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On-ground characterization of the Euclid's low noise CCD273 sensor for precise galaxy shape measurements

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Euclid is a medium class European Space Agency mission with a launch date scheduled for 2020. The survey is designed to study dark matter and energy of the Universe using two cosmological probes: weak gravitational lensing and baryonic acoustic oscillations. Weak lensing investigates the distortions caused to the galaxy shapes and relies on accurate shape measurements. The Euclid Visible Instrument (VIS) features a focal plane consisting of 36 CCD273 sensors manufactured by e2v technologies. The sensors are designed to provide a maximum charge transfer efficiency (CTE) to minimize geometrical distortions of the point sources. Each sensor undergoes a rigorous on-ground electro-optical testing at several stages of the mission to ensure that strict requirements are met before the launch of the telescope. This paper will summarize the results of the commissioning of a single CCD273 device (before the integration into the focal plane) performed at the Mullard Space Science Laboratory (MSSL) with a special interest in the measurements of the point spread function (PSF). Additionally, the influence of the on-ground testing environment and a dedicated readout electronics on the obtained images will be taken into consideration.

Author: Dr SZAFRANIEC, Magdalena (UCL, Mullard Space Science Laboratory)

Co-authors: Dr WALTON, David (UCL, Mullard Space Science Laboratory); Prof. CROPPER, Mark (UCL, Mullard Space Science Laboratory); Dr NIEMI, Sami (UCL, Mullard Space Science Laboratory)

Presenter: Dr SZAFRANIEC, Magdalena (UCL, Mullard Space Science Laboratory)

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