ON THE PERFORMANCE OF STANDARD−INDEPENDENT I/Q IMBALANCE COMPENSATION IN OFDM DIRECT−CONVERSION RECEIVERS (TueAmOR7)

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Abstract :

The growing number of different mobile communications standards calls for inexpensive and highly flexible receiver architectures supporting these standards. The direct−conversion receiver is a very attractive candidate for reaching this goal. However, unavoidable imbalances between the I− and the Q−branch of the I/Q demodulator lead to a significant performance degradation at the reception of OFDM signals. The performance of a novel algorithm for the estimation and compensation of these effects is analyzed in this paper. The novel approach does not depend on any standard−specific signal components, such as pilots or a preamble. Instead, a blind I/Q imbalance parameter estimation is performed during the ordinary receive mode. Therefore, the algorithm is applicable to a wide range of present and future OFDM communications standards.

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