



NVLAP Lab Code 500089-0

Report Number: PL03826-001
Model: INT-EDR-PS-xx-06-E-UL-XX-700-xxxx or
BXHRxA06E-UD-xxxx
Date: 06/13/2014

Cree Racine Engineering Services Testing Laboratory (RESTL) Photometric Testing and Evaluation Report

Prepared For:

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Product Information

Manufacturer	Cree
Model Number (SKU)	INT-EDR-PS-xx-06-E-UL-XX-700-xxxx or BXHRxA06E-UD-xxxx
Serial Number	PL03826-001
LED Type	XP-G2

Product Description

Cast gray painted metal housing, formed perforated metal top, fabricated metal mounting bracket. 3 extruded finned metal heat sinks. Each heat sink contains 1 circuit board with 20 LEDs, cast gray painted metal trim plates, 1 clear plastic non-integral lens below each LED. 2 decorative covers on each side of the LEDs.

Driver Information (Where Applicable)

Philips LED-INTA-0700C-210DO

Length	Width	Height
22.0"	22.0"	6.0"

Sample

The following sample was submitted for evaluation





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Key Photometric Data	Sphere Output	Goniophotometer	
Luminous Flux	13469	13152.0	lm
Efficacy	100.69	98.49	lm/W
Correlated Color Temperature (CCT)	5679	K	
Color Rendering Index (CRI)	72		
R ₉	-23		
Duv	0.003893		
S/P Ratio*	1.89		

Electrical Measurements	Sphere		Goniophotometer		
	120V	277V	120V	277V	
Input Wattage	133.77	131.57	133.32	131.31	W
Input Current	1.12	0.50	1.11	0.49	A
Input Voltage	119.92	277.09	120.01	277.03	V
Power Factor	0.998	0.956	0.998	0.958	
Off-State Power	0	0	0	0	W
Total Harmonic Distortion (Voltage)	0.06	0.06	0.07	0.08	%
Total Harmonic Distortion (Amperage)	5.24	11.40	5.28	11.46	%

Note: All photometric measurements taken at 120VAC.

Luminous Intensity Distribution	Goniophotometer	
Maximum Candela	5248.5	Cd
Beam Angle	106.7	°
Field of View	119.2	°
Zonal Lumens (0° – 30°)	4019.7 (30.6)	lm (%)
Zonal Lumens (0° – 40°)	7029.8 (53.5)	lm (%)
Zonal Lumens (0° – 60°)	12744.8 (96.9)	lm (%)
Zonal Lumens (60° – 90°)	407.2 (3.1)	lm (%)

Key Test Parameters	Sphere Output	Goniophotometer	
Stabilization Time	78	76	min
Total Operating Time (Stabilization + Test)	83	98	min
Ambient Temperature	24.1	25.1	°C



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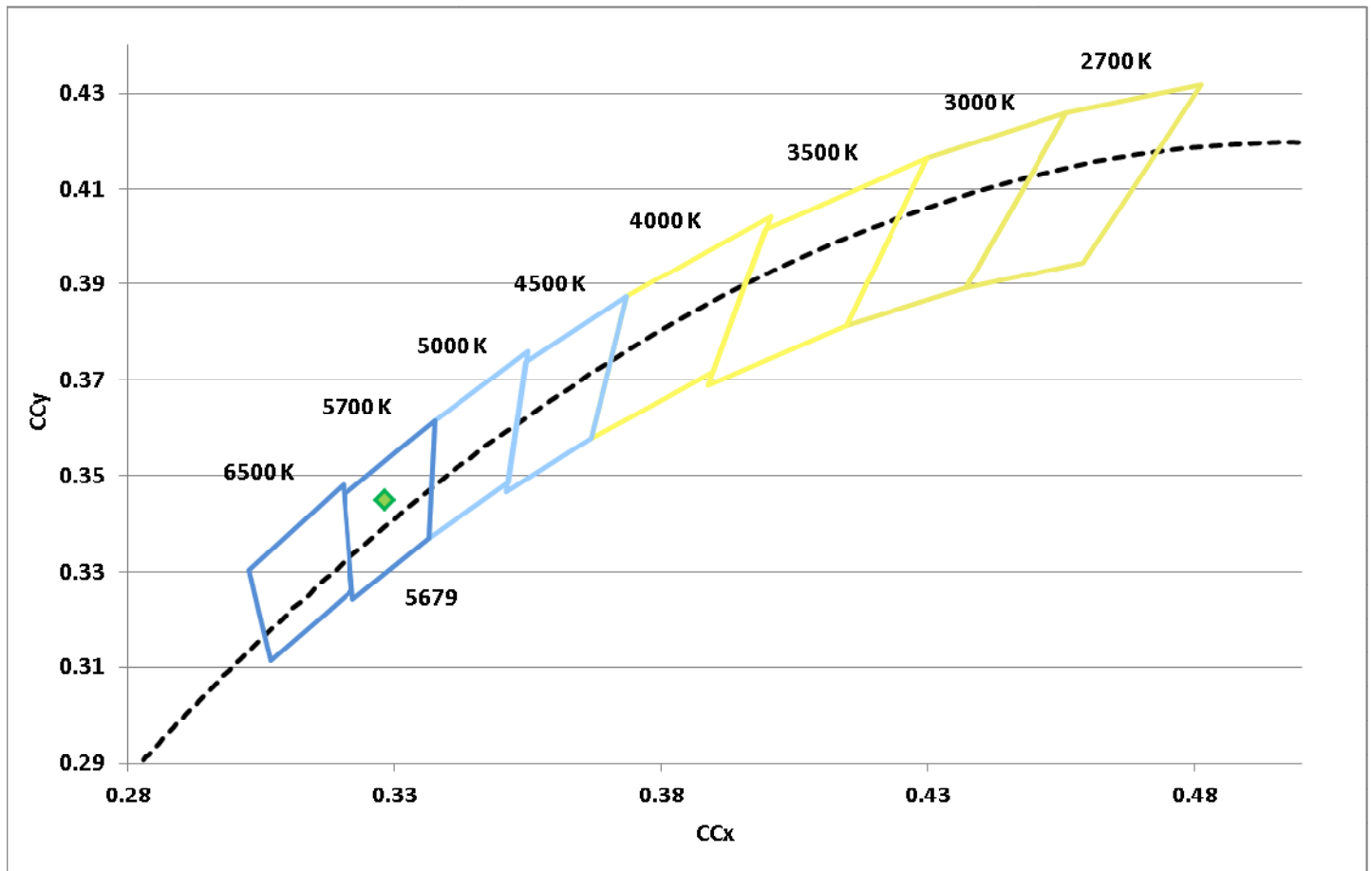
Chromaticity Coordinates **

x	y	u	v	u'	v'	Duv
0.3283	0.3450	0.2025	0.3193	0.2025	0.4789	0.003893

Color Rendering Index Details **

Ra	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
72	70	75	78	73	71	66	81	61	-23	40	70	44	70	87

Chromaticity Diagram **



Spectral Distribution **

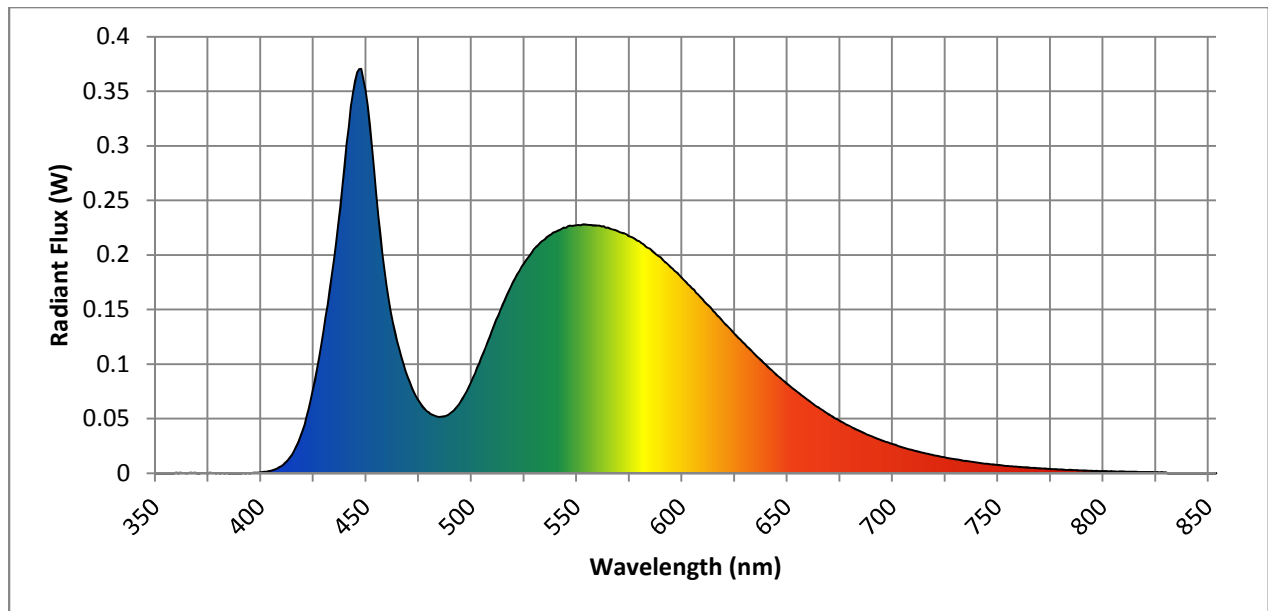
λ (nm)	W/nm
360	0.000694
370	0.000129
380	0.000277
390	0.000139
400	0.000798
410	0.006717
420	0.038744
430	0.130643
440	0.280884
450	0.351412
460	0.171827
470	0.088422
480	0.055833
490	0.054648
500	0.083059
510	0.130518
520	0.175213

λ (nm)	W/nm
530	0.205639
540	0.221236
550	0.227350
560	0.226926
570	0.221695
580	0.212616
590	0.198166
600	0.179573
610	0.159520
620	0.138541
630	0.118690
640	0.099569
650	0.082338
660	0.067405
670	0.053993
680	0.043271
690	0.034195

λ (nm)	W/nm
700	0.026977
710	0.021043
720	0.016553
730	0.012849
740	0.009959
750	0.007644
760	0.005843
770	0.004604
780	0.003572
790	0.002668
800	0.002082
810	0.001683
820	0.001190
830	0.000924

Dominant Wavelength **	528	nm
Peak Wavelength **	448	nm

Spectral Power Distribution (W/nm) **





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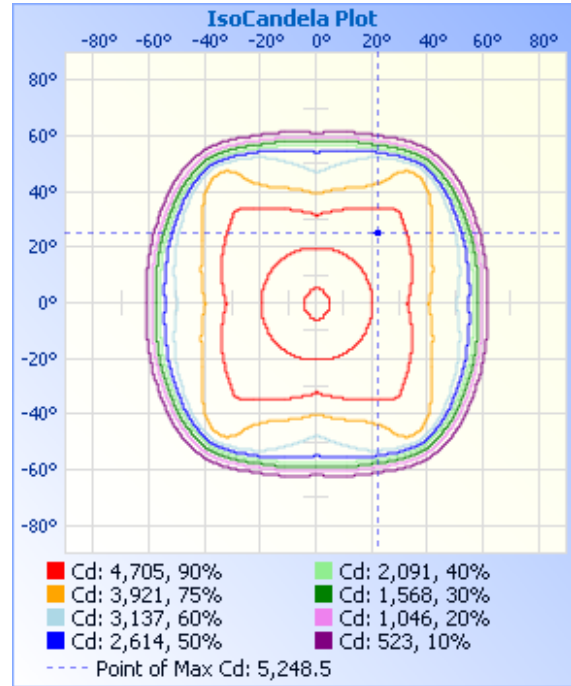
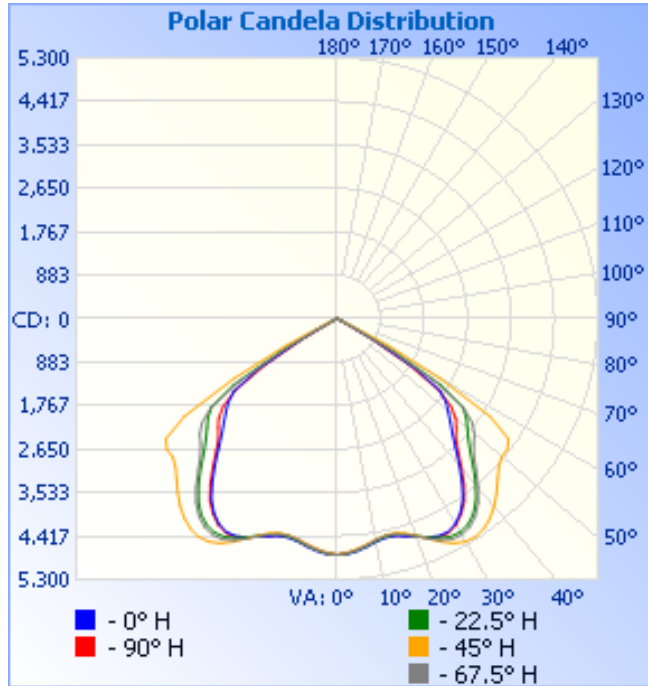
Zonal Lumen Summary

Zone	Lumens	% of Total	Zone	Lumens	% of Total
0-5	113.4	0.9%	90-95	0.0	0.0%
5-10	331.3	2.5%	95-100	0.0	0.0%
10-15	538.0	4.1%	100-105	0.0	0.0%
15-20	759.3	5.8%	105-110	0.0	0.0%
20-25	1,011.5	7.7%	110-115	0.0	0.0%
25-30	1,266.1	9.6%	115-120	0.0	0.0%
30-35	1,459.6	11.1%	120-125	0.0	0.0%
35-40	1,550.5	11.8%	125-130	0.0	0.0%
40-45	1,544.8	11.7%	130-135	0.0	0.0%
45-50	1,523.2	11.6%	135-140	0.0	0.0%
50-55	1,508.4	11.5%	140-145	0.0	0.0%
55-60	1,138.5	8.7%	145-150	0.0	0.0%
60-65	331.0	2.5%	150-155	0.0	0.0%
65-70	47.2	0.4%	155-160	0.0	0.0%
70-75	19.1	0.1%	160-165	0.0	0.0%
75-80	6.4	0.0%	165-170	0.0	0.0%
80-85	2.8	0.0%	170-175	0.0	0.0%
85-90	0.7	0.0%	175-180	0.0	0.0%
Total			13152.0 lm	100%	

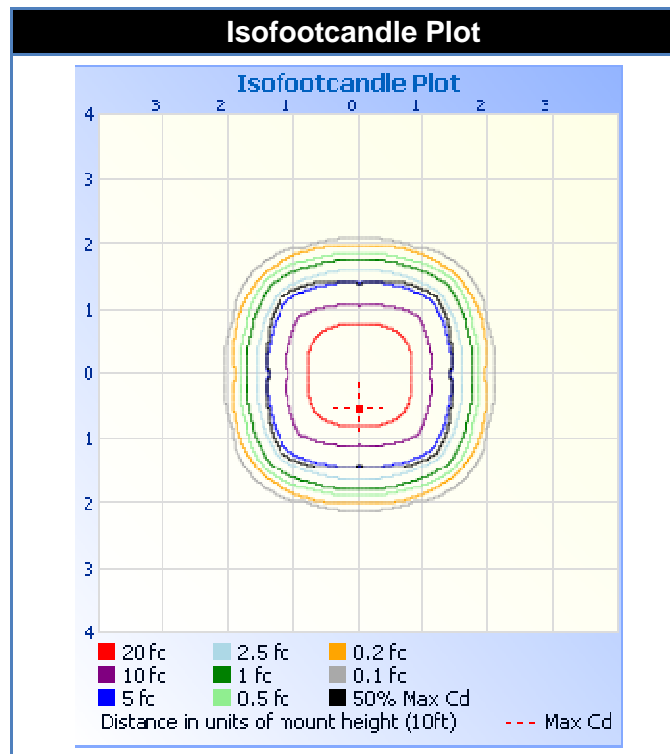
Spacing Criteria

Spacing Criterion (0 - 180)	1.42
Spacing Criterion (90 - 270)	1.44
Spacing Criterion (Diagonal)	1.66

Candela Plots



Isofootcandle Plot





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Candela Tabulations

	0	22.5	45	67.5	90
0	4793	4793	4793	4793	4793
2.5	4785	4772	4753	4772	4761
5	4733	4718	4697	4712	4701
7.5	4668	4650	4623	4641	4634
10	4596	4577	4548	4562	4564
12.5	4554	4535	4507	4516	4524
15	4564	4534	4503	4529	4545
17.5	4628	4591	4564	4592	4611
20	4713	4688	4685	4700	4707
22.5	4800	4803	4834	4831	4809
25	4872	4914	4998	4962	4891
27.5	4880	4990	5139	5049	4902
30	4810	5005	5230	5068	4833
32.5	4666	4952	5248	5014	4696
35	4457	4832	5201	4898	4507
37.5	4170	4637	5102	4709	4237
40	3860	4380	4967	4459	3930
42.5	3565	4102	4797	4183	3640
45	3320	3831	4616	3931	3412
47.5	3126	3619	4455	3764	3280
50	2952	3452	4362	3649	3147
52.5	2793	3314	4361	3460	2918
55	2555	3120	4252	3124	2529
57.5	1902	2493	3680	2356	1727
60	915	1336	2428	1219	772
62.5	264	475	1177	402	192
65	90	121	268	116	86
67.5	72	96	75	93	68
70	51	70	48	68	48
72.5	32	41	25	40	31
75	21	20	15	20	19
77.5	11	10	10	11	12
80	8	7	7	8	9
82.5	6	5	5	5	6
85	3	2	2	3	3
87.5	1	1	1	1	1
90	0	0	0	0	0

	0	22.5	45	67.5	90
92.5	0	0	0	0	0
95	0	0	0	0	0
97.5	0	0	0	0	0
100	0	0	0	0	0
102.5	0	0	0	0	0
105	0	0	0	0	0
107.5	0	0	0	0	0
110	0	0	0	0	0
112.5	0	0	0	0	0
115	0	0	0	0	0
117.5	0	0	0	0	0
120	0	0	0	0	0
122.5	0	0	0	0	0
125	0	0	0	0	0
127.5	0	0	0	0	0
130	0	0	0	0	0
132.5	0	0	0	0	0
135	0	0	0	0	0
137.5	0	0	0	0	0
140	0	0	0	0	0
142.5	0	0	0	0	0
145	0	0	0	0	0
147.5	0	0	0	0	0
150	0	0	0	0	0
152.5	0	0	0	0	0
155	0	0	0	0	0
157.5	0	0	0	0	0
160	0	0	0	0	0
162.5	0	0	0	0	0
165	0	0	0	0	0
167.5	0	0	0	0	0
170	0	0	0	0	0
172.5	0	0	0	0	0
175	0	0	0	0	0
177.5	0	0	0	0	0
180	0	0	0	0	0



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Integrating Sphere Equipment List

Description	Manufacturer	Model	Serial Number
2M Sphere	Everfine	2M	1004156T
CCD Array Spectrometer	Labsphere	MC-9801	98010360
Programmable AC Source	Adaptive	FC200	2280220
Power Analyzer	Yokogawa	WT310	C2QC04045V

Goniophotometer Equipment List

Description	Manufacturer	Model	Serial Number
AC Power Source	Chroma	61602	616020002300
Type C Goniophotometer	LSI / UL	6440T	6440PN2028
Spectroradiometer	Gooch & Housego	770VIS/NIR	12415212
Power Meter	Yokogawa	WT210	91M945458

Test Methods Used:

Title	Description
ANSI C82.77:2002	Harmonic Emission Limits- Related Power Quality Reqt's for Lighting Equipment
CIE Pub. 13.3:1995	Method of Measuring and Specifying Color Rendering of Light Sources
CIE Pub. 15:2004	Colorimetry
IES LM-58:1994	Spectroradiometric Measurements
IES LM-65:2001	Single-Ended Compact Fluorescent Lamps – Life Test Performance
IES LM-79:2008	Electrical and Photometric Measurements of Solid-State Lighting Products

Reference Standard Used:

Equipment	Description
2m Sphere	Tungsten Halogen Omni-Directional 75W Calibration Lamp, Serial Number F119
Type C Goniophotometer and Spectrometer	Tungsten Halogen Omni-Directional 500W Calibration Lamp, Serial Numbers 13C069, 13C070, 13C071. For color calibration of spectrometer, 13C074.

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In the event that the recorded temperature is outside of $25 \pm 1^\circ\text{C}$, this is considered a non-standard condition.

** In the event that testing is subcontracted, test results in this report marked with the symbol **, or noted as “Sphere” or “Integrating Sphere”, were performed by the subcontracted laboratory identified in the footer on the first page of this report. Subcontracted testing is strictly integrating sphere based. All other tests are performed using a Type C goniophotometer.

The integrating sphere information in the equipment list, report items marked with **, or results specifically identified as “Sphere” or “Integrating Sphere”, are the actual equipment used, and test results produced, by the subcontracted laboratory when subcontracting is indicated on the cover page.

Additional Comments:

The photos below are intended to show the orientation and fixturing/set-up of the units under test. These are critical to understanding the results of the test given the sensitivity of many products and measurement systems to orientation and set-up considerations, and also for reproducing the conditions of the test.

Goniophotometer

Integrating Sphere

