

## ABSTRACT

One of MIMO schemes is spatial multiplexing system which offered high data rate. Basically, the transmitter sends a different signal on each branch of transmitter simultaneously. The signal mixed in channel and received by the receiver, with the result that MIMO-detection is needed by receiver to recover the transmitted signal.

The system performance is influenced by MIMO's detection ability in getting back original information signal from transmitter. If detection ability became better than before, it makes algorithms to be more complex in the other side. The system performance will be good according to algorithm's reliability, but it needs more resources to do detection process.

This Final Task analyzes about MIMO-OFDM detection algorithm using ZF algorithm, VBLAST, and MAP rule in WIMAX 802.16e. Combination of those Algorithms will increase gain processing. Simulation program proved that MIMO-OFDM using VBLAST/ZF/MAP by BER  $10^{-2}$  has a better performance than others. The system MIMO-OFDM 4x4 in Flat Fading and Uncorrelated Canal condition needs a minimum standard for SNR at  $\pm 22.5$ dB,  $\pm 21$  dB for VBLAST, and  $\pm 18$ dB for VBLAST/ZF/MAP. There is gain processing when using algorithm VBLAST/ZF/MAP.

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