

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: P243322

Luminaire Tested: S123DRP-H560D830-X4F0-XX-UDD-A-W

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2024
Report Number: P243322
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-H560D830-X4F0-XX-UDD-A-W
Description: DEFINE 3 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 3000K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

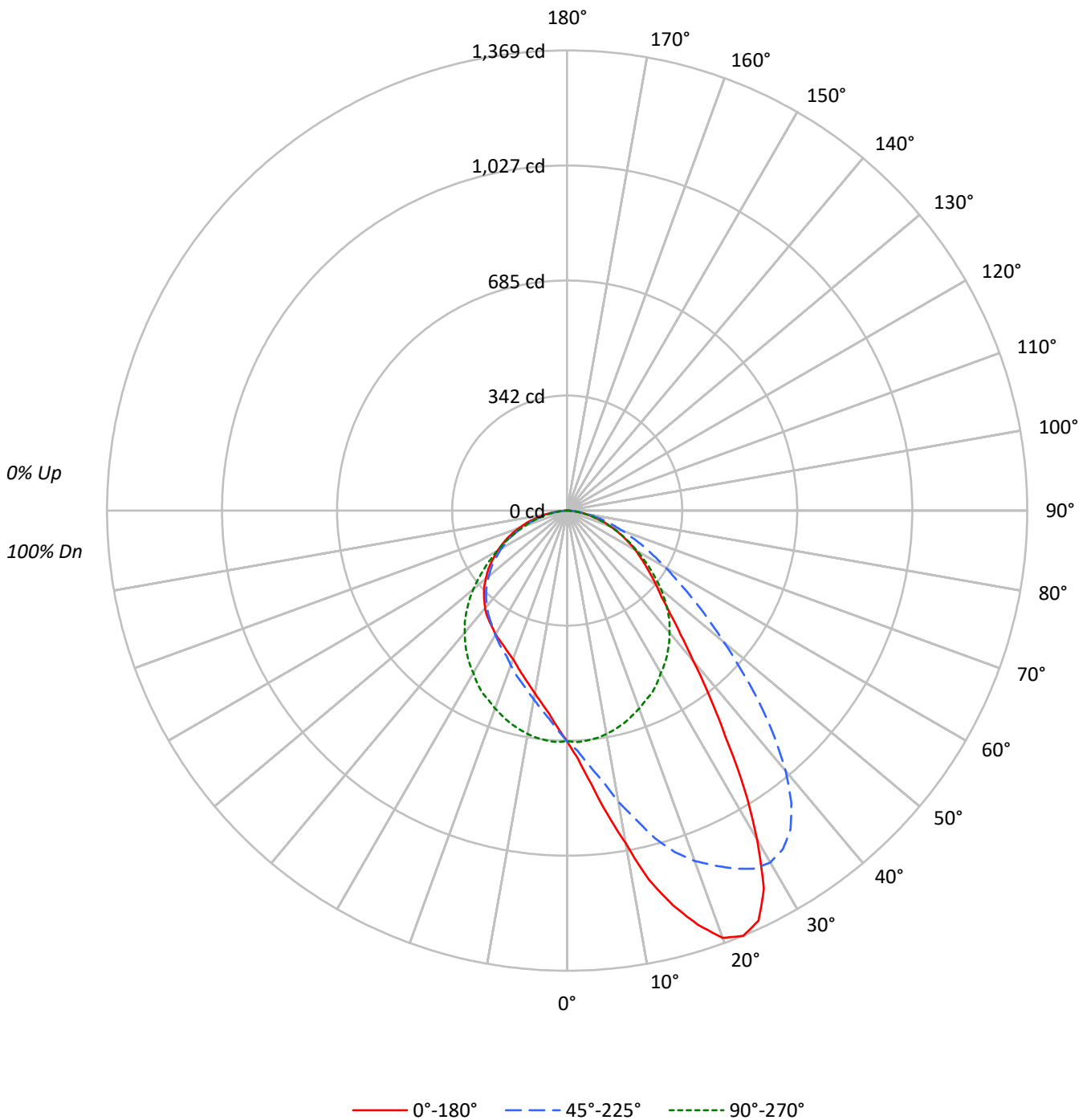
Lumens per Lamp: N/A
Luminaire Lumens: 2067.9 lumens
Efficiency: N/A
Efficacy: 120.2 lumens/watt
Spacing Criteria (0/90/45): 1.39 / 1.21 / 1.5
Luminous Opening: Rectangular (W 3.88' x L: 0.23' x H: 0')
CIE Type: Direct

Input Watts (W): 17.2
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	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°	8316	8316	8316	8316	8316
5°	9908	9266	8357	7557	7386
10°	12373	10823	8306	7018	6790
15°	15249	12663	8216	6619	6371
20°	17450	14309	8085	6318	6063
25°	18008	15719	7996	6097	5950
30°	15822	16920	7804	5976	5954
35°	12143	17140	7689	5900	5960
40°	9236	15997	7502	5881	6005
45°	7431	13873	7260	5849	6000
50°	6540	11475	6872	5746	5948
55°	6029	9601	6367	5657	5909
60°	5682	8194	5825	5469	5789
65°	5280	7119	5326	5254	5676
70°	4830	6202	4777	4830	5433
75°	4295	5297	4163	4327	5063
80°	3595	4363	3441	3707	4433
85°	2531	3227	2489	2795	3324

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 55°
 Vertical Angle: 45°
 Luminance: 15575 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	67.5	3.3
10°-20°	216.7	10.5
20°-30°	358.0	17.3
30°-40°	409.7	19.8
40°-50°	371.3	18.0
50°-60°	300.0	14.5
60°-70°	209.0	10.1
70°-80°	109.6	5.3
80°-90°	26.1	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°	642.2	31.1
0°-40°	1051.9	50.9
0°-60°	1723.1	83.3
0°-90°	2067.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2067.9	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	686	686	686	686	686	
5°	814	762	687	621	607	84
15°	1215	1009	655	528	508	346
25°	1346	1175	598	456	445	602
35°	821	1158	520	399	403	520
45°	434	809	424	341	350	342
55°	285	454	301	268	280	256
65°	184	248	186	183	198	182
75°	92	113	89	92	108	98
85°	18	23	18	20	24	23
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°	686.1	686.1	686.1	686.1	686.1	686.1	686.1	686.1	686.1	686.1	686.1
2.5°	738.9	740.5	738.0	739.5	735.8	733.6	730.1	728.5	721.0	715.7	713.8
5°	814.3	814.3	814.9	811.2	806.8	798.9	788.6	782.0	774.4	761.5	754.9
7.5°	909.2	904.5	901.3	894.4	888.5	875.6	864.3	850.8	833.2	811.8	800.5
10°	1005.3	1010.4	1007.2	1000.0	984.6	963.5	946.9	927.4	900.1	879.3	849.8
12.5°	1125.3	1118.7	1113.7	1102.7	1085.8	1063.4	1037.7	1008.8	973.6	939.4	906.4
15°	1215.2	1216.1	1215.8	1201.4	1184.7	1154.6	1130.7	1082.6	1038.0	1009.1	954.4
17.5°	1291.2	1295.3	1290.6	1268.9	1254.1	1236.2	1205.8	1152.4	1111.8	1065.0	1004.7
20°	1352.8	1353.4	1345.9	1329.9	1312.9	1292.8	1252.6	1211.7	1172.2	1109.3	1051.8
22.5°	1369.1	1370.7	1369.1	1362.2	1348.4	1327.0	1296.9	1259.2	1209.2	1142.3	1088.9
25°	1346.5	1345.6	1350.9	1346.8	1346.2	1339.3	1319.5	1289.0	1239.7	1175.3	1107.4
27.5°	1267.3	1260.7	1274.3	1291.8	1294.4	1305.4	1305.7	1291.5	1256.0	1201.1	1127.2
30°	1130.4	1136.7	1143.2	1180.0	1200.4	1229.0	1253.8	1262.9	1249.4	1208.9	1139.8
32.5°	981.5	1001.6	1020.1	1045.5	1075.4	1123.8	1163.0	1197.6	1212.4	1194.5	1139.8
35°	820.6	831.3	860.5	892.9	935.9	973.6	1051.5	1101.8	1146.7	1158.3	1125.3
37.5°	694.9	704.7	714.7	739.9	788.2	851.1	915.5	981.5	1048.1	1095.8	1093.9
40°	583.7	585.9	594.7	616.4	656.6	712.5	780.1	859.6	946.0	1011.0	1038.3
42.5°	498.3	498.3	509.3	534.4	557.6	598.5	663.8	733.9	828.5	912.0	970.5
45°	433.5	434.2	443.0	460.9	479.1	511.1	559.5	625.5	722.9	809.3	890.7
47.5°	380.8	386.7	391.8	401.2	419.4	447.7	482.9	539.1	608.5	702.8	797.7
50°	346.8	348.1	351.9	357.5	371.7	390.2	420.7	463.4	525.0	608.5	704.4
52.5°	313.5	313.5	317.3	324.2	332.4	347.5	369.5	405.0	451.1	526.9	612.9
55°	285.3	286.2	286.8	292.5	299.4	310.7	328.0	351.2	393.6	454.3	529.4
57.5°	257.6	261.1	260.1	264.5	269.6	277.7	290.0	310.1	342.4	388.6	456.2
60°	234.4	233.7	235.3	237.2	240.7	246.3	257.6	272.4	299.4	338.0	393.3
62.5°	208.0	207.3	209.2	211.4	214.6	219.3	227.5	238.8	260.1	289.0	337.1
65°	184.1	183.5	184.4	185.7	189.1	192.9	199.2	208.6	222.7	248.2	284.9
67.5°	160.2	160.2	160.9	162.1	164.3	167.1	172.2	177.8	192.0	208.9	237.8
70°	136.3	136.7	136.7	137.9	139.8	142.0	146.1	151.1	159.9	175.0	198.2
72.5°	115.6	115.6	115.0	115.6	116.9	117.8	120.3	125.0	131.6	142.6	160.2
75°	91.7	93.3	93.0	92.7	93.6	95.2	97.4	101.2	105.2	113.1	126.3
77.5°	70.4	71.3	71.3	71.6	72.6	73.8	74.5	78.2	82.0	86.7	96.4
80°	51.5	52.2	51.5	51.8	52.5	53.7	55.0	55.6	58.4	62.5	67.2
82.5°	34.6	33.6	34.9	34.6	35.2	35.5	36.1	36.4	38.3	40.8	44.0
85°	18.2	19.8	19.5	20.1	19.5	19.8	20.1	21.4	21.7	23.2	25.1
87.5°	6.9	7.5	7.5	7.5	7.5	7.5	8.2	8.5	9.1	9.4	10.1
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°	686.1	686.1	686.1	686.1	686.1	686.1	686.1	686.1	686.1	686.1	686.1
2.5°	715.0	712.2	708.1	703.7	699.0	694.3	692.1	689.3	683.6	678.0	673.6
5°	749.6	741.7	731.1	723.2	711.9	701.2	692.7	686.8	677.7	666.7	659.4
7.5°	788.2	774.1	757.1	739.9	722.9	706.9	693.7	682.4	668.2	654.7	643.7
10°	833.8	806.5	782.9	757.8	732.6	710.0	691.2	674.8	656.6	640.3	626.8
12.5°	874.0	842.3	809.6	774.1	740.2	711.0	686.8	665.4	643.4	624.6	610.7
15°	918.3	873.7	828.5	788.2	747.1	711.3	679.5	654.7	629.6	608.2	592.2
17.5°	969.2	909.5	852.6	794.8	758.4	712.2	673.3	640.6	614.8	593.5	572.7
20°	999.4	940.0	870.2	810.9	750.5	703.1	659.7	626.8	596.6	572.1	555.1
22.5°	1015.7	953.2	880.3	819.3	749.0	695.9	649.7	610.7	578.4	553.9	534.7
25°	1038.6	953.2	885.6	812.4	751.5	687.4	635.2	597.9	563.9	535.7	515.5
27.5°	1049.0	961.7	886.3	799.2	736.4	671.4	618.6	579.0	541.3	513.7	496.4
30°	1057.5	963.2	873.7	788.9	718.8	653.5	601.9	557.6	522.5	496.1	477.8
32.5°	1058.1	959.1	856.7	769.4	695.2	632.4	582.1	540.4	503.6	475.6	457.7
35°	1052.5	949.1	837.3	739.5	667.9	610.7	560.5	519.6	482.2	455.5	437.3
37.5°	1038.0	937.8	819.0	711.6	635.6	579.9	537.2	498.3	461.2	434.5	419.4
40°	1007.2	919.6	795.2	681.7	602.9	547.3	509.9	474.1	441.1	413.4	398.4
42.5°	966.4	892.2	766.2	650.0	566.4	512.7	479.7	450.8	417.2	393.3	377.9
45°	908.6	855.2	737.3	616.7	530.3	477.5	447.4	423.5	394.6	370.7	357.2
47.5°	843.2	810.5	700.0	579.3	492.3	442.7	414.1	394.9	370.4	350.0	336.5
50°	769.7	757.5	658.8	541.6	456.8	405.9	379.5	364.4	343.7	327.4	315.7
52.5°	689.9	697.4	615.5	503.3	422.6	371.0	345.9	332.1	318.9	305.1	294.1
55°	608.9	626.8	563.0	461.5	383.3	338.4	313.9	301.3	291.5	279.9	272.1
57.5°	532.8	560.8	508.6	416.9	347.2	304.1	280.9	269.9	262.6	256.4	249.1
60°	459.0	491.4	452.7	375.1	311.0	271.8	251.0	240.3	236.9	232.2	225.3
62.5°	393.6	426.6	397.7	332.1	274.6	241.0	222.1	213.3	208.3	206.7	202.6
65°	332.4	363.2	341.2	287.1	240.0	210.2	193.5	185.7	182.8	182.5	179.4
67.5°	279.3	309.1	289.0	243.5	203.6	179.4	166.8	160.5	157.7	158.0	155.8
70°	230.3	251.3	239.4	203.6	172.8	151.4	141.7	134.8	132.6	132.6	131.9
72.5°	184.7	201.4	192.3	164.9	140.7	124.4	115.9	111.8	110.0	109.6	110.0
75°	144.5	159.0	150.8	129.4	111.2	99.0	91.7	88.9	88.0	87.3	87.7
77.5°	108.1	117.2	112.2	98.3	83.3	74.8	71.3	68.5	67.5	67.9	68.5
80°	76.3	81.4	78.5	69.7	59.7	54.0	51.5	49.3	48.4	49.3	49.3
82.5°	48.4	52.2	49.6	44.0	39.0	35.2	32.7	32.0	31.7	31.1	32.0
85°	26.4	28.3	27.0	25.1	21.7	20.1	18.2	17.9	17.9	17.9	17.9
87.5°	10.4	11.6	10.1	10.1	9.4	7.9	7.9	7.5	7.2	7.5	7.5
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°	686.1	686.1	686.1	686.1	686.1	686.1	686.1	686.1	686.1	686.1	686.1
2.5°	671.7	667.6	665.1	661.6	657.5	652.2	650.0	652.2	651.0	648.8	649.7
5°	653.1	647.8	640.9	635.2	629.0	621.1	618.6	617.3	615.5	614.5	612.9
7.5°	634.9	627.1	618.6	610.7	601.6	594.7	591.6	589.4	588.7	584.0	582.1
10°	616.1	606.3	597.9	587.2	579.3	570.2	566.4	563.9	561.1	558.0	555.8
12.5°	596.3	586.5	575.9	565.8	558.0	547.9	542.9	540.1	537.9	535.7	533.1
15°	579.0	569.3	554.5	547.0	537.5	527.5	524.3	518.1	518.7	514.9	512.4
17.5°	560.8	546.3	536.0	524.7	517.7	510.5	504.5	498.0	497.0	494.2	493.2
20°	540.4	525.3	518.1	506.4	497.0	489.8	484.4	483.8	481.9	477.8	476.3
22.5°	520.3	508.0	498.0	487.3	478.8	469.4	466.8	467.8	464.3	463.4	459.9
25°	502.0	491.4	478.8	468.7	461.8	455.9	452.4	451.1	449.9	448.9	447.4
27.5°	482.6	471.2	460.6	452.4	445.8	441.7	439.5	436.7	436.4	436.4	435.7
30°	463.1	453.0	445.8	435.4	429.5	427.0	425.1	424.1	425.1	425.1	425.4
32.5°	445.2	435.4	427.0	419.7	413.8	411.9	411.6	411.6	412.8	412.8	413.8
35°	426.6	416.9	409.0	404.0	399.0	398.7	399.0	399.6	401.2	401.5	402.8
37.5°	406.5	399.0	393.0	386.7	385.5	386.1	386.7	387.4	388.0	390.5	390.5
40°	388.0	382.3	376.4	372.3	370.1	371.7	372.6	372.9	374.8	376.4	377.6
42.5°	369.8	364.4	359.7	356.3	355.3	356.6	357.5	358.5	360.3	361.6	363.8
45°	349.4	345.9	341.8	339.0	339.3	341.2	341.2	344.3	345.6	346.2	347.8
47.5°	330.5	326.7	323.9	322.6	322.3	323.9	324.8	327.4	328.0	330.2	331.4
50°	310.4	307.6	305.4	303.8	304.1	304.7	306.9	309.5	310.1	312.6	314.8
52.5°	289.3	286.8	284.9	285.6	286.5	286.5	288.7	290.3	291.9	293.7	295.9
55°	268.6	265.2	265.5	264.5	265.5	267.7	268.6	271.1	272.4	273.3	276.5
57.5°	246.0	245.4	244.4	243.5	245.4	246.3	247.9	249.4	251.6	252.9	255.1
60°	222.7	221.8	221.8	223.1	223.7	225.6	228.1	229.0	229.7	232.2	235.0
62.5°	201.4	200.4	200.1	202.0	202.0	203.9	204.8	206.4	208.9	209.9	213.6
65°	178.4	177.8	177.8	179.4	179.7	183.2	183.2	183.2	184.7	188.2	190.1
67.5°	154.6	154.9	155.8	156.8	158.0	159.0	159.3	161.2	163.7	165.9	169.6
70°	130.7	132.3	134.1	133.8	134.8	136.3	136.7	138.5	140.7	143.6	148.0
72.5°	109.3	110.3	112.2	112.2	113.4	114.4	115.9	117.2	120.0	122.5	124.4
75°	88.0	88.3	89.9	90.8	91.7	92.4	93.9	96.1	97.7	99.9	102.7
77.5°	69.1	68.5	69.7	70.1	70.7	71.9	73.2	75.4	76.7	79.2	80.1
80°	49.0	50.3	50.6	50.9	51.5	53.1	54.0	55.0	56.2	58.4	59.4
82.5°	32.4	33.0	33.9	34.2	34.9	35.2	35.5	37.1	38.0	38.6	41.8
85°	18.8	19.8	19.2	19.2	19.8	20.1	21.4	21.4	22.6	22.0	23.6
87.5°	8.2	7.9	7.9	8.2	7.9	7.5	8.5	8.5	8.2	8.5	8.5
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: P243322

CATALOG NUMBER: S123DRP-H560D830-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	686.1	686.1	686.1	686.1
2.5°	648.1	648.1	645.6	646.6
5°	609.8	611.1	607.9	607.0
7.5°	581.5	580.3	578.1	578.1
10°	553.9	552.6	551.7	551.7
12.5°	530.0	528.7	526.9	528.4
15°	508.6	508.9	507.7	507.7
17.5°	492.3	489.5	488.5	488.2
20°	472.8	473.4	472.2	470.0
22.5°	460.6	459.0	457.7	457.4
25°	448.0	446.4	446.1	444.9
27.5°	435.4	435.7	434.8	434.8
30°	425.1	426.0	425.1	425.4
32.5°	414.7	414.7	414.7	413.4
35°	403.4	403.7	403.4	402.8
37.5°	391.8	391.8	392.1	392.7
40°	378.9	378.9	379.5	379.5
42.5°	363.5	365.1	366.0	364.4
45°	349.7	350.0	350.3	350.0
47.5°	334.3	333.3	333.6	334.3
50°	315.1	317.3	317.3	315.4
52.5°	296.6	297.2	298.5	298.5
55°	278.4	278.7	279.0	279.6
57.5°	257.6	257.9	257.9	257.6
60°	236.9	238.8	238.5	238.8
62.5°	214.6	217.4	218.3	218.0
65°	193.5	194.2	195.7	197.9
67.5°	171.2	172.8	175.3	174.7
70°	149.2	151.4	152.1	153.3
72.5°	127.2	130.1	130.7	131.3
75°	105.9	107.1	108.4	108.1
77.5°	82.6	84.5	86.7	85.5
80°	61.9	62.2	64.1	63.5
82.5°	40.8	43.4	43.4	42.1
85°	23.9	23.9	23.9	23.9
87.5°	8.2	7.9	8.5	8.2
90°	0.0	0.0	0.0	0.0



TEST NUMBER: P243322
 CATALOG NUMBER: S123DRP-H560D830-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	17.76	19.32	18.12	19.63	19.95	18.29	19.85	18.65	20.16	20.48
	3H	19.28	20.68	19.66	21.01	21.37	19.63	21.03	20.01	21.36	21.72
	4H	19.82	21.14	20.22	21.49	21.87	20.08	21.40	20.48	21.75	22.13
	6H	20.19	21.40	20.60	21.77	22.16	20.38	21.60	20.80	21.97	22.36
	8H	20.28	21.44	20.71	21.83	22.23	20.46	21.62	20.89	22.01	22.41
	12H	20.34	21.45	20.77	21.83	22.26	20.50	21.61	20.93	21.99	22.42
4H	2H	18.92	20.24	19.32	20.59	20.97	19.08	20.40	19.48	20.75	21.13
	3H	20.48	21.58	20.89	21.98	22.38	20.87	21.97	21.28	22.37	22.77
	4H	21.08	22.06	21.51	22.48	22.92	21.43	22.42	21.87	22.84	23.27
	6H	21.50	22.36	21.96	22.81	23.26	21.80	22.66	22.26	23.10	23.56
	8H	21.62	22.43	22.08	22.87	23.34	21.89	22.70	22.35	23.14	23.61
	12H	21.70	22.42	22.18	22.89	23.36	21.95	22.67	22.43	23.14	23.61
8H	4H	21.54	22.34	22.00	22.79	23.25	21.74	22.54	22.20	22.99	23.45
	6H	22.04	22.70	22.53	23.19	23.67	22.25	22.91	22.74	23.40	23.88
	8H	22.20	22.80	22.71	23.31	23.79	22.39	22.99	22.91	23.50	23.99
	12H	22.32	22.85	22.83	23.34	23.90	22.49	23.02	23.00	23.51	24.08
12H	4H	21.59	22.31	22.07	22.78	23.25	21.75	22.47	22.23	22.95	23.42
	6H	22.11	22.71	22.62	23.21	23.70	22.28	22.88	22.79	23.39	23.87
	8H	22.32	22.84	22.82	23.33	23.90	22.48	23.01	22.99	23.50	24.07