

MEASUREMENT OF BER AND WLAN STRENGTH BASED ON INDOOR PROPAGATION



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Contents

1. Letter of Report Submission	iii
2. Letter of Offer (Research Grant).....	iv
3. Acknowledgements	vi
4. Enhanced Research Title and Objectives	vii
5. Report	1
5.1 Proposed Executive Summary	1
5.2 Enhanced Executive Summary.....	2
5.3 Introduction	3
5.4 Brief Literature Review	6
5.5 Methodology.....	9
5.6 Results and Discussion	13
5.7 Conclusion and Recommendation.....	18
5.8 References/Bibliography	20
6. Research Outcomes.....	21
7. Appendix	22

2. Letter of Offer (Research Grant)



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Dengan hormatnya perkara di atas adalah dirujuk.

2. Sukacita dimaklumkan pihak Universiti telah meluluskan cadangan penyelidikan Y. Brs Prof./tuan/puan untuk membiayai projek penyelidikan di bawah Dana Kecemerlangan UiTM.

3. Bagi pihak Universiti kami mengucapkan tahniah kepada Y. Brs. Prof./tuan/puan kerana kejayaan ini dan seterusnya diharapkan berjaya menyiapkan projek ini dengan cemerlang.

4. Peruntukan kewangan akan disalurkan melalui tiga (3) peringkat berdasarkan kepada laporan kemajuan serta kewangan yang mencapai perbelanjaan lebih kurang 50% dari peruntukan yang diterima.

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Peringkat Ketiga	40%

5. Untuk tujuan mengemaskini, pihak Y. Brs. Prof./tuan/puan adalah diminta untuk melengkapkan semula kertas cadangan penyelidikan sekiranya perlu, mengisi borang setuju terima projek penyelidikan dan menyusun perancangan semula bajet yang baru seperti yang diluluskan. Sila lihat lampiran bagi tatacara tambahan untuk pengurusan projek.

Sekian, harap maklum.

"SELAMAT MENJALANKAN PENYELIDIKAN DENGAN JAYANYA"

Yang benar

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5.2 Enhanced Executive Summary

A Wireless Local Area Network (WLAN) is a connection to the internet using some wireless distribution methods (typically spread-spectrum or OFDM radio), in which two or more devices are connected through an access point or router. WLAN services gives users the mobility to move around within a local coverage area and still be connected to the network within the same building . Due to ease of installation of WLAN and the increasing popularity of laptop computers, WLAN have become popular to all people in the world.

However the WLAN signal strength can change over time. Users cannot obtained a strong signal every time they access the internet. This is due to several factors that can effect the WLAN signal strength performance. One of the factors which affect the WLAN signal strength is the noise which comes from obstacles that exist in our surrounding. It is also known as Multipath fading. This type of noise is a main problem that exists in mobile communication environment. The signals transmitted via radio channel to receiver propagate in the air, tend to produce a large number of reflected radio waves that arrive at the receiver at different times. This is the result of delayed signals, which are caused from the reflection of signals from walls, tables, or other items. These reflected radio waves interfere with the direct wave and cause intersymbol interference (ISI), which cause significant degradation to the network performance. In order to overcome a multipath fading environment, it is possible to use OFDM transmission scheme. OFDM is based on parallel data transmission scheme that reduces the effects of multipath fading and renders complex equalizers unnecessary.

This project will study and identify the Orthogonal Frequency Division Multiplexing (OFDM) technology that gives the best BER performance in a multipath fading environment and compare BER performance using different modulation techniques in MATLAB.

5.3 Introduction

Communication technology has grown rapidly. Many types of communication technology exist nowadays. Among these are, WLAN, WIMAX, Bluetooth and etc. This paper will primarily concentrate only on WLAN 802.11a. Many companies such as offices, bank, educational centers and other organizations require high speed data transmission to transfer information. The major benefits of WLANs are connectivity and mobility, showing high performance and achievable data rate [1].

The transmission signals will be distorted by many obstacles that exist in the surrounding. These will result in the degradation of the performance of the communication. Obstacles and channels introduce noise during transmission and reception of the signal. OFDM describes the technology that transmits voice and data by operating over a range of frequencies which are developed to allow for higher data rates [3]. OFDM has been adopted as the modulation method for WLAN technologies such as IEEE802.11 a standard since it can provide high speed throughout the entire coverage area [1]. It is also spectrally a more efficient method and mitigates the severe problem of multipath propagation that causes data errors [2].

Nowadays, the need for fast transmission of information is needed to transmit various types of information. OFDM is a technique that can transmit various kind of information simultaneously at broad areas while at the same time also overcoming the multipath fading effects.

The high-rate data can be divided into lower rate using OFDM technology. The lower rate data then can then be transmitted simultaneously using multiple numbers of subcarriers. The transmission of lower rate data causes the symbol duration for transmitting parallel data using multiple numbers of subcarrier to increase, while the amount of relative dispersion due to multipath delay spread is decreased.