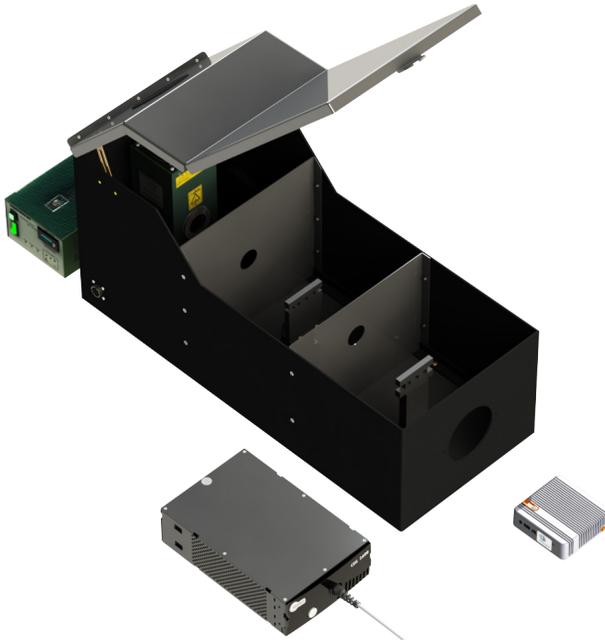


# In-House Calibration Unit



## Technical Challenge

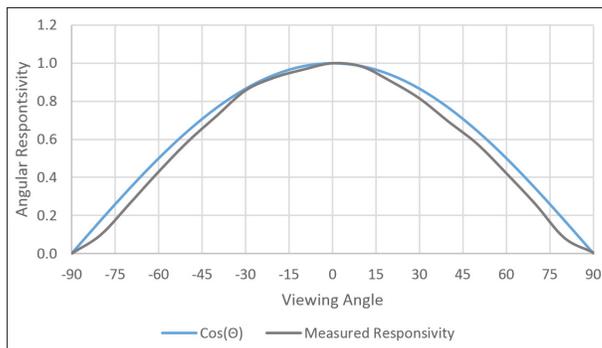
All integrating sphere systems will experience a shift in performance over time. Labsphere calibrates its light sources in its labs before they are sent out to their clients. However, the light sources' outputs will degrade from their original output value with every use. With time, the calibrated sources need to be replaced or sent back to be recalibrated; however, a national measurement institute requested an application-specific calibration unit to be used in-house for the purpose of recalibrating their own replacement sources.

## Labsphere's Solution

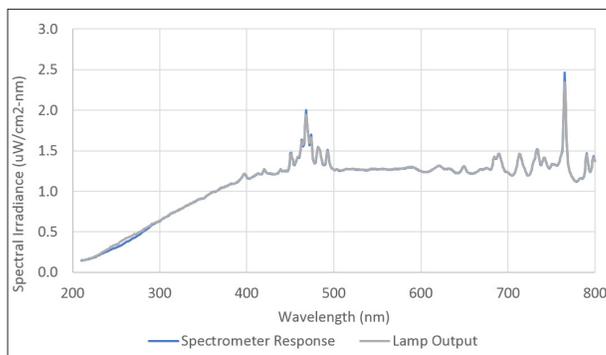
In order to provide the same calibration quality that our labs could offer, it was necessary to incorporate every aspect of our labs into the system. The spectrometer is used to calibrate the light sources, and the black calibration box is used to calibrate the spectrometer, offering multiple calibration setups.

- Spectrometer for spectral reading in the visible and near-infrared
- Various spectrometer fiber heads equipped with diffuser sheets to allow fitting to the various systems in the client's labs
- Light-tight black box to imitate a dark-room calibration lab
  - Xenon light source with known reference wavelength distribution
  - Three chambers separated by walls with small holes for absorbing background radiation
  - Darkroom louvres to allow heat from the lamp to escape without letting in outside light
  - Interchangeable mounts for different spectrometer fiber heads
  - Manual rotary table with fine adjustment for mapping cosine responsivity
- Integral software for performing calibration routines, controlling the power supply, and collecting spectral data

Spectrometer - Angular Responsivity



Spectrometer Calibrated to Xenon Lamp



## Benefits

- The client can recalibrate their systems on their own time
- Without the need to rely on an external calibration report, a significant amount of time and money is saved
- The inside of the calibration source unit offers the same protection from background radiation, allowing for equally accurate results to what any darkroom lab could offer
- The various spectrometer heads ensure the calibration unit is compatible with the client's systems
- Options for both specular responsivity and angular responsivity, allowing for a full system calibration
- Easy data collection and component control with Integral® software