

ABSTRACT

MIMO (Multiple Input Multiple Output) is a kind of technology which use multi array antenna both transmitters and receivers. The purpose is to overcome multipath fading problems, and also provide high speed data service. STBC (Space Time Block Code) is one of technique in MIMO which exploiting space and time diversity. In principle, signal sends has replica which will be transmission orthogonal one other same. Other technique is SM (Spatial Multiplexing) is one of the application of expansion from MIMO where this iechnique can increase channel capacity by transmitting many different signals concurrently. For that reason, receiver has to have a good reliable detector signals, so that the purpose can be achieved.

On this final project, conducted research and analysis of STBC and SM combines as a expansion of MIMO detection technology. The applied detector is non-linear VBLAST/MMSE. Analysis made by the result of simulation with Rayleigh fading and AWGN canal modeling. Users speed applied is 0, 5, 30, 50, 70, 90 (km/hour).

The simulation results shows that MIMO STBC scheme is better than MIMO STBC using V-BLAST/MMSE. To achieve BER 10^{-3} , MIMO STBC requires ± 6 dB smaller than MIMO STBC with V-BLAST/MMSE. The number of transmitter and receiver antenna also influences sistem performances. The greater amount of receiver antennas results better performance than greater amount antennas in transmitter. When transmitter antenna greater than receiver antenna, its will cause systems is worse in performances.

Keyword : MIMO, STBC, Spatial Multiplexing, Rayleigh