Abstracts

Currents Induced in an Anatomically Based Model of a Human for Exposure to Vertically Polarized Electromagnetic Pulses

J.-Y. Chen and O.P. Gandhi. "Currents Induced in an Anatomically Based Model of a Human for Exposure to Vertically Polarized Electromagnetic Pulses." 1991 Transactions on Microwave Theory and Techniques 39.1 (Jan. 1991 [T-MTT]): 31-39.

The finite-difference time-domain (FDTD) technique is used to calculate the internal fields and the induced current densities in anatomically based models of a human using 5628 or 45024 cubical cells of dimensions 2.62 and 1.31 cm, respectively. A layer of dielectric constant epsilon/sub r/ = 4.2 and thickness 2.62 cm is assumed under the feet to simulate a human wearing rubber soled shoes. The total induced currents for the various sections of the body and the specific absorption for several organs are given for two representative electromagnetic pulses. The calculated results for the induced currents are in excellent agreement with the data measured for a human subject. The FDTD method is ideally suited for exact representation of the pulse shapes and offers numerical efficiency to allow detailed modeling of the human body and the various organs.

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