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ISISPACE 16U SATELLITE PLATFORM FOR NEXT GENERATION EARTH OBSERVATION CONSTELLATIONS

Abstract

In the last few years ISISPACE has developed a satellite platform that is able to support high-end Earth Observation missions.

The 30 kg platform takes into account the lessons-learned from the NAPA-2 EO mission that is currently operational and delivers 5m GSD multispectral data. In addition, the platform is designed to be compatible with large (8-12U) payloads, having stringent requirements on pointing stability (to support 1-2m GSD imager payloads) and the latest detector technology (e.g. cryocooled MCT detectors). The satellite includes a fault-tolerant avionics design, allowing ¿5 years lifetime missions to support a large range of commercial and science applications.

As the 16U form factor is compatible with a containerized launch approach, the satellite design ensures flexibility wrt to choice of launcher, maintaining one of the key benefits of CubeSat-based technology.

This paper presents the key aspects of the satellite design, the foreseen use cases and the expected performance. As part of the ESA TANGO Risk Retirement Activities project, that ISISPACE as prime started in 2021 together with TNO, SRON and KNMI in the Netherlands, a Structural-Thermal Model of the 16U satellite is developed and tested through an environmental test campaign, retiring key risks for the TANGO mission and verifying the analysis and development methodologies to mitigate risks such as microvibration, thermoelastic distortions and interface design. Results from these activities will be presented.