

Design and Performance Analysis of UWB MIMO OFDM System Using Microstrip Antennas

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Abstract— OFDM based Ultra Wideband (UWB) system combines OFDM modulation technique with a multi banding approach, which divides the spectrum into several sub-bands, whose bandwidth is approximately 528MHz. It is a popular method for high data rate wireless communications. MIMO techniques promise a significant boost in the performance of OFDM systems. In this paper, a novel design UWB MIMO OFDM system using a compact double-sided printed antenna having ultra-wideband and band-notched characteristic is proposed. The UWB antennas are designed on CST Microwave studio simulation software with return loss less than -10dB, and further using the results from CST, OFDM transmission and reception on a MIMO system is done on MATLAB software. The MIMO UWB antennas are designed using polarization diversity of the individual antennas. The performance of this system is studied using BPSK modulation and finally bit error rate and operating range is obtained. The transmitting bandwidth is UWB (i.e. 3.1-10.6GHz) and the receiving bandwidth is notch UWB (notch bandwidth 5-5.9GHz) are chosen to reduce the interference at the receiver side. Furthermore, a MIMO UWB system is designed at a frequency of 9.4GHz that is used for micro power radar application in the ultra wideband removing the interference from WLAN band.

Keyword— Band-notched, Bit Error Rate (BER), Double-sided Printed, Multiple Input Multiple Output (MIMO), Orthogonal Frequency Division Multiplexing (OFDM)



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