

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: P242119

Luminaire Tested: **S121DR-S685D830-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242119
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-S685D830-X4F0-XX-UDD-A-W
Description: DEFINE 1 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER
STANDARD LIGHT ENGINE
Light Source: (92) 3000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2698.9 lumens
Efficiency: N/A
Efficacy: 102.6 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

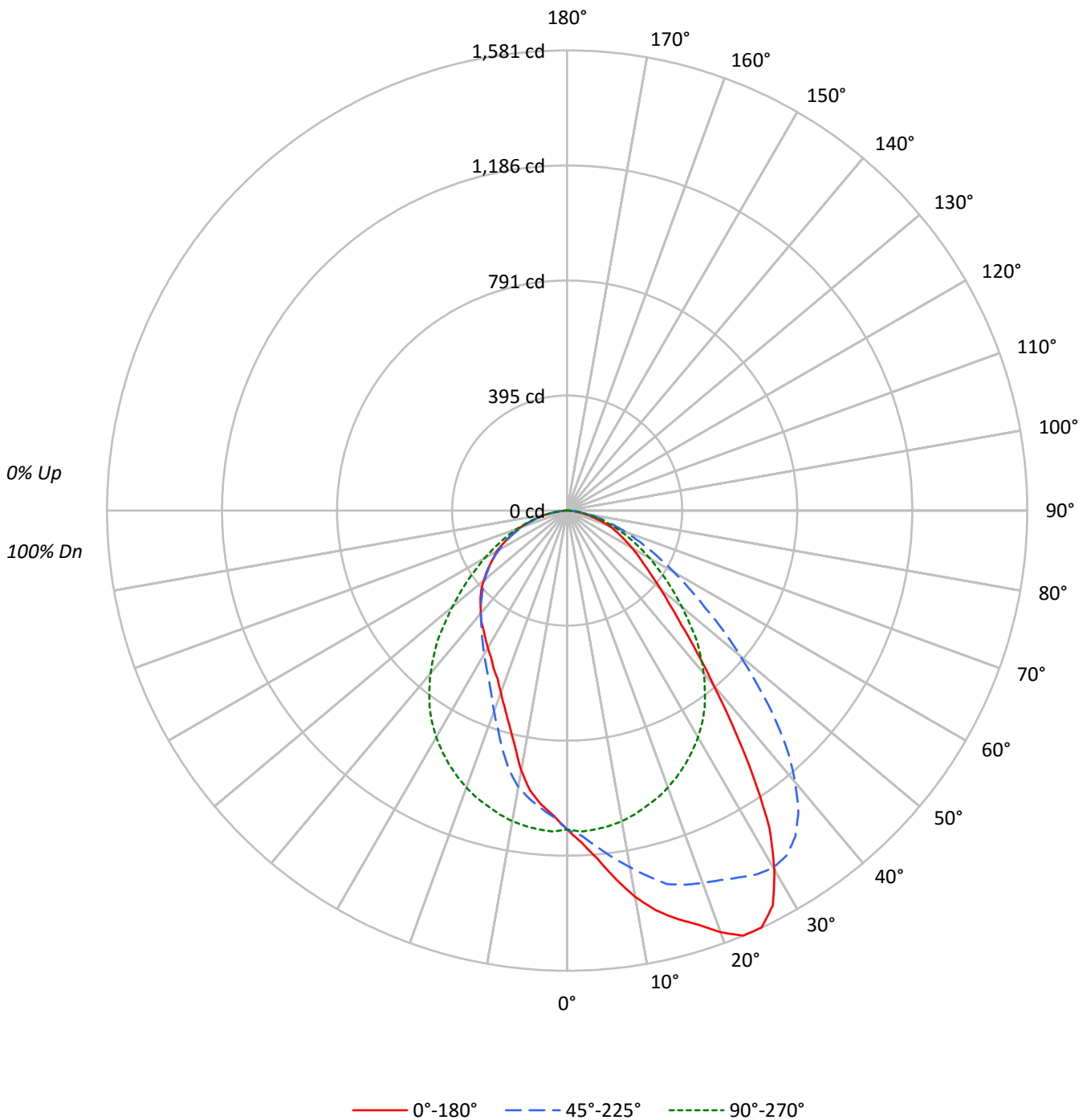
Input Watts (W): 26.3
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	32453	32453	32453
5°	35715	32717	30165
10°	40554	32599	27283
15°	44528	32239	23448
20°	48593	31919	20984
25°	51677	31418	19537
30°	48727	30765	18639
35°	40266	29798	18104
40°	30185	28255	17866
45°	23264	26344	17654
50°	19291	23702	17249
55°	16654	21521	16747
60°	15307	19407	16533
65°	14141	17548	15592
70°	13393	15758	14944
75°	11002	13921	13268
80°	8685	11347	10937
85°	6731	8329	7377



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	105.3	3.9
10°-20°	307.2	11.4
20°-30°	470.4	17.4
30°-40°	536.8	19.9
40°-50°	481.6	17.8
50°-60°	377.8	14.0
60°-70°	257.0	9.5
70°-80°	132.4	4.9
80°-90°	30.5	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°	882.9	32.7
0°-40°	1419.7	52.6
0°-60°	2279.1	84.4
0°-90°	2698.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2698.9	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1095	1095	1095	1095	1095	
5°	1201	1158	1100	1026	1014	119
15°	1452	1329	1051	854	764	413
25°	1581	1391	961	638	598	713
35°	1113	1367	824	511	500	690
45°	555	1009	629	414	421	440
55°	322	575	417	320	324	294
65°	202	306	250	219	222	201
75°	96	135	122	112	116	104
85°	20	26	24	23	22	24
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°	1095.3	1095.3	1095.3	1095.3	1095.3	1095.3	1095.3	1095.3	1095.3	1095.3	1095.3
2.5°	1141.5	1141.5	1143.3	1142.9	1141.0	1137.7	1134.9	1131.6	1123.1	1117.4	1122.6
5°	1200.8	1203.2	1205.5	1205.1	1198.0	1191.9	1182.9	1180.6	1165.5	1158.4	1156.1
7.5°	1276.2	1275.8	1276.7	1268.7	1262.6	1256.4	1244.7	1230.1	1212.1	1202.2	1192.8
10°	1347.9	1352.1	1350.2	1340.3	1330.9	1324.3	1305.5	1287.6	1265.4	1244.2	1232.4
12.5°	1406.3	1404.0	1412.0	1402.5	1391.2	1379.0	1360.6	1344.6	1315.8	1287.1	1263.0
15°	1451.6	1449.2	1450.1	1443.1	1431.3	1420.5	1401.6	1384.6	1357.3	1328.6	1303.1
17.5°	1491.1	1493.5	1489.3	1480.8	1464.8	1452.0	1428.5	1405.4	1376.6	1347.9	1322.9
20°	1541.1	1543.5	1535.4	1523.2	1507.6	1486.0	1461.5	1428.5	1396.4	1361.1	1330.0
22.5°	1580.7	1579.3	1576.5	1564.7	1548.2	1527.9	1492.6	1456.3	1418.1	1374.3	1334.2
25°	1580.7	1582.6	1584.0	1577.9	1567.0	1550.1	1526.0	1487.8	1445.0	1391.2	1335.2
27.5°	1529.8	1538.3	1544.4	1544.4	1542.0	1541.6	1527.4	1503.4	1463.3	1409.1	1346.9
30°	1424.2	1435.5	1445.0	1459.6	1477.0	1488.3	1492.6	1483.1	1462.4	1416.7	1352.1
32.5°	1294.2	1293.2	1312.5	1336.1	1370.5	1394.5	1418.6	1432.7	1431.8	1404.4	1350.7
35°	1113.2	1126.4	1149.5	1182.5	1226.8	1266.3	1318.7	1346.0	1367.7	1366.7	1332.3
37.5°	936.9	938.8	964.7	1010.0	1049.1	1110.3	1178.7	1235.7	1288.0	1305.0	1293.7
40°	780.4	793.6	811.1	848.8	887.9	941.6	1028.3	1104.7	1169.3	1219.2	1232.9
42.5°	659.8	666.9	683.8	716.8	751.7	815.8	879.4	961.0	1042.5	1122.1	1163.1
45°	555.2	561.8	577.3	600.4	632.9	683.4	748.9	828.0	915.2	1008.6	1067.0
47.5°	478.8	481.2	493.0	510.4	541.0	577.8	630.6	707.4	795.5	886.5	972.3
50°	418.5	422.3	430.3	444.0	466.6	501.0	542.9	600.9	682.4	776.7	863.9
52.5°	365.7	368.5	378.0	385.5	402.9	432.2	468.5	521.2	590.0	674.9	764.9
55°	322.4	325.2	329.9	338.4	352.1	371.8	402.9	444.9	503.8	575.4	659.8
57.5°	289.4	290.8	291.7	297.4	308.2	324.2	350.6	383.6	429.3	494.9	569.8
60°	258.3	257.8	261.6	265.8	272.4	282.3	301.6	331.3	372.3	425.6	495.3
62.5°	227.2	229.5	231.9	235.2	239.4	245.1	260.6	282.8	315.3	361.0	418.5
65°	201.7	202.2	204.1	204.5	209.7	215.4	227.2	242.2	269.1	306.3	353.9
67.5°	177.2	177.7	177.2	178.6	181.0	185.7	191.8	204.1	224.8	255.0	296.4
70°	154.6	153.2	151.3	153.6	156.0	158.4	162.6	172.0	187.6	210.2	244.6
72.5°	124.4	125.4	126.3	127.2	127.7	131.0	134.8	141.4	153.6	171.1	197.5
75°	96.1	96.1	97.6	98.5	102.7	103.7	107.9	112.6	122.5	134.8	155.5
77.5°	70.7	70.2	72.6	73.0	75.4	78.2	80.6	85.3	92.8	103.2	116.9
80°	50.9	51.4	50.9	50.9	52.3	54.2	57.5	59.9	65.0	71.6	81.5
82.5°	33.9	33.9	34.4	34.4	35.8	35.8	37.7	39.6	42.9	47.1	54.2
85°	19.8	19.8	19.3	19.3	19.8	19.8	21.7	23.1	23.6	26.4	28.7
87.5°	8.5	8.5	8.0	8.5	8.0	8.5	8.0	9.0	9.4	9.9	10.8
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°	1095.3	1095.3	1095.3	1095.3	1095.3	1095.3	1095.3	1095.3	1095.3	1095.3	1095.3
2.5°	1121.2	1119.8	1119.3	1114.1	1108.9	1102.8	1101.9	1103.8	1095.7	1085.8	1085.4
5°	1150.4	1145.2	1137.7	1127.8	1119.3	1108.0	1102.3	1100.0	1087.7	1073.6	1070.8
7.5°	1182.9	1170.2	1156.5	1141.5	1126.4	1109.9	1099.5	1093.4	1076.4	1059.0	1051.9
10°	1214.0	1197.5	1176.8	1153.7	1132.5	1109.9	1094.3	1083.5	1062.7	1041.1	1030.2
12.5°	1249.8	1222.5	1193.3	1164.5	1138.6	1109.4	1085.8	1069.3	1045.3	1022.2	1006.2
15°	1275.8	1236.2	1213.6	1172.6	1140.0	1104.7	1075.9	1051.0	1024.6	999.1	983.1
17.5°	1296.0	1264.9	1225.3	1180.1	1136.3	1098.1	1062.3	1034.5	999.6	971.8	954.4
20°	1302.6	1271.1	1230.5	1181.0	1137.2	1088.2	1045.8	1012.3	975.1	941.2	917.1
22.5°	1300.3	1264.5	1223.0	1174.4	1130.1	1072.2	1027.9	987.8	946.3	910.1	877.1
25°	1295.1	1253.6	1207.9	1162.2	1112.7	1055.7	1004.8	961.0	911.0	871.4	831.8
27.5°	1292.3	1238.1	1186.7	1137.2	1090.1	1034.9	980.3	931.3	876.1	828.0	777.2
30°	1291.3	1226.8	1162.2	1104.7	1061.3	1005.3	951.1	899.2	834.6	780.4	728.6
32.5°	1289.4	1217.3	1141.5	1072.6	1023.2	972.7	915.2	863.9	790.8	734.3	678.7
35°	1276.7	1200.8	1117.4	1039.2	981.2	928.9	877.5	823.8	747.9	687.1	633.9
37.5°	1249.4	1182.9	1093.9	1005.7	936.4	883.2	835.6	777.2	703.6	637.2	587.7
40°	1208.8	1154.7	1068.4	972.7	891.2	832.8	782.3	730.5	654.6	591.0	546.2
42.5°	1156.1	1114.1	1033.1	934.1	847.4	781.9	730.5	679.1	609.4	548.1	508.0
45°	1086.8	1060.9	989.7	892.1	805.0	729.1	673.5	628.7	564.1	508.0	471.3
47.5°	1010.0	998.7	939.3	845.5	753.6	680.1	615.0	567.9	517.5	469.9	437.4
50°	917.1	926.1	879.4	793.2	704.1	628.7	565.1	514.2	470.3	433.6	404.8
52.5°	830.4	851.6	813.9	731.9	652.3	574.0	509.9	463.3	428.9	398.7	373.7
55°	733.8	764.4	741.8	671.1	591.9	522.7	458.6	416.6	386.9	363.8	342.6
57.5°	640.9	684.3	667.8	604.2	536.8	469.4	409.1	367.6	346.4	329.4	311.5
60°	558.5	598.1	595.7	541.5	474.1	414.3	364.8	327.5	308.7	297.4	281.8
62.5°	484.5	524.5	520.8	471.8	418.5	362.9	320.9	287.0	273.3	261.1	251.2
65°	409.1	443.5	445.4	409.1	357.7	312.9	277.1	250.3	238.0	230.5	223.4
67.5°	340.7	374.2	377.5	348.8	303.5	264.9	238.0	215.4	204.5	197.9	192.8
70°	280.9	308.2	314.3	290.3	252.1	222.0	199.4	181.9	174.8	168.2	166.4
72.5°	227.6	249.8	254.0	231.9	203.6	181.0	163.5	150.3	145.2	138.6	137.1
75°	181.0	196.5	197.0	182.4	161.2	143.7	129.6	121.6	115.9	111.2	110.3
77.5°	131.5	145.2	149.4	138.6	121.1	106.5	98.5	92.4	88.6	86.2	85.8
80°	95.2	104.2	106.0	96.6	86.2	77.3	71.6	66.5	64.1	61.7	60.8
82.5°	59.4	67.4	67.9	61.3	56.1	50.0	45.2	43.4	41.9	40.5	40.5
85°	32.0	36.3	35.8	33.0	30.6	27.3	25.4	24.5	23.6	22.6	22.6
87.5°	12.3	13.7	13.7	14.1	12.3	10.8	9.9	10.4	9.9	9.9	9.9
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°	1095.3	1095.3	1095.3	1095.3	1095.3	1095.3	1095.3	1095.3	1095.3	1095.3	1095.3
2.5°	1082.1	1080.2	1075.5	1067.9	1063.7	1054.3	1054.7	1056.6	1057.1	1055.7	1055.2
5°	1062.7	1057.1	1049.6	1040.1	1033.5	1026.5	1021.7	1024.6	1023.2	1022.7	1020.3
7.5°	1041.5	1034.0	1024.6	1015.1	1007.6	998.2	994.4	991.1	987.3	986.9	985.0
10°	1020.3	1010.9	1000.1	986.4	976.0	964.3	952.9	946.8	939.7	934.6	923.7
12.5°	995.4	979.3	967.1	952.9	934.1	915.2	902.5	885.1	875.6	866.2	853.5
15°	966.6	945.9	924.7	896.4	879.9	853.5	834.6	821.9	807.3	797.9	787.0
17.5°	925.6	903.9	877.1	845.0	815.8	788.9	775.3	758.8	752.6	731.9	730.0
20°	885.1	852.6	819.1	786.6	754.1	734.7	717.3	706.5	695.1	682.0	677.7
22.5°	839.4	796.9	761.6	731.4	701.7	680.5	672.1	659.8	649.0	641.4	634.4
25°	783.7	744.6	708.8	680.5	653.7	637.6	626.8	617.9	613.1	604.7	601.8
27.5°	732.4	693.3	664.5	638.1	616.4	602.3	592.9	584.9	578.7	577.3	574.0
30°	680.1	646.6	619.3	596.6	577.3	569.8	560.8	557.1	553.3	551.4	547.6
32.5°	632.9	603.2	579.2	557.5	546.2	539.2	534.4	530.7	527.8	526.9	526.0
35°	590.0	562.7	542.9	527.4	518.9	511.3	509.0	505.7	504.3	503.8	503.3
37.5°	552.3	526.9	511.8	498.1	492.0	485.0	485.4	484.0	483.1	480.2	482.1
40°	514.2	494.4	478.8	468.0	463.7	461.4	460.4	459.5	460.0	460.0	459.5
42.5°	479.3	461.9	452.0	441.6	439.7	437.8	437.8	436.4	436.9	439.2	440.2
45°	447.7	434.1	425.1	416.6	416.6	414.3	416.1	415.7	417.1	418.5	419.4
47.5°	416.1	403.9	397.3	393.1	391.2	391.2	392.6	394.9	395.9	396.4	397.3
50°	384.6	375.6	370.0	367.6	367.1	369.5	370.9	370.4	371.8	373.7	375.1
52.5°	356.8	348.8	345.0	344.0	344.0	345.9	346.4	347.8	348.8	348.8	350.6
55°	328.0	322.4	319.5	319.1	319.5	320.5	322.4	323.3	322.8	323.8	323.8
57.5°	299.3	295.0	293.6	295.0	295.0	296.9	296.9	296.9	296.4	298.3	297.9
60°	272.4	267.7	269.1	268.6	270.0	270.0	271.5	271.5	270.0	271.9	272.9
62.5°	245.5	244.6	242.7	242.7	244.1	244.6	243.2	244.6	245.1	246.5	247.4
65°	217.3	214.0	215.4	214.9	216.3	218.7	216.8	216.8	218.2	220.1	221.0
67.5°	190.4	187.6	189.0	189.5	189.5	190.4	189.0	189.9	191.8	194.2	195.6
70°	163.1	162.1	162.6	162.1	162.1	164.5	165.0	164.5	166.4	168.7	169.2
72.5°	135.3	136.2	135.3	136.2	137.1	135.7	136.2	137.6	139.5	140.9	143.3
75°	109.8	108.4	108.9	111.2	110.8	111.7	111.2	112.6	115.9	115.0	115.5
77.5°	84.8	84.4	84.8	85.3	85.8	87.2	86.7	89.1	89.5	90.0	91.0
80°	60.3	60.8	61.3	62.2	63.6	63.2	64.1	64.6	66.5	64.6	66.0
82.5°	41.0	40.5	41.5	41.5	42.9	43.8	42.4	42.4	42.4	41.9	41.9
85°	22.6	24.0	24.0	24.0	23.1	23.1	23.6	23.1	23.1	23.1	22.6
87.5°	9.9	9.9	9.4	9.0	9.4	9.0	9.0	8.5	8.0	8.0	7.5
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: P242119

CATALOG NUMBER: S121DR-S685D830-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1095.3	1095.3	1095.3	1095.3
2.5°	1052.4	1054.7	1051.9	1050.0
5°	1018.0	1018.0	1015.1	1014.2
7.5°	979.3	979.8	974.6	970.8
10°	921.4	918.5	911.0	906.8
12.5°	844.1	848.3	837.0	828.5
15°	776.7	764.9	769.6	764.4
17.5°	720.1	716.4	711.2	711.6
20°	670.6	667.8	665.0	665.5
22.5°	631.5	629.2	628.2	624.9
25°	599.0	599.9	597.6	597.6
27.5°	572.1	570.7	569.3	567.4
30°	546.7	547.2	545.7	544.8
32.5°	524.1	524.5	523.6	522.2
35°	501.9	501.4	501.9	500.5
37.5°	481.7	481.2	481.7	483.5
40°	460.9	461.4	460.0	461.9
42.5°	440.7	441.1	441.1	440.2
45°	418.5	419.9	420.4	421.3
47.5°	396.8	399.2	398.2	398.7
50°	375.1	374.7	374.7	374.2
52.5°	351.1	349.7	349.2	349.7
55°	322.4	324.2	324.2	324.2
57.5°	298.8	299.3	300.7	298.8
60°	274.8	274.8	275.2	279.0
62.5°	247.9	248.4	249.3	249.8
65°	222.0	223.4	222.9	222.4
67.5°	196.5	196.5	197.0	196.1
70°	170.1	170.1	170.1	172.5
72.5°	142.8	142.8	143.3	144.2
75°	117.4	117.4	117.4	115.9
77.5°	89.5	90.0	90.0	90.5
80°	65.0	64.6	64.6	64.1
82.5°	41.0	41.5	41.0	40.5
85°	22.6	23.1	21.7	21.7
87.5°	8.0	8.0	7.5	8.5
90°	0.0	0.0	0.0	0.0

(END OF REPORT)