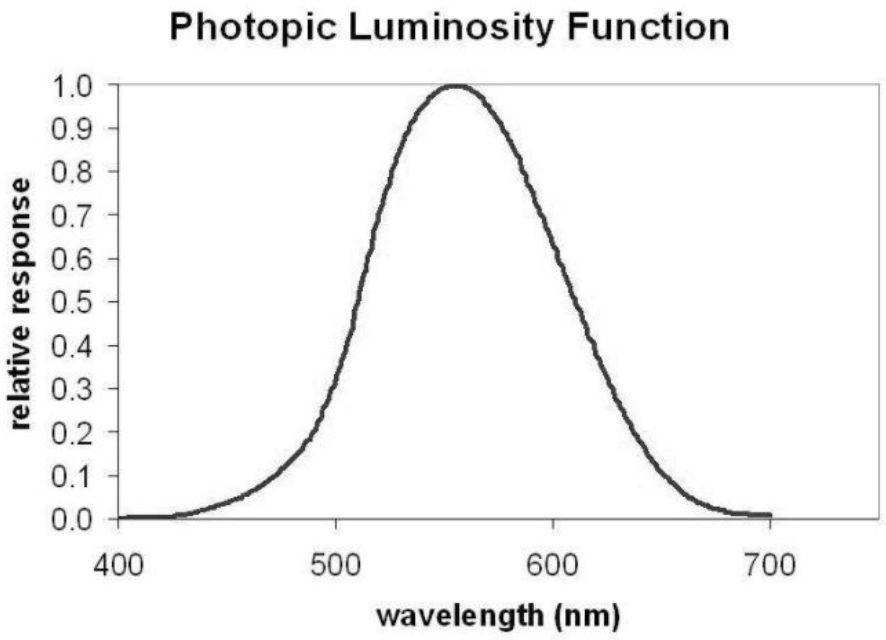
iTINT Calibration Glasses

For calibration purposes, iTINT uses a kit of FOUR reference glasses with nominal transmissions of 10 %, 20 %, 50 % and 70 %. The colorimetric transmission of each glass has been determined to International Standards by a UKAS certified laboratory. Calibration certificates are available for these glasses. Each of the four glasses is identified by a unique reference number and a kit ID. The exact transmission of the glasses will vary from kit to kit.

The UKAS certified laboratory (normally the National Physical Laboratory, NPL) measures the spectral transmission of each glass between the wavelengths of 380 nm (UV) and 780 nm (near IR). Measurements are taken at 5 nm intervals. The light source is a tungsten halogen lamp with a colour temperature of 2850 °K. This is known as ***CIE Illuminant A***, see https://cie.co.at/publications/colorimetric-illuminants .

The luminous transmittance of each reference glass for a ***CIE 2° Standard Colorimetric Observer*** is then calculated from the spectral transmission data of the glass. The standard observer is characterised by the so-called photopic curve which is derived from the relative sensitivity of the human eye to different wavelengths of light.

The colorimetric transmission of the glass is calculated from the mean of the glass transmission at each wavelength multiplied by the normalised luminosity function at that wavelength for a 2° observer.



Typical results for the four glasses in KIT 01 are given below. Note, to err on the side of caution, the actual value used for ***iTINT Calibrated*** value should be the measured transmission Y% plus its uncertainty. The iTINT will measure the ***Not Calibrated*** values and calculate its own calibration curve.

Always use the 2° Illuminant A values.

Glass KIT 01	Transmission Y%	Uncertainty %	iTINT Calibrated Value
GL0001	8.61	± 0.5	9.11
GL0002	19.89	± 0.5	20.39
GL0003	47.06	± 0.5	47.56
GL0004	67.03	± 0.75	67.78

From the iTINT micro-site:

Reference Glass Transmission

iTINT is calibrated using four reference glasses together with 0% and 100% transmission spacers. The light transmission of these reference glasses has been determined to International Standards, details of their calibration can be found here.

Glass description	Calibrated	Not Calibrated
Solid spacer, 0 %	0.0 %	0.0 %
Glass 1, nominal 10 %	9.1 %	8.6 %
Glass 2, nominal 20 %	20.4 %	20.2 %
Glass 3, nominal 50 %	47.6 %	47.2 %
Glass 4, nominal 70 %	67.8 %	66.5 %
Open spacer, 100 %	100.0 %	100.0 %

For reference, the glass kit identification is recorded in iTINT too:



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