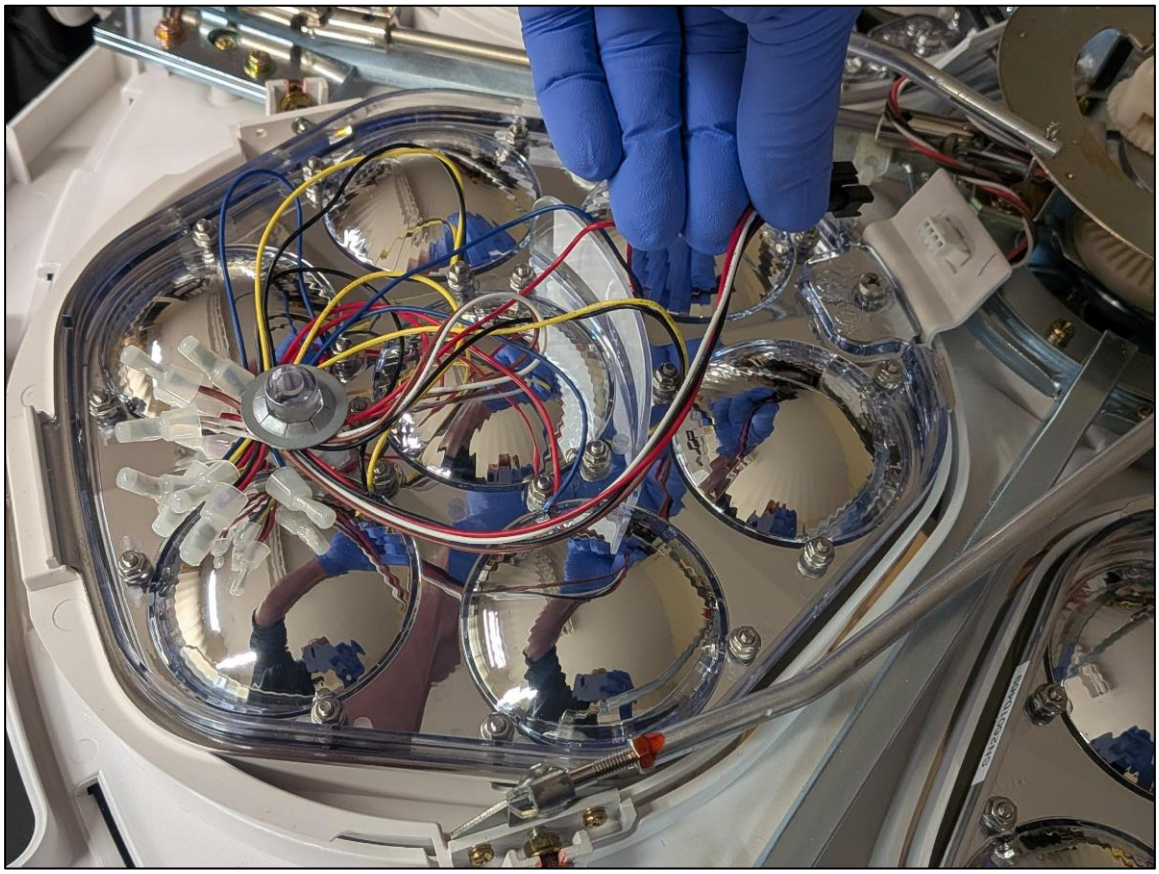
20-00001 Surgical Light Pod

Gaia Photonics Inc.
#7-2064 Henry Avenue West
Sidney, BC V8L 5Y1, Canada

Form and Fit

The Gaia Photonics Surgical Light Pod has been designed as a drop-in replacement for the Light Pods of the Skytron Aurora and Aurora II surgical Lighting systems (Skytron part numbers B1-610-38, B1-710-0, B1-710-1).

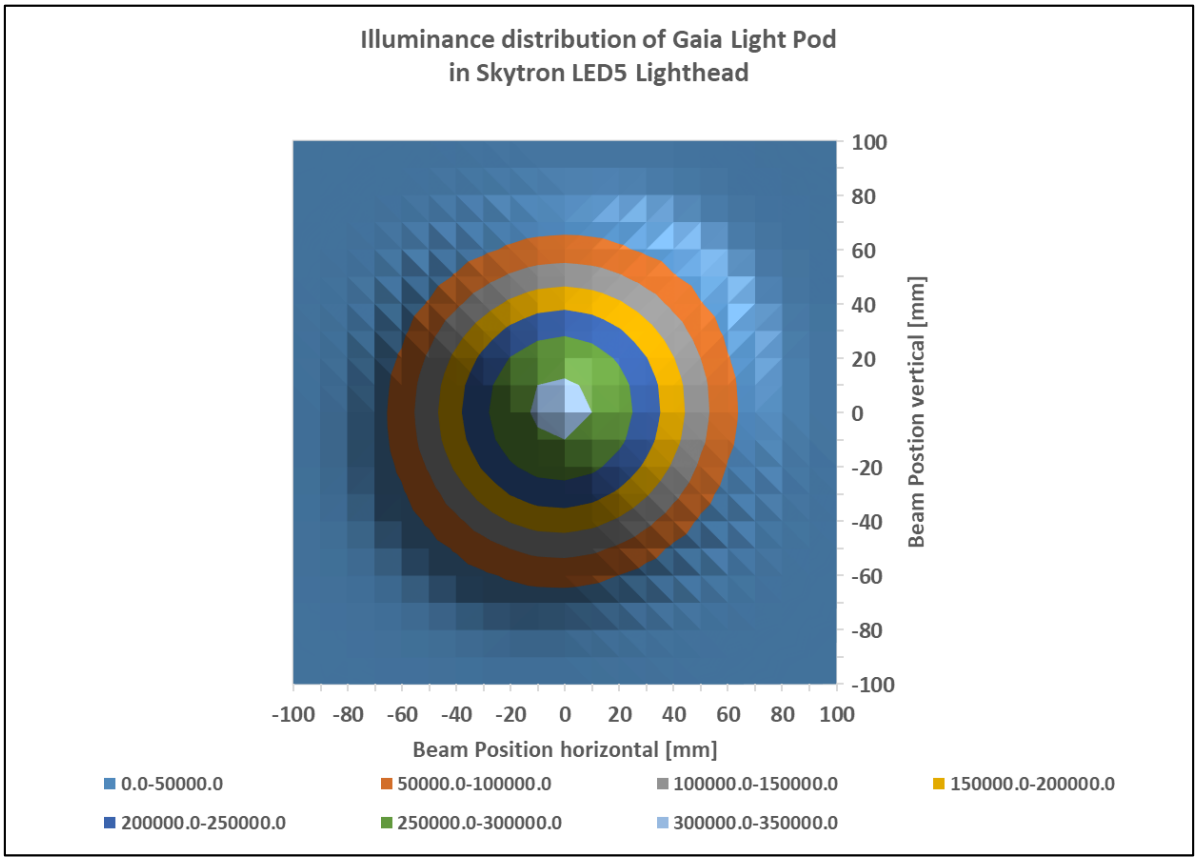
The exact mechanical fit and compatibility with the existing Skytron Aurora electronics make the replacement of the Light Pods effortless and time efficient. No changes to the system are required.



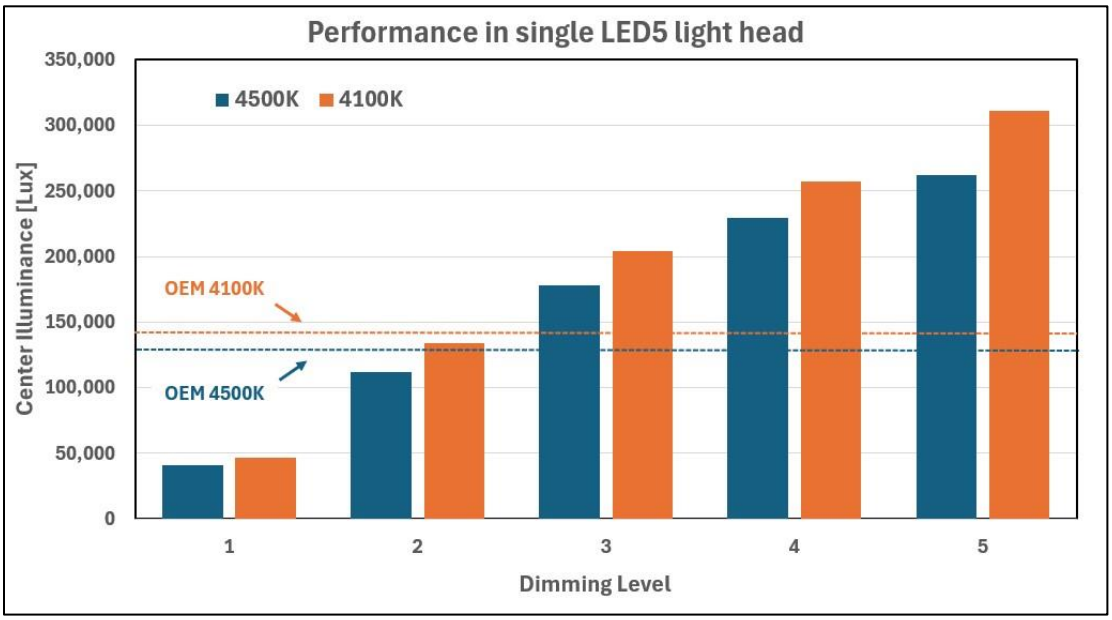
Performance Enhancements:

Optical performance starts with choosing the correct light source for the application. State-of-the-art ceramic LED packages from an industry leading Tier 1 LED supplier have been selected to power our Light Pods. This ensures not only the highest LED performance and reliability, but also optimum color rendering and minimal chromaticity drift over the life of the product.

A solid optomechanical design for mounting all critical components in exactly the right position and a consistent and repeatable assembly process result in a significantly improved beam uniformity, consistency from unit to unit and stability over time.



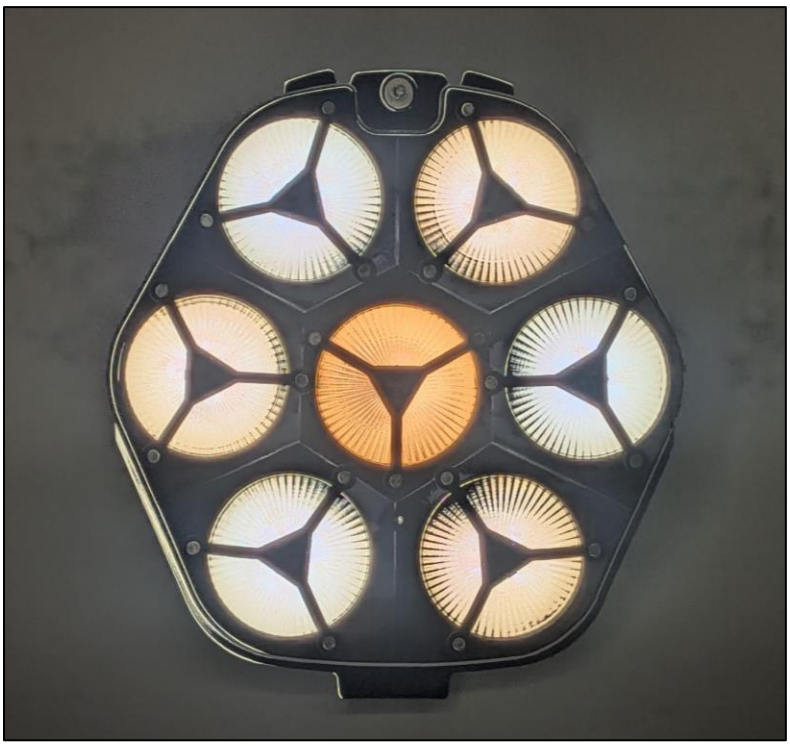
Combining the improvements in optical alignment with the state-of-the-art large format ceramic LEDs used in the Surgical Light Pods enables Aurora LED5 Lightheads to deliver more than 300,000 lux. This more than twice the flux specified in the original product.



Selection of three different types of LEDs with very high color rendering index allows for a chromaticity adjustment between 4100K and 4500K while maintaining exceptional color rendering Indices of CRI ≥ 97, R9 (red) ≥ 93 and R13 (skin tone) ≥ 99.

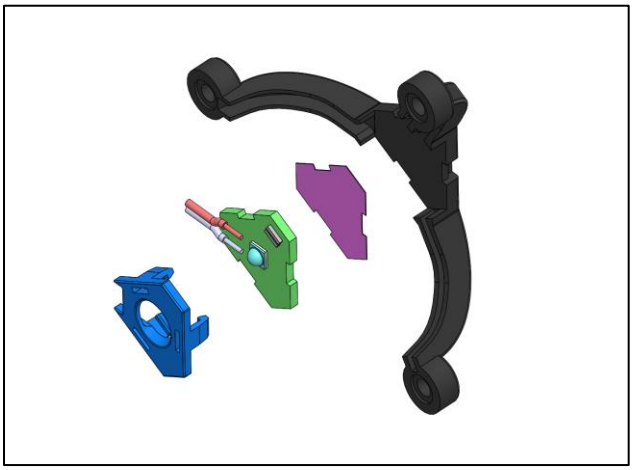
Metric	20-00001		OEM	
	4100 K	4500 K	4100 K	4500 K
CRI	97	96	95	96
R9 - deep red	93	97	87	97
R13 – skin	99	99	NR	NR
TM-30 Rf	94	94	NR	NR
TM-30 Rg	103	103	NR	NR

NR = not reported



Reliability:

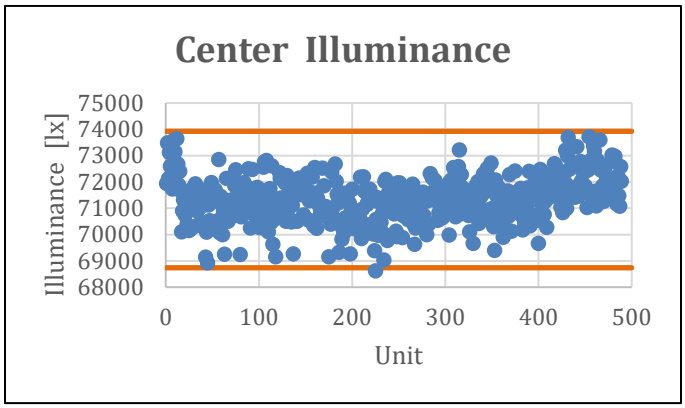
A thermal design that ensures the heat generated by the LEDs is efficiently spread and conducted to the carrier minimizes the temperature rise of the LED junction over ambient.

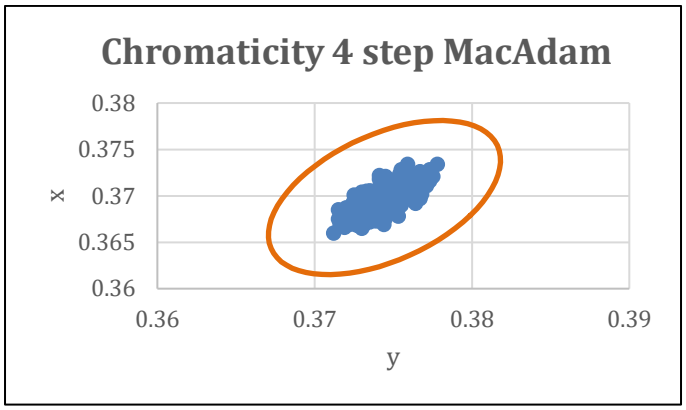


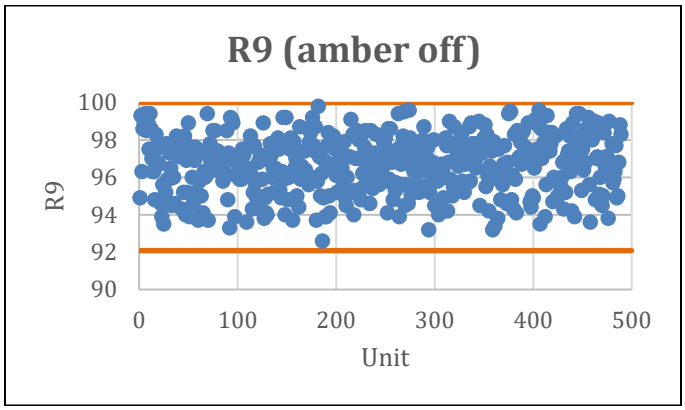
The efficient thermal design combined with the use of large format LED die capable of handling operating currents multiple times of the actual application warrants a L90 lifetime prediction of the Gaia Surgical Light pod of more than 50,000hrs.

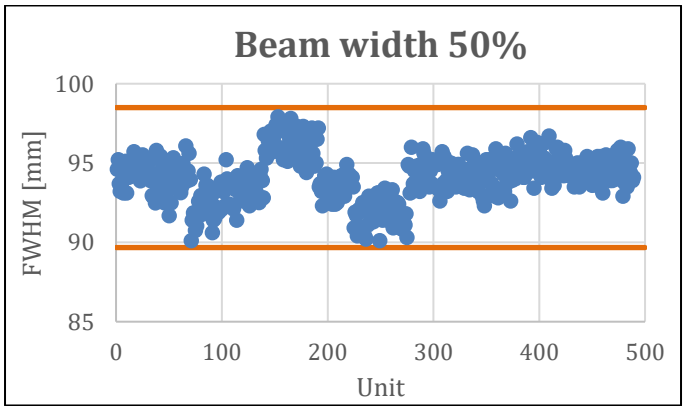
Process Control:

Selection of the best components, a solid design as well as repeatable manufacturing and assembly processes establish a very consistent product performance including center illuminance level, chromaticity coordinates, color rendering and beam distribution. The following charts display actual product variation with a 3 sigma tolerance band (4 Step MacAdam ellipse for chromaticity).









Individual Performance Reports

Every Gaia Photonics Surgical Light Pod undergoes a final test and alignment process to warrant that the product meets and exceeds our specifications.

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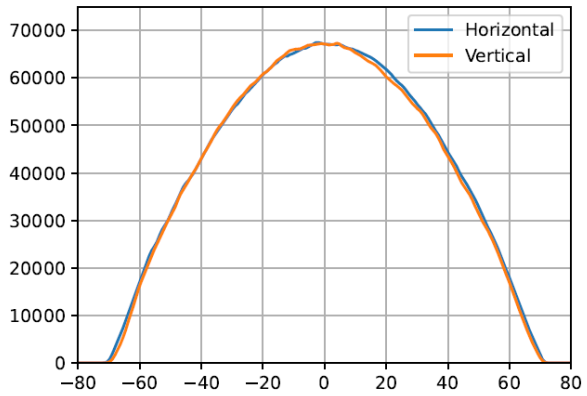
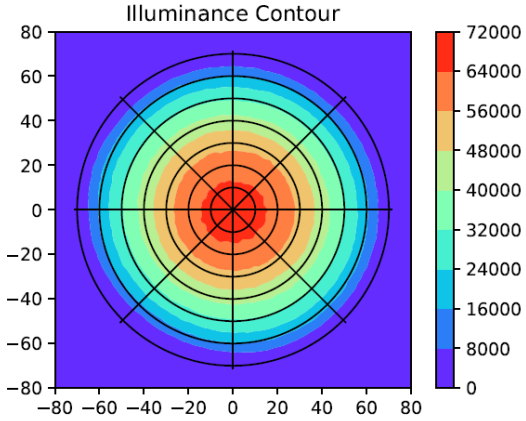
Cross Section Profiles



Illuminance Contour



Camera Results

	Beam Width 50% (mm)	Field Width 10% (mm)	Centre of Illumination (mm)	Max Illumination (lx)
Horizontal	95.1	129.4	0.8	67442
Vertical	95.9	130.5	0.6	

Spectrometer Results

SN	Condition	Photometric (lx)	Radiometric (W/m²)	UVA (W/m²)	x_Color	y_Color	CCT (K)	CRI	CRI09
sn26010163	all on	71370	269.8	0.033	0.3769	0.3714	4060	96.1	91.5
nan	amber off	62100	232.4	0.031	0.3661	0.3665	4348	96.7	98.7

Technical Specifications:

The Gaia Photonics Surgical Light Pod 20-00001 is a UL recognized component under UL file E548175.

The Gaia Photonics Surgical Light Pod 20-00001 is exclusively designed for installation in Skytron Aurora LED and Skytron Aurora II series Lightheads and is only to be operated under the following conditions:

Product Ratings	
Input current CC	410 mA
Input Power	10W
Input Type	Isolated Circuit
Environmental conditions	Damp or Dry

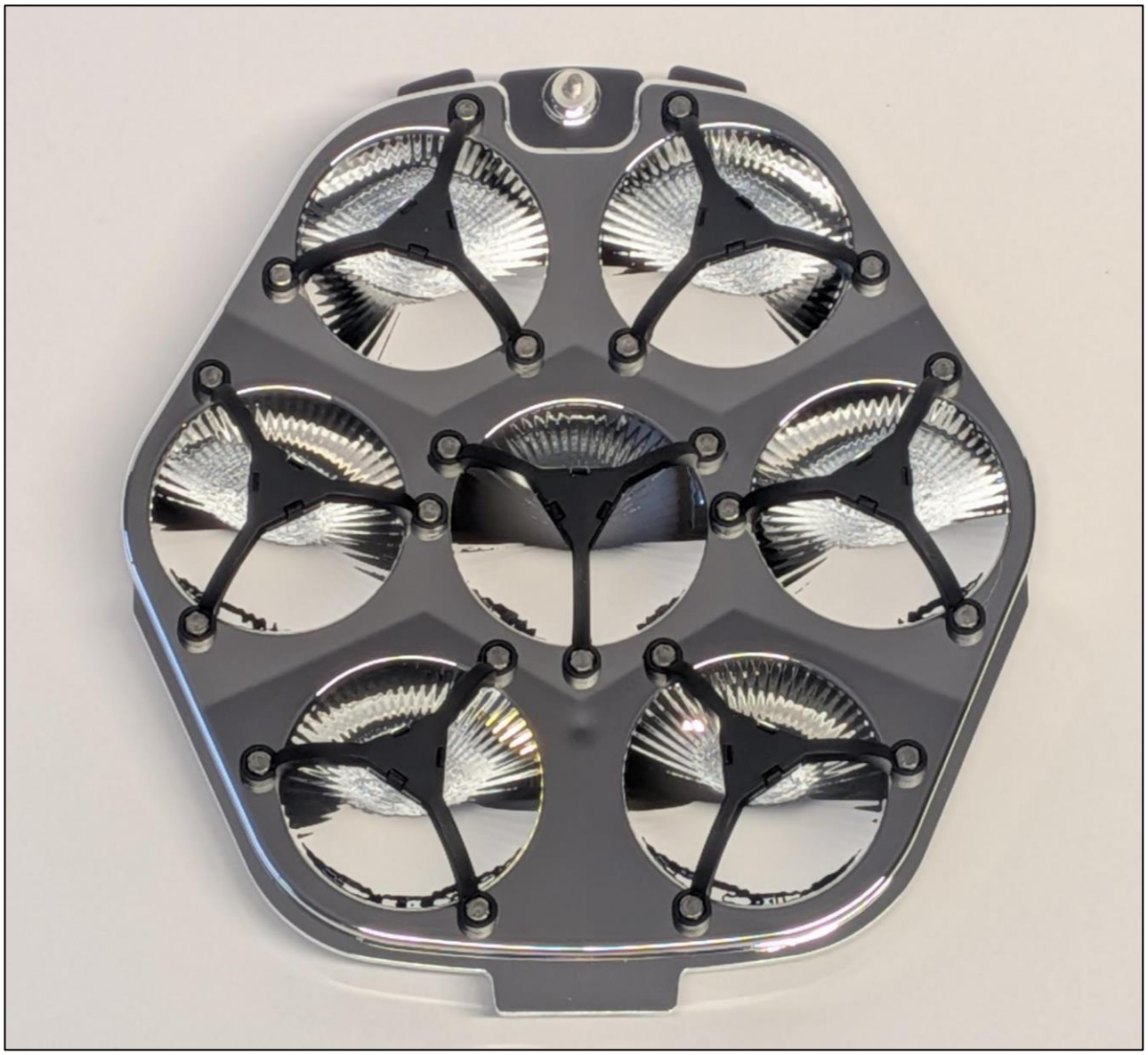
The typical operating characteristics of a single standalone unit at 410mA constant current operation and in the Skytron LED5 Lighthead with Skytron driver at dimming setting 5 providing the equivalent of 410mA constant current drive current are captured in the following table.

Configuration	20-00001 Single Light Pod[1]		20-00001 Surgical Light pod in LED5 Light Head[2]	
CCT setting	**Amber off**	**Amber on**	**Amber off**	**Amber on**
Color temperature	4400K	4100	4400K	4100K
CRI	96	97	97	96
R9 (red)	97	93	96	91
R13 (skin tone)	99	99	99	99
Chromaticity x	0.3631	0.3744	0.3635	0.3749
Chromaticity y	0.3644	0.3697	0.3622	0.3680
Center Illuminance Ec [lx]	62000	71000	260000	310000
Light field diameter d50 [mm]	87	87	90	90
Light field diameter d10 [mm]	138	138	140	140
Center Irradiance [W/m^2]	230	270	980	1200
UV center Irradiance [W/m^2]	0.03	0.035	0.24	0.28

Illuminance and Irradiance measurements performed at 1m distance

[1]Single Light Pod operated at 410mA DC current through both channels

[2] 20-00001 in LED5 Light Head operated with Aurora II wall control in dim5 setting



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