

TERRESTRIAL DIGITAL VIDEO BROADCASTING (DVB-T)  
CHANNEL PLANNING AND PERFORMANCE  
EVALUATION IN SAUDI ARABIA

SHAROLHAZ B SAIED IBRAHIM

DEPARTMENT OF ELECTRICAL ENGINEERING  
UNIVERSITY OF BAHIGAH  
BAHIGAH

**TERRESTRIAL DIGITAL VIDEO BROADCASTING  
(DVB-T)  
COVERAGE PLANNING AND PERFORMANCE EVALUATION IN  
SHAH ALAM**

**SHAHROLHAFIZ BIN SAYED IBRAHIM  
Faculty of Electrical Engineering  
UNIVERSITI TEKNOLOGI MARA  
40450 SHAH ALAM**

## ACKNOWLEDGEMENT

I would like to thank my project supervisors Pn. Norsuzila Ya'acob and Assoc. Prof. Dr. Deepak K. Ghodgaonkar for their kindness, support and concern in providing idea, as well as willingness to guide and help in completing this project. I am deeply indebted to my DVB lecturers Ir. V. Jeewa and Pn. Faraza Mahmood, they were extremely helpful in providing me basic knowledge regarding the DVB.

I am particularly grateful to Pn. Norzihan M.Salleh, TV Broadcasting Engineer of RTM Angkasapuri for her permission in helping me to use the equipment. I am grateful to Mr. Mohd Radzif Rahman, Mr. Ridzahudin and Ms. Norhanim Hj. Yahya of RTM, who tutored me on the *ICS Telecom* and put me on right track regarding the single transmitter network and not to forget the technical staff, thank you. Finally, I am deeply indebted to a large group of friends and colleagues who have reviewed and suggested changes and improvements to my thesis.

All of them had helped me with a lot of important technical materials for the purpose of improving this project. I thank you all.

## ABSTRACT

Digital television is already available via satellite and cable. Terrestrial digital television is also mature. Within a decade many countries had developed their own digital terrestrial television networks. Digital technology has brought, among others, a wider choice of programmes, improved spectrum utilization efficiency, a spectrum more immune to interference, the potential for quality video and audio, and numerous added services such as Internet, pay per view, home shopping, home banking, multimedia platform etc.

This project proposed a frequency planning for a Terrestrial Digital Video Broadcasting (DVB-T) radio station in Shah Alam. The planning involves several aspects such as main transmitter characteristics, transmitter network design, transmitting antenna parameters and interference consideration. The completed frequency planning will be evaluated using *ICS Telecom* simulation software to predict its performance. The main focus of this project is to conclude that all the areas of Shah Alam will receive a good DVB-T signal.

## TABLE OF CONTENTS

CHAPTER		PAGE
1	INTRODUCTION	
	1.1 Introduction	1
	1.2 Overview of Terrestrial Digital Video Broadcasting (DVB-T)	2
	1.3 DVB-T Revolution Around Europe and the World	4
	1.4 Objectives	6
	1.5 Scope of Work	7
	1.6 Methodology	9
	1.7 Expected Result (Aim)	9
2	INITIAL PLANNING	
	2.1 Introduction	10
	2.2 Main Transmitter's Location	10
	2.3 Path Profiles	11
	2.4 Site or Path Survey	13
3	COVERAGE PLANNING	
	3.1 Transmission Modes and Transmitting Frequency	15
	3.2 Transmitter Network Design	17
	3.3 Reception Classification	18
	3.4 Main Transmitter Effective Isotropic Radiated Power (EIRP)	20
	3.5 Interference Consideration	22
	3.6 Transmitting Antenna	24
4	SIMULATION SOFTWARE	
	4.1 Introduction	26
	4.2 Simulation Fundamental	27