

A new method for out of band radiation of OFDM signal

**Mohammad Mehdi Naghsh
Isfahan University of Technology**

Abstract

The orthogonal frequency division multiplexing (OFDM) is the most popular multi carrier modulation and mature technology. Beside of conventional applications of OFDM such that wireless local area networks (WLANs), digital broadcasting, etc., it is the first candidate for physical layer of cognitive radio (CR) networks.

Cognitive radio is a new method to satisfy ubiquitous demand for wireless services while there is no enough unlicensed spectrum. The most important shortcoming of OFDM based cognitive radio systems is the high out of band (OOB) components that originate from simple FFT based implementation.

In this paper, we propose a novel method that reduces side-lobes of OFDM spectra. In this method a controlled amount of correlation is introduced between the modulated symbols on the special subcarrier across the time. The amount of this correlation can be found from the solution of a convex optimization problem solving only at the beginning of the communication at once. Therefore, this method does not require high complexity at transmitter and only the receiver should had multilevel slicer.