

SPACE SYSTEMS SYMPOSIUM (D1)
Enabling Technologies for Space Systems (2)

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THE SERVIS PROJECT

Abstract

The Space Environment Reliability Verification Integrated System (SERVIS) is being developed by the Institute for Unmanned Space Experiment Free Flyer (USEF) under the contract with the New Energy and Industrial Technology Development Organization (NEDO).

The SERVIS project is intended to establish a technology baseline for using Commercial-Off-The-Shelf parts and technologies (COTS) for space application. Two spacecraft were planned to be launched for space verification under severe space environment such as radiation and extreme temperature. As the result of space verification, three technology baseline documents, namely COTS Database, COTS Evaluation Guideline, and Equipment Design Guideline have been established and will be revised. The final goal of the project is to strengthen technical and cost competitiveness of the Japanese space industry in the world market.

The first spacecraft, SERVIS-1 was launched into a sun-synchronous orbit from the Plesetsk Cosmodrome in Russia by the ROCKOT launch vehicle on October 30, 2003. After having conducted all of planned experiments in space successfully, SERVIS-1 terminated its mission on October 31, 2005. The second spacecraft, SERVIS-2 was also launched into a sun-synchronous orbit by ROCKOT on June 2, 2010. The space experiments are to be continued until June 2011.

The technology baseline documents were created at first, reflecting the results of the COTS ground evaluation tests and the on-orbit verification of the SERVIS-1. These documents have already been released in the USEF website and utilized by various organizations in Japan. These documents are being updated by outcomes of the SERVIS-2 development and on-orbit verification. We have found that more than half COTS can be used for normal Low Earth Orbit (LEO) mission.

Moreover, we have started the development of the third spacecraft, SERVIS-3 in 2011. This is rather smaller than the former two spacecraft and is to be equipped with the latest COTS. SERVIS-3 launch is planned in 2014. The technology baseline documents will be finalized after the verification of SERVIS-3.

We will present the results and the status of the SERVIS project.