

Title: Latest Progress in RFID Tag and Reader Antennas

Speaker:

Prof. Zhi Ning Chen
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Date: Thursday, 20 May 2010

Time: 10:30 am – 11:30 am

Venue: Lecture Theatre B, Chow Yei Ching Building

Abstract:

Radio frequency identification (RFID) technology has been rapidly developing in recent years and the applications have been found in service industries, distribution logistics, manufacturing companies, and goods flow systems. Antenna design for readers and tags is one of the key factors for RFID systems. The reading range and detection accuracy are directly dependent on the performance of both tag and reader antennas. The optimized antenna design will benefit the RFID systems with longer reading range, better detection accuracy, lower fabrication cost, and simple system configuration and implementation.

This talk will start with a brief introduction of RFID systems which may be active, passive, semi-active systems and operate at LF, HF, UHF, and MW. Then the key considerations related to the antenna design for tags, station readers and handheld readers will be addressed from system perspectives. After that, the design issues related to reader antennas will be discussed in detail. The discussion will cover the specific challenges for antennas in the systems of HF near-field, UHF near-field, UHF far-field, hybrid HF/UHF near/far field. Also, the design challenges of tag antennas will be elaborated such as impedance matching and characterization, platform effect, package effect, lossy/conductive object effect, etc. In the talk, the discussion will be with latest progress in corresponding practical design cases such UHF near field antenna design.

Biography of the speaker:

Dr Zhi Ning Chen received his BEng, MEng, PhDs degrees in Electrical Engineering from Institute of Communications Engineering (ICE), China and University of Tsukuba, Japan, respectively. During 1988-1995, he worked at ICE as Teaching Assistant, Lecturer and Associate Professor as well as Southeast University, China as Postdoctoral Fellow and later Associate Professor. During 1995-1997, he joined in City University of Hong Kong, China as Research Assistant and later Research Fellow. In 1997, he was awarded JSPS Fellowship to conduct his research at University of Tsukuba, Japan. In 2001 and 2004, he visited University of Tsukuba under JSPS Fellowship Program (senior level). In 2004, he worked at IBM T. J. Watson Research Center, USA as Academic Visitor. Since 1999, he has worked with Institute for Infocomm Research (formerly known as Center for Wireless Communications and Institute for Communication Research) as Member of Technical Staff (MTS), Principal MTS, Senior Scientist, and Lead Scientist. He is currently appointed as Principal Scientist and Department Head for RF & Optical and concurrently Adjunct/Guest Professors at Southeast University, Nanjing University, Shanghai Jiao Tong University, Tongji University and National University of Singapore.

Prof Chen has organized many international technical events as general chairs,

technical program committee chairs, and key members of organizing committees. He is the founder of International Workshop on Antenna Technology (iWAT). He has published 270 journal and conference papers as well as authored and edited books entitled Broadband Planar Antennas, UWB Wireless Communication, Antennas for Portable Devices and Antennas for Base Station in Wireless Communications. He also contributed to the books of UWB Antennas and Propagation for Communications, Rader, and Imaging as well as Antenna Engineering Handbook. He is holding 25 granted and filed patents with 15 licensed deals with industry. He is the recipient of the CST University Publication Award 2008, IEEE AP-S Honorable Mention Student Paper Contest 2008, IES Prestigious Engineering Achievement Award 2006, I2R Quarterly Best Paper Award 2004, and IEEE iWAT 2005 Best Poster Award.

His current research interest includes applied electromagnetics, antennas and RF components for applications of microwave, mmW, submmW, and THz in wireless systems.

Prof Chen is a Fellow of IEEE for his contribution to small and broadband antennas for wireless applications and IEEE AP-S Distinguished Lecturer. (www1.i2r.a-star.edu.sg/~chenzn).

Organizer: Dr. L. Jiang