

Selected Readings in
**COMPUTING AND
TELECOMMUNICATIONS**

Editors
Mira Kartiwi
Teddy Surya Gunawan
Aisha Hassan Abdalla Hashim



IIUM Press
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

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Published by:
IIUM Press
International Islamic University Malaysia

First Edition, 2011
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Perpustakaan Negara Malaysia

Cataloguing-in-Publication Data

Mira Kartiwi, Teddy Surya Gunawan, Aisha Hassan Abdalla Hashim:
Selected Readings in Computing and Telecommunications

ISBN: 978-967-0225-81-4

Member of Majlis Penerbitan Ilmiah Malaysia – MAPIM
(Malaysian Scholarly Publishing Council)

Printed by:
IIUM PRINTING SDN. BHD.
No. 1, Jalan Industri Batu Caves 1/3
Taman Perindustrian Batu Caves
Batu Caves Centre Point
68100 Batu Caves
Selangor Darul Ehsan

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15. PREDICTION OF PROBABILITY OF BIT ERROR RATE IN DIGITAL COMMUNICATION SYSTEM

Saad Osman Bashir, Abdallah Mohammed Tawfeeq Zyoud and Besir Salah
Eldin Mahmoud Sid Ahmed

ABSTRACT

The probability of bit error is one of the most important performance parameters in accessing a digital communication system. Since in modern times now people are moving towards digital and leaving behind analog, this performance parameter is of utmost importance especially when designing a digital communication system such as radio data links, fiber optic data systems and Ethernet. This project titled analysis of the probability of bit error rate in digital communication systems will present a formal definition of this performance parameter once that is done important formula to calculate the probability of bit error from some known digital modulation techniques are derived and presented. This project also attempts to show the effect of factors such as noise, interference, fading, and error correcting codes on the bit error rate of these chosen modulation techniques. With the help of Matlab software key graphs will be developed to extensively see and compare the bit error rates under the aforementioned factors for the chosen modulation techniques, all done for the single purpose to predict the probability of bit error rate more confidently.

15.1 INTRODUCTION

One of the most important aspects or need for modern digital communication systems is to have an end-to-end performance measurement. The measure of that performance is the bit error rate or actually in better