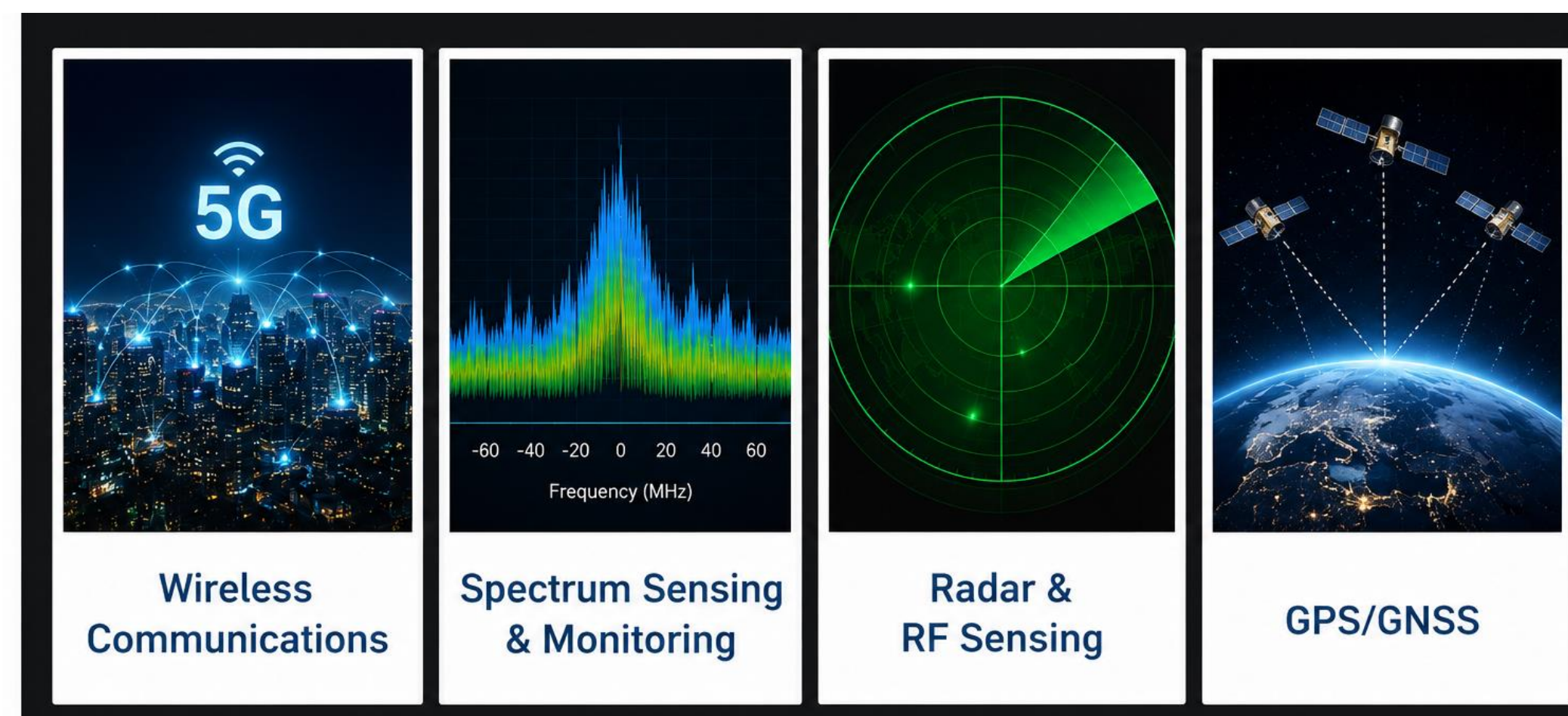


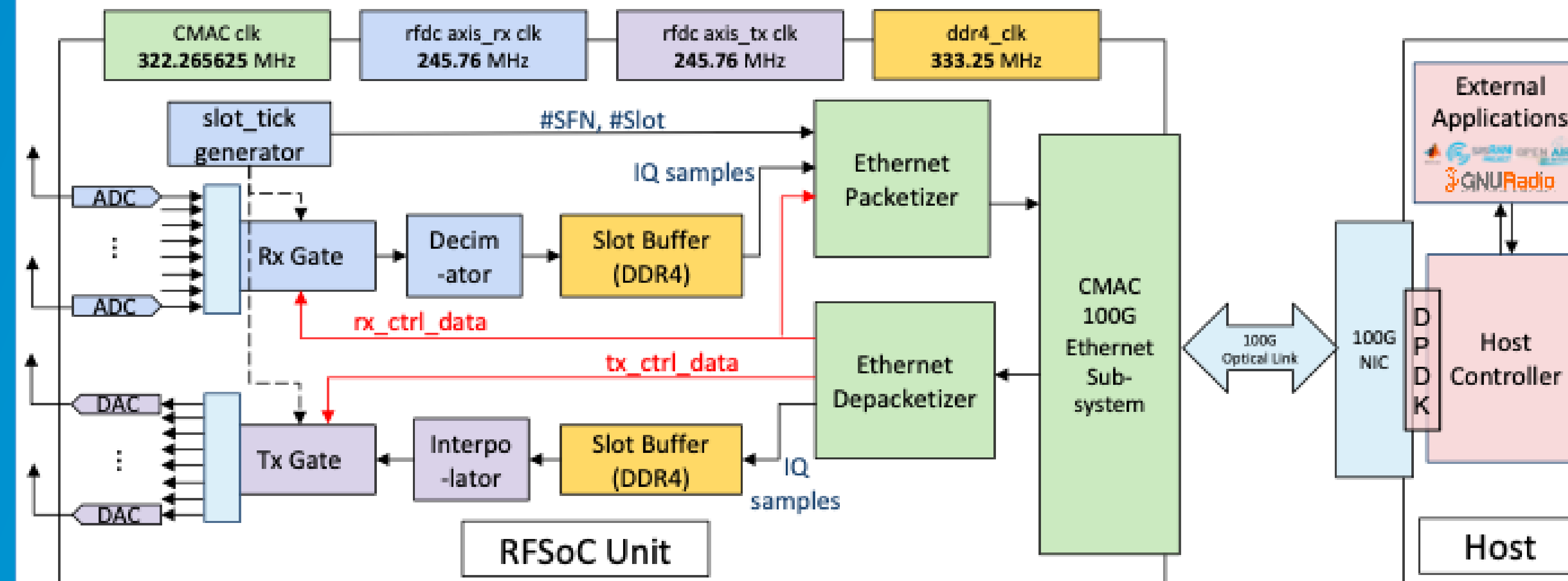


Software Defined Radio (SDR) Applications

- Wireless communications (5G/6G)
- Spectrum sensing & monitoring
- Radar & RF Sensing
- GPS/GNSS



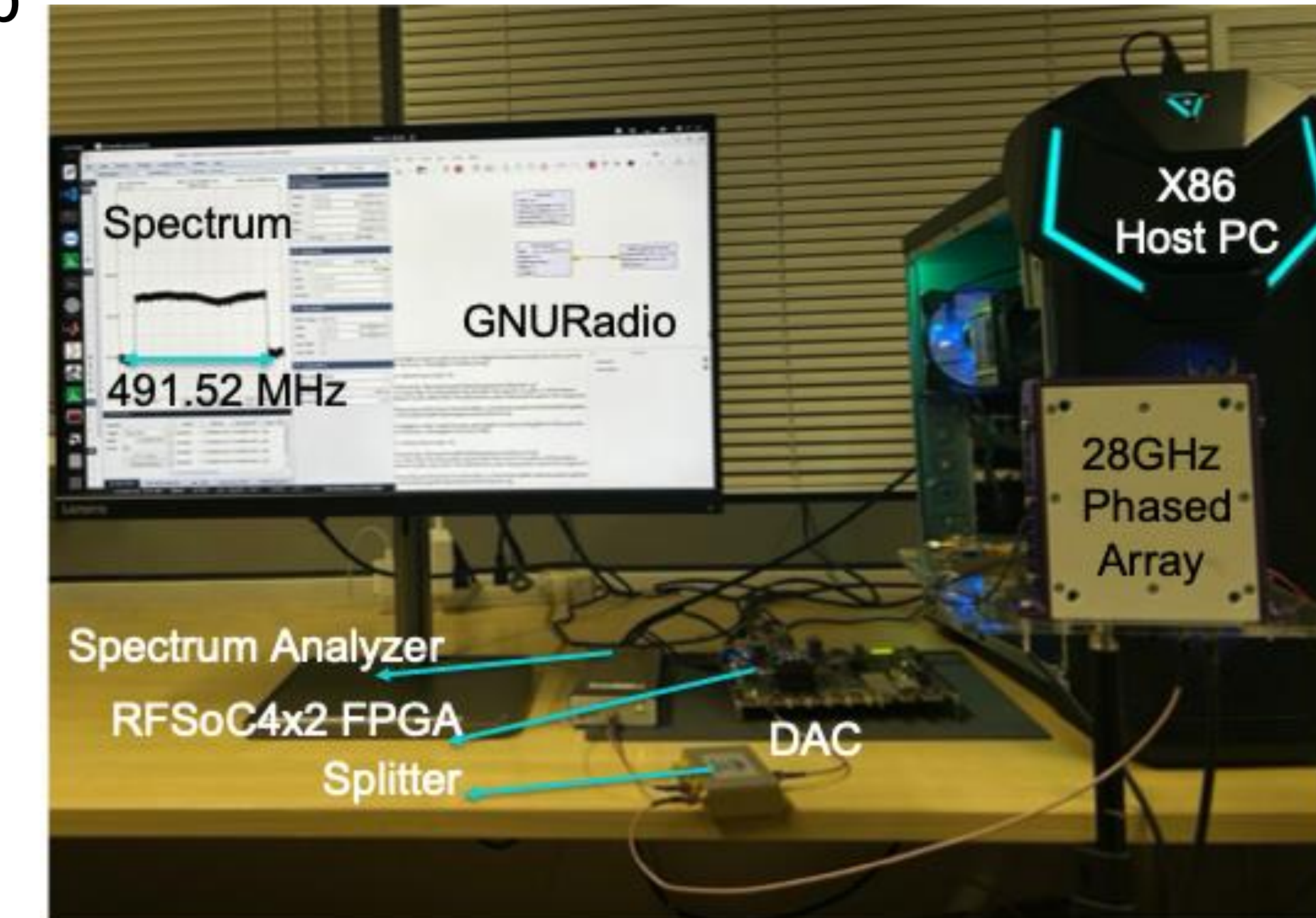
RadioStream Design



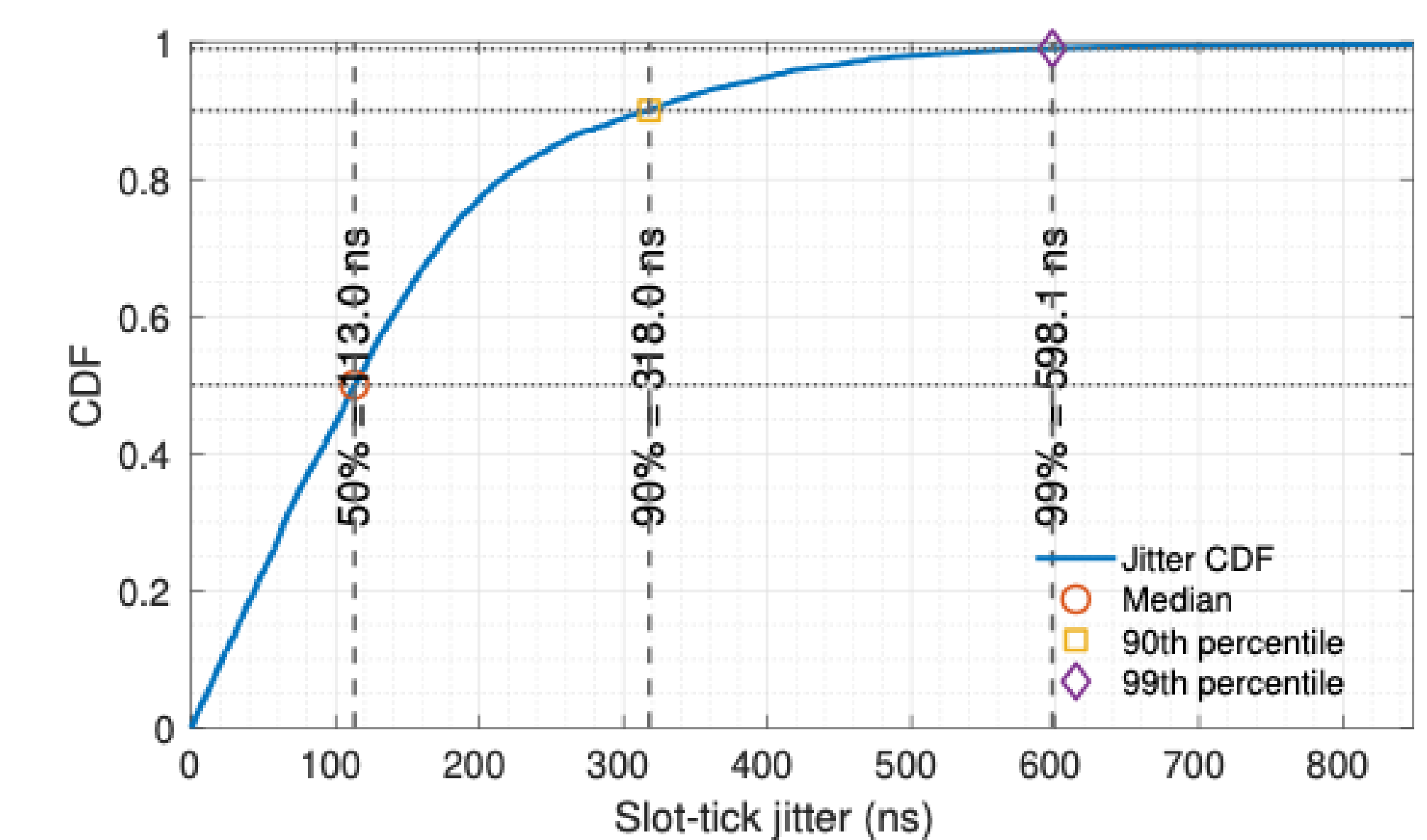
- A dedicated **100G Ethernet fronthaul link**
- Shared **synchronized clocking** across ADC/DAC paths
- Precise time alignment** between the Radio and the Host
- Compatibility with frameworks such as **GNU Radio**, **srsRAN**, and **OpenAirInterface**

Evaluation

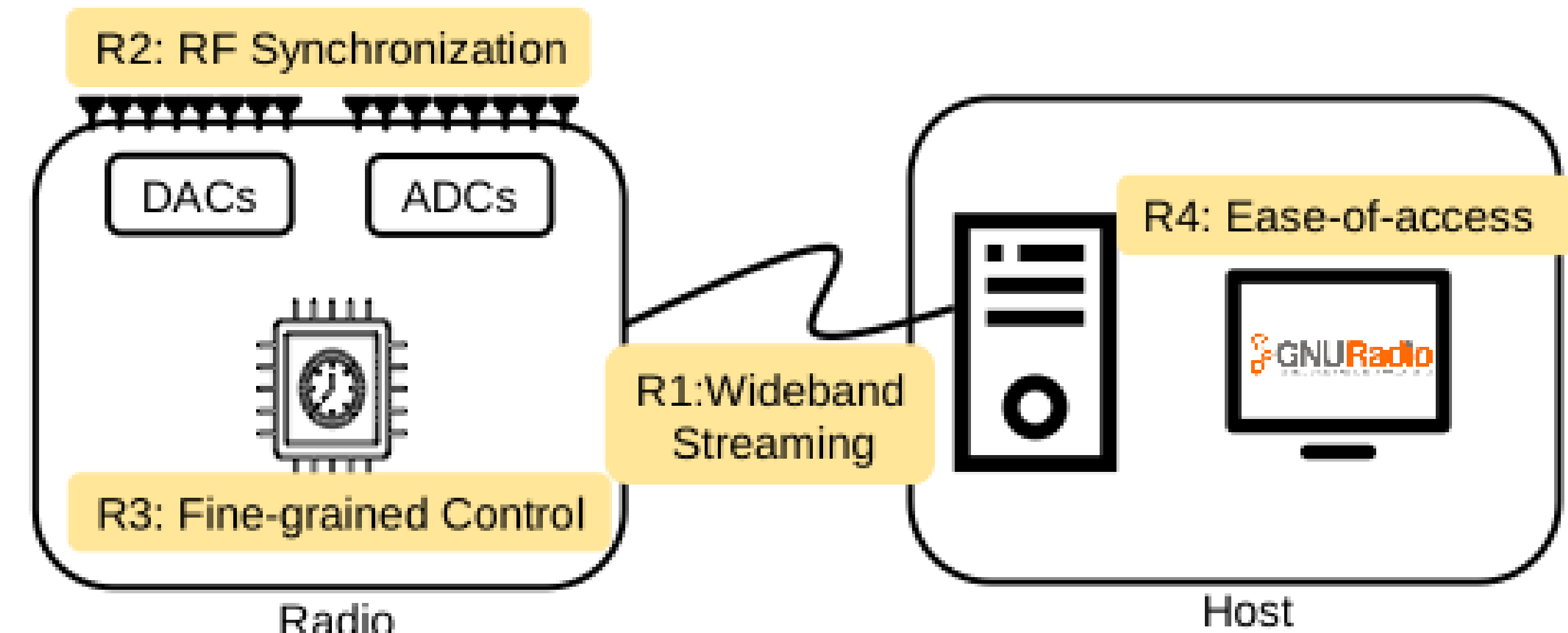
Experiment Setup



slot_tick Timing Jitter



SDR Requirements

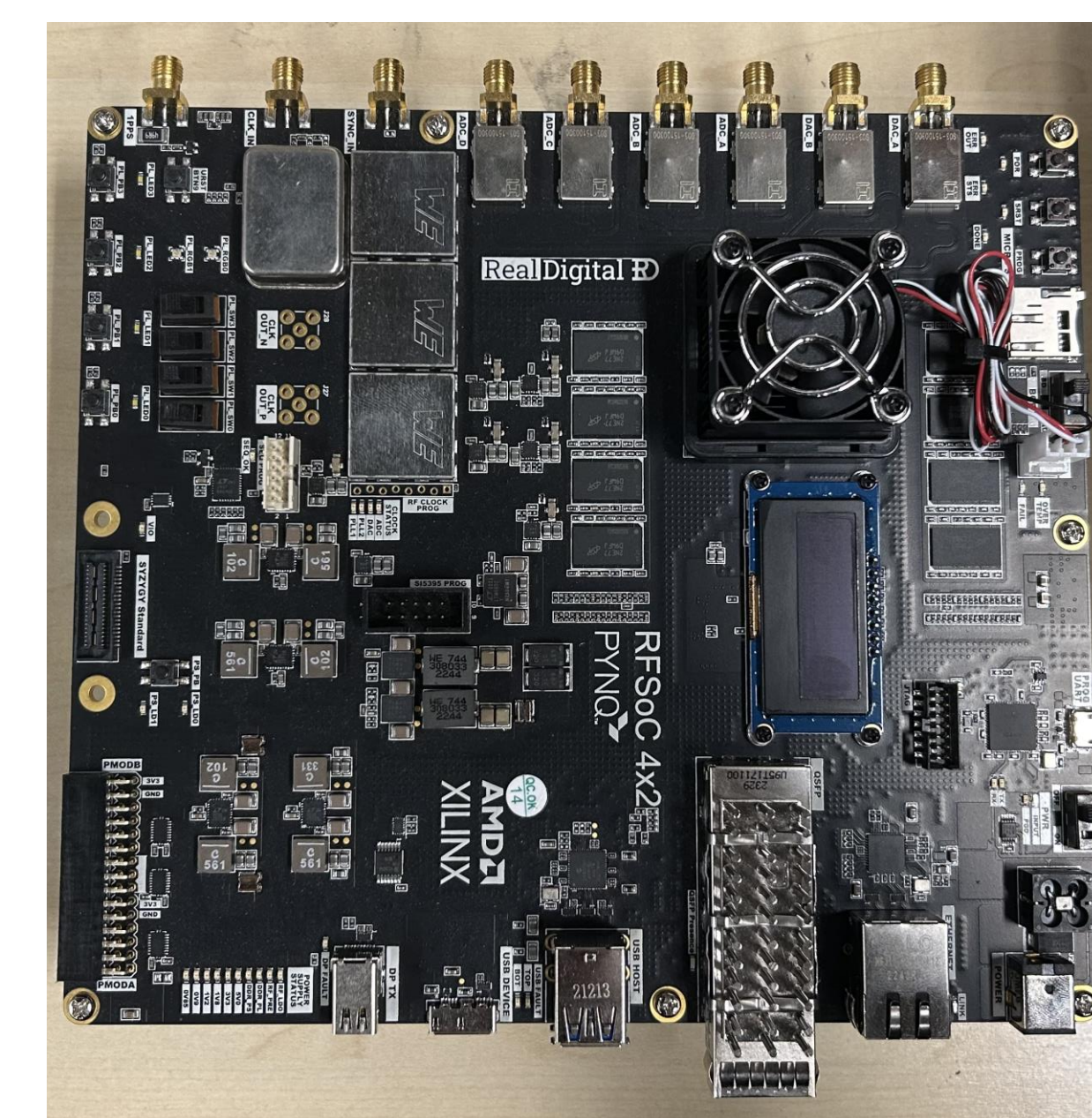


Requirement/Platform	Commercial SDR	Non-commercial SDR	RadioStream
Wideband Streaming	—*	✓	✓
RF Synchronization	—*	✓	✓
Fine-grained Control	✗	✗	✓
Ease-of-access	✓	✗	✓

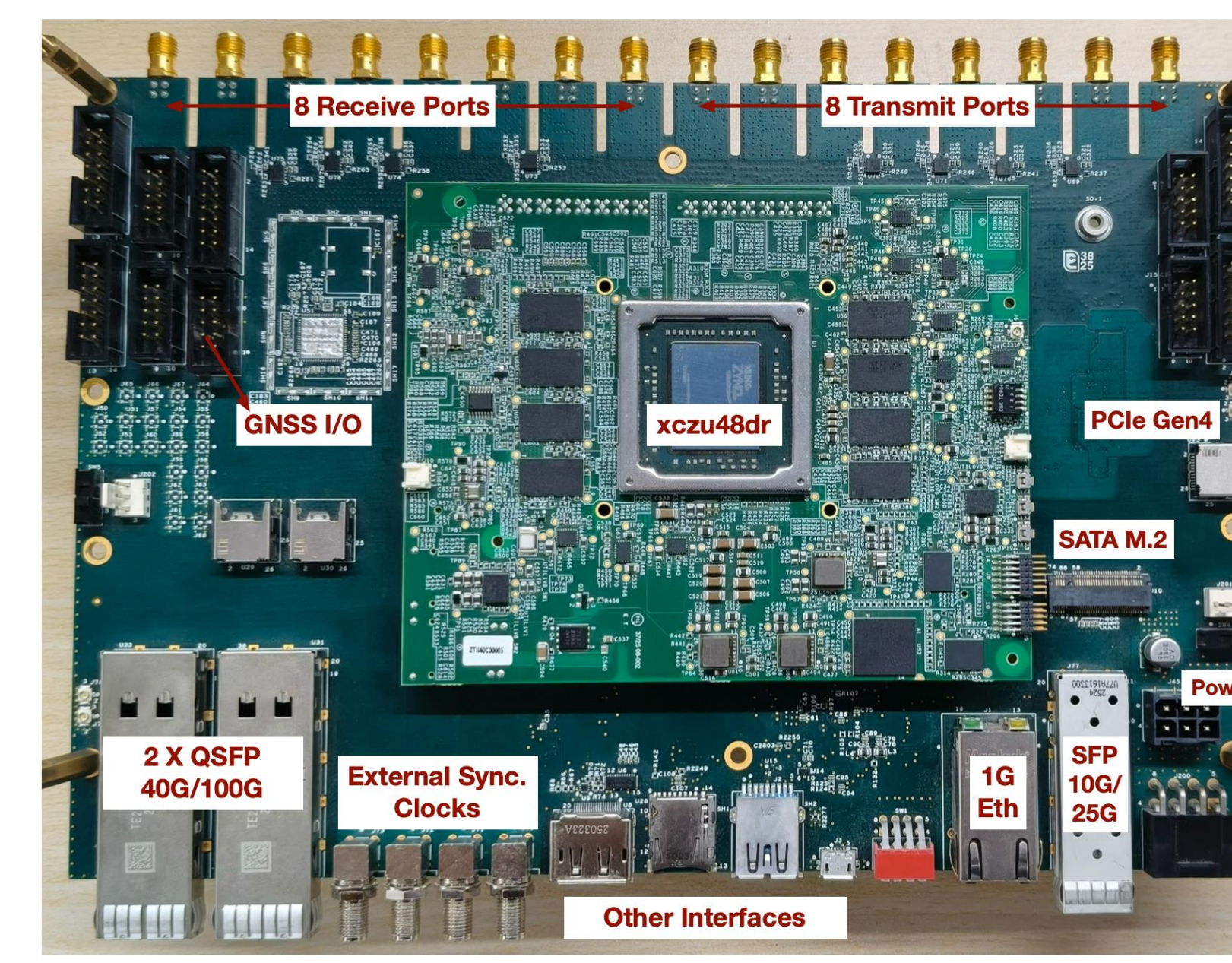
*only for high-end models

Traditional solutions only support 1-2 features

RadioStream Implementation



2T4R RFSoc4x2

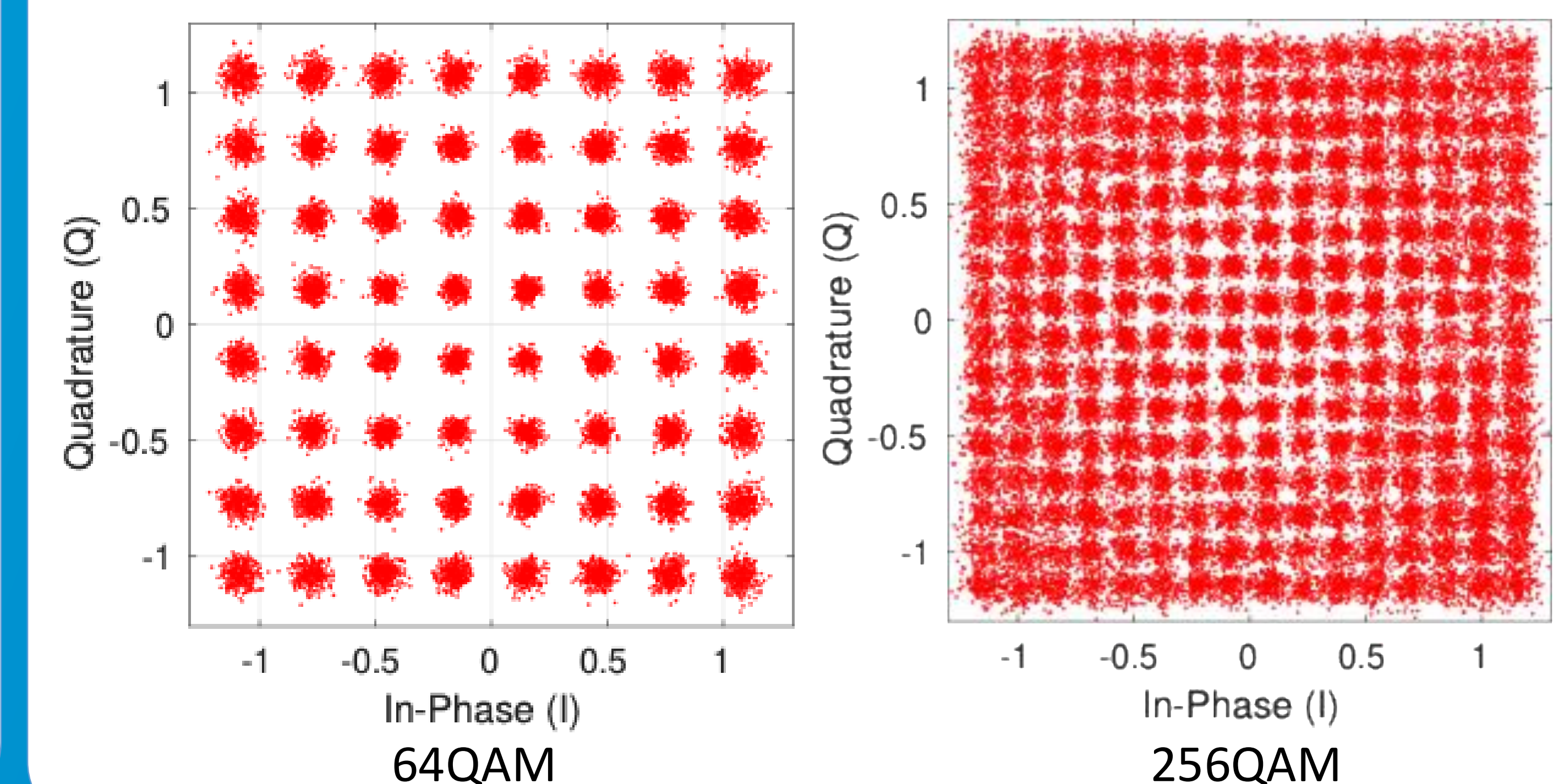


8T8R SOM board

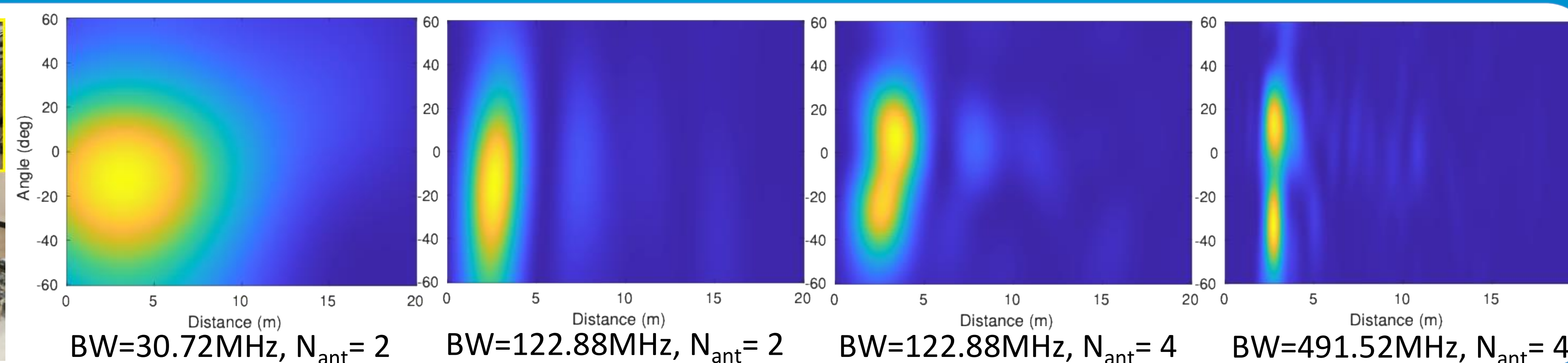
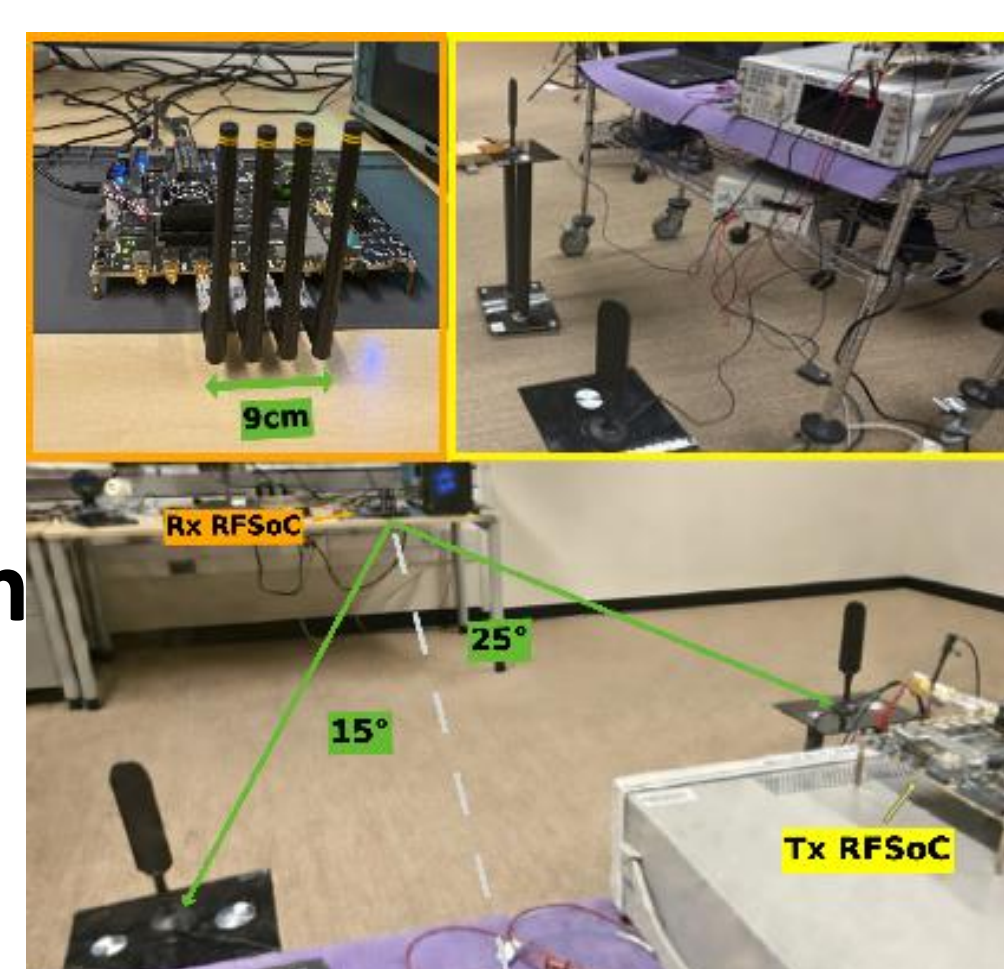
We implemented **RadioStream** on commercially available FPGA and custom designed Radio integrated with an x86 server

RadioStream proposes a novel SDR design featuring all four requirements

Constellation



Localization capability of RadioStream



Summary

RadioStream proposes a novel SDR architecture meeting all the requirements of modern wireless systems