

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: P242648

Luminaire Tested: S124DRP-S350D930-X4F0-XX-UDD-A-W

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-2024  
Report Number: P242648  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-21)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: S124DRP-S350D930-X4F0-XX-UDD-A-W  
Description: DEFINE 4 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER  
STANDARD LIGHT ENGINE  
Light Source: (92) 3000K CCT, 90 CRI LEDS  
Ballast/Driver: -

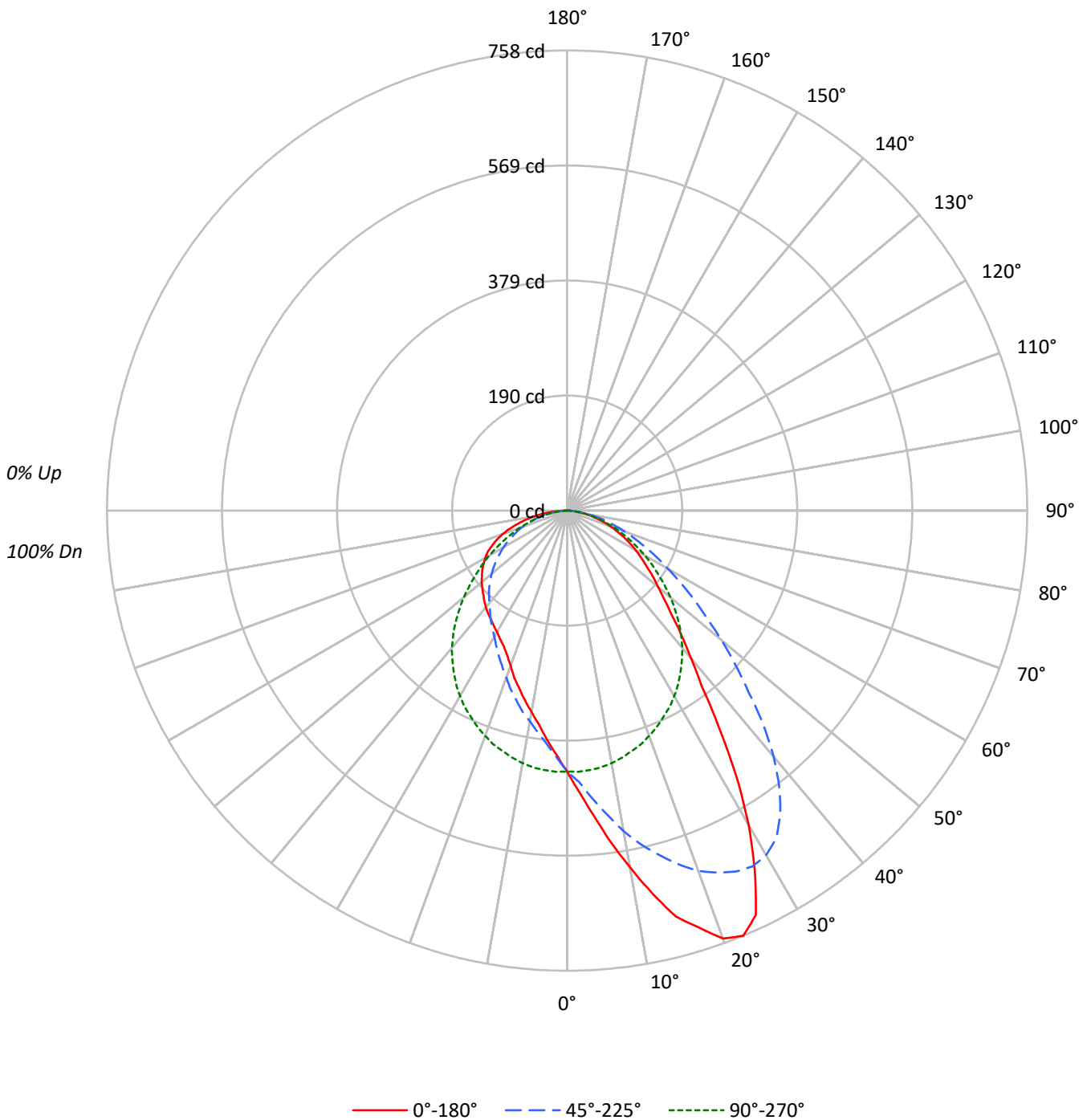
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1185.6 lumens  
Efficiency: N/A  
Efficacy: 102.2 lumens/watt  
Spacing Criteria (0/90/45): 1.3 / 1.22 / 1.41  
Luminous Opening: Rectangular (W 3.88' x L: 0.31' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 11.6  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): 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	109	105	101	97	107	103	99	96	98	95	93	95	92	90	91	89	87	85					85			
2	100	92	86	80	98	90	84	79	87	82	78	84	79	76	81	77	74	72					72			
3	92	82	74	68	89	80	73	67	77	71	66	74	69	65	72	67	64	62					62			
4	84	73	64	58	82	72	64	58	69	62	57	67	61	56	65	60	55	53					53			
5	78	65	57	50	76	64	56	50	62	55	50	60	54	49	58	53	49	46					46			
6	72	59	51	44	70	58	50	44	56	49	44	55	48	43	53	47	43	41					41			
7	67	54	45	39	65	53	45	39	52	44	39	50	44	39	49	43	38	36					36			
8	62	49	41	35	61	49	41	35	47	40	35	46	40	35	45	39	35	33					33			
9	58	45	37	32	57	45	37	32	44	37	32	43	36	32	42	36	31	30					30			
10	55	42	34	29	54	41	34	29	40	34	29	39	33	29	39	33	29	27					27			

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

	0°	45°	90°	135°	180°
0°	3820	3820	3820	3820	3820
5°	4498	4248	3829	3442	3380
10°	5385	4841	3813	3184	3043
15°	6372	5406	3774	2974	2795
20°	7095	5977	3735	2768	2573
25°	7210	6437	3676	2606	2420
30°	6135	6727	3621	2461	2371
35°	4717	6642	3531	2382	2372
40°	3676	6138	3424	2315	2416
45°	3065	5311	3265	2287	2456
50°	2698	4580	3070	2244	2540
55°	2472	3941	2836	2204	2642
60°	2316	3412	2626	2149	2766
65°	2156	2980	2391	2078	2867
70°	1970	2633	2160	2022	2932
75°	1762	2267	1903	1889	2899
80°	1474	1843	1556	1720	2805
85°	1091	1397	1122	1601	2682

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 55°  
 Vertical Angle: 45°  
 Luminance: 5864 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	41.8	3.5
10°-20°	129.1	10.9
20°-30°	205.0	17.3
30°-40°	227.8	19.2
40°-50°	207.2	17.5
50°-60°	169.3	14.3
60°-70°	120.9	10.2
70°-80°	66.5	5.6
80°-90°	18.0	1.5
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°	375.9	31.7
0°-40°	603.8	50.9
0°-60°	980.3	82.7
0°-90°	1185.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1185.6	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	430	430	430	430	430	
5°	504	476	429	386	379	51
15°	692	588	410	323	304	196
25°	735	656	375	266	247	326
35°	435	612	325	220	219	275
45°	244	422	260	182	195	192
55°	160	254	183	142	170	144
65°	102	142	114	99	136	101
75°	51	66	55	55	84	54
85°	11	14	11	16	26	13
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°	429.7	429.7	429.7	429.7	429.7	429.7	429.7	429.7	429.7	429.7	429.7
2.5°	464.2	464.0	462.2	461.9	460.6	459.0	458.7	455.8	450.1	447.5	446.8
5°	504.1	507.6	503.0	502.1	501.6	495.7	492.7	489.1	480.9	476.1	472.4
7.5°	550.7	550.9	548.9	547.0	543.6	538.6	531.8	524.0	514.6	505.0	498.2
10°	596.6	598.0	595.7	595.4	586.3	580.6	569.2	559.6	548.6	536.3	525.1
12.5°	645.0	642.2	641.3	631.9	632.0	620.5	606.8	596.8	578.3	563.7	547.9
15°	692.4	688.5	686.0	675.5	670.3	655.9	641.8	631.0	608.7	587.5	571.5
17.5°	719.8	724.6	718.2	713.9	699.9	690.4	676.4	654.1	637.6	611.2	592.9
20°	750.1	750.4	747.2	742.8	732.3	719.4	703.8	678.9	658.0	631.9	604.1
22.5°	758.2	758.2	757.3	753.3	746.0	736.2	720.3	700.6	674.2	645.2	617.4
25°	735.1	734.4	736.0	740.6	737.6	734.4	725.3	709.8	686.3	656.3	626.3
27.5°	669.6	674.2	683.8	695.2	703.4	710.7	710.2	703.6	686.9	660.9	629.0
30°	597.7	603.7	610.5	621.9	644.0	656.6	670.5	681.0	675.1	655.4	626.2
32.5°	518.7	519.0	529.9	543.2	563.0	590.2	614.2	638.3	648.6	640.6	617.4
35°	434.7	437.1	448.0	460.8	485.6	515.3	548.4	577.9	602.3	612.1	599.7
37.5°	364.2	372.0	380.2	394.8	417.4	444.3	479.9	516.7	552.5	574.2	576.5
40°	316.8	321.3	326.8	337.3	355.8	382.1	411.7	455.5	494.1	529.0	540.4
42.5°	279.4	281.6	284.4	293.7	306.7	332.8	359.2	396.4	435.2	478.6	499.6
45°	243.8	246.5	252.2	257.7	268.4	286.6	311.7	343.3	382.3	422.5	457.8
47.5°	217.1	218.9	222.5	228.5	238.2	250.4	271.8	298.7	336.8	375.7	413.5
50°	195.1	196.5	199.2	204.5	211.5	222.1	238.9	263.6	291.9	331.2	368.1
52.5°	177.6	178.0	179.8	183.0	188.1	196.7	209.7	229.1	254.9	288.9	325.5
55°	159.5	160.2	162.0	164.6	169.4	175.1	185.6	201.0	223.9	254.3	286.2
57.5°	144.5	145.2	146.7	147.7	152.0	156.8	165.4	176.4	194.4	221.4	250.4
60°	130.3	129.9	131.7	132.6	135.3	139.2	145.4	155.9	171.0	191.9	218.0
62.5°	116.4	115.9	117.3	118.5	119.8	123.0	127.8	135.5	147.0	165.4	187.1
65°	102.5	101.8	102.7	104.1	105.5	107.3	111.1	118.4	128.2	141.7	158.9
67.5°	88.3	89.2	89.2	90.1	91.0	93.4	96.1	101.8	108.8	119.8	135.1
70°	75.8	76.0	76.7	76.7	77.2	79.4	81.5	84.5	91.3	101.3	113.2
72.5°	63.4	64.3	63.7	64.4	64.8	66.0	67.5	70.3	75.8	82.6	92.2
75°	51.3	51.8	51.8	52.0	52.5	53.0	54.3	56.4	60.5	66.0	73.0
77.5°	39.5	39.5	39.9	40.6	40.6	41.5	42.5	44.1	46.5	50.5	55.0
80°	28.8	29.2	29.0	29.4	29.4	30.1	30.4	32.6	33.5	36.0	39.3
82.5°	19.2	19.6	19.6	20.1	20.5	20.5	21.0	21.5	22.4	24.6	25.5
85°	10.7	11.0	10.7	11.0	11.6	11.7	12.3	12.5	13.2	13.7	15.0
87.5°	3.9	4.4	4.4	4.6	5.0	5.2	5.3	5.2	5.9	6.1	6.8
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°	429.7	429.7	429.7	429.7	429.7	429.7	429.7	429.7	429.7	429.7	429.7
2.5°	446.9	444.4	442.7	441.2	437.3	435.0	433.2	430.7	427.9	424.9	421.1
5°	468.6	462.6	458.1	451.4	445.0	439.6	434.1	429.1	423.1	416.5	411.7
7.5°	490.9	482.5	471.3	462.6	452.1	443.0	435.0	426.6	417.7	409.2	401.2
10°	511.9	500.3	487.5	472.4	458.1	445.5	433.8	422.4	411.3	400.3	390.9
12.5°	534.5	519.4	498.9	480.6	464.2	446.2	431.4	416.9	403.0	391.2	379.8
15°	554.3	533.4	511.5	487.9	466.9	447.1	427.7	410.1	395.1	379.8	369.2
17.5°	566.7	540.9	517.4	492.7	468.5	443.7	423.6	403.9	385.3	370.4	357.0
20°	579.0	553.4	522.2	497.5	467.2	441.6	417.4	394.8	375.2	359.0	345.1
22.5°	589.7	559.1	527.9	493.4	463.3	435.7	408.7	385.9	365.8	348.5	335.3
25°	592.2	558.2	524.4	492.0	457.8	425.6	401.5	374.8	353.5	335.5	321.3
27.5°	593.1	557.1	519.6	484.3	449.1	419.7	388.4	365.1	343.0	323.9	310.4
30°	591.1	553.2	512.1	473.1	437.7	405.1	378.8	352.8	330.2	311.3	297.1
32.5°	584.9	545.0	502.5	460.6	423.6	391.9	364.5	340.1	318.2	299.7	284.6
35°	571.7	532.7	487.7	444.8	407.2	375.0	350.5	325.4	303.3	285.7	271.3
37.5°	554.1	517.8	472.0	427.4	391.2	358.5	333.7	310.6	290.7	272.5	257.6
40°	529.5	498.6	452.6	409.4	369.5	338.7	315.9	295.1	275.4	258.4	244.4
42.5°	501.2	475.2	433.8	387.3	349.2	318.2	296.2	278.0	259.7	244.4	230.3
45°	466.5	448.7	408.8	366.5	326.4	297.2	276.1	259.7	244.0	228.7	217.0
47.5°	427.9	417.9	383.2	342.6	304.2	275.0	256.7	241.0	226.8	213.4	202.9
50°	388.9	384.6	355.6	316.8	280.5	253.5	234.9	222.0	210.2	198.8	189.0
52.5°	350.5	351.4	325.9	291.2	258.3	232.5	214.1	202.2	192.4	183.7	175.1
55°	311.1	316.1	295.6	264.0	233.9	210.4	193.8	183.0	175.9	168.2	161.6
57.5°	275.0	283.4	265.6	236.5	211.1	188.7	174.1	165.7	157.9	152.9	147.7
60°	239.8	247.6	234.4	210.9	187.2	168.7	155.0	147.7	141.1	137.9	134.6
62.5°	208.4	215.2	206.3	184.9	165.2	147.6	136.5	129.6	125.7	122.1	120.1
65°	178.9	184.8	176.4	160.5	142.9	128.7	119.3	113.7	109.5	108.0	105.5
67.5°	149.7	155.0	150.6	136.7	121.7	110.5	103.1	97.2	94.7	93.3	91.7
70°	124.2	129.6	124.8	113.0	102.2	93.1	86.1	83.1	80.5	79.9	77.4
72.5°	102.7	105.9	101.1	92.6	83.7	76.4	71.4	68.2	67.1	66.0	65.0
75°	80.3	83.5	80.3	73.2	66.6	61.2	56.6	55.4	53.8	53.2	52.3
77.5°	60.2	63.2	60.7	55.9	50.7	46.3	43.6	41.8	41.6	40.6	40.9
80°	43.4	45.2	42.9	39.9	36.0	33.1	31.3	30.4	29.4	29.0	29.7
82.5°	28.1	28.7	27.8	26.0	23.3	21.7	20.6	19.6	19.6	19.8	19.6
85°	16.2	16.0	15.8	14.1	13.2	11.9	11.2	11.0	10.9	11.2	11.6
87.5°	6.8	6.9	6.8	6.1	5.5	5.0	4.8	4.6	4.8	5.0	5.2
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°	429.7	429.7	429.7	429.7	429.7	429.7	429.7	429.7	429.7	429.7	429.7
2.5°	419.3	417.7	415.4	412.2	409.6	406.7	406.0	404.9	407.1	405.3	404.8
5°	407.6	403.9	399.1	393.5	390.3	385.7	384.8	383.0	381.3	381.1	379.3
7.5°	395.3	390.2	384.1	378.4	373.4	368.4	365.2	364.9	362.0	360.6	358.8
10°	383.6	376.8	369.5	364.2	358.1	352.8	349.0	346.9	345.1	343.2	341.4
12.5°	369.7	362.4	356.7	350.8	343.3	339.6	332.8	328.7	328.7	329.3	323.9
15°	359.5	352.4	343.2	335.0	331.1	323.2	319.8	315.6	312.9	310.2	308.1
17.5°	347.1	338.4	331.2	322.0	314.7	308.8	304.2	301.9	297.6	293.7	291.0
20°	335.5	326.1	318.4	308.5	300.3	292.6	288.9	285.3	282.3	279.1	276.1
22.5°	323.8	313.8	304.0	294.4	286.9	278.7	275.2	270.0	267.2	265.7	262.7
25°	311.3	300.6	289.9	280.7	272.9	265.7	260.9	257.2	254.0	252.6	250.6
27.5°	297.8	287.3	277.1	266.5	257.4	252.2	248.3	245.3	243.3	241.2	240.3
30°	285.0	273.9	262.9	253.1	244.9	239.8	236.2	234.2	232.8	231.9	231.0
32.5°	272.0	261.1	249.4	240.6	233.5	229.1	226.6	224.6	224.1	223.9	223.7
35°	257.9	246.9	236.2	228.2	221.2	219.5	217.1	216.1	215.7	217.0	217.5
37.5°	244.4	234.1	224.1	216.1	211.5	208.6	207.7	207.5	208.8	209.9	211.1
40°	231.4	221.4	212.2	205.4	201.1	199.5	199.2	200.1	201.5	202.7	204.2
42.5°	218.8	209.0	200.8	194.5	191.9	190.4	190.8	191.7	193.8	195.4	197.7
45°	205.6	197.4	189.2	184.0	181.6	181.9	181.9	183.5	185.5	187.8	190.1
47.5°	193.3	184.9	178.0	173.5	172.3	171.8	172.7	174.8	177.5	180.1	183.3
50°	180.8	173.0	167.1	163.2	161.8	162.3	163.8	165.7	169.1	172.7	176.0
52.5°	168.2	161.3	155.9	152.4	151.5	152.5	154.0	157.3	160.2	164.1	168.4
55°	155.0	149.0	144.7	142.0	141.7	142.2	143.8	147.2	151.5	156.3	160.2
57.5°	142.0	136.9	132.8	130.8	131.0	131.4	133.8	137.9	142.2	147.4	152.4
60°	128.9	124.2	121.0	119.6	119.8	120.9	124.1	127.8	133.5	138.5	143.8
62.5°	116.4	112.5	109.5	108.2	107.9	110.5	113.6	117.5	123.2	128.9	134.7
65°	102.9	99.7	97.2	96.5	97.0	98.8	102.7	107.9	112.7	118.5	124.6
67.5°	89.7	87.0	85.3	85.6	86.1	88.6	92.0	96.5	101.8	107.9	114.1
70°	77.2	74.8	73.3	73.5	74.6	77.8	80.6	85.1	91.0	97.2	102.2
72.5°	64.4	63.0	61.8	62.7	63.7	65.7	69.4	73.9	78.8	84.5	89.9
75°	51.4	51.4	50.7	51.3	52.9	55.0	57.7	62.3	67.5	72.1	76.4
77.5°	40.4	39.9	40.2	40.8	41.8	44.5	47.5	50.9	55.0	59.8	63.4
80°	29.2	29.4	30.3	31.3	31.7	33.6	36.8	39.9	42.9	46.8	50.2
82.5°	20.1	20.3	20.6	22.1	22.4	24.6	26.3	29.4	32.0	34.4	37.0
85°	11.9	11.9	12.8	13.3	14.2	15.7	16.9	18.7	21.2	23.0	25.6
87.5°	5.7	5.7	6.4	6.8	7.3	8.2	8.5	10.5	11.2	12.1	13.7
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: P242648

CATALOG NUMBER: S124DRP-S350D930-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	429.7	429.7	429.7	429.7
2.5°	404.4	404.0	402.8	402.6
5°	378.2	377.3	376.8	378.8
7.5°	358.5	357.8	356.2	355.6
10°	339.6	338.9	337.5	337.1
12.5°	321.5	319.8	319.8	320.4
15°	305.8	305.1	303.1	303.7
17.5°	289.8	289.1	286.4	289.1
20°	274.8	273.4	272.1	272.0
22.5°	260.6	259.3	259.5	258.1
25°	249.2	247.9	247.6	246.7
27.5°	239.9	239.2	238.5	238.9
30°	231.6	231.4	231.0	231.0
32.5°	224.6	224.6	225.0	225.0
35°	218.2	218.8	219.1	218.6
37.5°	212.5	212.9	213.4	213.9
40°	205.8	207.0	207.4	208.2
42.5°	199.3	200.8	201.8	201.8
45°	192.8	194.2	195.4	195.4
47.5°	186.0	188.0	189.2	189.4
50°	179.1	181.6	182.8	183.7
52.5°	172.3	174.8	176.6	176.9
55°	164.3	167.8	169.8	170.5
57.5°	157.2	160.4	162.5	163.0
60°	148.6	152.2	155.0	155.6
62.5°	139.9	143.6	146.1	147.7
65°	129.6	133.3	135.8	136.3
67.5°	118.7	122.6	124.2	125.3
70°	107.2	110.2	112.0	112.8
72.5°	94.0	97.2	99.3	99.3
75°	80.5	83.3	84.4	84.4
77.5°	66.4	68.0	69.4	69.8
80°	52.9	53.8	54.8	54.8
82.5°	39.0	39.7	40.8	40.6
85°	25.3	26.9	26.7	26.3
87.5°	14.2	14.4	15.0	15.3
90°	0.0	0.0	0.0	0.0



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**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	14.62	16.18	14.99	16.50	16.81	15.53	17.10	15.90	17.41	17.72
	3H	16.11	17.51	16.48	17.84	18.20	16.90	18.31	17.28	18.63	19.00
	4H	16.64	17.97	17.04	18.31	18.69	17.37	18.69	17.77	19.04	19.42
	6H	17.00	18.23	17.42	18.59	18.99	17.68	18.90	18.09	19.27	19.66
	8H	17.11	18.27	17.53	18.66	19.06	17.76	18.93	18.19	19.32	19.72
	12H	17.16	18.28	17.59	18.66	19.09	17.80	18.92	18.23	19.30	19.73
4H	2H	15.78	17.11	16.18	17.45	17.83	16.22	17.54	16.62	17.89	18.27
	3H	17.31	18.42	17.72	18.81	19.22	17.93	19.03	18.34	19.43	19.83
	4H	17.90	18.90	18.33	19.31	19.75	18.52	19.51	18.95	19.93	20.36
	6H	18.33	19.19	18.78	19.64	20.09	18.91	19.78	19.37	20.22	20.68
	8H	18.45	19.26	18.91	19.71	20.17	19.02	19.83	19.48	20.27	20.74
	12H	18.53	19.25	19.01	19.73	20.20	19.08	19.81	19.56	20.29	20.76
8H	4H	18.36	19.17	18.82	19.61	20.08	18.83	19.64	19.29	20.09	20.55
	6H	18.86	19.53	19.36	20.02	20.50	19.36	20.03	19.85	20.52	21.00
	8H	19.03	19.64	19.55	20.14	20.63	19.52	20.13	20.03	20.63	21.12
	12H	19.16	19.69	19.66	20.18	20.74	19.64	20.17	20.14	20.66	21.22
12H	4H	18.40	19.13	18.89	19.61	20.08	18.86	19.59	19.34	20.07	20.54
	6H	18.94	19.54	19.45	20.05	20.54	19.42	20.02	19.93	20.53	21.02
	8H	19.16	19.69	19.67	20.18	20.74	19.64	20.17	20.15	20.66	21.22