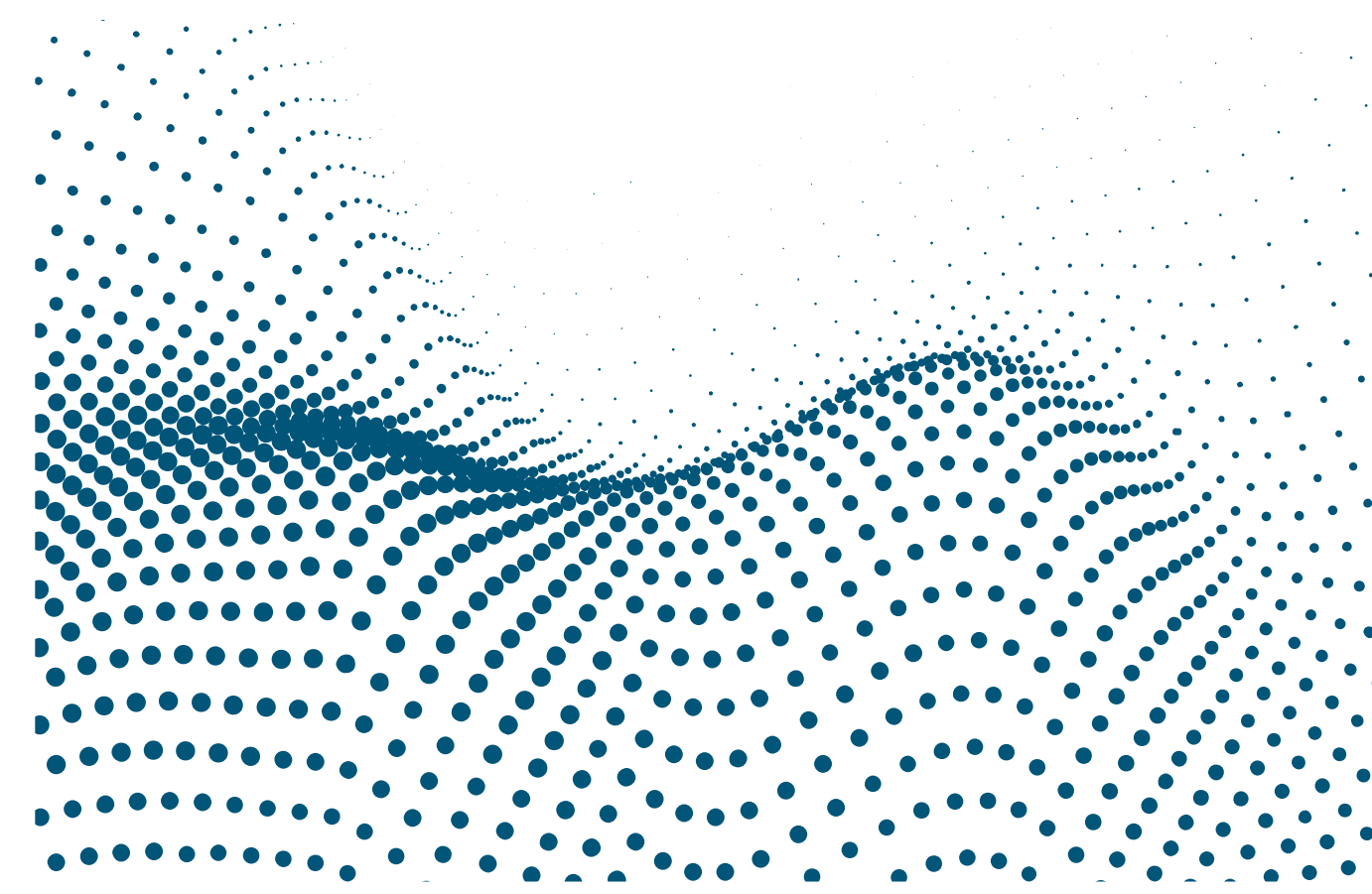**Universität Stuttgart**

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Open6GHub

# Open6G-Hub - IF-Channel Aggregation in a THz System

Communication at 300 GHz is envisioned to become a crucial part in future communication networks. To enhance the data-rate and for scalability or reallocation of spectrum resources, channel aggregation is a key element to increase system performance. In this work the student conducts research on channel aggregation in an 300 GHz-Link thorugh combining multiple modems at the IF-Interface of an THz-Link

Tasks

- **Evaluation of modem operation without standard housing**
    - EMV-Performance
    - Thermal evaluation
- **Combination of multiple modems at E-Band (60-90 GHz) for channel aggregation**
- **Design of setup, especially combiner and cooling concept. The IF-domain is realized in WR12-waveguide technology.**
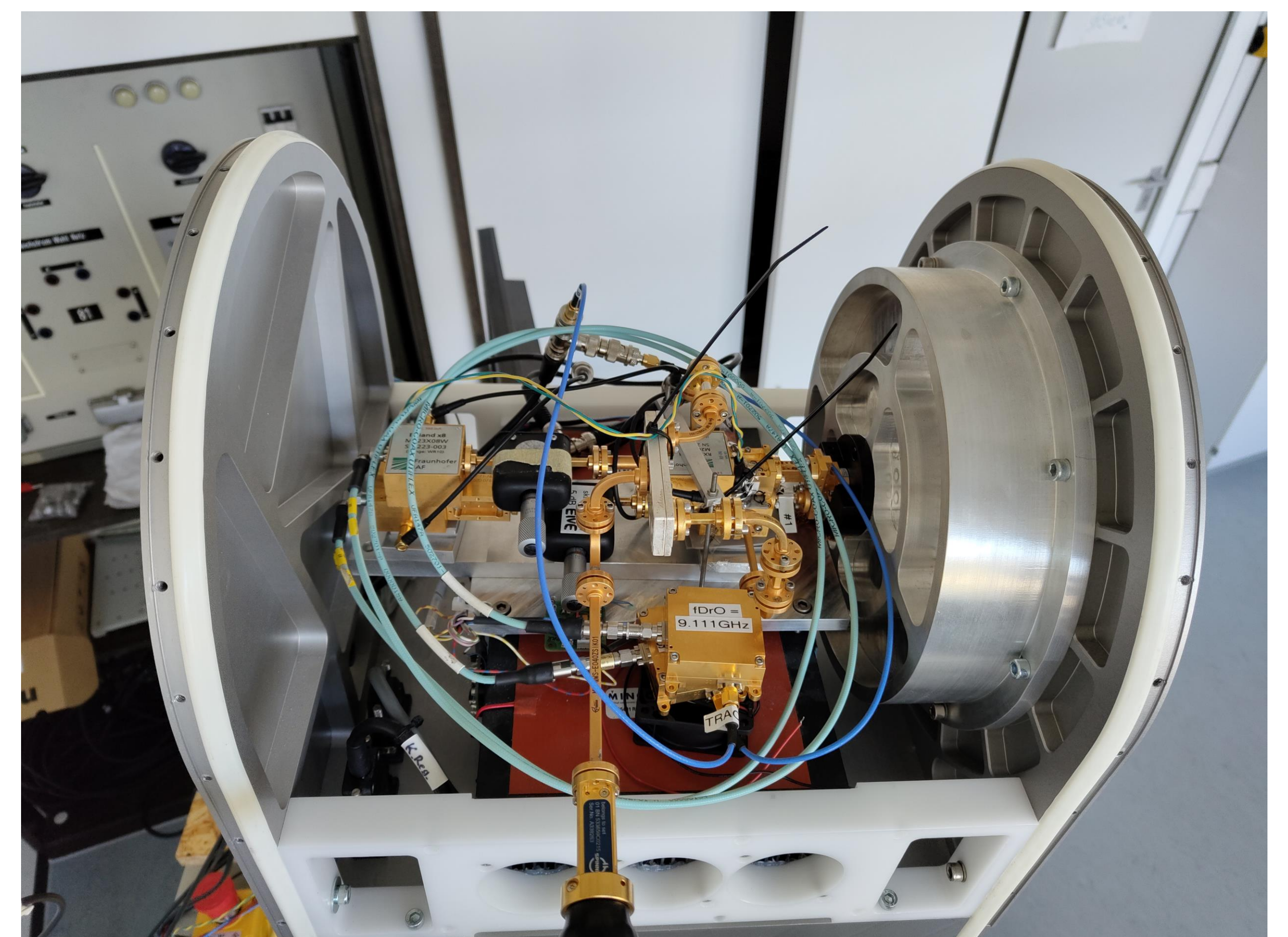
Goals

- **Realization of laboratory experiments with up to eight channels at 300 GHz**
- **Quantify the impact of parallelization on the systems linearity, because of PAPR-increase**
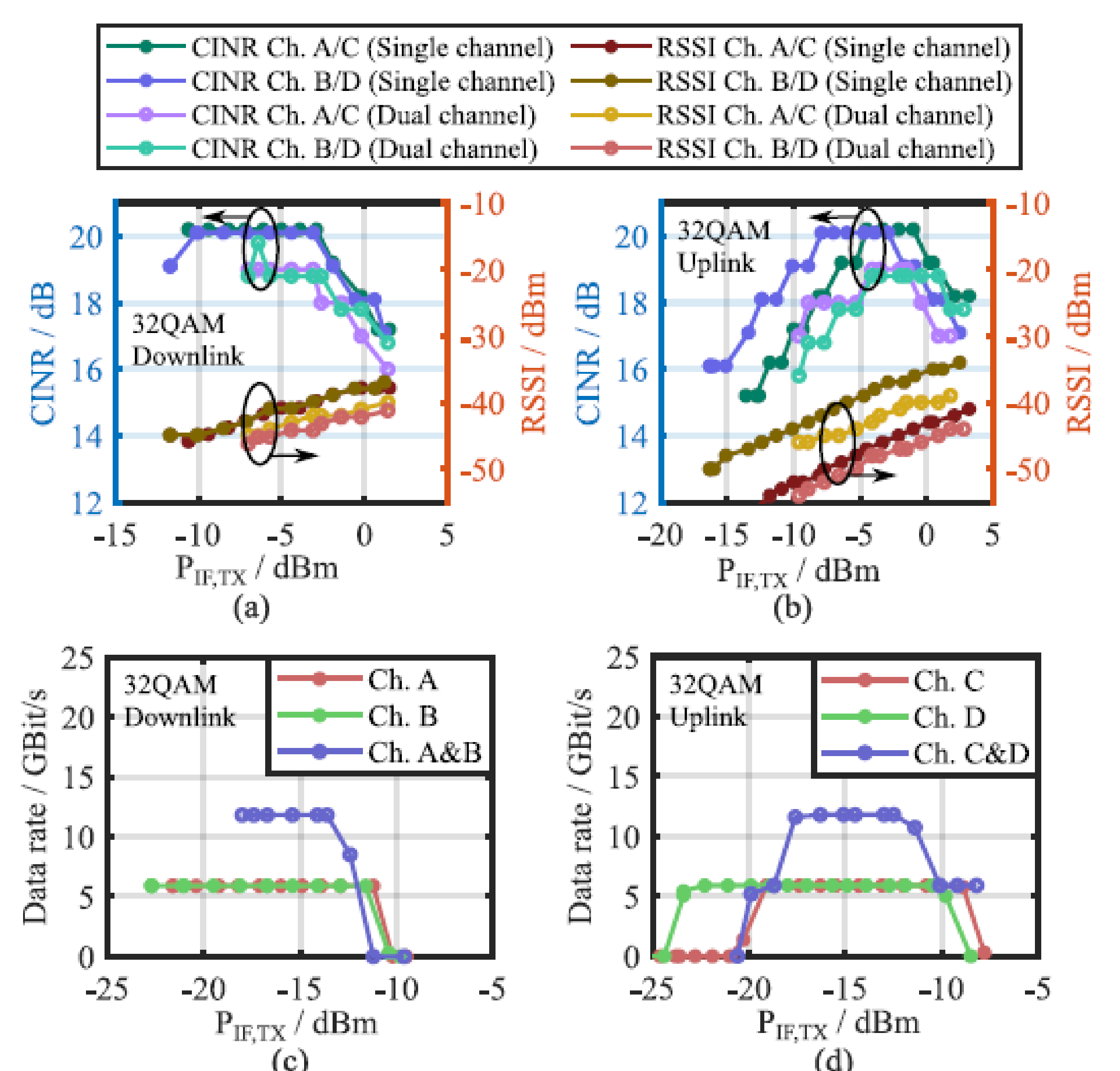- **Formulate/Plan integration in 300 GHz System**
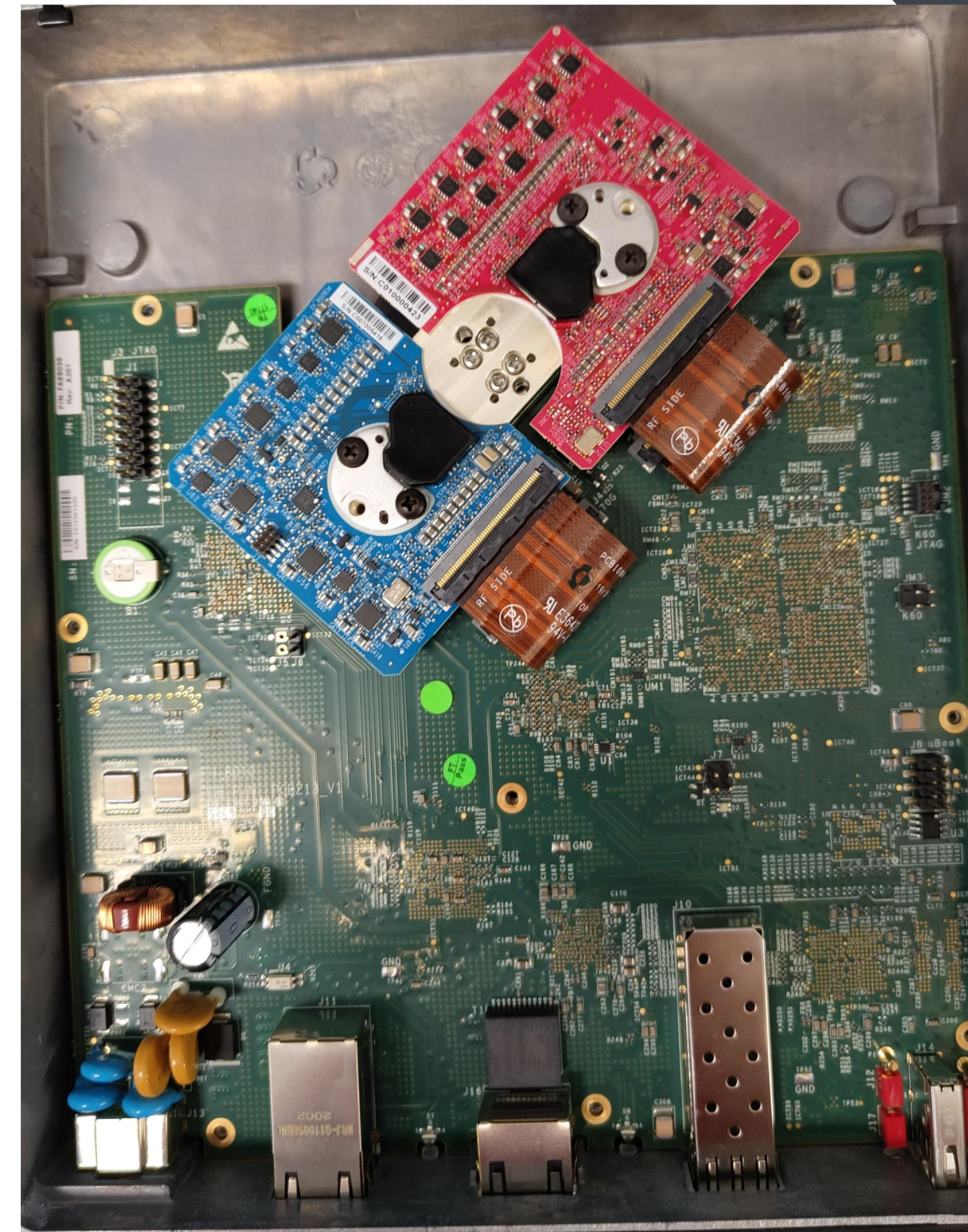
Main-Board of a 5G-Multi-Gigabit Modem, which can be aggregated in H-band. Parallelization of mutliple channels at the IF-Domain can result in parallelization at 300 GHz

Interieur of a 300 GHz cassegrain antenna with frontend.
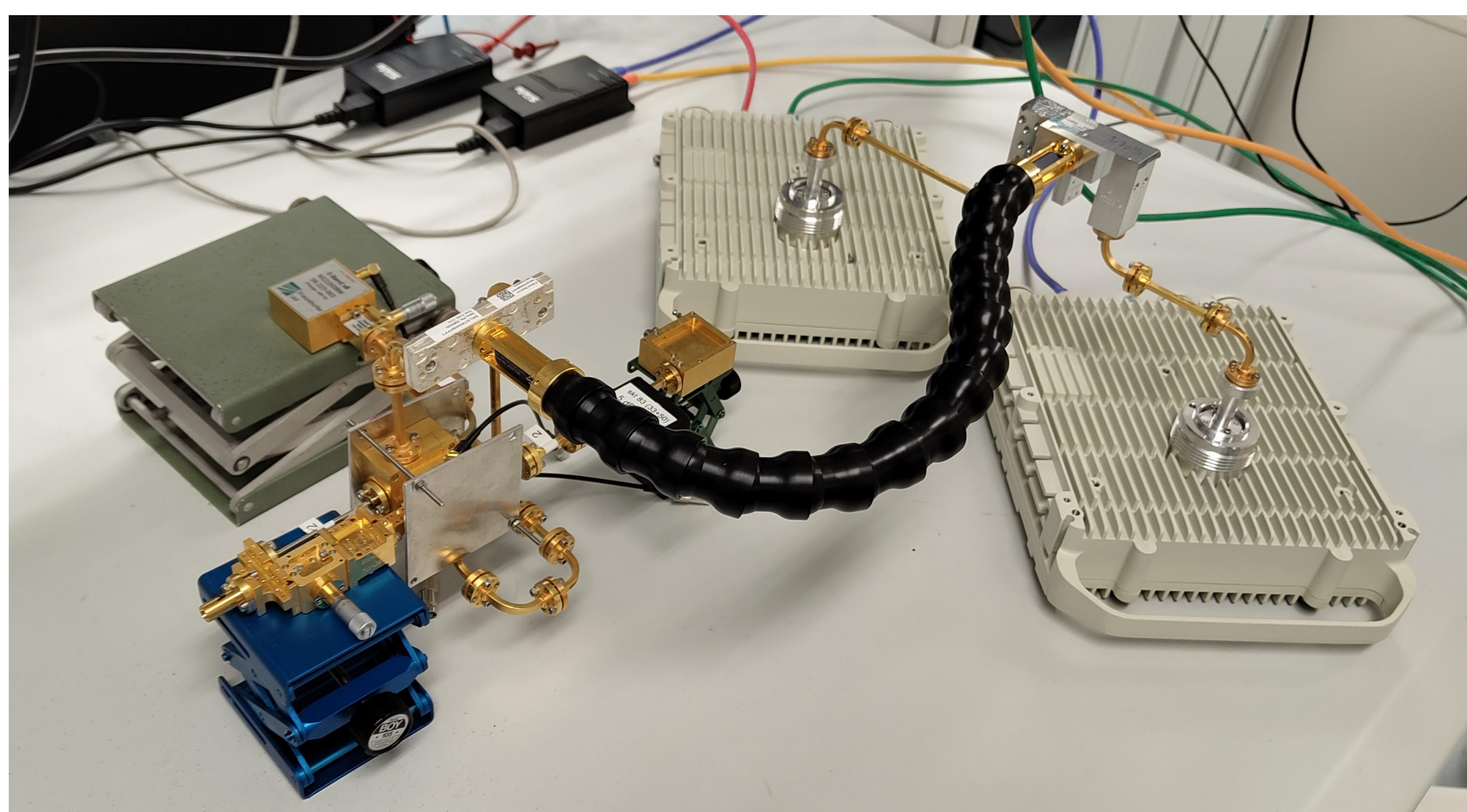
Laboratory duplex setup with aggregation of multiple modems.

Linearity evaluation of multiple aggregated channels

https://www.ilh.uni-stuttgart.de/en/research/mmw/Open6GHub/