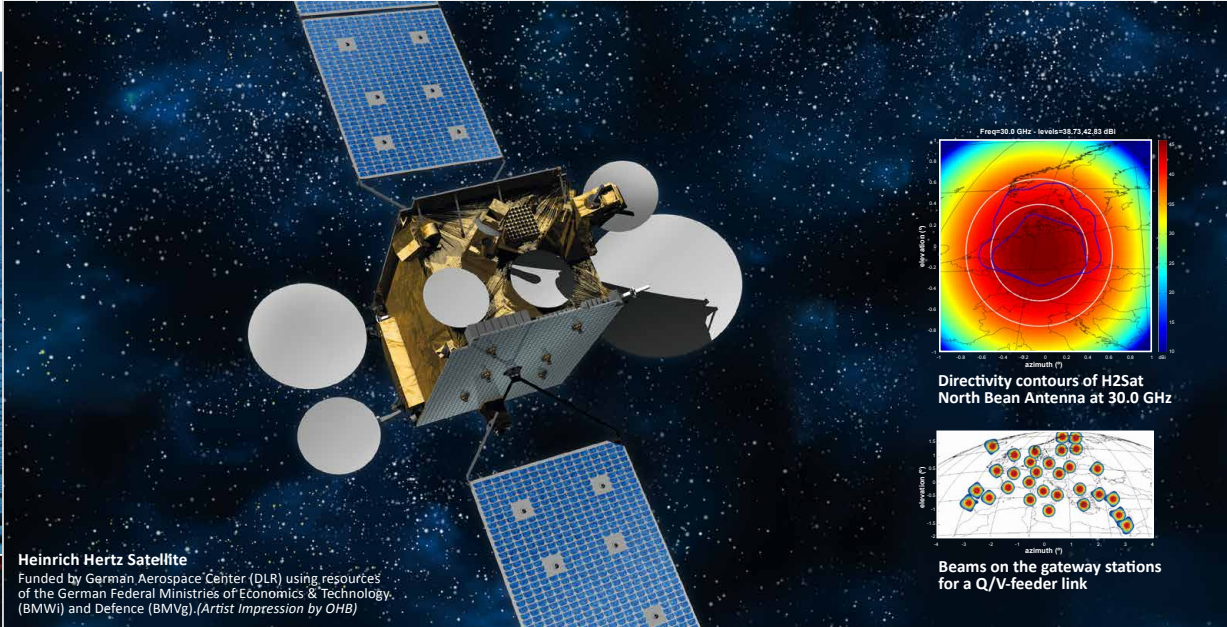
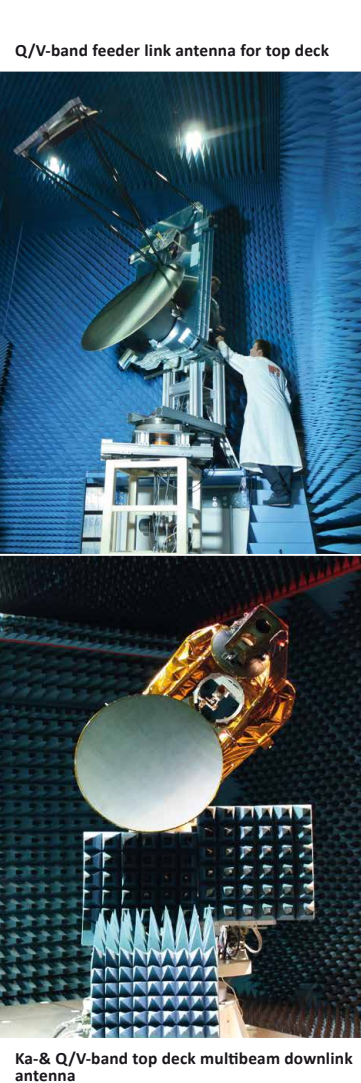
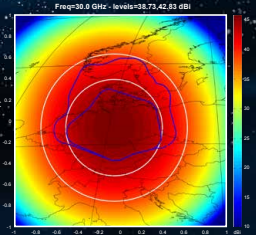


## Ka-Band & Q/V-Band Antennas for Satcom and Science Applications



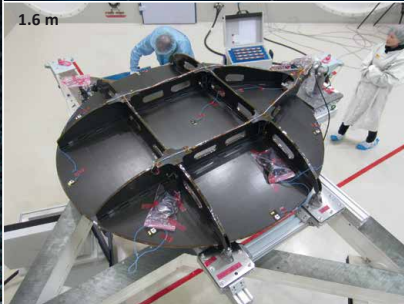
**Heinrich Hertz Satellite**  
Funded by German Aerospace Center (DLR) using resources of the German Federal Ministries of Economics & Technology, (BMWi) and Defence (BMVg). (Artist Impression by OHB)



Directivity contours of H2Sat North Bean Antenna at 30.0 GHz



Beams on the gateway stations for a Q/V-feeder link



1.6 m  
Ka- & Q/V-band side deployable reflector under acoustic test



2.4 m  
Side deployable reflector Q/V-band in full CFRP design tested under qualification level



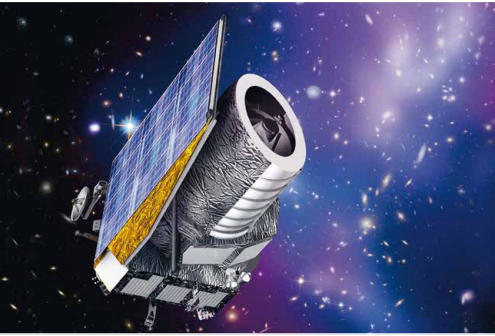
1.1 m  
Ka-Band reflector EQM for German Heinrich Hertz mission under vibration test

HPS is a German “turnkey supplier” for antenna subsystems, including design, analysis, manufacturing, testing and final delivery to the customer. Typical examples of antenna specifications are:

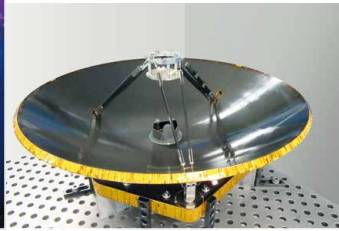
EARTH DECK ANTENNAS		SIDE DEPLOYABLE ANTENNAS	
<b>Downlink Antenna:</b>	<b>Feeder Link Antenna:</b>	<b>1.1 m Class:</b>	<b>1.6 m Class:</b>
<ul style="list-style-type: none"> <li>- Tx: 18.8 – 20.2 GHz, Rx: 28.5 – 30.0 GHz</li> <li>- Tested up to 49.8 GHz</li> <li>- Up to 19 beam</li> <li>- User link for multibeam scenario</li> <li>- Main refl. diameter: 70 cm</li> <li>- Sub-refl. diameter: 25 cm</li> <li>- First eigenfrequ. &gt; 110 Hz</li> <li>- Mass: 7 kg (incl. feed cluster).</li> </ul>	<ul style="list-style-type: none"> <li>- Rx: 47.2 – 50.2 GHz, Tx: 37.5 – 40.5 GHz</li> <li>- European coverage</li> <li>- 8 gateways for nominal ops</li> <li>- 2 gateways as diversity sites</li> <li>- Scan losses &lt; 0.5 dB</li> <li>- Main refl. diameter: 1.2 m</li> <li>- Sub-refl. diameter: 0.8 m</li> <li>- First eigenfrequ. &gt; 60 Hz.</li> </ul>	<ul style="list-style-type: none"> <li>- Rx: 28.5 – 30.0 GHz, Tx: 18.8 – 20.2 GHz</li> <li>- 2 service areas over Germany</li> <li>- Single offset configuration</li> <li>- In-orbit beam pointing error &lt; 0.006°, in-orbit TED &lt; 0.017 mm RMS</li> <li>- First eigenfrequ. &gt; 140 Hz</li> <li>- Launch on-board Heinrich Hertz Satellite.</li> </ul>	<ul style="list-style-type: none"> <li>- Rx: 28.5 – 30.0 GHz, Tx: 18.8 – 20.2 GHz</li> <li>- 4 x interface to HDRM</li> <li>- Single offset configuration</li> <li>- In-orbit beam pointing error &lt; 0.02°, in-orbit TED &lt; 0.03 mm RMS</li> <li>- First eigenfrequ. &gt; 130 Hz</li> <li>- Scalable up to 2.5 m.</li> </ul>

# Reflector Antennas

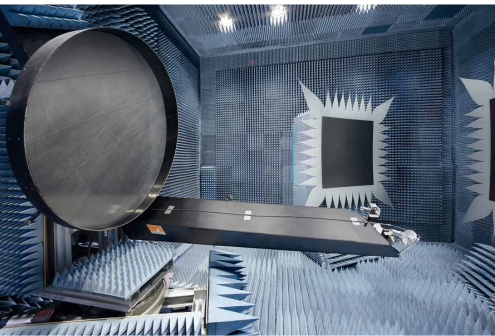
## for Science and other Space Applications



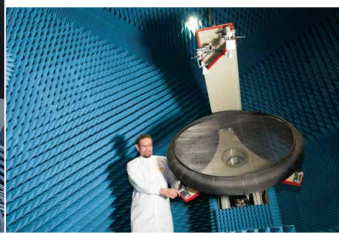
### HIGH GAIN DOWNLINK ANTENNAS



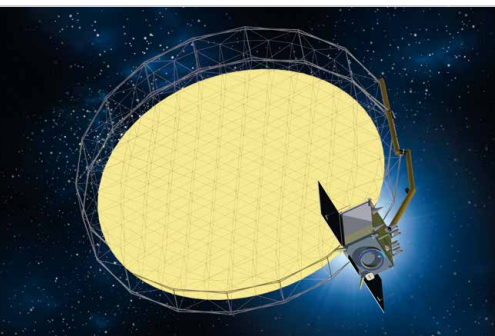
- Ka-Band for scientific application
- High manufacturing accuracy 15  $\mu\text{m}$  RMS
- Low in-orbit depointing  $< \pm 0.005^\circ$
- Diameter: 0.7 m
- Low mass due to CFRP design
- Delivery of three models in 2017, 2018, 2019
- Launch onboard EUCLID (ESA-mission)



### DUAL GRIDDED REFLECTORS



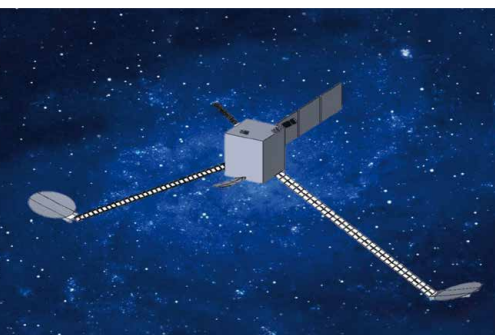
- Ku- / Ka-Band
- Linear polarisation
- CFRP- rod based patented concept
- Diameter: 1.2 m
- Mass: 4.3 kg
- First eigenfrequency:  $> 100$  Hz
- Shaped & unshaped configurations



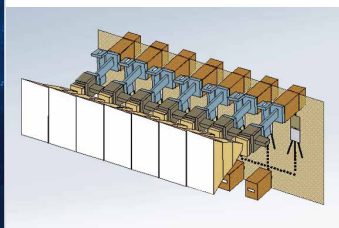
### LARGE DEPLOYABLE REFLECTORS & SUBSYSTEMS



- LEO application for Earth Observation
- GEO application for Telecommunication
- S-Band, L-Band, X-Band up to Ka-Band
- Diameters between 6 m and 20 m
- Mass of a 6 m reflector subsystem (reflector arm, HDRM, Thermal H/W, Electronics): 100 kg
- Own mesh development



### SAR RADAR ANTENNAS



- LEO-orbit
- Interferometric SAR system
- 2x Rx-antennas on deployable booms
- 2x Tx-antennas
- 35.0 - 75.0 GHz
- 3 hybrid multimatrix power amplifier networks
- Dual linear polarization



### GROUND PORTABLE ANTENNAS



- Direct satellite link
- Civil and military applications
- Packable to a back pack
- Quick deployment time
- Mass: 7 kg
- Diameter: 1.2 m
- Tx: 13.7 GHz – 14.5 GHz
- Rx: 10.7 GHz – 12.8 GHz