

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: P832467

Luminaire Tested: S123RDP-S560D830-4F0-1E-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: P832467
 Test Lab: INNOVATION CENTER
 Issue Date: 05/03/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: NEO-RAY
 Catalog Number: S123RDP-S560D830-4F0-1E-UDD-G
 Description: DEFINE 3 DIRECT PENDANT LED LUMINAIRE
 DOWNLIGHT 560 LUMENS PER FOOT, GRAZE OPTIC

Light Source: -
 Ballast/Driver: -

Summary

Lumens per Lamp: N/A
 Luminaire Lumens: 2282.4 lumens
 Efficiency: N/A
 Efficacy: 116.4 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

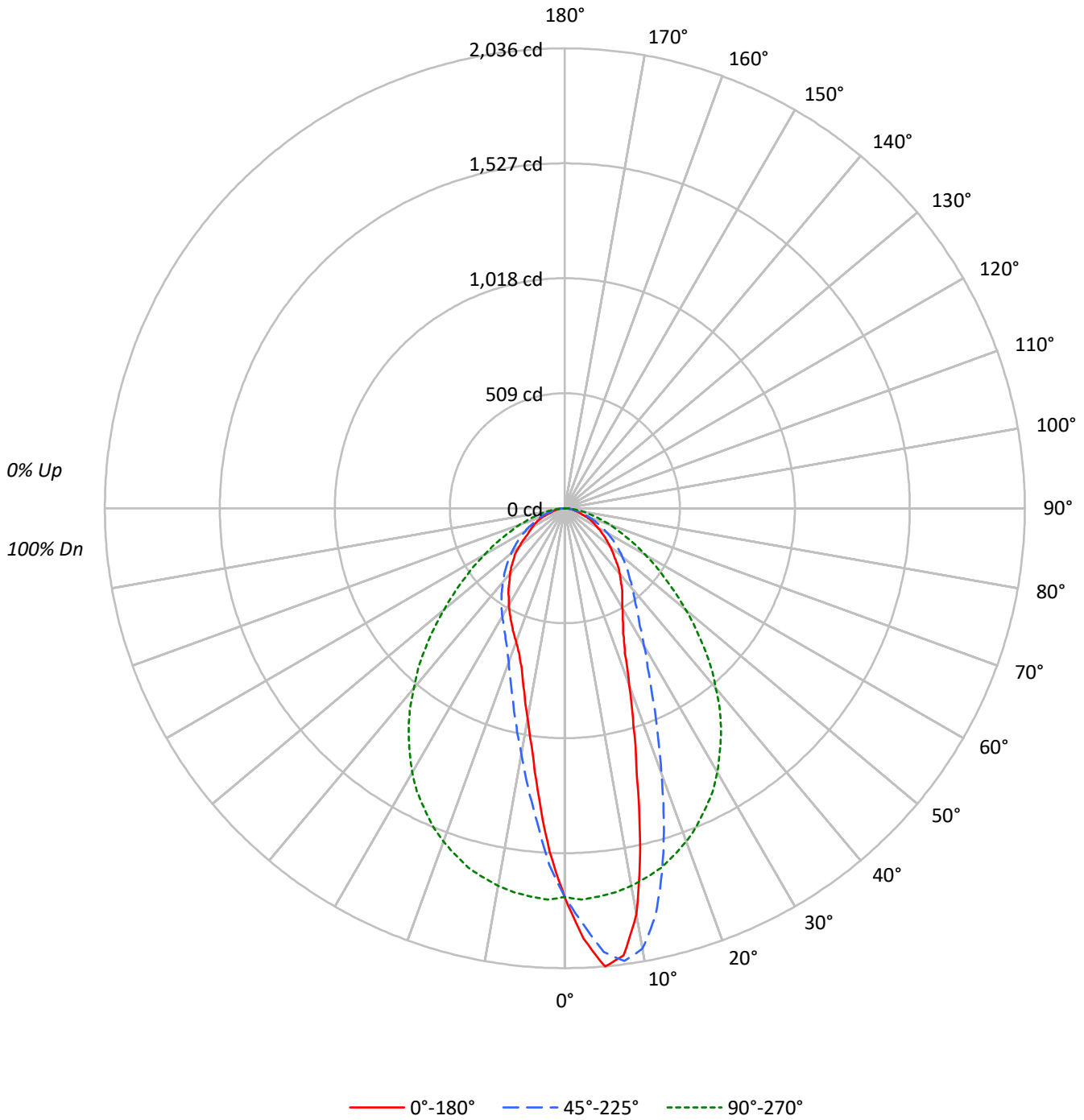
Input Watts (W): 19.6
 Input Voltage (V): 120
 Input Current (Ain): NR
 Voltage Rise (V): NR
 Power Factor: NR
 Total Harmonic Distortion (THDi): NR
 Frequency (hertz): 60
 Stabilization Time: NR
 Operation Time: NR
 Ambient Temperature (°C): NR
 Test Distance: 24 FT

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°	18529	18529	18529	18529	18529
5°	22001	21300	18646	15073	13994
10°	19934	21635	18553	12077	10361
15°	13724	18550	18357	9871	8195
20°	9548	14282	17988	8323	7204
25°	7276	10885	17453	7398	6639
30°	6334	8702	16782	6868	6150
35°	5815	7340	15831	6423	5704
40°	5306	6555	14588	5984	5296
45°	4792	5995	13247	5571	4888
50°	4349	5531	11665	5164	4384
55°	3933	5080	10145	4769	3761
60°	3524	4620	8813	4331	3556
65°	3252	4098	7585	3892	3362
70°	2644	3544	6618	3522	2732
75°	2321	2820	5606	2920	2408
80°	2101	2386	4593	2448	2275
85°	1914	2087	3483	2223	2087

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 80°
 Vertical Angle: 45°
 Luminance: 13977 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	156.9	6.9
10°-20°	363.1	15.9
20°-30°	416.6	18.3
30°-40°	410.6	18.0
40°-50°	362.1	15.9
50°-60°	278.6	12.2
60°-70°	183.1	8.0
70°-80°	88.9	3.9
80°-90°	22.4	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°	936.6	41.0
0°-40°	1347.2	59.0
0°-60°	1987.8	87.1
0°-90°	2282.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2282.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1721	1721	1721	1721	1721	
5°	2036	1971	1726	1395	1295	186
15°	1232	1665	1647	886	735	348
25°	613	916	1470	623	559	289
35°	442	559	1205	489	434	276
45°	315	394	870	366	321	244
55°	210	271	541	254	200	188
65°	128	161	298	153	132	125
75°	56	68	135	70	58	60
85°	16	17	28	18	17	17
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°	1721.4	1721.4	1721.4	1721.4	1721.4	1721.4	1721.4	1721.4	1721.4	1721.4	1721.4
2.5°	1907.8	1901.8	1895.8	1894.0	1892.2	1886.6	1880.9	1868.2	1855.5	1842.5	1829.4
5°	2036.2	2036.9	2037.6	2035.9	2034.1	2026.7	2019.3	2003.7	1988.2	1971.3	1954.3
7.5°	1996.7	2008.0	2019.3	2021.4	2023.5	2029.2	2034.8	2031.3	2027.7	2021.4	2015.0
10°	1823.8	1823.1	1822.4	1835.1	1847.8	1885.5	1923.3	1942.7	1962.1	1979.4	1996.7
12.5°	1541.4	1542.5	1543.6	1585.2	1626.9	1662.5	1698.1	1747.5	1796.9	1850.2	1903.5
15°	1231.6	1248.9	1266.2	1303.2	1340.3	1393.9	1447.6	1513.9	1580.3	1664.6	1749.0
17.5°	1011.4	1018.8	1026.2	1061.9	1097.5	1148.3	1199.1	1274.3	1349.5	1458.2	1566.9
20°	833.5	840.2	847.0	872.7	898.5	947.2	995.9	1067.5	1139.1	1246.8	1354.4
22.5°	695.9	709.0	722.0	739.3	756.6	791.9	827.2	900.2	973.3	1071.4	1169.5
25°	612.6	618.6	624.6	639.4	654.3	688.1	722.0	770.4	818.7	916.5	1014.2
27.5°	556.2	557.9	559.7	570.6	581.6	603.5	625.3	670.1	715.0	795.4	875.9
30°	509.6	512.8	515.9	524.4	532.9	548.8	564.6	596.4	628.2	700.1	772.1
32.5°	473.6	475.4	477.1	484.2	491.2	502.9	514.5	539.6	564.6	619.7	674.7
35°	442.5	442.9	443.2	448.5	453.8	465.1	476.4	497.2	518.1	558.6	599.2
37.5°	407.2	409.7	412.2	416.1	419.9	429.8	439.7	456.6	473.6	507.1	540.6
40°	377.6	379.7	381.8	386.4	391.0	398.8	406.5	422.1	437.6	466.5	495.5
42.5°	348.0	349.4	350.8	355.4	360.0	369.5	379.0	391.4	403.7	427.7	451.7
45°	314.8	318.3	321.8	326.8	331.7	339.8	348.0	360.7	373.4	393.8	414.3
47.5°	287.3	289.0	290.8	295.0	299.3	309.1	319.0	330.3	341.6	360.7	379.7
50°	259.7	260.4	261.1	265.0	268.9	277.7	286.6	299.6	312.7	330.3	348.0
52.5°	233.6	235.4	237.1	241.0	244.9	250.9	256.9	270.3	283.7	301.0	318.3
55°	209.6	210.7	211.7	214.6	217.4	224.4	231.5	243.1	254.8	270.7	286.6
57.5°	187.0	188.4	189.9	192.0	194.1	200.4	206.8	217.0	227.3	243.1	259.0
60°	163.7	165.5	167.3	169.7	172.2	177.2	182.1	191.3	200.4	214.6	228.7
62.5°	146.8	147.2	147.5	149.6	151.7	155.3	158.8	166.2	173.6	187.7	201.9
65°	127.7	128.8	129.9	130.9	132.0	134.8	137.6	144.0	150.3	160.9	171.5
67.5°	108.0	109.0	110.1	111.9	113.6	116.1	118.6	122.8	127.0	136.9	146.8
70°	84.0	84.0	84.0	86.8	89.6	93.9	98.1	101.3	104.5	112.6	120.7
72.5°	68.5	68.8	69.2	69.5	69.9	72.3	74.8	80.1	85.4	90.3	95.3
75°	55.8	56.1	56.5	56.8	57.2	57.9	58.6	60.3	62.1	67.8	73.4
77.5°	44.5	44.8	45.2	45.5	45.9	46.6	47.3	48.0	48.7	50.8	52.9
80°	33.9	34.2	34.6	34.9	35.3	35.6	36.0	36.7	37.4	38.5	39.5
82.5°	24.7	24.7	24.7	24.7	24.7	25.4	26.1	26.1	26.1	26.8	27.5
85°	15.5	15.5	15.5	15.9	16.2	16.2	16.2	16.6	16.9	16.9	16.9
87.5°	7.1	6.7	6.4	6.7	7.1	7.1	7.1	7.4	7.8	7.8	7.8
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°	1721.4	1721.4	1721.4	1721.4	1721.4	1721.4	1721.4	1721.4	1721.4	1721.4	1721.4
2.5°	1827.6	1825.9	1808.9	1792.0	1775.4	1758.8	1746.5	1734.1	1713.3	1692.5	1679.4
5°	1940.9	1927.5	1900.7	1873.9	1833.6	1793.4	1759.5	1725.7	1682.6	1639.6	1603.6
7.5°	2004.1	1993.2	1960.7	1928.2	1874.9	1821.6	1768.7	1715.8	1652.3	1588.7	1534.4
10°	2005.9	2015.0	1988.2	1961.4	1901.4	1841.4	1769.4	1697.4	1612.0	1526.6	1456.4
12.5°	1943.0	1982.6	1976.9	1971.3	1910.2	1849.2	1761.7	1674.1	1569.3	1464.5	1376.6
15°	1825.5	1902.1	1924.7	1947.3	1896.8	1846.4	1746.8	1647.3	1524.2	1401.0	1300.1
17.5°	1674.1	1781.4	1841.1	1900.7	1864.0	1827.3	1718.3	1609.2	1470.5	1331.8	1222.1
20°	1494.9	1635.3	1728.8	1822.4	1808.9	1795.5	1683.0	1570.4	1420.8	1271.1	1152.2
22.5°	1317.7	1465.9	1595.1	1724.2	1738.0	1751.8	1638.1	1524.5	1360.8	1197.0	1076.0
25°	1164.9	1315.6	1469.5	1623.3	1654.4	1685.4	1577.4	1469.5	1299.7	1130.0	1009.6
27.5°	1019.2	1162.4	1331.8	1501.2	1557.7	1614.1	1515.3	1416.5	1239.7	1062.9	942.9
30°	900.2	1028.3	1201.3	1374.2	1452.9	1531.6	1440.9	1350.2	1174.8	999.4	881.9
32.5°	789.4	904.1	1077.7	1251.4	1342.8	1434.2	1355.8	1277.5	1108.8	940.1	824.0
35°	701.9	804.6	966.6	1128.6	1230.9	1333.2	1269.0	1204.8	1040.0	875.2	765.4
37.5°	626.7	712.8	864.9	1017.0	1125.7	1234.4	1180.8	1127.1	972.2	817.3	713.6
40°	564.6	633.8	775.3	916.8	1023.4	1130.0	1084.1	1038.2	899.5	760.8	663.8
42.5°	511.3	571.0	698.0	825.1	922.8	1020.6	990.2	959.9	834.2	708.6	618.6
45°	464.4	514.5	626.4	738.3	828.2	918.2	894.2	870.2	761.9	653.6	571.0
47.5°	422.8	465.8	565.7	665.6	746.4	827.2	805.0	782.7	693.1	603.5	528.3
50°	384.7	421.4	504.6	587.9	660.6	733.3	715.0	696.6	622.5	548.4	483.5
52.5°	348.7	379.0	453.8	528.6	587.2	645.8	631.7	617.6	560.4	503.2	444.3
55°	314.4	342.3	405.5	468.6	518.8	568.9	554.8	540.6	496.2	451.7	399.8
57.5°	283.4	307.7	358.9	410.1	449.9	489.8	483.1	476.4	439.4	402.3	359.6
60°	250.6	272.4	316.5	360.7	392.8	424.9	417.1	409.4	382.9	356.4	319.7
62.5°	221.3	240.7	276.0	311.3	337.4	363.5	357.8	352.2	332.1	312.0	281.6
65°	190.6	209.6	238.2	266.8	287.3	307.7	302.8	297.8	282.7	267.5	243.1
67.5°	162.7	178.6	203.3	228.0	241.7	255.5	252.7	249.9	238.2	226.6	207.5
70°	134.5	148.2	168.7	189.2	198.7	208.2	209.3	210.3	199.7	189.2	175.0
72.5°	106.2	117.2	136.2	155.3	162.7	170.1	169.7	169.4	163.0	156.7	144.0
75°	81.5	89.6	104.5	119.3	125.6	132.0	133.4	134.8	128.8	122.8	115.7
77.5°	58.6	64.2	75.5	86.8	93.9	100.9	101.6	102.3	99.5	96.7	90.0
80°	41.3	43.1	50.1	57.2	64.6	72.0	73.0	74.1	71.3	68.5	64.2
82.5°	28.6	29.6	32.1	34.6	40.6	46.6	48.0	49.4	48.0	46.6	42.0
85°	17.3	17.6	18.7	19.8	22.6	25.4	26.8	28.2	27.5	26.8	24.3
87.5°	7.8	7.8	8.1	8.5	9.2	9.9	11.6	13.4	12.4	11.3	10.2
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°	1721.4	1721.4	1721.4	1721.4	1721.4	1721.4	1721.4	1721.4	1721.4	1721.4	1721.4
2.5°	1666.4	1646.3	1626.1	1611.7	1597.2	1579.2	1561.2	1560.5	1559.8	1546.4	1533.0
5°	1567.6	1532.6	1497.7	1463.5	1429.2	1395.0	1360.8	1353.0	1345.2	1333.6	1321.9
7.5°	1480.0	1424.3	1368.5	1324.8	1281.0	1246.8	1212.6	1189.3	1166.0	1148.0	1130.0
10°	1386.2	1317.0	1247.8	1194.9	1142.0	1104.9	1067.9	1041.0	1014.2	1001.5	988.8
12.5°	1288.8	1213.6	1138.4	1086.6	1034.7	990.2	945.8	921.4	897.1	879.4	861.8
15°	1199.1	1118.3	1037.5	982.5	927.4	885.8	844.1	819.8	795.4	777.8	760.1
17.5°	1112.3	1030.8	949.3	893.5	837.8	800.0	762.3	738.6	715.0	704.0	693.1
20°	1033.3	951.1	868.8	816.2	763.7	726.6	689.6	676.9	664.2	653.9	643.7
22.5°	954.9	875.9	796.8	746.4	695.9	669.1	642.3	632.0	621.8	614.0	606.3
25°	889.3	810.6	731.9	687.8	643.7	622.9	602.0	595.3	588.6	580.9	573.1
27.5°	823.0	748.1	673.3	638.0	602.7	585.8	568.9	560.4	551.9	545.6	539.2
30°	764.4	695.2	626.0	596.7	567.5	552.6	537.8	528.6	519.5	513.5	507.5
32.5°	707.9	646.5	585.1	560.0	535.0	520.5	506.1	497.2	488.4	481.4	474.3
35°	655.7	602.4	549.1	526.2	503.2	488.8	474.3	465.5	456.6	449.6	442.5
37.5°	609.8	561.5	513.1	491.6	470.1	457.4	444.6	435.5	426.3	418.9	411.5
40°	566.8	524.1	481.4	460.5	439.7	425.9	412.2	404.1	395.9	389.2	382.5
42.5°	528.6	489.5	450.3	429.8	409.4	396.3	383.2	373.7	364.2	360.3	356.4
45°	488.4	453.8	419.2	399.5	379.7	366.0	352.2	344.1	336.0	332.4	328.9
47.5°	453.1	421.0	388.9	369.5	350.1	337.7	325.4	319.0	312.7	307.7	302.8
50°	418.5	387.5	356.4	337.7	319.0	308.4	297.8	290.1	282.3	278.8	275.3
52.5°	385.4	357.1	328.9	309.8	290.8	280.6	270.3	263.6	256.9	249.5	242.1
55°	348.0	323.3	298.6	281.6	264.7	254.1	243.5	235.7	228.0	220.2	212.4
57.5°	316.9	292.6	268.2	253.0	237.9	227.6	217.4	208.9	200.4	194.1	187.7
60°	283.0	261.8	240.7	225.9	211.0	201.2	191.3	183.2	175.0	171.9	168.7
62.5°	251.3	231.5	211.7	198.7	185.6	176.1	166.6	161.3	156.0	153.9	151.7
65°	218.8	201.9	184.9	172.9	160.9	152.8	144.7	142.2	139.7	138.0	136.2
67.5°	188.4	174.0	159.5	148.9	138.3	132.7	127.0	124.2	121.4	119.3	117.2
70°	160.9	148.2	135.5	126.3	117.2	111.9	106.6	104.1	101.6	97.8	93.9
72.5°	131.3	121.4	111.5	104.5	97.4	92.8	88.2	83.3	78.3	74.8	71.3
75°	108.7	98.8	88.9	82.2	75.5	70.2	64.9	63.2	61.4	60.3	59.3
77.5°	83.3	74.8	66.3	61.1	55.8	53.3	50.8	49.8	48.7	48.3	48.0
80°	60.0	52.9	45.9	43.1	40.2	39.5	38.8	38.1	37.4	37.1	36.7
82.5°	37.4	33.9	30.3	29.6	28.9	28.6	28.2	27.9	27.5	27.2	26.8
85°	21.9	20.5	19.1	18.7	18.4	18.0	17.6	17.6	17.6	17.6	17.6
87.5°	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	8.8	8.5
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: P832467

CATALOG NUMBER: S123RDP-S560D830-4F0-1E-UDD-G

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1721.4	1721.4	1721.4	1721.4
2.5°	1529.5	1525.9	1524.5	1523.1
5°	1311.0	1300.1	1297.6	1295.1
7.5°	1125.4	1120.8	1105.6	1090.4
10°	974.7	960.6	954.2	947.9
12.5°	848.7	835.7	833.5	831.4
15°	751.0	741.8	738.6	735.4
17.5°	686.7	680.4	676.5	672.6
20°	639.1	634.5	631.7	628.9
22.5°	602.7	599.2	597.1	595.0
25°	567.8	562.5	560.8	559.0
27.5°	534.6	530.0	528.3	526.5
30°	503.6	499.7	497.2	494.8
32.5°	469.7	465.1	463.7	462.3
35°	439.7	436.9	435.5	434.1
37.5°	407.9	404.4	402.3	400.2
40°	380.8	379.0	378.0	376.9
42.5°	353.2	350.1	349.7	349.4
45°	325.7	322.5	321.8	321.1
47.5°	300.0	297.1	296.8	296.4
50°	271.4	267.5	264.7	261.8
52.5°	238.6	235.0	232.6	230.1
55°	208.6	204.7	202.6	200.4
57.5°	186.0	184.2	183.2	182.1
60°	167.6	166.6	165.9	165.2
62.5°	150.7	149.6	149.6	149.6
65°	135.2	134.1	133.0	132.0
67.5°	115.0	112.9	112.6	112.2
70°	90.7	87.5	87.2	86.8
72.5°	70.9	70.6	69.9	69.2
75°	58.6	57.9	57.9	57.9
77.5°	47.3	46.6	46.6	46.6
80°	36.3	36.0	36.3	36.7
82.5°	26.8	26.8	26.5	26.1
85°	17.3	16.9	16.9	16.9
87.5°	8.5	8.5	8.5	8.5
90°	0.0	0.0	0.0	0.0

TEST NUMBER: P832467

CATALOG NUMBER: S123RDP-S560D830-4F0-1E-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	14.85	16.30	15.21	16.62	16.93	19.51	20.97	19.88	21.28	21.60
	3H	16.11	17.41	16.49	17.74	18.10	21.05	22.36	21.43	22.68	23.05
	4H	16.52	17.74	16.92	18.09	18.47	21.57	22.79	21.97	23.14	23.52
	6H	16.83	17.96	17.24	18.32	18.72	21.91	23.04	22.32	23.40	23.80
	8H	16.93	18.00	17.36	18.39	18.80	22.01	23.08	22.43	23.47	23.87
	12H	17.00	18.03	17.43	18.41	18.84	22.06	23.08	22.49	23.46	23.89
4H	2H	15.64	16.86	16.04	17.21	17.59	19.58	20.80	19.98	21.15	21.53
	3H	17.06	18.07	17.47	18.47	18.87	21.28	22.29	21.70	22.70	23.10
	4H	17.54	18.44	17.97	18.86	19.30	21.91	22.82	22.35	23.24	23.68
	6H	17.93	18.72	18.39	19.17	19.63	22.38	23.17	22.84	23.61	24.07
	8H	18.07	18.81	18.54	19.25	19.72	22.52	23.26	22.99	23.70	24.17
	12H	18.17	18.83	18.66	19.31	19.78	22.61	23.27	23.09	23.75	24.22
8H	4H	17.89	18.63	18.36	19.07	19.54	21.92	22.66	22.39	23.10	23.57
	6H	18.38	18.98	18.87	19.47	19.95	22.44	23.04	22.94	23.53	24.01
	8H	18.57	19.11	19.09	19.62	20.11	22.62	23.17	23.14	23.68	24.17
	12H	18.73	19.21	19.25	19.71	20.27	22.77	23.24	23.28	23.74	24.30
12H	4H	17.93	18.58	18.41	19.06	19.54	21.90	22.55	22.38	23.03	23.50
	6H	18.43	18.98	18.95	19.49	19.98	22.41	22.95	22.93	23.47	23.96
	8H	18.68	19.16	19.19	19.65	20.22	22.63	23.11	23.14	23.60	24.17