

INITIATION AND PERFORMANCE ANALYSIS OF HANDOFF IN CDMA CELLULAR SYSTEMS

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UNIVERSITI TEKNOLOGI MARA

ROSMAWATI BINTI ABU
Faculty Of Electrical Engineering
UNIVERSITI TEKNOLOGI MARA
40450 SHAH ALAM
SELANGOR DARUL EHSAN

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ABSTRACT

This project presents an overview of soft handoff, an idea which is becoming quite important because of its use in the code division multiple access (CDMA) cellular standard. The study of handover performance in radio cellular system is based on simulation using software that was written in MATLAB. It involved a brief study of the various parameters affecting the handoff procedure. There are three major factors that affect the handoff. The factors are relative signal strength index (RSSI), carrier to interference ratio (C/I) and distance between mobile station (MS) and base station (BS).

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CHAPTER I

INTRODUCTION

1.1 Introduction

The *code division multiple access* (CDMA) scheme has been considered as one of the possible choice of future standards in cellular networks because of its various advantages. The process of transferring a mobile station from one channel or base station to another is called a '*handoff* ', which is an essential element of cellular communication. Since CDMA uses only one frequency, it uses a special handoff scheme with diversity, so called *soft handoff*. Soft handoff is a process in which a mobile unit can commence communication with a target station without interrupting the communication with the current serving base station (make before break). The traditional handoff scheme which requires the mobile to break communication with the current base station before establishing a new communication with other base station is called *hard handoff* (break before make).

Mobile Station can handle a call in cellular system when it moves from one cell to another cell. The procedure of handoff can occur when changing of one base station to another base station. It is possible for a process of handoff not to involve the changing of the base station but just the radio resource. Handoff ensures that connection to the network is continuously and can avoid the call from dropping.

Figure 1 briefly explains shows how handoff occurs. When a call is being made, BS will supervise the signal strength level from the MS and send data to control the power transmit level that is needed. When MS nears the cell boundary, signal strength level will drop, then the call would be given (handoff) to another BS nearby that can received the strongest signal from the MS. During this process, all information about MS will be transferred from the old BS to the new BS.