

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: P242999

Luminaire Tested: **S121DR-H685D935-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242999
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-57)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S121DR-H685D935-X4F0-XX-UDD-A-W
Description: DEFINE 1 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: 2314.3 lumens
Efficiency: N/A
Efficacy: 98.1 lumens/watt
Spacing Criteria (0/90/45): 1.13 / 1.2 / 1.28
Luminous Opening: Rectangular (W 3.88' x L: 0.09' x H: 0')
CIE Type: Direct

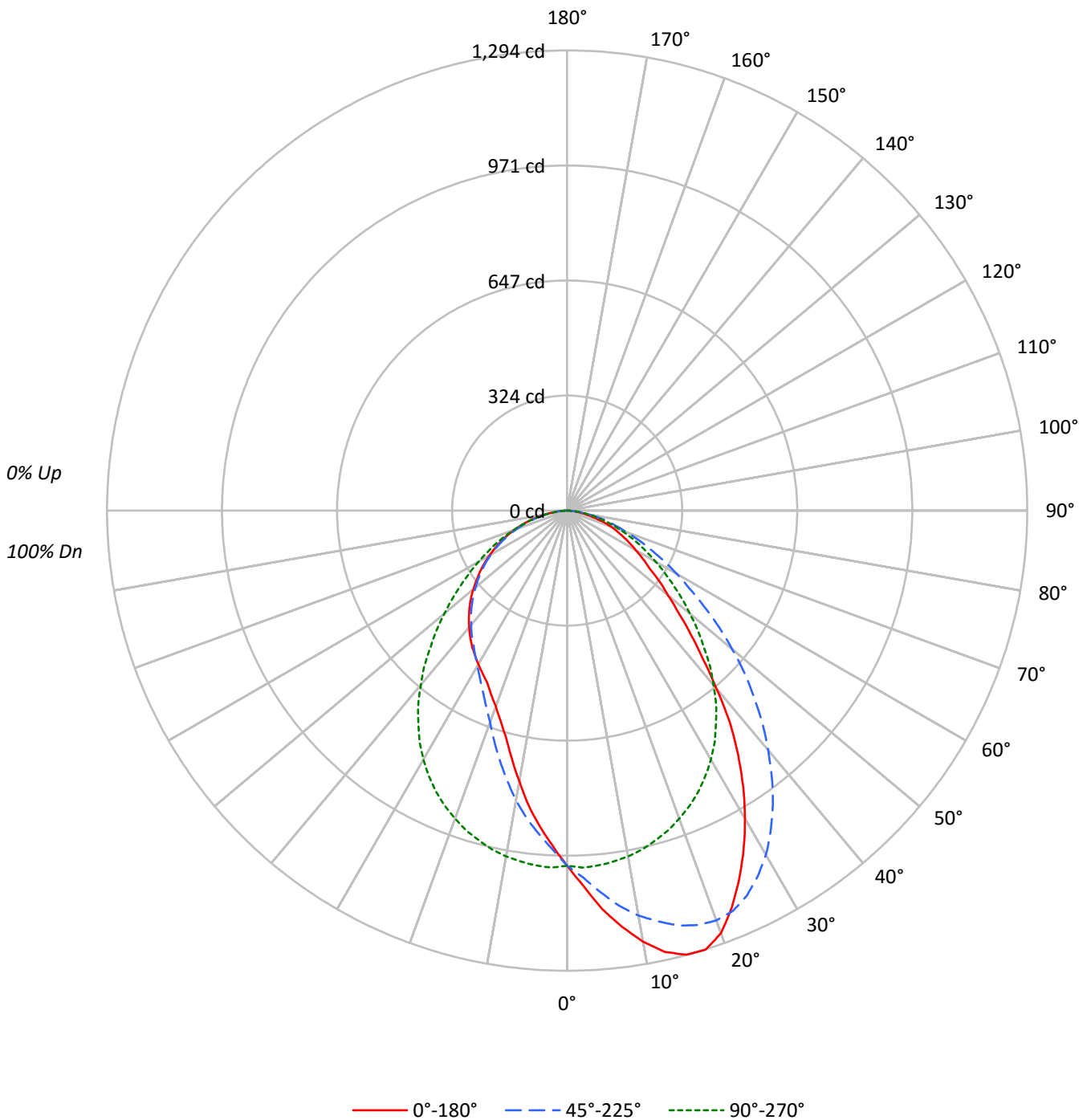
Input Watts (W): 23.6
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	110	105	102	98	107	103	100	96	99	96	93	95	93	91	92	90	88					86				
2	101	93	87	81	98	91	85	80	88	83	79	84	80	77	81	78	75					73				
3	92	83	75	69	90	81	74	68	78	72	67	75	70	66	73	69	65					63				
4	85	74	66	59	83	72	65	59	70	63	58	68	62	57	66	61	57					54				
5	79	66	58	52	77	65	57	51	63	56	51	61	55	50	60	54	50					48				
6	73	60	52	46	71	59	51	45	57	50	45	56	49	45	54	49	44					42				
7	68	55	46	41	66	54	46	40	53	45	40	51	45	40	50	44	40					38				
8	63	50	42	37	62	50	42	36	48	41	36	47	41	36	46	40	36					34				
9	59	46	38	33	58	46	38	33	45	38	33	44	37	33	43	37	33					31				
10	56	43	35	30	54	42	35	30	41	35	30	41	34	30	40	34	30					28				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	29585	29585	29585
5°	33428	29793	26471
10°	37034	29705	23269
15°	39657	29445	20298
20°	39874	29062	18480
25°	37401	28518	17425
30°	34217	27658	17083
35°	30301	26390	16867
40°	25250	24754	16574
45°	20583	22774	16271
50°	17083	20752	15862
55°	14619	18814	15451
60°	13244	17031	14957
65°	12234	15501	14429
70°	11279	13965	13584
75°	9113	12375	12513
80°	7269	10016	10699
85°	5473	7377	8737



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	95.4	4.1
10°-20°	273.3	11.8
20°-30°	397.9	17.2
30°-40°	443.6	19.2
40°-50°	410.1	17.7
50°-60°	326.7	14.1
60°-70°	223.7	9.7
70°-80°	116.1	5.0
80°-90°	27.5	1.2
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°	766.6	33.1
0°-40°	1210.2	52.3
0°-60°	1947.1	84.1
0°-90°	2314.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2314.3	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	998	998	998	998	998	
5°	1124	1077	1002	912	890	110
15°	1293	1208	960	729	662	362
25°	1144	1195	872	561	533	524
35°	838	1009	730	459	466	520
45°	491	743	544	380	388	382
55°	283	470	364	292	299	259
65°	174	259	221	200	206	173
75°	80	117	108	102	109	87
85°	16	22	22	23	26	20
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°	998.5	998.5	998.5	998.5	998.5	998.5	998.5	998.5	998.5	998.5	998.5
2.5°	1056.4	1056.4	1053.6	1054.8	1053.2	1050.4	1046.0	1041.1	1035.1	1032.7	1031.5
5°	1123.9	1125.6	1123.5	1119.5	1118.7	1115.5	1105.9	1100.2	1087.4	1077.3	1074.1
7.5°	1180.2	1183.0	1183.0	1175.8	1172.6	1164.5	1157.7	1148.5	1132.4	1121.1	1111.9
10°	1230.9	1232.1	1227.7	1223.6	1217.2	1210.8	1199.1	1187.5	1170.2	1156.5	1141.2
12.5°	1271.1	1273.5	1270.3	1263.8	1256.2	1247.8	1233.3	1218.4	1201.5	1183.0	1166.6
15°	1292.8	1296.4	1296.8	1291.6	1285.9	1275.9	1265.4	1249.4	1230.9	1208.0	1181.0
17.5°	1294.4	1296.0	1297.2	1293.2	1289.6	1285.9	1275.5	1262.2	1244.5	1222.0	1197.1
20°	1264.6	1268.3	1272.3	1268.7	1270.3	1270.3	1265.8	1259.0	1244.5	1226.4	1202.3
22.5°	1209.2	1217.6	1222.8	1226.4	1230.1	1235.3	1240.5	1237.3	1231.7	1218.4	1196.7
25°	1144.0	1150.9	1160.9	1164.1	1167.0	1182.2	1191.5	1197.9	1197.9	1195.1	1180.6
27.5°	1074.9	1079.3	1087.8	1099.0	1109.5	1118.7	1138.0	1150.1	1159.7	1159.7	1152.1
30°	1000.1	1006.6	1016.6	1024.3	1037.1	1056.0	1072.1	1086.6	1108.7	1118.3	1116.7
32.5°	921.3	927.8	938.2	944.7	963.2	978.4	1003.3	1025.9	1051.2	1065.7	1074.5
35°	837.7	838.1	855.8	866.3	882.4	901.2	931.8	957.1	984.9	1009.0	1027.9
37.5°	751.7	751.3	763.8	782.3	795.1	821.7	853.0	881.1	919.7	945.5	975.2
40°	652.8	661.3	671.7	688.6	710.7	742.1	771.8	808.4	847.0	879.1	910.9
42.5°	564.4	571.2	588.1	607.0	630.7	657.2	693.4	734.0	771.8	813.6	849.0
45°	491.2	494.8	504.9	520.2	545.1	575.2	613.0	656.0	700.7	743.3	782.7
47.5°	423.7	434.5	439.8	453.8	471.9	500.1	539.5	578.1	629.5	676.9	720.0
50°	370.6	372.6	381.9	392.3	413.6	434.5	464.3	504.1	551.9	605.4	649.2
52.5°	327.2	326.4	334.0	343.3	358.2	380.3	406.0	444.6	485.2	538.3	586.1
55°	283.0	287.0	290.6	299.9	313.1	330.0	351.7	384.3	422.5	469.5	519.8
57.5°	252.4	252.8	254.9	262.5	271.3	284.6	305.5	333.2	367.4	408.4	457.1
60°	223.5	223.9	227.5	229.9	236.0	247.2	263.3	286.2	316.4	355.8	398.4
62.5°	198.6	199.0	201.0	203.4	209.0	213.5	227.1	246.8	271.3	306.3	342.9
65°	174.5	174.9	174.9	178.1	181.7	185.7	195.4	207.8	231.5	259.3	291.8
67.5°	151.1	153.6	152.8	155.2	158.4	160.4	167.2	178.5	194.6	217.9	246.0
70°	130.2	129.8	131.0	132.3	133.5	136.7	141.1	148.7	162.4	178.9	203.8
72.5°	107.7	105.3	106.9	108.5	110.5	113.0	116.6	122.2	132.7	145.9	164.4
75°	79.6	78.4	80.8	81.2	84.8	88.0	92.1	97.7	105.3	116.6	128.6
77.5°	57.9	59.5	60.3	61.1	61.5	65.1	69.5	74.4	78.8	89.2	98.5
80°	42.6	42.6	43.0	43.8	44.6	45.4	48.2	51.5	55.1	61.5	70.7
82.5°	29.7	29.3	29.3	29.7	30.1	31.0	32.2	33.4	36.6	39.8	44.6
85°	16.1	16.5	16.9	16.1	16.5	16.9	17.7	18.9	19.7	22.1	24.1
87.5°	5.6	6.8	6.4	6.4	6.8	6.8	6.8	7.6	7.6	7.6	8.8
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°	998.5	998.5	998.5	998.5	998.5	998.5	998.5	998.5	998.5	998.5	998.5
2.5°	1030.3	1029.1	1025.9	1019.4	1015.0	1007.0	1005.4	1005.0	997.7	986.9	986.1
5°	1068.5	1059.2	1051.6	1040.3	1029.1	1015.4	1007.4	1001.7	988.9	972.8	965.6
7.5°	1103.4	1090.2	1074.5	1056.8	1040.3	1021.0	1007.0	995.7	976.8	956.3	943.9
10°	1131.6	1115.1	1095.4	1071.7	1049.2	1023.9	1004.2	987.3	962.3	937.0	920.1
12.5°	1150.9	1132.4	1109.9	1082.1	1054.8	1025.9	997.3	976.0	944.7	915.3	893.6
15°	1172.6	1142.0	1118.7	1087.4	1055.2	1020.6	990.5	959.9	923.8	890.8	862.7
17.5°	1177.8	1149.7	1121.9	1087.4	1054.0	1011.8	976.8	943.1	902.9	862.3	834.9
20°	1182.6	1150.5	1116.3	1078.9	1043.9	1000.5	961.1	921.7	875.1	831.3	797.1
22.5°	1179.0	1147.7	1109.5	1067.3	1029.5	984.9	942.2	898.8	846.6	800.7	762.2
25°	1168.6	1139.6	1100.2	1054.0	1008.6	963.2	918.5	872.3	815.6	762.6	720.0
27.5°	1147.3	1121.5	1083.7	1034.7	986.9	936.6	890.0	841.8	781.1	726.8	681.4
30°	1118.7	1098.2	1060.0	1011.0	959.1	905.3	857.4	808.4	745.3	686.2	637.9
32.5°	1079.3	1064.9	1031.9	984.1	928.2	871.1	822.1	772.2	704.7	648.4	599.4
35°	1035.1	1028.3	998.9	951.1	893.2	833.3	780.7	729.6	667.3	607.8	560.8
37.5°	983.2	988.1	961.5	914.1	854.2	793.1	737.6	688.2	625.1	568.0	521.8
40°	931.8	939.0	918.9	874.7	812.4	749.3	693.0	640.0	581.3	531.0	485.2
42.5°	874.7	889.2	873.5	830.5	769.8	703.1	644.4	594.9	539.1	492.8	452.6
45°	814.0	832.5	826.1	782.3	722.4	656.8	594.9	543.5	498.5	457.5	420.9
47.5°	752.5	773.8	771.0	734.4	676.9	609.8	548.7	498.1	456.7	423.7	393.1
50°	689.4	711.1	711.5	678.9	625.5	561.6	496.0	450.2	417.3	388.3	363.4
52.5°	627.9	649.6	650.0	624.7	571.2	508.9	448.6	406.8	378.7	356.2	335.3
55°	563.6	588.9	591.3	566.8	519.4	459.5	404.0	364.2	339.3	324.8	306.7
57.5°	498.5	525.8	530.6	510.9	465.1	409.2	362.6	324.4	304.3	294.3	280.6
60°	437.8	464.7	472.3	449.8	412.0	364.2	319.6	287.4	271.3	263.3	253.7
62.5°	381.9	408.8	412.8	393.5	356.2	316.0	282.2	252.8	239.6	233.6	225.9
65°	327.2	351.3	356.6	339.3	305.5	272.1	242.4	221.1	209.4	204.2	199.4
67.5°	277.0	299.5	303.1	287.4	259.3	230.7	209.0	190.5	182.5	175.7	173.7
70°	229.5	250.0	253.2	237.6	215.5	192.1	174.1	161.2	153.6	149.5	146.7
72.5°	185.7	201.8	204.6	195.0	177.7	157.2	143.1	132.3	127.4	123.8	122.6
75°	145.1	160.8	161.2	152.8	138.7	124.6	113.8	108.1	102.5	98.9	98.1
77.5°	111.3	120.2	121.4	117.0	103.3	94.5	86.0	82.0	80.0	76.4	76.4
80°	79.6	84.8	86.8	80.4	74.0	66.3	61.9	58.7	57.1	54.7	54.7
82.5°	49.4	53.9	56.3	51.5	48.2	44.2	41.0	39.0	37.8	36.6	36.2
85°	26.9	30.1	30.1	28.5	25.7	23.7	22.5	21.7	21.3	20.9	20.5
87.5°	9.6	12.1	10.9	11.3	10.0	9.6	9.2	9.2	9.6	8.8	8.8
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°	998.5	998.5	998.5	998.5	998.5	998.5	998.5	998.5	998.5	998.5	998.5
2.5°	980.8	978.8	972.8	967.2	962.7	953.1	951.1	951.9	951.9	952.3	947.9
5°	957.1	948.7	939.0	930.2	923.4	912.5	906.5	904.9	903.7	901.2	896.8
7.5°	930.2	920.5	906.9	898.8	884.4	872.3	863.9	858.2	854.6	849.4	842.2
10°	902.9	888.8	873.5	857.4	843.0	826.9	813.6	807.2	799.5	794.3	786.3
12.5°	875.5	855.8	834.9	816.4	796.7	777.8	764.2	755.3	741.7	734.0	725.6
15°	839.7	815.6	797.9	765.8	756.1	728.8	712.3	705.5	692.2	689.8	676.5
17.5°	806.0	778.2	752.1	725.2	699.4	680.6	666.5	657.6	647.2	640.8	631.9
20°	763.8	734.8	703.5	675.3	653.6	633.5	624.7	613.4	607.4	601.0	594.5
22.5°	723.6	688.2	656.8	633.9	611.8	595.3	585.7	578.1	572.8	566.4	562.0
25°	680.6	647.6	618.7	594.9	573.6	560.8	552.7	548.3	545.1	540.3	537.5
27.5°	639.6	606.2	577.6	559.6	542.3	531.0	527.0	523.0	519.0	517.4	516.9
30°	595.7	565.2	541.9	526.2	510.5	504.5	502.5	498.5	499.3	499.7	498.5
32.5°	558.8	529.0	511.3	498.1	486.0	481.6	481.2	479.6	480.0	482.0	481.2
35°	520.6	498.5	480.8	469.9	462.3	459.1	459.5	459.9	462.3	462.7	464.3
37.5°	488.0	466.7	455.0	444.6	441.0	441.0	441.4	441.8	443.8	446.2	447.0
40°	455.8	438.6	428.5	421.7	419.7	419.7	421.3	423.3	424.5	426.9	427.3
42.5°	426.9	412.4	404.8	398.0	398.8	400.8	401.2	402.4	405.6	406.0	406.8
45°	398.4	387.5	379.9	377.9	377.9	379.5	381.5	382.3	384.7	385.1	385.9
47.5°	373.8	362.6	357.0	355.0	356.2	358.2	361.0	362.2	364.2	363.8	365.8
50°	346.5	337.3	332.8	332.0	332.8	336.5	337.7	340.5	342.5	343.7	344.5
52.5°	320.4	313.1	311.1	310.7	312.3	314.8	316.4	319.2	321.6	321.6	321.2
55°	295.5	289.0	286.6	288.6	290.6	291.8	295.1	296.7	299.1	299.5	299.1
57.5°	270.1	264.5	263.7	264.5	268.5	270.9	272.9	272.9	274.2	274.6	275.8
60°	244.0	240.4	239.6	241.6	246.0	247.6	248.8	249.2	250.8	250.0	252.4
62.5°	219.5	215.9	217.5	219.5	221.1	223.5	224.3	226.3	225.9	226.7	227.9
65°	194.2	192.1	192.5	195.0	197.0	200.2	200.2	200.2	202.2	202.2	203.0
67.5°	169.6	168.4	170.0	172.0	172.5	174.5	174.1	176.5	178.1	178.9	179.7
70°	145.9	145.1	145.1	147.1	149.1	149.9	150.7	152.4	152.8	154.0	156.0
72.5°	123.4	121.0	121.4	124.2	124.2	125.8	127.8	127.8	130.2	130.6	132.7
75°	98.9	98.1	98.9	100.5	102.5	102.1	104.5	104.1	104.9	107.7	108.1
77.5°	77.2	76.0	78.0	78.8	79.2	79.6	80.4	82.4	84.0	85.2	85.6
80°	55.5	55.1	57.1	57.9	57.5	58.3	59.5	61.5	61.5	62.3	63.5
82.5°	37.4	36.6	37.8	39.0	39.8	40.2	40.2	41.0	41.4	42.2	42.2
85°	21.3	21.3	22.1	22.5	23.3	22.9	23.7	23.3	24.1	24.9	24.5
87.5°	9.2	9.2	9.2	9.2	9.6	9.6	10.0	10.0	9.6	10.0	9.2
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: P242999

CATALOG NUMBER: S121DR-H685D935-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	998.5	998.5	998.5	998.5
2.5°	946.3	947.1	945.1	943.1
5°	896.4	893.6	890.8	890.0
7.5°	840.5	840.5	833.7	835.3
10°	780.7	778.2	773.0	773.4
12.5°	722.4	720.4	717.5	716.3
15°	669.7	670.9	672.9	661.7
17.5°	628.3	625.1	623.5	621.5
20°	591.3	589.7	586.5	586.1
22.5°	562.8	559.2	558.4	558.8
25°	535.4	535.4	535.4	533.0
27.5°	516.1	516.1	514.9	515.3
30°	499.3	500.1	498.9	499.3
32.5°	483.2	483.6	482.8	482.4
35°	465.1	466.3	465.9	466.3
37.5°	447.8	448.6	447.8	447.8
40°	428.1	430.1	429.7	428.5
42.5°	408.4	408.4	409.6	409.2
45°	387.9	387.1	387.1	388.3
47.5°	366.2	367.8	367.0	367.4
50°	346.1	345.7	344.5	344.1
52.5°	322.4	323.2	322.8	320.8
55°	299.5	299.5	299.1	299.1
57.5°	275.0	276.2	275.8	275.8
60°	251.6	252.4	252.8	252.4
62.5°	227.9	228.3	227.9	228.3
65°	205.0	205.0	204.6	205.8
67.5°	180.1	180.5	180.1	180.9
70°	156.4	157.2	157.6	156.8
72.5°	133.9	133.1	133.5	132.7
75°	108.9	109.3	108.9	109.3
77.5°	85.6	86.0	85.6	86.0
80°	63.1	63.1	63.5	62.7
82.5°	42.6	42.6	43.8	42.6
85°	24.9	24.9	24.1	25.7
87.5°	9.6	9.6	9.6	9.6
90°	0.0	0.0	0.0	0.0

(END OF REPORT)