

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: P243347

Luminaire Tested: S123DRP-H560D940-X4F0-XX-UDD-A-W

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2024
Report Number: P243347
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-H560D940-X4F0-XX-UDD-A-W
Description: DEFINE 3 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 4000K CCT, 90 CRI LEDS
Ballast/Driver: -

Summary

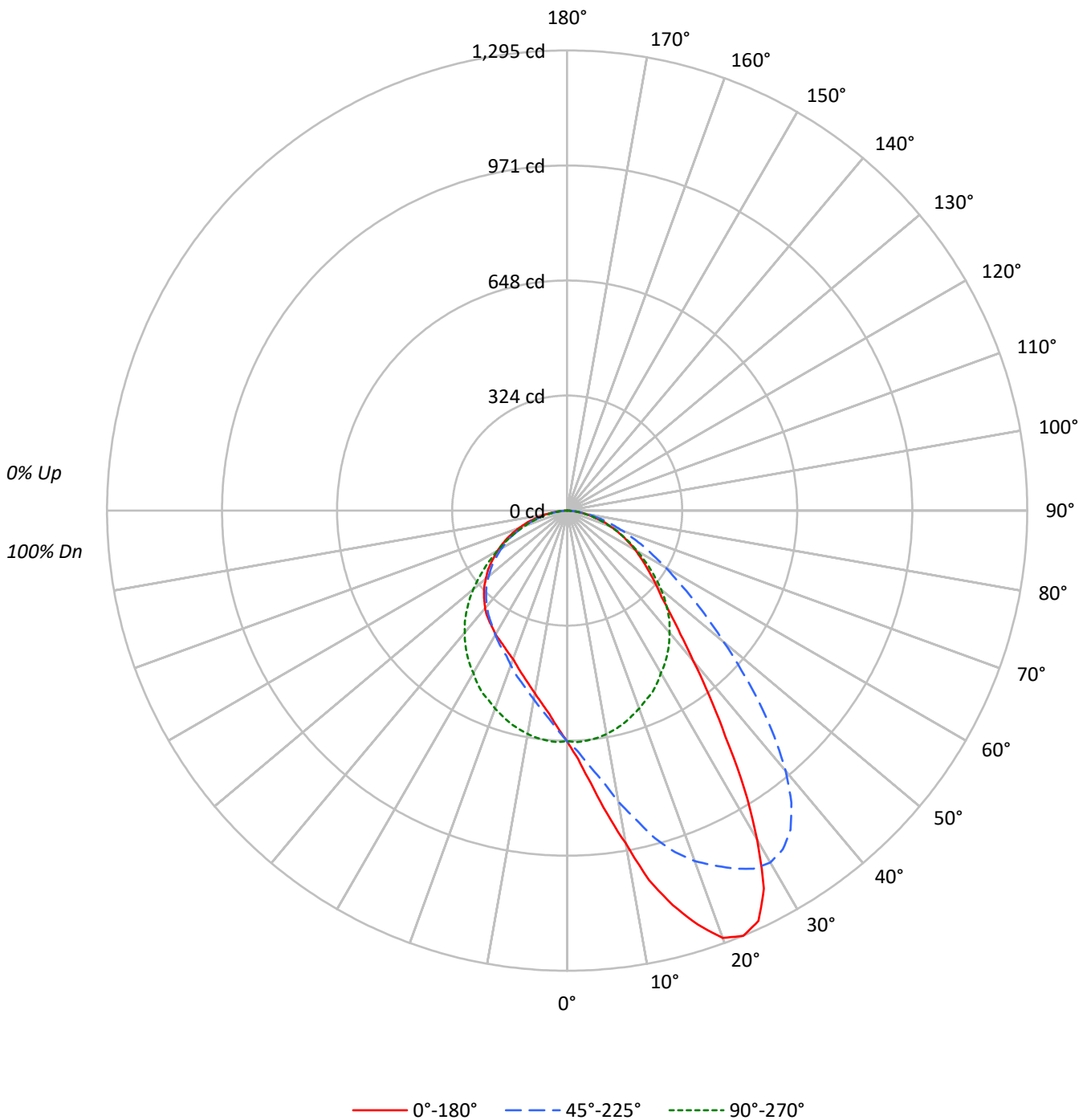
Lumens per Lamp: N/A
Luminaire Lumens: 1956.3 lumens
Efficiency: N/A
Efficacy: 113.7 lumens/watt
Spacing Criteria (0/90/45): 1.39 / 1.21 / 1.5
Luminous Opening: Rectangular (W 3.88' x L: 0.23' x H: 0')
CIE Type: Direct

Input Watts (W): 17.2
Input Voltage (V): 120
Input Current (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					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°	7868	7868	7868	7868	7868
5°	9374	8767	7905	7150	6987
10°	11706	10239	7858	6640	6424
15°	14427	11980	7773	6262	6027
20°	16508	13538	7649	5977	5735
25°	17038	14871	7564	5768	5629
30°	14968	16008	7384	5653	5632
35°	11487	16216	7274	5582	5638
40°	8738	15135	7097	5563	5681
45°	7032	13124	6869	5533	5676
50°	6187	10856	6502	5437	5627
55°	5704	9083	6023	5351	5590
60°	5375	7753	5513	5173	5476
65°	4996	6734	5039	4970	5372
70°	4572	5869	4519	4572	5139
75°	4065	5011	3939	4093	4786
80°	3399	4125	3260	3504	4188
85°	2392	3060	2350	2642	3143

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 55°
 Vertical Angle: 45°
 Luminance: 14735 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	63.9	3.3
10°-20°	205.0	10.5
20°-30°	338.7	17.3
30°-40°	387.6	19.8
40°-50°	351.2	18.0
50°-60°	283.8	14.5
60°-70°	197.7	10.1
70°-80°	103.7	5.3
80°-90°	24.7	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°	607.6	31.1
0°-40°	995.2	50.9
0°-60°	1630.2	83.3
0°-90°	1956.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1956.3	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	649	649	649	649	649	
5°	770	720	650	588	574	79
15°	1150	955	619	499	480	327
25°	1274	1112	566	431	421	569
35°	776	1096	492	377	381	492
45°	410	766	401	323	331	323
55°	270	430	285	253	264	242
65°	174	235	176	173	187	173
75°	87	107	84	87	102	93
85°	17	22	17	19	23	22
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°	649.1	649.1	649.1	649.1	649.1	649.1	649.1	649.1	649.1	649.1	649.1
2.5°	699.1	700.6	698.2	699.7	696.1	694.0	690.7	689.3	682.1	677.1	675.3
5°	770.4	770.4	771.0	767.4	763.3	755.8	746.0	739.8	732.7	720.5	714.2
7.5°	860.2	855.7	852.7	846.2	840.5	828.4	817.7	804.9	788.2	768.0	757.3
10°	951.1	955.9	952.9	946.1	931.5	911.6	895.8	877.4	851.5	831.9	804.0
12.5°	1064.7	1058.4	1053.7	1043.3	1027.2	1006.1	981.7	954.4	921.1	888.7	857.5
15°	1149.7	1150.5	1150.3	1136.6	1120.8	1092.3	1069.7	1024.2	982.0	954.7	903.0
17.5°	1221.6	1225.4	1221.0	1200.5	1186.5	1169.6	1140.7	1090.2	1051.9	1007.6	950.5
20°	1279.8	1280.4	1273.3	1258.1	1242.1	1223.1	1185.0	1146.4	1108.9	1049.5	995.1
22.5°	1295.3	1296.8	1295.3	1288.8	1275.7	1255.5	1226.9	1191.3	1144.0	1080.7	1030.2
25°	1273.9	1273.0	1278.1	1274.2	1273.6	1267.1	1248.3	1219.5	1172.8	1111.9	1047.7
27.5°	1199.0	1192.8	1205.5	1222.2	1224.6	1235.0	1235.3	1221.9	1188.3	1136.3	1066.4
30°	1069.4	1075.4	1081.6	1116.4	1135.7	1162.7	1186.2	1194.8	1182.1	1143.7	1078.3
32.5°	928.5	947.5	965.1	989.2	1017.4	1063.2	1100.3	1133.0	1147.0	1130.0	1078.3
35°	776.3	786.5	814.1	844.7	885.4	921.1	994.8	1042.4	1084.9	1095.9	1064.7
37.5°	657.5	666.7	676.2	700.0	745.7	805.2	866.1	928.5	991.5	1036.7	1034.9
40°	552.2	554.3	562.6	583.2	621.2	674.1	738.0	813.2	894.9	956.5	982.3
42.5°	471.4	471.4	481.8	505.6	527.6	566.2	628.0	694.3	783.8	862.8	918.1
45°	410.2	410.8	419.1	436.0	453.3	483.6	529.4	591.8	683.9	765.6	842.6
47.5°	360.2	365.9	370.6	379.6	396.8	423.5	456.8	510.0	575.7	664.9	754.6
50°	328.1	329.3	332.9	338.2	351.6	369.2	398.0	438.4	496.7	575.7	666.4
52.5°	296.6	296.6	300.2	306.7	314.5	328.7	349.5	383.1	426.8	498.4	579.9
55°	269.9	270.8	271.4	276.7	283.3	294.0	310.3	332.3	372.4	429.8	500.8
57.5°	243.7	247.0	246.1	250.3	255.0	262.7	274.3	293.4	324.0	367.7	431.6
60°	221.7	221.1	222.6	224.4	227.7	233.0	243.7	257.7	283.3	319.8	372.1
62.5°	196.8	196.2	198.0	200.0	203.0	207.5	215.2	225.9	246.1	273.4	318.9
65°	174.2	173.6	174.5	175.7	178.9	182.5	188.4	197.4	210.7	234.8	269.6
67.5°	151.6	151.6	152.2	153.4	155.4	158.1	162.9	168.2	181.6	197.7	225.0
70°	129.0	129.3	129.3	130.5	132.3	134.3	138.2	143.0	151.3	165.6	187.5
72.5°	109.4	109.4	108.8	109.4	110.6	111.5	113.8	118.3	124.5	134.9	151.6
75°	86.8	88.3	88.0	87.7	88.6	90.1	92.1	95.7	99.6	107.0	119.5
77.5°	66.6	67.5	67.5	67.8	68.7	69.8	70.4	74.0	77.6	82.0	91.2
80°	48.7	49.3	48.7	49.0	49.6	50.8	52.0	52.6	55.3	59.1	63.6
82.5°	32.7	31.8	33.0	32.7	33.3	33.6	34.2	34.5	36.3	38.6	41.6
85°	17.2	18.7	18.4	19.0	18.4	18.7	19.0	20.2	20.5	22.0	23.8
87.5°	6.5	7.1	7.1	7.1	7.1	7.1	7.7	8.0	8.6	8.9	9.5
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):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	649.1	649.1	649.1	649.1	649.1	649.1	649.1	649.1	649.1	649.1	649.1
2.5°	676.5	673.8	669.9	665.8	661.3	656.9	654.8	652.1	646.8	641.4	637.2
5°	709.2	701.7	691.6	684.2	673.5	663.4	655.4	649.7	641.1	630.7	623.9
7.5°	745.7	732.4	716.3	700.0	683.9	668.8	656.3	645.6	632.2	619.4	609.0
10°	788.8	763.0	740.7	716.9	693.1	671.7	653.9	638.4	621.2	605.7	593.0
12.5°	826.9	796.9	765.9	732.4	700.3	672.6	649.7	629.5	608.7	590.9	577.8
15°	868.8	826.6	783.8	745.7	706.8	672.9	642.9	619.4	595.6	575.4	560.3
17.5°	916.9	860.5	806.7	752.0	717.5	673.8	636.9	606.0	581.7	561.5	541.8
20°	945.5	889.3	823.3	767.1	710.1	665.2	624.2	593.0	564.4	541.2	525.2
22.5°	960.9	901.8	832.8	775.2	708.6	658.3	614.7	577.8	547.2	524.0	505.9
25°	982.6	901.8	837.9	768.6	711.0	650.3	601.0	565.6	533.5	506.8	487.7
27.5°	992.4	909.8	838.5	756.1	696.7	635.2	585.2	547.8	512.1	486.0	469.6
30°	1000.5	911.3	826.6	746.3	680.0	618.2	569.5	527.6	494.3	469.3	452.1
32.5°	1001.0	907.4	810.5	727.9	657.8	598.3	550.8	511.2	476.4	450.0	433.1
35°	995.7	897.9	792.1	699.7	631.9	577.8	530.2	491.6	456.2	431.0	413.7
37.5°	982.0	887.2	774.9	673.2	601.3	548.7	508.3	471.4	436.3	411.1	396.8
40°	952.9	870.0	752.3	645.0	570.4	517.8	482.4	448.5	417.3	391.1	376.9
42.5°	914.3	844.1	724.9	615.0	535.9	485.1	453.9	426.5	394.7	372.1	357.6
45°	859.6	809.0	697.6	583.4	501.7	451.8	423.2	400.7	373.3	350.7	337.9
47.5°	797.7	766.8	662.2	548.1	465.7	418.8	391.7	373.6	350.4	331.1	318.3
50°	728.2	716.6	623.3	512.4	432.2	384.0	359.0	344.8	325.2	309.7	298.7
52.5°	652.7	659.8	582.3	476.2	399.8	351.0	327.2	314.2	301.7	288.6	278.2
55°	576.0	593.0	532.6	436.6	362.6	320.1	296.9	285.0	275.8	264.8	257.4
57.5°	504.1	530.5	481.2	394.4	328.4	287.7	265.7	255.3	248.5	242.5	235.7
60°	434.2	464.9	428.3	354.9	294.3	257.1	237.5	227.4	224.1	219.6	213.1
62.5°	372.4	403.6	376.3	314.2	259.8	228.0	210.1	201.8	197.1	195.6	191.7
65°	314.5	343.6	322.8	271.7	227.1	198.8	183.1	175.7	173.0	172.7	169.7
67.5°	264.2	292.5	273.4	230.3	192.6	169.7	157.8	151.9	149.2	149.5	147.4
70°	217.9	237.8	226.5	192.6	163.5	143.3	134.0	127.5	125.4	125.4	124.8
72.5°	174.8	190.5	181.9	156.0	133.2	117.7	109.7	105.8	104.0	103.7	104.0
75°	136.7	150.4	142.7	122.5	105.2	93.6	86.8	84.1	83.2	82.6	82.9
77.5°	102.2	110.9	106.1	93.0	78.8	70.7	67.5	64.8	63.9	64.2	64.8
80°	72.2	77.0	74.3	66.0	56.5	51.1	48.7	46.7	45.8	46.7	46.7
82.5°	45.8	49.3	47.0	41.6	36.9	33.3	30.9	30.3	30.0	29.4	30.3
85°	25.0	26.8	25.6	23.8	20.5	19.0	17.2	16.9	16.9	16.9	16.9
87.5°	9.8	11.0	9.5	9.5	8.9	7.4	7.4	7.1	6.8	7.1	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°	649.1	649.1	649.1	649.1	649.1	649.1	649.1	649.1	649.1	649.1	649.1
2.5°	635.5	631.6	629.2	626.0	622.1	617.0	615.0	617.0	615.8	613.8	614.7
5°	617.9	612.9	606.3	601.0	595.0	587.6	585.2	584.0	582.3	581.4	579.9
7.5°	600.7	593.3	585.2	577.8	569.2	562.6	559.7	557.6	557.0	552.5	550.8
10°	582.9	573.6	565.6	555.5	548.1	539.5	535.9	533.5	530.8	527.9	525.8
12.5°	564.1	554.9	544.8	535.3	527.9	518.4	513.6	510.9	508.8	506.8	504.4
15°	547.8	538.6	524.6	517.5	508.5	499.0	496.1	490.1	490.7	487.1	484.8
17.5°	530.5	516.9	507.1	496.4	489.8	483.0	477.3	471.1	470.2	467.5	466.6
20°	511.2	497.0	490.1	479.1	470.2	463.4	458.3	457.7	455.9	452.1	450.6
22.5°	492.2	480.6	471.1	461.0	453.0	444.1	441.7	442.6	439.3	438.4	435.1
25°	475.0	464.9	453.0	443.5	436.9	431.3	428.0	426.8	425.6	424.7	423.2
27.5°	456.5	445.8	435.7	428.0	421.8	417.9	415.8	413.1	412.8	412.8	412.2
30°	438.1	428.6	421.8	412.0	406.3	403.9	402.1	401.3	402.1	402.1	402.4
32.5°	421.2	412.0	403.9	397.1	391.4	389.7	389.4	389.4	390.6	390.6	391.4
35°	403.6	394.4	387.0	382.2	377.5	377.2	377.5	378.1	379.6	379.9	381.0
37.5°	384.6	377.5	371.8	365.9	364.7	365.3	365.9	366.5	367.1	369.4	369.4
40°	367.1	361.7	356.1	352.2	350.1	351.6	352.5	352.8	354.6	356.1	357.3
42.5°	349.8	344.8	340.3	337.1	336.2	337.3	338.2	339.1	340.9	342.1	344.2
45°	330.5	327.2	323.4	320.7	321.0	322.8	322.8	325.8	326.9	327.5	329.0
47.5°	312.7	309.1	306.4	305.2	305.0	306.4	307.3	309.7	310.3	312.4	313.6
50°	293.7	291.0	288.9	287.4	287.7	288.3	290.4	292.8	293.4	295.7	297.8
52.5°	273.7	271.4	269.6	270.2	271.1	271.1	273.1	274.6	276.1	277.9	280.0
55°	254.1	250.9	251.2	250.3	251.2	253.2	254.1	256.5	257.7	258.6	261.6
57.5°	232.7	232.1	231.2	230.3	232.1	233.0	234.5	236.0	238.1	239.3	241.3
60°	210.7	209.8	209.8	211.0	211.6	213.4	215.8	216.7	217.3	219.6	222.3
62.5°	190.5	189.6	189.3	191.1	191.1	192.9	193.8	195.3	197.7	198.5	202.1
65°	168.8	168.2	168.2	169.7	170.0	173.3	173.3	173.3	174.8	178.0	179.8
67.5°	146.2	146.5	147.4	148.3	149.5	150.4	150.7	152.5	154.9	156.9	160.5
70°	123.6	125.1	126.9	126.6	127.5	129.0	129.3	131.1	133.2	135.8	140.0
72.5°	103.4	104.3	106.1	106.1	107.3	108.2	109.7	110.9	113.5	115.9	117.7
75°	83.2	83.5	85.0	85.9	86.8	87.4	88.9	91.0	92.4	94.5	97.2
77.5°	65.4	64.8	66.0	66.3	66.9	68.1	69.3	71.3	72.5	74.9	75.8
80°	46.4	47.6	47.9	48.2	48.7	50.2	51.1	52.0	53.2	55.3	56.2
82.5°	30.6	31.2	32.1	32.4	33.0	33.3	33.6	35.1	36.0	36.6	39.5
85°	17.8	18.7	18.1	18.1	18.7	19.0	20.2	20.2	21.4	20.8	22.3
87.5°	7.7	7.4	7.4	7.7	7.4	7.1	8.0	8.0	7.7	8.0	8.0
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: P243347

CATALOG NUMBER: S123DRP-H560D940-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	649.1	649.1	649.1	649.1
2.5°	613.2	613.2	610.8	611.7
5°	576.9	578.1	575.1	574.2
7.5°	550.2	549.0	546.9	546.9
10°	524.0	522.8	521.9	521.9
12.5°	501.4	500.2	498.4	499.9
15°	481.2	481.5	480.3	480.3
17.5°	465.7	463.1	462.2	461.9
20°	447.3	447.9	446.7	444.6
22.5°	435.7	434.2	433.1	432.8
25°	423.8	422.4	422.1	420.9
27.5°	412.0	412.2	411.4	411.4
30°	402.1	403.0	402.1	402.4
32.5°	392.3	392.3	392.3	391.1
35°	381.6	381.9	381.6	381.0
37.5°	370.6	370.6	370.9	371.5
40°	358.5	358.5	359.0	359.0
42.5°	343.9	345.4	346.3	344.8
45°	330.8	331.1	331.4	331.1
47.5°	316.2	315.4	315.7	316.2
50°	298.1	300.2	300.2	298.4
52.5°	280.6	281.2	282.4	282.4
55°	263.3	263.6	263.9	264.5
57.5°	243.7	244.0	244.0	243.7
60°	224.1	225.9	225.6	225.9
62.5°	203.0	205.7	206.6	206.3
65°	183.1	183.7	185.2	187.3
67.5°	162.0	163.5	165.9	165.3
70°	141.2	143.3	143.9	145.0
72.5°	120.4	123.1	123.6	124.2
75°	100.2	101.4	102.5	102.2
77.5°	78.2	80.0	82.0	80.8
80°	58.6	58.9	60.6	60.0
82.5°	38.6	41.0	41.0	39.8
85°	22.6	22.6	22.6	22.6
87.5°	7.7	7.4	8.0	7.7
90°	0.0	0.0	0.0	0.0

TEST NUMBER: P243347

CATALOG NUMBER: S123DRP-H560D940-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	17.57	19.13	17.93	19.44	19.75	18.09	19.65	18.46	19.97	20.28
	3H	19.08	20.49	19.46	20.82	21.18	19.43	20.84	19.81	21.16	21.53
	4H	19.63	20.95	20.03	21.30	21.68	19.89	21.21	20.29	21.56	21.93
	6H	19.99	21.21	20.40	21.58	21.97	20.19	21.41	20.60	21.78	22.17
	8H	20.09	21.25	20.52	21.64	22.04	20.27	21.43	20.69	21.82	22.22
	12H	20.14	21.25	20.57	21.64	22.07	20.30	21.41	20.73	21.80	22.23
4H	2H	18.73	20.05	19.13	20.39	20.77	18.89	20.21	19.29	20.55	20.93
	3H	20.29	21.38	20.70	21.78	22.18	20.68	21.77	21.09	22.17	22.57
	4H	20.88	21.87	21.31	22.29	22.72	21.24	22.23	21.67	22.64	23.08
	6H	21.31	22.17	21.77	22.61	23.07	21.61	22.47	22.06	22.91	23.37
	8H	21.43	22.23	21.89	22.68	23.14	21.70	22.50	22.16	22.95	23.41
	12H	21.50	22.22	21.99	22.70	23.17	21.75	22.47	22.23	22.95	23.42
8H	4H	21.35	22.15	21.81	22.59	23.06	21.54	22.35	22.01	22.79	23.26
	6H	21.85	22.51	22.34	23.00	23.48	22.05	22.72	22.55	23.21	23.69
	8H	22.01	22.60	22.52	23.11	23.60	22.20	22.80	22.71	23.31	23.79
	12H	22.13	22.65	22.63	23.14	23.71	22.30	22.83	22.81	23.32	23.88
12H	4H	21.39	22.11	21.88	22.59	23.06	21.56	22.28	22.04	22.76	23.23
	6H	21.91	22.51	22.43	23.02	23.51	22.09	22.69	22.60	23.19	23.68
	8H	22.12	22.65	22.63	23.14	23.71	22.29	22.82	22.80	23.31	23.87