

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: P243624

Luminaire Tested: **S124RDR-H1020D940-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P243624  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-70)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: NEO-RAY  
Catalog Number: S124RDR-H1020D940-X4F0-XX-UDD-A-W  
Description: DEFINE 4 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.  
HIGH PERFORMANCE LIGHT ENGINE  
Light Source: (184) 4000K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

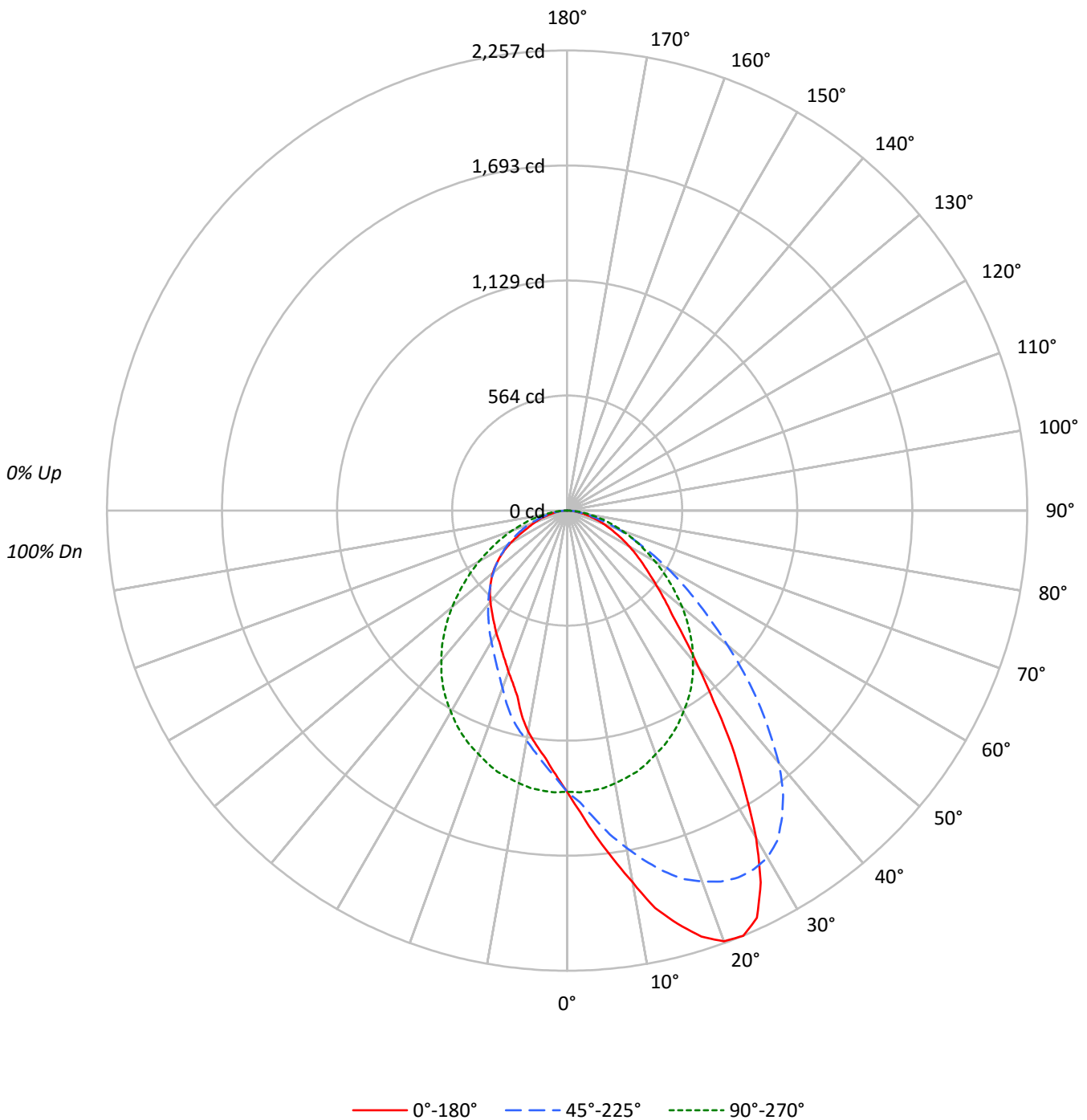
Lumens per Lamp: N/A  
Luminaire Lumens: 3558.1 lumens  
Efficiency: N/A  
Efficacy: 113.0 lumens/watt  
Spacing Criteria (0/90/45): 1.27 / 1.23 / 1.39  
Luminous Opening: Rectangular (W 3.88' x L: 0.31' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 31.5  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): 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	105	102	98	107	103	100	97	99	96	93	95	93	91	92	90	88	86
2	101	93	87	82	98	91	86	81	88	83	79	85	81	77	82	78	75	73
3	92	83	75	69	90	81	74	68	78	72	67	76	70	66	73	69	65	63
4	85	74	66	59	83	73	65	59	70	63	58	68	62	57	66	61	57	55
5	79	66	58	52	77	65	57	51	63	56	51	61	55	50	60	54	50	48
6	73	60	52	46	71	59	51	45	58	50	45	56	50	45	54	49	44	42
7	68	55	46	41	66	54	46	40	53	45	40	51	45	40	50	44	40	38
8	63	50	42	36	62	50	42	36	48	41	36	47	41	36	46	40	36	34
9	59	46	38	33	58	46	38	33	45	38	33	43	37	33	42	37	32	31
10	56	43	35	30	54	42	35	30	41	35	30	40	34	30	39	34	30	28

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°
0°	12254	12254	12254
5°	14275	12306	10864
10°	16717	12255	9934
15°	19317	12193	8675
20°	21268	12020	7953
25°	21609	11911	7434
30°	19021	11698	7130
35°	15264	11499	6897
40°	11612	11133	6790
45°	9218	10724	6708
50°	7914	10193	6592
55°	6989	9534	6273
60°	6261	8848	5746
65°	5511	8176	4833
70°	4912	7423	4353
75°	4279	6749	3871
80°	3629	5800	3573
85°	3172	4987	3610



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	133.8	3.8
10°-20°	405.7	11.4
20°-30°	633.1	17.8
30°-40°	706.0	19.8
40°-50°	634.6	17.8
50°-60°	501.5	14.1
60°-70°	333.0	9.4
70°-80°	167.0	4.7
80°-90°	43.5	1.2
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°	1172.5	33.0
0°-40°	1878.5	52.8
0°-60°	3014.6	84.7
0°-90°	3558.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3558.1	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1379	1379	1379	1379	1379	
5°	1600	1513	1379	1252	1218	160
15°	2099	1832	1325	1050	943	596
25°	2203	1986	1214	825	758	986
35°	1407	1838	1060	670	636	874
45°	733	1324	853	536	534	581
55°	451	777	615	406	405	406
65°	262	398	389	266	230	262
75°	125	158	196	132	113	133
85°	31	33	49	36	35	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°	1378.6	1378.6	1378.6	1378.6	1378.6	1378.6	1378.6	1378.6	1378.6	1378.6	1378.6
2.5°	1480.6	1475.3	1474.7	1467.8	1467.2	1460.2	1458.1	1452.2	1440.4	1431.3	1431.8
5°	1599.8	1595.5	1595.0	1588.0	1585.9	1577.3	1563.9	1547.8	1529.0	1513.4	1503.2
7.5°	1722.2	1729.7	1721.7	1721.7	1706.1	1695.9	1669.6	1656.2	1624.0	1601.4	1577.8
10°	1852.1	1859.1	1855.9	1849.5	1829.1	1808.1	1780.7	1754.4	1715.2	1679.8	1656.2
12.5°	1997.1	1976.2	1989.6	1969.7	1953.1	1919.8	1893.5	1840.9	1809.7	1758.2	1712.0
15°	2099.1	2091.0	2090.5	2077.1	2058.8	2022.3	1993.9	1939.1	1886.0	1831.7	1779.7
17.5°	2190.4	2191.4	2183.9	2162.4	2138.8	2103.4	2064.7	2015.9	1955.2	1895.1	1833.4
20°	2248.3	2248.9	2243.5	2232.2	2206.5	2174.3	2134.5	2070.6	2001.9	1935.4	1873.6
22.5°	2256.9	2258.5	2256.9	2250.0	2232.2	2205.9	2169.4	2115.2	2046.0	1969.7	1896.2
25°	2203.2	2208.6	2209.2	2218.8	2209.7	2199.5	2172.6	2127.0	2063.1	1985.8	1905.8
27.5°	2056.2	2071.2	2085.1	2102.3	2117.9	2131.8	2134.0	2109.8	2055.1	1983.1	1906.9
30°	1853.2	1870.9	1898.9	1917.1	1965.4	1996.0	2037.4	2046.5	2020.2	1964.9	1891.3
32.5°	1617.0	1635.8	1646.5	1706.7	1775.9	1825.8	1894.6	1935.4	1945.6	1919.3	1859.1
35°	1406.6	1409.8	1417.8	1486.0	1554.7	1630.4	1715.8	1786.7	1835.0	1837.7	1808.1
37.5°	1181.1	1184.8	1216.5	1268.6	1328.2	1411.4	1509.6	1610.6	1699.1	1739.9	1731.4
40°	1000.7	999.6	1033.4	1078.5	1136.5	1223.0	1324.4	1434.5	1529.0	1614.3	1634.7
42.5°	854.7	858.4	887.4	913.7	969.6	1030.2	1138.7	1253.0	1374.3	1467.8	1530.0
45°	733.3	743.0	762.9	787.6	829.4	885.3	973.9	1087.7	1211.7	1323.9	1398.5
47.5°	649.6	652.3	662.5	693.1	721.0	766.1	841.8	938.4	1048.5	1174.1	1272.3
50°	572.3	578.7	582.5	600.7	628.1	671.1	729.6	801.5	910.5	1025.9	1148.9
52.5°	505.7	509.5	516.5	533.1	554.6	584.6	630.8	694.2	784.9	891.7	1007.7
55°	451.0	451.5	458.5	470.3	486.9	510.0	554.0	599.7	680.2	777.4	882.6
57.5°	401.6	398.3	404.8	411.8	427.9	447.7	476.2	522.9	585.7	668.4	763.4
60°	352.2	354.9	354.3	362.4	371.0	390.8	415.0	445.6	497.1	572.8	653.4
62.5°	306.0	305.5	310.8	315.7	321.6	337.7	357.5	382.8	423.0	478.9	556.7
65°	262.0	263.1	267.4	271.1	277.6	287.8	302.8	323.2	355.4	398.3	463.8
67.5°	222.3	226.0	228.2	229.2	235.1	242.7	255.5	272.2	294.2	328.6	383.3
70°	189.0	190.0	191.1	194.9	197.6	201.9	211.5	220.6	240.5	265.7	305.5
72.5°	157.8	156.8	160.0	161.1	162.1	166.4	172.3	177.2	190.0	211.5	236.2
75°	124.6	125.1	125.6	127.2	131.5	132.1	134.8	140.1	149.2	157.8	174.5
77.5°	93.4	95.0	94.5	96.1	97.7	99.3	100.4	105.2	111.7	118.6	126.7
80°	70.9	70.9	70.9	71.9	70.9	74.6	74.6	76.2	77.8	81.1	87.0
82.5°	48.3	49.4	49.9	50.5	51.0	51.0	51.5	52.6	54.8	55.8	57.4
85°	31.1	30.1	30.6	30.6	30.6	30.6	31.7	32.7	32.7	33.3	34.9
87.5°	14.0	14.0	14.0	14.0	13.4	14.0	14.5	14.5	15.0	15.0	16.1
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):**

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1378.6	1378.6	1378.6	1378.6	1378.6	1378.6	1378.6	1378.6	1378.6	1378.6	1378.6
2.5°	1428.6	1427.0	1418.9	1410.3	1402.3	1394.2	1391.5	1383.5	1373.8	1365.2	1355.6
5°	1492.5	1479.6	1461.9	1443.6	1424.8	1407.6	1394.2	1379.2	1362.0	1341.6	1325.5
7.5°	1556.9	1533.3	1504.3	1477.4	1445.2	1419.4	1393.7	1372.2	1347.5	1318.5	1296.5
10°	1619.7	1580.5	1545.1	1502.7	1461.9	1426.4	1393.7	1357.7	1325.0	1293.8	1263.2
12.5°	1669.6	1630.4	1579.4	1527.3	1474.7	1428.6	1384.5	1342.1	1301.3	1263.8	1229.9
15°	1726.5	1670.2	1607.3	1549.9	1478.0	1421.1	1370.6	1325.0	1278.2	1232.6	1195.6
17.5°	1768.4	1701.8	1624.0	1558.0	1488.7	1417.8	1357.2	1299.7	1246.0	1198.3	1160.1
20°	1800.6	1721.7	1643.8	1560.1	1477.4	1404.9	1336.8	1270.7	1216.5	1164.4	1124.2
22.5°	1814.6	1731.4	1644.9	1554.2	1466.1	1384.0	1313.1	1245.0	1183.8	1130.1	1083.4
25°	1820.5	1729.2	1639.6	1536.5	1447.4	1363.6	1284.7	1214.4	1151.6	1090.9	1044.7
27.5°	1815.6	1717.9	1614.9	1517.7	1416.8	1334.6	1250.9	1179.5	1114.0	1055.5	1003.9
30°	1802.8	1692.2	1589.6	1480.6	1383.5	1297.0	1215.4	1139.7	1073.7	1014.1	963.1
32.5°	1769.5	1663.2	1546.7	1440.4	1335.7	1250.3	1176.2	1101.6	1034.5	972.2	922.9
35°	1728.1	1624.0	1502.1	1391.0	1287.4	1200.9	1126.3	1059.7	993.7	927.7	877.2
37.5°	1676.1	1570.3	1452.7	1333.0	1231.5	1147.8	1079.6	1012.5	947.0	886.3	830.0
40°	1605.7	1509.1	1391.0	1270.7	1168.7	1088.2	1021.1	959.4	901.4	841.8	781.1
42.5°	1518.2	1444.7	1322.8	1204.2	1104.3	1024.3	964.7	909.4	853.6	792.4	737.6
45°	1424.8	1362.0	1251.4	1131.7	1036.7	958.8	901.9	853.1	800.4	746.2	688.8
47.5°	1319.6	1272.9	1177.3	1058.7	958.8	892.3	839.6	795.1	747.3	699.0	643.2
50°	1200.9	1172.5	1090.9	983.0	888.0	820.3	776.8	737.1	696.3	648.0	600.2
52.5°	1082.3	1076.9	1000.7	905.7	816.0	753.2	710.8	674.3	641.0	595.4	555.1
55°	957.7	973.9	910.5	823.0	743.0	682.3	644.8	615.2	586.2	547.6	508.9
57.5°	847.2	865.4	821.9	741.4	666.8	615.2	583.0	556.2	530.9	495.5	469.7
60°	724.8	758.0	735.0	661.4	595.4	549.2	519.1	497.7	476.7	446.1	423.6
62.5°	628.1	651.2	637.8	583.0	524.5	486.9	460.1	440.2	423.6	400.0	377.9
65°	524.5	553.5	546.5	510.5	459.0	424.7	404.3	388.7	371.5	352.7	334.5
67.5°	431.1	461.2	459.5	434.9	396.7	368.3	349.0	337.7	323.7	305.5	294.2
70°	346.8	374.7	375.8	363.5	336.6	309.8	295.8	285.6	274.9	261.4	253.4
72.5°	269.5	294.7	299.0	293.1	275.9	258.2	245.9	238.9	229.8	218.5	211.5
75°	201.3	219.6	229.8	227.1	220.1	208.3	201.3	196.5	187.4	179.3	173.4
77.5°	143.3	157.8	168.0	172.3	169.1	164.3	157.8	154.1	144.4	140.7	137.4
80°	96.1	109.0	118.1	120.8	122.4	121.3	115.4	113.3	108.4	106.8	103.6
82.5°	59.1	66.0	72.5	79.5	82.7	82.7	79.5	80.0	75.7	73.5	72.5
85°	36.0	37.6	38.7	44.0	48.3	49.9	48.3	48.9	47.2	45.6	44.0
87.5°	16.6	16.6	17.2	18.3	19.3	22.5	23.6	25.2	23.1	23.1	19.3
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°	1378.6	1378.6	1378.6	1378.6	1378.6	1378.6	1378.6	1378.6	1378.6	1378.6	1378.6
2.5°	1349.7	1342.7	1337.3	1328.7	1321.7	1310.5	1306.7	1306.7	1308.9	1306.2	1308.9
5°	1314.2	1301.3	1287.4	1275.0	1261.6	1251.9	1242.3	1240.1	1239.1	1232.6	1233.2
7.5°	1278.8	1261.6	1243.9	1227.8	1211.1	1196.1	1185.9	1181.6	1177.9	1173.6	1168.7
10°	1240.7	1220.8	1199.9	1181.6	1165.5	1145.1	1134.9	1131.7	1121.0	1118.8	1111.3
12.5°	1200.4	1180.0	1159.1	1135.4	1119.9	1100.0	1085.0	1078.0	1067.8	1060.3	1049.0
15°	1168.7	1143.0	1115.0	1092.0	1071.6	1049.5	1029.1	1015.7	1002.3	981.4	971.2
17.5°	1129.5	1100.0	1075.9	1051.2	1021.6	989.4	965.3	945.4	930.9	913.7	903.5
20°	1087.1	1059.7	1029.7	994.8	963.7	927.1	905.1	888.5	877.2	867.0	861.7
22.5°	1049.5	1017.9	976.5	943.3	899.8	870.8	853.1	842.3	831.6	820.8	815.5
25°	1008.7	971.7	921.2	880.4	847.7	825.1	808.0	797.8	786.5	780.0	772.0
27.5°	968.5	920.7	870.2	833.2	807.4	781.1	766.6	758.6	750.0	740.9	734.4
30°	919.6	865.4	823.5	789.7	763.9	741.9	731.2	719.4	711.9	706.5	702.7
32.5°	868.6	816.6	778.4	749.4	724.2	707.6	694.2	686.6	680.2	674.3	670.0
35°	820.8	770.4	738.2	710.3	689.3	670.5	660.3	653.4	648.0	643.2	641.0
37.5°	773.6	730.7	695.8	673.8	651.7	636.7	627.0	620.6	617.4	612.6	613.1
40°	726.9	688.2	660.3	635.1	614.7	601.8	594.3	591.6	586.8	585.2	586.8
42.5°	685.0	649.6	622.8	599.1	581.4	569.1	563.2	559.4	557.8	557.3	557.8
45°	644.2	610.9	585.2	565.8	547.6	536.3	531.5	528.8	527.2	529.9	530.4
47.5°	603.4	573.4	550.3	527.7	512.7	504.6	499.8	497.7	499.3	500.3	504.1
50°	563.2	535.2	511.1	491.2	479.4	471.9	470.3	466.5	469.2	470.8	473.5
52.5°	522.4	497.1	475.7	456.9	444.5	439.7	435.9	434.3	438.1	438.1	440.8
55°	481.0	459.0	439.1	422.0	412.3	406.4	403.7	401.6	403.7	404.3	403.7
57.5°	442.4	421.4	400.5	386.0	377.9	371.5	368.8	367.7	367.2	369.4	368.8
60°	401.6	381.7	365.1	350.0	342.0	338.2	332.3	333.4	333.4	333.4	328.0
62.5°	360.8	340.9	326.4	316.2	306.5	300.1	299.0	297.4	294.2	293.7	286.7
65°	318.9	303.9	291.5	281.3	271.6	266.3	264.7	259.8	256.1	249.1	244.3
67.5°	280.2	269.5	255.0	246.4	238.4	231.9	226.0	222.3	214.7	207.8	203.5
70°	241.6	230.3	220.6	211.5	203.5	197.6	190.6	183.6	178.8	174.5	171.3
72.5°	202.9	193.3	185.2	176.6	168.0	162.1	156.8	151.4	149.2	147.1	145.5
75°	167.0	157.8	150.3	143.3	138.5	131.5	128.8	126.7	124.6	121.9	118.6
77.5°	132.1	125.1	119.2	113.3	109.0	105.2	103.1	96.6	91.3	90.2	89.1
80°	98.2	92.9	89.1	84.8	80.0	74.6	73.0	70.9	69.8	69.8	70.3
82.5°	68.7	65.5	61.2	57.4	55.8	53.7	53.7	53.1	52.6	53.1	53.1
85°	41.9	37.6	36.5	36.0	36.5	36.5	36.5	36.5	36.0	36.5	35.4
87.5°	18.3	19.9	20.4	18.8	19.3	18.3	18.8	18.8	18.8	19.3	18.8
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: P243624

CATALOG NUMBER: S124RDR-H1020D940-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	1378.6	1378.6	1378.6	1378.6
2.5°	1305.6	1305.6	1300.3	1296.0
5°	1232.1	1225.1	1224.0	1217.6
7.5°	1163.4	1162.3	1159.6	1159.6
10°	1108.6	1104.8	1101.1	1100.6
12.5°	1031.3	1036.7	1030.2	1028.6
15°	963.7	959.4	954.0	942.7
17.5°	900.8	892.8	890.6	885.8
20°	851.5	845.5	843.4	840.7
22.5°	804.7	803.7	797.2	795.6
25°	770.4	765.0	760.7	758.0
27.5°	732.8	729.0	726.9	722.6
30°	698.4	697.4	694.7	694.7
32.5°	667.3	664.1	664.1	663.6
35°	638.9	639.9	636.7	635.6
37.5°	612.0	610.4	610.9	609.9
40°	585.7	584.6	584.6	585.2
42.5°	558.9	559.4	560.5	560.5
45°	532.0	532.6	533.6	533.6
47.5°	506.8	505.7	506.8	505.7
50°	474.6	477.8	477.3	476.7
52.5°	441.8	440.8	442.9	442.4
55°	406.4	404.8	406.9	404.8
57.5°	366.7	367.2	367.2	366.1
60°	326.9	325.3	323.2	323.2
62.5°	280.8	275.9	272.7	274.9
65°	236.2	232.5	231.4	229.8
67.5°	200.8	196.5	194.9	194.3
70°	170.2	168.0	167.5	167.5
72.5°	144.4	144.4	142.8	141.7
75°	117.6	115.4	112.7	112.7
77.5°	88.0	87.5	87.0	87.0
80°	68.7	68.7	69.3	69.8
82.5°	51.5	52.1	52.6	52.6
85°	34.9	34.9	35.4	35.4
87.5°	18.8	18.8	18.8	18.3
90°	0.0	0.0	0.0	0.0

(END OF REPORT)