

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: P242744

Luminaire Tested: **S124RDR-S1020D835-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242744
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-S1020D835-X4F0-XX-UDD-A-W
Description: DEFINE 4 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER
STANDARD LIGHT ENGINE
Light Source: (92) 3500K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4000.6 lumens
Efficiency: N/A
Efficacy: 115.0 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

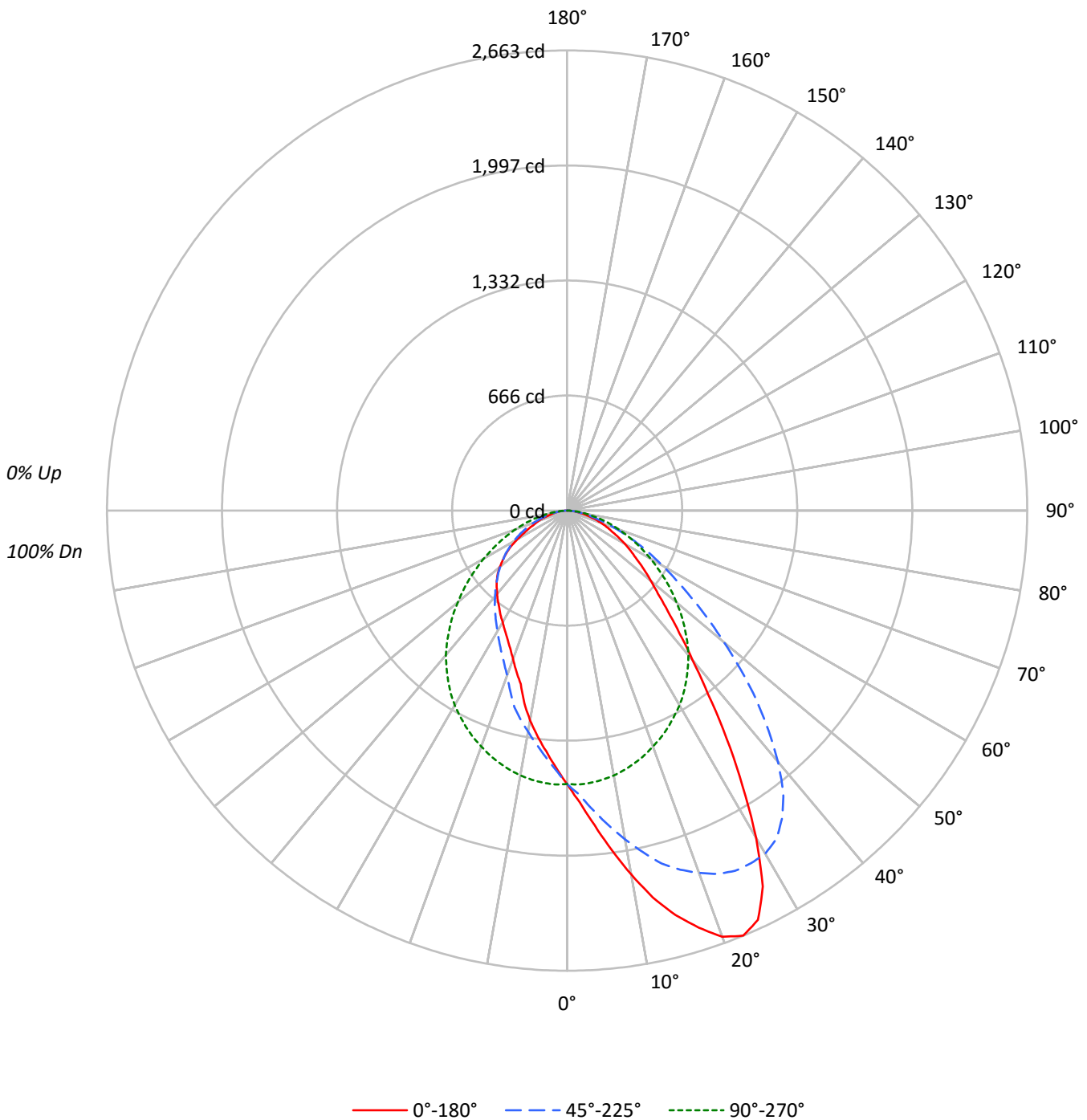
Input Watts (W): 34.8
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P242744

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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°	14068	14068	14068
5°	16317	14110	12471
10°	19303	14048	11131
15°	22298	13918	9564
20°	24826	13740	8650
25°	25628	13564	8030
30°	22435	13351	7657
35°	17464	13036	7431
40°	13096	12675	7310
45°	10339	12096	7246
50°	8729	11428	7036
55°	7609	10692	6661
60°	6846	9931	5895
65°	6034	9105	5069
70°	5434	8252	4574
75°	4554	7315	3898
80°	3849	6235	3655
85°	3253	4875	3253



TEST NUMBER: P242744

CATALOG NUMBER: S124RDR-S1020D835-X4F0-XX-UDD-A-W

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	153.2	3.8
10°-20°	462.8	11.6
20°-30°	724.9	18.1
30°-40°	805.0	20.1
40°-50°	713.3	17.8
50°-60°	555.9	13.9
60°-70°	363.6	9.1
70°-80°	178.4	4.5
80°-90°	43.4	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°	1340.9	33.5
0°-40°	2145.9	53.6
0°-60°	3415.1	85.4
0°-90°	4000.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4000.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1583	1583	1583	1583	1583	
5°	1829	1741	1581	1431	1398	184
15°	2423	2116	1512	1178	1039	689
25°	2613	2301	1383	901	819	1167
35°	1609	2170	1201	724	685	1007
45°	822	1546	962	576	576	649
55°	491	875	690	434	430	446
65°	287	450	433	281	241	288
75°	133	171	213	136	114	146
85°	32	34	48	34	32	37
90°	0	0	0	0	0	



TEST NUMBER: P242744

CATALOG NUMBER: S124RDR-S1020D835-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6
2.5°	1691.0	1696.7	1691.0	1690.3	1684.0	1682.1	1679.5	1671.2	1655.9	1647.0	1648.9
5°	1828.7	1844.6	1835.7	1834.4	1820.4	1806.4	1797.5	1777.1	1755.4	1740.7	1728.6
7.5°	1981.7	1991.3	1984.9	1977.9	1953.7	1946.0	1925.0	1900.8	1864.4	1837.0	1812.1
10°	2138.6	2146.2	2143.7	2127.1	2110.5	2076.7	2057.6	2020.0	1970.9	1932.0	1895.7
12.5°	2292.9	2301.2	2273.8	2278.9	2243.8	2218.9	2185.8	2136.0	2077.4	2024.5	1976.6
15°	2423.0	2412.8	2412.8	2400.0	2365.0	2328.0	2296.7	2247.0	2175.6	2115.6	2052.5
17.5°	2530.1	2534.6	2529.5	2496.9	2471.4	2433.8	2377.7	2321.0	2259.1	2178.8	2116.3
20°	2624.5	2624.5	2618.7	2598.3	2562.6	2521.8	2460.0	2396.8	2312.7	2231.7	2159.0
22.5°	2662.7	2665.3	2658.3	2642.3	2611.1	2571.5	2521.2	2456.8	2369.4	2275.7	2181.3
25°	2613.0	2625.1	2626.4	2621.9	2612.4	2588.1	2542.8	2477.2	2399.4	2300.6	2203.6
27.5°	2452.3	2468.2	2474.6	2488.7	2514.8	2524.4	2518.6	2474.6	2399.4	2301.8	2205.5
30°	2185.8	2198.5	2240.0	2294.2	2336.3	2374.5	2407.7	2416.6	2378.3	2292.9	2190.2
32.5°	1889.9	1908.4	1949.9	2009.2	2086.3	2157.7	2242.5	2287.8	2296.1	2253.4	2160.3
35°	1609.4	1622.1	1660.4	1721.6	1805.8	1902.0	2020.0	2111.8	2174.3	2169.8	2111.8
37.5°	1340.3	1358.1	1397.0	1447.4	1530.3	1653.4	1764.9	1888.0	2000.2	2055.1	2025.7
40°	1128.6	1129.2	1166.9	1219.1	1295.7	1399.6	1523.9	1664.2	1793.0	1898.2	1918.6
42.5°	961.5	961.5	983.2	1040.6	1090.3	1186.6	1303.9	1442.9	1599.2	1724.8	1787.3
45°	822.5	828.3	848.7	882.5	925.8	1008.7	1103.7	1233.2	1402.1	1546.2	1636.1
47.5°	712.9	723.1	735.2	765.8	801.5	859.5	940.5	1061.6	1201.9	1362.0	1486.3
50°	631.2	632.5	649.1	664.4	694.4	738.4	807.2	904.2	1030.4	1182.8	1325.0
52.5°	561.1	560.5	568.8	589.2	612.1	644.0	696.3	782.4	890.8	1023.4	1171.3
55°	491.0	494.2	501.8	517.1	535.6	559.8	603.8	670.1	758.1	874.8	1008.1
57.5°	437.4	439.3	446.3	452.1	469.9	487.8	523.5	571.3	648.5	746.0	876.7
60°	385.1	385.8	387.7	397.2	410.6	427.2	449.5	488.4	550.9	638.3	736.5
62.5°	334.1	335.4	338.6	345.0	354.5	364.7	388.3	417.6	466.7	538.2	624.2
65°	286.9	287.6	292.0	294.6	302.9	313.1	330.3	351.3	387.0	449.5	516.5
67.5°	247.4	247.4	247.4	251.2	257.6	264.6	276.1	293.9	322.6	362.8	425.3
70°	209.1	209.1	210.4	212.3	215.5	221.3	227.0	239.7	259.5	290.8	336.0
72.5°	173.4	174.1	175.3	175.3	176.6	181.1	184.9	191.9	205.3	227.0	261.4
75°	132.6	134.5	137.7	140.3	143.5	142.8	147.3	152.4	156.9	170.9	191.9
77.5°	104.6	103.3	103.3	105.8	106.5	107.1	110.3	114.8	118.6	126.2	133.9
80°	75.2	75.2	77.2	77.8	77.2	77.8	81.0	82.9	84.2	86.7	93.7
82.5°	52.3	53.6	52.3	52.9	53.6	54.2	56.7	56.7	58.0	58.7	60.6
85°	31.9	32.5	33.2	31.9	31.9	31.9	33.2	33.8	35.1	34.4	35.7
87.5°	14.0	13.4	14.0	14.0	14.7	14.0	14.7	15.9	14.7	15.3	15.3
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: P242744

CATALOG NUMBER: S124RDR-S1020D835-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6
2.5°	1642.5	1633.6	1629.1	1618.9	1606.8	1600.4	1594.7	1586.4	1575.6	1564.1	1555.8
5°	1713.3	1698.0	1678.9	1655.9	1635.5	1615.7	1598.5	1581.3	1561.5	1541.1	1520.7
7.5°	1783.4	1756.0	1726.7	1691.6	1657.8	1626.6	1598.5	1571.1	1539.9	1511.8	1485.7
10°	1857.4	1816.6	1771.3	1723.5	1675.7	1634.2	1593.4	1556.4	1515.6	1479.3	1448.7
12.5°	1917.3	1867.6	1810.9	1748.4	1688.4	1636.1	1587.7	1536.7	1488.9	1448.7	1405.3
15°	1984.9	1919.3	1845.9	1774.5	1699.9	1631.7	1568.6	1512.4	1459.5	1404.1	1365.2
17.5°	2031.5	1955.6	1868.9	1786.0	1700.5	1621.5	1550.1	1485.0	1424.5	1369.0	1323.1
20°	2072.3	1986.2	1887.4	1789.8	1691.0	1604.9	1526.5	1452.5	1389.4	1328.2	1280.4
22.5°	2095.2	1997.7	1887.4	1784.1	1680.8	1585.8	1497.8	1420.0	1349.9	1288.6	1234.4
25°	2096.5	1994.5	1884.2	1766.9	1654.6	1555.8	1466.5	1383.0	1306.5	1245.3	1189.2
27.5°	2091.4	1973.5	1862.5	1743.3	1627.9	1522.6	1430.2	1341.6	1265.7	1200.6	1143.3
30°	2076.1	1947.3	1826.2	1701.2	1583.9	1483.8	1384.9	1300.8	1221.1	1152.8	1094.8
32.5°	2043.0	1915.4	1782.8	1654.0	1534.8	1430.8	1338.4	1253.6	1175.8	1105.6	1043.2
35°	1997.0	1867.6	1726.1	1594.7	1478.0	1370.9	1282.9	1201.3	1126.7	1052.1	987.0
37.5°	1944.1	1808.9	1669.3	1525.2	1409.2	1307.1	1224.9	1146.5	1073.8	1005.5	933.5
40°	1862.5	1742.0	1596.6	1453.8	1333.9	1236.4	1161.8	1092.3	1018.9	951.3	879.3
42.5°	1763.7	1665.5	1518.2	1374.7	1256.8	1163.7	1095.4	1027.9	962.8	897.8	821.9
45°	1651.4	1573.7	1435.9	1298.2	1179.0	1085.9	1022.1	962.2	903.5	841.0	770.3
47.5°	1526.5	1469.1	1349.2	1205.1	1093.5	1008.1	946.9	897.1	845.5	782.4	718.6
50°	1395.1	1361.3	1246.6	1117.8	1012.5	935.4	872.3	826.4	784.9	725.0	669.5
52.5°	1254.8	1240.8	1148.4	1026.6	925.8	850.6	798.9	758.8	716.7	669.5	618.5
55°	1112.0	1121.6	1039.3	932.8	837.2	773.4	724.3	689.9	654.2	612.1	571.9
57.5°	963.5	999.8	938.6	842.3	749.8	689.9	652.3	621.7	591.7	556.0	519.7
60°	832.7	862.1	830.8	748.6	670.1	615.3	580.9	558.6	528.6	496.7	470.6
62.5°	705.2	737.1	721.8	659.3	587.9	542.6	513.3	492.9	472.5	445.7	418.3
65°	602.6	623.0	614.0	568.1	516.5	476.3	448.3	432.9	412.5	392.1	367.9
67.5°	482.0	522.2	515.8	490.3	440.6	408.7	389.0	374.9	355.8	340.5	323.3
70°	379.4	415.7	415.1	395.3	371.1	341.8	329.0	317.5	301.0	286.3	272.9
72.5°	293.3	325.8	332.2	318.2	303.5	283.1	271.0	264.0	248.0	239.1	228.9
75°	217.4	241.7	248.0	248.0	240.4	228.9	218.1	213.0	201.5	192.6	186.2
77.5°	153.0	169.6	179.2	181.1	181.7	177.3	167.1	163.2	154.3	151.1	144.1
80°	100.7	110.9	122.4	126.2	129.4	128.2	124.3	121.8	113.5	110.3	107.8
82.5°	61.8	66.3	75.2	84.8	82.9	87.4	84.2	82.3	76.5	75.9	73.3
85°	36.3	37.0	38.3	44.0	47.2	48.5	49.1	47.8	45.9	45.9	41.4
87.5°	15.3	14.7	15.9	15.9	16.6	19.1	21.0	21.7	19.8	17.9	15.9
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: P242744

CATALOG NUMBER: S124RDR-S1020D835-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6	1582.6
2.5°	1546.9	1540.5	1532.2	1522.6	1511.2	1501.0	1496.5	1500.3	1502.2	1497.1	1496.5
5°	1506.7	1490.8	1478.0	1458.9	1443.6	1430.8	1421.9	1418.1	1419.4	1409.2	1406.6
7.5°	1462.1	1444.9	1423.8	1402.1	1381.7	1363.9	1354.3	1349.9	1339.0	1334.5	1327.5
10°	1419.4	1393.8	1373.4	1346.7	1322.4	1300.1	1289.3	1280.4	1269.5	1264.4	1253.6
12.5°	1375.4	1344.8	1321.8	1293.7	1268.9	1240.8	1230.6	1212.1	1193.6	1181.5	1166.9
15°	1334.5	1298.8	1271.4	1238.3	1208.9	1178.3	1150.9	1120.3	1108.8	1084.6	1070.6
17.5°	1286.1	1249.1	1218.5	1175.8	1131.8	1094.8	1064.2	1032.3	1015.1	998.5	991.5
20°	1238.3	1205.1	1157.9	1106.3	1055.9	1013.8	990.2	971.1	952.0	941.1	933.5
22.5°	1193.0	1148.4	1091.6	1034.9	984.5	953.9	934.8	915.0	900.3	890.1	879.3
25°	1141.3	1085.9	1027.9	964.1	929.7	901.0	879.3	863.3	853.8	840.4	835.3
27.5°	1091.0	1024.0	958.4	915.0	879.3	851.9	832.1	820.6	807.9	798.9	791.9
30°	1031.0	962.8	905.4	864.6	828.3	806.6	791.3	777.3	767.7	760.7	755.6
32.5°	971.7	903.5	857.6	813.0	786.2	765.2	748.6	739.0	732.0	722.4	719.9
35°	915.0	854.4	812.3	772.8	743.5	724.3	711.6	700.8	694.4	691.8	689.9
37.5°	859.5	809.1	762.6	730.7	703.3	688.6	672.1	667.0	662.5	656.8	659.3
40°	807.2	760.7	720.5	686.1	665.0	648.5	639.5	633.2	629.3	629.3	629.3
42.5°	762.0	716.7	677.8	647.8	626.8	613.4	603.2	598.1	597.5	596.8	600.6
45°	714.8	672.7	633.2	607.7	589.8	575.8	570.0	565.6	565.6	568.1	568.8
47.5°	667.6	628.1	596.2	566.8	550.3	541.3	536.2	533.7	533.7	536.9	539.4
50°	624.9	586.0	554.7	529.2	513.9	505.6	501.2	499.9	501.2	501.2	505.6
52.5°	578.3	544.5	513.9	493.5	475.7	468.0	466.1	464.2	464.8	467.4	468.7
55°	533.1	501.8	472.5	452.1	439.3	434.2	428.5	429.1	427.8	429.1	429.1
57.5°	487.1	459.7	431.0	414.5	403.6	396.0	389.6	391.5	389.6	389.6	389.0
60°	443.1	412.5	390.9	376.2	363.4	357.1	351.3	352.6	350.7	349.4	346.9
62.5°	395.3	371.1	350.7	336.7	327.1	319.5	313.7	311.8	306.7	301.6	295.2
65°	349.4	328.4	309.9	296.5	286.9	281.2	276.7	272.9	263.3	253.1	248.0
67.5°	304.1	288.8	271.0	259.5	251.9	244.2	235.9	228.9	219.3	213.0	209.8
70°	260.8	246.1	231.5	220.6	212.3	205.3	195.8	191.3	184.9	182.4	179.2
72.5°	219.3	206.0	192.6	183.0	174.1	169.0	162.0	157.5	155.6	154.9	151.8
75°	177.3	166.4	156.2	147.3	140.3	136.5	133.3	130.1	128.8	123.1	119.9
77.5°	136.5	128.8	122.4	115.4	110.9	108.4	101.4	96.9	94.4	91.2	90.5
80°	100.7	95.6	89.3	85.4	78.4	75.9	73.3	72.7	72.1	71.4	70.8
82.5°	69.5	64.4	58.0	56.1	55.5	54.2	52.9	52.3	51.6	52.3	52.3
85°	38.3	35.7	35.7	35.1	34.4	33.8	33.2	33.2	32.5	33.2	32.5
87.5°	15.9	15.3	15.3	14.0	14.7	14.7	14.0	14.0	14.7	13.4	13.4
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: P242744

CATALOG NUMBER: S124RDR-S1020D835-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1582.6	1582.6	1582.6	1582.6
2.5°	1492.7	1494.0	1489.5	1488.2
5°	1401.5	1400.2	1397.0	1397.7
7.5°	1322.4	1318.0	1321.2	1316.1
10°	1251.0	1244.0	1238.3	1233.2
12.5°	1153.5	1147.7	1139.4	1142.6
15°	1062.3	1052.7	1037.4	1039.3
17.5°	980.7	981.9	973.0	975.6
20°	920.1	915.6	916.3	914.4
22.5°	878.0	872.3	866.5	862.1
25°	829.6	825.7	820.0	818.7
27.5°	786.8	786.2	783.6	780.5
30°	750.5	749.2	747.9	746.0
32.5°	718.0	717.3	716.1	716.7
35°	687.4	686.7	685.4	684.8
37.5°	658.7	660.6	659.3	659.3
40°	628.7	629.3	630.6	630.0
42.5°	603.8	603.8	605.7	603.2
45°	573.2	577.1	576.4	576.4
47.5°	540.7	545.2	545.8	545.8
50°	508.8	507.5	509.5	508.8
52.5°	469.9	470.6	469.9	469.3
55°	429.8	430.4	429.1	429.8
57.5°	387.0	384.5	386.4	385.1
60°	340.5	335.4	334.1	331.6
62.5°	288.2	285.0	279.9	283.1
65°	242.9	240.4	238.5	241.0
67.5°	206.6	205.3	205.3	204.0
70°	179.2	177.3	177.3	176.0
72.5°	151.1	149.2	149.8	149.2
75°	116.0	112.9	112.9	113.5
77.5°	90.5	89.9	91.2	89.3
80°	70.8	70.1	69.5	71.4
82.5°	51.0	51.0	51.0	53.6
85°	33.2	31.9	33.2	31.9
87.5°	14.7	14.0	13.4	14.0
90°	0.0	0.0	0.0	0.0

(END OF REPORT)