

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: P242643

Luminaire Tested: S124DRP-S350D840-X4F0-XX-UDD-A-W

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2024
Report Number: P242643
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-S350D840-X4F0-XX-UDD-A-W
Description: DEFINE 4 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER
STANDARD LIGHT ENGINE
Light Source: (92) 4000K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

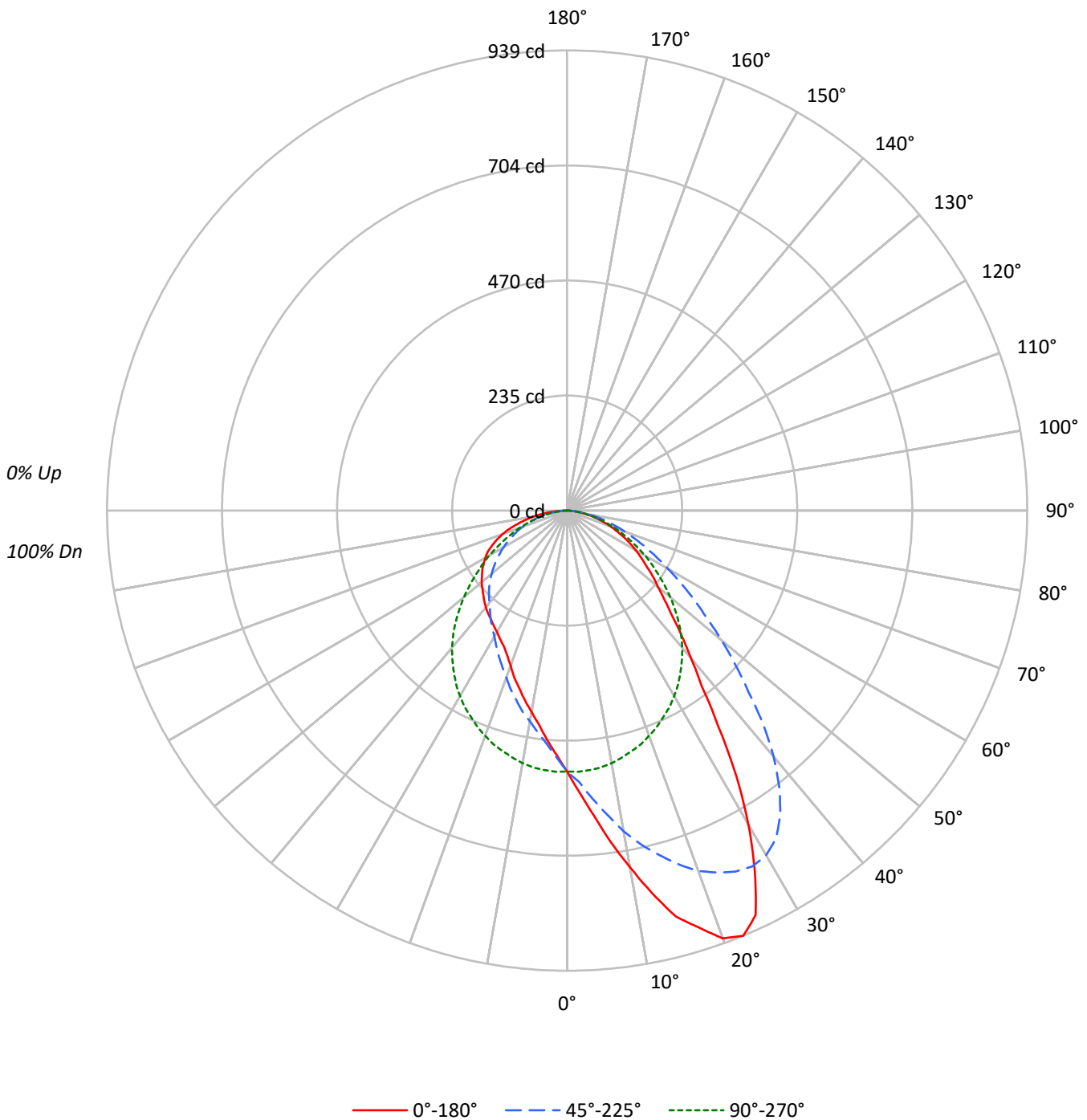
Lumens per Lamp: N/A
Luminaire Lumens: 1468.6 lumens
Efficiency: N/A
Efficacy: 126.6 lumens/watt
Spacing Criteria (0/90/45): 1.3 / 1.22 / 1.41
Luminous Opening: Rectangular (W 3.88' x L: 0.31' x H: 0')
CIE Type: Direct

Input Watts (W): 11.6
Input Voltage (V): 120
Input Current (A_{in}): 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°	4731	4731	4731	4731	4731
5°	5571	5262	4743	4263	4187
10°	6670	5996	4722	3944	3769
15°	7892	6698	4675	3685	3461
20°	8788	7404	4626	3428	3187
25°	8930	7973	4554	3229	2997
30°	7598	8332	4485	3048	2938
35°	5842	8227	4373	2949	2937
40°	4553	7603	4241	2867	2993
45°	3796	6580	4044	2832	3043
50°	3341	5674	3802	2781	3146
55°	3061	4882	3512	2731	3273
60°	2869	4226	3253	2661	3426
65°	2671	3691	2964	2574	3552
70°	2440	3259	2677	2503	3633
75°	2181	2809	2356	2339	3589
80°	1827	2278	1930	2135	3476
85°	1346	1734	1397	1979	3325

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 55°
 Vertical Angle: 45°
 Luminance: 7263 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	51.8	3.5
10°-20°	159.9	10.9
20°-30°	254.0	17.3
30°-40°	282.2	19.2
40°-50°	256.7	17.5
50°-60°	209.7	14.3
60°-70°	149.7	10.2
70°-80°	82.4	5.6
80°-90°	22.3	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°	465.7	31.7
0°-40°	747.9	50.9
0°-60°	1214.2	82.7
0°-90°	1468.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1468.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	532	532	532	532	532	
5°	624	590	532	478	469	63
15°	858	728	508	400	376	242
25°	910	813	464	329	306	404
35°	538	758	403	272	271	341
45°	302	523	322	225	242	237
55°	198	315	227	176	211	178
65°	127	176	141	122	169	126
75°	64	82	69	68	104	67
85°	13	17	14	19	33	16
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°	532.2	532.2	532.2	532.2	532.2	532.2	532.2	532.2	532.2	532.2	532.2
2.5°	575.0	574.8	572.6	572.1	570.6	568.6	568.1	564.6	557.6	554.3	553.4
5°	624.4	628.8	623.0	621.9	621.3	614.0	610.3	605.8	595.7	589.7	585.1
7.5°	682.1	682.3	679.9	677.5	673.3	667.1	658.8	649.1	637.4	625.5	617.1
10°	739.0	740.8	737.9	737.5	726.2	719.2	705.1	693.1	679.5	664.3	650.4
12.5°	799.0	795.4	794.3	782.7	782.9	768.5	751.6	739.2	716.3	698.2	678.6
15°	857.6	852.8	849.7	836.7	830.3	812.4	795.0	781.6	754.0	727.8	707.9
17.5°	891.6	897.5	889.6	884.3	866.9	855.2	837.8	810.2	789.7	757.1	734.4
20°	929.0	929.5	925.5	920.0	907.0	891.1	871.7	840.9	815.1	782.7	748.3
22.5°	939.2	939.2	938.1	933.0	924.0	911.9	892.2	867.8	835.1	799.2	764.8
25°	910.5	909.6	911.6	917.4	913.6	909.6	898.4	879.2	850.1	812.9	775.8
27.5°	829.4	835.1	847.0	861.1	871.3	880.3	879.7	871.5	850.8	818.6	779.1
30°	740.3	747.8	756.2	770.3	797.6	813.3	830.5	843.5	836.2	811.8	775.6
32.5°	642.4	642.9	656.3	672.9	697.3	731.1	760.8	790.6	803.4	793.5	764.8
35°	538.4	541.5	554.9	570.8	601.4	638.3	679.3	715.9	746.1	758.2	742.8
37.5°	451.1	460.8	470.9	489.0	517.0	550.3	594.4	640.0	684.3	711.2	714.1
40°	392.4	397.9	404.8	417.8	440.7	473.3	509.9	564.2	612.0	655.2	669.3
42.5°	346.1	348.8	352.3	363.8	379.9	412.3	444.9	491.0	539.0	592.8	618.9
45°	302.0	305.3	312.4	319.2	332.5	355.0	386.0	425.3	473.6	523.4	567.0
47.5°	269.0	271.2	275.6	283.1	295.0	310.2	336.7	369.9	417.1	465.4	512.1
50°	241.6	243.4	246.7	253.3	261.9	275.1	295.9	326.5	361.6	410.3	455.9
52.5°	220.0	220.5	222.7	226.6	233.0	243.6	259.7	283.7	315.7	357.8	403.2
55°	197.5	198.4	200.6	203.9	209.9	216.9	229.9	248.9	277.3	315.0	354.5
57.5°	179.0	179.9	181.7	183.0	188.3	194.2	204.8	218.5	240.7	274.3	310.2
60°	161.4	160.9	163.1	164.2	167.6	172.4	180.1	193.1	211.9	237.7	270.1
62.5°	144.2	143.5	145.3	146.8	148.4	152.3	158.3	167.8	182.1	204.8	231.7
65°	127.0	126.1	127.2	129.0	130.7	132.9	137.6	146.6	158.7	175.5	196.9
67.5°	109.4	110.5	110.5	111.6	112.7	115.7	119.1	126.1	134.7	148.4	167.3
70°	93.9	94.1	95.0	95.0	95.7	98.3	101.0	104.7	113.1	125.4	140.2
72.5°	78.5	79.6	78.9	79.8	80.2	81.8	83.6	87.1	93.9	102.3	114.2
75°	63.5	64.2	64.2	64.4	65.0	65.7	67.2	69.9	75.0	81.8	90.4
77.5°	48.9	48.9	49.4	50.3	50.3	51.4	52.7	54.7	57.5	62.6	68.1
80°	35.7	36.2	35.9	36.4	36.4	37.3	37.7	40.3	41.4	44.5	48.7
82.5°	23.8	24.3	24.3	24.9	25.4	25.4	26.0	26.7	27.8	30.4	31.5
85°	13.2	13.7	13.2	13.7	14.3	14.6	15.2	15.4	16.3	17.0	18.5
87.5°	4.9	5.5	5.5	5.7	6.2	6.4	6.6	6.4	7.3	7.5	8.4
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°	532.2	532.2	532.2	532.2	532.2	532.2	532.2	532.2	532.2	532.2	532.2
2.5°	553.6	550.5	548.3	546.5	541.7	538.8	536.6	533.5	530.0	526.3	521.6
5°	580.5	573.0	567.5	559.1	551.2	544.6	537.7	531.5	524.0	515.9	509.9
7.5°	608.0	597.7	583.8	573.0	560.0	548.7	538.8	528.5	517.4	506.9	496.9
10°	634.1	619.7	603.9	585.1	567.5	551.8	537.3	523.2	509.5	495.8	484.1
12.5°	662.1	643.3	618.0	595.3	575.0	552.7	534.4	516.3	499.1	484.6	470.5
15°	686.5	660.7	633.6	604.3	578.3	553.8	529.8	508.0	489.4	470.5	457.2
17.5°	702.0	670.0	640.9	610.3	580.3	549.6	524.7	500.2	477.3	458.8	442.3
20°	717.2	685.4	646.8	616.2	578.7	547.0	517.0	489.0	464.7	444.7	427.5
22.5°	730.4	692.5	653.9	611.1	573.9	539.7	506.2	478.0	453.1	431.7	415.4
25°	733.5	691.4	649.5	609.4	567.0	527.1	497.4	464.3	437.8	415.6	397.9
27.5°	734.6	690.1	643.5	599.9	556.2	519.9	481.1	452.2	424.8	401.2	384.5
30°	732.2	685.2	634.3	586.0	542.1	501.8	469.2	437.0	409.0	385.6	368.0
32.5°	724.5	675.1	622.4	570.6	524.7	485.5	451.5	421.3	394.2	371.3	352.5
35°	708.1	659.9	604.1	550.9	504.4	464.5	434.1	403.0	375.7	353.8	336.0
37.5°	686.3	641.3	584.7	529.3	484.6	444.0	413.4	384.7	360.0	337.5	319.0
40°	655.9	617.5	560.6	507.1	457.7	419.5	391.3	365.5	341.1	320.1	302.7
42.5°	620.8	588.6	537.3	479.7	432.6	394.2	366.9	344.4	321.7	302.7	285.3
45°	577.8	555.8	506.4	453.9	404.3	368.2	341.9	321.7	302.3	283.3	268.7
47.5°	530.0	517.7	474.7	424.4	376.8	340.6	317.9	298.5	280.9	264.3	251.3
50°	481.7	476.4	440.5	392.4	347.5	313.9	291.0	274.9	260.4	246.3	234.1
52.5°	434.1	435.2	403.7	360.7	319.9	287.9	265.2	250.5	238.3	227.5	216.9
55°	385.4	391.5	366.2	327.0	289.7	260.6	240.1	226.6	217.8	208.3	200.2
57.5°	340.6	351.0	328.9	293.0	261.5	233.7	215.6	205.3	195.6	189.4	183.0
60°	297.0	306.7	290.4	261.3	231.9	209.0	192.0	183.0	174.8	170.9	166.7
62.5°	258.2	266.5	255.5	229.1	204.6	182.8	169.1	160.5	155.6	151.2	148.8
65°	221.6	228.8	218.5	198.9	177.0	159.4	147.7	140.9	135.6	133.8	130.7
67.5°	185.4	192.0	186.5	169.3	150.8	136.9	127.7	120.4	117.3	115.5	113.5
70°	153.9	160.5	154.5	140.0	126.5	115.3	106.7	103.0	99.7	99.0	95.9
72.5°	127.2	131.2	125.2	114.6	103.6	94.6	88.4	84.4	83.1	81.8	80.5
75°	99.4	103.4	99.4	90.6	82.5	75.8	70.1	68.6	66.6	65.9	64.8
77.5°	74.5	78.3	75.2	69.2	62.8	57.3	54.0	51.8	51.6	50.3	50.7
80°	53.8	56.0	53.1	49.4	44.5	41.0	38.8	37.7	36.4	35.9	36.8
82.5°	34.8	35.5	34.4	32.2	28.9	26.9	25.6	24.3	24.3	24.5	24.3
85°	20.1	19.8	19.6	17.4	16.3	14.8	13.9	13.7	13.4	13.9	14.3
87.5°	8.4	8.6	8.4	7.5	6.8	6.2	6.0	5.7	6.0	6.2	6.4
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°	532.2	532.2	532.2	532.2	532.2	532.2	532.2	532.2	532.2	532.2	532.2
2.5°	519.4	517.4	514.6	510.6	507.3	503.8	502.9	501.6	504.2	502.0	501.3
5°	504.9	500.2	494.3	487.5	483.5	477.8	476.6	474.4	472.2	472.0	469.8
7.5°	489.7	483.3	475.8	468.7	462.5	456.4	452.4	452.0	448.4	446.7	444.5
10°	475.1	466.7	457.7	451.1	443.6	437.0	432.3	429.7	427.5	425.1	422.9
12.5°	457.9	448.9	441.8	434.5	425.3	420.7	412.3	407.2	407.2	407.9	401.2
15°	445.3	436.5	425.1	414.9	410.1	400.4	396.2	390.9	387.6	384.3	381.6
17.5°	429.9	419.1	410.3	398.8	389.8	382.5	376.8	373.9	368.6	363.8	360.5
20°	415.6	403.9	394.4	382.1	371.9	362.4	357.8	353.4	349.7	345.7	341.9
22.5°	401.0	388.7	376.6	364.7	355.4	345.3	340.8	334.4	330.9	329.2	325.4
25°	385.6	372.4	359.1	347.7	338.0	329.2	323.2	318.6	314.6	312.8	310.4
27.5°	368.8	355.8	343.3	330.0	318.8	312.4	307.6	303.8	301.4	298.7	297.6
30°	353.0	339.3	325.6	313.5	303.4	297.0	292.6	290.1	288.4	287.3	286.2
32.5°	336.9	323.4	308.9	298.1	289.3	283.7	280.7	278.2	277.6	277.3	277.1
35°	319.5	305.8	292.6	282.6	274.0	271.8	269.0	267.6	267.2	268.7	269.4
37.5°	302.7	289.9	277.6	267.6	261.9	258.4	257.3	257.1	258.6	259.9	261.5
40°	286.6	274.3	262.8	254.4	249.1	247.1	246.7	247.8	249.6	251.1	252.9
42.5°	271.0	258.8	248.7	241.0	237.7	235.9	236.3	237.4	240.1	242.1	244.9
45°	254.6	244.5	234.4	228.0	224.9	225.3	225.3	227.3	229.7	232.6	235.5
47.5°	239.4	229.1	220.5	215.0	213.4	212.8	213.9	216.5	219.8	223.1	227.1
50°	224.0	214.3	207.0	202.2	200.4	201.1	202.8	205.3	209.4	213.9	218.0
52.5°	208.3	199.7	193.1	188.7	187.6	188.9	190.7	194.9	198.4	203.3	208.6
55°	192.0	184.5	179.2	175.9	175.5	176.2	178.1	182.3	187.6	193.6	198.4
57.5°	175.9	169.5	164.5	162.0	162.3	162.7	165.8	170.9	176.2	182.5	188.7
60°	159.6	153.9	149.9	148.2	148.4	149.7	153.7	158.3	165.4	171.5	178.1
62.5°	144.2	139.3	135.6	134.0	133.6	136.9	140.7	145.5	152.6	159.6	166.9
65°	127.4	123.5	120.4	119.5	120.2	122.4	127.2	133.6	139.6	146.8	154.3
67.5°	111.1	107.8	105.6	106.0	106.7	109.8	114.0	119.5	126.1	133.6	141.3
70°	95.7	92.6	90.8	91.1	92.4	96.3	99.9	105.4	112.7	120.4	126.5
72.5°	79.8	78.0	76.5	77.6	78.9	81.4	86.0	91.5	97.7	104.7	111.3
75°	63.7	63.7	62.8	63.5	65.5	68.1	71.4	77.2	83.6	89.3	94.6
77.5°	50.0	49.4	49.8	50.5	51.8	55.1	58.9	63.1	68.1	74.1	78.5
80°	36.2	36.4	37.5	38.8	39.2	41.7	45.6	49.4	53.1	58.0	62.2
82.5°	24.9	25.1	25.6	27.3	27.8	30.4	32.6	36.4	39.7	42.6	45.9
85°	14.8	14.8	15.9	16.5	17.6	19.4	20.9	23.1	26.2	28.4	31.7
87.5°	7.1	7.1	7.9	8.4	9.0	10.1	10.6	13.0	13.9	15.0	17.0
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: P242643

CATALOG NUMBER: S124DRP-S350D840-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	532.2	532.2	532.2	532.2
2.5°	500.9	500.5	498.9	498.7
5°	468.5	467.4	466.7	469.2
7.5°	444.0	443.1	441.2	440.5
10°	420.7	419.8	418.0	417.6
12.5°	398.2	396.2	396.2	396.8
15°	378.8	377.9	375.5	376.1
17.5°	358.9	358.0	354.7	358.0
20°	340.4	338.6	337.1	336.9
22.5°	322.8	321.2	321.4	319.7
25°	308.7	307.1	306.7	305.6
27.5°	297.2	296.3	295.4	295.9
30°	286.8	286.6	286.2	286.2
32.5°	278.2	278.2	278.7	278.7
35°	270.3	271.0	271.4	270.7
37.5°	263.2	263.7	264.3	265.0
40°	254.9	256.4	256.8	257.9
42.5°	246.9	248.7	250.0	250.0
45°	238.8	240.5	242.1	242.1
47.5°	230.4	232.8	234.4	234.6
50°	221.8	224.9	226.4	227.5
52.5°	213.4	216.5	218.7	219.1
55°	203.5	207.9	210.3	211.2
57.5°	194.7	198.6	201.3	201.9
60°	184.1	188.5	192.0	192.7
62.5°	173.3	177.9	181.0	183.0
65°	160.5	165.1	168.2	168.9
67.5°	147.1	151.9	153.9	155.2
70°	132.7	136.5	138.7	139.8
72.5°	116.4	120.4	123.0	123.0
75°	99.7	103.2	104.5	104.5
77.5°	82.2	84.2	86.0	86.4
80°	65.5	66.6	67.9	67.9
82.5°	48.3	49.2	50.5	50.3
85°	31.3	33.3	33.1	32.6
87.5°	17.6	17.9	18.5	19.0
90°	0.0	0.0	0.0	0.0



TEST NUMBER: P242643
 CATALOG NUMBER: S124DRP-S350D840-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	15.37	16.93	15.73	17.24	17.56	16.28	17.84	16.64	18.15	18.47
	3H	16.85	18.26	17.23	18.58	18.94	17.64	19.05	18.02	19.38	19.74
	4H	17.39	18.71	17.79	19.06	19.44	18.12	19.44	18.52	19.79	20.16
	6H	17.75	18.97	18.16	19.34	19.73	18.42	19.65	18.84	20.01	20.40
	8H	17.85	19.02	18.28	19.41	19.81	18.50	19.67	18.93	20.06	20.46
	12H	17.90	19.02	18.33	19.40	19.83	18.54	19.66	18.97	20.04	20.47
4H	2H	16.53	17.85	16.93	18.20	18.57	16.96	18.29	17.36	18.63	19.01
	3H	18.06	19.16	18.47	19.56	19.96	18.67	19.77	19.08	20.17	20.57
	4H	18.64	19.64	19.08	20.05	20.49	19.26	20.25	19.69	20.67	21.11
	6H	19.07	19.94	19.53	20.38	20.84	19.66	20.52	20.11	20.97	21.42
	8H	19.20	20.01	19.66	20.45	20.92	19.76	20.57	20.22	21.02	21.48
	12H	19.27	20.00	19.75	20.48	20.95	19.83	20.55	20.31	21.03	21.50
8H	4H	19.10	19.91	19.56	20.35	20.82	19.57	20.39	20.04	20.83	21.30
	6H	19.61	20.28	20.10	20.77	21.24	20.10	20.77	20.60	21.26	21.74
	8H	19.78	20.38	20.29	20.89	21.38	20.27	20.87	20.78	21.38	21.86
	12H	19.90	20.43	20.41	20.92	21.49	20.38	20.91	20.89	21.40	21.97
12H	4H	19.15	19.88	19.63	20.35	20.82	19.61	20.33	20.09	20.81	21.28
	6H	19.68	20.28	20.19	20.79	21.28	20.16	20.76	20.67	21.27	21.76
	8H	19.90	20.43	20.41	20.93	21.49	20.38	20.91	20.89	21.40	21.97