Abstracts

Induced Fields and Heating Within a Cranial Structure Irradiated by an Electromagnetic Plane Wave

A.R. Shapiro, R.F. Lutomirski and H.T. Yura. "Induced Fields and Heating Within a Cranial Structure Irradiated by an Electromagnetic Plane Wave." 1971 Transactions on Microwave Theory and Techniques 19.2 (Feb. 1971 [T-MTT] (Special Issue on Biological Effects of Microwaves)): 187-196.

The induced fields and the static heating patterns within a multilayered spherical model that approximates the primate cranial structure irradiated by plane waves in the microwave spectrum are calculated. The relation of the model to the biological structure and the sensitivity of the results to the uncertainties in the dimensions and electrical properties of biological material are investigated. A method of solution for both the scattered and the interior fields for a sphere with an arbitrary number of electrically different concentric layers is developed in a form readily amenable to machine computation. It is shown that the semi-infinite slab model is inappropriate for calculating the microwave radiation dosage for the human head and similar structures.

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