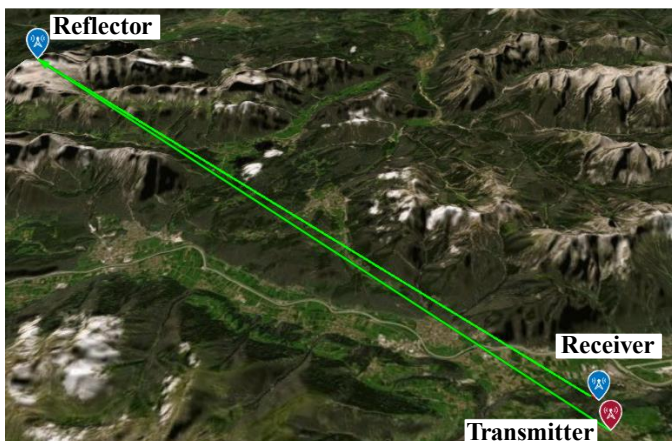
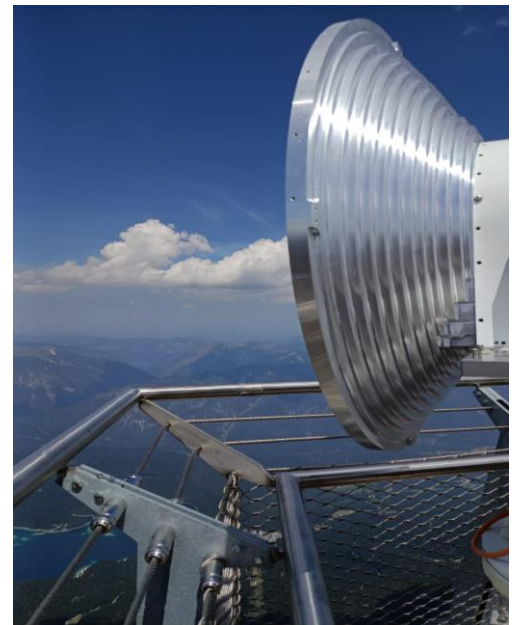


Description & Motivation:

- Measurement, modeling and characterization of the atmospheric and weather effects on an E/W band communication link (71-76 GHz & 81-86 GHz) with different elevation angles;
- Demonstration of wireless radio broadband Internet in remote areas (>40 Gbps in frequency and polarization multiplex scenarios).

Goals:

- Automatic remote antenna calibration;
- Identify and quantify optimal search algorithms to align 3 antennas.
- Modelling, simulation and control of the optimal antenna positions, allowed deviations and alignment precision;
- Development of an automatic algorithm to align 3 highly directive (HPBW= 0.3°) antennas
- Continuous automatic antenna alignment and position adjustment (Antenna Gain: 59 dBi and half power beamwidth: 0.3°) based on the received signal power;
- Automatic quantification and graphical representation of signal quality, antenna alignment and weather conditions.



System characteristics:

- Alignment of 3 antennas
- Each antenna is situated on an automatic controllable positioner
- Positioner step in azimuth and elevation: 0.01°
- Antenna HPBW: 0.3°
- Transmission distance: ~ 40 km
- Remote control of all 3 stations.