

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: P243088

Luminaire Tested: **S121RDR-H880D835-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243088
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-67)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S121RDR-H880D835-X4F0-XX-UDD-A-W
Description: DEFINE 1 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: 2814.9 lumens
Efficiency: N/A
Efficacy: 89.4 lumens/watt
Spacing Criteria (0/90/45): 0.89 / 1.21 / 1.07
Luminous Opening: Rectangular (W 3.88' x L: 0.09' x H: 0')
CIE Type: Direct

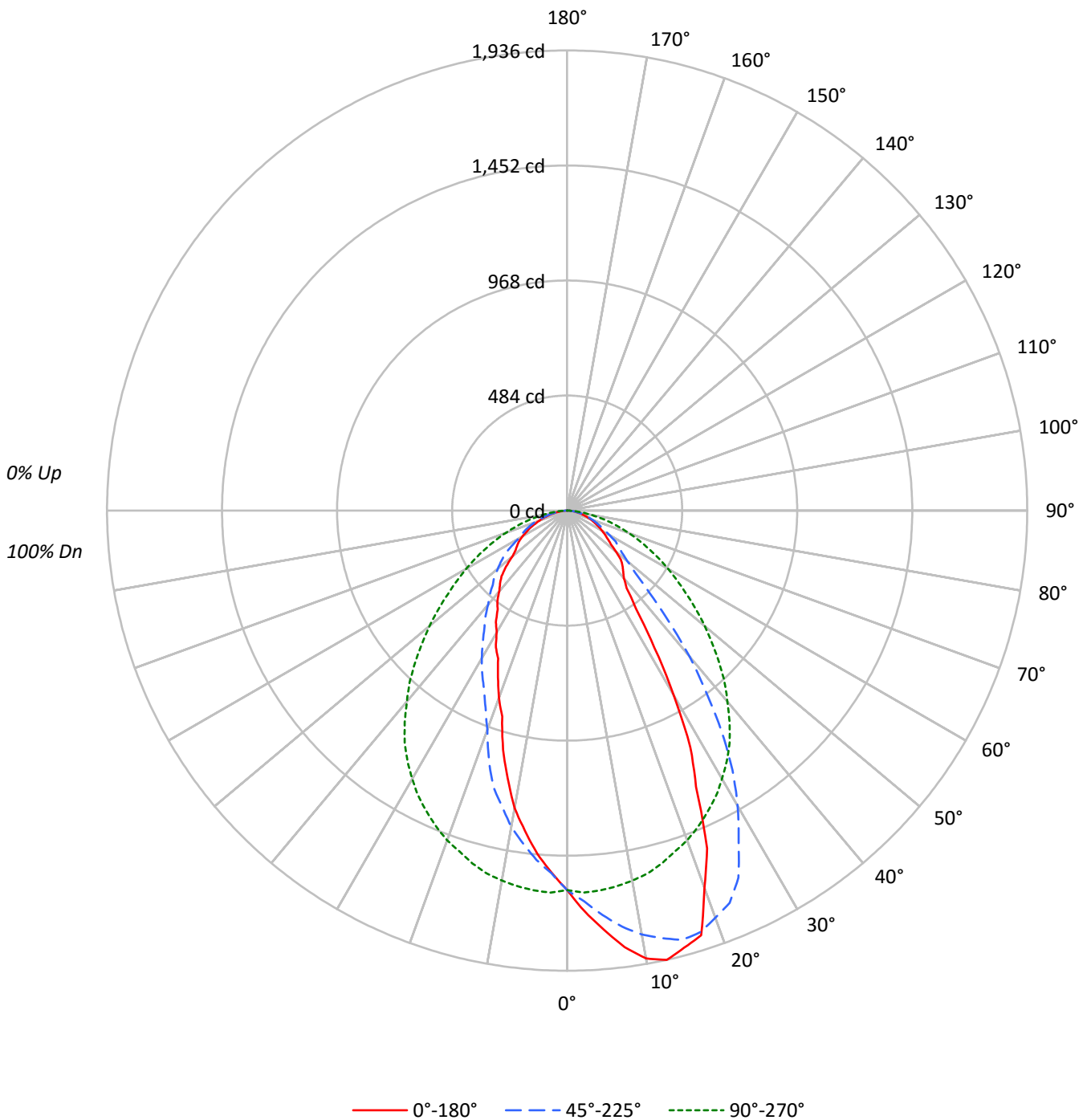
Input Watts (W): 31.5
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	0	
RCR																						
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100				100
1	111	107	103	100	108	104	101	98	100	97	95	96	94	92	93	91	89				87	
2	102	95	89	84	100	93	88	83	90	85	81	87	83	80	84	81	78				76	
3	94	85	78	73	92	84	77	72	81	75	71	78	73	70	76	72	68				66	
4	87	77	69	63	85	76	69	63	73	67	62	71	66	61	69	64	61				59	
5	81	70	62	56	79	69	61	56	67	60	55	65	59	55	63	58	54				52	
6	76	64	56	50	74	63	55	50	61	55	50	60	54	49	58	53	49				47	
7	71	59	51	45	69	58	50	45	56	50	45	55	49	44	54	48	44				42	
8	66	54	46	41	65	53	46	41	52	46	41	51	45	41	50	44	40				39	
9	62	50	43	38	61	50	42	38	49	42	37	48	42	37	47	41	37				35	
10	59	47	39	35	58	46	39	35	45	39	34	44	38	34	44	38	34				33	

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	47310	47310	47310
5°	52648	47690	43086
10°	57568	47552	38258
15°	58399	47150	31951
20°	53231	46550	26426
25°	41925	45704	22480
30°	30652	44597	20271
35°	18295	43120	18426
40°	14346	40566	17185
45°	13824	37867	16350
50°	12321	34830	13875
55°	10760	31692	13250
60°	10062	29007	12847
65°	9374	26382	11905
70°	8871	23789	10846
75°	8128	21156	9651
80°	7405	17148	8429
85°	6969	13089	6153



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	152.4	5.4
10°-20°	425.2	15.1
20°-30°	565.4	20.1
30°-40°	539.4	19.2
40°-50°	447.6	15.9
50°-60°	332.9	11.8
60°-70°	215.5	7.7
70°-80°	109.7	3.9
80°-90°	26.8	1.0
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°	1143.1	40.6
0°-40°	1682.4	59.8
0°-60°	2462.9	87.5
0°-90°	2814.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2814.9	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1597	1597	1597	1597	1597	
5°	1770	1708	1603	1476	1449	173
15°	1904	1870	1537	1202	1042	530
25°	1282	1704	1398	827	688	595
35°	506	1132	1192	608	509	344
45°	330	488	904	443	390	252
55°	208	264	614	320	256	189
65°	134	152	376	193	170	133
75°	71	78	185	96	84	75
85°	20	20	38	20	18	22
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°	1596.7	1596.7	1596.7	1596.7	1596.7	1596.7	1596.7	1596.7	1596.7	1596.7	1596.7
2.5°	1688.2	1684.0	1688.8	1687.0	1679.2	1681.0	1671.4	1665.4	1650.9	1645.5	1645.5
5°	1770.1	1776.2	1772.5	1773.7	1765.9	1761.1	1750.9	1739.4	1721.4	1708.1	1703.3
7.5°	1852.0	1853.8	1855.6	1850.8	1841.8	1833.3	1818.9	1802.0	1782.2	1765.3	1752.1
10°	1913.4	1917.6	1915.2	1908.0	1901.4	1888.7	1873.1	1855.0	1833.3	1811.1	1794.8
12.5°	1936.3	1939.9	1945.3	1941.1	1940.5	1934.5	1918.8	1896.6	1870.1	1842.4	1823.7
15°	1903.8	1901.4	1915.8	1912.2	1911.0	1908.6	1912.8	1908.0	1894.2	1870.1	1847.2
17.5°	1873.7	1872.5	1886.9	1890.5	1885.1	1877.3	1872.5	1866.5	1859.8	1860.4	1857.4
20°	1688.2	1725.0	1732.2	1751.5	1792.4	1819.5	1846.6	1845.4	1826.1	1823.1	1821.9
22.5°	1538.9	1552.8	1546.2	1577.5	1599.7	1648.5	1696.1	1756.3	1796.6	1786.4	1779.8
25°	1282.4	1325.8	1345.7	1384.8	1441.4	1503.4	1530.5	1594.3	1656.3	1704.5	1741.2
27.5°	1123.5	1133.1	1145.8	1186.1	1207.2	1263.8	1364.9	1451.6	1509.4	1561.8	1658.7
30°	895.9	900.1	944.1	966.3	1028.4	1083.8	1171.7	1241.5	1357.7	1435.4	1510.0
32.5°	684.0	680.4	728.5	754.4	815.8	890.5	988.6	1053.6	1167.4	1294.5	1383.6
35°	505.8	505.1	531.0	549.1	616.5	673.7	798.4	883.3	1007.9	1132.5	1247.5
37.5°	411.8	411.2	416.6	432.3	460.6	525.0	585.2	711.1	832.7	955.5	1099.4
40°	370.9	373.9	375.1	382.3	392.0	411.2	448.0	535.9	655.1	801.4	945.9
42.5°	349.2	349.2	350.4	352.2	357.0	362.5	384.7	418.4	514.2	631.0	792.9
45°	329.9	330.5	331.7	333.0	331.7	334.8	345.0	358.8	396.2	488.3	644.8
47.5°	307.1	306.5	309.5	311.3	313.7	317.3	317.9	325.1	341.4	389.5	503.3
50°	267.3	267.9	270.9	278.2	286.0	292.6	296.8	301.6	307.1	329.9	390.2
52.5°	231.2	231.8	233.6	239.0	246.3	254.7	267.9	278.8	283.0	290.2	323.9
55°	208.3	208.3	210.7	213.7	215.5	221.6	230.6	242.6	258.3	264.3	278.8
57.5°	189.1	189.1	190.3	190.3	192.7	195.7	201.7	207.7	221.0	240.2	249.3
60°	169.8	169.8	171.0	171.0	174.0	175.2	179.4	183.0	190.3	203.5	221.6
62.5°	151.7	150.5	151.7	152.3	154.1	155.9	159.0	163.2	167.4	175.2	188.5
65°	133.7	133.1	134.3	135.5	136.7	139.1	140.9	143.9	147.5	151.7	158.3
67.5°	118.0	117.4	118.0	119.8	119.2	120.4	123.4	124.6	128.2	132.5	137.9
70°	102.4	101.2	102.4	102.4	103.0	104.8	104.8	107.8	110.8	113.2	118.0
72.5°	85.5	86.1	85.5	86.1	87.3	87.9	89.1	90.9	92.7	95.1	98.1
75°	71.0	71.0	71.6	72.3	73.5	73.5	74.1	75.3	76.5	77.7	81.3
77.5°	56.6	57.2	57.8	58.4	58.4	59.0	59.6	60.2	62.0	62.6	64.4
80°	43.4	44.0	44.0	44.0	45.2	44.0	45.2	46.4	46.4	47.0	48.2
82.5°	31.3	31.9	31.3	31.9	32.5	32.5	31.9	32.5	32.5	33.7	33.7
85°	20.5	19.3	19.3	19.3	19.3	19.3	19.9	20.5	19.9	19.9	20.5
87.5°	8.4	8.4	8.4	8.4	9.0	8.4	9.0	9.0	9.0	8.4	9.0
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°	1596.7	1596.7	1596.7	1596.7	1596.7	1596.7	1596.7	1596.7	1596.7	1596.7	1596.7
2.5°	1648.5	1643.7	1639.5	1632.3	1623.2	1610.0	1608.2	1608.8	1592.5	1576.9	1574.5
5°	1693.1	1685.2	1672.0	1656.3	1641.9	1619.6	1610.0	1603.4	1578.7	1557.6	1549.2
7.5°	1740.6	1722.0	1703.9	1679.2	1655.1	1626.2	1608.2	1594.3	1561.8	1534.1	1519.7
10°	1778.0	1755.1	1729.2	1697.9	1664.8	1629.2	1602.1	1580.5	1541.3	1507.0	1489.0
12.5°	1804.4	1778.6	1747.9	1710.5	1672.6	1625.6	1592.5	1563.6	1516.1	1475.1	1453.4
15°	1818.3	1790.6	1752.7	1711.7	1672.6	1623.2	1579.3	1537.1	1490.2	1439.0	1411.9
17.5°	1830.9	1794.8	1752.1	1705.1	1665.4	1613.6	1559.4	1504.6	1451.6	1403.5	1359.5
20°	1821.9	1791.2	1743.6	1694.9	1650.3	1590.1	1532.9	1476.3	1410.1	1354.1	1310.1
22.5°	1779.8	1774.3	1723.2	1670.8	1619.6	1561.8	1495.6	1439.6	1368.5	1302.3	1249.3
25°	1730.4	1723.8	1696.1	1640.1	1582.3	1522.1	1462.5	1398.0	1316.2	1247.5	1186.7
27.5°	1688.8	1673.8	1653.9	1601.5	1539.5	1479.3	1417.9	1355.3	1268.0	1191.5	1122.3
30°	1604.6	1619.0	1596.7	1560.6	1489.0	1430.6	1371.6	1303.5	1216.8	1128.9	1057.9
32.5°	1470.9	1558.2	1535.9	1507.0	1436.6	1372.8	1316.8	1249.9	1154.2	1067.5	994.0
35°	1352.9	1428.1	1478.7	1443.8	1381.8	1307.7	1250.5	1192.1	1092.2	1003.7	933.2
37.5°	1238.5	1318.6	1402.9	1370.9	1319.8	1240.3	1180.1	1122.3	1029.6	940.5	870.0
40°	1088.6	1205.4	1286.7	1299.3	1246.9	1166.8	1108.4	1048.8	966.9	878.4	803.2
42.5°	944.7	1094.6	1160.2	1225.2	1171.7	1096.4	1031.4	980.8	901.9	824.3	742.4
45°	794.2	964.5	1061.5	1111.4	1092.2	1023.5	952.5	903.7	837.5	765.3	687.6
47.5°	663.5	825.5	963.9	992.2	1010.9	943.5	877.2	827.9	770.7	711.1	637.0
50°	526.2	694.2	842.3	893.5	929.0	867.6	798.4	755.6	707.5	653.9	588.2
52.5°	409.4	566.6	721.9	809.2	821.2	789.3	725.5	683.4	644.8	596.7	537.1
55°	325.1	446.7	602.1	703.8	715.3	707.5	650.3	613.5	585.2	544.9	494.9
57.5°	269.7	347.4	487.7	605.1	622.0	629.2	582.2	549.1	523.8	491.9	446.7
60°	233.0	273.9	381.1	496.1	542.5	555.1	513.6	489.5	468.4	439.5	397.4
62.5°	205.9	224.6	291.4	402.2	461.8	472.6	451.6	433.5	416.0	388.3	351.0
65°	171.6	191.5	224.6	310.7	384.1	389.5	393.8	376.3	362.5	339.6	306.5
67.5°	143.9	159.6	181.2	238.4	308.3	323.9	334.8	326.9	313.7	290.8	262.5
70°	122.2	131.3	146.9	178.8	235.4	269.1	280.6	274.6	267.9	243.2	219.2
72.5°	101.8	109.0	118.0	137.3	177.6	213.7	230.6	227.6	220.4	201.7	181.8
75°	84.3	87.3	94.5	105.4	128.8	162.6	182.4	184.8	176.4	159.0	143.3
77.5°	66.2	69.2	73.5	80.1	95.1	118.0	134.3	140.3	134.9	122.2	106.6
80°	50.6	52.4	55.4	58.4	64.4	80.1	96.9	100.5	97.5	87.3	77.7
82.5°	33.7	34.9	37.3	39.7	42.7	50.0	64.4	66.8	66.2	57.2	50.6
85°	20.5	20.5	21.1	22.9	24.1	27.1	34.9	38.5	36.7	30.7	27.7
87.5°	8.4	9.0	8.4	8.4	8.4	9.0	11.4	15.7	12.0	9.0	8.4
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°	1596.7	1596.7	1596.7	1596.7	1596.7	1596.7	1596.7	1596.7	1596.7	1596.7	1596.7
2.5°	1567.8	1565.4	1556.4	1548.0	1538.3	1526.9	1527.5	1529.3	1525.1	1523.9	1528.1
5°	1537.1	1528.7	1514.8	1501.0	1490.2	1475.7	1467.3	1471.5	1468.5	1463.1	1459.5
7.5°	1504.6	1492.6	1472.7	1455.2	1440.8	1413.7	1407.7	1400.5	1394.4	1382.4	1380.0
10°	1466.1	1448.6	1423.3	1398.6	1372.2	1351.1	1331.2	1322.8	1306.5	1295.7	1292.7
12.5°	1426.3	1397.4	1369.1	1333.0	1302.9	1272.2	1254.7	1242.7	1226.4	1200.0	1187.3
15°	1385.4	1341.4	1303.5	1263.8	1243.3	1201.8	1168.6	1131.3	1111.4	1066.9	1041.0
17.5°	1330.6	1280.0	1228.9	1196.3	1153.6	1095.8	1040.4	1021.1	991.0	962.1	933.2
20°	1256.6	1210.2	1161.4	1112.7	1047.6	980.8	959.7	926.6	893.5	876.0	861.0
22.5°	1188.5	1138.5	1080.7	1016.3	949.5	897.1	869.4	845.3	824.9	809.2	791.7
25°	1124.1	1072.3	989.8	924.2	865.8	827.3	813.4	782.1	760.4	749.0	733.9
27.5°	1053.0	982.0	915.8	847.7	796.0	774.3	742.4	717.7	694.8	672.5	667.1
30°	985.6	906.7	841.1	785.7	747.8	717.7	685.2	656.3	641.2	632.8	618.9
32.5°	918.8	838.7	777.3	733.9	693.0	661.1	630.4	615.3	592.5	573.8	561.7
35°	847.1	777.3	728.5	677.9	638.8	607.5	591.8	557.5	544.9	539.5	526.8
37.5°	783.9	721.9	672.5	634.0	591.2	566.0	535.3	527.4	510.6	496.1	491.9
40°	731.5	673.1	626.8	576.8	550.3	517.2	502.1	481.1	475.0	469.6	460.0
42.5°	674.3	624.4	571.4	537.7	498.5	483.5	460.0	454.0	439.5	434.1	430.5
45°	625.6	579.2	528.6	487.7	465.4	443.1	434.1	419.1	412.4	405.8	399.2
47.5°	578.0	529.8	489.5	451.0	426.3	416.0	399.8	388.9	381.7	375.1	368.5
50°	534.0	485.3	440.1	412.4	395.0	380.5	370.3	361.3	351.0	336.6	321.5
52.5°	486.5	442.5	405.8	378.7	363.1	349.2	340.2	324.5	304.7	289.0	281.8
55°	438.9	397.4	365.5	343.8	333.0	319.7	299.2	276.4	263.7	261.3	259.5
57.5°	398.6	359.4	329.9	313.1	300.4	277.0	255.3	246.9	243.2	242.0	240.8
60°	353.4	318.5	297.4	279.4	258.3	236.0	229.4	228.2	224.6	222.8	221.6
62.5°	311.9	281.8	262.5	240.8	218.6	214.3	209.5	206.5	204.7	200.5	198.7
65°	271.5	247.5	226.4	203.5	195.7	192.7	188.5	184.2	179.4	176.4	174.0
67.5°	233.0	209.5	187.2	178.8	174.6	169.8	164.4	158.3	155.9	151.7	151.1
70°	195.1	173.4	161.4	155.9	148.1	143.9	137.9	135.5	131.3	129.4	127.6
72.5°	159.0	143.3	138.5	130.7	125.2	118.6	115.6	113.2	110.8	107.8	107.8
75°	124.0	119.8	110.8	104.8	99.3	95.7	94.5	90.3	89.7	87.9	86.7
77.5°	98.7	90.3	87.3	80.7	77.1	75.3	74.1	71.6	69.2	68.6	68.0
80°	69.8	65.6	62.0	59.0	56.0	54.8	53.6	53.0	51.8	50.6	50.0
82.5°	45.8	43.4	40.9	39.1	38.5	36.7	35.5	34.9	33.7	33.7	33.7
85°	24.7	24.1	22.9	21.7	20.5	20.5	19.9	19.3	19.3	17.5	17.5
87.5°	7.8	7.8	7.2	7.2	6.0	6.6	6.0	6.0	5.4	6.0	6.0
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: P243088

CATALOG NUMBER: S121RDR-H880D835-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1596.7	1596.7	1596.7	1596.7
2.5°	1523.3	1523.3	1520.9	1523.3
5°	1457.0	1451.6	1449.8	1448.6
7.5°	1372.8	1367.9	1363.1	1358.3
10°	1286.7	1279.4	1275.2	1271.6
12.5°	1174.7	1165.6	1148.8	1153.6
15°	1036.8	1037.4	998.3	1041.6
17.5°	924.2	927.2	911.6	909.1
20°	852.6	851.3	845.3	838.1
22.5°	779.1	773.7	771.3	759.8
25°	710.5	700.8	703.8	687.6
27.5°	660.5	652.7	650.3	649.0
30°	610.5	594.3	588.8	592.5
32.5°	559.9	558.7	556.9	557.5
35°	517.2	514.8	509.4	509.4
37.5°	487.7	488.3	485.3	482.9
40°	451.6	448.6	448.0	444.3
42.5°	425.7	419.7	417.2	417.8
45°	395.6	392.0	388.9	390.2
47.5°	360.0	356.4	349.8	348.0
50°	311.9	307.1	304.1	301.0
52.5°	275.8	275.2	273.9	273.3
55°	258.3	256.5	256.5	256.5
57.5°	240.2	239.0	238.4	239.6
60°	220.4	219.2	216.8	216.8
62.5°	195.7	194.5	193.9	191.5
65°	171.0	170.4	169.2	169.8
67.5°	148.1	147.5	147.5	145.7
70°	125.8	125.8	124.0	125.2
72.5°	105.4	104.8	104.8	104.8
75°	85.5	84.9	84.3	84.3
77.5°	67.4	67.4	66.2	66.2
80°	48.8	48.8	48.2	49.4
82.5°	32.5	33.7	32.5	32.5
85°	17.5	18.1	18.1	18.1
87.5°	5.4	4.8	4.8	4.8
90°	0.0	0.0	0.0	0.0

(END OF REPORT)