Abstract

OFDM is an efficient modulation technique for wideband digital communication and adopted in many wireless standards. A major drawback of OFDM modulation is the high Peak-to-Average Power Ratio (PAPR) of the transmitted signal which limits its applications in communication systems. Traditionally, OFDM is implemented using FFT. On the other hand, OFDM can be implemented using orthogonal wavelets. We can have all the benefits of OFDM if we replace traditional sinusoid carriers of the Fourier based OFDM with suitable wavelets, in addition to that, PAPR can be greatly reduced in wavelet based OFDM systems. This article examines the PAPR performances of wavelet based OFDM system and classical FFT based OFDM system. Extensive computer simulations show that the Complementary Cumulative Distribution Function (CCDF) of PAPR for the wavelet based OFDM signal achieves about 7dB improvement in PAPR over the traditional OFDM signals at 10-3 of CCDF.

References


**Index Terms**

Computer Science

Communication Systems
Keywords
Wavelet based Orthogonal Frequency Division Multiplexing (WOFDM)
Complementary Cumulative Distribution Function (CCDF)

Peak to Average Power Ratio (PAPR)

and Power Spectral Density (PSD)