NUMBER OF USERS EFFECTS ON PERFORMANCE DEGRADATION IN MOBILE WIMAX

FAZILA BINTI SHAFIE

FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA
MALAYSIA

NUMBER OF USERS EFFECTS ON PERFORMANCE DEGRADATION IN MOBILE WIMAX

This thesis is presented in partial fulfillment for the award of the
Bachelor of Engineering (Hons) Electronics (Communication)
UNIVERSITI TEKNOLOGI MARA

FAZILA BINTI SHAFIE
Faculty of Electrical Engineering
UNIVERSITI TEKNOLOGI MARA
40450 SHAH ALAM, SELANGOR

JULY 2013

ACKNOWLEDGEMENT

With the name of ALLAH Most Gracious Most Merciful

Alhamdulillah, praise to ALLAH S.W.T with His wills and blessings, I successfully completed my Final Year Project (FYP) for my first degree of Bachelor of Engineering (Hons) Electronics (Communication).

First and foremost, I would like to express my highest gratitude and appreciation to my FYP Supervisor, Dr. Darmawaty Mohd Ali for the right guidance, patience and encouragement given from the early phase of my FYP project to the end of the last stage of my project thesis. Not to forget my great appreciation towards my family who have supported me throughout the years. Their love and motivation encourage me to complete this thesis successfully.

I also would like to express my gratitude to my fellow friends who always there for me and never stop giving the motivations and encouragement during FYP process.

Last but not least, tons of appreciation to all people that have supported me and willing to give a hand during project thesis, May Allah bless all of you.

ABSTRACT

Abstract— Worldwide Interoperability for Microwave Access (WiMAX) is a wireless communications technology based on the IEEE 802.16 standard that enabling the delivery of last mile wireless broadband access. Mobile WiMAX, refer to the IEEE 802.16e-2005 standard is amendment for mobile wireless broadband up to vehicular speeds in licensed bands from 2-6 GHz. In this paper, mobile WiMAX performance degradation is investigated using OPNET Modeler® version 14.5. Several scenarios have been created to analyze the increasing number of users in a mobile WiMAX topology in free space and vehicular affected the performance of the mobile WiMAX network. Throughput and average delay are used as the performance metric in 3 applications, which are web browsing (HTTP), FTP and Video conferencing.

Index Terms— Worldwide Interoperability for Microwave Access (WiMAX); IEEE 802.16e-2005; delay; throughput; mobile station; base station

TABLE OF CONTENTS