SMALL SATELLITE MISSIONS SYMPOSIUM (B4)
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OPTOS STM RESULT, SATELLITE VALIDATION AND FUTURE EVOLUTION

Abstract

The Spanish National Institute for Aerospace Engineering (INTA) has focused a great deal of resources for over a decade in the development of small satellite platforms and technologies (Minisat, Nanosat.,..). The latest development following this line of production is based on a small platform (3U Cubesat) that counts with state of the art technologies serving its subsystems, enabling a high efficiency low cost multipurpose satellite, which will allow industrial/agency level research applications at manageable budgets. OPTOS will be the new 3-Units Cubesat INTA platform. OPTOS picosatellite will be used as a technology demonstrator. The payloads on board for the first mission are: GMR (Giant Magneto Resistance sensors for magnetic field measurement), ODM (Evaluation of total radiation dose using commercial RadFET), FIBOS (Micro-photonic devices for temperature measurement) and APIS (Athermalized camera using CMOS technology) It uses advanced subsystem technologies for satellites of its kind, such as: OBCOM: An innovative on board communication system wireless OBDH: Distributed data handling CAN based subsystem counting with programmable devices such as CPLDs and FPGAs Internal structure: Composite carbon fibber structure OPTOS is managed, engineered and designed under ESA standards (ECSS) and a CDR has just been passed, so design has been frozen. Throughout 2008 a Structural and thermal model (STM) of the satellite has been made. That model has been used in environmental test campaign, particularly thermal balance and vibration tests (with EM P-POD from CalPoly). In this paper the results obtained in test campaign will be presented. Right through 2009 satellite validation will be held. For that purpose two models wil be used: First one an EM to validate interfaces, SW and operation Subsequently a PFM which will be used in test campaign (with qualification test levels and acceptance test times) and after that launched. Moreover, in this paper, the future evolution of this platform OPTOS 2.0 will be present.