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Energy-Efficient Wireless Communication Framework for IoT-Enabled Healthcare Using MIMO-OFDM

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Abstract: *This paper presents an energy-efficient wireless communication framework utilizing MIMO-OFDM (Multiple Input Multiple Output - Orthogonal Frequency Division Multiplexing) tailored for IoT-enabled healthcare systems. By combining advanced modulation techniques, such as BPSK, QPSK, and QAM, with the robust Alamouti scheme, the framework optimizes energy consumption while ensuring reliable data transmission. Evaluation in an IoT-enabled healthcare environment demonstrates significant improvements in energy efficiency and data accuracy. Simulation results show reduced Bit Error Rates (BER) at varying Signal-to-Noise Ratios (SNR), with BPSK offering the best performance in low SNR conditions and QAM excelling at high data rates. Compared to traditional methods, the framework achieves superior energy efficiency and robust communication, supporting the seamless operation of IoT healthcare devices. These findings underline the potential of MIMO-OFDM technology in advancing scalable, energy-efficient, and reliable healthcare solutions*

Keywords: Wireless Communication, IoT, Healthcare, Energy Efficiency, MIMO-OFDM

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