

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: P243087

Luminaire Tested: **S121RDR-H685D835-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243087
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-H685D835-X4F0-XX-UDD-A-W
Description: DEFINE 1 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 3500K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2182.8 lumens
Efficiency: N/A
Efficacy: 92.5 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

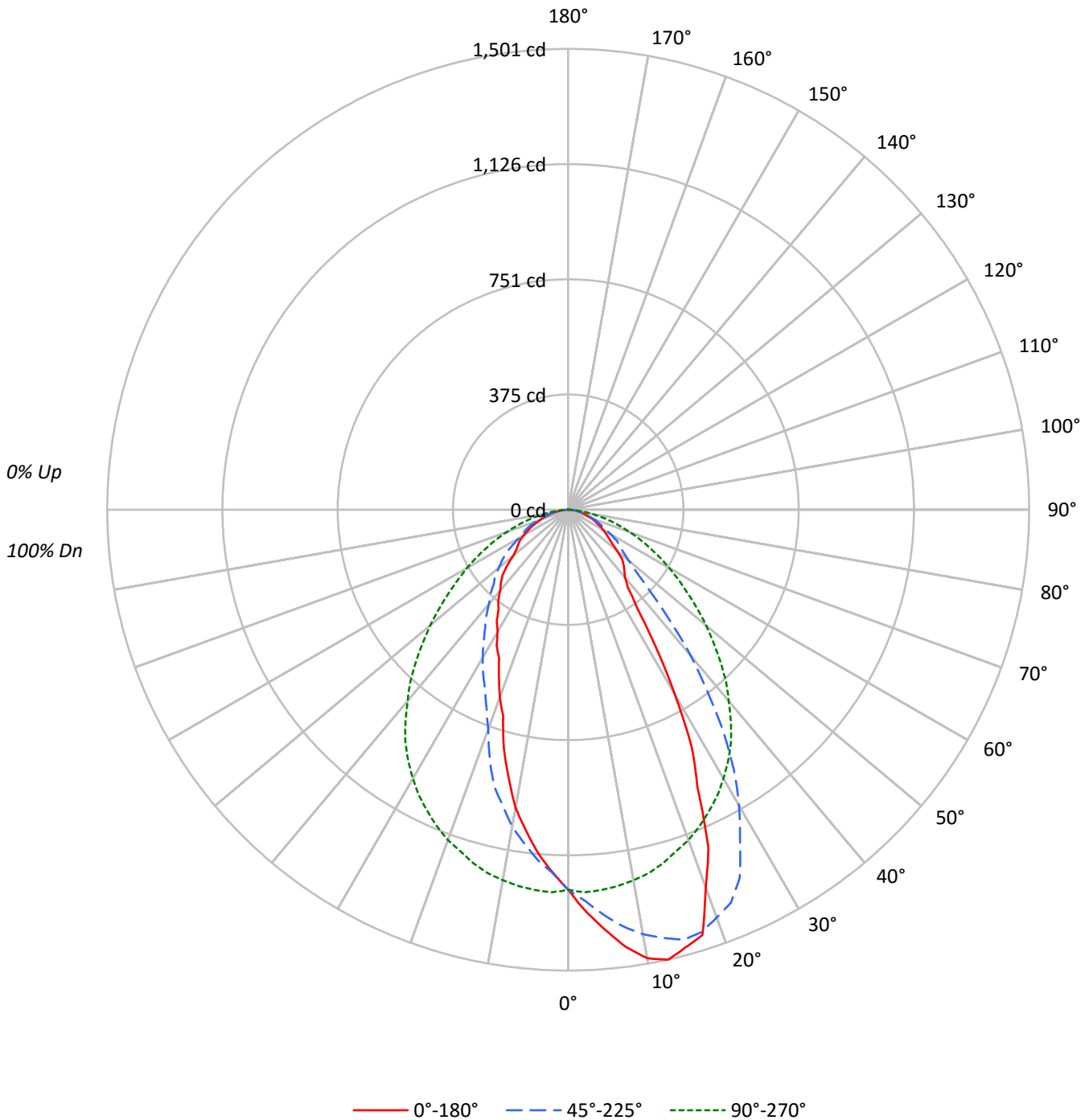
Input Watts (W): 23.6
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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°	36685	36685	36685
5°	40825	36979	33410
10°	44640	36871	29666
15°	45282	36561	24776
20°	41278	36097	20492
25°	32510	35442	17432
30°	23768	34583	15718
35°	14186	33437	14288
40°	11124	31457	13325
45°	10719	29365	12676
50°	9556	27007	10759
55°	8343	24574	10275
60°	7804	22495	9962
65°	7263	20458	9233
70°	6879	18444	8412
75°	6308	16405	7487
80°	5733	13309	6535
85°	5405	10165	4759



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	118.2	5.4
10°-20°	329.7	15.1
20°-30°	438.4	20.1
30°-40°	418.2	19.2
40°-50°	347.1	15.9
50°-60°	258.1	11.8
60°-70°	167.1	7.7
70°-80°	85.1	3.9
80°-90°	20.8	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°	886.4	40.6
0°-40°	1304.6	59.8
0°-60°	1909.8	87.5
0°-90°	2182.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2182.8	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1238	1238	1238	1238	1238	
5°	1373	1324	1243	1144	1123	134
15°	1476	1450	1192	932	808	411
25°	994	1322	1084	642	533	461
35°	392	878	924	471	395	267
45°	256	379	701	344	302	195
55°	162	205	476	248	199	147
65°	104	118	292	149	132	103
75°	55	60	143	74	65	58
85°	16	15	30	16	14	17
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°	1238.1	1238.1	1238.1	1238.1	1238.1	1238.1	1238.1	1238.1	1238.1	1238.1	1238.1
2.5°	1309.1	1305.8	1309.6	1308.2	1302.1	1303.5	1296.0	1291.4	1280.2	1275.9	1275.9
5°	1372.6	1377.3	1374.5	1375.4	1369.3	1365.6	1357.7	1348.8	1334.8	1324.5	1320.8
7.5°	1436.1	1437.5	1438.9	1435.2	1428.1	1421.6	1410.4	1397.3	1381.9	1368.9	1358.6
10°	1483.7	1487.0	1485.1	1479.5	1474.4	1464.6	1452.4	1438.4	1421.6	1404.3	1391.7
12.5°	1501.4	1504.2	1508.4	1505.2	1504.7	1500.0	1487.9	1470.6	1450.1	1428.6	1414.1
15°	1476.2	1474.4	1485.6	1482.8	1481.8	1480.0	1483.2	1479.5	1468.8	1450.1	1432.3
17.5°	1452.9	1452.0	1463.2	1466.0	1461.8	1455.7	1452.0	1447.3	1442.2	1442.6	1440.3
20°	1309.1	1337.6	1343.2	1358.1	1389.9	1410.9	1431.9	1430.9	1416.0	1413.7	1412.7
22.5°	1193.3	1204.1	1198.9	1223.2	1240.5	1278.3	1315.2	1361.9	1393.1	1385.2	1380.1
25°	994.4	1028.0	1043.4	1073.8	1117.7	1165.8	1186.8	1236.3	1284.4	1321.7	1350.2
27.5°	871.2	878.6	888.4	919.7	936.1	980.0	1058.4	1125.6	1170.4	1211.1	1286.2
30°	694.7	698.0	732.0	749.3	797.4	840.4	908.5	962.7	1052.8	1113.0	1170.9
32.5°	530.4	527.6	564.9	585.0	632.6	690.5	766.6	817.0	905.3	1003.8	1072.9
35°	392.2	391.7	411.8	425.8	478.1	522.4	619.1	684.9	781.5	878.2	967.3
37.5°	319.3	318.9	323.1	335.2	357.2	407.1	453.8	551.4	645.7	740.9	852.5
40°	287.6	289.9	290.9	296.5	303.9	318.9	347.3	415.5	508.0	621.4	733.4
42.5°	270.8	270.8	271.7	273.1	276.9	281.1	298.3	324.5	398.7	489.3	614.9
45°	255.8	256.3	257.2	258.2	257.2	259.6	267.5	278.3	307.2	378.6	500.0
47.5°	238.1	237.6	240.0	241.4	243.2	246.0	246.5	252.1	264.7	302.1	390.3
50°	207.3	207.8	210.1	215.7	221.8	226.9	230.2	233.9	238.1	255.8	302.5
52.5°	179.3	179.7	181.1	185.3	190.9	197.5	207.8	216.2	219.4	225.0	251.2
55°	161.5	161.5	163.4	165.7	167.1	171.8	178.8	188.1	200.3	205.0	216.2
57.5°	146.6	146.6	147.5	147.5	149.4	151.7	156.4	161.1	171.3	186.3	193.3
60°	131.7	131.7	132.6	132.6	134.9	135.9	139.1	141.9	147.5	157.8	171.8
62.5°	117.7	116.7	117.7	118.1	119.5	120.9	123.3	126.5	129.8	135.9	146.1
65°	103.6	103.2	104.1	105.0	106.0	107.8	109.2	111.6	114.4	117.7	122.8
67.5°	91.5	91.0	91.5	92.9	92.4	93.4	95.7	96.6	99.4	102.7	106.9
70°	79.4	78.4	79.4	79.4	79.8	81.2	81.2	83.6	85.9	87.8	91.5
72.5°	66.3	66.8	66.3	66.8	67.7	68.2	69.1	70.5	71.9	73.8	76.1
75°	55.1	55.1	55.6	56.0	57.0	57.0	57.4	58.4	59.3	60.2	63.0
77.5°	43.9	44.4	44.8	45.3	45.3	45.8	46.2	46.7	48.1	48.6	50.0
80°	33.6	34.1	34.1	34.1	35.0	34.1	35.0	35.9	35.9	36.4	37.3
82.5°	24.3	24.7	24.3	24.7	25.2	25.2	24.7	25.2	25.2	26.1	26.1
85°	15.9	14.9	14.9	14.9	14.9	14.9	15.4	15.9	15.4	15.4	15.9
87.5°	6.5	6.5	6.5	6.5	7.0	6.5	7.0	7.0	7.0	6.5	7.0
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°	1238.1	1238.1	1238.1	1238.1	1238.1	1238.1	1238.1	1238.1	1238.1	1238.1	1238.1
2.5°	1278.3	1274.5	1271.3	1265.7	1258.7	1248.4	1247.0	1247.5	1234.9	1222.7	1220.9
5°	1312.8	1306.8	1296.5	1284.4	1273.1	1255.9	1248.4	1243.3	1224.1	1207.8	1201.3
7.5°	1349.7	1335.2	1321.2	1302.1	1283.4	1261.0	1247.0	1236.3	1211.1	1189.6	1178.4
10°	1378.7	1360.9	1340.8	1316.6	1290.9	1263.3	1242.3	1225.5	1195.2	1168.6	1154.6
12.5°	1399.2	1379.1	1355.3	1326.4	1297.0	1260.5	1234.9	1212.5	1175.6	1143.8	1127.0
15°	1409.9	1388.5	1359.1	1327.3	1297.0	1258.7	1224.6	1191.9	1155.5	1115.8	1094.8
17.5°	1419.7	1391.7	1358.6	1322.2	1291.4	1251.2	1209.2	1166.7	1125.6	1088.3	1054.2
20°	1412.7	1388.9	1352.0	1314.2	1279.7	1233.0	1188.6	1144.8	1093.4	1050.0	1015.9
22.5°	1380.1	1375.9	1336.2	1295.6	1255.9	1211.1	1159.7	1116.3	1061.2	1009.8	968.8
25°	1341.8	1336.6	1315.2	1271.7	1226.9	1180.2	1134.0	1084.1	1020.6	967.3	920.2
27.5°	1309.6	1297.9	1282.5	1241.9	1193.8	1147.1	1099.5	1050.9	983.2	923.9	870.2
30°	1244.2	1255.4	1238.1	1210.1	1154.6	1109.3	1063.5	1010.8	943.5	875.4	820.3
32.5°	1140.6	1208.3	1191.0	1168.6	1113.9	1064.5	1021.0	969.2	895.0	827.8	770.8
35°	1049.1	1107.4	1146.6	1119.5	1071.5	1014.0	969.7	924.4	846.9	778.3	723.6
37.5°	960.3	1022.4	1087.8	1063.1	1023.4	961.7	915.1	870.2	798.3	729.2	674.6
40°	844.1	934.7	997.7	1007.5	966.9	904.8	859.5	813.3	749.8	681.2	622.8
42.5°	732.5	848.8	899.7	950.1	908.5	850.2	799.7	760.5	699.4	639.1	575.6
45°	615.8	747.9	823.1	861.8	846.9	793.7	738.6	700.8	649.4	593.4	533.2
47.5°	514.5	640.1	747.5	769.4	783.9	731.6	680.2	641.9	597.6	551.4	493.9
50°	408.0	538.3	653.1	692.8	720.4	672.8	619.1	585.9	548.6	507.0	456.1
52.5°	317.5	439.3	559.8	627.5	636.8	612.1	562.6	529.9	500.0	462.7	416.4
55°	252.1	346.4	466.9	545.8	554.6	548.6	504.2	475.7	453.8	422.5	383.8
57.5°	209.2	269.4	378.2	469.2	482.3	487.9	451.5	425.8	406.2	381.4	346.4
60°	180.7	212.4	295.5	384.7	420.6	430.5	398.2	379.6	363.2	340.8	308.1
62.5°	159.7	174.1	226.0	311.9	358.1	366.5	350.2	336.1	322.6	301.1	272.2
65°	133.1	148.5	174.1	240.9	297.9	302.1	305.3	291.8	281.1	263.3	237.6
67.5°	111.6	123.7	140.5	184.9	239.0	251.2	259.6	253.5	243.2	225.5	203.6
70°	94.8	101.8	113.9	138.7	182.5	208.7	217.6	212.9	207.8	188.6	169.9
72.5°	78.9	84.5	91.5	106.4	137.7	165.7	178.8	176.5	170.9	156.4	141.0
75°	65.4	67.7	73.3	81.7	99.9	126.1	141.5	143.3	136.8	123.3	111.1
77.5°	51.4	53.7	57.0	62.1	73.8	91.5	104.1	108.8	104.6	94.8	82.6
80°	39.2	40.6	43.0	45.3	50.0	62.1	75.2	78.0	75.6	67.7	60.2
82.5°	26.1	27.1	28.9	30.8	33.1	38.8	50.0	51.8	51.4	44.4	39.2
85°	15.9	15.9	16.3	17.7	18.7	21.0	27.1	29.9	28.5	23.8	21.5
87.5°	6.5	7.0	6.5	6.5	6.5	7.0	8.9	12.1	9.3	7.0	6.5
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°	1238.1	1238.1	1238.1	1238.1	1238.1	1238.1	1238.1	1238.1	1238.1	1238.1	1238.1
2.5°	1215.7	1213.9	1206.9	1200.3	1192.8	1184.0	1184.4	1185.8	1182.6	1181.6	1184.9
5°	1191.9	1185.4	1174.6	1163.9	1155.5	1144.3	1137.8	1141.0	1138.7	1134.5	1131.7
7.5°	1166.7	1157.4	1142.0	1128.4	1117.2	1096.2	1091.5	1085.9	1081.3	1071.9	1070.1
10°	1136.8	1123.3	1103.7	1084.5	1064.0	1047.7	1032.2	1025.7	1013.1	1004.7	1002.4
12.5°	1106.0	1083.6	1061.7	1033.6	1010.3	986.5	973.0	963.6	951.0	930.5	920.7
15°	1074.3	1040.2	1010.8	980.0	964.1	931.9	906.2	877.2	861.8	827.3	807.2
17.5°	1031.8	992.6	952.9	927.7	894.5	849.7	806.7	791.8	768.5	746.1	723.6
20°	974.4	938.4	900.6	862.8	812.3	760.5	744.2	718.5	692.8	679.3	667.6
22.5°	921.6	882.8	838.0	788.1	736.3	695.6	674.2	655.5	639.6	627.5	613.9
25°	871.6	831.5	767.5	716.6	671.4	641.5	630.7	606.5	589.7	580.8	569.1
27.5°	816.6	761.5	710.1	657.3	617.2	600.4	575.6	556.5	538.8	521.5	517.3
30°	764.3	703.1	652.2	609.3	579.8	556.5	531.3	508.9	497.2	490.7	479.9
32.5°	712.4	650.3	602.7	569.1	537.4	512.6	488.8	477.1	459.4	444.9	435.6
35°	656.9	602.7	564.9	525.7	495.3	471.1	458.9	432.3	422.5	418.3	408.5
37.5°	607.9	559.8	521.5	491.6	458.5	438.9	415.0	409.0	395.9	384.7	381.4
40°	567.2	522.0	486.0	447.3	426.7	401.0	389.4	373.0	368.4	364.2	356.7
42.5°	522.9	484.1	443.1	416.9	386.6	374.9	356.7	352.0	340.8	336.6	333.8
45°	485.1	449.1	409.9	378.2	360.9	343.6	336.6	324.9	319.8	314.7	309.5
47.5°	448.2	410.8	379.6	349.7	330.5	322.6	310.0	301.6	296.0	290.9	285.7
50°	414.1	376.3	341.3	319.8	306.3	295.1	287.1	280.1	272.2	261.0	249.3
52.5°	377.2	343.1	314.7	293.7	281.5	270.8	263.8	251.6	236.2	224.1	218.5
55°	340.3	308.1	283.4	266.6	258.2	247.9	232.0	214.3	204.5	202.6	201.2
57.5°	309.1	278.7	255.8	242.8	233.0	214.8	198.0	191.4	188.6	187.7	186.7
60°	274.1	247.0	230.6	216.6	200.3	183.0	177.9	176.9	174.1	172.7	171.8
62.5°	241.8	218.5	203.6	186.7	169.5	166.2	162.5	160.1	158.7	155.5	154.1
65°	210.6	191.9	175.5	157.8	151.7	149.4	146.1	142.9	139.1	136.8	134.9
67.5°	180.7	162.5	145.2	138.7	135.4	131.7	127.5	122.8	120.9	117.7	117.2
70°	151.3	134.5	125.1	120.9	114.8	111.6	106.9	105.0	101.8	100.4	99.0
72.5°	123.3	111.1	107.4	101.3	97.1	92.0	89.6	87.8	85.9	83.6	83.6
75°	96.2	92.9	85.9	81.2	77.0	74.2	73.3	70.0	69.6	68.2	67.2
77.5°	76.6	70.0	67.7	62.6	59.8	58.4	57.4	55.6	53.7	53.2	52.8
80°	54.2	50.9	48.1	45.8	43.4	42.5	41.6	41.1	40.2	39.2	38.8
82.5°	35.5	33.6	31.7	30.3	29.9	28.5	27.5	27.1	26.1	26.1	26.1
85°	19.1	18.7	17.7	16.8	15.9	15.9	15.4	14.9	14.9	13.5	13.5
87.5°	6.1	6.1	5.6	5.6	4.7	5.1	4.7	4.7	4.2	4.7	4.7
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: P243087

CATALOG NUMBER: S121RDR-H685D835-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1238.1	1238.1	1238.1	1238.1
2.5°	1181.2	1181.2	1179.3	1181.2
5°	1129.8	1125.6	1124.2	1123.3
7.5°	1064.5	1060.7	1057.0	1053.3
10°	997.7	992.1	988.8	986.0
12.5°	910.9	903.9	890.8	894.5
15°	803.9	804.4	774.1	807.7
17.5°	716.6	719.0	706.8	705.0
20°	661.1	660.2	655.5	649.9
22.5°	604.1	599.9	598.1	589.2
25°	550.9	543.4	545.8	533.2
27.5°	512.2	506.1	504.2	503.3
30°	473.4	460.8	456.6	459.4
32.5°	434.2	433.3	431.9	432.3
35°	401.0	399.2	395.0	395.0
37.5°	378.2	378.6	376.3	374.4
40°	350.2	347.8	347.3	344.5
42.5°	330.1	325.4	323.5	324.0
45°	306.7	303.9	301.6	302.5
47.5°	279.2	276.4	271.3	269.8
50°	241.8	238.1	235.8	233.4
52.5°	213.8	213.4	212.4	212.0
55°	200.3	198.9	198.9	198.9
57.5°	186.3	185.3	184.9	185.8
60°	170.9	169.9	168.1	168.1
62.5°	151.7	150.8	150.3	148.5
65°	132.6	132.1	131.2	131.7
67.5°	114.8	114.4	114.4	113.0
70°	97.6	97.6	96.2	97.1
72.5°	81.7	81.2	81.2	81.2
75°	66.3	65.8	65.4	65.4
77.5°	52.3	52.3	51.4	51.4
80°	37.8	37.8	37.3	38.3
82.5°	25.2	26.1	25.2	25.2
85°	13.5	14.0	14.0	14.0
87.5°	4.2	3.7	3.7	3.7
90°	0.0	0.0	0.0	0.0

(END OF REPORT)