RFID: A UNIQUE RADIO INNOVATION FOR THE 21ST CENTURY
Edited by R. Gadhi, G. Roussos, K. Michael, G. Q. Huang, B. S. Prabhu, and P. Chu

1550 Shunt Behavior in RFID UHF Tag According to ISO Standards and Manufacturer Requirements
By A. Moretto, E. Colin, C. Ripoll, and S. Abou Chakra
[CONTRIBUTED PAPER] Modeling and simulation are used to investigate loading effects and their implications for RFID antenna performance; a model of shunt resistance is used to calculate improved performance in hostile environments.

1555 Electromagnetic Modeling of RFID-Modulated Scattering Mechanism. Application to Tag Performance Evaluation
By J. C. Bolomey, S. Capdevilla, L. Jofre, and J. Romeu
[CONTRIBUTED PAPER] The authors of this paper use the concept of transfer impedance to characterize RFID systems; they demonstrate how their model can be used to investigate tradeoffs in RFID design.

1570 Ultrawide Bandwidth RFID: The Next Generation?
By D. Dardari, R. D’Errico, C. Roblin, A. Sibille, and M. Z. Win
[CONTRIBUTED PAPER] Ultrawideband technology is seen to be a promising means to provide improved area coverage, better resilience to interference, high multiple-access capability, and ranging resolution to RFID systems.

1583 RFID: From Supply Chains to Sensor Nets
By S. Roy, V. Jandhyala, J. R. Smith, D. J. Wetherall, B. P. Otis, R. Chakraborty, M. Buettnor, D. J. Yeager, Y.-C. Ko, and A. P. Sample
[CONTRIBUTED PAPER] A programmable wireless identification and sensing device is powered through energy harvesting and a software-defined RFID reader provides the means to investigate optimization approaches for RFID systems.

1593 Low-Cost, Ubiquitous RFID-Tag-Antenna-Based Sensing
By R. Bhattacharyya, C. Floerkemeier, and S. Sarma
[CONTRIBUTED PAPER] The authors of this paper propose a means for providing low-cost, long-lifetime temperature-threshold sensing, displacement sensing.
SPECIAL ISSUE: RFID: A UNIQUE RADIO INNOVATION FOR THE 21ST CENTURY

1620 Vibration Energy Harvesting for Disaster Asset Monitoring Using Active RFID Tags
By A. Hande, R. Bridgelall, and B. Zoghi
 CONTRIBUTED PAPER | Using highly efficient procedures, piezoelectric vibration energy has been harvested with an energy transducer, power management circuit, and energy storage device, and a comprehensive description has been developed.

1629 Long Range Passive UHF RFID System Using HVAC Ducts
By P. V. Nikitin, D. D. Arumugam, M. J. Chabalko, B. E. Henty, and D. D. Stancil
 INVITED PAPER | To provide a potential communications channel, HVAC ducts can function as electromagnetic waveguides; a 30-m read range has been achieved within a free space range of 6 m.

1636 Logical RFID Reader Using Hybrid Active–Passive Solution
 CONTRIBUTED PAPER | A novel logical reader has been implemented by combining tracking information from passive RFID and position information from active RFID; this provides low-cost, fine-grain, near real-time tracking.

1648 Antennas and Propagation of Implanted RFID for Pervasive Healthcare Applications
By A. Sani, M. Rajah, R. Foster, and Y. Hao
 CONTRIBUTED PAPER | Active subcutaneous tag antennas were found to have advantages over passive devices in communication range, and in coping with nulls in the radiation patterns.

1656 Dual-Frequency Active RFID Solution for Tracking Patients in a Children’s Hospital. Design Method, Test Procedure, Risk Analysis, and Technical Solution
By G. B. Gentili, F. Dori, and E. Iadanza
 CONTRIBUTED PAPER | A tracking device that performs active patient identification in a pediatric intensive care unit is found to have distinct advantages over passive devices.

1663 Planetary-Scale RFID Services in an Age of Ubervellance
By K. Michael, G. Roussos, G. Q. Huang, A. Chattopadhyay, R. Gadh, B. S. Prabh, and P. Chu
 CONTRIBUTED PAPER | This paper discusses possible futures for RFID, including an alternative to bar code tagging, and outlines a vision of a future RFID product service system.

1672 Unpacking the RFID Investment Decision
By B. W. Keating, T. R. Colman, S. Fosso-Wamba, and V. Baker
 CONTRIBUTED PAPER | A recent study dealing with RFID investment decisions finds that while adoption cost is a primary concern, a key factor is the opportunity for strategic benefits.