

Abstract

Iman Gamal Morsi

Noise Field Measurements for Safety Use of Environmental Electronic and Electrical Equipment

This paper aims to determine the measurements for the EMF of some appliances for a healthy human subject including a variety of ELF and RF ranges and to detect the Hot Spot distance and time dependent. Two alternative methods are used for measuring the electromagnetic field and are compared with each other. The first method is by using a cell sensor device to obtain the relation between power densities electromagnetic field strength at various distances from the objects. The second method depends on a hardware design, by using the Hall Effect sensor SS46 and PIC 16F 877A microcontroller for electromagnetic field measuring and monitoring. The measured values are collected from the sensor, and transmitted to the computer through the RS232 serial port. The results of the electromagnetic field measurement are compared against the results of the cell sensor device which are illustrated in the paper. The results of measurements are compared to FCC and ICNIRP guidelines for limiting time exposure. The results of measurements concerning a threshold Hot Spot using appliances in home and working environment presents the limit of safe exposures as a function of time.