Abstracts

Evaluation of electromagnetic interference from a cellular telephone with a hearing aid

K. Caputa, M.A. Stuchly, M. Skopec, H.I. Bassen, P. Ruggera and M. Kanda. "Evaluation of electromagnetic interference from a cellular telephone with a hearing aid." 2000 Transactions on Microwave Theory and Techniques 48.11 (Nov. 2000, Part II [T-MTT] (Special Issue on Medical Application and Biological Effects of RF/Microwaves)): 2148-2154.

In a collaborative effort, electromagnetic interference (EMI) is evaluated from a global system for mobile communication telephone with one model of a hearing aid used in the ear canal. Since the electromagnetic fields cannot be measured in the ear canal, a reliable method of their modeling with the finite-difference time-domain method is established. Very good agreement has been achieved between the measured and computed electric and magnetic fields in free space in very close proximity to the telephone. Subsequently, electric and magnetic fields in the ear canal are computed for two models of the ear, and three positions of the telephone. The computed fields are compared with the acoustic measurements for a small number of humans subjected to the EMI test.

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