

PSLV-C45 / EMISAT Mission

01 April, 2019

THE MISSION

PSLV-C45 carrying on-board the EMISAT and other 28 Commercial Satellites lifted-off from the Satish Dhawan Space Centre (SDSC) SHAR, Sriharikota at 09:27 AM (IST) on April 1, 2019. About 17 minutes and 12 seconds after lift-off, the PSLV-C45 placed EMISAT into Sun-synchronous Polar Orbit of 748 km height.

After the separation of EMISAT, the vehicle's fourth stage engines were restarted twice to place the 28 International Customer Satellites precisely into a Sun-synchronous Orbit of 504 km height. The last customer satellite was placed in its designated orbit 1 hour and 55 minutes after lift-off.

About 3 hours after lift-off, the fourth stage (PS4) of the vehicle was moved to a Lower Circular Orbit of 485 km after two restarts to establish it as an orbital platform for carrying out experiments with its three payloads. The PS4 payloads are Automatic Identification System from ISRO, Automatic Packet Repeating System from AMSAT, India and Advanced Retarding Potential Analyzer for ionospheric studies from Indian Institute of Space Science and Technology.

PSLV - C 4 5

THE LAUNCH VEHICLE

This flight of PSLV was in 'QL' configuration with 4 solid strap-on motors. This mission was the 1st flight in 'QL' configuration. It was a four strap-on new variant, the vehicle achieved three different orbits and for the first time the PS4 stage is powered by solar panels. In this launch, in-house prepared UH-25 was used successfully for the PS2 stage filling, from the outsourced UDMH and Hydrazine Hydrate after meeting all specifications. Continuous propellant filling of PS2 stage was carried out from Second Launch Pad which had resulted in reducing the countdown duration by one hour.

SPECIFICATIONS

Height	44 m		
Lift-Off Mass	287 t		
No of Stages	4		
Payloads	EMISAT	28 International Customer Satellites USA (24) Switzerland (01) Lithuania (02) Spain (01)	PS4 Orbital Experiment
Orbit Height	749 km	504 km	485 km
Inclination (deg)	98.376	97.468	97.468
Launch Azimuth	140°		
Launch Pad	Second Launch Pad (SDSC, SHAR)		



PSLV Fourth Stage (PS4) as an Orbital Platform

In this mission, the PS4 hosts three payloads, namely;

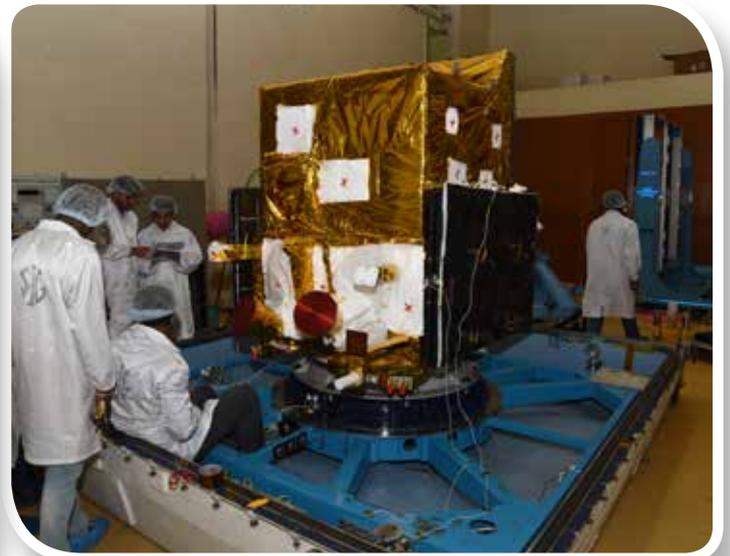
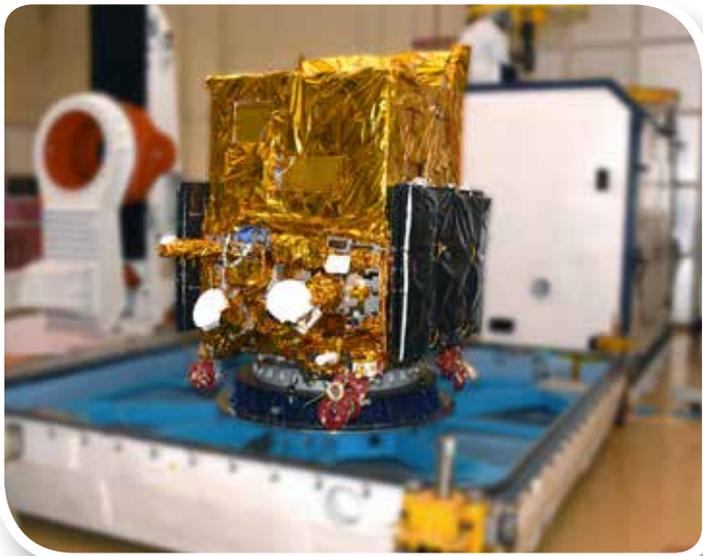
1. **Automatic Identification System (AIS)** from ISRO for maritime satellite applications capturing messages transmitted from ships.
2. **Automatic Packet Repeating System (APRS)** from AMSAT (Radio Amateur Satellite Corporation), India assists amateur radio operators in tracking and monitoring position data.
3. **Advanced Retarding Potential Analyzer for Ionospheric Studies (ARIS)** from Indian Institute of Space Science and Technology (IIST) for the structural and compositional studies of ionosphere.



EMISAT

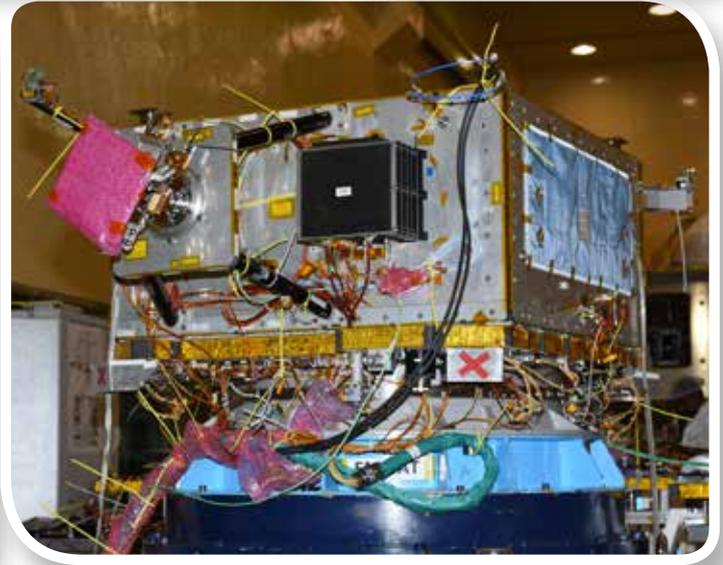
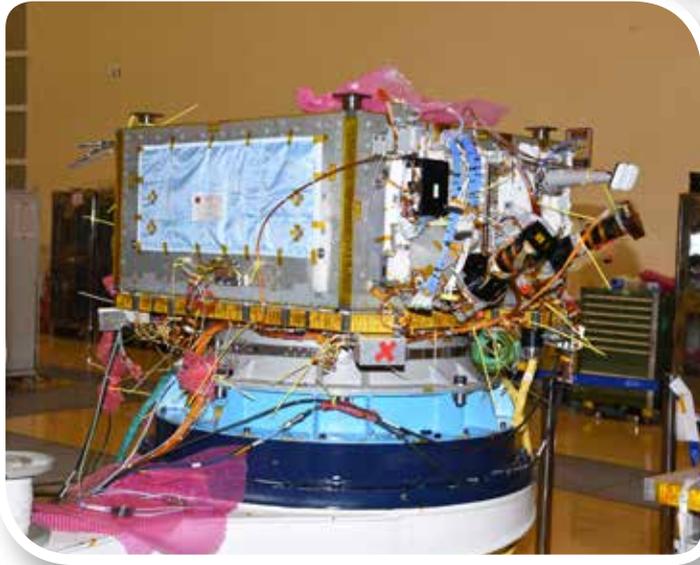
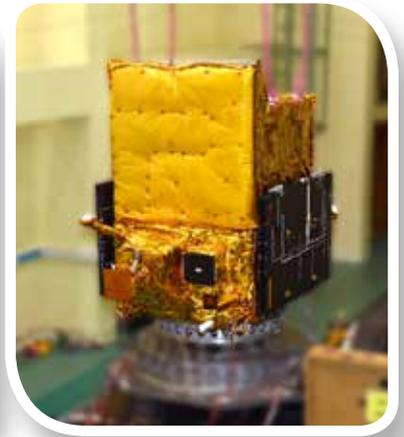
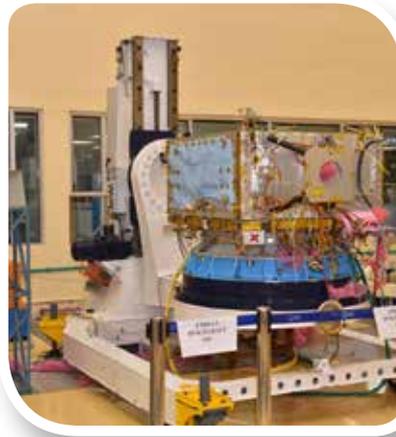
THE SATELLITE

EMISAT is a satellite based on ISRO's Indian Mini Satellite-2 (IMS-2) bus platform. The satellite was successfully placed in its intended Sun-synchronous Polar Orbit and is intended for Electromagnetic Spectrum Measurement.



SPECIFICATIONS

Weight	436 kg
Power	800 W
Type of Satellite	Experimental
Payloads	Electromagnetic Spectrum Measurement



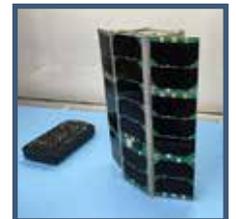
THE INTERNATIONAL CUSTOMER SATELLITES

The 28 International Customer Satellites, together weighing about 220 kg include twenty five 3U type, two 6U type and one 2U type Nanosatellites. All these satellites are being launched under commercial arrangements.

Satellite	No. of Satellites	Country	Mission Objectives
Flock-4A	20	USA	Earth Observation
LEMURS	4	USA	Vessel Automatic Identification System
Astrocast-2	1	Switzerland	Internet of Things
M6P	1	Lithuania	Internet of Things, Communications Network, Custom Radio Communication
BlueWalker1	1	Lithuania	Satellite Communication Technology
Aistechsatsat-3	1	Spain	Remote Assesst Management and Aircraft Tracking



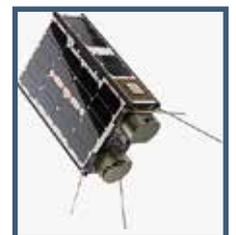
LEMURS



Astrocast-2



BlueWalker1



M6P



Flock-4A



Aistechsatsat-3