

Biographies of Zhi Ning Chen and Xianming Qing



Zhi Ning Chen is Principal Scientist and Head of RF and Optical Department of Institute for Infocomm Research, A*STAR, Singapore. He has over 20 years experience in applied EM research and antenna engineering. He has published 270 papers plus four books and filed 19 patents as well as won the awards of best papers and engineering achievement. His research interests include antennas for communications, imaging, and radar systems at a frequency range from HF to THz. He has served on the organization of many international events as key organizers. He is Fellow of IEEE and IEEE AP-S Distinguished Lecturer (2008-2010).



Xianming Qing is Research Scientist and Leader of Antenna Group of Institute for Infocomm Research, A*STAR, Singapore. He has over 20 years experience in microwave and antenna engineering. He has published over 60 papers and four book chapters. He has filed six patents as well as won eight awards of engineering achievement. His research interests include RFID reader/tag antennas, ultra-wideband (UWB) antennas, antenna measurement technology, and antenna co-design.

“Antennas for RFID Applications”

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. In addition, other important engineering factors such as environment effect, size constraints, cost constraints, etc. will be mentioned. Last, the design challenges of tag antennas will be elaborated such as impedance matching and characterization, platform effect, package effect, lossy/conductive object effect, etc. Two important design methods, namely co-designing tag antenna with environments and platform tolerant tag antenna design, for alleviating platform effect on the tag performance will be presented. Also, the other engineering issues such as size constraints and cost constraints etc. will be discussed. In the talk, the discussion will be with corresponding practical design cases.

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