UNIVERSITI TEKNOLOGI MARA

THE DEVELOPMENT OF SIMULATION MODEL AND LOCATION ACCURACY FOR OBSERVED TIME DIFFERENCE OF ARRIVAL IN WCDMA AND LTE SYSTEM

NORANIZAH BINTI SARBANI

Dissertation submitted in partial fulfillment of the requirements
for degree of
Master of Science (Telecommunication and Information Engineering)

Faculty of Electrical Engineering

JULY 2013

ACKNOWLEDGEMENT

First and foremost, I offer my sincerest gratitude to the almighty Allah for all the opportunities given to me in pursuing and finally accomplished my study. I would also like to express my sincere appreciation to my supervisor, Dr. Norsuzila binti Ya'acob for all her patience, motivation, enthusiasm, and immense knowledge. My sincere thanks also go to Engr Sabariah Binti Bohanudin, my co-supervisor for her most valuable guidance.

Last but not least, my special thanks to my beloved husband, parents and children for their utmost support, understanding and courage for me to complete this research.

ABSTRACT

Obtaining and delivering user location in Long term Evolution (LTE) technology are various methods that help Communication Service Providers (CSPs) monetize and optimize their networks. It is very important in case of user makes an emergency call and service provider need to locate the geographical position of the user. In this paper, the goal with this work is to analyse the Location Determination Technique (LDT) based on Observed Time Difference of Arrival (OTDOA) in positioning technique in WCDMA and LTE system. This kind of positioning method were chosen as the user equipment (UEs) need to "hear" the signal from the nearest three base stations (Bs). Data from the driven test of Received Signal Code Power (RSCP) Node Bs will be used to simulate by using the OTDOA simulation model with fixed input parameters. Drive test has been made in urban areas in Kuala Lumpur and Shah Alam as the LTE system is in trial version in Malaysia when this paper is written. Then we proceed with analyse the data to gain the accuracy of the location by using OTDOA method. The accuracy will be evaluated by the standard of accepted location approximation error that has been state in WDCMA and LTE network in many studies. The analysis shows that the location errors in WCDMA and LTE system by using OTDOA method were least and have the most accuracy.

CONTENTS