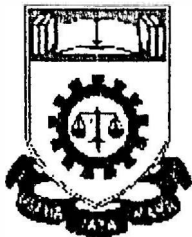


MAGNETIC FIELD DISTORTION DETECTOR

**This is presented fulfillment for the award of the
Bachelor of Electrical Engineering (Honours)
INSTITUT TEKNOLOGI MARA**



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ABSTRACT

It is essential for developers and users to detect the distortion of any magnetic field. This project presents the development of an ultrasensitive magnetic field distortion detector system. The system consists of sensor, voltage limiting circuit, amplifier and speaker. Other application will be in military as a radar replacement, it may also be used in power system engineering environments like detector of underground wire cable. Major magnetic disturbances caused by heavy solar activity are therefore obviously easily detected. The hardware designed is presented and the empirical experiment had been carried to compare with the theoretical results. This development is able to detect any magnetic field emitted by ferrous object.

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CHAPTER 1

1.0 INTRODUCTION

Magnetic wave or electromagnetic field is widely used in the industrial, medical environment, military, power system application and other relevant fields/disciplines. This is used in sensing sensitive magnetic distortion. The strength of this field measured at ground level varies between 19 and 54 A/m depending on the place and time [1]. The sensing of high-amplitude disturbances called 'magnetic storm', normally begin with a sudden increase in the horizontal component of the field.

The device was designed essentially for the purpose of characterizing the source of a disturbance and measuring the effects of the resulting disturbance on the equipment-undergoing test. The characterization of the source requires the measurement of either high voltage or heavy-current pulses delivered by injector or for radiated wave tests, measurement of the electromagnetic fields produced by simulators or generated by them within structure subjected to their effect [3]. The determination of the effects of the disturbances require the measurement of voltage and current pulses [3].

This report describes the development of magnetic field detector circuit. The overall system block diagram is confined of modular circuitry include, sensor, voltage limiting circuit, amplifier circuit, voltmeter and speaker. The sensing head is one of the important part that performs as a sensor consists of self inductance multi-turn coil. The others taking part in receiving the variable of signal and amplified it to the output that indicates some places have the dc field distortion [2].