

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: P242575

Luminaire Tested: S123RDRP-S560D840-X4F0-XX-UDD-A-W

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2024
Report Number: P242575
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-30)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: S123RDRP-S560D840-X4F0-XX-UDD-A-W
Description: DEFINE 3 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER
STANDARD LIGHT ENGINE
Light Source: (92) 4000K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

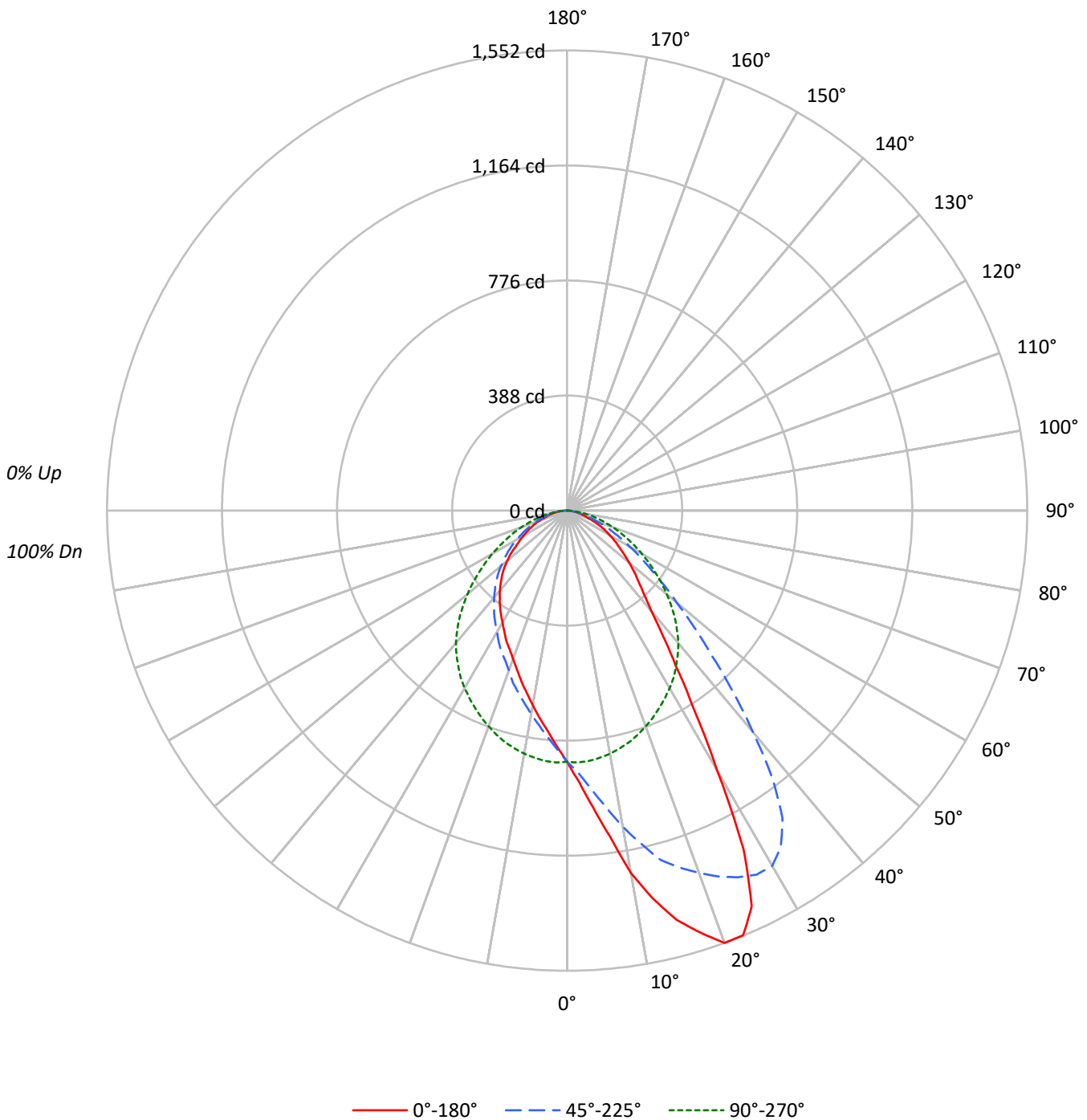
Lumens per Lamp: N/A
Luminaire Lumens: 2108.9 lumens
Efficiency: N/A
Efficacy: 112.2 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.22 / 1.35
Luminous Opening: Rectangular (W 3.88' x L: 0.23' x H: 0')
CIE Type: Direct

Input Watts (W): 18.8
Input Voltage (V): 120
Input Current (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	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	108	104	100	97	100	97	94	96	93	91	92	90	89	87				87
2	101	94	88	83	99	92	87	82	89	84	80	86	82	78	83	79	77	74				74
3	93	84	76	71	91	82	75	70	79	74	69	77	72	68	74	70	66	64				64
4	86	75	67	61	84	74	66	61	71	65	60	69	64	59	67	62	58	56				56
5	80	68	60	53	78	67	59	53	65	58	53	63	57	52	61	56	52	50				50
6	74	62	53	47	72	61	53	47	59	52	47	57	51	46	56	50	46	44				44
7	69	56	48	42	67	55	48	42	54	47	42	53	46	42	51	46	41	39				39
8	64	52	44	38	63	51	43	38	50	43	38	48	42	38	47	42	37	36				36
9	60	48	40	35	59	47	40	35	46	39	34	45	39	34	44	38	34	32				32
10	57	44	37	32	55	44	36	32	43	36	31	42	36	31	41	35	31	29				29

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	10265	10265	10265	10265	10265
5°	12237	11479	10310	9308	9079
10°	15279	13333	10250	8576	8202
15°	17935	15315	10146	7976	7480
20°	20017	16770	9989	7413	6865
25°	19696	18252	9825	7022	6488
30°	14157	19364	9672	6617	6100
35°	9453	18735	9475	6341	5848
40°	6965	15443	9236	6063	5587
45°	5842	11783	8820	5804	5333
50°	5156	9085	8273	5489	4976
55°	4520	7249	7646	5165	4491
60°	4027	5915	7050	4747	4114
65°	3536	4847	6405	4377	3826
70°	2775	3895	5833	4022	3494
75°	2445	2871	5095	3634	3194
80°	2129	2457	4328	3190	3141
85°	1711	1864	3477	3227	3324

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 60°
 Vertical Angle: 45°
 Luminance: 16581 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	83.2	3.9
10°-20°	260.4	12.3
20°-30°	410.1	19.4
30°-40°	426.4	20.2
40°-50°	364.8	17.3
50°-60°	278.1	13.2
60°-70°	178.1	8.4
70°-80°	85.3	4.0
80°-90°	22.5	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°	753.6	35.7
0°-40°	1180.1	56.0
0°-60°	1822.9	86.4
0°-90°	2108.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2108.9	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	847	847	847	847	847	
5°	1006	943	847	765	746	103
15°	1429	1220	808	636	596	405
25°	1473	1365	735	525	485	640
35°	639	1266	640	428	395	415
45°	341	687	514	339	311	267
55°	214	343	362	244	212	193
65°	123	169	223	153	133	121
75°	52	61	109	78	68	56
85°	12	13	25	23	24	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°	846.9	846.9	846.9	846.9	846.9	846.9	846.9	846.9	846.9	846.9	846.9
2.5°	915.8	917.3	912.6	911.8	906.4	905.0	905.0	897.3	892.6	886.5	882.8
5°	1005.7	1011.5	1008.6	1002.1	991.2	988.7	981.8	970.9	958.6	943.4	936.1
7.5°	1108.7	1120.7	1118.5	1108.4	1096.7	1089.5	1070.3	1054.7	1031.1	1009.7	993.1
10°	1241.4	1233.1	1226.5	1216.8	1206.2	1189.2	1168.9	1141.0	1108.7	1083.3	1055.1
12.5°	1340.8	1341.1	1332.4	1322.3	1306.3	1290.4	1264.3	1228.7	1189.9	1150.4	1117.1
15°	1429.2	1431.4	1426.0	1415.4	1394.4	1365.8	1328.1	1313.9	1260.3	1220.4	1180.5
17.5°	1492.3	1492.7	1491.6	1477.4	1454.6	1435.0	1399.9	1366.9	1316.1	1262.1	1208.8
20°	1551.8	1548.1	1548.9	1532.5	1516.6	1493.0	1458.9	1404.9	1365.0	1300.1	1244.7
22.5°	1550.3	1550.3	1553.6	1550.7	1540.2	1523.5	1498.5	1455.0	1401.3	1335.7	1271.5
25°	1472.7	1469.8	1486.9	1491.6	1510.1	1513.3	1505.4	1480.3	1432.1	1364.7	1287.5
27.5°	1287.8	1277.3	1312.8	1348.0	1394.8	1424.5	1455.0	1461.8	1439.0	1383.9	1303.0
30°	1011.5	1045.6	1061.6	1118.9	1182.7	1258.8	1325.5	1389.0	1404.6	1383.5	1320.1
32.5°	796.9	825.6	838.2	885.4	943.7	1036.2	1144.6	1241.0	1316.5	1341.8	1309.9
35°	638.8	639.2	669.7	691.4	746.5	838.2	935.4	1055.8	1175.4	1266.1	1275.5
37.5°	527.2	528.6	548.2	569.9	614.2	665.7	755.9	857.5	1001.4	1136.6	1207.0
40°	440.2	443.4	457.2	478.6	508.3	544.9	611.6	705.9	821.2	976.0	1102.6
42.5°	384.3	390.1	395.6	410.8	426.4	460.1	510.8	578.3	680.5	824.8	975.7
45°	340.8	343.7	349.1	356.8	373.4	397.4	433.6	482.6	569.6	687.4	833.5
47.5°	307.5	305.6	311.8	318.3	329.6	347.0	372.4	414.8	480.0	578.6	705.2
50°	273.4	273.0	277.0	281.7	292.2	304.2	324.1	354.2	403.5	481.8	595.3
52.5°	241.5	243.3	245.8	252.0	258.9	267.9	285.3	304.9	345.5	410.4	500.3
55°	213.9	215.0	219.0	222.3	227.7	237.5	248.7	266.8	295.9	343.0	420.9
57.5°	190.0	189.6	193.6	194.0	200.9	209.2	218.3	232.4	254.5	291.9	346.2
60°	166.1	165.0	168.2	170.8	174.0	180.6	187.8	201.6	218.3	244.0	289.0
62.5°	144.3	143.9	146.1	148.7	151.2	157.0	162.8	172.6	184.9	205.6	238.9
65°	123.3	124.4	125.4	126.5	128.0	131.6	137.4	144.7	153.7	169.0	194.7
67.5°	101.5	103.0	103.3	105.9	108.8	110.6	113.8	120.7	127.6	141.4	156.6
70°	78.3	78.0	78.3	79.4	83.4	87.4	92.1	96.8	100.8	109.9	122.2
72.5°	64.5	63.8	64.9	64.9	66.3	66.7	69.2	73.6	79.0	84.5	92.5
75°	52.2	52.2	52.2	52.2	53.7	54.4	55.5	56.6	58.4	61.3	67.8
77.5°	40.6	40.6	41.3	41.7	42.1	42.4	43.1	44.2	45.0	46.4	49.7
80°	30.5	30.8	30.5	30.8	30.8	31.5	31.9	33.0	33.4	35.2	36.3
82.5°	21.0	20.7	21.0	21.4	21.4	22.1	22.1	22.8	22.8	23.6	24.7
85°	12.3	11.6	12.3	12.0	12.7	12.0	12.3	13.1	13.1	13.4	14.9
87.5°	3.6	4.4	3.6	4.0	4.0	4.4	4.4	4.4	5.1	4.7	5.1
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°	846.9	846.9	846.9	846.9	846.9	846.9	846.9	846.9	846.9	846.9	846.9
2.5°	881.4	880.3	875.2	869.4	861.8	856.7	852.7	850.6	844.0	836.1	830.6
5°	928.5	917.6	906.0	891.9	878.9	865.4	857.1	847.3	835.3	821.9	812.5
7.5°	975.3	956.4	935.8	914.4	892.6	873.4	855.6	841.1	823.0	804.5	791.8
10°	1030.8	999.6	967.3	934.3	904.2	875.9	854.2	832.8	810.0	787.8	771.2
12.5°	1081.2	1037.7	999.2	956.8	916.2	881.0	847.3	821.2	792.6	768.6	749.1
15°	1122.1	1080.1	1035.1	973.5	922.4	879.6	841.5	808.5	775.2	746.2	727.7
17.5°	1164.9	1101.1	1042.0	994.1	927.4	875.6	831.0	792.6	756.3	726.6	703.4
20°	1189.6	1128.3	1062.7	997.0	931.8	872.0	817.9	774.4	736.4	701.6	680.5
22.5°	1204.4	1133.0	1063.0	991.2	920.9	858.2	804.9	755.9	713.9	681.3	654.1
25°	1215.3	1132.6	1056.5	986.9	916.2	848.8	785.3	734.6	690.0	654.8	627.2
27.5°	1224.0	1128.3	1040.9	965.1	893.7	825.2	767.9	713.5	668.9	632.3	602.2
30°	1226.2	1122.9	1022.4	938.7	865.8	804.2	742.5	691.0	643.2	603.7	576.1
32.5°	1229.1	1109.4	997.4	907.1	832.1	771.2	716.8	668.2	618.9	580.1	551.8
35°	1218.9	1106.2	972.0	869.8	795.1	736.0	685.6	640.3	592.1	554.4	525.7
37.5°	1188.1	1088.4	946.6	828.1	750.9	696.5	654.4	613.1	568.5	527.2	500.7
40°	1136.3	1059.4	916.2	790.7	709.2	653.0	616.0	583.7	540.9	502.9	473.9
42.5°	1059.0	1019.9	887.2	751.6	662.0	608.4	578.6	548.9	512.7	473.9	447.0
45°	961.2	967.3	845.5	709.5	619.3	564.9	535.5	514.5	481.1	449.2	421.3
47.5°	842.2	893.7	800.9	665.3	572.8	521.7	496.0	476.8	453.6	420.6	394.8
50°	726.2	808.5	745.1	620.7	529.7	478.9	453.6	438.7	419.1	394.5	370.2
52.5°	619.3	709.2	677.6	571.0	482.9	437.6	413.0	401.4	386.9	364.0	342.6
55°	522.5	612.0	603.3	521.0	436.2	394.5	375.6	361.8	351.3	333.9	316.5
57.5°	438.3	525.0	526.8	465.5	395.6	353.1	336.8	325.9	318.7	304.9	287.9
60°	359.7	437.6	452.8	409.3	351.3	315.1	299.1	290.8	285.3	274.8	262.5
62.5°	294.4	357.8	375.6	347.3	308.9	275.5	263.9	256.0	252.7	244.0	233.5
65°	235.3	290.4	307.1	289.7	267.6	240.4	230.2	223.3	220.1	215.0	207.0
67.5°	185.6	228.4	246.5	232.0	223.7	204.5	197.6	193.6	190.7	187.1	180.2
70°	142.1	171.9	190.7	187.4	180.9	171.9	167.1	164.6	161.7	158.8	153.0
72.5°	107.3	125.4	142.8	145.7	140.7	140.7	136.7	136.0	134.5	130.9	128.3
75°	75.8	89.9	102.2	107.0	109.1	110.9	109.1	108.8	108.4	105.5	103.7
77.5°	52.6	61.6	70.0	78.3	81.2	83.8	84.1	85.6	84.5	82.7	81.9
80°	38.1	39.9	45.3	52.2	57.6	59.8	61.3	62.0	61.6	61.3	59.8
82.5°	25.0	26.5	28.3	32.6	37.0	41.0	41.7	41.3	42.4	42.8	41.7
85°	14.9	15.2	16.0	16.7	19.2	23.2	24.3	25.0	25.7	25.7	23.6
87.5°	5.8	5.4	6.2	6.2	7.3	7.6	9.8	11.6	12.0	10.5	10.5
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°	846.9	846.9	846.9	846.9	846.9	846.9	846.9	846.9	846.9	846.9	846.9
2.5°	828.8	824.1	820.8	813.6	808.9	803.8	798.7	802.0	801.6	801.3	801.3
5°	804.5	796.2	788.6	778.8	772.6	765.0	759.2	758.5	759.9	754.9	752.0
7.5°	781.7	770.8	759.9	749.8	738.5	729.8	724.4	722.2	718.2	715.0	712.1
10°	757.4	744.0	733.5	720.0	707.7	696.8	690.0	685.2	682.7	680.2	675.5
12.5°	732.4	719.3	705.2	689.6	678.0	664.9	660.2	654.8	649.3	646.4	639.6
15°	708.1	691.0	676.9	661.0	647.9	635.6	628.3	617.8	616.4	612.7	606.2
17.5°	684.5	665.7	645.0	634.1	621.1	608.0	596.4	593.2	582.3	578.6	572.5
20°	655.5	638.5	623.6	608.0	586.6	574.7	566.0	561.2	552.9	547.8	544.2
22.5°	630.5	613.1	595.3	576.5	559.8	546.0	540.2	532.2	528.6	521.0	517.0
25°	606.9	588.1	567.4	547.8	535.1	525.0	514.8	508.3	501.8	498.5	491.3
27.5°	578.3	559.4	539.5	524.3	509.8	499.6	489.8	484.4	476.0	470.6	466.6
30°	555.4	532.2	515.6	502.1	482.2	472.8	465.9	458.6	452.8	447.0	443.1
32.5°	529.0	508.3	492.7	475.3	461.2	450.7	441.2	435.1	430.4	424.9	420.9
35°	501.1	483.3	467.0	450.3	439.1	428.5	418.0	412.6	407.9	402.8	399.2
37.5°	475.7	459.0	443.8	427.8	414.0	405.0	396.3	392.7	386.1	382.5	378.9
40°	452.5	436.2	419.5	404.3	389.8	383.2	375.6	369.5	363.6	361.1	357.1
42.5°	427.1	410.8	397.4	380.7	369.5	360.0	353.1	346.2	342.3	338.3	336.5
45°	402.1	387.6	373.8	357.5	346.2	338.6	330.7	324.5	320.5	318.0	314.0
47.5°	378.2	363.3	349.5	335.0	324.1	315.4	307.1	303.1	297.7	294.8	291.9
50°	351.7	338.6	323.8	310.7	299.8	291.1	284.6	279.2	274.5	270.5	268.7
52.5°	327.4	313.3	300.9	289.0	277.4	267.2	261.4	255.6	252.3	247.6	245.5
55°	300.2	286.8	275.9	263.9	252.7	244.4	237.1	232.0	228.4	223.3	220.4
57.5°	275.2	263.6	250.2	239.7	227.7	221.2	215.0	207.7	203.4	199.4	196.5
60°	249.8	236.0	224.8	215.0	204.8	195.8	190.3	184.9	180.2	176.2	173.7
62.5°	223.3	211.7	201.2	190.3	181.3	173.7	167.1	162.8	158.8	156.6	154.1
65°	196.1	186.7	175.8	167.1	158.4	152.6	147.6	143.6	140.7	138.9	136.7
67.5°	171.1	162.1	152.3	143.2	137.4	132.7	129.1	125.4	124.0	121.8	120.4
70°	146.8	137.4	129.1	122.5	116.7	113.5	111.3	108.8	107.3	104.4	103.0
72.5°	120.4	114.2	108.8	103.7	99.3	96.4	93.5	90.3	87.7	84.5	83.0
75°	99.0	92.8	88.1	84.5	81.6	77.6	73.6	70.3	69.2	68.2	67.8
77.5°	77.2	73.2	69.6	66.7	62.7	59.1	58.0	57.3	56.9	56.2	56.2
80°	57.6	54.0	51.5	47.9	45.7	45.7	45.7	45.0	45.3	45.3	45.3
82.5°	39.2	35.9	34.8	34.1	34.1	34.4	34.4	34.8	34.4	35.2	34.8
85°	22.1	22.5	23.2	22.8	23.2	23.2	23.9	23.6	23.9	23.2	23.9
87.5°	10.2	11.2	11.6	12.0	12.3	12.0	12.3	12.3	12.7	12.7	12.7
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: P242575

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CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	846.9	846.9	846.9	846.9
2.5°	796.9	796.5	796.9	795.5
5°	750.9	750.5	749.4	746.2
7.5°	709.2	708.4	705.5	706.3
10°	672.9	673.3	668.9	666.4
12.5°	637.7	635.6	632.3	629.4
15°	607.7	604.0	595.3	596.1
17.5°	570.3	567.4	567.0	562.0
20°	538.4	536.6	537.3	532.2
22.5°	513.4	511.6	507.6	506.9
25°	489.1	486.2	483.3	485.1
27.5°	464.4	462.3	459.0	459.0
30°	441.2	439.1	437.6	435.8
32.5°	417.7	417.7	414.8	414.8
35°	397.7	395.6	394.8	395.2
37.5°	378.5	375.6	374.2	372.7
40°	357.5	354.6	353.9	353.1
42.5°	333.9	333.2	332.8	331.4
45°	312.9	312.5	310.4	311.1
47.5°	290.4	288.6	287.5	288.6
50°	267.2	266.5	263.2	263.9
52.5°	244.0	240.7	240.0	239.3
55°	217.9	214.6	213.2	212.5
57.5°	192.2	191.1	189.6	190.7
60°	170.0	170.0	170.0	169.7
62.5°	153.0	151.9	151.6	152.3
65°	135.6	135.2	133.8	133.4
67.5°	119.6	118.2	118.2	117.5
70°	101.2	100.4	98.3	98.6
72.5°	81.2	80.5	80.5	79.8
75°	67.4	67.1	66.7	68.2
77.5°	56.2	56.2	56.6	55.8
80°	45.3	45.3	45.0	45.0
82.5°	34.1	34.4	34.8	34.1
85°	23.9	23.6	24.3	23.9
87.5°	13.4	12.7	12.7	13.1
90°	0.0	0.0	0.0	0.0



TEST NUMBER: P242575
 CATALOG NUMBER: S123RDRP-S560D840-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	15.73	17.22	16.10	17.54	17.85	19.13	20.62	19.49	20.93	21.25
	3H	16.82	18.16	17.20	18.49	18.85	20.54	21.87	20.91	22.20	22.56
	4H	17.16	18.41	17.56	18.76	19.14	21.04	22.29	21.44	22.64	23.02
	6H	17.40	18.56	17.82	18.93	19.32	21.39	22.54	21.80	22.91	23.30
	8H	17.47	18.57	17.90	18.96	19.37	21.49	22.59	21.91	22.98	23.38
	12H	17.51	18.56	17.94	18.95	19.37	21.55	22.60	21.98	22.98	23.41
4H	2H	16.71	17.96	17.11	18.31	18.69	19.37	20.62	19.77	20.97	21.35
	3H	17.88	18.92	18.29	19.32	19.72	21.06	22.09	21.47	22.49	22.90
	4H	18.27	19.20	18.70	19.61	20.05	21.67	22.60	22.10	23.02	23.46
	6H	18.58	19.39	19.03	19.83	20.29	22.14	22.95	22.60	23.39	23.85
	8H	18.67	19.42	19.13	19.87	20.34	22.28	23.04	22.74	23.48	23.95
	12H	18.72	19.40	19.21	19.88	20.35	22.38	23.05	22.86	23.53	24.01
8H	4H	18.63	19.39	19.10	19.83	20.30	21.72	22.48	22.19	22.92	23.39
	6H	19.01	19.63	19.50	20.12	20.60	22.26	22.88	22.76	23.37	23.85
	8H	19.14	19.70	19.65	20.21	20.70	22.45	23.01	22.97	23.52	24.01
	12H	19.24	19.73	19.75	20.22	20.79	22.61	23.10	23.12	23.60	24.16
12H	4H	18.66	19.34	19.15	19.82	20.29	21.71	22.38	22.19	22.86	23.33
	6H	19.05	19.61	19.56	20.12	20.61	22.25	22.81	22.76	23.32	23.81
	8H	19.23	19.72	19.74	20.21	20.78	22.48	22.97	22.99	23.47	24.03