

# **ANALYSIS OF HANDOVER PERFORMANCE IN MOBILE WIMAX NETWORKS**

This thesis is presented in partial fulfillment for the award of the  
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## ABSTRACT

*Abstract* – Mobile terminals allow users to access service while on the move. This unique feature has driven the rapid growth in the mobile network industry, changing it from a new technology into a massive industry in less than two decades. The handover performance in mobile network is the most important factor that can influence the Quality of Service (QoS). Nowadays, many countries in the world have move to more advance mobile communication system such as IEEE 802.16e Mobile WiMAX standard. The parameters such as handover time, throughput and packet delay are the main factors which affect the mobile WiMAX network performance. OPNET 14.5 is used to simulate the mobile WiMAX handover process.

*Keywords* — Mobile WiMAX, Handover, Delay

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# CHAPTER 1

## INTRODUCTION

### 1.1 INTRODUCTION

Data and voice over IP (VoIP) is the transports of voice using the Internet Protocol (IP) are the main traffic from users around the world. The demand for high speed transmission data rate is growing every day. This phenomenon will continuously happen and never one knows the end. Therefore, the introduction to WiMAX system is one the solution at this moment [13].

Mobile WiMAX has supports mobility in the standard. It is the first mobile broadband wireless-access solution based on the IEEE 802.16e standard [14] was started in December 2005. The range of frequency in license band from 2GHz to 6GHz and in unlicensed band, from 2GHz to 11GHz [15]. This service enables roaming for portable client using smart phone, laptop or personal computer within the service area.

The objectives of this research are to study the QoS of the network which contain of Unsolicited Grant Scheme (UGS), Non- Real-time Polling Service (nrtPS), and Best Effort (BE); over the mobile WiMAX applications and analyze the handover performance in terms of delay and throughput in different scenarios. In this project, the OPNET simulation software is used to obtain the results.