MULTIPATH EFFECT MITIGATION IN LPTV−BASED MULTIPLE ACCESS SYSTEM (WedPmPO3)

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Abstract :

A multiple access system is developed in this paper by means of Linear Periodic Time Varying (LPTV) filters. We construct an LPTV−based Multiple Access (LPTVMA) system with complex modulators and matrix interleavers. This LPTVMA system has good spreading properties and small Multi User Interference (MUI). However, the equalization problem of such LPTV filters in stationary multipath channels remains unsolved. We show that, due to the presence of matrix interleavers, the received signal is affected by a time varying delay. By using a Zero Padding (ZP) technique, classical single user equalization techniques can be used. Further, when the users in the LPTVMA system are quasi−synchronous, MUI−free transceivers can be achieved. Comparisons of the LPTVMA system with a Chip Interleaved Block Spread (CIBS) − CDMA system are made in quasi−synchronous and asynchronous scenarios. Simulations showed that the LPTVMA system has better performances in the asynchronous scenario than the CIBS−CDMA system.

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