

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: P242653

Luminaire Tested: S124DRP-S350D935-X4F0-XX-UDD-A-W

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-2024  
Report Number: P242653  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-21)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: S124DRP-S350D935-X4F0-XX-UDD-A-W  
Description: DEFINE 4 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER  
STANDARD LIGHT ENGINE  
Light Source: (92) 3500K CCT, 90 CRI LEDS  
Ballast/Driver: -

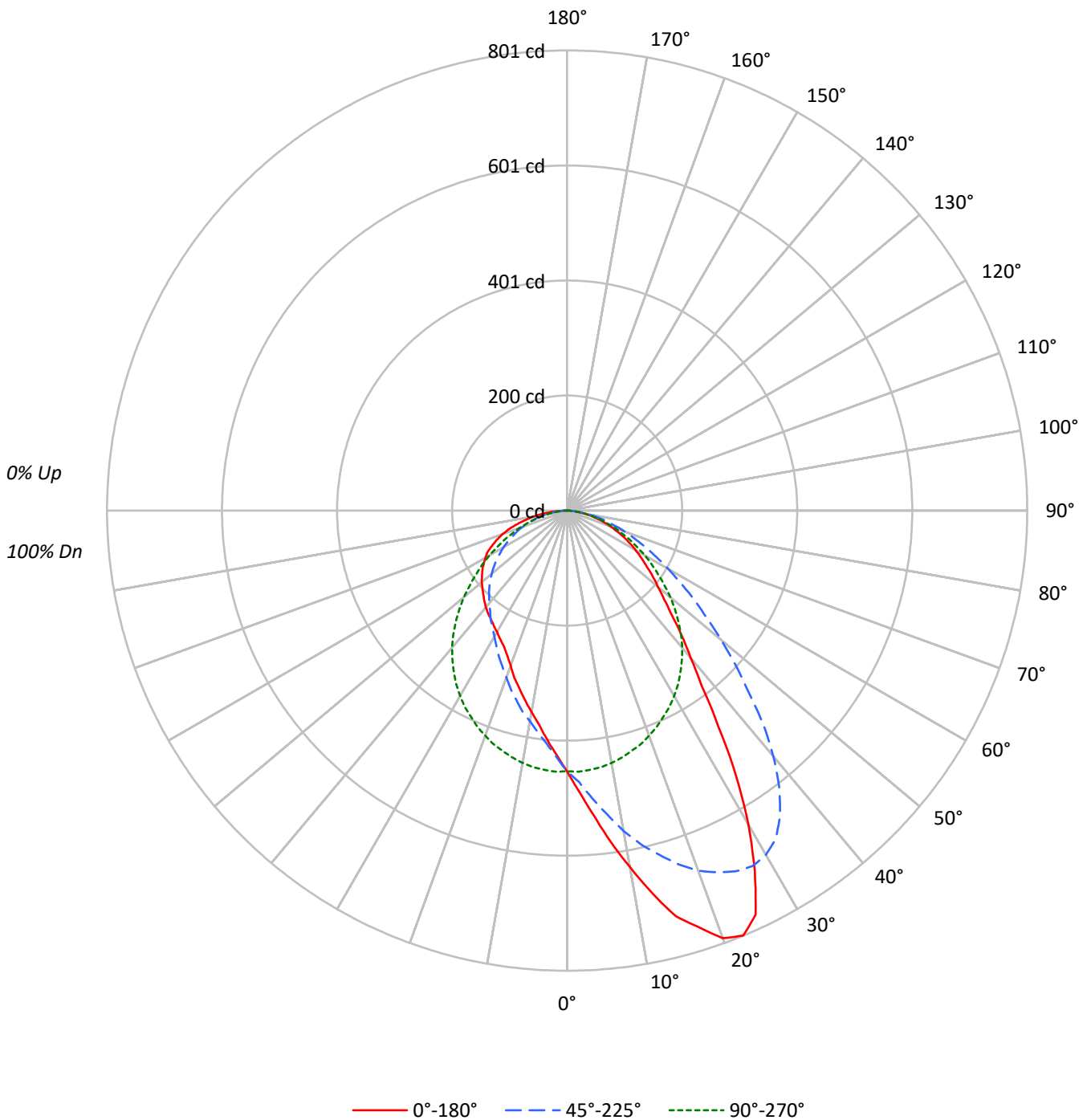
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1252.1 lumens  
Efficiency: N/A  
Efficacy: 107.9 lumens/watt  
Spacing Criteria (0/90/45): 1.3 / 1.22 / 1.41  
Luminous Opening: Rectangular (W 3.88' x L: 0.31' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 11.6  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): 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	109	105	101	97	107	103	99	96	98	95	93	95	92	90	91	89	87				85	
2	100	92	86	80	98	90	84	79	87	82	78	84	79	76	81	77	74				72	
3	92	82	74	68	89	80	73	67	77	71	66	74	69	65	72	67	64				62	
4	84	73	64	58	82	72	64	58	69	62	57	67	61	56	65	60	55				53	
5	78	65	57	50	76	64	56	50	62	55	50	60	54	49	58	53	49				46	
6	72	59	51	44	70	58	50	44	56	49	44	55	48	43	53	47	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	40	35	45	39	35				33	
9	58	45	37	32	57	45	37	32	44	37	32	43	36	32	42	36	31				30	
10	55	42	34	29	54	41	34	29	40	34	29	39	33	29	39	33	29				27	

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

	0°	45°	90°	135°	180°
0°	4034	4034	4034	4034	4034
5°	4750	4486	4044	3634	3569
10°	5687	5111	4026	3363	3213
15°	6729	5710	3986	3141	2951
20°	7493	6312	3944	2923	2717
25°	7614	6797	3883	2752	2555
30°	6479	7104	3824	2599	2504
35°	4981	7014	3729	2515	2504
40°	3883	6482	3617	2445	2552
45°	3237	5609	3447	2415	2595
50°	2849	4837	3241	2370	2683
55°	2610	4163	2994	2328	2791
60°	2446	3602	2773	2268	2921
65°	2278	3147	2526	2194	3029
70°	2082	2781	2282	2134	3098
75°	1858	2394	2009	1995	3060
80°	1561	1945	1643	1817	2964
85°	1152	1479	1193	1683	2835

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 55°  
 Vertical Angle: 45°  
 Luminance: 6194 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	44.2	3.5
10°-20°	136.3	10.9
20°-30°	216.5	17.3
30°-40°	240.6	19.2
40°-50°	218.8	17.5
50°-60°	178.8	14.3
60°-70°	127.6	10.2
70°-80°	70.2	5.6
80°-90°	19.0	1.5
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°	397.0	31.7
0°-40°	637.6	50.9
0°-60°	1035.2	82.7
0°-90°	1252.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1252.1	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	454	454	454	454	454	
5°	532	503	453	407	400	54
15°	731	620	433	341	321	207
25°	776	693	396	281	260	344
35°	459	646	344	232	231	291
45°	258	446	274	192	206	202
55°	168	269	193	150	180	152
65°	108	150	120	104	144	107
75°	54	70	58	58	89	57
85°	11	14	12	16	28	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°	453.8	453.8	453.8	453.8	453.8	453.8	453.8	453.8	453.8	453.8	453.8
2.5°	490.2	490.0	488.2	487.8	486.5	484.8	484.4	481.4	475.4	472.6	471.8
5°	532.3	536.1	531.2	530.3	529.7	523.5	520.3	516.5	507.9	502.8	498.9
7.5°	581.6	581.8	579.7	577.6	574.1	568.8	561.6	553.4	543.4	533.3	526.1
10°	630.1	631.6	629.1	628.8	619.2	613.2	601.1	591.0	579.3	566.3	554.5
12.5°	681.2	678.2	677.2	667.3	667.5	655.3	640.8	630.3	610.7	595.3	578.6
15°	731.2	727.1	724.4	713.3	707.9	692.7	677.8	666.3	642.8	620.5	603.6
17.5°	760.1	765.2	758.4	753.9	739.1	729.1	714.3	690.8	673.3	645.5	626.1
20°	792.1	792.5	789.1	784.4	773.3	759.8	743.2	716.9	694.9	667.3	638.0
22.5°	800.7	800.7	799.8	795.5	787.8	777.4	760.7	739.8	712.0	681.4	652.1
25°	776.3	775.6	777.2	782.1	778.9	775.6	766.0	749.6	724.8	693.0	661.5
27.5°	707.1	712.0	722.2	734.2	742.8	750.6	750.0	743.0	725.4	697.9	664.3
30°	631.2	637.6	644.7	656.8	680.1	693.4	708.1	719.2	713.0	692.1	661.3
32.5°	547.7	548.1	559.6	573.7	594.5	623.3	648.7	674.1	685.0	676.5	652.1
35°	459.0	461.6	473.1	486.6	512.8	544.2	579.1	610.3	636.1	646.4	633.3
37.5°	384.6	392.9	401.5	416.9	440.8	469.2	506.8	545.7	583.5	606.4	608.8
40°	334.6	339.3	345.1	356.2	375.7	403.6	434.8	481.0	521.8	558.6	570.7
42.5°	295.1	297.4	300.4	310.1	323.9	351.5	379.3	418.6	459.6	505.4	527.6
45°	257.5	260.3	266.4	272.2	283.5	302.6	329.1	362.6	403.8	446.2	483.5
47.5°	229.3	231.2	235.0	241.4	251.5	264.5	287.0	315.4	355.6	396.8	436.6
50°	206.0	207.5	210.3	216.0	223.3	234.6	252.3	278.4	308.3	349.8	388.7
52.5°	187.6	188.0	189.8	193.2	198.7	207.7	221.4	241.9	269.2	305.1	343.8
55°	168.4	169.2	171.1	173.9	178.9	185.0	196.1	212.2	236.5	268.6	302.3
57.5°	152.6	153.4	154.9	156.0	160.5	165.6	174.6	186.3	205.3	233.8	264.5
60°	137.6	137.2	139.1	140.0	142.9	147.0	153.6	164.7	180.6	202.6	230.3
62.5°	122.9	122.4	123.9	125.2	126.5	129.9	135.0	143.0	155.3	174.6	197.6
65°	108.3	107.5	108.5	110.0	111.5	113.3	117.3	125.0	135.3	149.6	167.9
67.5°	93.2	94.2	94.2	95.1	96.1	98.7	101.5	107.5	114.8	126.5	142.7
70°	80.1	80.3	81.0	81.0	81.6	83.8	86.1	89.3	96.4	107.0	119.5
72.5°	66.9	67.9	67.3	68.0	68.4	69.7	71.2	74.2	80.1	87.2	97.4
75°	54.1	54.7	54.7	54.9	55.5	56.0	57.3	59.6	63.9	69.7	77.1
77.5°	41.7	41.7	42.1	42.9	42.9	43.8	44.9	46.6	49.1	53.4	58.1
80°	30.5	30.8	30.6	31.0	31.0	31.8	32.1	34.4	35.3	38.0	41.5
82.5°	20.3	20.7	20.7	21.2	21.6	21.6	22.2	22.7	23.7	25.9	26.9
85°	11.3	11.7	11.3	11.7	12.2	12.4	13.0	13.2	13.9	14.5	15.8
87.5°	4.1	4.7	4.7	4.9	5.3	5.5	5.6	5.5	6.2	6.4	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):**

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	453.8	453.8	453.8	453.8	453.8	453.8	453.8	453.8	453.8	453.8	453.8
2.5°	472.0	469.4	467.5	466.0	461.8	459.4	457.5	454.9	451.9	448.7	444.7
5°	494.9	488.5	483.8	476.7	469.9	464.3	458.5	453.2	446.8	439.8	434.8
7.5°	518.4	509.6	497.7	488.5	477.4	467.9	459.4	450.6	441.2	432.1	423.7
10°	540.6	528.4	514.8	498.9	483.8	470.5	458.1	446.0	434.4	422.7	412.8
12.5°	564.5	548.5	526.9	507.5	490.2	471.2	455.6	440.2	425.6	413.2	401.1
15°	585.3	563.3	540.2	515.2	493.0	472.2	451.7	433.1	417.3	401.1	389.8
17.5°	598.5	571.2	546.4	520.3	494.7	468.6	447.4	426.5	406.9	391.2	377.1
20°	611.5	584.4	551.5	525.4	493.4	466.3	440.8	416.9	396.2	379.1	364.5
22.5°	622.7	590.4	557.5	521.0	489.3	460.1	431.6	407.5	386.3	368.0	354.1
25°	625.4	589.5	553.8	519.5	483.5	449.4	424.1	395.9	373.3	354.3	339.3
27.5°	626.3	588.3	548.7	511.5	474.2	443.2	410.1	385.5	362.2	342.1	327.8
30°	624.2	584.2	540.8	499.6	462.2	427.8	400.0	372.6	348.7	328.8	313.7
32.5°	617.7	575.6	530.6	486.5	447.4	413.9	385.0	359.2	336.1	316.5	300.6
35°	603.8	562.6	515.0	469.7	430.1	396.0	370.1	343.6	320.3	301.7	286.5
37.5°	585.1	546.8	498.5	451.3	413.2	378.6	352.4	328.0	307.0	287.8	272.0
40°	559.2	526.5	478.0	432.3	390.2	357.7	333.6	311.7	290.8	272.9	258.1
42.5°	529.3	501.9	458.1	409.0	368.8	336.1	312.8	293.6	274.2	258.1	243.2
45°	492.7	473.9	431.8	387.0	344.7	313.9	291.5	274.2	257.7	241.5	229.1
47.5°	451.9	441.3	404.7	361.8	321.2	290.4	271.0	254.5	239.5	225.4	214.3
50°	410.7	406.2	375.6	334.6	296.2	267.7	248.1	234.4	222.0	210.0	199.6
52.5°	370.1	371.0	344.2	307.5	272.7	245.5	226.1	213.5	203.2	194.0	185.0
55°	328.6	333.8	312.2	278.8	247.0	222.2	204.7	193.2	185.7	177.6	170.7
57.5°	290.4	299.2	280.4	249.8	222.9	199.2	183.8	175.0	166.7	161.5	156.0
60°	253.2	261.5	247.6	222.7	197.7	178.2	163.7	156.0	149.1	145.7	142.1
62.5°	220.1	227.3	217.9	195.3	174.4	155.8	144.2	136.8	132.7	128.9	126.9
65°	188.9	195.1	186.3	169.5	150.9	135.9	125.9	120.1	115.6	114.1	111.5
67.5°	158.1	163.7	159.0	144.4	128.6	116.7	108.8	102.6	100.0	98.5	96.8
70°	131.2	136.8	131.8	119.4	107.9	98.3	91.0	87.8	85.0	84.4	81.8
72.5°	108.5	111.8	106.8	97.7	88.3	80.6	75.4	72.0	70.9	69.7	68.6
75°	84.8	88.2	84.8	77.3	70.3	64.7	59.8	58.5	56.8	56.2	55.3
77.5°	63.5	66.7	64.1	59.0	53.6	48.9	46.1	44.2	44.0	42.9	43.2
80°	45.9	47.7	45.3	42.1	38.0	35.0	33.1	32.1	31.0	30.6	31.4
82.5°	29.7	30.3	29.3	27.4	24.6	22.9	21.8	20.7	20.7	20.9	20.7
85°	17.1	16.9	16.7	14.8	13.9	12.6	11.8	11.7	11.5	11.8	12.2
87.5°	7.1	7.3	7.1	6.4	5.8	5.3	5.1	4.9	5.1	5.3	5.5
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°	453.8	453.8	453.8	453.8	453.8	453.8	453.8	453.8	453.8	453.8	453.8
2.5°	442.9	441.2	438.7	435.3	432.5	429.5	428.8	427.6	429.9	428.0	427.4
5°	430.4	426.5	421.4	415.6	412.2	407.3	406.4	404.5	402.6	402.4	400.6
7.5°	417.5	412.0	405.6	399.6	394.4	389.1	385.7	385.3	382.3	380.8	378.9
10°	405.1	397.9	390.2	384.6	378.2	372.6	368.6	366.3	364.5	362.4	360.5
12.5°	390.4	382.7	376.7	370.5	362.6	358.6	351.5	347.2	347.2	347.7	342.1
15°	379.7	372.2	362.4	353.8	349.6	341.3	337.8	333.3	330.4	327.6	325.4
17.5°	366.5	357.3	349.8	340.0	332.3	326.1	321.2	318.8	314.3	310.1	307.3
20°	354.3	344.4	336.3	325.7	317.1	309.0	305.1	301.3	298.1	294.7	291.5
22.5°	341.9	331.4	321.0	310.9	303.0	294.4	290.6	285.1	282.1	280.6	277.4
25°	328.8	317.5	306.2	296.4	288.2	280.6	275.6	271.6	268.2	266.7	264.7
27.5°	314.5	303.4	292.7	281.4	271.8	266.4	262.2	259.0	257.0	254.7	253.8
30°	300.9	289.3	277.6	267.3	258.6	253.2	249.4	247.4	245.9	244.9	244.0
32.5°	287.2	275.7	263.3	254.1	246.6	241.9	239.3	237.2	236.7	236.5	236.3
35°	272.4	260.7	249.4	241.0	233.6	231.8	229.3	228.2	227.8	229.1	229.7
37.5°	258.1	247.2	236.7	228.2	223.3	220.3	219.4	219.2	220.5	221.6	222.9
40°	244.4	233.8	224.1	216.9	212.4	210.7	210.3	211.3	212.8	214.1	215.6
42.5°	231.0	220.7	212.0	205.4	202.6	201.1	201.5	202.4	204.7	206.4	208.8
45°	217.1	208.5	199.8	194.4	191.7	192.1	192.1	193.8	195.9	198.3	200.7
47.5°	204.1	195.3	188.0	183.3	182.0	181.4	182.3	184.6	187.4	190.2	193.6
50°	191.0	182.7	176.5	172.4	170.9	171.4	172.9	175.0	178.6	182.3	185.9
52.5°	177.6	170.3	164.7	160.9	160.0	161.1	162.6	166.2	169.2	173.3	177.8
55°	163.7	157.3	152.8	150.0	149.6	150.2	151.9	155.4	160.0	165.0	169.2
57.5°	150.0	144.5	140.2	138.2	138.3	138.7	141.4	145.7	150.2	155.6	160.9
60°	136.1	131.2	127.8	126.3	126.5	127.6	131.0	135.0	141.0	146.2	151.9
62.5°	122.9	118.8	115.6	114.3	113.9	116.7	119.9	124.1	130.1	136.1	142.3
65°	108.6	105.3	102.6	101.9	102.4	104.3	108.5	113.9	119.0	125.2	131.6
67.5°	94.7	91.9	90.0	90.4	91.0	93.6	97.2	101.9	107.5	113.9	120.5
70°	81.6	78.9	77.4	77.6	78.8	82.1	85.1	89.8	96.1	102.6	107.9
72.5°	68.0	66.5	65.2	66.2	67.3	69.4	73.3	78.0	83.3	89.3	94.9
75°	54.3	54.3	53.6	54.1	55.8	58.1	60.9	65.8	71.2	76.1	80.6
77.5°	42.7	42.1	42.5	43.0	44.2	47.0	50.2	53.8	58.1	63.2	66.9
80°	30.8	31.0	32.0	33.1	33.5	35.5	38.9	42.1	45.3	49.4	53.0
82.5°	21.2	21.4	21.8	23.3	23.7	25.9	27.8	31.0	33.8	36.3	39.1
85°	12.6	12.6	13.5	14.1	15.0	16.5	17.9	19.7	22.4	24.2	27.1
87.5°	6.0	6.0	6.8	7.1	7.7	8.6	9.0	11.1	11.8	12.8	14.5
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: P242653

CATALOG NUMBER: S124DRP-S350D935-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	453.8	453.8	453.8	453.8
2.5°	427.1	426.7	425.4	425.2
5°	399.4	398.5	397.9	400.0
7.5°	378.6	377.8	376.1	375.6
10°	358.6	357.9	356.4	356.0
12.5°	339.5	337.8	337.8	338.3
15°	322.9	322.2	320.1	320.7
17.5°	306.0	305.3	302.4	305.3
20°	290.2	288.7	287.4	287.2
22.5°	275.2	273.9	274.1	272.6
25°	263.2	261.8	261.5	260.5
27.5°	253.4	252.6	251.9	252.3
30°	244.5	244.4	244.0	244.0
32.5°	237.2	237.2	237.6	237.6
35°	230.4	231.0	231.4	230.8
37.5°	224.4	224.8	225.4	225.9
40°	217.3	218.6	219.0	219.9
42.5°	210.5	212.0	213.2	213.2
45°	203.6	205.1	206.4	206.4
47.5°	196.4	198.5	199.8	200.0
50°	189.1	191.7	193.0	194.0
52.5°	182.0	184.6	186.5	186.8
55°	173.5	177.3	179.3	180.1
57.5°	166.0	169.4	171.6	172.2
60°	157.0	160.7	163.7	164.3
62.5°	147.7	151.7	154.3	156.0
65°	136.8	140.8	143.4	144.0
67.5°	125.4	129.5	131.2	132.3
70°	113.2	116.4	118.2	119.2
72.5°	99.2	102.6	104.9	104.9
75°	85.0	88.0	89.1	89.1
77.5°	70.1	71.8	73.3	73.7
80°	55.8	56.8	57.9	57.9
82.5°	41.2	41.9	43.0	42.9
85°	26.7	28.4	28.2	27.8
87.5°	15.0	15.2	15.8	16.2
90°	0.0	0.0	0.0	0.0



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**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	14.81	16.37	15.18	16.69	17.00	15.72	17.28	16.09	17.60	17.91
	3H	16.30	17.70	16.67	18.03	18.39	17.09	18.50	17.47	18.82	19.18
	4H	16.83	18.16	17.23	18.50	18.88	17.56	18.88	17.96	19.23	19.61
	6H	17.19	18.42	17.61	18.78	19.17	17.87	19.09	18.28	19.46	19.85
	8H	17.29	18.46	17.72	18.85	19.25	17.95	19.12	18.37	19.50	19.90
	12H	17.35	18.47	17.78	18.85	19.28	17.99	19.11	18.42	19.49	19.92
4H	2H	15.97	17.29	16.37	17.64	18.02	16.41	17.73	16.81	18.08	18.46
	3H	17.50	18.61	17.91	19.00	19.40	18.12	19.22	18.53	19.62	20.02
	4H	18.09	19.08	18.52	19.50	19.94	18.71	19.70	19.14	20.12	20.55
	6H	18.52	19.38	18.97	19.83	20.28	19.10	19.97	19.56	20.41	20.87
	8H	18.64	19.45	19.10	19.89	20.36	19.21	20.02	19.67	20.46	20.93
	12H	18.72	19.44	19.20	19.92	20.39	19.27	20.00	19.75	20.48	20.95
8H	4H	18.55	19.36	19.01	19.80	20.27	19.02	19.83	19.48	20.28	20.74
	6H	19.05	19.72	19.55	20.21	20.69	19.55	20.22	20.04	20.71	21.19
	8H	19.22	19.83	19.73	20.33	20.82	19.71	20.32	20.22	20.82	21.31
	12H	19.35	19.88	19.85	20.37	20.93	19.83	20.36	20.33	20.85	21.41
12H	4H	18.59	19.32	19.08	19.80	20.27	19.05	19.78	19.53	20.26	20.73
	6H	19.13	19.73	19.64	20.24	20.72	19.61	20.21	20.12	20.72	21.20
	8H	19.35	19.88	19.85	20.37	20.93	19.83	20.36	20.33	20.85	21.41