



NVLAP Lab Code 500089-0

Report Number: PL03375-001
Model: CPY250-A-xx-D-C-UL-xx-40K or
BXCCAxD04-UW7 or XCCAxD04-UW7
Date: 03/24/2014

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

Prepared For:

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Prepared By:

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Approved By:

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Product Information

Manufacturer	Cree
Model Number (SKU)	CPY250-A-xx-D-C-UL-xx-40K or BXCCAxD04-UW7 or XCCAxD04-UW7
Serial Number	PL03375-001
LED Type	XTE AWT

Product Description

Cast white painted finned metal housing, molded white plastic reflector, 1 white circuit board with 72 LEDs, glass drop lens in cast white painted metal Frame.

Driver Information (Where Applicable)

Philips LED-INTA-0700C-140F3

Length	Width	Height
15.0"	15.0"	3.0"

Sample

The following sample was submitted for evaluation





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Key Photometric Data	Sphere Output	Goniophotometer	
Luminous Flux	4631	4527.0	lm
Efficacy	109.56	107.63	lm/W
Correlated Color Temperature (CCT)	4033	K	
Color Rendering Index (CRI)	74		
R ₉	-13		
Duv	0.003062		
S/P Ratio*	1.53		

	Sphere		Goniophotometer	
Electrical Measurements	120V	277V	120V	
Input Wattage	42.27	42.56	42.06	W
Input Current	0.35	0.17	0.35	A
Input Voltage	120.13	277.10	120.00	V
Power Factor	0.992	0.904	0.990	
Off-State Power	0	0	0	W
Total Harmonic Distortion (Voltage)	0.12	0.19	0.10	%
Total Harmonic Distortion (Amperage)	7.43	12.23	7.48	%

Note: All photometric measurements taken at 120VAC.

Luminous Intensity Distribution	Goniophotometer	
Max Candela	1916.1	Cd
Angle of Max Candela (Horizontal)	0	°
Angle of Max Candela (Vertical)	5	°

Key Test Parameters	Sphere Output	Goniophotometer	
Stabilization Time	48	57	min
Total Operating Time (Stabilization + Test)	53	80	min
Ambient Temperature	24.2	24.7	°C

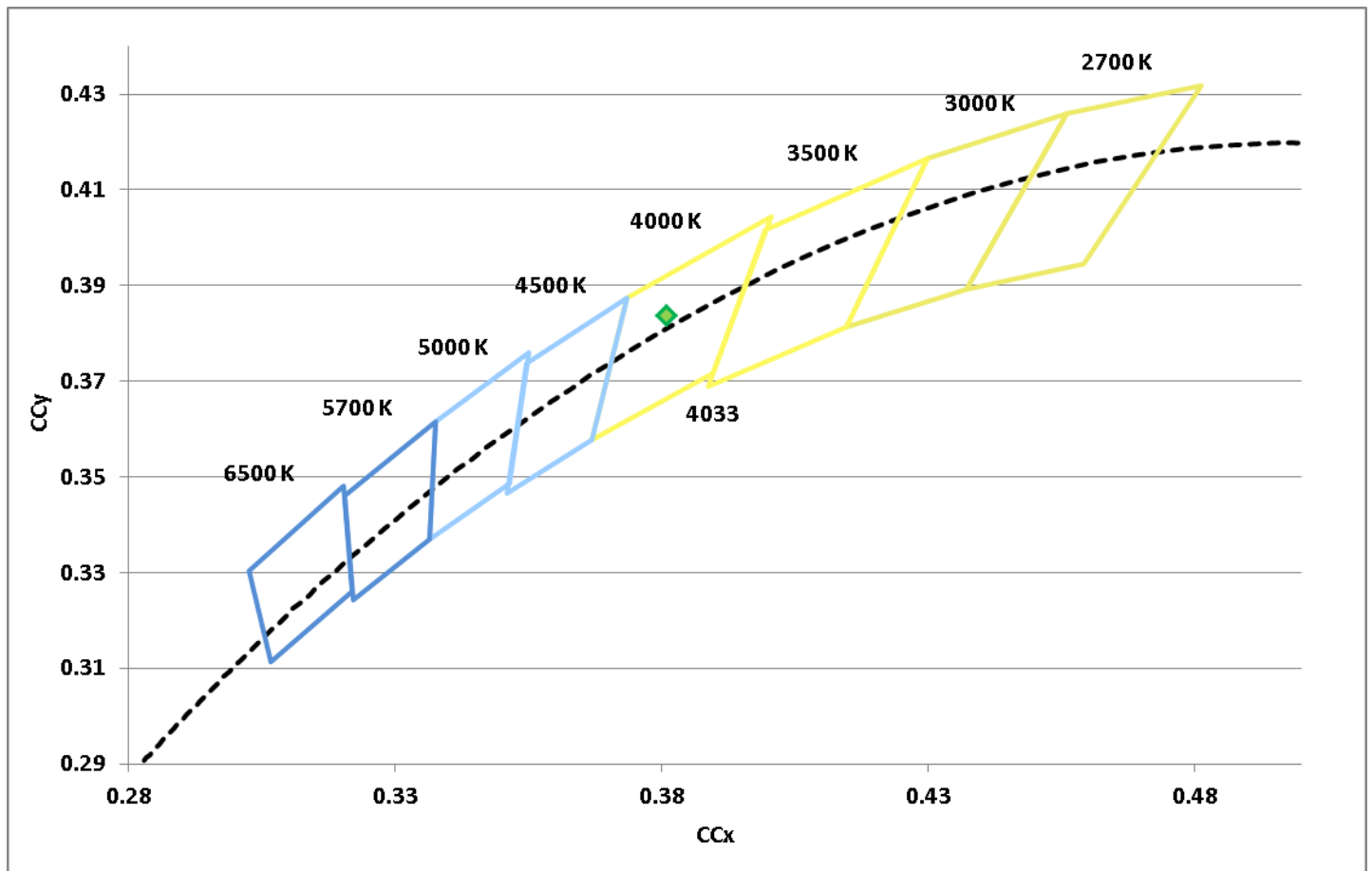
Chromaticity Coordinates **

x	y	u	v	u'	v'	Duv
0.3810	0.3837	0.2227	0.3365	0.2227	0.5047	0.003062

Color Rendering Index Details **

Ra	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
74	72	79	83	75	71	70	83	60	-13	49	71	43	73	90

Chromaticity Diagram **



Spectral Distribution **

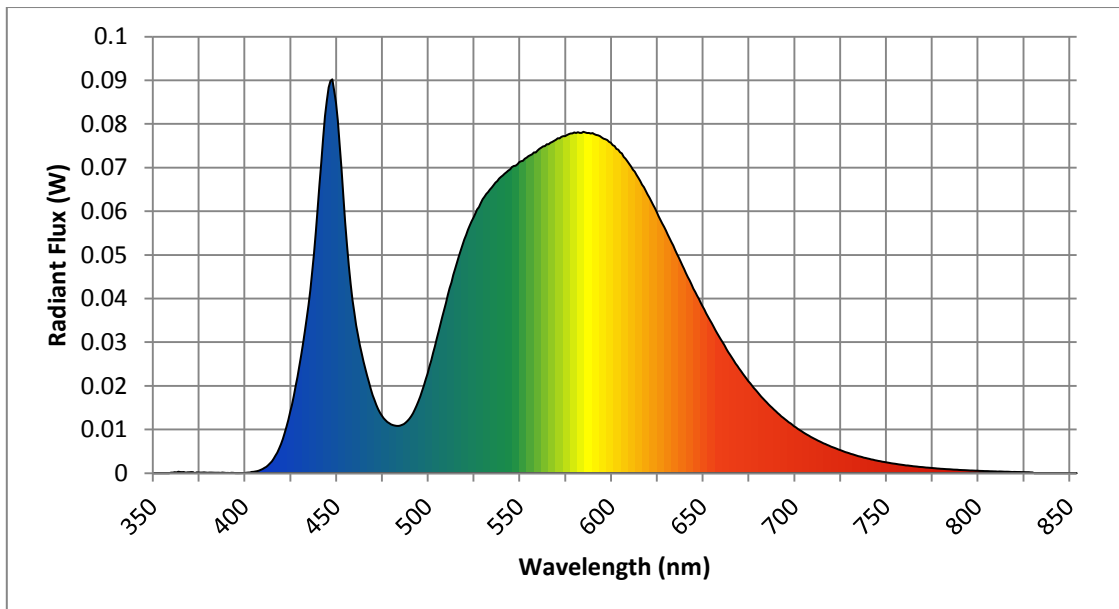
$\lambda(\text{nm})$	W/nm
360	0.000125
370	0.000204
380	0.000099
390	0.000050
400	0.000041
410	0.000958
420	0.006662
430	0.024540
440	0.060622
450	0.084843
460	0.036848
470	0.017877
480	0.011182
490	0.012437
500	0.022817
510	0.038996
520	0.053524

$\lambda(\text{nm})$	W/nm
530	0.062743
540	0.067862
550	0.071254
560	0.073923
570	0.076373
580	0.078051
590	0.077908
600	0.075667
610	0.070837
620	0.063851
630	0.055616
640	0.046713
650	0.038224
660	0.030619
670	0.023952
680	0.018557
690	0.014186

$\lambda(\text{nm})$	W/nm
700	0.010715
710	0.008106
720	0.006100
730	0.004569
740	0.003368
750	0.002496
760	0.001844
770	0.001386
780	0.001002
790	0.000737
800	0.000568
810	0.000402
820	0.000290
830	0.000168

Dominant Wavelength **	577	nm
Peak Wavelength **	448	nm

Spectral Power Distribution (W/nm) **



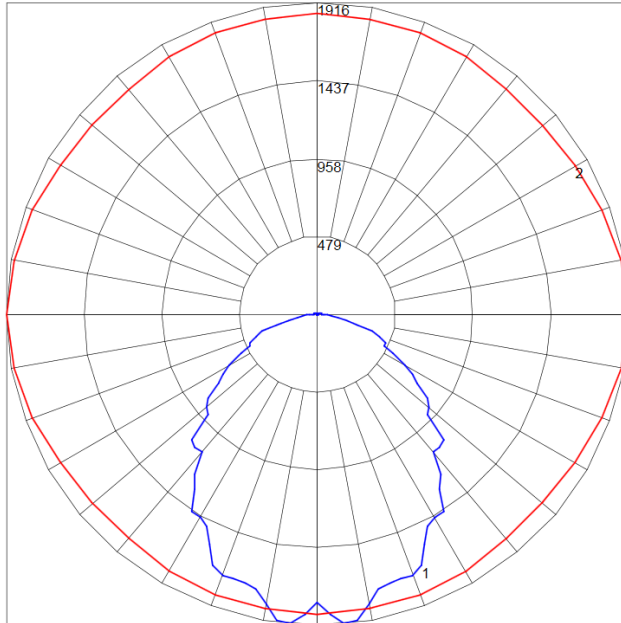


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Zonal Lumen Summary

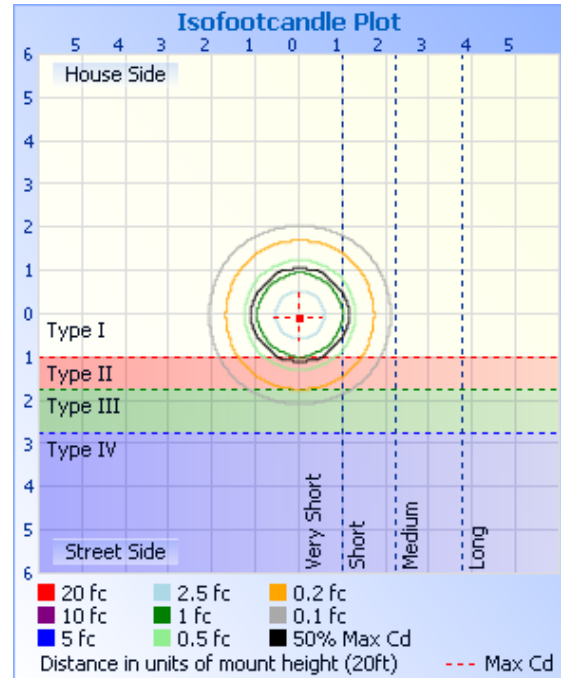
Zone	Lumens	% of Total	Zone	Lumens	% of Total
0-5	43.9	1.0%	90-95	11.5	0.3%
5-10	129.9	2.9%	95-100	5.3	0.1%
10-15	210.2	4.6%	100-105	2.8	0.1%
15-20	282.2	6.2%	105-110	1.0	0%
20-25	343.1	7.6%	110-115	0.2	0%
25-30	386.2	8.5%	115-120	0.0	0%
30-35	412.7	9.1%	120-125	0	0%
35-40	418.3	9.2%	125-130	0	0%
40-45	409.1	9.0%	130-135	0	0%
45-50	388.2	8.6%	135-140	0	0%
50-55	359.2	7.9%	140-145	0	0%
55-60	321.3	7.1%	145-150	0	0%
60-65	268.1	5.9%	150-155	0	0%
65-70	210.2	4.6%	155-160	0	0%
70-75	154.7	3.4%	160-165	0	0%
75-80	93.7	2.1%	165-170	0	0%
80-85	49.8	1.1%	170-175	0	0%
85-90	25.5	0.6%	175-180	0	0%
Total			4527.0 lm 100%		

Candela Plot



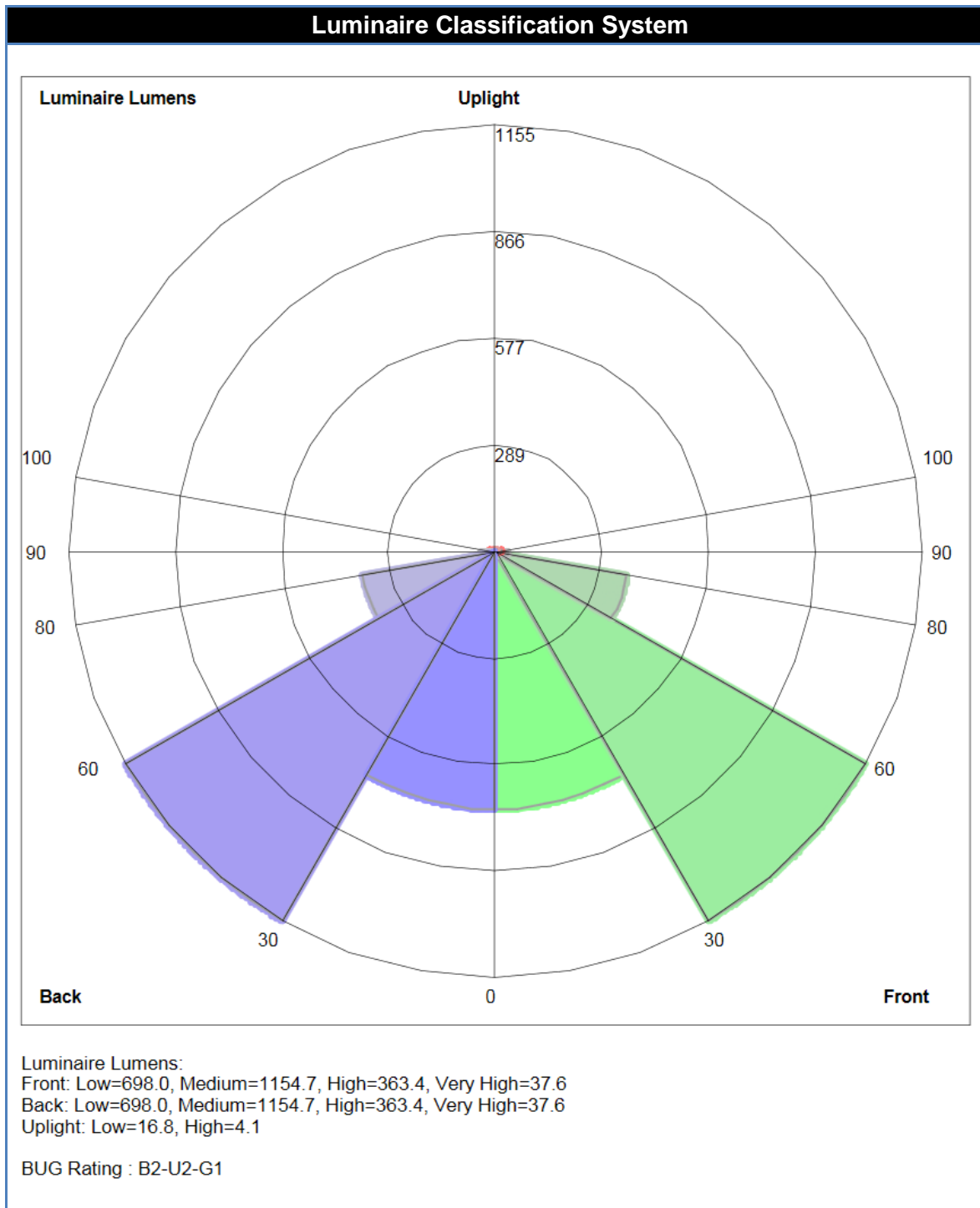
Maximum Candela = 1916.1 Located At Horizontal Angle = 0, Vertical Angle = 5
 # 1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
 # 2 - Horizontal Cone Through Vertical Angle (5) (Through Max. Cd.)

Illuminance Plot



Roadway Summary

Cutoff Classification	Cutoff
Distribution	Type VS



Candela Tabulations

	0	10	20	30	40	50	60	70	80	90
0	1774	1774	1774	1774	1774	1774	1774	1774	1774	1774
2.5	1854	1848	1843	1836	1829	1824	1821	1822	1822	1822
5	1916	1899	1869	1835	1812	1809	1830	1843	1846	1852
7.5	1904	1872	1838	1794	1773	1793	1823	1832	1834	1847
10	1813	1809	1761	1772	1748	1747	1777	1781	1807	1792
12.5	1739	1765	1787	1798	1771	1785	1784	1787	1753	1716
15	1720	1731	1781	1806	1800	1761	1779	1804	1722	1668
17.5	1715	1693	1704	1700	1720	1712	1699	1729	1713	1682
20	1714	1688	1657	1647	1650	1664	1687	1682	1708	1724
22.5	1679	1620	1624	1613	1631	1623	1678	1648	1641	1671
25	1568	1538	1555	1602	1614	1610	1643	1583	1618	1585
27.5	1473	1488	1512	1507	1551	1561	1538	1545	1575	1499
30	1444	1459	1428	1397	1495	1483	1450	1481	1505	1460
32.5	1446	1419	1379	1352	1380	1375	1407	1430	1440	1449
35	1316	1309	1331	1361	1299	1333	1359	1370	1384	1377
37.5	1247	1237	1182	1269	1238	1218	1280	1270	1306	1294
40	1110	1149	1145	1140	1196	1169	1183	1184	1228	1208
42.5	1115	1104	1046	1097	1099	1108	1087	1105	1159	1123
45	1101	1082	1048	990	998	1016	1015	1066	1088	1100
47.5	919	935	971	960	942	925	954	980	986	995
50	890	882	832	915	882	885	915	869	915	914
52.5	852	845	819	802	841	846	814	823	830	838
55	744	754	772	764	748	767	748	750	769	782
57.5	692	694	688	697	710	718	680	694	700	703
60	626	630	645	634	640	614	651	605	613	610
62.5	530	520	551	573	564	571	559	556	531	539
65	456	456	457	476	485	495	491	483	486	498
67.5	455	435	404	408	404	402	419	402	411	424
70	404	381	364	351	327	341	342	356	352	364
72.5	357	335	313	302	277	269	274	286	293	305
75	256	253	248	246	228	225	229	211	224	226
77.5	185	182	183	182	180	172	164	160	160	162
80	127	124	124	126	127	123	119	114	112	114
82.5	92	92	92	92	93	91	88	88	87	86
85	65	66	66	66	68	66	65	63	62	62
87.5	45	47	46	46	47	46	45	43	43	42
90	31	32	32	32	32	32	30	29	28	27

Candela Tabulations (Continued)

	0	10	20	30	40	50	60	70	80	90
92.5	24	24	23	22	21	20	17	16	16	16
95	21	21	19	17	14	12	9	7	7	8
97.5	21	19	17	14	10	6	3	1	2	2
100	18	17	14	11	8	4	1	0	0	0
102.5	14	14	11	8	5	2	0	0	0	0
105	11	10	8	5	2	0	0	0	0	0
107.5	6	5	4	2	0	0	0	0	0	0
110	3	3	2	1	0	0	0	0	0	0
112.5	3	2	0	0	0	0	0	0	0	0
115	2	1	0	0	0	0	0	0	0	0
117.5	1	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0
122.5	0	0	0	0	0	0	0	0	0	0
125	0	0	0	0	0	0	0	0	0	0
127.5	0	0	0	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0	0	0	0
132.5	0	0	0	0	0	0	0	0	0	0
135	0	0	0	0	0	0	0	0	0	0
137.5	0	0	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0	0
142.5	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0
147.5	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0
152.5	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0	0
157.5	0	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0	0
162.5	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0
167.5	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0
172.5	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0
177.5	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	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	Chroma	66202	66202 0005018

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	12415189
Power Meter	Yokogawa	WT210	91M945458

Test Methods Used:

Title	Description
ANSI C82.77:2002	Harmonic Emission Limits- Related Power Quality Req't'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

