

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: P243435

Luminaire Tested: S123RDRP-H560D840-X4F0-XX-UDD-A-W

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-2024  
Report Number: P243435  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-69)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: S123RDRP-H560D840-X4F0-XX-UDD-A-W  
Description: DEFINE 3 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.  
HIGH PERFORMANCE LIGHT ENGINE  
Light Source: (184) 4000K CCT, 80 CRI LEDS  
Ballast/Driver: -

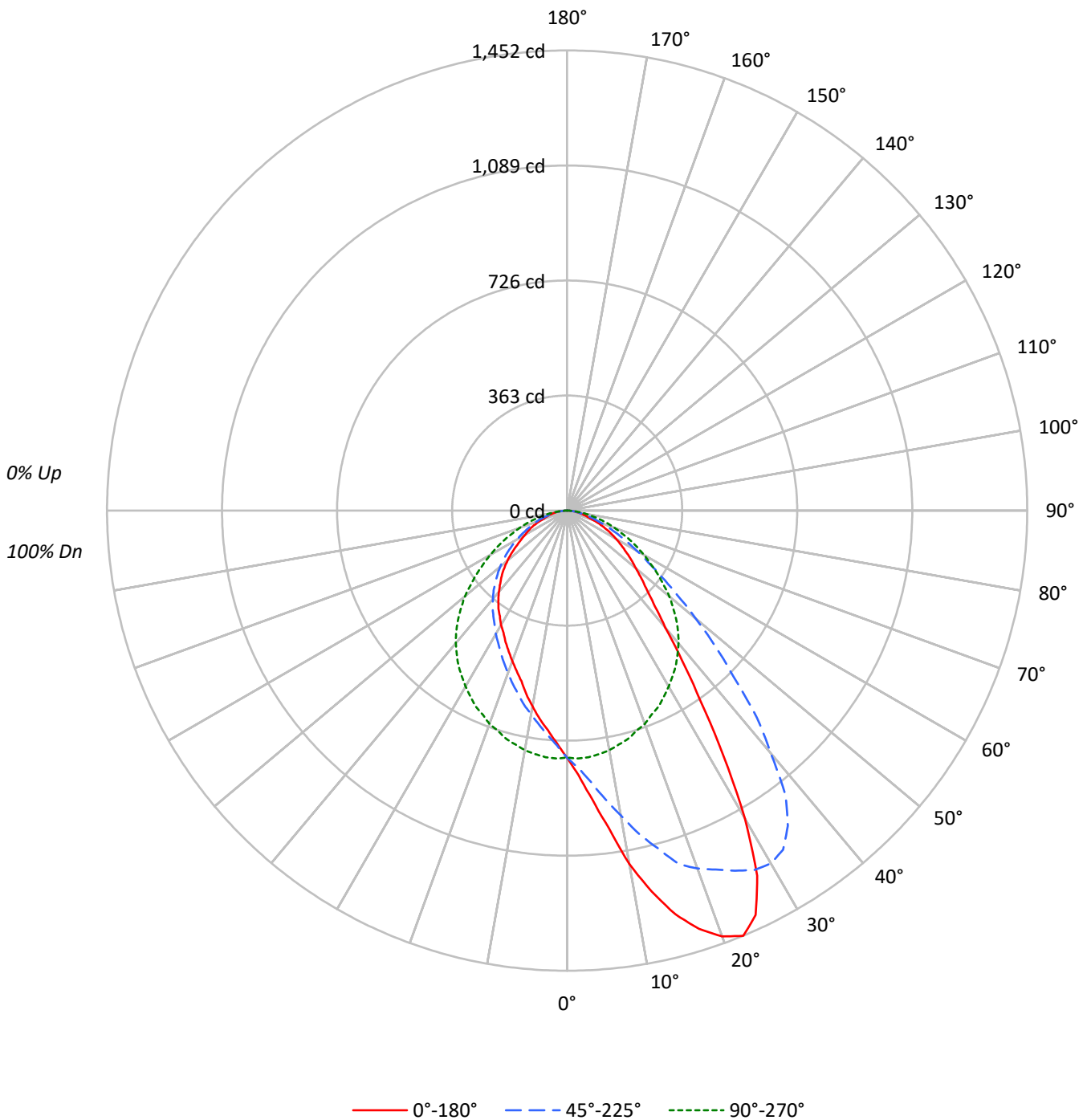
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2031.4 lumens  
Efficiency: N/A  
Efficacy: 118.1 lumens/watt  
Spacing Criteria (0/90/45): 1.28 / 1.22 / 1.4  
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 (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	106	102	99	107	104	100	97	99	97	94	96	93	91	92	90	89	87					87			
2	101	94	88	83	99	92	86	82	89	84	80	85	81	78	82	79	76	74					74			
3	93	84	76	70	91	82	75	70	79	73	68	76	71	67	74	70	66	64					64			
4	86	75	67	61	84	74	66	60	71	65	59	69	63	59	67	62	58	56					56			
5	79	68	59	53	77	66	59	53	64	57	52	62	56	52	61	55	51	49					49			
6	74	61	53	47	72	60	52	47	59	52	46	57	51	46	55	50	46	44					44			
7	69	56	48	42	67	55	47	42	54	47	41	52	46	41	51	45	41	39					39			
8	64	51	43	38	62	51	43	37	49	42	37	48	42	37	47	41	37	35					35			
9	60	47	39	34	59	47	39	34	45	39	34	44	38	34	43	38	33	32					32			
10	56	44	36	31	55	43	36	31	42	35	31	41	35	31	40	35	31	29					29			

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

	0°	45°	90°	135°	180°
0°	9450	9450	9450	9450	9450
5°	11141	10457	9503	8638	8463
10°	13946	12024	9447	8030	7723
15°	16551	13834	9353	7510	6995
20°	18444	15506	9240	7047	6513
25°	18827	16770	9125	6627	6132
30°	15689	17992	8970	6300	5832
35°	10839	17967	8846	6008	5589
40°	7617	15820	8644	5763	5294
45°	6116	12740	8338	5504	5009
50°	5333	9972	7941	5199	4633
55°	4780	7697	7348	4858	4125
60°	4325	6128	6790	4407	3738
65°	3786	5031	6255	3987	3496
70°	3055	4093	5631	3661	2959
75°	2651	3217	4903	3091	2899
80°	2443	2632	4181	2960	2911
85°	2156	2253	3366	2670	2531

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 55°  
 Vertical Angle: 45°  
 Luminance: 15966 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	76.5	3.8
10°-20°	240.8	11.9
20°-30°	385.8	19.0
30°-40°	418.8	20.6
40°-50°	358.8	17.7
50°-60°	272.0	13.4
60°-70°	173.8	8.6
70°-80°	83.1	4.1
80°-90°	21.8	1.1
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°	703.0	34.6
0°-40°	1121.8	55.2
0°-60°	1752.6	86.3
0°-90°	2031.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2031.4	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	780	780	780	780	780	
5°	916	859	781	710	696	94
15°	1319	1102	745	598	557	374
25°	1408	1254	682	496	458	625
35°	732	1214	598	406	378	470
45°	357	743	486	321	292	282
55°	226	364	348	230	195	204
65°	132	175	218	139	122	131
75°	57	69	105	66	62	61
85°	16	16	24	19	18	18
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°	779.6	779.6	779.6	779.6	779.6	779.6	779.6	779.6	779.6	779.6	779.6
2.5°	835.5	836.5	834.8	834.5	834.1	828.8	827.1	824.4	814.9	812.6	810.9
5°	915.6	912.9	915.9	910.2	903.8	900.1	894.1	880.6	868.8	859.4	853.3
7.5°	1010.5	1011.5	1008.5	1003.1	990.3	984.9	968.4	952.3	936.8	917.3	902.8
10°	1133.1	1125.0	1126.7	1109.8	1096.4	1080.2	1057.6	1031.7	1004.5	976.9	956.3
12.5°	1230.7	1236.4	1232.4	1224.3	1198.4	1182.5	1162.0	1124.3	1081.2	1044.2	1012.9
15°	1318.9	1311.1	1312.1	1292.6	1283.2	1268.7	1234.7	1197.3	1169.4	1102.4	1065.4
17.5°	1383.5	1382.8	1381.8	1365.3	1353.9	1323.6	1288.9	1250.5	1215.5	1169.1	1122.6
20°	1429.9	1435.0	1433.7	1420.2	1400.0	1370.7	1349.8	1302.0	1244.5	1202.1	1145.2
22.5°	1452.2	1452.5	1453.2	1446.8	1433.3	1414.5	1384.8	1346.5	1295.3	1226.0	1162.7
25°	1407.7	1409.4	1418.2	1423.6	1427.3	1418.8	1403.4	1368.7	1324.6	1253.9	1188.3
27.5°	1298.7	1304.1	1313.8	1346.1	1359.3	1377.4	1383.8	1370.0	1337.4	1278.5	1203.7
30°	1120.9	1136.1	1145.5	1182.2	1233.7	1282.2	1305.1	1327.6	1324.6	1285.5	1209.8
32.5°	917.6	927.4	954.6	994.0	1034.8	1105.8	1185.2	1239.8	1270.4	1268.4	1214.8
35°	732.5	746.6	769.8	799.8	856.0	929.7	1019.6	1105.4	1182.2	1214.2	1195.0
37.5°	594.5	595.8	617.7	660.1	695.1	760.1	841.2	947.2	1047.9	1131.4	1149.9
40°	481.4	490.8	502.2	528.8	570.2	632.5	686.4	790.7	895.1	999.8	1074.5
42.5°	410.0	410.0	422.8	439.6	467.2	504.6	568.9	663.5	757.4	886.0	970.1
45°	356.8	360.2	365.9	376.7	396.2	425.1	475.0	539.3	635.2	743.2	869.8
47.5°	318.4	318.1	323.2	329.5	344.7	366.6	395.9	448.0	519.1	635.5	747.3
50°	282.8	284.1	287.8	293.2	303.3	318.8	337.3	376.7	436.6	528.8	646.0
52.5°	255.2	254.8	257.8	261.2	269.0	277.7	294.2	323.5	364.9	438.3	535.6
55°	226.2	227.6	231.3	233.3	239.7	245.4	259.2	275.7	309.0	364.2	452.7
57.5°	201.3	203.0	205.0	207.0	211.4	217.1	228.6	238.7	262.9	302.6	373.3
60°	178.4	177.7	180.1	183.5	185.8	190.9	197.3	207.7	224.5	252.8	304.6
62.5°	155.5	155.9	156.2	158.2	162.6	167.0	172.7	180.4	190.5	211.4	248.1
65°	132.0	132.3	133.0	135.0	139.4	142.1	148.1	154.8	162.9	175.4	201.0
67.5°	111.1	112.4	112.4	114.1	115.8	118.5	122.9	127.9	134.6	143.7	160.2
70°	86.2	85.8	87.5	90.9	92.6	97.3	100.3	103.7	109.7	115.5	129.6
72.5°	69.3	69.3	69.3	70.7	71.0	72.0	74.1	81.1	85.8	91.6	99.3
75°	56.6	56.9	56.9	57.2	57.6	58.6	59.2	61.3	62.6	68.7	73.4
77.5°	45.1	45.4	45.4	45.8	46.1	46.5	47.8	47.8	48.8	50.2	52.2
80°	35.0	34.7	34.7	35.0	35.0	36.0	36.0	36.7	37.0	37.7	38.7
82.5°	24.9	24.6	24.9	24.6	24.9	25.2	25.9	25.6	26.3	26.9	27.3
85°	15.5	15.8	15.8	16.5	16.2	15.8	16.2	16.2	16.2	16.2	16.8
87.5°	6.7	7.4	7.4	7.1	7.4	7.4	6.7	7.4	7.4	7.4	7.7
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°	779.6	779.6	779.6	779.6	779.6	779.6	779.6	779.6	779.6	779.6	779.6
2.5°	809.9	808.6	803.5	798.8	791.7	788.7	784.7	783.0	777.6	770.2	766.8
5°	847.6	837.5	827.7	816.0	806.2	794.8	788.4	781.0	769.5	759.1	751.7
7.5°	887.7	872.8	854.7	835.1	817.6	801.1	787.0	775.2	760.4	745.9	734.5
10°	931.8	906.5	877.2	852.3	827.1	803.2	785.3	767.5	748.3	730.1	716.3
12.5°	979.2	943.5	908.2	870.8	833.1	805.5	778.9	756.0	734.5	715.3	698.8
15°	1028.4	979.6	934.4	892.4	839.9	802.8	773.5	745.3	718.3	694.8	678.6
17.5°	1063.4	1007.5	950.6	891.0	845.9	800.1	763.8	728.1	703.2	679.0	657.1
20°	1095.7	1032.4	964.7	909.2	846.3	790.4	750.7	716.3	681.6	655.7	637.2
22.5°	1109.5	1052.3	983.9	906.8	843.9	786.7	735.5	696.8	665.8	637.6	613.3
25°	1112.2	1048.2	978.2	903.8	834.8	772.9	721.0	682.3	641.9	612.6	593.8
27.5°	1124.0	1036.4	967.8	893.7	823.7	759.1	704.5	661.5	623.8	592.4	568.2
30°	1127.0	1031.4	945.6	874.9	802.8	739.5	684.3	640.9	599.9	567.9	546.0
32.5°	1128.3	1024.7	922.3	844.9	776.2	716.7	666.2	619.0	580.0	546.3	523.8
35°	1123.6	1015.2	894.4	810.9	744.9	686.4	639.6	597.8	554.4	522.8	498.9
37.5°	1105.1	1000.4	878.6	771.2	708.2	653.0	613.3	572.2	532.2	497.9	473.3
40°	1070.1	978.9	848.9	737.9	666.5	617.0	580.0	546.3	505.9	472.9	448.7
42.5°	1014.2	949.6	821.7	700.2	625.1	578.3	547.3	518.4	482.0	450.7	424.1
45°	931.4	908.5	785.3	661.8	580.0	535.9	509.0	486.4	453.4	424.8	400.2
47.5°	841.9	846.9	748.6	622.7	538.9	496.8	473.3	453.4	428.5	397.9	375.3
50°	738.5	766.1	697.1	583.4	497.9	456.5	433.2	421.1	397.9	372.3	351.1
52.5°	643.9	687.7	645.0	540.3	457.5	416.7	395.2	383.1	367.6	346.4	324.8
55°	546.0	601.5	570.6	493.8	416.4	375.3	357.2	347.7	334.9	318.4	298.9
57.5°	464.9	524.1	504.6	445.0	376.3	339.3	323.2	312.4	304.6	289.5	273.7
60°	385.4	440.3	432.6	388.8	336.6	301.3	288.8	280.1	273.7	262.6	247.1
62.5°	311.0	364.2	368.9	334.6	297.9	265.9	254.5	248.4	243.4	234.6	220.5
65°	246.7	293.5	303.3	277.0	257.2	232.9	221.8	218.1	214.4	204.3	193.6
67.5°	193.2	229.9	242.7	227.9	213.8	199.6	190.9	185.8	183.1	177.1	169.7
70°	147.8	179.4	190.2	183.8	174.4	169.0	162.2	158.9	156.2	148.4	144.4
72.5°	110.7	132.3	145.8	143.7	141.7	138.0	134.0	133.0	128.9	123.9	120.2
75°	81.1	93.6	105.7	110.1	109.4	110.7	106.4	104.7	102.3	98.6	95.6
77.5°	58.2	65.6	74.1	79.4	82.1	82.5	82.5	81.5	79.8	77.1	74.7
80°	40.4	42.1	49.8	54.9	57.6	59.6	59.6	59.9	58.2	57.2	55.5
82.5°	27.9	28.9	30.6	34.7	38.0	40.4	40.7	40.4	39.7	39.4	37.0
85°	17.5	17.2	17.2	18.2	20.9	23.2	23.6	24.2	23.9	23.6	21.2
87.5°	7.4	7.4	7.7	7.4	8.4	8.8	9.4	11.1	10.8	9.1	8.4
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°	779.6	779.6	779.6	779.6	779.6	779.6	779.6	779.6	779.6	779.6	779.6
2.5°	764.8	760.4	756.4	752.0	746.6	741.6	740.9	740.2	741.9	738.5	737.2
5°	745.9	737.5	731.1	723.1	717.3	709.9	705.9	704.9	704.5	702.5	699.8
7.5°	725.4	716.3	707.2	698.1	688.7	681.0	676.6	674.2	672.2	668.9	666.2
10°	706.2	694.8	685.0	672.6	662.5	652.4	648.3	645.0	642.9	638.2	634.5
12.5°	684.7	670.2	659.4	646.0	636.9	628.1	621.7	615.3	610.6	603.6	600.5
15°	665.8	650.7	632.5	624.4	611.6	598.5	591.4	591.4	581.7	576.0	572.2
17.5°	640.6	627.5	614.7	598.2	580.0	572.2	564.2	557.1	550.4	548.7	542.0
20°	618.4	602.9	589.8	571.9	555.4	546.3	536.9	529.2	524.1	519.4	515.7
22.5°	596.5	581.0	560.8	543.3	532.2	520.1	510.0	503.2	498.9	491.8	488.4
25°	573.6	555.1	536.9	519.7	505.9	495.5	485.1	481.4	473.6	469.9	465.2
27.5°	550.7	528.5	511.3	496.5	481.0	470.9	463.9	457.1	450.4	448.4	445.7
30°	525.1	504.6	488.1	473.6	458.8	450.1	441.6	435.6	429.9	425.5	422.5
32.5°	499.5	482.4	466.6	449.7	436.3	426.8	419.8	414.4	411.7	404.3	401.6
35°	476.0	458.5	441.6	425.8	415.0	406.0	399.6	394.5	388.8	384.1	381.4
37.5°	451.7	435.9	418.8	405.3	393.2	385.8	378.7	372.0	367.6	364.9	361.5
40°	428.2	411.3	398.2	383.4	372.6	364.2	356.8	351.8	346.4	344.0	339.6
42.5°	406.0	389.8	374.7	361.2	351.4	343.3	336.3	330.6	326.2	321.8	319.4
45°	380.4	366.2	352.4	339.0	329.9	321.1	313.4	308.3	302.3	298.6	297.2
47.5°	358.8	344.0	329.2	316.8	307.3	297.9	291.5	285.5	280.4	276.7	274.7
50°	333.3	319.4	307.3	294.9	285.8	275.7	267.9	262.2	256.5	253.8	250.4
52.5°	311.4	297.9	283.1	272.0	261.6	252.8	245.7	241.0	236.0	231.9	229.6
55°	284.1	271.0	259.2	247.4	237.0	229.9	224.2	216.1	211.7	207.7	201.3
57.5°	260.2	247.7	235.3	223.9	214.1	205.7	198.6	193.2	187.5	184.5	180.1
60°	235.0	221.8	210.4	201.6	190.9	181.8	177.1	170.7	166.0	161.2	159.9
62.5°	210.0	197.9	186.5	177.4	167.6	160.6	154.5	151.5	146.8	143.1	141.7
65°	184.1	174.0	163.3	153.2	147.1	139.0	135.7	130.6	127.9	126.2	125.9
67.5°	158.5	149.5	139.7	132.0	126.2	120.8	116.8	114.8	112.1	110.1	108.4
70°	135.3	126.6	118.2	111.8	107.4	103.3	100.6	96.9	94.3	91.6	87.9
72.5°	112.4	105.4	98.3	93.2	88.9	86.5	82.8	77.1	74.4	73.7	73.4
75°	91.2	83.5	78.4	75.7	71.7	66.0	63.6	62.9	62.6	61.9	61.9
77.5°	70.4	65.6	62.3	56.6	54.5	54.2	52.5	52.2	51.5	51.8	51.8
80°	51.2	48.5	44.4	42.8	42.1	42.4	41.7	42.1	41.4	41.7	41.1
82.5°	34.0	31.6	32.3	31.3	31.3	32.0	31.6	30.6	30.6	30.3	30.3
85°	20.2	19.9	20.5	20.5	20.2	19.2	19.9	19.5	18.5	18.9	18.9
87.5°	8.8	8.8	8.8	8.4	8.8	8.4	8.4	8.4	7.4	7.4	7.4
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: P243435

CATALOG NUMBER: S123RDRP-H560D840-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	779.6	779.6	779.6	779.6
2.5°	737.9	737.2	736.2	735.2
5°	699.8	696.8	696.5	695.5
7.5°	664.1	662.8	660.4	663.1
10°	631.5	632.5	630.1	627.5
12.5°	597.5	595.5	591.8	593.8
15°	567.5	564.2	562.1	557.4
17.5°	536.2	533.5	533.5	530.5
20°	509.0	506.3	506.9	504.9
22.5°	486.1	484.1	481.0	481.4
25°	464.5	461.5	458.1	458.5
27.5°	440.6	437.9	437.3	434.9
30°	419.4	417.1	416.7	416.7
32.5°	398.9	397.9	396.2	395.2
35°	381.1	379.7	377.0	377.7
37.5°	358.8	357.5	357.2	356.8
40°	338.0	337.0	334.3	334.6
42.5°	317.1	315.4	313.7	313.1
45°	294.5	294.2	291.5	292.2
47.5°	273.0	272.3	271.0	269.3
50°	249.1	248.8	247.7	245.7
52.5°	225.9	224.9	222.8	220.8
55°	199.6	196.6	196.9	195.2
57.5°	178.1	176.7	174.0	173.0
60°	157.2	155.9	155.5	154.2
62.5°	139.7	138.3	137.3	137.3
65°	123.9	122.2	121.9	121.9
67.5°	106.4	104.7	104.4	103.7
70°	84.5	84.2	83.5	83.5
72.5°	72.7	72.4	72.7	71.4
75°	61.9	61.6	61.6	61.9
77.5°	51.5	51.5	51.2	51.2
80°	40.7	41.1	40.7	41.7
82.5°	30.6	30.0	30.3	29.6
85°	18.9	18.9	18.2	18.2
87.5°	7.4	7.4	7.4	7.4
90°	0.0	0.0	0.0	0.0



TEST NUMBER: P243435  
 CATALOG NUMBER: S123RDRP-H560D840-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	16.19	17.69	16.56	18.01	18.32	18.89	20.39	19.25	20.70	21.02
	3H	17.38	18.72	17.76	19.05	19.41	20.32	21.66	20.69	21.99	22.35
	4H	17.73	18.99	18.13	19.34	19.72	20.82	22.08	21.22	22.43	22.81
	6H	18.00	19.17	18.42	19.54	19.93	21.16	22.33	21.58	22.70	23.09
	8H	18.10	19.20	18.52	19.59	19.99	21.27	22.37	21.69	22.76	23.16
	12H	18.16	19.22	18.59	19.60	20.03	21.32	22.38	21.76	22.77	23.20
4H	2H	17.14	18.40	17.54	18.75	19.13	19.17	20.43	19.57	20.78	21.16
	3H	18.41	19.45	18.82	19.85	20.26	20.89	21.93	21.30	22.33	22.73
	4H	18.82	19.76	19.25	20.17	20.61	21.50	22.44	21.93	22.86	23.30
	6H	19.16	19.98	19.62	20.42	20.88	21.96	22.77	22.42	23.22	23.68
	8H	19.28	20.04	19.74	20.48	20.95	22.10	22.86	22.56	23.30	23.77
	12H	19.37	20.05	19.85	20.53	21.00	22.19	22.87	22.67	23.35	23.82
8H	4H	19.18	19.94	19.64	20.38	20.85	21.56	22.32	22.03	22.77	23.23
	6H	19.60	20.23	20.09	20.72	21.20	22.09	22.72	22.59	23.21	23.69
	8H	19.76	20.33	20.28	20.84	21.32	22.28	22.84	22.79	23.35	23.84
	12H	19.91	20.41	20.42	20.90	21.46	22.43	22.93	22.94	23.42	23.99
12H	4H	19.21	19.89	19.69	20.37	20.84	21.55	22.23	22.03	22.71	23.18
	6H	19.64	20.21	20.16	20.72	21.21	22.08	22.64	22.59	23.16	23.64
	8H	19.85	20.35	20.36	20.85	21.41	22.31	22.81	22.82	23.30	23.87