

15th SYMPOSIUM ON SMALL SATELLITE MISSIONS (B4)
Generic Technologies for Small/Micro Platforms (6A)

Author: Dr. Yosuke Nakamura

Japan Aerospace Exploration Agency (JAXA), Japan, nakamura.yosuke@jaxa.jp

Mr. Takashi Ohtani

Japan Aerospace Exploration Agency (JAXA), Japan, ohtani.takashi@jaxa.jp

Mr. Yasuyuki Takahashi

JAXA, Japan, yakahashi.yasuyuki@jaxa.jp

Mr. Koichi Inoue

JAXA, Japan, inoue.koichi@jaxa.jp

Mr. Keiichi Hirako

Japan Aerospace Exploration Agency (JAXA), Japan, hirako.keiichi@jaxa.jp

FLIGHT RESULT OF SDS-1 AND DEVELOPMENT OF SDS-4 IN JAXA

Abstract

In 2006, a program called Small Demonstration Satellite (SDS) was initiated. This program provides useful standard small satellite platforms to demonstrate advanced space technology with timely launch opportunity. The program will contribute as a strategic means of JAXA to improve reliability of space missions.

SDS-1 is the first satellite in this program. It has three main mission components: 1. Multi-mode Integrated Transponder (MTP), 2. Space-wire demonstration Module and super high sensitivity accelerometer for future gravitational wave detection mission (SWIM), and 3. Advanced Micro processing In-orbit experiment equipment (AMI). The satellite was launched successfully as a piggyback payload of H-IIA launch vehicle with Greenhouse Gases Observing Satellite (GOSAT) in January 2009. Now all missions are successful and excellent results are obtained including world's first achievement.

After SDS-1, we have studied SDS standard bus concept, and developed upgraded satellite bus components which are smaller size and have higher performance. Based on these accomplishments, we initiated next SDS-4 project to be launched in the JFY 2011. The main missions of the SDS-4 are the demonstration of Space-based Automatic Identification System Experiment (SPAISE), Quartz Crystal Microbalance for monitoring contamination environment around the spacecraft (QCM), Flat-plate Heat Pipe Experiment (FOX), and In-flight experiment of Space materials using THERME (IST) which is developed by the JAXA-CNES joint research program.

As described herein, we submit flight result of SDS-1 and mission outline and development status of SDS-4, as well as a 50 to 100 kg class SDS standard bus concept.