Abstracts

Heat Potential Distribution in an Inhomogeneous Spherical Model of a Cranial Structure Exposed to Microwaves Due to Loop or Dipole Antennas

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An inhomogeneous spherical model of a 3.3-cm radius cranial structure is assumed to be placed symmetically in the near field of a small loop antenna or an electrical dipole antenna at 3 GHz. The transitions between the layers are taken to be sharp but sinusoidal. Calculations of the heat potential are performed using a spherical wave expansion technique in which linear differential equations are solved for the unknown multipole coefficients. The results are also compared with the plane-wave excitations. It is seen that a more uniform distribution of the heat potential occurs for the dipole antenna excitation which is also similar to the E-plane distribution in the case of plane-wave excitation. For the loop excitation, a significant hot spot occurs near the center of the structure.

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