Irradiance measurements

Radiometry deals with the measurement of all optical radiation inclusive of the visible portion of this radiant energy. Irradiance is a parameter of radiometry. It describes the amount of radiant power impinging upon a surface per unit area. Irradiance measurements can be done in the UV, VIS and NIR wavelength ranges.

Avantes works with a variety of irradiance applications ranging from pulsed solar simulator characterization to free space measurements of radiant sources such as street lights. The AvaSpec line of instruments provides exceptional resolution and stray-light rejection to ensure the accuracy of these measurements. Typical system configurations involve one or more spectrometers configured for the appropriate range 200-400 nm for UV irradiance, 360-1100 nm for VIS irradiance and 1100-2500 nm for NIR irradiance. While broadband configurations covering 200-1100 nm are feasible with one spectrometer, optimal performance is achieved with dedicated UV (200-400 nm), VIS/NIR (400-1100 nm) channels.

The spectrometer or group of spectrometers is connected via fiber-optic cable to a diffuser with a known surface area and the entire system is calibrated against a NIST traceable source for irradiance. Avantes offers a variety of cosine diffusers and integrating spheres for irradiance applications. The calibrated system is shipped as an integrated system (connected together) and should remain in this configuration in order to ensure the integrity of the calibration. FC/PC connectors are recommended in lieu of the standard SMA, which enable repeatable disconnection and re-insertion of the fiber-optics, so the system may be disconnected for transportation.

Customers that wish to conduct their calibrations may consider one of Avantes' intensity calibration sources. The AvaLight-HAL-CAL is available for VIS/NIR wavelengths (360-2500 nm) and the AvaLight-DH-CAL is available for UV/VIS wavelengths (200-1100 nm).
The Avantes AvaSoft-IRRAD software module enables irradiance parameter measurements such as radiometric quantities - µWatt/cm^2, µJoule/cm^2, µWatt or µJoule, photometric quantities Lux or Lumen, color coordinates X, Y, Z, x, y, z, u, v, color rendering index and color temperature, and number of photons µMol/s•m^2, µMol/m^2, µMol/s and µMol. AvaSoft-IRRAD software also facilitates the performance of irradiance intensity calibrations.

Irradiance / Spectroradiometry

Irradiance means measuring how much light reaches a specific place. This is why a cosine corrector is included: it collects light from a 180 degree angle.
The comprehensive AvaSoft-Irrad allows fully calibrated traceable radiometric and photometric measurements

Typical applications:

- Solar lighting
- Environmental & general lighting

... and many more

Order information: Ava-IRRAD-A

Spectrometer	AvaSpec-ULS2048-USB2 FC/PC	Grating UA (200-1100nm) 25 µm slit, DUV, DLC-UV/VIS OSC-UA Order Sorting Filter AvaSoft-Full & AvaSoft-Irrad Irrad-CAL-UV/VIS
Fiber optics	FC-UVIR200-2-ME-1FCPC	
Included	CC-VIS/NIR	

Download the latest software for your AvaSpec at www.avantes.com

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