

ENHANCEMENT OF HIGH DATA RATES IN WIRELESS COMMUNICATION NETWORKS USING MIMO-OFDM TECHNOLOGY

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ABSTRACT

Wireless communication systems require high transmission speed, improvement in spectral efficiency, and increasing speed and robustness. Orthogonal frequency-division multiplexing (OFDM) is a method of encoding digital data on multiple carrier frequencies. OFDM has developed into a popular scheme for wideband digital, whether wireless or over copper wires, used in applications such as digital television and audio broadcasting, DSL broad band internet access, wireless networks, and 4G mobile communications. By using Multiple input and multiple output (MIMO) i.e. multiple antennas at the transmitter and multiple antennas at the receiver, the spectral efficiency will increase. For broadband communications, OFDM turns a frequency selective channel into a set of parallel flat channels, which significantly reduces the receiver complexity. In this paper, we applied Space-Time Coded Multiple-Input Multiple-Output OFDM (STC MIMO- OFDM) concept for spreading the transmitted symbols. In the proposed systems, a multidimensional diversity, including time, frequency, space and modulation diversities, can be used, resulting in better bit error performance in AWGN channel for with and without padding as well as for with and without convolution coding.

KEYWORDS: OFDM, STC, MIMO, BER, PER, AWGN.