

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: P243609

Luminaire Tested: **S124RDR-H1020D840-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243609
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-H1020D840-X4F0-XX-UDD-A-W
Description: DEFINE 4 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: 4029.6 lumens
Efficiency: N/A
Efficacy: 127.9 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

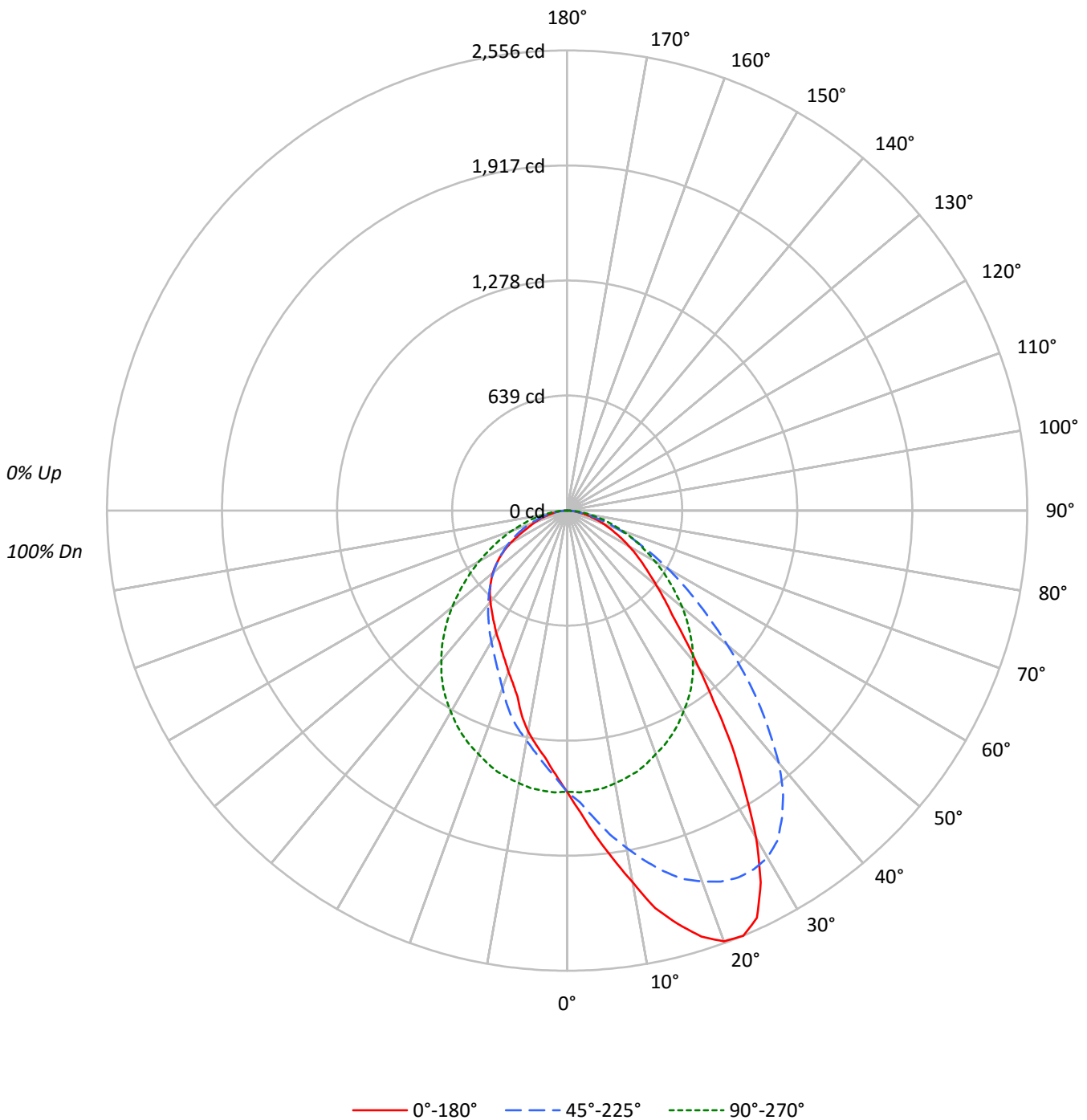
Input Watts (W): 31.5
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	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°	13878	13878	13878
5°	16166	13937	12304
10°	18933	13878	11250
15°	21876	13808	9825
20°	24086	13613	9006
25°	24472	13489	8420
30°	21542	13249	8075
35°	17285	13024	7812
40°	13150	12607	7690
45°	10440	12145	7597
50°	8962	11544	7466
55°	7914	10799	7104
60°	7090	10020	6507
65°	6240	9259	5473
70°	5562	8405	4930
75°	4846	7642	4386
80°	4110	6568	4044
85°	3600	5640	4090



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	151.5	3.8
10°-20°	459.4	11.4
20°-30°	717.0	17.8
30°-40°	799.5	19.8
40°-50°	718.7	17.8
50°-60°	567.9	14.1
60°-70°	377.2	9.4
70°-80°	189.1	4.7
80°-90°	49.3	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°	1327.9	33.0
0°-40°	2127.5	52.8
0°-60°	3414.1	84.7
0°-90°	4029.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4029.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1561	1561	1561	1561	1561	
5°	1812	1714	1562	1418	1379	182
15°	2377	2074	1500	1189	1068	676
25°	2495	2249	1375	934	858	1117
35°	1593	2081	1200	759	720	990
45°	830	1499	966	607	604	658
55°	511	880	697	460	458	460
65°	297	451	440	302	260	297
75°	141	179	222	149	128	151
85°	35	38	55	41	40	40
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°	1561.3	1561.3	1561.3	1561.3	1561.3	1561.3	1561.3	1561.3	1561.3	1561.3	1561.3
2.5°	1676.8	1670.8	1670.1	1662.2	1661.6	1653.7	1651.3	1644.6	1631.2	1620.9	1621.5
5°	1811.8	1806.9	1806.3	1798.4	1796.0	1786.3	1771.1	1752.8	1731.6	1713.9	1702.4
7.5°	1950.4	1958.9	1949.8	1949.8	1932.2	1920.6	1890.8	1875.6	1839.2	1813.6	1786.9
10°	2097.6	2105.5	2101.8	2094.5	2071.4	2047.7	2016.7	1986.9	1942.5	1902.4	1875.6
12.5°	2261.7	2238.0	2253.2	2230.7	2211.9	2174.2	2144.4	2084.8	2049.5	1991.2	1938.9
15°	2377.2	2368.1	2367.5	2352.3	2331.6	2290.3	2258.1	2196.1	2135.9	2074.5	2015.5
17.5°	2480.6	2481.8	2473.3	2449.0	2422.2	2382.1	2338.3	2283.0	2214.3	2146.2	2076.3
20°	2546.3	2546.9	2540.8	2528.0	2498.8	2462.4	2417.4	2345.0	2267.2	2191.8	2121.9
22.5°	2556.0	2557.8	2556.0	2548.1	2528.0	2498.2	2456.9	2395.5	2317.0	2230.7	2147.4
25°	2495.2	2501.3	2501.9	2512.8	2502.5	2490.9	2460.5	2408.9	2336.5	2249.0	2158.4
27.5°	2328.6	2345.6	2361.4	2380.9	2398.5	2414.3	2416.8	2389.4	2327.4	2245.9	2159.6
30°	2098.8	2118.8	2150.5	2171.1	2225.8	2260.5	2307.3	2317.7	2287.9	2225.2	2141.9
32.5°	1831.3	1852.5	1864.7	1932.8	2011.2	2067.8	2145.6	2191.8	2203.4	2173.6	2105.5
35°	1592.9	1596.6	1605.7	1682.9	1760.7	1846.5	1943.1	2023.4	2078.1	2081.1	2047.7
37.5°	1337.6	1341.8	1377.7	1436.7	1504.2	1598.4	1709.7	1824.0	1924.3	1970.5	1960.8
40°	1133.3	1132.1	1170.4	1221.4	1287.1	1385.0	1499.9	1624.5	1731.6	1828.2	1851.3
42.5°	967.9	972.2	1005.0	1034.8	1098.0	1166.7	1289.5	1419.0	1556.5	1662.2	1732.8
45°	830.5	841.5	864.0	891.9	939.3	1002.6	1102.9	1231.8	1372.2	1499.3	1583.8
47.5°	735.7	738.7	750.3	784.9	816.5	867.6	953.3	1062.8	1187.4	1329.7	1440.9
50°	648.1	655.4	659.7	680.3	711.3	760.0	826.3	907.7	1031.1	1161.9	1301.1
52.5°	572.7	577.0	584.9	603.7	628.1	662.1	714.4	786.1	888.9	1009.9	1141.2
55°	510.7	511.3	519.2	532.6	551.4	577.6	627.4	679.1	770.3	880.4	999.5
57.5°	454.8	451.1	458.4	466.3	484.6	507.1	539.3	592.2	663.3	756.9	864.6
60°	398.8	401.9	401.3	410.4	420.1	442.6	470.0	504.6	563.0	648.7	739.9
62.5°	346.6	345.9	352.0	357.5	364.2	382.4	404.9	433.5	479.1	542.3	630.5
65°	296.7	297.9	302.8	307.0	314.3	325.9	342.9	366.0	402.5	451.1	525.3
67.5°	251.7	256.0	258.4	259.6	266.3	274.8	289.4	308.3	333.2	372.1	434.1
70°	214.0	215.2	216.4	220.7	223.7	228.6	239.5	249.9	272.4	301.0	345.9
72.5°	178.7	177.5	181.2	182.4	183.6	188.5	195.2	200.6	215.2	239.5	267.5
75°	141.1	141.7	142.3	144.1	149.0	149.6	152.6	158.7	169.0	178.7	197.6
77.5°	105.8	107.6	107.0	108.8	110.7	112.5	113.7	119.2	126.5	134.4	143.5
80°	80.3	80.3	80.3	81.5	80.3	84.5	84.5	86.3	88.2	91.8	98.5
82.5°	54.7	55.9	56.5	57.2	57.8	57.8	58.4	59.6	62.0	63.2	65.1
85°	35.3	34.0	34.7	34.7	34.7	34.7	35.9	37.1	37.1	37.7	39.5
87.5°	15.8	15.8	15.8	15.8	15.2	15.8	16.4	16.4	17.0	17.0	18.2
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):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1561.3	1561.3	1561.3	1561.3	1561.3	1561.3	1561.3	1561.3	1561.3	1561.3	1561.3
2.5°	1617.9	1616.0	1606.9	1597.2	1588.1	1578.9	1575.9	1566.8	1555.8	1546.1	1535.2
5°	1690.2	1675.6	1655.6	1634.9	1613.6	1594.1	1578.9	1561.9	1542.5	1519.4	1501.1
7.5°	1763.2	1736.4	1703.6	1673.2	1636.7	1607.5	1578.3	1554.0	1526.1	1493.2	1468.3
10°	1834.3	1789.9	1749.8	1701.8	1655.6	1615.4	1578.3	1537.6	1500.5	1465.3	1430.6
12.5°	1890.8	1846.5	1788.7	1729.7	1670.1	1617.9	1568.0	1520.0	1473.8	1431.2	1392.9
15°	1955.3	1891.5	1820.3	1755.3	1673.8	1609.3	1552.2	1500.5	1447.6	1395.9	1354.0
17.5°	2002.7	1927.3	1839.2	1764.4	1686.0	1605.7	1537.0	1471.9	1411.1	1357.0	1313.9
20°	2039.2	1949.8	1861.7	1766.8	1673.2	1591.1	1513.9	1439.1	1377.7	1318.7	1273.1
22.5°	2055.0	1960.8	1862.9	1760.1	1660.4	1567.4	1487.1	1409.9	1340.6	1279.8	1226.9
25°	2061.7	1958.3	1856.8	1740.1	1639.1	1544.3	1454.9	1375.3	1304.1	1235.4	1183.1
27.5°	2056.2	1945.6	1828.8	1718.8	1604.5	1511.5	1416.6	1335.8	1261.6	1195.3	1136.9
30°	2041.6	1916.4	1800.3	1676.8	1566.8	1468.9	1376.5	1290.8	1216.0	1148.5	1090.7
32.5°	2003.9	1883.5	1751.6	1631.2	1512.7	1416.0	1332.1	1247.6	1171.6	1101.1	1045.1
35°	1957.1	1839.2	1701.2	1575.3	1458.0	1360.1	1275.6	1200.2	1125.4	1050.6	993.5
37.5°	1898.1	1778.4	1645.2	1509.6	1394.7	1299.9	1222.7	1146.7	1072.5	1003.8	940.0
40°	1818.5	1709.1	1575.3	1439.1	1323.6	1232.4	1156.4	1086.5	1020.8	953.3	884.6
42.5°	1719.4	1636.1	1498.1	1363.7	1250.6	1160.0	1092.6	1029.9	966.7	897.4	835.4
45°	1613.6	1542.5	1417.2	1281.6	1174.0	1085.9	1021.4	966.1	906.5	845.1	780.0
47.5°	1494.4	1441.5	1333.3	1199.0	1085.9	1010.5	950.9	900.4	846.3	791.6	728.4
50°	1360.1	1327.8	1235.4	1113.2	1005.6	929.0	879.8	834.8	788.6	733.8	679.7
52.5°	1225.7	1219.6	1133.3	1025.7	924.1	853.0	805.0	763.6	725.9	674.3	628.7
55°	1084.7	1102.9	1031.1	932.0	841.5	772.8	730.2	696.8	663.9	620.1	576.4
57.5°	959.4	980.1	930.8	839.6	755.1	696.8	660.3	629.9	601.3	561.2	532.0
60°	820.8	858.5	832.3	749.0	674.3	622.0	587.9	563.6	539.9	505.2	479.7
62.5°	711.3	737.5	722.3	660.3	594.0	551.4	521.0	498.6	479.7	453.0	428.0
65°	594.0	626.8	618.9	578.2	519.8	480.9	457.8	440.2	420.7	399.4	378.8
67.5°	488.2	522.3	520.4	492.5	449.3	417.1	395.2	382.4	366.6	345.9	333.2
70°	392.8	424.4	425.6	411.6	381.2	350.8	335.0	323.4	311.3	296.1	287.0
72.5°	305.2	333.8	338.6	332.0	312.5	292.4	278.5	270.6	260.2	247.5	239.5
75°	228.0	248.7	260.2	257.2	249.3	235.9	228.0	222.5	212.2	203.1	196.4
77.5°	162.3	178.7	190.3	195.2	191.5	186.0	178.7	174.5	163.5	159.3	155.6
80°	108.8	123.4	133.8	136.8	138.6	137.4	130.7	128.3	122.8	121.0	117.3
82.5°	66.9	74.8	82.1	90.0	93.6	93.6	90.0	90.6	85.7	83.3	82.1
85°	40.7	42.6	43.8	49.9	54.7	56.5	54.7	55.3	53.5	51.7	49.9
87.5°	18.8	18.8	19.5	20.7	21.9	25.5	26.8	28.6	26.1	26.1	21.9
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°	1561.3	1561.3	1561.3	1561.3	1561.3	1561.3	1561.3	1561.3	1561.3	1561.3	1561.3
2.5°	1528.5	1520.6	1514.5	1504.8	1496.9	1484.1	1479.8	1479.8	1482.3	1479.2	1482.3
5°	1488.4	1473.8	1458.0	1444.0	1428.8	1417.8	1406.9	1404.5	1403.2	1395.9	1396.5
7.5°	1448.2	1428.8	1408.7	1390.5	1371.6	1354.6	1343.0	1338.2	1333.9	1329.1	1323.6
10°	1405.1	1382.6	1358.9	1338.2	1319.9	1296.8	1285.3	1281.6	1269.5	1267.0	1258.5
12.5°	1359.5	1336.4	1312.6	1285.9	1268.3	1245.8	1228.7	1220.8	1209.3	1200.8	1188.0
15°	1323.6	1294.4	1262.8	1236.6	1213.5	1188.6	1165.5	1150.3	1135.1	1111.4	1099.9
17.5°	1279.2	1245.8	1218.4	1190.4	1157.0	1120.5	1093.2	1070.7	1054.3	1034.8	1023.2
20°	1231.2	1200.2	1166.1	1126.6	1091.3	1050.0	1025.1	1006.2	993.5	981.9	975.8
22.5°	1188.6	1152.7	1105.9	1068.2	1019.0	986.2	966.1	953.9	941.8	929.6	923.5
25°	1142.4	1100.5	1043.3	997.1	960.0	934.5	915.0	903.5	890.7	883.4	874.3
27.5°	1096.8	1042.7	985.5	943.6	914.4	884.6	868.2	859.1	849.4	839.0	831.7
30°	1041.5	980.1	932.7	894.4	865.2	840.2	828.1	814.7	806.2	800.1	795.9
32.5°	983.7	924.8	881.6	848.8	820.2	801.3	786.1	777.6	770.3	763.6	758.8
35°	929.6	872.5	836.0	804.4	780.7	759.4	747.8	739.9	733.8	728.4	725.9
37.5°	876.1	827.5	788.0	763.0	738.1	721.1	710.1	702.8	699.2	693.7	694.3
40°	823.2	779.4	747.8	719.3	696.1	681.6	673.0	670.0	664.5	662.7	664.5
42.5°	775.8	735.7	705.3	678.5	658.5	644.5	637.8	633.5	631.7	631.1	631.7
45°	729.6	691.9	662.7	640.8	620.1	607.4	601.9	598.9	597.0	600.1	600.7
47.5°	683.4	649.3	623.2	597.7	580.6	571.5	566.0	563.6	565.4	566.6	570.9
50°	637.8	606.2	578.8	556.3	542.9	534.4	532.6	528.3	531.4	533.2	536.2
52.5°	591.6	563.0	538.7	517.4	503.4	497.9	493.7	491.9	496.1	496.1	499.2
55°	544.8	519.8	497.3	477.9	466.9	460.2	457.2	454.8	457.2	457.8	457.2
57.5°	501.0	477.3	453.6	437.1	428.0	420.7	417.7	416.5	415.9	418.3	417.7
60°	454.8	432.3	413.4	396.4	387.3	383.0	376.3	377.6	377.6	377.6	371.5
62.5°	408.6	386.1	369.7	358.1	347.2	339.9	338.6	336.8	333.2	332.6	324.7
65°	361.1	344.1	330.1	318.6	307.6	301.6	299.7	294.3	290.0	282.1	276.6
67.5°	317.4	305.2	288.8	279.1	269.9	262.7	256.0	251.7	243.2	235.3	230.4
70°	273.6	260.8	249.9	239.5	230.4	223.7	215.8	207.9	202.5	197.6	193.9
72.5°	229.8	218.9	209.8	200.0	190.3	183.6	177.5	171.5	169.0	166.6	164.8
75°	189.1	178.7	170.2	162.3	156.9	149.0	145.9	143.5	141.1	138.0	134.4
77.5°	149.6	141.7	135.0	128.3	123.4	119.2	116.7	109.4	103.4	102.1	100.9
80°	111.3	105.2	100.9	96.1	90.6	84.5	82.7	80.3	79.0	79.0	79.6
82.5°	77.8	74.2	69.3	65.1	63.2	60.8	60.8	60.2	59.6	60.2	60.2
85°	47.4	42.6	41.3	40.7	41.3	41.3	41.3	41.3	40.7	41.3	40.1
87.5°	20.7	22.5	23.1	21.3	21.9	20.7	21.3	21.3	21.3	21.9	21.3
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: P243609

CATALOG NUMBER: S124RDR-H1020D840-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1561.3	1561.3	1561.3	1561.3
2.5°	1478.6	1478.6	1472.5	1467.7
5°	1395.3	1387.4	1386.2	1378.9
7.5°	1317.5	1316.3	1313.3	1313.3
10°	1255.5	1251.2	1247.0	1246.4
12.5°	1167.9	1174.0	1166.7	1164.9
15°	1091.3	1086.5	1080.4	1067.6
17.5°	1020.2	1011.1	1008.7	1003.2
20°	964.3	957.6	955.2	952.1
22.5°	911.4	910.2	902.9	901.0
25°	872.5	866.4	861.5	858.5
27.5°	829.9	825.6	823.2	818.4
30°	791.0	789.8	786.7	786.7
32.5°	755.7	752.1	752.1	751.5
35°	723.5	724.7	721.1	719.9
37.5°	693.1	691.3	691.9	690.7
40°	663.3	662.1	662.1	662.7
42.5°	632.9	633.5	634.7	634.7
45°	602.5	603.1	604.3	604.3
47.5°	573.9	572.7	573.9	572.7
50°	537.5	541.1	540.5	539.9
52.5°	500.4	499.2	501.6	501.0
55°	460.2	458.4	460.9	458.4
57.5°	415.3	415.9	415.9	414.6
60°	370.3	368.4	366.0	366.0
62.5°	318.0	312.5	308.9	311.3
65°	267.5	263.3	262.0	260.2
67.5°	227.4	222.5	220.7	220.1
70°	192.7	190.3	189.7	189.7
72.5°	163.5	163.5	161.7	160.5
75°	133.1	130.7	127.7	127.7
77.5°	99.7	99.1	98.5	98.5
80°	77.8	77.8	78.4	79.0
82.5°	58.4	59.0	59.6	59.6
85°	39.5	39.5	40.1	40.1
87.5°	21.3	21.3	21.3	20.7
90°	0.0	0.0	0.0	0.0

(END OF REPORT)