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**EIVE-T**



**Exploratory In-Orbit**  
**Verification of an**  
**E/W-band Satellite**  
**Communication Link**  
 -  
**Terrestrial Mission**

**Goals**

- Measure, model and characterize the atmospheric and weather effects on a communication E/W-band link (71-76 GHz & 81-86 GHz) with different elevation angles;
- Demonstrate wireless radio broadband internet in remote areas;
- Characterize the E/W-band front-end modules and payload computer for later use in ILH EIVE satellite mission;
- Achieve a record in terrestrial radio data transmission with the highest data rate demonstrated so far (40 Gbit/s) and transmission distance (60 km).

**Preferred set-up**

- Transmitter situated on the Zugspitze mountain;
- Line-of-Sight from Zugspitze to Hochschule Kempten, Oberstdorf and Eibsee;
- Receiver and measurement equipment situated on Hochschule Kempten, Oberstdorf and Eibsee;
- Parabolic dish antenna: 55 cm diameter + a weather-proof cabinet.



Experimental Setup in collaboration with SWR.  
 A similar setup is planned in EIVE-T.

**Motivation**

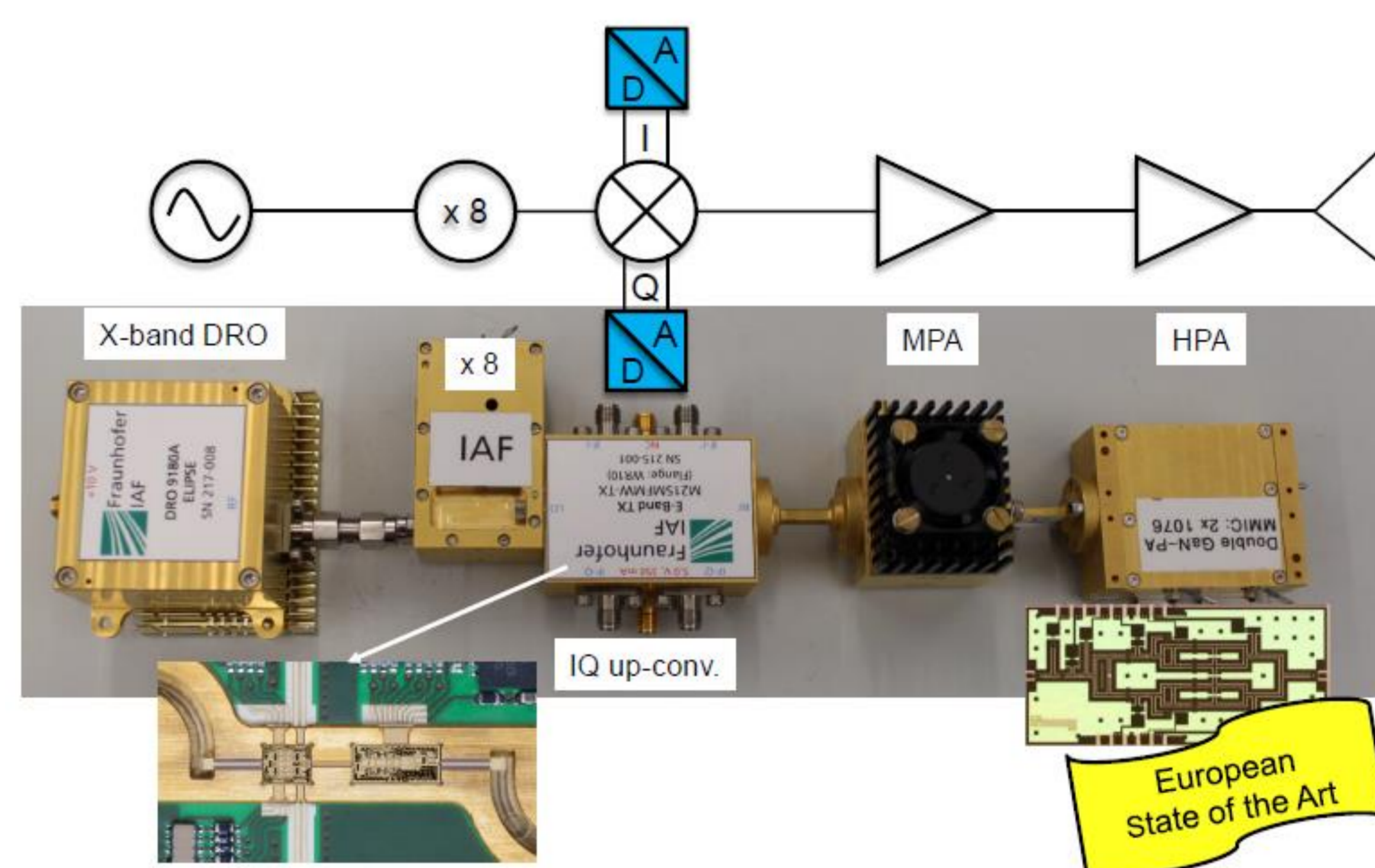
- Precise modeling of the atmospheric effects and creating a statistical data base of the atmospheric attenuation in the E-Band;
- Measure the atmospheric attenuation and compare it with the ITU theoretical models;
- Extend the ITU models for different elevations;
- Transmit wirelessly live 4k video & image data

**Requirements**

- Power supply access
- Internet access (not mandatory)

**Duration**

- About 8 months (June 2021-Feb 2022), including installation, de-installation and check-ups.
- In accordance to the transmission allowance from German & Austrian authorities.
- Experiments will not run continuously, but they will be remotely (via Internet) switched on/off.
- Duration of an experiments: 5-10 minutes. Multiple experiments per day.



E-Band high-frequency modules, enclosed in the antenna unit.



FPGA MSoC KIT enclosed in the outdoor unit.