

Beyond 5G – IoT for Aviation and Space

AES develops prototype for IoT in the aerospace industry

In the future, the linkage of mobile devices in aircrafts will continue to gain relevance. The biggest challenge in the process is the flood of huge amounts of data. Especially in the aerospace sector, the steadily increasing number of devices in use has the causal consequence that wired connections lead to an increase in weight, which cause increased fuel consumption and increased environmental impact.

For use as a backbone in the in-flight entertainment of aircrafts, a wireless network will be developed in the project „Beyond 5G IoT for Space and Aircraft“. Coherent light is to be used as the communication medium. Compared to radio waves, it offers a significantly wider spectrum, does not interfere with them and provides data rates comparable to high-speed cables.

The goal of the project is to build a prototype with all system-relevant components, which nevertheless meets the special requirements of aviation. This project is funded by the European Regional Development Fund (ERDF).

The basic system consists of several access points which are connected to the central router in the aircraft via Ethernet. These establish an optical communication with end points. The end points are assigned to seat groups and each is connected to an „end user distribution“ via Ethernet. The end user distribution passes on the data connection to the individual seats, e.g. by transmitting data with visible light (light fidelity - LIFI) to the mobile devices, which is currently being developed in the AIRBORNE-DE-LIGHT project at AES.

Summary of advantages:

- + High transmission speeds
- + No electromagnetic radiation
- + Wireless data transmission
- + No interference with other radio systems
- + Combination of cabin lighting and data communication
- + Cost-effective retrofitting
- + Data protection
- + Bandwidth increases with number of lights

The following goals should be achieved:

- + System stability
- + High data rates beyond 1Gbit/s in the downlink and 300Mbit/s in the uplink
- + Bridging of large distances, at least 50m
- + Power consumption of a transmitting/receiving unit should be less than 5 watts

