

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: P243619

Luminaire Tested: **S124RDR-H1020D935-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243619
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-H1020D935-X4F0-XX-UDD-A-W
Description: DEFINE 4 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 3500K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3435.6 lumens
Efficiency: N/A
Efficacy: 109.1 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

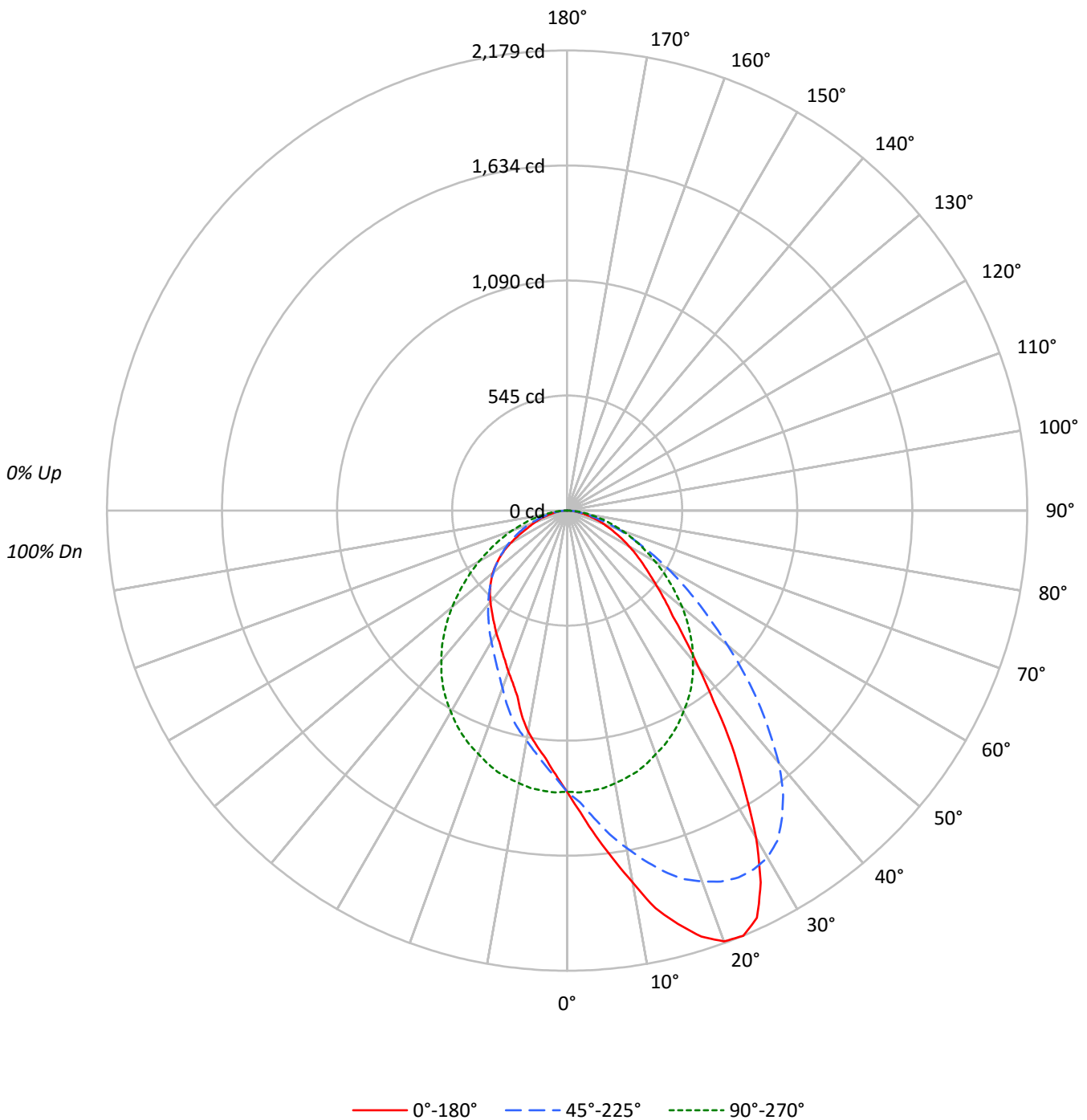
Input Watts (W): 31.5
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	11833	11833	11833
5°	13783	11883	10491
10°	16142	11832	9591
15°	18652	11773	8376
20°	20535	11607	7679
25°	20865	11500	7178
30°	18366	11296	6885
35°	14737	11104	6659
40°	11211	10748	6556
45°	8901	10355	6478
50°	7642	9842	6365
55°	6748	9205	6056
60°	6044	8542	5548
65°	5321	7894	4667
70°	4743	7168	4202
75°	4132	6515	3740
80°	3501	5600	3450
85°	3070	4814	3488



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	129.2	3.8
10°-20°	391.7	11.4
20°-30°	611.3	17.8
30°-40°	681.7	19.8
40°-50°	612.8	17.8
50°-60°	484.2	14.1
60°-70°	321.6	9.4
70°-80°	161.2	4.7
80°-90°	42.0	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°	1132.2	33.0
0°-40°	1813.8	52.8
0°-60°	2910.8	84.7
0°-90°	3435.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3435.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1331	1331	1331	1331	1331	
5°	1545	1461	1332	1209	1176	155
15°	2027	1769	1279	1013	910	576
25°	2127	1917	1172	797	732	952
35°	1358	1774	1023	647	614	844
45°	708	1278	824	518	515	561
55°	435	751	594	392	391	392
65°	253	385	375	257	222	253
75°	120	152	190	127	109	129
85°	30	32	47	35	34	34
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°	1331.2	1331.2	1331.2	1331.2	1331.2	1331.2	1331.2	1331.2	1331.2	1331.2	1331.2
2.5°	1429.6	1424.5	1423.9	1417.2	1416.7	1410.0	1407.9	1402.2	1390.8	1382.0	1382.5
5°	1544.7	1540.6	1540.1	1533.3	1531.2	1523.0	1510.0	1494.4	1476.3	1461.3	1451.4
7.5°	1662.9	1670.2	1662.4	1662.4	1647.4	1637.5	1612.1	1599.2	1568.1	1546.3	1523.5
10°	1788.4	1795.1	1792.0	1785.8	1766.1	1745.9	1719.4	1694.0	1656.2	1622.0	1599.2
12.5°	1928.3	1908.1	1921.1	1901.9	1885.8	1853.7	1828.3	1777.5	1747.4	1697.6	1653.1
15°	2026.8	2019.0	2018.5	2005.6	1987.9	1952.7	1925.2	1872.3	1821.0	1768.7	1718.4
17.5°	2114.9	2116.0	2108.7	2088.0	2065.2	2031.0	1993.6	1946.5	1887.9	1829.8	1770.2
20°	2170.9	2171.4	2166.2	2155.4	2130.5	2099.4	2061.0	1999.3	1933.0	1868.7	1809.1
22.5°	2179.2	2180.8	2179.2	2172.5	2155.4	2130.0	2094.7	2042.4	1975.5	1901.9	1830.9
25°	2127.4	2132.6	2133.1	2142.4	2133.6	2123.7	2097.8	2053.8	1992.1	1917.4	1840.2
27.5°	1985.3	1999.9	2013.3	2029.9	2044.9	2058.4	2060.5	2037.2	1984.3	1914.8	1841.2
30°	1789.4	1806.5	1833.5	1851.1	1897.7	1927.3	1967.2	1976.0	1950.6	1897.2	1826.2
32.5°	1561.3	1579.5	1589.8	1647.9	1714.8	1763.0	1829.3	1868.7	1878.6	1853.2	1795.1
35°	1358.1	1361.2	1369.0	1434.8	1501.2	1574.3	1656.7	1725.1	1771.8	1774.4	1745.9
37.5°	1140.4	1144.0	1174.6	1224.9	1282.4	1362.8	1457.6	1555.1	1640.6	1680.0	1671.7
40°	966.2	965.2	997.9	1041.4	1097.4	1180.8	1278.8	1385.1	1476.3	1558.7	1578.4
42.5°	825.2	828.9	856.9	882.3	936.2	994.7	1099.5	1209.9	1327.0	1417.2	1477.3
45°	708.1	717.4	736.6	760.4	800.9	854.8	940.3	1050.2	1169.9	1278.3	1350.3
47.5°	627.2	629.8	639.7	669.2	696.2	739.7	812.8	906.1	1012.4	1133.7	1228.5
50°	552.6	558.8	562.4	580.0	606.5	648.0	704.5	773.9	879.1	990.6	1109.3
52.5°	488.3	491.9	498.7	514.7	535.5	564.5	609.1	670.2	757.8	861.0	973.0
55°	435.4	435.9	442.7	454.1	470.2	492.4	535.0	579.0	656.8	750.6	852.2
57.5°	387.7	384.6	390.8	397.6	413.1	432.3	459.8	504.9	565.5	645.4	737.1
60°	340.0	342.6	342.1	349.9	358.2	377.4	400.7	430.2	480.0	553.1	630.8
62.5°	295.5	294.9	300.1	304.8	310.5	326.1	345.2	369.6	408.5	462.4	537.5
65°	253.0	254.0	258.1	261.8	268.0	277.8	292.4	312.1	343.2	384.6	447.9
67.5°	214.6	218.2	220.3	221.3	227.0	234.3	246.7	262.8	284.1	317.2	370.1
70°	182.5	183.5	184.5	188.2	190.8	194.9	204.2	213.0	232.2	256.6	294.9
72.5°	152.4	151.4	154.5	155.5	156.5	160.7	166.4	171.1	183.5	204.2	228.1
75°	120.3	120.8	121.3	122.9	127.0	127.5	130.1	135.3	144.1	152.4	168.5
77.5°	90.2	91.8	91.2	92.8	94.3	95.9	96.9	101.6	107.8	114.6	122.3
80°	68.4	68.4	68.4	69.5	68.4	72.1	72.1	73.6	75.2	78.3	84.0
82.5°	46.7	47.7	48.2	48.7	49.2	49.2	49.8	50.8	52.9	53.9	55.5
85°	30.1	29.0	29.5	29.5	29.5	29.5	30.6	31.6	31.6	32.1	33.7
87.5°	13.5	13.5	13.5	13.5	13.0	13.5	14.0	14.0	14.5	14.5	15.6
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°	1331.2	1331.2	1331.2	1331.2	1331.2	1331.2	1331.2	1331.2	1331.2	1331.2	1331.2
2.5°	1379.4	1377.8	1370.0	1361.7	1354.0	1346.2	1343.6	1335.8	1326.5	1318.2	1308.9
5°	1441.1	1428.6	1411.5	1393.9	1375.7	1359.2	1346.2	1331.7	1315.1	1295.4	1279.8
7.5°	1503.3	1480.4	1452.5	1426.5	1395.4	1370.6	1345.7	1324.9	1301.1	1273.1	1251.9
10°	1563.9	1526.1	1491.9	1450.9	1411.5	1377.3	1345.7	1310.9	1279.3	1249.3	1219.7
12.5°	1612.1	1574.3	1525.0	1474.7	1423.9	1379.4	1336.9	1295.9	1256.5	1220.2	1187.6
15°	1667.1	1612.6	1552.0	1496.5	1427.1	1372.1	1323.4	1279.3	1234.2	1190.2	1154.4
17.5°	1707.5	1643.2	1568.1	1504.3	1437.4	1369.0	1310.4	1255.0	1203.1	1157.0	1120.2
20°	1738.6	1662.4	1587.2	1506.4	1426.5	1356.6	1290.7	1227.0	1174.6	1124.3	1085.5
22.5°	1752.1	1671.7	1588.3	1500.7	1415.7	1336.3	1267.9	1202.1	1143.0	1091.2	1046.1
25°	1757.8	1669.7	1583.1	1483.6	1397.5	1316.6	1240.4	1172.5	1111.9	1053.3	1008.7
27.5°	1753.1	1658.8	1559.2	1465.4	1368.0	1288.7	1207.8	1138.8	1075.6	1019.1	969.3
30°	1740.7	1633.9	1534.9	1429.6	1335.8	1252.4	1173.6	1100.5	1036.7	979.2	929.9
32.5°	1708.5	1605.9	1493.4	1390.8	1289.7	1207.3	1135.7	1063.7	998.9	938.8	891.1
35°	1668.6	1568.1	1450.4	1343.1	1243.0	1159.6	1087.5	1023.3	959.5	895.7	847.0
37.5°	1618.3	1516.2	1402.7	1287.1	1189.1	1108.3	1042.4	977.6	914.4	855.8	801.4
40°	1550.4	1457.1	1343.1	1227.0	1128.5	1050.7	985.9	926.3	870.3	812.8	754.2
42.5°	1465.9	1394.9	1277.3	1162.7	1066.3	989.0	931.5	878.1	824.2	765.1	712.2
45°	1375.7	1315.1	1208.3	1092.7	1001.0	925.8	870.9	823.7	772.9	720.5	665.1
47.5°	1274.1	1229.0	1136.8	1022.2	925.8	861.5	810.7	767.7	721.6	674.9	621.0
50°	1159.6	1132.1	1053.3	949.1	857.4	792.1	750.1	711.7	672.3	625.7	579.5
52.5°	1045.0	1039.8	966.2	874.5	787.9	727.3	686.3	651.1	618.9	574.9	536.0
55°	924.8	940.3	879.1	794.7	717.4	658.8	622.6	594.0	566.1	528.7	491.4
57.5°	818.0	835.6	793.6	715.9	643.8	594.0	562.9	537.0	512.7	478.5	453.6
60°	699.8	731.9	709.6	638.6	574.9	530.3	501.3	480.5	460.3	430.8	409.0
62.5°	606.5	628.8	615.8	562.9	506.4	470.2	444.2	425.1	409.0	386.2	364.9
65°	506.4	534.4	527.7	493.0	443.2	410.0	390.3	375.3	358.7	340.6	322.9
67.5°	416.2	445.3	443.7	419.9	383.1	355.6	336.9	326.1	312.6	294.9	284.1
70°	334.9	361.8	362.9	350.9	325.0	299.1	285.6	275.8	265.4	252.4	244.7
72.5°	260.2	284.6	288.7	283.0	266.4	249.3	237.4	230.7	221.9	211.0	204.2
75°	194.4	212.0	221.9	219.3	212.5	201.1	194.4	189.7	180.9	173.1	167.4
77.5°	138.4	152.4	162.2	166.4	163.3	158.6	152.4	148.8	139.4	135.8	132.7
80°	92.8	105.2	114.0	116.6	118.2	117.2	111.4	109.4	104.7	103.2	100.0
82.5°	57.0	63.8	70.0	76.7	79.8	79.8	76.7	77.2	73.1	71.0	70.0
85°	34.7	36.3	37.3	42.5	46.7	48.2	46.7	47.2	45.6	44.1	42.5
87.5°	16.1	16.1	16.6	17.6	18.7	21.8	22.8	24.4	22.3	22.3	18.7
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°	1331.2	1331.2	1331.2	1331.2	1331.2	1331.2	1331.2	1331.2	1331.2	1331.2	1331.2
2.5°	1303.2	1296.4	1291.2	1283.0	1276.2	1265.3	1261.7	1261.7	1263.8	1261.2	1263.8
5°	1269.0	1256.5	1243.0	1231.1	1218.2	1208.8	1199.5	1197.4	1196.4	1190.2	1190.7
7.5°	1234.7	1218.2	1201.1	1185.5	1169.4	1154.9	1145.1	1140.9	1137.3	1133.1	1128.5
10°	1197.9	1178.8	1158.5	1140.9	1125.4	1105.7	1095.8	1092.7	1082.3	1080.3	1073.0
12.5°	1159.1	1139.4	1119.1	1096.3	1081.3	1062.1	1047.6	1040.9	1031.0	1023.8	1012.9
15°	1128.5	1103.6	1076.6	1054.4	1034.7	1013.4	993.7	980.7	967.8	947.6	937.7
17.5°	1090.6	1062.1	1038.8	1015.0	986.4	955.3	932.0	912.8	898.8	882.3	872.4
20°	1049.7	1023.3	994.2	960.5	930.5	895.2	874.0	857.9	847.0	837.2	832.0
22.5°	1013.4	982.8	942.9	910.8	868.8	840.8	823.7	813.3	802.9	792.6	787.4
25°	974.0	938.2	889.5	850.1	818.5	796.7	780.1	770.3	759.4	753.2	745.4
27.5°	935.1	889.0	840.3	804.5	779.6	754.2	740.2	732.4	724.2	715.3	709.1
30°	888.0	835.6	795.2	762.5	737.6	716.4	706.0	694.6	687.4	682.2	678.5
32.5°	838.7	788.4	751.6	723.6	699.3	683.2	670.2	663.0	656.8	651.1	646.9
35°	792.6	743.9	712.8	685.8	665.6	647.4	637.6	630.8	625.7	621.0	618.9
37.5°	747.0	705.5	671.8	650.5	629.3	614.8	605.4	599.2	596.1	591.5	592.0
40°	701.9	664.5	637.6	613.2	593.5	581.1	573.8	571.2	566.6	565.0	566.6
42.5°	661.4	627.2	601.3	578.5	561.4	549.5	543.8	540.1	538.6	538.1	538.6
45°	622.0	589.9	565.0	546.4	528.7	517.8	513.2	510.6	509.0	511.6	512.1
47.5°	582.6	553.6	531.3	509.6	495.0	487.3	482.6	480.5	482.1	483.1	486.7
50°	543.8	516.8	493.5	474.3	462.9	455.6	454.1	450.5	453.1	454.6	457.2
52.5°	504.4	480.0	459.3	441.1	429.2	424.5	420.9	419.4	423.0	423.0	425.6
55°	464.5	443.2	424.0	407.4	398.1	392.4	389.8	387.7	389.8	390.3	389.8
57.5°	427.1	406.9	386.7	372.7	364.9	358.7	356.1	355.1	354.6	356.6	356.1
60°	387.7	368.6	352.5	338.0	330.2	326.6	320.9	321.9	321.9	321.9	316.7
62.5°	348.3	329.2	315.2	305.3	296.0	289.8	288.7	287.2	284.1	283.5	276.8
65°	307.9	293.4	281.5	271.6	262.3	257.1	255.6	250.9	247.3	240.5	235.9
67.5°	270.6	260.2	246.2	237.9	230.2	223.9	218.2	214.6	207.3	200.6	196.5
70°	233.3	222.4	213.0	204.2	196.5	190.8	184.0	177.3	172.6	168.5	165.4
72.5°	195.9	186.6	178.8	170.5	162.2	156.5	151.4	146.2	144.1	142.0	140.5
75°	161.2	152.4	145.1	138.4	133.7	127.0	124.4	122.3	120.3	117.7	114.6
77.5°	127.5	120.8	115.1	109.4	105.2	101.6	99.5	93.3	88.1	87.1	86.0
80°	94.9	89.7	86.0	81.9	77.2	72.1	70.5	68.4	67.4	67.4	67.9
82.5°	66.4	63.2	59.1	55.5	53.9	51.8	51.8	51.3	50.8	51.3	51.3
85°	40.4	36.3	35.2	34.7	35.2	35.2	35.2	35.2	34.7	35.2	34.2
87.5°	17.6	19.2	19.7	18.1	18.7	17.6	18.1	18.1	18.1	18.7	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



TEST NUMBER: P243619

CATALOG NUMBER: S124RDR-H1020D935-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1331.2	1331.2	1331.2	1331.2
2.5°	1260.7	1260.7	1255.5	1251.3
5°	1189.6	1182.9	1181.9	1175.7
7.5°	1123.3	1122.3	1119.7	1119.7
10°	1070.4	1066.8	1063.2	1062.6
12.5°	995.8	1001.0	994.7	993.2
15°	930.5	926.3	921.1	910.2
17.5°	869.8	862.0	860.0	855.3
20°	822.1	816.4	814.4	811.8
22.5°	777.0	776.0	769.8	768.2
25°	743.9	738.7	734.5	731.9
27.5°	707.6	703.9	701.9	697.7
30°	674.4	673.4	670.8	670.8
32.5°	644.3	641.2	641.2	640.7
35°	616.9	617.9	614.8	613.7
37.5°	590.9	589.4	589.9	588.9
40°	565.5	564.5	564.5	565.0
42.5°	539.6	540.1	541.2	541.2
45°	513.7	514.2	515.3	515.3
47.5°	489.3	488.3	489.3	488.3
50°	458.2	461.3	460.8	460.3
52.5°	426.6	425.6	427.7	427.1
55°	392.4	390.8	392.9	390.8
57.5°	354.0	354.6	354.6	353.5
60°	315.7	314.1	312.1	312.1
62.5°	271.1	266.4	263.3	265.4
65°	228.1	224.5	223.4	221.9
67.5°	193.9	189.7	188.2	187.6
70°	164.3	162.2	161.7	161.7
72.5°	139.4	139.4	137.9	136.8
75°	113.5	111.4	108.9	108.9
77.5°	85.0	84.5	84.0	84.0
80°	66.4	66.4	66.9	67.4
82.5°	49.8	50.3	50.8	50.8
85°	33.7	33.7	34.2	34.2
87.5°	18.1	18.1	18.1	17.6
90°	0.0	0.0	0.0	0.0

(END OF REPORT)