

LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Test Report Prepared for
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P832464

Luminaire Tested: S123RDP-S340D935-4F0-1E-UDD-G

Issue Date: 05/03/2024

Tested By:

Approved By:



NVLAP Lab Code: 200050-0

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Test Information

Test Method: LM-79-2019
 Report Number: P832464
 Test Lab: INNOVATION CENTER
 Issue Date: 05/03/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: NEO-RAY
 Catalog Number: S123RDP-S340D935-4F0-1E-UDD-G
 Description: DEFINE 3 DIRECT PENDANT LED LUMINAIRE
 DOWNLIGHT 340 LUMENS PER FOOT, GRAZE OPTIC

Light Source: -
 Ballast/Driver: -

Summary

Lumens per Lamp: N/A
 Luminaire Lumens: 1268.2 lumens
 Efficiency: N/A
 Efficacy: 102.3 lumens/watt
 Spacing Criteria (0/90/45): 0.55 / 1.17 / 0.8
 Luminous Opening: Rectangular (W 4' x L: 0.25' x H: 0')
 CIE Type: Direct

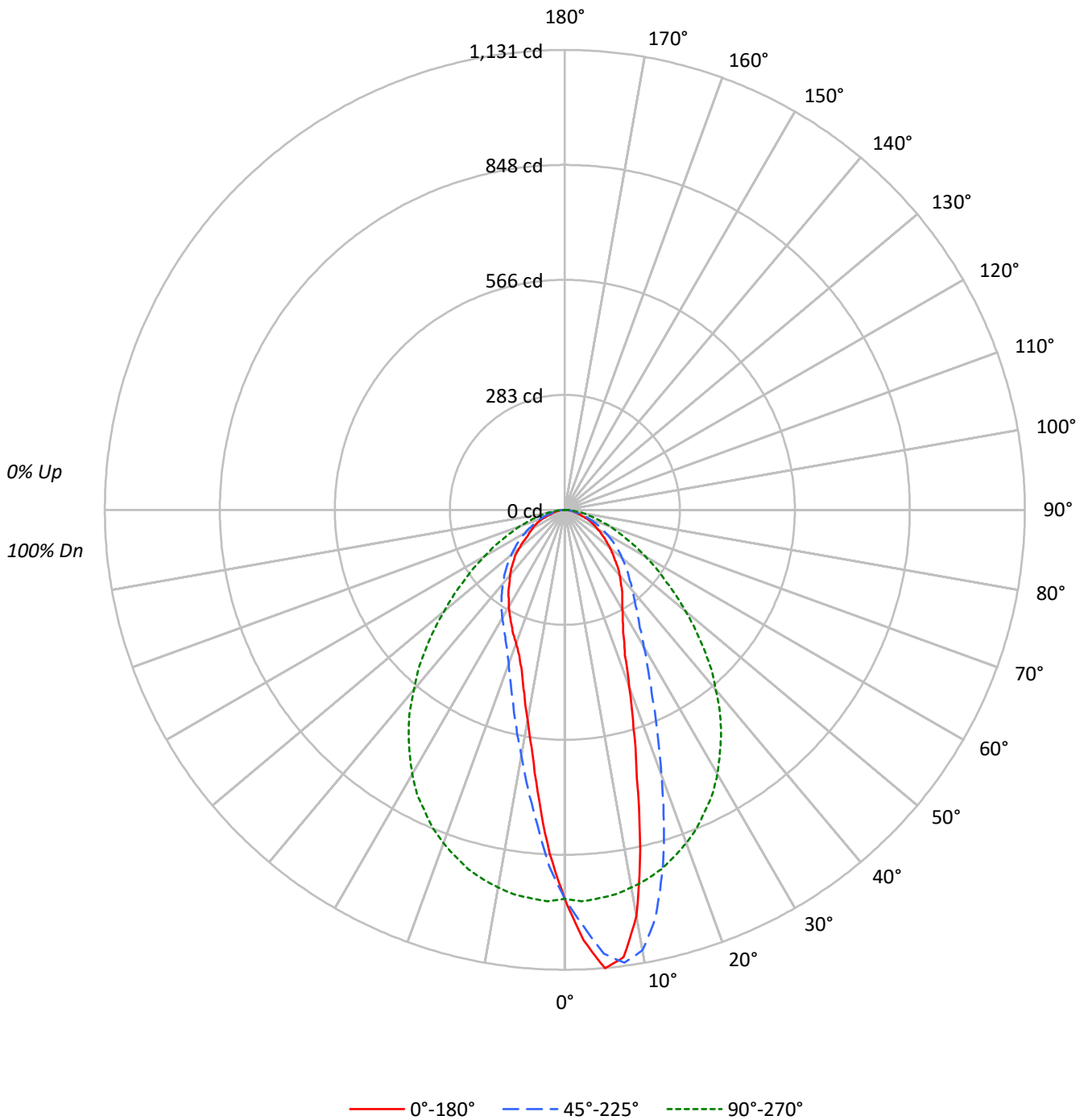
Input Watts (W): 12.4
 Input Voltage (V): 120
 Input Current (Ain): NR
 Voltage Rise (V): NR
 Power Factor: NR
 Total Harmonic Distortion (THDi): NR
 Frequency (hertz): 60
 Stabilization Time: NR
 Operation Time: NR
 Ambient Temperature (°C): NR
 Test Distance: 24 FT

Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	P3	10/30/2015	4/30/2016
Power Meter	IN0214	1/12/2016	1/12/2017
AC Power Source	IN0062	1/12/2016	1/12/2017
DC Power Supply	--	--	--
Room Thermometer	IN0145	1/13/2016	1/13/2017

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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				
1	111	107	103	100	108	104	101	98	100	97	95	96	94	92	93	91	89	87				
2	102	95	89	84	100	93	88	83	90	85	81	87	83	80	84	81	78	76				
3	94	85	78	73	92	84	77	72	81	75	71	78	74	70	76	72	69	67				
4	88	77	69	64	85	76	69	63	73	67	62	71	66	62	69	65	61	59				
5	82	70	62	56	80	69	62	56	67	61	56	65	60	55	63	58	54	53				
6	76	64	56	51	74	63	56	50	62	55	50	60	54	50	59	53	49	47				
7	71	59	51	46	70	58	51	46	57	50	45	56	50	45	54	49	45	43				
8	67	55	47	42	65	54	47	42	53	46	41	52	46	41	51	45	41	39				
9	63	51	43	38	62	50	43	38	49	43	38	48	42	38	47	42	38	36				
10	60	47	40	35	58	47	40	35	46	40	35	45	39	35	44	39	35	33				

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	10296	10296	10296	10296	10296
5°	12225	11835	10361	8375	7775
10°	11076	12021	10309	6710	5757
15°	7626	10307	10200	5485	4553
20°	5306	7936	9995	4624	4002
25°	4043	6048	9697	4111	3689
30°	3519	4835	9324	3817	3417
35°	3231	4079	8796	3569	3169
40°	2948	3642	8106	3326	2942
45°	2662	3331	7360	3095	2716
50°	2416	3073	6482	2870	2436
55°	2186	2822	5637	2650	2091
60°	1959	2566	4898	2407	1976
65°	1808	2277	4215	2162	1867
70°	1470	1970	3679	1958	1517
75°	1289	1564	3115	1622	1339
80°	1165	1327	2554	1364	1265
85°	1062	1161	1939	1235	1161

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 80°
 Vertical Angle: 45°
 Luminance: 7767 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	87.2	6.9
10°-20°	201.7	15.9
20°-30°	231.5	18.3
30°-40°	228.2	18.0
40°-50°	201.2	15.9
50°-60°	154.8	12.2
60°-70°	101.8	8.0
70°-80°	49.4	3.9
80°-90°	12.5	1.0
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°	520.4	41.0
0°-40°	748.5	59.0
0°-60°	1104.5	87.1
0°-90°	1268.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1268.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	956	956	956	956	956	
5°	1131	1095	959	775	720	103
15°	684	925	915	492	409	193
25°	340	509	816	346	311	161
35°	246	310	669	272	241	153
45°	175	219	484	203	178	136
55°	116	150	300	141	111	104
65°	71	89	166	85	73	70
75°	31	38	75	39	32	33
85°	9	9	16	10	9	10
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°	956.5	956.5	956.5	956.5	956.5	956.5	956.5	956.5	956.5	956.5	956.5
2.5°	1060.0	1056.7	1053.4	1052.4	1051.4	1048.3	1045.1	1038.1	1031.0	1023.8	1016.5
5°	1131.4	1131.8	1132.2	1131.2	1130.2	1126.1	1122.0	1113.4	1104.7	1095.3	1085.9
7.5°	1109.5	1115.7	1122.0	1123.2	1124.4	1127.5	1130.6	1128.7	1126.7	1123.2	1119.6
10°	1013.4	1013.0	1012.6	1019.6	1026.7	1047.7	1068.7	1079.5	1090.2	1099.8	1109.5
12.5°	856.5	857.1	857.7	880.8	904.0	923.8	943.6	971.0	998.5	1028.1	1057.7
15°	684.3	693.9	703.6	724.1	744.7	774.5	804.3	841.2	878.1	924.9	971.8
17.5°	562.0	566.1	570.2	590.0	609.8	638.1	666.3	708.1	749.8	810.2	870.6
20°	463.2	466.9	470.6	484.9	499.2	526.3	553.4	593.2	633.0	692.8	752.6
22.5°	386.7	393.9	401.2	410.8	420.4	440.0	459.6	500.2	540.8	595.3	649.8
25°	340.4	343.7	347.1	355.3	363.5	382.4	401.2	428.1	454.9	509.2	563.6
27.5°	309.0	310.0	311.0	317.1	323.1	335.3	347.5	372.4	397.3	442.0	486.7
30°	283.1	284.9	286.7	291.4	296.1	304.9	313.7	331.4	349.0	389.0	429.0
32.5°	263.1	264.1	265.1	269.0	273.0	279.4	285.9	299.8	313.7	344.3	374.9
35°	245.9	246.1	246.3	249.2	252.2	258.4	264.7	276.3	287.9	310.4	333.0
37.5°	226.3	227.7	229.0	231.2	233.3	238.8	244.3	253.7	263.1	281.8	300.4
40°	209.8	211.0	212.2	214.7	217.3	221.6	225.9	234.5	243.1	259.2	275.3
42.5°	193.3	194.1	194.9	197.5	200.0	205.3	210.6	217.5	224.3	237.7	251.0
45°	174.9	176.9	178.8	181.6	184.3	188.8	193.3	200.4	207.5	218.8	230.2
47.5°	159.6	160.6	161.6	163.9	166.3	171.8	177.3	183.5	189.8	200.4	211.0
50°	144.3	144.7	145.1	147.3	149.4	154.3	159.2	166.5	173.7	183.5	193.3
52.5°	129.8	130.8	131.8	133.9	136.1	139.4	142.8	150.2	157.7	167.3	176.9
55°	116.5	117.1	117.7	119.2	120.8	124.7	128.6	135.1	141.6	150.4	159.2
57.5°	103.9	104.7	105.5	106.7	107.8	111.4	114.9	120.6	126.3	135.1	143.9
60°	91.0	92.0	92.9	94.3	95.7	98.4	101.2	106.3	111.4	119.2	127.1
62.5°	81.6	81.8	82.0	83.1	84.3	86.3	88.2	92.4	96.5	104.3	112.2
65°	71.0	71.6	72.2	72.7	73.3	74.9	76.5	80.0	83.5	89.4	95.3
67.5°	60.0	60.6	61.2	62.2	63.1	64.5	65.9	68.2	70.6	76.1	81.6
70°	46.7	46.7	46.7	48.2	49.8	52.2	54.5	56.3	58.0	62.6	67.1
72.5°	38.0	38.2	38.4	38.6	38.8	40.2	41.6	44.5	47.5	50.2	52.9
75°	31.0	31.2	31.4	31.6	31.8	32.2	32.6	33.5	34.5	37.6	40.8
77.5°	24.7	24.9	25.1	25.3	25.5	25.9	26.3	26.7	27.1	28.2	29.4
80°	18.8	19.0	19.2	19.4	19.6	19.8	20.0	20.4	20.8	21.4	22.0
82.5°	13.7	13.7	13.7	13.7	13.7	14.1	14.5	14.5	14.5	14.9	15.3
85°	8.6	8.6	8.6	8.8	9.0	9.0	9.0	9.2	9.4	9.4	9.4
87.5°	3.9	3.7	3.5	3.7	3.9	3.9	3.9	4.1	4.3	4.3	4.3
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°	956.5	956.5	956.5	956.5	956.5	956.5	956.5	956.5	956.5	956.5	956.5
2.5°	1015.5	1014.5	1005.1	995.7	986.5	977.3	970.4	963.6	952.0	940.4	933.2
5°	1078.5	1071.0	1056.1	1041.2	1018.9	996.5	977.7	958.9	934.9	911.0	891.0
7.5°	1113.6	1107.5	1089.5	1071.4	1041.8	1012.2	982.8	953.4	918.1	882.8	852.6
10°	1114.6	1119.6	1104.7	1089.8	1056.5	1023.2	983.2	943.2	895.7	848.3	809.2
12.5°	1079.6	1101.6	1098.5	1095.3	1061.4	1027.5	978.9	930.2	872.0	813.8	764.9
15°	1014.4	1056.9	1069.5	1082.0	1054.0	1025.9	970.6	915.3	846.9	778.5	722.4
17.5°	930.2	989.8	1023.0	1056.1	1035.7	1015.3	954.7	894.2	817.1	740.0	679.0
20°	830.6	908.7	960.6	1012.6	1005.1	997.7	935.1	872.6	789.4	706.3	640.2
22.5°	732.2	814.5	886.3	958.1	965.7	973.4	910.2	847.1	756.1	665.1	597.9
25°	647.3	731.0	816.5	902.0	919.3	936.5	876.5	816.5	722.2	627.9	561.0
27.5°	566.3	645.9	740.0	834.1	865.5	896.9	842.0	787.1	688.8	590.6	523.9
30°	500.2	571.4	667.5	763.6	807.3	851.0	800.6	750.2	652.8	555.3	490.0
32.5°	438.6	502.4	598.8	695.3	746.1	796.9	753.4	709.8	616.1	522.4	457.9
35°	390.0	447.1	537.1	627.1	683.9	740.8	705.1	669.4	577.9	486.3	425.3
37.5°	348.2	396.1	480.6	565.1	625.5	685.9	656.1	626.3	540.2	454.1	396.5
40°	313.7	352.2	430.8	509.4	568.6	627.9	602.4	576.9	499.8	422.8	368.8
42.5°	284.1	317.3	387.9	458.4	512.8	567.1	550.2	533.4	463.5	393.7	343.7
45°	258.0	285.9	348.1	410.2	460.2	510.2	496.9	483.5	423.3	363.2	317.3
47.5°	234.9	258.8	314.3	369.8	414.7	459.6	447.3	434.9	385.1	335.3	293.5
50°	213.7	234.1	280.4	326.7	367.1	407.5	397.3	387.1	345.9	304.7	268.6
52.5°	193.7	210.6	252.2	293.7	326.3	358.8	351.0	343.2	311.4	279.6	246.9
55°	174.7	190.2	225.3	260.4	288.2	316.1	308.2	300.4	275.7	251.0	222.2
57.5°	157.5	171.0	199.4	227.9	250.0	272.2	268.4	264.7	244.1	223.5	199.8
60°	139.2	151.4	175.9	200.4	218.2	236.1	231.8	227.5	212.8	198.0	177.7
62.5°	122.9	133.7	153.3	172.9	187.5	202.0	198.8	195.7	184.5	173.3	156.5
65°	105.9	116.5	132.4	148.2	159.6	171.0	168.2	165.5	157.1	148.6	135.1
67.5°	90.4	99.2	112.9	126.7	134.3	142.0	140.4	138.8	132.4	125.9	115.3
70°	74.7	82.4	93.7	105.1	110.4	115.7	116.3	116.9	111.0	105.1	97.3
72.5°	59.0	65.1	75.7	86.3	90.4	94.5	94.3	94.1	90.6	87.1	80.0
75°	45.3	49.8	58.0	66.3	69.8	73.3	74.1	74.9	71.6	68.2	64.3
77.5°	32.6	35.7	42.0	48.2	52.2	56.1	56.5	56.9	55.3	53.7	50.0
80°	22.9	23.9	27.8	31.8	35.9	40.0	40.6	41.2	39.6	38.0	35.7
82.5°	15.9	16.5	17.8	19.2	22.5	25.9	26.7	27.5	26.7	25.9	23.3
85°	9.6	9.8	10.4	11.0	12.5	14.1	14.9	15.7	15.3	14.9	13.5
87.5°	4.3	4.3	4.5	4.7	5.1	5.5	6.5	7.5	6.9	6.3	5.7
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°	956.5	956.5	956.5	956.5	956.5	956.5	956.5	956.5	956.5	956.5	956.5
2.5°	925.9	914.7	903.6	895.5	887.5	877.5	867.5	867.1	866.7	859.2	851.8
5°	871.0	851.6	832.2	813.2	794.1	775.1	756.1	751.8	747.5	741.0	734.5
7.5°	822.4	791.4	760.4	736.1	711.8	692.8	673.8	660.8	647.9	637.9	627.9
10°	770.2	731.8	693.4	663.9	634.5	613.9	593.4	578.5	563.6	556.5	549.4
12.5°	716.1	674.3	632.6	603.7	574.9	550.2	525.5	512.0	498.5	488.6	478.8
15°	666.3	621.4	576.5	545.9	515.3	492.2	469.0	455.5	442.0	432.2	422.4
17.5°	618.1	572.8	527.5	496.5	465.5	444.5	423.5	410.4	397.3	391.2	385.1
20°	574.1	528.5	482.8	453.5	424.3	403.7	383.2	376.1	369.0	363.3	357.7
22.5°	530.6	486.7	442.8	414.7	386.7	371.8	356.9	351.2	345.5	341.2	336.9
25°	494.1	450.4	406.7	382.2	357.7	346.1	334.5	330.8	327.1	322.8	318.4
27.5°	457.3	415.7	374.1	354.5	334.9	325.5	316.1	311.4	306.7	303.1	299.6
30°	424.7	386.3	347.9	331.6	315.3	307.1	298.8	293.7	288.6	285.3	282.0
32.5°	393.3	359.2	325.1	311.2	297.3	289.2	281.2	276.3	271.4	267.5	263.5
35°	364.3	334.7	305.1	292.4	279.6	271.6	263.5	258.6	253.7	249.8	245.9
37.5°	338.8	312.0	285.1	273.1	261.2	254.1	247.1	242.0	236.9	232.8	228.6
40°	314.9	291.2	267.5	255.9	244.3	236.7	229.0	224.5	220.0	216.3	212.6
42.5°	293.7	272.0	250.2	238.8	227.5	220.2	212.9	207.7	202.4	200.2	198.0
45°	271.4	252.2	232.9	222.0	211.0	203.3	195.7	191.2	186.7	184.7	182.8
47.5°	251.8	233.9	216.1	205.3	194.5	187.7	180.8	177.3	173.7	171.0	168.2
50°	232.6	215.3	198.0	187.7	177.3	171.4	165.5	161.2	156.9	154.9	152.9
52.5°	214.1	198.4	182.8	172.2	161.6	155.9	150.2	146.5	142.8	138.6	134.5
55°	193.3	179.6	165.9	156.5	147.1	141.2	135.3	131.0	126.7	122.4	118.0
57.5°	176.1	162.6	149.0	140.6	132.2	126.5	120.8	116.1	111.4	107.8	104.3
60°	157.3	145.5	133.7	125.5	117.3	111.8	106.3	101.8	97.3	95.5	93.7
62.5°	139.6	128.6	117.7	110.4	103.1	97.8	92.6	89.6	86.7	85.5	84.3
65°	121.6	112.2	102.7	96.1	89.4	84.9	80.4	79.0	77.6	76.7	75.7
67.5°	104.7	96.7	88.6	82.7	76.9	73.7	70.6	69.0	67.5	66.3	65.1
70°	89.4	82.4	75.3	70.2	65.1	62.2	59.2	57.8	56.5	54.3	52.2
72.5°	72.9	67.5	62.0	58.0	54.1	51.6	49.0	46.3	43.5	41.6	39.6
75°	60.4	54.9	49.4	45.7	42.0	39.0	36.1	35.1	34.1	33.5	32.9
77.5°	46.3	41.6	36.9	33.9	31.0	29.6	28.2	27.6	27.1	26.9	26.7
80°	33.3	29.4	25.5	23.9	22.4	22.0	21.6	21.2	20.8	20.6	20.4
82.5°	20.8	18.8	16.9	16.5	16.1	15.9	15.7	15.5	15.3	15.1	14.9
85°	12.2	11.4	10.6	10.4	10.2	10.0	9.8	9.8	9.8	9.8	9.8
87.5°	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	4.9	4.7
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):

	165°	170°	175°	180°
0°	956.5	956.5	956.5	956.5
2.5°	849.8	847.9	847.1	846.3
5°	728.5	722.4	721.0	719.6
7.5°	625.3	622.8	614.3	605.9
10°	541.6	533.7	530.2	526.7
12.5°	471.6	464.3	463.2	462.0
15°	417.3	412.2	410.4	408.6
17.5°	381.6	378.1	375.9	373.7
20°	355.1	352.6	351.0	349.4
22.5°	334.9	333.0	331.8	330.6
25°	315.5	312.6	311.6	310.6
27.5°	297.1	294.5	293.5	292.6
30°	279.8	277.7	276.3	274.9
32.5°	261.0	258.4	257.7	256.9
35°	244.3	242.8	242.0	241.2
37.5°	226.7	224.7	223.5	222.4
40°	211.6	210.6	210.0	209.4
42.5°	196.3	194.5	194.3	194.1
45°	181.0	179.2	178.8	178.4
47.5°	166.7	165.1	164.9	164.7
50°	150.8	148.6	147.1	145.5
52.5°	132.6	130.6	129.2	127.8
55°	115.9	113.7	112.6	111.4
57.5°	103.3	102.4	101.8	101.2
60°	93.1	92.6	92.2	91.8
62.5°	83.7	83.1	83.1	83.1
65°	75.1	74.5	73.9	73.3
67.5°	63.9	62.7	62.6	62.4
70°	50.4	48.6	48.4	48.2
72.5°	39.4	39.2	38.8	38.4
75°	32.6	32.2	32.2	32.2
77.5°	26.3	25.9	25.9	25.9
80°	20.2	20.0	20.2	20.4
82.5°	14.9	14.9	14.7	14.5
85°	9.6	9.4	9.4	9.4
87.5°	4.7	4.7	4.7	4.7
90°	0.0	0.0	0.0	0.0

TEST NUMBER: P832464

CATALOG NUMBER: S123RDP-S340D935-4F0-1E-UDD-G

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	12.81	14.26	13.17	14.57	14.89	17.47	18.93	17.84	19.24	19.55
	3H	14.07	15.37	14.45	15.70	16.06	19.01	20.32	19.39	20.64	21.01
	4H	14.48	15.70	14.88	16.05	16.43	19.53	20.75	19.93	21.10	21.48
	6H	14.79	15.91	15.20	16.28	16.67	19.87	20.99	20.28	21.36	21.75
	8H	14.89	15.96	15.32	16.35	16.75	19.96	21.03	20.39	21.42	21.83
	12H	14.96	15.98	15.39	16.37	16.80	20.01	21.04	20.45	21.42	21.85
4H	2H	13.60	14.82	14.00	15.17	15.55	17.53	18.75	17.94	19.10	19.48
	3H	15.02	16.03	15.43	16.43	16.83	19.24	20.25	19.66	20.65	21.06
	4H	15.50	16.40	15.93	16.82	17.26	19.87	20.78	20.30	21.20	21.64
	6H	15.89	16.68	16.35	17.12	17.59	20.34	21.13	20.80	21.57	22.03
	8H	16.03	16.76	16.49	17.21	17.68	20.48	21.22	20.95	21.66	22.13
	12H	16.13	16.78	16.61	17.26	17.74	20.57	21.23	21.05	21.70	22.18
8H	4H	15.85	16.59	16.32	17.03	17.50	19.88	20.61	20.34	21.06	21.53
	6H	16.33	16.94	16.83	17.43	17.91	20.40	21.00	20.89	21.49	21.97
	8H	16.53	17.07	17.04	17.58	18.07	20.58	21.12	21.10	21.64	22.13
	12H	16.69	17.17	17.20	17.66	18.23	20.72	21.20	21.24	21.70	22.26
12H	4H	15.89	16.54	16.37	17.02	17.49	19.86	20.51	20.34	20.99	21.46
	6H	16.39	16.94	16.91	17.45	17.94	20.37	20.91	20.89	21.42	21.91
	8H	16.64	17.12	17.15	17.61	18.18	20.59	21.07	21.10	21.56	22.13