

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: P242289

Luminaire Tested: S122DRP-S290D830-X4F0-XX-UDD-A-W

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-2024  
Report Number: P242289  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-19)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: S122DRP-S290D830-X4F0-XX-UDD-A-W  
Description: DEFINE 2 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER  
STANDARD LIGHT ENGINE  
Light Source: (92) 3000K CCT, 80 CRI LEDS  
Ballast/Driver: -

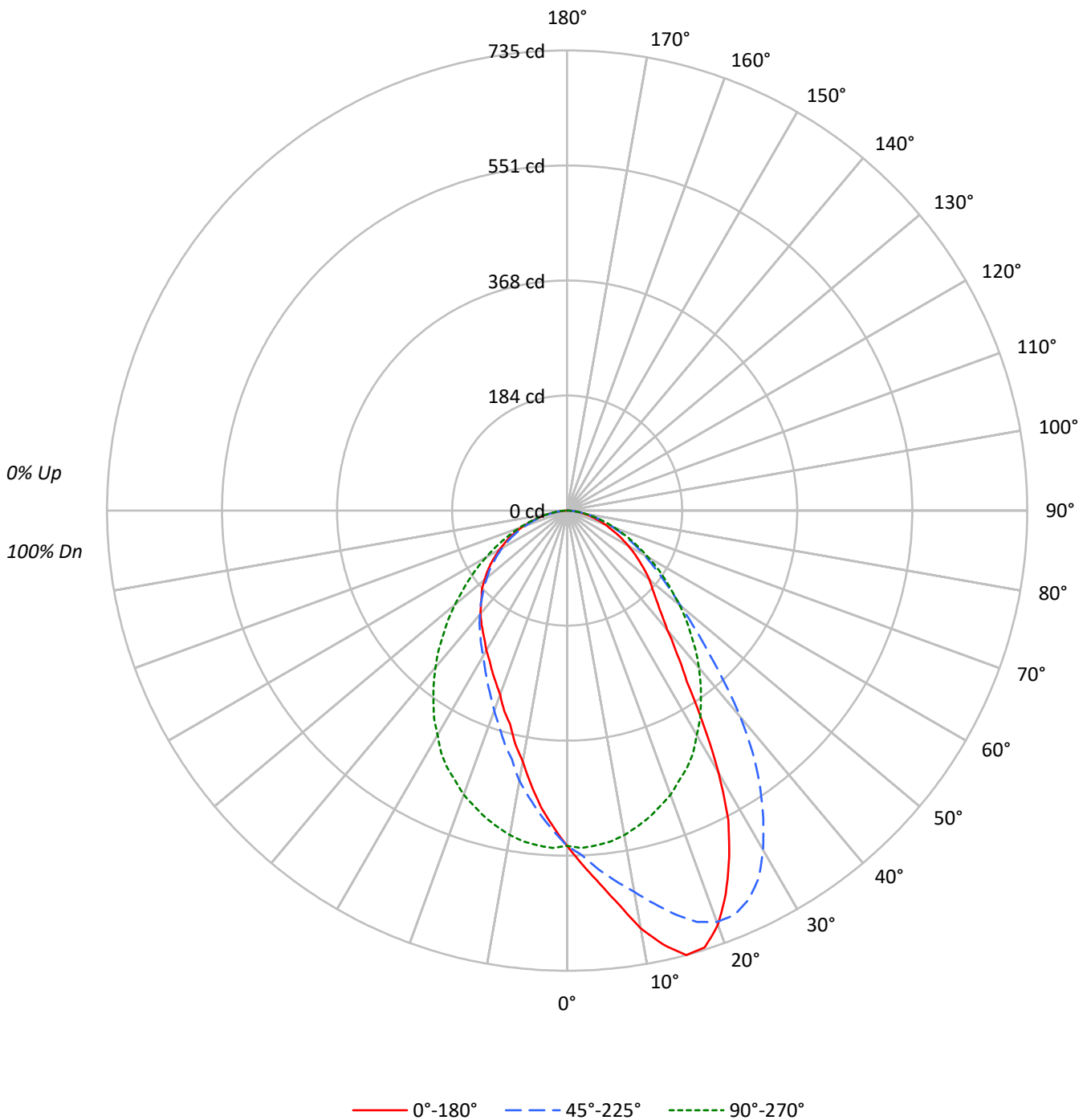
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1181.3 lumens  
Efficiency: N/A  
Efficacy: 101.8 lumens/watt  
Spacing Criteria (0/90/45): 1.09 / 1.16 / 1.23  
Luminous Opening: Rectangular (W 3.88' x L: 0.15' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 11.6  
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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CATALOG NUMBER: S122DRP-S290D830-X4F0-XX-UDD-A-W

### 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	98	107	103	100	97	99	96	94	95	93	91	92	90	88					86				
2	101	94	87	82	98	92	86	81	88	83	79	85	81	78	82	79	76					74				
3	93	83	76	70	90	82	75	69	79	73	68	76	71	67	74	69	66					64				
4	86	75	66	60	83	73	66	60	71	64	59	69	63	58	66	62	58					55				
5	79	67	59	53	77	66	58	52	64	57	52	62	56	51	60	55	51					49				
6	74	61	53	47	72	60	52	46	58	51	46	57	51	46	55	50	45					43				
7	69	56	48	42	67	55	47	42	54	46	41	52	46	41	51	45	41					39				
8	64	51	43	38	63	51	43	38	49	42	37	48	42	37	47	41	37					35				
9	60	47	39	34	59	47	39	34	46	39	34	45	38	34	44	38	34					32				
10	56	44	36	31	55	43	36	31	42	36	31	41	35	31	41	35	31					29				

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

	0°	45°	90°	135°	180°
0°	10200	10200	10200	10200	10200
5°	11434	11006	10266	9325	9098
10°	13104	11965	10181	8481	7874
15°	14496	13169	9996	7600	6955
20°	14274	14175	9795	6900	6341
25°	12871	14411	9529	6337	5952
30°	10636	13764	9101	5897	5668
35°	7753	12489	8657	5627	5464
40°	6191	10709	8131	5393	5353
45°	5412	8563	7524	5156	5199
50°	5085	6987	6934	4958	5097
55°	4689	6074	6336	4775	4961
60°	4297	5410	5699	4564	4750
65°	3912	4890	5129	4286	4543
70°	3553	4366	4572	3954	4238
75°	3150	3864	3952	3547	3753
80°	2709	3269	3269	2907	3027
85°	2426	2644	2426	2032	1792

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 65°  
 Vertical Angle: 45°  
 Luminance: 13121 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	51.0	4.3
10°-20°	148.4	12.6
20°-30°	215.4	18.2
30°-40°	227.1	19.2
40°-50°	200.9	17.0
50°-60°	160.4	13.6
60°-70°	109.0	9.2
70°-80°	55.8	4.7
80°-90°	13.2	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°	414.9	35.1
0°-40°	642.0	54.3
0°-60°	1003.4	84.9
0°-90°	1181.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1181.3	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	536	536	536	536	536	
5°	598	576	537	488	476	59
15°	735	668	507	385	353	204
25°	612	686	453	302	283	278
35°	333	537	372	242	235	216
45°	201	318	279	191	193	157
55°	141	183	191	144	149	127
65°	87	108	114	95	101	86
75°	43	52	54	48	51	46
85°	11	12	11	9	8	13
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°	535.5	535.5	535.5	535.5	535.5	535.5	535.5	535.5	535.5	535.5	535.5
2.5°	566.3	566.5	567.0	563.7	563.3	563.3	560.4	557.9	555.0	551.1	551.5
5°	598.0	600.3	601.1	598.6	594.9	594.5	591.0	585.3	579.9	575.6	572.5
7.5°	634.7	635.5	633.8	631.0	628.5	623.8	618.0	612.4	604.2	596.8	591.4
10°	677.5	678.7	675.2	670.5	666.6	660.8	651.3	641.7	629.9	618.6	609.6
12.5°	710.0	713.5	708.7	709.2	701.7	693.3	681.6	677.9	660.2	643.3	633.4
15°	735.1	734.9	735.3	731.4	726.4	725.2	713.3	700.3	677.1	667.8	651.7
17.5°	731.4	734.3	735.9	734.7	733.9	732.0	726.9	717.2	704.4	688.8	669.6
20°	704.2	708.3	709.0	713.7	716.4	719.9	721.3	719.0	711.8	699.3	683.2
22.5°	662.2	662.6	664.9	672.9	679.5	689.6	695.0	705.0	703.4	698.9	686.1
25°	612.4	610.4	617.6	621.3	634.7	648.7	658.7	669.9	679.7	685.7	681.8
27.5°	557.3	553.0	563.9	573.5	583.0	596.6	611.8	629.9	643.7	662.4	667.0
30°	483.6	485.5	495.8	506.2	522.7	544.1	561.8	582.2	604.2	625.8	640.8
32.5°	404.2	412.6	418.2	435.7	449.7	474.1	502.1	528.9	557.7	583.0	608.3
35°	333.4	341.6	350.7	362.4	382.8	406.4	431.7	466.1	503.6	537.1	564.7
37.5°	288.5	287.1	292.6	301.3	318.8	339.1	369.2	404.2	449.0	486.3	523.3
40°	249.0	248.2	251.9	259.7	272.3	286.3	311.8	341.6	382.6	430.7	477.0
42.5°	221.8	222.7	224.3	229.3	236.9	247.8	265.3	289.5	326.2	370.8	421.5
45°	200.9	202.3	204.6	207.2	212.2	221.6	232.3	250.4	280.1	317.9	366.9
47.5°	184.4	184.8	187.3	189.7	192.6	198.4	207.8	219.4	242.0	274.3	318.2
50°	171.6	170.2	171.8	173.7	176.8	180.5	186.2	196.9	210.9	235.8	271.0
52.5°	156.0	156.4	157.8	158.3	160.9	164.6	169.8	176.4	188.7	206.8	234.2
55°	141.2	142.2	143.0	144.3	146.7	149.4	153.5	158.5	168.3	182.9	204.4
57.5°	127.2	127.6	128.2	130.9	132.3	134.8	138.9	143.4	150.0	161.3	178.2
60°	112.8	112.8	114.4	115.4	117.5	120.0	123.1	127.4	133.1	142.0	155.0
62.5°	99.6	99.4	99.8	101.7	103.1	105.4	108.5	112.0	117.3	124.9	135.0
65°	86.8	86.4	87.7	88.1	89.7	92.0	94.5	98.4	102.7	108.5	117.9
67.5°	74.1	74.7	75.5	76.3	77.2	79.8	81.5	84.4	88.1	93.0	99.6
70°	63.8	63.8	63.8	64.4	65.6	66.9	68.5	70.8	74.3	78.4	84.2
72.5°	52.3	53.1	53.9	53.3	54.9	55.6	57.6	58.7	61.9	64.2	69.1
75°	42.8	42.8	42.8	43.8	44.5	45.1	46.3	47.5	49.2	52.5	55.2
77.5°	33.7	33.5	33.7	34.0	34.8	35.6	36.0	37.0	38.7	40.3	42.8
80°	24.7	25.1	25.3	25.7	25.7	26.1	26.3	27.8	28.8	29.8	31.3
82.5°	17.7	17.7	17.7	17.7	17.9	18.1	18.7	18.9	19.1	20.0	21.0
85°	11.1	10.9	10.9	11.3	11.1	11.1	11.5	11.9	11.9	12.1	12.8
87.5°	5.4	5.4	5.6	5.4	5.4	5.6	5.6	5.4	5.6	5.8	6.0
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°	535.5	535.5	535.5	535.5	535.5	535.5	535.5	535.5	535.5	535.5	535.5
2.5°	553.0	551.3	550.3	546.6	543.3	540.0	539.0	539.4	534.9	530.5	528.7
5°	570.9	566.7	562.8	557.3	550.7	543.5	539.8	536.9	529.7	521.9	517.4
7.5°	587.1	581.8	574.8	564.9	555.8	545.1	538.6	533.0	522.9	512.4	506.0
10°	601.7	593.7	584.0	571.3	559.5	545.8	536.1	526.4	514.1	500.9	492.7
12.5°	614.3	602.8	593.3	576.0	561.6	543.5	531.6	516.9	503.8	487.5	479.5
15°	635.7	615.7	597.6	579.1	562.0	537.9	525.2	506.9	489.8	470.4	461.2
17.5°	651.5	629.9	601.9	579.5	560.6	534.9	516.5	494.7	475.4	454.0	441.6
20°	664.7	639.0	608.3	580.3	556.5	526.0	505.6	483.2	459.5	434.6	421.0
22.5°	672.5	645.2	614.9	577.2	548.2	518.8	491.8	466.7	442.7	415.3	400.9
25°	672.9	648.2	616.1	575.8	541.6	508.1	477.2	453.4	424.3	399.2	378.5
27.5°	666.1	646.6	615.5	572.9	534.0	495.5	462.0	435.9	405.2	378.0	357.3
30°	651.1	640.8	610.8	568.0	524.6	482.4	444.5	413.8	383.4	355.8	334.4
32.5°	627.9	627.7	602.1	561.0	514.5	465.7	426.2	395.1	360.5	333.6	313.4
35°	596.0	605.8	589.2	549.9	501.3	450.1	407.7	372.3	337.3	311.4	292.2
37.5°	555.4	578.3	571.7	535.1	484.4	433.4	387.3	350.3	316.7	290.0	271.2
40°	513.2	544.5	549.1	517.6	466.3	413.4	363.8	327.0	294.5	270.6	251.7
42.5°	468.0	505.8	520.2	496.6	446.6	392.4	342.8	304.4	272.3	249.2	233.0
45°	416.3	464.7	487.1	472.7	424.1	369.0	317.9	279.3	250.0	228.2	215.3
47.5°	369.6	422.1	450.7	443.9	400.1	345.3	294.9	257.2	228.2	210.5	198.4
50°	319.4	373.7	410.1	411.8	373.7	319.6	269.0	234.0	207.8	191.6	182.1
52.5°	275.8	327.0	367.5	378.0	344.3	292.8	245.7	210.9	188.7	174.1	165.9
55°	238.9	282.8	326.8	342.8	315.1	265.7	221.4	190.8	169.2	158.9	151.5
57.5°	203.9	242.4	284.2	301.1	283.4	240.0	197.1	170.2	151.9	142.6	136.9
60°	177.4	206.2	242.4	263.6	248.8	211.1	174.9	149.6	135.2	127.2	121.8
62.5°	152.7	177.4	206.6	225.5	219.2	184.2	152.7	131.1	119.2	111.7	108.2
65°	130.1	150.2	173.9	191.8	186.4	159.5	132.9	113.8	103.9	98.0	94.9
67.5°	110.7	126.2	143.0	159.5	155.0	135.0	112.6	97.1	89.5	84.2	82.3
70°	92.6	103.7	118.3	130.9	127.4	111.7	94.9	82.1	75.7	71.4	69.6
72.5°	75.3	84.0	94.3	103.9	101.9	89.5	76.1	67.3	62.8	58.9	57.4
75°	59.5	66.5	73.3	80.1	79.4	69.4	61.1	53.7	49.8	46.7	46.1
77.5°	46.5	50.8	55.8	60.1	59.1	52.5	45.7	41.2	38.1	36.0	35.8
80°	33.5	35.8	39.1	42.0	40.5	38.1	32.9	29.8	27.8	25.7	24.9
82.5°	22.0	24.3	25.9	27.2	26.1	23.9	21.2	19.3	18.3	17.1	16.9
85°	12.8	14.0	14.8	15.2	14.8	13.4	11.9	11.1	10.1	9.5	9.3
87.5°	6.2	6.2	6.2	6.6	6.0	6.0	5.1	4.5	4.3	4.1	3.7
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):**

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	535.5	535.5	535.5	535.5	535.5	535.5	535.5	535.5	535.5	535.5	535.5
2.5°	526.6	525.4	521.1	518.8	515.1	511.6	509.3	510.4	511.2	510.8	510.2
5°	513.2	509.3	503.4	498.2	494.5	487.7	484.8	483.4	482.2	480.7	479.3
7.5°	498.4	492.9	484.4	477.8	471.3	462.6	458.3	455.8	453.2	450.1	447.2
10°	482.4	473.7	464.7	454.4	446.2	438.5	431.7	427.2	423.1	419.2	416.3
12.5°	465.5	455.2	443.5	428.5	419.2	407.5	407.9	399.0	392.0	390.0	386.5
15°	447.4	433.4	419.2	402.5	395.3	385.4	379.3	373.1	367.5	363.6	362.6
17.5°	427.6	408.9	395.1	382.8	371.0	361.0	355.6	350.7	345.9	340.2	340.0
20°	404.4	388.7	373.3	362.8	350.7	340.4	333.4	328.4	324.5	321.4	318.8
22.5°	382.4	364.9	351.1	339.3	327.4	319.6	314.4	309.7	306.6	303.1	300.7
25°	358.5	345.1	329.7	316.7	306.8	301.5	297.0	292.8	290.8	288.5	285.6
27.5°	338.1	323.3	308.1	298.0	288.9	284.2	280.7	277.6	275.8	274.3	272.5
30°	316.3	301.3	290.0	280.1	272.9	268.1	266.1	264.4	262.2	261.4	260.5
32.5°	295.3	282.1	272.9	264.6	257.9	255.2	253.3	251.9	250.2	249.4	247.6
35°	275.8	264.4	255.0	250.2	244.7	242.0	240.6	238.5	236.9	236.0	235.8
37.5°	257.0	246.7	240.4	234.0	231.3	229.9	227.8	226.4	225.8	225.5	225.3
40°	238.9	230.9	225.3	220.4	219.4	216.9	215.3	214.0	214.0	214.2	214.0
42.5°	222.5	215.5	210.7	206.6	205.4	204.1	202.5	202.7	203.1	203.9	203.1
45°	205.8	200.6	197.1	195.1	192.8	191.4	191.2	191.8	192.0	192.2	192.8
47.5°	190.2	186.9	183.6	181.1	180.1	179.9	179.4	180.5	181.5	181.7	182.7
50°	176.6	172.7	170.0	168.5	167.7	167.3	167.7	169.0	169.8	170.8	171.4
52.5°	161.3	158.9	157.2	156.2	156.0	156.4	156.4	157.8	159.3	159.5	159.7
55°	147.6	145.5	145.1	143.2	144.1	143.8	144.9	145.7	146.9	148.2	148.4
57.5°	133.6	131.7	130.5	130.7	130.9	131.7	132.5	134.0	135.4	136.9	136.9
60°	119.6	118.7	118.1	118.1	118.5	119.8	120.8	122.2	123.1	123.9	124.5
62.5°	106.8	106.0	105.4	105.8	107.0	107.6	108.9	109.5	110.3	111.1	111.3
65°	93.2	92.8	93.4	93.8	94.0	95.1	96.5	97.1	98.0	98.4	99.8
67.5°	80.9	80.9	80.7	81.3	82.5	82.7	84.2	85.8	85.8	86.6	87.7
70°	68.3	68.7	69.1	69.6	70.6	71.0	72.0	72.6	73.5	74.1	74.7
72.5°	56.8	56.8	57.2	57.0	57.8	58.9	59.7	60.3	61.1	61.9	62.6
75°	45.5	45.5	45.9	46.1	47.1	48.2	47.9	48.4	49.2	50.0	50.4
77.5°	35.2	34.8	35.2	35.4	35.8	36.6	36.8	37.5	38.5	38.3	38.7
80°	25.3	24.7	25.3	25.5	25.5	26.5	26.5	27.0	27.6	27.0	27.6
82.5°	16.3	16.1	16.5	16.5	16.9	16.7	17.1	17.1	17.7	17.5	17.7
85°	9.1	8.8	9.1	8.8	9.1	9.3	9.3	9.1	9.1	9.5	8.8
87.5°	3.5	3.3	3.1	3.1	2.9	2.7	2.5	2.5	2.5	2.1	2.1
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: P242289

CATALOG NUMBER: S122DRP-S290D830-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	535.5	535.5	535.5	535.5
2.5°	508.1	507.7	507.7	505.8
5°	476.4	475.8	474.8	475.8
7.5°	446.4	443.7	443.3	441.2
10°	412.8	411.2	411.0	407.1
12.5°	387.3	382.8	383.8	381.9
15°	357.0	357.0	356.2	352.7
17.5°	335.4	335.2	333.4	334.6
20°	316.5	315.3	312.8	312.8
22.5°	298.6	298.8	296.1	297.2
25°	285.4	283.8	282.6	283.2
27.5°	271.9	271.2	271.0	269.2
30°	260.3	258.3	258.7	257.7
32.5°	247.2	246.7	246.1	245.3
35°	235.4	235.6	234.6	235.0
37.5°	224.9	225.8	225.1	225.1
40°	214.6	214.6	214.6	215.3
42.5°	204.8	204.4	203.9	203.7
45°	193.2	193.9	194.1	193.0
47.5°	183.2	183.4	183.2	184.4
50°	172.5	172.0	172.5	172.0
52.5°	161.1	161.3	160.9	160.9
55°	149.2	149.6	149.4	149.4
57.5°	137.1	137.3	137.7	136.6
60°	124.3	125.3	125.1	124.7
62.5°	112.6	112.8	112.8	112.8
65°	100.4	100.8	100.2	100.8
67.5°	87.3	87.5	87.9	88.1
70°	75.1	74.9	75.5	76.1
72.5°	62.4	63.0	62.6	63.0
75°	50.0	50.6	50.4	51.0
77.5°	38.3	38.5	38.5	38.7
80°	27.6	27.2	26.8	27.6
82.5°	17.1	17.5	17.1	16.9
85°	8.8	8.6	8.2	8.2
87.5°	2.1	1.9	1.9	1.6
90°	0.0	0.0	0.0	0.0



TEST NUMBER: P242289  
 CATALOG NUMBER: S122DRP-S290D830-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	16.36	17.88	16.73	18.19	18.51	19.62	21.14	19.98	21.45	21.76
	3H	17.77	19.13	18.15	19.46	19.82	20.63	21.99	21.01	22.32	22.68
	4H	18.27	19.55	18.67	19.90	20.28	20.95	22.22	21.35	22.57	22.95
	6H	18.63	19.81	19.04	20.17	20.57	21.14	22.32	21.55	22.69	23.08
	8H	18.74	19.86	19.17	20.25	20.65	21.19	22.31	21.61	22.70	23.10
	12H	18.81	19.89	19.24	20.27	20.70	21.20	22.28	21.63	22.66	23.09
4H	2H	17.22	18.50	17.62	18.85	19.23	19.83	21.11	20.23	21.45	21.83
	3H	18.78	19.84	19.19	20.24	20.64	21.17	22.23	21.58	22.63	23.03
	4H	19.37	20.32	19.80	20.74	21.18	21.68	22.63	22.11	23.05	23.49
	6H	19.82	20.65	20.27	21.09	21.55	22.01	22.84	22.47	23.28	23.74
	8H	19.96	20.73	20.42	21.18	21.64	22.09	22.86	22.55	23.30	23.77
	12H	20.06	20.75	20.54	21.23	21.70	22.13	22.82	22.61	23.30	23.77
8H	4H	19.80	20.58	20.27	21.02	21.49	21.80	22.58	22.27	23.02	23.49
	6H	20.34	20.98	20.83	21.47	21.94	22.24	22.88	22.74	23.37	23.85
	8H	20.53	21.10	21.04	21.61	22.10	22.38	22.95	22.89	23.46	23.95
	12H	20.69	21.19	21.20	21.69	22.25	22.47	22.97	22.98	23.47	24.03
12H	4H	19.86	20.55	20.34	21.03	21.50	21.80	22.49	22.28	22.97	23.44
	6H	20.41	20.99	20.93	21.50	21.98	22.24	22.82	22.76	23.33	23.82
	8H	20.66	21.16	21.17	21.65	22.22	22.42	22.93	22.93	23.42	23.98