

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: P243093

Luminaire Tested: **S121RDR-H880D840-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243093
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-H880D840-X4F0-XX-UDD-A-W
Description: DEFINE 1 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 4000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2842.7 lumens
Efficiency: N/A
Efficacy: 90.2 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

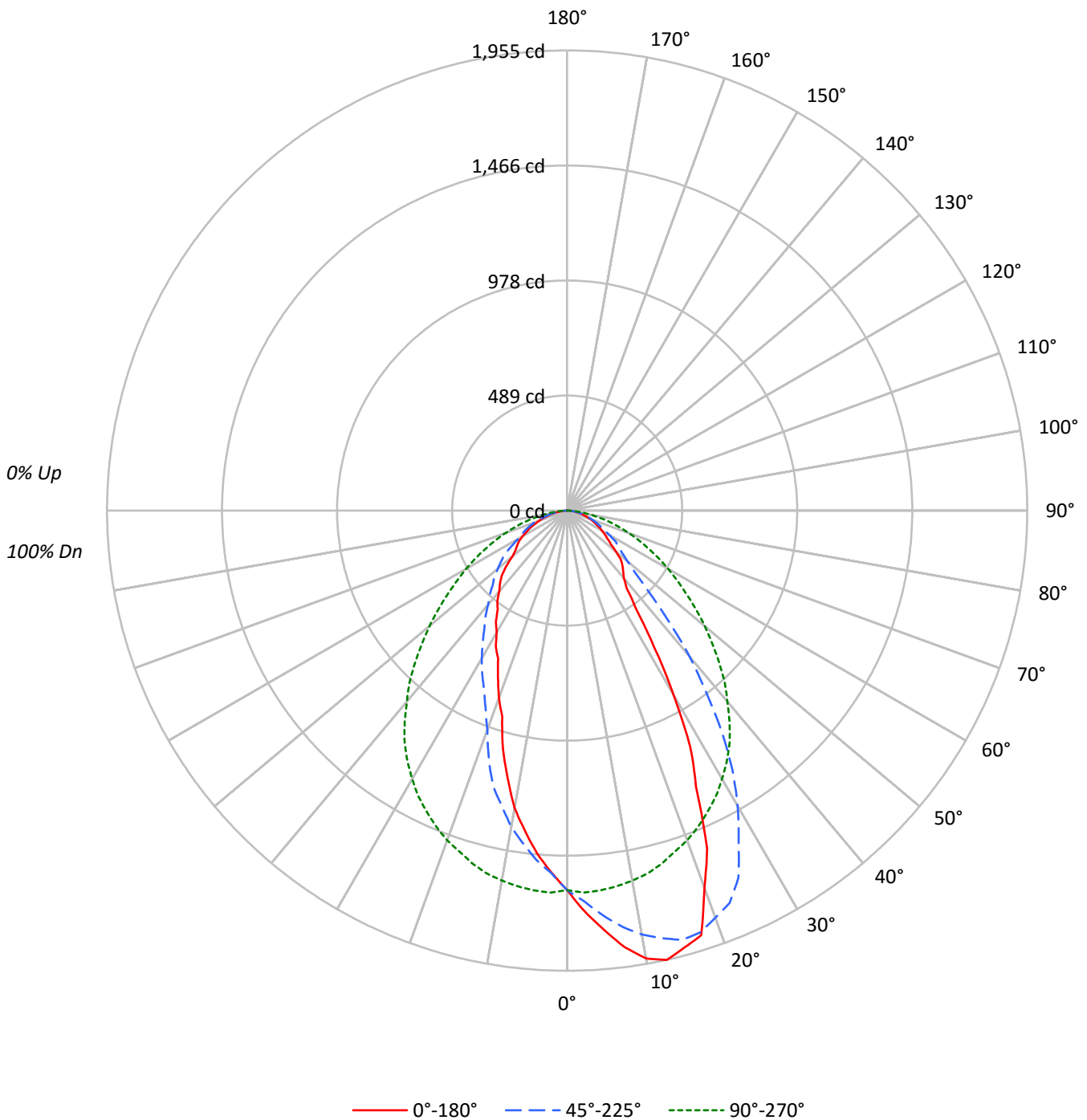
Input Watts (W): 31.5
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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°	47778	47778	47778
5°	53168	48160	43511
10°	58137	48022	38634
15°	58976	47617	32267
20°	53758	47010	26688
25°	42340	46156	22702
30°	30953	45039	20470
35°	18473	43546	18606
40°	14485	40969	17355
45°	13962	38240	16510
50°	12446	35176	14013
55°	10869	32007	13379
60°	10163	29292	12972
65°	9465	26642	12024
70°	8958	24023	10959
75°	8208	21373	9742
80°	7474	17319	8514
85°	7037	13225	6187



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	153.9	5.4
10°-20°	429.4	15.1
20°-30°	571.0	20.1
30°-40°	544.7	19.2
40°-50°	452.0	15.9
50°-60°	336.1	11.8
60°-70°	217.7	7.7
70°-80°	110.8	3.9
80°-90°	27.1	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°	1154.3	40.6
0°-40°	1699.0	59.8
0°-60°	2487.2	87.5
0°-90°	2842.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2842.7	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1612	1612	1612	1612	1612	
5°	1788	1725	1619	1490	1463	175
15°	1923	1888	1552	1214	1052	535
25°	1295	1721	1412	835	694	601
35°	511	1144	1204	614	514	348
45°	333	493	913	448	394	254
55°	210	267	620	323	259	191
65°	135	153	380	195	172	135
75°	72	78	187	97	85	76
85°	21	20	39	21	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°	1612.5	1612.5	1612.5	1612.5	1612.5	1612.5	1612.5	1612.5	1612.5	1612.5	1612.5
2.5°	1704.9	1700.6	1705.5	1703.7	1695.8	1697.6	1687.9	1681.8	1667.2	1661.7	1661.7
5°	1787.6	1793.7	1790.0	1791.2	1783.3	1778.5	1768.1	1756.6	1738.3	1725.0	1720.1
7.5°	1870.3	1872.1	1873.9	1869.1	1859.9	1851.4	1836.8	1819.8	1799.8	1782.7	1769.4
10°	1932.3	1936.6	1934.1	1926.8	1920.1	1907.4	1891.6	1873.3	1851.4	1828.9	1812.5
12.5°	1955.4	1959.1	1964.5	1960.3	1959.7	1953.6	1937.8	1915.3	1888.5	1860.6	1841.7
15°	1922.6	1920.1	1934.7	1931.1	1929.9	1927.4	1931.7	1926.8	1912.8	1888.5	1865.4
17.5°	1892.2	1891.0	1905.5	1909.2	1903.7	1895.8	1891.0	1884.9	1878.2	1878.8	1875.8
20°	1704.9	1742.0	1749.3	1768.7	1810.1	1837.5	1864.8	1863.6	1844.1	1841.1	1839.9
22.5°	1554.1	1568.1	1561.4	1593.0	1615.5	1664.8	1712.8	1773.6	1814.3	1804.0	1797.3
25°	1295.1	1338.9	1358.9	1398.5	1455.6	1518.2	1545.6	1610.0	1672.7	1721.3	1758.4
27.5°	1134.6	1144.3	1157.1	1197.8	1219.1	1276.2	1378.4	1465.9	1524.3	1577.2	1675.1
30°	904.7	909.0	953.4	975.9	1038.5	1094.4	1183.2	1253.7	1371.1	1449.5	1524.9
32.5°	690.7	687.1	735.7	761.9	823.9	899.3	998.4	1064.0	1179.0	1307.3	1397.2
35°	510.7	510.1	536.3	554.5	622.6	680.4	806.2	892.0	1017.8	1143.7	1259.8
37.5°	415.9	415.3	420.8	436.6	465.1	530.2	591.0	718.1	840.9	964.9	1110.3
40°	374.5	377.6	378.8	386.1	395.8	415.3	452.4	541.1	661.5	809.3	955.2
42.5°	352.7	352.7	353.9	355.7	360.6	366.0	388.5	422.6	519.3	637.2	800.8
45°	333.2	333.8	335.0	336.2	335.0	338.1	348.4	362.4	400.1	493.1	651.2
47.5°	310.1	309.5	312.5	314.3	316.8	320.4	321.0	328.3	344.8	393.4	508.3
50°	270.0	270.6	273.6	280.9	288.8	295.5	299.8	304.6	310.1	333.2	394.0
52.5°	233.5	234.1	235.9	241.4	248.7	257.2	270.6	281.5	285.8	293.1	327.1
55°	210.4	210.4	212.8	215.8	217.7	223.8	232.9	245.0	260.8	266.9	281.5
57.5°	190.9	190.9	192.1	192.1	194.6	197.6	203.7	209.8	223.1	242.6	251.7
60°	171.5	171.5	172.7	172.7	175.7	176.9	181.2	184.8	192.1	205.5	223.8
62.5°	153.2	152.0	153.2	153.8	155.7	157.5	160.5	164.8	169.0	176.9	190.3
65°	135.0	134.4	135.6	136.8	138.0	140.5	142.3	145.3	149.0	153.2	159.9
67.5°	119.2	118.6	119.2	121.0	120.4	121.6	124.6	125.9	129.5	133.8	139.2
70°	103.4	102.1	103.4	103.4	104.0	105.8	105.8	108.8	111.9	114.3	119.2
72.5°	86.3	86.9	86.3	86.9	88.2	88.8	90.0	91.8	93.6	96.1	99.1
75°	71.7	71.7	72.4	73.0	74.2	74.2	74.8	76.0	77.2	78.4	82.1
77.5°	57.2	57.8	58.4	59.0	59.0	59.6	60.2	60.8	62.6	63.2	65.1
80°	43.8	44.4	44.4	44.4	45.6	44.4	45.6	46.8	46.8	47.4	48.6
82.5°	31.6	32.2	31.6	32.2	32.8	32.8	32.2	32.8	32.8	34.0	34.0
85°	20.7	19.5	19.5	19.5	19.5	19.5	20.1	20.7	20.1	20.1	20.7
87.5°	8.5	8.5	8.5	8.5	9.1	8.5	9.1	9.1	9.1	8.5	9.1
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°	1612.5	1612.5	1612.5	1612.5	1612.5	1612.5	1612.5	1612.5	1612.5	1612.5	1612.5
2.5°	1664.8	1659.9	1655.7	1648.4	1639.2	1625.9	1624.0	1624.6	1608.2	1592.4	1590.0
5°	1709.8	1701.9	1688.5	1672.7	1658.1	1635.6	1625.9	1619.2	1594.2	1573.0	1564.4
7.5°	1757.8	1739.0	1720.7	1695.8	1671.5	1642.3	1624.0	1610.0	1577.2	1549.2	1534.7
10°	1795.5	1772.4	1746.2	1714.6	1681.2	1645.3	1618.0	1596.1	1556.5	1521.9	1503.6
12.5°	1822.3	1796.1	1765.1	1727.4	1689.1	1641.7	1608.2	1579.0	1531.0	1489.7	1467.8
15°	1836.2	1808.3	1770.0	1728.6	1689.1	1639.2	1594.8	1552.3	1504.9	1453.2	1425.8
17.5°	1849.0	1812.5	1769.4	1721.9	1681.8	1629.5	1574.8	1519.5	1465.9	1417.3	1372.9
20°	1839.9	1808.9	1760.8	1711.6	1666.6	1605.8	1548.0	1490.9	1424.0	1367.4	1323.1
22.5°	1797.3	1791.8	1740.2	1687.3	1635.6	1577.2	1510.3	1453.8	1382.0	1315.2	1261.7
25°	1747.5	1740.8	1712.8	1656.3	1597.9	1537.1	1476.9	1411.8	1329.1	1259.8	1198.4
27.5°	1705.5	1690.3	1670.2	1617.3	1554.7	1493.9	1431.9	1368.7	1280.5	1203.3	1133.4
30°	1620.4	1635.0	1612.5	1576.0	1503.6	1444.7	1385.1	1316.4	1228.8	1140.0	1068.3
32.5°	1485.4	1573.6	1551.1	1521.9	1450.7	1386.3	1329.8	1262.3	1165.6	1078.0	1003.8
35°	1366.2	1442.2	1493.3	1458.0	1395.4	1320.6	1262.9	1203.9	1103.0	1013.6	942.4
37.5°	1250.7	1331.6	1416.7	1384.5	1332.8	1252.5	1191.7	1133.4	1039.7	949.7	878.6
40°	1099.3	1217.3	1299.3	1312.1	1259.2	1178.4	1119.4	1059.2	976.5	887.1	811.1
42.5°	954.0	1105.4	1171.7	1237.3	1183.2	1107.2	1041.5	990.5	910.8	832.4	749.7
45°	802.0	974.1	1071.9	1122.4	1103.0	1033.6	961.9	912.6	845.8	772.8	694.4
47.5°	670.0	833.6	973.4	1002.0	1020.9	952.8	885.9	836.0	778.3	718.1	643.3
50°	531.4	701.1	850.6	902.3	938.2	876.2	806.2	763.1	714.4	660.3	594.0
52.5°	413.5	572.2	729.0	817.2	829.3	797.1	732.7	690.1	651.2	602.6	542.4
55°	328.3	451.2	608.0	710.8	722.3	714.4	656.7	619.6	591.0	550.3	499.8
57.5°	272.4	350.8	492.5	611.1	628.1	635.4	588.0	554.5	529.0	496.8	451.2
60°	235.3	276.7	384.9	501.0	547.8	560.6	518.6	494.3	473.0	443.9	401.3
62.5°	207.9	226.8	294.3	406.2	466.4	477.3	456.0	437.8	420.1	392.2	354.5
65°	173.3	193.4	226.8	313.7	387.9	393.4	397.6	380.0	366.0	342.9	309.5
67.5°	145.3	161.1	183.0	240.8	311.3	327.1	338.1	330.2	316.8	293.7	265.1
70°	123.4	132.5	148.4	180.6	237.7	271.8	283.3	277.3	270.6	245.6	221.3
72.5°	102.8	110.1	119.2	138.6	179.4	215.8	232.9	229.8	222.5	203.7	183.6
75°	85.1	88.2	95.5	106.4	130.1	164.2	184.2	186.7	178.2	160.5	144.7
77.5°	66.9	69.9	74.2	80.9	96.1	119.2	135.6	141.7	136.2	123.4	107.6
80°	51.1	52.9	55.9	59.0	65.1	80.9	97.9	101.5	98.5	88.2	78.4
82.5°	34.0	35.3	37.7	40.1	43.2	50.5	65.1	67.5	66.9	57.8	51.1
85°	20.7	20.7	21.3	23.1	24.3	27.4	35.3	38.9	37.1	31.0	28.0
87.5°	8.5	9.1	8.5	8.5	8.5	9.1	11.6	15.8	12.2	9.1	8.5
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°	1612.5	1612.5	1612.5	1612.5	1612.5	1612.5	1612.5	1612.5	1612.5	1612.5	1612.5
2.5°	1583.3	1580.9	1571.7	1563.2	1553.5	1542.0	1542.6	1544.4	1540.1	1538.9	1543.2
5°	1552.3	1543.8	1529.8	1515.8	1504.9	1490.3	1481.8	1486.0	1483.0	1477.5	1473.9
7.5°	1519.5	1507.3	1487.2	1469.6	1455.0	1427.6	1421.6	1414.3	1408.2	1396.0	1393.6
10°	1480.5	1462.9	1437.4	1412.4	1385.7	1364.4	1344.3	1335.8	1319.4	1308.5	1305.4
12.5°	1440.4	1411.2	1382.6	1346.2	1315.8	1284.8	1267.1	1255.0	1238.5	1211.8	1199.0
15°	1399.1	1354.7	1316.4	1276.2	1255.6	1213.6	1180.2	1142.5	1122.4	1077.4	1051.3
17.5°	1343.7	1292.7	1241.0	1208.1	1165.0	1106.6	1050.7	1031.2	1000.8	971.6	942.4
20°	1268.9	1222.1	1172.9	1123.6	1058.0	990.5	969.2	935.8	902.3	884.7	869.5
22.5°	1200.2	1149.8	1091.4	1026.3	958.9	906.0	878.0	853.7	833.0	817.2	799.6
25°	1135.2	1082.9	999.6	933.3	874.3	835.4	821.4	789.8	767.9	756.4	741.2
27.5°	1063.4	991.7	924.8	856.1	803.8	781.9	749.7	724.8	701.7	679.2	673.7
30°	995.3	915.7	849.4	793.5	755.2	724.8	691.9	662.7	647.5	639.0	625.0
32.5°	927.8	847.0	785.0	741.2	699.8	667.6	636.6	621.4	598.3	579.4	567.3
35°	855.5	785.0	735.7	684.6	645.1	613.5	597.7	563.0	550.3	544.8	532.0
37.5°	791.6	729.0	679.2	640.3	597.1	571.5	540.5	532.6	515.6	501.0	496.8
40°	738.8	679.8	633.0	582.5	555.7	522.3	507.1	485.8	479.7	474.3	464.5
42.5°	681.0	630.5	577.0	543.0	503.4	488.2	464.5	458.5	443.9	438.4	434.7
45°	631.7	584.9	533.8	492.5	470.0	447.5	438.4	423.2	416.5	409.8	403.1
47.5°	583.7	535.1	494.3	455.4	430.5	420.1	403.7	392.8	385.5	378.8	372.1
50°	539.3	490.1	444.5	416.5	398.9	384.3	373.9	364.8	354.5	339.9	324.7
52.5°	491.3	446.9	409.8	382.4	366.6	352.7	343.5	327.7	307.7	291.9	284.6
55°	443.3	401.3	369.1	347.2	336.2	322.9	302.2	279.1	266.3	263.9	262.1
57.5°	402.5	363.0	333.2	316.2	303.4	279.7	257.8	249.3	245.6	244.4	243.2
60°	356.9	321.6	300.4	282.1	260.8	238.3	231.7	230.4	226.8	225.0	223.8
62.5°	315.0	284.6	265.1	243.2	220.7	216.5	211.6	208.6	206.7	202.5	200.6
65°	274.2	249.9	228.6	205.5	197.6	194.6	190.3	186.1	181.2	178.2	175.7
67.5°	235.3	211.6	189.1	180.6	176.3	171.5	166.0	159.9	157.5	153.2	152.6
70°	197.0	175.1	163.0	157.5	149.6	145.3	139.2	136.8	132.5	130.7	128.9
72.5°	160.5	144.7	139.8	131.9	126.5	119.8	116.7	114.3	111.9	108.8	108.8
75°	125.3	121.0	111.9	105.8	100.3	96.7	95.5	91.2	90.6	88.8	87.6
77.5°	99.7	91.2	88.2	81.5	77.8	76.0	74.8	72.4	69.9	69.3	68.7
80°	70.5	66.3	62.6	59.6	56.5	55.3	54.1	53.5	52.3	51.1	50.5
82.5°	46.2	43.8	41.3	39.5	38.9	37.1	35.9	35.3	34.0	34.0	34.0
85°	24.9	24.3	23.1	21.9	20.7	20.7	20.1	19.5	19.5	17.6	17.6
87.5°	7.9	7.9	7.3	7.3	6.1	6.7	6.1	6.1	5.5	6.1	6.1
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: P243093

CATALOG NUMBER: S121RDR-H880D840-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1612.5	1612.5	1612.5	1612.5
2.5°	1538.3	1538.3	1535.9	1538.3
5°	1471.4	1465.9	1464.1	1462.9
7.5°	1386.3	1381.4	1376.6	1371.7
10°	1299.3	1292.1	1287.8	1284.1
12.5°	1186.3	1177.1	1160.1	1165.0
15°	1047.0	1047.6	1008.1	1051.9
17.5°	933.3	936.4	920.5	918.1
20°	861.0	859.7	853.7	846.4
22.5°	786.8	781.3	778.9	767.3
25°	717.5	707.7	710.8	694.4
27.5°	667.0	659.1	656.7	655.5
30°	616.5	600.1	594.6	598.3
32.5°	565.5	564.2	562.4	563.0
35°	522.3	519.9	514.4	514.4
37.5°	492.5	493.1	490.1	487.6
40°	456.0	453.0	452.4	448.7
42.5°	429.9	423.8	421.4	422.0
45°	399.5	395.8	392.8	394.0
47.5°	363.6	360.0	353.3	351.4
50°	315.0	310.1	307.1	304.0
52.5°	278.5	277.9	276.7	276.0
55°	260.8	259.0	259.0	259.0
57.5°	242.6	241.4	240.8	242.0
60°	222.5	221.3	218.9	218.9
62.5°	197.6	196.4	195.8	193.4
65°	172.7	172.1	170.9	171.5
67.5°	149.6	149.0	149.0	147.1
70°	127.1	127.1	125.3	126.5
72.5°	106.4	105.8	105.8	105.8
75°	86.3	85.7	85.1	85.1
77.5°	68.1	68.1	66.9	66.9
80°	49.3	49.3	48.6	49.9
82.5°	32.8	34.0	32.8	32.8
85°	17.6	18.2	18.2	18.2
87.5°	5.5	4.9	4.9	4.9
90°	0.0	0.0	0.0	0.0

(END OF REPORT)