

PERFORMANCE IMPROVEMENTS OF 3GPP-LTE-OFDMA USING THE MULTIWAVELET TRANSFORM

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ABSTRACT

Today, the buzzword is high-data rate, wireless connectivity without mobility constraints with minimum bit error rate (BER). Long Term Evolution (LTE) is considered to be the 4th generation (4G) of radio technologies designed to increase the capacity and speed of mobile telephone networks. LTE has adopted Orthogonal Frequency Division Multiple Access (OFDMA) for the downlink transmission. The provision of high rates to users, anytime and everywhere is challenged by the time varying wireless medium and dynamic nature of interference. In this paper a novel method based on the Multiwavelet Transform (MWT) for implementing the OFDMA in LTE is proposed. The proposed scheme is tested in different channels such as Additive White Gaussian Noise (AWGN) and fading channel (flat fading and selective Fading) with other parameters such as second path gain and path delay. The results show that the proposed system overcome the traditional method based on the Fast Fourier transform (FFT) and give lower BER compared with the system based on FFT.

KEYWORDS: 4G, AWGN, BER, Fading Channel, LTE, MWT, OFDMA, SNR