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## **MEASURING INDUCED FOOT CURRENTS CAUSED BY RADIOFREQUENCY ELECTROMAGNETIC FIELDS EXPOSURE OF MANPACK RADIO TRANSCEIVERS USERS**

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### **Abstract**

In order to limit personnel exposure to electromagnetic fields, safety standards provide among others, limitations in terms of induced currents in limbs, which is the measurable quantity allowing the evaluation of thermal load in limbs in the real conditions of electromagnetic radiofrequency exposure. Using a clamp-on current meter, eleven subjects were measured for current passing through their feet during the use of backpacked radio equipment, configured in various operating modes while using a monopole antenna of 122 cm length. Measurements were performed in the near-field zone of the radio source emitting electromagnetic fields of 30-108 MHz frequency, including indoor and outdoor measurement scenarios, as well as different working positions and operating modes. We have analyzed the way that induced current varies with respect to different exposure scenario variables to develop better understanding what parameters of exposure scenario have significant influence on limb thermal load in exposed person, what is useful in direct evaluation of exposure hazards, design of protection actions and validation of numerical models designed to mimic exposure scenario and evaluate thermal load by in-silico measurements (with respect to SAR values or limb currents). We have measured higher values of induced currents with indoor measurements (what indicate the elevated risk from exposure in multi-path propagation condition), for fixed frequency mode of emission and upright standing posture of user. We've also found that the height of exposed subject itself do not sufficiently characterize exposure scenario with respect to foot current inter-person variability.

*Key words:* dosimetric reference limits, electromagnetic field, human exposure, induced foot currents, reference levels/action levels

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