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THE TOOLS AND WORKFLOW OF LEO EARTH OBSERVATION OPTICAL PAYLOAD: CASE STUDY THEOS-3 SATELLITE

Abstract

THAILAND is a country among numerous countries to start the satellite project as known as the THEOS-3 project, initiated by the Geo-Informatics and Space Technology Development Agency (Public organization) or, in brief, GISTDA. A THEOS-3 satellite has been developed by experienced GISTDA Engineers which have been trained to develop a micro-satellite project from Surrey Satellite Technology Ltd (SSTL), based in the United Kingdom. According the procurement of Commercial Off-The-Shelf (COTs) imagers in THEOS-3 satellite project, This research paper outlines present the workflow to characterize the optimal values of optical parameters and an in-house tool for calculating all optical payload budgets using a spreadsheet, including of Ground Sampling Distance (GSD), Scene Swath, Signal-to-Noise Ratio, Modulation Transfer Function (MTF) in the system level as well as the data consumption to ensure that the selected COTs imagers will align with the THEOS-3 satellite objectives with minimal risks and maximum feasibilities. In summary, GISTDA has already established the workflow and an optical payload budget spreadsheet tool as a heritage baseline for selecting the COTs imagers as well as it can be also applied to develop the in-house optical payload of the next GISTDA satellite project.