

GSLV-D3 / GSAT-4 Mission

15 April, 2010

THE MISSION

GSLV-D3 carrying on-board the GSAT-4 Satellite lifted-off from Satish Dhawan Space Centre (SDSC) SHAR, Sriharikota at 02:27 PM (IST) on April 15, 2010. The flight-testing of the indigenous Cryogenic Engine and the Stage conducted in the Geosynchronous Satellite Launch Vehicle GSLV-D3 was unsuccessful.



G S L V - D 3

THE LAUNCH VEHICLE

The GSLV-D3 was the 6th flight of ISRO's Geosynchronous Satellite Launch Vehicle as well as its 3rd developmental flight. GSLV-D3 was the maiden flight of GSLV in which the indigenous Cryogenic Upper Stage (CUS) was used.



SPECIFICATIONS

Height	49 m
Lift-Off Mass	414 t
No of Stages	3
Payloads	GSAT-4
Inclination (deg)	104°
Launch Pad	Second Launch Pad (SDSC, SHAR)



STAGE CHARACTERISTICS				
Parameters	First Stage (GS1)		GS2	GS3
	S139 Booster	L40H Strap-on	Second Stage (L37, 5H)	Third Stage (CUS12)
Length (m)	20.13	19.7	11.56	8.7
Dia (m)	2.8	2.1	2.8	2.8
Propellant Mass (t)	138.25	42.67	39.42	12.85
Case/Tank Material	Maraging Steel	Aluminium Alloy	Aluminium Alloy	Aluminium Alloy
Propellant	HTPB	UH25 & N ₂ O ₄	UH25 & N ₂ O ₄	LH ₂ & LOX
Burn Time (s)	109.8 (action time)	149.3 (steady state time)	136 (steady state time)	714.4 (from ignition to shut off)
Max. Vac. Thrust (kN)	4707	763	799	73.5 (Normal) 82.0 (uprated)
Control System		Engine Gimbaling - Single Plane	Engine Gimbaling – two place for pitch and yaw control, hot gas Reaction Control System (RCS) for roll control	2 Vernier engines for thrust phase control and cold gas RCS for coast phase control

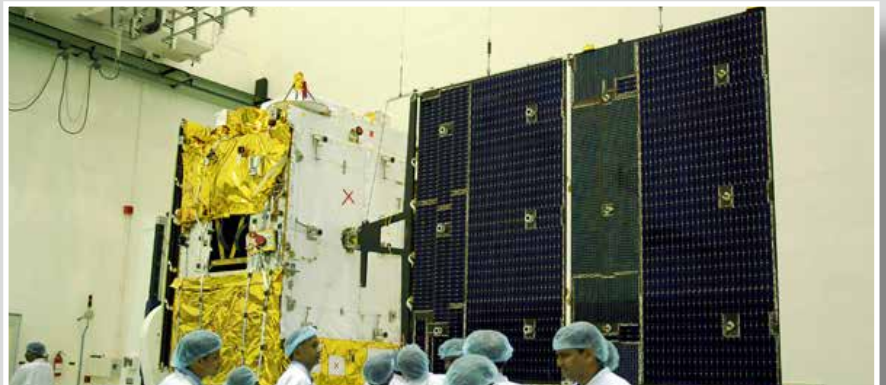
GSAT-4

THE SATELLITE

GSAT-4 was the 19th Geostationary Satellite of India built by ISRO and 4th in the GSAT series. GSAT-4 was basically an experimental satellite with the following new technologies intended to be tested:

- Electric Propulsion System
- Bus Management Unit
- 1553 Bus for Data Communication
- Miniaturised Dynamically Tuned Gyros
- 36 Ah Lithium Ion Battery
- 70 V Bus for Ka-band TWTAs

However, GSAT-4 was not placed in orbit.



SPECIFICATIONS

Weight	2220 kg
Power	Solar Array: 2759 W Batteries: Li-Ion 35 Ah
Stabilisation	3-axis body stabilised using Momentum / Reaction Wheels, Magnetic Torquers, Sensors and Thrusters
Type of Satellite	Communication
Payloads	<ul style="list-style-type: none"> • 8 Ka-band Bent Pipe and Regenerative Payload • GAGAN (GPS and GEO augmented navigation) operating in C, L1 & L5 band
Mission Life	Not Achieved

