

ABSTRACT

The high value of Peak to Average Power Ratio (PAPR) is a major problem when using multicarrier techniques, for example in Coded Orthogonal Frequency Division Multiplexing (COFDM) technique which is used in the second generation digital television system (DVB-T2). These problem can lead to reduced power efficiency due to nonlinearities of the High Power Amplifier (HPA). So that will degrade the signal quality of the DVB-T2 system itself.

PAPR reduction methods can use a combination of Tone Reservation (TR) and Active Constellation Extension (ACE). The basic idea of the TR technique is to provide or reserve several subcarrier of COFDM signals called Peak Reduction Tones (PRT) for PAPR reduction. These subcarriers is not provided with information, but only used to reduce the PAPR value. While basic idea of the ACE technique is by extended the outermost constellation point to produce another representation of the constellation, but it is actually a same symbol. In this technique the signal processing in the frequency domain and time domain is required.

In this final project, the results of simulation and analysis using reduction techniques on DVB-T2 system with 16 QAM mode and 4k FFT mode , reduction techniques by using a combination of TR and ACE can generate the maximum value of PAPR improvements around 5.13 dB -5.20 dB and the value of minimal PAPR improvement around 1.62 dB -2.25 dB compared with PAPR reduction technique using TR technique only gives the PAPR improvement around 2.40 dB or ACE which only gives PAPR values around 4.30 dB improvements.

Keywords: DVB-T2, PAPR, COFDM, Tone Reservation, Active Constellation Extension