

ETC Application Note

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Application
Note #

ETC Application Notes are designed to provide specific helpful information regarding ETC's technology or about solving a problem using ETC equipment.

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ETC Selador LED Luminaires - Ultraviolet (UV) Content

Introduction:

The safe use of Selador LED luminaires to illuminate works of art, objects in a museum or similar delicate photosensitive objects requires knowledge of the ultraviolet radiation emitted. This document provides data for Selador luminaires to allow the lighting professional to make an educated judgment as to those emissions when creating a lighting design. It should be stressed however that, although care has been taken to ensure that these figures are as accurate as possible, there is no substitute for measuring the actual emission on site as local conditions may significantly affect the final result. These figures should be used for guidance only.

Methodology:

IESNA RP-30-96 suggests defining UV for these purposes as all electromagnetic radiation with wavelengths between 300 and 400 nm and the luminaire's total emission as the total radiation with wavelengths between 300 and 700 nm. The Selador LED units have negligible output in this UV region, in fact the levels of electromagnetic radiation emitted between 300 and 400nm are so low they are below the accurate measurement resolution of normal test instruments so, instead, this document uses theoretical calculations for the worst case values.

The Selador LED luminaires utilize up to seven different colors of LEDs, of these the only one which may emit any energy in the 300 to 400 nm range is the 'Royal Blue' emitter. The center wavelength of this LED is nominally 450nm however it may vary due to manufacturing tolerances down to a minimum 440 nm. Figure 1 illustrates the worst case situation where every Royal Blue emitter in a Selador luminaire is emitting at the minimum 440 nm.

Even in this worst case the area of the Royal Blue emitter that extends into the UV region is minimal. In all cases the UV percentage is expected to be significantly lower than from either tungsten fixtures with UV filters or HID fixtures with UV filters.

Often the UV content of a light source is examined because of the damage it can inflict on sensitive items such as paint pigments and fabric dyes. However, it's important to note that all wavelengths of light can damage these articles, not just the UV. The advantage of an LED based light in these circumstances, particularly an ETC Selador light, is that they can produce white light of the desired Color Temperature with minimal UV content. Selador luminaires can help ensure that allowable light levels appear brighter and more natural, with better color rendering than alternative light sources.

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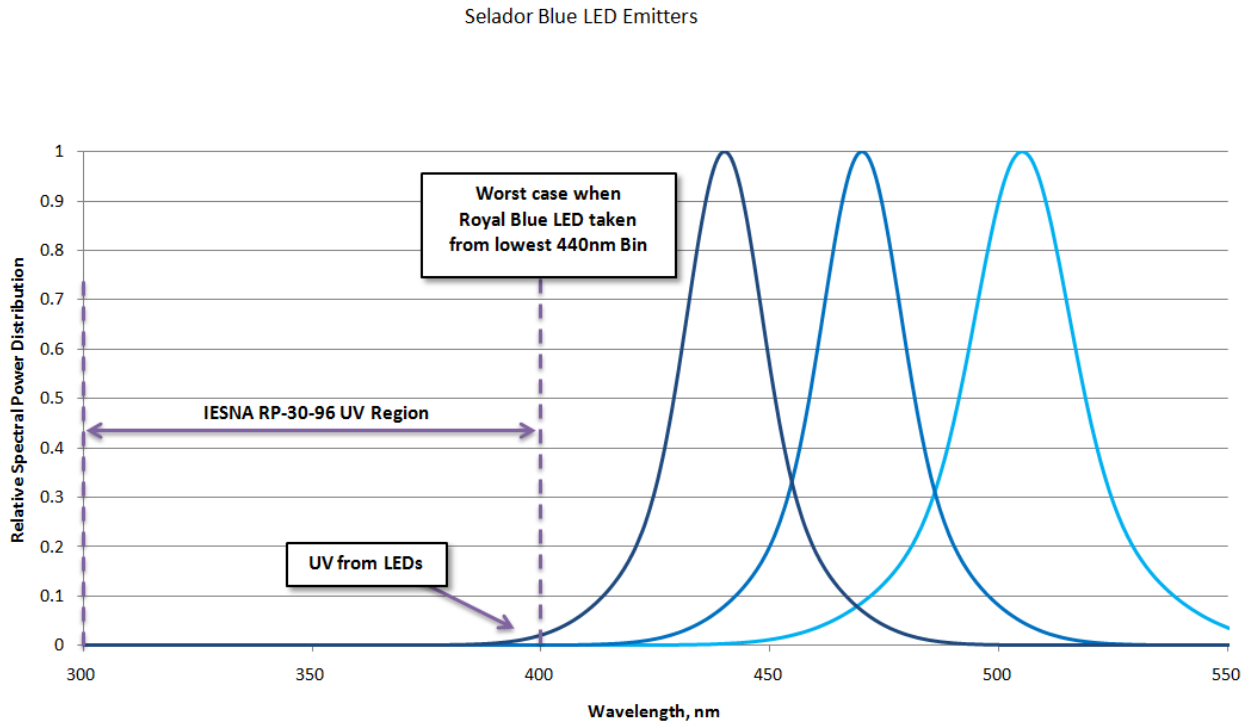


Figure 1: Worst case UV emission

UV emission from Selador LED Luminaires

Data is reported as UV percent (%): This expresses the total UV energy between 300 and 400 nm as a proportion of the total energy between 300 and 700 nm.

Luminaire	Nominal UV percent	Worst Case UV percent
Selador ICE	< 0.03%	< 0.15%
All other Selador luminaires	< 0.01%	< 0.06%