

OL Series 455/462

Features and Performance

This Information Sheet provides information on the unique features and performance of the OL Series 455/462 Variable Integrating Sphere Calibration Standards. Data presented is actual results from one such standard selected at random.

Dynamic range

The radiance and luminance levels of the OL Series 455/462 standards may be varied continuously by adjustment of the micrometer-controlled aperture. Radiance and luminance levels can be set to any desired level within a 5-6 decade range (depending on sphere size). Examples are given in Figure 1.

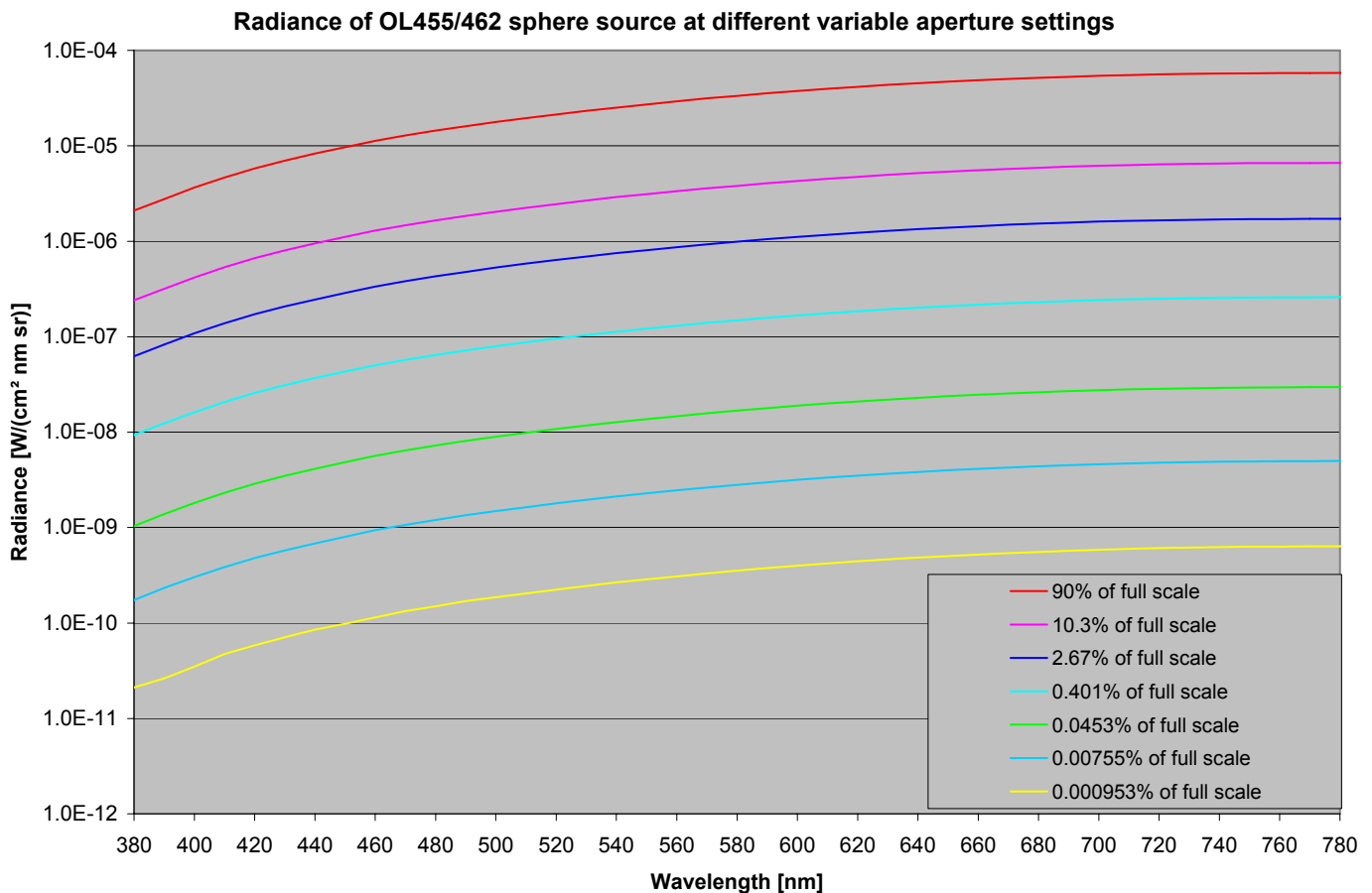


Figure 1. Radiance values of the tested OL Series 455/462 at several levels. The y-axis is shown on a logarithmic scale to illustrate the high dynamic range of adjustability.

Constant Correlated Color Temperature

Although the radiance can be adjusted from very high levels to very low levels, a single radiance calibration is generally all that is required. The built-in photometer provides the luminance level and changes in radiance mirror the changes in luminance very closely. This is achieved because the unique design of the attenuation mechanism has little effect on the radiance spectral shape. Figure 2 shows the same spectra as Figure 1, but scaled to the photometer reading. It can be seen that hardly any spectral changes occur, even over the 5 decades of testing.

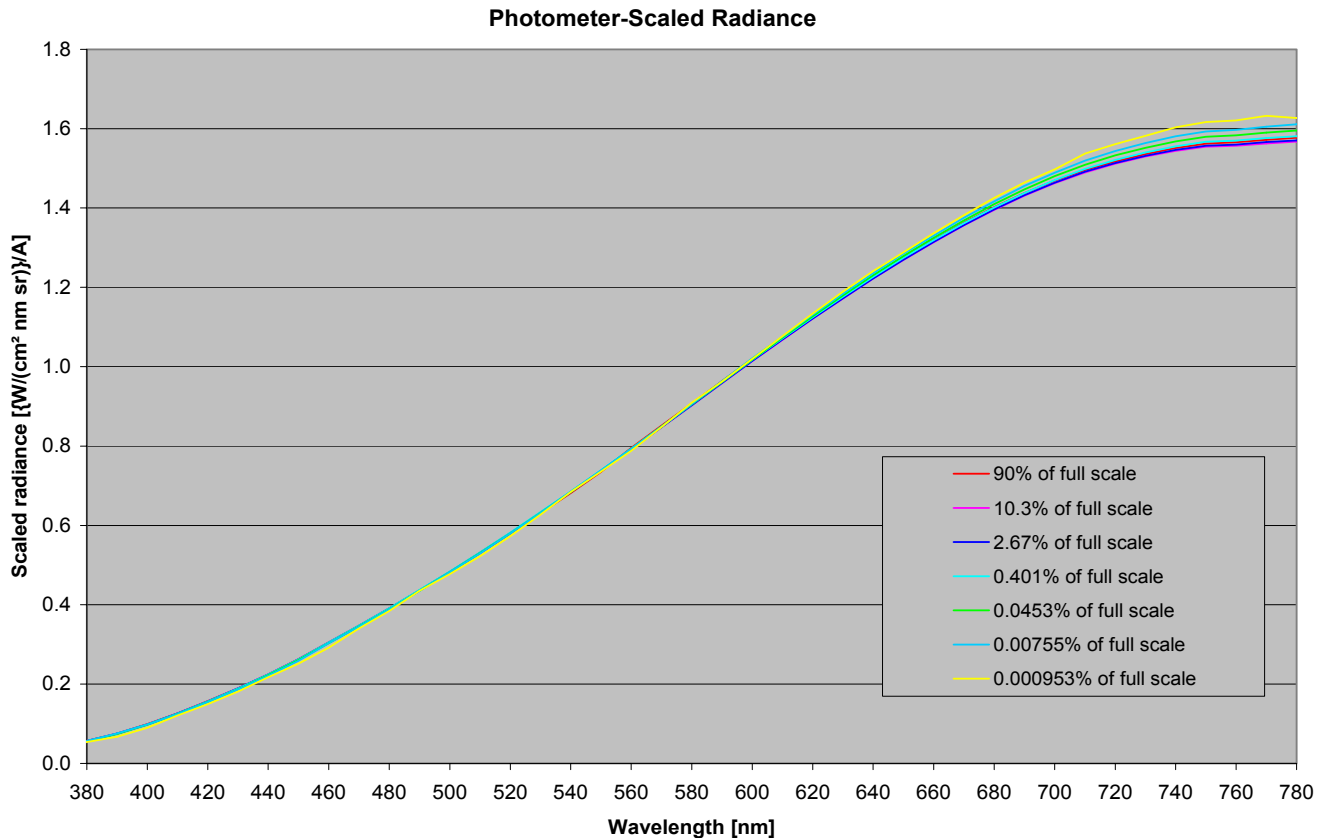


Figure 2. The spectra shown in Figure 1, scaled to the photometer reading, to show the almost constant spectral shape of the radiance over the adjustment range.

Adjustability

The micrometer is attached to a uniquely designed attenuation mechanism. Simple slit-type variation mechanisms become difficult to control adjustment after just one or two decades, but the OL Series 455/462 mechanism provides almost constant adjustability over five decades. Figure 3 shows that the level changes by close to 1% for a 1% adjustment of the micrometer, even at the lower levels.

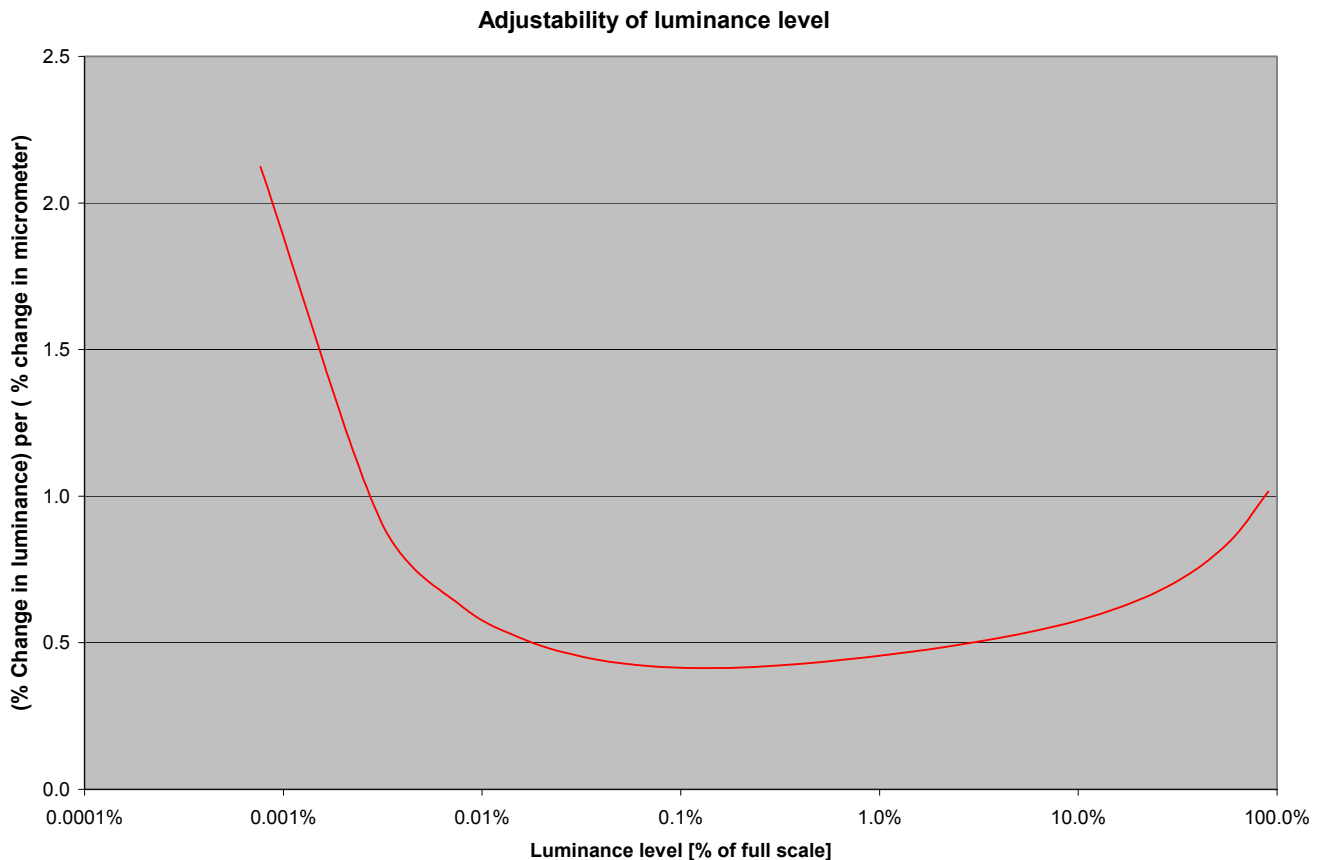


Figure 3. Adjustability of the OL Series 455/462. The x-scale indicates the % of full scale luminance, shown on a logarithmic scale for clarity. The y-scale indicates the % luminance change for 1% micrometer change. Values are within a factor of 2.5 from unity over the entire luminance range tested.

Accurate photometer tracking and linearity

The levels of sphere radiance and luminance are provided by the internal photometer. This is reliable only if the sphere output is accurately tracked by the photometer. Figure 4 shows that tracking is extremely accurate and linear. In fact, within the measurement error, tracking was found to be ideal at all luminance values.

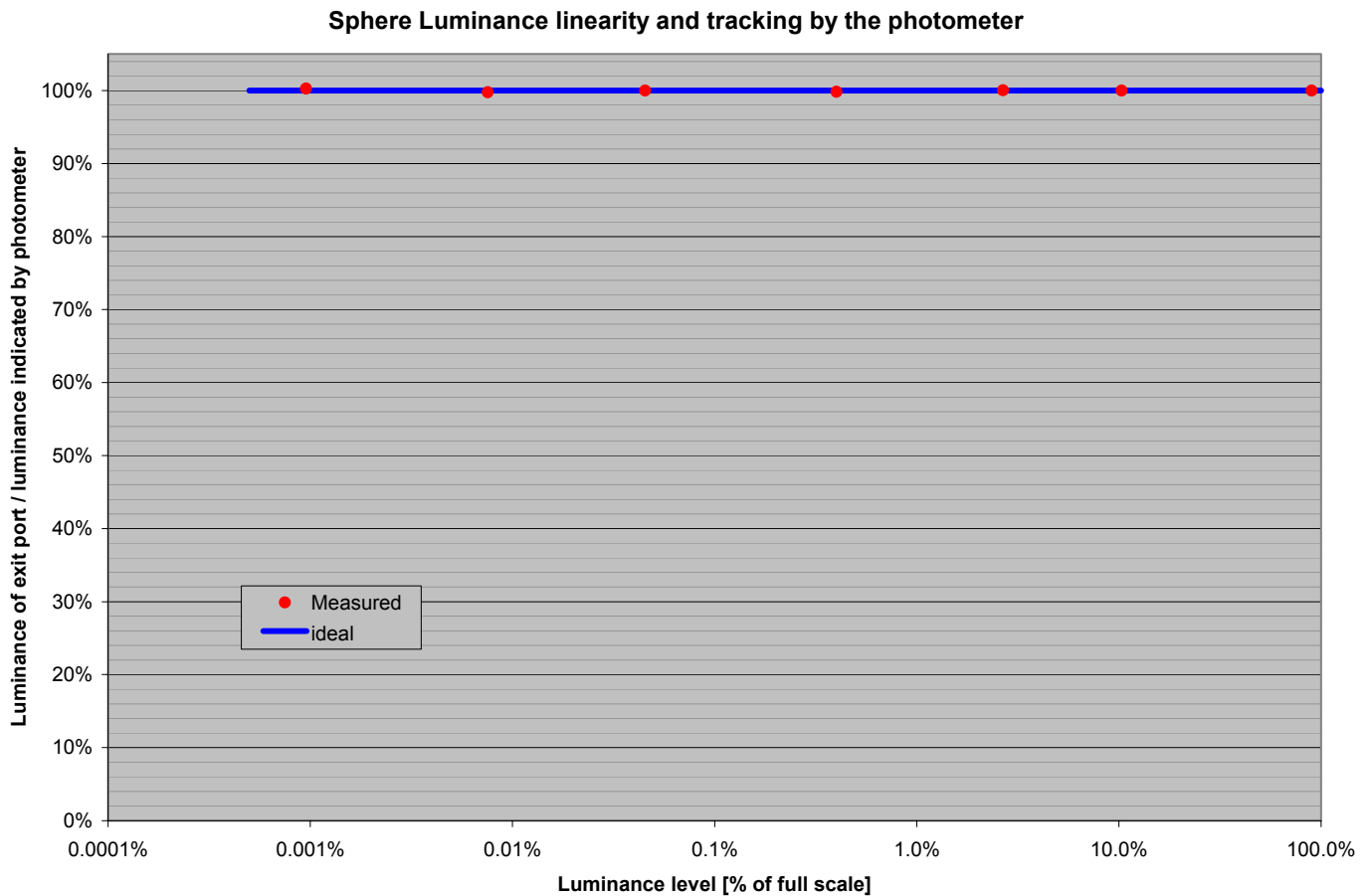


Figure 4. The luminance at the exit port is accurately indicated by the internal photometer, as indicated by their ratio being very close to the ideal value of 1. This applies at all luminance values tested, indicating excellent linearity.