

**LIGHTNING RISK ASSESSMENT FOR CANSELERI UITM
BUILDING AND INTERFACE WITH GUI**

*It is hereby that all the materials in this thesis are the result of my own work and all
the materials which are not the results of my own work have been clearly
acknowledged in this thesis.*

**Thesis is presented in partial fulfillment for the award of the Bachelor of
Engineering (Hons.) Electrical
UNIVERSITI TEKNOLOGI MARA (UiTM)**



**MUHAMMAD ANUAR B MAT JUSOH
2007283902
FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA
40450 SHAH ALAM,
SELANGOR, MALAYSIA
MAY 2010**

ACKNOWLEDGEMENT

In the name of Allah The Most Gracious and Merciful With The Salawat and Salam to Prophet Muhammad S.A.W.

First and foremost, I would like to thank God, for without His strength and encouragement this degree would have never materialized.

I would like to thank my supervisor, Assoc. Prof. Puziah Mohd Arsad, for the guidance, patience, encouragement, and support he has given to me for my final year project.

In addition, I would like to acknowledge my colleagues for their constructive comments and support. And also to my beloved family for the contribution and sacrifice they have made.

ABSTRACT

This report presents the lightning risk assessment for Canseleri UiTM building based on Malaysian Standard MS 62306. Based on assessment R_1 shall be determined and compared with tolerable risk value $R_T = 10^{-5}$. Protection is required if the risk R_1 is higher than tolerable risk, R_T lightning protection required for structure. This report also presents the result of Zone 3 (office building) in GUI method using MATLAB software as an alternative to mathematical method.

TABLE OF CONTENTS

CHAPTER	CONTENT	PAGE
	Title	i
	Approval	iii
	Declaration	iv
	Acknowledgement	v
	Abstract	vi
	Table of Contents	vii
	List of Figures	x
	List of Tables	xi
	List of Abbreviations	xiii
1	INTRODUCTION	
	1.1 Definition lightning	1
	1.2 Lightning form	2
	1.3 Lightning strike	4
	1.4 Lightning damage and risk management	5
	1.5 GUI MATLAB software	10
	1.6 Objective	11
	1.7 Thesis Organization	12
2	LETERATURE REVIEW	
	2.1 ERICO Lightning protection handbook	13
	2.2 Malaysian standard MS IEC 62305-2-2007	14

CHAPTER 1

INTRODUCTION

1 INTRODUCTION

1.1 Definition Lightning

Lightning is a natural phenomenon which develops when the upper atmosphere becomes unbalanced due to the convergence of a warm, solar heated, vertical air column on the cooler upper air mass. These rising air currents carry water vapor which, on meeting the cooler air, usually condense, giving rise to convective storm activity[1]. It can travel at speed 220,000 km/h and the temperature can approach to 30,000 Celsius.

Lightning is a normal phenomenon in the world. There are some 1700 electrical storms active throughout the worlds which produce in excess of 100 flashes per second. This would result to an aggregate of some 7 to 8 million flashes per day and approximately 90% of these are cloud-to-cloud flashes and the remaining are cloud-to-ground flashes. Generally, tropical regions of the world would have high incidences of lightning as describe by isokeraunic thunder day maps. According to map, Malaysia is one of highest records of lightning strikes among the countries in the world such as shown in Figure 1.1 below.