

# Simulation and analysis performance of 64-QAM and 8-PSK by using reed solomon codes in WCDMA environment

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**By**

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## ABSTRACT

This project illustrates the simulation and performance analysis of 8-PSK and 64-QAM in WCDMA. The main objective of this study is to compare and identify which technique is better by analyzing the performance of both channels in term of bit error rate (BER).The simulation was done by using Matlab Version 7.6. The system model constructed two modulation technique which is 8-PSK and 64-QAM.The channel coding that has been applied in this project is Reed Solomon Codes to encode and decode the signals from the two channels before the modulation and after demodulation process occur in the system. As for the noise, AWGN was injected to the WCDMA spread spectrum environment. From the result obtained 8-PSK is better than 64-QAM in BER performance, but the 64-QAM offer higher data rate compare to 8-PSK.

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## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 INTRODUCTION**

In order to increase the capacity of user, the system should be improved by using higher order of modulation technique. Modulation is the process of impressing low frequency information onto a high-frequency carrier signal. It is also known as the process by which some characteristics of a carrier are varied in accordance with a modulating wave to convey a message [1]. QAM is a form of digital modulation similar to PSK except the digital information is contained in both the phase and the amplitude of the transmitted carrier. For QAM, amplitude and phase shift keying are combined. Phase-Shift Keying (PSK) is a form of angle-modulated, constant-amplitude digital modulation. PSK is an M-ary modulation scheme where the input binary information is encoded into a group of bits before the carrier is modulating. For this project, 8-PSK and 64-QAM were used to modulate the signal.

#### **1.2 PROBLEM STATEMENT**

Nowadays, users are very demanding to meet the high capacity of information. So, the channel used to transmit the data must be able to carry higher data rate transmission with minimum error. To satisfy the consumer, WCDMA is implemented. Hence, it is important to analyze which modulation technique is better to be used to achieve higher data rate and at the same time lower in bit error rate.