

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: P243335

Luminaire Tested: **S123DR-H1165D840-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243335
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-59)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S123DR-H1165D840-X4F0-XX-UDD-A-W
Description: DEFINE 3 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: 4674.6 lumens
Efficiency: N/A
Efficacy: 124.0 lumens/watt
Spacing Criteria (0/90/45): 1.39 / 1.21 / 1.5
Luminous Opening: Rectangular (W 3.88' x L: 0.23' x H: 0')
CIE Type: Direct

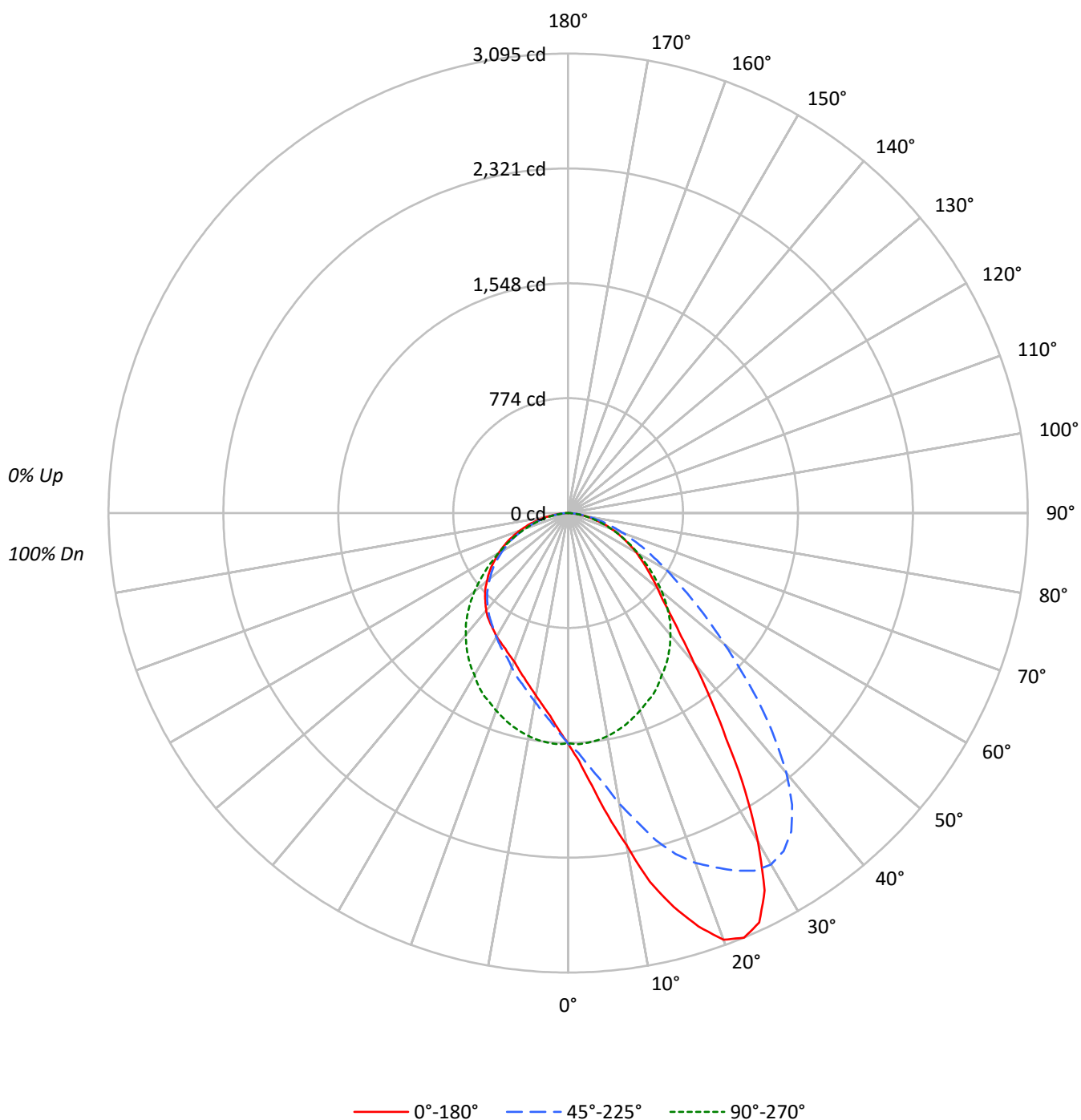
Input Watts (W): 37.7
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P243335

CATALOG NUMBER: S123DR-H1165D840-X4F0-XX-UDD-A-W

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					0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10
RCR																				
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100		
1	110	105	101	98	107	103	99	96	99	96	93	95	92	90	91	89	87	85		
2	100	92	86	81	98	91	85	80	87	82	78	84	80	76	81	77	74	72		
3	92	82	74	68	89	80	73	67	77	71	66	75	69	65	72	68	64	62		
4	84	73	64	58	82	72	64	58	69	62	57	67	61	56	65	60	55	53		
5	78	65	57	50	76	64	56	50	62	55	50	60	54	49	58	53	49	46		
6	72	59	50	44	70	58	50	44	56	49	44	55	48	43	53	47	43	41		
7	67	54	45	39	65	53	45	39	51	44	39	50	43	39	49	43	38	36		
8	62	49	41	35	61	48	41	35	47	40	35	46	39	35	45	39	34	33		
9	58	45	37	32	57	45	37	32	43	36	31	42	36	31	41	35	31	29		
10	55	42	34	29	53	41	34	29	40	33	29	39	33	28	38	33	28	27		

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	18801	18801	18801
5°	22398	18890	16695
10°	27972	18776	15350
15°	34472	18572	14402
20°	39447	18275	13705
25°	40710	18075	13449
30°	35765	17644	13459
35°	27449	17382	13473
40°	20879	16958	13575
45°	16801	16410	13563
50°	14786	15535	13445
55°	13628	14393	13358
60°	12844	13171	13084
65°	11937	12038	12832
70°	10923	10799	12284
75°	9713	9413	11441
80°	8132	7783	10017
85°	5730	5633	7510

TEST NUMBER: P243335

CATALOG NUMBER: S123DR-H1165D840-X4F0-XX-UDD-A-W

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	152.6	3.3
10°-20°	489.9	10.5
20°-30°	809.2	17.3
30°-40°	926.1	19.8
40°-50°	839.3	18.0
50°-60°	678.1	14.5
60°-70°	472.5	10.1
70°-80°	247.8	5.3
80°-90°	59.1	1.3
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°	1451.7	31.1
0°-40°	2377.9	50.9
0°-60°	3895.3	83.3
0°-90°	4674.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4674.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1551	1551	1551	1551	1551	
5°	1841	1722	1552	1404	1372	189
15°	2747	2281	1480	1192	1148	782
25°	3044	2657	1352	1030	1006	1360
35°	1855	2618	1175	901	910	1175
45°	980	1830	957	771	791	772
55°	645	1027	681	605	632	579
65°	416	561	420	414	447	412
75°	207	256	201	209	244	221
85°	41	53	40	46	54	53
90°	0	0	0	0	0	

TEST NUMBER: P243335

CATALOG NUMBER: S123DR-H1165D840-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1551.1	1551.1	1551.1	1551.1	1551.1	1551.1	1551.1	1551.1	1551.1	1551.1	1551.1
2.5°	1670.4	1673.9	1668.3	1671.8	1663.3	1658.3	1650.5	1646.9	1629.9	1617.8	1613.6
5°	1840.8	1840.8	1842.2	1833.7	1823.8	1806.0	1782.6	1767.7	1750.6	1721.5	1706.6
7.5°	2055.3	2044.7	2037.6	2021.9	2008.4	1979.3	1953.7	1923.2	1883.4	1835.1	1809.6
10°	2272.6	2284.0	2276.9	2260.6	2225.8	2178.2	2140.5	2096.5	2034.7	1987.8	1921.1
12.5°	2543.9	2529.0	2517.6	2492.8	2454.4	2404.0	2345.8	2280.4	2200.9	2123.5	2048.9
15°	2747.0	2749.2	2748.5	2715.8	2678.2	2610.0	2556.0	2447.3	2346.5	2281.2	2157.6
17.5°	2918.9	2928.1	2917.5	2868.5	2835.1	2794.6	2725.7	2605.0	2513.4	2407.6	2271.2
20°	3058.1	3059.5	3042.5	3006.3	2967.9	2922.5	2831.6	2739.2	2649.7	2507.7	2377.7
22.5°	3095.0	3098.6	3095.0	3079.4	3048.2	2999.9	2931.7	2846.5	2733.5	2582.3	2461.5
25°	3043.9	3041.8	3053.8	3044.6	3043.2	3027.6	2982.8	2913.9	2802.4	2656.8	2503.4
27.5°	2864.9	2850.0	2880.6	2920.3	2926.0	2950.9	2951.6	2919.6	2839.4	2715.1	2548.2
30°	2555.3	2569.5	2584.4	2667.5	2713.7	2778.3	2834.4	2855.0	2824.5	2732.8	2576.6
32.5°	2218.7	2264.1	2306.0	2363.5	2431.0	2540.4	2629.1	2707.3	2740.6	2700.2	2576.6
35°	1855.0	1879.2	1945.2	2018.4	2115.7	2200.9	2377.0	2490.7	2592.2	2618.5	2543.9
37.5°	1571.0	1593.0	1615.7	1672.5	1781.9	1923.9	2069.5	2218.7	2369.2	2477.2	2472.9
40°	1319.5	1324.5	1344.4	1393.4	1484.3	1610.7	1763.4	1943.1	2138.4	2285.4	2347.2
42.5°	1126.4	1126.4	1151.2	1208.0	1260.6	1352.9	1500.6	1659.0	1872.8	2061.7	2193.8
45°	980.1	981.5	1001.4	1041.9	1083.0	1155.5	1264.9	1414.0	1634.2	1829.5	2013.4
47.5°	860.8	874.3	885.6	906.9	948.1	1012.0	1091.6	1218.7	1375.7	1588.7	1803.2
50°	784.1	786.9	795.4	808.2	840.2	882.1	951.0	1047.5	1186.7	1375.7	1592.3
52.5°	708.8	708.8	717.3	732.9	751.4	785.5	835.2	915.4	1019.8	1191.0	1385.6
55°	644.9	647.0	648.4	661.2	676.8	702.4	741.4	794.0	889.9	1026.9	1196.7
57.5°	582.4	590.2	588.0	598.0	609.3	627.8	655.5	701.0	774.1	878.5	1031.2
60°	529.8	528.4	531.9	536.2	544.0	556.8	582.4	615.7	676.8	764.2	889.2
62.5°	470.1	468.7	473.0	478.0	485.1	495.7	514.2	539.7	588.0	653.4	762.0
65°	416.2	414.8	416.9	419.7	427.5	436.1	450.3	471.6	503.5	561.1	644.1
67.5°	362.2	362.2	363.6	366.5	371.4	377.8	389.2	402.0	433.9	472.3	537.6
70°	308.2	308.9	308.9	311.8	316.0	321.0	330.2	341.6	361.5	395.6	448.1
72.5°	261.4	261.4	259.9	261.4	264.2	266.3	272.0	282.7	297.6	322.4	362.2
75°	207.4	210.9	210.2	209.5	211.6	215.2	220.2	228.7	237.9	255.7	285.5
77.5°	159.1	161.2	161.2	161.9	164.1	166.9	168.3	176.8	185.4	196.0	218.0
80°	116.5	117.9	116.5	117.2	118.6	121.4	124.3	125.7	132.1	141.3	152.0
82.5°	78.1	76.0	78.8	78.1	79.5	80.3	81.7	82.4	86.6	92.3	99.4
85°	41.2	44.7	44.0	45.5	44.0	44.7	45.5	48.3	49.0	52.6	56.8
87.5°	15.6	17.0	17.0	17.0	17.0	17.0	18.5	19.2	20.6	21.3	22.7
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: P243335

CATALOG NUMBER: S123DR-H1165D840-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1551.1	1551.1	1551.1	1551.1	1551.1	1551.1	1551.1	1551.1	1551.1	1551.1	1551.1
2.5°	1616.4	1610.0	1600.8	1590.8	1580.2	1569.5	1564.6	1558.2	1545.4	1532.6	1522.7
5°	1694.5	1676.8	1652.6	1634.9	1609.3	1585.2	1566.0	1552.5	1531.9	1507.0	1490.7
7.5°	1781.9	1749.9	1711.6	1672.5	1634.2	1597.9	1568.1	1542.5	1510.6	1480.0	1455.2
10°	1884.9	1823.1	1769.8	1713.0	1656.2	1605.0	1562.4	1525.5	1484.3	1447.4	1416.8
12.5°	1975.8	1904.0	1830.2	1749.9	1673.2	1607.2	1552.5	1504.2	1454.5	1411.9	1380.6
15°	2075.9	1975.1	1872.8	1781.9	1688.8	1607.9	1536.2	1480.0	1423.2	1374.9	1338.7
17.5°	2191.0	2056.0	1927.5	1796.8	1714.4	1610.0	1522.0	1448.1	1389.9	1341.6	1294.7
20°	2259.1	2124.9	1967.2	1833.0	1696.7	1589.4	1491.4	1416.8	1348.7	1293.3	1254.9
22.5°	2296.1	2154.7	1990.0	1852.2	1693.1	1573.1	1468.7	1380.6	1307.5	1252.1	1208.8
25°	2347.9	2154.7	2002.0	1836.6	1698.8	1553.9	1436.0	1351.5	1274.8	1210.9	1165.4
27.5°	2371.3	2173.9	2003.5	1806.7	1664.7	1517.7	1398.4	1308.9	1223.7	1161.2	1122.1
30°	2390.5	2177.5	1975.1	1783.3	1624.9	1477.2	1360.7	1260.6	1181.1	1121.4	1080.2
32.5°	2391.9	2168.2	1936.7	1739.3	1571.7	1429.6	1316.0	1221.5	1138.4	1075.2	1034.8
35°	2379.2	2145.5	1892.7	1671.8	1509.9	1380.6	1267.0	1174.7	1090.2	1029.8	988.6
37.5°	2346.5	2119.9	1851.5	1608.6	1436.7	1311.0	1214.4	1126.4	1042.6	982.2	948.1
40°	2276.9	2078.7	1797.5	1541.1	1362.9	1237.2	1152.6	1071.7	997.1	934.6	900.5
42.5°	2184.6	2017.0	1732.2	1469.4	1280.5	1159.0	1084.5	1019.1	943.1	889.2	854.4
45°	2053.9	1933.2	1666.8	1394.1	1198.8	1079.5	1011.3	957.3	892.0	838.0	807.5
47.5°	1906.2	1832.3	1582.3	1309.6	1112.9	1000.7	936.0	892.7	837.3	791.2	760.6
50°	1740.0	1712.3	1489.3	1224.4	1032.6	917.6	857.9	823.8	777.0	740.0	713.7
52.5°	1559.6	1576.6	1391.3	1137.7	955.2	838.7	781.9	750.7	720.8	689.6	664.7
55°	1376.4	1416.8	1272.7	1043.3	866.4	764.9	709.5	681.1	659.1	632.8	615.0
57.5°	1204.5	1267.7	1149.8	942.4	784.8	687.5	634.9	610.1	593.7	579.5	563.2
60°	1037.6	1110.7	1023.4	848.0	703.1	614.3	567.4	543.3	535.5	524.8	509.2
62.5°	889.9	964.4	899.1	750.7	620.7	544.7	502.1	482.2	470.9	467.3	458.1
65°	751.4	821.0	771.3	649.1	542.6	475.1	437.5	419.7	413.3	412.6	405.5
67.5°	631.4	698.8	653.4	550.4	460.2	405.5	377.1	362.9	356.5	357.2	352.3
70°	520.6	568.2	541.2	460.2	390.6	342.3	320.3	304.7	299.7	299.7	298.3
72.5°	417.6	455.2	434.6	372.9	318.2	281.2	262.1	252.8	248.6	247.9	248.6
75°	326.7	359.4	340.9	292.6	251.4	223.7	207.4	201.0	198.9	197.4	198.1
77.5°	244.3	264.9	253.5	222.3	188.2	169.0	161.2	154.8	152.7	153.4	154.8
80°	172.6	183.9	177.5	157.7	134.9	122.2	116.5	111.5	109.4	111.5	111.5
82.5°	109.4	117.9	112.2	99.4	88.1	79.5	73.9	72.4	71.7	70.3	72.4
85°	59.7	63.9	61.1	56.8	49.0	45.5	41.2	40.5	40.5	40.5	40.5
87.5°	23.4	26.3	22.7	22.7	21.3	17.8	17.8	17.0	16.3	17.0	17.0
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: P243335

CATALOG NUMBER: S123DR-H1165D840-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1551.1	1551.1	1551.1	1551.1	1551.1	1551.1	1551.1	1551.1	1551.1	1551.1	1551.1
2.5°	1518.4	1509.2	1503.5	1495.7	1486.4	1474.4	1469.4	1474.4	1471.5	1466.6	1468.7
5°	1476.5	1464.4	1448.8	1436.0	1421.8	1404.1	1398.4	1395.5	1391.3	1389.1	1385.6
7.5°	1435.3	1417.6	1398.4	1380.6	1360.0	1344.4	1337.3	1332.3	1330.9	1320.3	1316.0
10°	1392.7	1370.7	1351.5	1327.4	1309.6	1289.0	1280.5	1274.8	1268.4	1261.3	1256.3
12.5°	1348.0	1325.9	1301.8	1279.1	1261.3	1238.6	1227.2	1220.8	1215.9	1210.9	1205.2
15°	1308.9	1286.9	1253.5	1236.5	1215.1	1192.4	1185.3	1171.1	1172.5	1164.0	1158.3
17.5°	1267.7	1235.0	1211.6	1186.0	1170.4	1154.1	1140.6	1125.7	1123.5	1117.1	1115.0
20°	1221.5	1187.4	1171.1	1144.8	1123.5	1107.2	1095.1	1093.7	1089.4	1080.2	1076.7
22.5°	1176.1	1148.4	1125.7	1101.5	1082.3	1061.0	1055.4	1057.5	1049.7	1047.5	1039.7
25°	1134.9	1110.7	1082.3	1059.6	1044.0	1030.5	1022.7	1019.8	1017.0	1014.9	1011.3
27.5°	1090.9	1065.3	1041.1	1022.7	1007.8	998.5	993.6	987.2	986.5	986.5	985.0
30°	1046.8	1024.1	1007.8	984.3	970.8	965.2	960.9	958.8	960.9	960.9	961.6
32.5°	1006.3	984.3	965.2	948.8	935.3	931.1	930.4	930.4	933.2	933.2	935.3
35°	964.4	942.4	924.7	913.3	901.9	901.2	901.9	903.4	906.9	907.6	910.5
37.5°	919.0	901.9	888.5	874.3	871.4	872.8	874.3	875.7	877.1	882.8	882.8
40°	877.1	864.3	850.8	841.6	836.6	840.2	842.3	843.0	847.3	850.8	853.7
42.5°	835.9	823.8	813.2	805.4	803.2	806.1	808.2	810.3	814.6	817.4	822.4
45°	789.7	781.9	772.7	766.3	767.0	771.3	771.3	778.4	781.2	782.6	786.2
47.5°	747.1	738.6	732.2	729.4	728.7	732.2	734.3	740.0	741.4	746.4	749.3
50°	701.7	695.3	690.3	686.8	687.5	688.9	693.9	699.5	701.0	706.6	711.6
52.5°	654.1	648.4	644.1	645.6	647.7	647.7	652.7	656.2	659.8	664.0	669.0
55°	607.2	599.4	600.1	598.0	600.1	605.1	607.2	612.9	615.7	617.9	625.0
57.5°	556.1	554.7	552.5	550.4	554.7	556.8	560.3	563.9	568.9	571.7	576.7
60°	503.5	501.4	501.4	504.2	505.7	509.9	515.6	517.7	519.2	524.8	531.2
62.5°	455.2	453.1	452.4	456.7	456.7	460.9	463.0	466.6	472.3	474.4	482.9
65°	403.4	402.0	402.0	405.5	406.2	414.0	414.0	414.0	417.6	425.4	429.7
67.5°	349.4	350.1	352.3	354.4	357.2	359.4	360.1	364.3	370.0	375.0	383.5
70°	295.4	299.0	303.3	302.5	304.7	308.2	308.9	313.2	318.2	324.6	334.5
72.5°	247.1	249.3	253.5	253.5	256.4	258.5	262.1	264.9	271.3	277.0	281.2
75°	198.9	199.6	203.1	205.2	207.4	208.8	212.3	217.3	220.9	225.8	232.2
77.5°	156.2	154.8	157.7	158.4	159.8	162.6	165.5	170.4	173.3	179.0	181.1
80°	110.8	113.6	114.3	115.1	116.5	120.0	122.2	124.3	127.1	132.1	134.2
82.5°	73.2	74.6	76.7	77.4	78.8	79.5	80.3	83.8	85.9	87.4	94.5
85°	42.6	44.7	43.3	43.3	44.7	45.5	48.3	48.3	51.1	49.7	53.3
87.5°	18.5	17.8	17.8	18.5	17.8	17.0	19.2	19.2	18.5	19.2	19.2
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: P243335

CATALOG NUMBER: S123DR-H1165D840-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1551.1	1551.1	1551.1	1551.1
2.5°	1465.1	1465.1	1459.5	1461.6
5°	1378.5	1381.3	1374.2	1372.1
7.5°	1314.6	1311.7	1306.8	1306.8
10°	1252.1	1249.2	1247.1	1247.1
12.5°	1198.1	1195.3	1191.0	1194.6
15°	1149.8	1150.5	1147.7	1147.7
17.5°	1112.9	1106.5	1104.4	1103.6
20°	1068.8	1070.3	1067.4	1062.5
22.5°	1041.1	1037.6	1034.8	1034.0
25°	1012.7	1009.2	1008.5	1005.6
27.5°	984.3	985.0	982.9	982.9
30°	960.9	963.0	960.9	961.6
32.5°	937.5	937.5	937.5	934.6
35°	911.9	912.6	911.9	910.5
37.5°	885.6	885.6	886.3	887.7
40°	856.5	856.5	857.9	857.9
42.5°	821.7	825.2	827.4	823.8
45°	790.4	791.2	791.9	791.2
47.5°	755.6	753.5	754.2	755.6
50°	712.3	717.3	717.3	713.0
52.5°	670.4	671.8	674.7	674.7
55°	629.2	629.9	630.7	632.1
57.5°	582.4	583.1	583.1	582.4
60°	535.5	539.7	539.0	539.7
62.5°	485.1	491.5	493.6	492.9
65°	437.5	438.9	442.5	447.4
67.5°	387.1	390.6	396.3	394.9
70°	337.3	342.3	343.7	346.6
72.5°	287.6	294.0	295.4	296.9
75°	239.3	242.2	245.0	244.3
77.5°	186.8	191.0	196.0	193.2
80°	139.9	140.6	144.9	143.5
82.5°	92.3	98.0	98.0	95.2
85°	54.0	54.0	54.0	54.0
87.5°	18.5	17.8	19.2	18.5
90°	0.0	0.0	0.0	0.0

(END OF REPORT)