

GSAT-10 Mission

29 September, 2012

THE MISSION

India's Communication Satellite GSAT-10 on-board the Ariane-5 VA-209 lifted-off from Kourou, French Guiana at 02:48 AM (IST) on September 29, 2012. About 31 minutes after lift off, GSAT-10 was injected into an elliptical Geosynchronous Transfer Orbit with a perigee of 250 km and an apogee of about 35,853 km. From there, the satellite would be moved to Geostationary Orbit (circular 36,000 km above Equator) by using the satellite propulsion system in a three step approach. GSAT-10 satellite was positioned at 83° East orbital location.

GSAT-10 is India's advanced communication satellite being inducted into the INSAT system.

GSAT-10

THE SATELLITE

GSAT-10 is configured to carry 30 communication transponders in normal C-band, lower extended C-band and Ku-band as well as a GPS Aided GEO Augmented Navigation (GAGAN) payload operating in L1 and L5 bands. GSAT-10 is the second satellite to carry GAGAN payload after GSAT-8, which is already providing navigation services from orbit. GSAT-10 also carries a Ku-band beacon to help in accurately pointing ground antennas towards the satellite.

The 30 communication transponders on-board GSAT-10 will further augment the capacity in the INSAT system. The GAGAN payload provides the Satellite Based Augmentation System (SBAS), through which the accuracy of the positioning information obtained from the



Ariane 5

GPS satellites is improved by a network of ground based receivers and made available to the users in the country through Geostationary Satellites.

PAYLOADS OF GSAT-10

- 12 Ku-band transponders each with 36 MHz usable bandwidth employing 140 W Travelling Wave Tube Amplifier (TWTA) with footprint covering Indian mainland with an Edge of Coverage Effective Isotropic Radiated Power (EIRP) of 51.5 dBW and Andaman & Nicobar Islands with an EIRP of 49.5 dBW
- 12 C-band transponders each with 36 MHz usable bandwidth employing 32 W TWTA with footprint covering Indian mainland and West Asia with an Edge of Coverage EIRO of 40 dBW
- 6 Lower Extended C-band transponders each with 36 MHz usable bandwidth employing 32 W TWTA with footprint covering Indian mainland and island territories with an Edge of Coverage EIRP of 38 dBW and 37 dBW respectively

NAVIGATION PAYLOAD

- Two-channel GAGAN payload operating in L1 and L5 bands provides satellite-based navigation services with accuracy and integrity required for civil aviation applications over Indian Air Space.

SPECIFICATIONS

Weight	3400 kg
Power	6474 W, two 128 AH Li-Ion Batteries
Propulsion	440 Newton Liquid Apogee Motors (LAM) with Mono Methyl Hydrazine (MMH) as fuel and Mixed oxides of Nitrogen (MON-3) as oxidizer for orbit raising
Stabilisation	Three axis stabilised in orbit using Earth Sensors, Sun Sensors, Momentum and Reaction Wheels, Magnetic Torquers and 10 Newton and eight 22 Newton bipropellant thrusters
Antennae	East: 2.2 m dia circular deployable Dual Gridded Reflector (DGR) West: 2.2 m x 2.4 m elliptical deployable DGR Earth Viewing Face (top): 0.7 m parabolic, 0.9 m parabolic and 0.8 m x 0.8 m sixteen element helical antenna for GAGAN
Type of Satellite	Communication
Payloads	<ul style="list-style-type: none"> • 12 Ku-band Transponders • 12 Normal C-band Transponders • 6 Lower Extended C-band Transponders • Two-channel GAGAN
Mission Life	15 Years

