

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: P832462

Luminaire Tested: S123RDP-S340D927-4F0-1E-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: P832462
 Test Lab: INNOVATION CENTER
 Issue Date: 05/03/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: NEO-RAY
 Catalog Number: S123RDP-S340D927-4F0-1E-UDD-G
 Description: DEFINE 3 DIRECT PENDANT LED LUMINAIRE
 DOWNLIGHT 340 LUMENS PER FOOT, GRAZE OPTIC

Light Source: -
 Ballast/Driver: -

Summary

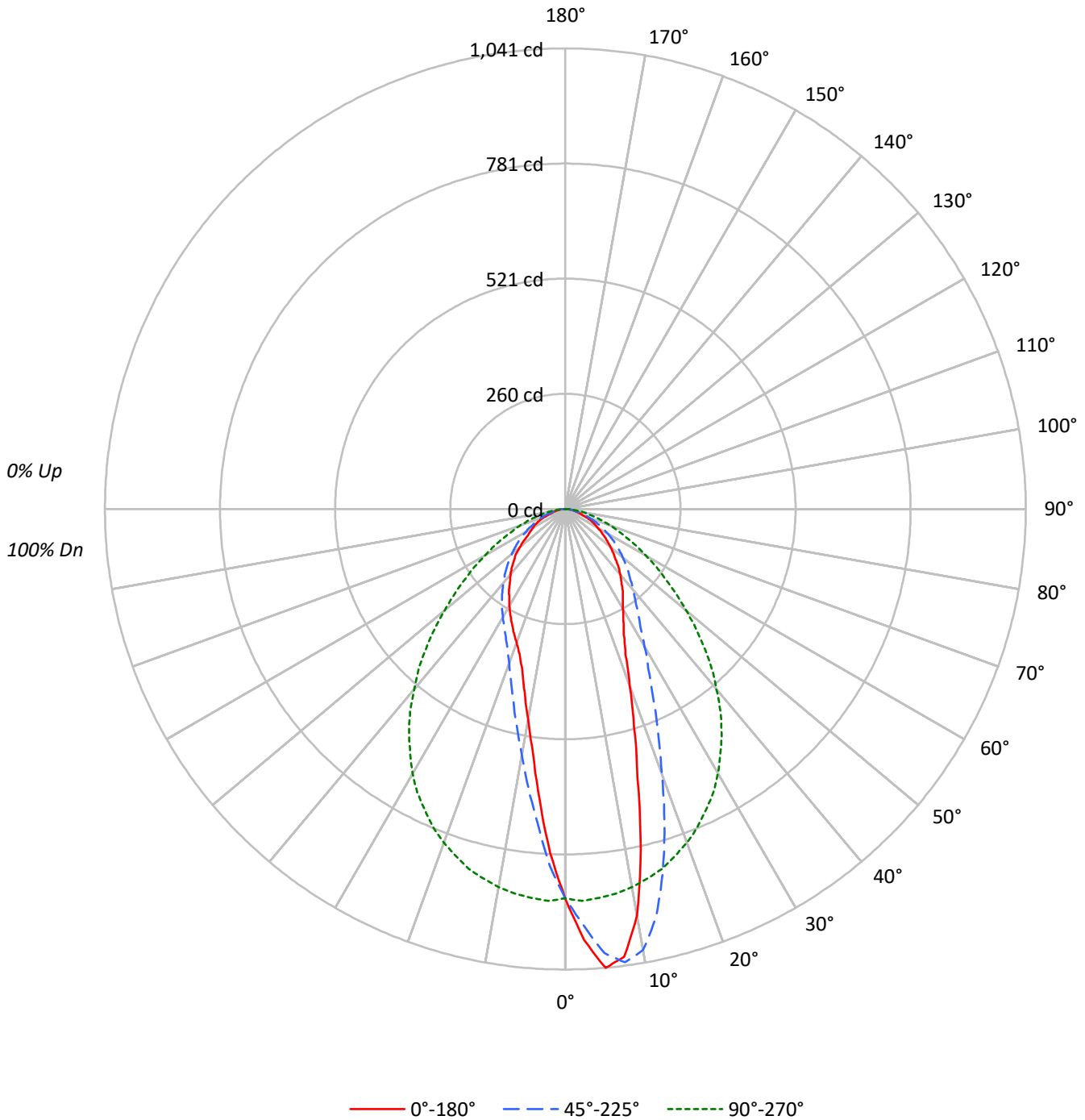
Lumens per Lamp: N/A
 Luminaire Lumens: 1166.8 lumens
 Efficiency: N/A
 Efficacy: 94.1 lumens/watt
 Spacing Criteria (0/90/45): 0.55 / 1.17 / 0.8
 Luminous Opening: Rectangular (W 4' x L: 0.25' x H: 0')
 CIE Type: Direct

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°	9473	9473	9473	9473	9473
5°	11248	10889	9532	7706	7154
10°	10191	11060	9485	6174	5297
15°	7016	9483	9385	5046	4190
20°	4881	7301	9196	4255	3683
25°	3720	5564	8922	3782	3394
30°	3238	4448	8580	3511	3143
35°	2972	3753	8093	3284	2916
40°	2712	3351	7458	3060	2708
45°	2449	3064	6772	2848	2500
50°	2224	2828	5963	2641	2242
55°	2012	2597	5187	2438	1924
60°	1802	2362	4506	2213	1817
65°	1663	2096	3879	1989	1719
70°	1350	1813	3383	1800	1397
75°	1185	1439	2865	1493	1231
80°	1072	1221	2349	1252	1165
85°	976	1074	1778	1136	1074

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 80°
 Vertical Angle: 45°
 Luminance: 7145 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	80.2	6.9
10°-20°	185.6	15.9
20°-30°	213.0	18.3
30°-40°	209.9	18.0
40°-50°	185.1	15.9
50°-60°	142.4	12.2
60°-70°	93.6	8.0
70°-80°	45.5	3.9
80°-90°	11.5	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°	478.8	41.0
0°-40°	688.7	59.0
0°-60°	1016.3	87.1
0°-90°	1166.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1166.8	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	880	880	880	880	880	
5°	1041	1008	882	713	662	95
15°	630	851	842	453	376	178
25°	313	468	751	318	286	148
35°	226	286	616	250	222	141
45°	161	201	445	187	164	125
55°	107	138	276	130	102	96
65°	65	82	152	78	68	64
75°	28	35	69	36	30	31
85°	8	9	14	9	9	9
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°	880.1	880.1	880.1	880.1	880.1	880.1	880.1	880.1	880.1	880.1	880.1
2.5°	975.3	972.2	969.2	968.3	967.4	964.5	961.6	955.1	948.6	941.9	935.3
5°	1041.0	1041.3	1041.7	1040.8	1039.9	1036.1	1032.3	1024.4	1016.4	1007.8	999.1
7.5°	1020.8	1026.6	1032.3	1033.4	1034.5	1037.4	1040.3	1038.5	1036.7	1033.4	1030.2
10°	932.4	932.0	931.7	938.1	944.6	963.9	983.3	993.2	1003.1	1011.9	1020.8
12.5°	788.0	788.6	789.1	810.4	831.7	849.9	868.1	893.4	918.7	945.9	973.1
15°	629.6	638.5	647.3	666.3	685.2	712.6	740.1	774.0	807.9	851.0	894.1
17.5°	517.1	520.9	524.6	542.9	561.1	587.1	613.0	651.5	689.9	745.5	801.0
20°	426.1	429.6	433.0	446.2	459.3	484.2	509.1	545.8	582.4	637.4	692.4
22.5°	355.8	362.5	369.1	378.0	386.8	404.8	422.9	460.2	497.6	547.7	597.9
25°	313.2	316.3	319.3	326.9	334.5	351.8	369.1	393.8	418.6	468.5	518.5
27.5°	284.3	285.2	286.1	291.7	297.3	308.5	319.7	342.6	365.5	406.7	447.8
30°	260.5	262.1	263.8	268.1	272.4	280.5	288.7	304.9	321.1	357.9	394.7
32.5°	242.1	243.0	243.9	247.5	251.1	257.1	263.0	275.9	288.7	316.8	345.0
35°	226.2	226.4	226.6	229.3	232.0	237.8	243.6	254.2	264.8	285.6	306.3
37.5°	208.2	209.5	210.7	212.7	214.7	219.7	224.8	233.5	242.1	259.3	276.4
40°	193.0	194.1	195.2	197.6	199.9	203.9	207.8	215.8	223.7	238.5	253.3
42.5°	177.9	178.6	179.3	181.7	184.0	188.9	193.8	200.1	206.4	218.7	230.9
45°	160.9	162.7	164.5	167.1	169.6	173.7	177.9	184.4	190.9	201.3	211.8
47.5°	146.9	147.8	148.7	150.8	153.0	158.0	163.1	168.9	174.6	184.4	194.1
50°	132.8	133.1	133.5	135.5	137.5	142.0	146.5	153.2	159.8	168.9	177.9
52.5°	119.4	120.3	121.2	123.2	125.2	128.3	131.3	138.2	145.1	153.9	162.7
55°	107.2	107.7	108.2	109.7	111.1	114.7	118.4	124.3	130.3	138.4	146.5
57.5°	95.6	96.3	97.1	98.1	99.2	102.5	105.7	111.0	116.2	124.3	132.4
60°	83.7	84.6	85.5	86.8	88.0	90.6	93.1	97.8	102.5	109.7	116.9
62.5°	75.1	75.2	75.4	76.5	77.6	79.4	81.2	85.0	88.8	96.0	103.2
65°	65.3	65.9	66.4	66.9	67.5	68.9	70.4	73.6	76.9	82.3	87.7
67.5°	55.2	55.7	56.3	57.2	58.1	59.4	60.6	62.8	64.9	70.0	75.1
70°	42.9	42.9	42.9	44.4	45.8	48.0	50.2	51.8	53.4	57.6	61.7
72.5°	35.0	35.2	35.4	35.5	35.7	37.0	38.2	41.0	43.7	46.2	48.7
75°	28.5	28.7	28.9	29.0	29.2	29.6	29.9	30.9	31.8	34.6	37.5
77.5°	22.7	22.9	23.1	23.3	23.5	23.8	24.2	24.5	24.9	26.0	27.1
80°	17.3	17.5	17.7	17.9	18.0	18.2	18.4	18.8	19.1	19.7	20.2
82.5°	12.6	12.6	12.6	12.6	12.6	13.0	13.4	13.4	13.4	13.7	14.1
85°	7.9	7.9	7.9	8.1	8.3	8.3	8.3	8.5	8.7	8.7	8.7
87.5°	3.6	3.4	3.2	3.4	3.6	3.6	3.6	3.8	4.0	4.0	4.0
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°	880.1	880.1	880.1	880.1	880.1	880.1	880.1	880.1	880.1	880.1	880.1
2.5°	934.4	933.5	924.8	916.1	907.7	899.2	892.9	886.6	875.9	865.3	858.6
5°	992.3	985.4	971.7	958.0	937.4	916.9	899.5	882.2	860.2	838.2	819.8
7.5°	1024.6	1019.0	1002.4	985.8	958.5	931.3	904.2	877.2	844.7	812.2	784.4
10°	1025.5	1030.2	1016.4	1002.7	972.1	941.4	904.6	867.8	824.1	780.5	744.6
12.5°	993.4	1013.6	1010.7	1007.8	976.6	945.4	900.6	855.9	802.3	748.7	703.8
15°	933.3	972.4	984.0	995.5	969.7	943.9	893.0	842.2	779.2	716.2	664.6
17.5°	855.9	910.7	941.2	971.7	952.9	934.2	878.4	822.7	751.8	680.9	624.8
20°	764.2	836.0	883.8	931.7	924.8	917.9	860.4	802.8	726.3	649.8	589.0
22.5°	673.7	749.4	815.5	881.5	888.5	895.6	837.5	779.4	695.7	612.0	550.1
25°	595.5	672.6	751.2	829.9	845.8	861.7	806.4	751.2	664.5	577.7	516.2
27.5°	521.0	594.3	680.9	767.5	796.3	825.2	774.7	724.2	633.8	543.4	482.1
30°	460.2	525.7	614.1	702.5	742.8	783.0	736.6	690.3	600.6	510.9	450.9
32.5°	403.6	462.2	551.0	639.7	686.5	733.2	693.1	653.1	566.9	480.6	421.3
35°	358.8	411.3	494.2	577.0	629.3	681.6	648.8	615.9	531.7	447.4	391.3
37.5°	320.4	364.4	442.2	520.0	575.5	631.1	603.7	576.2	497.0	417.8	364.8
40°	288.7	324.0	396.4	468.7	523.2	577.7	554.2	530.8	459.9	389.0	339.4
42.5°	261.4	291.9	356.9	421.8	471.8	521.8	506.2	490.7	426.5	362.3	316.3
45°	237.4	263.0	320.2	377.4	423.4	469.4	457.2	444.9	389.5	334.1	291.9
47.5°	216.1	238.1	289.2	340.3	381.6	422.9	411.5	400.2	354.3	308.5	270.1
50°	196.7	215.4	258.0	300.6	337.7	374.9	365.5	356.1	318.2	280.4	247.2
52.5°	178.2	193.8	232.0	270.3	300.2	330.2	322.9	315.7	286.5	257.3	227.1
55°	160.7	175.0	207.3	239.6	265.2	290.8	283.6	276.4	253.7	230.9	204.4
57.5°	144.9	157.3	183.5	209.6	230.0	250.4	247.0	243.6	224.6	205.7	183.8
60°	128.1	139.3	161.8	184.4	200.8	217.2	213.2	209.3	195.7	182.2	163.5
62.5°	113.1	123.0	141.1	159.1	172.5	185.8	182.9	180.1	169.8	159.5	144.0
65°	97.4	107.2	121.8	136.4	146.9	157.3	154.8	152.3	144.5	136.8	124.3
67.5°	83.2	91.3	103.9	116.5	123.6	130.6	129.2	127.7	121.8	115.8	106.1
70°	68.7	75.8	86.2	96.7	101.6	106.4	107.0	107.5	102.1	96.7	89.5
72.5°	54.3	59.9	69.6	79.4	83.2	87.0	86.8	86.6	83.4	80.1	73.6
75°	41.7	45.8	53.4	61.0	64.2	67.5	68.2	68.9	65.9	62.8	59.2
77.5°	29.9	32.8	38.6	44.4	48.0	51.6	52.0	52.3	50.9	49.4	46.0
80°	21.1	22.0	25.6	29.2	33.0	36.8	37.3	37.9	36.4	35.0	32.8
82.5°	14.6	15.2	16.4	17.7	20.7	23.8	24.5	25.3	24.5	23.8	21.5
85°	8.8	9.0	9.6	10.1	11.5	13.0	13.7	14.4	14.1	13.7	12.4
87.5°	4.0	4.0	4.1	4.3	4.7	5.1	6.0	6.9	6.3	5.8	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):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	880.1	880.1	880.1	880.1	880.1	880.1	880.1	880.1	880.1	880.1	880.1
2.5°	851.9	841.6	831.3	823.9	816.6	807.3	798.1	797.8	797.4	790.6	783.7
5°	801.4	783.5	765.7	748.2	730.7	713.2	695.7	691.7	687.7	681.8	675.8
7.5°	756.7	728.1	699.6	677.3	654.9	637.4	619.9	608.0	596.1	586.9	577.7
10°	708.7	673.3	637.9	610.9	583.8	564.9	545.9	532.2	518.5	512.0	505.5
12.5°	658.9	620.4	582.0	555.5	529.0	506.2	483.5	471.1	458.6	449.6	440.6
15°	613.0	571.7	530.4	502.3	474.1	452.8	431.5	419.1	406.7	397.6	388.6
17.5°	568.7	527.0	485.3	456.8	428.3	409.0	389.7	377.6	365.5	359.9	354.3
20°	528.3	486.2	444.2	417.3	390.4	371.5	352.5	346.0	339.5	334.3	329.1
22.5°	488.2	447.8	407.4	381.6	355.8	342.1	328.4	323.1	317.9	313.9	310.0
25°	454.6	414.4	374.2	351.6	329.1	318.4	307.8	304.4	300.9	297.0	293.0
27.5°	420.7	382.5	344.2	326.2	308.1	299.5	290.8	286.5	282.2	278.9	275.7
30°	390.8	355.4	320.1	305.1	290.1	282.5	274.9	270.3	265.6	262.5	259.4
32.5°	361.9	330.5	299.1	286.3	273.5	266.1	258.7	254.2	249.7	246.1	242.5
35°	335.2	308.0	280.7	269.0	257.3	249.9	242.5	238.0	233.5	229.8	226.2
37.5°	311.8	287.0	262.3	251.3	240.3	233.8	227.3	222.6	217.9	214.2	210.4
40°	289.7	267.9	246.1	235.4	224.8	217.8	210.7	206.6	202.4	199.0	195.6
42.5°	270.3	250.2	230.2	219.7	209.3	202.6	195.9	191.1	186.2	184.2	182.2
45°	249.7	232.0	214.3	204.2	194.1	187.1	180.1	175.9	171.8	169.9	168.1
47.5°	231.7	215.2	198.8	188.9	179.0	172.7	166.3	163.1	159.8	157.3	154.8
50°	214.0	198.1	182.2	172.7	163.1	157.7	152.3	148.3	144.3	142.5	140.7
52.5°	197.0	182.6	168.1	158.4	148.7	143.4	138.2	134.8	131.3	127.6	123.8
55°	177.9	165.3	152.6	144.0	135.3	129.9	124.5	120.5	116.5	112.6	108.6
57.5°	162.0	149.6	137.1	129.4	121.6	116.4	111.1	106.8	102.5	99.2	96.0
60°	144.7	133.9	123.0	115.5	107.9	102.8	97.8	93.6	89.5	87.9	86.2
62.5°	128.5	118.4	108.2	101.6	94.9	90.0	85.2	82.4	79.7	78.7	77.6
65°	111.9	103.2	94.5	88.4	82.3	78.1	74.0	72.7	71.4	70.5	69.6
67.5°	96.3	88.9	81.5	76.1	70.7	67.8	64.9	63.5	62.1	61.0	59.9
70°	82.3	75.8	69.3	64.6	59.9	57.2	54.5	53.2	52.0	50.0	48.0
72.5°	67.1	62.1	57.0	53.4	49.8	47.4	45.1	42.6	40.1	38.2	36.4
75°	55.6	50.5	45.5	42.0	38.6	35.9	33.2	32.3	31.4	30.9	30.3
77.5°	42.6	38.2	33.9	31.2	28.5	27.2	26.0	25.4	24.9	24.7	24.5
80°	30.7	27.1	23.5	22.0	20.6	20.2	19.8	19.5	19.1	18.9	18.8
82.5°	19.1	17.3	15.5	15.2	14.8	14.6	14.4	14.3	14.1	13.9	13.7
85°	11.2	10.5	9.7	9.6	9.4	9.2	9.0	9.0	9.0	9.0	9.0
87.5°	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.5	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):

	165°	170°	175°	180°
0°	880.1	880.1	880.1	880.1
2.5°	781.9	780.1	779.4	778.7
5°	670.2	664.6	663.4	662.1
7.5°	575.3	573.0	565.2	557.5
10°	498.3	491.1	487.8	484.6
12.5°	433.9	427.2	426.1	425.1
15°	383.9	379.2	377.6	376.0
17.5°	351.1	347.8	345.9	343.9
20°	326.7	324.4	322.9	321.5
22.5°	308.1	306.3	305.3	304.2
25°	290.3	287.6	286.7	285.8
27.5°	273.3	271.0	270.1	269.2
30°	257.4	255.5	254.2	252.9
32.5°	240.1	237.8	237.1	236.3
35°	224.8	223.4	222.6	221.9
37.5°	208.6	206.8	205.7	204.6
40°	194.7	193.8	193.2	192.7
42.5°	180.6	179.0	178.8	178.6
45°	166.5	164.9	164.5	164.2
47.5°	153.4	151.9	151.7	151.5
50°	138.7	136.8	135.3	133.9
52.5°	122.0	120.2	118.9	117.6
55°	106.6	104.6	103.6	102.5
57.5°	95.1	94.2	93.6	93.1
60°	85.7	85.2	84.8	84.4
62.5°	77.0	76.5	76.5	76.5
65°	69.1	68.6	68.0	67.5
67.5°	58.8	57.7	57.6	57.4
70°	46.4	44.7	44.6	44.4
72.5°	36.3	36.1	35.7	35.4
75°	29.9	29.6	29.6	29.6
77.5°	24.2	23.8	23.8	23.8
80°	18.6	18.4	18.6	18.8
82.5°	13.7	13.7	13.5	13.4
85°	8.8	8.7	8.7	8.7
87.5°	4.3	4.3	4.3	4.3
90°	0.0	0.0	0.0	0.0

TEST NUMBER: P832462

CATALOG NUMBER: S123RDP-S340D927-4F0-1E-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	12.52	13.97	12.88	14.29	14.60	17.18	18.64	17.55	18.95	19.26
	3H	13.78	15.08	14.16	15.41	15.77	18.72	20.03	19.10	20.35	20.72
	4H	14.19	15.41	14.59	15.76	16.14	19.24	20.46	19.64	20.81	21.19
	6H	14.50	15.62	14.91	15.99	16.38	19.58	20.70	19.99	21.07	21.47
	8H	14.60	15.67	15.03	16.06	16.46	19.67	20.74	20.10	21.13	21.54
	12H	14.67	15.70	15.10	16.08	16.51	19.72	20.75	20.16	21.13	21.56
4H	2H	13.31	14.53	13.71	14.88	15.26	17.25	18.47	17.65	18.81	19.19
	3H	14.73	15.74	15.14	16.14	16.54	18.95	19.96	19.37	20.37	20.77
	4H	15.21	16.11	15.64	16.53	16.97	19.58	20.49	20.02	20.91	21.35
	6H	15.60	16.39	16.06	16.84	17.30	20.05	20.84	20.51	21.28	21.74
	8H	15.74	16.47	16.20	16.92	17.39	20.19	20.93	20.66	21.37	21.84
	12H	15.84	16.50	16.33	16.98	17.45	20.28	20.93	20.76	21.41	21.89
8H	4H	15.56	16.30	16.03	16.74	17.21	19.59	20.33	20.06	20.77	21.24
	6H	16.04	16.65	16.54	17.14	17.62	20.11	20.71	20.61	21.20	21.68
	8H	16.24	16.78	16.76	17.29	17.78	20.29	20.83	20.81	21.35	21.84
	12H	16.40	16.88	16.91	17.37	17.94	20.43	20.91	20.95	21.41	21.97
12H	4H	15.60	16.25	16.08	16.73	17.21	19.57	20.22	20.05	20.70	21.17
	6H	16.10	16.65	16.62	17.16	17.65	20.08	20.62	20.60	21.14	21.62
	8H	16.35	16.83	16.86	17.32	17.89	20.30	20.78	20.81	21.27	21.84