

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: P242651

Luminaire Tested: S124DRP-S1020D930-X4F0-XX-UDD-A-W

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2024
Report Number: P242651
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-S1020D930-X4F0-XX-UDD-A-W
Description: DEFINE 4 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER
STANDARD LIGHT ENGINE
Light Source: (92) 3000K CCT, 90 CRI LEDS
Ballast/Driver: -

Summary

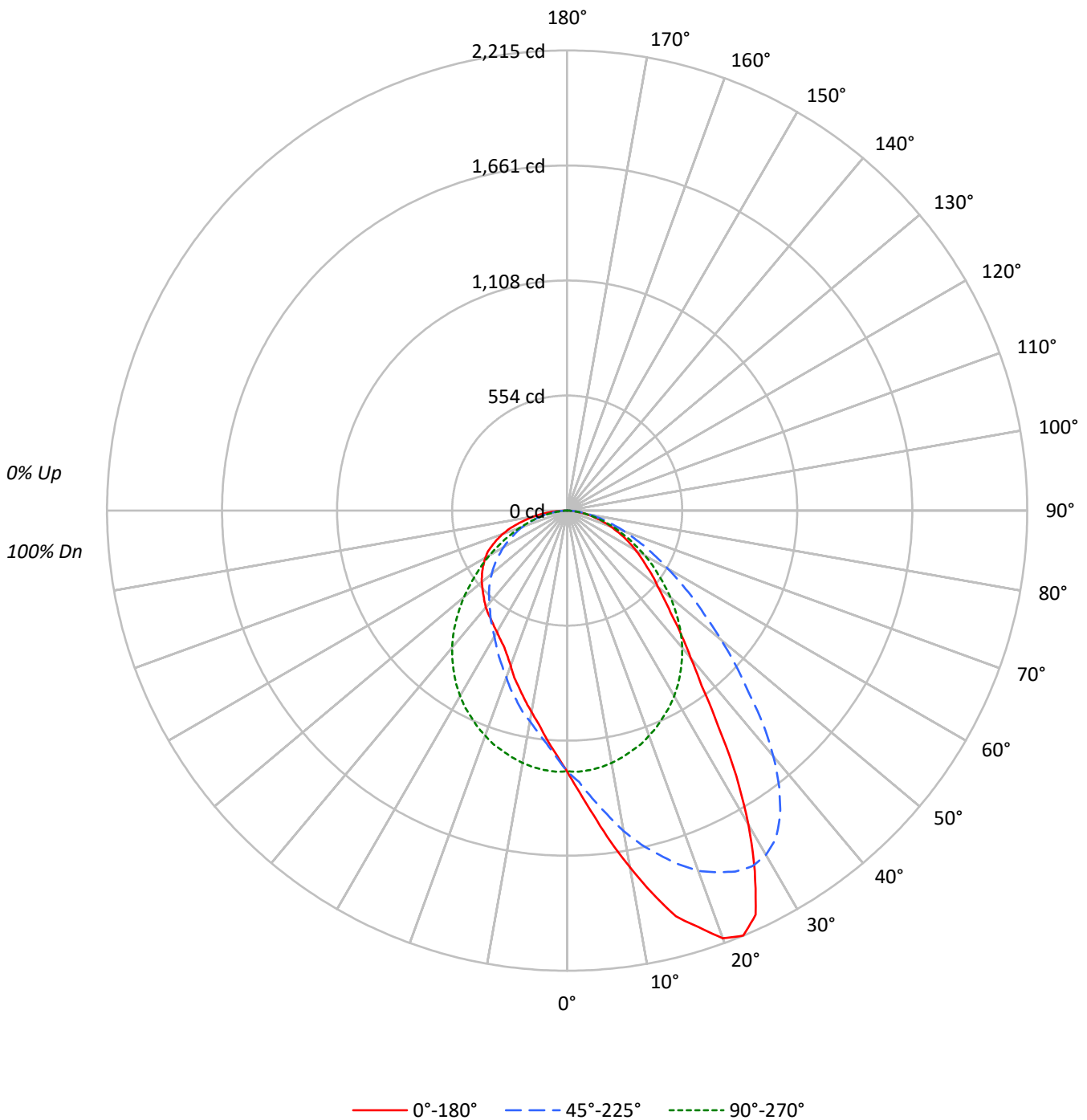
Lumens per Lamp: N/A
Luminaire Lumens: 3462.9 lumens
Efficiency: N/A
Efficacy: 99.5 lumens/watt
Spacing Criteria (0/90/45): 1.3 / 1.22 / 1.41
Luminous Opening: Rectangular (W 3.88' x L: 0.31' x H: 0')
CIE Type: Direct

Input Watts (W): 34.8
Input Voltage (V): 120
Input Current (A_{in}): 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	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					85			
2	100	92	86	80	98	90	84	79	87	82	78	84	79	76	81	77	74	72					72			
3	92	82	74	68	89	80	73	67	77	71	66	74	69	65	72	67	64	62					62			
4	84	73	64	58	82	72	64	58	69	62	57	67	61	56	65	60	55	53					53			
5	78	65	57	50	76	64	56	50	62	55	50	60	54	49	58	53	49	46					46			
6	72	59	51	44	70	58	50	44	56	49	44	55	48	43	53	47	43	41					41			
7	67	54	45	39	65	53	45	39	52	44	39	50	44	39	49	43	38	36					36			
8	62	49	41	35	61	49	41	35	47	40	35	46	40	35	45	39	35	33					33			
9	58	45	37	32	57	45	37	32	44	37	32	43	36	32	42	36	31	30					30			
10	55	42	34	29	54	41	34	29	40	34	29	39	33	29	39	33	29	27					27			

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	11155	11155	11155	11155	11155
5°	13136	12408	11184	10052	9871
10°	15729	14137	11135	9300	8887
15°	18609	15791	11023	8688	8162
20°	20723	17457	10907	8084	7514
25°	21057	18799	10738	7612	7067
30°	17918	19646	10576	7187	6926
35°	13776	19400	10312	6956	6928
40°	10737	17928	10001	6763	7057
45°	8953	15514	9535	6679	7175
50°	7880	13379	8965	6556	7419
55°	7219	11513	8282	6438	7718
60°	6764	9963	7671	6276	8078
65°	6297	8703	6987	6068	8375
70°	5757	7688	6310	5905	8566
75°	5141	6625	5553	5516	8462
80°	4310	5375	4551	5032	8195
85°	3182	4080	3284	4661	7843

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 55°
 Vertical Angle: 45°
 Luminance: 17128 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	122.1	3.5
10°-20°	377.0	10.9
20°-30°	598.9	17.3
30°-40°	665.4	19.2
40°-50°	605.2	17.5
50°-60°	494.5	14.3
60°-70°	353.0	10.2
70°-80°	194.2	5.6
80°-90°	52.5	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°	1098.0	31.7
0°-40°	1763.4	50.9
0°-60°	2863.1	82.7
0°-90°	3462.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3462.9	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1255	1255	1255	1255	1255	
5°	1472	1391	1253	1126	1106	149
15°	2022	1716	1198	944	887	572
25°	2147	1917	1095	776	720	952
35°	1270	1788	950	641	638	804
45°	712	1234	758	531	571	560
55°	466	743	534	415	498	420
65°	299	414	332	288	398	296
75°	150	193	162	161	246	159
85°	31	40	32	46	77	38
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°	1254.9	1254.9	1254.9	1254.9	1254.9	1254.9	1254.9	1254.9	1254.9	1254.9	1254.9
2.5°	1355.8	1355.3	1350.1	1349.0	1345.4	1340.7	1339.7	1331.4	1314.7	1306.9	1304.8
5°	1472.2	1482.6	1469.1	1466.5	1465.0	1447.8	1439.0	1428.6	1404.7	1390.6	1379.7
7.5°	1608.4	1609.0	1603.2	1597.5	1587.6	1573.1	1553.3	1530.5	1502.9	1474.8	1455.1
10°	1742.6	1746.7	1740.0	1738.9	1712.4	1695.8	1662.5	1634.4	1602.2	1566.3	1533.6
12.5°	1884.0	1875.6	1873.0	1845.5	1846.0	1812.2	1772.2	1743.1	1689.0	1646.4	1600.1
15°	2022.2	2010.8	2003.5	1972.9	1957.8	1915.7	1874.6	1842.9	1777.9	1716.0	1669.3
17.5°	2102.3	2116.3	2097.6	2085.1	2044.1	2016.5	1975.5	1910.5	1862.1	1785.2	1731.6
20°	2190.7	2191.7	2182.4	2169.4	2138.7	2101.3	2055.5	1982.7	1921.9	1845.5	1764.4
22.5°	2214.6	2214.6	2212.0	2200.0	2178.7	2150.1	2103.9	2046.2	1969.2	1884.5	1803.4
25°	2147.0	2144.9	2149.6	2163.1	2154.3	2144.9	2118.4	2073.2	2004.6	1916.7	1829.4
27.5°	1955.7	1969.2	1997.3	2030.6	2054.5	2075.8	2074.2	2055.0	2006.1	1930.2	1837.2
30°	1745.7	1763.4	1783.1	1816.4	1880.8	1917.8	1958.3	1989.0	1971.8	1914.1	1828.9
32.5°	1514.9	1515.9	1547.6	1586.6	1644.3	1723.8	1794.0	1864.2	1894.4	1871.0	1803.4
35°	1269.5	1276.8	1308.5	1345.9	1418.2	1505.0	1601.7	1688.0	1759.2	1787.8	1751.4
37.5°	1063.6	1086.5	1110.4	1153.0	1219.1	1297.6	1401.5	1509.1	1613.6	1677.1	1683.8
40°	925.3	938.3	954.5	985.1	1039.2	1116.1	1202.4	1330.3	1443.1	1545.0	1578.3
42.5°	816.2	822.4	830.7	857.8	895.7	972.1	1049.1	1157.7	1271.1	1397.9	1459.2
45°	712.2	720.0	736.6	752.8	783.9	837.0	910.3	1002.8	1116.7	1234.1	1337.1
47.5°	634.2	639.4	649.8	667.5	695.6	731.4	793.8	872.3	983.6	1097.4	1207.6
50°	569.8	573.9	581.7	597.3	617.6	648.8	697.6	769.9	852.6	967.5	1075.1
52.5°	518.8	519.9	525.1	534.4	549.5	574.4	612.4	669.1	744.4	843.7	950.8
55°	465.8	467.9	473.1	480.9	494.9	511.5	542.2	586.9	654.0	742.9	835.9
57.5°	422.1	424.2	428.4	431.5	444.0	458.0	482.9	515.2	567.7	646.7	731.4
60°	380.5	379.5	384.7	387.3	395.1	406.5	424.7	455.4	499.6	560.4	636.8
62.5°	340.0	338.4	342.6	346.2	349.9	359.2	373.3	395.6	429.4	482.9	546.4
65°	299.4	297.4	300.0	304.1	308.3	313.5	324.4	345.7	374.3	413.8	464.2
67.5°	257.8	260.4	260.4	263.0	265.6	272.9	280.7	297.4	317.6	349.9	394.6
70°	221.5	222.0	224.1	224.1	225.6	231.9	238.1	246.9	266.7	295.8	330.6
72.5°	185.1	187.7	186.1	188.2	189.2	192.9	197.0	205.3	221.5	241.2	269.3
75°	149.7	151.3	151.3	151.8	153.4	154.9	158.6	164.8	176.8	192.9	213.1
77.5°	115.4	115.4	116.4	118.5	118.5	121.1	124.2	128.9	135.7	147.6	160.6
80°	84.2	85.3	84.7	85.8	85.8	87.9	88.9	95.1	97.7	105.0	114.9
82.5°	56.1	57.2	57.2	58.7	59.8	59.8	61.3	62.9	65.5	71.7	74.3
85°	31.2	32.2	31.2	32.2	33.8	34.3	35.9	36.4	38.5	40.0	43.7
87.5°	11.4	13.0	13.0	13.5	14.6	15.1	15.6	15.1	17.2	17.7	19.8
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°	1254.9	1254.9	1254.9	1254.9	1254.9	1254.9	1254.9	1254.9	1254.9	1254.9	1254.9
2.5°	1305.4	1298.1	1292.9	1288.7	1277.3	1270.5	1265.3	1258.1	1249.7	1240.9	1230.0
5°	1368.8	1351.1	1338.1	1318.4	1299.6	1284.0	1267.9	1253.4	1235.7	1216.5	1202.4
7.5°	1433.8	1409.3	1376.6	1351.1	1320.4	1293.9	1270.5	1246.1	1220.1	1195.2	1171.8
10°	1495.1	1461.3	1423.9	1379.7	1338.1	1301.2	1266.9	1233.6	1201.4	1169.2	1141.6
12.5°	1561.1	1516.9	1457.2	1403.6	1355.8	1303.3	1260.1	1217.5	1177.0	1142.6	1109.4
15°	1618.8	1558.0	1494.1	1424.9	1363.6	1305.9	1249.2	1197.8	1154.1	1109.4	1078.2
17.5°	1655.2	1579.8	1511.2	1439.0	1368.3	1296.0	1237.3	1179.6	1125.5	1081.8	1042.8
20°	1691.1	1616.2	1525.3	1453.0	1364.6	1289.8	1219.1	1153.0	1095.9	1048.6	1008.0
22.5°	1722.3	1632.9	1541.9	1441.0	1353.2	1272.6	1193.6	1127.0	1068.3	1017.9	979.4
25°	1729.6	1630.3	1531.5	1436.9	1337.1	1243.0	1172.8	1094.8	1032.4	979.9	938.3
27.5°	1732.2	1627.2	1517.5	1414.5	1311.6	1225.8	1134.3	1066.2	1001.8	946.1	906.6
30°	1726.4	1615.7	1495.6	1381.8	1278.3	1183.2	1106.3	1030.4	964.3	909.2	867.6
32.5°	1708.2	1591.8	1467.6	1345.4	1237.3	1144.7	1064.7	993.4	929.5	875.4	831.3
35°	1669.8	1555.9	1424.4	1299.1	1189.4	1095.3	1023.6	950.3	885.8	834.4	792.3
37.5°	1618.3	1512.3	1378.7	1248.2	1142.6	1047.0	974.7	907.2	848.9	795.9	752.2
40°	1546.6	1456.1	1322.0	1195.7	1079.2	989.3	922.7	861.9	804.2	754.8	713.8
42.5°	1463.9	1388.0	1266.9	1131.2	1020.0	929.5	865.0	812.0	758.5	713.8	672.7
45°	1362.5	1310.6	1194.1	1070.4	953.4	868.2	806.3	758.5	712.7	668.0	633.7
47.5°	1249.7	1220.6	1119.3	1000.7	888.4	803.2	749.6	703.9	662.3	623.3	592.6
50°	1135.9	1123.4	1038.7	925.3	819.3	740.3	686.2	648.3	614.0	580.7	552.1
52.5°	1023.6	1026.2	951.9	850.5	754.3	678.9	625.4	590.6	562.0	536.5	511.5
55°	908.7	923.3	863.5	770.9	683.1	614.5	566.1	534.4	513.6	491.3	472.0
57.5°	803.2	827.6	775.6	690.9	616.6	551.0	508.4	484.0	461.1	446.6	431.5
60°	700.2	723.1	684.7	616.0	546.9	492.8	452.8	431.5	412.2	402.9	393.0
62.5°	608.8	628.5	602.5	540.1	482.4	431.0	398.7	378.5	367.0	356.6	350.9
65°	522.5	539.6	515.2	468.9	417.4	375.9	348.3	332.2	319.7	315.6	308.3
67.5°	437.2	452.8	439.8	399.3	355.6	322.8	301.0	283.8	276.6	272.4	267.7
70°	362.9	378.5	364.4	330.1	298.4	271.9	251.6	242.8	235.0	233.4	226.1
72.5°	300.0	309.3	295.3	270.3	244.3	223.0	208.5	199.1	196.0	192.9	189.7
75°	234.5	243.8	234.5	213.7	194.4	178.8	165.3	161.7	157.0	155.4	152.8
77.5°	175.7	184.5	177.3	163.2	148.2	135.2	127.4	122.2	121.6	118.5	119.6
80°	126.8	132.0	125.3	116.4	105.0	96.7	91.5	88.9	85.8	84.7	86.8
82.5°	82.1	83.7	81.1	75.9	68.1	63.4	60.3	57.2	57.2	57.7	57.2
85°	47.3	46.8	46.3	41.1	38.5	34.8	32.8	32.2	31.7	32.8	33.8
87.5°	19.8	20.3	19.8	17.7	16.1	14.6	14.0	13.5	14.0	14.6	15.1
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):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1254.9	1254.9	1254.9	1254.9	1254.9	1254.9	1254.9	1254.9	1254.9	1254.9	1254.9
2.5°	1224.8	1220.1	1213.3	1204.0	1196.2	1187.9	1185.8	1182.7	1188.9	1183.7	1182.2
5°	1190.5	1179.6	1165.5	1149.4	1140.0	1126.5	1123.9	1118.7	1113.5	1113.0	1107.8
7.5°	1154.6	1139.5	1121.9	1105.2	1090.7	1076.1	1066.7	1065.7	1057.4	1053.2	1048.0
10°	1120.3	1100.5	1079.2	1063.6	1046.0	1030.4	1019.4	1013.2	1008.0	1002.3	997.1
12.5°	1079.7	1058.4	1041.8	1024.6	1002.8	991.9	972.1	960.2	960.2	961.7	946.1
15°	1050.1	1029.3	1002.3	978.4	966.9	944.1	934.2	921.7	913.9	906.1	899.9
17.5°	1013.7	988.2	967.5	940.4	919.1	902.0	888.4	881.7	869.2	857.8	850.0
20°	979.9	952.4	930.0	900.9	877.0	854.6	843.7	833.3	824.5	815.1	806.3
22.5°	945.6	916.5	887.9	859.8	838.0	814.1	803.7	788.6	780.3	776.1	767.3
25°	909.2	878.0	846.8	819.8	796.9	776.1	762.1	751.2	741.8	737.7	732.0
27.5°	869.7	839.0	809.4	778.2	751.7	736.6	725.2	716.4	710.6	704.4	701.8
30°	832.3	800.1	767.8	739.2	715.3	700.2	689.9	684.1	680.0	677.4	674.8
32.5°	794.3	762.6	728.3	702.8	682.1	669.1	661.8	656.1	654.5	654.0	653.5
35°	753.3	721.0	689.9	666.5	646.2	641.0	634.2	631.1	630.1	633.7	635.3
37.5°	713.8	683.6	654.5	631.1	617.6	609.3	606.7	606.2	609.8	612.9	616.6
40°	675.8	646.7	619.7	599.9	587.4	582.8	581.7	584.3	588.5	592.1	596.3
42.5°	638.9	610.3	586.4	568.2	560.4	556.2	557.3	559.9	566.1	570.8	577.6
45°	600.4	576.5	552.6	537.5	530.3	531.3	531.3	536.0	541.7	548.4	555.2
47.5°	564.6	540.1	519.9	506.9	503.2	501.7	504.3	510.5	518.3	526.1	535.5
50°	528.2	505.3	488.1	476.7	472.5	474.1	478.3	484.0	493.9	504.3	514.1
52.5°	491.3	471.0	455.4	445.0	442.4	445.5	449.7	459.6	467.9	479.3	491.8
55°	452.8	435.1	422.6	414.8	413.8	415.4	420.0	429.9	442.4	456.4	467.9
57.5°	414.8	399.8	387.8	382.1	382.6	383.7	390.9	402.9	415.4	430.4	445.0
60°	376.4	362.9	353.5	349.3	349.9	353.0	362.3	373.3	389.9	404.4	420.0
62.5°	340.0	328.5	319.7	316.1	315.0	322.8	331.7	343.1	359.7	376.4	393.5
65°	300.5	291.1	283.8	281.8	283.3	288.5	300.0	315.0	329.1	346.2	363.9
67.5°	262.0	254.2	249.0	250.1	251.6	258.9	268.8	281.8	297.4	315.0	333.2
70°	225.6	218.3	214.2	214.7	217.8	227.2	235.5	248.5	265.6	283.8	298.4
72.5°	188.2	184.0	180.4	183.0	186.1	191.8	202.7	215.7	230.3	246.9	262.5
75°	150.2	150.2	148.2	149.7	154.4	160.6	168.4	181.9	197.0	210.5	223.0
77.5°	118.0	116.4	117.5	119.0	122.2	130.0	138.8	148.7	160.6	174.7	185.1
80°	85.3	85.8	88.4	91.5	92.5	98.3	107.6	116.4	125.3	136.7	146.6
82.5°	58.7	59.3	60.3	64.5	65.5	71.7	76.9	85.8	93.6	100.3	108.1
85°	34.8	34.8	37.4	39.0	41.6	45.7	49.4	54.6	61.9	67.1	74.9
87.5°	16.6	16.6	18.7	19.8	21.3	23.9	25.0	30.7	32.8	35.4	40.0
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: P242651

CATALOG NUMBER: S124DRP-S1020D930-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1254.9	1254.9	1254.9	1254.9
2.5°	1181.1	1180.1	1176.4	1175.9
5°	1104.7	1102.1	1100.5	1106.3
7.5°	1047.0	1044.9	1040.2	1038.7
10°	991.9	989.8	985.6	984.6
12.5°	938.9	934.2	934.2	935.7
15°	893.1	891.0	885.3	886.9
17.5°	846.3	844.2	836.4	844.2
20°	802.7	798.5	794.9	794.3
22.5°	761.1	757.4	758.0	753.8
25°	727.8	724.2	723.1	720.5
27.5°	700.8	698.7	696.6	697.6
30°	676.3	675.8	674.8	674.8
32.5°	656.1	656.1	657.1	657.1
35°	637.3	638.9	639.9	638.4
37.5°	620.7	621.7	623.3	624.9
40°	601.0	604.6	605.6	608.2
42.5°	582.2	586.4	589.5	589.5
45°	563.0	567.2	570.8	570.8
47.5°	543.3	549.0	552.6	553.1
50°	523.0	530.3	533.9	536.5
52.5°	503.2	510.5	515.7	516.7
55°	479.8	490.2	495.9	498.0
57.5°	459.0	468.4	474.6	476.2
60°	434.1	444.5	452.8	454.4
62.5°	408.6	419.5	426.8	431.5
65°	378.5	389.4	396.7	398.2
67.5°	346.7	358.2	362.9	366.0
70°	313.0	321.8	327.0	329.6
72.5°	274.5	283.8	290.1	290.1
75°	235.0	243.3	246.4	246.4
77.5°	193.9	198.6	202.7	203.8
80°	154.4	157.0	160.1	160.1
82.5°	113.8	115.9	119.0	118.5
85°	73.8	78.5	78.0	76.9
87.5°	41.6	42.1	43.7	44.7
90°	0.0	0.0	0.0	0.0



TEST NUMBER: P242651
 CATALOG NUMBER: S124DRP-S1020D930-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	18.35	19.91	18.71	20.22	20.54	19.26	20.82	19.62	21.13	21.45
	3H	19.83	21.24	20.21	21.56	21.92	20.62	22.03	21.00	22.36	22.72
	4H	20.37	21.69	20.77	22.04	22.42	21.10	22.42	21.50	22.77	23.14
	6H	20.73	21.95	21.14	22.32	22.71	21.40	22.63	21.82	22.99	23.38
	8H	20.83	22.00	21.26	22.39	22.79	21.48	22.65	21.91	23.04	23.44
	12H	20.88	22.00	21.31	22.38	22.81	21.52	22.64	21.95	23.02	23.45
4H	2H	19.51	20.83	19.91	21.18	21.56	19.94	21.27	20.34	21.61	21.99
	3H	21.04	22.14	21.45	22.54	22.94	21.65	22.75	22.06	23.15	23.55
	4H	21.62	22.62	22.06	23.03	23.47	22.24	23.24	22.67	23.65	24.09
	6H	22.05	22.92	22.51	23.36	23.82	22.64	23.51	23.09	23.95	24.41
	8H	22.18	22.99	22.64	23.43	23.90	22.74	23.55	23.20	24.00	24.46
	12H	22.25	22.98	22.73	23.46	23.93	22.81	23.53	23.29	24.01	24.48
8H	4H	22.08	22.89	22.54	23.33	23.80	22.55	23.37	23.02	23.81	24.28
	6H	22.59	23.26	23.08	23.75	24.22	23.08	23.75	23.58	24.24	24.72
	8H	22.76	23.36	23.27	23.87	24.36	23.25	23.85	23.76	24.36	24.84
	12H	22.88	23.41	23.39	23.90	24.47	23.36	23.89	23.87	24.38	24.95
12H	4H	22.13	22.86	22.61	23.33	23.80	22.59	23.31	23.07	23.79	24.26
	6H	22.66	23.26	23.17	23.77	24.26	23.14	23.74	23.65	24.25	24.74
	8H	22.88	23.41	23.39	23.91	24.47	23.36	23.89	23.87	24.38	24.95