ABSTRACT

Worldwide Interoperability for Microwave Access (WiMAX) is wireless broadband technology thorough far distance with high throughput base on IEEE 802.16 standard. This system using orthogonal frequency division multiplexing (OFDM) technology with high spectrum efficiency and multipath propagation resistance.

OFDM signal have high peak to average power ratio PAPR that causing HPA efficiency decrease, in-band distortion, and out-band radiation when the signal through HPA.

PAPR reduction technique tries to alter or introduce new constellations to combat large signal peaks. The symbols can be mapped to a set of constellation points, for reducing PAPR. Development of the method is Active Constellation Extension (ACE) that cutting peak of time domain signal which is up or close to HPA saturation level, and extend outer constellation points in active channel with emphasize on border surveillance. Impacts of ACE are signal average power increase and signal peak power decrease, so PAPR can be reduced. ACE applied on transmitter side, does not need any adaptation on receiver side and does not sending side information which is not comply with standard.

This final task analyzes ACE technique performance on OFDM for different modulation and subcarrier and performance on 256 fixed WiMAX 802.16.d for different modulation on PAPR reduction. The simulation reducing PAPR between 2.9450 - 6.3590 dB, increasing mean amplitude between 0.9752 - 1.0802 dB, reducing peak amplitude between 1.5579 - 2.7625 dB, reducing *Input Back Off* between 1.6922 - 1.8472 dB, *Output Back Off* between 1.6956 - 1.8481 dB, and increasing SNR between 0.05 - 2.2 to achieve BER target 10^{-4}.