SMALL SATELLITE MISSIONS SYMPOSIUM (B4)
Small Satellites Potential for Future Integrated Applications and Services (4)

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INITIAL CALIBRATION AND VALIDATION RESULT OF DUBAISAT-1 IMAGES

Abstract

DubaiSat-1 which is 200 Kg class 2.5 meter resolution Earth observation satellite is launched in May 2009. DubaiSat-1 was a co-development program between EIAST (Emirates Institution for Advanced Science and Technology), U.A.E and Satrec Initiative Co. Ltd., Korea. After the launch, EIAST and Satrec Initiative perform Launch Early Operation and calibration validation for two months. In this paper, the calibration and validation activities such as MTF measurement and MTF correction filter design, VSP gain setting, in-orbit SNR measurement, band-to-band registration, in-orbit radiometric geometric calibration for the DubaiSat-1 are introduced with their results.

We perform VSP gain setting and in-orbit radiometric calibration by taking homogeneous area with various brightness values. We developed an MTF measurement tool based on edge and ESF (Edge Spread Function). Using the MTF measurement, we will create MTF correction kernel for the MTF correction with maximally flat low pass filter for de-noising. Based on these, MTF correction is performed. Also, we perform band-to-band registration using the module developed based on the DubaiSat-1 CCD alignment geometry.

For the geometric calibration, based on the GCPs we measure the geo-location errors and these errors is used to interior orientation calibration.

The initial calibration and validation results are presented in this paper with brief introduction to the calibration and validation process with each algorithm used during each step.