ELECTROMAGNETIC COMPATIBILITY TESTING ON HAND PHONE

Project Report is presented in partial fulfillment for the award of the Bachelor of Electrical Engineering (Hons.)

UNIVERSITI TEKNOLOGI MARA

RAFISYA BINTI ISMAIL
Faculty of Electrical Engineering
UNIVERSITI TEKNOLOGI MARA
40450 SHAH ALAM, SELANGOR

ACKNOWLEDGEMENT

All praises to the might Allah, the Merciful and the Beneficent for the strength and blessing in the completion of this report. Peace be upon our prophet Muhammad S.A.W., who has given light to mankind.

Here, I would like to thank my supervisor, En Uzer Mohd Noor from Faculty of Electrical Engineering, University of Technology MARA, for his guidance, comments, support and concern to make this report a success.

I also would like to thank my fiancé, Syed Faiz bin Syed Omar for giving me moral support and lending me his laptop for convenience.

I am also greatly indebted to Ir Zulkifli bin Yaakub for giving me this interesting idea by proposing me this topic. Not forgotten Dr Zaiki bin Awang, the panel for giving me valuable suggestions and critism.

Finally, a big thank you to En Shaikh Mohd Jamaldin, En Zarismail, En Azizul Azman and Cik Norhayati from SIRIM QAS, in helping me to make this project a reality.

ABSTRACT

Most countries throughout the world have realized the importance of Electromagnetic Compatibility (EMC) and the effective control of the environment to protect live saving and other products or equipment. Ensuring that electrical and electronic equipment are safe and do not interfere with the normal operation of other equipment is the basis of the ***emc***.

In Malaysia, EMC testing is being done in SIRIM EMC Lab in Shah Alam, which will be giving the emc-mark if the equipment passes the tests. The advantage of this certification is; it provides independent assurance of product compliance to EMC requirements thus facilitating customer acceptance.

In this thesis, I will be conducting tests on a hand phone to see if it complies with the standard prepared by European Telecommunications Standard Institute. I wanted to see if my hand phone may affect or may be affected by other electrical or electronic equipment in terms of electromagnetic interference. The tests, which will be done, are the emission and immunity tests. On the emission side of the equation, the aim is to ensure that hand phone does not disturb other equipment. While on the immunity side, the aim is to ensure that other equipment does not affect the hand phone.

Debates all around the world have been saying that the use of hand phone in a long-term duration may be hazardous to human health. Although I may not be doing the test on the effects on electromagnetic interference on human being, but someday we may find the relation between EMC and SAR. SAR is specific absorption rate or the level of power which human being are capable to absorb when operating a hand phone.

TABLE OF CONTENTS

CHAPTER I

INTRODUCTION

1.1 Electromagnetic Environment

Electromagnetic environment (EM) is created when electrons are moved around to complete the circuit to make any electrical or electronic devices work. Natural phenomena such as lightning occurring at the same location can also contribute to electromagnetic environment. An electrostatic discharge may take place even when a device or system is not in normal functioning mode.

In the earliest days of radio, they are usually referred to radio frequency interference (RFI). Today, the term electromagnetic interference (EMI) better reflects the fact that electrical or electronic systems may cause disturbances at any frequency between 0 Hz and the GHz (microwave) range.

As defined by the IEC, EM refers to " the totality of electromagnetic environment phenomena existing at a given location."

Electromagnetic compatibility itself is defined as: