EAGLE LIGHTING

DERIVED ENGINEERING CALCULATION

12 November 2026

SPECTRAL ANALYSIS / TECHNICAL STATEMENT

Cyanosis Observation Index

Calculated from a measured spectral power distribution (SPD)

PRODUCT / LIGHT SOURCE	INPUT SPECTRAL FILE	MEASUREMENT REFERENCE
Applicable to all upgraded (2026) 4000K CRI95+ Eagle Lighting products with Tridonic ADV6 Cree JB2873B	**Tridonic LLE ADV6 with Cree JB2835B 3V J Class Pro9 - 940.csv**	**HAAS2000 Spectrophotometer - Eagle Lab - Melbourne VIC**

CYANOSIS OBSERVATION INDEX (COI)

Standard 5 nm spot sampling

1.545 Compliant

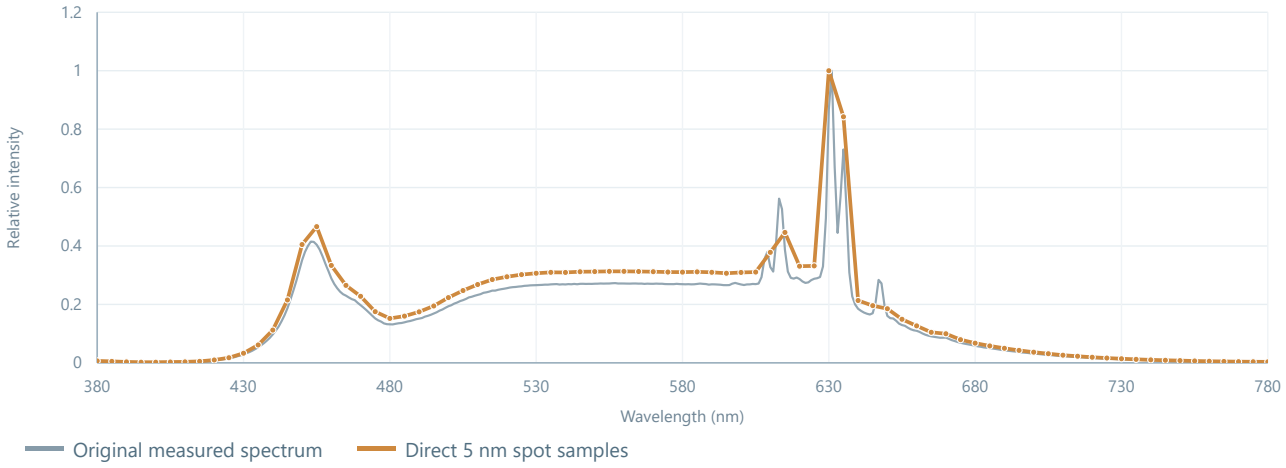
Against the COI criterion of ≤ 3.3, using the selected calculation method.

0 Threshold: 3.3 5+

ΔE*AB · 100% O_2	ΔE*AB · 50% O_2	OTHER METHOD · GAUSSIAN
2.325	**0.764**	**1.528**
Oxygenated blood	Oxygen-reduced blood	Gaussian-smoothed comparison

Spectral power distribution

380–780 nm · direct 5 nm samples · normalised



CALCULATED COLOUR DIFFERENCE · CIE L*A*B*

BLOOD OXYGENATION	TEST-SOURCE L* / A* / B*	REFERENCE L* / A* / B*	ΔE*AB
100% saturation	31.34 / 55.90 / 30.42	30.40 / 57.00 / 28.60	2.325
50% saturation	20.18 / 26.60 / 8.39	19.80 / 26.90 / 7.80	0.764

METHOD & INTERPRETATION · STANDARD 5 NM SPOT SAMPLING

COI = (ΔE*ab,100% + ΔE*ab,50%) / 2. Derived using the blood-reflectance values and COI calculation framework specified in AS/NZS 1680.2.5:2018, Appendix G, together with CIE colour-matching functions and reference L*a*b* data. The measured SPD is sampled directly at 380, 385, ..., 780 nm without smoothing. The CSV has exact wavelength samples at all 77 COI integration wavelengths. Relative scaling does not affect the calculated index. COI uses the 380–760 nm range. Input data: wavelength and SPD from columns 1 and 2. **The 3.3 COI criterion is assessed here in isolation;** CCT, CRI and other applicable requirements are not evaluated by this calculation.

Data provenance: Source CSV: Tridonic LLE ADV6 with Cree JB2835B 3V J Class Pro9 - 940.csv · Generated 12 November 2026 · Prepared by Eagle Lighting Australia · Photometric Laboratory. This document is a derived COI calculation, not a standalone NATA-endorsed test report. Any NATA-accredited measurement claim must be supported by the separate original spectral measurement report and its applicable scope.

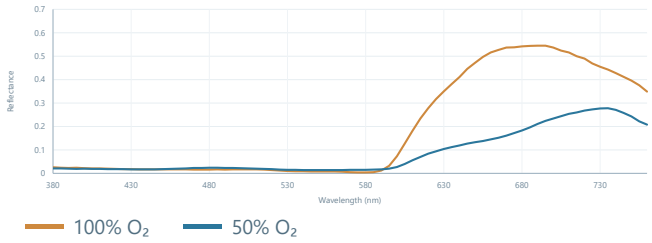
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Underlying spectral and reference functions

Valid wavelength samples	Input resolution (mean)	Input range	Selected processing
401	**1.00 nm**	**380–780 nm**	**Spot sampled · 5 nm**

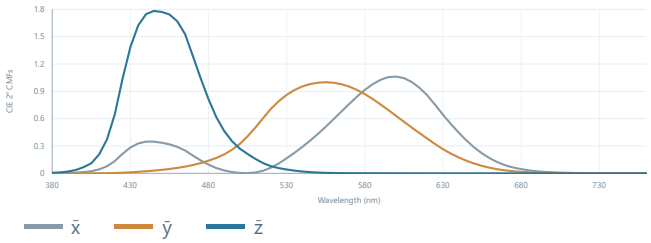
Blood spectral reflectance

Reflectance of blood at 100% and 50% oxygen saturation



CIE colour matching functions

CIE 1931 2° observer colour-matching functions



Computational record: The measured spectrum is sampled at 380, 385, ..., 780 nm without smoothing. If an exact wavelength is unavailable, linear interpolation between adjacent measured wavelengths is used (0 of the 77 wavelengths contributing to COI). The alternate Gaussian calculation uses σ = 2 nm with reflect boundary handling before 5 nm sampling. Both calculations use the 77 values between 380 and 760 nm for the COI summations. Uncertainty for the derived COI has not been evaluated by this tool. This appendix documents the calculation, not a separate laboratory test.