INTERFERENCE ANALYSIS OF LTE AND WI-FI SYSTEMS

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"In the name of ALLAH S.W.T, The Most Gracious and The Most Merciful. Peace be upon the Holy Prophet, Muhammad S.A.W."

Alhamdulillah, with the help and guidance of the Al-Mighty, I have managed to produce this piece of work, despite of my own weakness and lack of design experience. I would like to thank my family for supporting me all these hard day. special thanks to my beloved supervisor Dr. Darmawaty Mohd Ali for her initial suggestions, advice, guidance and invaluable help throughout the development of the project. Also not forgetting my friends that have shared their knowledge and giving me the motivation and mentality to complete this project due time. May Allah bless all of you.

ABSTRACT

Abstract— Mobile broadband has transformed the way people access and share information. Basically, mobile broadband is used for communications, education, health care, and public safety. These will result in an exponential growth in the number of wireless subscribers. Consequently, the mobile broadband traffic has increased significantly over the last years and will continue to do so for many years to come. To satisfy the increasing demand, mobile operators will have to increase the capacity of their networks. However, the operating frequency of LTE and Wi-Fi is so close that can interference to occur. Hence, in this project, we design an interference analysis to find out realistic distance between the LTE transmitter and Wi-Fi receiver. We consider a scenario where the LTE transmitter is located together with a Wi-Fi system in very close proximity. We evaluate and analyze the performance due to the separation distances between the two systems in terms of transmission power, capacity and the signal strength. Simulations results have shown that at 40 km distance, there is no interference between the transmission system.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Since the mid 1190s, the cellular communication industry has witnesssed an explosive growth. Figure 1.1 shows the progression of the wireless communication technology which is more pervasive than anyone could have imagined. The worldwide cellular and personal communication subscriber base surpassed 600 million users in late 2001. The number of subscribers is projected to reach 2 billion by the end of 2006. Indeed, most countries through out the world continue to experience cellular subscription increases of 50% or more per year. The spread adoption of wireless communication was accelerated when government throughout the world provided increased competition and new radio spectrum licenses for personal services [1].

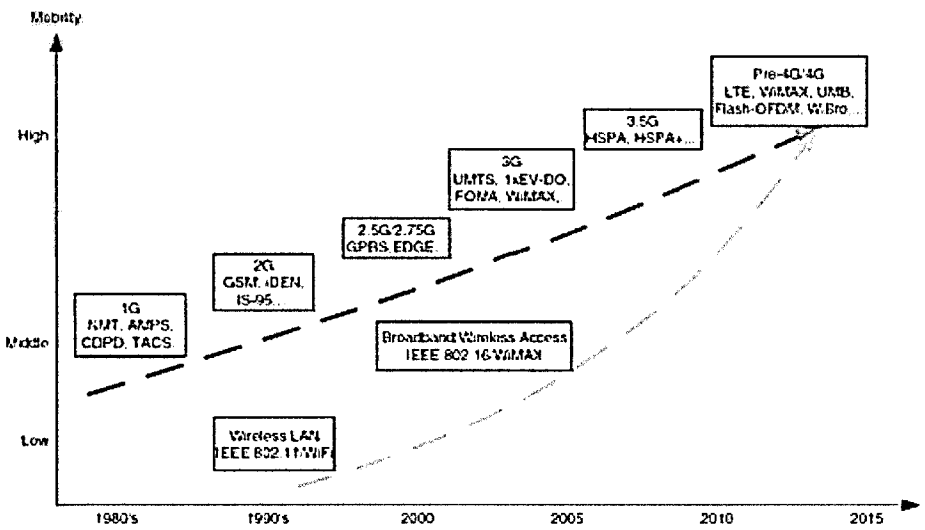

Figure 1.1: Evolving of technology wireless