

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: P243498

Luminaire Tested: S124DRP-H350D835-X4F0-XX-UDD-A-W

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-2024  
Report Number: P243498  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-60)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: S124DRP-H350D835-X4F0-XX-UDD-A-W  
Description: DEFINE 4 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.  
HIGH PERFORMANCE LIGHT ENGINE  
Light Source: (184) 3500K CCT, 80 CRI LEDS  
Ballast/Driver: -

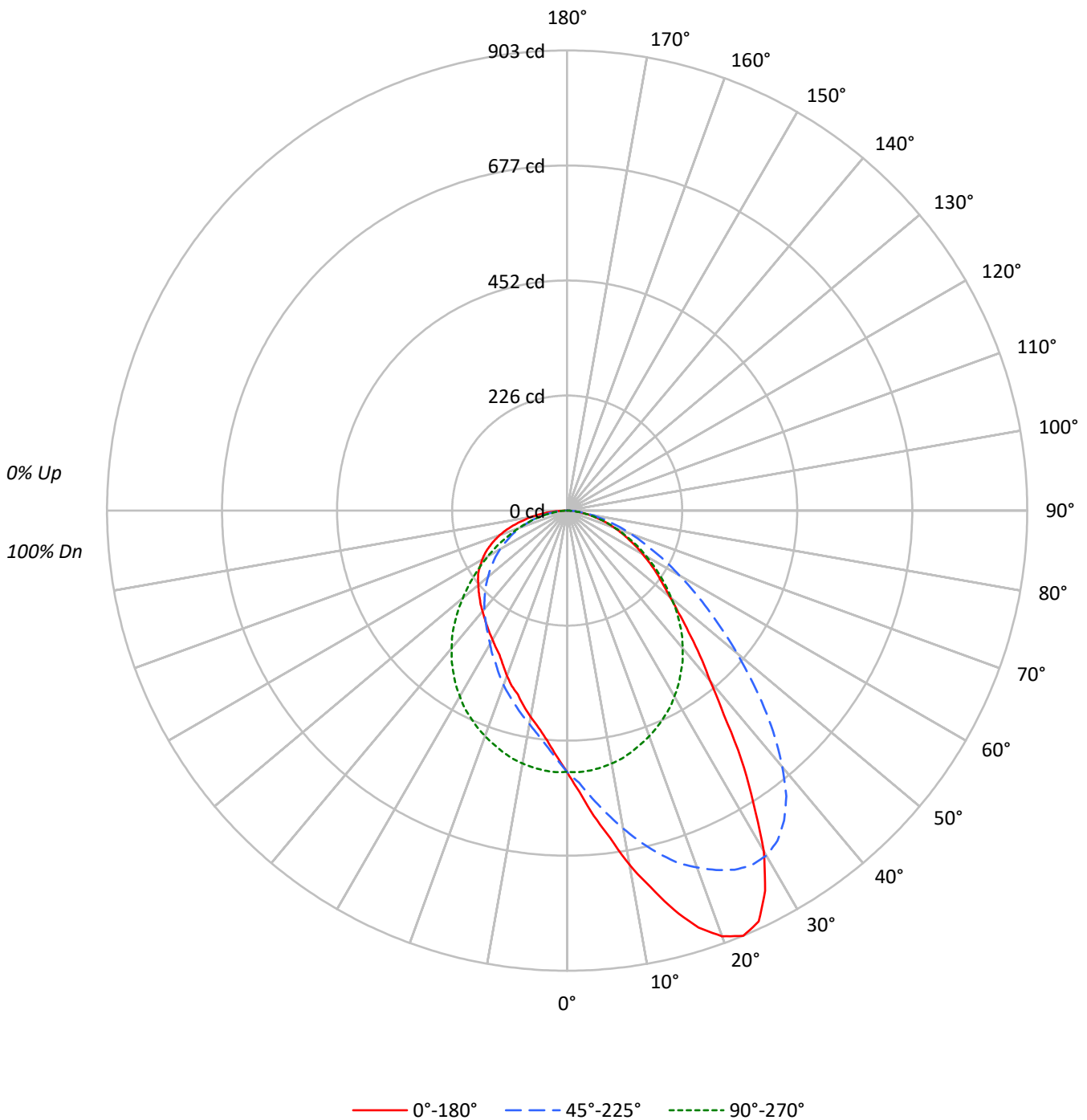
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1470.5 lumens  
Efficiency: N/A  
Efficacy: 131.3 lumens/watt  
Spacing Criteria (0/90/45): 1.35 / 1.22 / 1.45  
Luminous Opening: Rectangular (W 3.88' x L: 0.31' 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

TEST NUMBER: P243498

CATALOG NUMBER: S124DRP-H350D835-X4F0-XX-UDD-A-W

### 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	94	92	90	91	89	87	85					85			
2	100	92	86	80	97	90	84	79	87	82	77	83	79	76	80	77	74	72					72			
3	92	81	74	67	89	80	73	67	77	71	66	74	69	64	72	67	63	61					61			
4	84	73	64	58	82	71	63	57	69	62	56	66	60	56	64	59	55	53					53			
5	78	65	56	50	75	64	56	50	62	55	49	60	54	49	58	53	48	46					46			
6	72	59	50	44	70	58	50	44	56	49	43	54	48	43	53	47	43	41					41			
7	67	53	45	39	65	53	45	39	51	44	38	50	43	38	48	42	38	36					36			
8	62	49	41	35	61	48	40	35	47	40	35	46	39	34	44	39	34	32					32			
9	58	45	37	31	57	44	37	31	43	36	31	42	36	31	41	35	31	29					29			
10	54	41	34	29	53	41	34	28	40	33	28	39	33	28	38	32	28	26					26			

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

	0°	45°	90°	135°	180°
0°	4558	4558	4558	4558	4558
5°	5364	5057	4570	4131	4034
10°	6374	5719	4549	3839	3714
15°	7466	6414	4509	3629	3440
20°	8407	7049	4457	3447	3263
25°	8725	7627	4398	3252	3071
30°	7924	8022	4322	3107	3003
35°	6464	8054	4220	3003	2984
40°	5062	7624	4088	2931	2997
45°	4236	6875	3923	2865	3052
50°	3636	6011	3694	2802	3143
55°	3321	5210	3445	2754	3296
60°	3044	4521	3189	2709	3417
65°	2791	3918	2919	2619	3548
70°	2568	3433	2633	2534	3657
75°	2287	2954	2315	2366	3651
80°	1909	2401	1894	2186	3645
85°	1448	1795	1428	1968	3417

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 50°  
 Vertical Angle: 45°  
 Luminance: 7185 cd/sqm



TEST NUMBER: P243498

CATALOG NUMBER: S124DRP-H350D835-X4F0-XX-UDD-A-W

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	49.9	3.4
10°-20°	154.6	10.5
20°-30°	248.4	16.9
30°-40°	283.9	19.3
40°-50°	261.3	17.8
50°-60°	213.8	14.5
60°-70°	152.4	10.4
70°-80°	83.7	5.7
80°-90°	22.5	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°	452.9	30.8
0°-40°	736.8	50.1
0°-60°	1211.9	82.4
0°-90°	1470.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1470.5	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	513	513	513	513	513	
5°	601	567	512	463	452	60
15°	811	697	490	394	374	231
25°	890	778	448	332	313	399
35°	596	742	389	277	275	370
45°	337	547	312	228	243	263
55°	214	336	222	178	213	192
65°	133	186	139	124	169	133
75°	67	86	67	69	106	71
85°	14	18	14	19	34	17
90°	0	0	0	0	0	



TEST NUMBER: P243498

CATALOG NUMBER: S124DRP-H350D835-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8
2.5°	552.2	550.5	549.7	548.6	548.4	547.4	545.3	542.3	538.6	534.6	534.6
5°	601.2	600.7	597.6	597.8	593.8	589.4	586.1	581.9	573.7	566.8	562.0
7.5°	648.0	652.4	651.4	648.0	642.2	635.9	629.2	623.3	608.3	599.9	593.0
10°	706.2	707.9	705.0	700.2	694.9	682.8	674.0	664.2	647.8	633.6	621.0
12.5°	757.3	761.3	756.0	751.4	739.1	730.1	721.3	701.6	684.5	666.5	648.3
15°	811.3	807.1	809.8	798.5	789.7	781.2	758.8	738.7	719.2	697.0	678.0
17.5°	858.2	858.2	853.2	845.8	836.6	820.5	798.1	775.9	754.4	725.3	698.3
20°	888.8	891.1	885.2	877.5	866.4	849.6	831.8	807.7	779.1	745.2	714.6
22.5°	903.4	903.8	901.7	895.2	886.2	872.0	853.8	830.4	800.0	763.6	731.6
25°	889.6	891.9	891.3	890.8	886.2	878.1	863.4	841.7	814.0	777.6	743.1
27.5°	841.0	846.7	851.5	853.6	858.6	859.0	854.6	841.4	818.8	784.5	746.0
30°	772.0	769.0	782.0	788.5	805.7	815.9	823.2	822.4	809.4	781.6	745.0
32.5°	679.9	687.8	697.0	712.3	732.6	756.5	774.5	787.9	786.6	768.4	737.8
35°	595.7	595.7	607.4	626.3	647.8	676.5	706.7	731.6	746.8	742.2	720.7
37.5°	504.5	510.1	523.5	538.2	564.5	592.2	631.9	665.0	697.0	706.7	695.6
40°	436.2	438.7	453.0	465.3	492.3	521.0	554.3	596.6	633.4	657.0	658.5
42.5°	385.6	385.4	391.2	402.3	424.1	449.6	485.6	527.1	570.2	603.7	619.4
45°	337.0	336.6	342.6	354.0	369.4	392.0	423.2	464.7	508.8	546.9	571.6
47.5°	296.0	299.7	302.5	311.3	324.0	343.3	370.1	403.1	445.6	488.3	521.6
50°	262.9	264.6	270.4	274.6	288.9	302.3	323.8	353.5	390.0	434.7	470.8
52.5°	236.5	237.6	241.1	246.6	254.7	266.5	283.6	311.0	343.9	382.8	420.1
55°	214.3	213.7	216.0	219.6	226.7	236.5	249.1	270.0	298.7	336.2	370.5
57.5°	192.6	192.6	194.7	197.2	201.2	209.3	221.7	238.2	261.2	294.5	324.9
60°	171.2	172.7	173.5	176.0	179.4	185.5	194.7	207.6	227.1	254.3	284.5
62.5°	152.4	152.4	153.8	154.7	159.1	163.5	170.2	181.3	196.5	220.8	244.3
65°	132.7	134.0	134.0	135.6	139.4	142.8	148.0	156.4	168.9	186.3	208.3
67.5°	116.0	116.0	117.0	117.8	119.9	122.2	126.8	133.3	144.0	157.8	177.7
70°	98.8	99.4	99.0	100.1	101.3	103.6	107.0	112.4	120.1	132.1	146.7
72.5°	83.3	82.5	82.9	83.9	84.6	86.0	88.1	92.3	98.6	108.2	118.9
75°	66.6	66.1	67.6	67.2	68.2	69.5	71.4	74.5	79.3	86.0	94.2
77.5°	51.9	51.3	51.9	52.3	52.7	53.8	55.3	57.1	60.5	64.9	72.2
80°	37.3	37.0	37.5	37.9	38.1	39.8	40.2	42.1	43.5	46.9	50.4
82.5°	24.7	25.1	25.3	25.7	25.5	26.4	26.8	28.0	29.3	31.0	33.7
85°	14.2	13.6	14.2	14.2	14.2	15.3	15.1	15.9	16.7	17.6	19.5
87.5°	5.0	5.0	5.2	5.4	5.4	6.1	5.9	6.3	7.1	7.1	7.7
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: P243498

CATALOG NUMBER: S124DRP-H350D835-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8
2.5°	533.3	531.0	529.4	524.5	521.6	518.9	516.4	513.7	510.7	507.0	504.7
5°	557.0	552.0	544.6	537.9	530.4	523.7	518.3	512.2	505.5	498.6	492.5
7.5°	583.2	573.7	562.4	550.1	538.4	528.5	518.3	508.6	499.2	490.0	481.4
10°	609.3	593.0	578.1	561.2	545.7	530.8	517.4	504.0	492.3	480.2	469.3
12.5°	633.6	613.9	592.2	571.0	550.3	531.0	514.5	498.2	483.1	468.7	455.9
15°	652.2	627.5	601.8	576.7	552.8	532.7	511.1	490.0	474.3	456.7	442.7
17.5°	673.6	644.3	618.7	588.6	558.9	526.4	503.6	480.6	461.8	444.8	430.8
20°	687.8	655.6	618.7	584.6	554.1	525.0	497.5	471.2	451.3	431.6	414.7
22.5°	699.1	665.8	625.2	589.6	551.3	516.2	486.4	460.5	437.1	418.4	402.3
25°	705.0	664.4	625.6	582.5	544.2	510.5	477.0	448.4	424.7	404.0	390.2
27.5°	705.2	663.5	617.7	575.0	534.0	497.5	464.5	436.2	409.6	389.7	373.2
30°	704.1	658.1	609.7	563.1	522.2	485.0	450.4	421.1	396.9	375.7	360.0
32.5°	697.4	650.6	597.8	548.8	504.5	467.0	435.2	406.1	380.1	360.9	344.3
35°	682.4	634.0	581.1	530.6	488.5	449.6	418.2	388.9	365.7	344.7	327.8
37.5°	663.1	617.9	564.1	511.4	465.9	429.1	399.6	372.0	347.7	328.4	311.5
40°	638.8	596.3	543.4	488.5	443.1	405.9	378.0	352.3	331.6	311.9	295.3
42.5°	605.6	572.9	518.5	465.1	417.6	382.4	355.4	334.1	312.7	294.9	278.4
45°	570.0	540.2	491.9	438.9	393.3	357.1	331.8	312.1	293.9	275.9	262.5
47.5°	530.6	506.3	461.5	409.8	364.8	332.8	307.9	290.3	273.6	259.8	246.4
50°	483.7	471.0	429.1	382.2	338.5	305.6	285.1	267.1	254.7	241.3	228.8
52.5°	440.2	429.9	395.8	349.8	310.0	281.1	259.1	244.9	232.8	222.9	212.9
55°	392.9	387.7	358.8	319.0	283.0	254.1	235.3	222.3	212.7	203.5	196.1
57.5°	349.3	348.9	323.4	289.3	254.1	229.6	211.6	200.9	192.6	186.1	179.8
60°	304.8	308.3	287.4	256.2	228.4	205.3	189.0	179.4	173.7	167.7	162.4
62.5°	264.4	269.8	250.8	226.3	198.9	180.0	167.5	160.1	153.8	149.5	145.5
65°	225.6	232.5	217.1	195.1	174.2	156.4	145.7	138.8	134.0	131.5	128.7
67.5°	191.5	195.3	184.8	167.7	150.3	134.8	126.0	119.9	115.8	114.7	111.6
70°	157.4	161.8	154.5	138.8	125.4	114.1	106.1	101.3	98.8	97.3	95.2
72.5°	130.0	131.9	124.5	113.7	103.0	93.6	87.7	84.1	81.2	80.6	79.5
75°	101.7	104.4	98.6	90.2	81.4	74.7	70.3	67.4	65.9	64.9	64.9
77.5°	76.8	79.1	75.8	68.4	63.2	57.4	54.4	51.7	51.1	50.0	50.4
80°	54.6	55.7	53.8	48.8	44.2	41.0	38.5	37.0	36.8	36.0	36.8
82.5°	36.2	36.4	34.3	32.0	28.5	26.8	25.1	24.5	24.3	24.3	23.9
85°	20.1	20.5	19.0	17.6	16.3	14.9	14.4	14.0	13.6	14.2	14.7
87.5°	7.7	8.0	7.7	7.1	6.7	6.3	6.1	6.5	5.9	6.3	6.5
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: P243498

CATALOG NUMBER: S124DRP-H350D835-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8
2.5°	501.1	499.4	496.9	492.7	489.8	486.7	485.4	485.8	484.6	482.9	483.3
5°	487.9	483.1	478.9	473.1	467.6	463.0	461.5	459.7	458.0	456.9	455.9
7.5°	473.9	467.2	460.9	455.1	448.8	442.9	440.6	438.9	438.1	435.2	433.9
10°	460.5	452.8	445.2	438.3	431.8	425.3	423.0	420.9	418.0	416.7	415.3
12.5°	446.3	438.5	430.4	422.0	415.5	410.3	406.3	404.8	401.9	400.6	399.8
15°	432.4	423.0	416.5	410.0	400.2	394.4	392.7	387.4	385.8	383.3	381.6
17.5°	418.6	409.8	400.2	392.7	386.6	379.3	375.3	373.0	369.9	367.6	364.4
20°	405.0	394.8	387.2	377.8	371.1	364.4	359.4	357.3	354.6	351.4	347.0
22.5°	391.8	380.5	373.2	364.4	356.0	348.3	344.1	341.2	335.7	335.1	331.1
25°	376.3	366.3	356.7	347.5	339.3	331.6	328.8	324.2	322.3	318.6	318.0
27.5°	361.7	351.0	340.6	330.5	323.4	318.0	313.1	310.2	308.3	305.4	305.6
30°	346.4	334.7	324.9	315.6	307.9	302.7	299.5	298.1	295.3	294.9	293.5
32.5°	330.1	319.4	309.2	301.0	293.0	288.4	287.0	285.5	283.8	284.0	283.6
35°	313.8	304.3	293.5	285.9	279.4	276.7	274.4	274.0	273.4	273.8	273.8
37.5°	297.9	287.6	278.6	271.7	267.9	264.2	263.1	262.9	263.1	263.5	264.6
40°	282.4	272.9	264.2	258.5	254.3	252.6	251.2	251.8	252.6	254.1	255.4
42.5°	266.9	257.9	250.6	244.9	240.9	240.1	240.3	241.6	241.8	243.9	246.2
45°	250.6	242.8	235.9	231.5	229.0	227.9	228.4	229.6	231.1	234.0	236.9
47.5°	235.5	228.6	222.5	218.1	216.2	215.8	216.6	218.3	221.7	224.6	227.9
50°	220.2	213.9	208.3	204.3	204.1	202.6	204.5	206.6	210.6	214.5	219.6
52.5°	205.1	199.1	194.2	191.1	190.3	190.3	192.6	196.3	199.9	205.1	209.7
55°	189.4	184.0	179.4	178.3	177.1	177.7	180.2	184.0	189.0	194.9	199.9
57.5°	173.3	168.7	165.4	163.9	163.3	165.4	168.3	172.3	178.8	184.6	190.1
60°	158.0	154.1	150.5	150.1	149.7	152.4	155.9	160.1	166.6	172.5	179.2
62.5°	141.7	138.6	136.3	135.6	135.6	138.4	142.3	147.8	153.8	160.1	167.2
65°	125.2	122.4	121.8	121.0	122.9	124.5	128.5	133.8	140.2	147.1	154.7
67.5°	109.9	108.2	107.0	107.0	108.4	111.6	115.1	120.4	127.1	134.4	141.1
70°	94.6	92.9	91.9	92.9	93.8	97.5	101.3	106.3	112.6	119.7	126.8
72.5°	78.7	78.9	79.1	78.9	79.7	83.3	87.1	91.9	98.0	104.9	111.4
75°	64.7	63.6	63.8	64.3	67.0	68.9	72.6	77.2	83.7	90.0	95.4
77.5°	50.2	49.8	50.9	50.9	53.4	55.7	58.8	63.4	69.1	74.7	79.1
80°	36.8	37.0	37.9	38.1	40.2	42.7	46.0	49.2	54.2	58.2	62.4
82.5°	24.9	25.3	26.4	27.8	28.7	30.1	33.1	36.4	40.0	44.2	46.7
85°	14.4	15.1	15.9	17.0	17.8	19.3	21.4	24.1	26.6	28.9	31.0
87.5°	7.1	7.1	7.7	8.2	8.8	9.6	11.1	12.1	13.8	15.5	16.3
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: P243498

CATALOG NUMBER: S124DRP-H350D835-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	512.8	512.8	512.8	512.8
2.5°	482.5	482.3	481.4	481.8
5°	455.3	453.2	453.0	452.1
7.5°	431.8	431.2	431.2	429.5
10°	413.8	411.9	412.4	411.5
12.5°	396.7	395.6	394.4	393.1
15°	377.4	377.4	377.4	373.8
17.5°	362.3	362.1	361.1	360.9
20°	346.6	345.8	343.1	345.0
22.5°	330.7	330.1	327.8	328.2
25°	315.9	315.2	314.8	313.1
27.5°	303.1	303.3	303.7	302.7
30°	293.5	292.8	293.7	292.6
32.5°	284.5	284.5	283.6	283.8
35°	274.2	275.0	275.3	275.0
37.5°	265.2	266.2	267.1	266.2
40°	256.8	257.7	258.5	258.3
42.5°	248.0	249.5	250.1	250.8
45°	239.7	241.6	242.6	242.8
47.5°	231.1	233.4	235.5	235.3
50°	222.7	225.6	227.5	227.3
52.5°	214.3	217.3	219.6	220.6
55°	204.9	208.7	210.8	212.7
57.5°	195.5	199.7	201.8	202.6
60°	185.0	188.8	191.5	192.2
62.5°	173.3	177.3	180.8	181.7
65°	161.2	165.6	168.3	168.7
67.5°	147.1	151.3	154.1	155.3
70°	132.7	135.8	138.8	140.7
72.5°	116.6	120.4	123.1	124.3
75°	99.8	104.0	105.5	106.3
77.5°	82.5	85.0	87.3	87.5
80°	65.1	68.2	69.1	71.2
82.5°	47.9	50.9	50.2	51.1
85°	31.6	32.7	33.3	33.5
87.5°	16.7	17.4	17.8	18.0
90°	0.0	0.0	0.0	0.0



TEST NUMBER: P243498  
 CATALOG NUMBER: S124DRP-H350D835-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	15.84	17.41	16.20	17.73	18.04	16.13	17.70	16.49	18.01	18.33
	3H	17.28	18.70	17.66	19.02	19.38	17.51	18.93	17.89	19.25	19.62
	4H	17.80	19.13	18.20	19.48	19.86	18.00	19.33	18.39	19.67	20.05
	6H	18.15	19.38	18.56	19.74	20.13	18.31	19.54	18.72	19.91	20.30
	8H	18.24	19.42	18.67	19.80	20.20	18.39	19.57	18.82	19.96	20.36
	12H	18.29	19.42	18.72	19.80	20.23	18.44	19.56	18.87	19.95	20.37
4H	2H	16.98	18.31	17.37	18.65	19.03	16.92	18.25	17.32	18.60	18.97
	3H	18.48	19.59	18.89	19.99	20.39	18.62	19.73	19.03	20.13	20.53
	4H	19.05	20.05	19.48	20.47	20.91	19.21	20.22	19.65	20.63	21.07
	6H	19.46	20.34	19.92	20.78	21.24	19.62	20.49	20.07	20.93	21.39
	8H	19.58	20.40	20.04	20.84	21.31	19.72	20.54	20.18	20.98	21.45
	12H	19.65	20.39	20.14	20.86	21.33	19.79	20.52	20.27	21.00	21.47
8H	4H	19.48	20.30	19.94	20.74	21.20	19.55	20.37	20.02	20.81	21.28
	6H	19.98	20.65	20.47	21.14	21.62	20.09	20.76	20.58	21.25	21.73
	8H	20.14	20.75	20.65	21.25	21.74	20.25	20.86	20.76	21.37	21.85
	12H	20.25	20.79	20.76	21.28	21.85	20.37	20.90	20.87	21.39	21.96
12H	4H	19.52	20.25	20.00	20.73	21.20	19.59	20.32	20.07	20.80	21.27
	6H	20.04	20.65	20.55	21.16	21.65	20.15	20.76	20.66	21.27	21.75
	8H	20.26	20.79	20.76	21.28	21.85	20.37	20.91	20.88	21.40	21.96