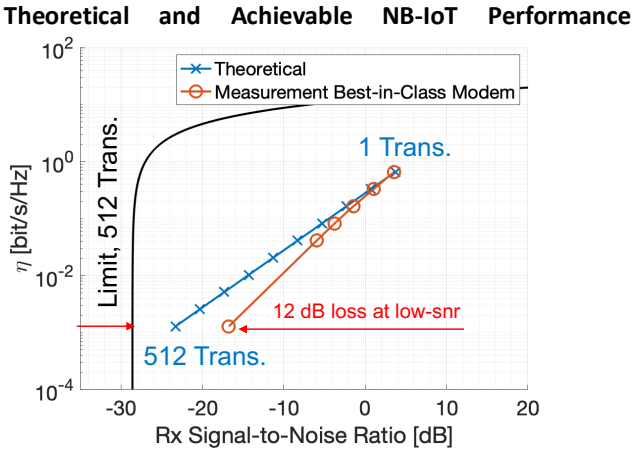
Chair of
„Secure Digital Circuits“

der Bundeswehr Universität München

Analysis of Dedicated Digital Baseband Algorithms for Extended Coverage IoT Applications

Introduction

Extended coverage is a highly desirable feature for many Internet-of-Things (IoT) applications. Textbook examples are sensor nodes in smart farming applications with a long transmitter-receiver distance or smart meters located in the basement that are shielded by concrete walls. Dedicated digital-baseband algorithms are required to establish communication links at highly negative Signal-to-Noise Ratios (SNR) common to these use cases.



Short Project Description

A prerequisite of reliable communication links at highly negative SNR is a proper transmitter-receiver synchronization in time and frequency as well as sufficient knowledge about the channel state. While today's extended-coverage communication standards showing serious deficits in this regard, new waveform designs promise to overcome these problems. The goal of this project is to analyze and optimize proposed waveform designs with regard to synchronization and channel estimation paving the way to a new generation of extended-coverage communication systems.

Prerequisites

- Interest in wireless communication and signal processing
- MATLAB experience is helpful

What you will learn

You will gain insights in the first wave of extended-coverage communication standards and state-of-the-art communication systems for IoT.

Contact

matthias.korb@unibw.de