NEMO-HD Microsatellite - Technical Solution for Interactive Earth Observation Mission

Hubert Fröhlich, Tomaž Rodič

SPACE-SI – Slovenian Centre of Excellence for Space Sciences and Technologies
E-mail: hubert.froehlich@space.si

Abstract. NEMO-HD (Next-Generation Earth Monitoring and Observation – High Definition) is a high performance multispectral Earth observation microsatellite (65 kg) developed in collaboration between SPACE-SI and SFL, the Space Flight Laboratory of University of Toronto. The NEMO-HD payload consists of two instruments of which the primary instrument is capable of imaging in four spectral bands at a pan-sharpened GSD of 2.8m, and covers a swath width of 10 km and the secondary instrument produces images at a GSD of 40m and a much wider field of view.

In addition to still imaging, both instruments can capture high definition video at 25 fps. The video is H.264 encoded and can be downlinked in real time when the satellite is within a line of sight with a ground station. The video channels are co-boresighted with the still imagery channels. This allows for a real-time imaging mode in which an operator can, during viewing the real-time video feed, command the spacecraft to acquire still images of area of interest.
NEMO-HD includes standard complement of subsystems, sensors and actuators that make up a three-axis stabilized bus. Payload data will be downlinked via 50 Mbps X-band downlink. It has 279.4 GB of on-board storage, a high-performance instrument computers, solar pannels capable of producing 55W of power and 300 Wh Li-ion battery.