On Using Convolutional Codes to Reduce the Crest Factor of OFDM signal

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ABSTRACT

This paper is to explore the use of coding method to reduce crest factor in OFDM signals. After we explore the method of convolutional coding, in this paper, we focused on binary stream converted into 16-ary structure of the OFDM system, then we proposed the method of arithmetical coding. By the simulation results we found that the method of arithmetical coding more effective to reduce crest factor than convolutional coding, where the performance of assessment criteria which accrued by the use of complementary cumulative distribution function (CCDF) at the . When convolutional code are encoding, at the same time it change the data permutation position to reduce the peak to average power ratio (PAPR). Because the advantages of reduce PAPR and error correction ability, the coding method become more attractive in the PAPR reduce techniques. Convolutional coding has error correlation ability through transmitted more bit. I get an inspiration from convolutional coding. I use more symbol to reduce the PAPR.

According to system simulation, in the CCDF curve of , we found that when using the arithmetical coding of OFDM system can effectively reduce the PAPR of 1.6dB than traditional OFDM system. When using convolutional coding of OFDM system can reduce PAPR of 0.6dB than traditional OFDM system. Arithmetical coding would decrease half the transmission rate. But we also proposed a method to improve it. In the bit error rate performance, when using arithmetical coding of OFDM system can reduce the bit error rate slightly. And convolutional coding has error correction ability. Thus the performance of bit error rate better than the arithmetical coding.

Keywords : PAPR、Convolutional code、Arithmetical、CCDF

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