

**FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA**

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This thesis is approved by:

DR. AZLINA BINTI IDRIS

(Project Supervisor)

Faculty of Electrical Engineering

Universiti Teknologi MARA

Shah Alam

Date:

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ABSTRACT

Orthogonal frequency division multiple access (OFDMA) is one of the modulation technique designed to have high speed data rate transmission in wireless communication system. Inter symbol interference (ISI) is a main cause that can reduce efficiency of the system due to multipath propagation. Different equalization of adaptive algorithm technique had been proposed in this research in order to reduce ISI in OFDMA system. This research also presents the combination of space time frequency block code (STFBC) with multiple input multiple output (MIMO) antenna can also help to overcome ISI according to IEEE 802.16 standard. The simulation results show the improvement of bit error rate (BER) performance after reducing ISI and also prove that STFBC was able to achieve maximum diversity order in the MIMO OFDMA system.

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