Base on the Theoretical Analysis of System Performance for an MC-CDMA System Joint with UWB System with Notch Filter

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ABSTRACT

The impact of PBI (partial band interference) on the system combining MC-CDMA (multicarrier code-division multiple-access) with UWB (ultra-wideband) techniques, which is referred as CDMA overlay, is studied in this paper. The scenario of fading channel is considered as Gamma distributed, which is generated by the Nakagami-m distributed when the receive intensity is transfer to the power scale. In order to mitigate the effects of PBI, the diversity techniques along with notch filter are adopted to embed in MC-CDMA receiver. Furthermore, the analysis of system performance with the methods of whether the notch filter is employed or not is illustrated for comparison purpose. It is worthy claiming that the system become superior after the notch filter is adopted to avoid the number of subcarriers jammed by narrowband interference is small and multicarrier receiver without notch filters can work well, due to the gain of frequency diversity from non-crowded subcarriers. Comparatively, when the number of subcarriers crowded by the narrowband interference is large, the significantly degraded system performance of the multicarrier system can be mitigated by using of applying the notch filters.

Keywords : Frequency diversity ; Gamma distributed ; MC-CDMA ; Nakagami-m distributed ; notch filter ; UWB (ultra-wideband)

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