ANALYSIS OF A 3G NETWORK QoS IN URBAN AND RURAL AREA IN MALAYSIA

This thesis is submitted in partial fulfillment for the degree of the
Bachelor of Engineering (Honours) in Electronic (Communication)
UNIVERSITI TEKNOLOGI MARA (UiTM)

MOHD FADZLI BIN HASHIM
FACULTY OF ELECTRICAL ENGINEERING,
UNIVERSITI TEKNOLOGI MARA,
40450, SHAH ALAM,
SELANGOR, MALAYSIA

Acknowledgement

All praise and thanks be to Allah, for with His will, I am able to complete this project.

I would like to thank my supervisor Assoc.Proffessor Norhayati Bt Ahmad for guiding me throughout this project. I am forever indebted to her for all her help. I would also like to thank my good friend, Syazani Bakri for providing help with obtaining the data needed to complete this project

Finally I would like to thank my friends and family for their support. They have been with me through thick and thin from the start of until the end of this journey. May Allah bless them for all their help.

Abstract

This work is an investigation on mobile QoS(Quality-of-Service) of a 3G network in an urban and rural area. The investigation was done by analyzing raw data acquired through drive tests carried out in the different areas. There were three main parameters of network QoS that were focused on in the analysis. They are availability, dependability and reliability. Availability is determined through analyzing RSCP values meanwhile dependability is determined through analyzing blocked call events and reliability is determined through analyzing Ec/No values and dropped call events. The results of the analysis were used to determine the impact of different terrain and population density in urban and rural areas on a 3G network QoS. Handover failures and packet data performance will also be analyzed.

Table of Contents

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Ever since the dawn of mankind, the human race has never ceased to find faster and better ways to communicate with one another. The first forms of communications consisted of talking drums used by the natives in Africa, New Guinea and South America. Smoke signals were used by natives in North America and China. These early forms of communication were mainly used for war and merely convey the presence of an enemy military camp by a scouting or reconnaissance party [1].

The first mobile phone call was made by one Martin Cooper, a Motorola engineer on the 3rd of April 1973 using a prototype handheld weighing around 2.5 pounds and 9 inches long. The prototype offered a talktime of just 30 minutes and took 10 hours to re-charge [2].The call was made to Dr. Joel S.Engel of Bell Labs in front of an awestruck crowd of reporters [3].

In 1974 AT&T commercialized Mobile Telephone Service(MTS) by introducing it to a hundred towns and highway corridors starting from 1948. There were about 5000 customers averaging only 30,000 per week. The call subscriber equipment weighed about 80 pounds [4].

About 40 years from when the first mobile phone call was made the mobile technology has evolved to new heights. The table below shows the evolution of the mobile technology from the first generation 1G up to Long Term Evolution technology,4G also known as LTE: