

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: P242304

Luminaire Tested: S122DRP-S290D930-X4F0-XX-UDD-A-W

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-2024  
Report Number: P242304  
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-S290D930-X4F0-XX-UDD-A-W  
Description: DEFINE 2 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER  
STANDARD LIGHT ENGINE  
Light Source: (92) 3000K CCT, 90 CRI LEDS  
Ballast/Driver: -

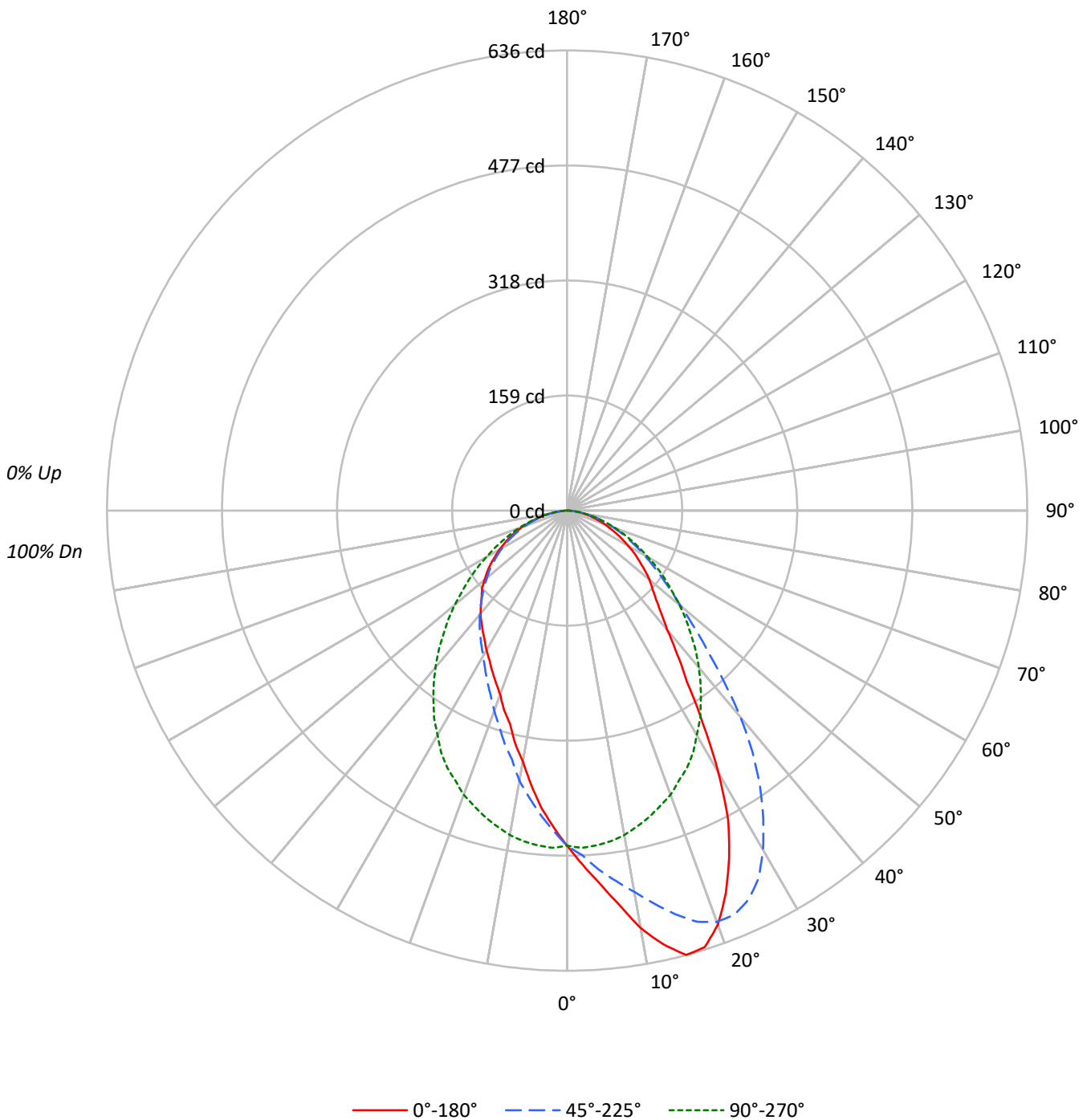
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1021.8 lumens  
Efficiency: N/A  
Efficacy: 88.1 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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### 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	98	107	103	100	97	99	96	94	95	93	91	92	90	88	86				86
2	101	94	87	82	98	92	86	81	88	83	79	85	81	78	82	79	76	74				74
3	93	83	76	70	90	82	75	69	79	73	68	76	71	67	74	69	66	64				64
4	86	75	66	60	83	73	66	60	71	64	59	69	63	58	66	62	58	55				55
5	79	67	59	53	77	66	58	52	64	57	52	62	56	51	60	55	51	49				49
6	74	61	53	47	72	60	52	46	58	51	46	57	51	46	55	50	45	43				43
7	69	56	48	42	67	55	47	42	54	46	41	52	46	41	51	45	41	39				39
8	64	51	43	38	63	51	43	38	49	42	37	48	42	37	47	41	37	35				35
9	60	47	39	34	59	47	39	34	46	39	34	45	38	34	44	38	34	32				32
10	56	44	36	31	55	43	36	31	42	36	31	41	35	31	41	35	31	29				29

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

	0°	45°	90°	135°	180°
0°	8823	8823	8823	8823	8823
5°	9891	9520	8880	8067	7870
10°	11334	10350	8806	7336	6810
15°	12538	11390	8645	6575	6016
20°	12347	12261	8473	5968	5485
25°	11135	12465	8243	5481	5147
30°	9200	11906	7874	5101	4903
35°	6706	10803	7487	4867	4727
40°	5356	9265	7034	4665	4630
45°	4679	7408	6508	4458	4499
50°	4400	6045	5998	4288	4409
55°	4055	5257	5479	4131	4291
60°	3714	4678	4930	3947	4110
65°	3385	4228	4435	3705	3930
70°	3074	3776	3954	3419	3670
75°	2723	3341	3422	3069	3246
80°	2347	2830	2830	2523	2622
85°	2098	2295	2098	1748	1552

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 65°  
 Vertical Angle: 45°  
 Luminance: 11349 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	44.1	4.3
10°-20°	128.4	12.6
20°-30°	186.4	18.2
30°-40°	196.4	19.2
40°-50°	173.8	17.0
50°-60°	138.8	13.6
60°-70°	94.3	9.2
70°-80°	48.2	4.7
80°-90°	11.4	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°	358.9	35.1
0°-40°	555.3	54.3
0°-60°	867.9	84.9
0°-90°	1021.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1021.8	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	463	463	463	463	463	
5°	517	498	464	422	412	51
15°	636	578	438	333	305	176
25°	530	593	392	261	245	240
35°	288	465	322	209	203	187
45°	174	275	242	166	167	136
55°	122	158	165	124	129	109
65°	75	94	98	82	87	75
75°	37	45	46	42	44	39
85°	10	10	10	8	7	11
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°	463.2	463.2	463.2	463.2	463.2	463.2	463.2	463.2	463.2	463.2	463.2
2.5°	489.9	490.1	490.4	487.6	487.2	487.2	484.7	482.6	480.1	476.7	477.1
5°	517.3	519.3	520.0	517.8	514.6	514.3	511.2	506.3	501.6	497.9	495.2
7.5°	549.0	549.7	548.3	545.8	543.6	539.5	534.6	529.8	522.6	516.2	511.6
10°	586.0	587.1	584.0	580.0	576.6	571.6	563.4	555.0	544.9	535.1	527.3
12.5°	614.1	617.2	613.1	613.4	607.0	599.7	589.6	586.4	571.1	556.5	547.9
15°	635.8	635.7	636.0	632.6	628.4	627.3	617.0	605.8	585.7	577.6	563.8
17.5°	632.6	635.1	636.6	635.5	634.8	633.2	628.7	620.4	609.3	595.8	579.2
20°	609.1	612.7	613.2	617.3	619.7	622.7	623.9	622.0	615.7	604.9	591.0
22.5°	572.8	573.2	575.1	582.1	587.8	596.5	601.1	609.9	608.4	604.5	593.5
25°	529.8	528.0	534.2	537.4	549.0	561.1	569.8	579.4	588.0	593.1	589.7
27.5°	482.0	478.3	487.7	496.1	504.3	516.0	529.2	544.9	556.8	573.0	576.9
30°	418.3	419.9	428.8	437.9	452.1	470.7	486.0	503.6	522.6	541.3	554.3
32.5°	349.6	356.9	361.7	376.8	389.0	410.1	434.3	457.5	482.4	504.3	526.2
35°	288.4	295.5	303.3	313.5	331.1	351.6	373.5	403.2	435.6	464.6	488.5
37.5°	249.6	248.3	253.1	260.6	275.7	293.4	319.3	349.6	388.4	420.6	452.7
40°	215.4	214.7	217.9	224.6	235.5	247.6	269.7	295.5	330.9	372.6	412.6
42.5°	191.9	192.6	194.0	198.3	204.9	214.3	229.5	250.5	282.1	320.8	364.6
45°	173.7	175.0	176.9	179.3	183.5	191.7	201.0	216.6	242.3	275.0	317.4
47.5°	159.5	159.9	162.0	164.1	166.6	171.6	179.8	189.8	209.3	237.3	275.2
50°	148.5	147.2	148.6	150.2	152.9	156.1	161.1	170.4	182.5	204.0	234.4
52.5°	134.9	135.3	136.5	136.9	139.2	142.4	146.9	152.6	163.2	178.9	202.6
55°	122.1	123.0	123.7	124.8	126.9	129.2	132.8	137.1	145.6	158.3	176.8
57.5°	110.0	110.4	110.9	113.2	114.5	116.6	120.2	124.1	129.8	139.6	154.2
60°	97.5	97.5	99.0	99.9	101.6	103.8	106.4	110.2	115.2	122.8	134.0
62.5°	86.2	86.0	86.3	87.9	89.2	91.1	93.8	96.8	101.5	108.1	116.8
65°	75.1	74.8	75.8	76.2	77.6	79.6	81.7	85.1	88.8	93.8	102.0
67.5°	64.1	64.6	65.3	66.0	66.8	69.1	70.5	73.0	76.2	80.5	86.2
70°	55.2	55.2	55.2	55.7	56.8	57.9	59.3	61.2	64.3	67.8	72.8
72.5°	45.2	45.9	46.6	46.1	47.5	48.1	49.8	50.7	53.6	55.5	59.8
75°	37.0	37.0	37.0	37.9	38.5	39.0	40.1	41.1	42.5	45.4	47.7
77.5°	29.2	29.0	29.2	29.4	30.1	30.8	31.2	32.0	33.5	34.9	37.0
80°	21.4	21.7	21.9	22.3	22.3	22.6	22.8	24.0	24.9	25.8	27.1
82.5°	15.3	15.3	15.3	15.3	15.5	15.7	16.2	16.4	16.6	17.3	18.2
85°	9.6	9.4	9.4	9.8	9.6	9.6	10.0	10.3	10.3	10.5	11.0
87.5°	4.6	4.6	4.8	4.6	4.6	4.8	4.8	4.6	4.8	5.0	5.2
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°	463.2	463.2	463.2	463.2	463.2	463.2	463.2	463.2	463.2	463.2	463.2
2.5°	478.3	476.9	476.0	472.8	469.9	467.1	466.2	466.6	462.6	458.9	457.3
5°	493.8	490.2	486.9	482.0	476.4	470.1	466.9	464.4	458.2	451.4	447.5
7.5°	507.9	503.2	497.2	488.6	480.8	471.5	465.9	461.0	452.3	443.2	437.7
10°	520.5	513.6	505.2	494.2	484.0	472.1	463.7	455.3	444.7	433.3	426.2
12.5°	531.4	521.4	513.2	498.2	485.8	470.1	459.8	447.2	435.8	421.7	414.8
15°	549.9	532.6	516.9	500.9	486.1	465.3	454.3	438.4	423.7	406.9	398.9
17.5°	563.6	544.9	520.7	501.3	484.9	462.6	446.8	427.9	411.2	392.7	382.0
20°	575.0	552.7	526.2	502.0	481.3	455.0	437.4	418.0	397.5	376.0	364.2
22.5°	581.7	558.1	531.9	499.3	474.2	448.8	425.4	403.7	382.9	359.2	346.8
25°	582.1	560.7	533.0	498.1	468.5	439.5	412.8	392.2	367.1	345.3	327.4
27.5°	576.2	559.3	532.4	495.6	461.9	428.6	399.6	377.0	350.5	327.0	309.0
30°	563.2	554.3	528.3	491.3	453.7	417.3	384.5	358.0	331.6	307.8	289.3
32.5°	543.1	542.9	520.9	485.3	445.0	402.8	368.7	341.8	311.9	288.6	271.1
35°	515.5	524.1	509.6	475.6	433.6	389.3	352.6	322.0	291.8	269.3	252.8
37.5°	480.4	500.2	494.5	462.8	419.0	374.9	335.0	303.0	274.0	250.8	234.6
40°	444.0	471.0	474.9	447.7	403.4	357.6	314.7	282.9	254.7	234.1	217.7
42.5°	404.8	437.5	450.0	429.5	386.3	339.5	296.6	263.3	235.5	215.6	201.5
45°	360.1	401.9	421.3	408.9	366.9	319.2	275.0	241.6	216.3	197.4	186.2
47.5°	319.7	365.1	389.8	384.0	346.1	298.7	255.1	222.5	197.4	182.1	171.6
50°	276.3	323.3	354.8	356.2	323.3	276.4	232.7	202.4	179.8	165.7	157.5
52.5°	238.5	282.9	317.9	327.0	297.8	253.3	212.5	182.5	163.2	150.6	143.5
55°	206.7	244.6	282.7	296.6	272.5	229.8	191.5	165.0	146.3	137.4	131.0
57.5°	176.4	209.7	245.8	260.4	245.1	207.6	170.5	147.2	131.4	123.4	118.4
60°	153.4	178.4	209.7	228.0	215.2	182.6	151.3	129.4	117.0	110.0	105.4
62.5°	132.1	153.4	178.7	195.1	189.6	159.3	132.1	113.4	103.1	96.7	93.6
65°	112.5	129.9	150.4	165.9	161.3	138.0	115.0	98.4	89.9	84.7	82.1
67.5°	95.8	109.1	123.7	138.0	134.0	116.8	97.4	84.0	77.4	72.8	71.2
70°	80.1	89.7	102.4	113.2	110.2	96.7	82.1	71.0	65.5	61.8	60.2
72.5°	65.2	72.6	81.5	89.9	88.1	77.4	65.9	58.2	54.3	50.9	49.7
75°	51.4	57.5	63.4	69.2	68.7	60.0	52.9	46.5	43.1	40.4	39.9
77.5°	40.2	44.0	48.2	52.0	51.1	45.4	39.5	35.6	32.9	31.2	31.0
80°	29.0	31.0	33.8	36.3	35.1	32.9	28.5	25.8	24.0	22.3	21.5
82.5°	19.0	21.0	22.4	23.5	22.6	20.6	18.3	16.7	15.8	14.8	14.6
85°	11.0	12.1	12.8	13.2	12.8	11.6	10.3	9.6	8.7	8.2	8.0
87.5°	5.3	5.3	5.3	5.7	5.2	5.2	4.5	3.9	3.7	3.6	3.2
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°	463.2	463.2	463.2	463.2	463.2	463.2	463.2	463.2	463.2	463.2	463.2
2.5°	455.5	454.5	450.7	448.8	445.6	442.5	440.6	441.5	442.2	441.8	441.3
5°	444.0	440.6	435.4	431.0	427.8	421.9	419.4	418.1	417.1	415.8	414.6
7.5°	431.1	426.3	419.0	413.3	407.6	400.2	396.4	394.3	392.0	389.3	386.8
10°	417.3	409.8	401.9	393.0	385.9	379.3	373.5	369.5	366.0	362.6	360.1
12.5°	402.7	393.8	383.6	370.6	362.6	352.5	352.8	345.2	339.1	337.3	334.3
15°	387.0	374.9	362.6	348.2	342.0	333.4	328.1	322.7	317.9	314.5	313.7
17.5°	369.9	353.7	341.8	331.1	321.0	312.2	307.6	303.3	299.2	294.2	294.1
20°	349.8	336.3	322.9	313.8	303.3	294.4	288.4	284.1	280.7	278.1	275.7
22.5°	330.7	315.6	303.7	293.5	283.2	276.4	272.0	267.9	265.2	262.2	260.1
25°	310.1	298.5	285.2	274.0	265.4	260.8	256.9	253.3	251.5	249.6	247.1
27.5°	292.5	279.7	266.5	257.8	249.9	245.8	242.8	240.1	238.5	237.3	235.7
30°	273.6	260.6	250.8	242.3	236.0	231.9	230.2	228.7	226.8	226.1	225.4
32.5°	255.4	244.1	236.0	228.9	223.0	220.7	219.1	217.9	216.5	215.7	214.1
35°	238.5	228.7	220.6	216.5	211.7	209.3	208.1	206.3	204.9	204.2	204.0
37.5°	222.3	213.4	207.9	202.4	200.1	198.8	197.1	195.8	195.3	195.1	194.9
40°	206.7	199.7	194.9	190.6	189.8	187.6	186.2	185.1	185.1	185.3	185.1
42.5°	192.4	186.4	182.3	178.7	177.7	176.6	175.2	175.3	175.7	176.4	175.7
45°	178.0	173.6	170.5	168.8	166.8	165.5	165.4	165.9	166.1	166.3	166.8
47.5°	164.5	161.6	158.8	156.6	155.8	155.6	155.2	156.1	157.0	157.2	158.1
50°	152.7	149.3	147.0	145.8	145.1	144.7	145.1	146.1	146.9	147.7	148.3
52.5°	139.6	137.4	136.0	135.1	134.9	135.3	135.3	136.5	137.8	138.0	138.1
55°	127.6	125.9	125.5	123.9	124.6	124.4	125.3	126.0	127.1	128.2	128.3
57.5°	115.5	113.9	112.9	113.0	113.2	113.9	114.6	115.9	117.1	118.4	118.4
60°	103.4	102.7	102.2	102.2	102.5	103.6	104.5	105.7	106.4	107.2	107.7
62.5°	92.4	91.7	91.1	91.5	92.6	93.1	94.2	94.7	95.4	96.1	96.3
65°	80.6	80.3	80.8	81.2	81.4	82.2	83.5	84.0	84.7	85.1	86.3
67.5°	70.0	70.0	69.8	70.3	71.4	71.6	72.8	74.2	74.2	74.9	75.8
70°	59.1	59.5	59.8	60.2	61.1	61.4	62.3	62.8	63.5	64.1	64.6
72.5°	49.1	49.1	49.5	49.3	50.0	50.9	51.6	52.2	52.9	53.6	54.1
75°	39.3	39.3	39.7	39.9	40.8	41.7	41.5	41.8	42.5	43.3	43.6
77.5°	30.4	30.1	30.4	30.6	31.0	31.7	31.9	32.4	33.3	33.1	33.5
80°	21.9	21.4	21.9	22.1	22.1	23.0	23.0	23.3	23.9	23.3	23.9
82.5°	14.1	13.9	14.2	14.2	14.6	14.4	14.8	14.8	15.3	15.1	15.3
85°	7.8	7.7	7.8	7.7	7.8	8.0	8.0	7.8	7.8	8.2	7.7
87.5°	3.0	2.8	2.7	2.7	2.5	2.3	2.1	2.1	2.1	1.8	1.8
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: P242304

CATALOG NUMBER: S122DRP-S290D930-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	463.2	463.2	463.2	463.2
2.5°	439.5	439.1	439.1	437.5
5°	412.1	411.6	410.7	411.6
7.5°	386.1	383.8	383.4	381.7
10°	357.1	355.7	355.5	352.1
12.5°	335.0	331.1	332.0	330.4
15°	308.8	308.8	308.1	305.1
17.5°	290.2	290.0	288.4	289.4
20°	273.8	272.7	270.6	270.6
22.5°	258.3	258.5	256.2	257.0
25°	246.9	245.5	244.4	244.9
27.5°	235.2	234.6	234.4	232.8
30°	225.2	223.4	223.8	222.9
32.5°	213.8	213.4	212.9	212.2
35°	203.6	203.8	202.9	203.3
37.5°	194.6	195.3	194.7	194.7
40°	185.7	185.7	185.7	186.2
42.5°	177.1	176.8	176.4	176.2
45°	167.2	167.7	167.9	167.0
47.5°	158.4	158.6	158.4	159.5
50°	149.2	148.8	149.2	148.8
52.5°	139.4	139.6	139.2	139.2
55°	129.1	129.4	129.2	129.2
57.5°	118.6	118.7	119.1	118.2
60°	107.5	108.4	108.2	107.9
62.5°	97.4	97.5	97.5	97.5
65°	86.9	87.2	86.7	87.2
67.5°	75.5	75.7	76.0	76.2
70°	65.0	64.8	65.3	65.9
72.5°	53.9	54.5	54.1	54.5
75°	43.3	43.8	43.6	44.1
77.5°	33.1	33.3	33.3	33.5
80°	23.9	23.5	23.1	23.9
82.5°	14.8	15.1	14.8	14.6
85°	7.7	7.5	7.1	7.1
87.5°	1.8	1.6	1.6	1.4
90°	0.0	0.0	0.0	0.0



TEST NUMBER: P242304

CATALOG NUMBER: S122DRP-S290D930-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	15.86	17.38	16.23	17.69	18.01	19.11	20.63	19.48	20.94	21.26
	3H	17.27	18.63	17.65	18.96	19.32	20.12	21.49	20.50	21.81	22.17
	4H	17.77	19.05	18.17	19.40	19.77	20.44	21.72	20.84	22.07	22.45
	6H	18.13	19.31	18.54	19.67	20.06	20.64	21.82	21.05	22.18	22.58
	8H	18.24	19.36	18.66	19.75	20.15	20.68	21.81	21.11	22.20	22.60
	12H	18.31	19.38	18.74	19.77	20.19	20.70	21.77	21.13	22.16	22.59
4H	2H	16.72	18.00	17.12	18.35	18.72	19.32	20.60	19.72	20.95	21.33
	3H	18.28	19.34	18.69	19.74	20.14	20.67	21.73	21.08	22.13	22.53
	4H	18.87	19.82	19.30	20.24	20.67	21.17	22.13	21.61	22.54	22.98
	6H	19.31	20.14	19.77	20.59	21.05	21.51	22.34	21.96	22.78	23.24
	8H	19.45	20.23	19.92	20.67	21.14	21.58	22.36	22.04	22.80	23.27
	12H	19.56	20.25	20.04	20.73	21.20	21.62	22.31	22.10	22.79	23.26
8H	4H	19.30	20.07	19.76	20.52	20.99	21.30	22.08	21.76	22.52	22.99
	6H	19.83	20.47	20.33	20.96	21.44	21.74	22.38	22.24	22.87	23.35
	8H	20.03	20.60	20.54	21.11	21.60	21.87	22.45	22.39	22.96	23.44
	12H	20.19	20.69	20.69	21.18	21.75	21.96	22.47	22.47	22.96	23.53
12H	4H	19.36	20.05	19.84	20.53	21.00	21.29	21.99	21.78	22.47	22.94
	6H	19.91	20.48	20.42	20.99	21.48	21.74	22.31	22.25	22.82	23.31
	8H	20.15	20.66	20.66	21.15	21.72	21.92	22.42	22.43	22.92	23.48