

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: P243004

Luminaire Tested: **S121DR-H685D940-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P243004  
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-H685D940-X4F0-XX-UDD-A-W  
Description: DEFINE 1 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.  
HIGH PERFORMANCE LIGHT ENGINE  
Light Source: (184) 4000K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

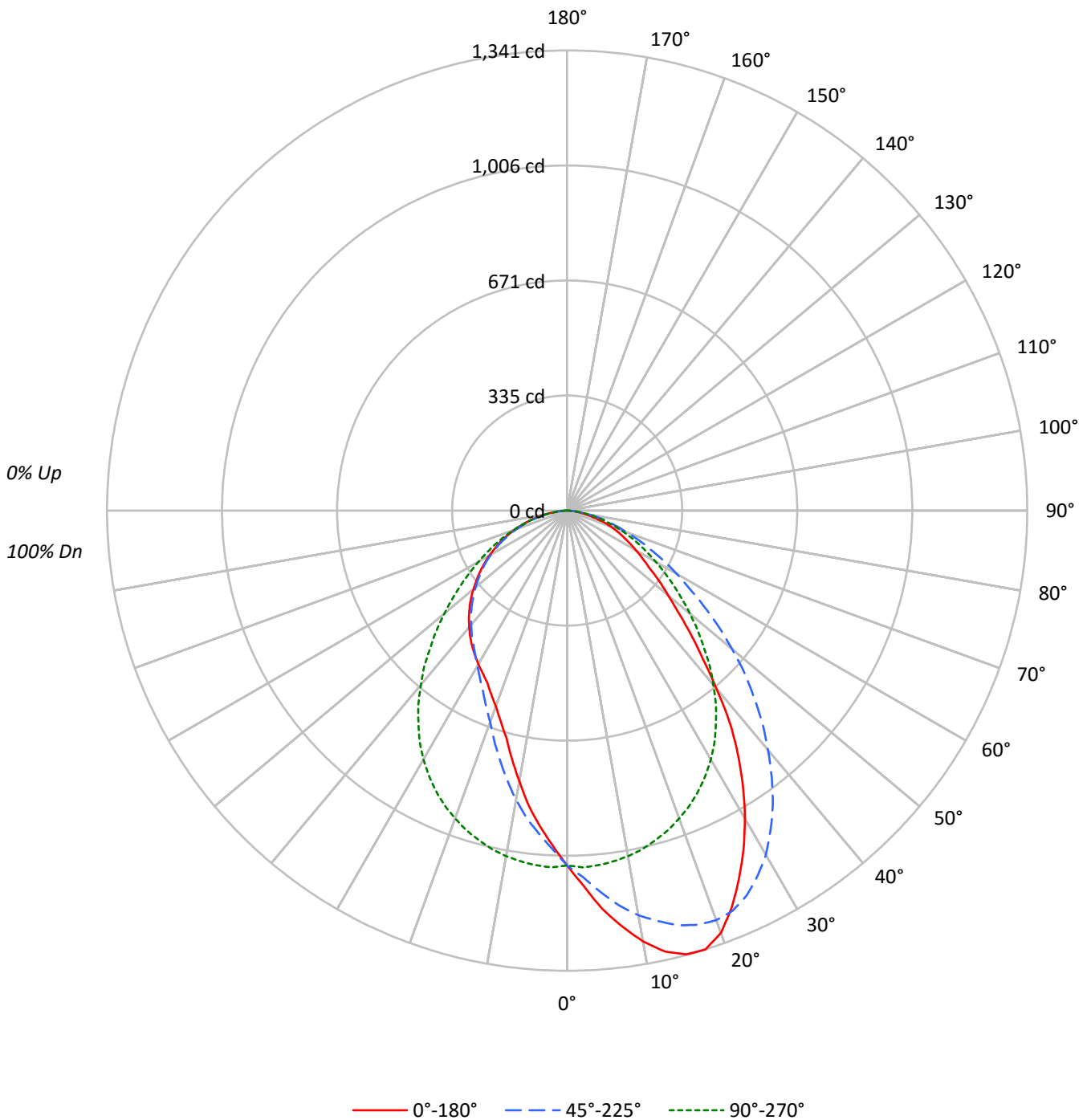
Lumens per Lamp: N/A  
Luminaire Lumens: 2396.9 lumens  
Efficiency: N/A  
Efficacy: 101.6 lumens/watt  
Spacing Criteria (0/90/45): 1.13 / 1.2 / 1.28  
Luminous Opening: Rectangular (W 3.88' x L: 0.09' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 23.6  
Input Voltage (V): 120  
Input Current (Ain): 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	100	100	100	100	100		
1	110	105	102	98	107	103	100	96	99	96	93	95	93	91	92	90	88	86	86	86	86	86	86	86		
2	101	93	87	81	98	91	85	80	88	83	79	84	80	77	81	78	75	73	73	73	73	73	73	73		
3	92	83	75	69	90	81	74	68	78	72	67	75	70	66	73	69	65	63	63	63	63	63	63	63		
4	85	74	66	59	83	72	65	59	70	63	58	68	62	57	66	61	57	54	54	54	54	54	54	54		
5	79	66	58	52	77	65	57	51	63	56	51	61	55	50	60	54	50	48	48	48	48	48	48	48		
6	73	60	52	46	71	59	51	45	57	50	45	56	49	45	54	49	44	42	42	42	42	42	42	42		
7	68	55	46	41	66	54	46	40	53	45	40	51	45	40	50	44	40	38	38	38	38	38	38	38		
8	63	50	42	37	62	50	42	36	48	41	36	47	41	36	46	40	36	34	34	34	34	34	34	34		
9	59	46	38	33	58	46	38	33	45	38	33	44	37	33	43	37	33	31	31	31	31	31	31	31		
10	56	43	35	30	54	42	35	30	41	35	30	41	34	30	40	34	30	28	28	28	28	28	28	28		

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°
0°	30640	30640	30640
5°	34621	30858	27414
10°	38355	30764	24100
15°	41071	30497	21022
20°	41297	30100	19139
25°	38734	29535	18046
30°	35438	28643	17692
35°	31382	27331	17467
40°	26151	25636	17166
45°	21316	23587	16853
50°	17692	21494	16428
55°	15141	19485	15998
60°	13719	17642	15490
65°	12669	16055	14947
70°	11687	14459	14069
75°	9433	12822	12959
80°	7525	10374	11074
85°	5677	7649	9043



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	98.8	4.1
10°-20°	283.0	11.8
20°-30°	412.1	17.2
30°-40°	459.4	19.2
40°-50°	424.8	17.7
50°-60°	338.4	14.1
60°-70°	231.6	9.7
70°-80°	120.2	5.0
80°-90°	28.5	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°	793.9	33.1
0°-40°	1253.4	52.3
0°-60°	2016.5	84.1
0°-90°	2396.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2396.9	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1034	1034	1034	1034	1034	
5°	1164	1116	1038	945	922	114
15°	1339	1251	994	755	685	375
25°	1185	1238	903	581	552	543
35°	868	1045	756	475	483	538
45°	509	770	563	393	402	396
55°	293	486	377	302	310	268
65°	181	268	229	207	213	180
75°	82	121	112	106	113	90
85°	17	23	22	24	27	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°	1034.1	1034.1	1034.1	1034.1	1034.1	1034.1	1034.1	1034.1	1034.1	1034.1	1034.1
2.5°	1094.1	1094.1	1091.2	1092.4	1090.8	1087.8	1083.3	1078.3	1072.0	1069.5	1068.3
5°	1164.0	1165.7	1163.6	1159.5	1158.6	1155.3	1145.3	1139.5	1126.1	1115.7	1112.4
7.5°	1222.3	1225.2	1225.2	1217.7	1214.4	1206.1	1199.0	1189.4	1172.8	1161.1	1151.5
10°	1274.8	1276.0	1271.4	1267.3	1260.6	1254.0	1241.9	1229.8	1211.9	1197.8	1181.9
12.5°	1316.4	1318.9	1315.6	1308.9	1301.0	1292.3	1277.3	1261.9	1244.4	1225.2	1208.2
15°	1338.9	1342.6	1343.1	1337.6	1331.8	1321.4	1310.6	1293.9	1274.8	1251.0	1223.2
17.5°	1340.6	1342.2	1343.5	1339.3	1335.6	1331.8	1321.0	1307.2	1288.9	1265.6	1239.8
20°	1309.7	1313.5	1317.7	1313.9	1315.6	1315.6	1311.0	1303.9	1288.9	1270.2	1245.2
22.5°	1252.3	1261.0	1266.4	1270.2	1273.9	1279.4	1284.8	1281.4	1275.6	1261.9	1239.4
25°	1184.8	1191.9	1202.3	1205.7	1208.6	1224.4	1234.0	1240.6	1240.6	1237.7	1222.7
27.5°	1113.2	1117.8	1126.6	1138.2	1149.0	1158.6	1178.6	1191.1	1201.1	1201.1	1193.2
30°	1035.8	1042.5	1052.9	1060.8	1074.1	1093.7	1110.3	1125.3	1148.2	1158.2	1156.5
32.5°	954.2	960.9	971.7	978.4	997.5	1013.3	1039.1	1062.5	1088.7	1103.7	1112.8
35°	867.6	868.0	886.3	897.2	913.8	933.4	965.0	991.3	1020.0	1045.0	1064.5
37.5°	778.5	778.1	791.0	810.2	823.5	851.0	883.4	912.6	952.5	979.2	1010.0
40°	676.1	684.8	695.7	713.2	736.1	768.5	799.3	837.2	877.2	910.5	943.4
42.5°	584.5	591.6	609.1	628.6	653.2	680.7	718.2	760.2	799.3	842.6	879.3
45°	508.7	512.5	522.9	538.7	564.5	595.8	634.9	679.4	725.6	769.8	810.6
47.5°	438.8	450.0	455.5	470.0	488.8	517.9	558.7	598.7	652.0	701.1	745.6
50°	383.8	385.9	395.5	406.3	428.4	450.0	480.9	522.1	571.6	627.0	672.4
52.5°	338.9	338.1	346.0	355.5	370.9	393.8	420.5	460.5	502.5	557.5	607.0
55°	293.1	297.3	301.0	310.6	324.3	341.8	364.3	398.0	437.6	486.3	538.3
57.5°	261.4	261.9	263.9	271.9	281.0	294.8	316.4	345.1	380.5	423.0	473.4
60°	231.5	231.9	235.6	238.1	244.4	256.0	272.7	296.4	327.6	368.4	412.6
62.5°	205.7	206.1	208.2	210.7	216.5	221.1	235.2	255.6	281.0	317.2	355.1
65°	180.7	181.1	181.1	184.4	188.2	192.3	202.3	215.2	239.8	268.5	302.2
67.5°	156.5	159.0	158.2	160.7	164.0	166.1	173.2	184.8	201.5	225.6	254.8
70°	134.9	134.5	135.7	137.0	138.2	141.5	146.1	154.0	168.2	185.3	211.1
72.5°	111.6	109.1	110.7	112.4	114.5	117.0	120.7	126.6	137.4	151.1	170.3
75°	82.4	81.2	83.7	84.1	87.8	91.2	95.3	101.2	109.1	120.7	133.2
77.5°	60.0	61.6	62.4	63.3	63.7	67.4	72.0	77.0	81.6	92.4	102.0
80°	44.1	44.1	44.5	45.4	46.2	47.0	50.0	53.3	57.0	63.7	73.3
82.5°	30.8	30.4	30.4	30.8	31.2	32.1	33.3	34.6	37.9	41.2	46.2
85°	16.7	17.1	17.5	16.7	17.1	17.5	18.3	19.6	20.4	22.9	25.0
87.5°	5.8	7.1	6.7	6.7	7.1	7.1	7.1	7.9	7.9	7.9	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



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**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1034.1	1034.1	1034.1	1034.1	1034.1	1034.1	1034.1	1034.1	1034.1	1034.1	1034.1
2.5°	1067.0	1065.8	1062.5	1055.8	1051.2	1042.9	1041.2	1040.8	1033.3	1022.1	1021.2
5°	1106.6	1097.0	1089.1	1077.4	1065.8	1051.6	1043.3	1037.5	1024.1	1007.5	1000.0
7.5°	1142.8	1129.1	1112.8	1094.5	1077.4	1057.5	1042.9	1031.2	1011.7	990.4	977.5
10°	1171.9	1154.9	1134.5	1109.9	1086.6	1060.4	1040.0	1022.5	996.7	970.4	953.0
12.5°	1191.9	1172.8	1149.5	1120.7	1092.4	1062.5	1032.9	1010.8	978.4	948.0	925.5
15°	1214.4	1182.8	1158.6	1126.1	1092.8	1057.0	1025.8	994.2	956.7	922.6	893.4
17.5°	1219.8	1190.7	1162.0	1126.1	1091.6	1047.9	1011.7	976.7	935.1	893.0	864.7
20°	1224.8	1191.5	1156.1	1117.4	1081.2	1036.2	995.4	954.6	906.3	861.0	825.6
22.5°	1221.1	1188.6	1149.0	1105.3	1066.2	1020.0	975.9	930.9	876.8	829.3	789.3
25°	1210.2	1180.3	1139.5	1091.6	1044.5	997.5	951.3	903.4	844.7	789.8	745.6
27.5°	1188.2	1161.5	1122.4	1071.6	1022.1	970.0	921.7	871.8	808.9	752.7	705.7
30°	1158.6	1137.4	1097.8	1047.0	993.3	937.6	888.0	837.2	771.9	710.7	660.7
32.5°	1117.8	1102.8	1068.7	1019.2	961.3	902.2	851.4	799.8	729.8	671.5	620.7
35°	1072.0	1064.9	1034.6	985.0	925.1	863.0	808.5	755.6	691.1	629.5	580.8
37.5°	1018.3	1023.3	995.8	946.7	884.7	821.4	763.9	712.7	647.4	588.3	540.4
40°	965.0	972.5	951.7	905.9	841.4	776.0	717.7	662.8	602.0	550.0	502.5
42.5°	905.9	920.9	904.7	860.1	797.3	728.1	667.4	616.2	558.3	510.4	468.8
45°	843.0	862.2	855.5	810.2	748.1	680.3	616.2	562.9	516.2	473.8	435.9
47.5°	779.4	801.4	798.5	760.6	701.1	631.6	568.3	515.8	472.9	438.8	407.2
50°	714.0	736.5	736.9	703.2	647.8	581.6	513.7	466.3	432.1	402.2	376.4
52.5°	650.3	672.8	673.2	647.0	591.6	527.1	464.6	421.3	392.2	368.9	347.2
55°	583.7	609.9	612.4	587.0	537.9	475.9	418.4	377.2	351.4	336.4	317.7
57.5°	516.2	544.5	549.5	529.1	481.7	423.8	375.5	336.0	315.2	304.7	290.6
60°	453.4	481.3	489.2	465.9	426.7	377.2	331.0	297.7	281.0	272.7	262.7
62.5°	395.5	423.4	427.6	407.6	368.9	327.2	292.3	261.9	248.1	241.9	234.0
65°	338.9	363.9	369.3	351.4	316.4	281.8	251.0	229.0	216.9	211.5	206.5
67.5°	286.8	310.2	313.9	297.7	268.5	239.0	216.5	197.3	189.0	181.9	179.9
70°	237.7	259.0	262.3	246.0	223.1	199.0	180.3	166.9	159.0	154.9	152.0
72.5°	192.3	209.0	211.9	201.9	184.0	162.8	148.2	137.0	132.0	128.2	127.0
75°	150.3	166.5	166.9	158.2	143.6	129.1	117.8	112.0	106.2	102.4	101.6
77.5°	115.3	124.5	125.7	121.1	107.0	97.8	89.1	84.9	82.8	79.1	79.1
80°	82.4	87.8	89.9	83.3	76.6	68.7	64.1	60.8	59.1	56.6	56.6
82.5°	51.2	55.8	58.3	53.3	50.0	45.8	42.5	40.4	39.1	37.9	37.5
85°	27.9	31.2	31.2	29.6	26.6	24.6	23.3	22.5	22.1	21.6	21.2
87.5°	10.0	12.5	11.2	11.7	10.4	10.0	9.6	9.6	10.0	9.2	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



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**CANDELA DISTRIBUTION (continued):**

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1034.1	1034.1	1034.1	1034.1	1034.1	1034.1	1034.1	1034.1	1034.1	1034.1	1034.1
2.5°	1015.8	1013.7	1007.5	1001.7	997.1	987.1	985.0	985.8	985.8	986.3	981.7
5°	991.3	982.5	972.5	963.4	956.3	945.0	938.8	937.1	935.9	933.4	928.8
7.5°	963.4	953.4	939.2	930.9	915.9	903.4	894.7	888.8	885.1	879.7	872.2
10°	935.1	920.5	904.7	888.0	873.0	856.4	842.6	836.0	828.1	822.7	814.3
12.5°	906.7	886.3	864.7	845.5	825.1	805.6	791.4	782.3	768.1	760.2	751.5
15°	869.7	844.7	826.4	793.1	783.1	754.8	737.7	730.6	716.9	714.4	700.7
17.5°	834.7	806.0	778.9	751.0	724.4	704.8	690.3	681.1	670.3	663.6	654.5
20°	791.0	761.0	728.6	699.4	676.9	656.1	647.0	635.3	629.1	622.4	615.7
22.5°	749.4	712.7	680.3	656.5	633.6	616.6	606.6	598.7	593.3	586.6	582.0
25°	704.8	670.7	640.7	616.2	594.1	580.8	572.4	567.9	564.5	559.5	556.6
27.5°	662.4	627.8	598.3	579.5	561.6	550.0	545.8	541.6	537.5	535.8	535.4
30°	617.0	585.3	561.2	545.0	528.7	522.5	520.4	516.2	517.1	517.5	516.2
32.5°	578.7	547.9	529.6	515.8	503.3	498.8	498.3	496.7	497.1	499.2	498.3
35°	539.1	516.2	497.9	486.7	478.8	475.4	475.9	476.3	478.8	479.2	480.9
37.5°	505.4	483.3	471.3	460.5	456.7	456.7	457.1	457.5	459.6	462.1	462.9
40°	472.1	454.2	443.8	436.7	434.6	434.6	436.3	438.4	439.6	442.1	442.5
42.5°	442.1	427.1	419.2	412.2	413.0	415.1	415.5	416.7	420.1	420.5	421.3
45°	412.6	401.3	393.4	391.3	391.3	393.0	395.1	395.9	398.4	398.8	399.7
47.5°	387.2	375.5	369.7	367.6	368.9	370.9	373.9	375.1	377.2	376.8	378.9
50°	358.9	349.3	344.7	343.9	344.7	348.5	349.7	352.6	354.7	356.0	356.8
52.5°	331.8	324.3	322.2	321.8	323.5	326.0	327.6	330.6	333.1	333.1	332.6
55°	306.0	299.3	296.8	298.9	301.0	302.2	305.6	307.2	309.7	310.2	309.7
57.5°	279.8	273.9	273.1	273.9	278.1	280.6	282.7	282.7	283.9	284.3	285.6
60°	252.7	249.0	248.1	250.2	254.8	256.5	257.7	258.1	259.8	259.0	261.4
62.5°	227.3	223.6	225.2	227.3	229.0	231.5	232.3	234.4	234.0	234.8	236.1
65°	201.1	199.0	199.4	201.9	204.0	207.3	207.3	207.3	209.4	209.4	210.2
67.5°	175.7	174.4	176.1	178.2	178.6	180.7	180.3	182.8	184.4	185.3	186.1
70°	151.1	150.3	150.3	152.4	154.5	155.3	156.1	157.8	158.2	159.5	161.5
72.5°	127.8	125.3	125.7	128.6	128.6	130.3	132.4	132.4	134.9	135.3	137.4
75°	102.4	101.6	102.4	104.1	106.2	105.7	108.2	107.8	108.7	111.6	112.0
77.5°	79.9	78.7	80.8	81.6	82.0	82.4	83.3	85.3	87.0	88.3	88.7
80°	57.5	57.0	59.1	60.0	59.5	60.4	61.6	63.7	63.7	64.5	65.8
82.5°	38.7	37.9	39.1	40.4	41.2	41.6	41.6	42.5	42.9	43.7	43.7
85°	22.1	22.1	22.9	23.3	24.1	23.7	24.6	24.1	25.0	25.8	25.4
87.5°	9.6	9.6	9.6	9.6	10.0	10.0	10.4	10.4	10.0	10.4	9.6
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: P243004

CATALOG NUMBER: S121DR-H685D940-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	1034.1	1034.1	1034.1	1034.1
2.5°	980.0	980.9	978.8	976.7
5°	928.4	925.5	922.6	921.7
7.5°	870.5	870.5	863.4	865.1
10°	808.5	806.0	800.6	801.0
12.5°	748.1	746.0	743.1	741.9
15°	693.6	694.8	696.9	685.3
17.5°	650.7	647.4	645.7	643.6
20°	612.4	610.7	607.4	607.0
22.5°	582.8	579.1	578.3	578.7
25°	554.5	554.5	554.5	552.0
27.5°	534.6	534.6	533.3	533.7
30°	517.1	517.9	516.7	517.1
32.5°	500.4	500.8	500.0	499.6
35°	481.7	482.9	482.5	482.9
37.5°	463.8	464.6	463.8	463.8
40°	443.4	445.5	445.0	443.8
42.5°	423.0	423.0	424.2	423.8
45°	401.7	400.9	400.9	402.2
47.5°	379.3	380.9	380.1	380.5
50°	358.5	358.0	356.8	356.4
52.5°	333.9	334.7	334.3	332.2
55°	310.2	310.2	309.7	309.7
57.5°	284.8	286.0	285.6	285.6
60°	260.6	261.4	261.9	261.4
62.5°	236.1	236.5	236.1	236.5
65°	212.3	212.3	211.9	213.2
67.5°	186.5	186.9	186.5	187.3
70°	161.9	162.8	163.2	162.4
72.5°	138.6	137.8	138.2	137.4
75°	112.8	113.2	112.8	113.2
77.5°	88.7	89.1	88.7	89.1
80°	65.4	65.4	65.8	64.9
82.5°	44.1	44.1	45.4	44.1
85°	25.8	25.8	25.0	26.6
87.5°	10.0	10.0	10.0	10.0
90°	0.0	0.0	0.0	0.0

(END OF REPORT)