

COOLEGE™

## COOLEGE LIGHT QUALITY METRICS: TILE TUNABLE WHITE - 2700K-5700K, (BOTH CHANNELS @50%)

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### NOTES ABOUT LIGHT QUALITY METRICS DATA:

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- Values shown are TYPICAL – actual performance of individual units may vary
- The data presented has been generated in accordance with LM-79-08
- A complete summary of LM-79-08 data is provided for 600 lm/sqft (6450 lm/m<sup>2</sup>) TILE models only; however, spectral and color rendering data is applicable to TILE models of the same CCT at lower lumen output levels (150/1600 & 300/3225), including:
  - Spectral Power Distribution (SPD)
  - Nominal CCT
  - Chromaticity
  - $R_f$  and  $R_g$  (TM-30-15)
  - CRI ( $R_a$ ) and R-values
  - $D_{uv}$

### SELECTED DEFINITIONS

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- **Candlepower:** As presented in this document it is the same as “candela” the SI unit of measurement for light intensity.
- **CRI ( $R_a$ ):** The general Color Rendering Index based on 8 CIE reference pastel color samples.
- **$D_{uv}$ :** The American National Standards Institute (ANSI) references  $D_{uv}$ , a metric based on the CIE 1976 color space that quantifies the distance between the chromaticity of a given light source and a blackbody radiator of equal CCT. A negative  $D_{uv}$  indicates that the source is “below” the Planckian locus (blackbody curve), potentially having a red/blue tint, whereas a positive  $D_{uv}$  indicates that the source is “above” the curve, potentially exhibiting a green tint.
- **Nominal CCT Quadrangles:** ANSI has defined acceptable chromaticity quadrangles for LED binning in relation to the blackbody curve within CIE color space. The data presented shows the typical chromaticity coordinate within the relevant quadrangle.
- **R-value ( $R_i$ ):** The R-value is a mathematical calculation measuring how similar a light source renders a particular color compared to a reference blackbody source of the same CCT. R-values are not absolute and therefore cannot be used as a specific measurement of color rendering. For example, a 2700K source may have a lower R9 value than a 5700K source, however, in absolute terms the 2700K source will render saturated red much better than the 5700K source because of the relative abundance of red in the spectral power distribution (SPD) for the 2700K source in comparison.
- **R1-R15:** The data presented include the special CRI set of CIE 14 samples and the Japanese Industrial Standard (JIS) for R15.
- **$R_f$ :** The IESNA TM-30-15 technical memorandum for measuring color rendering defines a “fidelity” index,  $R_f$ , that is similar to CRI and quantifies the average difference in appearance between the test source and a reference source based on 99 reference colors.
- **$R_g$ :** The IESNA TM-30-15 technical memorandum for measuring color rendering defines a “gamut” index,  $R_g$ , that quantifies the average difference in color saturation between the test source and a reference source based on 99 reference colors.

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## LIGHTING PROPERTIES: TYPICAL PERFORMANCE

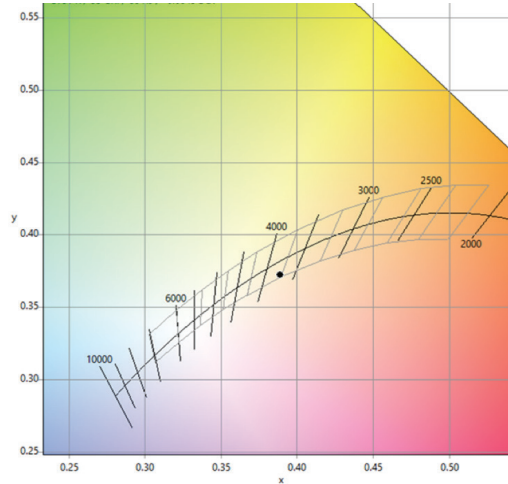
### TEST CONDITIONS

Temp (°C)	DC Voltage (V)	Current (A)	Power (W)
22.4	58.0	0.0938	5.44

### COLOR RENDERING INDEX DETAILS

Reference	Value
R1	98
R2	98
R3	98
R4	94
R5	96
R6	94
R7	93
R8	91
R9	86
R10	98
R11	95
R12	75
R13	99
R14	100
R15	97

### NOMINAL CCT QUADRANGLES



### CHROMATICITY COORDINATES

Chromaticity (x)	0.3892
Chromaticity (y)	0.3723
Chromaticity (u)	0.2327
Chromaticity (v)	0.3339
Chromaticity (u)	0.2327
Chromaticity (v)	0.5009
Duv	-0.0045

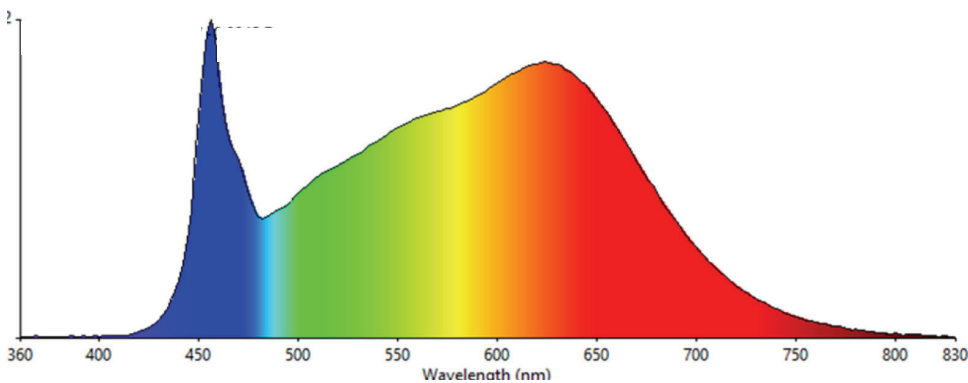
### SUMMARY OF RESULTS

Total Lumen Output	595 Lumens
Luminaire Efficacy	109 lm/W
Maximum Candela	195 Candela
CCT	3731 K
CRI (Ra)	95
Duv	-0.0045
TM-30 R <sub>f</sub>	89
TM-30 R <sub>g</sub>	98

### INTENSITY (CANDLEPOWER) SUMMARY

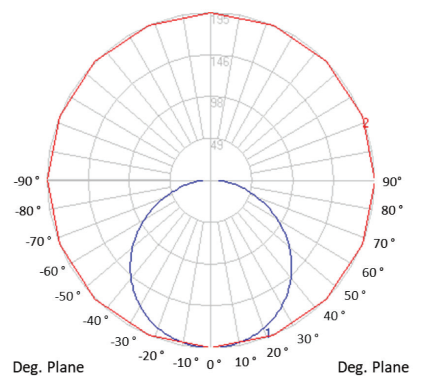
Angle	Mean CP	Lumens
0	195.1	
5	194.3	595
10	192.2	
15	188.6	576
20	183.6	
25	177.1	531
30	169.2	
35	159.7	455
40	148.8	
45	136.5	359
50	122.9	
55	108.1	253
60	92.4	
65	75.9	153
70	59.3	
75	43.1	72
80	28.4	
85	16.6	19
90	8.2	

### SPECTRAL POWER DISTRIBUTION (SPD)



Testing was performed in accordance with LM-79-08.

### POLAR GRAPH



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Cooledge Lighting reserves the right to change materials or modify the design of its product without notification as part of the company's continuing product improvement program.

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