

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: P243102

Luminaire Tested: **S121RDR-H685D935-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243102
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-H685D935-X4F0-XX-UDD-A-W
Description: DEFINE 1 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 3500K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1879.4 lumens
Efficiency: N/A
Efficacy: 79.6 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

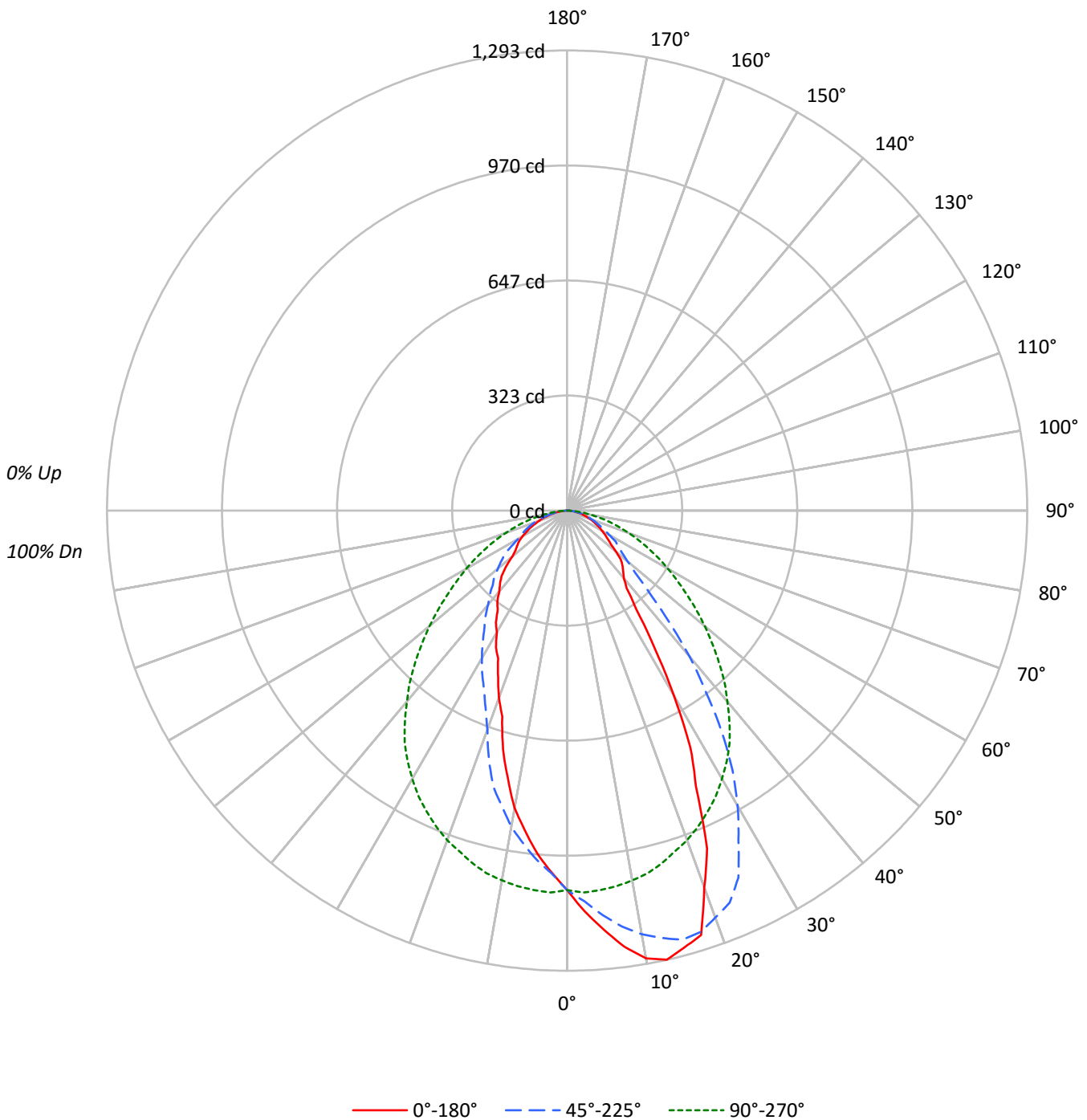
Input Watts (W): 23.6
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	31585	31585	31585
5°	35150	31840	28764
10°	38436	31748	25544
15°	38988	31479	21331
20°	35539	31077	17642
25°	27992	30515	15009
30°	20463	29776	13531
35°	12215	28789	12302
40°	9577	27083	11476
45°	9231	25284	10916
50°	8228	23255	9265
55°	7186	21159	8844
60°	6720	19366	8575
65°	6254	17612	7950
70°	5917	15880	7242
75°	5426	14127	6445
80°	4931	11449	5631
85°	4657	8737	4114



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	101.8	5.4
10°-20°	283.9	15.1
20°-30°	377.5	20.1
30°-40°	360.1	19.2
40°-50°	298.8	15.9
50°-60°	222.2	11.8
60°-70°	143.9	7.7
70°-80°	73.2	3.9
80°-90°	17.9	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°	763.1	40.6
0°-40°	1123.2	59.8
0°-60°	1644.3	87.5
0°-90°	1879.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1879.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1066	1066	1066	1066	1066	
5°	1182	1140	1070	985	967	116
15°	1271	1248	1026	802	695	354
25°	856	1138	933	552	459	397
35°	338	756	796	406	340	230
45°	220	326	603	296	260	168
55°	139	176	410	213	171	126
65°	89	101	251	129	113	89
75°	47	52	123	64	56	50
85°	14	13	26	14	12	15
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°	1066.0	1066.0	1066.0	1066.0	1066.0	1066.0	1066.0	1066.0	1066.0	1066.0	1066.0
2.5°	1127.1	1124.3	1127.5	1126.3	1121.1	1122.3	1115.9	1111.9	1102.2	1098.6	1098.6
5°	1181.8	1185.8	1183.4	1184.2	1179.0	1175.8	1168.9	1161.3	1149.2	1140.4	1137.2
7.5°	1236.5	1237.7	1238.9	1235.7	1229.6	1224.0	1214.4	1203.1	1189.8	1178.6	1169.7
10°	1277.5	1280.3	1278.7	1273.9	1269.4	1261.0	1250.5	1238.5	1224.0	1209.1	1198.3
12.5°	1292.7	1295.2	1298.8	1296.0	1295.6	1291.5	1281.1	1266.2	1248.5	1230.0	1217.6
15°	1271.0	1269.4	1279.1	1276.7	1275.9	1274.3	1277.1	1273.9	1264.6	1248.5	1233.3
17.5°	1250.9	1250.1	1259.8	1262.2	1258.6	1253.4	1250.1	1246.1	1241.7	1242.1	1240.1
20°	1127.1	1151.7	1156.5	1169.3	1196.7	1214.8	1232.9	1232.0	1219.2	1217.2	1216.4
22.5°	1027.4	1036.7	1032.3	1053.2	1068.0	1100.6	1132.4	1172.6	1199.5	1192.7	1188.2
25°	856.2	885.1	898.4	924.5	962.3	1003.7	1021.8	1064.4	1105.8	1138.0	1162.5
27.5°	750.1	756.5	765.0	791.9	806.0	843.7	911.3	969.2	1007.7	1042.7	1107.4
30°	598.1	600.9	630.3	645.2	686.6	723.6	782.2	828.9	906.4	958.3	1008.1
32.5°	456.6	454.2	486.4	503.7	544.7	594.5	660.0	703.5	779.4	864.2	923.7
35°	337.7	337.3	354.5	366.6	411.6	449.8	533.0	589.7	672.9	756.1	832.9
37.5°	274.9	274.5	278.2	288.6	307.5	350.5	390.7	474.7	555.9	637.9	734.0
40°	247.6	249.6	250.4	255.3	261.7	274.5	299.1	357.8	437.3	535.0	631.5
42.5°	233.1	233.1	233.9	235.2	238.4	242.0	256.9	279.4	343.3	421.3	529.4
45°	220.3	220.7	221.5	222.3	221.5	223.5	230.3	239.6	264.5	326.0	430.5
47.5°	205.0	204.6	206.6	207.8	209.4	211.8	212.2	217.1	227.9	260.1	336.0
50°	178.5	178.9	180.9	185.7	190.9	195.4	198.2	201.4	205.0	220.3	260.5
52.5°	154.4	154.8	156.0	159.6	164.4	170.0	178.9	186.1	188.9	193.8	216.3
55°	139.1	139.1	140.7	142.7	143.9	147.9	154.0	162.0	172.4	176.5	186.1
57.5°	126.2	126.2	127.0	127.0	128.6	130.6	134.7	138.7	147.5	160.4	166.4
60°	113.4	113.4	114.2	114.2	116.2	117.0	119.8	122.2	127.0	135.9	147.9
62.5°	101.3	100.5	101.3	101.7	102.9	104.1	106.1	108.9	111.7	117.0	125.8
65°	89.2	88.8	89.6	90.4	91.2	92.9	94.1	96.1	98.5	101.3	105.7
67.5°	78.8	78.4	78.8	80.0	79.6	80.4	82.4	83.2	85.6	88.4	92.1
70°	68.3	67.5	68.3	68.3	68.7	69.9	69.9	72.0	74.0	75.6	78.8
72.5°	57.1	57.5	57.1	57.5	58.3	58.7	59.5	60.7	61.9	63.5	65.5
75°	47.4	47.4	47.8	48.2	49.0	49.0	49.4	50.2	51.1	51.9	54.3
77.5°	37.8	38.2	38.6	39.0	39.0	39.4	39.8	40.2	41.4	41.8	43.0
80°	28.9	29.3	29.3	29.3	30.1	29.3	30.1	31.0	31.0	31.4	32.2
82.5°	20.9	21.3	20.9	21.3	21.7	21.7	21.3	21.7	21.7	22.5	22.5
85°	13.7	12.9	12.9	12.9	12.9	12.9	13.3	13.7	13.3	13.3	13.7
87.5°	5.6	5.6	5.6	5.6	6.0	5.6	6.0	6.0	6.0	5.6	6.0
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°	1066.0	1066.0	1066.0	1066.0	1066.0	1066.0	1066.0	1066.0	1066.0	1066.0	1066.0
2.5°	1100.6	1097.4	1094.6	1089.7	1083.7	1074.9	1073.7	1074.1	1063.2	1052.8	1051.2
5°	1130.3	1125.1	1116.3	1105.8	1096.2	1081.3	1074.9	1070.5	1054.0	1039.9	1034.3
7.5°	1162.1	1149.6	1137.6	1121.1	1105.0	1085.7	1073.7	1064.4	1042.7	1024.2	1014.6
10°	1187.0	1171.8	1154.5	1133.6	1111.5	1087.7	1069.7	1055.2	1029.1	1006.1	994.1
12.5°	1204.7	1187.4	1166.9	1142.0	1116.7	1085.3	1063.2	1043.9	1012.2	984.8	970.4
15°	1214.0	1195.5	1170.1	1142.8	1116.7	1083.7	1054.4	1026.2	994.9	960.7	942.6
17.5°	1222.4	1198.3	1169.7	1138.4	1111.9	1077.3	1041.1	1004.5	969.2	937.0	907.7
20°	1216.4	1195.9	1164.1	1131.6	1101.8	1061.6	1023.4	985.6	941.4	904.0	874.7
22.5°	1188.2	1184.6	1150.4	1115.5	1081.3	1042.7	998.5	961.1	913.7	869.5	834.1
25°	1155.3	1150.8	1132.4	1095.0	1056.4	1016.2	976.4	933.4	878.7	832.9	792.3
27.5°	1127.5	1117.5	1104.2	1069.2	1027.8	987.6	946.6	904.8	846.6	795.5	749.3
30°	1071.3	1080.9	1066.0	1041.9	994.1	955.1	915.7	870.3	812.4	753.7	706.3
32.5°	982.0	1040.3	1025.4	1006.1	959.1	916.5	879.1	834.5	770.6	712.7	663.7
35°	903.2	953.5	987.2	963.9	922.5	873.1	834.9	795.9	729.2	670.1	623.1
37.5°	826.9	880.3	936.6	915.3	881.1	828.1	787.9	749.3	687.4	627.9	580.9
40°	726.8	804.7	859.0	867.5	832.5	779.0	740.0	700.2	645.6	586.5	536.2
42.5°	630.7	730.8	774.6	818.0	782.2	732.0	688.6	654.8	602.2	550.3	495.6
45°	530.2	644.0	708.7	742.0	729.2	683.4	635.9	603.4	559.1	510.9	459.1
47.5°	443.0	551.1	643.6	662.5	674.9	629.9	585.7	552.7	514.5	474.7	425.3
50°	351.3	463.5	562.4	596.5	620.2	579.2	533.0	504.5	472.3	436.5	392.7
52.5°	273.3	378.3	482.0	540.3	548.3	527.0	484.4	456.2	430.5	398.4	358.6
55°	217.1	298.3	402.0	469.9	477.5	472.3	434.1	409.6	390.7	363.8	330.4
57.5°	180.1	231.9	325.6	404.0	415.2	420.1	388.7	366.6	349.7	328.4	298.3
60°	155.6	182.9	254.4	331.2	362.2	370.6	342.9	326.8	312.7	293.4	265.3
62.5°	137.5	149.9	194.6	268.5	308.3	315.5	301.5	289.4	277.8	259.3	234.4
65°	114.6	127.8	149.9	207.4	256.5	260.1	262.9	251.2	242.0	226.7	204.6
67.5°	96.1	106.5	121.0	159.2	205.8	216.3	223.5	218.3	209.4	194.2	175.3
70°	81.6	87.6	98.1	119.4	157.2	179.7	187.3	183.3	178.9	162.4	146.3
72.5°	67.9	72.8	78.8	91.6	118.6	142.7	154.0	151.9	147.1	134.7	121.4
75°	56.3	58.3	63.1	70.3	86.0	108.5	121.8	123.4	117.8	106.1	95.7
77.5°	44.2	46.2	49.0	53.5	63.5	78.8	89.6	93.7	90.0	81.6	71.1
80°	33.8	35.0	37.0	39.0	43.0	53.5	64.7	67.1	65.1	58.3	51.9
82.5°	22.5	23.3	24.9	26.5	28.5	33.4	43.0	44.6	44.2	38.2	33.8
85°	13.7	13.7	14.1	15.3	16.1	18.1	23.3	25.7	24.5	20.5	18.5
87.5°	5.6	6.0	5.6	5.6	5.6	6.0	7.6	10.5	8.0	6.0	5.6
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°	1066.0	1066.0	1066.0	1066.0	1066.0	1066.0	1066.0	1066.0	1066.0	1066.0	1066.0
2.5°	1046.7	1045.1	1039.1	1033.5	1027.0	1019.4	1019.8	1021.0	1018.2	1017.4	1020.2
5°	1026.2	1020.6	1011.4	1002.1	994.9	985.2	979.6	982.4	980.4	976.8	974.4
7.5°	1004.5	996.5	983.2	971.6	961.9	943.8	939.8	935.0	931.0	922.9	921.3
10°	978.8	967.1	950.3	933.8	916.1	902.0	888.8	883.1	872.3	865.0	863.0
12.5°	952.3	933.0	914.1	890.0	869.9	849.4	837.7	829.7	818.8	801.1	792.7
15°	924.9	895.6	870.3	843.7	830.1	802.3	780.2	755.3	742.0	712.3	695.0
17.5°	888.4	854.6	820.4	798.7	770.2	731.6	694.6	681.7	661.6	642.4	623.1
20°	838.9	808.0	775.4	742.8	699.4	654.8	640.7	618.6	596.5	584.9	574.8
22.5°	793.5	760.1	721.5	678.5	633.9	598.9	580.4	564.4	550.7	540.3	528.6
25°	750.5	715.9	660.8	617.0	578.0	552.3	543.1	522.2	507.7	500.1	490.0
27.5°	703.1	655.6	611.4	566.0	531.4	516.9	495.6	479.2	463.9	449.0	445.4
30°	658.0	605.4	561.6	524.6	499.3	479.2	457.4	438.2	428.1	422.5	413.2
32.5°	613.4	559.9	518.9	490.0	462.7	441.4	420.9	410.8	395.5	383.1	375.0
35°	565.6	518.9	486.4	452.6	426.5	405.6	395.1	372.2	363.8	360.2	351.7
37.5°	523.4	482.0	449.0	423.3	394.7	377.9	357.4	352.1	340.9	331.2	328.4
40°	488.4	449.4	418.5	385.1	367.4	345.3	335.2	321.2	317.2	313.5	307.1
42.5°	450.2	416.8	381.5	359.0	332.8	322.8	307.1	303.1	293.4	289.8	287.4
45°	417.6	386.7	352.9	325.6	310.7	295.9	289.8	279.8	275.4	270.9	266.5
47.5°	385.9	353.7	326.8	301.1	284.6	277.8	266.9	259.7	254.9	250.4	246.0
50°	356.6	324.0	293.8	275.4	263.7	254.0	247.2	241.2	234.4	224.7	214.7
52.5°	324.8	295.5	270.9	252.8	242.4	233.1	227.1	216.7	203.4	192.9	188.1
55°	293.0	265.3	244.0	229.5	222.3	213.4	199.8	184.5	176.1	174.5	173.3
57.5°	266.1	240.0	220.3	209.0	200.6	184.9	170.4	164.8	162.4	161.6	160.8
60°	236.0	212.6	198.6	186.5	172.4	157.6	153.2	152.3	149.9	148.7	147.9
62.5°	208.2	188.1	175.3	160.8	145.9	143.1	139.9	137.9	136.7	133.9	132.7
65°	181.3	165.2	151.1	135.9	130.6	128.6	125.8	123.0	119.8	117.8	116.2
67.5°	155.6	139.9	125.0	119.4	116.6	113.4	109.7	105.7	104.1	101.3	100.9
70°	130.2	115.8	107.7	104.1	98.9	96.1	92.1	90.4	87.6	86.4	85.2
72.5°	106.1	95.7	92.5	87.2	83.6	79.2	77.2	75.6	74.0	72.0	72.0
75°	82.8	80.0	74.0	69.9	66.3	63.9	63.1	60.3	59.9	58.7	57.9
77.5°	65.9	60.3	58.3	53.9	51.5	50.2	49.4	47.8	46.2	45.8	45.4
80°	46.6	43.8	41.4	39.4	37.4	36.6	35.8	35.4	34.6	33.8	33.4
82.5°	30.5	28.9	27.3	26.1	25.7	24.5	23.7	23.3	22.5	22.5	22.5
85°	16.5	16.1	15.3	14.5	13.7	13.7	13.3	12.9	12.9	11.7	11.7
87.5°	5.2	5.2	4.8	4.8	4.0	4.4	4.0	4.0	3.6	4.0	4.0
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: P243102

CATALOG NUMBER: S121RDR-H685D935-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1066.0	1066.0	1066.0	1066.0
2.5°	1017.0	1017.0	1015.4	1017.0
5°	972.8	969.2	968.0	967.1
7.5°	916.5	913.3	910.1	906.9
10°	859.0	854.2	851.4	849.0
12.5°	784.2	778.2	767.0	770.2
15°	692.2	692.6	666.5	695.4
17.5°	617.0	619.0	608.6	607.0
20°	569.2	568.4	564.4	559.5
22.5°	520.2	516.5	514.9	507.3
25°	474.3	467.9	469.9	459.1
27.5°	441.0	435.7	434.1	433.3
30°	407.6	396.7	393.1	395.5
32.5°	373.8	373.0	371.8	372.2
35°	345.3	343.7	340.1	340.1
37.5°	325.6	326.0	324.0	322.4
40°	301.5	299.5	299.1	296.7
42.5°	284.2	280.2	278.6	279.0
45°	264.1	261.7	259.7	260.5
47.5°	240.4	238.0	233.5	232.3
50°	208.2	205.0	203.0	201.0
52.5°	184.1	183.7	182.9	182.5
55°	172.4	171.2	171.2	171.2
57.5°	160.4	159.6	159.2	160.0
60°	147.1	146.3	144.7	144.7
62.5°	130.6	129.8	129.4	127.8
65°	114.2	113.8	113.0	113.4
67.5°	98.9	98.5	98.5	97.3
70°	84.0	84.0	82.8	83.6
72.5°	70.3	69.9	69.9	69.9
75°	57.1	56.7	56.3	56.3
77.5°	45.0	45.0	44.2	44.2
80°	32.6	32.6	32.2	33.0
82.5°	21.7	22.5	21.7	21.7
85°	11.7	12.1	12.1	12.1
87.5°	3.6	3.2	3.2	3.2
90°	0.0	0.0	0.0	0.0

(END OF REPORT)