IEEE Journal of Radio Frequency Identification

Special Issue on

RFID for Circular Economy and Sustainable Innovation

As the global focus on sustainability intensifies, RFID technologies (including RAIN, NFC, LF, etc.) present significant opportunities to enhance environmental stewardship by enabling greater supply chain efficiency, circularity, and waste reduction. This special issue aims to explore two critical dimensions of sustainability in the context of RFID: (1) leveraging RFID to drive sustainable supply chains and product lifecycles, and (2) advancing research into more eco-friendly RFID tags and labels. The goal is to gather research that demonstrates how RFID can support sustainable business practices—such as optimizing inventory, tracking carbon footprints, and improving recycling processes—alongside innovations focused on reducing the environmental impact of RFID technology itself through sustainable materials and manufacturing methods. Research papers, surveys and descriptions of successful industrial case studies are encouraged on, but not limited to, the following relevant topics related to RFID and sustainability:

Enabling Sustainability with RFID

- Strategies for using RFID technology to support circular economy initiatives across various industries.
- Researching how different Industries (e.g., apparel & general merchandise, logistics, food, healthcare, industrial, etc.) are leveraging RFID for sustainability.
- Tracking and reducing product footprint through RFID-enabled monitoring of product lifecycle.
- Tools and frameworks for measuring the environmental return of investment (ROI) of implementing RFID solutions.
- Innovations that enable mobile RFID reading to provide consumers with real-time access to product lifecycle data, recycling/reuse instructions, and environmental impact information.
- Integrating RFID with AI and ML for predictive analytics, sustainability insights, and optimization of resource usage.
- Case studies on reducing waste and supporting reverse logistics with RFID.
- RFID applications in textile and packaging waste management, including collection, sortation, reuse, repair, resale, and recycling.

Developing Sustainable RFID Tags and Labels

- Innovations in recyclable, compostable, and eco-friendly RFID tag and label materials.
- Developing greener antenna manufacturing processes, such as die-cutting, printing, additive manufacturing, to minimize environmental impact.
- Exploring alternative antenna materials such as conductive polymers, graphene, and paper-based or plastic substrates that preserve the recyclability of tagged items and support sustainable lifecycle management.
- Designing RFID systems that align with recyclability of RFID-embedded products embedded tags (e.g., apparel, packages, plastic items, tools etc.)
- Strategies for improving the lifecycle sustainability of RFID tags, including design for disassembly and reuse.

SUBMISSION DEADLINE: **JUNE 30, 2025**

As soon as the authors of the accepted papers submit the final files, their manuscript will be published on IEEE Xplore as a paper under the Topic "RFID for Circular Economy and Sustainable Innovation"

GUEST EDITORS:

Dr. Samin Aayanifard	Research Engineer, Impinj, Seattle, US (saayanifard@impinj.com)
Dr. Megan Brewster	VP Advanced Technology, Impinj, Seattle, US (mbrewster@impinj.com)
Prof. Alice Buffi	Department of Energy, Systems, Territory and Construction Engineering (DESTeC), University of Pisa, Pisa, Italy (alice.buffi@unipi.it). CRFID VP Publications
Prof. Marcos R. Pino	Electrical Engineering Dep., University of Oviedo, Oviedo, Spain (mpino@uniovi.es)

Submission Guidelines: Authors are requested to submit their original manuscripts through the IEEE Author Portal, according to the format available at https://journals.ieeeauthorcenter.ieee.org/. While authors are submitting their manuscript they are required to select the present Special Issue among the running ones, by selecting the following TYPE: "**RFID for Circular Economy and Sustainable Innovation**"

About the Journal: IEEE Journal of Radio Frequency Identification (JRFID) is the flagship journal (Hybrid Open Access) of the IEEE CRFID). JRFID has achieved remarkable success and outstanding metrics, solidifying its position as a leading publication in the field of the technologies for communication, localization, wireless power transfer and sensing.

JRFID metrics: 2023 IF: **2.7**; 2023 Cite Score: **5.7.** JRFID has also excelled in publication timeliness (average on past 12 months): Weeks Submitted to First Decision: **5.1 weeks**; Weeks Submitted to Online Post: **13.1 weeks.**