

ABSTRACT

In the future wireless communication, it's needed high datarate and wide bandwidth, but there is limited frequency spectrum. Orthogonal Frequency Division Multiplexing (OFDM) as a multicarrier technique offer bandwidth efficiency from the overlapping between subcarriers. Multiple Input Multiple Output (MIMO) which is use several antenna both in transmitter and receiver can solve multipath fading problem. Multipath fading is one of main characteristic in wireless communication system. Diversity is an effective technique to reduce multipath fadings effect.

This Final Project analyses the performance of MIMO-OFDM System that use Differential Space-Time-Frequency Code (DSTFC) scheme. DSTFC is a scheme that exploit different sources of diversity : spatial diversity, temporal diversity, and frequency diversity, which codes across subcarriers, multiple OFDM symbols and antennas. Differential Space-Time-Block Code (DSTBC) is a space-time coding technique that do not require channel estimates either at the receiver or at the transmitter.

Simulation results show that by using DSTFC scheme in MIMO-OFDM System can improved the performance about 3 dB than Conventional MIMO-OFDM. Beside it, the system more effective in fast fluctuation channel. It showed by increasing coding gain together with increasing frequency Doppler. The coding gain that was gained for each users movement : 3 kmph , 50 kmph, and 90 kmph are 1 dB, 2 dB, and 4 dB.

Key words : MIMO, OFDM, DSTFC, Diversity, Multipath Fading