

Near-Field Communications (NFC) in Internet-of-Everything

The development of wireless technology, exemplified by the ambitious objectives of 6G, heralds a resurgence in the utilization of higher frequencies, particularly in the low terahertz spectrum. This shift promises an era characterized by rapid data transmission and enhanced energy-efficiency. A critical element in this transformation is near-field communication (NFC), which has been reshaping how devices communicate, especially when the distance between the receiver and transmitter is closer than the traditional Fraunhofer far-field distance. The introduction of extremely large aperture arrays (ELAA) has significantly extended the communication range of NFC. However, it replaces the standard planar wavefronts at the receiver with more complex spherical wavefronts.

The next generation of mobile communication is expected to bring more convenient, efficient, and secure transmission, while also promoting continuous innovation and development in the consumer electronics industry. These technological advancements hold profound implications for Internet of Everything (IoE), advocating a future of seamless interaction among smart devices, as well as improved localization, sensing, and communication capabilities. This Special Section of the IEEE Internet of Things Journal aims to illuminate the transformative potential of NFC in revolutionizing massive smart devices interactions.

Topics of interest in this Special Section include (but are not limited to):

- Power management in NFC devices
- The design of ELAA in NFC
- Applications of NFC in IoT
- Enhancing security and privacy in NFC-enabled devices
- The role of ELAAs in mitigating challenges in NFC-based IoE
- Integrating NFC within smart homes: Challenges and prospects
- NFC's influence on personal device communications: Smartphones, wearables, and beyond
- NFC's interplay with other emerging technologies: AI, IoT, and holographic surfaces
- Standardization, regulatory, and policy considerations for NFC
- Robust transmission design/optimization for NFC in IoE
- Security and privacy for NFC in IoE
- Experimental results and testbed implementations of NFC in IoE
- Use of next generation multiple access (NGMA) for NFC in IoE

Important Dates:

- Submissions Deadline: December 15th, 2024
- First Reviews Due: February 1st, 2025
- Revision Due: March 1st, 2025
- Second Reviews/Notification: March 31st, 2025

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- Acceptance Notification: April 15th, 2025
 - Final Manuscript Due: April 30th, 2025
 - Publication Date: July 2025

Submission Guidelines: The original manuscripts to be submitted need to follow the guidelines described at: <http://ieeetj.org/guidelinesfor-authors/>, which should not be concurrently submitted for publication in other venues. Authors should submit their manuscripts through the IEEE Manuscript Central at: <https://mc.manuscriptcentral.com/iot>. The authors must select as “SI: Near-Field Communications (NFC) in Internet-of-Everything” step in the submission process.

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