Analysis of Received Signal Strength Behavior in Wi-Fi Network of S&T Building

Thesis is presented in partial fulfillment for the award of the
Bachelor of Engineering (Hons.) Electronics Engineering (Communication)
UNIVERSITI TEKNOLOGI MARA (UiTM)

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JULY 2014

ACKNOWLEDGEMENT

All praise to almighty Allah for giving me strength and patience in completing this final year project. Without the grace and help of Allah S.W.T it would be virtually impossible for me to complete the research.

Foremost, I would like to express my sincere gratitude and deep appreciation to my supervisor, Associate Professor Norhayatibinti Ahmad for this invaluable guidance, comments, suggestions and assistance rendered throughout the entire duration of the study which led to the success of this project.

Also, I wish to state here that all the encouragement and support rendered by my friends whom I cannot acknowledge by name, would not go unforgotten, they will always be greatly cherished.

Last but not least, my deepest gratitude to my parents and family for their support and encouragement throughout my study that constantly pray for my success.

ABSTRACT

This thesis presents the Analysis of Received Signal Strength Behavior in Wi-Fi Network of S&T Building. Problems encountered in the Wi-Fi network are behavior of RSS caused by various factors. Low received signal strength (RSS) may lead to connection problems such as loose connectivity. Detailed analyses of factors affecting the received signal for indoor Wi-Fi network were done. The method used is to gather data using inSSIDer. Readings are taken from each access points (APs) for a period of one hour for 6 APs. Location of the data recorded is approximately 5 and 6.5 meters from APs and the measurements were carried out along S&T building. Observation of the signal coverage in selected APs are using EkahauHeatMapper and then produce a graph using MATLAB based on the recorded data. Readings are also taken for location at 5, 10, 15, 20 and 25 meters from APs. To strengthen the results of measurements, comparison is made with calculation for indoor propagation model. This paper discusses the several factors that contribute to these problems as spatial, human presence, interference, path loss and the router itself. It also presents the graph and statistical analysis of the measured data that can defined the APs with the best and worst signal strength.

TABLE OF CONTENT

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

Wireless communication is one of the most active areas of technology development of our time. This development is being driven primarily by the transformation of what has been largely a medium for supporting voice telephony into a medium for supporting other services, such as the transmission of video, images, text, and data.

The first radio waves were discovered in 1888 by Heinrich Herz and by 1894, the modern way to send a message over telegraph wires was conducted. Guglielmo Marconi known as the father of radio since he have been able to sent and received signals up to two miles using radio waves. Marconi also sent a signal nine miles across the Bristol Channel and 31 miles across the English Channel to France in 1899. By 1901, Marconi was able to transmit across the Atlantic Ocean.

During World War II, first used radio signals for data transmission was by the United States Army. In 1971, a group of researchers at the University of Hawaii inspired to create the first packet based radio communications network called ALOHAnet. ALOHAnet was the very first wireless local area network (WLAN) which consisted of 7 computers that communicated in a bi-directional star topology.