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Experimental Investigation of the Effect of Magnetic and Electric Fields of High Voltage Transmission Line on Human Body

S. Mousa^{1*}, M. Albakoush², I. Anageem³, A. Eldieb⁴

Department of Electrical and Electronic Engineering, Faculty of Engineering, Sabratha University, Libya^{1,3,4}

, Department of Electrical and Electronic Engineering, Faculty of Engineering, Zawia University, Libya²

salahmousa@hotmail.com¹, maoloud2018@gmail.com², ana_geem@hotmail.com³

ABSTRACT

This paper illustrates the effect of magnetic and electric fields on human body due to the pollution caused by 400 kV high voltage power lines in Sabratha province in Libya. An experimental work was carried out in aforementioned area, a variations in electric fields and magnetic fields were noticed based on the distances from the center of the tower, since small values of electric fields were noticed close to the tower could be due to parasitic capacitances, a higher values in the mid distance between the towers were also observed. As far as for the magnetic fields, an ELF Field Strength Measurement System (Hi-3604) meter was used, similar results were found since the magnetic field intensity increase or decrease based on the distance from zero point (tower center). The achieved results are useful as a measure for the impact of the magnetic and electric fields densities on the human body at the ground level under or in the vicinity of the high voltage transmission line and under the safety limits recommendations of international committee. Finally, the measurement results were compared with computer simulation using the MATLAB.

Keywords. Electric field, magnetic field, human body, tower center and transmission line.