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Abstract

PLATO, the PLAnetary Transits and Oscillations of stars mission, is an ESA mission dedicated to finding and studying extrasolar planetary systems, with a special emphasis on rocky planets around Sun-like stars and their habitable zone, planned to be launched in 2026. Payload is composed of 26 cameras in the same instrument bench in order to cover a large field of view with the highest possible photon statistics. Each PLATO Camera consists of a Telescope (TOU, Telescope Optical Unit), a Focal Plane Assembly (FPA), and a Front-End Electronics box (FEE).

This paper is focused on FPA. There are two types of FPA: Normal and Fast (differences will be also explained). The AIVT (Assembly, Integration, Verification and Test) activities of the FPA to reach the delivered 29 flight models for this particular serial production project will be described.

The flight FPA design and the different models which have been manufactured will be presented, as well as all the needed activities to have a tested and robust flight design. Serial production in space is not common, so model philosophy plays an important role in this project. In total, 37 FPAs (holding 144 CCDs) have been manufactured plus 26 mass thermal dummies.

AIVT activities, from earlier models to flight units will be described, analysing the improvements in design and in some processes as integration, verification and testing.

Keywords: Exoplanets, PLATO, model philosophy, validation, testing, AIVT, FPA, CCD.