Biography of Koichi Ito

Koichi Ito received the B.S. and M.S. degrees from Chiba University, Chiba, Japan and the D.E. degree from the Tokyo Institute of Technology, Tokyo, Japan. He is currently a Professor at the Graduate School of Engineering and Director of Research Center for Frontier Medical Engineering, Chiba University. His main research interests include analysis and design of printed antennas and small antennas for mobile communications, research on evaluation of the interaction between electromagnetic fields and the human body by use of numerical and experimental phantoms, microwave antennas for medical applications such as cancer treatment, and antenna systems for human-body communications. He has co-authored over 120 journal papers with review and nine books including Handbook of Microstrip Antennas (IEE, 1989) and Antennas and Propagation for Body-Centric Wireless Communications (Artech House, 2006).

Dr. Ito is a Fellow of the IEEE, a Fellow of the IEICE (Institute of Electronics, Information and Communication Engineers, Japan). He served as Chair of the Technical Committee on Human Phantoms for Electromagnetics, IEICE, Chair of the IEEE AP-S Japan Chapter, TPC Co-Chair of the 2006 IEEE International Workshop on Antenna Technology (iWAT2006), Vice-Chair of the 2007 International Symposium on Antennas and Propagation (ISAP2007), General Chair of iWAT2008 and Co-Chair of ISAP2008. He currently serves as an Associate Editor for the IEEE Transactions on Antennas and Propagation, a Distinguished Lecturer and an AdCom member for the IEEE Antennas and Propagation Society, Chair of the Technical Committee on Antennas and Propagation, IEICE and Chair of ISAP2012 to be held in Japan

"Electric field distributions around the human body generated by a small wearable antenna"

ABSTRACT: In recent years, a study on body-centric wireless communications has become an important and active area of research because of their various applications such as e-healthcare, indoor security systems, personal communications, and so on. Frequencies used for body-centric wireless communications widely range from MHz to GHz. In this paper, to bring objective and unified idea on the frequency dependence, electric field distributions around the human body wearing a small antenna in a range of 2.5 MHz to 2.5 GHz are numerically calculated. The results show that behavior of the electric field distributions around the human body could be divided into two ranges; below 100 MHz and above 250 MHz. These data would be useful to choose appropriate frequency range for specific applications.

Then, influences of the ground as well as different posture of the human body on the electric field distributions are numerically investigated over the wide frequency range.

Finally, calculated results of some useful parameters at HF band are demonstrated for a practical situation of touching a receiver attached to the wall at the security door.

Koichi Ito

Chiba University, Japan