

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: P243082

Luminaire Tested: **S121RDR-H685D830-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P243082  
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-H685D830-X4F0-XX-UDD-A-W  
Description: DEFINE 1 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.  
HIGH PERFORMANCE LIGHT ENGINE  
Light Source: (184) 3000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

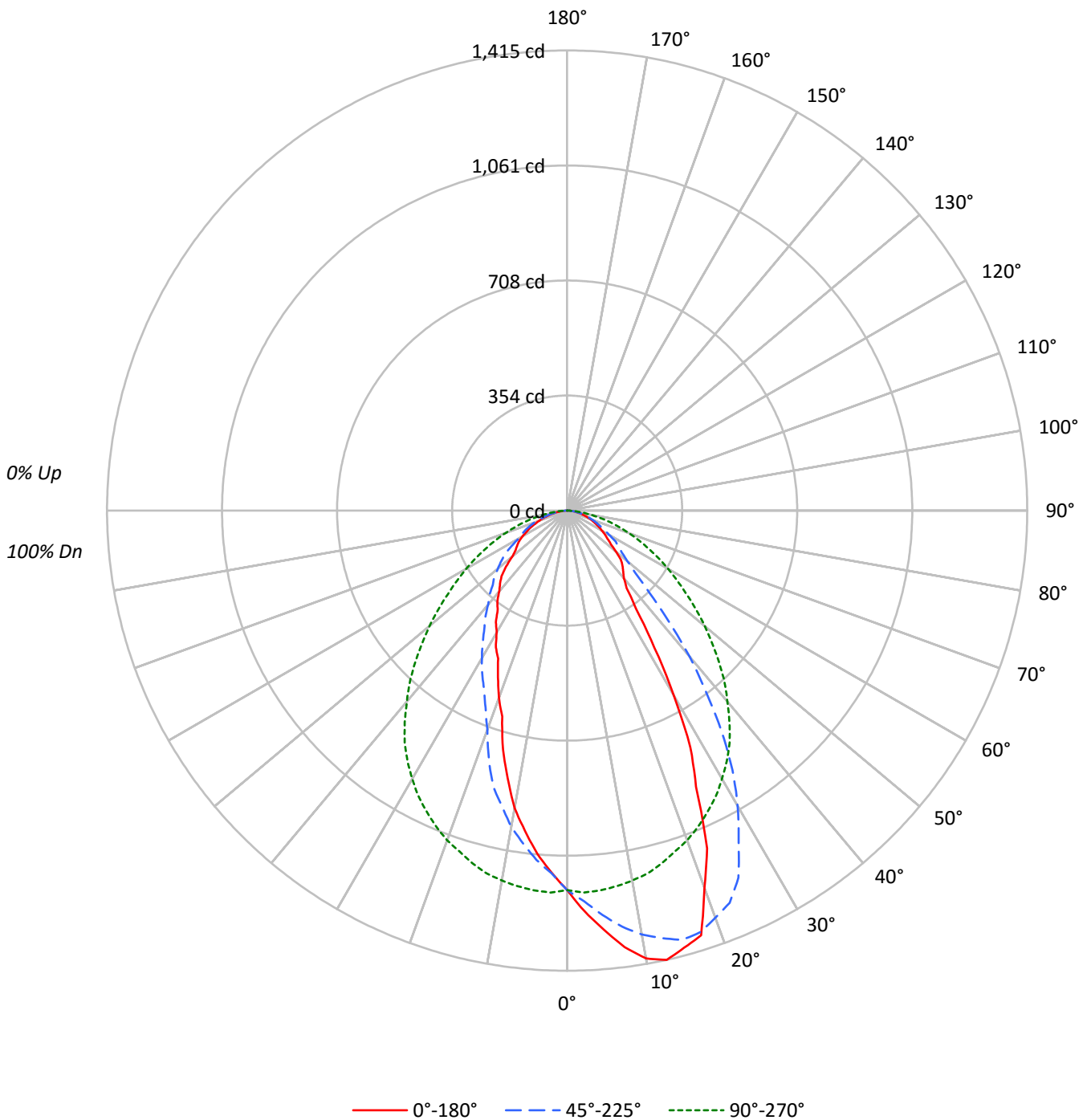
Lumens per Lamp: N/A  
Luminaire Lumens: 2057.3 lumens  
Efficiency: N/A  
Efficacy: 87.2 lumens/watt  
Spacing Criteria (0/90/45): 0.89 / 1.21 / 1.07  
Luminous Opening: Rectangular (W 3.88' x L: 0.09' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 23.6  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): 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	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					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°	34578	34578	34578
5°	38478	34853	31489
10°	42076	34753	27963
15°	42681	34460	23353
20°	38906	34022	19313
25°	30643	33405	16428
30°	22403	32595	14814
35°	13369	31516	13467
40°	10486	29651	12563
45°	10103	27677	11946
50°	9007	25459	10141
55°	7867	23163	9686
60°	7354	21203	9387
65°	6850	19280	8701
70°	6480	17387	7927
75°	5942	15466	7052
80°	5409	12541	6160
85°	5099	9587	4488



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	111.4	5.4
10°-20°	310.8	15.1
20°-30°	413.2	20.1
30°-40°	394.2	19.2
40°-50°	327.1	15.9
50°-60°	243.3	11.8
60°-70°	157.5	7.7
70°-80°	80.2	3.9
80°-90°	19.6	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°	835.4	40.6
0°-40°	1229.6	59.8
0°-60°	1800.0	87.5
0°-90°	2057.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2057.3	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1167	1167	1167	1167	1167	
5°	1294	1248	1172	1078	1059	127
15°	1391	1367	1123	878	761	387
25°	937	1246	1022	605	502	435
35°	370	828	871	444	372	252
45°	241	357	660	324	285	184
55°	152	193	448	234	188	138
65°	98	111	275	141	124	98
75°	52	57	135	70	62	55
85°	15	14	28	15	13	16
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°	1167.0	1167.0	1167.0	1167.0	1167.0	1167.0	1167.0	1167.0	1167.0	1167.0	1167.0
2.5°	1233.9	1230.8	1234.3	1233.0	1227.3	1228.6	1221.6	1217.2	1206.6	1202.6	1202.6
5°	1293.7	1298.1	1295.5	1296.4	1290.6	1287.1	1279.6	1271.3	1258.1	1248.4	1244.9
7.5°	1353.6	1354.9	1356.2	1352.7	1346.1	1339.9	1329.4	1317.0	1302.5	1290.2	1280.5
10°	1398.5	1401.5	1399.8	1394.5	1389.7	1380.4	1369.0	1355.8	1339.9	1323.6	1311.8
12.5°	1415.2	1417.8	1421.8	1418.7	1418.3	1413.9	1402.4	1386.1	1366.8	1346.5	1332.9
15°	1391.4	1389.7	1400.2	1397.6	1396.7	1394.9	1398.0	1394.5	1384.4	1366.8	1350.1
17.5°	1369.4	1368.5	1379.1	1381.7	1377.8	1372.1	1368.5	1364.1	1359.3	1359.7	1357.5
20°	1233.9	1260.7	1266.0	1280.1	1310.0	1329.8	1349.6	1348.7	1334.6	1332.4	1331.6
22.5°	1124.7	1134.9	1130.0	1152.9	1169.2	1204.8	1239.6	1283.6	1313.1	1305.6	1300.8
25°	937.3	969.0	983.5	1012.1	1053.5	1098.8	1118.6	1165.2	1210.6	1245.8	1272.6
27.5°	821.1	828.2	837.4	866.9	882.3	923.6	997.6	1060.9	1103.2	1141.5	1212.3
30°	654.8	657.9	690.0	706.3	751.6	792.1	856.3	907.4	992.3	1049.1	1103.6
32.5°	499.9	497.2	532.5	551.4	596.3	650.8	722.5	770.1	853.2	946.1	1011.2
35°	369.6	369.2	388.1	401.3	450.6	492.4	583.5	645.5	736.6	827.7	911.8
37.5°	301.0	300.5	304.5	316.0	336.6	383.7	427.7	519.7	608.6	698.3	803.5
40°	271.1	273.3	274.1	279.4	286.5	300.5	327.4	391.6	478.8	585.7	691.3
42.5°	255.2	255.2	256.1	257.4	260.9	264.9	281.2	305.8	375.8	461.2	579.5
45°	241.1	241.6	242.5	243.3	242.5	244.7	252.1	262.3	289.5	356.9	471.3
47.5°	224.4	224.0	226.2	227.5	229.3	231.9	232.3	237.6	249.5	284.7	367.9
50°	195.4	195.8	198.0	203.3	209.0	213.9	216.9	220.5	224.4	241.1	285.1
52.5°	169.0	169.4	170.7	174.7	180.0	186.1	195.8	203.7	206.8	212.1	236.7
55°	152.3	152.3	154.0	156.2	157.5	161.9	168.5	177.3	188.8	193.2	203.7
57.5°	138.2	138.2	139.1	139.1	140.8	143.0	147.4	151.8	161.5	175.6	182.2
60°	124.1	124.1	125.0	125.0	127.2	128.1	131.1	133.8	139.1	148.7	161.9
62.5°	110.9	110.0	110.9	111.3	112.7	114.0	116.2	119.3	122.3	128.1	137.7
65°	97.7	97.2	98.1	99.0	99.9	101.6	103.0	105.2	107.8	110.9	115.7
67.5°	86.2	85.8	86.2	87.6	87.1	88.0	90.2	91.1	93.7	96.8	100.8
70°	74.8	73.9	74.8	74.8	75.2	76.6	76.6	78.8	81.0	82.7	86.2
72.5°	62.5	62.9	62.5	62.9	63.8	64.2	65.1	66.4	67.8	69.5	71.7
75°	51.9	51.9	52.4	52.8	53.7	53.7	54.1	55.0	55.9	56.8	59.4
77.5°	41.4	41.8	42.2	42.7	42.7	43.1	43.6	44.0	45.3	45.8	47.1
80°	31.7	32.1	32.1	32.1	33.0	32.1	33.0	33.9	33.9	34.3	35.2
82.5°	22.9	23.3	22.9	23.3	23.8	23.8	23.3	23.8	23.8	24.6	24.6
85°	15.0	14.1	14.1	14.1	14.1	14.1	14.5	15.0	14.5	14.5	15.0
87.5°	6.2	6.2	6.2	6.2	6.6	6.2	6.6	6.6	6.6	6.2	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):**

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1167.0	1167.0	1167.0	1167.0	1167.0	1167.0	1167.0	1167.0	1167.0	1167.0	1167.0
2.5°	1204.8	1201.3	1198.2	1193.0	1186.4	1176.7	1175.4	1175.8	1163.9	1152.5	1150.7
5°	1237.4	1231.7	1222.0	1210.6	1200.0	1183.7	1176.7	1171.8	1153.8	1138.4	1132.2
7.5°	1272.2	1258.5	1245.3	1227.3	1209.7	1188.6	1175.4	1165.2	1141.5	1121.2	1110.7
10°	1299.4	1282.7	1263.8	1240.9	1216.7	1190.8	1171.0	1155.1	1126.5	1101.4	1088.2
12.5°	1318.8	1299.9	1277.4	1250.2	1222.4	1188.1	1163.9	1142.8	1108.0	1078.1	1062.3
15°	1328.9	1308.7	1281.0	1251.0	1222.4	1186.4	1154.2	1123.4	1089.1	1051.7	1031.9
17.5°	1338.2	1311.8	1280.5	1246.2	1217.2	1179.3	1139.7	1099.7	1060.9	1025.7	993.6
20°	1331.6	1309.1	1274.4	1238.7	1206.2	1162.2	1120.3	1079.0	1030.6	989.7	957.5
22.5°	1300.8	1296.8	1259.4	1221.1	1183.7	1141.5	1093.1	1052.1	1000.2	951.8	913.1
25°	1264.7	1259.8	1239.6	1198.7	1156.4	1112.4	1068.9	1021.8	961.9	911.8	867.3
27.5°	1234.3	1223.3	1208.8	1170.5	1125.2	1081.2	1036.3	990.5	926.7	870.8	820.2
30°	1172.7	1183.3	1167.0	1140.6	1088.2	1045.5	1002.4	952.7	889.3	825.1	773.2
32.5°	1075.0	1138.8	1122.5	1101.4	1049.9	1003.3	962.4	913.5	843.6	780.2	726.5
35°	988.8	1043.8	1080.7	1055.2	1009.9	955.8	914.0	871.3	798.2	733.6	682.1
37.5°	905.2	963.7	1025.3	1002.0	964.6	906.5	862.5	820.2	752.5	687.3	635.9
40°	795.6	881.0	940.4	949.6	911.3	852.8	810.1	766.6	706.7	642.0	587.0
42.5°	690.4	800.0	848.0	895.5	856.3	801.3	753.8	716.8	659.2	602.4	542.6
45°	580.4	704.9	775.8	812.3	798.2	748.1	696.1	660.5	612.1	559.3	502.5
47.5°	484.9	603.3	704.5	725.2	738.8	689.5	641.1	605.1	563.3	519.7	465.6
50°	384.6	507.4	615.6	653.0	679.0	634.1	583.5	552.3	517.1	477.9	429.9
52.5°	299.2	414.1	527.6	591.4	600.2	576.9	530.3	499.4	471.3	436.1	392.5
55°	237.6	326.5	440.0	514.4	522.8	517.1	475.2	448.4	427.7	398.2	361.7
57.5°	197.1	253.9	356.4	442.2	454.6	459.8	425.5	401.3	382.8	359.5	326.5
60°	170.3	200.2	278.5	362.6	396.5	405.7	375.4	357.8	342.4	321.2	290.4
62.5°	150.5	164.1	213.0	293.9	337.5	345.4	330.0	316.8	304.1	283.8	256.5
65°	125.4	139.9	164.1	227.1	280.7	284.7	287.8	275.0	264.9	248.2	224.0
67.5°	105.2	116.6	132.5	174.3	225.3	236.7	244.7	238.9	229.3	212.5	191.9
70°	89.3	95.9	107.4	130.7	172.1	196.7	205.1	200.7	195.8	177.8	160.2
72.5°	74.4	79.6	86.2	100.3	129.8	156.2	168.5	166.3	161.1	147.4	132.9
75°	61.6	63.8	69.1	77.0	94.2	118.8	133.3	135.1	128.9	116.2	104.7
77.5°	48.4	50.6	53.7	58.5	69.5	86.2	98.1	102.5	98.6	89.3	77.9
80°	37.0	38.3	40.5	42.7	47.1	58.5	70.8	73.5	71.3	63.8	56.8
82.5°	24.6	25.5	27.3	29.0	31.2	36.5	47.1	48.8	48.4	41.8	37.0
85°	15.0	15.0	15.4	16.7	17.6	19.8	25.5	28.2	26.8	22.4	20.2
87.5°	6.2	6.6	6.2	6.2	6.2	6.6	8.4	11.4	8.8	6.6	6.2
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):**

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1167.0	1167.0	1167.0	1167.0	1167.0	1167.0	1167.0	1167.0	1167.0	1167.0	1167.0
2.5°	1145.9	1144.1	1137.5	1131.3	1124.3	1115.9	1116.4	1117.7	1114.6	1113.7	1116.8
5°	1123.4	1117.3	1107.1	1097.0	1089.1	1078.5	1072.4	1075.5	1073.3	1069.3	1066.7
7.5°	1099.7	1090.9	1076.3	1063.6	1053.0	1033.2	1028.8	1023.5	1019.1	1010.3	1008.6
10°	1071.5	1058.7	1040.3	1022.2	1002.9	987.5	972.9	966.8	954.9	947.0	944.8
12.5°	1042.5	1021.3	1000.7	974.3	952.3	929.8	917.0	908.2	896.4	877.0	867.8
15°	1012.5	980.4	952.7	923.6	908.7	878.3	854.1	826.8	812.3	779.8	760.8
17.5°	972.5	935.5	898.1	874.4	843.1	800.9	760.4	746.3	724.3	703.2	682.1
20°	918.4	884.5	848.8	813.2	765.7	716.8	701.4	677.2	653.0	640.3	629.3
22.5°	868.6	832.1	789.9	742.8	693.9	655.7	635.4	617.8	602.9	591.4	578.7
25°	821.6	783.7	723.4	675.5	632.8	604.6	594.5	571.6	555.8	547.4	536.4
27.5°	769.6	717.7	669.3	619.6	581.7	565.9	542.6	524.5	507.8	491.5	487.6
30°	720.3	662.7	614.7	574.3	546.5	524.5	500.8	479.6	468.6	462.5	452.4
32.5°	671.5	613.0	568.1	536.4	506.5	483.2	460.7	449.7	433.0	419.4	410.6
35°	619.1	568.1	532.5	495.5	466.9	444.0	432.6	407.5	398.2	394.3	385.0
37.5°	572.9	527.6	491.5	463.4	432.1	413.6	391.2	385.5	373.2	362.6	359.5
40°	534.7	492.0	458.1	421.6	402.2	378.0	367.0	351.6	347.2	343.2	336.2
42.5°	492.8	456.3	417.6	393.0	364.4	353.4	336.2	331.8	321.2	317.3	314.6
45°	457.2	423.3	386.4	356.4	340.2	323.9	317.3	306.3	301.4	296.6	291.7
47.5°	422.4	387.2	357.8	329.6	311.6	304.1	292.2	284.3	279.0	274.1	269.3
50°	390.3	354.7	321.7	301.4	288.7	278.1	270.6	264.0	256.5	246.0	235.0
52.5°	355.6	323.4	296.6	276.8	265.3	255.2	248.6	237.2	222.7	211.2	205.9
55°	320.8	290.4	267.1	251.3	243.3	233.7	218.7	202.0	192.7	191.0	189.7
57.5°	291.3	262.7	241.1	228.8	219.6	202.4	186.6	180.4	177.8	176.9	176.0
60°	258.3	232.8	217.4	204.2	188.8	172.5	167.7	166.8	164.1	162.8	161.9
62.5°	227.9	205.9	191.9	176.0	159.7	156.7	153.1	150.9	149.6	146.5	145.2
65°	198.5	180.9	165.5	148.7	143.0	140.8	137.7	134.7	131.1	128.9	127.2
67.5°	170.3	153.1	136.9	130.7	127.6	124.1	120.1	115.7	114.0	110.9	110.5
70°	142.6	126.7	117.9	114.0	108.3	105.2	100.8	99.0	95.9	94.6	93.3
72.5°	116.2	104.7	101.2	95.5	91.5	86.7	84.5	82.7	81.0	78.8	78.8
75°	90.6	87.6	81.0	76.6	72.6	70.0	69.1	66.0	65.6	64.2	63.4
77.5°	72.2	66.0	63.8	59.0	56.3	55.0	54.1	52.4	50.6	50.2	49.7
80°	51.0	48.0	45.3	43.1	40.9	40.0	39.2	38.7	37.8	37.0	36.5
82.5°	33.4	31.7	29.9	28.6	28.2	26.8	26.0	25.5	24.6	24.6	24.6
85°	18.0	17.6	16.7	15.8	15.0	15.0	14.5	14.1	14.1	12.8	12.8
87.5°	5.7	5.7	5.3	5.3	4.4	4.8	4.4	4.4	4.0	4.4	4.4
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: P243082

CATALOG NUMBER: S121RDR-H685D830-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	1167.0	1167.0	1167.0	1167.0
2.5°	1113.3	1113.3	1111.5	1113.3
5°	1064.9	1060.9	1059.6	1058.7
7.5°	1003.3	999.8	996.3	992.7
10°	940.4	935.1	932.0	929.4
12.5°	858.5	851.9	839.6	843.1
15°	757.8	758.2	729.6	761.3
17.5°	675.5	677.7	666.2	664.5
20°	623.1	622.2	617.8	612.5
22.5°	569.4	565.5	563.7	555.3
25°	519.3	512.2	514.4	502.5
27.5°	482.7	477.0	475.2	474.4
30°	446.2	434.3	430.4	433.0
32.5°	409.2	408.4	407.0	407.5
35°	378.0	376.2	372.3	372.3
37.5°	356.4	356.9	354.7	352.9
40°	330.0	327.8	327.4	324.8
42.5°	311.1	306.7	304.9	305.4
45°	289.1	286.5	284.3	285.1
47.5°	263.1	260.5	255.7	254.3
50°	227.9	224.4	222.2	220.0
52.5°	201.5	201.1	200.2	199.8
55°	188.8	187.5	187.5	187.5
57.5°	175.6	174.7	174.3	175.1
60°	161.1	160.2	158.4	158.4
62.5°	143.0	142.1	141.7	139.9
65°	125.0	124.5	123.7	124.1
67.5°	108.3	107.8	107.8	106.5
70°	92.0	92.0	90.6	91.5
72.5°	77.0	76.6	76.6	76.6
75°	62.5	62.0	61.6	61.6
77.5°	49.3	49.3	48.4	48.4
80°	35.6	35.6	35.2	36.1
82.5°	23.8	24.6	23.8	23.8
85°	12.8	13.2	13.2	13.2
87.5°	4.0	3.5	3.5	3.5
90°	0.0	0.0	0.0	0.0

(END OF REPORT)