

Electromagnetic Fields Characterization of an Urban Area in Lagos De Moreno Mexico and Its Correlation with Public Health Hazards

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Abstract : This paper reports a spectral analysis of the exposure levels of radiofrequency electromagnetic fields originating from a wide variety of telecommunications sources present in an urban area of Lagos de Moreno, Jalisco, Mexico. The electromagnetic characterization of the urban zone under study was carried out by measurements in 118 sites. Measurements of TETRA, ISM434, LTE800, ISM868, GSM900, GSM1800, 3G UMTS, 4G UMTS, Wlan2.4, LTE2.6, DECT, VHF Television and FM radio signals were performed at distances ranging over 10 to 1000m from 87 broadcasting towers concentrated in an urban area of about 3 hectares. The aim of these measurements is the evaluation of the electromagnetic fields power levels generated by communication systems because of their interaction with the human body. We found that in certain regions the general public exposure limits determined by ICNIRP (International Commission of Non Ionizing Radiation Protection) are overpassed from 5% up to 61% of the upper values, indicating an imminent health public hazard, whereas in other regions we found that these limits are not overpassed. This work proposes an electromagnetic pollution classification for urban zones according with ICNIRP standards. We conclude that the urban zone under study presents diverse levels of pollution and that in certain regions an electromagnetic shielding solution is needed in order to safeguard the health of the population that lives there. A practical solution in the form of paint coatings and fiber curtains for the buildings present in this zone is also proposed.

Keywords : electromagnetic field, telecommunication systems, electropollution, health hazards

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