Master Thesis: Design/Implementation of digital baseband receiver algorithms

Organization Description:

NXP Semiconductors N.V. (NASDAQ: NXPI) is one of the market leaders in providing High Performance Mixed Signal and Standard Product solutions that leverage its leading RF, Analog, Power Management, Interface, Security, Digital Processing and Manufacturing expertise. These innovations are used in a wide range of identification, automotive, industrial, consumer, lighting, medical and computing applications. Headquartered in Europe, the company has about 23,000 employees working in more than 25 countries. Additional information about NXP can be found by visiting www.nxp.com.

In NXP Gratkorn we design circuits which are able to transmit and receive signals through air, on various frequencies. We are continuously working on the improvement of our conformance measurement equipment in order to test these circuits against next generation product standards.

The introduction of high speed media transfer through these narrowband transmission channels requires special signal conditioning algorithms and receiver architectures. The applied methods are commonly known as signal feed forward compensation, channel identification, and channel equalization.

By writing your master thesis you will be working on the design and implementation of digital baseband receiver algorithms on state-of-the-art rapid prototyping hardware. The goal of your thesis is to refine existing digital baseband receiver algorithms and to validate their real-time functionality on FPGA hardware:

Your Responsibilities:

-Investigate and simulate the integration complexity versus performance tradeoff for a reduced fixed point resolution equalization algorithm

-Implement and validate the equalization algorithm on the rapid prototyping FPGA hardware

Your Profile:

-Good knowledge of applied digital signal processing

-Good knowledge of a programming language like VHDL or Verilog

The work is part of an innovative project in the field of next generation mobile transceivers and you will be working also in close cooperation with software and system architects, lab engineers, and master students. The result of your work will integrated in a measurement platform prepared for high speed media transfer through HF-RFID channels.

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