Study on Jointing UWB Techniques with Multi-Carrier Spread Spectrum Systems

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ABSTRACT

The performance analysis of UWB techniques combining with MC-SS (multi-carrier spread-spectrum) system working in multi-path fading channel is investigated in this paper. The model of the multi-path fading is characterized by Nakagami-m statistical distribution. We establish and derive the model for MC-CDMA (multi-carrier code-division multiple-access) systems working in correlated Nakagami-m fading channel. The average BER（bit error rate）is calculated and compared to the special case of the published results. Basically、some studied results from this paper can be implied to approve the system performance for the UWB system combining with a MC-CDMA system in wireless communication systems. Especially、it is worthwhile noting that the fading parameter of the Nakagami-m distributed significantly dominates the system performance of the UWB system accompany with MC-SS signaling under fading environments. On the other hand、the fact is discovered that the effect of power decay ratio parameter will be ignored after the SNR (signal-to-noise ratio) of the transmitted bit is greater than about 50 dB.

Keywords : UWB ; Multi-carrier ; Multi-path ; Nakagami-m fading

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