

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-2024 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P243449

Luminaire Tested: S123RDRP-H340D940-X4F0-XX-UDD-A-W

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-2024  
Report Number: P243449  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-69)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: S123RDRP-H340D940-X4F0-XX-UDD-A-W  
Description: DEFINE 3 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.  
HIGH PERFORMANCE LIGHT ENGINE  
Light Source: (184) 4000K CCT, 90 CRI LEDS  
Ballast/Driver: -

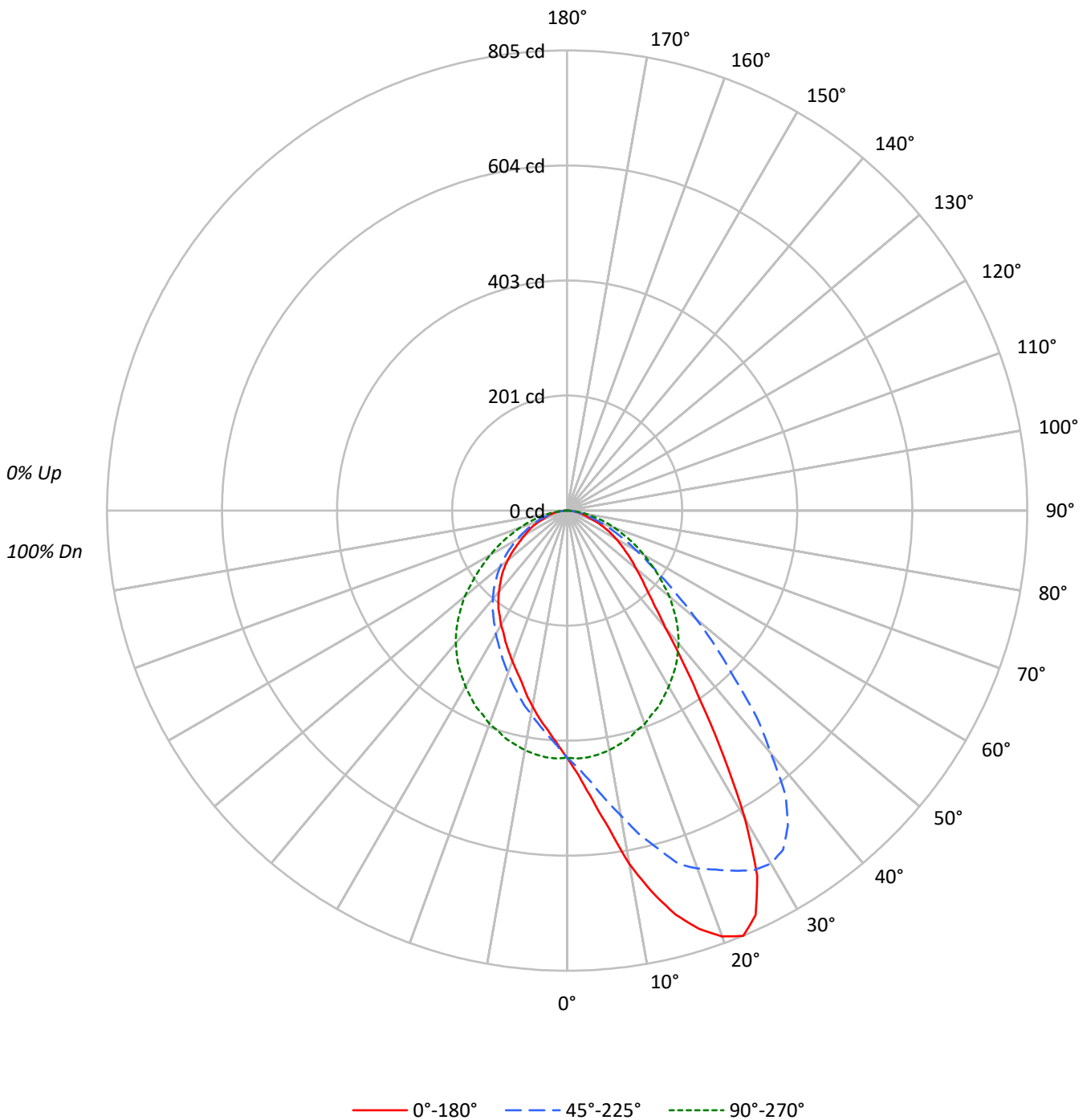
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1126.3 lumens  
Efficiency: N/A  
Efficacy: 100.6 lumens/watt  
Spacing Criteria (0/90/45): 1.28 / 1.22 / 1.4  
Luminous Opening: Rectangular (W 3.88' x L: 0.23' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 11.2  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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### Luminous Intensity Polar Plot



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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20					20					20					20					20					
RC	80					70					50					30					10					0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0		
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100					100			
1	110	106	102	99	107	104	100	97	99	97	94	96	93	91	92	90	89	87					87			
2	101	94	88	83	99	92	86	82	89	84	80	85	81	78	82	79	76	74					74			
3	93	84	76	70	91	82	75	70	79	73	68	76	71	67	74	70	66	64					64			
4	86	75	67	61	84	74	66	60	71	65	59	69	63	59	67	62	58	56					56			
5	79	68	59	53	77	66	59	53	64	57	52	62	56	52	61	55	51	49					49			
6	74	61	53	47	72	60	52	47	59	52	46	57	51	46	55	50	46	44					44			
7	69	56	48	42	67	55	47	42	54	47	41	52	46	41	51	45	41	39					39			
8	64	51	43	38	62	51	43	37	49	42	37	48	42	37	47	41	37	35					35			
9	60	47	39	34	59	47	39	34	45	39	34	44	38	34	43	38	33	32					32			
10	56	44	36	31	55	43	36	31	42	35	31	41	35	31	40	35	31	29					29			

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°	135°	180°
0°	5240	5240	5240	5240	5240
5°	6177	5798	5269	4789	4692
10°	7732	6666	5237	4452	4282
15°	9177	7671	5185	4164	3879
20°	10228	8597	5124	3907	3612
25°	10439	9298	5059	3674	3400
30°	8699	9977	4974	3492	3235
35°	6009	9962	4905	3331	3099
40°	4223	8771	4793	3195	2935
45°	3391	7064	4623	3053	2777
50°	2957	5529	4403	2883	2568
55°	2650	4267	4074	2694	2289
60°	2398	3399	3765	2444	2073
65°	2099	2788	3468	2211	1939
70°	1694	2268	3122	2031	1641
75°	1471	1784	2716	1714	1606
80°	1354	1459	2317	1640	1612
85°	1196	1252	1864	1474	1405

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 55°  
 Vertical Angle: 45°  
 Luminance: 8852 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	42.4	3.8
10°-20°	133.5	11.9
20°-30°	213.9	19.0
30°-40°	232.2	20.6
40°-50°	199.0	17.7
50°-60°	150.8	13.4
60°-70°	96.4	8.6
70°-80°	46.1	4.1
80°-90°	12.1	1.1
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	389.8	34.6
0°-40°	622.0	55.2
0°-60°	971.8	86.3
0°-90°	1126.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1126.3	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	432	432	432	432	432	
5°	508	476	433	394	386	52
15°	731	611	413	332	309	207
25°	780	695	378	275	254	346
35°	406	673	332	225	209	261
45°	198	412	270	178	162	156
55°	125	202	193	128	108	113
65°	73	97	121	77	68	73
75°	31	38	58	37	34	34
85°	9	9	13	11	10	10
90°	0	0	0	0	0	



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	432.3	432.3	432.3	432.3	432.3	432.3	432.3	432.3	432.3	432.3	432.3
2.5°	463.2	463.8	462.9	462.7	462.5	459.5	458.6	457.1	451.9	450.6	449.6
5°	507.7	506.2	507.9	504.7	501.1	499.1	495.7	488.3	481.7	476.5	473.1
7.5°	560.3	560.9	559.2	556.2	549.1	546.1	537.0	528.0	519.4	508.6	500.6
10°	628.2	623.8	624.7	615.4	607.9	598.9	586.4	572.1	556.9	541.6	530.3
12.5°	682.4	685.5	683.3	678.8	664.4	655.7	644.3	623.4	599.5	579.0	561.6
15°	731.3	727.0	727.5	716.7	711.5	703.5	684.6	663.9	648.4	611.3	590.7
17.5°	767.1	766.7	766.2	757.0	750.7	733.9	714.7	693.4	674.0	648.2	622.5
20°	792.9	795.7	794.9	787.4	776.2	760.0	748.4	721.9	690.0	666.5	635.0
22.5°	805.2	805.4	805.7	802.2	794.7	784.3	767.8	746.6	718.2	679.8	644.7
25°	780.5	781.5	786.3	789.3	791.4	786.7	778.1	758.9	734.4	695.2	658.8
27.5°	720.1	723.1	728.5	746.4	753.7	763.7	767.3	759.6	741.5	708.9	667.4
30°	621.5	629.9	635.1	655.5	684.0	710.9	723.6	736.1	734.4	712.8	670.8
32.5°	508.8	514.2	529.3	551.2	573.7	613.1	657.2	687.4	704.4	703.3	673.6
35°	406.1	414.0	426.9	443.5	474.6	515.5	565.3	612.9	655.5	673.2	662.6
37.5°	329.6	330.4	342.5	366.0	385.4	421.4	466.4	525.2	581.0	627.3	637.6
40°	266.9	272.1	278.5	293.2	316.2	350.7	380.6	438.4	496.3	554.3	595.8
42.5°	227.3	227.3	234.4	243.8	259.1	279.8	315.4	367.9	419.9	491.2	537.9
45°	197.8	199.7	202.9	208.9	219.7	235.7	263.4	299.0	352.2	412.1	482.3
47.5°	176.6	176.4	179.2	182.7	191.1	203.3	219.5	248.4	287.8	352.4	414.3
50°	156.8	157.5	159.6	162.6	168.2	176.8	187.0	208.9	242.1	293.2	358.2
52.5°	141.5	141.3	143.0	144.8	149.1	154.0	163.1	179.4	202.3	243.0	296.9
55°	125.4	126.2	128.2	129.3	132.9	136.1	143.7	152.9	171.3	201.9	251.0
57.5°	111.6	112.5	113.7	114.8	117.2	120.4	126.7	132.3	145.8	167.8	207.0
60°	98.9	98.5	99.9	101.7	103.0	105.8	109.4	115.2	124.5	140.2	168.9
62.5°	86.2	86.4	86.6	87.7	90.1	92.6	95.7	100.0	105.6	117.2	137.6
65°	73.2	73.4	73.7	74.8	77.3	78.8	82.1	85.9	90.3	97.2	111.4
67.5°	61.6	62.3	62.3	63.3	64.2	65.7	68.1	70.9	74.7	79.7	88.8
70°	47.8	47.6	48.5	50.4	51.3	53.9	55.6	57.5	60.8	64.0	71.9
72.5°	38.4	38.4	38.4	39.2	39.4	39.9	41.1	45.0	47.6	50.8	55.1
75°	31.4	31.5	31.5	31.7	31.9	32.5	32.8	34.0	34.7	38.1	40.7
77.5°	25.0	25.2	25.2	25.4	25.6	25.8	26.5	26.5	27.1	27.8	28.9
80°	19.4	19.2	19.2	19.4	19.4	20.0	20.0	20.3	20.5	20.9	21.5
82.5°	13.8	13.6	13.8	13.6	13.8	14.0	14.4	14.2	14.6	14.9	15.1
85°	8.6	8.8	8.8	9.1	9.0	8.8	9.0	9.0	9.0	9.0	9.3
87.5°	3.7	4.1	4.1	3.9	4.1	4.1	3.7	4.1	4.1	4.1	4.3
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	432.3	432.3	432.3	432.3	432.3	432.3	432.3	432.3	432.3	432.3	432.3
2.5°	449.1	448.3	445.5	442.9	439.0	437.3	435.1	434.1	431.1	427.0	425.2
5°	470.0	464.4	459.0	452.4	447.0	440.7	437.1	433.0	426.7	420.9	416.8
7.5°	492.2	484.0	473.9	463.1	453.4	444.2	436.4	429.8	421.6	413.6	407.3
10°	516.6	502.6	486.4	472.6	458.6	445.3	435.4	425.5	414.9	404.8	397.2
12.5°	542.9	523.2	503.6	482.8	461.9	446.6	431.9	419.2	407.3	396.6	387.5
15°	570.2	543.1	518.1	494.8	465.7	445.1	428.9	413.2	398.3	385.2	376.3
17.5°	589.6	558.6	527.1	494.0	469.0	443.6	423.5	403.7	389.9	376.5	364.3
20°	607.5	572.4	534.9	504.1	469.2	438.2	416.2	397.2	378.0	363.6	353.3
22.5°	615.2	583.4	545.6	502.8	467.9	436.2	407.8	386.3	369.2	353.5	340.1
25°	616.7	581.2	542.4	501.1	462.9	428.5	399.8	378.3	355.9	339.7	329.2
27.5°	623.2	574.7	536.6	495.5	456.7	420.9	390.6	366.8	345.8	328.5	315.1
30°	624.9	571.9	524.3	485.1	445.1	410.1	379.4	355.4	332.6	314.9	302.7
32.5°	625.6	568.1	511.4	468.5	430.4	397.4	369.4	343.2	321.6	302.9	290.4
35°	623.0	562.9	495.9	449.6	413.0	380.6	354.6	331.5	307.4	289.9	276.6
37.5°	612.7	554.7	487.1	427.6	392.7	362.1	340.1	317.3	295.1	276.0	262.4
40°	593.3	542.8	470.7	409.1	369.6	342.1	321.6	302.9	280.5	262.2	248.8
42.5°	562.4	526.5	455.6	388.2	346.6	320.7	303.5	287.4	267.3	249.9	235.2
45°	516.4	503.7	435.4	366.9	321.6	297.1	282.2	269.7	251.4	235.5	221.9
47.5°	466.8	469.6	415.1	345.3	298.8	275.5	262.4	251.4	237.6	220.6	208.1
50°	409.5	424.8	386.5	323.5	276.0	253.1	240.2	233.5	220.6	206.4	194.7
52.5°	357.0	381.3	357.6	299.6	253.6	231.1	219.1	212.4	203.8	192.1	180.1
55°	302.7	333.5	316.4	273.8	230.9	208.1	198.0	192.8	185.7	176.6	165.7
57.5°	257.8	290.6	279.8	246.7	208.7	188.1	179.2	173.2	168.9	160.5	151.7
60°	213.7	244.1	239.8	215.6	186.6	167.0	160.1	155.3	151.7	145.6	137.0
62.5°	172.5	201.9	204.6	185.5	165.2	147.4	141.1	137.7	134.9	130.1	122.3
65°	136.8	162.8	168.2	153.6	142.6	129.2	123.0	120.9	118.9	113.3	107.3
67.5°	107.1	127.5	134.6	126.4	118.5	110.7	105.8	103.0	101.5	98.2	94.1
70°	81.9	99.5	105.5	101.9	96.7	93.7	90.0	88.1	86.6	82.3	80.1
72.5°	61.4	73.4	80.8	79.7	78.6	76.5	74.3	73.7	71.5	68.7	66.6
75°	45.0	51.9	58.6	61.0	60.7	61.4	59.0	58.0	56.7	54.7	53.0
77.5°	32.3	36.4	41.1	44.0	45.5	45.7	45.7	45.2	44.2	42.7	41.4
80°	22.4	23.3	27.6	30.4	31.9	33.0	33.0	33.2	32.3	31.7	30.8
82.5°	15.5	16.1	17.0	19.2	21.1	22.4	22.6	22.4	22.0	21.8	20.5
85°	9.7	9.5	9.5	10.1	11.6	12.9	13.1	13.4	13.3	13.1	11.8
87.5°	4.1	4.1	4.3	4.1	4.7	4.9	5.2	6.2	6.0	5.0	4.7
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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**CANDELA DISTRIBUTION (continued):**

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	432.3	432.3	432.3	432.3	432.3	432.3	432.3	432.3	432.3	432.3	432.3
2.5°	424.1	421.6	419.4	417.0	414.0	411.2	410.8	410.4	411.4	409.5	408.7
5°	413.6	408.9	405.4	400.9	397.7	393.6	391.4	390.8	390.6	389.5	388.0
7.5°	402.2	397.2	392.1	387.1	381.9	377.6	375.2	373.8	372.7	370.9	369.4
10°	391.6	385.2	379.8	372.9	367.3	361.7	359.5	357.6	356.5	353.9	351.8
12.5°	379.6	371.6	365.6	358.2	353.1	348.3	344.7	341.2	338.6	334.6	333.0
15°	369.2	360.8	350.7	346.2	339.1	331.8	327.9	327.9	322.5	319.3	317.3
17.5°	355.2	347.9	340.8	331.7	321.6	317.3	312.8	308.9	305.2	304.2	300.5
20°	342.9	334.3	327.0	317.1	308.0	302.9	297.7	293.4	290.6	288.0	285.9
22.5°	330.7	322.1	310.9	301.2	295.1	288.4	282.8	279.0	276.6	272.7	270.8
25°	318.0	307.8	297.7	288.2	280.5	274.7	269.0	266.9	262.6	260.6	257.9
27.5°	305.3	293.0	283.5	275.3	266.7	261.1	257.2	253.5	249.7	248.6	247.1
30°	291.2	279.8	270.6	262.6	254.4	249.5	244.9	241.5	238.3	235.9	234.2
32.5°	277.0	267.5	258.7	249.4	241.9	236.7	232.7	229.8	228.3	224.2	222.7
35°	263.9	254.2	244.9	236.1	230.1	225.1	221.5	218.7	215.6	213.0	211.5
37.5°	250.5	241.7	232.2	224.7	218.0	213.9	210.0	206.2	203.8	202.3	200.5
40°	237.4	228.1	220.8	212.6	206.6	201.9	197.8	195.0	192.1	190.7	188.3
42.5°	225.1	216.1	207.7	200.3	194.9	190.4	186.5	183.3	180.9	178.4	177.1
45°	210.9	203.1	195.4	187.9	182.9	178.1	173.8	171.0	167.6	165.6	164.8
47.5°	199.0	190.7	182.5	175.6	170.4	165.2	161.6	158.3	155.5	153.4	152.3
50°	184.8	177.1	170.4	163.5	158.5	152.9	148.6	145.4	142.2	140.7	138.9
52.5°	172.6	165.2	157.0	150.8	145.0	140.2	136.2	133.6	130.8	128.6	127.3
55°	157.5	150.2	143.7	137.2	131.4	127.5	124.3	119.8	117.4	115.2	111.6
57.5°	144.3	137.4	130.5	124.1	118.7	114.0	110.1	107.1	104.0	102.3	99.9
60°	130.3	123.0	116.7	111.8	105.8	100.8	98.2	94.6	92.0	89.4	88.7
62.5°	116.5	109.7	103.4	98.4	92.9	89.0	85.7	84.0	81.4	79.3	78.6
65°	102.1	96.5	90.5	84.9	81.6	77.1	75.2	72.4	70.9	70.0	69.8
67.5°	87.9	82.9	77.5	73.2	70.0	67.0	64.8	63.6	62.2	61.0	60.1
70°	75.0	70.2	65.5	62.0	59.5	57.3	55.8	53.8	52.3	50.8	48.7
72.5°	62.3	58.4	54.5	51.7	49.3	48.0	45.9	42.7	41.2	40.9	40.7
75°	50.6	46.3	43.5	42.0	39.8	36.6	35.3	34.9	34.7	34.3	34.3
77.5°	39.0	36.4	34.5	31.4	30.2	30.0	29.1	28.9	28.6	28.7	28.7
80°	28.4	26.9	24.6	23.7	23.3	23.5	23.1	23.3	23.0	23.1	22.8
82.5°	18.9	17.5	17.9	17.4	17.4	17.7	17.5	17.0	17.0	16.8	16.8
85°	11.2	11.0	11.4	11.4	11.2	10.6	11.0	10.8	10.3	10.5	10.5
87.5°	4.9	4.9	4.9	4.7	4.9	4.7	4.7	4.7	4.1	4.1	4.1
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P243449

CATALOG NUMBER: S123RDRP-H340D940-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	432.3	432.3	432.3	432.3
2.5°	409.1	408.7	408.2	407.6
5°	388.0	386.3	386.2	385.6
7.5°	368.2	367.5	366.2	367.7
10°	350.1	350.7	349.4	347.9
12.5°	331.3	330.2	328.1	329.2
15°	314.7	312.8	311.7	309.1
17.5°	297.3	295.8	295.8	294.1
20°	282.2	280.7	281.1	280.0
22.5°	269.5	268.4	266.7	266.9
25°	257.6	255.9	254.0	254.2
27.5°	244.3	242.8	242.4	241.1
30°	232.6	231.2	231.1	231.1
32.5°	221.2	220.6	219.7	219.1
35°	211.3	210.5	209.0	209.4
37.5°	199.0	198.2	198.0	197.8
40°	187.4	186.8	185.3	185.5
42.5°	175.8	174.9	174.0	173.6
45°	163.3	163.1	161.6	162.0
47.5°	151.4	151.0	150.2	149.3
50°	138.1	137.9	137.4	136.2
52.5°	125.2	124.7	123.6	122.4
55°	110.7	109.0	109.2	108.3
57.5°	98.7	98.0	96.5	95.9
60°	87.2	86.4	86.2	85.5
62.5°	77.5	76.7	76.1	76.1
65°	68.7	67.8	67.6	67.6
67.5°	59.0	58.0	57.9	57.5
70°	46.8	46.7	46.3	46.3
72.5°	40.3	40.1	40.3	39.6
75°	34.3	34.2	34.2	34.3
77.5°	28.6	28.6	28.4	28.4
80°	22.6	22.8	22.6	23.1
82.5°	17.0	16.6	16.8	16.4
85°	10.5	10.5	10.1	10.1
87.5°	4.1	4.1	4.1	4.1
90°	0.0	0.0	0.0	0.0



TEST NUMBER: P243449  
 CATALOG NUMBER: S123RDRP-H340D940-X4F0-XX-UDD-A-W

**CIE UGR TABLE:**

Reflectances:											
Ceiling		0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall		0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Reference plane		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions		Viewed crosswise					Viewed endwise				
X=2H	Y=2H	14.14	15.64	14.51	15.96	16.27	16.84	18.34	17.21	18.66	18.97
	3H	15.33	16.67	15.71	17.00	17.36	18.27	19.61	18.65	19.94	20.30
	4H	15.68	16.94	16.08	17.29	17.67	18.77	20.03	19.17	20.38	20.76
	6H	15.96	17.12	16.37	17.49	17.88	19.12	20.28	19.53	20.65	21.04
	8H	16.05	17.15	16.47	17.54	17.94	19.22	20.32	19.64	20.71	21.11
	12H	16.11	17.17	16.54	17.55	17.98	19.28	20.34	19.71	20.72	21.15
4H	2H	15.09	16.35	15.49	16.70	17.08	17.12	18.38	17.52	18.73	19.11
	3H	16.36	17.40	16.77	17.80	18.21	18.84	19.88	19.25	20.28	20.68
	4H	16.77	17.71	17.20	18.12	18.56	19.45	20.39	19.89	20.81	21.25
	6H	17.11	17.93	17.57	18.37	18.83	19.91	20.72	20.37	21.17	21.63
	8H	17.23	17.99	17.69	18.43	18.90	20.05	20.81	20.51	21.25	21.72
	12H	17.32	18.00	17.80	18.48	18.95	20.14	20.82	20.63	21.30	21.77
8H	4H	17.13	17.89	17.59	18.33	18.80	19.51	20.27	19.98	20.72	21.19
	6H	17.55	18.18	18.05	18.67	19.15	20.04	20.67	20.54	21.16	21.64
	8H	17.71	18.28	18.23	18.79	19.27	20.23	20.79	20.75	21.30	21.79
	12H	17.86	18.36	18.37	18.85	19.41	20.38	20.88	20.89	21.37	21.94
12H	4H	17.16	17.84	17.64	18.32	18.79	19.50	20.18	19.98	20.66	21.13
	6H	17.59	18.16	18.11	18.67	19.16	20.03	20.60	20.55	21.11	21.59
	8H	17.80	18.30	18.32	18.80	19.36	20.26	20.76	20.77	21.25	21.82