



Small Demonstration Satellite-1

(SDS-1)

Japan Aerospace Exploration Agency
(JAXA)

Outline of SDS-1

Objectives

As part of our efforts to improve the reliability of satellites, we verify our new technologies at the part, material, or component level in space by using a small satellite to improve our technological achievements.

We will carry out operational experiments on new technologies in space to apply them for future satellite development.

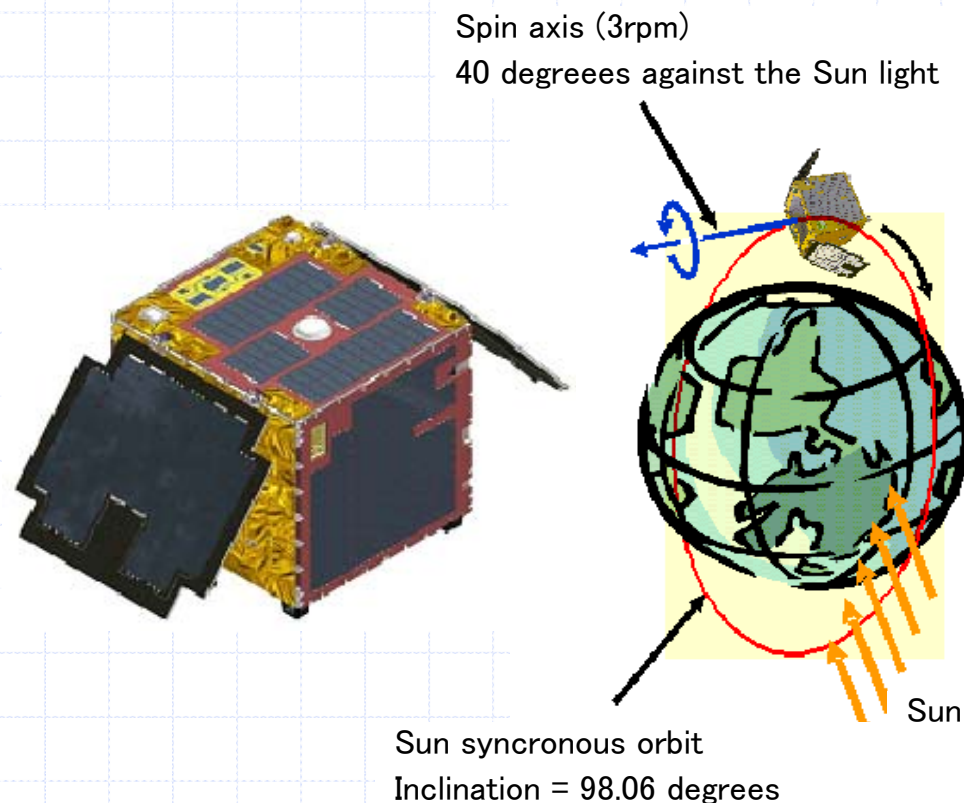
● Major Characteristics:

Dimension: 70cm × 70cm × 60cm

Mass: about 100kg

Power generation: about 140W

Altitude: 660km



SDS-1 Onboard Mission Equipment

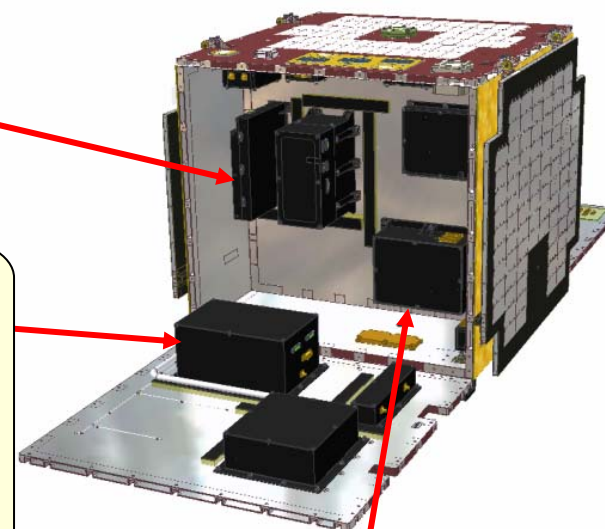
Space Wire Demonstration Module *1

By using the high speed MPU*2 developed for space by JAXA, we will verify new-generation network type data processing technology, which is improved technology based on the current international standard of the space wire.

Multi-mode Integrated Transponder

Four types of communication functions that are scheduled to be used for future satellites have been made smaller and lighter so that they can be placed in a conventional transponder size box.

- USB function (Telemetry and command function that is the same as that of the conventional satellite bus system)
- QPSK function (Faster transmission speed)
- CDMA function (Interference avoidance function for the operation of a multiple number of satellites at the same time, and simultaneous tracking)
- SSA function (Inter-satellite communication function)



*1 Space wire: a communication network device that is loaded onto space equipment such as a satellite

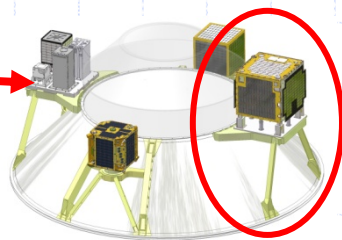
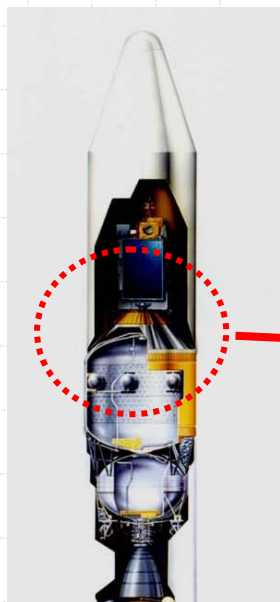
*2 MPU: Micro Processor Unit
Data processing chip that is the core of the computer

Advanced Microprocessor In-orbit Experiment Equipment

The in-orbit functional experiments on the high performance computer board consist of JAXA developed components including the 320MIPS class 64 bit MPU SRAM, DC/CD convertor, and the Power MOSFET.

SDS-1 Development Schedule

Japan Fiscal Year	JFY 2006			JFY 2007			JFY 2008		
Milestone	△ System requirements confirmation review	△ System definition confirmation review	△ Plan review		△ Design confirmation review			△ Development completion review	△ Launch
(Design) Preliminary design	Conceptual design								
Design		Design (basic, detailed)			Maintenance design (manufacturing/test)				
(Manufacturing Tests) BBM		BBM equipment/system							
PFM equipment		Flight equipment manufacturing/tests							
PFM system					System assembly tests				
(Launch/operation) Launch									Launch site
Operation									operations



Inhouse Satellite by JAXA Young Engineers

