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Space Systems and Architectures Featuring Cross-Platform Compatibility (7)

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THE SSTL-50 – A FLEXIBLE, HIGH PERFORMANCE PLATFORM

Abstract

The SSTL-50 provides a finely balanced mix of cutting edge performance and trailing-edge robustness designed to service a wide variety of applications across a range of LEO orbits. It makes use of modern, high performance nanosatellite avionics alongside the robust and trusted heritage avionics from larger SSTL missions. This combination delivers a high value 50 kg class satellite design with a 35-50% payload mass fraction. This paper covers all aspects of the spacecraft system design and details some of the wide range of applications possible on the SSTL-50.

The interfacing between the microsatellite and the nano- or cube-sat avionics is detailed alongside the system level trades which drive the avionics selection to maximise performance and minimise mass without sacrificing robustness. The standard mechanical, thermal and electrical interfaces proposed for the platform and payload result in a capability to rapidly reconfigure the platform leading to a shortened design phase. Combining the reduced design phase with a high percentage of off the shelf components and modules it is intended to take this spacecraft from kick-off to shipping to the launch site in less than 12 months.

The potential missions that this platform is capable of cover a range of science, commercial Earth observation and commercial radio frequency applications. To demonstrate the rapid reconfigurability and capability of the platform a case study is presented to show the mission life cycle and on orbit performance of the SSTL-50 configured for a high resolution commercial Earth observation mission. In addition, indicative costs will be provided.