Abstracts

Power Deposition in a Spherical Model of Man Exposed to 1-20-MHz Electromagnetic Fields (Dec. 1973 [T-MTT])

J.C. Lin, A.W. Guy and C.C. Johnson. "Power Deposition in a Spherical Model of Man Exposed to 1-20-MHz Electromagnetic Fields (Dec. 1973 [T-MTT])." 1973 Transactions on Microwave Theory and Techniques 21.12 (Dec. 1973 [T-MTT] (1973 Symposium Issue)): 791-797.

The induced fields and the associated power deposition in mail exposed to HF electromagnetic (EM) fields have been investigated theoretically using spherical models. The induced electric fields inside the model exposed to either plane wave or near fields can be described adequately by a combination of quasi-static electric and magnetic induction solutions. It is shown that for field impedances less than 1200 pi Omega the magnetically induced energy absorption predominates. Therefore, H fields must be measured to obtain any estimate of the hazards due to HF exposure. For a 70-kg model of man exposed to a plane wave field, the theory indicates that the time-average power absorption per unit volume is less than 2.5x10/sup -3/ mW/g for each milliwatt per square centimeter incident at 20 MHz and below. This suggests that the thermal safe-exposure levels for the HF band are many orders of magnitude in excess of the 10-mW/cm² level recommended for the microwave region.

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