

Open Thesis / Project

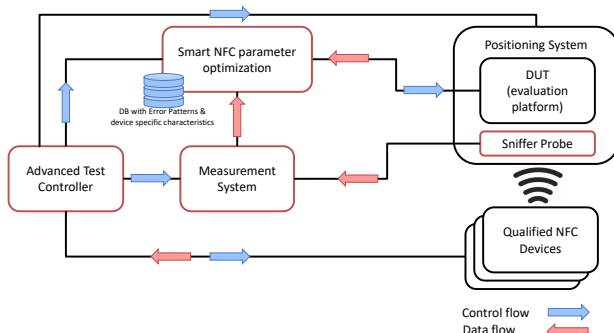
Design and Implementation of a NFC protocol decoder/analyzer

Motivation

Near Field Communication (NFC) is a wireless communication technology for convenient and secure data exchange over a short distance. Use cases can be found in a wide range of different applications like access control, payment, public transport, fare collection, data sharing, smart poster and many more. Due to the different requirements, standards and implementations of the contactless interface, interoperability can not be guaranteed.

To test interoperability in the field of secure payment the device under test performs several payment transaction at different positions for many different payment terminals. If a transaction error occurs the communication between the two NFC devices needs to be further analyzed. Besides the communication relevant parameters the protocol layer needs to be analyzed.

In this thesis, you will work with the communication protocols of secure payment applications using NFC technology. Two steps are necessary to analyze the protocol between two NFC-enabled devices. First, the generated electromagnetic field should be captured with a sniffer coil and preprocessed. Second, the signal should be analyzed using the ISO 14443 standard.



Thesis Type

- Bachelor Thesis
- Master Project
- Master Thesis

Target Group

- Students of ICE/Telematics;
- Students of Computer Science;

Goals and Tasks

- Get familiar with the NFC technology.
- Use the provided ISO standard tools and methods to process the analog signal.
- Implement a protocol decoder using the ISO14443 standard.
- Implement a graphical user interface to display the protocol and possible errors.

Required Prior Knowledge

- Programming language Matlab and Java;
- Problem solving skills;
- Interest in NFC technology;

Cooperation Partner

This thesis is part of the ANITAS project which is a cooperation between TU Graz, CISC Semiconductor and NXP Semiconductors.

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