



SURPRISE

SUPER-RESOLVED COMPRESSIVE INSTRUMENT IN THE VISIBLE AND MEDIUM INFRARED FOR EARTH OBSERVATION APPLICATIONS



Test Plan Report
[D4.5]
CNR – IFAC
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The SURPRISE demonstrator is conceived as a whiskbroom spectral imager working in the VIS-NIR and MWIR spectral ranges, able to acquire super-resolved images of a generic target by using an implementation of a CS architecture. The demonstrator foresees four different channels: two MWIR channels, one VIS-NIR Channel and a high resolution camera channel, the latter playing a crucial role in validation and test tasks. The scene is scanned along two axes by means of a suitable target scanning system, while a master unit guarantees proper synchronisation and data handling.

Deliverable 4.5 deals with the description of the test plan outlined for the SURPRISE demonstrator and its sub-systems, describing the test procedures that can be applied for the characterisation, calibration and functional verification of all sub-systems, prior to their integration in the demonstrator, and of the demonstrator itself. The test plan and procedures cover tests on the reworked SLM; tests on the demonstrator sub-system such as VIS-NIR spectrometer, MWIR detector model, and target scanning system; tests on the demonstrator once it is assembled and aligned; tests on master unit once the demonstrator is assembled.

The aim of the test plan for the SLM is to evaluate its robustness and its functionality after reworking operations as well as to allow its characterisation and calibration.

The SLM will be tested for its operational functioning, switching time, pointing direction stability, reflectivity in VIS-NIR and MWIR emissivity; thermal tests will be also carried out. Tests on VIS-NIR spectrometer will check the correct functioning of the spectrometer before its integration in the demonstrator (e.g. spectral calibration, spectral resolution, spectral response). The test plan for the MWIR detectors will check their main characteristics (e.g. dark current, amplifier offset, switching time test). Target scanning system will include tests on its functionality, and also mechanical and electrical tests.

The test plan outlined for the demonstrator consists of two stages. The first stage addresses the preliminary test on the VIS-NIR, MWIR and high resolution camera channels after their integration into the demonstrator. The second stage focuses on the evaluation of the fundamental parameters of the system by means of OGSE and artificial scenarios.

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