

## **PEAK-TO-AVERAGE POWER RATIO REDUCTION SCHEMES FOR COMPLEX WAVELET PACKET MODULATION**

**HIKMAT N. ABDULLAH<sup>1</sup>, FADHIL S. HASAN<sup>2</sup>  
AND ALEJANDRO A. VALENZUELA<sup>3</sup>**

<sup>1</sup>Al-Mustansiryah University, Electrical Engineering Department, Baghdad, Iraq,

<sup>2</sup>Basrah University, Electrical Engineering Department, Basrah, Iraq

<sup>3</sup>Bonn-Rhein-Sieg University of Applied Sciences, EMT Department, Sankt Augustin, Germany,

### **Abstract**

High peak to average power ratio (PAPR) of a transmitted signal is one of the major drawbacks of complex wavelet packet modulation (CWPM) as usually used in multicarrier communication systems. Many PAPR reduction techniques have been proposed to solve this problem by utilizing the advantage that is obtained by concentrating the energy to certain subspaces of the discrete wavelet transform. In this paper the performance of a set of PAPR reduction methods designed for OFDM systems, including SLM, PTS, and TPWC, ATC, threshold, clipping and hybrid threshold-clipping are analyzed for the use in CWPM systems. The simulation results in Rayleigh multipath fading channels show that the hybrid threshold-clipping scheme achieves a reduction in PAPR of 4.6, 4.4 dB, 2.4 dB, and 5.5 dB over the SLM, PTS, clipping and TPWC methods respectively with less than 0.3 dB degradation in bit error probability.

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**Keywords:** Peak to average power ratio PAPR, complex wavelet packet modulation, SLM, PTS, ATC, TPWC, threshold and clipping techniques.