SIMULATION AND ANALYZE DRIVE TEST MEASUREMENTS FOR 3G WIRELESS NETWORKS

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In the Name of Allah the Almighty, the Most Beneficent and the Most Merciful. All praise and thanks to Allah, lord of the universe and all that exists. Prayers and peace be upon His prophet Mohammed, the last messenger for all humankind.

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ABSTRACT

This project presents a simulation study of drive testing with respect to power control. Drive testing is the process of performing radio frequency and protocol-level measurements throughout an area covered by a wireless communications network. The names drive testing results from the typical method of performing these measurements, where a car or van is used to drive measurement equipment throughout all service areas. Results of this project show that power control is one of critical importance in 3G system.

Keyword

Drive testing, 3G

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CHAPTER 1

INTRODUCTION

1.1. Introduction

Third generation systems are designed for multimedia communication with them person-to-person communication can be enhanced with high quality images, video and access to information and services on public and private networks will be enhanced by the higher data rates and new flexible communication capabilities of third generation system. One of the most importance requirements in a third generation system is the capability of the user equipment (UE) and base transceiver stations (BTS) to control their transmitter power output. Without it, a single mobile could block a whole cell. For example, user equipment UE1 and UE2 operate within the same frequency, separable at the base station only by their respective spreading codes. It may happen that UE1 at the cell edge suffers a path loss above that of UE2 which is near the base station. If there were no mechanism for UE1 and UE2 to be power controlled to the same level at the base station, UE2 could easily over shout UE1 and thus block a large part of the cell giving rise to the near-far problem of WCDMA. The optimum strategy in the sense of maximizing capacity is to equalize the received power per bit of all mobile stations at all times. Not only power control required to combat the near- far problem, it is also required to combat the effects of Raleigh fading, where the received signal can suddenly drop by many decibels as a result of multi-path propagation., which results in multiple copies of a signal arriving at the receiver out of phase. Thus, power control is deployed both in the uplink and downlink.

1.2 Objectives

The goal for this thesis is to study the simulation of drive testing with respect to power control and handover. The actual measurement and the evaluation of results drive test can be configured and carried out independently with ROMES simulation software.