

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: P242129

Luminaire Tested: **S121DR-S685D840-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242129
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-S685D840-X4F0-XX-UDD-A-W
Description: DEFINE 1 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER
STANDARD LIGHT ENGINE
Light Source: (92) 4000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2891.7 lumens
Efficiency: N/A
Efficacy: 110.0 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

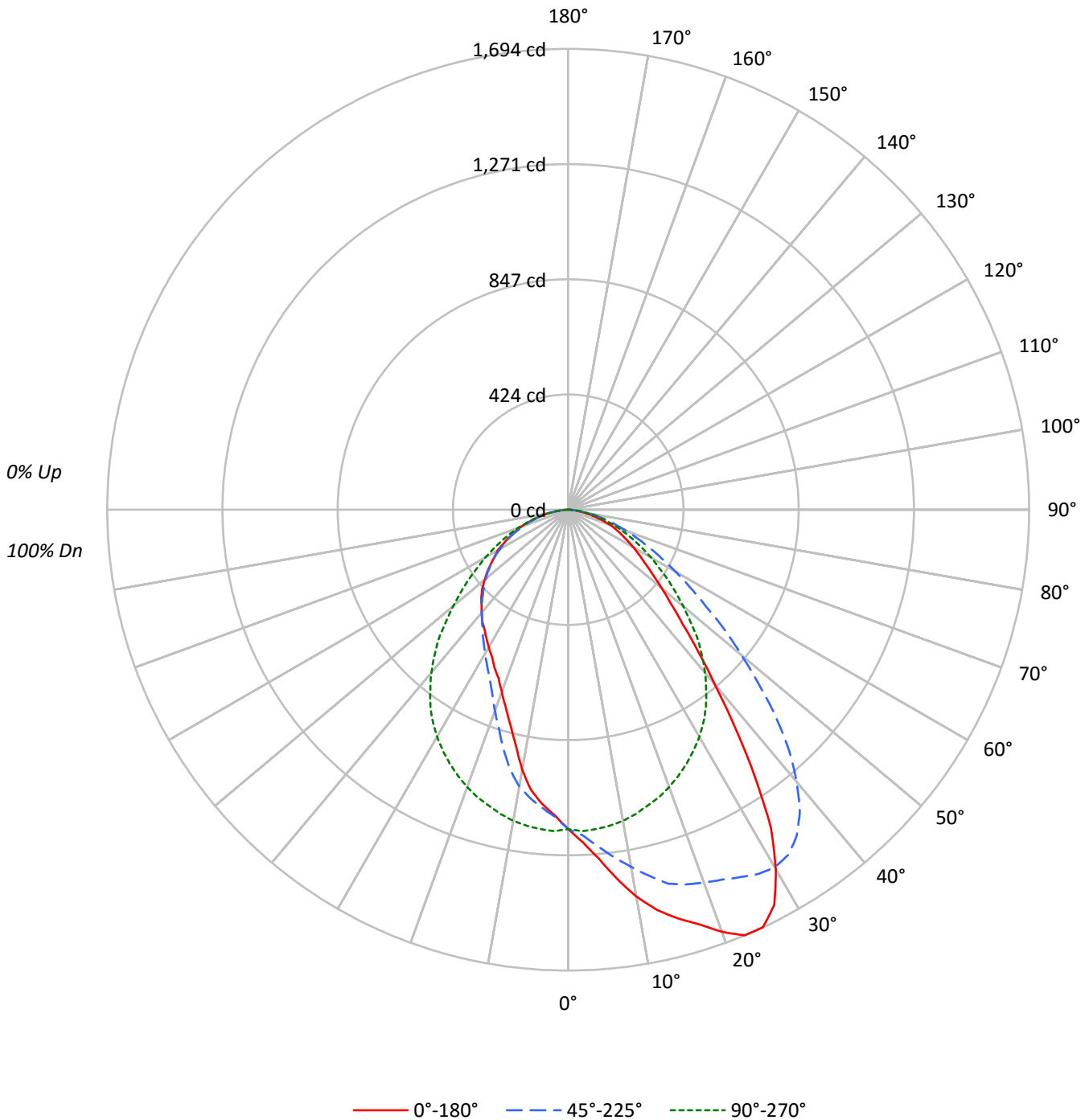
Input Watts (W): 26.3
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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°	34770	34770	34770
5°	38267	35052	32319
10°	43451	34928	29229
15°	47706	34540	25123
20°	52064	34199	22482
25°	55368	33660	20933
30°	52210	32961	19970
35°	43141	31925	19399
40°	32343	30274	19138
45°	24924	28226	18915
50°	20669	25394	18480
55°	17843	23060	17946
60°	16397	20794	17713
65°	15151	18796	16707
70°	14346	16884	16009
75°	11791	14917	14218
80°	9299	12149	11722
85°	7207	8941	7887



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	112.8	3.9
10°-20°	329.1	11.4
20°-30°	504.0	17.4
30°-40°	575.1	19.9
40°-50°	516.0	17.8
50°-60°	404.8	14.0
60°-70°	275.4	9.5
70°-80°	141.8	4.9
80°-90°	32.6	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°	946.0	32.7
0°-40°	1521.1	52.6
0°-60°	2441.9	84.4
0°-90°	2891.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2891.7	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1174	1174	1174	1174	1174	
5°	1287	1241	1178	1100	1087	128
15°	1555	1423	1126	914	819	443
25°	1694	1491	1030	683	640	764
35°	1193	1464	883	548	536	739
45°	595	1081	674	444	451	472
55°	345	616	446	343	347	315
65°	216	328	268	234	238	215
75°	103	144	130	120	124	111
85°	21	28	26	25	23	26
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°	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5
2.5°	1223.0	1223.0	1225.0	1224.5	1222.5	1218.9	1215.9	1212.4	1203.3	1197.2	1202.8
5°	1286.6	1289.1	1291.7	1291.2	1283.6	1277.0	1267.4	1264.9	1248.7	1241.2	1238.6
7.5°	1367.4	1366.9	1367.9	1359.3	1352.8	1346.2	1333.6	1317.9	1298.7	1288.1	1278.0
10°	1444.2	1448.7	1446.7	1436.1	1426.0	1418.9	1398.7	1379.5	1355.8	1333.1	1320.4
12.5°	1506.8	1504.2	1512.8	1502.7	1490.6	1477.5	1457.8	1440.6	1409.8	1379.0	1353.3
15°	1555.2	1552.7	1553.7	1546.2	1533.5	1521.9	1501.7	1483.5	1454.3	1423.4	1396.2
17.5°	1597.7	1600.2	1595.6	1586.5	1569.4	1555.7	1530.5	1505.8	1475.0	1444.2	1417.4
20°	1651.2	1653.7	1645.1	1632.0	1615.3	1592.1	1565.8	1530.5	1496.2	1458.3	1425.0
22.5°	1693.6	1692.1	1689.1	1676.4	1658.8	1637.0	1599.2	1560.3	1519.4	1472.4	1429.5
25°	1693.6	1695.6	1697.1	1690.6	1679.0	1660.8	1635.0	1594.1	1548.2	1490.6	1430.5
27.5°	1639.1	1648.2	1654.7	1654.7	1652.2	1651.7	1636.5	1610.8	1567.9	1509.8	1443.1
30°	1526.0	1538.1	1548.2	1563.8	1582.5	1594.6	1599.2	1589.1	1566.9	1517.9	1448.7
32.5°	1386.6	1385.6	1406.3	1431.5	1468.4	1494.1	1519.9	1535.0	1534.0	1504.7	1447.2
35°	1192.7	1206.8	1231.6	1266.9	1314.4	1356.8	1412.8	1442.1	1465.4	1464.3	1427.5
37.5°	1003.8	1005.9	1033.6	1082.1	1124.0	1189.7	1262.9	1324.0	1380.0	1398.2	1386.1
40°	836.2	850.3	869.0	909.4	951.3	1008.9	1101.8	1183.6	1252.8	1306.3	1320.9
42.5°	706.9	714.5	732.7	768.0	805.4	874.1	942.2	1029.6	1116.9	1202.3	1246.2
45°	594.8	601.9	618.6	643.3	678.1	732.2	802.4	887.2	980.6	1080.6	1143.2
47.5°	513.0	515.6	528.2	546.9	579.7	619.1	675.6	757.9	852.4	949.8	1041.7
50°	448.4	452.4	461.0	475.7	499.9	536.8	581.7	643.8	731.2	832.2	925.6
52.5°	391.8	394.9	405.0	413.0	431.7	463.0	501.9	558.5	632.2	723.1	819.5
55°	345.4	348.4	353.5	362.6	377.2	398.4	431.7	476.7	539.8	616.5	706.9
57.5°	310.0	311.6	312.6	318.6	330.2	347.4	375.7	411.0	460.0	530.2	610.5
60°	276.7	276.2	280.2	284.8	291.9	302.5	323.2	355.0	398.9	456.0	530.7
62.5°	243.4	245.9	248.4	252.0	256.5	262.6	279.2	303.0	337.8	386.8	448.4
65°	216.1	216.6	218.6	219.1	224.7	230.8	243.4	259.5	288.3	328.2	379.2
67.5°	189.9	190.4	189.9	191.4	193.9	198.9	205.5	218.6	240.9	273.2	317.6
70°	165.6	164.1	162.1	164.6	167.1	169.7	174.2	184.3	201.0	225.2	262.1
72.5°	133.3	134.3	135.3	136.3	136.8	140.4	144.4	151.5	164.6	183.3	211.6
75°	103.0	103.0	104.5	105.5	110.1	111.1	115.6	120.7	131.3	144.4	166.6
77.5°	75.7	75.2	77.8	78.3	80.8	83.8	86.3	91.4	99.5	110.6	125.2
80°	54.5	55.0	54.5	54.5	56.0	58.1	61.6	64.1	69.7	76.8	87.4
82.5°	36.4	36.4	36.9	36.9	38.4	38.4	40.4	42.4	46.0	50.5	58.1
85°	21.2	21.2	20.7	20.7	21.2	21.2	23.2	24.7	25.2	28.3	30.8
87.5°	9.1	9.1	8.6	9.1	8.6	9.1	8.6	9.6	10.1	10.6	11.6
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°	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5
2.5°	1201.3	1199.8	1199.3	1193.7	1188.1	1181.6	1180.6	1182.6	1174.0	1163.4	1162.9
5°	1232.6	1227.0	1218.9	1208.3	1199.3	1187.1	1181.1	1178.5	1165.4	1150.3	1147.2
7.5°	1267.4	1253.8	1239.1	1223.0	1206.8	1189.2	1178.0	1171.5	1153.3	1134.6	1127.0
10°	1300.7	1283.1	1260.9	1236.1	1213.4	1189.2	1172.5	1160.9	1138.7	1115.4	1103.8
12.5°	1339.1	1309.8	1278.5	1247.7	1220.0	1188.6	1163.4	1145.7	1120.0	1095.2	1078.1
15°	1366.9	1324.5	1300.2	1256.3	1221.5	1183.6	1152.8	1126.0	1097.8	1070.5	1053.3
17.5°	1388.6	1355.3	1312.9	1264.4	1217.4	1176.5	1138.2	1108.4	1071.0	1041.2	1022.5
20°	1395.7	1361.8	1318.4	1265.4	1218.4	1165.9	1120.5	1084.6	1044.7	1008.4	982.6
22.5°	1393.2	1354.8	1310.3	1258.3	1210.9	1148.8	1101.3	1058.4	1013.9	975.1	939.7
25°	1387.6	1343.2	1294.2	1245.2	1192.2	1131.1	1076.5	1029.6	976.1	933.6	891.2
27.5°	1384.6	1326.5	1271.5	1218.4	1167.9	1108.9	1050.3	997.8	938.7	887.2	832.7
30°	1383.6	1314.4	1245.2	1183.6	1137.1	1077.1	1019.0	963.4	894.3	836.2	780.6
32.5°	1381.5	1304.3	1223.0	1149.3	1096.2	1042.2	980.6	925.6	847.3	786.7	727.1
35°	1367.9	1286.6	1197.2	1113.4	1051.3	995.3	940.2	882.6	801.4	736.2	679.2
37.5°	1338.6	1267.4	1172.0	1077.6	1003.3	946.3	895.3	832.7	753.9	682.7	629.7
40°	1295.2	1237.1	1144.7	1042.2	954.9	892.2	838.2	782.7	701.4	633.2	585.2
42.5°	1238.6	1193.7	1106.8	1000.8	907.9	837.7	782.7	727.6	652.9	587.3	544.3
45°	1164.4	1136.6	1060.4	955.9	862.5	781.2	721.6	673.6	604.4	544.3	504.9
47.5°	1082.1	1070.0	1006.4	905.9	807.4	728.6	659.0	608.5	554.4	503.4	468.6
50°	982.6	992.2	942.2	849.8	754.4	673.6	605.4	550.9	503.9	464.6	433.8
52.5°	889.7	912.4	872.0	784.2	698.8	615.0	546.4	496.4	459.5	427.2	400.4
55°	786.2	819.0	794.8	719.0	634.2	560.0	491.3	446.4	414.6	389.8	367.1
57.5°	686.7	733.2	715.5	647.3	575.1	502.9	438.3	393.9	371.1	353.0	333.8
60°	598.4	640.8	638.3	580.2	508.0	443.8	390.8	350.9	330.7	318.6	302.0
62.5°	519.1	562.0	558.0	505.5	448.4	388.8	343.9	307.5	292.9	279.7	269.1
65°	438.3	475.2	477.2	438.3	383.3	335.3	296.9	268.1	255.0	246.9	239.3
67.5°	365.1	400.9	404.5	373.7	325.2	283.8	255.0	230.8	219.1	212.1	206.5
70°	300.9	330.2	336.8	311.0	270.1	237.8	213.6	194.9	187.3	180.3	178.2
72.5°	243.9	267.6	272.2	248.4	218.1	193.9	175.2	161.1	155.5	148.5	146.9
75°	193.9	210.6	211.1	195.4	172.7	154.0	138.9	130.3	124.2	119.2	118.2
77.5°	140.9	155.5	160.1	148.5	129.8	114.1	105.5	99.0	94.9	92.4	91.9
80°	102.0	111.6	113.6	103.5	92.4	82.8	76.8	71.2	68.7	66.1	65.1
82.5°	63.6	72.2	72.7	65.6	60.1	53.5	48.5	46.5	44.9	43.4	43.4
85°	34.3	38.9	38.4	35.3	32.8	29.3	27.3	26.3	25.2	24.2	24.2
87.5°	13.1	14.6	14.6	15.1	13.1	11.6	10.6	11.1	10.6	10.6	10.6
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°	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5
2.5°	1159.4	1157.3	1152.3	1144.2	1139.7	1129.6	1130.1	1132.1	1132.6	1131.1	1130.6
5°	1138.7	1132.6	1124.5	1114.4	1107.4	1099.8	1094.7	1097.8	1096.2	1095.7	1093.2
7.5°	1115.9	1107.9	1097.8	1087.7	1079.6	1069.5	1065.4	1061.9	1057.9	1057.4	1055.3
10°	1093.2	1083.1	1071.5	1056.9	1045.7	1033.1	1021.0	1014.4	1006.9	1001.3	989.7
12.5°	1066.5	1049.3	1036.2	1021.0	1000.8	980.6	967.0	948.3	938.2	928.1	914.5
15°	1035.6	1013.4	990.7	960.4	942.7	914.5	894.3	880.6	865.0	854.9	843.3
17.5°	991.7	968.5	939.7	905.4	874.1	845.3	830.6	813.0	806.4	784.2	782.2
20°	948.3	913.5	877.6	842.8	807.9	787.2	768.5	756.9	744.8	730.7	726.1
22.5°	899.3	853.9	816.0	783.7	751.9	729.1	720.1	706.9	695.3	687.2	679.7
25°	839.7	797.8	759.4	729.1	700.4	683.2	671.6	662.0	656.9	647.8	644.8
27.5°	784.7	742.8	712.0	683.7	660.5	645.3	635.2	626.6	620.1	618.6	615.0
30°	728.6	692.8	663.5	639.3	618.6	610.5	600.9	596.8	592.8	590.8	586.7
32.5°	678.1	646.3	620.6	597.4	585.2	577.7	572.6	568.6	565.5	564.5	563.5
35°	632.2	602.9	581.7	565.0	555.9	547.9	545.3	541.8	540.3	539.8	539.3
37.5°	591.8	564.5	548.4	533.7	527.2	519.6	520.1	518.6	517.6	514.5	516.6
40°	550.9	529.7	513.0	501.4	496.9	494.3	493.3	492.3	492.8	492.8	492.3
42.5°	513.5	494.8	484.2	473.1	471.1	469.1	469.1	467.6	468.1	470.6	471.6
45°	479.7	465.1	455.5	446.4	446.4	443.8	445.9	445.4	446.9	448.4	449.4
47.5°	445.9	432.7	425.7	421.1	419.1	419.1	420.6	423.1	424.2	424.7	425.7
50°	412.0	402.4	396.4	393.9	393.4	395.9	397.4	396.9	398.4	400.4	401.9
52.5°	382.2	373.7	369.6	368.6	368.6	370.6	371.1	372.7	373.7	373.7	375.7
55°	351.4	345.4	342.4	341.8	342.4	343.4	345.4	346.4	345.9	346.9	346.9
57.5°	320.6	316.1	314.6	316.1	316.1	318.1	318.1	318.1	317.6	319.6	319.1
60°	291.9	286.8	288.3	287.8	289.3	289.3	290.9	290.9	289.3	291.4	292.4
62.5°	263.1	262.1	260.0	260.0	261.6	262.1	260.6	262.1	262.6	264.1	265.1
65°	232.8	229.2	230.8	230.3	231.8	234.3	232.3	232.3	233.8	235.8	236.8
67.5°	204.0	201.0	202.5	203.0	203.0	204.0	202.5	203.5	205.5	208.0	209.6
70°	174.7	173.7	174.2	173.7	173.7	176.2	176.7	176.2	178.2	180.8	181.3
72.5°	144.9	145.9	144.9	145.9	146.9	145.4	145.9	147.4	149.5	151.0	153.5
75°	117.7	116.1	116.6	119.2	118.7	119.7	119.2	120.7	124.2	123.2	123.7
77.5°	90.9	90.4	90.9	91.4	91.9	93.4	92.9	95.4	95.9	96.4	97.5
80°	64.6	65.1	65.6	66.7	68.2	67.7	68.7	69.2	71.2	69.2	70.7
82.5°	43.9	43.4	44.4	44.4	46.0	47.0	45.4	45.4	45.4	44.9	44.9
85°	24.2	25.8	25.8	25.8	24.7	24.7	25.2	24.7	24.7	24.7	24.2
87.5°	10.6	10.6	10.1	9.6	10.1	9.6	9.6	9.1	8.6	8.6	8.1
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: P242129

CATALOG NUMBER: S121DR-S685D840-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1173.5	1173.5	1173.5	1173.5
2.5°	1127.5	1130.1	1127.0	1125.0
5°	1090.7	1090.7	1087.7	1086.6
7.5°	1049.3	1049.8	1044.2	1040.2
10°	987.2	984.1	976.1	971.5
12.5°	904.4	908.9	896.8	887.7
15°	832.2	819.5	824.6	819.0
17.5°	771.6	767.5	762.0	762.5
20°	718.5	715.5	712.5	713.0
22.5°	676.6	674.1	673.1	669.6
25°	641.8	642.8	640.3	640.3
27.5°	613.0	611.5	610.0	608.0
30°	585.7	586.2	584.7	583.7
32.5°	561.5	562.0	561.0	559.5
35°	537.8	537.3	537.8	536.3
37.5°	516.1	515.6	516.1	518.1
40°	493.8	494.3	492.8	494.8
42.5°	472.1	472.6	472.6	471.6
45°	448.4	449.9	450.4	451.4
47.5°	425.2	427.7	426.7	427.2
50°	401.9	401.4	401.4	400.9
52.5°	376.2	374.7	374.2	374.7
55°	345.4	347.4	347.4	347.4
57.5°	320.1	320.6	322.2	320.1
60°	294.4	294.4	294.9	298.9
62.5°	265.6	266.1	267.1	267.6
65°	237.8	239.3	238.8	238.3
67.5°	210.6	210.6	211.1	210.1
70°	182.3	182.3	182.3	184.8
72.5°	153.0	153.0	153.5	154.5
75°	125.7	125.7	125.7	124.2
77.5°	95.9	96.4	96.4	97.0
80°	69.7	69.2	69.2	68.7
82.5°	43.9	44.4	43.9	43.4
85°	24.2	24.7	23.2	23.2
87.5°	8.6	8.6	8.1	9.1
90°	0.0	0.0	0.0	0.0

(END OF REPORT)