CDMA2000 PHYSICAL LAYER SIMULATION FOR 3G MOBILE SYSTEMS

This project is presented of fulfillment for the award of Bachelor of Electrical Engineering (Hons)

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ABSTRACT

Success of wireless services and desire for higher rate wireless services, improved spectrum efficiency were a major design goal in the elaboration of CDMA2000. CDMA2000 offers a seamless and evolutionary high data rate upgrade path for current users of 2G and 2.5G CDMA technology.

This project describes the simulation of CDMA2000 physical layer forward link system. The simulation is specified for Forward Fundamental Channel (F-FCH) of CDMA2000 1XRTT system. The simulation model is designed and simulated following the standard that being specified by the 3G Partnership Project 2 (3GPP2). The simulation is implemented using the Matlab and Simulink software provided by Mathworks Co. The purpose of this project is to study the performance of the simulation model in different data rate specified for CDMA2000 with Radio Configuration 3, the performance of channel coding, interference and other parameters. The model developed may be a very valuable tool for investigating the CDMA200 for 3G mobile system development.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION TO WIRELESS SYSTEMS

The wireless communications industry has grown rapidly over the past. Much of this growth has been due to the public's increasing demand for mobile telephones, and more recently, wireless data systems. Consumers today have access to many different kinds of wireless products and services, having widely varying range of coverage such as cordless telephones, wireless local area networks (WLANs), satellite-based wireless units, cellular telephones, wide-area wireless data and radio paging services and internet access from hand-held units.

Of these, the most widely used are cellular mobile systems. Cellular mobile systems aim to provide high-mobility, wide-ranging, two-way wireless voice communications. Therefore, the communication engineers attempt to improve the mobile technology and applications so that people will be able to communicate from a mobile location, which has changed the way they communicate with each other and do business.

Due to high demand from users, third generation of mobile communication technology (3G) is currently under development. 3G is a pending improvement in wireless data and voice communications via a variety of proposed protocols. The goal is to improve transmission speeds to 2 Mbps. The two major technologies used in 3G systems are CDMA2000 and WCDMA. CDMA2000 is based on cdmaOne system while WCDMA is based on GSM system.

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