

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: P243614

Luminaire Tested: **S124RDR-H1020D930-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243614
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-H1020D930-X4F0-XX-UDD-A-W
Description: DEFINE 4 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 3000K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3253.3 lumens
Efficiency: N/A
Efficacy: 103.3 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

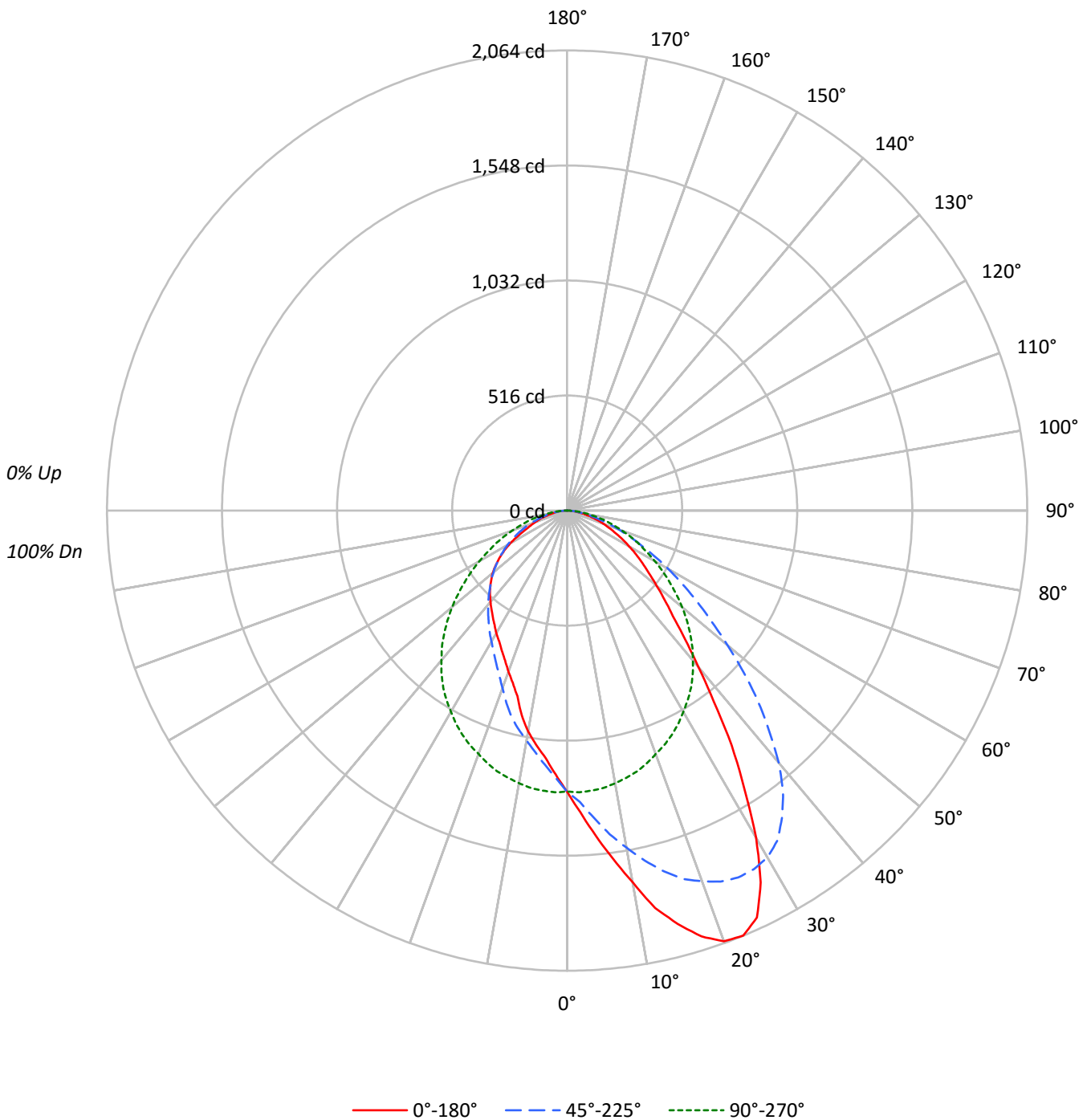
Input Watts (W): 31.5
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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°	11204	11204	11204
5°	13051	11252	9933
10°	15285	11205	9082
15°	17661	11148	7932
20°	19446	10990	7271
25°	19758	10890	6798
30°	17391	10696	6520
35°	13955	10514	6307
40°	10616	10178	6208
45°	8429	9805	6133
50°	7235	9319	6028
55°	6390	8717	5736
60°	5724	8089	5253
65°	5037	7475	4419
70°	4491	6786	3979
75°	3912	6172	3541
80°	3317	5303	3266
85°	2907	4559	3304



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	122.3	3.8
10°-20°	370.9	11.4
20°-30°	578.9	17.8
30°-40°	645.5	19.8
40°-50°	580.3	17.8
50°-60°	458.5	14.1
60°-70°	304.5	9.4
70°-80°	152.7	4.7
80°-90°	39.8	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°	1072.1	33.0
0°-40°	1717.6	52.8
0°-60°	2756.3	84.7
0°-90°	3253.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3253.3	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1260	1260	1260	1260	1260	
5°	1463	1384	1261	1145	1113	147
15°	1919	1675	1211	960	862	545
25°	2014	1816	1110	754	693	902
35°	1286	1680	969	613	581	799
45°	670	1210	780	490	488	531
55°	412	711	562	372	370	372
65°	240	364	355	244	210	240
75°	114	144	180	120	103	122
85°	28	30	45	33	32	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°	1260.5	1260.5	1260.5	1260.5	1260.5	1260.5	1260.5	1260.5	1260.5	1260.5	1260.5
2.5°	1353.8	1348.9	1348.4	1342.0	1341.5	1335.1	1333.1	1327.8	1317.0	1308.6	1309.1
5°	1462.7	1458.8	1458.3	1451.9	1450.0	1442.1	1429.8	1415.1	1397.9	1383.7	1374.4
7.5°	1574.6	1581.5	1574.2	1574.2	1559.9	1550.6	1526.5	1514.3	1484.8	1464.2	1442.6
10°	1693.4	1699.8	1696.9	1691.0	1672.3	1653.2	1628.2	1604.1	1568.3	1535.9	1514.3
12.5°	1826.0	1806.8	1819.1	1800.9	1785.7	1755.3	1731.2	1683.1	1654.7	1607.5	1565.3
15°	1919.2	1911.9	1911.4	1899.1	1882.4	1849.0	1823.0	1773.0	1724.4	1674.8	1627.2
17.5°	2002.7	2003.7	1996.8	1977.1	1955.5	1923.2	1887.8	1843.1	1787.7	1732.7	1676.3
20°	2055.7	2056.2	2051.3	2041.0	2017.4	1987.9	1951.6	1893.2	1830.4	1769.5	1713.1
22.5°	2063.5	2065.0	2063.5	2057.2	2041.0	2016.9	1983.5	1934.0	1870.6	1800.9	1733.7
25°	2014.5	2019.4	2019.8	2028.7	2020.3	2011.0	1986.5	1944.7	1886.3	1815.7	1742.5
27.5°	1880.0	1893.7	1906.5	1922.2	1936.4	1949.2	1951.1	1929.0	1879.0	1813.2	1743.5
30°	1694.4	1710.6	1736.1	1752.8	1797.0	1825.0	1862.8	1871.1	1847.1	1796.5	1729.3
32.5°	1478.4	1495.6	1505.4	1560.4	1623.7	1669.4	1732.2	1769.5	1778.8	1754.8	1699.8
35°	1286.0	1289.0	1296.3	1358.7	1421.5	1490.7	1568.8	1633.6	1677.7	1680.2	1653.2
37.5°	1079.9	1083.3	1112.3	1159.9	1214.4	1290.4	1380.3	1472.6	1553.5	1590.8	1583.0
40°	914.9	914.0	944.9	986.1	1039.1	1118.2	1210.9	1311.6	1397.9	1476.0	1494.6
42.5°	781.4	784.9	811.4	835.4	886.5	941.9	1041.1	1145.6	1256.6	1342.0	1398.9
45°	670.5	679.3	697.5	720.1	758.4	809.4	890.4	994.5	1107.8	1210.4	1278.7
47.5°	593.9	596.4	605.7	633.7	659.2	700.4	769.7	858.0	958.6	1073.5	1163.3
50°	523.2	529.1	532.6	549.3	574.3	613.6	667.1	732.8	832.5	938.0	1050.4
52.5°	462.4	465.8	472.2	487.4	507.0	534.5	576.7	634.7	717.6	815.3	921.3
55°	412.3	412.8	419.2	430.0	445.2	466.3	506.6	548.3	621.9	710.8	807.0
57.5°	367.2	364.2	370.1	376.5	391.2	409.4	435.4	478.1	535.5	611.1	698.0
60°	322.0	324.5	324.0	331.3	339.2	357.3	379.4	407.4	454.5	523.7	597.4
62.5°	279.8	279.3	284.2	288.6	294.0	308.7	326.9	350.0	386.8	437.8	509.0
65°	239.5	240.5	244.4	247.9	253.8	263.1	276.8	295.5	324.9	364.2	424.1
67.5°	203.2	206.6	208.6	209.6	215.0	221.9	233.6	248.9	269.0	300.4	350.5
70°	172.8	173.8	174.7	178.2	180.6	184.6	193.4	201.7	219.9	243.0	279.3
72.5°	144.3	143.3	146.3	147.3	148.2	152.2	157.6	162.0	173.8	193.4	216.0
75°	113.9	114.4	114.9	116.3	120.3	120.7	123.2	128.1	136.5	144.3	159.5
77.5°	85.4	86.9	86.4	87.9	89.3	90.8	91.8	96.2	102.1	108.5	115.8
80°	64.8	64.8	64.8	65.8	64.8	68.2	68.2	69.7	71.2	74.1	79.5
82.5°	44.2	45.2	45.6	46.1	46.6	46.6	47.1	48.1	50.1	51.0	52.5
85°	28.5	27.5	28.0	28.0	28.0	28.0	29.0	29.9	29.9	30.4	31.9
87.5°	12.8	12.8	12.8	12.8	12.3	12.8	13.3	13.3	13.7	13.7	14.7
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):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1260.5	1260.5	1260.5	1260.5	1260.5	1260.5	1260.5	1260.5	1260.5	1260.5	1260.5
2.5°	1306.2	1304.7	1297.3	1289.5	1282.1	1274.7	1272.3	1264.9	1256.1	1248.2	1239.4
5°	1364.6	1352.8	1336.6	1319.9	1302.7	1287.0	1274.7	1261.0	1245.3	1226.6	1211.9
7.5°	1423.5	1401.9	1375.4	1350.8	1321.4	1297.8	1274.2	1254.6	1232.0	1205.5	1185.4
10°	1480.9	1445.1	1412.7	1373.9	1336.6	1304.2	1274.2	1241.4	1211.4	1182.9	1155.0
12.5°	1526.5	1490.7	1444.1	1396.5	1348.4	1306.2	1265.9	1227.1	1189.8	1155.5	1124.5
15°	1578.6	1527.0	1469.6	1417.1	1351.3	1299.3	1253.1	1211.4	1168.7	1127.0	1093.1
17.5°	1616.9	1556.0	1484.8	1424.4	1361.1	1296.3	1240.9	1188.3	1139.3	1095.6	1060.7
20°	1646.3	1574.2	1503.0	1426.4	1350.8	1284.6	1222.2	1161.8	1112.3	1064.7	1027.8
22.5°	1659.1	1583.0	1504.0	1421.0	1340.5	1265.4	1200.6	1138.3	1082.3	1033.2	990.5
25°	1664.5	1581.0	1499.1	1404.8	1323.3	1246.8	1174.6	1110.3	1052.9	997.4	955.2
27.5°	1660.1	1570.7	1476.5	1387.6	1295.4	1220.3	1143.7	1078.4	1018.5	965.0	917.9
30°	1648.3	1547.2	1453.4	1353.8	1264.9	1185.9	1111.3	1042.1	981.7	927.2	880.6
32.5°	1617.8	1520.7	1414.1	1317.0	1221.2	1143.2	1075.5	1007.2	945.9	888.9	843.8
35°	1580.0	1484.8	1373.4	1271.8	1177.1	1098.0	1029.8	968.9	908.6	848.2	802.0
37.5°	1532.4	1435.7	1328.2	1218.8	1126.0	1049.4	987.1	925.7	865.9	810.4	758.9
40°	1468.1	1379.8	1271.8	1161.8	1068.6	995.0	933.6	877.1	824.1	769.7	714.2
42.5°	1388.1	1320.9	1209.5	1101.0	1009.7	936.5	882.1	831.5	780.5	724.5	674.4
45°	1302.7	1245.3	1144.2	1034.7	947.8	876.7	824.6	780.0	731.9	682.3	629.8
47.5°	1206.5	1163.8	1076.4	968.0	876.7	815.8	767.7	726.9	683.3	639.1	588.0
50°	1098.0	1072.0	997.4	898.7	811.9	750.0	710.3	673.9	636.6	592.5	548.8
52.5°	989.6	984.6	914.9	828.1	746.1	688.7	649.9	616.5	586.1	544.4	507.5
55°	875.7	890.4	832.5	752.5	679.3	623.9	589.5	562.5	536.0	500.7	465.3
57.5°	774.6	791.3	751.5	677.9	609.6	562.5	533.1	508.5	485.5	453.1	429.5
60°	662.6	693.1	672.0	604.7	544.4	502.1	474.7	455.0	435.9	407.9	387.3
62.5°	574.3	595.4	583.1	533.1	479.6	445.2	420.7	402.5	387.3	365.7	345.6
65°	479.6	506.1	499.7	466.8	419.7	388.3	369.6	355.4	339.7	322.5	305.8
67.5°	394.2	421.6	420.2	397.6	362.7	336.7	319.1	308.7	296.0	279.3	269.0
70°	317.1	342.6	343.6	332.3	307.8	283.2	270.5	261.1	251.3	239.0	231.7
72.5°	246.4	269.5	273.4	268.0	252.3	236.1	224.8	218.4	210.1	199.8	193.4
75°	184.1	200.8	210.1	207.6	201.2	190.4	184.1	179.7	171.3	163.9	158.5
77.5°	131.1	144.3	153.6	157.6	154.6	150.2	144.3	140.9	132.0	128.6	125.7
80°	87.9	99.6	108.0	110.4	111.9	110.9	105.5	103.6	99.2	97.7	94.7
82.5°	54.0	60.4	66.3	72.6	75.6	75.6	72.6	73.1	69.2	67.2	66.3
85°	32.9	34.4	35.3	40.2	44.2	45.6	44.2	44.7	43.2	41.7	40.2
87.5°	15.2	15.2	15.7	16.7	17.7	20.6	21.6	23.1	21.1	21.1	17.7
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°	1260.5	1260.5	1260.5	1260.5	1260.5	1260.5	1260.5	1260.5	1260.5	1260.5	1260.5
2.5°	1234.0	1227.6	1222.7	1214.9	1208.5	1198.2	1194.7	1194.7	1196.7	1194.2	1196.7
5°	1201.6	1189.8	1177.1	1165.8	1153.5	1144.7	1135.8	1133.9	1132.9	1127.0	1127.5
7.5°	1169.2	1153.5	1137.3	1122.6	1107.4	1093.6	1084.3	1080.4	1076.9	1073.0	1068.6
10°	1134.4	1116.2	1097.1	1080.4	1065.6	1047.0	1037.7	1034.7	1024.9	1022.9	1016.1
12.5°	1097.5	1078.9	1059.7	1038.1	1023.9	1005.8	992.0	985.6	976.3	969.4	959.1
15°	1068.6	1045.0	1019.5	998.4	979.7	959.6	941.0	928.7	916.4	897.3	887.9
17.5°	1032.7	1005.8	983.7	961.1	934.1	904.6	882.5	864.4	851.1	835.4	826.1
20°	994.0	968.9	941.5	909.5	881.1	847.7	827.6	812.4	802.0	792.7	787.8
22.5°	959.6	930.7	892.9	862.4	822.7	796.2	780.0	770.1	760.3	750.5	745.6
25°	922.3	888.4	842.3	805.0	775.1	754.4	738.7	729.4	719.1	713.2	705.8
27.5°	885.5	841.8	795.7	761.8	738.2	714.2	700.9	693.6	685.7	677.4	671.5
30°	840.8	791.3	753.0	722.0	698.5	678.4	668.5	657.7	650.9	646.0	642.5
32.5°	794.2	746.6	711.7	685.2	662.2	646.9	634.7	627.8	621.9	616.5	612.6
35°	750.5	704.4	674.9	649.4	630.3	613.1	603.7	597.4	592.5	588.0	586.1
37.5°	707.3	668.0	636.1	616.0	595.9	582.1	573.3	567.4	564.5	560.1	560.6
40°	664.6	629.3	603.7	580.7	562.0	550.2	543.4	540.9	536.5	535.0	536.5
42.5°	626.3	593.9	569.4	547.8	531.6	520.3	514.9	511.5	510.0	509.5	510.0
45°	589.0	558.6	535.0	517.4	500.7	490.4	485.9	483.5	482.0	484.5	485.0
47.5°	551.7	524.2	503.1	482.5	468.8	461.4	457.0	455.0	456.5	457.5	460.9
50°	514.9	489.4	467.3	449.1	438.3	431.5	430.0	426.5	429.0	430.5	432.9
52.5°	477.6	454.5	434.9	417.7	406.4	402.0	398.6	397.1	400.5	400.5	403.0
55°	439.8	419.7	401.5	385.8	377.0	371.6	369.1	367.2	369.1	369.6	369.1
57.5°	404.5	385.3	366.2	352.9	345.6	339.7	337.2	336.2	335.7	337.7	337.2
60°	367.2	349.0	333.8	320.0	312.7	309.2	303.8	304.8	304.8	304.8	299.9
62.5°	329.9	311.7	298.4	289.1	280.3	274.4	273.4	271.9	269.0	268.5	262.1
65°	291.6	277.8	266.5	257.2	248.4	243.5	242.0	237.6	234.1	227.8	223.3
67.5°	256.2	246.4	233.2	225.3	217.9	212.0	206.6	203.2	196.3	190.0	186.0
70°	220.9	210.6	201.7	193.4	186.0	180.6	174.3	167.9	163.5	159.5	156.6
72.5°	185.5	176.7	169.3	161.5	153.6	148.2	143.3	138.4	136.5	134.5	133.0
75°	152.7	144.3	137.4	131.1	126.6	120.3	117.8	115.8	113.9	111.4	108.5
77.5°	120.7	114.4	109.0	103.6	99.6	96.2	94.2	88.4	83.4	82.5	81.5
80°	89.8	84.9	81.5	77.6	73.1	68.2	66.8	64.8	63.8	63.8	64.3
82.5°	62.8	59.9	56.0	52.5	51.0	49.1	49.1	48.6	48.1	48.6	48.6
85°	38.3	34.4	33.4	32.9	33.4	33.4	33.4	33.4	32.9	33.4	32.4
87.5°	16.7	18.2	18.7	17.2	17.7	16.7	17.2	17.2	17.2	17.7	17.2
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: P243614

CATALOG NUMBER: S124RDR-H1020D930-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1260.5	1260.5	1260.5	1260.5
2.5°	1193.7	1193.7	1188.8	1184.9
5°	1126.5	1120.1	1119.1	1113.2
7.5°	1063.7	1062.7	1060.2	1060.2
10°	1013.6	1010.2	1006.7	1006.2
12.5°	942.9	947.8	941.9	940.5
15°	881.1	877.1	872.2	861.9
17.5°	823.6	816.3	814.3	809.9
20°	778.5	773.1	771.1	768.7
22.5°	735.8	734.8	728.9	727.4
25°	704.4	699.5	695.5	693.1
27.5°	670.0	666.6	664.6	660.7
30°	638.6	637.6	635.2	635.2
32.5°	610.1	607.2	607.2	606.7
35°	584.1	585.1	582.1	581.2
37.5°	559.6	558.1	558.6	557.6
40°	535.5	534.5	534.5	535.0
42.5°	511.0	511.5	512.4	512.4
45°	486.4	486.9	487.9	487.9
47.5°	463.4	462.4	463.4	462.4
50°	433.9	436.9	436.4	435.9
52.5°	404.0	403.0	405.0	404.5
55°	371.6	370.1	372.1	370.1
57.5°	335.3	335.7	335.7	334.8
60°	298.9	297.5	295.5	295.5
62.5°	256.7	252.3	249.4	251.3
65°	216.0	212.5	211.6	210.1
67.5°	183.6	179.7	178.2	177.7
70°	155.6	153.6	153.1	153.1
72.5°	132.0	132.0	130.6	129.6
75°	107.5	105.5	103.1	103.1
77.5°	80.5	80.0	79.5	79.5
80°	62.8	62.8	63.3	63.8
82.5°	47.1	47.6	48.1	48.1
85°	31.9	31.9	32.4	32.4
87.5°	17.2	17.2	17.2	16.7
90°	0.0	0.0	0.0	0.0

(END OF REPORT)