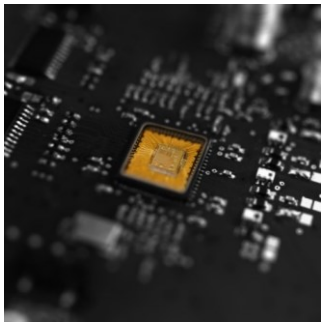
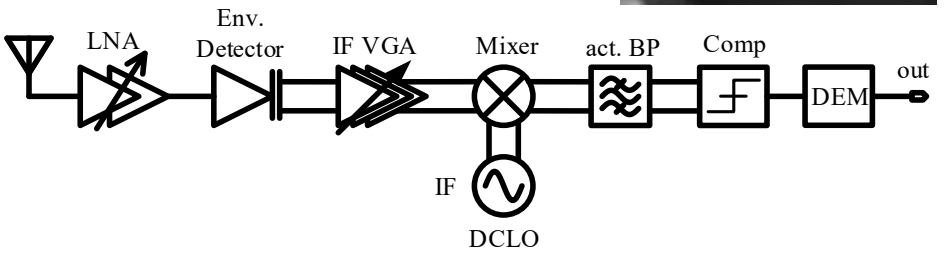
Chair of
Integrated Analog Circuits
and RF Systems

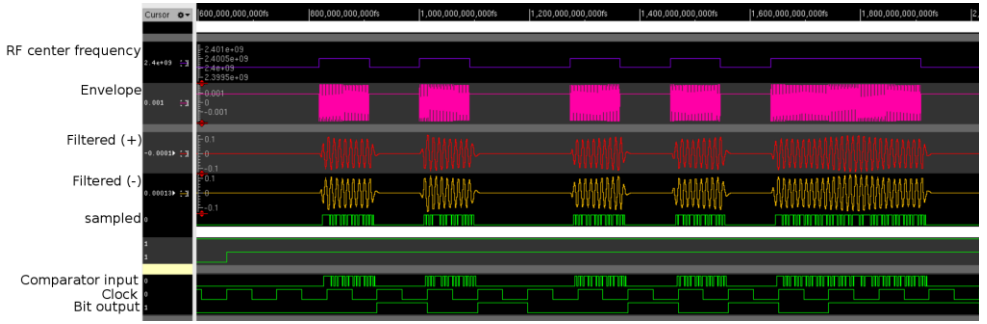
Bachelor / Master Thesis



Background

A key challenge in modern wireless mobile communications is the reduction of the energy consumption and, thus, the extension of the battery life time of mobile devices or sensor nodes of wireless sensor networks. The Wake-Up Receiver concept represents the ultimate frontier in ultra-low power communications. While the main transceiver remains in deep-sleep mode when there is no communication, the always-on Wake-Up Receiver monitors the channel for incoming communication requests. By the reception of such a request, it wakes up the main transceiver. The Wake-Up Receiver itself is a dedicated receiver with its own frontend that is specially designed for ultra-low power dissipation.





Task

The goal in designing a Wake-Up Receiver is to find the right trade-off between energy consumption and performance regarding range and robustness against interferers.

The task of this thesis would include working on a novel Wake-Up Receiver architecture and designing individual low power blocks in the frontend such as low noise amplifiers (LNA), envelope detectors, ring oscillators or filters in a modern CMOS technology.

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