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## **Abstract**

### **Thermal Testing of a Spaceborne Deployable Reflector (SAR Antenna)**

The presentation deals with the thermal testing of a deployable reflector which is part of a spaceborne SAR payload.

The different challenges, solutions and lessons learnt of the QM thermal vacuum test will be presented.

Due to the design of the deployable reflector, three different cavities – one external and two different internal sections – needed to be qualified simultaneously. Due to the challenge of meeting component temperature extrema on the one hand and the average temperature extrema of the long waveguide structure due to thermo-elastic reasons on the other hand, an antagonistic environmental control has been developed and applied which will be explained in the presentation.

Also the challenge of meeting and monitoring thermo-elastic distortion requirements for the RF waveguides during the test is presented.

Concluding, lessons learnt of the thermal vacuum test are outlined, comprising the difference between theory and practice i.e. between test predictions and testing, as well as the monitoring and preventing of an uncontrolled mechanism deployment during the test.