

IAF EARTH OBSERVATION SYMPOSIUM (B1)
Earth Observation Sensors and Technology (3)

Author: Mr. Joosep Kivastik
University of Tartu, Estonia, joosep.kivastik@estcube.eu

Mr. Hendrik Ehrpais
University of Tartu, Estonia, Hendrik.Ehrpais@Estcube.eu

Mr. Reimo Soosaar
University of Tartu, Estonia, reimos@to.ee

Mr. Silvar Muru
University of Tartu, Estonia, silvar.muru@estcube.eu

Mr. Madis Kaspar Nigol
University of Tartu, Estonia, madis.kaspar.nigol@ut.ee

Mr. Joel Kuusk
University of Tartu, Estonia, joel.kuusk@to.ee

Mr. Hans Hubert Sams
University of Tartu, Estonia, hans.sams@estcube.eu

PROTOTYPE DESIGN OF A RADIOMETRICALLY CALIBRATED MINIATURE MULTISPECTRAL
EARTH OBSERVATION IMAGER FOR NANOSATELLITES**Abstract**

In this article we present a prototype design for a radiometrically calibrated scientific grade miniaturised standardised Earth Observation Imager. The imager is designed for CubeSats or similarly sized platforms and is radiometrically calibrated. This kind of imager on multiple nanosatellites could provide complementary data to large Earth observation missions such as Sentinel-2. The EOI will be a small, lightweight imager that separates two spectral bands using optical beam splitting technology. The EOI complies with the small mass, cost effective, low power CubeSat standard, can be integrated into a variety of different satellites, and provide ready-to-use embedded software, simple-to-adapt mechanics and electronics to support filters, and sensors. The EOI will be capable of providing scientific grade data suitable for quantitative remote sensing studies. Our goal is to achieve 5% radiometric measurement accuracy. This is accomplished through design, characterization of the instrument hardware and an on-board calibration unit.