

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: P243350

Luminaire Tested: **S123DR-H1165D940-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243350
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-H1165D940-X4F0-XX-UDD-A-W
Description: DEFINE 3 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 4000K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4127.7 lumens
Efficiency: N/A
Efficacy: 109.5 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

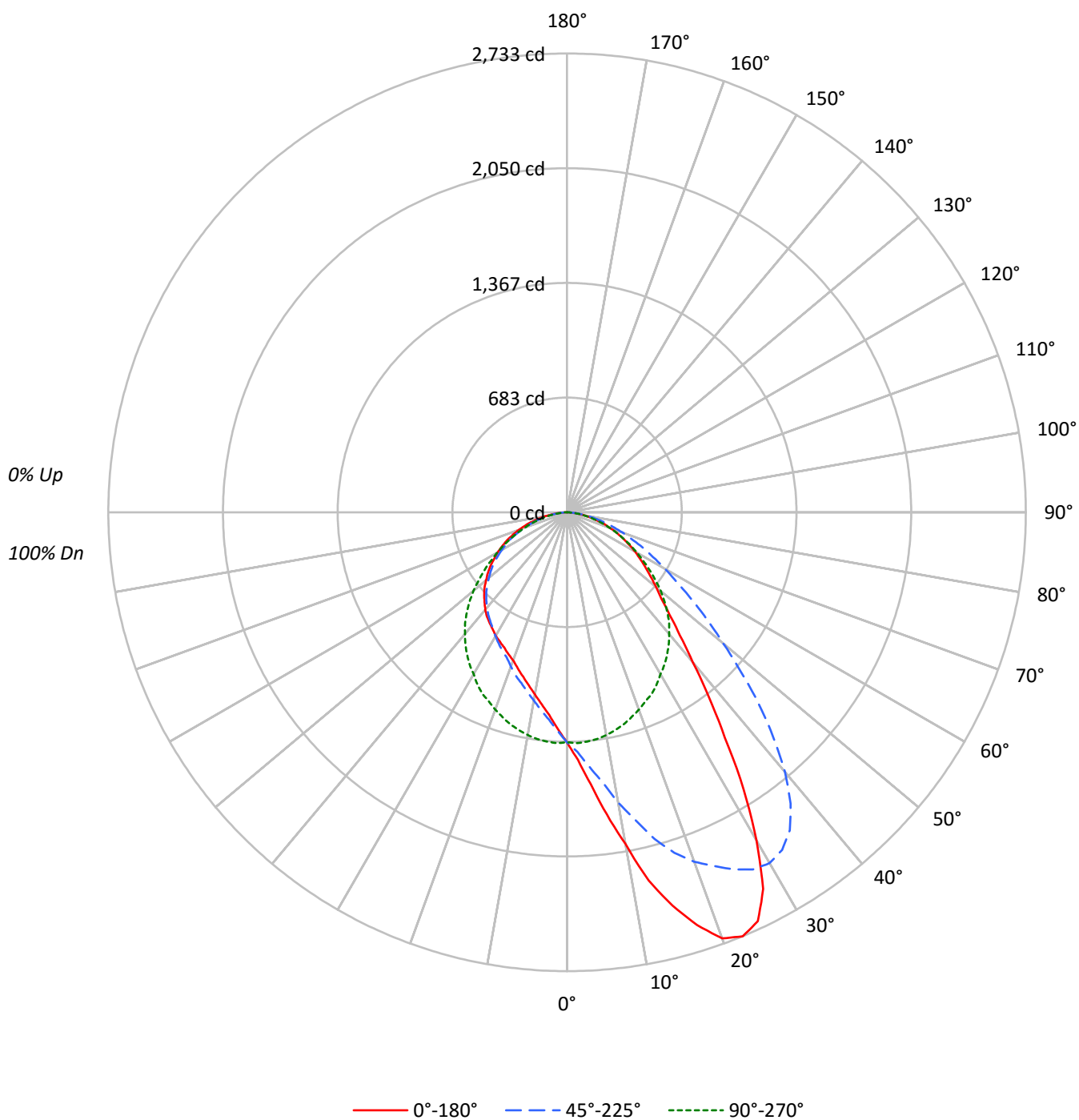
Input Watts (W): 37.7
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P243350

CATALOG NUMBER: S123DR-H1165D940-X4F0-XX-UDD-A-W

Luminous Intensity Polar Plot



TEST NUMBER: P243350

CATALOG NUMBER: S123DR-H1165D940-X4F0-XX-UDD-A-W

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

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	16601	16601	16601
5°	19778	16679	14742
10°	24699	16579	13554
15°	30438	16400	12717
20°	34832	16138	12101
25°	35947	15961	11876
30°	31580	15579	11884
35°	24238	15348	11896
40°	18437	14973	11986
45°	14835	14490	11975
50°	13055	13717	11873
55°	12033	12709	11794
60°	11341	11629	11554
65°	10540	10629	11332
70°	9647	9533	10845
75°	8575	8313	10102
80°	7176	6876	8844
85°	5062	4965	6634

TEST NUMBER: P243350

CATALOG NUMBER: S123DR-H1165D940-X4F0-XX-UDD-A-W

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	134.8	3.3
10°-20°	432.6	10.5
20°-30°	714.5	17.3
30°-40°	817.8	19.8
40°-50°	741.1	18.0
50°-60°	598.8	14.5
60°-70°	417.2	10.1
70°-80°	218.8	5.3
80°-90°	52.2	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°	1281.9	31.1
0°-40°	2099.7	50.9
0°-60°	3439.5	83.3
0°-90°	4127.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4127.7	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1370	1370	1370	1370	1370	
5°	1626	1520	1371	1240	1212	167
15°	2426	2014	1307	1053	1013	690
25°	2688	2346	1193	910	888	1201
35°	1638	2312	1037	796	804	1038
45°	865	1615	845	681	699	682
55°	569	907	601	534	558	512
65°	368	495	371	366	395	364
75°	183	226	178	184	216	196
85°	36	46	36	40	48	46
90°	0	0	0	0	0	

TEST NUMBER: P243350

CATALOG NUMBER: S123DR-H1165D940-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1369.6	1369.6	1369.6	1369.6	1369.6	1369.6	1369.6	1369.6	1369.6	1369.6	1369.6
2.5°	1474.9	1478.1	1473.1	1476.2	1468.7	1464.3	1457.4	1454.3	1439.2	1428.5	1424.8
5°	1625.5	1625.5	1626.7	1619.2	1610.4	1594.7	1574.0	1560.9	1545.8	1520.1	1506.9
7.5°	1814.8	1805.4	1799.2	1785.4	1773.4	1747.7	1725.2	1698.2	1663.1	1620.4	1597.9
10°	2006.7	2016.8	2010.5	1996.1	1965.3	1923.3	1890.1	1851.2	1796.7	1755.3	1696.3
12.5°	2246.3	2233.1	2223.1	2201.1	2167.3	2122.7	2071.3	2013.6	1943.4	1875.0	1809.2
15°	2425.6	2427.5	2426.9	2398.0	2364.8	2304.6	2256.9	2161.0	2071.9	2014.3	1905.1
17.5°	2577.4	2585.5	2576.1	2532.9	2503.4	2467.7	2406.8	2300.2	2219.3	2125.9	2005.5
20°	2700.3	2701.6	2686.5	2654.5	2620.7	2580.5	2500.3	2418.7	2339.7	2214.3	2099.5
22.5°	2732.9	2736.1	2732.9	2719.1	2691.5	2648.9	2588.7	2513.4	2413.7	2280.1	2173.5
25°	2687.8	2685.9	2696.5	2688.4	2687.1	2673.3	2633.8	2573.0	2474.5	2346.0	2210.5
27.5°	2529.7	2516.6	2543.5	2578.6	2583.7	2605.6	2606.2	2578.0	2507.2	2397.4	2250.0
30°	2256.3	2268.9	2282.0	2355.4	2396.2	2453.2	2502.8	2521.0	2494.0	2413.1	2275.1
32.5°	1959.1	1999.2	2036.2	2087.0	2146.6	2243.1	2321.5	2390.5	2420.0	2384.2	2275.1
35°	1638.0	1659.3	1717.6	1782.2	1868.1	1943.4	2098.9	2199.3	2288.9	2312.1	2246.3
37.5°	1387.2	1406.6	1426.7	1476.8	1573.4	1698.8	1827.4	1959.1	2092.0	2187.3	2183.6
40°	1165.2	1169.5	1187.1	1230.4	1310.6	1422.3	1557.1	1715.8	1888.2	2018.0	2072.6
42.5°	994.6	994.6	1016.5	1066.7	1113.1	1194.6	1325.1	1464.9	1653.7	1820.5	1937.1
45°	865.4	866.7	884.2	920.0	956.3	1020.3	1116.9	1248.6	1443.0	1615.4	1777.8
47.5°	760.0	772.0	782.0	800.8	837.2	893.6	963.9	1076.1	1214.7	1402.8	1592.2
50°	692.3	694.8	702.4	713.6	741.9	778.9	839.7	925.0	1047.9	1214.7	1406.0
52.5°	625.8	625.8	633.4	647.2	663.5	693.6	737.5	808.3	900.5	1051.7	1223.5
55°	569.4	571.3	572.5	583.8	597.6	620.2	654.7	701.1	785.8	906.8	1056.7
57.5°	514.2	521.1	519.2	528.0	538.1	554.4	578.8	619.0	683.5	775.7	910.6
60°	467.8	466.6	469.7	473.5	480.4	491.6	514.2	543.7	597.6	674.8	785.1
62.5°	415.1	413.9	417.7	422.0	428.3	437.7	454.0	476.6	519.2	576.9	672.9
65°	367.5	366.2	368.1	370.6	377.5	385.0	397.6	416.4	444.6	495.4	568.8
67.5°	319.8	319.8	321.1	323.6	328.0	333.6	343.7	354.9	383.2	417.0	474.7
70°	272.2	272.8	272.8	275.3	279.1	283.5	291.6	301.6	319.2	349.3	395.7
72.5°	230.8	230.8	229.5	230.8	233.3	235.2	240.2	249.6	262.8	284.7	319.8
75°	183.1	186.2	185.6	185.0	186.9	190.0	194.4	201.9	210.1	225.8	252.1
77.5°	140.5	142.4	142.4	143.0	144.9	147.4	148.6	156.1	163.7	173.1	192.5
80°	102.8	104.1	102.8	103.5	104.7	107.2	109.7	111.0	116.6	124.8	134.2
82.5°	69.0	67.1	69.6	69.0	70.2	70.9	72.1	72.7	76.5	81.5	87.8
85°	36.4	39.5	38.9	40.1	38.9	39.5	40.1	42.6	43.3	46.4	50.2
87.5°	13.8	15.1	15.1	15.1	15.1	15.1	16.3	16.9	18.2	18.8	20.1
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: P243350

CATALOG NUMBER: S123DR-H1165D940-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1369.6	1369.6	1369.6	1369.6	1369.6	1369.6	1369.6	1369.6	1369.6	1369.6	1369.6
2.5°	1427.3	1421.6	1413.5	1404.7	1395.3	1385.9	1381.5	1375.9	1364.6	1353.3	1344.5
5°	1496.3	1480.6	1459.3	1443.6	1421.0	1399.7	1382.8	1370.8	1352.7	1330.7	1316.3
7.5°	1573.4	1545.2	1511.3	1476.8	1443.0	1411.0	1384.6	1362.1	1333.8	1306.9	1284.9
10°	1664.3	1609.8	1562.7	1512.6	1462.4	1417.3	1379.6	1347.0	1310.6	1278.0	1251.1
12.5°	1744.6	1681.3	1616.0	1545.2	1477.5	1419.1	1370.8	1328.2	1284.3	1246.7	1219.1
15°	1833.0	1744.0	1653.7	1573.4	1491.3	1419.8	1356.4	1306.9	1256.7	1214.1	1182.1
17.5°	1934.6	1815.5	1702.0	1586.6	1513.8	1421.6	1343.9	1278.7	1227.2	1184.6	1143.2
20°	1994.8	1876.3	1737.1	1618.6	1498.1	1403.5	1316.9	1251.1	1190.9	1142.0	1108.1
22.5°	2027.4	1902.6	1757.1	1635.5	1495.0	1389.0	1296.8	1219.1	1154.5	1105.6	1067.3
25°	2073.2	1902.6	1767.8	1621.7	1500.0	1372.1	1268.0	1193.4	1125.7	1069.2	1029.1
27.5°	2093.9	1919.6	1769.1	1595.4	1469.9	1340.1	1234.8	1155.8	1080.5	1025.3	990.8
30°	2110.8	1922.7	1744.0	1574.7	1434.8	1304.4	1201.5	1113.1	1042.9	990.2	953.8
32.5°	2112.1	1914.5	1710.1	1535.8	1387.8	1262.4	1162.0	1078.6	1005.2	949.4	913.7
35°	2100.8	1894.5	1671.2	1476.2	1333.2	1219.1	1118.8	1037.2	962.6	909.3	872.9
37.5°	2071.9	1871.9	1634.9	1420.4	1268.6	1157.6	1072.3	994.6	920.6	867.3	837.2
40°	2010.5	1835.5	1587.2	1360.8	1203.4	1092.4	1017.8	946.3	880.5	825.3	795.2
42.5°	1929.0	1781.0	1529.5	1297.5	1130.7	1023.4	957.6	899.9	832.8	785.1	754.4
45°	1813.6	1707.0	1471.8	1231.0	1058.6	953.2	893.0	845.3	787.6	740.0	713.0
47.5°	1683.1	1617.9	1397.2	1156.4	982.7	883.6	826.5	788.3	739.4	698.6	671.6
50°	1536.4	1511.9	1315.0	1081.1	911.8	810.2	757.5	727.4	686.1	653.4	630.2
52.5°	1377.1	1392.2	1228.5	1004.6	843.5	740.6	690.4	662.8	636.5	608.9	587.0
55°	1215.3	1251.1	1123.8	921.2	765.1	675.4	626.5	601.4	582.0	558.7	543.1
57.5°	1063.6	1119.4	1015.3	832.2	692.9	607.0	560.6	538.7	524.3	511.7	497.3
60°	916.2	980.8	903.7	748.8	620.8	542.4	501.1	479.7	472.8	463.4	449.6
62.5°	785.8	851.6	793.9	662.8	548.1	481.0	443.4	425.8	415.8	412.6	404.5
65°	663.5	724.9	681.0	573.2	479.1	419.5	386.3	370.6	365.0	364.3	358.1
67.5°	557.5	617.1	576.9	486.0	406.4	358.1	333.0	320.4	314.8	315.4	311.0
70°	459.7	501.7	477.9	406.4	344.9	302.3	282.8	269.0	264.6	264.6	263.4
72.5°	368.7	402.0	383.8	329.2	280.9	248.3	231.4	223.2	219.5	218.9	219.5
75°	288.5	317.3	301.0	258.4	222.0	197.5	183.1	177.5	175.6	174.3	175.0
77.5°	215.7	233.9	223.9	196.3	166.2	149.3	142.4	136.7	134.8	135.5	136.7
80°	152.4	162.4	156.8	139.2	119.1	107.9	102.8	98.5	96.6	98.5	98.5
82.5°	96.6	104.1	99.1	87.8	77.8	70.2	65.2	64.0	63.3	62.1	64.0
85°	52.7	56.4	53.9	50.2	43.3	40.1	36.4	35.7	35.7	35.7	35.7
87.5°	20.7	23.2	20.1	20.1	18.8	15.7	15.7	15.1	14.4	15.1	15.1
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: P243350

CATALOG NUMBER: S123DR-H1165D940-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1369.6	1369.6	1369.6	1369.6	1369.6	1369.6	1369.6	1369.6	1369.6	1369.6	1369.6
2.5°	1340.7	1332.6	1327.6	1320.7	1312.5	1301.9	1297.5	1301.9	1299.4	1295.0	1296.8
5°	1303.7	1293.1	1279.3	1268.0	1255.5	1239.8	1234.8	1232.3	1228.5	1226.6	1223.5
7.5°	1267.4	1251.7	1234.8	1219.1	1200.9	1187.1	1180.8	1176.4	1175.2	1165.8	1162.0
10°	1229.7	1210.3	1193.4	1172.1	1156.4	1138.2	1130.7	1125.7	1120.0	1113.7	1109.3
12.5°	1190.2	1170.8	1149.5	1129.4	1113.7	1093.7	1083.6	1078.0	1073.6	1069.2	1064.2
15°	1155.8	1136.3	1106.8	1091.8	1073.0	1052.9	1046.6	1034.1	1035.3	1027.8	1022.8
17.5°	1119.4	1090.5	1069.8	1047.3	1033.5	1019.0	1007.1	994.0	992.1	986.4	984.6
20°	1078.6	1048.5	1034.1	1010.9	992.1	977.7	967.0	965.7	962.0	953.8	950.7
22.5°	1038.5	1014.0	994.0	972.6	955.7	936.9	931.9	933.8	926.9	925.0	918.1
25°	1002.1	980.8	955.7	935.6	921.8	909.9	903.0	900.5	898.0	896.1	893.0
27.5°	963.2	940.7	919.3	903.0	889.9	881.7	877.3	871.7	871.0	871.0	869.8
30°	924.4	904.3	889.9	869.2	857.3	852.2	848.5	846.6	848.5	848.5	849.1
32.5°	888.6	869.2	852.2	837.8	825.9	822.1	821.5	821.5	824.0	824.0	825.9
35°	851.6	832.2	816.5	806.5	796.4	795.8	796.4	797.7	800.8	801.4	803.9
37.5°	811.5	796.4	784.5	772.0	769.5	770.7	772.0	773.2	774.5	779.5	779.5
40°	774.5	763.2	751.3	743.1	738.7	741.9	743.7	744.4	748.1	751.3	753.8
42.5°	738.1	727.4	718.0	711.1	709.3	711.8	713.6	715.5	719.3	721.8	726.2
45°	697.3	690.4	682.3	676.6	677.3	681.0	681.0	687.3	689.8	691.1	694.2
47.5°	659.7	652.2	646.5	644.0	643.4	646.5	648.4	653.4	654.7	659.1	661.6
50°	619.6	613.9	609.5	606.4	607.0	608.3	612.7	617.7	619.0	624.0	628.4
52.5°	577.6	572.5	568.8	570.0	571.9	571.9	576.3	579.4	582.6	586.3	590.7
55°	536.2	529.3	529.9	528.0	529.9	534.3	536.2	541.2	543.7	545.6	551.9
57.5°	491.0	489.8	487.9	486.0	489.8	491.6	494.8	497.9	502.3	504.8	509.2
60°	444.6	442.7	442.7	445.2	446.5	450.3	455.3	457.2	458.4	463.4	469.1
62.5°	402.0	400.1	399.5	403.2	403.2	407.0	408.9	412.0	417.0	418.9	426.4
65°	356.2	354.9	354.9	358.1	358.7	365.6	365.6	365.6	368.7	375.6	379.4
67.5°	308.5	309.2	311.0	312.9	315.4	317.3	317.9	321.7	326.7	331.1	338.6
70°	260.9	264.0	267.8	267.1	269.0	272.2	272.8	276.6	280.9	286.6	295.4
72.5°	218.2	220.1	223.9	223.9	226.4	228.3	231.4	233.9	239.6	244.6	248.3
75°	175.6	176.2	179.4	181.2	183.1	184.4	187.5	191.9	195.0	199.4	205.1
77.5°	138.0	136.7	139.2	139.8	141.1	143.6	146.1	150.5	153.0	158.0	159.9
80°	97.8	100.3	101.0	101.6	102.8	106.0	107.9	109.7	112.3	116.6	118.5
82.5°	64.6	65.8	67.7	68.4	69.6	70.2	70.9	74.0	75.9	77.1	83.4
85°	37.6	39.5	38.3	38.3	39.5	40.1	42.6	42.6	45.2	43.9	47.0
87.5°	16.3	15.7	15.7	16.3	15.7	15.1	16.9	16.9	16.3	16.9	16.9
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: P243350

CATALOG NUMBER: S123DR-H1165D940-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1369.6	1369.6	1369.6	1369.6
2.5°	1293.7	1293.7	1288.7	1290.6
5°	1217.2	1219.7	1213.4	1211.6
7.5°	1160.8	1158.3	1153.9	1153.9
10°	1105.6	1103.1	1101.2	1101.2
12.5°	1057.9	1055.4	1051.7	1054.8
15°	1015.3	1015.9	1013.4	1013.4
17.5°	982.7	977.0	975.1	974.5
20°	943.8	945.0	942.5	938.1
22.5°	919.3	916.2	913.7	913.1
25°	894.2	891.1	890.5	888.0
27.5°	869.2	869.8	867.9	867.9
30°	848.5	850.4	848.5	849.1
32.5°	827.8	827.8	827.8	825.3
35°	805.2	805.8	805.2	803.9
37.5°	782.0	782.0	782.6	783.9
40°	756.3	756.3	757.5	757.5
42.5°	725.6	728.7	730.6	727.4
45°	698.0	698.6	699.2	698.6
47.5°	667.2	665.4	666.0	667.2
50°	629.0	633.4	633.4	629.6
52.5°	592.0	593.2	595.7	595.7
55°	555.6	556.2	556.9	558.1
57.5°	514.2	514.9	514.9	514.2
60°	472.8	476.6	476.0	476.6
62.5°	428.3	434.0	435.8	435.2
65°	386.3	387.5	390.7	395.1
67.5°	341.8	344.9	349.9	348.7
70°	297.9	302.3	303.5	306.0
72.5°	254.0	259.6	260.9	262.1
75°	211.3	213.8	216.4	215.7
77.5°	164.9	168.7	173.1	170.6
80°	123.5	124.2	127.9	126.7
82.5°	81.5	86.5	86.5	84.0
85°	47.7	47.7	47.7	47.7
87.5°	16.3	15.7	16.9	16.3
90°	0.0	0.0	0.0	0.0

(END OF REPORT)