



اَوْنِيُوْا سِيْتِيْ بِاَتِيْكَوْا لُوْ كِيْ مَارَا
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**COMPARISON OF RECEIVED SIGNAL STRENGTH AND SIGNAL
QUALITY IN UITM SHAH ALAM USING NEMO HANDY**

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ABSTRACT

Global System for Mobile (GSM) is a second-generation cellular system standard. With the increase of the number of GSM subscriber, GSM wireless communication system has attracted more attention in the telecommunication field. The GSM Association estimates that GSM serve 80% of the global mobile market. Third Generation (3G) stands for third generation of mobile communication networks. Manufacturers claims that 3G can offer data rate up to 40 times faster than the earlier 2G technology. We can see the trend nowadays where people had shift from the outdated GSM phone to the latest 3G phones since people are using data more often with their phone. Nowadays users are likely to expect uninterrupted, efficient and stable service from their network. Customers complain a lot, more aware and picky about signal availability within their network. Thus, to provide better and uninterrupted service, performance testing is required. In this project we focuses on measuring, comparing, analyzing signal strength, signal quality and cell reselection in 2G and 3G system for MAXIS and DIGI. This project could as well familiarize us with NEMO Handy as the measuring tool during drive test and also understanding NEMO Outdoor as the software to analyze the results obtained. The measures of signal strength were taken with different time and weather condition which is morning, afternoon, evening and during rainy day. The average were calculated from the results and compared. The number of cell reselection occurrence was recorded as well during the Idle drive test (DT). A voice call drive test for 3G and 2G from Digi and Maxis were conducted too, measuring the Rx Quality and Ec/No which is used to determine the signal quality. The drive test around UiTM Shah Alam was conducted using NEMO Handy and results were analysed using NEMO Outdoor 6 software. NEMO Handy and NEMO Outdoor 6 can provide information such as cell id, location area code, cell reselection, signal quality, signal strength and many more. The results shows that Digi have better signal strength and signal quality compared to Maxis for both 2G (GSM) and 3G (WCDMA) systems. The best performance of signal strength for both Digi and Maxis is during the afternoon. As for cell reselection, Maxis shows more cell reselection occurrence in GSM network, while Digi shows more occurrence in Third Generation network.

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CHAPTER 1

INTRODUCTION

1.1 GLOBAL SYSTEM FOR MOBILE COMMUNICATION (GSM)

Global System for Mobile (GSM) is a second-generation cellular system standard. With the increase of the number and the requirement of GSM subscriber, GSM wireless communication system has attracted more and more attention in the field of mobile telecommunication [1]. It can provide data rate between 10 and 20 kbps [2]. The GSM Association estimates that GSM serve 80% of the global mobile market, with more than 5 billion people around the world across more than 212 countries and territories [3]. In Malaysia, Maxis and Celcom have the majority usage of GSM in their network compared to Digi [4].

GSM is an international standard for mobile service, the service and calls are either data or voice. It uses Frequency Division Multiple Access (FDMA) and time Division Multiple Access (TDMA) transmission methods. GSM offer many services such as voice call, short message service (SMS), fax, voice mail, call forwarding and caller ID. There are many type of bands used in GSM which are 450 MHz, 850 MHz, 900 MHz, 1800 MHz and 1900 MHz. In Malaysia we are currently using the 900MHz and 1800 MHz band. The allocated frequency band for lower band and upper band in Malaysia are [5].