

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: P332213-840

Luminaire Tested: **S123DIW-S1165D460U840-4F0-1E-UDD-D1**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P332213-840  
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-S1165D460U840-4F0-1E-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: 6512.8 lumens  
Efficiency: N/A  
Efficacy: 124.3 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

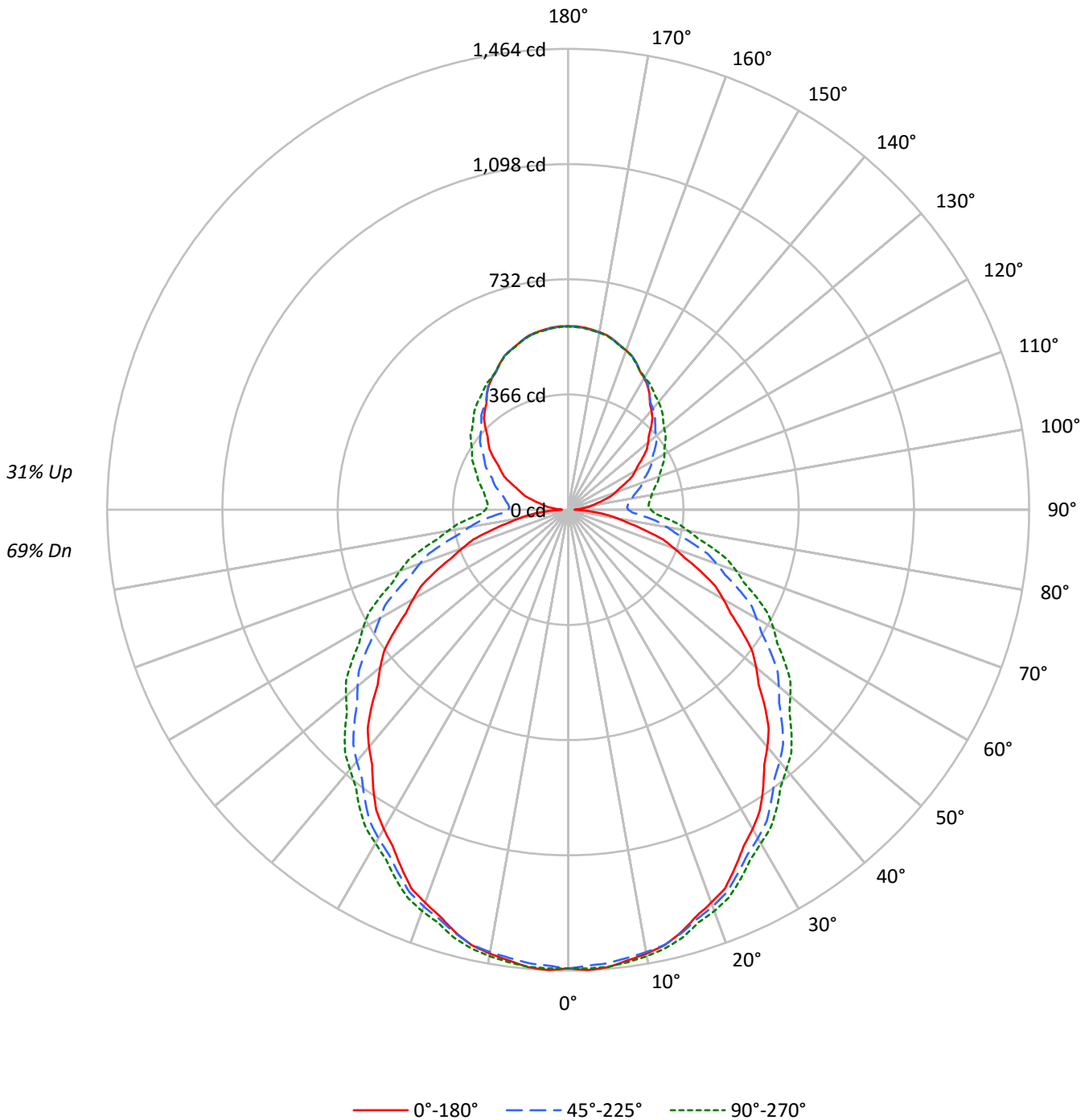
Input Watts (W): 52.4  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	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°	15685	15685	15685
5°	15735	15290	15299
10°	15593	14937	14863
15°	15393	14539	14387
20°	15105	14082	13865
25°	14751	13556	13315
30°	14388	13084	12757
35°	13980	12583	12311
40°	13592	12128	11834
45°	13161	11692	11453
50°	12735	11259	11034
55°	12267	10818	10657
60°	11808	10368	10270
65°	11339	9889	9809
70°	10633	9352	9336
75°	9740	8736	8855
80°	8709	8132	8306
85°	7760	7716	7988



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	138.1	2.1
10°-20°	393.8	6.0
20°-30°	589.0	9.0
30°-40°	703.4	10.8
40°-50°	735.9	11.3
50°-60°	690.6	10.6
60°-70°	576.8	8.9
70°-80°	412.7	6.3
80°-90°	247.8	3.8
90°-100°	192.4	3.0
100°-110°	227.1	3.5
110°-120°	269.0	4.1
120°-130°	297.4	4.6
130°-140°	305.1	4.7
140°-150°	284.9	4.4
150°-160°	236.4	3.6
160°-170°	157.3	2.4
170°-180°	55.1	0.8
0°-30°	1120.9	17.2
0°-40°	1824.3	28.0
0°-60°	3250.8	49.9
0°-90°	4488.1	68.9
90°-120°	688.4	10.6
90°-150°	1575.8	24.2
90°-180°	2025.0	31.1
0°-180°	6512.8	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1457	1457	1457	1457	1457	
5°	1459	1455	1446	1458	1457	138
15°	1389	1393	1392	1407	1406	391
25°	1254	1269	1275	1294	1295	578
35°	1079	1105	1126	1148	1156	675
45°	883	921	960	990	1003	680
55°	673	726	783	824	838	602
65°	465	528	597	643	660	459
75°	252	327	406	457	478	270
85°	78	157	241	293	311	82
90°	21	104	190	244	263	16
95°	44	110	191	240	258	44
105°	116	157	227	270	287	123
115°	202	225	279	316	330	201
125°	289	293	336	366	377	259
135°	372	375	391	416	424	287
145°	450	449	450	462	467	280
155°	513	513	514	515	512	236
165°	559	557	557	560	557	157
175°	581	580	579	582	579	55
180°	583	583	583	583	583	



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1457.2	1457.2	1457.2	1457.2	1457.2	1457.2	1457.2	1457.2	1457.2	1457.2	1457.2
2.5°	1463.6	1462.8	1461.9	1461.1	1460.2	1458.6	1456.4	1454.1	1451.9	1449.7	1451.9
5°	1458.9	1458.1	1457.4	1456.7	1456.0	1454.6	1452.5	1450.4	1448.2	1446.1	1449.0
7.5°	1444.5	1444.7	1444.8	1445.0	1445.1	1444.2	1442.1	1440.1	1438.0	1435.9	1439.5
10°	1431.9	1432.6	1433.3	1434.0	1434.7	1434.1	1432.4	1430.6	1428.9	1427.0	1430.6
12.5°	1416.6	1417.5	1418.6	1419.6	1420.6	1420.5	1419.3	1418.1	1416.8	1415.6	1418.9
15°	1389.0	1390.1	1391.1	1392.2	1393.2	1393.6	1393.2	1392.9	1392.5	1392.2	1395.7
17.5°	1354.0	1356.1	1358.3	1360.4	1362.5	1363.5	1363.4	1363.2	1363.1	1362.9	1366.1
20°	1328.7	1330.8	1332.9	1335.0	1337.2	1338.6	1339.3	1340.0	1340.7	1341.4	1344.5
22.5°	1302.0	1304.1	1306.3	1308.4	1310.5	1312.0	1313.0	1314.0	1314.9	1316.0	1320.0
25°	1254.1	1257.6	1261.1	1264.7	1268.2	1270.4	1271.5	1272.5	1273.6	1274.7	1279.3
27.5°	1205.8	1209.8	1213.9	1217.9	1221.8	1225.1	1227.3	1229.5	1231.8	1234.1	1238.0
30°	1171.5	1176.1	1180.6	1185.3	1189.8	1193.6	1196.4	1199.2	1202.0	1204.9	1209.1
32.5°	1133.4	1138.5	1143.7	1148.8	1154.0	1158.4	1162.1	1165.8	1169.4	1173.1	1177.6
35°	1079.4	1085.1	1090.8	1096.4	1102.1	1107.1	1111.8	1116.3	1120.8	1125.5	1130.7
37.5°	1022.3	1028.6	1035.0	1041.4	1047.7	1053.7	1059.3	1065.0	1070.7	1076.3	1082.3
40°	984.2	990.6	996.9	1003.2	1009.6	1016.3	1023.4	1030.4	1037.4	1044.5	1050.6
42.5°	942.3	950.1	957.9	965.5	973.3	980.9	988.3	995.5	1002.9	1010.3	1016.8
45°	882.6	891.1	899.5	908.0	916.5	925.1	933.9	942.7	951.6	960.4	967.0
47.5°	820.0	829.6	839.2	848.9	858.5	868.3	878.4	888.5	898.6	908.7	916.1
50°	779.4	789.3	799.2	809.0	818.9	829.3	840.3	851.2	862.1	873.0	881.2
52.5°	736.3	746.7	757.1	767.6	778.0	789.3	801.3	813.3	825.5	837.5	846.0
55°	673.1	684.7	696.3	708.0	719.6	731.7	744.5	757.2	769.9	782.6	792.1
57.5°	611.5	623.6	635.7	647.8	660.0	673.1	686.9	700.8	714.7	728.6	738.2
60°	568.3	581.0	593.7	606.4	619.0	632.7	647.1	661.6	676.1	690.5	700.4
62.5°	527.7	540.7	553.6	566.6	579.6	593.7	609.0	624.3	639.6	655.0	664.8
65°	465.1	478.9	492.6	506.3	520.2	534.8	550.3	565.8	581.4	596.8	607.4
67.5°	401.6	416.3	430.8	445.5	460.0	475.2	491.0	506.9	522.6	538.5	550.0
70°	357.2	372.3	387.5	402.6	417.9	433.9	450.8	467.8	484.7	501.6	512.9
72.5°	316.5	331.7	346.9	362.0	377.2	393.5	411.0	428.5	446.1	463.5	475.1
75°	252.4	269.0	285.6	302.2	318.7	335.8	353.5	371.1	388.7	406.4	418.0
77.5°	196.5	213.3	229.9	246.7	263.4	280.6	298.4	316.2	334.0	351.7	364.1
80°	157.1	174.4	191.8	209.0	226.3	244.1	262.5	280.8	299.1	317.5	329.5
82.5°	122.9	140.5	158.0	175.6	193.1	211.3	229.8	248.5	267.1	285.7	297.7
85°	77.8	95.4	113.1	130.7	148.3	166.5	185.2	203.9	222.6	241.3	253.3
87.5°	42.3	60.1	77.9	95.6	113.4	131.4	149.7	167.9	186.2	204.4	216.5
90°	21.1	39.4	57.7	76.0	94.3	113.1	132.4	151.8	171.1	190.4	202.8
92.5°	30.4	46.8	63.0	79.3	95.5	112.9	131.4	149.9	168.3	186.8	198.8
95°	44.4	59.0	73.4	87.9	102.3	118.7	136.7	154.8	172.9	191.1	202.4
97.5°	63.5	76.4	89.4	102.4	115.3	130.4	147.4	164.5	181.6	198.7	209.7
100°	76.5	88.5	100.3	112.2	124.1	138.5	155.2	171.9	188.6	205.4	215.9
102.5°	91.7	102.3	112.8	123.3	133.8	147.4	164.0	180.7	197.2	213.9	224.1
105°	115.6	124.3	133.0	141.7	150.4	162.7	178.8	194.9	211.0	227.0	236.9
107.5°	142.0	149.3	156.6	163.9	171.3	182.3	197.0	211.8	226.5	241.3	251.1
110°	158.2	164.8	171.4	177.9	184.5	194.9	209.2	223.5	237.8	252.2	261.8



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**CANDELA DISTRIBUTION (continued):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
112.5°	176.5	181.9	187.2	192.6	197.9	207.4	221.0	234.6	248.1	261.8	271.1
115°	202.5	207.0	211.5	216.0	220.6	229.1	241.6	254.1	266.6	279.1	287.6
117.5°	229.7	232.6	235.4	238.2	241.1	248.2	259.9	271.6	283.3	294.9	303.3
120°	245.7	248.0	250.4	252.8	255.2	262.0	273.1	284.2	295.4	306.5	314.5
122.5°	263.7	265.0	266.4	267.7	269.1	275.2	286.0	296.8	307.6	318.4	326.0
125°	289.4	289.7	290.0	290.3	290.6	295.8	305.8	315.9	325.9	335.9	343.0
127.5°	314.7	315.0	315.3	315.6	315.9	320.1	328.4	336.6	344.9	353.1	359.5
130°	331.5	331.9	332.4	333.0	333.4	337.0	343.8	350.4	357.2	364.0	370.2
132.5°	347.1	347.8	348.6	349.3	350.0	353.1	358.6	364.0	369.4	374.9	380.7
135°	372.5	372.7	373.0	373.2	373.5	375.6	379.3	383.1	386.9	390.6	396.6
137.5°	396.0	396.2	396.5	396.7	396.9	398.2	400.7	403.1	405.6	408.0	413.1
140°	411.2	411.7	412.2	412.7	413.2	414.0	415.3	416.4	417.5	418.7	423.8
142.5°	426.2	426.5	426.7	426.9	427.1	427.4	427.8	428.2	428.6	429.0	433.6
145°	449.6	449.5	449.3	449.2	449.0	449.1	449.4	449.7	450.0	450.3	453.0
147.5°	468.6	468.9	469.3	469.6	470.0	470.3	470.6	470.9	471.2	471.5	472.3
150°	482.8	483.0	483.2	483.4	483.6	483.8	484.0	484.2	484.4	484.6	484.6
152.5°	494.5	494.8	495.1	495.3	495.6	495.8	495.9	496.1	496.2	496.3	496.6
155°	513.0	513.0	513.0	513.0	513.0	513.1	513.2	513.3	513.4	513.5	513.9
157.5°	528.8	528.7	528.6	528.4	528.3	528.3	528.4	528.5	528.5	528.6	529.0
160°	538.7	538.5	538.3	538.1	537.9	537.8	537.8	537.8	537.8	537.8	538.3
162.5°	547.4	547.1	546.8	546.5	546.3	546.2	546.2	546.3	546.4	546.5	547.0
165°	558.8	558.5	558.2	557.8	557.5	557.4	557.4	557.4	557.4	557.4	558.1
167.5°	567.8	567.4	567.0	566.6	566.2	566.0	566.1	566.2	566.3	566.3	567.0
170°	573.0	572.6	572.2	571.8	571.4	571.2	571.2	571.2	571.2	571.2	571.9
172.5°	577.0	576.6	576.2	575.8	575.3	575.1	575.1	575.1	575.1	575.1	575.8
175°	581.2	580.8	580.4	580.0	579.6	579.4	579.4	579.4	579.4	579.4	580.0
177.5°	583.0	582.6	582.3	582.0	581.7	581.5	581.5	581.5	581.5	581.5	582.0
180°	582.6	582.6	582.6	582.6	582.6	582.6	582.6	582.6	582.6	582.6	582.6



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**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
0°	1457.2	1457.2	1457.2	1457.2	1457.2	1457.2	1457.2	1457.2
2.5°	1454.1	1456.4	1458.6	1459.7	1459.4	1459.1	1458.8	1458.5
5°	1451.8	1454.6	1457.4	1458.6	1458.3	1457.9	1457.6	1457.2
7.5°	1443.0	1446.5	1450.1	1451.7	1451.2	1450.8	1450.4	1450.0
10°	1434.1	1437.6	1441.2	1442.6	1441.9	1441.2	1440.5	1439.8
12.5°	1422.2	1425.4	1428.7	1429.9	1429.2	1428.5	1427.7	1427.0
15°	1399.2	1402.7	1406.2	1407.9	1407.5	1407.1	1406.8	1406.4
17.5°	1369.3	1372.5	1375.6	1377.0	1376.5	1376.0	1375.5	1375.0
20°	1347.7	1350.9	1354.0	1355.8	1356.1	1356.6	1356.9	1357.3
22.5°	1324.0	1328.1	1332.0	1333.9	1333.7	1333.5	1333.3	1333.1
25°	1283.8	1288.5	1293.0	1295.4	1295.4	1295.4	1295.4	1295.4
27.5°	1241.9	1245.9	1249.8	1251.9	1252.2	1252.5	1252.8	1253.1
30°	1213.4	1217.6	1221.7	1223.9	1223.9	1223.9	1223.9	1223.9
32.5°	1182.1	1186.7	1191.1	1193.9	1194.7	1195.6	1196.4	1197.2
35°	1136.1	1141.3	1146.6	1150.0	1151.4	1152.9	1154.3	1155.6
37.5°	1088.2	1094.3	1100.2	1103.8	1105.0	1106.1	1107.2	1108.3
40°	1056.5	1062.5	1068.5	1072.2	1073.6	1075.0	1076.4	1077.8
42.5°	1023.4	1030.0	1036.5	1040.8	1042.7	1044.7	1046.6	1048.6
45°	973.8	980.5	987.2	992.0	994.8	997.6	1000.5	1003.2
47.5°	923.7	931.3	938.9	943.7	945.8	948.1	950.3	952.4
50°	889.3	897.5	905.5	910.8	913.3	915.7	918.3	920.7
52.5°	854.3	862.7	871.1	876.9	879.9	882.9	886.0	889.0
55°	801.6	811.1	820.7	826.9	829.7	832.5	835.4	838.2
57.5°	747.8	757.4	767.0	773.5	776.8	780.1	783.5	786.7
60°	710.2	720.1	730.0	736.9	740.8	744.7	748.5	752.5
62.5°	674.7	684.6	694.5	701.3	704.8	708.4	712.1	715.6
65°	618.0	628.6	639.2	646.2	649.7	653.3	656.8	660.4
67.5°	561.6	573.2	584.7	592.0	595.0	597.9	600.9	603.9
70°	524.2	535.5	546.7	554.2	557.7	561.3	564.7	568.3
72.5°	486.7	498.3	509.8	517.4	520.9	524.4	528.0	531.5
75°	429.7	441.3	452.9	460.9	465.1	469.4	473.6	477.8
77.5°	376.3	388.6	400.9	408.6	411.9	415.2	418.4	421.6
80°	341.4	353.5	365.5	373.2	376.8	380.3	383.8	387.3
82.5°	309.7	321.7	333.7	341.4	345.0	348.5	352.0	355.6
85°	265.3	277.3	289.2	297.0	300.5	304.1	307.6	311.1
87.5°	228.6	240.7	252.8	260.5	264.1	267.7	271.2	274.8
90°	215.2	227.5	239.9	248.0	251.8	255.5	259.2	263.0
92.5°	210.9	222.9	234.9	242.6	245.6	248.7	251.9	255.0
95°	213.7	225.0	236.4	243.8	247.3	250.9	254.4	257.9
97.5°	220.7	231.7	242.7	249.8	253.4	256.8	260.3	263.8
100°	226.4	237.0	247.5	254.7	258.4	262.2	265.8	269.5
102.5°	234.4	244.6	254.9	261.8	265.2	268.7	272.3	275.7
105°	246.8	256.7	266.6	273.2	276.6	279.9	283.4	286.7
107.5°	260.8	270.6	280.4	286.8	289.8	292.8	295.8	298.7
110°	271.4	280.9	290.4	296.6	299.2	301.8	304.5	307.0





TEST NUMBER: P332213-840

CATALOG NUMBER: S123DIW-S1165D460U840-4F0-1E-UDD-D1

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	280.5	289.8	299.2	305.5	308.5	311.6	314.7	317.7
115°	296.2	304.8	313.4	319.0	321.7	324.5	327.2	329.9
117.5°	311.6	320.0	328.4	333.8	336.3	338.7	341.2	343.7
120°	322.4	330.5	338.5	343.7	345.9	348.2	350.4	352.7
122.5°	333.6	341.1	348.7	353.6	355.8	357.9	360.1	362.3
125°	349.9	356.9	364.0	368.4	370.5	372.5	374.7	376.7
127.5°	366.0	372.3	378.8	382.9	384.9	386.8	388.7	390.7
130°	376.6	382.8	389.2	393.0	394.5	395.8	397.2	398.6
132.5°	386.7	392.6	398.6	402.4	404.2	406.2	408.0	409.8
135°	402.5	408.5	414.4	418.2	419.7	421.3	422.8	424.4
137.5°	418.3	423.4	428.6	431.9	433.2	434.6	436.0	437.4
140°	429.1	434.2	439.5	442.5	443.6	444.6	445.8	446.8
142.5°	438.3	442.8	447.5	450.4	451.6	452.8	454.0	455.2
145°	455.8	458.5	461.2	463.0	464.0	465.0	466.1	467.1
147.5°	473.1	474.0	474.8	475.6	476.3	477.0	477.6	478.3
150°	484.6	484.6	484.6	484.7	484.8	484.8	484.9	485.0
152.5°	496.7	496.9	497.1	496.9	496.6	496.1	495.7	495.3
155°	514.3	514.7	515.1	514.9	514.2	513.5	512.8	512.1
157.5°	529.5	529.9	530.3	530.2	529.7	529.1	528.5	528.0
160°	538.8	539.3	539.8	539.8	539.4	539.0	538.6	538.2
162.5°	547.5	548.1	548.6	548.5	547.9	547.1	546.5	545.8
165°	558.7	559.3	559.9	559.8	559.1	558.4	557.6	556.9
167.5°	567.6	568.3	568.9	568.9	568.3	567.6	567.0	566.3
170°	572.6	573.3	574.0	574.0	573.3	572.6	571.9	571.2
172.5°	576.4	577.0	577.6	577.6	576.9	576.2	575.5	574.8
175°	580.6	581.2	581.8	581.8	581.1	580.4	579.7	579.0
177.5°	582.5	583.0	583.4	583.4	582.8	582.3	581.7	581.1
180°	582.6	582.6	582.6	582.6	582.6	582.6	582.6	582.6

(END OF REPORT)