

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: P242759

Luminaire Tested: S124RDRP-S1020D935-X4F0-XX-UDD-A-W

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2024
Report Number: P242759
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-31)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: S124RDRP-S1020D935-X4F0-XX-UDD-A-W
Description: DEFINE 4 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER
STANDARD LIGHT ENGINE
Light Source: (92) 3500K CCT, 90 CRI LEDS
Ballast/Driver: -

Summary

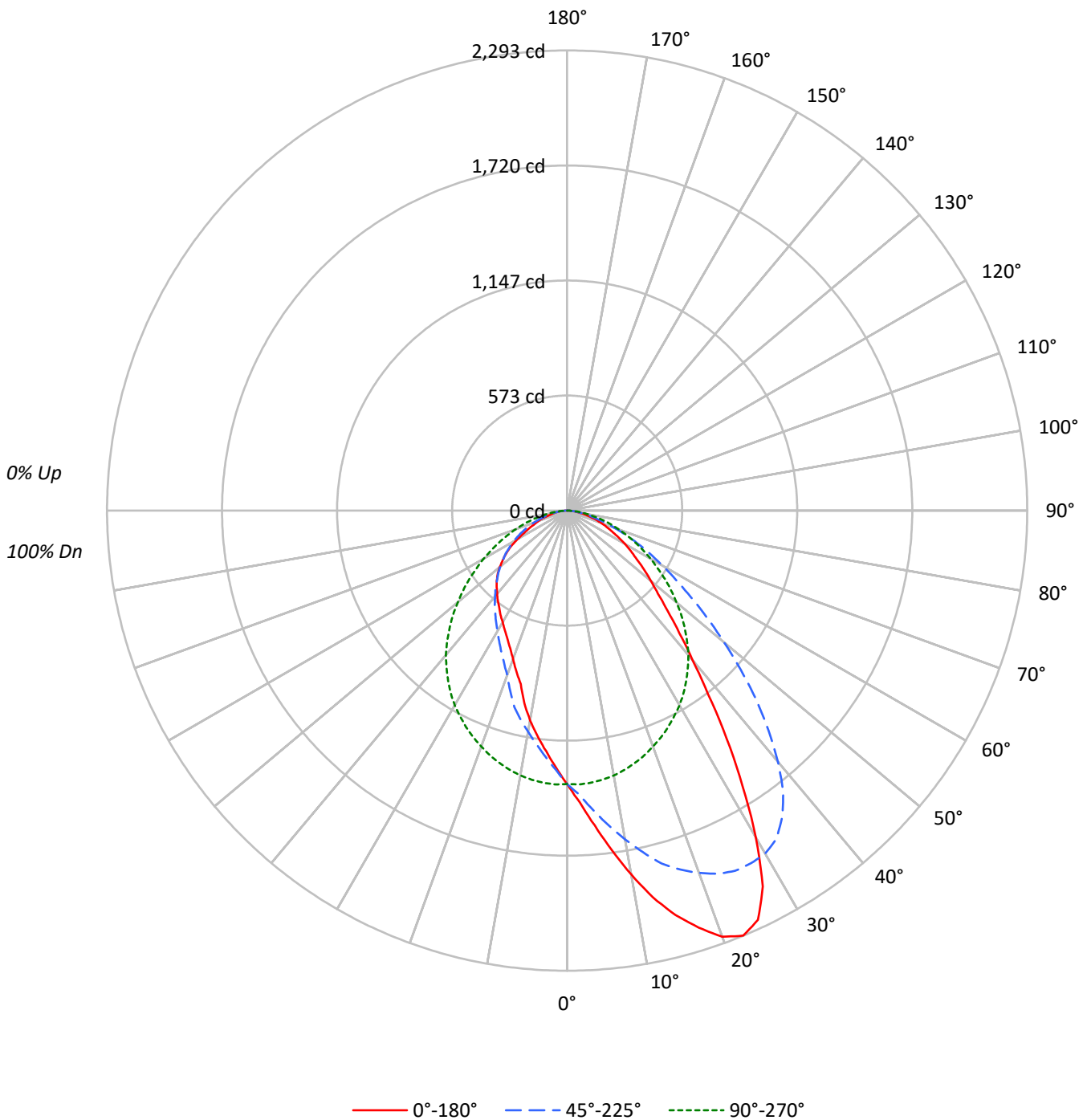
Lumens per Lamp: N/A
Luminaire Lumens: 3444.5 lumens
Efficiency: N/A
Efficacy: 99.0 lumens/watt
Spacing Criteria (0/90/45): 1.27 / 1.22 / 1.39
Luminous Opening: Rectangular (W 3.88' x L: 0.31' x H: 0')
CIE Type: Direct

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	110	106	102	98	107	103	100	97	99	96	94	95	93	91	92	90	88					86				
2	101	93	87	82	98	92	86	81	88	83	79	85	81	77	82	79	76					74				
3	93	83	76	70	90	81	75	69	79	73	68	76	71	67	73	69	65					63				
4	85	74	66	60	83	73	65	59	71	64	59	68	63	58	66	61	57					55				
5	79	67	58	52	77	66	58	52	64	57	51	62	56	51	60	55	50					48				
6	73	61	52	46	71	60	52	46	58	51	46	56	50	45	55	49	45					43				
7	68	55	47	41	66	54	47	41	53	46	41	52	45	40	50	44	40					38				
8	64	51	42	37	62	50	42	37	49	42	37	47	41	36	46	40	36					34				
9	59	47	39	33	58	46	38	33	45	38	33	44	38	33	43	37	33					31				
10	56	43	35	30	55	43	35	30	42	35	30	41	34	30	40	34	30					28				

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	12112	12112	12112	12112	12112
5°	14049	13374	12148	10992	10738
10°	16620	15015	12096	10104	9584
15°	19198	16763	11983	9336	8235
20°	21375	18176	11830	8257	7447
25°	22066	19427	11679	7608	6914
30°	19317	20263	11496	7128	6593
35°	15037	20273	11224	6768	6398
40°	11275	18965	10912	6478	6294
45°	8903	16736	10414	6231	6239
50°	7516	14083	9839	6021	6058
55°	6551	11673	9205	5794	5734
60°	5895	9769	8549	5465	5076
65°	5195	8140	7841	5092	4364
70°	4681	6505	7106	4595	3937
75°	3922	5052	6299	4035	3355
80°	3317	3824	5370	3343	3148
85°	2794	3019	4202	2968	2794

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 55°
 Vertical Angle: 45°
 Luminance: 17874 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	131.9	3.8
10°-20°	398.4	11.6
20°-30°	624.1	18.1
30°-40°	693.1	20.1
40°-50°	614.2	17.8
50°-60°	478.6	13.9
60°-70°	313.1	9.1
70°-80°	153.6	4.5
80°-90°	37.4	1.1
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°	1154.5	33.5
0°-40°	1847.6	53.6
0°-60°	2940.4	85.4
0°-90°	3444.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3444.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1363	1363	1363	1363	1363	
5°	1574	1499	1362	1232	1203	159
15°	2086	1822	1302	1014	895	593
25°	2250	1981	1191	776	705	1005
35°	1386	1868	1034	624	590	867
45°	708	1331	828	496	496	558
55°	423	753	594	374	370	384
65°	247	387	373	242	208	248
75°	114	147	183	118	98	125
85°	27	30	41	29	27	32
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°	1362.6	1362.6	1362.6	1362.6	1362.6	1362.6	1362.6	1362.6	1362.6	1362.6	1362.6
2.5°	1455.9	1460.9	1455.9	1455.4	1449.9	1448.2	1446.1	1438.9	1425.7	1418.1	1419.7
5°	1574.5	1588.2	1580.6	1579.5	1567.4	1555.3	1547.6	1530.1	1511.4	1498.8	1488.3
7.5°	1706.3	1714.5	1709.0	1703.0	1682.1	1675.5	1657.4	1636.6	1605.3	1581.7	1560.2
10°	1841.3	1847.9	1845.7	1831.4	1817.2	1788.1	1771.6	1739.2	1696.9	1663.5	1632.2
12.5°	1974.2	1981.3	1957.7	1962.1	1931.9	1910.5	1882.0	1839.1	1788.6	1743.1	1701.9
15°	2086.2	2077.4	2077.4	2066.4	2036.2	2004.4	1977.5	1934.7	1873.2	1821.6	1767.2
17.5°	2178.4	2182.3	2177.9	2149.9	2127.9	2095.5	2047.2	1998.3	1945.1	1875.9	1822.1
20°	2259.7	2259.7	2254.7	2237.2	2206.4	2171.3	2118.0	2063.7	1991.2	1921.5	1858.9
22.5°	2292.6	2294.8	2288.8	2275.0	2248.1	2214.1	2170.7	2115.3	2040.1	1959.4	1878.1
25°	2249.8	2260.2	2261.3	2257.5	2249.2	2228.4	2189.4	2132.8	2065.9	1980.8	1897.3
27.5°	2111.4	2125.2	2130.7	2142.7	2165.2	2173.5	2168.5	2130.7	2065.9	1981.9	1899.0
30°	1882.0	1892.9	1928.6	1975.3	2011.5	2044.5	2073.0	2080.7	2047.8	1974.2	1885.8
32.5°	1627.2	1643.1	1678.8	1729.9	1796.3	1857.8	1930.8	1969.8	1976.9	1940.1	1860.0
35°	1385.7	1396.6	1429.6	1482.3	1554.8	1637.7	1739.2	1818.3	1872.1	1868.2	1818.3
37.5°	1154.0	1169.4	1202.8	1246.2	1317.6	1423.5	1519.6	1625.6	1722.2	1769.4	1744.2
40°	971.7	972.3	1004.7	1049.7	1115.6	1205.0	1312.1	1432.9	1543.8	1634.4	1651.9
42.5°	827.9	827.9	846.6	896.0	938.8	1021.7	1122.7	1242.4	1376.9	1485.0	1538.8
45°	708.2	713.1	730.7	759.8	797.1	868.5	950.3	1061.8	1207.2	1331.3	1408.7
47.5°	613.8	622.6	633.0	659.3	690.1	740.0	809.8	914.1	1034.9	1172.7	1279.7
50°	543.5	544.6	558.9	572.1	597.9	635.7	695.0	778.5	887.2	1018.4	1140.8
52.5°	483.1	482.6	489.7	507.3	527.0	554.5	599.5	673.6	766.9	881.1	1008.5
55°	422.7	425.5	432.1	445.2	461.2	482.0	519.9	577.0	652.8	753.2	868.0
57.5°	376.6	378.3	384.3	389.2	404.6	420.0	450.7	491.9	558.3	642.3	754.9
60°	331.6	332.1	333.8	342.0	353.6	367.8	387.0	420.5	474.3	549.5	634.1
62.5°	287.7	288.8	291.5	297.0	305.2	314.0	334.3	359.6	401.9	463.4	537.5
65°	247.0	247.6	251.4	253.6	260.8	269.6	284.4	302.5	333.2	387.0	444.7
67.5°	213.0	213.0	213.0	216.3	221.8	227.8	237.7	253.1	277.8	312.4	366.2
70°	180.1	180.1	181.2	182.8	185.6	190.5	195.4	206.4	223.4	250.3	289.3
72.5°	149.3	149.9	151.0	151.0	152.1	155.9	159.2	165.2	176.8	195.4	225.1
75°	114.2	115.8	118.6	120.8	123.5	123.0	126.8	131.2	135.1	147.1	165.2
77.5°	90.0	88.9	88.9	91.1	91.7	92.2	95.0	98.8	102.1	108.7	115.3
80°	64.8	64.8	66.4	67.0	66.4	67.0	69.7	71.4	72.5	74.7	80.7
82.5°	45.0	46.1	45.0	45.6	46.1	46.7	48.9	48.9	50.0	50.5	52.2
85°	27.4	28.0	28.5	27.4	27.4	27.4	28.5	29.1	30.2	29.6	30.7
87.5°	12.1	11.5	12.1	12.1	12.6	12.1	12.6	13.7	12.6	13.2	13.2
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):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1362.6	1362.6	1362.6	1362.6	1362.6	1362.6	1362.6	1362.6	1362.6	1362.6	1362.6
2.5°	1414.2	1406.5	1402.7	1393.9	1383.5	1378.0	1373.0	1365.9	1356.6	1346.7	1339.5
5°	1475.2	1462.0	1445.5	1425.7	1408.2	1391.2	1376.3	1361.5	1344.5	1326.9	1309.4
7.5°	1535.5	1511.9	1486.7	1456.5	1427.4	1400.5	1376.3	1352.7	1325.8	1301.7	1279.2
10°	1599.2	1564.1	1525.1	1483.9	1442.8	1407.1	1371.9	1340.1	1305.0	1273.7	1247.3
12.5°	1650.8	1608.0	1559.1	1505.3	1453.7	1408.7	1367.0	1323.1	1281.9	1247.3	1210.0
15°	1709.0	1652.5	1589.3	1527.9	1463.6	1404.9	1350.5	1302.2	1256.7	1208.9	1175.4
17.5°	1749.1	1683.8	1609.1	1537.7	1464.2	1396.1	1334.6	1278.6	1226.5	1178.7	1139.2
20°	1784.2	1710.1	1625.0	1541.0	1455.9	1381.8	1314.3	1250.6	1196.3	1143.6	1102.4
22.5°	1804.0	1720.0	1625.0	1536.1	1447.2	1365.4	1289.6	1222.6	1162.2	1109.5	1062.9
25°	1805.1	1717.3	1622.3	1521.3	1424.6	1339.5	1262.7	1190.8	1124.9	1072.2	1023.9
27.5°	1800.7	1699.1	1603.6	1501.0	1401.6	1311.0	1231.4	1155.1	1089.8	1033.8	984.3
30°	1787.5	1676.6	1572.3	1464.7	1363.7	1277.5	1192.4	1120.0	1051.3	992.6	942.6
32.5°	1759.0	1649.2	1535.0	1424.1	1321.4	1231.9	1152.3	1079.3	1012.3	952.0	898.2
35°	1719.5	1608.0	1486.1	1373.0	1272.6	1180.3	1104.6	1034.3	970.1	905.8	849.8
37.5°	1673.9	1557.5	1437.3	1313.2	1213.3	1125.4	1054.6	987.1	924.5	865.8	803.7
40°	1603.6	1499.9	1374.7	1251.7	1148.5	1064.5	1000.3	940.4	877.3	819.1	757.1
42.5°	1518.5	1434.0	1307.2	1183.6	1082.1	1001.9	943.2	885.0	829.0	773.0	707.7
45°	1421.9	1354.9	1236.3	1117.8	1015.1	934.9	880.0	828.4	777.9	724.1	663.2
47.5°	1314.3	1264.9	1161.7	1037.6	941.5	868.0	815.3	772.4	728.0	673.6	618.7
50°	1201.2	1172.1	1073.3	962.4	871.8	805.4	751.0	711.5	675.8	624.2	576.4
52.5°	1080.4	1068.3	988.7	883.9	797.1	732.4	687.9	653.3	617.1	576.4	532.5
55°	957.4	965.7	894.9	803.2	720.8	665.9	623.7	594.0	563.3	527.0	492.4
57.5°	829.5	860.8	808.1	725.2	645.6	594.0	561.6	535.3	509.5	478.7	447.4
60°	717.0	742.2	715.3	644.5	577.0	529.8	500.1	480.9	455.1	427.7	405.2
62.5°	607.2	634.6	621.5	567.7	506.2	467.2	441.9	424.4	406.8	383.7	360.1
65°	518.8	536.4	528.7	489.2	444.7	410.1	385.9	372.8	355.2	337.6	316.8
67.5°	415.0	449.6	444.1	422.2	379.4	351.9	334.9	322.8	306.3	293.2	278.3
70°	326.7	357.9	357.4	340.4	319.5	294.3	283.3	273.4	259.1	246.5	235.0
72.5°	252.5	280.5	286.0	273.9	261.3	243.8	233.3	227.3	213.6	205.9	197.1
75°	187.2	208.1	213.6	213.6	207.0	197.1	187.8	183.4	173.5	165.8	160.3
77.5°	131.8	146.0	154.3	155.9	156.5	152.6	143.8	140.5	132.9	130.1	124.1
80°	86.7	95.5	105.4	108.7	111.4	110.3	107.1	104.9	97.7	95.0	92.8
82.5°	53.3	57.1	64.8	73.0	71.4	75.2	72.5	70.8	65.9	65.3	63.1
85°	31.3	31.8	32.9	37.9	40.6	41.7	42.3	41.2	39.5	39.5	35.7
87.5°	13.2	12.6	13.7	13.7	14.3	16.5	18.1	18.7	17.0	15.4	13.7
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°	1362.6	1362.6	1362.6	1362.6	1362.6	1362.6	1362.6	1362.6	1362.6	1362.6	1362.6
2.5°	1331.9	1326.4	1319.2	1311.0	1301.1	1292.3	1288.5	1291.8	1293.4	1289.0	1288.5
5°	1297.3	1283.6	1272.6	1256.1	1242.9	1231.9	1224.3	1221.0	1222.1	1213.3	1211.1
7.5°	1258.8	1244.0	1225.9	1207.2	1189.7	1174.3	1166.1	1162.2	1152.9	1149.0	1143.0
10°	1222.1	1200.1	1182.5	1159.5	1138.6	1119.4	1110.1	1102.4	1093.0	1088.7	1079.3
12.5°	1184.2	1157.8	1138.1	1113.9	1092.5	1068.3	1059.6	1043.6	1027.7	1017.3	1004.7
15°	1149.0	1118.3	1094.7	1066.1	1040.9	1014.5	990.9	964.6	954.7	933.8	921.8
17.5°	1107.3	1075.5	1049.1	1012.3	974.5	942.6	916.3	888.8	874.0	859.7	853.7
20°	1066.1	1037.6	997.0	952.5	909.1	872.9	852.6	836.1	819.7	810.3	803.7
22.5°	1027.2	988.7	939.9	891.0	847.6	821.3	804.8	787.8	775.2	766.4	757.1
25°	982.7	934.9	885.0	830.1	800.4	775.7	757.1	743.3	735.1	723.6	719.2
27.5°	939.3	881.7	825.1	787.8	757.1	733.5	716.4	706.6	695.6	687.9	681.9
30°	887.7	829.0	779.6	744.4	713.1	694.5	681.3	669.2	661.0	655.0	650.6
32.5°	836.7	777.9	738.4	700.0	676.9	658.8	644.5	636.3	630.2	622.0	619.8
35°	787.8	735.7	699.4	665.4	640.1	623.7	612.7	603.3	597.9	595.7	594.0
37.5°	740.0	696.7	656.6	629.1	605.5	592.9	578.6	574.2	570.4	565.5	567.7
40°	695.0	655.0	620.4	590.7	572.6	558.3	550.6	545.2	541.9	541.9	541.9
42.5°	656.0	617.1	583.6	557.8	539.7	528.1	519.3	515.0	514.4	513.9	517.2
45°	615.4	579.2	545.2	523.2	507.8	495.7	490.8	487.0	487.0	489.2	489.7
47.5°	574.8	540.8	513.3	488.1	473.8	466.1	461.7	459.5	459.5	462.3	464.5
50°	538.0	504.5	477.6	455.7	442.5	435.4	431.5	430.4	431.5	431.5	435.4
52.5°	497.9	468.8	442.5	424.9	409.6	403.0	401.3	399.7	400.2	402.4	403.5
55°	459.0	432.1	406.8	389.2	378.3	373.9	368.9	369.5	368.4	369.5	369.5
57.5°	419.4	395.8	371.1	356.8	347.5	340.9	335.4	337.1	335.4	335.4	334.9
60°	381.6	355.2	336.5	323.9	312.9	307.4	302.5	303.6	301.9	300.8	298.7
62.5°	340.4	319.5	301.9	289.9	281.6	275.0	270.1	268.5	264.1	259.7	254.2
65°	300.8	282.7	266.8	255.3	247.0	242.1	238.3	235.0	226.7	218.0	213.6
67.5°	261.9	248.7	233.3	223.4	216.9	210.3	203.1	197.1	188.9	183.4	180.6
70°	224.5	211.9	199.3	190.0	182.8	176.8	168.5	164.7	159.2	157.0	154.3
72.5°	188.9	177.3	165.8	157.6	149.9	145.5	139.4	135.6	134.0	133.4	130.7
75°	152.6	143.3	134.5	126.8	120.8	117.5	114.7	112.0	110.9	106.0	103.2
77.5°	117.5	110.9	105.4	99.4	95.5	93.3	87.3	83.4	81.3	78.5	78.0
80°	86.7	82.3	76.9	73.6	67.5	65.3	63.1	62.6	62.0	61.5	60.9
82.5°	59.8	55.4	50.0	48.3	47.8	46.7	45.6	45.0	44.5	45.0	45.0
85°	32.9	30.7	30.7	30.2	29.6	29.1	28.5	28.5	28.0	28.5	28.0
87.5°	13.7	13.2	13.2	12.1	12.6	12.6	12.1	12.1	12.6	11.5	11.5
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: P242759

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CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1362.6	1362.6	1362.6	1362.6
2.5°	1285.2	1286.3	1282.5	1281.4
5°	1206.7	1205.6	1202.8	1203.4
7.5°	1138.6	1134.8	1137.5	1133.1
10°	1077.1	1071.1	1066.1	1061.8
12.5°	993.1	988.2	981.1	983.8
15°	914.6	906.4	893.2	894.9
17.5°	844.4	845.5	837.8	840.0
20°	792.2	788.4	788.9	787.3
22.5°	756.0	751.0	746.1	742.2
25°	714.2	710.9	706.0	704.9
27.5°	677.5	676.9	674.7	672.0
30°	646.2	645.1	644.0	642.3
32.5°	618.2	617.6	616.5	617.1
35°	591.8	591.3	590.2	589.6
37.5°	567.1	568.8	567.7	567.7
40°	541.3	541.9	543.0	542.4
42.5°	519.9	519.9	521.5	519.3
45°	493.5	496.8	496.3	496.3
47.5°	465.5	469.4	469.9	469.9
50°	438.1	437.0	438.6	438.1
52.5°	404.6	405.2	404.6	404.1
55°	370.0	370.6	369.5	370.0
57.5°	333.2	331.0	332.7	331.6
60°	293.2	288.8	287.7	285.5
62.5°	248.1	245.4	241.0	243.8
65°	209.2	207.0	205.3	207.5
67.5°	177.9	176.8	176.8	175.7
70°	154.3	152.6	152.6	151.5
72.5°	130.1	128.5	129.0	128.5
75°	99.9	97.2	97.2	97.7
77.5°	78.0	77.4	78.5	76.9
80°	60.9	60.4	59.8	61.5
82.5°	43.9	43.9	43.9	46.1
85°	28.5	27.4	28.5	27.4
87.5°	12.6	12.1	11.5	12.1
90°	0.0	0.0	0.0	0.0

TEST NUMBER: P242759

CATALOG NUMBER: S124RDRP-S1020D935-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	17.77	19.29	18.13	19.60	19.92	19.59	21.11	19.95	21.42	21.74
	3H	18.99	20.36	19.37	20.69	21.05	21.04	22.41	21.42	22.73	23.09
	4H	19.43	20.71	19.83	21.06	21.44	21.56	22.84	21.96	23.18	23.56
	6H	19.70	20.88	20.11	21.25	21.64	21.91	23.09	22.32	23.46	23.85
	8H	19.78	20.91	20.21	21.30	21.70	22.01	23.14	22.44	23.53	23.93
	12H	19.83	20.91	20.26	21.29	21.72	22.07	23.15	22.50	23.53	23.96
4H	2H	19.03	20.31	19.43	20.66	21.04	20.09	21.37	20.49	21.72	22.10
	3H	20.26	21.33	20.67	21.72	22.13	21.83	22.90	22.24	23.30	23.70
	4H	20.73	21.68	21.16	22.10	22.54	22.46	23.42	22.89	23.83	24.27
	6H	21.05	21.88	21.51	22.32	22.78	22.92	23.75	23.37	24.19	24.65
	8H	21.14	21.92	21.61	22.36	22.83	23.05	23.83	23.52	24.27	24.74
	12H	21.21	21.91	21.70	22.38	22.86	23.14	23.84	23.63	24.31	24.79
8H	4H	21.13	21.91	21.59	22.35	22.82	22.57	23.35	23.04	23.79	24.26
	6H	21.52	22.16	22.01	22.65	23.12	23.12	23.76	23.61	24.25	24.73
	8H	21.65	22.23	22.17	22.74	23.22	23.31	23.88	23.82	24.39	24.88
	12H	21.76	22.27	22.27	22.76	23.33	23.45	23.96	23.96	24.45	25.02
12H	4H	21.17	21.86	21.65	22.34	22.81	22.56	23.25	23.04	23.73	24.20
	6H	21.56	22.14	22.08	22.65	23.14	23.10	23.68	23.62	24.19	24.68
	8H	21.74	22.25	22.25	22.74	23.31	23.33	23.84	23.84	24.33	24.90