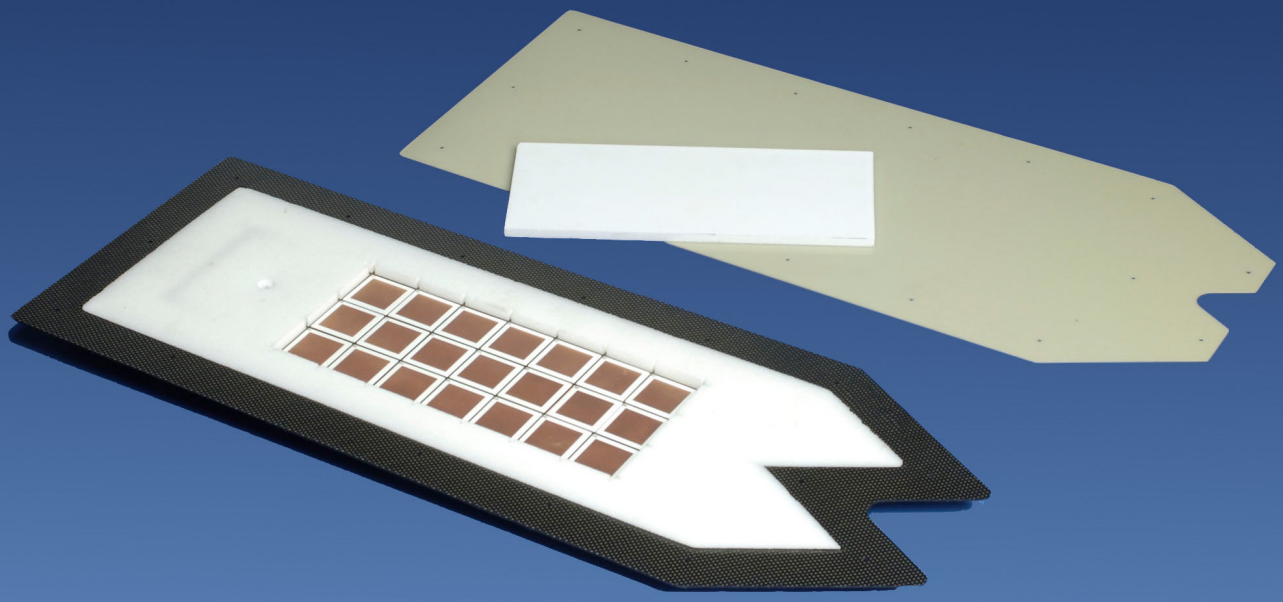
Accelerating the future of aerospace

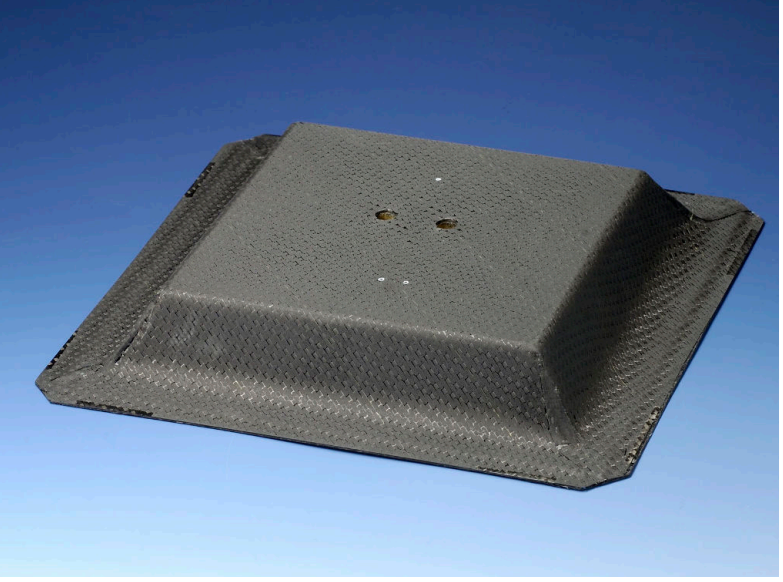
Smart antennas for aerospace applications

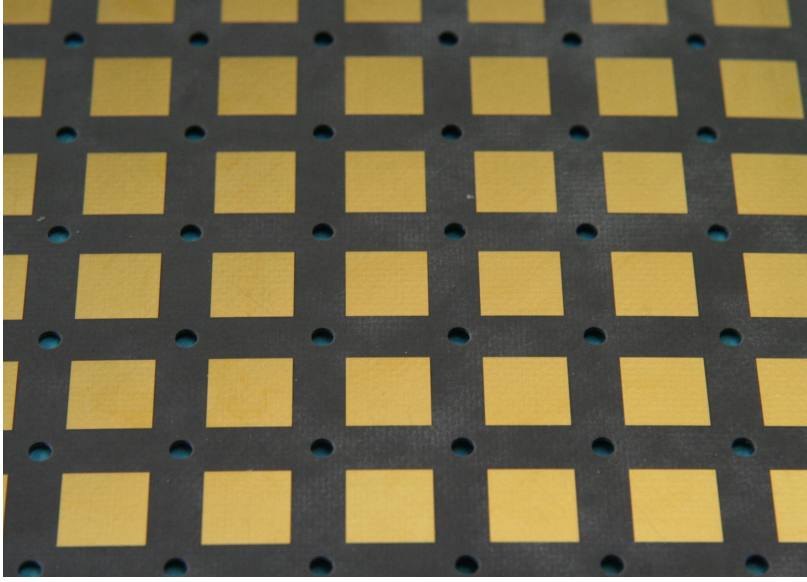
PRODUCTS & SERVICES



Supporting you in solving the increasing demand for antennas in aerospace

- **Development of low-profile and structurally integrated antennas for satellite communication and satellite navigation**
- **Research into smart airborne antennas adaptable to their environment**





WHAT YOU NEED

- Low-profile high-gain antennas for satellite TV or Internet on board aircraft
- Structurally integrated communication antennas on RPAS/UAS
- Smart satellite navigation antennas with suppression of intentional interference.
- Compact phased array antennas for satellites with multi-beam capability.
- Broadband phased array antennas for spaceborne applications

WHAT WE DELIVER

- Support in design, development and integration of electronically steerable antennas into aircraft structures
- Multi-disciplinary know-how, tools and facilities for investigation of electromagnetic and mechanical interaction of antennas with its surrounding structure.

OUR CAPABILITIES

STRUCTURALLY INTEGRATED ANTENNAS

We develop composite panels with embedded multilayer antennas. The skin of the panel is transparent for the electromagnetic signals received by the embedded antennas. The panel withstands the applicable mechanical, temperature and aerodynamic pressure loads applied during flight.

SMART ANTENNAS

We develop prototype planar phased array antennas for broadband Ku-band satellite communication for satellite TV reception and Internet on board aircraft. During flight, this antenna system (without moving parts) continuously steers its beam towards the geostationary satellite to be received.

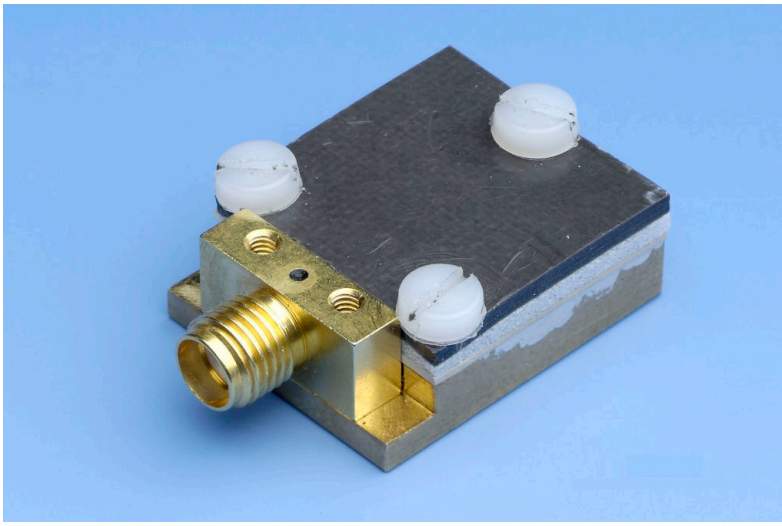
Our phased array technology with broadband beamforming network is also capable of generating multiple simultaneous beams which can be useful for inter-satellite links and satellite-to-ground links.

We develop electronically steerable antenna arrays to be integrated into light weight structures of air vehicles, which are subject to aero-mechanical vibrations. Such vibrations degrade the antenna performance. Smart antenna technology can re- establish the antenna radiation characteristics and can improve the quality of data communication. In real-time the phase errors due to displacement of the antenna elements can be measured and the beam of the array can be adapted accordingly.

EUROPEAN COOPERATION

As partner in the European FP7 project SANDRA we developed a low-profile Ku-band SatCom antenna that covers the complete receive band for aeronautical earth stations and DVB-S broadcast in Ku band (10.7 – 12.75 GHz). Optical True Time Delays in an Optical Beam Forming Network enable a squint free beam steering over the whole band to geostationary satellites.

NLR is leading the European H2020 project ACASIAS in which technology is being developed for integration of VHF, L-band and Ku-band antennas.



PRODUCTS & FEATURES

- multilayer dual-frequency band
- broadband Ku-band satellite communication
- electronic beam steering
- multi-beam
- low-profile
- high-gain
- aerospace applications
- integrated into light weight structures
- suppression of intentional interference

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