IAF EARTH OBSERVATION SYMPOSIUM (B1)
Future Earth Observation Systems (2)

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NEMO-HD INORBIT TESTS FOR INTERACTIVE REAL TIME VIDEO AND MULTISPECTAL EO IMAGING

Abstract

NEMO-HD is the first Slovenian microsatellite mission that explores a new Earth observation concept by combining interactive real-time video streaming and multispectral imaging. The satellite operated by the Slovenian Centre of Excellence for Space Sciences and Technologies SPACE-SI was developed in collaboration with the Space Flight Laboratory from University of Toronto Institute for Aerospace Studies.

NEMO-HD has two optical payloads: Multi-spectral Optical Imager, 2.8 m GSD, 10 km swath, and Color Optical Imager, 40 m GSD, 75 km swath. Both are 1080p HD H.264 video capable. In addition to the payloads, the satellite is equipped with a three axis attitude determination and control system, body mounted solar panels with maximum power of 55 W and 300 Wh Lithium-Ion battery pack. For command and telemetry, an UHF receiver and S-band transmitter are used, while the payload data can be downloaded in real time by 50 Mbps X-band transmitter.

In the proposed contribution, the first NEMO-HD inorbit test results achieved after the Vega SSMS POC launch in 2020 into SSO, 500 km, LTDN 10:30 will be presented. Special attention will be dedicated to the technology demonstrations of real time video and multispectral imaging of river basins and smart cities. In particular the advanced features of the complete EO system that combines the agile NEMO-HD microsatellite with transportable ground station STREAM and advanced data processing chain STORM will be assessed. Since STREAM allows NEMO-HD to be controlled interactivelly, a number of real life scenarios will be demonstrated for real time and low latency services.