Investigating in the System Performance of UWB Systems Operating over Frequency Selective Fading Environments

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ABSTRACT

The Federal Communications Commission (FCC) has allocated 7,500MHz spectrum for unlicensed use of ultra-wideband (UWB) devices in the 3.1 to 10.6 GHz frequency band. The UWB techniques belong to the protocol of 802.15.3a, that is, the UWB will be the most one technical applied in the wireless communication systems. Especially, it is one of the most important fechnique for application in military service, since the base station is not needed for the UWB system. The UWB communication methods will be the most adaptive application for small enterprises since it owns the unlicensed spectrum. Thus, the UWB wireless communication technique will be adopted in this paper for studing in order to research and dervelop some added applications in private area. Combining the high dense multiple access of AIRMA (analog impulse radio multiple access) with DIRMA (Digital impulse radio multiple access) will be held in this study. Some of the theories of UWB system will be derived by using the theory means. Hence, the advantages for the UWB technique will be cleared, and some of the results from this investigation will be provided to apply in the real world applications. Besides, the operation environments with frequency sclectve fading channel are also combined with the analysis of the system performance.

Keywords : Ultra Wideband communication,fading channels, DIRMA , AIRMA, multiple access communications.

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