



PSLV-C45/EMISAT MISSION

Launch Kit

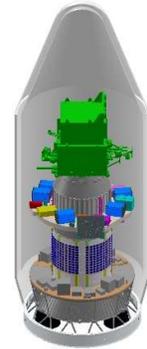


CONTENTS

Mission Description	3
Flight Sequence & Events	4
PSLV-C45	5
EMISAT & PS4 Orbital Platform	6
International Customer Satellites	7
Glimpses	8

MISSION DESCRIPTION

India's Polar Satellite Launch Vehicle (PSLV), in its 47th mission (PSLV-C45), will launch EMISAT, the primary satellite and 28 international customer satellites from Satish Dhawan Space Centre (SDSC) SHAR, Sriharikota.



The primary Satellite will be injected into a 749 km orbit, followed by two fourth stage restarts to achieve a 504 km orbit, where all customer satellites will be injected. Subsequently, the fourth stage is restarted again to achieve a 485 km orbit to serve as an orbital platform to carry out space borne experimentation.

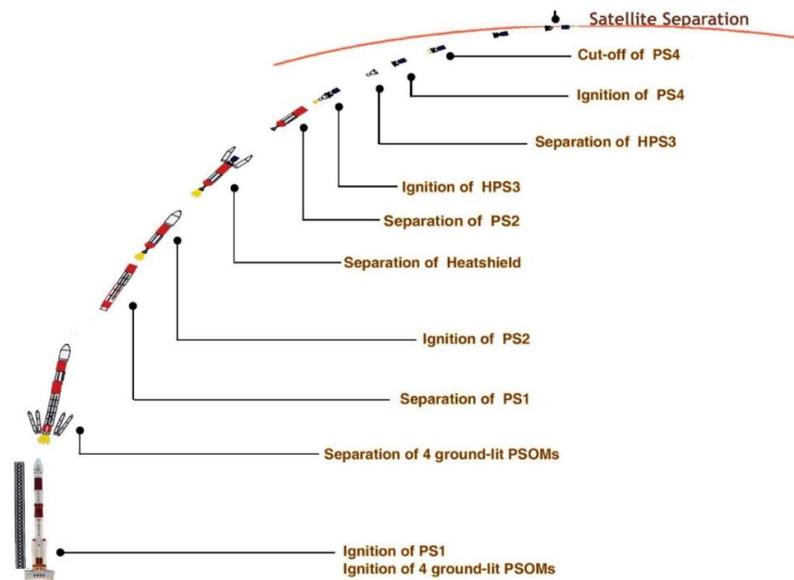
PSLV-C45 Mission Specifications			
Parameter	EMISAT	International Customer Satellites	PS4 Orbital experiment
Altitude (km)	749	504	485
Inclination (deg)	98.376	97.468	97.468
Launch Pad	Second Launch Pad (SLP)		
Launch Azimuth (deg)	140		

This is the first mission of the PSLV in which its PSLV-QL variant (4 XL Strap-on motors) is being flown.

MILESTONES

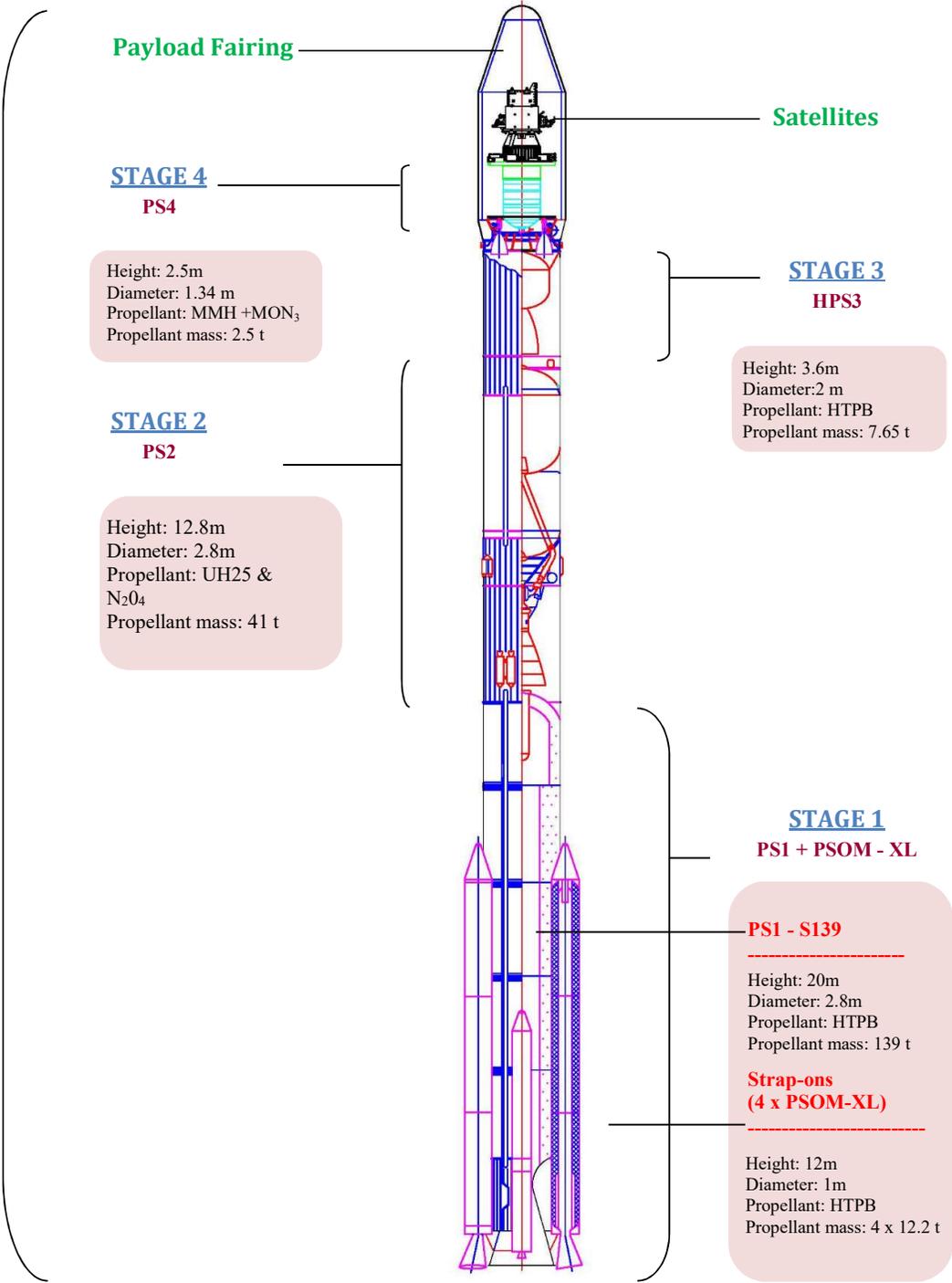


PSLV-C45 FLIGHT SEQUENCE



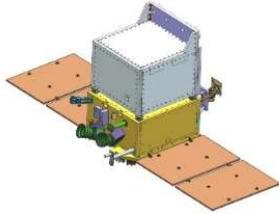
Flight Events	Time (s)	Local Altitude (km)	Inertial Velocity (m/s)
PS1 Ignition	0	0.026	451.9
PSOM XL 1 & 2 Ignition	0.42	0.026	451.9
PSOM XL 3 & 4 Ignition	0.62	0.026	451.9
PSOM XL 1 & 2 Separation	69.9	28.822	1229.8
PSOM XL 3 & 4 Separation	70.1	28.977	1233.2
PS1 Separation	108.82	68.615	2009.1
PS2 Ignition	109.02	68.848	2008.2
Heat Shield Separation	149.82	115.331	2270.0
PS2 Separation	261.34	249.042	4038.2
PS3 Ignition	262.54	250.677	4034.5
PS3 Separation	509.72	560.459	5775.1
PS4 Ignition	520.12	570.574	5760.6
PS4 Engine Cut-off	984.20	752.861	7473.3
EMISAT Separation	1031.20	753.687	7478.1
PS4 Engine Restart-1	3611.52	749.799	7477.1
PS4 Engine Cut-off (Restart-1)	3621.66	749.808	7420.0
PS4 Engine Restart-2	6530.52	504.927	7676.4
PS4 Engine Cut-off (Restart-2)	6541.00	504.935	7615.2
First Customer Satellite Separation	6626.00	505.305	7609.8
Last Customer Satellite Separation	6901.00	508.243	7608.9
PS4 RCS Orbit Change-1 Start	7903.52	520.003	7606.1
PS4 RCS Orbit Change-1 Stop	7969.54	519.795	7604.7
PS4 RCS Orbit Change-2 Start	10741.02	507.907	7615.6
PS4 RCS Orbit Change-2 Stop	10857.56	507.321	7619.6

PSLV-C45



EMISAT

EMISAT is a satellite based on ISRO's Indian Mini Satellite -2 (IMS-2) bus platform.



SALIENT FEATURES OF EMISAT	
Lift-off weight	436 kg
Altitude	749 km
Inclination	98.376 deg
Power	800 W

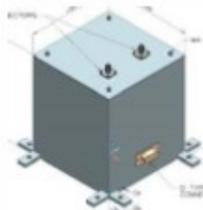
The satellite is intended for electromagnetic spectrum measurement.

PSLV Fourth Stage (PS4) as an Orbital Platform

The PS4 orbital platform is envisaged to provide a microgravity environment for research organisations and academic institutes to perform experiments.

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.



APRS



AIS

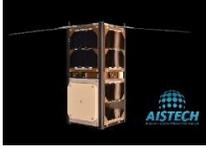


ARIS

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 nano satellites. These satellites are from four countries, viz. Lithuania, Spain, Switzerland and USA. All these satellites are being launched under commercial arrangements.

Country	No. of Satellites
USA	24
Switzerland	01
Lithuania	02
Spain	01

Satellite Name (Numbers) & Country	Satellite Photograph	Mission Objective
Flock-4A (20 Nos.) - USA		Earth Observation
LEMURs (4 Nos.) - USA		Vessel Automatic Identification System
Astrocast-2 (1 No.) - Switzerland		Internet of Things
M6P (1 No.) - Lithuania		Internet of Things communications network, custom radio communication.
BlueWalker1(1 No.) - Lithuania		Satellite communications technology
Aistechsat-3 (1 No.) - Spain		Remote asset management & aircraft tracking

GLIMPSES



Nozzle end segment of PSLV-C45 Core (First) Stage being lowered on Mobile Launch



PSLV-C45 core (first) stage with four strap-ons inside Vehicle Assembly Building



Hoisting of PSLV-C45 liquid second stage during vehicle integration



PSLV-C45 Third and Fourth Stages at Stage Preparation Facility