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KENT RIDGE 1 - A HYPER SPECTRAL MISSION IN NEAR EQUATORIAL ORBIT

Abstract

The Kent Ridge 1 mission has been jointly implemented by Singapores National University (NUS) and Berlin Space Technologies. The project was initiated in May 2013 and was launched on PSLV in December 2015. The 80kg satellite carries three payloads. Two hyper spectral instruments (VNIR and SWIR bands) as main payload and a high resolution real time video imager as secondary payload. The primary payloads are based on polarizing fourier transform spectrometers thats have been developed in Singapore. The VNIR instrument has 44m resolution and 50km swath and allows to generate data products of up to 60 channels in the 500-950mm spectral range. The SWIR instrument has 110m resolution and 50km swath and can generate data products with up to 40 channels in the 950-1550nm range. The main payloads task is to aid environmental monitoring such as water quality, land use and food security. The secondary payload is a 3 band (Landsat 1,2,3) multi spectral imager with 6 m resolution and a scene size of 12x9km. The camera is being operated in real time to support time critical applications. The satellite was placed into a near equatorial orbit (15 inclination, 550km orbit height) and has thus very fast revisit time (multiple time per day) in near equatorial regions. The orbit has been specifically chosen to have a fast revisit time for near equatorial targets such as Singapore. KR1 is one of very few earth observation satellites use similar orbits so far (Malaysias Razaksat launched 2009 / decommissioned 2010, Indionesias LAPAN A2 launched September 2015, Singapores Teleos-1 launched December 2015). The KR1 satellite is since its launch operated by the Singapore based Centre of Remote Imaging Sensing and Processing (CRISP) located at NUS campus. The paper will assess the first 6 month of operation of the space craft in orbit.