

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: P242467

Luminaire Tested: S123DRP-S560D835-X4F0-XX-UDD-A-W

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2024
Report Number: P242467
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-S560D835-X4F0-XX-UDD-A-W
Description: DEFINE 3 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER
STANDARD LIGHT ENGINE
Light Source: (92) 3500K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

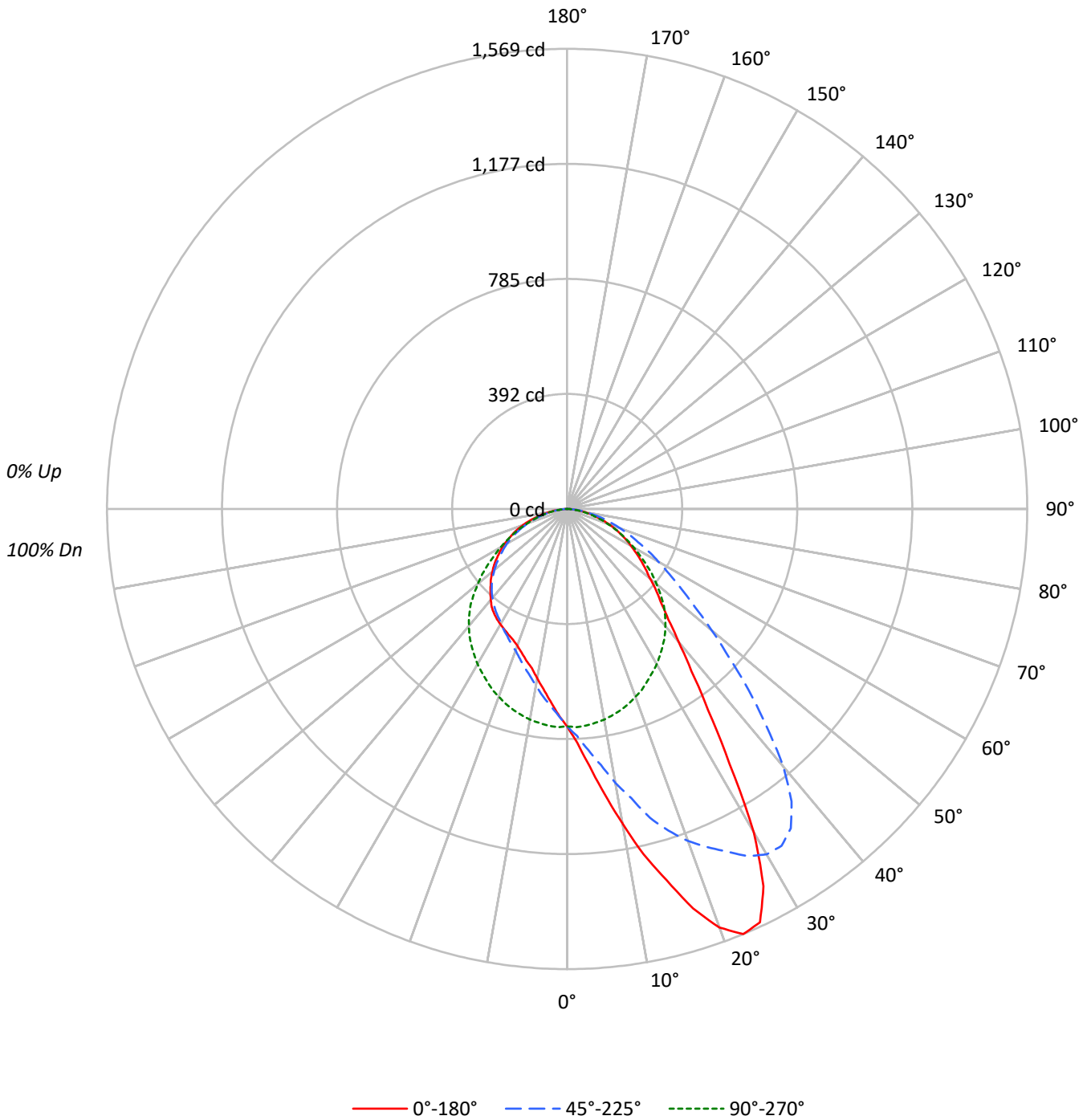
Lumens per Lamp: N/A
Luminaire Lumens: 2236.5 lumens
Efficiency: N/A
Efficacy: 119.0 lumens/watt
Spacing Criteria (0/90/45): 1.37 / 1.23 / 1.5
Luminous Opening: Rectangular (W 3.88' x L: 0.23' x H: 0')
CIE Type: Direct

Input Watts (W): 18.8
Input Voltage (V): 120
Input Current (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																		
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	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																												
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°	8982	8982	8982	8982	8982
5°	10711	10038	9020	8168	7994
10°	13406	11669	8974	7525	7220
15°	16443	13686	8902	7019	6721
20°	19589	15541	8789	6622	6399
25°	20800	17237	8652	6429	6329
30°	17827	19034	8552	6305	6361
35°	12399	19666	8409	6284	6428
40°	9339	18155	8242	6271	6408
45°	7753	15016	7993	6228	6327
50°	6945	12118	7488	6106	6268
55°	6494	10053	6942	5932	6190
60°	6092	8693	6371	5762	6126
65°	5725	7649	5808	5467	5931
70°	5369	6833	5167	5025	5649
75°	4810	5920	4524	4491	5180
80°	4209	4858	3707	3637	4460
85°	3296	3797	2698	2642	2990

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 55°
 Vertical Angle: 45°
 Luminance: 17749 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	72.9	3.3
10°-20°	234.1	10.5
20°-30°	393.8	17.6
30°-40°	445.1	19.9
40°-50°	398.7	17.8
50°-60°	321.8	14.4
60°-70°	224.2	10.0
70°-80°	117.7	5.3
80°-90°	28.2	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°	700.8	31.3
0°-40°	1145.9	51.2
0°-60°	1866.3	83.5
0°-90°	2236.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2236.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	741	741	741	741	741	
5°	880	825	741	671	657	91
15°	1310	1091	709	559	536	378
25°	1555	1289	647	481	473	688
35°	838	1329	568	425	434	541
45°	452	876	466	363	369	357
55°	307	476	328	281	293	276
65°	200	267	202	191	207	199
75°	103	126	97	96	111	110
85°	24	27	19	19	22	29
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°	741.0	741.0	741.0	741.0	741.0	741.0	741.0	741.0	741.0	741.0	741.0
2.5°	797.7	797.0	795.2	796.6	793.7	789.8	789.4	785.8	775.4	774.7	771.8
5°	880.3	877.4	877.0	876.7	871.6	864.8	851.9	850.8	833.6	825.0	814.6
7.5°	980.1	979.0	976.1	972.9	956.0	947.8	935.5	919.8	899.7	880.3	868.1
10°	1089.2	1101.0	1086.3	1076.3	1066.9	1049.4	1028.9	1003.4	977.9	948.1	925.5
12.5°	1206.2	1210.5	1210.5	1201.2	1185.4	1156.3	1116.1	1087.4	1064.4	1009.9	990.5
15°	1310.3	1332.2	1318.2	1285.9	1286.7	1261.2	1213.8	1161.7	1134.1	1090.6	1031.4
17.5°	1428.1	1432.0	1427.7	1397.6	1382.9	1345.9	1303.2	1254.7	1202.6	1149.9	1088.5
20°	1518.6	1516.4	1503.8	1489.8	1459.0	1431.7	1383.9	1328.3	1256.5	1204.8	1136.2
22.5°	1568.8	1564.9	1560.6	1549.4	1525.0	1495.2	1453.6	1391.5	1324.0	1247.9	1166.0
25°	1555.2	1559.8	1560.6	1557.3	1548.4	1530.8	1497.0	1448.6	1380.3	1288.8	1206.2
27.5°	1449.6	1461.5	1476.6	1486.6	1502.8	1513.5	1502.8	1472.3	1416.2	1334.4	1232.8
30°	1273.7	1259.4	1294.9	1339.8	1370.3	1424.1	1454.3	1456.1	1427.7	1359.9	1261.5
32.5°	1029.6	1052.9	1063.7	1121.5	1197.3	1259.4	1326.9	1386.8	1400.8	1361.3	1278.4
35°	837.9	857.6	886.4	915.1	986.9	1048.6	1154.2	1246.1	1319.3	1329.0	1276.2
37.5°	696.5	707.9	725.5	756.1	805.2	881.7	965.3	1084.9	1185.8	1256.9	1249.7
40°	590.2	593.1	613.5	635.4	673.5	733.8	807.4	910.1	1037.1	1147.4	1193.3
42.5°	510.5	517.7	523.4	544.2	572.6	614.2	681.4	761.8	875.6	1006.6	1107.5
45°	452.3	459.5	464.9	478.9	500.4	531.0	578.7	656.2	744.9	876.0	996.9
47.5°	412.1	411.4	416.1	427.2	442.6	467.1	502.2	553.9	639.0	748.5	875.2
50°	368.3	374.1	375.5	383.8	395.3	412.1	440.1	482.5	549.3	642.6	756.8
52.5°	337.5	338.2	342.8	348.2	357.9	370.1	393.5	424.3	473.2	549.3	651.9
55°	307.3	307.3	311.3	315.9	321.7	333.5	349.7	374.1	413.9	475.7	562.6
57.5°	279.3	280.7	284.3	285.4	290.4	298.7	312.7	332.1	362.6	412.5	484.3
60°	251.3	254.5	254.2	257.0	261.4	267.5	278.9	294.0	320.6	358.6	416.8
62.5°	226.9	225.8	225.8	229.4	233.7	239.5	245.9	258.5	280.0	312.7	360.1
65°	199.6	198.9	201.4	203.6	205.0	209.3	215.0	226.5	241.6	266.7	305.1
67.5°	175.9	173.8	175.6	176.3	178.8	182.4	188.1	195.3	207.5	228.7	259.6
70°	151.5	149.7	149.3	150.1	152.2	154.7	158.7	165.5	176.6	192.8	214.0
72.5°	126.4	125.3	125.3	127.1	127.8	129.2	131.8	137.9	146.1	157.2	176.6
75°	102.7	102.7	102.7	103.0	104.1	105.5	107.7	110.9	117.8	126.4	139.7
77.5°	81.1	81.5	80.8	80.4	82.2	82.9	83.3	86.9	90.8	97.3	107.7
80°	60.3	58.5	59.2	60.3	61.0	61.4	62.5	63.2	66.4	69.6	76.5
82.5°	40.9	39.5	39.5	41.3	41.3	41.6	42.7	43.8	44.5	47.4	50.3
85°	23.7	23.7	24.1	24.1	24.4	24.1	25.1	25.5	25.5	27.3	29.4
87.5°	10.8	10.1	10.4	10.8	10.4	10.8	11.1	11.5	11.8	12.2	12.6
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°	741.0	741.0	741.0	741.0	741.0	741.0	741.0	741.0	741.0	741.0	741.0
2.5°	769.7	766.8	763.9	758.9	754.6	748.5	746.7	744.6	738.1	732.4	728.0
5°	810.6	802.0	789.4	777.9	768.6	756.1	748.9	741.3	730.6	720.9	713.0
7.5°	849.7	834.7	817.1	798.1	779.7	762.2	748.2	735.6	721.6	707.9	697.5
10°	898.2	873.8	846.5	817.1	792.0	767.5	747.1	729.1	709.7	692.9	678.9
12.5°	953.5	914.4	874.2	836.8	806.0	769.7	743.8	719.8	697.2	676.0	659.8
15°	994.8	948.8	904.3	855.1	809.9	767.5	738.1	709.4	683.9	663.1	643.0
17.5°	1035.7	985.5	928.7	869.5	816.4	767.5	727.3	696.5	665.2	640.1	620.7
20°	1069.5	1010.2	943.8	881.7	821.4	765.4	720.2	681.4	646.9	620.0	597.4
22.5°	1098.5	1026.7	957.4	890.0	821.0	759.6	706.9	666.7	628.6	602.4	578.0
25°	1116.8	1033.9	965.0	887.1	812.1	749.6	692.1	646.9	609.6	578.7	553.9
27.5°	1134.1	1032.8	954.9	870.9	801.3	739.2	677.4	629.0	589.8	556.4	531.0
30°	1151.3	1034.6	937.3	854.4	784.1	719.4	659.8	611.0	569.4	535.3	511.6
32.5°	1162.1	1033.6	921.2	831.4	756.8	701.5	640.8	589.8	546.8	513.4	490.8
35°	1164.9	1027.5	902.2	798.1	727.0	671.3	620.7	568.3	523.4	492.2	466.3
37.5°	1158.8	1016.3	881.3	767.9	691.1	635.8	591.6	546.8	503.7	468.9	446.2
40°	1139.1	1005.6	856.2	735.6	653.7	601.0	564.7	520.9	478.5	445.9	425.1
42.5°	1101.4	983.7	828.6	699.7	615.0	562.2	529.5	494.7	455.2	425.1	404.2
45°	1035.4	949.9	800.9	663.8	576.9	522.3	492.9	466.3	430.1	400.3	382.3
47.5°	951.0	904.3	761.1	626.1	537.1	484.3	453.4	431.5	403.2	379.1	361.5
50°	862.3	845.4	720.5	587.3	497.2	445.9	416.4	397.1	378.0	354.0	338.2
52.5°	760.0	777.2	673.1	547.1	456.6	406.4	379.1	364.7	347.9	329.2	315.9
55°	665.2	702.9	617.1	501.2	416.4	368.3	342.1	328.5	318.4	303.7	291.9
57.5°	573.3	621.4	559.0	454.9	376.9	334.9	309.1	293.7	287.2	278.9	269.2
60°	493.3	540.7	495.8	408.2	337.1	297.6	275.4	262.8	256.3	250.9	243.0
62.5°	421.8	469.9	434.0	360.8	298.0	262.1	243.4	231.2	226.5	224.4	217.9
65°	357.6	398.8	373.7	311.3	261.0	228.7	211.1	202.5	197.8	196.7	192.4
67.5°	301.9	333.9	314.5	267.5	226.5	197.1	181.7	174.1	170.2	169.8	166.2
70°	247.3	276.8	262.8	221.1	187.0	165.1	152.2	145.8	143.6	143.2	141.4
72.5°	205.0	223.3	212.9	179.9	155.4	136.1	127.4	120.6	118.1	118.8	117.8
75°	158.0	173.4	166.9	142.9	121.7	108.8	100.9	96.6	94.4	95.5	94.1
77.5°	120.6	131.4	124.9	106.6	93.0	83.3	77.2	74.3	72.2	72.2	71.4
80°	85.8	91.5	88.3	78.3	67.5	59.6	54.9	53.1	52.1	51.7	51.3
82.5°	54.9	59.6	55.6	49.5	43.1	39.1	37.0	34.5	33.7	34.1	33.7
85°	30.9	32.7	31.2	26.9	24.1	21.9	20.5	19.4	18.7	19.0	18.3
87.5°	13.3	13.6	12.6	11.1	10.4	9.3	9.3	8.6	7.9	7.9	7.5
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°	741.0	741.0	741.0	741.0	741.0	741.0	741.0	741.0	741.0	741.0	741.0
2.5°	725.5	723.0	719.4	714.0	709.7	702.9	702.9	704.0	704.0	703.6	702.9
5°	706.5	701.1	694.7	687.1	679.2	671.3	669.9	667.0	664.9	663.4	661.6
7.5°	687.1	678.1	669.2	658.8	649.8	642.2	636.9	632.2	629.3	626.1	623.6
10°	667.4	655.5	644.4	633.3	621.1	611.4	605.3	601.0	597.7	594.9	593.4
12.5°	644.0	630.0	617.5	607.1	593.4	583.4	577.6	576.2	572.2	565.4	561.8
15°	621.4	608.9	594.1	578.0	571.5	559.3	552.5	549.3	547.1	542.4	541.0
17.5°	602.8	585.9	569.0	557.2	545.3	535.6	531.7	527.4	524.5	520.2	519.1
20°	579.4	564.7	549.6	536.7	524.1	513.4	510.1	507.3	504.4	502.6	501.2
22.5°	555.7	541.0	529.2	517.3	503.7	497.6	494.0	490.8	489.0	487.9	486.4
25°	533.8	520.9	506.9	496.1	485.4	480.7	478.5	476.7	475.3	473.5	473.2
27.5°	514.4	500.1	488.2	477.8	469.9	466.0	463.5	462.4	462.4	463.1	463.5
30°	492.2	479.3	469.9	461.3	454.1	450.5	450.2	450.2	451.6	452.0	452.7
32.5°	471.7	461.7	452.3	444.1	439.1	436.9	438.7	438.7	439.8	440.9	442.3
35°	452.0	442.6	435.5	428.3	423.6	424.7	425.4	426.1	427.9	430.1	431.5
37.5°	433.3	424.7	417.2	411.4	408.5	410.7	412.5	413.9	416.1	417.9	419.3
40°	412.8	406.7	399.6	394.5	395.3	396.3	397.8	399.6	401.4	402.4	403.9
42.5°	393.8	387.4	382.3	378.4	379.5	380.9	381.6	382.3	384.5	386.6	387.4
45°	374.4	369.4	364.4	361.9	362.6	363.3	364.0	365.1	366.9	368.3	368.7
47.5°	352.5	348.9	345.7	342.8	344.3	343.9	345.0	347.2	347.9	348.6	350.7
50°	331.7	328.5	324.5	323.8	323.8	323.8	324.2	327.0	327.0	328.5	329.9
52.5°	308.7	306.9	304.8	303.4	302.6	302.6	304.4	305.5	306.2	308.4	309.8
55°	286.1	284.0	281.8	280.7	280.0	280.7	283.6	284.3	286.1	287.2	288.3
57.5°	262.4	261.0	259.2	258.5	258.5	258.8	261.0	262.8	263.1	266.7	268.2
60°	239.1	236.6	235.1	235.1	234.4	237.7	236.9	240.5	241.2	243.4	245.9
62.5°	215.0	211.5	211.1	211.1	212.5	212.9	214.3	215.4	217.6	220.4	222.2
65°	188.8	187.0	189.6	189.2	188.5	190.6	190.6	192.4	194.6	197.1	201.0
67.5°	164.4	163.0	163.7	163.3	164.4	165.9	166.9	168.4	170.9	173.8	176.3
70°	139.7	140.7	138.9	140.4	141.4	141.8	142.5	144.7	147.5	149.3	152.2
72.5°	115.6	115.2	116.0	116.3	117.4	118.1	118.8	121.3	124.6	126.0	128.2
75°	92.6	92.3	93.3	93.3	95.1	95.9	96.6	97.6	100.5	102.7	104.5
77.5°	71.8	72.2	71.8	73.2	72.5	72.9	75.0	76.1	76.5	81.1	81.9
80°	51.0	51.7	52.1	52.4	52.8	52.1	54.6	55.6	55.6	58.2	60.0
82.5°	33.0	33.4	34.5	34.8	34.8	35.9	35.5	36.3	37.3	38.1	40.6
85°	18.3	19.4	19.7	19.4	19.7	19.0	20.1	20.5	20.8	20.8	20.8
87.5°	7.2	7.5	7.2	7.5	7.2	7.5	7.5	6.8	6.8	7.9	6.5
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: P242467

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CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	741.0	741.0	741.0	741.0
2.5°	700.4	700.0	702.6	700.8
5°	659.5	660.6	657.0	657.0
7.5°	622.5	621.1	621.4	618.9
10°	589.1	587.0	586.2	586.6
12.5°	561.5	561.5	555.7	555.7
15°	541.0	534.2	533.5	535.6
17.5°	518.4	514.4	514.8	514.1
20°	501.2	499.0	498.6	496.1
22.5°	485.4	485.0	485.4	482.5
25°	472.8	474.6	473.2	473.2
27.5°	464.2	464.2	463.1	463.1
30°	454.1	453.8	454.5	454.5
32.5°	444.1	444.8	444.8	445.2
35°	433.7	434.0	435.1	434.4
37.5°	420.0	421.8	421.5	422.2
40°	404.2	405.3	405.0	405.0
42.5°	388.1	388.8	387.7	387.0
45°	370.1	369.4	370.5	369.1
47.5°	350.4	350.7	351.1	352.5
50°	330.6	332.8	332.8	332.4
52.5°	311.3	312.0	313.8	313.8
55°	291.1	291.9	292.6	292.9
57.5°	270.7	270.3	271.8	272.1
60°	248.8	248.8	251.7	252.7
62.5°	225.5	226.9	229.8	227.6
65°	202.8	205.7	205.3	206.8
67.5°	179.1	180.9	183.8	183.8
70°	155.1	156.9	158.3	159.4
72.5°	131.8	132.5	136.4	134.3
75°	107.0	109.5	111.6	110.6
77.5°	83.3	86.5	87.2	86.2
80°	62.5	62.1	64.3	63.9
82.5°	41.6	41.3	42.0	42.4
85°	22.3	23.3	21.9	21.5
87.5°	6.5	6.5	6.1	5.7
90°	0.0	0.0	0.0	0.0

TEST NUMBER: P242467

CATALOG NUMBER: S123DRP-S560D835-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	18.01	19.57	18.38	19.88	20.19	18.56	20.12	18.93	20.43	20.75
	3H	19.56	20.96	19.94	21.28	21.65	19.90	21.30	20.27	21.62	21.98
	4H	20.12	21.44	20.52	21.79	22.16	20.36	21.67	20.76	22.02	22.40
	6H	20.52	21.74	20.93	22.10	22.50	20.65	21.87	21.06	22.23	22.62
	8H	20.64	21.79	21.06	22.18	22.58	20.72	21.88	21.15	22.27	22.67
	12H	20.70	21.81	21.13	22.19	22.62	20.76	21.87	21.19	22.25	22.68
4H	2H	19.16	20.48	19.56	20.82	21.20	19.33	20.64	19.73	20.99	21.37
	3H	20.76	21.85	21.17	22.25	22.65	21.13	22.23	21.54	22.62	23.03
	4H	21.38	22.36	21.81	22.78	23.22	21.70	22.68	22.13	23.10	23.54
	6H	21.85	22.71	22.31	23.15	23.61	22.06	22.92	22.52	23.36	23.82
	8H	21.99	22.79	22.45	23.23	23.70	22.15	22.96	22.62	23.40	23.87
	12H	22.08	22.80	22.56	23.28	23.75	22.21	22.92	22.69	23.40	23.87
8H	4H	21.86	22.67	22.33	23.11	23.58	22.00	22.81	22.47	23.25	23.72
	6H	22.41	23.08	22.91	23.57	24.04	22.51	23.18	23.01	23.67	24.14
	8H	22.60	23.19	23.11	23.70	24.19	22.66	23.25	23.17	23.76	24.25
	12H	22.74	23.27	23.25	23.76	24.32	22.76	23.28	23.26	23.77	24.34
12H	4H	21.92	22.63	22.40	23.11	23.58	22.02	22.73	22.50	23.21	23.68
	6H	22.49	23.08	23.00	23.59	24.08	22.55	23.14	23.06	23.65	24.14
	8H	22.73	23.25	23.23	23.74	24.31	22.75	23.28	23.26	23.77	24.33