

Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State
Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: NEO-RAY

Report Number: P242739

Luminaire Tested: **S124RDR-S1020D830-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242739
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 (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S124RDR-S1020D830-X4F0-XX-UDD-A-W
Description: DEFINE 4 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER
STANDARD LIGHT ENGINE
Light Source: (92) 3000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3770.7 lumens
Efficiency: N/A
Efficacy: 108.4 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

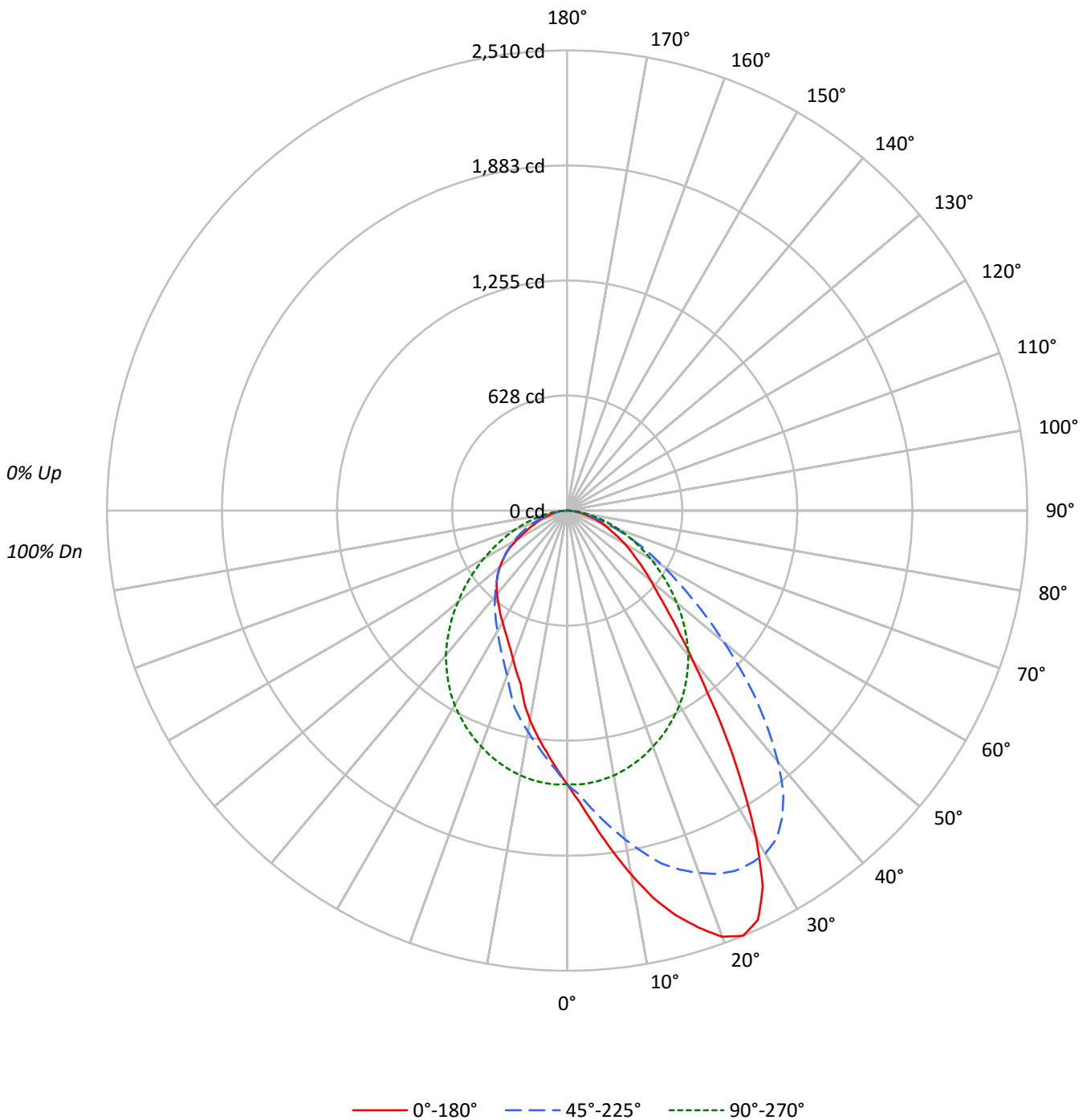
Input Watts (W): 34.8
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	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°	90°	180°
0°	13260	13260	13260
5°	15379	13300	11755
10°	18194	13241	10491
15°	21017	13118	9015
20°	23400	12951	8152
25°	24156	12785	7569
30°	21146	12584	7218
35°	16460	12287	7005
40°	12344	11946	6890
45°	9746	11400	6830
50°	8228	10771	6632
55°	7172	10078	6278
60°	6453	9360	5556
65°	5687	8584	4779
70°	5123	7779	4312
75°	4293	6893	3675
80°	3629	5877	3445
85°	3060	4600	3060



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	144.4	3.8
10°-20°	436.2	11.6
20°-30°	683.2	18.1
30°-40°	758.7	20.1
40°-50°	672.4	17.8
50°-60°	524.0	13.9
60°-70°	342.7	9.1
70°-80°	168.2	4.5
80°-90°	41.0	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°	1263.8	33.5
0°-40°	2022.6	53.6
0°-60°	3218.9	85.4
0°-90°	3770.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3770.7	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1492	1492	1492	1492	1492	
5°	1724	1641	1490	1349	1317	174
15°	2284	1994	1426	1111	980	650
25°	2463	2168	1304	849	772	1100
35°	1517	2045	1132	683	646	949
45°	775	1457	907	543	543	611
55°	463	825	650	409	405	420
65°	270	424	408	265	227	272
75°	125	161	201	129	107	137
85°	30	32	45	32	30	35
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°	1491.7	1491.7	1491.7	1491.7	1491.7	1491.7	1491.7	1491.7	1491.7	1491.7	1491.7
2.5°	1593.8	1599.2	1593.8	1593.2	1587.2	1585.4	1583.0	1575.2	1560.8	1552.4	1554.2
5°	1723.6	1738.7	1730.2	1729.0	1715.8	1702.6	1694.2	1675.0	1654.5	1640.7	1629.3
7.5°	1867.9	1876.9	1870.9	1864.3	1841.4	1834.2	1814.4	1791.5	1757.3	1731.4	1708.0
10°	2015.7	2022.9	2020.5	2004.9	1989.3	1957.4	1939.4	1903.9	1857.7	1821.0	1786.7
12.5°	2161.2	2169.0	2143.1	2147.9	2114.9	2091.4	2060.2	2013.3	1958.0	1908.1	1863.1
15°	2283.8	2274.1	2274.1	2262.1	2229.1	2194.2	2164.8	2117.9	2050.6	1994.1	1934.6
17.5°	2384.7	2388.9	2384.1	2353.5	2329.4	2294.0	2241.1	2187.6	2129.3	2053.6	1994.7
20°	2473.7	2473.7	2468.3	2449.0	2415.4	2376.9	2318.6	2259.1	2179.8	2103.5	2034.9
22.5°	2509.7	2512.1	2505.5	2490.5	2461.0	2423.8	2376.3	2315.6	2233.3	2144.9	2056.0
25°	2462.9	2474.3	2475.5	2471.3	2462.3	2439.4	2396.7	2334.8	2261.5	2168.4	2077.0
27.5°	2311.4	2326.4	2332.4	2345.7	2370.3	2379.3	2373.9	2332.4	2261.5	2169.6	2078.8
30°	2060.2	2072.2	2111.3	2162.4	2202.0	2238.1	2269.3	2277.7	2241.7	2161.2	2064.4
32.5°	1781.3	1798.8	1837.8	1893.7	1966.4	2033.7	2113.7	2156.3	2164.2	2123.9	2036.2
35°	1516.9	1528.9	1565.0	1622.7	1702.0	1792.8	1903.9	1990.5	2049.4	2045.2	1990.5
37.5°	1263.3	1280.1	1316.8	1364.2	1442.4	1558.4	1663.5	1779.5	1885.3	1937.0	1909.3
40°	1063.8	1064.4	1099.8	1149.1	1221.2	1319.2	1436.4	1568.6	1690.0	1789.1	1808.4
42.5°	906.3	906.3	926.7	980.8	1027.7	1118.4	1229.0	1360.0	1507.3	1625.7	1684.6
45°	775.3	780.7	799.9	831.8	872.6	950.8	1040.3	1162.3	1321.6	1457.4	1542.1
47.5°	671.9	681.5	692.9	721.8	755.4	810.1	886.5	1000.6	1132.9	1283.7	1400.9
50°	595.0	596.2	611.8	626.2	654.5	695.9	760.9	852.2	971.2	1114.8	1248.9
52.5°	528.9	528.3	536.1	555.3	576.9	607.0	656.3	737.4	839.6	964.6	1104.0
55°	462.8	465.8	473.0	487.4	504.8	527.7	569.1	631.6	714.6	824.6	950.2
57.5°	412.3	414.1	420.7	426.1	442.9	459.8	493.4	538.5	611.2	703.2	826.4
60°	363.0	363.6	365.4	374.4	387.0	402.7	423.7	460.4	519.3	601.6	694.1
62.5°	314.9	316.1	319.1	325.1	334.1	343.8	366.0	393.6	439.9	507.2	588.4
65°	270.4	271.0	275.3	277.7	285.5	295.1	311.3	331.1	364.8	423.7	486.8
67.5°	233.2	233.2	233.2	236.8	242.8	249.4	260.2	277.1	304.1	342.0	400.9
70°	197.1	197.1	198.3	200.1	203.1	208.5	214.0	226.0	244.6	274.1	316.7
72.5°	163.5	164.1	165.3	165.3	166.5	170.7	174.3	180.9	193.5	214.0	246.4
75°	125.0	126.8	129.8	132.2	135.2	134.6	138.8	143.6	147.8	161.1	180.9
77.5°	98.6	97.4	97.4	99.8	100.4	101.0	104.0	108.2	111.8	119.0	126.2
80°	70.9	70.9	72.7	73.3	72.7	73.3	76.3	78.1	79.3	81.7	88.3
82.5°	49.3	50.5	49.3	49.9	50.5	51.1	53.5	53.5	54.7	55.3	57.1
85°	30.0	30.7	31.3	30.0	30.0	30.0	31.3	31.9	33.1	32.5	33.7
87.5°	13.2	12.6	13.2	13.2	13.8	13.2	13.8	15.0	13.8	14.4	14.4
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°	1491.7	1491.7	1491.7	1491.7	1491.7	1491.7	1491.7	1491.7	1491.7	1491.7	1491.7
2.5°	1548.1	1539.7	1535.5	1525.9	1514.5	1508.5	1503.1	1495.3	1485.0	1474.2	1466.4
5°	1614.9	1600.4	1582.4	1560.8	1541.5	1522.9	1506.7	1490.5	1471.8	1452.6	1433.4
7.5°	1681.0	1655.1	1627.5	1594.4	1562.6	1533.1	1506.7	1480.8	1451.4	1424.9	1400.3
10°	1750.7	1712.2	1669.5	1624.5	1579.4	1540.3	1501.9	1467.0	1428.6	1394.3	1365.4
12.5°	1807.2	1760.3	1706.8	1647.9	1591.4	1542.1	1496.5	1448.4	1403.3	1365.4	1324.6
15°	1870.9	1809.0	1739.9	1672.6	1602.2	1537.9	1478.4	1425.5	1375.7	1323.4	1286.7
17.5°	1914.8	1843.2	1761.5	1683.4	1602.8	1528.3	1461.0	1399.7	1342.6	1290.3	1247.1
20°	1953.2	1872.1	1778.9	1687.0	1593.8	1512.7	1438.8	1369.1	1309.6	1251.9	1206.8
22.5°	1974.8	1882.9	1778.9	1681.6	1584.2	1494.7	1411.7	1338.4	1272.3	1214.6	1163.5
25°	1976.1	1879.9	1775.9	1665.3	1559.6	1466.4	1382.3	1303.5	1231.4	1173.7	1120.8
27.5°	1971.2	1860.1	1755.5	1643.1	1534.3	1435.2	1348.0	1264.5	1193.0	1131.7	1077.6
30°	1956.8	1835.4	1721.2	1603.4	1492.9	1398.5	1305.3	1226.0	1150.9	1086.6	1031.9
32.5°	1925.6	1805.4	1680.4	1559.0	1446.6	1348.6	1261.5	1181.5	1108.2	1042.1	983.2
35°	1882.3	1760.3	1626.9	1503.1	1393.1	1292.1	1209.2	1132.3	1061.9	991.6	930.3
37.5°	1832.4	1705.0	1573.4	1437.6	1328.2	1232.0	1154.5	1080.6	1012.1	947.8	879.8
40°	1755.5	1641.9	1504.9	1370.3	1257.3	1165.3	1095.0	1029.5	960.4	896.7	828.8
42.5°	1662.3	1569.8	1431.0	1295.7	1184.5	1096.8	1032.5	968.8	907.5	846.2	774.7
45°	1556.6	1483.2	1353.4	1223.6	1111.2	1023.5	963.4	906.9	851.6	792.7	726.0
47.5°	1438.8	1384.7	1271.7	1135.9	1030.7	950.2	892.5	845.6	796.9	737.4	677.3
50°	1315.0	1283.1	1174.9	1053.5	954.4	881.7	822.2	778.9	739.8	683.3	631.0
52.5°	1182.7	1169.5	1082.4	967.6	872.6	801.7	753.0	715.2	675.5	631.0	583.0
55°	1048.1	1057.1	979.6	879.2	789.1	729.0	682.7	650.3	616.6	576.9	539.1
57.5°	908.1	942.4	884.7	793.9	706.8	650.3	614.8	586.0	557.7	524.1	489.8
60°	784.9	812.5	783.1	705.6	631.6	580.0	547.5	526.5	498.2	468.2	443.5
62.5°	664.7	694.7	680.3	621.4	554.1	511.4	483.8	464.6	445.3	420.1	394.2
65°	567.9	587.2	578.8	535.5	486.8	448.9	422.5	408.1	388.8	369.6	346.8
67.5°	454.3	492.2	486.2	462.2	415.3	385.2	366.6	353.4	335.4	320.9	304.7
70°	357.6	391.8	391.2	372.6	349.8	322.1	310.1	299.3	283.7	269.8	257.2
72.5°	276.5	307.1	313.1	299.9	286.1	266.8	255.4	248.8	233.8	225.4	215.8
75°	204.9	227.8	233.8	233.8	226.6	215.8	205.5	200.7	189.9	181.5	175.5
77.5°	144.2	159.9	168.9	170.7	171.3	167.1	157.5	153.9	145.4	142.4	135.8
80°	95.0	104.6	115.4	119.0	122.0	120.8	117.2	114.8	107.0	104.0	101.6
82.5°	58.3	62.5	70.9	79.9	78.1	82.3	79.3	77.5	72.1	71.5	69.1
85°	34.3	34.9	36.1	41.5	44.5	45.7	46.3	45.1	43.3	43.3	39.1
87.5°	14.4	13.8	15.0	15.0	15.6	18.0	19.8	20.4	18.6	16.8	15.0
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):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1491.7	1491.7	1491.7	1491.7	1491.7	1491.7	1491.7	1491.7	1491.7	1491.7	1491.7
2.5°	1458.0	1452.0	1444.2	1435.2	1424.3	1414.7	1410.5	1414.1	1415.9	1411.1	1410.5
5°	1420.1	1405.1	1393.1	1375.1	1360.6	1348.6	1340.2	1336.6	1337.8	1328.2	1325.8
7.5°	1378.1	1361.8	1342.0	1321.6	1302.3	1285.5	1276.5	1272.3	1262.1	1257.9	1251.3
10°	1337.8	1313.8	1294.5	1269.3	1246.5	1225.4	1215.2	1206.8	1196.6	1191.8	1181.5
12.5°	1296.3	1267.5	1245.9	1219.4	1196.0	1169.5	1159.9	1142.5	1125.1	1113.6	1099.8
15°	1257.9	1224.2	1198.4	1167.1	1139.5	1110.6	1084.8	1055.9	1045.1	1022.3	1009.1
17.5°	1212.2	1177.3	1148.5	1108.2	1066.8	1031.9	1003.1	973.0	956.8	941.1	934.5
20°	1167.1	1135.9	1091.4	1042.7	995.2	955.6	933.3	915.3	897.3	887.1	879.8
22.5°	1124.5	1082.4	1028.9	975.4	927.9	899.1	881.0	862.4	848.6	839.0	828.8
25°	1075.8	1023.5	968.8	908.7	876.2	849.2	828.8	813.7	804.7	792.1	787.3
27.5°	1028.3	965.2	903.3	862.4	828.8	802.9	784.3	773.5	761.5	753.0	746.4
30°	971.8	907.5	853.4	814.9	780.7	760.3	745.8	732.6	723.6	717.0	712.2
32.5°	915.9	851.6	808.3	766.3	741.0	721.2	705.6	696.5	689.9	680.9	678.5
35°	862.4	805.3	765.7	728.4	700.8	682.7	670.7	660.5	654.5	652.1	650.3
37.5°	810.1	762.7	718.8	688.7	662.9	649.1	633.4	628.6	624.4	619.0	621.4
40°	760.9	717.0	679.1	646.7	626.8	611.2	602.8	596.8	593.2	593.2	593.2
42.5°	718.2	675.5	638.9	610.6	590.8	578.2	568.5	563.7	563.1	562.5	566.1
45°	673.7	634.0	596.8	572.7	555.9	542.7	537.3	533.1	533.1	535.5	536.1
47.5°	629.2	592.0	561.9	534.3	518.7	510.2	505.4	503.0	503.0	506.0	508.4
50°	589.0	552.3	522.9	498.8	484.4	476.6	472.4	471.2	472.4	472.4	476.6
52.5°	545.1	513.2	484.4	465.2	448.3	441.1	439.3	437.5	438.1	440.5	441.7
55°	502.4	473.0	445.3	426.1	414.1	409.3	403.9	404.5	403.3	404.5	404.5
57.5°	459.2	433.3	406.3	390.6	380.4	373.2	367.2	369.0	367.2	367.2	366.6
60°	417.7	388.8	368.4	354.6	342.6	336.6	331.1	332.3	330.5	329.3	326.9
62.5°	372.6	349.8	330.5	317.3	308.3	301.1	295.7	293.9	289.1	284.3	278.3
65°	329.3	309.5	292.1	279.5	270.4	265.0	260.8	257.2	248.2	238.6	233.8
67.5°	286.7	272.2	255.4	244.6	237.4	230.2	222.4	215.8	206.7	200.7	197.7
70°	245.8	232.0	218.2	207.9	200.1	193.5	184.5	180.3	174.3	171.9	168.9
72.5°	206.7	194.1	181.5	172.5	164.1	159.3	152.7	148.4	146.6	146.0	143.0
75°	167.1	156.9	147.2	138.8	132.2	128.6	125.6	122.6	121.4	116.0	113.0
77.5°	128.6	121.4	115.4	108.8	104.6	102.2	95.6	91.4	88.9	85.9	85.3
80°	95.0	90.1	84.1	80.5	73.9	71.5	69.1	68.5	67.9	67.3	66.7
82.5°	65.5	60.7	54.7	52.9	52.3	51.1	49.9	49.3	48.7	49.3	49.3
85°	36.1	33.7	33.7	33.1	32.5	31.9	31.3	31.3	30.7	31.3	30.7
87.5°	15.0	14.4	14.4	13.2	13.8	13.8	13.2	13.2	13.8	12.6	12.6
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: P242739

CATALOG NUMBER: S124RDR-S1020D830-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1491.7	1491.7	1491.7	1491.7
2.5°	1406.9	1408.1	1403.9	1402.7
5°	1321.0	1319.8	1316.8	1317.4
7.5°	1246.5	1242.2	1245.2	1240.4
10°	1179.1	1172.5	1167.1	1162.3
12.5°	1087.2	1081.8	1074.0	1077.0
15°	1001.2	992.2	977.8	979.6
17.5°	924.3	925.5	917.1	919.5
20°	867.2	863.0	863.6	861.8
22.5°	827.6	822.2	816.7	812.5
25°	781.9	778.3	772.9	771.7
27.5°	741.6	741.0	738.6	735.6
30°	707.4	706.2	705.0	703.2
32.5°	676.7	676.1	674.9	675.5
35°	647.9	647.3	646.1	645.5
37.5°	620.8	622.6	621.4	621.4
40°	592.6	593.2	594.4	593.8
42.5°	569.1	569.1	570.9	568.5
45°	540.3	543.9	543.3	543.3
47.5°	509.6	513.8	514.4	514.4
50°	479.6	478.4	480.2	479.6
52.5°	442.9	443.5	442.9	442.3
55°	405.1	405.7	404.5	405.1
57.5°	364.8	362.4	364.2	363.0
60°	320.9	316.1	314.9	312.5
62.5°	271.6	268.6	263.8	266.8
65°	229.0	226.6	224.8	227.2
67.5°	194.7	193.5	193.5	192.3
70°	168.9	167.1	167.1	165.9
72.5°	142.4	140.6	141.2	140.6
75°	109.4	106.4	106.4	107.0
77.5°	85.3	84.7	85.9	84.1
80°	66.7	66.1	65.5	67.3
82.5°	48.1	48.1	48.1	50.5
85°	31.3	30.0	31.3	30.0
87.5°	13.8	13.2	12.6	13.2
90°	0.0	0.0	0.0	0.0

(END OF REPORT)