31st IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS (B4)
Access to Space for Small Satellite Missions (5)

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CONFIGURATION DESIGN AND APPLICATION OF LM-2D LAUNCH VEHICLE SMALL SATELLITE RIDESHARE MISSION

Abstract

LM-2D is a two-stage liquid launch vehicle developed by Shanghai Academy of Spaceflight Technology(SAST). It is designed for low earth orbit and sun-synchronous orbit missions, with the capacity of 1300kg for 700km SSO, and has already successfully performed 85 flights as of December 2023. The launch vehicle embodies the design principle of high reliability and low cost, and can support single-satellite, multi-satellite parallel, dual-satellite or triple-satellite tandem, and other forms of launch configuration to meet the requirements of different users. In recent years, in the face of the increasingly strong demand for small satellite launches, LM-2D launch vehicle have explored and designed a variety of rideshare launch configurations and small satellite adapters that adapt to different installation methods, as well as equipment cable layout, AIT process. lt successively completed the launch of Chinese Hα Solar Explorer(CHASE) with 10 rideshare satellites in composite disc inclined tiling configuration, and the launch of QILU-2, QILU-3 with other 12 rideshare satellites in tandem-parallel and side-mounted combination, which solves the problem that bottom-mounted satellites and side-mounted satellites are difficult to be compatible at the same time in configuration layout design, forming a universal shared launch configuration, which can adapt to most domestic SC/LV separation devices, and effectively use the launching capacity and payload fairing envelope space, and is committed to provide users with convenient and efficient shared launch services.