Abstracts

Effect of Separation from Ground on Human Whole-Body RF Absorption Rates

D.A. Hill. "Effect of Separation from Ground on Human Whole-Body RF Absorption Rates." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 772-778.

Whole-body absorption rates of human volunteers exposed in E-polarization are reported as a function of the separation between the subject's feet and the ground plane. Little difference is observed between the results for the EKH and EHK orientations. At frequencies below the grounded resonance (7 to 25 MHz), and air gap of 3 to 6 mm reduces the absorption rate to half the grounded rate. On the other hand, near the grounded resonance (at 40.68 MHz), an air gap of 50 to 80 mm is required for the same effect. Typical footwear provides some radiation protection by reducing the RF absorption rate by approximately 50 percent at below-resonance frequencies, or 20 percent at near-resonance frequencies. Experiments with different dielectric materials between the soles of the feet and the ground plane support the idea that those two surfaces effectively form a parallel-plate capacitor. The experimental results are compared to the predictions of the cylinder and block-model calculations.

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