

PSLV-C17 / GSAT-12 Mission

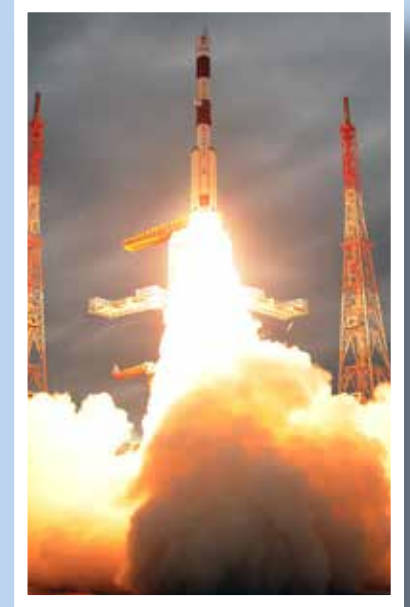
15 July, 2011

THE MISSION

PSLV-C17 carrying on-board the GSAT-12 Satellite lifted-off from the Satish Dhawan Space Centre (SDSC) SHAR, Sriharikota on July 15, 2011. This satellite was placed into sub-Geosynchronous Transfer Orbit of 284 km perigee and an apogee of 21,000 km with an inclination of 17.9° with respect to the Equatorial plane. The critical manoeuvres to raise GSAT-12 satellite into Geosynchronous Orbit were performed by firing the 440 N Liquid Apogee Motor of GSAT-12 satellite for about 80 minutes in five spells.

GSAT-12 is now located at 63° East longitude. The satellite was moved to reach its designated longitude of 83° East within the next 16 days (at the rate of one degree per day). The satellite was then co-located with INSAT-2E and INSAT-4A satellites. After parking the satellite at this location, the Communication Transponders were planned to be switched on by August 5, 2011, followed by In-Orbit Testing.

GSAT-12, the latest communication satellite built by ISRO, was configured to carry 12 Extended C-band transponders to meet the country's growing demand for transponders in a short turn-around-time.



PSLV - C 1 7

THE LAUNCH VEHICLE

PSLV-C17 in its 'XL' Version used six extended solid strap-on motors wherein each strap-on carries 12 tonne of solid propellant. This is the 2nd time 'XL' configuration is being flown. PSLV was in its 19th flight for this mission.

SPECIFICATIONS

Height	44.5 m
Lift-Off Mass	320 t
No of Stages	4
Payloads	GSAT-12
Inclination (deg)	17.9°
Apogee	21,000 km
Perigee	284 km
Launch Pad	Second Launch Pad (SDSC, SHAR)

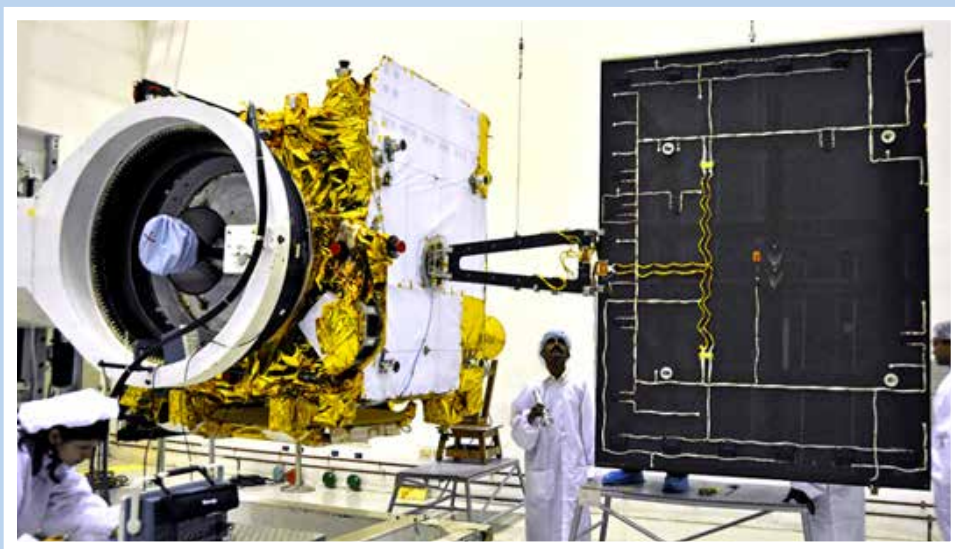


STAGE CHARACTERISTICS				
	Stage-1	Stage-2	Stage-3	Stage-4
Nomenclature	Core Stage PS1 + 6 Strap-on Motors	PS2	PS3	PS4
Propellant	Solid (HTPB based)	Liquid (UH25 + N ₂ O ₄)	Solid (HTPB based)	Liquid (MMH + MON-3)
Propellant Mass (t)	138.2 (Core), 6 x 12.2 (Strap-on)	41.0	7.6	2.5
Max Thrust (kN)	4703 (Core), 6 x 716 (Strap-on)	804	244	7.3 x 2
Burn Time (sec)	107 (Core), 55 (Strap-on)	151	116	510
Stage Dia (m)	2.8 (Core), 1 (Strap-on)	2.8	2.0	2.8
Stage Length (m)	20 (Core), 14.7 (Strap-on)	12.8	3.6	2.6

GSAT- 12

THE SATELLITE

GSAT-12, the latest communication satellite was configured to carry 12 Extended C-band transponders each with 36 MHz usable bandwidth with footprint covering Indian mainland with an Edge Of Coverage EIRP of 37 dBW and Islands with an Edge Of Coverage EIRP of 33 Dbw. It covers Indian mainland and Andaman & Nicobar Islands to support the various communication services of the INSAT system like Tele-Education, Telemedicine and for Village Resource Centres (VRC). The spacecraft is built around the standard I-1K bus of ISRO with power generating capability of 1428 W.



SPECIFICATIONS

Weight	1410 kg
Power	1430 W, one 64 Ah Li-Ion Battery
Stabilisation	3-axis stabilized in orbit using Earth sensors, Sun Sensors, Momentum and Reaction Wheels, Magnetic Torquers and eight 10 Newton and eight 22 Newton Bipropellant Thrusters
Propulsion	440 Newton Liquid Apogee Motor (LAM) with Mono Methyl Hydrazine (MMH) as fuel and Mixed Oxides of Nitrogen (MON-3) as oxidiser
Antennae	One 0.7 m Diameter Body Mounted Parabolic Receive Antenna One 1.2 m Diameter Polarization Sensitive Deployable Antenna
Type of Satellite	Communication
Payloads	12 Extended C-Band Transponders
Mission Life	About 8 Years