

SUMMARY

Test Condition: 15V 60Hz for SL13

Criteria	Result
Total Lumen Output (lm)	22.6076
Total Power(W)	4.0920
Lamp Luminaire Efficacy (lm/W)	5.52
Power Factor	0.6957
Field Angle (°)	50.8
Correlated Color Temperature (CCT)	3020
Color Rendering Index (CRI)	96
Color Rendering Index (R ₉)	85
Fidelity Index (R _f)	95
Gamut Index (R _g)	101
Chromaticity Coordinate (x)	0.4369
Chromaticity Coordinate (y)	0.4065
Chromaticity Coordinate (u')	0.2495
Chromaticity Coordinate (v')	0.5223
In-situ Case Temperature of LED/COB (°C)	57.9
Drive Current of LED/COB (mA)	100
Projection Life Time, Reported L70 (hours)	>42000

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RESULTS OF TESTS

Test Condition: 15V 60Hz for SL13

Total operation burning time: 70 min

Stabilization time: 60 min

Photometric Measurements at 25°C

Intertek Sample No.	Base Orientation	Correlated Color Temperature (K)	CRI	CIE 31' Chromaticity Coordinate (x)	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
SL13							
0231201-15-007	N/A	3020	96	0.4369	0.4065	0.2495	0.5223

Photometric and Electrical Measurements at 25°C

Intertek Sample No.	Base Orientation	Input Voltage (Vac)	Input Current (A)	Lamp Input Power (Watts)	Input Power Factor	Absolute Luminous Flux (Lumens)	Lumen Efficacy (Lumens Per Watt)
SL13							
0231201-15-007	N/A	15.0	0.3934	4.0920	0.6957	22.6076	5.52

Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens (lm)	% Luminaire (%)
SL13		
0-30	0	0
0-40	0.017	0.07
0-60	0.2911	1.29
0-90	15.57	68.9
0-180	22.61	100.0

Beam Angle

	Horizontal Spread (°)	Vertical Spread (°)
SL13		
Beam (50%)	21.4	360.0
Beam Angle	190.7	

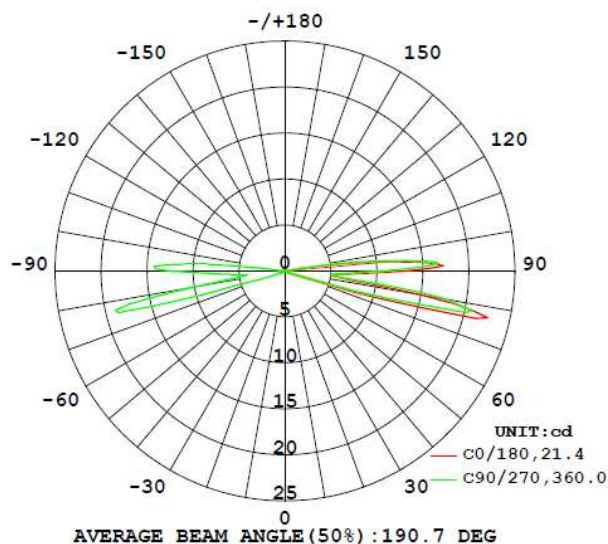
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RESULTS OF TESTS (cont'd)

Intensity (Candlepower) Summary at 25°C – Candelas

Test Condition: 15V 60Hz for SL13

G \ C(°)	0	22.5	45	67.5	90
0	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00
30	0.02	0.01	0.00	0.00	0.00
35	0.05	0.03	0.00	0.00	0.01
40	0.09	0.06	0.01	0.00	0.04
45	0.15	0.11	0.03	0.02	0.08
50	0.23	0.17	0.05	0.03	0.14
55	0.35	0.27	0.08	0.06	0.24
60	0.52	0.41	0.11	0.09	0.39
65	0.80	0.64	0.16	0.14	0.63
70	2.32	1.95	0.31	0.30	1.79
75	15.45	12.53	0.98	0.80	11.21
80	15.07	14.67	1.18	0.81	17.73
85	5.12	4.46	0.47	0.42	5.00
90	13.04	12.19	0.48	0.23	10.57



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RESULTS OF TESTS (cont'd)

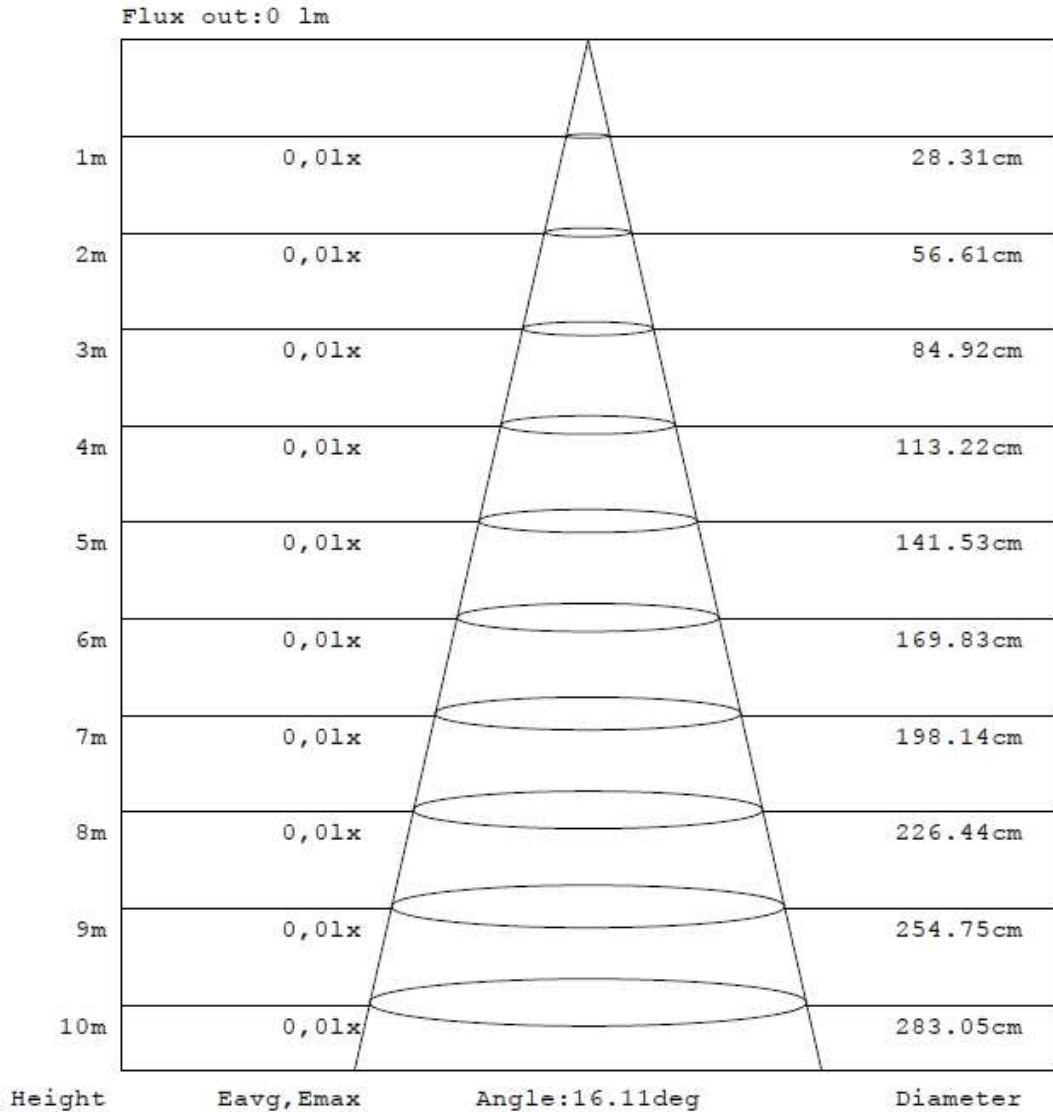
Test Condition: 15V 60Hz for SL13

Illumination Plots

Model No.: SL13

Mount Height: 10 m

Illuminance - Cone of Light



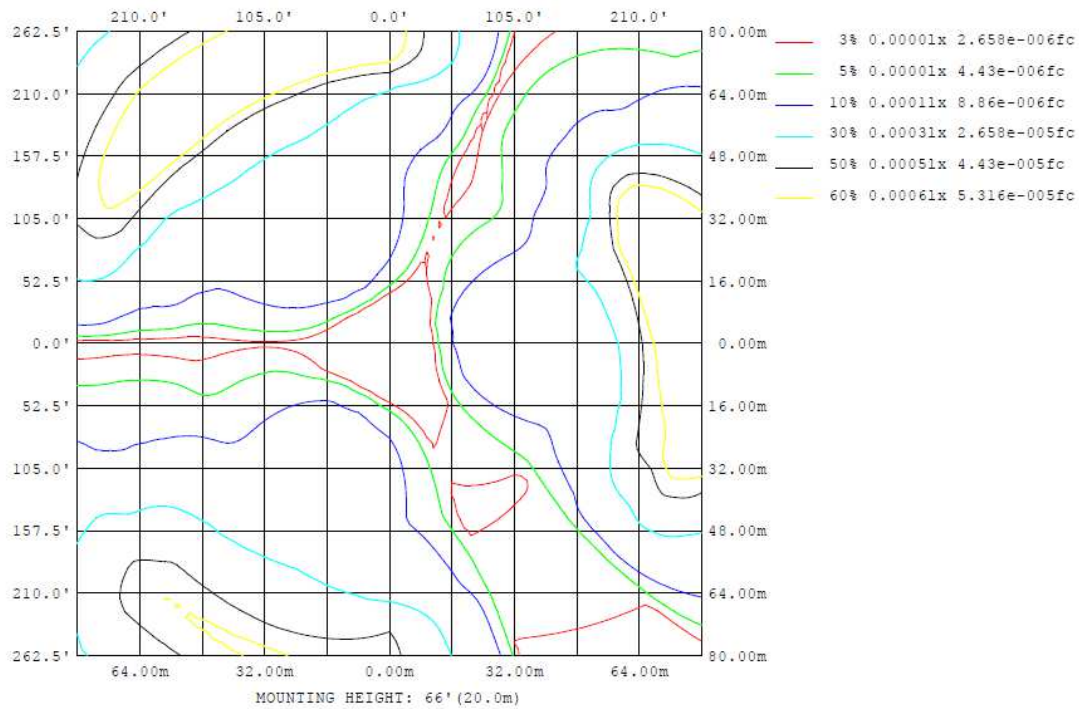
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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RESULTS OF TESTS (cont'd)

Test Condition: 15V 60Hz for SL13

Model No.: SL13
Mount Height: 20 m
Isoillumination Plot



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RESULTS OF TESTS (cont'd)

Test Condition: 15V 60Hz for SL13

ANSI/IES TM-30-18 Color Rendition Report

Source: LED

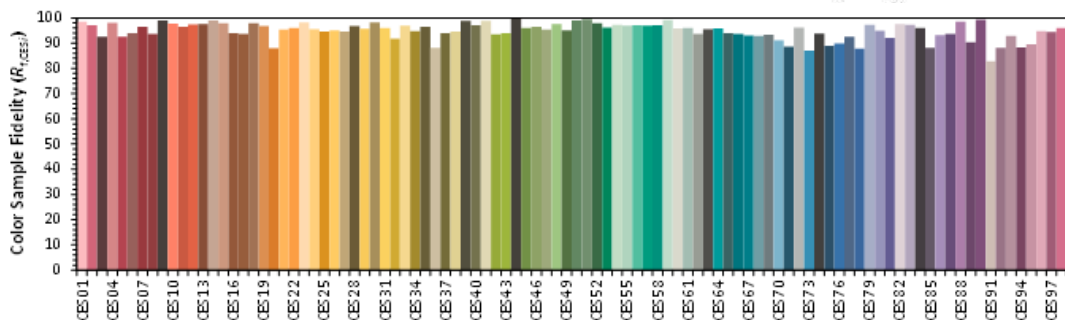
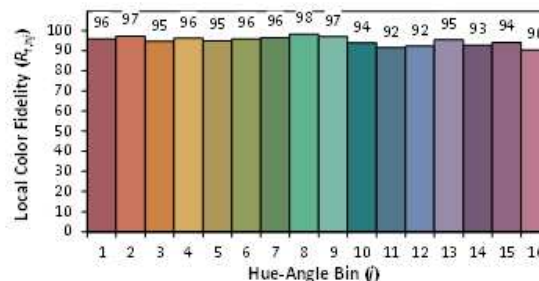
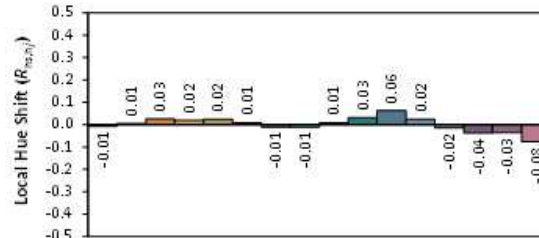
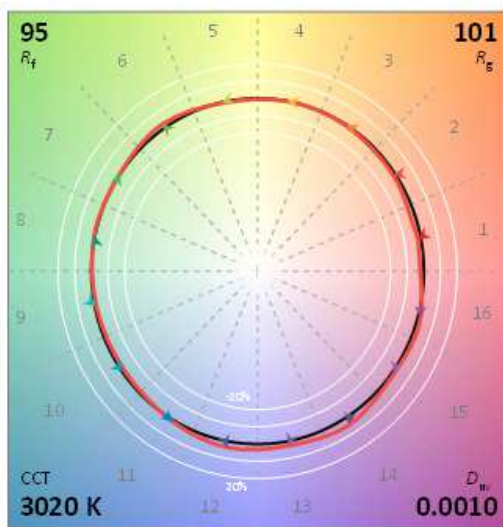
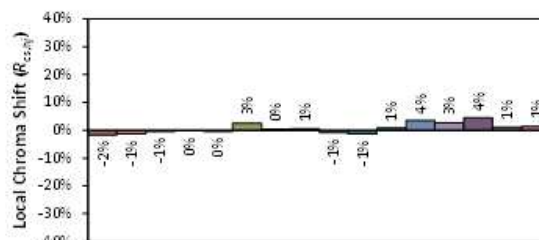
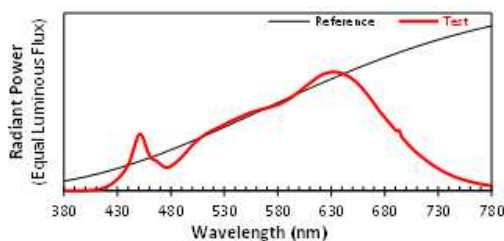
Manufacturer:

STERLING LIGHTING LLC

Date: 12/18/2023

Model:

SL13



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x 0.4369

y 0.4065

u' 0.2495

v' 0.5223

CIE 13.3-1995
(CRI)

R_a 96

R_g 85

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RESULTS OF TESTS (cont'd)

IN SITU TEMPERATURE MEASUREMENT TEST

Test Results of LED chip temperature and current

TMP led: CXA1304	
In-situ case temperature of LED source (°C)	Limit single led chip temperature(°C)
57.9	85
Measured Drive current for each LED package/array/module (mA)	Limit single led chip current (mA)
100	692

Note: In-situ case temperature was corrected to ambient temperature at 25°C in above table.

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RESULTS OF TESTS (cont'd)

IN SITU TEMPERATURE MEASUREMENT TEST

Lumen Maintenance Life Projection (Cont'd) - led chip point 1

The Calculation is based on the Illumination Engineering Society's TM-21-11: Projecting Long Term Lumen Maintenance of LED Light Sources.

Table 1: Report at each LM-80 Test Condition					
Description of LED Light Source Tested (manufacturer, model, catalog number)		Manufacturer: Cree LEDModel: CXA1304Report No:CLD-AP144 Rev5Issued: Jun. 11, 201			
Test Condition 1 - 85°C Case Temp					
Sample size	25	Sample size	-	Sample size	-
Number of failures	0	Number of failures	-	Number of failures	-
DUT drive current used in the test (mA)	692	DUT drive current used in the test (mA)	-	DUT drive current used in the test (mA)	-
Test duration (hours)	7,056	Test duration (hours)	-	Test duration (hours)	-
Test duration used for projection (hour to hour)	2,016 - 7,056	Test duration used for projection (hour to hour)	-	Test duration used for projection (hour to hour)	-
Tested case temperature (°C)	85	Tested case temperature (°C)	-	Tested case temperature (°C)	-
α	2.424E-06	α	-	α	-
B	0.985	B	-	B	-
Reported L70(7k) (hours)	>42000	Reported L70(7k) (hours)	-	Reported L70(7k) (hours)	-

Table 2: Interpolation Report (projection based on <i>in-situ</i> temperature entered)	
$T_{s,1}$ (°C)	85.00
$T_{s,1}$ (K)	358.15
α_1	2.424E-06
B_1	0.985
$T_{s,2}$ (°C)	-
$T_{s,2}$ (K)	-
α_2	-
B_2	-
E_{θ}/k_0	-
A	-
B_0	0.985
$T_{s,i}$ (°C)	57.90
$T_{s,i}$ (K)	331.05
α_i	2.424E-06
Reported L70(7k) at 57.9°C (hours)	>42000

In-Situ Inputs

Drive current for each LED package/array/module (mA):	100
<i>In-situ</i> case temperature (T_c , °C):	57.9
Percentage of initial lumens to project to (e.g. for L70, enter 70):	70

Results

Time (t) at which to estimate lumen maintenance (hours):	50,000
Lumen maintenance at time (t) (%):	87.30%
Reported L70 (hours):	>42000

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