On the impact of CFO for an MC-DS-CDMA system in weibull fading environments

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ABSTRACT

On the basis of CFO (carrier frequency offset) point of view, the system performance results from the analysis by adopting the channel scenarios characterized as Weibull fading for an MC-DS-CDMA (multi-carrier direct-sequence coded-division multiple-access) system are proposed in this article. Moreover, an approximate simple expression with the criterion of BER (bit error rate) versus SNR (signal-to-noise ratio) method is derived for an MC-DS-CDMA system combining with MRC (maximal ratio combining) diversity based on the MGF (moment generating function) formula of Weibull statistics, and it associates with an alternative expression of Gaussian Q-function. In addition, the other point of view on the BER performance evaluation of an MC-DS-CDMA system is not only the assumption of both single-user and multi-user cases applied, but the phenomena of PBI (partial band interference) is also included. Furthermore, with several of the system parameters, such as CFO values, ε, Weibull fading parameter, β, user number, K, spreading chip number, N, branch number, L, and the PBI values, JSR, etc., are compared with each other in the numerical results in order to validate the accuracy in the derived formulas. To the best of author ’ s knowledge, it is a brain fresh idea proposed in this paper to evaluate the system performance for an MC-DS-CDMA system on the point of the CFO view over Weibull fading.

Keywords : CFO (carrier frequency offset) MC-DS-CDMA system MGF (moment generating function) MRC (maximal ratio combining) PBI (partial

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