Project Type: Master Thesis

ASIC NFC Interface for Low-Cost Smart Chemical Sensors

Short Description

The ICAS group of the IMB-CNM is investigating a new generation of low-cost smart RFID devices capable of perceiving their own environment through chemical sensors. The core of these RFIDs is a tiny (1mm²) application-specific integrated circuit (ASIC) containing the sensor analog frontend (AFE) and A/D converter, digital communication interface and remote power management. The target contactless protocol is NFC. A first ASIC prototype chip is currently being designed in 0.18-µm 1P6M mixed-signal CMOS technology.

The purpose of this Master Thesis is the development of an IP block for the digital stack of the NFC slave to be integrated in the smart RFID ASIC.

Background & skills required

- Electronic, Telecommunications or Computer Engineering (or any similar curriculum) covering the following topics: digital design, VHDL synthesis, standard-cell P&R.
- Knowledge of EDA tools and languages for semi-custom digital ASIC design.
- Capability of working as a team.
- Good spoken and written English.

Tasks

The development of the IP block for the digital stack of the NFC slave includes its VHDL synthesis and standard-cell P&R in 0.18-µm 1P6M CMOS technology, as well as the corresponding validation plan. Special attention will be paid to minimize the overall Silicon area.

Contact

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