

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: P243332

Luminaire Tested: S123DRP-H560D840-X4F0-XX-UDD-A-W

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2024
Report Number: P243332
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-H560D840-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

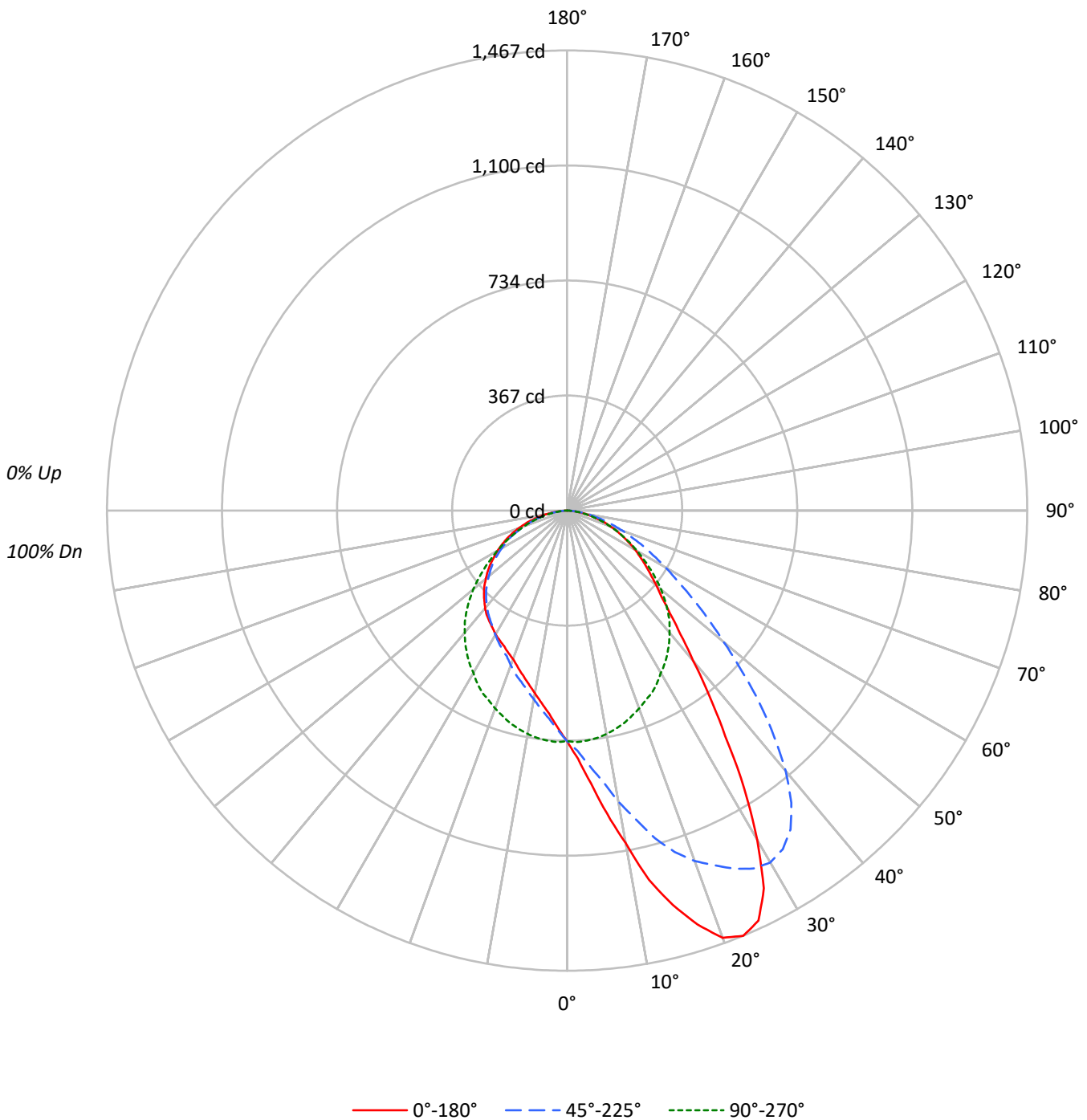
Lumens per Lamp: N/A
Luminaire Lumens: 2215.6 lumens
Efficiency: N/A
Efficacy: 128.8 lumens/watt
Spacing Criteria (0/90/45): 1.39 / 1.21 / 1.5
Luminous Opening: Rectangular (W 3.88' x L: 0.23' x H: 0')
CIE Type: Direct

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°	8910	8910	8910	8910	8910
5°	10616	9927	8953	8097	7913
10°	13257	11597	8899	7519	7275
15°	16339	13568	8803	7093	6827
20°	18696	15332	8662	6769	6496
25°	19295	16841	8568	6532	6374
30°	16951	18130	8363	6402	6380
35°	13010	18365	8238	6321	6385
40°	9896	17140	8037	6301	6434
45°	7962	14864	7777	6267	6428
50°	7007	12295	7364	6157	6374
55°	6458	10285	6822	6061	6331
60°	6087	8781	6242	5859	6201
65°	5659	7626	5705	5627	6083
70°	5178	6645	5118	5178	5823
75°	4604	5676	4463	4636	5423
80°	3853	4677	3686	3972	4747
85°	2712	3463	2670	2990	3560

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 55°
 Vertical Angle: 45°
 Luminance: 16688 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	72.3	3.3
10°-20°	232.2	10.5
20°-30°	383.5	17.3
30°-40°	439.0	19.8
40°-50°	397.8	18.0
50°-60°	321.4	14.5
60°-70°	223.9	10.1
70°-80°	117.4	5.3
80°-90°	28.0	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°	688.1	31.1
0°-40°	1127.0	50.9
0°-60°	1846.2	83.3
0°-90°	2215.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2215.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	735	735	735	735	735	
5°	872	816	736	666	650	90
15°	1302	1081	702	565	544	371
25°	1443	1259	641	488	477	645
35°	879	1241	557	427	432	557
45°	464	867	454	366	375	366
55°	306	487	323	287	300	275
65°	197	266	199	196	212	195
75°	98	121	95	99	116	105
85°	20	25	19	22	26	25
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°	735.1	735.1	735.1	735.1	735.1	735.1	735.1	735.1	735.1	735.1	735.1
2.5°	791.7	793.4	790.7	792.4	788.3	786.0	782.3	780.6	772.5	766.8	764.8
5°	872.5	872.5	873.2	869.1	864.4	856.0	844.9	837.8	829.7	815.9	808.9
7.5°	974.1	969.1	965.7	958.3	951.9	938.1	926.0	911.5	892.7	869.8	857.7
10°	1077.1	1082.5	1079.2	1071.4	1054.9	1032.4	1014.5	993.7	964.4	942.2	910.5
12.5°	1205.7	1198.7	1193.3	1181.5	1163.3	1139.4	1111.8	1080.8	1043.1	1006.4	971.1
15°	1302.0	1303.0	1302.7	1287.2	1269.3	1237.0	1211.4	1159.9	1112.1	1081.2	1022.6
17.5°	1383.4	1387.8	1382.8	1359.5	1343.7	1324.5	1291.9	1234.7	1191.2	1141.1	1076.5
20°	1449.4	1450.1	1442.0	1424.8	1406.7	1385.1	1342.0	1298.3	1255.9	1188.6	1127.0
22.5°	1466.9	1468.6	1466.9	1459.5	1444.7	1421.8	1389.5	1349.1	1295.6	1223.9	1166.7
25°	1442.7	1441.7	1447.4	1443.0	1442.4	1434.9	1413.7	1381.1	1328.2	1259.2	1186.5
27.5°	1357.9	1350.8	1365.3	1384.1	1386.8	1398.6	1398.9	1383.8	1345.7	1286.8	1207.7
30°	1211.1	1217.8	1224.9	1264.3	1286.2	1316.8	1343.4	1353.2	1338.7	1295.3	1221.2
32.5°	1051.6	1073.1	1093.0	1120.2	1152.2	1204.0	1246.1	1283.1	1299.0	1279.8	1221.2
35°	879.2	890.7	922.0	956.6	1002.7	1043.1	1126.6	1180.5	1228.6	1241.1	1205.7
37.5°	744.6	755.0	765.8	792.7	844.5	911.9	980.9	1051.6	1122.9	1174.1	1172.1
40°	625.4	627.8	637.2	660.4	703.5	763.4	835.8	921.0	1013.5	1083.2	1112.5
42.5°	533.9	533.9	545.6	572.6	597.5	641.2	711.2	786.3	887.6	977.2	1039.8
45°	464.5	465.2	474.6	493.8	513.3	547.7	599.5	670.2	774.5	867.1	954.3
47.5°	408.0	414.4	419.7	429.8	449.4	479.7	517.4	577.6	652.0	753.0	854.6
50°	371.6	373.0	377.0	383.1	398.2	418.1	450.7	496.5	562.5	652.0	754.7
52.5°	335.9	335.9	340.0	347.4	356.1	372.3	395.8	433.9	483.4	564.5	656.7
55°	305.6	306.6	307.3	313.4	320.8	332.9	351.4	376.3	421.8	486.7	567.2
57.5°	276.0	279.7	278.7	283.4	288.8	297.6	310.7	332.2	366.9	416.4	488.8
60°	251.1	250.4	252.1	254.1	257.8	263.9	276.0	291.8	320.8	362.2	421.4
62.5°	222.8	222.2	224.2	226.5	229.9	235.0	243.7	255.8	278.7	309.7	361.2
65°	197.3	196.6	197.6	198.9	202.6	206.7	213.4	223.5	238.7	265.9	305.3
67.5°	171.7	171.7	172.3	173.7	176.0	179.1	184.5	190.5	205.7	223.8	254.8
70°	146.1	146.4	146.4	147.8	149.8	152.1	156.5	161.9	171.3	187.5	212.4
72.5°	123.9	123.9	123.2	123.9	125.2	126.2	128.9	134.0	141.0	152.8	171.7
75°	98.3	100.0	99.6	99.3	100.3	102.0	104.3	108.4	112.8	121.2	135.3
77.5°	75.4	76.4	76.4	76.7	77.8	79.1	79.8	83.8	87.9	92.9	103.3
80°	55.2	55.9	55.2	55.5	56.2	57.6	58.9	59.6	62.6	67.0	72.0
82.5°	37.0	36.0	37.4	37.0	37.7	38.0	38.7	39.0	41.1	43.8	47.1
85°	19.5	21.2	20.9	21.5	20.9	21.2	21.5	22.9	23.2	24.9	26.9
87.5°	7.4	8.1	8.1	8.1	8.1	8.1	8.8	9.1	9.8	10.1	10.8
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°	735.1	735.1	735.1	735.1	735.1	735.1	735.1	735.1	735.1	735.1	735.1
2.5°	766.1	763.1	758.7	754.0	748.9	743.9	741.5	738.5	732.5	726.4	721.7
5°	803.1	794.7	783.3	774.9	762.7	751.3	742.2	735.8	726.1	714.3	706.5
7.5°	844.5	829.4	811.2	792.7	774.5	757.4	743.2	731.1	716.0	701.5	689.7
10°	893.4	864.1	838.8	811.9	785.0	760.7	740.5	723.0	703.5	686.0	671.5
12.5°	936.4	902.4	867.4	829.4	793.0	761.7	735.8	712.9	689.4	669.2	654.4
15°	983.9	936.1	887.6	844.5	800.4	762.1	728.1	701.5	674.6	651.7	634.5
17.5°	1038.4	974.5	913.5	851.6	812.6	763.1	721.3	686.3	658.7	635.8	613.6
20°	1070.7	1007.1	932.4	868.8	804.1	753.3	706.9	671.5	639.2	613.0	594.8
22.5°	1088.2	1021.3	943.2	877.9	802.5	745.6	696.1	654.4	619.7	593.4	572.9
25°	1112.8	1021.3	948.9	870.5	805.2	736.5	680.6	640.6	604.2	573.9	552.4
27.5°	1123.9	1030.3	949.6	856.3	789.0	719.3	662.8	620.4	580.0	550.3	531.8
30°	1133.0	1032.0	936.1	845.2	770.2	700.1	644.9	597.5	559.8	531.5	512.0
32.5°	1133.7	1027.7	917.9	824.3	744.9	677.6	623.7	579.0	539.6	509.6	490.4
35°	1127.6	1016.9	897.1	792.4	715.6	654.4	600.5	556.7	516.7	488.1	468.6
37.5°	1112.1	1004.8	877.5	762.4	681.0	621.4	575.6	533.9	494.1	465.5	449.4
40°	1079.2	985.2	851.9	730.4	645.9	586.4	546.3	507.9	472.6	443.0	426.8
42.5°	1035.4	956.0	821.0	696.4	606.9	549.3	514.0	483.0	447.0	421.4	404.9
45°	973.5	916.2	790.0	660.8	568.2	511.6	479.3	453.7	422.8	397.2	382.7
47.5°	903.4	868.4	750.0	620.7	527.5	474.3	443.6	423.1	396.9	375.0	360.5
50°	824.7	811.6	705.9	580.3	489.4	434.9	406.6	390.5	368.2	350.7	338.3
52.5°	739.2	747.3	659.4	539.2	452.7	397.5	370.6	355.8	341.7	326.8	315.1
55°	652.3	671.5	603.2	494.5	410.7	362.5	336.3	322.8	312.4	299.9	291.5
57.5°	570.9	600.8	545.0	446.7	371.9	325.8	300.9	289.1	281.4	274.7	266.9
60°	491.8	526.5	485.0	401.9	333.2	291.2	268.9	257.5	253.8	248.8	241.3
62.5°	421.8	457.1	426.1	355.8	294.2	258.2	238.0	228.6	223.2	221.5	217.1
65°	356.1	389.1	365.6	307.7	257.2	225.2	207.3	198.9	195.9	195.6	192.2
67.5°	299.2	331.2	309.7	260.9	218.1	192.2	178.7	172.0	169.0	169.3	167.0
70°	246.7	269.3	256.5	218.1	185.1	162.2	151.8	144.4	142.0	142.0	141.4
72.5°	197.9	215.8	206.0	176.7	150.8	133.3	124.2	119.8	117.8	117.5	117.8
75°	154.8	170.3	161.6	138.7	119.2	106.0	98.3	95.3	94.2	93.6	93.9
77.5°	115.8	125.6	120.2	105.4	89.2	80.1	76.4	73.4	72.4	72.7	73.4
80°	81.8	87.2	84.2	74.7	64.0	57.9	55.2	52.8	51.8	52.8	52.8
82.5°	51.8	55.9	53.2	47.1	41.7	37.7	35.0	34.3	34.0	33.3	34.3
85°	28.3	30.3	28.9	26.9	23.2	21.5	19.5	19.2	19.2	19.2	19.2
87.5°	11.1	12.5	10.8	10.8	10.1	8.4	8.4	8.1	7.7	8.1	8.1
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°	735.1	735.1	735.1	735.1	735.1	735.1	735.1	735.1	735.1	735.1	735.1
2.5°	719.7	715.3	712.6	708.9	704.5	698.8	696.4	698.8	697.4	695.1	696.1
5°	699.8	694.1	686.7	680.6	673.9	665.5	662.8	661.4	659.4	658.4	656.7
7.5°	680.3	671.9	662.8	654.4	644.6	637.2	633.8	631.5	630.8	625.7	623.7
10°	660.1	649.6	640.6	629.1	620.7	610.9	606.9	604.2	601.2	597.8	595.5
12.5°	638.9	628.4	617.0	606.2	597.8	587.0	581.7	578.6	576.3	573.9	571.2
15°	620.4	609.9	594.1	586.0	575.9	565.2	561.8	555.1	555.7	551.7	549.0
17.5°	600.8	585.4	574.2	562.1	554.7	547.0	540.6	533.5	532.5	529.5	528.5
20°	579.0	562.8	555.1	542.6	532.5	524.8	519.0	518.4	516.4	512.0	510.3
22.5°	557.4	544.3	533.5	522.1	513.0	502.9	500.2	501.2	497.5	496.5	492.8
25°	537.9	526.5	513.0	502.2	494.8	488.4	484.7	483.4	482.0	481.0	479.3
27.5°	517.0	504.9	493.5	484.7	477.6	473.3	470.9	467.9	467.5	467.5	466.9
30°	496.2	485.4	477.6	466.5	460.1	457.4	455.4	454.4	455.4	455.4	455.8
32.5°	477.0	466.5	457.4	449.7	443.3	441.3	441.0	441.0	442.3	442.3	443.3
35°	457.1	446.7	438.3	432.9	427.5	427.2	427.5	428.2	429.8	430.2	431.5
37.5°	435.6	427.5	421.1	414.4	413.0	413.7	414.4	415.0	415.7	418.4	418.4
40°	415.7	409.6	403.3	398.9	396.5	398.2	399.2	399.6	401.6	403.3	404.6
42.5°	396.2	390.5	385.4	381.7	380.7	382.0	383.1	384.1	386.1	387.4	389.8
45°	374.3	370.6	366.2	363.2	363.5	365.6	365.6	368.9	370.3	370.9	372.6
47.5°	354.1	350.1	347.0	345.7	345.4	347.0	348.0	350.7	351.4	353.8	355.1
50°	332.6	329.5	327.2	325.5	325.8	326.5	328.9	331.6	332.2	334.9	337.3
52.5°	310.0	307.3	305.3	306.0	307.0	307.0	309.3	311.0	312.7	314.7	317.1
55°	287.8	284.1	284.4	283.4	284.4	286.8	287.8	290.5	291.8	292.8	296.2
57.5°	263.6	262.9	261.9	260.9	262.9	263.9	265.6	267.3	269.6	271.0	273.3
60°	238.7	237.6	237.6	239.0	239.7	241.7	244.4	245.4	246.1	248.8	251.8
62.5°	215.8	214.8	214.4	216.4	216.4	218.5	219.5	221.1	223.8	224.9	228.9
65°	191.2	190.5	190.5	192.2	192.5	196.2	196.2	196.2	197.9	201.6	203.6
67.5°	165.6	165.9	167.0	168.0	169.3	170.3	170.7	172.7	175.4	177.7	181.8
70°	140.0	141.7	143.7	143.4	144.4	146.1	146.4	148.4	150.8	153.8	158.5
72.5°	117.1	118.1	120.2	120.2	121.5	122.5	124.2	125.6	128.6	131.3	133.3
75°	94.2	94.6	96.3	97.3	98.3	99.0	100.6	103.0	104.7	107.0	110.1
77.5°	74.1	73.4	74.7	75.1	75.7	77.1	78.4	80.8	82.1	84.8	85.8
80°	52.5	53.9	54.2	54.5	55.2	56.9	57.9	58.9	60.3	62.6	63.6
82.5°	34.7	35.3	36.4	36.7	37.4	37.7	38.0	39.7	40.7	41.4	44.8
85°	20.2	21.2	20.5	20.5	21.2	21.5	22.9	22.9	24.2	23.6	25.2
87.5°	8.8	8.4	8.4	8.8	8.4	8.1	9.1	9.1	8.8	9.1	9.1
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: P243332

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CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	735.1	735.1	735.1	735.1
2.5°	694.4	694.4	691.7	692.7
5°	653.4	654.7	651.3	650.3
7.5°	623.1	621.7	619.4	619.4
10°	593.4	592.1	591.1	591.1
12.5°	567.9	566.5	564.5	566.2
15°	545.0	545.3	544.0	544.0
17.5°	527.5	524.4	523.4	523.1
20°	506.6	507.3	505.9	503.6
22.5°	493.5	491.8	490.4	490.1
25°	480.0	478.3	478.0	476.6
27.5°	466.5	466.9	465.9	465.9
30°	455.4	456.4	455.4	455.8
32.5°	444.3	444.3	444.3	443.0
35°	432.2	432.5	432.2	431.5
37.5°	419.7	419.7	420.1	420.8
40°	405.9	405.9	406.6	406.6
42.5°	389.5	391.1	392.1	390.5
45°	374.6	375.0	375.3	375.0
47.5°	358.1	357.1	357.5	358.1
50°	337.6	340.0	340.0	338.0
52.5°	317.8	318.4	319.8	319.8
55°	298.2	298.6	298.9	299.6
57.5°	276.0	276.4	276.4	276.0
60°	253.8	255.8	255.5	255.8
62.5°	229.9	232.9	233.9	233.6
65°	207.3	208.0	209.7	212.1
67.5°	183.4	185.1	187.8	187.2
70°	159.9	162.2	162.9	164.3
72.5°	136.3	139.4	140.0	140.7
75°	113.4	114.8	116.1	115.8
77.5°	88.5	90.5	92.9	91.6
80°	66.3	66.6	68.7	68.0
82.5°	43.8	46.5	46.5	45.1
85°	25.6	25.6	25.6	25.6
87.5°	8.8	8.4	9.1	8.8
90°	0.0	0.0	0.0	0.0



TEST NUMBER: P243332
 CATALOG NUMBER: S123DRP-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	18.00	19.56	18.36	19.87	20.19	18.53	20.09	18.89	20.40	20.72
	3H	19.52	20.92	19.89	21.25	21.61	19.87	21.27	20.24	21.60	21.96
	4H	20.06	21.38	20.46	21.73	22.11	20.32	21.64	20.72	21.99	22.37
	6H	20.42	21.64	20.84	22.01	22.40	20.62	21.84	21.04	22.21	22.60
	8H	20.52	21.68	20.95	22.07	22.47	20.70	21.86	21.12	22.25	22.65
	12H	20.57	21.69	21.01	22.07	22.50	20.74	21.85	21.17	22.23	22.66
4H	2H	19.16	20.48	19.56	20.83	21.20	19.32	20.64	19.72	20.99	21.36
	3H	20.72	21.82	21.13	22.21	22.62	21.11	22.21	21.52	22.61	23.01
	4H	21.31	22.30	21.75	22.72	23.16	21.67	22.66	22.11	23.08	23.51
	6H	21.74	22.60	22.20	23.04	23.50	22.04	22.90	22.50	23.34	23.80
	8H	21.86	22.67	22.32	23.11	23.58	22.13	22.94	22.59	23.38	23.85
	12H	21.94	22.66	22.42	23.13	23.60	22.18	22.91	22.67	23.38	23.85
8H	4H	21.78	22.58	22.24	23.03	23.49	21.98	22.78	22.44	23.23	23.69
	6H	22.28	22.94	22.77	23.43	23.91	22.49	23.15	22.98	23.64	24.12
	8H	22.44	23.04	22.95	23.55	24.03	22.63	23.23	23.15	23.74	24.23
	12H	22.56	23.09	23.07	23.58	24.14	22.73	23.26	23.24	23.75	24.32
12H	4H	21.83	22.55	22.31	23.02	23.49	21.99	22.71	22.47	23.19	23.66
	6H	22.35	22.95	22.86	23.45	23.94	22.52	23.12	23.03	23.63	24.11
	8H	22.56	23.08	23.06	23.57	24.14	22.72	23.25	23.23	23.74	24.31