

## **On the Challenge of Defining Conservative Specific Absorption Rate Assessment Procedures**

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During a communication with a handheld or body-worn wireless device, biological tissues of the user are exposed to electromagnetic field energy. At frequencies used by mobile phones or other commercial communicating devices, the radiofrequency power absorbed by the tissues is usually quantified in terms of Specific Absorption Rate (SAR). Limits of SAR averaged over the whole-body or locally over 1g or 10 gram of tissue (peak spatial-average) are established in international exposure guidelines/standards. Methods for assessing the peak spatial-average SAR are defined in international measurement standards which have been widely adopted by national regulators as means for demonstrating compliance of devices with exposure limits.

SAR measurement standards aim at defining conservative assessment procedures, i.e. designed in the intent of delivering an overestimate with respect to the SAR in a significant majority of users and real-life human exposure conditions. However, taking into account the multiplicity of such conditions including the variability in anatomies and device-user relative positions remains a challenge. The author here proposes to give an overview on the extent of this challenge and introduce some recent considerations on the conservativeness of existing SAR assessment procedures. In particular, the latest results from investigations on the impact of the hand on head SAR are reviewed and the relevance of accounting for the hand effect in SAR measurement of mobile phones is discussed.



### **Biography - Benoît Derat**

Benoît Derat was born in Drancy, France, in 1979. He received the Engineer degree from the Ecole Supérieure d'Electricité (Supélec), Gif-sur-Yvette, France, in 2002, and the Ph. D. degree in Physics from the University of Paris XI, Orsay, France, in 2006, in collaboration with the mobile phones R&D Department of SAGEM Communication, Cergy-Pontoise, France. From 2006 to 2008, he worked for SAGEM Mobiles R&D as a research engineer and expert in analytical and numerical modeling of electromagnetic radiation and near-field interactions. In 2009, he then founded the FIELD IMAGING S.A.R.L. company, providing services in his areas of expertise. His research interests include small antenna design and measurement, 3-D electromagnetic simulation, near-field power dissipation mechanisms and Specific Absorption Rate (SAR) measurement and computation. Dr. Derat is currently an active member of the IEC MT62209 and ICES TC34 SC2.