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A New Method for using Wavelet-OFDM and Its Applications in Healthcare to Improve the Services of the 5G Mobile Network and IoT-Related Communication Devices

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Abstract: The orthogonal frequency division multiplex (OFDM), which is based on the Fourier transform, is at the center of the current wireless communication systems, including 5G.Due to its performance and capacity to support network-intensive applications like the Internet of Things (IoT), numerous studies have suggested that wavelet transform-based OFDM is a superior alternative to Fourier in physical layer solutions. In this paper, we compare the performance of wavelet transforms to the requirements of the future wireless application system and offer guidelines and methods for wavelet applications in the design of 5G waveforms. A comprehensive discussion of the impact on healthcare follows. Taking into consideration the following 5G key performance indicators (KPIs), a comprehensive performance comparison has been conducted using an image as the test data: energy savings, complexity of modulation and demodulation, dependability, latency, spectral efficiency, effect of transmission and reception under asynchronous transmission, and resistance to time- and frequency-selective channels are all factors to consider. The usage guidelines for the wavelet transform are then discussed. The guidelines are sufficient to act as a guide for future developments and as approaches to tradeoffs.

Keywords: Orthogonal Frequency Division Multiplex

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