Mitigation for the Phenomenon of CFO in MC-CDMA Systems and Implementation with Multiple Dimension Combining Schemes

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ABSTRACT

In this paper assumed that the CFO (carrier frequency offset), which is caused by the ICI (inter-carrier interference), exists in the environments of short-term fading, a multi-dimension combining (M-D combining) receiver for an MC-CDMA (multi-carrier coded-division multiple-access) system is designed and proposed considerably to overcome the system performance degradation The system performance of the proposed system is validated by the evaluation with assumption of the working environment state is in the frequency selective fading environments. Furthermore, some of the system parameters, e.g., the resolvable multipath number, the number of antenna with combining receiver, the fading parameter, the power decay factor MIP (multipath intensity profile), and the correlation characteristic between the antennas, are adopted for analyzing. In order to obtain the validation of the accuracy of the derivation and the proof of the proposed schemes the numerical results are illustrated in this paper. It is worthwhile claiming that is not only the fading parameter of the correlated-fading model dominates the system performance of an MC-CDMA system, but the number of antenna with the M-D combining receiver also definitely affects the system performance.

Keywords : CFO ; MC-CDMA system ; multi-dimension combining (M-D combining) ; MIP

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