

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: P243092

Luminaire Tested: **S121RDR-H685D840-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243092
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-H685D840-X4F0-XX-UDD-A-W
Description: DEFINE 1 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: 2204.3 lumens
Efficiency: N/A
Efficacy: 93.4 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

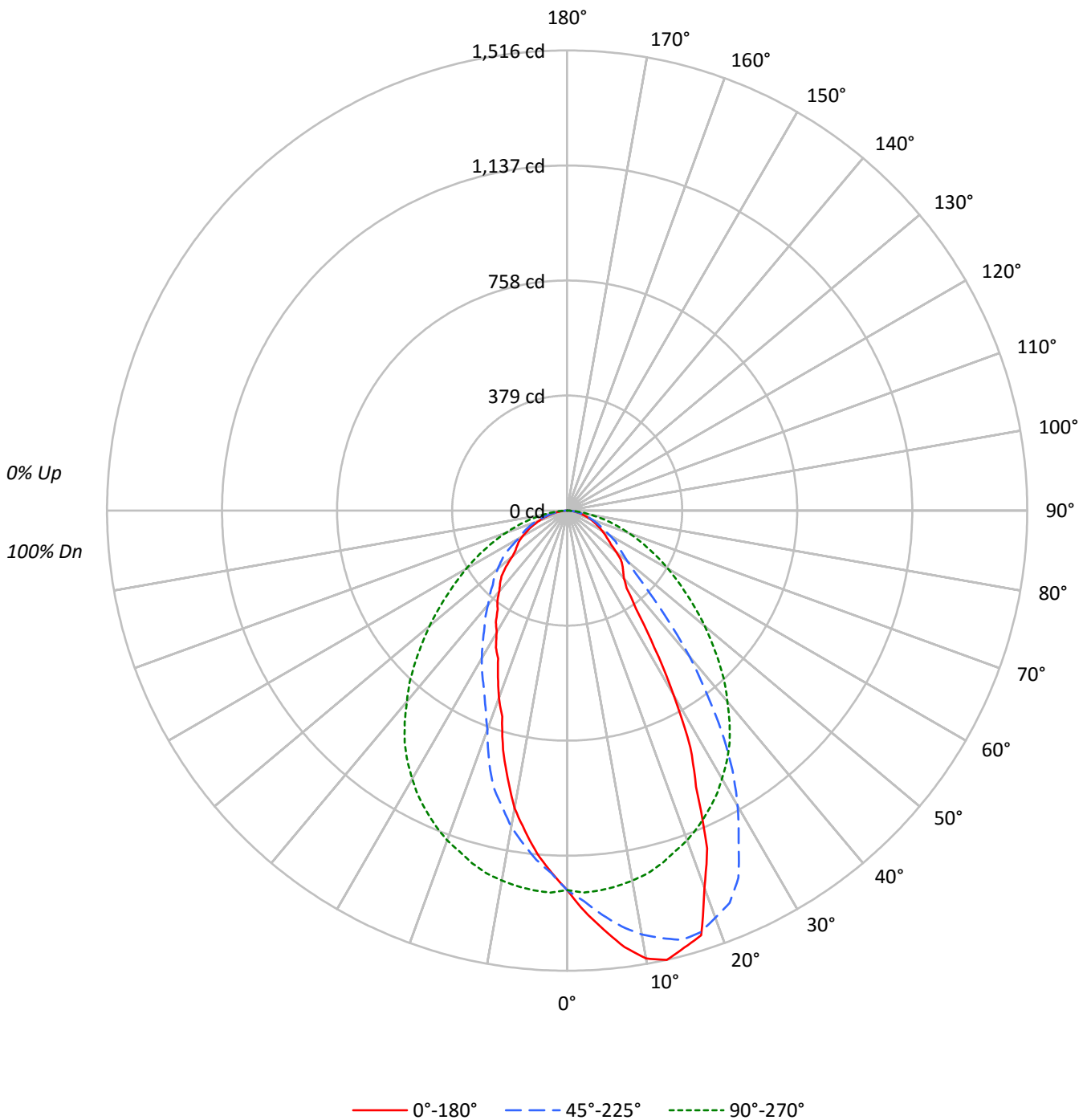
Input Watts (W): 23.6
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	37046	37046	37046
5°	41227	37342	33740
10°	45079	37235	29960
15°	45730	36923	25018
20°	41684	36453	20694
25°	32830	35792	17602
30°	24004	34922	15872
35°	14324	33766	14429
40°	11232	31767	13456
45°	10828	29655	12801
50°	9648	27275	10865
55°	8425	24816	10373
60°	7882	22714	10056
65°	7341	20661	9325
70°	6948	18626	8499
75°	6365	16565	7556
80°	5784	13429	6603
85°	5439	10267	4793



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	119.4	5.4
10°-20°	333.0	15.1
20°-30°	442.7	20.1
30°-40°	422.3	19.2
40°-50°	350.5	15.9
50°-60°	260.7	11.8
60°-70°	168.8	7.7
70°-80°	85.9	3.9
80°-90°	21.0	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°	895.1	40.6
0°-40°	1317.4	59.8
0°-60°	1928.6	87.5
0°-90°	2204.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2204.3	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1250	1250	1250	1250	1250	
5°	1386	1338	1256	1156	1134	136
15°	1491	1464	1204	941	816	415
25°	1004	1335	1095	648	538	466
35°	396	887	934	476	399	270
45°	258	382	708	347	306	197
55°	163	207	480	250	201	148
65°	105	119	295	151	133	105
75°	56	61	145	75	66	59
85°	16	16	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°	1250.3	1250.3	1250.3	1250.3	1250.3	1250.3	1250.3	1250.3	1250.3	1250.3	1250.3
2.5°	1322.0	1318.7	1322.5	1321.1	1314.9	1316.4	1308.8	1304.1	1292.8	1288.5	1288.5
5°	1386.1	1390.8	1388.0	1389.0	1382.8	1379.1	1371.0	1362.1	1347.9	1337.6	1333.8
7.5°	1450.3	1451.7	1453.1	1449.3	1442.2	1435.6	1424.3	1411.1	1395.6	1382.4	1372.0
10°	1498.3	1501.6	1499.8	1494.1	1488.9	1479.0	1466.8	1452.6	1435.6	1418.2	1405.5
12.5°	1516.3	1519.1	1523.3	1520.0	1519.6	1514.8	1502.6	1485.1	1464.4	1442.7	1428.1
15°	1490.8	1488.9	1500.2	1497.4	1496.5	1494.6	1497.9	1494.1	1483.3	1464.4	1446.5
17.5°	1467.2	1466.3	1477.6	1480.4	1476.2	1470.1	1466.3	1461.6	1456.4	1456.9	1454.5
20°	1322.0	1350.8	1356.4	1371.5	1403.6	1424.8	1446.0	1445.1	1430.0	1427.6	1426.7
22.5°	1205.1	1215.9	1210.7	1235.3	1252.7	1290.9	1328.1	1375.3	1406.9	1398.9	1393.7
25°	1004.2	1038.2	1053.7	1084.4	1128.7	1177.3	1198.5	1248.5	1297.0	1334.7	1363.5
27.5°	879.8	887.3	897.2	928.8	945.3	989.6	1068.8	1136.7	1182.0	1223.0	1298.9
30°	701.6	704.9	739.3	756.7	805.3	848.7	917.5	972.2	1063.2	1124.0	1182.5
32.5°	535.6	532.8	570.5	590.8	638.8	697.3	774.2	825.1	914.2	1013.7	1083.4
35°	396.0	395.6	415.8	430.0	482.8	527.6	625.2	691.7	789.2	886.8	976.9
37.5°	322.5	322.0	326.3	338.5	360.7	411.1	458.3	556.8	652.0	748.2	860.9
40°	290.4	292.8	293.7	299.4	306.9	322.0	350.8	419.6	513.0	627.5	740.7
42.5°	273.5	273.5	274.4	275.8	279.6	283.8	301.3	327.7	402.6	494.1	620.9
45°	258.4	258.8	259.8	260.7	259.8	262.1	270.2	281.0	310.2	382.4	504.9
47.5°	240.5	240.0	242.3	243.8	245.6	248.5	248.9	254.6	267.3	305.0	394.2
50°	209.3	209.8	212.2	217.8	223.9	229.1	232.4	236.2	240.5	258.4	305.5
52.5°	181.0	181.5	182.9	187.2	192.8	199.4	209.8	218.3	221.6	227.3	253.7
55°	163.1	163.1	165.0	167.4	168.8	173.5	180.6	190.0	202.3	207.0	218.3
57.5°	148.0	148.0	149.0	149.0	150.9	153.2	157.9	162.7	173.0	188.1	195.2
60°	133.0	133.0	133.9	133.9	136.3	137.2	140.5	143.3	149.0	159.4	173.5
62.5°	118.8	117.9	118.8	119.3	120.7	122.1	124.5	127.8	131.1	137.2	147.6
65°	104.7	104.2	105.1	106.1	107.0	108.9	110.3	112.7	115.5	118.8	124.0
67.5°	92.4	91.9	92.4	93.8	93.4	94.3	96.7	97.6	100.4	103.7	108.0
70°	80.2	79.2	80.2	80.2	80.6	82.0	82.0	84.4	86.8	88.6	92.4
72.5°	66.9	67.4	66.9	67.4	68.4	68.8	69.8	71.2	72.6	74.5	76.9
75°	55.6	55.6	56.1	56.6	57.5	57.5	58.0	58.9	59.9	60.8	63.6
77.5°	44.3	44.8	45.3	45.7	45.7	46.2	46.7	47.1	48.6	49.0	50.4
80°	33.9	34.4	34.4	34.4	35.4	34.4	35.4	36.3	36.3	36.8	37.7
82.5°	24.5	25.0	24.5	25.0	25.5	25.5	25.0	25.5	25.5	26.4	26.4
85°	16.0	15.1	15.1	15.1	15.1	15.1	15.6	16.0	15.6	15.6	16.0
87.5°	6.6	6.6	6.6	6.6	7.1	6.6	7.1	7.1	7.1	6.6	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



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CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1250.3	1250.3	1250.3	1250.3	1250.3	1250.3	1250.3	1250.3	1250.3	1250.3	1250.3
2.5°	1290.9	1287.1	1283.8	1278.2	1271.1	1260.7	1259.3	1259.8	1247.0	1234.8	1232.9
5°	1325.8	1319.7	1309.3	1297.0	1285.7	1268.3	1260.7	1255.5	1236.2	1219.7	1213.1
7.5°	1363.0	1348.4	1334.3	1314.9	1296.1	1273.4	1259.3	1248.5	1223.0	1201.3	1190.0
10°	1392.3	1374.3	1354.1	1329.6	1303.6	1275.8	1254.6	1237.6	1207.0	1180.1	1166.0
12.5°	1413.0	1392.7	1368.7	1339.5	1309.8	1273.0	1247.0	1224.4	1187.2	1155.1	1138.1
15°	1423.8	1402.2	1372.5	1340.4	1309.8	1271.1	1236.7	1203.7	1166.9	1126.8	1105.6
17.5°	1433.8	1405.5	1372.0	1335.2	1304.1	1263.5	1221.1	1178.2	1136.7	1099.0	1064.6
20°	1426.7	1402.6	1365.4	1327.2	1292.3	1245.2	1200.4	1156.1	1104.2	1060.3	1025.9
22.5°	1393.7	1389.4	1349.4	1308.3	1268.3	1223.0	1171.1	1127.3	1071.7	1019.8	978.3
25°	1355.0	1349.8	1328.1	1284.3	1239.0	1191.9	1145.2	1094.8	1030.6	976.9	929.3
27.5°	1322.5	1310.7	1295.1	1254.1	1205.6	1158.4	1110.3	1061.3	992.9	933.0	878.8
30°	1256.5	1267.8	1250.3	1222.1	1166.0	1120.2	1074.0	1020.7	952.8	884.0	828.4
32.5°	1151.8	1220.2	1202.7	1180.1	1124.9	1075.0	1031.1	978.8	903.8	835.9	778.4
35°	1059.4	1118.3	1157.9	1130.6	1082.0	1024.0	979.2	933.5	855.3	785.9	730.8
37.5°	969.8	1032.5	1098.5	1073.5	1033.5	971.2	924.1	878.8	806.2	736.4	681.3
40°	852.4	943.9	1007.5	1017.4	976.4	913.7	868.0	821.3	757.2	687.9	628.9
42.5°	739.7	857.1	908.5	959.4	917.5	858.6	807.6	768.0	706.3	645.4	581.3
45°	621.9	755.3	831.2	870.3	855.3	801.5	745.9	707.7	655.8	599.2	538.4
47.5°	519.6	646.4	754.8	777.0	791.6	738.8	686.9	648.3	603.5	556.8	498.8
50°	412.1	543.6	659.6	699.7	727.5	679.4	625.2	591.7	554.0	512.0	460.6
52.5°	320.6	443.7	565.3	633.7	643.1	618.1	568.1	535.1	504.9	467.2	420.6
55°	254.6	349.8	471.5	551.2	560.1	554.0	509.2	480.4	458.3	426.7	387.6
57.5°	211.2	272.0	381.9	473.8	487.0	492.7	455.9	430.0	410.2	385.2	349.8
60°	182.5	214.5	298.4	388.5	424.8	434.7	402.2	383.3	366.8	344.2	311.2
62.5°	161.2	175.9	228.2	314.9	361.6	370.1	353.6	339.5	325.8	304.1	274.9
65°	134.4	149.9	175.9	243.3	300.8	305.0	308.3	294.7	283.8	265.9	240.0
67.5°	112.7	124.9	141.9	186.7	241.4	253.7	262.1	256.0	245.6	227.7	205.6
70°	95.7	102.8	115.0	140.0	184.3	210.7	219.7	215.0	209.8	190.5	171.6
72.5°	79.7	85.3	92.4	107.5	139.1	167.4	180.6	178.2	172.6	157.9	142.4
75°	66.0	68.4	74.0	82.5	100.9	127.3	142.9	144.7	138.1	124.5	112.2
77.5°	51.9	54.2	57.5	62.7	74.5	92.4	105.1	109.9	105.6	95.7	83.5
80°	39.6	41.0	43.4	45.7	50.4	62.7	75.9	78.7	76.4	68.4	60.8
82.5°	26.4	27.3	29.2	31.1	33.5	39.1	50.4	52.3	51.9	44.8	39.6
85°	16.0	16.0	16.5	17.9	18.9	21.2	27.3	30.2	28.8	24.0	21.7
87.5°	6.6	7.1	6.6	6.6	6.6	7.1	9.0	12.3	9.4	7.1	6.6
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°	1250.3	1250.3	1250.3	1250.3	1250.3	1250.3	1250.3	1250.3	1250.3	1250.3	1250.3
2.5°	1227.7	1225.8	1218.8	1212.2	1204.6	1195.7	1196.1	1197.5	1194.2	1193.3	1196.6
5°	1203.7	1197.1	1186.2	1175.4	1166.9	1155.6	1149.0	1152.3	1149.9	1145.7	1142.9
7.5°	1178.2	1168.8	1153.2	1139.6	1128.2	1107.0	1102.3	1096.6	1091.9	1082.5	1080.6
10°	1148.0	1134.4	1114.6	1095.2	1074.5	1058.0	1042.4	1035.8	1023.1	1014.6	1012.3
12.5°	1116.9	1094.3	1072.1	1043.8	1020.3	996.2	982.6	973.1	960.4	939.6	929.7
15°	1084.9	1050.4	1020.7	989.6	973.6	941.1	915.1	885.9	870.3	835.5	815.2
17.5°	1042.0	1002.4	962.3	936.8	903.3	858.1	814.7	799.6	776.0	753.4	730.8
20°	984.0	947.7	909.5	871.3	820.4	768.0	751.5	725.6	699.7	686.0	674.2
22.5°	930.7	891.6	846.3	795.8	743.5	702.5	680.8	661.9	645.9	633.7	620.0
25°	880.2	839.7	775.1	723.7	678.0	647.8	637.0	612.4	595.5	586.5	574.7
27.5°	824.6	769.0	717.1	663.8	623.3	606.3	581.3	562.0	544.1	526.6	522.4
30°	771.8	710.0	658.6	615.3	585.6	562.0	536.5	513.9	502.1	495.5	484.7
32.5°	719.5	656.8	608.7	574.7	542.7	517.7	493.6	481.8	463.9	449.3	439.9
35°	663.4	608.7	570.5	530.9	500.2	475.7	463.5	436.6	426.7	422.4	412.5
37.5°	613.9	565.3	526.6	496.5	463.0	443.2	419.1	413.0	399.8	388.5	385.2
40°	572.8	527.1	490.8	451.7	430.9	405.0	393.2	376.7	372.0	367.7	360.2
42.5°	528.1	488.9	447.4	421.0	390.4	378.6	360.2	355.5	344.2	339.9	337.1
45°	489.9	453.6	414.0	381.9	364.4	347.0	339.9	328.1	323.0	317.8	312.6
47.5°	452.6	414.9	383.3	353.1	333.8	325.8	313.1	304.6	298.9	293.7	288.5
50°	418.2	380.0	344.6	323.0	309.3	298.0	290.0	282.9	274.9	263.6	251.8
52.5°	381.0	346.5	317.8	296.6	284.3	273.5	266.4	254.1	238.6	226.3	220.6
55°	343.7	311.2	286.2	269.2	260.7	250.4	234.3	216.4	206.5	204.6	203.2
57.5°	312.1	281.5	258.4	245.2	235.3	216.9	199.9	193.3	190.5	189.5	188.6
60°	276.8	249.4	232.9	218.8	202.3	184.8	179.6	178.7	175.9	174.4	173.5
62.5°	244.2	220.6	205.6	188.6	171.1	167.8	164.1	161.7	160.3	157.0	155.6
65°	212.6	193.8	177.3	159.4	153.2	150.9	147.6	144.3	140.5	138.1	136.3
67.5°	182.5	164.1	146.6	140.0	136.7	133.0	128.7	124.0	122.1	118.8	118.3
70°	152.8	135.8	126.4	122.1	116.0	112.7	108.0	106.1	102.8	101.4	100.0
72.5°	124.5	112.2	108.4	102.3	98.1	92.9	90.5	88.6	86.8	84.4	84.4
75°	97.1	93.8	86.8	82.0	77.8	75.0	74.0	70.7	70.2	68.8	67.9
77.5°	77.3	70.7	68.4	63.2	60.3	58.9	58.0	56.1	54.2	53.7	53.3
80°	54.7	51.4	48.6	46.2	43.8	42.9	42.0	41.5	40.5	39.6	39.1
82.5°	35.8	33.9	32.1	30.6	30.2	28.8	27.8	27.3	26.4	26.4	26.4
85°	19.3	18.9	17.9	17.0	16.0	16.0	15.6	15.1	15.1	13.7	13.7
87.5°	6.1	6.1	5.7	5.7	4.7	5.2	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: P243092

CATALOG NUMBER: S121RDR-H685D840-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1250.3	1250.3	1250.3	1250.3
2.5°	1192.8	1192.8	1190.9	1192.8
5°	1141.0	1136.7	1135.3	1134.4
7.5°	1075.0	1071.2	1067.4	1063.6
10°	1007.5	1001.9	998.6	995.8
12.5°	919.8	912.8	899.6	903.3
15°	811.9	812.3	781.7	815.6
17.5°	723.7	726.1	713.8	711.9
20°	667.6	666.7	661.9	656.3
22.5°	610.1	605.8	604.0	595.0
25°	556.3	548.8	551.2	538.4
27.5°	517.2	511.1	509.2	508.2
30°	478.1	465.3	461.1	463.9
32.5°	438.5	437.5	436.1	436.6
35°	405.0	403.1	398.9	398.9
37.5°	381.9	382.4	380.0	378.1
40°	353.6	351.2	350.8	347.9
42.5°	333.3	328.6	326.7	327.2
45°	309.8	306.9	304.6	305.5
47.5°	281.9	279.1	273.9	272.5
50°	244.2	240.5	238.1	235.7
52.5°	215.9	215.5	214.5	214.0
55°	202.3	200.8	200.8	200.8
57.5°	188.1	187.2	186.7	187.6
60°	172.6	171.6	169.7	169.7
62.5°	153.2	152.3	151.8	149.9
65°	133.9	133.4	132.5	133.0
67.5°	116.0	115.5	115.5	114.1
70°	98.5	98.5	97.1	98.1
72.5°	82.5	82.0	82.0	82.0
75°	66.9	66.5	66.0	66.0
77.5°	52.8	52.8	51.9	51.9
80°	38.2	38.2	37.7	38.7
82.5°	25.5	26.4	25.5	25.5
85°	13.7	14.1	14.1	14.1
87.5°	4.2	3.8	3.8	3.8
90°	0.0	0.0	0.0	0.0

(END OF REPORT)