

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: P242144

Luminaire Tested: **S121DR-S685D940-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242144
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-18)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S121DR-S685D940-X4F0-XX-UDD-A-W
Description: DEFINE 1 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER
STANDARD LIGHT ENGINE
Light Source: (92) 4000K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2553.4 lumens
Efficiency: N/A
Efficacy: 97.1 lumens/watt
Spacing Criteria (0/90/45): 1.27 / 1.22 / 1.37
Luminous Opening: Rectangular (W 3.88' x L: 0.09' x H: 0')
CIE Type: Direct

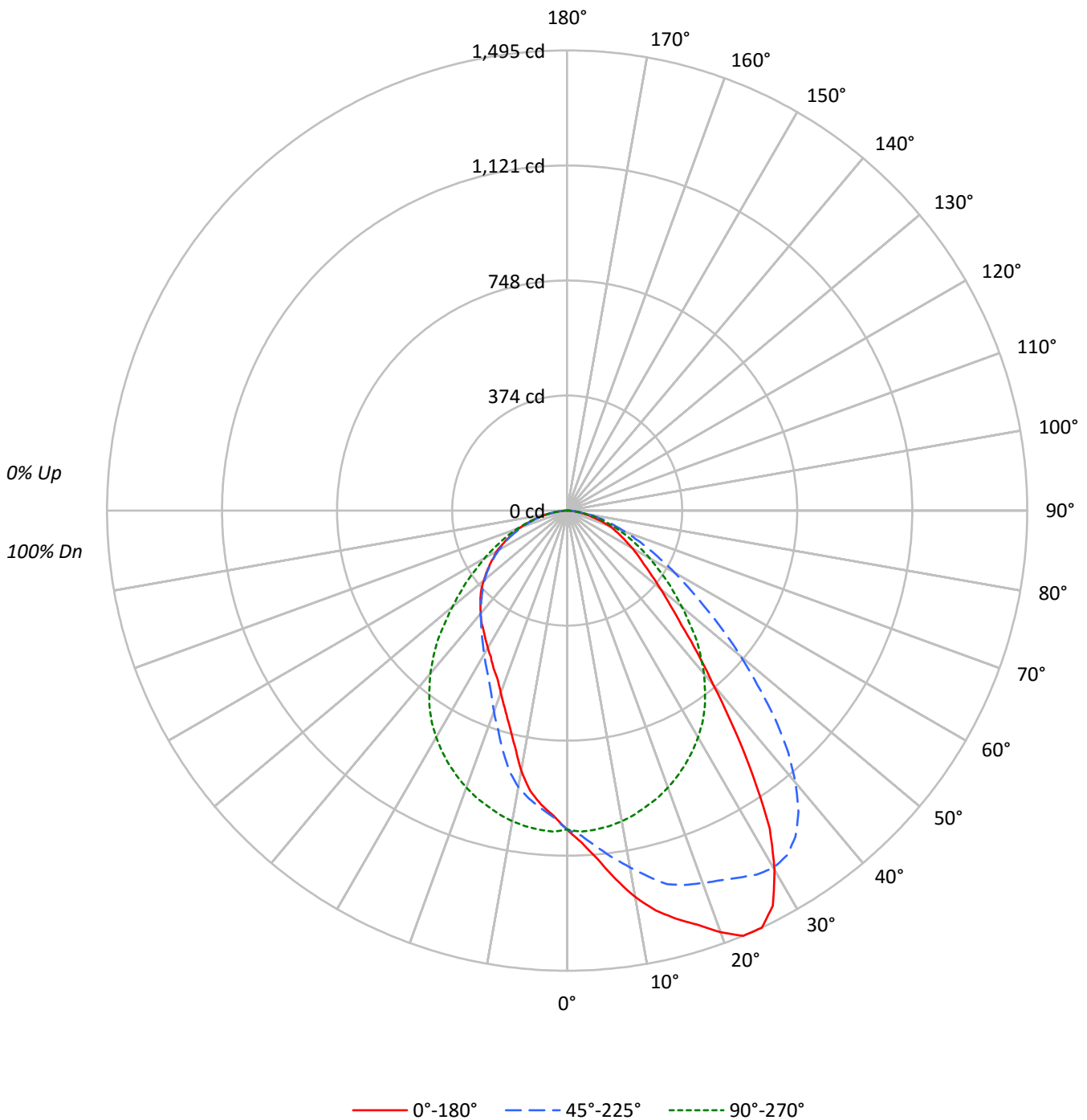
Input Watts (W): 26.3
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	110	105	102	98	107	103	100	96	99	96	93	95	93	91	92	90	88	86
2	101	93	87	82	98	91	85	81	88	83	79	85	80	77	82	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	73	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	52	45	40	51	45	40	50	44	40	38
8	63	50	42	36	62	50	42	36	48	41	36	47	41	36	46	40	36	34
9	59	46	38	33	58	46	38	33	44	38	33	43	37	33	42	37	32	31
10	56	43	35	30	54	42	35	30	41	34	30	40	34	30	39	34	30	28

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	30702	30702	30702
5°	33791	30953	28538
10°	38367	30842	25811
15°	42126	30500	22184
20°	45973	30197	19852
25°	48889	29721	18484
30°	46099	29105	17634
35°	38092	28192	17127
40°	28560	26731	16903
45°	22007	24924	16702
50°	18249	22421	16318
55°	15756	20358	15849
60°	14477	18364	15644
65°	13377	16602	14758
70°	12666	14909	14138
75°	10418	13165	12558
80°	8224	10733	10340
85°	6357	7887	6969



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	99.6	3.9
10°-20°	290.6	11.4
20°-30°	445.0	17.4
30°-40°	507.8	19.9
40°-50°	455.6	17.8
50°-60°	357.4	14.0
60°-70°	243.2	9.5
70°-80°	125.2	4.9
80°-90°	28.8	1.1
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°	835.3	32.7
0°-40°	1343.1	52.6
0°-60°	2156.2	84.4
0°-90°	2553.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2553.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1036	1036	1036	1036	1036	
5°	1136	1096	1041	971	960	113
15°	1373	1257	994	808	723	391
25°	1495	1316	909	603	565	674
35°	1053	1293	779	484	474	653
45°	525	954	595	392	399	416
55°	305	544	394	303	307	278
65°	191	290	237	207	210	190
75°	91	128	115	106	110	98
85°	19	25	23	22	20	23
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°	1036.2	1036.2	1036.2	1036.2	1036.2	1036.2	1036.2	1036.2	1036.2	1036.2	1036.2
2.5°	1079.9	1079.9	1081.7	1081.2	1079.4	1076.3	1073.7	1070.5	1062.5	1057.2	1062.1
5°	1136.1	1138.3	1140.5	1140.1	1133.4	1127.6	1119.1	1116.9	1102.6	1095.9	1093.7
7.5°	1207.4	1207.0	1207.9	1200.3	1194.5	1188.7	1177.5	1163.7	1146.8	1137.4	1128.5
10°	1275.2	1279.2	1277.4	1268.1	1259.1	1252.9	1235.1	1218.1	1197.2	1177.1	1165.9
12.5°	1330.5	1328.2	1335.8	1326.9	1316.2	1304.6	1287.2	1272.1	1244.9	1217.7	1194.9
15°	1373.3	1371.0	1371.9	1365.3	1354.1	1343.8	1326.0	1310.0	1284.1	1256.9	1232.8
17.5°	1410.7	1413.0	1408.9	1400.9	1385.8	1373.7	1351.4	1329.6	1302.4	1275.2	1251.6
20°	1458.0	1460.2	1452.6	1441.0	1426.3	1405.8	1382.6	1351.4	1321.1	1287.7	1258.2
22.5°	1495.4	1494.1	1491.4	1480.3	1464.7	1445.5	1412.1	1377.7	1341.6	1300.2	1262.3
25°	1495.4	1497.2	1498.6	1492.8	1482.5	1466.5	1443.7	1407.6	1367.0	1316.2	1263.1
27.5°	1447.3	1455.3	1461.1	1461.1	1458.9	1458.4	1445.1	1422.3	1384.4	1333.1	1274.3
30°	1347.4	1358.1	1367.0	1380.9	1397.4	1408.1	1412.1	1403.2	1383.5	1340.3	1279.2
32.5°	1224.4	1223.5	1241.7	1264.0	1296.6	1319.3	1342.1	1355.4	1354.6	1328.7	1277.9
35°	1053.1	1065.6	1087.5	1118.7	1160.6	1198.1	1247.5	1273.4	1293.9	1293.0	1260.5
37.5°	886.4	888.2	912.7	955.5	992.5	1050.5	1115.1	1169.1	1218.6	1234.6	1223.9
40°	738.4	750.8	767.3	803.0	840.0	890.8	972.9	1045.1	1106.2	1153.5	1166.4
42.5°	624.2	630.9	647.0	678.2	711.2	771.8	832.0	909.1	986.3	1061.6	1100.4
45°	525.2	531.5	546.2	568.0	598.8	646.5	708.5	783.4	865.9	954.2	1009.4
47.5°	453.0	455.2	466.4	482.9	511.9	546.6	596.6	669.2	752.6	838.7	919.8
50°	395.9	399.5	407.1	420.0	441.4	474.0	513.6	568.5	645.6	734.8	817.3
52.5°	346.0	348.7	357.6	364.7	381.2	408.9	443.2	493.1	558.2	638.5	723.6
55°	305.0	307.6	312.1	320.1	333.1	351.8	381.2	420.9	476.6	544.4	624.2
57.5°	273.8	275.1	276.0	281.3	291.6	306.8	331.7	362.9	406.2	468.2	539.1
60°	244.3	243.9	247.5	251.5	257.7	267.1	285.4	313.4	352.2	402.6	468.6
62.5°	214.9	217.1	219.4	222.5	226.5	231.9	246.6	267.5	298.3	341.5	395.9
65°	190.8	191.3	193.1	193.5	198.4	203.8	214.9	229.2	254.6	289.8	334.8
67.5°	167.6	168.1	167.6	169.0	171.2	175.7	181.5	193.1	212.7	241.2	280.5
70°	146.2	144.9	143.1	145.4	147.6	149.8	153.8	162.7	177.5	198.9	231.4
72.5°	117.7	118.6	119.5	120.4	120.8	124.0	127.5	133.8	145.4	161.9	186.8
75°	91.0	91.0	92.3	93.2	97.2	98.1	102.1	106.6	115.9	127.5	147.1
77.5°	66.9	66.4	68.7	69.1	71.3	74.0	76.2	80.7	87.8	97.6	110.6
80°	48.2	48.6	48.2	48.2	49.5	51.3	54.4	56.6	61.5	67.8	77.1
82.5°	32.1	32.1	32.5	32.5	33.9	33.9	35.7	37.5	40.6	44.6	51.3
85°	18.7	18.7	18.3	18.3	18.7	18.7	20.5	21.8	22.3	25.0	27.2
87.5°	8.0	8.0	7.6	8.0	7.6	8.0	7.6	8.5	8.9	9.4	10.3
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°	1036.2	1036.2	1036.2	1036.2	1036.2	1036.2	1036.2	1036.2	1036.2	1036.2	1036.2
2.5°	1060.7	1059.4	1058.9	1054.0	1049.1	1043.3	1042.4	1044.2	1036.6	1027.3	1026.8
5°	1088.4	1083.5	1076.3	1067.0	1058.9	1048.2	1042.9	1040.7	1029.1	1015.7	1013.0
7.5°	1119.1	1107.1	1094.2	1079.9	1065.6	1050.0	1040.2	1034.4	1018.4	1001.9	995.2
10°	1148.6	1133.0	1113.3	1091.5	1071.4	1050.0	1035.3	1025.1	1005.4	984.9	974.7
12.5°	1182.4	1156.6	1128.9	1101.7	1077.2	1049.6	1027.3	1011.7	988.9	967.1	951.9
15°	1207.0	1169.5	1148.1	1109.3	1078.6	1045.1	1017.9	994.3	969.3	945.2	930.1
17.5°	1226.1	1196.7	1159.3	1116.5	1075.0	1038.9	1005.0	978.7	945.7	919.4	902.9
20°	1232.4	1202.5	1164.2	1117.3	1075.9	1029.5	989.4	957.7	922.5	890.4	867.7
22.5°	1230.2	1196.3	1157.0	1111.1	1069.2	1014.4	972.4	934.5	895.3	861.0	829.8
25°	1225.2	1186.0	1142.8	1099.5	1052.7	998.7	950.6	909.1	861.9	824.4	787.0
27.5°	1222.6	1171.3	1122.7	1075.9	1031.3	979.1	927.4	881.0	828.9	783.4	735.2
30°	1221.7	1160.6	1099.5	1045.1	1004.1	951.0	899.8	850.7	789.6	738.4	689.3
32.5°	1219.9	1151.7	1079.9	1014.8	968.0	920.3	865.9	817.3	748.2	694.7	642.1
35°	1207.9	1136.1	1057.2	983.1	928.3	878.8	830.2	779.4	707.6	650.1	599.7
37.5°	1182.0	1119.1	1034.9	951.5	885.9	835.6	790.5	735.2	665.7	602.8	556.0
40°	1143.7	1092.4	1010.8	920.3	843.1	787.9	740.1	691.1	619.3	559.1	516.8
42.5°	1093.7	1054.0	977.3	883.7	801.7	739.7	691.1	642.5	576.5	518.5	480.6
45°	1028.2	1003.7	936.3	844.0	761.5	689.8	637.1	594.8	533.7	480.6	445.9
47.5°	955.5	944.8	888.6	799.9	712.9	643.4	581.9	537.3	489.6	444.5	413.8
50°	867.7	876.1	832.0	750.4	666.1	594.8	534.6	486.4	445.0	410.2	383.0
52.5°	785.6	805.7	770.0	692.4	617.1	543.1	482.4	438.3	405.7	377.2	353.6
55°	694.2	723.2	701.8	634.9	560.0	494.5	433.8	394.1	366.1	344.2	324.1
57.5°	606.4	647.4	631.8	571.6	507.8	444.1	387.0	347.8	327.7	311.7	294.7
60°	528.4	565.8	563.6	512.3	448.5	391.9	345.1	309.9	292.0	281.3	266.6
62.5°	458.4	496.3	492.7	446.3	395.9	343.3	303.6	271.5	258.6	247.0	237.6
65°	387.0	419.6	421.3	387.0	338.4	296.1	262.2	236.8	225.2	218.0	211.3
67.5°	322.4	354.0	357.1	329.9	287.1	250.6	225.2	203.8	193.5	187.3	182.4
70°	265.7	291.6	297.4	274.7	238.5	210.0	188.6	172.1	165.4	159.2	157.4
72.5°	215.4	236.3	240.3	219.4	192.6	171.2	154.7	142.2	137.3	131.1	129.7
75°	171.2	185.9	186.4	172.6	152.5	136.0	122.6	115.0	109.7	105.2	104.3
77.5°	124.4	137.3	141.3	131.1	114.6	100.8	93.2	87.4	83.8	81.6	81.1
80°	90.1	98.5	100.3	91.4	81.6	73.1	67.8	62.9	60.6	58.4	57.5
82.5°	56.2	63.8	64.2	58.0	53.1	47.3	42.8	41.0	39.7	38.3	38.3
85°	30.3	34.3	33.9	31.2	29.0	25.9	24.1	23.2	22.3	21.4	21.4
87.5°	11.6	12.9	12.9	13.4	11.6	10.3	9.4	9.8	9.4	9.4	9.4
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°	1036.2	1036.2	1036.2	1036.2	1036.2	1036.2	1036.2	1036.2	1036.2	1036.2	1036.2
2.5°	1023.7	1021.9	1017.5	1010.3	1006.3	997.4	997.9	999.6	1000.1	998.7	998.3
5°	1005.4	1000.1	993.0	984.0	977.8	971.1	966.6	969.3	968.0	967.5	965.3
7.5°	985.4	978.2	969.3	960.4	953.3	944.4	940.8	937.7	934.1	933.6	931.9
10°	965.3	956.4	946.1	933.2	923.4	912.2	901.5	895.8	889.1	884.2	873.9
12.5°	941.7	926.5	914.9	901.5	883.7	865.9	853.8	837.3	828.4	819.5	807.5
15°	914.5	894.9	874.8	848.0	832.4	807.5	789.6	777.6	763.8	754.9	744.6
17.5°	875.7	855.2	829.8	799.4	771.8	746.4	733.5	717.8	712.1	692.4	690.7
20°	837.3	806.6	774.9	744.2	713.4	695.1	678.6	668.4	657.7	645.2	641.2
22.5°	794.1	754.0	720.5	692.0	663.9	643.8	635.8	624.2	614.0	606.8	600.1
25°	741.5	704.5	670.6	643.8	618.4	603.3	593.0	584.5	580.1	572.1	569.4
27.5°	692.9	655.9	628.7	603.7	583.2	569.8	560.9	553.3	547.5	546.2	543.1
30°	643.4	611.7	585.9	564.5	546.2	539.1	530.6	527.0	523.5	521.7	518.1
32.5°	598.8	570.7	548.0	527.5	516.8	510.1	505.6	502.0	499.4	498.5	497.6
35°	558.2	532.4	513.6	498.9	490.9	483.8	481.5	478.4	477.1	476.6	476.2
37.5°	522.6	498.5	484.2	471.3	465.5	458.8	459.2	457.9	457.0	454.3	456.1
40°	486.4	467.7	453.0	442.7	438.7	436.5	435.6	434.7	435.2	435.2	434.7
42.5°	453.4	437.0	427.6	417.8	416.0	414.2	414.2	412.9	413.3	415.6	416.4
45°	423.6	410.6	402.2	394.1	394.1	391.9	393.7	393.3	394.6	395.9	396.8
47.5°	393.7	382.1	375.9	371.9	370.1	370.1	371.4	373.6	374.5	375.0	375.9
50°	363.8	355.4	350.0	347.8	347.3	349.6	350.9	350.5	351.8	353.6	354.9
52.5°	337.5	329.9	326.4	325.5	325.5	327.3	327.7	329.1	329.9	329.9	331.7
55°	310.3	305.0	302.3	301.9	302.3	303.2	305.0	305.9	305.4	306.3	306.3
57.5°	283.1	279.1	277.8	279.1	279.1	280.9	280.9	280.9	280.5	282.2	281.8
60°	257.7	253.3	254.6	254.1	255.5	255.5	256.8	256.8	255.5	257.3	258.2
62.5°	232.3	231.4	229.6	229.6	231.0	231.4	230.1	231.4	231.9	233.2	234.1
65°	205.5	202.4	203.8	203.3	204.7	206.9	205.1	205.1	206.4	208.2	209.1
67.5°	180.1	177.5	178.8	179.2	179.2	180.1	178.8	179.7	181.5	183.7	185.0
70°	154.3	153.4	153.8	153.4	153.4	155.6	156.1	155.6	157.4	159.6	160.1
72.5°	128.0	128.9	128.0	128.9	129.7	128.4	128.9	130.2	132.0	133.3	135.5
75°	103.9	102.5	103.0	105.2	104.8	105.7	105.2	106.6	109.7	108.8	109.2
77.5°	80.3	79.8	80.3	80.7	81.1	82.5	82.0	84.3	84.7	85.2	86.1
80°	57.1	57.5	58.0	58.9	60.2	59.7	60.6	61.1	62.9	61.1	62.4
82.5°	38.8	38.3	39.2	39.2	40.6	41.5	40.1	40.1	40.1	39.7	39.7
85°	21.4	22.7	22.7	22.7	21.8	21.8	22.3	21.8	21.8	21.8	21.4
87.5°	9.4	9.4	8.9	8.5	8.9	8.5	8.5	8.0	7.6	7.6	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



TEST NUMBER: P242144

CATALOG NUMBER: S121DR-S685D940-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1036.2	1036.2	1036.2	1036.2
2.5°	995.6	997.9	995.2	993.4
5°	963.1	963.1	960.4	959.5
7.5°	926.5	927.0	922.1	918.5
10°	871.7	869.0	861.9	857.9
12.5°	798.6	802.6	791.9	783.8
15°	734.8	723.6	728.1	723.2
17.5°	681.3	677.7	672.8	673.3
20°	634.5	631.8	629.1	629.6
22.5°	597.5	595.2	594.3	591.2
25°	566.7	567.6	565.4	565.4
27.5°	541.3	539.9	538.6	536.8
30°	517.2	517.7	516.3	515.4
32.5°	495.8	496.3	495.4	494.0
35°	474.9	474.4	474.9	473.5
37.5°	455.7	455.2	455.7	457.5
40°	436.1	436.5	435.2	437.0
42.5°	416.9	417.3	417.3	416.4
45°	395.9	397.3	397.7	398.6
47.5°	375.4	377.7	376.8	377.2
50°	354.9	354.5	354.5	354.0
52.5°	332.2	330.8	330.4	330.8
55°	305.0	306.8	306.8	306.8
57.5°	282.7	283.1	284.5	282.7
60°	259.9	259.9	260.4	264.0
62.5°	234.5	235.0	235.9	236.3
65°	210.0	211.3	210.9	210.5
67.5°	185.9	185.9	186.4	185.5
70°	161.0	161.0	161.0	163.2
72.5°	135.1	135.1	135.5	136.4
75°	111.0	111.0	111.0	109.7
77.5°	84.7	85.2	85.2	85.6
80°	61.5	61.1	61.1	60.6
82.5°	38.8	39.2	38.8	38.3
85°	21.4	21.8	20.5	20.5
87.5°	7.6	7.6	7.1	8.0
90°	0.0	0.0	0.0	0.0

(END OF REPORT)