

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: P242233

Luminaire Tested: **S121RDR-S880D840-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242233
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-28)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S121RDR-S880D840-X4F0-XX-UDD-A-W
Description: DEFINE 1 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER
STANDARD LIGHT ENGINE
Light Source: (92) 4000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3103.5 lumens
Efficiency: N/A
Efficacy: 89.2 lumens/watt
Spacing Criteria (0/90/45): 0.96 / 1.23 / 1.1
Luminous Opening: Rectangular (W 3.88' x L: 0.09' x H: 0')
CIE Type: Direct

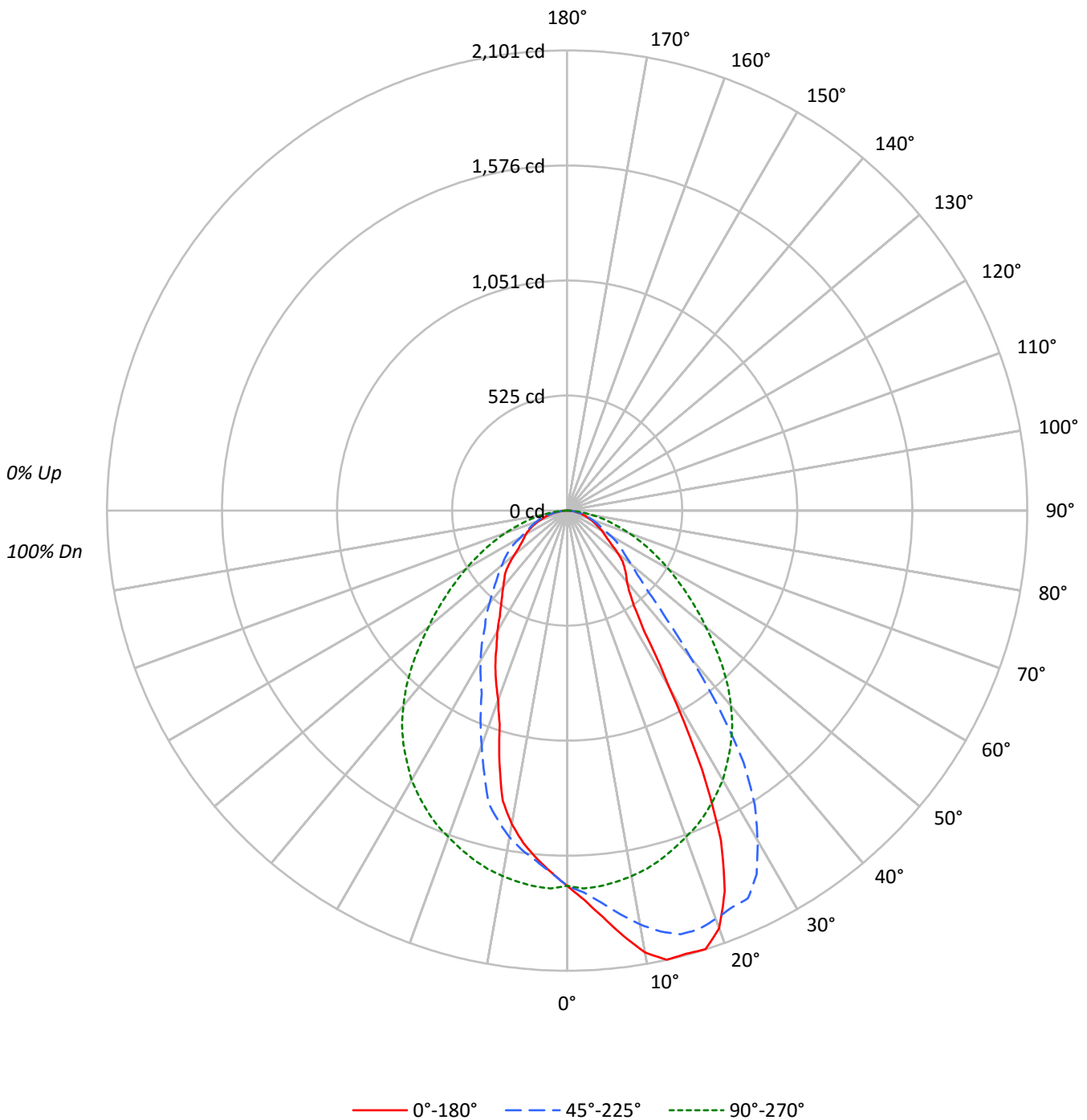
Input Watts (W): 34.8
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	82	87	83	80	84	81	78				76	
3	94	85	78	73	92	84	77	72	81	75	71	78	74	70	76	72	68				67	
4	88	77	69	64	85	76	69	63	73	67	62	71	66	61	69	65	61				59	
5	81	70	62	56	79	69	62	56	67	60	55	65	59	55	63	58	54				52	
6	76	64	56	50	74	63	56	50	61	55	50	60	54	49	58	53	49				47	
7	71	59	51	45	69	58	51	45	57	50	45	55	49	45	54	48	44				43	
8	67	54	47	41	65	54	46	41	52	46	41	51	45	41	50	45	40				39	
9	63	50	43	38	61	50	43	38	49	42	37	48	42	37	47	41	37				35	
10	59	47	40	35	58	46	39	35	45	39	35	44	39	34	44	38	34				33	

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	50753	50753	50753
5°	55390	51196	47422
10°	61648	50994	43707
15°	64276	50607	36583
20°	63999	50009	29034
25°	54273	49451	25347
30°	31945	48604	21767
35°	19192	47120	19008
40°	16439	44983	17533
45°	15542	41932	16677
50°	13893	38084	14428
55°	11577	34761	13038
60°	10762	31674	12972
65°	9935	28850	12550
70°	9374	25998	11825
75°	8849	22999	10761
80°	7917	19230	9453
85°	7445	15094	7445



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	164.2	5.3
10°-20°	467.8	15.1
20°-30°	639.0	20.6
30°-40°	595.3	19.2
40°-50°	492.1	15.9
50°-60°	362.9	11.7
60°-70°	232.0	7.5
70°-80°	119.4	3.8
80°-90°	30.7	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°	1271.0	41.0
0°-40°	1866.3	60.1
0°-60°	2721.4	87.7
0°-90°	3103.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3103.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1713	1713	1713	1713	1713	
5°	1862	1797	1721	1607	1594	184
15°	2095	2003	1650	1384	1193	590
25°	1660	1954	1513	923	775	721
35°	531	1404	1303	655	526	360
45°	371	524	1001	458	398	284
55°	224	300	673	328	252	206
65°	142	164	412	191	179	141
75°	77	84	201	106	94	81
85°	22	22	44	25	22	25
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°	1712.9	1712.9	1712.9	1712.9	1712.9	1712.9	1712.9	1712.9	1712.9	1712.9	1712.9
2.5°	1778.6	1777.3	1779.2	1777.9	1776.7	1773.4	1770.9	1763.1	1751.5	1745.1	1751.5
5°	1862.3	1867.5	1865.5	1862.9	1857.2	1852.0	1840.4	1833.3	1812.7	1796.6	1801.1
7.5°	1957.6	1964.0	1955.7	1949.9	1946.7	1931.8	1919.0	1899.0	1876.5	1858.4	1848.1
10°	2049.0	2051.0	2048.4	2043.3	2032.3	2016.2	1997.5	1975.0	1946.7	1919.0	1900.3
12.5°	2100.6	2103.8	2107.6	2098.6	2090.3	2077.4	2058.1	2035.5	2000.8	1968.6	1947.3
15°	2095.4	2098.0	2105.1	2101.9	2098.0	2092.2	2081.2	2062.6	2038.1	2002.7	1972.4
17.5°	2099.3	2101.2	2104.4	2092.8	2086.4	2079.3	2065.1	2052.3	2031.7	2004.0	1981.4
20°	2029.7	2061.3	2057.4	2072.9	2079.3	2078.7	2065.1	2040.7	2012.3	1984.0	1973.7
22.5°	1880.3	1905.4	1908.7	1932.5	1962.1	1985.9	2015.6	2026.5	2004.6	1962.1	1947.9
25°	1660.1	1678.1	1696.2	1730.3	1761.8	1828.2	1888.7	1934.4	1959.5	1953.7	1926.1
27.5°	1334.3	1314.9	1386.4	1425.7	1513.9	1610.5	1695.5	1779.2	1819.2	1872.6	1899.7
30°	933.7	931.8	985.9	1054.1	1186.2	1275.0	1434.1	1568.7	1673.6	1739.3	1812.7
32.5°	655.5	665.2	705.1	747.0	819.7	964.6	1086.3	1271.8	1450.8	1594.4	1684.6
35°	530.6	531.9	540.9	566.0	610.5	691.0	785.6	965.9	1208.7	1403.8	1538.4
37.5°	464.9	468.8	471.4	485.5	501.6	535.8	595.7	720.6	921.5	1139.1	1372.9
40°	425.0	428.2	430.8	435.3	445.0	461.1	500.3	560.2	676.1	876.4	1136.6
42.5°	398.0	396.7	402.5	404.4	409.6	418.6	436.0	468.2	535.1	671.0	895.1
45°	370.9	372.8	372.8	375.4	379.9	385.1	392.2	412.1	446.3	523.5	699.3
47.5°	342.6	341.9	345.8	347.7	352.2	356.7	361.9	372.2	392.2	437.2	539.0
50°	301.4	302.7	309.7	316.2	322.6	328.4	334.9	341.3	354.2	378.6	441.1
52.5°	257.6	257.6	265.3	269.8	278.8	293.0	303.9	313.6	322.0	334.2	371.6
55°	224.1	224.7	227.3	231.2	237.6	244.7	258.9	275.6	289.8	300.1	320.7
57.5°	200.9	201.6	202.2	205.4	208.6	211.2	219.6	232.5	251.1	269.8	282.0
60°	181.6	180.9	180.9	182.9	185.5	188.7	193.2	198.3	208.6	228.6	250.5
62.5°	159.7	161.0	161.0	162.9	164.9	168.1	170.0	175.2	180.9	190.0	212.5
65°	141.7	143.0	141.7	143.6	144.9	146.8	150.0	152.6	157.8	163.6	172.6
67.5°	123.6	124.3	125.6	126.2	127.5	128.1	130.7	133.9	137.2	141.0	148.1
70°	108.2	108.2	108.2	109.5	110.8	110.8	112.7	114.0	117.2	121.1	124.9
72.5°	91.4	92.1	92.1	91.4	94.0	94.7	95.3	96.6	99.2	102.4	105.6
75°	77.3	76.0	76.0	76.6	78.6	78.6	79.2	79.8	81.8	84.4	86.3
77.5°	60.5	60.5	61.2	61.8	62.5	62.5	63.8	63.8	66.3	67.6	68.9
80°	46.4	47.7	48.3	47.7	47.7	48.3	48.3	49.6	50.2	50.9	52.2
82.5°	34.8	35.4	34.1	34.1	34.8	34.8	35.4	35.4	36.1	36.7	36.7
85°	21.9	21.9	22.5	21.9	22.5	21.9	21.9	23.2	22.5	22.5	23.2
87.5°	10.3	10.9	10.3	10.9	10.3	10.9	10.9	10.9	10.9	10.9	10.3
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°	1712.9	1712.9	1712.9	1712.9	1712.9	1712.9	1712.9	1712.9	1712.9	1712.9	1712.9
2.5°	1749.6	1749.0	1745.7	1738.7	1733.5	1723.9	1723.9	1727.1	1710.3	1698.7	1698.1
5°	1790.2	1783.7	1772.8	1759.3	1747.0	1730.3	1723.9	1721.3	1698.7	1681.4	1675.6
7.5°	1833.3	1817.2	1798.6	1776.7	1756.1	1732.2	1720.0	1710.3	1681.4	1660.1	1647.2
10°	1878.4	1852.6	1823.7	1792.1	1763.8	1731.6	1711.6	1694.9	1661.4	1631.8	1617.0
12.5°	1918.3	1882.3	1845.6	1804.3	1765.7	1725.1	1697.5	1675.6	1636.3	1600.9	1582.8
15°	1937.0	1898.4	1868.1	1811.4	1759.3	1718.1	1682.6	1649.8	1607.9	1568.7	1541.0
17.5°	1953.1	1910.6	1870.7	1817.2	1756.7	1703.2	1660.7	1618.9	1573.8	1532.6	1498.5
20°	1948.6	1912.5	1863.6	1806.9	1749.6	1687.8	1639.5	1586.0	1530.0	1488.2	1452.1
22.5°	1922.8	1893.2	1842.3	1788.2	1732.9	1666.5	1611.8	1553.9	1484.9	1439.2	1398.7
25°	1890.0	1861.7	1811.4	1755.4	1700.7	1636.3	1571.9	1512.6	1438.6	1383.8	1331.7
27.5°	1864.2	1821.7	1771.5	1709.0	1656.2	1595.1	1527.4	1467.6	1387.7	1327.2	1266.6
30°	1834.6	1786.3	1724.5	1658.2	1602.1	1546.1	1480.4	1420.6	1332.3	1263.4	1188.1
32.5°	1749.6	1750.3	1676.8	1602.8	1542.9	1483.0	1424.4	1360.7	1273.1	1192.0	1114.7
35°	1638.9	1682.0	1627.9	1542.9	1468.8	1413.5	1365.2	1302.7	1205.5	1121.8	1034.2
37.5°	1490.7	1566.7	1573.2	1484.9	1403.2	1338.1	1290.5	1238.3	1140.4	1050.3	963.3
40°	1342.6	1443.1	1483.0	1421.8	1333.0	1258.3	1210.6	1163.0	1070.9	973.7	893.2
42.5°	1161.0	1324.0	1373.5	1355.5	1260.2	1179.7	1129.5	1086.3	996.8	901.5	821.7
45°	956.3	1176.5	1248.6	1267.3	1186.8	1100.5	1042.6	1000.7	922.1	838.4	755.4
47.5°	768.2	1010.4	1129.5	1148.8	1106.3	1022.6	956.3	912.5	850.0	777.9	695.5
50°	586.0	833.9	1004.6	1034.2	1023.9	938.9	877.7	826.2	778.5	714.1	636.9
52.5°	466.2	666.5	869.3	924.7	927.9	861.0	796.6	749.6	703.2	652.3	582.1
55°	372.2	515.2	720.6	814.6	823.6	777.2	718.0	672.9	638.2	590.5	531.3
57.5°	313.6	398.6	577.0	703.8	707.7	694.8	638.2	600.8	571.8	530.6	478.5
60°	267.9	316.2	445.0	593.1	612.4	612.4	567.3	534.5	506.8	475.9	426.3
62.5°	231.8	258.2	337.4	471.4	521.0	528.7	500.3	471.4	450.8	419.9	374.1
65°	195.1	215.1	261.4	364.5	432.7	446.9	432.7	411.5	395.4	363.2	327.1
67.5°	160.3	179.7	208.6	276.3	351.0	368.3	365.8	354.8	338.1	314.2	276.3
70°	132.7	144.2	165.5	204.8	275.6	302.0	309.7	300.1	285.3	259.5	231.8
72.5°	109.5	118.5	128.8	157.1	206.1	240.8	253.7	248.6	237.6	213.1	190.0
75°	89.5	95.3	102.4	115.9	148.1	187.4	202.2	200.9	190.0	169.4	150.7
77.5°	72.1	74.1	79.2	87.6	103.7	139.1	150.7	154.5	146.2	128.8	114.0
80°	54.1	56.7	59.2	63.8	71.5	92.1	106.9	112.7	105.6	95.3	80.5
82.5°	38.0	38.6	41.2	43.8	47.7	56.0	71.5	77.9	71.5	60.5	56.0
85°	23.8	23.2	23.8	24.5	28.3	30.3	39.9	44.4	43.1	36.7	31.6
87.5°	10.9	10.9	10.3	10.9	10.3	12.2	14.2	20.6	15.5	13.5	12.2
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°	1712.9	1712.9	1712.9	1712.9	1712.9	1712.9	1712.9	1712.9	1712.9	1712.9	1712.9
2.5°	1692.9	1691.0	1684.6	1675.6	1667.8	1655.0	1655.0	1658.2	1657.5	1658.8	1657.5
5°	1665.9	1656.9	1647.2	1635.0	1623.4	1606.7	1604.7	1606.0	1605.4	1604.7	1600.9
7.5°	1631.1	1620.8	1608.6	1593.1	1580.3	1564.2	1559.6	1558.4	1553.2	1551.3	1546.1
10°	1597.6	1585.4	1569.3	1550.6	1533.2	1514.6	1503.0	1496.5	1488.2	1479.2	1471.4
12.5°	1560.3	1544.2	1523.6	1501.0	1472.1	1451.5	1434.1	1423.1	1411.5	1396.1	1385.1
15°	1520.4	1487.5	1463.1	1426.3	1390.9	1383.8	1357.4	1322.7	1320.1	1244.8	1218.4
17.5°	1466.9	1439.9	1394.2	1346.5	1298.2	1258.9	1259.6	1165.5	1136.6	1135.9	1089.6
20°	1411.5	1374.2	1321.4	1273.1	1222.2	1141.1	1076.7	1045.8	998.8	980.7	954.3
22.5°	1346.5	1297.6	1235.7	1170.1	1099.2	1033.5	970.4	940.8	917.0	897.0	886.1
25°	1269.2	1219.6	1145.6	1063.8	984.6	923.4	888.7	875.1	834.6	820.4	806.9
27.5°	1191.3	1137.2	1040.6	962.1	897.0	855.2	819.1	796.6	777.2	741.2	725.1
30°	1117.3	1030.3	950.5	878.3	829.4	790.1	763.7	718.0	691.0	674.2	667.1
32.5°	1036.8	944.0	871.9	809.4	759.2	725.1	685.8	654.9	642.7	620.8	589.2
35°	954.3	870.0	794.6	744.4	701.3	654.9	630.4	600.8	569.9	553.2	550.6
37.5°	874.5	794.6	740.5	687.7	635.6	608.5	572.5	540.9	530.0	514.5	497.8
40°	802.4	734.1	683.9	623.3	591.8	549.9	522.2	506.1	479.7	473.9	468.8
42.5°	743.1	684.5	627.9	573.8	537.1	503.6	479.1	460.4	452.1	437.9	433.4
45°	683.2	629.1	571.2	528.7	486.8	458.5	441.7	425.7	416.0	412.1	404.4
47.5°	629.1	576.3	522.9	470.7	442.4	423.7	405.0	396.7	390.9	382.5	378.0
50°	577.6	519.0	468.8	436.0	405.7	388.9	376.7	369.0	360.0	351.0	338.1
52.5°	525.5	475.2	426.9	392.2	369.6	358.7	347.1	338.7	320.7	303.3	292.4
55°	472.7	421.1	381.9	355.5	339.4	327.8	314.2	289.8	273.0	263.4	258.2
57.5°	425.0	378.6	343.9	322.0	310.4	291.1	267.2	251.8	243.4	239.5	237.0
60°	374.1	334.2	305.2	288.5	270.5	244.7	231.8	224.1	221.5	220.2	218.3
62.5°	330.3	294.9	272.4	253.7	228.0	214.4	207.4	203.5	203.5	201.6	200.3
65°	284.0	256.3	237.0	209.9	196.4	190.6	188.0	186.1	184.2	183.5	180.9
67.5°	246.0	221.5	196.4	182.2	173.9	170.6	168.1	167.4	164.9	162.9	161.0
70°	207.4	183.5	162.9	156.5	152.0	150.7	148.1	145.5	143.6	141.0	139.7
72.5°	168.7	146.2	139.1	135.9	131.4	129.4	126.2	124.3	121.1	119.8	118.5
75°	128.8	119.8	115.9	113.3	110.1	105.6	104.3	102.4	101.1	99.2	97.2
77.5°	102.4	97.2	92.7	89.5	86.9	83.7	81.1	80.5	79.2	77.3	76.6
80°	76.6	72.8	70.8	67.6	64.4	62.5	61.2	60.5	58.6	58.0	57.3
82.5°	52.8	49.6	48.3	44.4	43.1	43.1	42.5	41.2	39.9	39.3	38.6
85°	29.6	28.3	26.4	27.0	25.1	25.1	24.5	23.8	23.2	22.5	21.9
87.5°	11.6	10.9	10.3	9.7	9.7	7.7	7.7	7.7	8.4	7.7	7.1
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: P242233

CATALOG NUMBER: S121RDR-S880D840-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1712.9	1712.9	1712.9	1712.9
2.5°	1659.5	1660.7	1656.2	1653.7
5°	1600.9	1598.9	1596.4	1594.4
7.5°	1541.0	1539.0	1539.0	1531.3
10°	1468.2	1463.1	1459.2	1452.7
12.5°	1375.5	1367.7	1365.2	1357.4
15°	1200.3	1184.2	1173.3	1192.6
17.5°	1078.6	1036.8	1040.0	1023.9
20°	953.7	936.9	945.3	920.8
22.5°	872.6	862.2	852.6	847.4
25°	797.2	785.0	770.2	775.3
27.5°	702.5	702.5	692.9	696.8
30°	654.3	649.1	633.0	636.2
32.5°	578.9	572.5	570.5	571.8
35°	542.8	532.5	529.3	525.5
37.5°	492.6	488.8	489.4	486.8
40°	459.1	455.9	452.1	453.3
42.5°	430.2	428.2	424.4	425.0
45°	401.8	399.9	398.0	398.0
47.5°	370.3	366.4	363.2	359.3
50°	329.1	321.3	315.5	313.0
52.5°	284.6	280.8	276.9	276.9
55°	256.3	254.4	253.1	252.4
57.5°	236.3	235.0	235.0	233.1
60°	218.3	218.3	217.7	218.9
62.5°	200.9	199.0	199.6	199.6
65°	180.9	180.3	179.7	179.0
67.5°	159.7	159.1	159.7	158.4
70°	138.4	138.4	137.8	136.5
72.5°	116.6	117.8	116.6	115.9
75°	95.9	95.3	95.9	94.0
77.5°	76.6	74.1	75.3	76.0
80°	56.7	56.7	56.0	55.4
82.5°	38.0	38.6	37.3	37.3
85°	21.9	21.9	20.6	21.9
87.5°	6.4	6.4	6.4	7.7
90°	0.0	0.0	0.0	0.0

(END OF REPORT)