

ANTENNA DESIGN FOR  
PROBLEMS AREA IN SHAH ALAM

This thesis is presented to fulfil the  
requirement of Advance Diploma in Electrical  
Engineering of MARA of Technology

ZALIZAH BINTI PONIRAN D.E.E(UTM)  
N.AISHAH BINTI TUKIRIN D.E.E(ITM)

MAY, 1993  
during my  
Department of Electrical Engineering  
School of Engineering  
MARA Institute of Technology

40450 Shah Alam

Selangor

MALAYSIA

## ACKNOWLEDGEMENT

We are indeed thankful to Department of Electrical Engineering, MARA Institute of Technology for giving us the opportunity to undertake this study which would be great help in our future career.

Our sincere and heartiest thanks to Puan Rusnani Ariffin, our project supervisor, for whom we are much indebted for her guidance towards the success and completion of this project paper. Grateful acknowledgement is also honoured to the various organisation, departments and residences of section 2, 4, 6, and 8 of Shah Alam, who permit us to gather and collect informations. Many thanks for their assistances and in furnishing us with the latest and relevant informations.

The organisations and departments are:

1. Radio Television Malaysia (RTM), Kajang.
2. TV3 Bhd.
3. Majlis Perbandaran Shah Alam (MPSA).
4. Power Laboratory, ITM, Shah Alam.
5. Communication Laboratory, ITM, Shah Alam.

Finally, we would also like to express our special appreciation to Mr. Amir and Mr. Abd. Rahman from Matsushita Television (MTV), Shah Alam and also Mr. Kamarulzaman from ITM, Shah Alam for their assistance in helping us to complete the antenna design.

## ABSTRACT

### Antenna Design for Problem Area in Shah Alam

This project is about the television antenna design that can solve the channel reception problems in Section 8, Shah Alam. In order to design a good antenna reception, a study of the antenna characteristic and random survey to a certain area in Shah Alam is needed to acknowledge the current problem.

Nowadays, television is used in most houses where good channel reception is the most important parameter. Thus, an antenna with competitive in price, quality and portable design will be in great demand.

This project is to fulfil this requirement and help in present broadcast facilities especially for radio and television indeed.

The followings are brief description of the topics covered in each chapter:

Chapter 1: Covers the survey of problems area and problems identification.

: Covers the General View of the Television Transmission Network in Malaysia.

## TABLE OF CONTENTS

	PAGE
1.0 Introduction	1
2.0 Communication Systems in Malaysia and Radio Wave Propagation.	3
2.1 General view of TV Communication System in Malaysia.	
2.1.1 Electromagnetic Wave.	4
2.1.2 Band Reception.	9
2.2 Problems statements at Section 8, Shah Alam.	10
2.3 Antenna System	
2.3.1 Introduction	18
2.3.2 Yagi Antenna	23
3.0 Antenna Design	
3.1 Introduction	26
3.2 Power received	26
3.3 Antenna Band	27
3.4 Antenna Gain	28
3.5 Directivity	30
3.6 Effective Aperture	31
3.7 Antenna Impedance	32
3.8 Polarization	34
3.9 Hardware Material	35
3.10 Design Construction	37

## 1.0 INTRODUCTION

This project is to design a special kind of antenna that can overcome the television reception problem in Section 8, Shah Alam but it is also applicable for other areas.

Selecting the best VHF or UHF antenna for a given installation involves much more than scanning gain figures and manufacturer's catalog. Thus, our design antenna is to be competitive in price, quality and easy to construct.

In attempt to fulfil the required antenna design, surveying and data collection at the television reception problems area were done. A study of antenna characteristic had give a better insight into the ways in which the problems could be solved.