

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: P242227

Luminaire Tested: **S121RDR-S685D835-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242227
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-28)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S121RDR-S685D835-X4F0-XX-UDD-A-W
Description: DEFINE 1 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER
STANDARD LIGHT ENGINE
Light Source: (92) 3500K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2409.8 lumens
Efficiency: N/A
Efficacy: 91.3 lumens/watt
Spacing Criteria (0/90/45): 0.96 / 1.23 / 1.1
Luminous Opening: Rectangular (W 3.88' x L: 0.09' x H: 0')
CIE Type: Direct

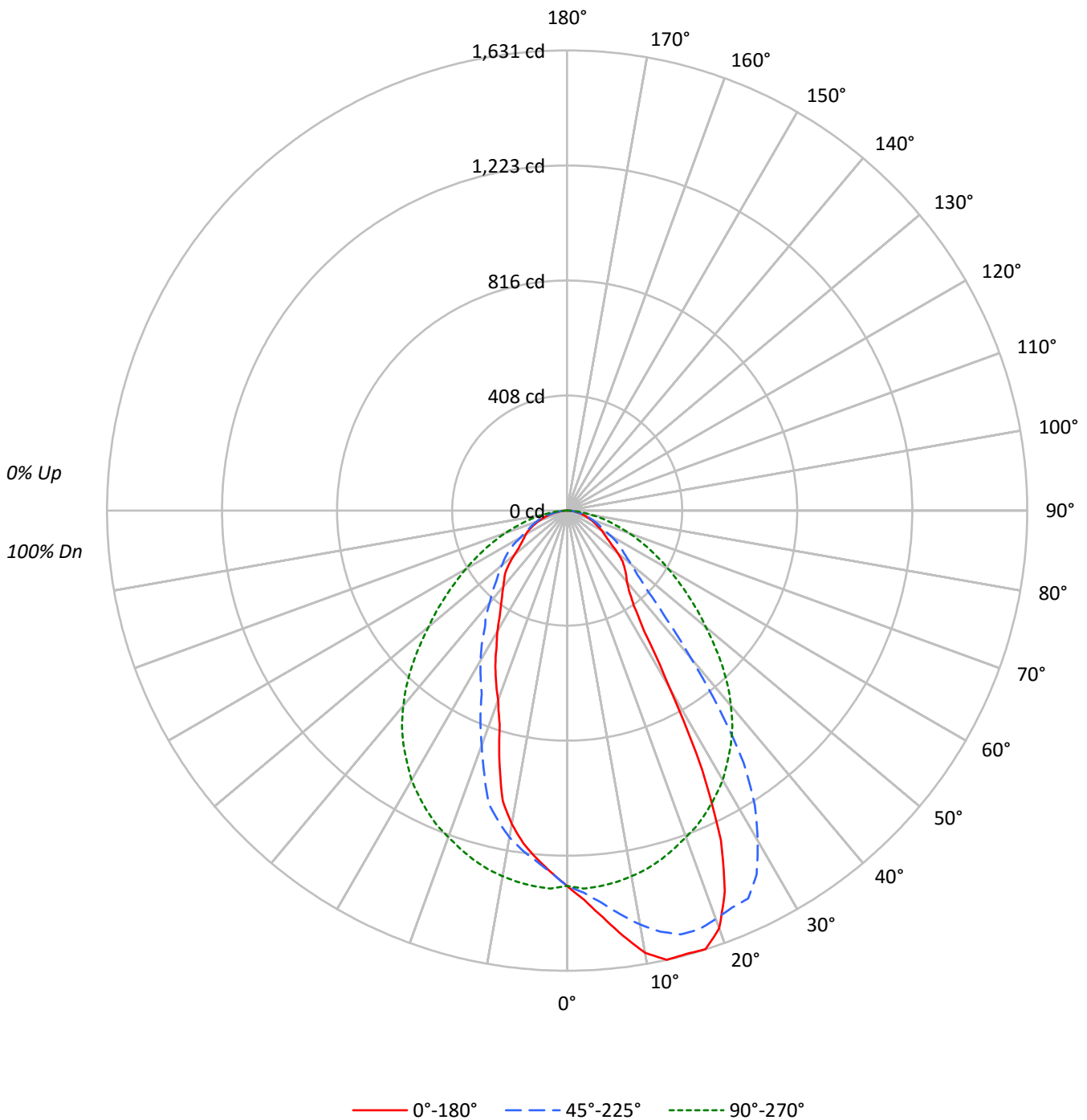
Input Watts (W): 26.4
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P242227

CATALOG NUMBER: S121RDR-S685D835-X4F0-XX-UDD-A-W

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	100	100	100	100	100		
1	111	107	103	100	108	104	101	98	100	97	95	96	94	92	93	91	89	87	87	87	87	87	87	87		
2	102	95	89	84	100	93	88	83	90	85	82	87	83	80	84	81	78	76	76	76	76	76	76	76		
3	94	85	78	73	92	84	77	72	81	75	71	78	74	70	76	72	68	67	67	67	67	67	67	67		
4	88	77	69	64	85	76	69	63	73	67	62	71	66	61	69	65	61	59	59	59	59	59	59	59		
5	81	70	62	56	79	69	62	56	67	60	55	65	59	55	63	58	54	52	52	52	52	52	52	52		
6	76	64	56	50	74	63	56	50	61	55	50	60	54	49	58	53	49	47	47	47	47	47	47	47		
7	71	59	51	45	69	58	51	45	57	50	45	55	49	45	54	48	44	43	43	43	43	43	43	43		
8	67	54	47	41	65	54	46	41	52	46	41	51	45	41	50	45	40	39	39	39	39	39	39	39		
9	63	50	43	38	61	50	43	38	49	42	37	48	42	37	47	41	37	35	35	35	35	35	35	35		
10	59	47	40	35	58	46	39	35	45	39	35	44	39	34	44	38	34	33	33	33	33	33	33	33		

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	39410	39410	39410
5°	43011	39754	36825
10°	47871	39597	33941
15°	49911	39298	28408
20°	49696	38834	22545
25°	42144	38401	19681
30°	24805	37741	16901
35°	14903	36591	14758
40°	12764	34931	13615
45°	12068	32558	12948
50°	10786	29570	11201
55°	8988	26991	10125
60°	8356	24593	10074
65°	7712	22400	9745
70°	7277	20185	9183
75°	6869	17859	8357
80°	6143	14930	7337
85°	5779	11729	5779



TEST NUMBER: P242227

CATALOG NUMBER: S121RDR-S685D835-X4F0-XX-UDD-A-W

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	127.5	5.3
10°-20°	363.3	15.1
20°-30°	496.2	20.6
30°-40°	462.3	19.2
40°-50°	382.1	15.9
50°-60°	281.8	11.7
60°-70°	180.2	7.5
70°-80°	92.7	3.8
80°-90°	23.8	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°	986.9	41.0
0°-40°	1449.2	60.1
0°-60°	2113.1	87.7
0°-90°	2409.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2409.8	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1330	1330	1330	1330	1330	
5°	1446	1395	1337	1248	1238	143
15°	1627	1555	1281	1075	926	459
25°	1289	1517	1175	717	602	560
35°	412	1090	1012	508	408	280
45°	288	406	777	356	309	221
55°	174	233	522	254	196	160
65°	110	127	320	148	139	109
75°	60	66	156	82	73	63
85°	17	18	34	20	17	19
90°	0	0	0	0	0	



TEST NUMBER: P242227

CATALOG NUMBER: S121RDR-S685D835-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1330.1	1330.1	1330.1	1330.1	1330.1	1330.1	1330.1	1330.1	1330.1	1330.1	1330.1
2.5°	1381.1	1380.1	1381.6	1380.6	1379.6	1377.1	1375.1	1369.1	1360.1	1355.1	1360.1
5°	1446.1	1450.1	1448.6	1446.6	1442.1	1438.1	1429.1	1423.6	1407.6	1395.1	1398.6
7.5°	1520.1	1525.1	1518.6	1514.1	1511.6	1500.1	1490.1	1474.6	1457.1	1443.1	1435.1
10°	1591.1	1592.6	1590.6	1586.6	1578.1	1565.6	1551.1	1533.6	1511.6	1490.1	1475.6
12.5°	1631.1	1633.6	1636.6	1629.6	1623.1	1613.1	1598.1	1580.6	1553.6	1528.6	1512.1
15°	1627.1	1629.1	1634.6	1632.1	1629.1	1624.6	1616.1	1601.6	1582.6	1555.1	1531.6
17.5°	1630.1	1631.6	1634.1	1625.1	1620.1	1614.6	1603.6	1593.6	1577.6	1556.1	1538.6
20°	1576.1	1600.6	1597.6	1609.6	1614.6	1614.1	1603.6	1584.6	1562.6	1540.6	1532.6
22.5°	1460.1	1479.6	1482.1	1500.6	1523.6	1542.1	1565.1	1573.6	1556.6	1523.6	1512.6
25°	1289.1	1303.1	1317.1	1343.6	1368.1	1419.6	1466.6	1502.1	1521.6	1517.1	1495.6
27.5°	1036.1	1021.1	1076.6	1107.1	1175.6	1250.6	1316.6	1381.6	1412.6	1454.1	1475.1
30°	725.0	723.5	765.5	818.5	921.1	990.1	1113.6	1218.1	1299.6	1350.6	1407.6
32.5°	509.0	516.5	547.5	580.0	636.5	749.0	843.5	987.6	1126.6	1238.1	1308.1
35°	412.0	413.0	420.0	439.5	474.0	536.5	610.0	750.0	938.6	1090.1	1194.6
37.5°	361.0	364.0	366.0	377.0	389.5	416.0	462.5	559.5	715.5	884.5	1066.1
40°	330.0	332.5	334.5	338.0	345.5	358.0	388.5	435.0	525.0	680.5	882.5
42.5°	309.0	308.0	312.5	314.0	318.0	325.0	338.5	363.5	415.5	521.0	695.0
45°	288.0	289.5	289.5	291.5	295.0	299.0	304.5	320.0	346.5	406.5	543.0
47.5°	266.0	265.5	268.5	270.0	273.5	277.0	281.0	289.0	304.5	339.5	418.5
50°	234.0	235.0	240.5	245.5	250.5	255.0	260.0	265.0	275.0	294.0	342.5
52.5°	200.0	200.0	206.0	209.5	216.5	227.5	236.0	243.5	250.0	259.5	288.5
55°	174.0	174.5	176.5	179.5	184.5	190.0	201.0	214.0	225.0	233.0	249.0
57.5°	156.0	156.5	157.0	159.5	162.0	164.0	170.5	180.5	195.0	209.5	219.0
60°	141.0	140.5	140.5	142.0	144.0	146.5	150.0	154.0	162.0	177.5	194.5
62.5°	124.0	125.0	125.0	126.5	128.0	130.5	132.0	136.0	140.5	147.5	165.0
65°	110.0	111.0	110.0	111.5	112.5	114.0	116.5	118.5	122.5	127.0	134.0
67.5°	96.0	96.5	97.5	98.0	99.0	99.5	101.5	104.0	106.5	109.5	115.0
70°	84.0	84.0	84.0	85.0	86.0	86.0	87.5	88.5	91.0	94.0	97.0
72.5°	71.0	71.5	71.5	71.0	73.0	73.5	74.0	75.0	77.0	79.5	82.0
75°	60.0	59.0	59.0	59.5	61.0	61.0	61.5	62.0	63.5	65.5	67.0
77.5°	47.0	47.0	47.5	48.0	48.5	48.5	49.5	49.5	51.5	52.5	53.5
80°	36.0	37.0	37.5	37.0	37.0	37.5	37.5	38.5	39.0	39.5	40.5
82.5°	27.0	27.5	26.5	26.5	27.0	27.0	27.5	27.5	28.0	28.5	28.5
85°	17.0	17.0	17.5	17.0	17.5	17.0	17.0	18.0	17.5	17.5	18.0
87.5°	8.0	8.5	8.0	8.5	8.0	8.5	8.5	8.5	8.5	8.5	8.0
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: P242227

CATALOG NUMBER: S121RDR-S685D835-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1330.1	1330.1	1330.1	1330.1	1330.1	1330.1	1330.1	1330.1	1330.1	1330.1	1330.1
2.5°	1358.6	1358.1	1355.6	1350.1	1346.1	1338.6	1338.6	1341.1	1328.1	1319.1	1318.6
5°	1390.1	1385.1	1376.6	1366.1	1356.6	1343.6	1338.6	1336.6	1319.1	1305.6	1301.1
7.5°	1423.6	1411.1	1396.6	1379.6	1363.6	1345.1	1335.6	1328.1	1305.6	1289.1	1279.1
10°	1458.6	1438.6	1416.1	1391.6	1369.6	1344.6	1329.1	1316.1	1290.1	1267.1	1255.6
12.5°	1489.6	1461.6	1433.1	1401.1	1371.1	1339.6	1318.1	1301.1	1270.6	1243.1	1229.1
15°	1504.1	1474.1	1450.6	1406.6	1366.1	1334.1	1306.6	1281.1	1248.6	1218.1	1196.6
17.5°	1516.6	1483.6	1452.6	1411.1	1364.1	1322.6	1289.6	1257.1	1222.1	1190.1	1163.6
20°	1513.1	1485.1	1447.1	1403.1	1358.6	1310.6	1273.1	1231.6	1188.1	1155.6	1127.6
22.5°	1493.1	1470.1	1430.6	1388.6	1345.6	1294.1	1251.6	1206.6	1153.1	1117.6	1086.1
25°	1467.6	1445.6	1406.6	1363.1	1320.6	1270.6	1220.6	1174.6	1117.1	1074.6	1034.1
27.5°	1447.6	1414.6	1375.6	1327.1	1286.1	1238.6	1186.1	1139.6	1077.6	1030.6	983.6
30°	1424.6	1387.1	1339.1	1287.6	1244.1	1200.6	1149.6	1103.1	1034.6	981.1	922.6
32.5°	1358.6	1359.1	1302.1	1244.6	1198.1	1151.6	1106.1	1056.6	988.6	925.6	865.5
35°	1272.6	1306.1	1264.1	1198.1	1140.6	1097.6	1060.1	1011.6	936.1	871.0	803.0
37.5°	1157.6	1216.6	1221.6	1153.1	1089.6	1039.1	1002.1	961.6	885.5	815.5	748.0
40°	1042.6	1120.6	1151.6	1104.1	1035.1	977.1	940.1	903.1	831.5	756.0	693.5
42.5°	901.6	1028.1	1066.6	1052.6	978.6	916.1	877.0	843.5	774.0	700.0	638.0
45°	742.5	913.6	969.6	984.1	921.6	854.5	809.5	777.0	716.0	651.0	586.5
47.5°	596.5	784.5	877.0	892.1	859.0	794.0	742.5	708.5	660.0	604.0	540.0
50°	455.0	647.5	780.0	803.0	795.0	729.0	681.5	641.5	604.5	554.5	494.5
52.5°	362.0	517.5	675.0	718.0	720.5	668.5	618.5	582.0	546.0	506.5	452.0
55°	289.0	400.0	559.5	632.5	639.5	603.5	557.5	522.5	495.5	458.5	412.5
57.5°	243.5	309.5	448.0	546.5	549.5	539.5	495.5	466.5	444.0	412.0	371.5
60°	208.0	245.5	345.5	460.5	475.5	475.5	440.5	415.0	393.5	369.5	331.0
62.5°	180.0	200.5	262.0	366.0	404.5	410.5	388.5	366.0	350.0	326.0	290.5
65°	151.5	167.0	203.0	283.0	336.0	347.0	336.0	319.5	307.0	282.0	254.0
67.5°	124.5	139.5	162.0	214.5	272.5	286.0	284.0	275.5	262.5	244.0	214.5
70°	103.0	112.0	128.5	159.0	214.0	234.5	240.5	233.0	221.5	201.5	180.0
72.5°	85.0	92.0	100.0	122.0	160.0	187.0	197.0	193.0	184.5	165.5	147.5
75°	69.5	74.0	79.5	90.0	115.0	145.5	157.0	156.0	147.5	131.5	117.0
77.5°	56.0	57.5	61.5	68.0	80.5	108.0	117.0	120.0	113.5	100.0	88.5
80°	42.0	44.0	46.0	49.5	55.5	71.5	83.0	87.5	82.0	74.0	62.5
82.5°	29.5	30.0	32.0	34.0	37.0	43.5	55.5	60.5	55.5	47.0	43.5
85°	18.5	18.0	18.5	19.0	22.0	23.5	31.0	34.5	33.5	28.5	24.5
87.5°	8.5	8.5	8.0	8.5	8.0	9.5	11.0	16.0	12.0	10.5	9.5
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: P242227

CATALOG NUMBER: S121RDR-S685D835-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1330.1	1330.1	1330.1	1330.1	1330.1	1330.1	1330.1	1330.1	1330.1	1330.1	1330.1
2.5°	1314.6	1313.1	1308.1	1301.1	1295.1	1285.1	1285.1	1287.6	1287.1	1288.1	1287.1
5°	1293.6	1286.6	1279.1	1269.6	1260.6	1247.6	1246.1	1247.1	1246.6	1246.1	1243.1
7.5°	1266.6	1258.6	1249.1	1237.1	1227.1	1214.6	1211.1	1210.1	1206.1	1204.6	1200.6
10°	1240.6	1231.1	1218.6	1204.1	1190.6	1176.1	1167.1	1162.1	1155.6	1148.6	1142.6
12.5°	1211.6	1199.1	1183.1	1165.6	1143.1	1127.1	1113.6	1105.1	1096.1	1084.1	1075.6
15°	1180.6	1155.1	1136.1	1107.6	1080.1	1074.6	1054.1	1027.1	1025.1	966.6	946.1
17.5°	1139.1	1118.1	1082.6	1045.6	1008.1	977.6	978.1	905.1	882.5	882.0	846.0
20°	1096.1	1067.1	1026.1	988.6	949.1	886.0	836.0	812.0	775.5	761.5	741.0
22.5°	1045.6	1007.6	959.6	908.6	853.5	802.5	753.5	730.5	712.0	696.5	688.0
25°	985.6	947.1	889.5	826.0	764.5	717.0	690.0	679.5	648.0	637.0	626.5
27.5°	925.1	883.0	808.0	747.0	696.5	664.0	636.0	618.5	603.5	575.5	563.0
30°	867.5	800.0	738.0	682.0	644.0	613.5	593.0	557.5	536.5	523.5	518.0
32.5°	805.0	733.0	677.0	628.5	589.5	563.0	532.5	508.5	499.0	482.0	457.5
35°	741.0	675.5	617.0	578.0	544.5	508.5	489.5	466.5	442.5	429.5	427.5
37.5°	679.0	617.0	575.0	534.0	493.5	472.5	444.5	420.0	411.5	399.5	386.5
40°	623.0	570.0	531.0	484.0	459.5	427.0	405.5	393.0	372.5	368.0	364.0
42.5°	577.0	531.5	487.5	445.5	417.0	391.0	372.0	357.5	351.0	340.0	336.5
45°	530.5	488.5	443.5	410.5	378.0	356.0	343.0	330.5	323.0	320.0	314.0
47.5°	488.5	447.5	406.0	365.5	343.5	329.0	314.5	308.0	303.5	297.0	293.5
50°	448.5	403.0	364.0	338.5	315.0	302.0	292.5	286.5	279.5	272.5	262.5
52.5°	408.0	369.0	331.5	304.5	287.0	278.5	269.5	263.0	249.0	235.5	227.0
55°	367.0	327.0	296.5	276.0	263.5	254.5	244.0	225.0	212.0	204.5	200.5
57.5°	330.0	294.0	267.0	250.0	241.0	226.0	207.5	195.5	189.0	186.0	184.0
60°	290.5	259.5	237.0	224.0	210.0	190.0	180.0	174.0	172.0	171.0	169.5
62.5°	256.5	229.0	211.5	197.0	177.0	166.5	161.0	158.0	158.0	156.5	155.5
65°	220.5	199.0	184.0	163.0	152.5	148.0	146.0	144.5	143.0	142.5	140.5
67.5°	191.0	172.0	152.5	141.5	135.0	132.5	130.5	130.0	128.0	126.5	125.0
70°	161.0	142.5	126.5	121.5	118.0	117.0	115.0	113.0	111.5	109.5	108.5
72.5°	131.0	113.5	108.0	105.5	102.0	100.5	98.0	96.5	94.0	93.0	92.0
75°	100.0	93.0	90.0	88.0	85.5	82.0	81.0	79.5	78.5	77.0	75.5
77.5°	79.5	75.5	72.0	69.5	67.5	65.0	63.0	62.5	61.5	60.0	59.5
80°	59.5	56.5	55.0	52.5	50.0	48.5	47.5	47.0	45.5	45.0	44.5
82.5°	41.0	38.5	37.5	34.5	33.5	33.5	33.0	32.0	31.0	30.5	30.0
85°	23.0	22.0	20.5	21.0	19.5	19.5	19.0	18.5	18.0	17.5	17.0
87.5°	9.0	8.5	8.0	7.5	7.5	6.0	6.0	6.0	6.5	6.0	5.5
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: P242227

CATALOG NUMBER: S121RDR-S685D835-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1330.1	1330.1	1330.1	1330.1
2.5°	1288.6	1289.6	1286.1	1284.1
5°	1243.1	1241.6	1239.6	1238.1
7.5°	1196.6	1195.1	1195.1	1189.1
10°	1140.1	1136.1	1133.1	1128.1
12.5°	1068.1	1062.1	1060.1	1054.1
15°	932.1	919.6	911.1	926.1
17.5°	837.5	805.0	807.5	795.0
20°	740.5	727.5	734.0	715.0
22.5°	677.5	669.5	662.0	658.0
25°	619.0	609.5	598.0	602.0
27.5°	545.5	545.5	538.0	541.0
30°	508.0	504.0	491.5	494.0
32.5°	449.5	444.5	443.0	444.0
35°	421.5	413.5	411.0	408.0
37.5°	382.5	379.5	380.0	378.0
40°	356.5	354.0	351.0	352.0
42.5°	334.0	332.5	329.5	330.0
45°	312.0	310.5	309.0	309.0
47.5°	287.5	284.5	282.0	279.0
50°	255.5	249.5	245.0	243.0
52.5°	221.0	218.0	215.0	215.0
55°	199.0	197.5	196.5	196.0
57.5°	183.5	182.5	182.5	181.0
60°	169.5	169.5	169.0	170.0
62.5°	156.0	154.5	155.0	155.0
65°	140.5	140.0	139.5	139.0
67.5°	124.0	123.5	124.0	123.0
70°	107.5	107.5	107.0	106.0
72.5°	90.5	91.5	90.5	90.0
75°	74.5	74.0	74.5	73.0
77.5°	59.5	57.5	58.5	59.0
80°	44.0	44.0	43.5	43.0
82.5°	29.5	30.0	29.0	29.0
85°	17.0	17.0	16.0	17.0
87.5°	5.0	5.0	5.0	6.0
90°	0.0	0.0	0.0	0.0

(END OF REPORT)