

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: P243346

Luminaire Tested: S123DRP-H340D940-X4F0-XX-UDD-A-W

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-2024  
Report Number: P243346  
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-H340D940-X4F0-XX-UDD-A-W  
Description: DEFINE 3 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.  
HIGH PERFORMANCE LIGHT ENGINE  
Light Source: (184) 4000K CCT, 90 CRI LEDS  
Ballast/Driver: -

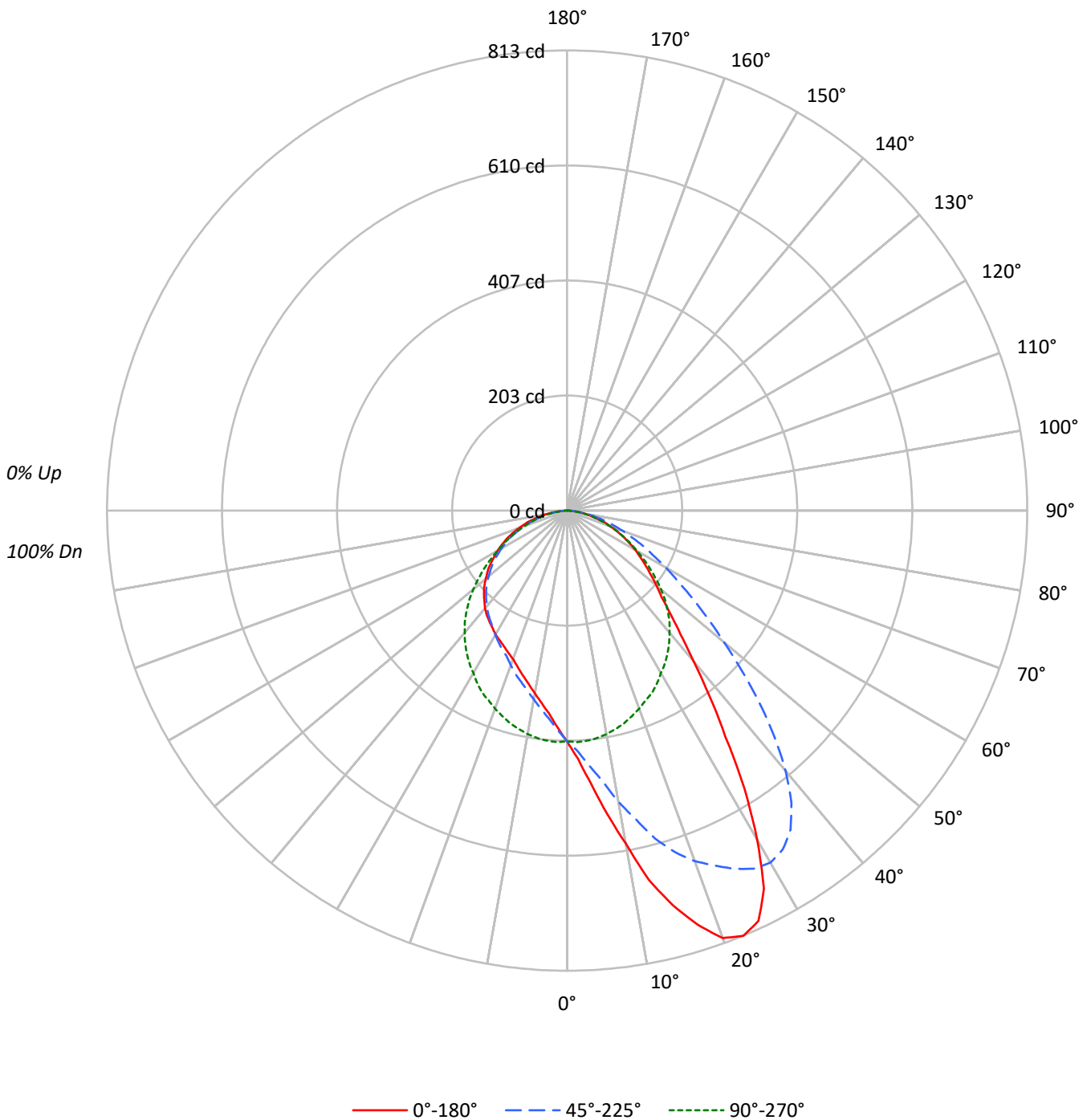
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1228.5 lumens  
Efficiency: N/A  
Efficacy: 109.7 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

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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	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°	4941	4941	4941	4941	4941
5°	5887	5505	4964	4490	4388
10°	7350	6430	4934	4169	4033
15°	9059	7523	4880	3933	3785
20°	10367	8501	4802	3754	3601
25°	10698	9338	4751	3622	3535
30°	9399	10052	4637	3549	3537
35°	7214	10182	4568	3504	3541
40°	5487	9503	4456	3494	3568
45°	4416	8242	4313	3475	3564
50°	3885	6817	4083	3413	3534
55°	3582	5704	3783	3360	3510
60°	3375	4868	3462	3248	3438
65°	3138	4228	3164	3121	3373
70°	2871	3686	2839	2871	3229
75°	2552	3147	2473	2571	3007
80°	2136	2590	2045	2199	2632
85°	1502	1919	1474	1655	1975

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 55°  
 Vertical Angle: 45°  
 Luminance: 9253 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	40.1	3.3
10°-20°	128.8	10.5
20°-30°	212.7	17.3
30°-40°	243.4	19.8
40°-50°	220.6	18.0
50°-60°	178.2	14.5
60°-70°	124.2	10.1
70°-80°	65.1	5.3
80°-90°	15.5	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°	381.5	31.1
0°-40°	624.9	50.9
0°-60°	1023.7	83.3
0°-90°	1228.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1228.5	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	408	408	408	408	408	
5°	484	452	408	369	361	50
15°	722	600	389	313	302	205
25°	800	698	355	271	264	357
35°	488	688	309	237	239	309
45°	258	481	252	203	208	203
55°	170	270	179	159	166	152
65°	109	147	110	109	118	108
75°	54	67	53	55	64	58
85°	11	14	11	12	14	14
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°	407.6	407.6	407.6	407.6	407.6	407.6	407.6	407.6	407.6	407.6	407.6
2.5°	439.0	439.9	438.4	439.3	437.1	435.8	433.7	432.8	428.3	425.2	424.0
5°	483.8	483.8	484.1	481.9	479.3	474.6	468.5	464.5	460.1	452.4	448.5
7.5°	540.1	537.3	535.5	531.4	527.8	520.2	513.4	505.4	495.0	482.3	475.5
10°	597.2	600.2	598.4	594.1	584.9	572.4	562.5	550.9	534.7	522.4	504.8
12.5°	668.5	664.6	661.6	655.1	645.0	631.8	616.5	599.3	578.4	558.0	538.4
15°	721.9	722.5	722.3	713.7	703.8	685.9	671.7	643.1	616.6	599.5	567.0
17.5°	767.1	769.5	766.7	753.8	745.0	734.4	716.3	684.6	660.5	632.7	596.9
20°	803.7	804.0	799.5	790.0	780.0	768.0	744.1	719.9	696.3	659.0	624.9
22.5°	813.4	814.3	813.4	809.3	801.0	788.3	770.4	748.0	718.4	678.6	646.9
25°	799.9	799.4	802.5	800.1	799.7	795.6	783.9	765.8	736.5	698.2	657.9
27.5°	752.9	749.0	757.0	767.4	768.9	775.5	775.7	767.3	746.2	713.5	669.6
30°	671.5	675.2	679.2	701.0	713.1	730.1	744.9	750.3	742.3	718.2	677.1
32.5°	583.1	595.0	606.0	621.1	638.9	667.6	690.9	711.5	720.2	709.6	677.1
35°	487.5	493.8	511.2	530.4	556.0	578.4	624.7	654.5	681.2	688.1	668.5
37.5°	412.8	418.6	424.6	439.5	468.3	505.6	543.9	583.1	622.6	651.0	649.9
40°	346.8	348.1	353.3	366.2	390.1	423.3	463.4	510.6	562.0	600.6	616.8
42.5°	296.0	296.0	302.5	317.5	331.3	355.5	394.4	436.0	492.2	541.8	576.5
45°	257.6	257.9	263.2	273.8	284.6	303.7	332.4	371.6	429.4	480.8	529.1
47.5°	226.2	229.7	232.7	238.3	249.2	266.0	286.9	320.3	361.5	417.5	473.9
50°	206.0	206.8	209.0	212.4	220.8	231.8	249.9	275.3	311.9	361.5	418.4
52.5°	186.3	186.3	188.5	192.6	197.5	206.4	219.5	240.6	268.0	313.0	364.1
55°	169.5	170.0	170.4	173.8	177.9	184.6	194.8	208.7	233.9	269.9	314.5
57.5°	153.0	155.1	154.5	157.1	160.1	165.0	172.3	184.2	203.4	230.9	271.0
60°	139.2	138.9	139.8	140.9	143.0	146.3	153.0	161.8	177.9	200.8	233.7
62.5°	123.6	123.2	124.3	125.6	127.5	130.3	135.1	141.8	154.5	171.7	200.3
65°	109.4	109.0	109.6	110.3	112.4	114.6	118.3	123.9	132.3	147.4	169.3
67.5°	95.2	95.2	95.6	96.3	97.6	99.3	102.3	105.6	114.0	124.1	141.3
70°	81.0	81.2	81.2	81.9	83.1	84.4	86.8	89.8	95.0	104.0	117.8
72.5°	68.7	68.7	68.3	68.7	69.4	70.0	71.5	74.3	78.2	84.7	95.2
75°	54.5	55.4	55.2	55.1	55.6	56.6	57.9	60.1	62.5	67.2	75.0
77.5°	41.8	42.4	42.4	42.6	43.1	43.9	44.2	46.5	48.7	51.5	57.3
80°	30.6	31.0	30.6	30.8	31.2	31.9	32.7	33.0	34.7	37.1	39.9
82.5°	20.5	20.0	20.7	20.5	20.9	21.1	21.5	21.6	22.8	24.3	26.1
85°	10.8	11.8	11.6	11.9	11.6	11.8	11.9	12.7	12.9	13.8	14.9
87.5°	4.1	4.5	4.5	4.5	4.5	4.5	4.9	5.0	5.4	5.6	6.0
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°	407.6	407.6	407.6	407.6	407.6	407.6	407.6	407.6	407.6	407.6	407.6
2.5°	424.8	423.1	420.7	418.1	415.3	412.5	411.2	409.5	406.1	402.8	400.1
5°	445.3	440.6	434.3	429.6	422.9	416.6	411.5	408.0	402.6	396.0	391.7
7.5°	468.3	459.9	449.8	439.5	429.4	419.9	412.1	405.4	397.0	388.9	382.4
10°	495.3	479.1	465.1	450.2	435.2	421.8	410.6	400.9	390.1	380.4	372.3
12.5°	519.2	500.4	481.0	459.9	439.7	422.4	408.0	395.3	382.2	371.0	362.8
15°	545.5	519.0	492.2	468.3	443.8	422.5	403.7	388.9	374.0	361.3	351.8
17.5°	575.8	540.3	506.5	472.2	450.5	423.1	400.0	380.6	365.2	352.6	340.2
20°	593.7	558.4	517.0	481.7	445.9	417.7	391.9	372.3	354.4	339.9	329.8
22.5°	603.4	566.3	523.0	486.7	444.9	413.4	386.0	362.8	343.6	329.0	317.7
25°	617.0	566.3	526.1	482.6	446.4	408.4	377.4	355.2	335.0	318.2	306.3
27.5°	623.2	571.3	526.5	474.8	437.5	398.8	367.5	344.0	321.6	305.1	294.9
30°	628.2	572.2	519.0	468.6	427.0	388.2	357.6	331.3	310.4	294.7	283.9
32.5°	628.6	569.8	509.0	457.1	413.0	375.7	345.8	321.0	299.2	282.6	271.9
35°	625.2	563.8	497.4	439.3	396.8	362.8	333.0	308.7	286.5	270.6	259.8
37.5°	616.6	557.1	486.6	422.7	377.6	344.5	319.1	296.0	274.0	258.1	249.2
40°	598.4	546.3	472.4	405.0	358.2	325.1	302.9	281.6	262.0	245.6	236.7
42.5°	574.1	530.0	455.2	386.1	336.5	304.6	285.0	267.8	247.9	233.7	224.5
45°	539.8	508.0	438.0	366.4	315.0	283.7	265.8	251.6	234.4	220.2	212.2
47.5°	500.9	481.5	415.8	344.2	292.5	263.0	246.0	234.6	220.0	207.9	199.9
50°	457.3	450.0	391.4	321.8	271.4	241.1	225.5	216.5	204.2	194.5	187.6
52.5°	409.9	414.3	365.6	299.0	251.0	220.4	205.5	197.3	189.4	181.2	174.7
55°	361.7	372.3	334.5	274.2	227.7	201.0	186.4	179.0	173.2	166.3	161.6
57.5°	316.5	333.1	302.2	247.7	206.2	180.7	166.9	160.3	156.0	152.3	148.0
60°	272.7	291.9	268.9	222.8	184.8	161.4	149.1	142.8	140.7	137.9	133.8
62.5°	233.9	253.5	236.3	197.3	163.1	143.1	132.0	126.7	123.7	122.8	120.4
65°	197.5	215.8	202.7	170.6	142.6	124.9	115.0	110.3	108.6	108.4	106.6
67.5°	165.9	183.6	171.7	144.6	120.9	106.6	99.1	95.4	93.7	93.9	92.6
70°	136.8	149.3	142.2	120.9	102.6	90.0	84.2	80.1	78.8	78.8	78.4
72.5°	109.7	119.6	114.2	98.0	83.6	73.9	68.9	66.4	65.3	65.1	65.3
75°	85.9	94.4	89.6	76.9	66.1	58.8	54.5	52.8	52.3	51.9	52.1
77.5°	64.2	69.6	66.6	58.4	49.5	44.4	42.4	40.7	40.1	40.3	40.7
80°	45.4	48.3	46.7	41.4	35.5	32.1	30.6	29.3	28.7	29.3	29.3
82.5°	28.7	31.0	29.5	26.1	23.1	20.9	19.4	19.0	18.9	18.5	19.0
85°	15.7	16.8	16.1	14.9	12.9	11.9	10.8	10.6	10.6	10.6	10.6
87.5°	6.2	6.9	6.0	6.0	5.6	4.7	4.7	4.5	4.3	4.5	4.5
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°	407.6	407.6	407.6	407.6	407.6	407.6	407.6	407.6	407.6	407.6	407.6
2.5°	399.0	396.6	395.1	393.1	390.6	387.5	386.1	387.5	386.7	385.4	386.0
5°	388.0	384.8	380.7	377.4	373.6	369.0	367.5	366.7	365.6	365.1	364.1
7.5°	377.2	372.5	367.5	362.8	357.4	353.3	351.4	350.1	349.8	347.0	345.8
10°	366.0	360.2	355.2	348.8	344.2	338.7	336.5	335.0	333.3	331.5	330.2
12.5°	354.2	348.4	342.1	336.1	331.5	325.5	322.5	320.8	319.5	318.2	316.7
15°	344.0	338.2	329.4	324.9	319.3	313.4	311.5	307.8	308.1	305.9	304.4
17.5°	333.1	324.6	318.4	311.7	307.6	303.3	299.7	295.8	295.3	293.6	293.0
20°	321.0	312.1	307.8	300.9	295.3	291.0	287.8	287.4	286.3	283.9	282.9
22.5°	309.1	301.8	295.8	289.5	284.4	278.8	277.3	277.9	275.8	275.3	273.2
25°	298.2	291.9	284.4	278.5	274.4	270.8	268.8	268.0	267.3	266.7	265.8
27.5°	286.7	280.0	273.6	268.8	264.8	262.4	261.1	259.4	259.2	259.2	258.9
30°	275.1	269.1	264.8	258.7	255.1	253.6	252.5	252.0	252.5	252.5	252.7
32.5°	264.5	258.7	253.6	249.3	245.8	244.7	244.5	244.5	245.2	245.2	245.8
35°	253.5	247.7	243.0	240.0	237.0	236.8	237.0	237.4	238.3	238.5	239.3
37.5°	241.5	237.0	233.5	229.7	229.0	229.4	229.7	230.1	230.5	232.0	232.0
40°	230.5	227.1	223.6	221.2	219.9	220.8	221.3	221.5	222.7	223.6	224.3
42.5°	219.7	216.5	213.7	211.6	211.1	211.8	212.4	213.0	214.1	214.8	216.1
45°	207.5	205.5	203.1	201.4	201.6	202.7	202.7	204.6	205.3	205.7	206.6
47.5°	196.3	194.1	192.4	191.7	191.5	192.4	193.0	194.5	194.8	196.2	196.9
50°	184.4	182.7	181.4	180.5	180.7	181.0	182.3	183.8	184.2	185.7	187.0
52.5°	171.9	170.4	169.3	169.7	170.2	170.2	171.5	172.5	173.4	174.5	175.8
55°	159.6	157.5	157.7	157.1	157.7	159.0	159.6	161.1	161.8	162.4	164.2
57.5°	146.1	145.8	145.2	144.6	145.8	146.3	147.3	148.2	149.5	150.2	151.5
60°	132.3	131.8	131.8	132.5	132.9	134.0	135.5	136.1	136.4	137.9	139.6
62.5°	119.6	119.1	118.9	120.0	120.0	121.1	121.7	122.6	124.1	124.7	126.9
65°	106.0	105.6	105.6	106.6	106.8	108.8	108.8	108.8	109.7	111.8	112.9
67.5°	91.8	92.0	92.6	93.1	93.9	94.4	94.6	95.7	97.2	98.5	100.8
70°	77.6	78.6	79.7	79.5	80.1	81.0	81.2	82.3	83.6	85.3	87.9
72.5°	64.9	65.5	66.6	66.6	67.4	67.9	68.9	69.6	71.3	72.8	73.9
75°	52.3	52.4	53.4	53.9	54.5	54.9	55.8	57.1	58.0	59.4	61.0
77.5°	41.1	40.7	41.4	41.6	42.0	42.7	43.5	44.8	45.5	47.0	47.6
80°	29.1	29.9	30.0	30.2	30.6	31.5	32.1	32.7	33.4	34.7	35.3
82.5°	19.2	19.6	20.2	20.3	20.7	20.9	21.1	22.0	22.6	23.0	24.8
85°	11.2	11.8	11.4	11.4	11.8	11.9	12.7	12.7	13.4	13.1	14.0
87.5°	4.9	4.7	4.7	4.9	4.7	4.5	5.0	5.0	4.9	5.0	5.0
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: P243346

CATALOG NUMBER: S123DRP-H340D940-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	407.6	407.6	407.6	407.6
2.5°	385.0	385.0	383.5	384.1
5°	362.3	363.0	361.1	360.6
7.5°	345.5	344.7	343.4	343.4
10°	329.0	328.3	327.7	327.7
12.5°	314.9	314.1	313.0	313.9
15°	302.2	302.3	301.6	301.6
17.5°	292.5	290.8	290.2	290.0
20°	280.9	281.3	280.5	279.2
22.5°	273.6	272.7	271.9	271.7
25°	266.1	265.2	265.0	264.3
27.5°	258.7	258.9	258.3	258.3
30°	252.5	253.1	252.5	252.7
32.5°	246.4	246.4	246.4	245.6
35°	239.6	239.8	239.6	239.3
37.5°	232.7	232.7	232.9	233.3
40°	225.1	225.1	225.5	225.5
42.5°	215.9	216.9	217.4	216.5
45°	207.7	207.9	208.1	207.9
47.5°	198.6	198.0	198.2	198.6
50°	187.2	188.5	188.5	187.4
52.5°	176.2	176.6	177.3	177.3
55°	165.4	165.5	165.7	166.1
57.5°	153.0	153.2	153.2	153.0
60°	140.7	141.8	141.7	141.8
62.5°	127.5	129.2	129.7	129.5
65°	115.0	115.3	116.3	117.6
67.5°	101.7	102.6	104.1	103.8
70°	88.7	90.0	90.3	91.1
72.5°	75.6	77.3	77.6	78.0
75°	62.9	63.6	64.4	64.2
77.5°	49.1	50.2	51.5	50.8
80°	36.8	37.0	38.1	37.7
82.5°	24.3	25.8	25.8	25.0
85°	14.2	14.2	14.2	14.2
87.5°	4.9	4.7	5.0	4.9
90°	0.0	0.0	0.0	0.0



TEST NUMBER: P243346  
 CATALOG NUMBER: S123DRP-H340D940-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	15.95	17.51	16.31	17.82	18.14	16.48	18.04	16.84	18.35	18.67
	3H	17.47	18.87	17.85	19.20	19.56	17.82	19.22	18.20	19.55	19.91
	4H	18.01	19.33	18.41	19.68	20.06	18.27	19.59	18.67	19.94	20.32
	6H	18.38	19.59	18.79	19.96	20.35	18.58	19.79	18.99	20.16	20.55
	8H	18.47	19.64	18.90	20.02	20.43	18.65	19.81	19.08	20.20	20.60
	12H	18.53	19.64	18.96	20.02	20.45	18.69	19.80	19.12	20.18	20.61
4H	2H	17.11	18.43	17.51	18.78	19.16	17.27	18.59	17.67	18.94	19.32
	3H	18.67	19.77	19.08	20.17	20.57	19.06	20.16	19.47	20.56	20.96
	4H	19.27	20.25	19.70	20.67	21.11	19.62	20.61	20.06	21.03	21.47
	6H	19.69	20.55	20.15	21.00	21.45	19.99	20.85	20.45	21.30	21.75
	8H	19.81	20.62	20.27	21.06	21.53	20.08	20.89	20.55	21.33	21.80
	12H	19.89	20.61	20.37	21.09	21.56	20.14	20.86	20.62	21.33	21.80
8H	4H	19.73	20.53	20.19	20.98	21.44	19.93	20.73	20.39	21.18	21.64
	6H	20.23	20.90	20.73	21.39	21.86	20.44	21.10	20.93	21.59	22.07
	8H	20.39	20.99	20.90	21.50	21.98	20.58	21.18	21.10	21.69	22.18
	12H	20.51	21.04	21.02	21.53	22.09	20.68	21.21	21.19	21.70	22.27
12H	4H	19.78	20.50	20.26	20.97	21.44	19.94	20.66	20.42	21.14	21.61
	6H	20.30	20.90	20.81	21.41	21.89	20.47	21.07	20.98	21.58	22.07
	8H	20.51	21.03	21.02	21.53	22.09	20.68	21.20	21.18	21.69	22.26