

GSLV-F01 / GSAT-3 (EDUSAT) Mission

20 September, 2004

THE MISSION

GSLV-F01 carrying on-board the GSAT-3 (EDUSAT) Satellite lifted-off from Satish Dhawan Space Centre (SDSC) SHAR, Sriharikota at 4:01 PM (IST) on September 20, 2004. In its first operational flight GSLV-F01 successfully launched GSAT-3 (EDUSAT) the country's first thematic satellite dedicated exclusively for educational services into a Geosynchronous Transfer Orbit with a perigee (nearest point to Earth) of 180 km and an apogee (farthest point to Earth) of 35,985 km with an orbital inclination of 19.2° with respect to the Equator.

G S L V - F 0 1

THE LAUNCH VEHICLE

GSLV-F01 is the 3rd flight of ISRO's Geosynchronous Satellite Launch Vehicle and this is the first operational flight. The GSLV is configured as the 49 m tall and a three stage launch vehicle. The first stage, GS1, comprises a core motor with 138 tonne of solid propellant and four strap-on motors each with 40 tonne of hypergolic liquid propellants (UH₂₅ and N₂O₄). The second stage has 39 tonne of the same hypergolic liquid propellants. The third stage (GS3) is a cryogenic stage with 12.5 tonne of Liquid Oxygen and Liquid Hydrogen. The Aluminium alloy GSLV payload fairing is 3.4 m in diameter and is 7.8 m long.



SPECIFICATIONS

Height	49 m
Lift-Off Mass	414 t
No of Stages	3
Payloads	GSAT-3 (EDUSAT)
Inclination (deg)	19.2°
Launch Azimuth	140°
Apogee	35,985 km
Perigee	180 km



GSAT-3 (EDUSAT)

THE SATELLITE

GSAT-3, known as EDUSAT is meant for distant class room education from school level to higher education. This was the first dedicated “Educational Satellite” that provide the country with satellite based two-way communication to class room for delivering educational materials.

It was mainly intended to meet the demand for an interactive satellite based distance education system for the country. It strongly reflects India’s commitment to use space technology for national development, especially for the development of the population in remote and rural locations. The satellite was co-located with KALPANA-1 and INSAT-3C satellites at 74° East longitude. EDUSAT carried 5 Ku-band transponders providing spot beams, 1 Ku-band transponder providing a national beam and 6 extended C-band transponders with national coverage beam. Compared to the preceding satellites launched in the INSAT series, EDUSAT employed several new technologies. The spacecraft was built around the standardized spacecraft bus called I-2K. It had a multiple spot beam antenna with 1.2 m reflector to direct precisely the Ku-band spot beams towards their intended regions of India, a dual core bent heat pipe for thermal control, high efficiency multi-junction solar cells and an improved thruster configuration for optimized propellant use for orbit and orientation maintenance. The satellite used radiatively cooled Ku-band Travelling Wave Tube Amplifiers (TWTAs) and dielectrically loaded C-band demultiplexer for its communication payloads.



SPECIFICATIONS

Weight	1950.5 kg
Power	Solar Array: 2040 W
Stabilization	3-axis body stabilized in orbit using Momentum / Reaction Wheels, Magnetic Torquers, Sensors and Thrusters
Type of Satellite	Communication
Payloads	<ul style="list-style-type: none">• 6 Upper extended C-band Transponders• 5 Lower Ku-band Transponders with Regional Beam Coverage• 1 Lower Ku-band National beam Transponder with Indian Mainland Coverage• Ku Beacon
Mission Life	7 Years (minimum)

