Bachelor / Master Thesis

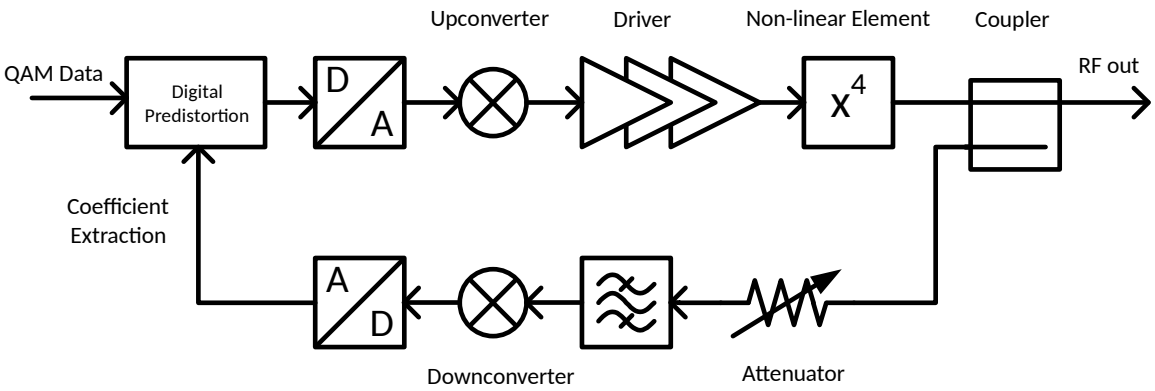
Höchstfrequenz elektronik

RWTH AACHEN UNIVERSITY

Frequency Multiplying Transmitter enabling Communication beyond fmax

Background

Flexible circuits are necessary in order to be able to produce wearable devices. Therefore, there is a lot of research ongoing on how to integrate transistors on flexible substrate.
Depending on the process technology, the transistors fmax might be too low to implement conventional transceiver frontends at the 2.45 GHz ISM band.
Hence, we are investigating novel transmitter architectures based on non-linearity which can enable communication above fmax of the transistors.



Tasks

Your task will be to investigate, model and implement a transmitter frontend based on frequency multiplication. The difficulty is to preserve the linearity of the signal while utilizing non-linear circuits.
You will learn about signal processing, transmitter architectures and circuit design. Additionally, you will get hands-on experience with simulation tools and lab equipment.

The task can be broken down as follows:

- Literature study
- System modelling and simulation
- Implementation with off-the-shelf components
- Measurement
- Documentation

Contact

Stefan Müller
Kopernikusstraße 16, 52074 Aachen
ICT cubes, 5th Floor, Room 538
+49 241 80 24643
stefan.mueller@hfe.rwth-aachen.de
www.hfe.rwth-aachen.de