

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: P243503

Luminaire Tested: S124DRP-H350D840-X4F0-XX-UDD-A-W

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2024
Report Number: P243503
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-H350D840-X4F0-XX-UDD-A-W
Description: DEFINE 4 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 4000K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

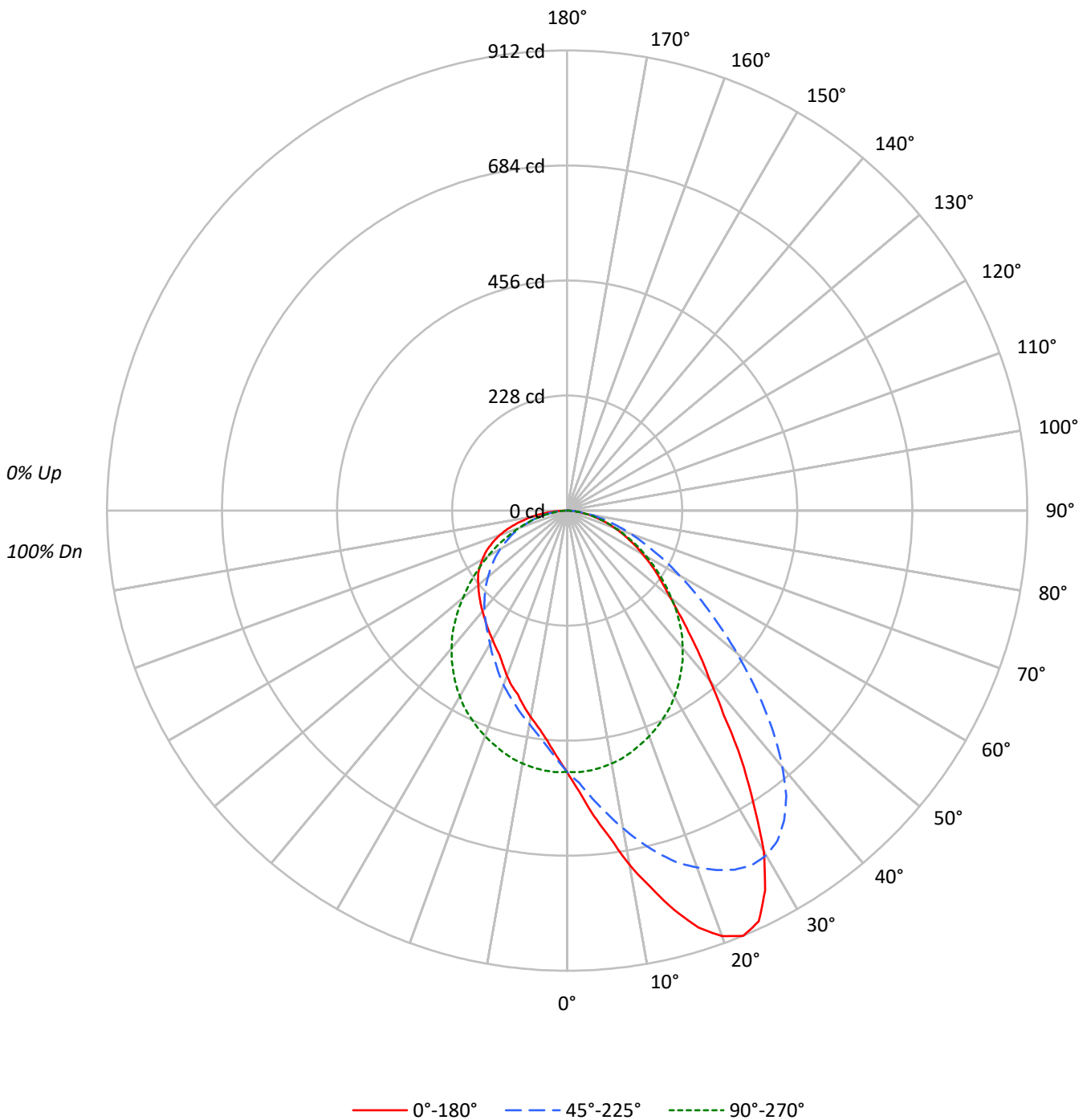
Lumens per Lamp: N/A
Luminaire Lumens: 1485.0 lumens
Efficiency: N/A
Efficacy: 132.6 lumens/watt
Spacing Criteria (0/90/45): 1.35 / 1.22 / 1.45
Luminous Opening: Rectangular (W 3.88' x L: 0.31' x H: 0')
CIE Type: Direct

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

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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	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°	4604	4604	4604	4604	4604
5°	5417	5107	4615	4172	4074
10°	6437	5775	4594	3877	3751
15°	7540	6478	4553	3664	3474
20°	8490	7118	4501	3481	3296
25°	8811	7702	4441	3284	3101
30°	8002	8101	4365	3138	3033
35°	6528	8134	4261	3032	3015
40°	5111	7699	4129	2960	3026
45°	4278	6943	3962	2894	3082
50°	3672	6071	3730	2829	3175
55°	3355	5261	3479	2782	3329
60°	3074	4565	3221	2736	3449
65°	2818	3956	2947	2646	3584
70°	2594	3467	2659	2560	3690
75°	2308	2985	2339	2387	3689
80°	1925	2421	1914	2206	3681
85°	1469	1815	1448	1979	3447

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 50°
 Vertical Angle: 45°
 Luminance: 7257 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	50.4	3.4
10°-20°	156.1	10.5
20°-30°	250.8	16.9
30°-40°	286.7	19.3
40°-50°	263.9	17.8
50°-60°	215.9	14.5
60°-70°	153.9	10.4
70°-80°	84.5	5.7
80°-90°	22.7	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°	457.3	30.8
0°-40°	744.1	50.1
0°-60°	1223.9	82.4
0°-90°	1485.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1485.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	518	518	518	518	518	
5°	607	572	517	468	457	61
15°	819	704	495	398	378	234
25°	898	785	453	335	316	403
35°	602	750	393	279	278	374
45°	340	552	315	230	245	266
55°	216	340	224	180	215	194
65°	134	188	140	126	170	134
75°	67	87	68	70	107	72
85°	14	18	14	19	34	17
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°	517.9	517.9	517.9	517.9	517.9	517.9	517.9	517.9	517.9	517.9	517.9
2.5°	557.6	555.9	555.1	554.0	553.8	552.8	550.6	547.7	543.9	539.9	539.9
5°	607.1	606.7	603.5	603.7	599.7	595.2	591.9	587.6	579.4	572.4	567.6
7.5°	654.4	658.9	657.8	654.4	648.5	642.2	635.4	629.5	614.3	605.8	598.8
10°	713.2	714.9	711.9	707.1	701.8	689.5	680.6	670.7	654.2	639.8	627.2
12.5°	764.8	768.8	763.5	758.9	746.4	737.3	728.4	708.5	691.2	673.0	654.6
15°	819.3	815.1	817.8	806.4	797.5	788.9	766.3	746.0	726.3	703.9	684.7
17.5°	866.7	866.7	861.6	854.2	844.9	828.6	806.0	783.6	761.8	732.4	705.2
20°	897.5	899.8	893.9	886.1	874.9	858.0	840.0	815.7	786.8	752.5	721.7
22.5°	912.3	912.7	910.6	904.1	895.0	880.6	862.2	838.5	807.9	771.1	738.8
25°	898.4	900.7	900.1	899.6	895.0	886.7	871.9	850.0	822.1	785.3	750.4
27.5°	849.3	855.0	859.9	862.0	867.1	867.5	863.1	849.8	826.9	792.3	753.4
30°	779.6	776.6	789.7	796.3	813.6	824.0	831.4	830.5	817.4	789.3	752.3
32.5°	686.6	694.6	703.9	719.3	739.8	763.9	782.1	795.6	794.4	776.0	745.1
35°	601.6	601.6	613.4	632.5	654.2	683.2	713.6	738.8	754.2	749.6	727.8
37.5°	509.4	515.1	528.7	543.5	570.1	598.0	638.2	671.6	703.9	713.6	702.4
40°	440.5	443.1	457.4	469.9	497.2	526.1	559.7	602.4	639.6	663.5	665.0
42.5°	389.4	389.2	395.1	406.3	428.3	454.0	490.4	532.3	575.8	609.6	625.5
45°	340.3	339.9	346.0	357.4	373.1	395.9	427.4	469.3	513.9	552.3	577.3
47.5°	298.9	302.7	305.4	314.3	327.2	346.7	373.7	407.1	450.0	493.2	526.8
50°	265.5	267.2	273.1	277.3	291.7	305.2	327.0	357.0	393.8	439.0	475.4
52.5°	238.9	239.9	243.5	249.0	257.3	269.1	286.4	314.1	347.3	386.6	424.2
55°	216.5	215.8	218.1	221.7	228.9	238.9	251.5	272.7	301.6	339.5	374.1
57.5°	194.5	194.5	196.6	199.1	203.1	211.4	223.9	240.6	263.8	297.4	328.1
60°	172.9	174.4	175.2	177.8	181.2	187.3	196.6	209.7	229.3	256.8	287.3
62.5°	153.9	153.9	155.4	156.2	160.6	165.1	171.9	183.1	198.5	223.0	246.7
65°	134.0	135.3	135.3	137.0	140.8	144.2	149.4	157.9	170.6	188.1	210.3
67.5°	117.1	117.1	118.2	119.0	121.1	123.4	128.1	134.6	145.4	159.4	179.5
70°	99.8	100.4	100.0	101.0	102.3	104.6	108.0	113.5	121.3	133.4	148.2
72.5°	84.1	83.3	83.7	84.8	85.4	86.9	89.0	93.2	99.6	109.3	120.1
75°	67.2	66.8	68.3	67.9	68.9	70.2	72.1	75.3	80.1	86.9	95.1
77.5°	52.4	51.8	52.4	52.8	53.3	54.3	55.8	57.7	61.1	65.5	72.9
80°	37.6	37.4	37.8	38.3	38.5	40.2	40.6	42.5	44.0	47.3	50.9
82.5°	24.9	25.4	25.6	26.0	25.8	26.6	27.1	28.3	29.6	31.3	34.0
85°	14.4	13.7	14.4	14.4	14.4	15.4	15.2	16.1	16.9	17.8	19.7
87.5°	5.1	5.1	5.3	5.5	5.5	6.1	5.9	6.3	7.2	7.2	7.8
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°	517.9	517.9	517.9	517.9	517.9	517.9	517.9	517.9	517.9	517.9	517.9
2.5°	538.6	536.3	534.6	529.7	526.8	524.0	521.5	518.7	515.8	512.0	509.6
5°	562.5	557.4	550.0	543.2	535.6	528.9	523.4	517.2	510.5	503.5	497.4
7.5°	588.9	579.4	568.0	555.5	543.7	533.7	523.4	513.7	504.1	494.8	486.2
10°	615.3	598.8	583.8	566.7	551.1	536.1	522.5	509.0	497.2	484.9	473.9
12.5°	639.8	620.0	598.0	576.6	555.7	536.3	519.6	503.1	487.9	473.3	460.4
15°	658.7	633.7	607.7	582.4	558.3	538.0	516.2	494.8	479.0	461.2	447.1
17.5°	680.2	650.6	624.8	594.4	564.4	531.6	508.6	485.3	466.3	449.2	435.0
20°	694.6	662.0	624.8	590.4	559.5	530.1	502.5	475.8	455.7	435.9	418.7
22.5°	706.0	672.4	631.4	595.5	556.8	521.3	491.2	465.0	441.4	422.6	406.3
25°	711.9	670.9	631.8	588.3	549.6	515.6	481.7	452.8	428.9	408.0	394.0
27.5°	712.1	670.1	623.8	580.7	539.2	502.5	469.1	440.5	413.7	393.6	376.9
30°	711.1	664.6	615.8	568.6	527.4	489.8	454.9	425.3	400.8	379.4	363.6
32.5°	704.3	657.0	603.7	554.2	509.4	471.6	439.5	410.1	383.9	364.4	347.7
35°	689.1	640.3	586.8	535.9	493.4	454.0	422.3	392.7	369.3	348.1	331.0
37.5°	669.7	624.0	569.7	516.4	470.5	433.3	403.5	375.6	351.1	331.7	314.5
40°	645.1	602.2	548.7	493.4	447.5	409.9	381.8	355.8	334.8	315.0	298.3
42.5°	611.5	578.5	523.6	469.7	421.7	386.2	358.9	337.4	315.8	297.8	281.1
45°	575.6	545.6	496.7	443.3	397.2	360.6	335.0	315.2	296.8	278.6	265.1
47.5°	535.9	511.3	466.1	413.9	368.4	336.1	310.9	293.2	276.3	262.3	248.8
50°	488.5	475.6	433.3	386.0	341.8	308.6	287.9	269.7	257.3	243.7	231.0
52.5°	444.5	434.2	399.7	353.2	313.1	283.9	261.7	247.3	235.1	225.1	215.0
55°	396.8	391.5	362.3	322.1	285.8	256.6	237.6	224.5	214.8	205.5	198.1
57.5°	352.8	352.4	326.6	292.1	256.6	231.9	213.7	202.9	194.5	187.9	181.6
60°	307.8	311.4	290.2	258.7	230.6	207.4	190.9	181.2	175.4	169.3	164.0
62.5°	267.0	272.5	253.2	228.5	200.8	181.8	169.1	161.7	155.4	150.9	146.9
65°	227.9	234.8	219.2	197.0	175.9	157.9	147.1	140.1	135.3	132.7	130.0
67.5°	193.4	197.2	186.6	169.3	151.8	136.1	127.3	121.1	116.9	115.8	112.7
70°	159.0	163.4	156.0	140.1	126.6	115.2	107.2	102.3	99.8	98.3	96.2
72.5°	131.3	133.2	125.8	114.8	104.0	94.5	88.6	85.0	82.0	81.4	80.3
75°	102.7	105.5	99.6	91.1	82.2	75.5	71.0	68.1	66.6	65.5	65.5
77.5°	77.6	79.9	76.5	69.1	63.8	57.9	55.0	52.2	51.6	50.5	50.9
80°	55.2	56.2	54.3	49.3	44.6	41.4	38.9	37.4	37.2	36.4	37.2
82.5°	36.6	36.8	34.7	32.3	28.7	27.1	25.4	24.7	24.5	24.5	24.1
85°	20.3	20.7	19.2	17.8	16.5	15.0	14.6	14.2	13.7	14.4	14.8
87.5°	7.8	8.0	7.8	7.2	6.8	6.3	6.1	6.6	5.9	6.3	6.6
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°	517.9	517.9	517.9	517.9	517.9	517.9	517.9	517.9	517.9	517.9	517.9
2.5°	506.0	504.4	501.8	497.6	494.6	491.5	490.2	490.6	489.3	487.7	488.1
5°	492.7	487.9	483.6	477.7	472.2	467.6	466.1	464.2	462.5	461.4	460.4
7.5°	478.6	471.8	465.5	459.5	453.2	447.3	445.0	443.3	442.4	439.5	438.2
10°	465.0	457.2	449.6	442.6	436.1	429.5	427.2	425.1	422.1	420.9	419.4
12.5°	450.7	442.8	434.6	426.1	419.6	414.3	410.3	408.8	405.9	404.6	403.7
15°	436.7	427.2	420.6	414.1	404.2	398.2	396.6	391.3	389.6	387.0	385.3
17.5°	422.8	413.9	404.2	396.6	390.4	383.0	379.0	376.7	373.5	371.2	368.0
20°	409.0	398.7	391.1	381.5	374.8	368.0	362.9	360.8	358.1	354.9	350.5
22.5°	395.7	384.3	376.9	368.0	359.6	351.7	347.5	344.6	339.1	338.4	334.4
25°	380.1	369.9	360.2	350.9	342.6	334.8	332.1	327.4	325.5	321.7	321.1
27.5°	365.3	354.5	343.9	333.8	326.6	321.1	316.2	313.3	311.4	308.4	308.6
30°	349.8	338.0	328.1	318.8	310.9	305.7	302.5	301.0	298.3	297.8	296.4
32.5°	333.3	322.6	312.2	304.0	295.9	291.3	289.8	288.3	286.6	286.8	286.4
35°	316.9	307.3	296.4	288.7	282.2	279.4	277.1	276.7	276.1	276.5	276.5
37.5°	300.8	290.4	281.3	274.4	270.6	266.8	265.7	265.5	265.7	266.1	267.2
40°	285.2	275.6	266.8	261.1	256.8	255.1	253.7	254.3	255.1	256.6	257.9
42.5°	269.5	260.4	253.0	247.3	243.3	242.5	242.7	243.9	244.1	246.3	248.6
45°	253.0	245.2	238.2	233.8	231.3	230.2	230.6	231.9	233.4	236.3	239.3
47.5°	237.8	230.8	224.7	220.3	218.4	217.9	218.8	220.5	223.9	226.8	230.2
50°	222.4	216.0	210.3	206.3	206.1	204.6	206.5	208.6	212.6	216.7	221.7
52.5°	207.2	201.0	196.2	193.0	192.1	192.1	194.5	198.3	201.9	207.2	211.8
55°	191.3	185.8	181.2	180.1	178.8	179.5	182.0	185.8	190.9	196.8	201.9
57.5°	175.0	170.4	167.0	165.5	164.9	167.0	170.0	174.0	180.5	186.4	191.9
60°	159.6	155.6	152.0	151.6	151.1	153.9	157.5	161.7	168.3	174.2	180.9
62.5°	143.1	139.9	137.6	137.0	137.0	139.7	143.7	149.2	155.4	161.7	168.9
65°	126.4	123.7	123.0	122.2	124.1	125.8	129.8	135.1	141.6	148.6	156.2
67.5°	111.0	109.3	108.0	108.0	109.5	112.7	116.3	121.5	128.3	135.7	142.5
70°	95.5	93.9	92.8	93.9	94.7	98.5	102.3	107.4	113.7	120.9	128.1
72.5°	79.5	79.7	79.9	79.7	80.5	84.1	87.9	92.8	98.9	105.9	112.5
75°	65.3	64.3	64.5	64.9	67.6	69.5	73.3	78.0	84.6	90.9	96.4
77.5°	50.7	50.3	51.4	51.4	53.9	56.2	59.4	64.0	69.8	75.5	79.9
80°	37.2	37.4	38.3	38.5	40.6	43.1	46.5	49.7	54.7	58.8	63.0
82.5°	25.2	25.6	26.6	28.1	29.0	30.4	33.4	36.8	40.4	44.6	47.1
85°	14.6	15.2	16.1	17.1	18.0	19.4	21.6	24.3	26.8	29.2	31.3
87.5°	7.2	7.2	7.8	8.2	8.9	9.7	11.2	12.3	14.0	15.6	16.5
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: P243503

CATALOG NUMBER: S124DRP-H350D840-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	517.9	517.9	517.9	517.9
2.5°	487.2	487.0	486.2	486.6
5°	459.8	457.6	457.4	456.6
7.5°	436.1	435.4	435.4	433.8
10°	417.9	416.0	416.4	415.6
12.5°	400.6	399.5	398.2	397.0
15°	381.1	381.1	381.1	377.5
17.5°	365.9	365.7	364.6	364.4
20°	350.0	349.2	346.5	348.4
22.5°	334.0	333.3	331.0	331.4
25°	319.0	318.3	317.9	316.2
27.5°	306.1	306.3	306.7	305.7
30°	296.4	295.7	296.6	295.5
32.5°	287.3	287.3	286.4	286.6
35°	276.9	277.8	278.0	277.8
37.5°	267.8	268.9	269.7	268.9
40°	259.4	260.2	261.1	260.8
42.5°	250.5	252.0	252.6	253.2
45°	242.0	243.9	245.0	245.2
47.5°	233.4	235.7	237.8	237.6
50°	224.9	227.9	229.8	229.6
52.5°	216.5	219.4	221.7	222.8
55°	206.9	210.7	212.9	214.8
57.5°	197.4	201.7	203.8	204.6
60°	186.9	190.7	193.4	194.0
62.5°	175.0	179.0	182.6	183.5
65°	162.8	167.2	170.0	170.4
67.5°	148.6	152.8	155.6	156.8
70°	134.0	137.2	140.1	142.0
72.5°	117.7	121.5	124.3	125.6
75°	100.8	105.1	106.5	107.4
77.5°	83.3	85.8	88.1	88.4
80°	65.7	68.9	69.8	71.9
82.5°	48.4	51.4	50.7	51.6
85°	31.9	33.0	33.6	33.8
87.5°	16.9	17.5	18.0	18.2
90°	0.0	0.0	0.0	0.0



TEST NUMBER: P243503
 CATALOG NUMBER: S124DRP-H350D840-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	15.87	17.44	16.24	17.76	18.07	16.16	17.73	16.53	18.05	18.36
	3H	17.31	18.73	17.69	19.06	19.42	17.55	18.96	17.92	19.29	19.65
	4H	17.83	19.16	18.23	19.51	19.89	18.03	19.36	18.43	19.71	20.09
	6H	18.18	19.41	18.59	19.78	20.17	18.35	19.58	18.76	19.94	20.33
	8H	18.28	19.45	18.70	19.84	20.24	18.43	19.60	18.85	19.99	20.39
	12H	18.33	19.45	18.76	19.83	20.26	18.47	19.60	18.90	19.98	20.41
4H	2H	17.01	18.34	17.41	18.69	19.06	16.95	18.28	17.35	18.63	19.01
	3H	18.51	19.62	18.92	20.02	20.42	18.66	19.77	19.07	20.17	20.57
	4H	19.09	20.09	19.52	20.50	20.94	19.25	20.25	19.68	20.67	21.10
	6H	19.50	20.37	19.95	20.81	21.27	19.65	20.53	20.11	20.97	21.42
	8H	19.62	20.43	20.08	20.88	21.34	19.76	20.57	20.22	21.02	21.48
	12H	19.69	20.42	20.17	20.90	21.37	19.82	20.56	20.30	21.03	21.50
8H	4H	19.51	20.33	19.97	20.77	21.24	19.59	20.41	20.05	20.85	21.32
	6H	20.01	20.69	20.50	21.18	21.65	20.12	20.80	20.62	21.29	21.76
	8H	20.17	20.78	20.68	21.29	21.78	20.28	20.89	20.80	21.40	21.89
	12H	20.29	20.83	20.80	21.32	21.88	20.40	20.94	20.91	21.43	21.99
12H	4H	19.56	20.29	20.04	20.76	21.23	19.62	20.36	20.11	20.83	21.30
	6H	20.08	20.69	20.59	21.19	21.68	20.18	20.79	20.69	21.30	21.79
	8H	20.29	20.83	20.80	21.32	21.88	20.41	20.94	20.91	21.43	22.00