

Multiple-input multiple-output orthogonal frequency division multiplexing with index modulation (MIMO-OFDM-IM) is a novel multicarrier transmission technique which has been proposed recently as an alternative to classical MIMO-OFDM. In this scheme, OFDM with index modulation (OFDM-IM) concept is combined with MIMO transmission to take advantage of the benefits of these two techniques. In this paper, we shed light on the implementation and error performance analysis of the MIMO-OFDM-IM scheme for next generation 5G wireless networks. Maximum likelihood (ML), near-ML, simple minimum mean square error (MMSE) and ordered successive interference cancellation (OSIC) based MMSE detectors of MIMO-OFDM-IM are proposed, and their theoretical performance is investigated. It has been shown via extensive computer simulations that MIMO-OFDM-IM scheme provides an interesting tradeoff between error performance and spectral efficiency as well as it achieves considerably better error performance than classical MIMO-OFDM using different type detectors and under realistic conditions.