



# CALIBRATION & TESTING

Services & Equipment to Verify  
Sensor System Performance

The calibration and test experts at the Space Dynamics Laboratory (SDL) understand that verifying sensor performance before operations begin increases the likelihood of mission success. As a trusted agent of the Government and a mission partner, SDL has 50 years of experience providing specialized calibration and test services in state-of-the-art facilities for NASA and Department of Defense missions spanning the electromagnetic spectrum.

Calibration and testing verify that a sensor meets mission requirements and demonstrate performance and limitations under operational conditions. SDL's engineers are known for their expertise in providing end-to-end sensor calibration services to measure full system performance, including interactions between subsystems. Proper calibration is also crucial as it provides the means to convert raw instrument output to usable data that is traceable to known standards. SDL's services yield long-term reduced cost and risk benefits by preparing sensors to make accurate and precise measurements, resulting in reliable mission data.

## FEATURES

- Specialization in spectral, spatial, radiometric, temporal & stray light measurements
- Automated calibration services ranging from in-depth exquisite calibrations to streamlined environmental testing
- Pre-launch through on-orbit calibration expertise
- Calibration in the near-UV to far-IR wavelengths
- State-of-the-art facilities & equipment
- Services & equipment available for:
  - Sensor sizes ranging from SmallSats to large assets
  - Single sensors, multiple sensors & subsystems
- Traceability to the National Institute of Standards & Technology (NIST)
- Full mission lifecycle support

## CALIBRATION & TESTING Services & Equipment to Verify Sensor System Performance

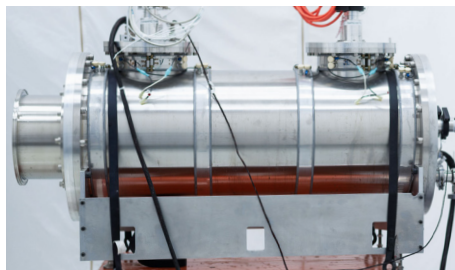
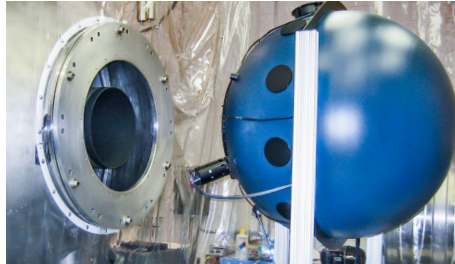
SDL's engineers have built a large catalog of calibration and test equipment to accommodate a wide range of sensors and mission objectives. SDL can perform secure calibrations for several customers simultaneously and, if needed, can arrange for calibrations at customer locations.

### SUPPORT EQUIPMENT



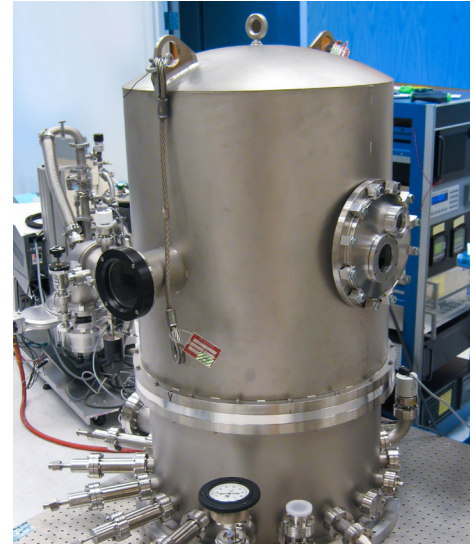
#### Collimator Chambers

- Enable spatial & irradiance calibration
- Accommodate beam diameters up to 19"
- Operational temperature range:  
Ambient to LN<sub>2</sub>
- Focal length: Up to ~280"
- Angle of accuracy: <20 μrad over ~3°



#### Radiance Sources

- Enable radiance calibration
- Multiple integrating spheres
- Thermal IR blackbodies
  - Temperature range: LN<sub>2</sub> (or less with special arrangements) to 350 K
  - Diameter ranges up to 20"
- Wavelength range: Near-UV to long-wave IR (up to ~100 μm)



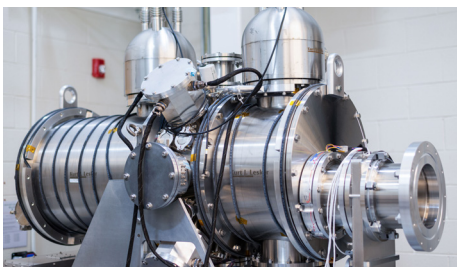
#### Spectral Characterization Equipment

- Enables spectral calibration
- Spectrometers spanning the near-UV, visible & near-IR wavelengths
- Monochromators
- Fourier Transform Spectrometers
- Optical Coating Characterization System (OCCS)



#### Thermal Vacuum Chambers

- Simulate the space environment & in-flight temperatures
- Temperature range: 100°C to LN<sub>2</sub>
- Up to 12' diameter chambers
- 4' wide x 10' long cold bench



#### Transfer Radiometer

- Provides high-accuracy radiometric measurements & spectral characterization of sources
- Wavelength range: 2 to 30 μm



#### Altitude Test Chamber

- Simulates environment for airborne sensor testing
- Altitude simulation: Sea level to 100,000 ft
- Operational temperature: -60°C to 125°C

#### Stray Light Measurement Facility

- Measures system-level stray light over IR, visible, or UV spectral wavelengths
- Accommodates apertures up to 24"
- Stray light rejection up to 12 orders of magnitude