

Abstract:

The high envelope fluctuations of OFDM signals (Orthogonal Frequency Division Multiplexing) make them very prone to nonlinear distortion effects. In typical OFDM implementations the nonlinear distortion component is regarded as a noise-like term that leads to performance degradation. To achieve optimum performance we should employ a ML (Maximum Likelihood) receiver where we take into account all the information associated to the transmitted signals that is in the nonlinearly-distorted signal. Although the performance of an ML is substantially better than traditional receivers, its complexity is prohibitively high. In this paper we consider nonlinearly distorted OFDM schemes and we present sub-optimum receivers that try to approach the ML performance. It is shown that, contrarily to what was expectable, the ML performance with nonlinear transmitters can be better than with ideal, linear transmitters. Our suboptimal receivers allow remarkable performance improvements, being able to reduce significantly the gap between the ML performance and the performance of typical OFDM receivers.

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