

**HANDOVER PROCEDURE BETWEEN FEMTOCELL AND
MACROCELL ANALYSIS BASED ON HYSTERESIS MARGIN AND
TIME-TO-TRIGGER IN LTE NETWORK**

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ABSTRACT

In the purpose of offering extensively higher data rates, higher systems throughput, and lower latency the 3GPP LTE system has premeditate. The goals for handover are to keep the continuity of the communication, enhance the capacity and the quality of service. There are problems that occur during the handover process between macrocell and femtocell. Handover procedures for existing networks are needed to support the macrocell/femtocell integrated network. In a large number of femtocells, there are too many prehandover and unnecessary handover processes frequently occur. Call termination due to handover where it happens when the mobile moves from one serving cell to another cell. High number of switching load will bring to ping-pong effect. The objective of this research is to analyze the result of handover performance between femtocell and macrocell. The related scope of work is simulating and analyzing the handover parameters which are Hysteresis Margin (HM) and Time-to-Trigger (TTT) incorporating with threshold level for the handover from femtocell to macrocell. The method used in this paper is by deploying the hierarchical macro/femto cell. The existence of femtocell will improve the handover performance because femtocell helps offloading the macrocell. The result shows that the deployment of femtocell has increase the handover performance.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Long Term Evolution (LTE) is a radio access technology specified by the 3rd Generation Partnership Project (3GPP). LTE includes improved capacity, lower latency, higher throughput, increased spectrum efficiency and better coverage [2]. Figure 1.1 shows the simple model of indoor wireless network which includes femtocells, macrocells and mobile user. Handover procedure is one of the most important functions of a mobile system. It needs to be designed accordingly to the distributed nature of the LTE architecture [1]. Furthermore, since Orthogonal Frequency Division Multiple Access (OFDMA) and Single Carrier Frequency Domain Multiple Access (SC-FDMA) are used as the access schemes, soft handover which is used in Wideband CDMA (WCDMA) system is not applicable in 3GPP LTE.

Hence, the hard handover, which causes an interruption in the user plane, becomes the sole option in LTE.