

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: P243491

Luminaire Tested: S124DRP-H1020D927-X4F0-XX-UDD-A-W

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2024
Report Number: P243491
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-60)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: S124DRP-H1020D927-X4F0-XX-UDD-A-W
Description: DEFINE 4 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 2700K CCT, 90 CRI LEDS
Ballast/Driver: -

Summary

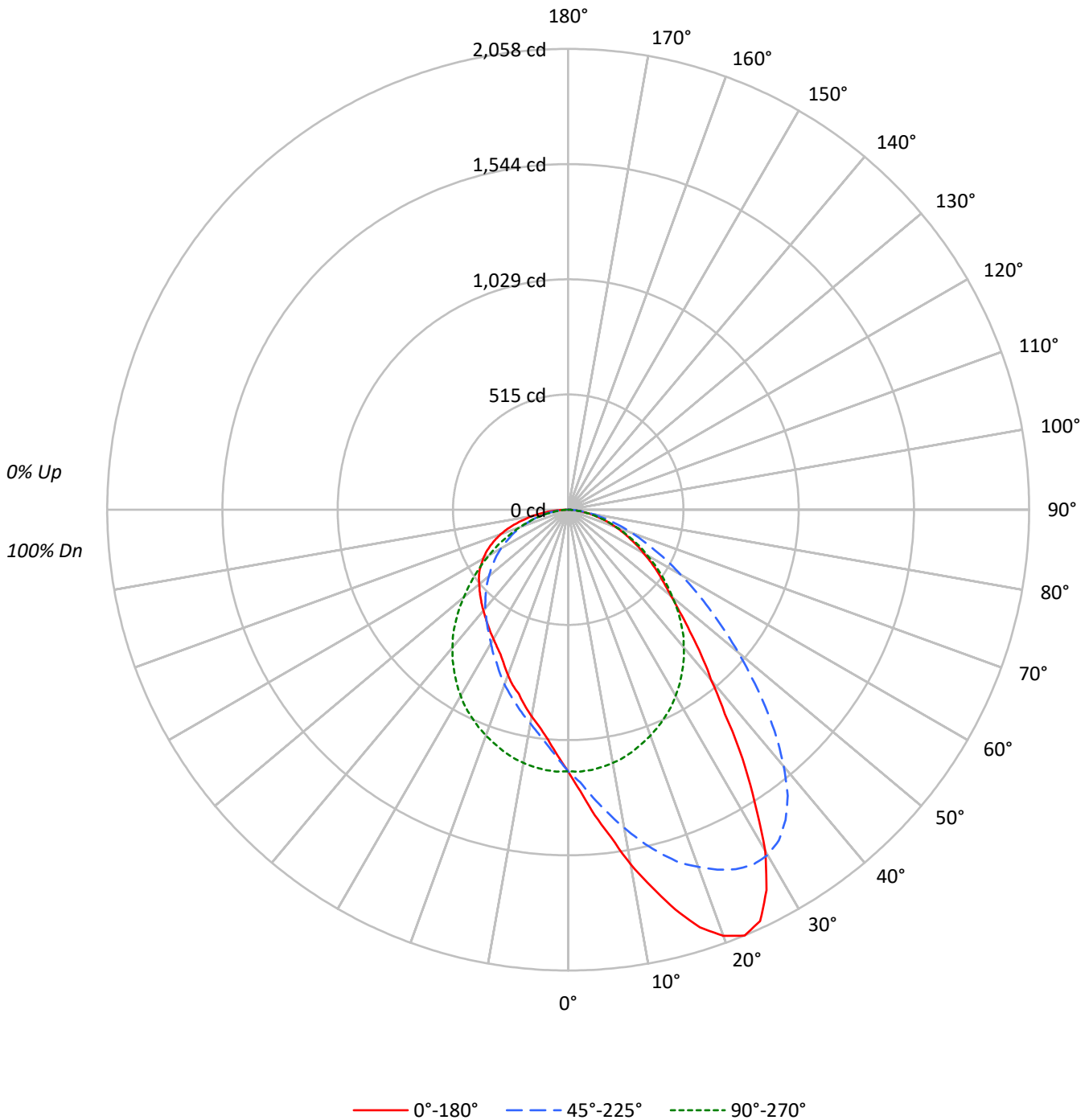
Lumens per Lamp: N/A
Luminaire Lumens: 3350.5 lumens
Efficiency: N/A
Efficacy: 106.4 lumens/watt
Spacing Criteria (0/90/45): 1.35 / 1.22 / 1.45
Luminous Opening: Rectangular (W 3.88' x L: 0.31' x H: 0')
CIE Type: Direct

Input Watts (W): 31.5
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

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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	94	92	90	91	89	87	85					85			
2	100	92	86	80	97	90	84	79	87	82	77	83	79	76	80	77	74	72					72			
3	92	81	74	67	89	80	73	67	77	71	66	74	69	64	72	67	63	61					61			
4	84	73	64	58	82	71	63	57	69	62	56	66	60	56	64	59	55	53					53			
5	78	65	56	50	75	64	56	50	62	55	49	60	54	49	58	53	48	46					46			
6	72	59	50	44	70	58	50	44	56	49	43	54	48	43	53	47	43	41					41			
7	67	53	45	39	65	53	45	39	51	44	38	50	43	38	48	42	38	36					36			
8	62	49	41	35	61	48	40	35	47	40	35	46	39	34	44	39	34	32					32			
9	58	45	37	31	57	44	37	31	43	36	31	42	36	31	41	35	31	29					29			
10	54	41	34	29	53	41	34	28	40	33	28	39	33	28	38	32	28	26					26			

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	10387	10387	10387	10387	10387
5°	12223	11524	10414	9414	9192
10°	14525	13031	10366	8747	8464
15°	17012	14615	10275	8268	7839
20°	19156	16061	10156	7854	7435
25°	19880	17378	10020	7410	6998
30°	18053	18279	9849	7078	6844
35°	14730	18352	9615	6842	6801
40°	11533	17372	9314	6680	6829
45°	9653	15666	8939	6529	6954
50°	8283	13699	8416	6385	7162
55°	7569	11871	7849	6275	7510
60°	6935	10302	7266	6172	7783
65°	6360	8928	6651	5969	8085
70°	5850	7820	5998	5777	8330
75°	5210	6731	5275	5389	8322
80°	4346	5467	4320	4981	8303
85°	3304	4090	3264	4477	7782

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 50°
 Vertical Angle: 45°
 Luminance: 16373 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	113.7	3.4
10°-20°	352.3	10.5
20°-30°	565.9	16.9
30°-40°	646.9	19.3
40°-50°	595.5	17.8
50°-60°	487.1	14.5
60°-70°	347.1	10.4
70°-80°	190.7	5.7
80°-90°	51.3	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°	1031.9	30.8
0°-40°	1678.8	50.1
0°-60°	2761.4	82.4
0°-90°	3350.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3350.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1168	1168	1168	1168	1168	
5°	1370	1292	1167	1055	1030	138
15°	1849	1588	1116	898	852	527
25°	2027	1772	1022	756	714	910
35°	1357	1691	886	630	627	844
45°	768	1246	711	519	553	599
55°	488	766	506	405	485	438
65°	302	424	316	284	384	302
75°	152	196	154	157	242	162
85°	32	40	32	44	76	39
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°	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5
2.5°	1258.2	1254.3	1252.4	1250.0	1249.6	1247.2	1242.4	1235.7	1227.1	1218.1	1218.1
5°	1369.8	1368.8	1361.6	1362.1	1353.1	1343.0	1335.4	1325.9	1307.3	1291.5	1280.6
7.5°	1476.6	1486.6	1484.2	1476.6	1463.2	1448.9	1433.7	1420.3	1386.0	1366.9	1351.2
10°	1609.2	1613.0	1606.3	1595.3	1583.4	1555.8	1535.7	1513.3	1476.1	1443.7	1415.1
12.5°	1725.5	1734.6	1722.7	1712.2	1684.1	1663.5	1643.5	1598.7	1559.6	1518.6	1477.1
15°	1848.6	1839.1	1845.3	1819.5	1799.5	1779.9	1728.9	1683.1	1638.7	1588.2	1544.8
17.5°	1955.4	1955.4	1944.0	1927.3	1906.3	1869.6	1818.5	1768.0	1718.9	1652.6	1591.1
20°	2025.1	2030.3	2017.0	1999.3	1974.0	1935.9	1895.3	1840.5	1775.1	1697.9	1628.3
22.5°	2058.4	2059.4	2054.6	2039.8	2019.3	1986.9	1945.4	1892.0	1822.8	1739.9	1666.9
25°	2027.0	2032.2	2030.8	2029.8	2019.3	2000.7	1967.4	1917.7	1854.8	1771.8	1693.1
27.5°	1916.3	1929.2	1940.2	1944.9	1956.4	1957.3	1947.3	1917.3	1865.8	1787.5	1699.8
30°	1758.9	1752.3	1781.8	1796.6	1835.7	1859.1	1875.8	1873.9	1844.3	1780.9	1697.4
32.5°	1549.1	1567.2	1588.2	1623.0	1669.3	1723.6	1764.7	1795.2	1792.3	1750.8	1681.2
35°	1357.4	1357.4	1384.1	1427.0	1476.1	1541.4	1610.1	1666.9	1701.7	1691.2	1642.1
37.5°	1149.4	1162.3	1192.8	1226.2	1286.3	1349.2	1439.9	1515.2	1588.2	1610.1	1584.9
40°	993.9	999.7	1032.1	1060.2	1121.7	1187.1	1262.9	1359.3	1443.2	1497.1	1500.4
42.5°	878.5	878.0	891.4	916.7	966.3	1024.5	1106.5	1200.9	1299.2	1375.5	1411.2
45°	767.9	766.9	780.7	806.5	841.8	893.3	964.4	1058.8	1159.4	1246.2	1302.5
47.5°	674.4	683.0	689.2	709.2	738.3	782.2	843.2	918.6	1015.4	1112.7	1188.5
50°	599.0	602.8	616.2	625.7	658.2	688.7	737.8	805.5	888.5	990.6	1072.6
52.5°	538.9	541.3	549.4	561.8	580.4	607.1	646.2	708.7	783.6	872.3	957.2
55°	488.4	486.9	492.2	500.3	516.5	538.9	567.6	615.2	680.6	766.0	844.2
57.5°	438.8	438.8	443.5	449.3	458.3	476.9	505.1	542.8	595.2	671.0	740.2
60°	390.1	393.5	395.4	401.1	408.7	422.6	443.5	473.1	517.5	579.5	648.2
62.5°	347.2	347.2	350.5	352.5	362.5	372.5	387.7	413.0	447.8	503.2	556.6
65°	302.4	305.2	305.2	309.1	317.6	325.3	337.2	356.3	384.9	424.5	474.5
67.5°	264.2	264.2	266.6	268.5	273.3	278.5	289.0	303.8	328.1	359.6	404.9
70°	225.1	226.5	225.6	228.0	230.8	236.1	243.7	256.1	273.8	300.9	334.3
72.5°	189.8	187.9	188.9	191.3	192.7	196.0	200.8	210.3	224.6	246.6	270.9
75°	151.7	150.7	154.0	153.1	155.5	158.3	162.6	169.8	180.8	196.0	214.6
77.5°	118.3	116.8	118.3	119.2	120.2	122.6	125.9	130.2	137.8	147.8	164.5
80°	84.9	84.4	85.4	86.3	86.8	90.6	91.6	95.9	99.2	106.8	114.9
82.5°	56.3	57.2	57.7	58.7	58.2	60.1	61.0	63.9	66.8	70.6	76.8
85°	32.4	31.0	32.4	32.4	32.4	34.8	34.3	36.2	38.2	40.1	44.4
87.5°	11.4	11.4	11.9	12.4	12.4	13.8	13.4	14.3	16.2	16.2	17.6
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°	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5
2.5°	1215.2	1210.0	1206.2	1195.2	1188.5	1182.3	1176.6	1170.4	1163.7	1155.1	1149.9
5°	1269.1	1257.7	1241.0	1225.7	1208.5	1193.3	1180.9	1167.1	1151.8	1136.1	1122.2
7.5°	1328.7	1307.3	1281.5	1253.4	1226.7	1204.3	1180.9	1158.9	1137.5	1116.5	1096.9
10°	1388.4	1351.2	1317.3	1278.7	1243.4	1209.5	1179.0	1148.5	1121.7	1094.1	1069.3
12.5°	1443.7	1398.8	1349.2	1301.1	1253.9	1210.0	1172.3	1135.1	1100.8	1067.9	1038.8
15°	1486.1	1429.8	1371.2	1314.0	1259.6	1213.8	1164.7	1116.5	1080.7	1040.7	1008.7
17.5°	1534.8	1468.0	1409.8	1341.1	1273.4	1199.5	1147.5	1095.0	1052.1	1013.5	981.5
20°	1567.2	1493.8	1409.8	1332.1	1262.4	1196.1	1133.7	1073.6	1028.3	983.4	944.8
22.5°	1593.0	1517.1	1424.6	1343.5	1256.2	1176.1	1108.4	1049.3	995.8	953.4	916.7
25°	1606.3	1513.8	1425.6	1327.3	1240.0	1163.2	1086.9	1021.6	967.7	920.5	889.0
27.5°	1606.8	1511.9	1407.4	1310.1	1216.7	1133.7	1058.3	993.9	933.4	888.1	850.4
30°	1604.4	1499.5	1389.3	1283.0	1189.9	1105.1	1026.4	959.6	904.3	856.1	820.3
32.5°	1589.1	1482.3	1362.1	1250.5	1149.4	1064.0	991.5	925.3	866.1	822.2	784.6
35°	1554.8	1444.6	1324.0	1209.0	1113.2	1024.5	952.9	886.1	833.2	785.5	746.9
37.5°	1510.9	1407.9	1285.3	1165.1	1061.7	977.7	910.5	847.5	792.2	748.3	709.7
40°	1455.6	1358.8	1238.1	1113.2	1009.7	924.8	861.3	802.7	755.5	710.6	673.0
42.5°	1379.8	1305.4	1181.4	1059.7	951.5	871.4	809.8	761.2	712.5	672.0	634.3
45°	1298.7	1231.0	1120.8	1000.1	896.2	813.6	755.9	711.1	669.6	628.6	598.1
47.5°	1209.0	1153.7	1051.6	933.8	831.3	758.3	701.6	661.5	623.4	591.9	561.4
50°	1102.2	1073.1	977.7	870.9	771.2	696.3	649.6	608.6	580.4	549.9	521.3
52.5°	1003.0	979.6	901.9	797.0	706.3	640.5	590.4	558.0	530.4	507.9	485.0
55°	895.2	883.3	817.5	726.8	644.8	579.0	536.1	506.5	484.6	463.6	446.9
57.5°	796.0	795.0	736.9	659.1	579.0	523.2	482.2	457.9	438.8	424.0	409.7
60°	694.4	702.5	654.8	583.8	520.3	467.9	430.7	408.7	395.9	382.0	370.1
62.5°	602.4	614.8	571.4	515.6	453.1	410.2	381.5	364.9	350.5	340.5	331.5
65°	514.1	529.9	494.6	444.5	396.8	356.3	331.9	316.2	305.2	299.5	293.3
67.5°	436.4	445.0	421.1	382.0	342.4	307.1	287.1	273.3	263.7	261.4	254.2
70°	358.7	368.7	352.0	316.2	285.7	259.9	241.8	230.8	225.1	221.8	217.0
72.5°	296.2	300.5	283.8	259.0	234.7	213.2	199.8	191.7	185.1	183.6	181.2
75°	231.8	238.0	224.6	205.6	185.5	170.3	160.2	153.6	150.2	147.8	147.8
77.5°	175.0	180.3	172.6	156.0	144.0	130.7	124.0	117.8	116.4	114.0	114.9
80°	124.5	126.9	122.6	111.1	100.6	93.5	87.8	84.4	83.9	82.0	83.9
82.5°	82.5	83.0	78.2	73.0	64.9	61.0	57.2	55.8	55.3	55.3	54.4
85°	45.8	46.7	43.4	40.1	37.2	33.9	32.9	32.0	31.0	32.4	33.4
87.5°	17.6	18.1	17.6	16.2	15.3	14.3	13.8	14.8	13.4	14.3	14.8
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):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5
2.5°	1141.8	1138.0	1132.2	1122.7	1116.0	1108.9	1106.0	1107.0	1104.1	1100.3	1101.2
5°	1111.7	1100.8	1091.2	1077.9	1065.5	1055.0	1051.6	1047.3	1043.5	1041.1	1038.8
7.5°	1079.8	1064.5	1050.2	1036.9	1022.5	1009.2	1003.9	1000.1	998.2	991.5	988.7
10°	1049.3	1031.6	1014.4	998.7	983.9	969.1	963.9	959.1	952.4	949.6	946.2
12.5°	1016.8	999.2	980.6	961.5	946.7	934.8	925.7	922.4	915.7	912.9	910.9
15°	985.3	963.9	949.1	934.3	911.9	898.5	894.7	882.8	879.0	873.3	869.4
17.5°	953.9	933.8	911.9	894.7	880.9	864.2	855.1	849.9	842.7	837.5	830.3
20°	922.9	899.5	882.3	860.9	845.6	830.3	818.9	814.1	807.9	800.8	790.8
22.5°	892.8	867.1	850.4	830.3	811.3	793.6	784.1	777.4	765.0	763.6	754.5
25°	857.5	834.6	812.7	791.7	773.1	755.5	749.3	738.8	734.5	725.9	724.5
27.5°	824.1	799.8	776.0	753.1	736.9	724.5	713.5	706.8	702.5	695.8	696.3
30°	789.3	762.6	740.2	719.2	701.6	689.6	682.5	679.2	673.0	672.0	668.7
32.5°	752.1	727.8	704.4	685.8	667.7	657.2	653.9	650.5	646.7	647.2	646.2
35°	714.9	693.5	668.7	651.5	636.7	630.5	625.3	624.3	622.9	623.8	623.8
37.5°	678.7	655.3	634.8	619.1	610.5	601.9	599.5	599.0	599.5	600.5	602.8
40°	643.4	621.9	601.9	589.0	579.5	575.7	572.3	573.8	575.7	579.0	581.9
42.5°	608.1	587.6	570.9	558.0	549.0	547.0	547.5	550.4	550.9	555.6	560.9
45°	570.9	553.2	537.5	527.5	521.8	519.4	520.3	523.2	526.5	533.2	539.9
47.5°	536.6	520.8	507.0	497.0	492.7	491.7	493.6	497.4	505.1	511.7	519.4
50°	501.7	487.4	474.5	465.5	465.0	461.7	466.0	470.7	479.8	488.9	500.3
52.5°	467.4	453.6	442.6	435.4	433.5	433.5	438.8	447.4	455.5	467.4	477.9
55°	431.6	419.2	408.7	406.3	403.5	404.9	410.6	419.2	430.7	444.0	455.5
57.5°	394.9	384.4	376.8	373.4	372.0	376.8	383.5	392.5	407.3	420.7	433.1
60°	360.1	351.0	342.9	342.0	341.0	347.2	355.3	364.9	379.6	393.0	408.3
62.5°	322.9	315.7	310.5	309.1	309.1	315.3	324.3	336.7	350.5	364.9	381.1
65°	285.2	279.0	277.6	275.7	280.0	283.8	292.8	304.8	319.5	335.3	352.5
67.5°	250.4	246.6	243.7	243.7	247.1	254.2	262.3	274.2	289.5	306.2	321.5
70°	215.6	211.8	209.4	211.8	213.7	222.3	230.8	242.3	256.6	272.8	289.0
72.5°	179.3	179.8	180.3	179.8	181.7	189.8	198.4	209.4	223.2	238.9	253.7
75°	147.4	145.0	145.5	146.4	152.6	156.9	165.5	176.0	190.8	205.1	217.5
77.5°	114.5	113.5	115.9	115.9	121.6	126.9	134.0	144.5	157.4	170.3	180.3
80°	83.9	84.4	86.3	86.8	91.6	97.3	104.9	112.1	123.5	132.6	142.1
82.5°	56.8	57.7	60.1	63.4	65.3	68.7	75.4	83.0	91.1	100.6	106.4
85°	32.9	34.3	36.2	38.6	40.5	43.9	48.6	54.8	60.6	65.8	70.6
87.5°	16.2	16.2	17.6	18.6	20.0	21.9	25.3	27.7	31.5	35.3	37.2
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: P243491

CATALOG NUMBER: S124DRP-H1020D927-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1168.5	1168.5	1168.5	1168.5
2.5°	1099.3	1098.9	1096.9	1097.9
5°	1037.3	1032.6	1032.1	1030.2
7.5°	983.9	982.5	982.5	978.7
10°	942.9	938.6	939.6	937.7
12.5°	903.8	901.4	898.5	895.7
15°	859.9	859.9	859.9	851.8
17.5°	825.6	825.1	822.7	822.2
20°	789.8	787.9	781.7	786.0
22.5°	753.6	752.1	746.9	747.8
25°	719.7	718.3	717.3	713.5
27.5°	690.6	691.1	692.0	689.6
30°	668.7	667.2	669.1	666.8
32.5°	648.2	648.2	646.2	646.7
35°	624.8	626.7	627.2	626.7
37.5°	604.3	606.7	608.6	606.7
40°	585.2	587.1	589.0	588.5
42.5°	565.2	568.5	569.9	571.4
45°	546.1	550.4	552.8	553.2
47.5°	526.5	531.8	536.6	536.1
50°	507.5	514.1	518.4	517.9
52.5°	488.4	495.1	500.3	502.7
55°	466.9	475.5	480.3	484.6
57.5°	445.5	455.0	459.8	461.7
60°	421.6	430.2	436.4	437.8
62.5°	394.9	404.0	412.1	414.0
65°	367.2	377.3	383.5	384.4
67.5°	335.3	344.8	351.0	353.9
70°	302.4	309.5	316.2	320.5
72.5°	265.7	274.2	280.4	283.3
75°	227.5	237.0	240.4	242.3
77.5°	187.9	193.6	198.9	199.4
80°	148.3	155.5	157.4	162.2
82.5°	109.2	115.9	114.5	116.4
85°	72.0	74.4	75.8	76.3
87.5°	38.2	39.6	40.5	41.0
90°	0.0	0.0	0.0	0.0



TEST NUMBER: P243491
 CATALOG NUMBER: S124DRP-H1020D927-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	18.70	20.27	19.06	20.59	20.90	18.99	20.56	19.35	20.87	21.19
	3H	20.14	21.56	20.52	21.88	22.25	20.37	21.79	20.75	22.12	22.48
	4H	20.66	21.99	21.06	22.34	22.72	20.86	22.19	21.26	22.54	22.91
	6H	21.01	22.24	21.42	22.60	22.99	21.17	22.40	21.58	22.77	23.16
	8H	21.10	22.28	21.53	22.67	23.07	21.26	22.43	21.68	22.82	23.22
	12H	21.15	22.28	21.58	22.66	23.09	21.30	22.43	21.73	22.81	23.24
4H	2H	19.84	21.17	20.23	21.51	21.89	19.78	21.11	20.18	21.46	21.83
	3H	21.34	22.45	21.75	22.85	23.25	21.48	22.59	21.89	22.99	23.39
	4H	21.91	22.91	22.34	23.33	23.77	22.08	23.08	22.51	23.49	23.93
	6H	22.33	23.20	22.78	23.64	24.10	22.48	23.35	22.93	23.79	24.25
	8H	22.44	23.26	22.90	23.70	24.17	22.58	23.40	23.05	23.84	24.31
	12H	22.52	23.25	23.00	23.72	24.20	22.65	23.38	23.13	23.86	24.33
8H	4H	22.34	23.16	22.80	23.60	24.07	22.42	23.23	22.88	23.68	24.14
	6H	22.84	23.51	23.33	24.00	24.48	22.95	23.63	23.44	24.12	24.59
	8H	23.00	23.61	23.51	24.12	24.60	23.11	23.72	23.62	24.23	24.71
	12H	23.12	23.65	23.62	24.15	24.71	23.23	23.76	23.74	24.26	24.82
12H	4H	22.38	23.11	22.86	23.59	24.06	22.45	23.18	22.93	23.66	24.13
	6H	22.90	23.51	23.41	24.02	24.51	23.01	23.62	23.52	24.13	24.61
	8H	23.12	23.65	23.62	24.15	24.71	23.23	23.77	23.74	24.26	24.82