

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: P332213-935

Luminaire Tested: **S123DIW-S1165D460U935-4F0-1E-UDD-D1**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P332213-935  
REPORT IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1807-864-9,  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: NEO-RAY  
Catalog Number: S123DIW-S1165D460U935-4F0-1E-UDD-D1  
Description: DEFINE 3 DIRECT-INDIRECT WALL MOUNT LED LUMINAIRE  
DOWNLIGHT 1165 LUMENS PER FOOT, DROP SATIN WHITE DIFFUSER  
UPLIGHT 460 LUMENS PER FOOT, FLUSH SATIN WHITE DIFFUSER  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

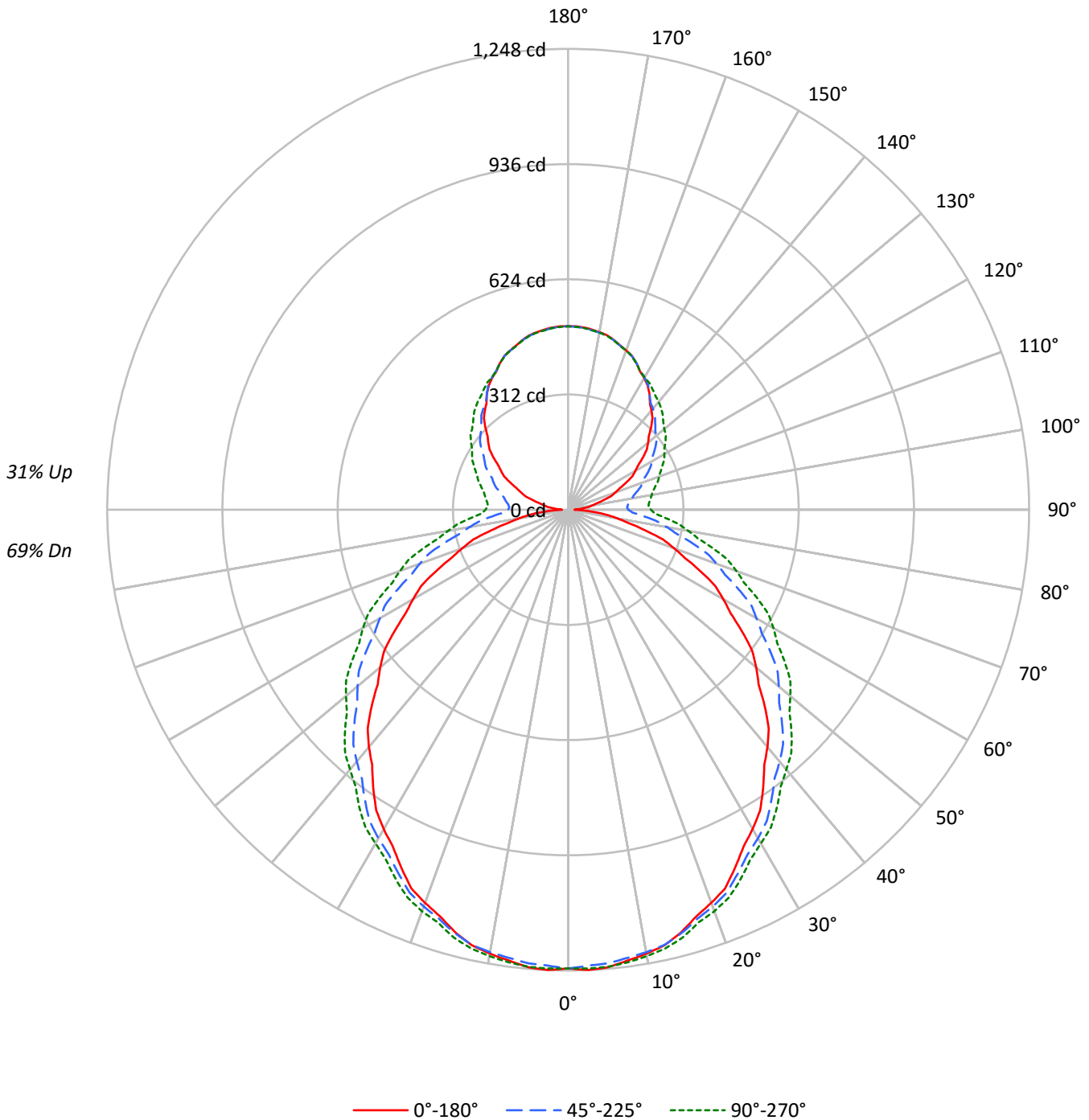
Lumens per Lamp: N/A  
Luminaire Lumens: 5552.8 lumens  
Efficiency: N/A  
Efficacy: 106.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.26 / 1.37  
Luminous Opening: Rectangular w/ Sides (W: 0.25' x L: 4' x H: 0.08')  
CIE Type: Semi-Direct  
  
Input Watts (W): 52.4  
Input Voltage (V): 120  
Input 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	112	112	112	112	105	105	105	105	94	94	94	83	83	83	73	73	73	69
1	101	95	91	87	95	90	86	82	80	77	74	71	69	66	63	61	59	55
2	91	83	76	70	85	78	72	67	70	65	60	62	58	54	54	51	49	45
3	83	72	64	58	78	68	61	55	61	55	50	54	49	45	48	44	41	37
4	76	64	55	48	71	60	52	46	54	47	42	48	43	39	42	38	35	32
5	69	57	48	41	65	54	46	40	48	42	36	43	38	33	38	34	30	27
6	64	51	42	36	60	48	40	34	43	37	32	39	33	29	34	30	26	24
7	59	46	37	31	55	44	36	30	39	33	28	35	30	26	31	27	23	21
8	55	42	33	28	52	40	32	27	36	29	25	32	27	23	29	24	21	19
9	51	38	30	25	48	36	29	24	33	27	22	30	24	21	27	22	19	17
10	48	35	27	22	45	33	26	22	30	24	20	27	22	19	25	20	17	15

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

	0°	45°	90°
0°	13373	13373	13373
5°	13415	13037	13044
10°	13294	12736	12672
15°	13123	12396	12267
20°	12878	12006	11821
25°	12576	11558	11352
30°	12267	11155	10876
35°	11919	10728	10496
40°	11588	10340	10090
45°	11221	9968	9765
50°	10858	9599	9408
55°	10459	9224	9085
60°	10067	8841	8755
65°	9669	8433	8362
70°	9064	7974	7959
75°	8304	7449	7549
80°	7429	6933	7081
85°	6613	6577	6812



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	117.8	2.1
10°-20°	335.7	6.0
20°-30°	502.2	9.0
30°-40°	599.7	10.8
40°-50°	627.4	11.3
50°-60°	588.8	10.6
60°-70°	491.8	8.9
70°-80°	351.8	6.3
80°-90°	211.3	3.8
90°-100°	164.0	3.0
100°-110°	193.6	3.5
110°-120°	229.3	4.1
120°-130°	253.6	4.6
130°-140°	260.1	4.7
140°-150°	242.9	4.4
150°-160°	201.6	3.6
160°-170°	134.2	2.4
170°-180°	47.0	0.8
0°-30°	955.7	17.2
0°-40°	1555.4	28.0
0°-60°	2771.6	49.9
0°-90°	3826.5	68.9
90°-120°	586.9	10.6
90°-150°	1343.5	24.2
90°-180°	1726.0	31.1
0°-180°	5552.8	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1242	1242	1242	1242	1242	
5°	1244	1241	1233	1243	1242	118
15°	1184	1188	1187	1200	1199	333
25°	1069	1082	1087	1103	1104	492
35°	920	942	960	979	985	575
45°	752	785	819	844	855	580
55°	574	619	667	702	715	514
65°	397	450	509	548	563	392
75°	215	279	346	390	407	230
85°	66	134	206	250	265	70
90°	18	88	162	208	224	13
95°	38	94	163	205	220	37
105°	99	133	194	230	244	105
115°	173	192	238	270	281	171
125°	247	250	286	312	321	220
135°	318	319	333	355	362	245
145°	383	383	384	394	398	239
155°	437	437	438	439	437	201
165°	476	475	475	477	475	134
175°	496	494	494	496	494	47
180°	497	497	497	497	497	



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1242.4	1242.4	1242.4	1242.4	1242.4	1242.4	1242.4	1242.4	1242.4	1242.4	1242.4
2.5°	1247.8	1247.2	1246.4	1245.7	1244.9	1243.6	1241.7	1239.8	1237.9	1236.0	1237.9
5°	1243.8	1243.2	1242.6	1242.0	1241.4	1240.2	1238.4	1236.6	1234.8	1233.0	1235.4
7.5°	1231.6	1231.7	1231.8	1232.0	1232.1	1231.3	1229.5	1227.8	1226.1	1224.3	1227.3
10°	1220.8	1221.4	1222.0	1222.6	1223.2	1222.7	1221.2	1219.7	1218.2	1216.7	1219.7
12.5°	1207.8	1208.6	1209.4	1210.3	1211.2	1211.1	1210.0	1209.0	1208.0	1206.9	1209.7
15°	1184.2	1185.2	1186.0	1187.0	1187.8	1188.2	1187.8	1187.6	1187.2	1187.0	1190.0
17.5°	1154.4	1156.2	1158.0	1159.9	1161.7	1162.5	1162.4	1162.3	1162.2	1162.0	1164.8
20°	1132.8	1134.6	1136.4	1138.2	1140.1	1141.3	1141.9	1142.5	1143.1	1143.7	1146.3
22.5°	1110.1	1111.9	1113.7	1115.5	1117.3	1118.6	1119.5	1120.3	1121.1	1122.0	1125.4
25°	1069.2	1072.2	1075.2	1078.2	1081.2	1083.1	1084.1	1084.9	1085.9	1086.8	1090.7
27.5°	1028.0	1031.5	1034.9	1038.4	1041.7	1044.5	1046.4	1048.3	1050.2	1052.1	1055.5
30°	998.8	1002.7	1006.6	1010.6	1014.4	1017.6	1020.0	1022.4	1024.8	1027.3	1030.9
32.5°	966.3	970.7	975.1	979.5	983.9	987.7	990.8	993.9	997.0	1000.1	1004.0
35°	920.3	925.1	930.0	934.8	939.6	943.9	947.9	951.7	955.6	959.6	964.1
37.5°	871.6	877.0	882.4	887.9	893.3	898.4	903.2	908.0	912.8	917.7	922.7
40°	839.1	844.6	850.0	855.3	860.7	866.5	872.5	878.5	884.5	890.5	895.7
42.5°	803.4	810.0	816.7	823.2	829.8	836.3	842.6	848.8	855.1	861.3	866.9
45°	752.5	759.7	766.9	774.1	781.4	788.8	796.3	803.7	811.3	818.8	824.5
47.5°	699.1	707.3	715.5	723.8	731.9	740.3	748.9	757.5	766.1	774.7	781.1
50°	664.5	673.0	681.4	689.7	698.2	707.1	716.4	725.7	735.0	744.3	751.3
52.5°	627.8	636.6	645.5	654.4	663.3	673.0	683.2	693.4	703.8	714.0	721.3
55°	573.9	583.8	593.7	603.6	613.5	623.9	634.7	645.6	656.4	667.3	675.4
57.5°	521.3	531.7	542.0	552.3	562.7	573.9	585.7	597.5	609.3	621.2	629.4
60°	484.5	495.3	506.2	517.0	527.8	539.4	551.7	564.0	576.4	588.8	597.2
62.5°	449.9	461.0	472.0	483.1	494.1	506.2	519.3	532.3	545.4	558.4	566.8
65°	396.6	408.3	420.0	431.7	443.5	456.0	469.2	482.4	495.7	508.9	517.9
67.5°	342.4	354.9	367.3	379.8	392.2	405.2	418.6	432.1	445.6	459.1	468.9
70°	304.5	317.5	330.4	343.3	356.3	370.0	384.4	398.8	413.3	427.7	437.3
72.5°	269.8	282.8	295.8	308.7	321.6	335.5	350.4	365.3	380.3	395.2	405.1
75°	215.2	229.4	243.5	257.6	271.7	286.3	301.4	316.4	331.4	346.5	356.4
77.5°	167.6	181.8	196.0	210.3	224.5	239.3	254.4	269.6	284.7	299.9	310.4
80°	134.0	148.7	163.5	178.2	193.0	208.1	223.8	239.4	255.0	270.7	280.9
82.5°	104.8	119.8	134.7	149.7	164.6	180.1	196.0	211.9	227.7	243.6	253.8
85°	66.3	81.4	96.4	111.4	126.5	142.0	157.9	173.8	189.8	205.7	215.9
87.5°	36.1	51.2	66.4	81.5	96.7	112.0	127.6	143.2	158.8	174.3	184.6
90°	18.0	33.6	49.2	64.8	80.4	96.4	112.9	129.4	145.9	162.3	172.9
92.5°	25.9	39.9	53.7	67.6	81.5	96.3	112.0	127.8	143.5	159.3	169.5
95°	37.9	50.3	62.6	74.9	87.2	101.2	116.6	132.0	147.4	162.9	172.5
97.5°	54.2	65.2	76.2	87.3	98.3	111.2	125.7	140.3	154.8	169.4	178.8
100°	65.3	75.4	85.5	95.7	105.8	118.0	132.3	146.5	160.8	175.1	184.1
102.5°	78.2	87.2	96.2	105.1	114.1	125.7	139.8	154.0	168.2	182.4	191.1
105°	98.6	106.0	113.4	120.8	128.2	138.7	152.5	166.2	179.9	193.6	202.0
107.5°	121.1	127.3	133.5	139.7	146.0	155.4	168.0	180.6	193.1	205.7	214.0
110°	134.9	140.5	146.1	151.7	157.3	166.2	178.4	190.5	202.8	215.0	223.2



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**CANDELA DISTRIBUTION (continued):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
112.5°	150.5	155.1	159.6	164.2	168.8	176.8	188.4	200.0	211.5	223.2	231.2
115°	172.6	176.5	180.3	184.2	188.0	195.4	206.0	216.6	227.3	238.0	245.2
117.5°	195.9	198.3	200.7	203.1	205.5	211.6	221.6	231.5	241.5	251.4	258.6
120°	209.5	211.5	213.5	215.5	217.6	223.3	232.8	242.3	251.8	261.3	268.1
122.5°	224.8	225.9	227.1	228.3	229.5	234.6	243.8	253.0	262.3	271.5	277.9
125°	246.8	247.0	247.3	247.5	247.8	252.2	260.7	269.3	277.8	286.4	292.4
127.5°	268.3	268.5	268.8	269.1	269.3	272.9	280.0	287.0	294.0	301.1	306.5
130°	282.7	283.0	283.4	283.9	284.2	287.3	293.1	298.8	304.5	310.3	315.6
132.5°	295.9	296.5	297.2	297.8	298.4	301.1	305.7	310.3	315.0	319.6	324.6
135°	317.6	317.8	318.1	318.2	318.5	320.2	323.4	326.7	329.8	333.0	338.1
137.5°	337.6	337.8	338.0	338.2	338.4	339.5	341.6	343.7	345.8	347.8	352.2
140°	350.6	351.0	351.5	351.9	352.3	353.0	354.0	355.0	355.9	357.0	361.4
142.5°	363.3	363.6	363.8	363.9	364.1	364.4	364.7	365.1	365.4	365.8	369.7
145°	383.3	383.2	383.1	383.0	382.8	382.9	383.1	383.4	383.7	383.9	386.2
147.5°	399.5	399.8	400.1	400.4	400.7	401.0	401.2	401.5	401.7	402.0	402.7
150°	411.6	411.8	412.0	412.2	412.3	412.5	412.7	412.8	413.0	413.2	413.2
152.5°	421.6	421.9	422.1	422.3	422.6	422.8	422.8	423.0	423.1	423.2	423.4
155°	437.4	437.4	437.4	437.4	437.4	437.5	437.6	437.6	437.7	437.8	438.2
157.5°	450.8	450.7	450.6	450.5	450.4	450.4	450.5	450.6	450.6	450.6	451.0
160°	459.3	459.1	458.9	458.7	458.6	458.5	458.5	458.5	458.5	458.5	458.9
162.5°	466.7	466.5	466.2	466.0	465.8	465.7	465.7	465.8	465.9	466.0	466.4
165°	476.4	476.1	475.9	475.6	475.4	475.3	475.3	475.3	475.3	475.3	475.8
167.5°	484.1	483.8	483.5	483.1	482.8	482.6	482.7	482.8	482.8	482.8	483.5
170°	488.5	488.2	487.8	487.5	487.2	487.0	487.0	487.0	487.0	487.0	487.6
172.5°	492.0	491.6	491.3	490.9	490.5	490.3	490.3	490.3	490.3	490.3	490.9
175°	495.5	495.2	494.8	494.5	494.1	494.0	494.0	494.0	494.0	494.0	494.5
177.5°	497.1	496.7	496.5	496.2	495.9	495.8	495.8	495.8	495.8	495.8	496.2
180°	496.7	496.7	496.7	496.7	496.7	496.7	496.7	496.7	496.7	496.7	496.7



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**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
0°	1242.4	1242.4	1242.4	1242.4	1242.4	1242.4	1242.4	1242.4
2.5°	1239.8	1241.7	1243.6	1244.5	1244.2	1244.0	1243.7	1243.5
5°	1237.8	1240.2	1242.6	1243.6	1243.4	1243.0	1242.8	1242.4
7.5°	1230.3	1233.3	1236.3	1237.7	1237.3	1236.9	1236.6	1236.2
10°	1222.7	1225.7	1228.7	1229.9	1229.3	1228.7	1228.1	1227.5
12.5°	1212.5	1215.3	1218.1	1219.1	1218.5	1217.9	1217.3	1216.7
15°	1192.9	1195.9	1198.9	1200.3	1200.1	1199.7	1199.5	1199.1
17.5°	1167.4	1170.2	1172.9	1174.0	1173.6	1173.2	1172.8	1172.3
20°	1149.0	1151.8	1154.4	1156.0	1156.2	1156.6	1156.8	1157.2
22.5°	1128.9	1132.3	1135.7	1137.3	1137.1	1137.0	1136.8	1136.6
25°	1094.6	1098.5	1102.4	1104.4	1104.4	1104.4	1104.4	1104.4
27.5°	1058.9	1062.2	1065.6	1067.4	1067.6	1067.9	1068.2	1068.4
30°	1034.5	1038.1	1041.6	1043.4	1043.4	1043.4	1043.4	1043.4
32.5°	1007.9	1011.8	1015.5	1017.9	1018.6	1019.3	1020.0	1020.7
35°	968.6	973.1	977.6	980.5	981.7	982.9	984.1	985.2
37.5°	927.8	933.0	938.1	941.1	942.1	943.1	944.0	944.9
40°	900.8	905.9	911.0	914.1	915.3	916.5	917.7	918.9
42.5°	872.5	878.1	883.7	887.3	889.0	890.7	892.3	894.1
45°	830.3	835.9	841.7	845.8	848.2	850.6	853.0	855.3
47.5°	787.6	794.0	800.5	804.6	806.4	808.3	810.2	812.0
50°	758.2	765.2	772.1	776.5	778.7	780.8	782.9	785.0
52.5°	728.4	735.6	742.7	747.6	750.2	752.8	755.4	757.9
55°	683.5	691.6	699.7	705.0	707.4	709.8	712.2	714.6
57.5°	637.6	645.8	653.9	659.4	662.3	665.1	668.0	670.7
60°	605.5	614.0	622.4	628.3	631.6	634.9	638.2	641.5
62.5°	575.2	583.7	592.1	597.9	600.9	604.0	607.1	610.1
65°	526.9	536.0	545.0	551.0	554.0	557.0	560.0	563.0
67.5°	478.8	488.7	498.5	504.7	507.3	509.8	512.3	514.9
70°	446.9	456.6	466.1	472.5	475.5	478.5	481.5	484.5
72.5°	414.9	424.8	434.6	441.1	444.1	447.1	450.1	453.1
75°	366.4	376.3	386.2	393.0	396.6	400.2	403.8	407.3
77.5°	320.8	331.3	341.8	348.4	351.2	354.0	356.7	359.5
80°	291.1	301.4	311.6	318.2	321.2	324.3	327.3	330.2
82.5°	264.1	274.3	284.5	291.1	294.1	297.1	300.1	303.2
85°	226.2	236.4	246.6	253.2	256.2	259.2	262.3	265.3
87.5°	194.9	205.2	215.5	222.1	225.2	228.3	231.3	234.3
90°	183.5	194.0	204.6	211.5	214.6	217.8	221.0	224.2
92.5°	179.8	190.0	200.3	206.8	209.4	212.1	214.7	217.4
95°	182.2	191.8	201.6	207.8	210.9	213.9	216.9	219.9
97.5°	188.1	197.5	206.9	213.0	216.0	219.0	222.0	224.9
100°	193.0	202.1	211.0	217.1	220.3	223.5	226.6	229.8
102.5°	199.8	208.5	217.3	223.2	226.1	229.1	232.1	235.1
105°	210.4	218.9	227.3	232.9	235.8	238.7	241.6	244.4
107.5°	222.4	230.7	239.1	244.5	247.1	249.6	252.2	254.7
110°	231.4	239.5	247.6	252.9	255.1	257.4	259.6	261.7





TEST NUMBER: P332213-935

CATALOG NUMBER: S123DIW-S1165D460U935-4F0-1E-UDD-D1

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	239.2	247.1	255.1	260.5	263.0	265.7	268.3	270.9
115°	252.5	259.8	267.2	272.0	274.3	276.6	279.0	281.3
117.5°	265.7	272.9	280.0	284.6	286.7	288.8	290.9	293.0
120°	274.9	281.8	288.6	293.0	294.9	296.9	298.8	300.7
122.5°	284.4	290.8	297.3	301.4	303.3	305.1	307.0	308.9
125°	298.3	304.3	310.3	314.1	315.9	317.6	319.4	321.2
127.5°	312.0	317.5	323.0	326.5	328.1	329.8	331.4	333.1
130°	321.1	326.4	331.8	335.1	336.3	337.4	338.6	339.8
132.5°	329.7	334.8	339.8	343.1	344.7	346.3	347.8	349.4
135°	343.2	348.3	353.4	356.5	357.8	359.2	360.5	361.9
137.5°	356.6	361.0	365.4	368.2	369.4	370.6	371.7	372.9
140°	365.8	370.2	374.7	377.3	378.2	379.1	380.0	380.9
142.5°	373.7	377.5	381.5	384.0	385.0	386.1	387.1	388.1
145°	388.6	390.9	393.2	394.8	395.6	396.5	397.4	398.2
147.5°	403.4	404.2	404.8	405.5	406.0	406.7	407.2	407.8
150°	413.2	413.2	413.2	413.3	413.4	413.4	413.5	413.5
152.5°	423.4	423.6	423.8	423.6	423.4	423.0	422.7	422.3
155°	438.5	438.9	439.2	439.0	438.4	437.8	437.2	436.6
157.5°	451.4	451.8	452.1	452.0	451.6	451.1	450.6	450.1
160°	459.3	459.8	460.2	460.2	459.9	459.5	459.2	458.8
162.5°	466.8	467.3	467.7	467.6	467.1	466.5	466.0	465.4
165°	476.3	476.8	477.3	477.3	476.6	476.0	475.4	474.8
167.5°	484.0	484.5	485.0	485.0	484.5	484.0	483.5	482.8
170°	488.2	488.8	489.4	489.4	488.8	488.2	487.6	487.0
172.5°	491.5	492.0	492.5	492.5	491.9	491.3	490.7	490.1
175°	495.0	495.5	496.0	496.0	495.4	494.8	494.2	493.6
177.5°	496.6	497.1	497.4	497.4	496.9	496.5	495.9	495.4
180°	496.7	496.7	496.7	496.7	496.7	496.7	496.7	496.7

(END OF REPORT)