

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: P243604

Luminaire Tested: **S124RDR-H1020D835-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243604
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-H1020D835-X4F0-XX-UDD-A-W
Description: DEFINE 4 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 3500K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3990.2 lumens
Efficiency: N/A
Efficacy: 126.7 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

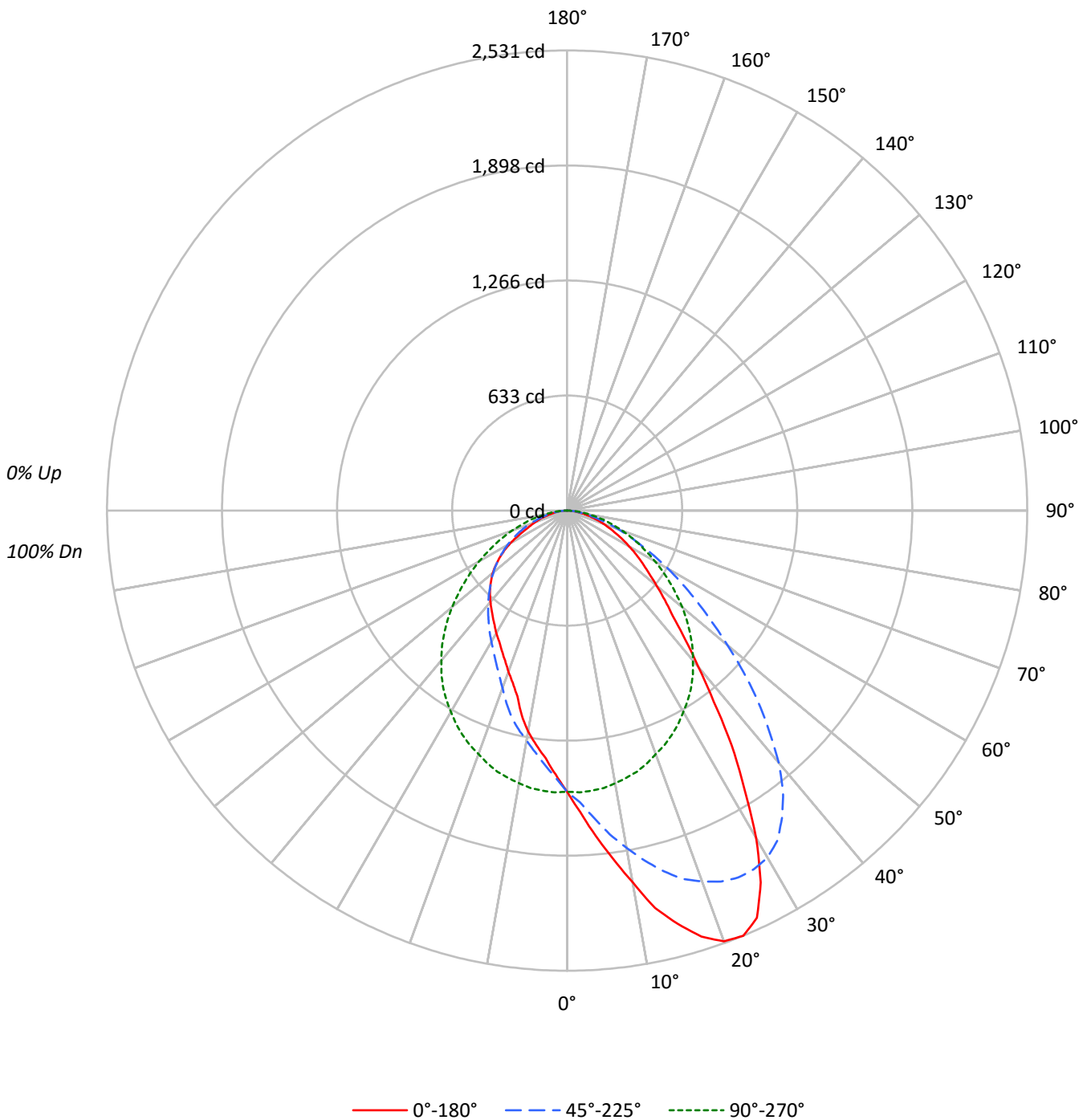
Input Watts (W): 31.5
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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	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°	13743	13743	13743
5°	16009	13801	12183
10°	18748	13743	11140
15°	21663	13674	9729
20°	23851	13481	8918
25°	24233	13356	8338
30°	21332	13119	7997
35°	17117	12896	7735
40°	13022	12484	7614
45°	10338	12027	7522
50°	8875	11431	7393
55°	7837	10692	7034
60°	7020	9922	6443
65°	6179	9168	5420
70°	5507	8324	4881
75°	4798	7569	4341
80°	4070	6501	4008
85°	3559	5589	4049



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	150.0	3.8
10°-20°	454.9	11.4
20°-30°	710.0	17.8
30°-40°	791.7	19.8
40°-50°	711.7	17.8
50°-60°	562.3	14.1
60°-70°	373.5	9.4
70°-80°	187.3	4.7
80°-90°	48.8	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°	1314.9	33.0
0°-40°	2106.7	52.8
0°-60°	3380.7	84.7
0°-90°	3990.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3990.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1546	1546	1546	1546	1546	
5°	1794	1697	1547	1404	1365	180
15°	2354	2054	1486	1177	1057	669
25°	2471	2227	1362	925	850	1106
35°	1577	2061	1188	752	713	980
45°	822	1485	957	601	598	652
55°	506	872	690	456	454	456
65°	294	447	436	299	258	294
75°	140	177	220	148	126	149
85°	35	37	55	41	40	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°	1546.1	1546.1	1546.1	1546.1	1546.1	1546.1	1546.1	1546.1	1546.1	1546.1	1546.1
2.5°	1660.5	1654.4	1653.8	1646.0	1645.4	1637.6	1635.2	1628.5	1615.3	1605.1	1605.7
5°	1794.1	1789.3	1788.7	1780.9	1778.5	1768.8	1753.8	1735.7	1714.6	1697.2	1685.7
7.5°	1931.4	1939.8	1930.8	1930.8	1913.3	1901.9	1872.4	1857.3	1821.2	1795.9	1769.4
10°	2077.1	2084.9	2081.3	2074.1	2051.2	2027.7	1997.0	1967.5	1923.5	1883.8	1857.3
12.5°	2239.6	2216.1	2231.2	2208.9	2190.3	2152.9	2123.4	2064.4	2029.5	1971.7	1919.9
15°	2354.0	2345.0	2344.4	2329.3	2308.9	2267.9	2236.0	2174.6	2115.0	2054.2	1995.8
17.5°	2456.4	2457.6	2449.1	2425.1	2398.6	2358.8	2315.5	2260.7	2192.7	2125.2	2056.0
20°	2521.4	2522.0	2516.0	2503.3	2474.4	2438.3	2393.7	2322.1	2245.0	2170.4	2101.2
22.5°	2531.0	2532.8	2531.0	2523.2	2503.3	2473.8	2432.9	2372.1	2294.4	2208.9	2126.4
25°	2470.8	2476.8	2477.4	2488.3	2478.0	2466.6	2436.5	2385.3	2313.7	2227.0	2137.3
27.5°	2305.8	2322.7	2338.4	2357.6	2375.1	2390.7	2393.1	2366.1	2304.6	2224.0	2138.5
30°	2078.3	2098.1	2129.4	2149.9	2204.1	2238.4	2284.8	2295.0	2265.5	2203.5	2121.0
32.5°	1813.4	1834.4	1846.5	1913.9	1991.6	2047.6	2124.6	2170.4	2181.8	2152.3	2084.9
35°	1577.4	1581.0	1590.0	1666.5	1743.5	1828.4	1924.2	2003.6	2057.8	2060.8	2027.7
37.5°	1324.5	1328.7	1364.2	1422.6	1489.5	1582.8	1693.0	1806.1	1905.5	1951.2	1941.6
40°	1122.2	1121.0	1158.9	1209.5	1274.5	1371.5	1485.3	1608.7	1714.6	1810.4	1833.2
42.5°	958.5	962.7	995.2	1024.7	1087.3	1155.3	1276.9	1405.2	1541.2	1646.0	1715.8
45°	822.4	833.2	855.5	883.2	930.2	992.8	1092.1	1219.8	1358.8	1484.7	1568.3
47.5°	728.5	731.5	742.9	777.2	808.6	859.1	944.0	1052.4	1175.8	1316.7	1426.9
50°	641.8	649.0	653.2	673.7	704.4	752.6	818.2	898.9	1021.1	1150.5	1288.4
52.5°	567.1	571.3	579.2	597.8	621.9	655.6	707.4	778.4	880.2	1000.0	1130.0
55°	505.7	506.3	514.2	527.4	546.1	571.9	621.3	672.5	762.8	871.8	989.8
57.5°	450.3	446.7	453.9	461.8	479.8	502.1	534.0	586.4	656.8	749.6	856.1
60°	394.9	398.0	397.4	406.4	416.0	438.3	465.4	499.7	557.5	642.4	732.7
62.5°	343.2	342.6	348.6	354.0	360.6	378.7	401.0	429.3	474.4	537.0	624.3
65°	293.8	295.0	299.8	304.0	311.3	322.7	339.6	362.4	398.6	446.7	520.2
67.5°	249.2	253.5	255.9	257.1	263.7	272.1	286.6	305.2	329.9	368.5	429.9
70°	211.9	213.1	214.3	218.5	221.6	226.4	237.2	247.4	269.7	298.0	342.6
72.5°	177.0	175.8	179.4	180.6	181.8	186.6	193.3	198.7	213.1	237.2	264.9
75°	139.7	140.3	140.9	142.7	147.5	148.1	151.1	157.1	167.4	177.0	195.7
77.5°	104.8	106.6	106.0	107.8	109.6	111.4	112.6	118.0	125.2	133.1	142.1
80°	79.5	79.5	79.5	80.7	79.5	83.7	83.7	85.5	87.3	90.9	97.5
82.5°	54.2	55.4	56.0	56.6	57.2	57.2	57.8	59.0	61.4	62.6	64.4
85°	34.9	33.7	34.3	34.3	34.3	34.3	35.5	36.7	36.7	37.3	39.1
87.5°	15.7	15.7	15.7	15.7	15.1	15.7	16.3	16.3	16.9	16.9	18.1
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°	1546.1	1546.1	1546.1	1546.1	1546.1	1546.1	1546.1	1546.1	1546.1	1546.1	1546.1
2.5°	1602.1	1600.2	1591.2	1581.6	1572.6	1563.5	1560.5	1551.5	1540.6	1531.0	1520.2
5°	1673.7	1659.2	1639.4	1618.9	1597.8	1578.6	1563.5	1546.7	1527.4	1504.5	1486.5
7.5°	1745.9	1719.5	1686.9	1656.8	1620.7	1591.8	1562.9	1538.8	1511.1	1478.6	1453.9
10°	1816.4	1772.4	1732.7	1685.1	1639.4	1599.6	1562.9	1522.6	1485.9	1450.9	1416.6
12.5°	1872.4	1828.4	1771.2	1712.8	1653.8	1602.1	1552.7	1505.1	1459.4	1417.2	1379.3
15°	1936.2	1873.0	1802.5	1738.1	1657.4	1593.6	1537.0	1485.9	1433.5	1382.3	1340.8
17.5°	1983.2	1908.5	1821.2	1747.1	1669.5	1590.0	1522.0	1457.6	1397.4	1343.8	1301.0
20°	2019.3	1930.8	1843.5	1749.6	1656.8	1575.6	1499.1	1425.1	1364.2	1305.8	1260.7
22.5°	2034.9	1941.6	1844.7	1742.9	1644.2	1552.1	1472.6	1396.2	1327.5	1267.3	1214.9
25°	2041.5	1939.2	1838.7	1723.1	1623.1	1529.2	1440.7	1361.8	1291.4	1223.4	1171.6
27.5°	2036.1	1926.6	1811.0	1702.0	1588.8	1496.7	1402.8	1322.7	1249.3	1183.6	1125.8
30°	2021.7	1897.7	1782.7	1660.5	1551.5	1454.6	1363.0	1278.2	1204.1	1137.3	1080.1
32.5°	1984.4	1865.1	1734.5	1615.3	1497.9	1402.2	1319.1	1235.4	1160.1	1090.3	1034.9
35°	1938.0	1821.2	1684.5	1559.9	1443.7	1346.8	1263.1	1188.4	1114.4	1040.3	983.7
37.5°	1879.6	1761.0	1629.1	1494.9	1381.1	1287.2	1210.7	1135.5	1062.0	994.0	930.8
40°	1800.7	1692.4	1559.9	1425.1	1310.7	1220.4	1145.1	1075.9	1010.8	944.0	876.0
42.5°	1702.6	1620.1	1483.4	1350.4	1238.4	1148.7	1081.9	1019.9	957.3	888.6	827.2
45°	1597.8	1527.4	1403.4	1269.1	1162.6	1075.3	1011.4	956.7	897.7	836.8	772.4
47.5°	1479.8	1427.5	1320.3	1187.2	1075.3	1000.6	941.6	891.6	838.1	783.9	721.3
50°	1346.8	1314.9	1223.4	1102.4	995.8	919.9	871.2	826.6	780.9	726.7	673.1
52.5°	1213.7	1207.7	1122.2	1015.7	915.1	844.7	797.1	756.2	718.8	667.7	622.5
55°	1074.1	1092.1	1021.1	922.9	833.2	765.2	723.1	689.9	657.4	614.1	570.7
57.5°	950.0	970.5	921.7	831.4	747.7	689.9	653.8	623.7	595.4	555.7	526.8
60°	812.8	850.1	824.2	741.7	667.7	615.9	582.2	558.1	534.6	500.3	475.0
62.5°	704.4	730.3	715.2	653.8	588.2	546.1	516.0	493.7	475.0	448.5	423.8
65°	588.2	620.7	612.9	572.5	514.8	476.2	453.3	435.9	416.6	395.5	375.1
67.5°	483.4	517.2	515.4	487.7	444.9	413.0	391.3	378.7	363.0	342.6	329.9
70°	388.9	420.2	421.4	407.6	377.5	347.4	331.7	320.3	308.2	293.2	284.2
72.5°	302.2	330.5	335.3	328.7	309.5	289.6	275.7	267.9	257.7	245.0	237.2
75°	225.8	246.2	257.7	254.7	246.8	233.6	225.8	220.4	210.1	201.1	194.5
77.5°	160.7	177.0	188.4	193.3	189.6	184.2	177.0	172.8	162.0	157.7	154.1
80°	107.8	122.2	132.5	135.5	137.3	136.1	129.4	127.0	121.6	119.8	116.2
82.5°	66.2	74.1	81.3	89.1	92.7	92.7	89.1	89.7	84.9	82.5	81.3
85°	40.3	42.1	43.3	49.4	54.2	56.0	54.2	54.8	53.0	51.2	49.4
87.5°	18.7	18.7	19.3	20.5	21.7	25.3	26.5	28.3	25.9	25.9	21.7
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°	1546.1	1546.1	1546.1	1546.1	1546.1	1546.1	1546.1	1546.1	1546.1	1546.1	1546.1
2.5°	1513.6	1505.7	1499.7	1490.1	1482.2	1469.6	1465.4	1465.4	1467.8	1464.8	1467.8
5°	1473.8	1459.4	1443.7	1429.9	1414.8	1404.0	1393.1	1390.7	1389.5	1382.3	1382.9
7.5°	1434.1	1414.8	1394.9	1376.9	1358.2	1341.4	1329.9	1325.1	1320.9	1316.1	1310.7
10°	1391.3	1369.1	1345.6	1325.1	1307.0	1284.2	1272.7	1269.1	1257.1	1254.7	1246.2
12.5°	1346.2	1323.3	1299.8	1273.3	1255.9	1233.6	1216.7	1208.9	1197.5	1189.0	1176.4
15°	1310.7	1281.8	1250.5	1224.6	1201.7	1177.0	1154.1	1139.1	1124.0	1100.5	1089.1
17.5°	1266.7	1233.6	1206.5	1178.8	1145.7	1109.6	1082.5	1060.2	1044.0	1024.7	1013.2
20°	1219.2	1188.4	1154.7	1115.6	1080.7	1039.7	1015.1	996.4	983.7	972.3	966.3
22.5°	1177.0	1141.5	1095.1	1057.8	1009.0	976.5	956.7	944.6	932.6	920.5	914.5
25°	1131.3	1089.7	1033.1	987.4	950.6	925.3	906.1	894.6	882.0	874.8	865.7
27.5°	1086.1	1032.5	975.9	934.4	905.5	876.0	859.7	850.7	841.1	830.8	823.6
30°	1031.3	970.5	923.5	885.6	856.7	832.0	820.0	806.7	798.3	792.3	788.1
32.5°	974.1	915.7	873.0	840.5	812.2	793.5	778.4	770.0	762.8	756.2	751.4
35°	920.5	863.9	827.8	796.5	773.0	752.0	740.5	732.7	726.7	721.3	718.8
37.5°	867.6	819.4	780.3	755.6	730.9	714.0	703.2	696.0	692.4	686.9	687.5
40°	815.2	771.8	740.5	712.2	689.3	674.9	666.5	663.5	658.0	656.2	658.0
42.5°	768.2	728.5	698.4	671.9	652.0	638.2	631.5	627.3	625.5	624.9	625.5
45°	722.5	685.1	656.2	634.6	614.1	601.4	596.0	593.0	591.2	594.2	594.8
47.5°	676.7	643.0	617.1	591.8	575.0	565.9	560.5	558.1	559.9	561.1	565.3
50°	631.5	600.2	573.2	550.9	537.6	529.2	527.4	523.2	526.2	528.0	531.0
52.5°	585.8	557.5	533.4	512.3	498.5	493.1	488.9	487.1	491.3	491.3	494.3
55°	539.4	514.8	492.5	473.2	462.4	455.8	452.7	450.3	452.7	453.3	452.7
57.5°	496.1	472.6	449.1	432.9	423.8	416.6	413.6	412.4	411.8	414.2	413.6
60°	450.3	428.1	409.4	392.5	383.5	379.3	372.7	373.9	373.9	373.9	367.9
62.5°	404.6	382.3	366.0	354.6	343.8	336.5	335.3	333.5	329.9	329.3	321.5
65°	357.6	340.8	326.9	315.5	304.6	298.6	296.8	291.4	287.2	279.4	273.9
67.5°	314.3	302.2	286.0	276.3	267.3	260.1	253.5	249.2	240.8	233.0	228.2
70°	270.9	258.3	247.4	237.2	228.2	221.6	213.7	205.9	200.5	195.7	192.1
72.5°	227.6	216.7	207.7	198.1	188.4	181.8	175.8	169.8	167.4	165.0	163.2
75°	187.2	177.0	168.6	160.7	155.3	147.5	144.5	142.1	139.7	136.7	133.1
77.5°	148.1	140.3	133.7	127.0	122.2	118.0	115.6	108.4	102.3	101.1	99.9
80°	110.2	104.2	99.9	95.1	89.7	83.7	81.9	79.5	78.3	78.3	78.9
82.5°	77.1	73.5	68.6	64.4	62.6	60.2	60.2	59.6	59.0	59.6	59.6
85°	47.0	42.1	40.9	40.3	40.9	40.9	40.9	40.9	40.3	40.9	39.7
87.5°	20.5	22.3	22.9	21.1	21.7	20.5	21.1	21.1	21.1	21.7	21.1
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: P243604

CATALOG NUMBER: S124RDR-H1020D835-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1546.1	1546.1	1546.1	1546.1
2.5°	1464.2	1464.2	1458.2	1453.3
5°	1381.7	1373.9	1372.7	1365.4
7.5°	1304.6	1303.4	1300.4	1300.4
10°	1243.2	1239.0	1234.8	1234.2
12.5°	1156.5	1162.6	1155.3	1153.5
15°	1080.7	1075.9	1069.8	1057.2
17.5°	1010.2	1001.2	998.8	993.4
20°	954.9	948.2	945.8	942.8
22.5°	902.5	901.3	894.0	892.2
25°	863.9	857.9	853.1	850.1
27.5°	821.8	817.6	815.2	810.4
30°	783.3	782.1	779.1	779.1
32.5°	748.3	744.7	744.7	744.1
35°	716.4	717.6	714.0	712.8
37.5°	686.3	684.5	685.1	683.9
40°	656.8	655.6	655.6	656.2
42.5°	626.7	627.3	628.5	628.5
45°	596.6	597.2	598.4	598.4
47.5°	568.3	567.1	568.3	567.1
50°	532.2	535.8	535.2	534.6
52.5°	495.5	494.3	496.7	496.1
55°	455.8	453.9	456.4	453.9
57.5°	411.2	411.8	411.8	410.6
60°	366.6	364.8	362.4	362.4
62.5°	314.9	309.5	305.8	308.2
65°	264.9	260.7	259.5	257.7
67.5°	225.2	220.4	218.5	217.9
70°	190.8	188.4	187.8	187.8
72.5°	162.0	162.0	160.1	158.9
75°	131.8	129.4	126.4	126.4
77.5°	98.7	98.1	97.5	97.5
80°	77.1	77.1	77.7	78.3
82.5°	57.8	58.4	59.0	59.0
85°	39.1	39.1	39.7	39.7
87.5°	21.1	21.1	21.1	20.5
90°	0.0	0.0	0.0	0.0

(END OF REPORT)