

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: P242462

Luminaire Tested: S123DRP-S560D830-X4F0-XX-UDD-A-W

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2024
Report Number: P242462
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-20)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: S123DRP-S560D830-X4F0-XX-UDD-A-W
Description: DEFINE 3 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER
STANDARD LIGHT ENGINE
Light Source: (92) 3000K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

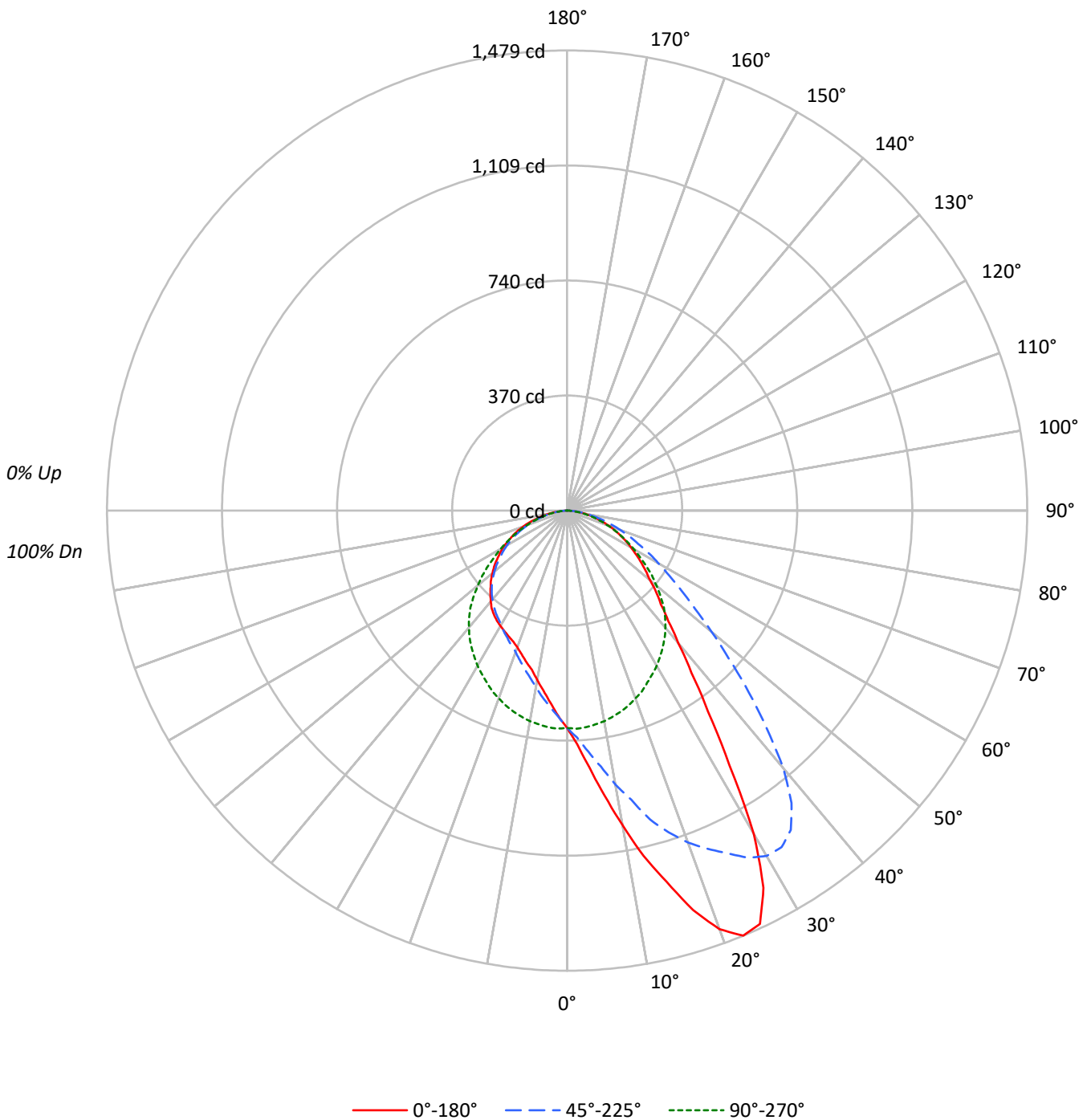
Lumens per Lamp: N/A
Luminaire Lumens: 2108.0 lumens
Efficiency: N/A
Efficacy: 112.1 lumens/watt
Spacing Criteria (0/90/45): 1.37 / 1.23 / 1.5
Luminous Opening: Rectangular (W 3.88' x L: 0.23' x H: 0')
CIE Type: Direct

Input Watts (W): 18.8
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				
2	100	93	86	81	98	91	85	80	87	82	78	84	80	76	81	78	74					72				
3	92	82	74	68	89	80	73	67	77	71	66	75	69	65	72	68	64					62				
4	84	73	65	58	82	72	64	58	69	62	57	67	61	56	65	60	56					53				
5	78	66	57	51	76	64	56	50	62	55	50	60	54	49	59	53	49					47				
6	72	59	51	44	70	58	50	44	56	49	44	55	48	43	53	48	43					41				
7	67	54	45	39	65	53	45	39	52	44	39	50	44	39	49	43	38					36				
8	62	49	41	35	61	49	41	35	47	40	35	46	39	35	45	39	35					33				
9	58	45	37	32	57	45	37	32	43	36	32	42	36	31	41	36	31					29				
10	55	42	34	29	53	41	34	29	40	33	29	39	33	29	38	33	28					27				

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	8465	8465	8465	8465	8465
5°	10095	9461	8501	7700	7534
10°	12636	10999	8458	7092	6805
15°	15499	12900	8390	6616	6335
20°	18463	14648	8284	6242	6032
25°	19604	16247	8154	6060	5965
30°	16803	17941	8061	5944	5996
35°	11687	18537	7925	5923	6058
40°	8802	17111	7769	5912	6040
45°	7308	14152	7534	5869	5962
50°	6547	11422	7056	5755	5908
55°	6120	9474	6543	5592	5835
60°	5743	8194	6005	5430	5775
65°	5395	7210	5472	5154	5590
70°	5061	6439	4869	4738	5323
75°	4533	5578	4262	4229	4880
80°	3965	4579	3497	3427	4202
85°	3101	3574	2545	2489	2823

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 55°
 Vertical Angle: 45°
 Luminance: 16729 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	68.7	3.3
10°-20°	220.6	10.5
20°-30°	371.2	17.6
30°-40°	419.5	19.9
40°-50°	375.8	17.8
50°-60°	303.3	14.4
60°-70°	211.3	10.0
70°-80°	110.9	5.3
80°-90°	26.6	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°	660.5	31.3
0°-40°	1080.0	51.2
0°-60°	1759.1	83.5
0°-90°	2108.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2108.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	698	698	698	698	698	
5°	830	778	699	633	619	85
15°	1235	1028	669	527	505	356
25°	1466	1215	610	453	446	648
35°	790	1253	536	400	409	510
45°	426	826	440	342	348	336
55°	290	448	310	265	276	260
65°	188	251	191	180	195	187
75°	97	119	91	90	104	103
85°	22	26	18	18	20	27
90°	0	0	0	0	0	



TEST NUMBER: P242462

CATALOG NUMBER: S123DRP-S560D830-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	698.4	698.4	698.4	698.4	698.4	698.4	698.4	698.4	698.4	698.4	698.4
2.5°	751.9	751.2	749.5	750.8	748.1	744.4	744.1	740.7	730.9	730.2	727.5
5°	829.7	827.0	826.6	826.3	821.6	815.1	803.0	801.9	785.7	777.6	767.8
7.5°	923.8	922.7	920.0	917.0	901.1	893.3	881.8	866.9	848.0	829.7	818.2
10°	1026.6	1037.8	1023.9	1014.4	1005.6	989.1	969.8	945.7	921.7	893.6	872.3
12.5°	1136.9	1141.0	1141.0	1132.2	1117.3	1089.9	1052.0	1024.9	1003.3	951.8	933.6
15°	1235.1	1255.7	1242.5	1212.0	1212.7	1188.7	1144.0	1095.0	1068.9	1028.0	972.1
17.5°	1346.0	1349.8	1345.7	1317.3	1303.4	1268.6	1228.3	1182.6	1133.5	1083.8	1025.9
20°	1431.3	1429.3	1417.4	1404.2	1375.1	1349.4	1304.4	1252.0	1184.3	1135.6	1070.9
22.5°	1478.7	1475.0	1470.9	1460.4	1437.4	1409.3	1370.1	1311.5	1247.9	1176.2	1099.0
25°	1465.8	1470.2	1470.9	1467.9	1459.4	1442.8	1411.0	1365.3	1301.0	1214.8	1136.9
27.5°	1366.3	1377.5	1391.7	1401.2	1416.4	1426.6	1416.4	1387.7	1334.9	1257.7	1162.0
30°	1200.5	1187.0	1220.5	1262.8	1291.6	1342.3	1370.7	1372.4	1345.7	1281.8	1189.0
32.5°	970.4	992.4	1002.6	1057.1	1128.5	1187.0	1250.6	1307.1	1320.3	1283.1	1204.9
35°	789.8	808.4	835.4	862.5	930.2	988.4	1087.9	1174.5	1243.5	1252.7	1202.9
37.5°	656.4	667.3	683.8	712.6	759.0	831.0	909.9	1022.6	1117.6	1184.6	1177.9
40°	556.3	559.0	578.3	598.9	634.8	691.6	761.0	857.8	977.6	1081.4	1124.7
42.5°	481.2	487.9	493.3	513.0	539.7	579.0	642.2	718.0	825.3	948.8	1043.9
45°	426.3	433.1	438.2	451.4	471.7	500.5	545.5	618.5	702.1	825.6	939.7
47.5°	388.5	387.8	392.2	402.7	417.2	440.2	473.4	522.1	602.3	705.5	824.9
50°	347.2	352.6	353.9	361.7	372.5	388.5	414.8	454.8	517.7	605.7	713.3
52.5°	318.1	318.7	323.1	328.2	337.4	348.9	370.9	400.0	446.0	517.7	614.5
55°	289.6	289.6	293.4	297.8	303.2	314.3	329.6	352.6	390.1	448.3	530.2
57.5°	263.3	264.6	268.0	269.0	273.7	281.5	294.7	313.0	341.8	388.8	456.5
60°	236.9	239.9	239.6	242.3	246.3	252.1	262.9	277.1	302.2	338.0	392.8
62.5°	213.9	212.8	212.8	216.2	220.3	225.7	231.8	243.6	263.9	294.7	339.4
65°	188.1	187.5	189.8	191.9	193.2	197.3	202.7	213.5	227.7	251.4	287.6
67.5°	165.8	163.8	165.5	166.1	168.5	171.9	177.3	184.1	195.6	215.5	244.6
70°	142.8	141.1	140.8	141.4	143.5	145.8	149.6	156.0	166.5	181.7	201.7
72.5°	119.1	118.1	118.1	119.8	120.5	121.8	124.2	129.9	137.7	148.2	166.5
75°	96.8	96.8	96.8	97.1	98.1	99.5	101.5	104.6	111.0	119.1	131.6
77.5°	76.5	76.8	76.1	75.8	77.5	78.2	78.5	81.9	85.6	91.7	101.5
80°	56.8	55.2	55.8	56.8	57.5	57.9	58.9	59.6	62.6	65.6	72.1
82.5°	38.6	37.2	37.2	38.9	38.9	39.3	40.3	41.3	42.0	44.7	47.4
85°	22.3	22.3	22.7	22.7	23.0	22.7	23.7	24.0	24.0	25.7	27.7
87.5°	10.2	9.5	9.8	10.2	9.8	10.2	10.5	10.8	11.2	11.5	11.8
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°	698.4	698.4	698.4	698.4	698.4	698.4	698.4	698.4	698.4	698.4	698.4
2.5°	725.5	722.8	720.1	715.3	711.3	705.5	703.8	701.8	695.7	690.3	686.2
5°	764.0	755.9	744.1	733.3	724.5	712.6	705.8	698.7	688.6	679.4	672.0
7.5°	800.9	786.7	770.1	752.2	734.9	718.4	705.2	693.3	680.1	667.3	657.5
10°	846.6	823.6	797.9	770.1	746.4	723.4	704.2	687.2	669.0	653.1	639.9
12.5°	898.7	861.8	823.9	788.7	759.6	725.5	701.1	678.4	657.1	637.2	621.9
15°	937.6	894.3	852.4	806.0	763.4	723.4	695.7	668.6	644.6	625.0	606.0
17.5°	976.2	928.8	875.4	819.5	769.5	723.4	685.5	656.4	627.0	603.3	585.0
20°	1008.0	952.2	889.6	831.0	774.2	721.4	678.8	642.2	609.7	584.4	563.0
22.5°	1035.4	967.7	902.4	838.8	773.9	716.0	666.3	628.4	592.5	567.8	544.8
25°	1052.7	974.5	909.5	836.1	765.4	706.5	652.4	609.7	574.6	545.5	522.1
27.5°	1068.9	973.5	900.1	820.9	755.2	696.7	638.5	592.8	555.9	524.5	500.5
30°	1085.2	975.2	883.5	805.3	739.0	678.1	621.9	575.9	536.7	504.5	482.2
32.5°	1095.3	974.2	868.3	783.7	713.3	661.2	604.0	555.9	515.3	483.9	462.6
35°	1098.0	968.4	850.3	752.2	685.2	632.8	585.0	535.6	493.3	463.9	439.5
37.5°	1092.3	957.9	830.7	723.8	651.4	599.3	557.6	515.3	474.7	441.9	420.6
40°	1073.7	947.8	807.0	693.3	616.2	566.4	532.3	491.0	451.0	420.3	400.6
42.5°	1038.1	927.1	781.0	659.5	579.6	529.9	499.1	466.3	429.1	400.6	381.0
45°	975.9	895.3	754.9	625.6	543.8	492.3	464.6	439.5	405.4	377.3	360.4
47.5°	896.3	852.4	717.3	590.1	506.2	456.5	427.4	406.7	380.0	357.3	340.7
50°	812.8	796.9	679.1	553.6	468.6	420.3	392.5	374.2	356.3	333.6	318.7
52.5°	716.3	732.6	634.4	515.7	430.4	383.0	357.3	343.8	327.9	310.3	297.8
55°	627.0	662.5	581.7	472.4	392.5	347.2	322.5	309.6	300.1	286.3	275.1
57.5°	540.4	585.7	526.8	428.7	355.3	315.7	291.3	276.8	270.7	262.9	253.8
60°	464.9	509.6	467.3	384.7	317.7	280.5	259.5	247.7	241.6	236.5	229.1
62.5°	397.6	442.9	409.1	340.1	280.8	247.0	229.4	217.9	213.5	211.5	205.4
65°	337.0	375.9	352.2	293.4	246.0	215.5	199.0	190.8	186.4	185.4	181.4
67.5°	284.6	314.7	296.4	252.1	213.5	185.8	171.2	164.1	160.4	160.0	156.7
70°	233.1	260.9	247.7	208.4	176.3	155.7	143.5	137.4	135.3	135.0	133.3
72.5°	193.2	210.5	200.7	169.5	146.5	128.2	120.1	113.7	111.3	112.0	111.0
75°	148.9	163.4	157.3	134.7	114.7	102.5	95.1	91.0	89.0	90.0	88.7
77.5°	113.7	123.8	117.8	100.5	87.6	78.5	72.7	70.0	68.0	68.0	67.3
80°	80.9	86.3	83.2	73.8	63.6	56.2	51.8	50.1	49.1	48.7	48.4
82.5°	51.8	56.2	52.4	46.7	40.6	36.9	34.9	32.5	31.8	32.1	31.8
85°	29.1	30.8	29.4	25.4	22.7	20.6	19.3	18.3	17.6	17.9	17.3
87.5°	12.5	12.9	11.8	10.5	9.8	8.8	8.8	8.1	7.4	7.4	7.1
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):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	698.4	698.4	698.4	698.4	698.4	698.4	698.4	698.4	698.4	698.4	698.4
2.5°	683.8	681.5	678.1	673.0	669.0	662.5	662.5	663.5	663.5	663.2	662.5
5°	665.9	660.8	654.7	647.6	640.2	632.8	631.4	628.7	626.7	625.3	623.6
7.5°	647.6	639.2	630.7	620.9	612.5	605.3	600.3	595.9	593.2	590.1	587.8
10°	629.0	617.9	607.4	596.9	585.4	576.2	570.5	566.4	563.4	560.7	559.3
12.5°	607.0	593.8	582.0	572.2	559.3	549.9	544.4	543.1	539.4	532.9	529.6
15°	585.7	573.9	560.0	544.8	538.7	527.2	520.8	517.7	515.7	511.3	509.9
17.5°	568.1	552.2	536.3	525.2	514.0	504.8	501.1	497.1	494.4	490.3	489.3
20°	546.1	532.3	518.0	505.9	494.0	483.9	480.8	478.1	475.4	473.7	472.4
22.5°	523.8	509.9	498.8	487.6	474.7	469.0	465.6	462.6	460.9	459.8	458.5
25°	503.2	491.0	477.8	467.6	457.5	453.1	451.0	449.4	448.0	446.3	446.0
27.5°	484.9	471.4	460.2	450.4	442.9	439.2	436.8	435.8	435.8	436.5	436.8
30°	463.9	451.7	442.9	434.8	428.0	424.7	424.3	424.3	425.7	426.0	426.7
32.5°	444.6	435.1	426.3	418.6	413.8	411.8	413.5	413.5	414.5	415.5	416.9
35°	426.0	417.2	410.4	403.7	399.3	400.3	401.0	401.6	403.3	405.4	406.7
37.5°	408.4	400.3	393.2	387.8	385.1	387.1	388.8	390.1	392.2	393.9	395.2
40°	389.1	383.4	376.6	371.9	372.5	373.6	374.9	376.6	378.3	379.3	380.7
42.5°	371.2	365.1	360.4	356.6	357.7	359.0	359.7	360.4	362.4	364.4	365.1
45°	352.9	348.2	343.4	341.1	341.8	342.4	343.1	344.1	345.8	347.2	347.5
47.5°	332.3	328.9	325.9	323.1	324.5	324.2	325.2	327.2	327.9	328.6	330.6
50°	312.7	309.6	305.9	305.2	305.2	305.2	305.5	308.3	308.3	309.6	311.0
52.5°	291.0	289.3	287.3	285.9	285.2	285.2	286.9	288.0	288.6	290.7	292.0
55°	269.7	267.7	265.6	264.6	263.9	264.6	267.3	268.0	269.7	270.7	271.7
57.5°	247.3	246.0	244.3	243.6	243.6	244.0	246.0	247.7	248.0	251.4	252.8
60°	225.4	223.0	221.6	221.6	221.0	224.0	223.3	226.7	227.4	229.4	231.8
62.5°	202.7	199.3	199.0	199.0	200.3	200.7	202.0	203.0	205.1	207.8	209.5
65°	178.0	176.3	178.7	178.3	177.6	179.7	179.7	181.4	183.4	185.8	189.5
67.5°	155.0	153.6	154.3	154.0	155.0	156.3	157.3	158.7	161.1	163.8	166.1
70°	131.6	132.6	130.9	132.3	133.3	133.7	134.3	136.4	139.1	140.8	143.5
72.5°	109.0	108.6	109.3	109.6	110.6	111.3	112.0	114.4	117.4	118.8	120.8
75°	87.3	87.0	88.0	88.0	89.7	90.3	91.0	92.0	94.7	96.8	98.5
77.5°	67.7	68.0	67.7	69.0	68.4	68.7	70.7	71.7	72.1	76.5	77.1
80°	48.0	48.7	49.1	49.4	49.7	49.1	51.4	52.4	52.4	54.8	56.5
82.5°	31.1	31.5	32.5	32.8	32.8	33.8	33.5	34.2	35.2	35.9	38.2
85°	17.3	18.3	18.6	18.3	18.6	17.9	18.9	19.3	19.6	19.6	19.6
87.5°	6.8	7.1	6.8	7.1	6.8	7.1	7.1	6.4	6.4	7.4	6.1
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: P242462

CATALOG NUMBER: S123DRP-S560D830-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	698.4	698.4	698.4	698.4
2.5°	660.2	659.8	662.2	660.5
5°	621.6	622.6	619.2	619.2
7.5°	586.7	585.4	585.7	583.4
10°	555.3	553.2	552.6	552.9
12.5°	529.2	529.2	523.8	523.8
15°	509.9	503.5	502.8	504.8
17.5°	488.6	484.9	485.2	484.5
20°	472.4	470.3	470.0	467.6
22.5°	457.5	457.1	457.5	454.8
25°	445.6	447.3	446.0	446.0
27.5°	437.5	437.5	436.5	436.5
30°	428.0	427.7	428.4	428.4
32.5°	418.6	419.2	419.2	419.6
35°	408.8	409.1	410.1	409.4
37.5°	395.9	397.6	397.2	397.9
40°	381.0	382.0	381.7	381.7
42.5°	365.8	366.5	365.4	364.8
45°	348.9	348.2	349.2	347.8
47.5°	330.3	330.6	330.9	332.3
50°	311.6	313.7	313.7	313.3
52.5°	293.4	294.0	295.7	295.7
55°	274.4	275.1	275.8	276.1
57.5°	255.1	254.8	256.1	256.5
60°	234.5	234.5	237.2	238.2
62.5°	212.5	213.9	216.6	214.5
65°	191.2	193.9	193.5	194.9
67.5°	168.8	170.5	173.2	173.2
70°	146.2	147.9	149.2	150.2
72.5°	124.2	124.9	128.6	126.6
75°	100.8	103.2	105.2	104.2
77.5°	78.5	81.5	82.2	81.2
80°	58.9	58.5	60.6	60.2
82.5°	39.3	38.9	39.6	39.9
85°	21.0	22.0	20.6	20.3
87.5°	6.1	6.1	5.8	5.4
90°	0.0	0.0	0.0	0.0



TEST NUMBER: P242462
 CATALOG NUMBER: S123DRP-S560D830-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	17.80	19.36	18.17	19.67	19.99	18.36	19.91	18.72	20.23	20.54
	3H	19.35	20.75	19.73	21.08	21.44	19.69	21.09	20.07	21.42	21.78
	4H	19.92	21.23	20.32	21.58	21.96	20.15	21.47	20.55	21.81	22.19
	6H	20.32	21.53	20.73	21.90	22.29	20.45	21.66	20.86	22.03	22.42
	8H	20.43	21.59	20.85	21.98	22.38	20.52	21.68	20.94	22.07	22.47
	12H	20.50	21.61	20.93	21.99	22.42	20.55	21.66	20.98	22.04	22.47
4H	2H	18.96	20.27	19.36	20.62	21.00	19.12	20.43	19.52	20.78	21.16
	3H	20.55	21.65	20.96	22.05	22.45	20.93	22.02	21.34	22.42	22.82
	4H	21.17	22.16	21.61	22.57	23.01	21.49	22.48	21.93	22.89	23.33
	6H	21.65	22.50	22.10	22.95	23.40	21.86	22.72	22.31	23.16	23.62
	8H	21.78	22.59	22.25	23.03	23.50	21.95	22.75	22.41	23.19	23.66
	12H	21.88	22.59	22.36	23.07	23.54	22.00	22.72	22.48	23.20	23.67
8H	4H	21.66	22.46	22.12	22.90	23.37	21.80	22.60	22.26	23.04	23.51
	6H	22.21	22.87	22.70	23.36	23.84	22.31	22.97	22.80	23.46	23.94
	8H	22.39	22.99	22.91	23.50	23.98	22.45	23.05	22.97	23.56	24.05
	12H	22.54	23.06	23.05	23.56	24.12	22.55	23.08	23.06	23.57	24.13
12H	4H	21.71	22.43	22.19	22.90	23.38	21.81	22.53	22.29	23.01	23.48
	6H	22.28	22.88	22.79	23.39	23.87	22.34	22.94	22.85	23.45	23.93
	8H	22.52	23.05	23.03	23.54	24.10	22.55	23.07	23.05	23.56	24.13