



Specific Absorption Rate Measurement various Frequencies of Mobile Phones

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Specific Absorption Rate (SAR) is one of the important issues in the field of EMI and EMC since twentieth century. SAR is a measurement of the rate at which energy is absorbed by an object when exposed to an electromagnetic field. SAR is usually averaged either over a small sample volume (1 g or 10 g of tissue) or over the whole body. SAR measurements system has been developed for testing of Mobile phone frequencies in a brain phantom material. The volume of the box was chosen as corresponding to the volume of a small rat and illuminated by a 2G and 3G mobile phone frequencies. An induced field measurement was performed in the box containing the brain phantom. The phantom consists of frequency-specific fluids with known electrical properties (dielectric constant and conductivity), [1, 2] close to the average of gray and white matters of the brain in the frequency of interest. An induced field was measured using a specially designed monopole probe, immersed in the phantom material. Induced fields in various locations were measured at different depth of the phantom.

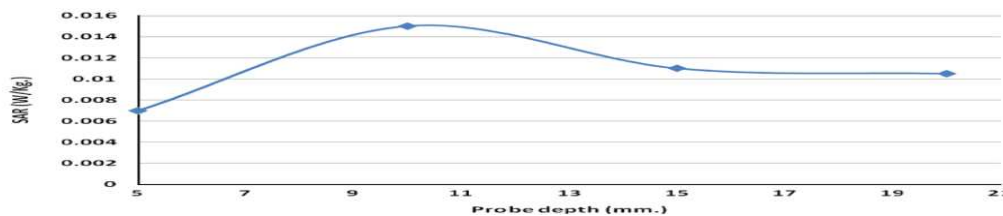


Fig. 1. SAR measurement in 10 gm of brain phantom at various locations

The measurement of induced field for computation of SAR.

$$SAR = \sigma E^2 / \rho \text{ -----(1)}$$

σ = Conductivity of Tissues

E_{RMS} = Induced Electric field

ρ = Density of Tissues

- 1- Behari J and Jayprakash (2012) .SAR Measurement due to Mobile Phone exposure in a Simulated Biological Media Electromagnetic biology & medicine
- 2- Paulraj R and Behari J. (2011). Effects of low level Microwave Radiation on Carcinogenesis in Swiss Albino Mice. Molecular and Cellular Biochemistry 348; 191-197.