

GSLV-F09 / GSAT-9 Mission

05 May, 2017

THE MISSION

GSLV-F09 carrying on-board the South Asia Satellite GSAT-9 lifted-off from the Satish Dhawan Space Centre (SDSC) SHAR, Sriharikota at 04:57 PM (IST) on May 05, 2017. After lift-off, GSLV-F09 placed GSAT-9 into a Geosynchronous Transfer Orbit (GTO). GSAT-9 is a Geostationary Communication satellite with the primary objective to provide various communication applications in Ku-band with coverage over South Asian Countries. GSAT-9 has the potential to be utilised for various broadcasting and interactive Telecommunication Applications. These applications would benefit the member countries to address their specific needs.



G S L V - F 0 9

THE LAUNCH VEHICLE

GSLV-F09 mission is the 11th flight of India's Geosynchronous Satellite Launch Vehicle (GSLV) and its 4th consecutive flight with the indigenous Cryogenic Upper Stage (CUS). The vehicle is designed to inject 2 - 2.5 ton class of satellites into GTO.

S-band telemetry and C-band transponders enable GSLV-F09 performance monitoring, tracking, range safety / flight safety and Preliminary Orbit Determination (POD).

GSLV-F09 is configured with Four Liquid Propellant Strap-On Motors (L40Hs) and Solid Propellant Core Stage (S139) which together constitute the first stage (GS1) + Liquid Propellant Second Stage (GS2) + Cryogenic Third Stage (GS3) + Metallic Payload Fairing with a diameter of 3.4 m.

SPECIFICATIONS

Height	49.1 m
Lift-Off Mass	415.2 t
No of Stages	3
Payloads	GSAT-9
Inclination (deg)	20.61°
Apogee	35975 km
Perigee	170 km
Launch Pad	Second Launch Pad (SDSC, SHAR)

STAGE CHARACTERISTICS				
Parameters	Stages			
	First Stage (GS1)	Second Stage (GS2)	Third Stage (GS3)	
	(4) L40Hs	S139		
Length (m)	19.7	20.2	11.6	8.7
Diameter (m)	2.1	2.8	2.8	2.8
Propellants	Earth Storable Liquid Propellants	Composite Solid Propellant	Earth storable Liquid Propellants	Cryogenic Propellants
Propellant Mass (t)	4 x 42.7	138.2	39.5	12.8

GSAT-9

THE SATELLITE

GSAT-9 is configured around the ISRO's standard I-2K bus. The satellite carries communication transponders operating in Ku-band. The two solar arrays of GSAT-9 consisting of Ultra Triple Junction Solar Cells generate about 3500 W of electrical power. Sun and Earth sensors as well as gyroscopes provide orientation reference for the satellite. The Attitude and Orbit Control System (AOCS) of the satellite maintains its orientation with the help of momentum wheels, magnetic torquers and thrusters.

The satellite's propulsion system consists of a 440 N Liquid Apogee Motor (LAM) and eight 10 N and eight 22 N Chemical Thrusters using liquid propellants for initial orbit raising and station keeping. The satellite also carries Four Stationary Plasma Thrusters of 18 mN thrust each.

In addition to the various broadcasting and interactive telecommunication applications, the satellite will also be used for supporting applications that include Disaster Management Support, Broadcast of Meteorological Data, Networking of Academic, Scientific and Research Institutions. The intended applications of GSAT-9 would strengthen the regional cooperation among the member countries.

SPECIFICATIONS

Weight	2230 kg
Power	3500 W, two 90 Ah Li-Ion Batteries
Stabilisation	3-axis stabilised Orientation reference from Sun and Earth Sensors and Gyros Momentum Wheels, Magnetic Torquers as well as Chemical and Ion thrusters for orbit and orientation control
Antennas	1.4 m Ku-band reflector on West side (for reception) 2.0 m by 2.2 m Ku-band reflector on East side (for transmission)
Type of Satellite	Communication
Payloads	12 Ku-band Transponders
Mission Life	12 Years

