



UNIVERSITY OF TARTU  
Tartu Observatory



# LABORATORY SERVICES

*Your reliable partner  
in testing and calibration!*



## Sine and random vibration

- Test object with a mass up to 50 kg
- Frequency range 5 Hz ... 4 kHz
- Max acceleration\* 720 m/s<sup>2</sup> (sine vibration)
- Max acceleration\* 480 m/s<sup>2</sup> (random vibration)
- Max force 1.5 kN
- EVS-EN 60068-2-6
- EVS-EN 60068-2-64
- ECSS-E-ST-10-03C

\* Depends on the mass of the test object



## Mechanical shock

- Mechanical shock response spectrum up to 98 000 m/s<sup>2</sup>
- Frequency range 1 Hz ... 10 kHz
- Test object with a mass up to 26 kg
- ECSS-E-ST-10-03C

**EAK**

EN ISO/IEC 17025  
L151



## Thermal vacuum

- Lowest pressure  $5 \times 10^{-7}$  hPa
- Temperature range (-40 ... +150) °C
- Chamber dimensions  $\varnothing 650$  mm  $\times$  650 mm
- ECSS-E-ST-10-03C

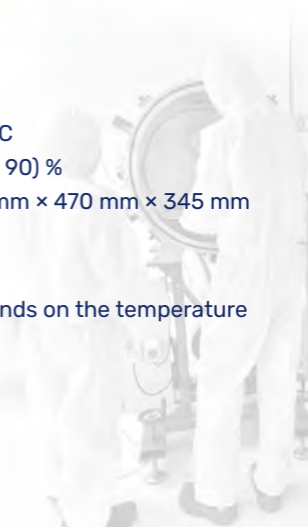




## Climatic conditions

- Temperature (-40 ... +150) °C
- Relative air humidity\* (30 ... 90) %
- Chamber dimensions 400 mm × 470 mm × 345 mm
- ECSS-E-ST-10-03C

\* Depends on the temperature





## Electromagnetic compatibility

- Immunity and emission
- Frequency range 30 MHz ... 18 GHz
- Distance from test object 1 m
- Size of uniform field area 0.5 m × 0.5 m
- Chamber dimensions 4 m × 3 m × 2.5 m
- IEC/EN 61000-4-3
- ECSS-E-ST-20-07C



## Electrostatic discharge

- Emission
- Test voltage range  $\pm (1 \dots 30)$  kV
- IEC/EN 61000-4-2
- ISO 10605



## Irradiance sensors

- Wavelength range (290 ... 900) nm
- Spectral irradiance\*  
 $100 \text{ nW m}^{-2} \text{ nm}^{-1} \dots 500 \text{ mW m}^{-2} \text{ nm}^{-1}$
- Calibration and measurement capability\* (1.1 ... 10) %

## Radiance sensors

- Wavelength range (350 ... 900) nm
- Spectral radiance\*  
 $50 \text{ nW m}^{-2} \text{ sr}^{-1} \text{ nm}^{-1} \dots 100 \text{ mW m}^{-2} \text{ sr}^{-1} \text{ nm}^{-1}$
- Calibration and measurement capability\* (1.4 ... 3.6) %

\* Depends on the wavelength

**EAK**

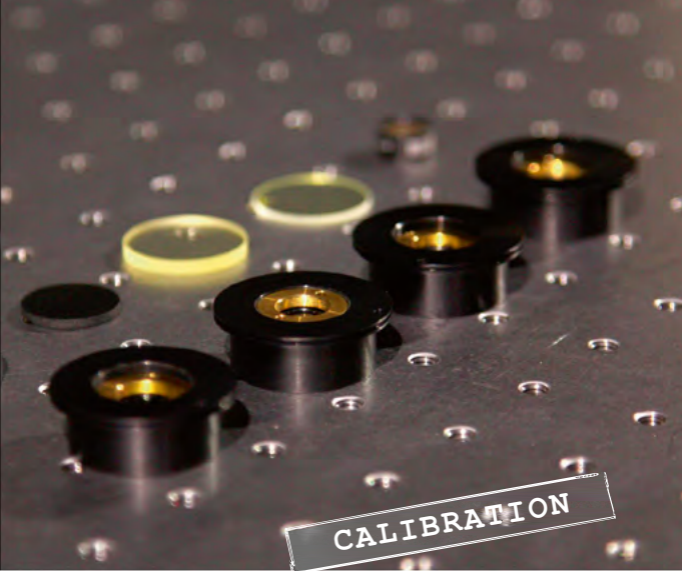
EN ISO/IEC 17025  
K025



## Incandescent lamps

- Wavelength range (340 ... 900) nm
- Irradiance\*  
100 nW m<sup>-2</sup> nm<sup>-1</sup> ... 500 mW m<sup>-2</sup> nm<sup>-1</sup>
- Calibration and measurement capability\*  
(1.4 ... 3.0) %

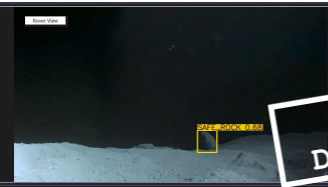
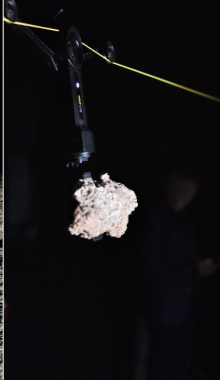
\* Depends on the wavelength



## Optical filters

- Wavelength range (300 ... 900) nm
- Regular transmittance 0.0001 ... 1
- Calibration and measurement capability\*  
(0.4 ... 10.0) %

\* Depends on the wavelength



## Space Mission Simulation Center

### Lunar Analog Facility:

- 7.5 m × 8.5 m Lunar analog testbed
- Controlled directional illumination system
- Ground vehicle data gathering
- Mission planning and validation

### Comet/Asteroid Fly-by Simulation:

- Up to 30 m length flyby simulation
- Wired camera dolly setup
- Data acquisition for small body flybys

*Testing, calibration,  
consultation.*



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