

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: P243331

Luminaire Tested: S123DRP-H340D840-X4F0-XX-UDD-A-W

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-2024  
Report Number: P243331  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-59)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: S123DRP-H340D840-X4F0-XX-UDD-A-W  
Description: DEFINE 3 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.  
HIGH PERFORMANCE LIGHT ENGINE  
Light Source: (184) 4000K CCT, 80 CRI LEDS  
Ballast/Driver: -

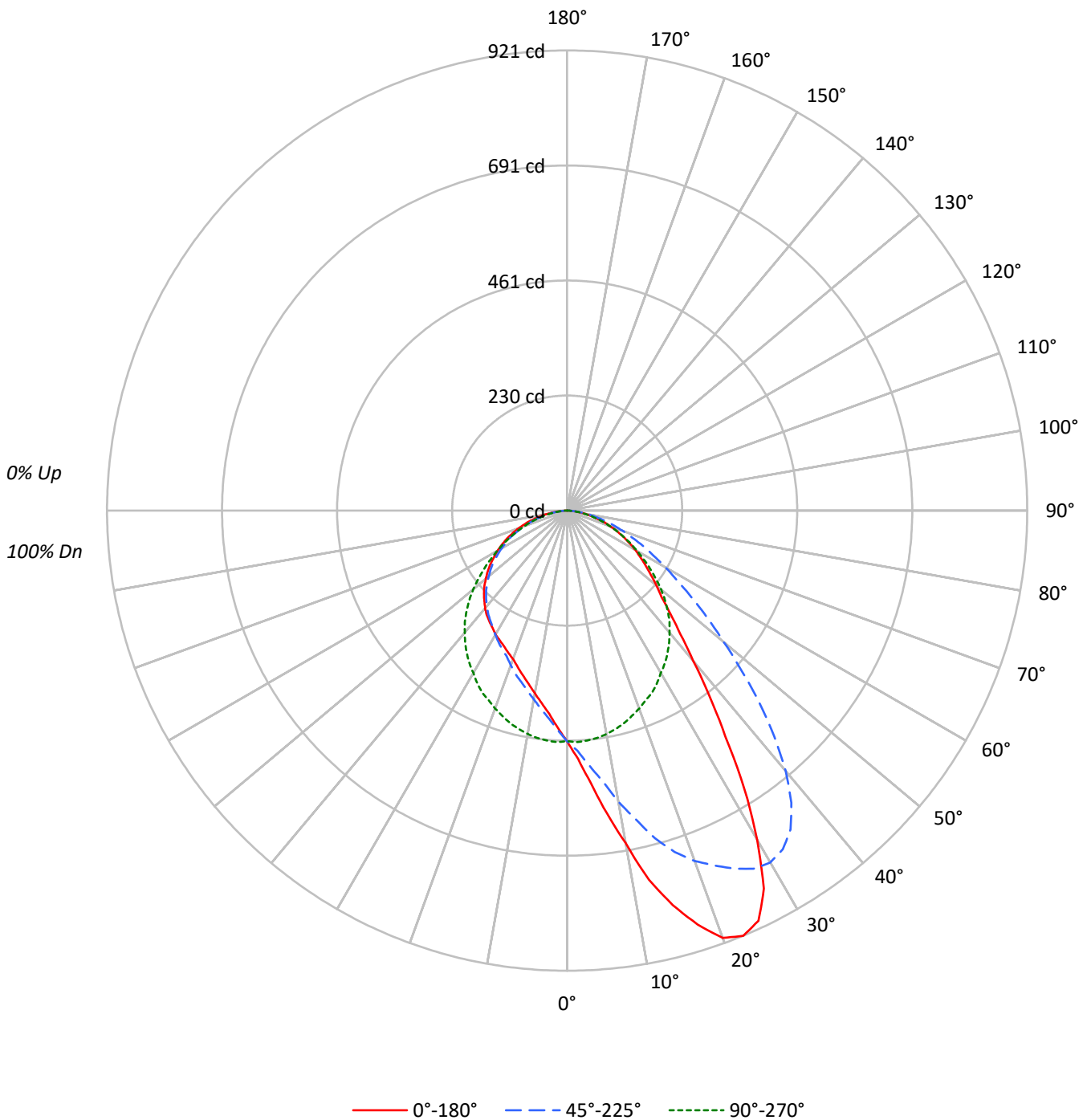
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1391.2 lumens  
Efficiency: N/A  
Efficacy: 124.2 lumens/watt  
Spacing Criteria (0/90/45): 1.39 / 1.21 / 1.5  
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

TEST NUMBER: P243331

CATALOG NUMBER: S123DRP-H340D840-X4F0-XX-UDD-A-W

### Luminous Intensity Polar Plot



TEST NUMBER: P243331

CATALOG NUMBER: S123DRP-H340D840-X4F0-XX-UDD-A-W

**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	105	101	98	107	103	99	96	99	96	93	95	92	90	91	89	87	85					85			
2	100	92	86	81	98	91	85	80	87	82	78	84	80	76	81	77	74	72					72			
3	92	82	74	68	89	80	73	67	77	71	66	75	69	65	72	68	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	50	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	51	44	39	50	43	39	49	43	38	36					36			
8	62	49	41	35	61	48	41	35	47	40	35	46	39	35	45	39	34	33					33			
9	58	45	37	32	57	45	37	32	43	36	31	42	36	31	41	35	31	29					29			
10	55	42	34	29	53	41	34	29	40	33	29	39	33	28	38	33	28	27					27			

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

	0°	45°	90°	135°	180°
0°	5595	5595	5595	5595	5595
5°	6667	6233	5621	5085	4969
10°	8325	7282	5588	4721	4569
15°	10260	8519	5528	4454	4287
20°	11740	9627	5440	4250	4079
25°	12116	10575	5379	4102	4003
30°	10644	11383	5251	4020	4006
35°	8170	11532	5173	3969	4010
40°	6214	10763	5048	3956	4040
45°	5000	9334	4884	3934	4037
50°	4399	7720	4624	3866	4002
55°	4055	6458	4284	3806	3975
60°	3823	5513	3920	3680	3893
65°	3554	4790	3582	3534	3820
70°	3250	4171	3214	3250	3654
75°	2890	3564	2801	2908	3405
80°	2422	2939	2317	2492	2981
85°	1711	2170	1669	1878	2239

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 55°  
 Vertical Angle: 45°  
 Luminance: 10479 cd/sqm



TEST NUMBER: P243331

CATALOG NUMBER: S123DRP-H340D840-X4F0-XX-UDD-A-W

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	45.4	3.3
10°-20°	145.8	10.5
20°-30°	240.8	17.3
30°-40°	275.6	19.8
40°-50°	249.8	18.0
50°-60°	201.8	14.5
60°-70°	140.6	10.1
70°-80°	73.7	5.3
80°-90°	17.6	1.3
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°	432.1	31.1
0°-40°	707.7	50.9
0°-60°	1159.3	83.3
0°-90°	1391.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1391.2	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	462	462	462	462	462	
5°	548	512	462	418	408	56
15°	818	679	440	355	342	233
25°	906	791	402	307	299	405
35°	552	779	350	268	271	350
45°	292	544	285	230	236	230
55°	192	306	203	180	188	172
65°	124	167	125	123	133	123
75°	62	76	60	62	73	66
85°	12	16	12	14	16	16
90°	0	0	0	0	0	

TEST NUMBER: P243331

CATALOG NUMBER: S123DRP-H340D840-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	461.6	461.6	461.6	461.6	461.6	461.6	461.6	461.6	461.6	461.6	461.6
2.5°	497.1	498.2	496.5	497.6	495.0	493.5	491.2	490.2	485.1	481.5	480.2
5°	547.9	547.9	548.3	545.7	542.8	537.5	530.5	526.1	521.0	512.3	507.9
7.5°	611.7	608.5	606.4	601.8	597.7	589.1	581.5	572.4	560.5	546.2	538.6
10°	676.4	679.8	677.6	672.8	662.4	648.3	637.1	624.0	605.6	591.6	571.7
12.5°	757.1	752.7	749.3	741.9	730.5	715.5	698.1	678.7	655.0	632.0	609.8
15°	817.6	818.2	818.0	808.3	797.1	776.8	760.7	728.4	698.4	678.9	642.1
17.5°	868.7	871.5	868.3	853.7	843.8	831.7	811.2	775.3	748.0	716.5	675.9
20°	910.1	910.6	905.5	894.7	883.3	869.8	842.7	815.2	788.6	746.3	707.7
22.5°	921.1	922.2	921.1	916.5	907.2	892.8	872.5	847.2	813.5	768.5	732.6
25°	905.9	905.3	908.9	906.1	905.7	901.1	887.7	867.2	834.0	790.7	745.1
27.5°	852.6	848.2	857.3	869.1	870.8	878.2	878.4	868.9	845.0	808.1	758.4
30°	760.5	764.7	769.2	793.9	807.6	826.9	843.6	849.7	840.6	813.3	766.8
32.5°	660.3	673.8	686.3	703.4	723.5	756.1	782.5	805.7	815.7	803.6	766.8
35°	552.1	559.3	578.9	600.7	629.7	655.0	707.4	741.3	771.5	779.3	757.1
37.5°	467.5	474.1	480.9	497.8	530.3	572.6	615.9	660.3	705.1	737.2	736.0
40°	392.7	394.2	400.1	414.7	441.8	479.4	524.8	578.3	636.4	680.2	698.6
42.5°	335.2	335.2	342.6	359.5	375.2	402.7	446.6	493.7	557.4	613.6	652.9
45°	291.7	292.1	298.0	310.1	322.3	343.9	376.4	420.8	486.4	544.5	599.2
47.5°	256.2	260.2	263.6	269.9	282.2	301.2	324.9	362.7	409.4	472.8	536.7
50°	233.3	234.2	236.7	240.5	250.0	262.5	283.0	311.8	353.2	409.4	473.9
52.5°	210.9	210.9	213.5	218.1	223.6	233.8	248.6	272.5	303.5	354.5	412.4
55°	191.9	192.6	193.0	196.8	201.4	209.0	220.7	236.3	264.8	305.6	356.2
57.5°	173.3	175.6	175.0	178.0	181.4	186.8	195.1	208.6	230.4	261.5	306.9
60°	157.7	157.3	158.3	159.6	161.9	165.7	173.3	183.3	201.4	227.4	264.6
62.5°	139.9	139.5	140.8	142.2	144.4	147.5	153.0	160.6	175.0	194.5	226.8
65°	123.9	123.4	124.1	124.9	127.2	129.8	134.0	140.3	149.9	167.0	191.7
67.5°	107.8	107.8	108.2	109.1	110.5	112.4	115.8	119.6	129.1	140.6	160.0
70°	91.7	91.9	91.9	92.8	94.1	95.5	98.3	101.7	107.6	117.7	133.4
72.5°	77.8	77.8	77.4	77.8	78.6	79.3	81.0	84.1	88.6	96.0	107.8
75°	61.7	62.8	62.6	62.4	63.0	64.0	65.5	68.1	70.8	76.1	85.0
77.5°	47.3	48.0	48.0	48.2	48.8	49.7	50.1	52.6	55.2	58.3	64.9
80°	34.7	35.1	34.7	34.9	35.3	36.1	37.0	37.4	39.3	42.1	45.2
82.5°	23.3	22.6	23.5	23.3	23.7	23.9	24.3	24.5	25.8	27.5	29.6
85°	12.3	13.3	13.1	13.5	13.1	13.3	13.5	14.4	14.6	15.6	16.9
87.5°	4.7	5.1	5.1	5.1	5.1	5.1	5.5	5.7	6.1	6.3	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



TEST NUMBER: P243331

CATALOG NUMBER: S123DRP-H340D840-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	461.6	461.6	461.6	461.6	461.6	461.6	461.6	461.6	461.6	461.6	461.6
2.5°	481.1	479.2	476.4	473.5	470.3	467.1	465.6	463.7	459.9	456.1	453.2
5°	504.3	499.0	491.8	486.6	479.0	471.8	466.1	462.0	455.9	448.5	443.7
7.5°	530.3	520.8	509.4	497.8	486.4	475.6	466.7	459.1	449.6	440.5	433.1
10°	561.0	542.6	526.7	509.8	492.9	477.7	465.0	454.0	441.8	430.8	421.7
12.5°	588.0	566.7	544.7	520.8	498.0	478.3	462.0	447.7	432.9	420.2	410.9
15°	617.8	587.8	557.4	530.3	502.6	478.5	457.2	440.5	423.6	409.2	398.4
17.5°	652.1	611.9	573.6	534.8	510.2	479.2	453.0	431.0	413.6	399.3	385.3
20°	672.4	632.4	585.5	545.5	505.0	473.0	443.9	421.7	401.4	384.9	373.5
22.5°	683.3	641.3	592.2	551.2	503.9	468.2	437.1	410.9	389.1	372.6	359.7
25°	698.8	641.3	595.8	546.6	505.6	462.5	427.4	402.2	379.4	360.4	346.9
27.5°	705.7	647.0	596.3	537.7	495.4	451.7	416.2	389.5	364.2	345.6	334.0
30°	711.5	648.0	587.8	530.7	483.6	439.6	405.0	375.2	351.5	333.7	321.5
32.5°	711.9	645.3	576.4	517.6	467.8	425.5	391.7	363.5	338.8	320.0	308.0
35°	708.1	638.5	563.3	497.6	449.4	410.9	377.1	349.6	324.4	306.5	294.2
37.5°	698.4	630.9	551.0	478.7	427.6	390.2	361.4	335.2	310.3	292.3	282.2
40°	677.6	618.7	535.0	458.7	405.6	368.2	343.0	319.0	296.8	278.2	268.0
42.5°	650.2	600.3	515.5	437.3	381.1	344.9	322.8	303.3	280.7	264.6	254.3
45°	611.3	575.3	496.1	414.9	356.8	321.3	301.0	284.9	265.5	249.4	240.3
47.5°	567.3	545.3	470.9	389.8	331.2	297.8	278.6	265.7	249.2	235.5	226.4
50°	517.8	509.6	443.2	364.4	307.3	273.1	255.3	245.2	231.2	220.2	212.4
52.5°	464.2	469.2	414.1	338.6	284.3	249.6	232.7	223.4	214.5	205.2	197.8
55°	409.6	421.7	378.8	310.5	257.9	227.6	211.2	202.7	196.1	188.3	183.0
57.5°	358.5	377.3	342.2	280.5	233.6	204.6	189.0	181.6	176.7	172.5	167.6
60°	308.8	330.6	304.6	252.4	209.3	182.8	168.9	161.7	159.4	156.2	151.5
62.5°	264.8	287.0	267.6	223.4	184.7	162.1	149.4	143.5	140.1	139.1	136.3
65°	223.6	244.3	229.5	193.2	161.5	141.4	130.2	124.9	123.0	122.8	120.7
67.5°	187.9	208.0	194.5	163.8	137.0	120.7	112.2	108.0	106.1	106.3	104.8
70°	154.9	169.1	161.1	137.0	116.3	101.9	95.3	90.7	89.2	89.2	88.8
72.5°	124.3	135.5	129.4	111.0	94.7	83.7	78.0	75.2	74.0	73.8	74.0
75°	97.2	107.0	101.5	87.1	74.8	66.6	61.7	59.8	59.2	58.8	59.0
77.5°	72.7	78.8	75.5	66.2	56.0	50.3	48.0	46.1	45.4	45.7	46.1
80°	51.4	54.7	52.8	46.9	40.2	36.4	34.7	33.2	32.6	33.2	33.2
82.5°	32.6	35.1	33.4	29.6	26.2	23.7	22.0	21.6	21.3	20.9	21.6
85°	17.8	19.0	18.2	16.9	14.6	13.5	12.3	12.0	12.0	12.0	12.0
87.5°	7.0	7.8	6.8	6.8	6.3	5.3	5.3	5.1	4.9	5.1	5.1
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: P243331

CATALOG NUMBER: S123DRP-H340D840-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	461.6	461.6	461.6	461.6	461.6	461.6	461.6	461.6	461.6	461.6	461.6
2.5°	451.9	449.2	447.5	445.1	442.4	438.8	437.3	438.8	437.9	436.5	437.1
5°	439.4	435.8	431.2	427.4	423.2	417.9	416.2	415.3	414.1	413.4	412.4
7.5°	427.2	421.9	416.2	410.9	404.8	400.1	398.0	396.5	396.1	392.9	391.7
10°	414.5	407.9	402.2	395.0	389.8	383.6	381.1	379.4	377.5	375.4	373.9
12.5°	401.2	394.6	387.4	380.7	375.4	368.6	365.2	363.3	361.9	360.4	358.7
15°	389.5	383.0	373.1	368.0	361.6	354.9	352.8	348.5	349.0	346.4	344.7
17.5°	377.3	367.6	360.6	353.0	348.3	343.5	339.5	335.0	334.4	332.5	331.8
20°	363.5	353.4	348.5	340.7	334.4	329.5	325.9	325.5	324.2	321.5	320.4
22.5°	350.0	341.8	335.0	327.8	322.1	315.8	314.1	314.7	312.4	311.8	309.4
25°	337.8	330.6	322.1	315.4	310.7	306.7	304.4	303.5	302.7	302.0	301.0
27.5°	324.7	317.0	309.9	304.4	299.9	297.2	295.7	293.8	293.6	293.6	293.2
30°	311.6	304.8	299.9	293.0	288.9	287.2	286.0	285.3	286.0	286.0	286.2
32.5°	299.5	293.0	287.2	282.4	278.4	277.1	276.9	276.9	277.7	277.7	278.4
35°	287.0	280.5	275.2	271.8	268.4	268.2	268.4	268.9	269.9	270.1	271.0
37.5°	273.5	268.4	264.4	260.2	259.3	259.8	260.2	260.6	261.0	262.7	262.7
40°	261.0	257.2	253.2	250.5	249.0	250.0	250.7	250.9	252.2	253.2	254.1
42.5°	248.8	245.2	242.0	239.7	239.1	239.9	240.5	241.2	242.4	243.3	244.8
45°	235.0	232.7	230.0	228.1	228.3	229.5	229.5	231.7	232.5	232.9	234.0
47.5°	222.4	219.8	217.9	217.1	216.9	217.9	218.6	220.2	220.7	222.1	223.0
50°	208.8	206.9	205.4	204.4	204.6	205.0	206.5	208.2	208.6	210.3	211.8
52.5°	194.7	193.0	191.7	192.1	192.8	192.8	194.2	195.3	196.4	197.6	199.1
55°	180.7	178.4	178.6	178.0	178.6	180.1	180.7	182.4	183.3	183.9	186.0
57.5°	165.5	165.1	164.4	163.8	165.1	165.7	166.8	167.8	169.3	170.1	171.6
60°	149.9	149.2	149.2	150.1	150.5	151.8	153.5	154.1	154.5	156.2	158.1
62.5°	135.5	134.9	134.6	135.9	135.9	137.2	137.8	138.9	140.6	141.2	143.7
65°	120.1	119.6	119.6	120.7	120.9	123.2	123.2	123.2	124.3	126.6	127.9
67.5°	104.0	104.2	104.8	105.5	106.3	107.0	107.2	108.4	110.1	111.6	114.1
70°	87.9	89.0	90.3	90.0	90.7	91.7	91.9	93.2	94.7	96.6	99.6
72.5°	73.6	74.2	75.5	75.5	76.3	76.9	78.0	78.8	80.7	82.4	83.7
75°	59.2	59.4	60.5	61.1	61.7	62.1	63.2	64.7	65.7	67.2	69.1
77.5°	46.5	46.1	46.9	47.1	47.6	48.4	49.2	50.7	51.6	53.3	53.9
80°	33.0	33.8	34.0	34.2	34.7	35.7	36.4	37.0	37.8	39.3	39.9
82.5°	21.8	22.2	22.8	23.0	23.5	23.7	23.9	24.9	25.6	26.0	28.1
85°	12.7	13.3	12.9	12.9	13.3	13.5	14.4	14.4	15.2	14.8	15.9
87.5°	5.5	5.3	5.3	5.5	5.3	5.1	5.7	5.7	5.5	5.7	5.7
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: P243331

CATALOG NUMBER: S123DRP-H340D840-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	461.6	461.6	461.6	461.6
2.5°	436.0	436.0	434.4	435.0
5°	410.3	411.1	409.0	408.4
7.5°	391.2	390.4	388.9	388.9
10°	372.6	371.8	371.2	371.2
12.5°	356.6	355.7	354.5	355.5
15°	342.2	342.4	341.6	341.6
17.5°	331.2	329.3	328.7	328.5
20°	318.1	318.5	317.7	316.2
22.5°	309.9	308.8	308.0	307.7
25°	301.4	300.4	300.1	299.3
27.5°	293.0	293.2	292.5	292.5
30°	286.0	286.6	286.0	286.2
32.5°	279.0	279.0	279.0	278.2
35°	271.4	271.6	271.4	271.0
37.5°	263.6	263.6	263.8	264.2
40°	254.9	254.9	255.3	255.3
42.5°	244.5	245.6	246.2	245.2
45°	235.2	235.5	235.7	235.5
47.5°	224.9	224.3	224.5	224.9
50°	212.0	213.5	213.5	212.2
52.5°	199.5	200.0	200.8	200.8
55°	187.3	187.5	187.7	188.1
57.5°	173.3	173.5	173.5	173.3
60°	159.4	160.6	160.4	160.6
62.5°	144.4	146.3	146.9	146.7
65°	130.2	130.6	131.7	133.2
67.5°	115.2	116.3	117.9	117.5
70°	100.4	101.9	102.3	103.1
72.5°	85.6	87.5	87.9	88.4
75°	71.2	72.1	72.9	72.7
77.5°	55.6	56.9	58.3	57.5
80°	41.6	41.9	43.1	42.7
82.5°	27.5	29.2	29.2	28.3
85°	16.1	16.1	16.1	16.1
87.5°	5.5	5.3	5.7	5.5
90°	0.0	0.0	0.0	0.0

TEST NUMBER: P243331

CATALOG NUMBER: S123DRP-H340D840-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	16.38	17.94	16.75	18.26	18.57	16.91	18.47	17.28	18.79	19.10
	3H	17.90	19.30	18.28	19.63	19.99	18.25	19.65	18.63	19.98	20.34
	4H	18.45	19.77	18.85	20.11	20.49	18.71	20.02	19.11	20.37	20.75
	6H	18.81	20.03	19.22	20.39	20.79	19.01	20.23	19.42	20.59	20.98
	8H	18.91	20.07	19.33	20.46	20.86	19.08	20.24	19.51	20.63	21.03
	12H	18.96	20.07	19.39	20.45	20.88	19.12	20.23	19.55	20.61	21.04
4H	2H	17.54	18.86	17.94	19.21	19.59	17.70	19.02	18.10	19.37	19.75
	3H	19.10	20.20	19.51	20.60	21.00	19.49	20.59	19.90	20.99	21.39
	4H	19.70	20.69	20.13	21.10	21.54	20.06	21.05	20.49	21.46	21.90
	6H	20.13	20.99	20.58	21.43	21.89	20.43	21.29	20.88	21.73	22.19
	8H	20.25	21.05	20.71	21.49	21.96	20.52	21.32	20.98	21.76	22.23
	12H	20.32	21.04	20.80	21.52	21.99	20.57	21.29	21.05	21.77	22.24
8H	4H	20.16	20.97	20.62	21.41	21.88	20.36	21.17	20.82	21.61	22.08
	6H	20.66	21.33	21.16	21.82	22.29	20.87	21.54	21.37	22.03	22.50
	8H	20.82	21.42	21.34	21.93	22.42	21.02	21.61	21.53	22.12	22.61
	12H	20.94	21.47	21.45	21.96	22.52	21.12	21.64	21.63	22.14	22.70
12H	4H	20.21	20.93	20.69	21.41	21.88	20.37	21.10	20.86	21.57	22.04
	6H	20.73	21.33	21.24	21.84	22.33	20.90	21.50	21.42	22.01	22.50
	8H	20.94	21.47	21.45	21.96	22.52	21.11	21.64	21.62	22.13	22.69