

Special Issue on
Wireless Communications using Embedded Microprocessors

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The Internet of Things (IoT) is the main driving force for the development of fifth-generation (5G) communications. IoT consists of sensors, wireless networks, and radio-frequency identification (RFID). However, the embedded system (ES) controls the operations and data processing of the IoT system. As a common sensing layer control unit of IoT, single-chip microcomputer is not only the most basic component of IoT, but also the first step to expand the technology and application of IoT. Microcomputers generally take the central processing unit (CPU) as the core, and some contain other functional chips. Microprocessor is characterized by micro, low power consumption, and low main frequency. ES is an integrated computer hardware and software system designed with specific functions, or the special-purpose microcomputer system mounted within a device for control. The defining features of ES are purpose and pertinence. Every ES is developed for special application occasions with specific functions. Wireless serial data transmission system (DTS) is widely used in modern communication systems, especially in industrial control, data transmission, and data acquisition.

The new System on a Chip (SoC) platform will provide multicore heterogeneous CPU, digital signal processor (DSP), and function specific accelerator core. This is essential to meet throughput requirements, 5G deployment delay, and flexibility. More functions will be integrated into a single SoC to deal with multiple traffic types such as payload control, plane traffic, front-end processing, and user scheduling. The more powerful the SOC is, the deeper the combination of embedded system and 5G is. 5G SOC integration mode is the development direction of the 5G chip. The embedded processor includes an embedded microprocessor (MPC), an embedded DSP, SOC, and a micro controller unit (MCU). The chip functions should be developed based on a development platform, namely, the simulation development system. Users may not be aware of the capacity limitation of the wireless communication system and send considerable amounts of data through the system, which increases the traffic load or incurs congestion. Hence, wireless communication with digital processors should have higher efficiency and faster response. The wireless communication system can be easily updated through the remote software download of relevant programs, so the application of the processor array to the base station becomes a trendy development of the processing platform. Meanwhile, due to the power and volume constraints of terminals, the high computing power processor (i.e., scalar processor and vector processor) will become the future trend.

The aim of this Special Issue is to bring together original research and review articles that discuss wireless communications using microprocessors.

Potential topics include but are not limited to the following:

- ▶ Vehicle navigation, flow control, and information monitoring based on 5G embedded auxiliary driving system
- ▶ Embedded opportunities under 5G interconnection of all things (e.g., smart wear, smart home, smart medical treatment, and smart home security)
- ▶ Embedded solution of 5G intelligent streetlamp
- ▶ Development and design of microprocessors in wireless communications
- ▶ Design of microprocessor pipeline architecture
- ▶ Instruction set design of wireless communication digital signal processor
- ▶ Intelligent agricultural sensor control microprocessor based on Internet of Things
- ▶ RF integrated circuit design and wireless communication system chip
- ▶ Design of very low power integrated circuit for wireless communication
- ▶ Design of RF integrated circuit assisted by digital circuit
- ▶ Large modulus multiplication algorithm and prime field elliptic curve cryptography chip
- ▶ Information-aware multitask processor architecture for new sensor applications
- ▶ Digital signal processing in wireless communications
- ▶ Microprocessor interface technology in wireless communications

Authors can submit their manuscripts through the Manuscript Tracking System at <https://review.hindawi.com/submit?specialIssue=663937>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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