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IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Launch Vehicles in Service or in Development (1)

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THE RESULT OF EPSILON LAUNCH VEHICLE THIRD FLIGHT AND PLAN FOR MULTI LAUNCHES

Abstract

The Epsilon is a three-stage solid-propellant launch vehicle suitable for delivering small payloads to orbits with high performance and affordable prices. We have launched Epsilon twice in past few years. Epsilon demonstrated high accuracey and payloads-friendly environments in fairing in the past two flights. We launched the third Epsilon in January 2018. The third Epsilon is a three-stage solid-propellant launch vehicle with a Post Boost Stage(PBS). PBS has liquid-propellant thrusters for orbital adjusting and attitude control. The third Epsilon has injected ASNARO-2(Advanced Satellite with New System ARchitecture for Observation) into the 500km Sun-Synchronized-Orbit(SSO) with high accuracy of +1.38 km in apogee altitude, and -0.031 degrees in inclination. The launch vehicle also demonstrated low level of mechanical environments inthe fairing such as sinusoidal vivration and acoustic environment. Epsilom has demonstrated capability to inject single payloads into circular orbit (LEO), long elliptical orbit (LEO), and SSO in past three missions. As a next step, we plan to enhance Epsilon's ability for multi-launch missions. For multi-launch system, we develop a structure which can load four to six small-sats, and function to change orbit several times. As demonstration of elements for multi-launch system, the fourth flight of Epsilon is scheduled in 2018. The fourth Epsilon is equiped a structure which has capacity for one 200 kg class space-craft, three small-sats, and three 3U cube-sats. The fourth Epsilon has capability to inject six to ten payloads into orbits with different altitudes.