Abstracts

Electromagnetic Fields and Power Deposition in Body-of-Revolution Models of Man

T.-K. Wu. "Electromagnetic Fields and Power Deposition in Body-of-Revolution Models of Man." 1979 Transactions on Microwave Theory and Techniques 27.3 (Mar. 1979 [T-MTT]): 279-283.

Internal electromagnetic (EM) fields and power absorption in a homogeneous lossy dielectric body of revolution are evaluated using the surface integral equation method. The method yields moment method solutions for the induced current densities on the body surface. The interior fields to the body are then evafuated via the reciprocity theorem and the measurement matrix concept. The bulk body power deposition is obtained by the integration of the surface Poynting vector. The method applies for a wide range of dielectric parameters (with epsilon/sub r/ from 1.1 to 10^2 and sigma from 0 to 10^3 mhos/m) in the resonance region. Numerical results for EM fields and power deposition in a body-of-revolution model of a human torso with height of 1.78 m are evaluated for frequencies of 30, 80, and 300 MHz. It is found that the strongest power deposition in the torso model occurs for fields polarized along the longest dimension and for frequencies near the first resonance (i.e., 80 MHz) of the torso body. Hot spots are also observed in the neck region of the torso body.

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