

Abstract

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A modified blind deterministic carrier frequency offset estimator for OFDM systems

This paper proposes a modified efficient blind deterministic carrier frequency offset (CFO) estimation method for orthogonal frequency division multiplexing (OFDM) systems. In the proposed method, Four OFDM symbols with time difference are generated by exploiting both the oversampled OFDM signal and the cyclic prefix, and a cost function is introduced for CFO estimation. The cost function is expressed as a cosine function. The estimator of the CFO requires three independent cost function values calculated at three different frequency offsets. Using the formula, the CFO can be estimated without searching all the frequency offset range. The proposed method is very suitable for real wireless environments since it requires only one OFDM symbol for blind reliable estimation of CFO. The computer simulations show that the performance of the proposed modified method is superior to that of the original method.