



## PSLV-C55/TeLEOS-2 Mission - Glimpses



PSLV Project  
Vikram Sarabhai Space Centre (VSSC)  
Indian Space Research Organisation (ISRO)



### PSLV-C55/TeLEOS-2 Mission

PSLV-C55 is a Dedicated Commercial PSLV Mission of NewSpace India Limited (NSIL), for the International Satellite customer from Singapore. In this mission, TELEOS-2 a Synthetic Aperture Radar Satellite will be the primary Satellite and Lumelite-4 a Technology Demonstration Nano-satellite will be co-passenger Satellite.

This is the 57<sup>th</sup> flight of PSLV and 16<sup>th</sup> mission using the PSLV Core Alone configuration (PSLV-CA).

PSLV-C55 adopted “Integrate, Transfer and Launch (ITL)” concept using PSLV Integration Facility (PIF).

Non-Separating POEM-2 payloads:

ARIS-2, PiLOT, ARKA200, Starberry, DSOL, DSOD-3U, DSOD-6U

## TeLEOS-2

The TeLEOS-2 Satellite is developed under a partnership between DSTA (representing the Government of Singapore) and ST Engineering. Once deployed and operational, it will be used to support the Satellite imagery requirements of various agencies within the Government of Singapore.

TeLEOS-2 carries a Synthetic Aperture Radar (SAR) payload. TeLEOS-2 will be able to provide all-weather day and night coverage, and capable of imaging at 1 m full-polarimetric resolution.



## LUMELITE-4

The LUMELITE-4 Satellite is co-developed by the Institute for Infocomm Research (I2R) of A\*STAR and Satellite Technology and Research Centre (STAR) of the National University of Singapore. LUMELITE-4 is an advanced 12U Satellite developed for the technological demonstration of the High-Performance Space-borne VHF Data Exchange System (VDES). Using the VDES communication payload developed by I2R and STAR's scalable Satellite bus platform, it aims to augment Singapore's e-navigation maritime safety and benefit the global shipping community.

## Orbit Specification



There is no orbital specification for the orbital platform phase of the mission. PS4 OP shall remain in the same orbit achieved at the end of PS4 tank passivation after the primary mission.

### PSLV-C55 Vehicle Characteristics

### PSLV-C55 Mission Specifications (Osculating Elements)

Vehicle Height	44.4 m		<b>Parameter</b>	<b>Orbit-1</b>
Lift off Mass	228.355 t		Semi-Major Axis (km)	6964 (Alt: 586 km)
<b>Propulsion Stages</b>			Eccentricity	0.0
First Stage	S139		Inclination (deg)	10.00
Second Stage	PL40		Launch Pad	FLP
Third Stage	HPS3 (7.6 t)		Launch Azimuth (deg)	104
Fourth Stage	L1.6 (0.8 t) (Ti)			

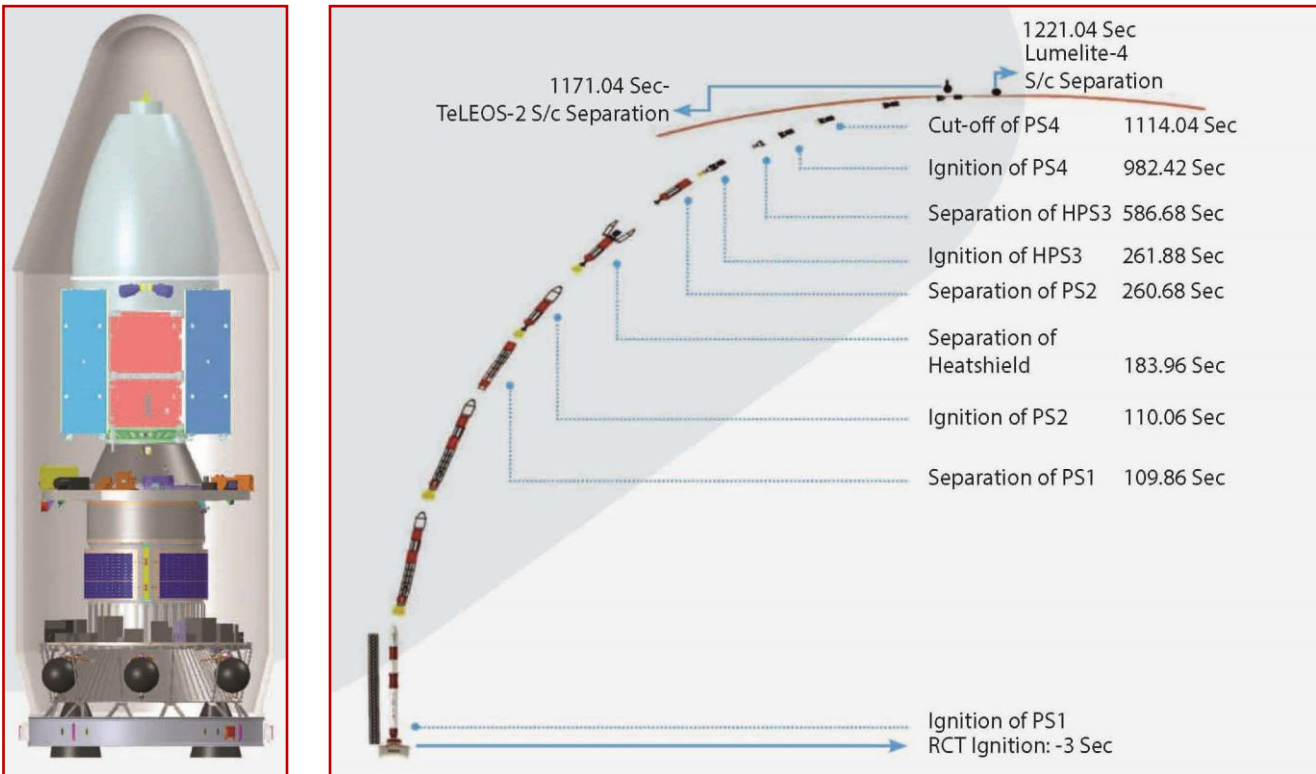
← PSLV-C55 Vehicle Configuration  
(S139+PL40+HPS3 (7.6t)+L1.6 (0.8t) (Ti))

<b>Expected period of Operation</b>	<b>Orbital Platform Configuration</b>
1 Month	L1.6 (Ti) + Solar Panel (Deployable)

### PSLV-C55 Stages at a Glance

	<b>Stage-1 – (PS1)</b>	<b>Stage-2 – (PS2)</b>	<b>Stage-3 – (HPS3)</b>	<b>Stage-4 – (PS4)</b>
Length (m)	20	12.8	3.6	3.0
Diameter (m)	2.8	2.8	2	1.34
Propellant	Solid (HTPB based)	Liquid (UH25 + N <sub>2</sub> O <sub>4</sub> )	Solid (HTPB based)	Liquid (MMH + MON3)
Propellant Mass (t)	139	41	7.65	0.8

### PSLV-C55 Flight Sequence



Payload Accommodation in PSLV-C55

### Satellites in PSLV-C5

<b>Satellite</b>	<b>Agency, Country</b>	<b>Separating Mass (Kg)</b>
TeLEOS-2	DSTA and ST Engineering, Singapore	741
Lumelite-4	ASTAR and NUS, Singapore	16

### PSLV-C55 Typical Flight Profile

Event	Time (s)	Local Altitude (Km)	Inertial Velocity (m/s)
RCT Ignition	-3	0.026	451.9
PS1 Ignition	0	0.026	451.9
PS1 Separation	109.86	49.972	1743.6
PS2 Ignition	110.06	50.161	1742.8
CLG Initiation	115.06	54.812	1762.5
Heat Shield Separation	183.96	112.713	2616.4
PS2 Separation	260.68	165.124	4668.3
PS3 Ignition	261.88	165.824	4666.9
PS3 Separation	586.68	350.098	7578.0
PS4 Ignition	982.42	557.259	7340.8
PS4 Engine Cut-off	1114.04	586.231	7563.2
TeLEOS-2 Separation	1171.04	586.233	7565.3
Lumelite-4 Separation	1221.04	586.203	7565.4
MON Passivation Start	1354.04	585.997	7566.6
MMH Passivation Start	1694.04	584.310	7575.4



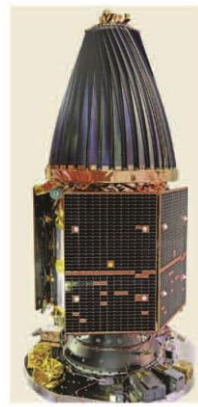
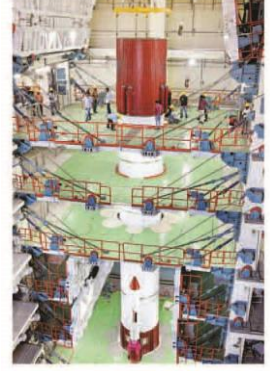
### PSLV Orbital Experimental Module-2 (POEM-2)

PSLV-C55 mission will carry out in-orbit scientific experiments by using the spent PS4 stage as an orbital platform. This is the third time that PS4 will be used after satellite separations as a platform for experiments. There will be non-separable payloads mounted on MSA. Payloads will be powered ON by a command, after all satellites are separated. The platform will have solar panel mounted around PS4 tank which will be deployed after confirmation of the stage achieving stabilization.

The deployment of the solar panels will be through a ground command. The platform will ensure that the deployed solar panel points towards the Sun optimally using appropriate sun pointing mode, which will increase the power generation capability of the platform. The power will be provided to payloads and avionic packages based on their requirements.

As a part of POEM-2, there are 7 experimental non-separable payloads: PiLOT (PSLV In orbital Obc and Thermals), a OBS package from IIST; ARIS-2 (Advanced Retarding Potential analyser for Ionospheric Studies) experiment from IIST; HET based ARKA200 Electric Propulsion System from Bellatrix; DSOD-3U and DSOD-6U deployer units along with DSOL-Transceiver in S- and X-bands from Dhruva Space ; and Starberry Sense Payload from Indian Institute of Astrophysics (IAP).

## Glimpses



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