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THE ALPHABUS PRODUCT LINE QUALIFICATION AND ACCEPTANCE OF THE FIRST SERVICE MODULE

Abstract

The development phase of the ESA/CNES Alphabus program was started in 2005 jointly with Astrium and ThalesAleniaSpace with 2 main objectives: the development of the Alphabus product line and the provision of an Alphabus Service Module, to be used by the first application program. This development is now coming to an end. The qualification of the product line has been achieved by end of 2010, demonstrating adequacy of Alphabus to support a large variety of geostationary missions in the 12 to 18 kW range, with further growth potential. The qualification process covers units, subsystems and the overall system level, with extensive use of a variety of qualification hardware and test benches. The integration and test of the first Proto-Flight Service Module has proceeded in parallel and is now coming to the end of its acceptance phase, after a series of successful subsystem and system tests. This also contributed in part to qualification of some features of the product line but most importantly demonstrated the ability of the Service Module to support the Alphasat mission for Inmarsat. Within the integrated Alphasat spacecraft, the service module will then undergo system level environmental testing, as part of a normal proto-flight approach.

This paper will present the key features of Alphabus, the main steps of the product line qualification and the first Service Module acceptance program, leading to its successful acceptance.