high PAPR is the main issue. This study has depicted many PAPR diminishing techniques. Several factors are responsible for the reduction of PAPR while choosing any particular coding method in OFDM system.

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