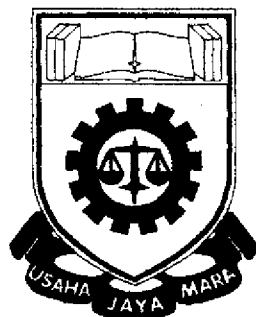


MAGNETIC FIELD SHIELDING

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ABSTRACT

Electromagnetic Interference (EMI) is an unwanted disturbance. Due to this, necessary prevention should be taken. This report describes a study on the magnetic shielding of EMI emitted from a step down transformer. Gaussmeter with frequency range 30 to 300Hz is used to measure the strayed magnetic field. Various experimentations had been conducted in terms of shielding materials, methods and locations. From the experiments, the most suitable material that provides the best shielding effectiveness could be discovered. Results indicated that the material with high permeability value and suitable thickness is the most important factor for proper magnetic shielding.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Electromagnetic Interference (EMI) is an electromagnetic disturbance that can cause degradation of performance to any system, device or equipment it interferes [1]. From this simple definition, the understanding of this project can be started and explored. However, before the main idea is read, it is good to know the historical event of the subject.

The EMI of one particular system on another part of itself or some other systems is known since work on electrical systems started about a century ago [2]. It became source of interest during World War II. The necessity of hundred percent efficiency of targeting to enemy has proved it [3]. Nowadays, it becomes environmental concern, as much electronic equipment is widely used in our daily life [4]. Probably, it will be the top priority subject in near future if the current trend in the use of electronic devices is taken into consideration.

The EMI can cause disturbance to peripheral apparatus via radiation or conduction. EMI that is radiated to the air will induce to the circuits or systems that contain loops or like structure and disrupt the systems. Whilst, the conducted EMI transmit through main power supply and thus corrupt the supply. Any other electric circuits or systems that share the same main power supply will also be affected by the conducted EMI [2]. The conducted EMI also appears when radiated EMI is picked up by the interconnecting cables of the main power supply. Some examples of potential effect of EMI are interference to television and radio reception, malfunction of critical process control function (e.g. oil or