

## ABSTRACT

Channel capacity is an important parameter in determining the data rate communication system is now a demand-oriented high-speed data transmission. Utilizing of MIMO-OFDM antenna systems can improve data transfer capability of being able to parse the information on the condition that a lot of experienced scattering multipath channel. One scheme used the system diversity STBC MIMO is a technique that can deliver high performance. On the one condition, the analysis needs to be done considering the channel capacity of one STBC system reliability is good data transmission performance, but not followed by the good condition of the channel capacity.

At this research was carried out simulation and analysis techniques that can provide solutions to the channel capacity is capable of delivering maximum data rate in STBC MIMO-OFDM systems. Through the analysis of channel conditions on the Channel State Information Transmitter-Receiver (CSIT-R), then the information signal from the antenna user can know the condition of channels sender. Furthermore it has been compared also to the subcarrier system performance and speed of different users. Capacity calculation itself is done by using the SVD technique refers to the IEEE 802.16e standard.

Simulation results show that the STBC MIMO-OFDM system in a state of knowledge of CSIT-R condition, the channel capacity of the output obtained at 2,8359 bps / Hz, or an increase of 1,5514 bps / Hz at 25dB SNR. At the condition of user speed at 100 km / h channel capacity is not significantly increase the capacity of the channel, which at 25 dB SNR with subcarrier obtained only 256 of the channel capacity of 2,7017 bps / Hz. Further simulation results also show that the condition of user movement at a speed of 3 km / h through a QPSK mapping technique available channel capacity to 512 the number of subcarriers of 0.9592 bps / Hz compared to 128 the number of subcarrier at 20 dB SNR.

**Keywords: OFDM, CSIT-R, SVD, MIMO STBC**