PERFORMANCE MEASUREMENT & ANALYSIS ON OPTICAL FIBRE LINK USING OTDR

Thesis is presented in partial fulfillment for the award of the Bachelor of Electrical Engineering (Honours)

NORAZLIN NIZA RAMLEY
Faculty of Electrical Engineering
UNIVERSITI TEKNOLOGI MARA
40450 SHAH ALAM, SELANGOR

ACKNOWLEDGEMENT

In the name of ALLAH
The Compassionate, the Merciful,
Praise to be ALLAH, Lord of the Universe,
And Peace and Prayers be upon
His Final Prophet and Messenger

This thesis is the result of the efforts of a number of people. Here I would like to express my sincere thanks to each and everyone whom involved directly and indirectly in the development of this thesis.

Firstly, I am particularly grateful for my parents and family for their encouragement and support during my studying.

I would like to take this opportunity to express my special thanks to my supervisor En. Uzer B. Mohd. Noor for his guidance and encouragement through the development of this application.

I also would like to wish my gratitude to En. Tamin Ishak for his valuable information. My special word of thanks also goes to all TELEKOM staffs especially En. Rahim, En. Nordin, En. Sabri and En. Yunus: your contributions are invaluable upon helping me completing this project.

ABSTRACT

This report describes the performance and characteristics of the fibre optic. The fibre performance is measured by OTDR (Optical Time Domain Reflectometre). OTDR is used to examine the trace of the reflected signal from the fibre. From the OTDR measurements, fibre loss, fibre return loss, distance and attenuation are presented, compared and analyzed. The purpose of this measurement is to check the optical quality (loss) of each splice and determine the condition of the fibre. Fibre Acceptence Test Simulation is used to monitor the status of the fibre.

The result can be used as periodic inspection and maintenance of the link involved. This project is done with the cooperation TELEKOM MALAYSIA at Bukit Raja Exchange. The data are taken around Selangor Barat fibre network's area. This project has given the author a sound knowledge and understanding on how to examine the performance characteristics of a complex optical link and network.

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INTRODUCTION

1.1 Introduction

Optical fibre has become the transmission medium of choice for most communications. Its high speed and long distance capability make it the most cost effective communications medium for most applications. While higher performance and lower cost components are in continual development, it has also become critical to maintain the optical fibre networks.

This project was focused on the practical aspects of testing and troubleshooting optical fiber cable plants and networks. Its also includes an introduction to the basics of fibre optics.

An optical Time Domain Reflectometer (OTDR) is used to obtain a visual representation of an optical fibre's attenuation characteristics along its length. OTDR testing is the only method available for determining the exact location of broken optical fibres in an installation fibre optic cable when the cable jacket is not visibly damaged. It provides the best method for determining loss due to individual splices, connectors or other single point anomalies installed in a system.