

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: METALUX

Report Number: C1701878A003

Luminaire Tested: **24CZRK-LD4-40HP-UNV-L840-CD1-U**

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-79-08  
Report Number: C1701878A003  
REPORT IS SCALED FROM IESNA LM-79-08 TEST DATA ( C1701878A003)  
Test Lab: INNOVATION CENTER-P2  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: METALUX  
Catalog Number: 24CZRK-LD4-40HP-UNV-L840-CD1-U  
Description: 24CRZ RETROFIT DLC Prem 4000 40K 0-10Dim  
Light Source: -  
Ballast/Driver: -

**Summary**

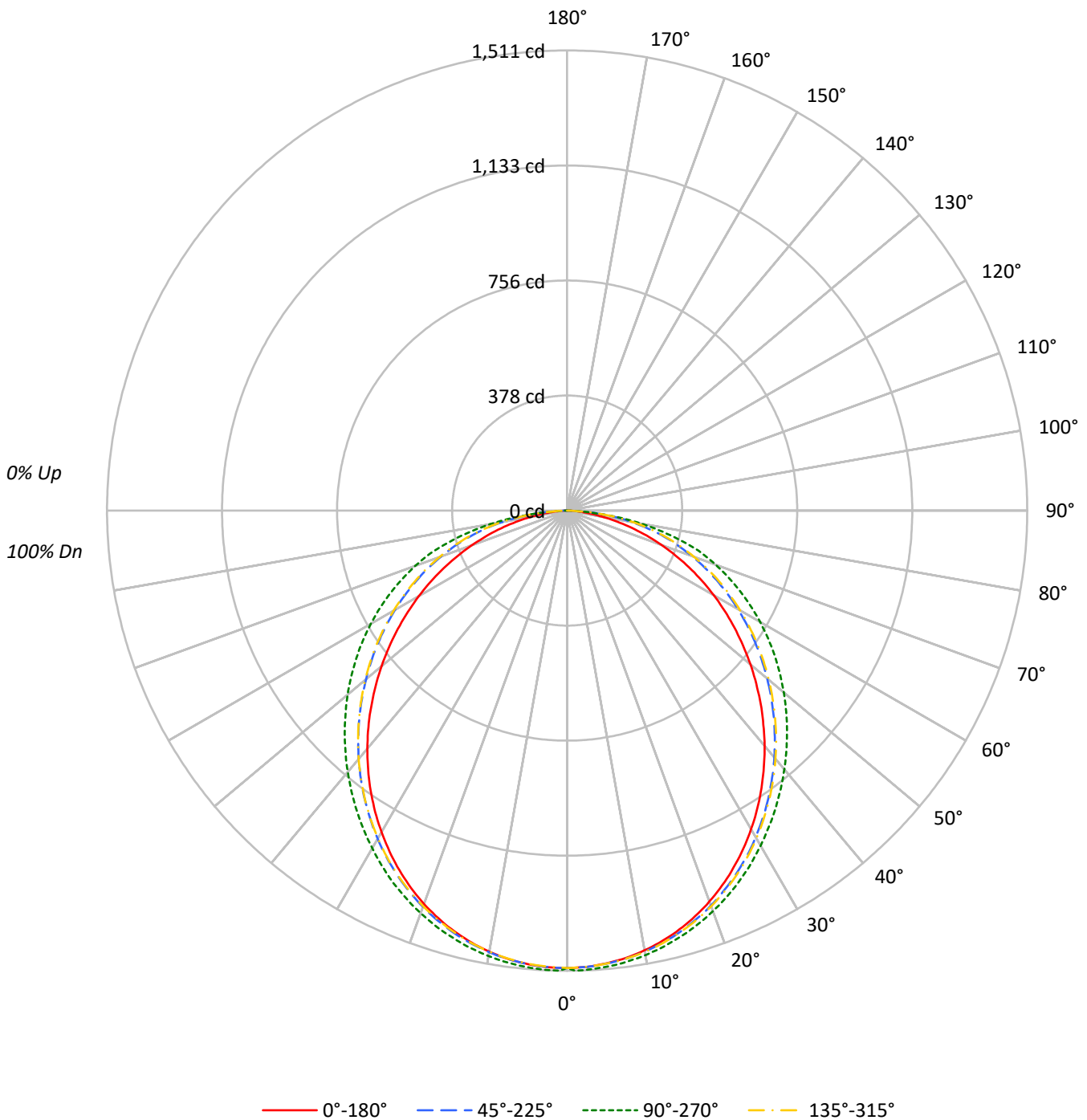
Lumens per Lamp: 4278.4 (1 lamp)  
Luminaire Lumens: 4278.3 lumens  
Efficiency: 100.0%  
Efficacy: 132.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.26 / 1.35  
Luminous Opening: Rectangular w/ Sides (W: 2' x L: 4' x H: 0.1')  
CIE Type: Direct

Input Watts (W): 32.3509  
Input Voltage (V): NR  
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	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	108	103	99	95	106	101	97	93	97	94	90	93	90	88	89	87	85	83
2	98	90	83	77	96	88	81	76	84	79	74	81	76	72	78	74	71	69
3	89	79	70	64	87	77	69	63	74	67	62	71	66	61	69	64	60	58
4	82	70	61	54	80	68	60	53	66	58	53	63	57	52	61	56	51	49
5	75	62	53	46	73	61	52	46	59	51	46	57	50	45	55	49	44	42
6	69	56	47	40	68	55	46	40	53	46	40	51	45	39	50	44	39	37
7	64	51	42	36	63	50	41	36	48	41	35	47	40	35	46	39	35	33
8	60	46	38	32	58	46	37	32	44	37	31	43	36	31	42	36	31	29
9	56	42	34	29	55	42	34	29	41	33	28	40	33	28	39	33	28	26
10	53	39	31	26	51	39	31	26	38	31	26	37	30	26	36	30	26	24

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

	0°	90°	180°	270°
0°	2021	2021	2021	2021
5°	2011	2022	2014	2024
10°	1994	2007	2001	2012
15°	1971	1989	1980	1996
20°	1938	1969	1950	1978
25°	1898	1945	1913	1958
30°	1850	1919	1867	1933
35°	1796	1894	1815	1911
40°	1735	1870	1756	1889
45°	1669	1850	1690	1873
50°	1596	1835	1617	1859
55°	1519	1822	1537	1849
60°	1434	1813	1451	1844
65°	1335	1802	1351	1840
70°	1212	1793	1227	1835
75°	1045	1728	1065	1766
80°	814	1494	841	1540
85°	496	837	527	877



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**ZONAL LUMENS:**

**CANDELA DISTRIBUTION:**

Zone	Lumens	% Fixture	% Lamp		0°	90°	180°	270°	360°	Flux
0°-10°	142.0	3.3	3.3	0°	1502	1502	1502	1502	1502	
10°-20°	404.9	9.5	9.5	5°	1492	1503	1495	1505	1492	142
20°-30°	607.8	14.2	14.2	15°	1424	1447	1431	1452	1424	401
30°-40°	723.7	16.9	16.9	25°	1293	1341	1303	1350	1293	595
40°-50°	744.5	17.4	17.4	35°	1112	1193	1124	1204	1112	695
50°-60°	677.9	15.8	15.8	45°	899	1021	910	1033	899	693
60°-70°	539.4	12.6	12.6	55°	671	832	679	845	671	600
70°-80°	342.1	8.0	8.0	65°	442	627	447	640	442	437
80°-90°	96.2	2.2	2.2	75°	220	394	224	403	220	233
90°-100°	0.0	0.0	0.0	85°	41	85	44	89	41	53
100°-110°	0.0	0.0	0.0	90°	4	4	4	4	4	
110°-120°	0.0	0.0	0.0							
120°-130°	0.0	0.0	0.0							
130°-140°	0.0	0.0	0.0							
140°-150°	0.0	0.0	0.0							
150°-160°	0.0	0.0	0.0							
160°-170°	0.0	0.0	0.0							
170°-180°	0.0	0.0	0.0							
0°-30°	1154.6	27.0	27.0							
0°-40°	1878.4	43.9	43.9							
0°-60°	3300.7	77.1	77.1							
0°-90°	4278.3	100.0	100.0							
90°-120°	0.0	0.0	0.0							
90°-150°	0.0	0.0	0.0							
90°-180°	0.0	0.0	0.0							
0°-180°	4278.3	100.0	100.0							



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**CANDELA DISTRIBUTION (FULL):**

	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°
0°	1502.1	1502.1	1502.1	1502.1	1502.1	1502.1	1502.1	1502.1	1502.1	1502.1	1502.1
1°	1501.3	1500.0	1502.5	1510.9	1500.8	1500.8	1502.1	1500.4	1502.7	1510.9	1500.6
2°	1500.3	1499.0	1501.9	1509.9	1499.8	1500.2	1501.0	1499.6	1501.7	1510.4	1500.0
3°	1498.4	1497.2	1500.3	1507.8	1497.9	1498.6	1499.8	1498.4	1500.4	1509.3	1498.8
4°	1495.6	1494.5	1497.9	1505.8	1495.6	1496.3	1497.6	1496.3	1498.2	1507.3	1496.7
5°	1492.4	1491.5	1495.3	1503.4	1493.3	1493.3	1494.7	1493.6	1495.9	1505.3	1494.1
6°	1488.3	1487.6	1492.4	1500.6	1490.2	1489.7	1491.1	1490.3	1492.6	1502.5	1491.2
7°	1484.0	1482.9	1488.9	1496.6	1486.7	1486.0	1487.1	1486.4	1488.9	1498.9	1487.7
8°	1478.8	1477.9	1485.0	1492.0	1482.1	1481.5	1482.5	1482.0	1484.7	1494.8	1483.5
9°	1472.8	1472.5	1479.9	1487.6	1476.8	1476.3	1476.9	1476.8	1479.6	1490.2	1478.7
10°	1466.2	1466.2	1473.8	1482.2	1471.6	1470.4	1470.8	1470.6	1474.1	1485.5	1473.3
11°	1459.0	1459.2	1468.2	1476.0	1465.6	1464.2	1463.9	1464.4	1468.1	1479.9	1467.4
12°	1451.3	1452.1	1461.9	1469.7	1458.8	1457.3	1456.7	1457.3	1461.7	1473.5	1461.2
13°	1442.7	1444.2	1454.4	1462.6	1451.6	1449.4	1448.4	1450.0	1454.3	1467.4	1454.0
14°	1434.0	1435.9	1446.6	1454.8	1444.4	1440.5	1439.8	1441.8	1446.8	1459.8	1446.4
15°	1424.1	1426.0	1438.6	1447.0	1436.0	1431.7	1430.7	1433.0	1438.7	1451.9	1438.8
16°	1413.8	1415.7	1430.1	1439.1	1427.1	1422.2	1420.7	1423.2	1430.0	1444.2	1430.4
17°	1402.7	1405.1	1420.5	1430.0	1418.2	1412.2	1410.0	1413.0	1420.3	1436.1	1420.8
18°	1391.0	1394.1	1410.9	1420.0	1408.7	1401.6	1398.6	1402.4	1411.0	1426.4	1411.5
19°	1379.0	1382.8	1401.0	1410.3	1398.2	1390.2	1386.8	1391.4	1400.8	1416.6	1401.7
20°	1366.0	1370.7	1390.0	1400.1	1387.0	1378.5	1374.4	1379.6	1389.5	1406.8	1390.7
21°	1352.6	1357.8	1378.5	1389.1	1375.9	1366.0	1361.2	1367.3	1378.3	1396.3	1379.7
22°	1338.5	1344.5	1366.5	1377.7	1364.3	1353.0	1347.4	1354.3	1366.6	1385.2	1368.0
23°	1324.3	1331.1	1354.5	1366.0	1352.1	1339.6	1333.4	1340.6	1354.3	1373.2	1356.1
24°	1309.3	1316.6	1342.0	1353.6	1339.2	1326.0	1318.6	1327.2	1341.7	1361.4	1343.8
25°	1293.4	1301.7	1329.0	1340.6	1326.3	1311.4	1303.3	1312.8	1328.5	1349.5	1330.9
26°	1277.6	1286.4	1315.0	1327.4	1312.8	1296.3	1287.4	1297.8	1314.3	1336.6	1317.1
27°	1260.7	1270.8	1300.9	1314.0	1298.9	1280.8	1271.0	1282.5	1300.5	1323.0	1303.2
28°	1243.6	1254.4	1286.9	1299.7	1284.3	1264.7	1254.1	1266.6	1286.7	1309.3	1289.6
29°	1226.2	1237.9	1271.7	1285.3	1269.2	1248.1	1237.0	1249.8	1271.5	1294.9	1274.9
30°	1208.1	1220.5	1256.0	1270.7	1253.9	1231.8	1219.0	1233.1	1255.8	1280.3	1259.3
31°	1189.7	1203.2	1240.2	1255.7	1238.5	1214.8	1200.8	1215.9	1240.0	1266.0	1244.0
32°	1171.1	1185.3	1224.3	1239.9	1222.3	1197.0	1182.5	1198.1	1224.2	1250.6	1228.3
33°	1152.0	1167.0	1208.0	1224.9	1206.0	1179.0	1163.3	1180.2	1207.6	1235.3	1212.1
34°	1132.6	1148.3	1191.2	1209.2	1189.7	1160.4	1143.7	1161.7	1190.5	1219.7	1195.2
35°	1112.4	1129.8	1174.3	1193.2	1173.0	1141.4	1124.4	1143.0	1174.0	1204.1	1178.8
36°	1092.3	1110.4	1157.3	1176.6	1155.7	1122.7	1104.1	1124.2	1156.6	1187.7	1161.9
37°	1071.8	1090.4	1139.7	1160.1	1138.8	1103.1	1083.8	1104.7	1139.2	1171.2	1144.3
38°	1051.0	1070.9	1122.2	1143.3	1121.3	1083.5	1063.0	1084.8	1121.3	1154.8	1127.5
39°	1030.0	1050.5	1104.4	1126.5	1103.6	1063.7	1041.8	1064.6	1103.4	1137.9	1109.8
40°	1008.8	1030.4	1086.5	1109.1	1085.6	1043.2	1020.8	1043.8	1085.4	1120.7	1092.0
41°	987.2	1009.8	1068.1	1092.0	1067.5	1022.8	999.1	1023.4	1066.7	1103.5	1073.7
42°	965.1	989.1	1049.3	1074.3	1049.2	1001.8	977.1	1002.5	1047.9	1086.3	1055.2
43°	943.0	967.8	1031.2	1056.6	1030.8	981.0	955.0	981.6	1029.5	1068.6	1037.3
44°	921.0	946.8	1012.2	1039.0	1012.0	959.8	932.9	960.2	1010.5	1050.8	1018.4



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**CANDELA DISTRIBUTION (continued):**

	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°
45°	899.0	925.7	993.2	1021.1	993.3	938.6	910.2	938.6	991.4	1033.3	999.9
46°	876.2	904.1	973.8	1002.9	974.6	917.2	887.5	917.2	972.4	1015.0	981.0
47°	853.6	882.6	955.1	984.6	955.6	895.6	864.7	895.2	953.1	996.6	962.4
48°	831.4	860.8	935.9	965.9	936.7	873.9	841.5	873.4	934.1	978.3	943.2
49°	808.3	839.3	916.4	947.2	917.2	852.1	818.8	851.2	914.5	959.6	923.9
50°	785.4	817.4	896.8	928.7	898.1	830.7	795.4	829.3	894.9	940.9	904.8
51°	762.4	795.7	877.0	909.7	878.8	809.0	772.4	807.6	875.5	922.1	885.5
52°	739.8	773.9	857.6	890.3	858.9	787.2	748.6	785.2	855.5	902.8	866.0
53°	716.7	752.1	837.8	871.1	839.6	765.2	725.8	763.4	836.2	883.8	846.5
54°	693.4	730.6	817.5	851.6	820.0	743.6	702.4	741.3	816.2	864.3	827.0
55°	670.6	708.7	797.5	832.2	799.9	722.0	678.8	719.3	796.1	844.6	807.2
56°	647.5	687.0	777.3	812.3	779.8	700.2	655.5	697.4	776.1	825.5	787.1
57°	624.8	665.2	756.9	792.4	759.6	678.6	632.2	675.4	756.1	805.4	766.9
58°	601.8	643.0	736.9	772.4	739.7	656.7	608.7	653.4	736.2	785.4	746.8
59°	578.8	621.6	716.1	751.8	719.3	635.2	585.5	631.6	716.0	765.1	726.8
60°	556.0	599.8	695.6	732.1	698.9	613.6	562.5	610.0	695.5	744.4	706.3
61°	533.2	578.3	675.0	711.0	678.3	592.1	539.4	588.2	675.2	724.3	686.0
62°	510.4	556.6	654.2	690.3	657.6	570.7	516.6	566.6	654.5	703.3	665.1
63°	487.4	535.2	633.5	669.2	636.8	549.5	493.2	544.8	634.0	682.3	644.4
64°	464.7	513.7	612.5	647.8	615.8	528.2	470.2	522.9	613.2	661.2	623.8
65°	441.8	492.2	591.5	626.7	594.6	506.8	447.1	502.4	592.1	640.0	602.3
66°	419.5	470.7	570.3	605.2	573.4	485.6	424.3	480.8	570.9	618.1	581.4
67°	396.6	449.3	549.2	583.6	551.9	464.1	401.2	459.5	549.6	596.5	560.0
68°	374.1	428.1	527.9	561.7	530.5	442.7	378.4	437.7	528.2	574.4	538.5
69°	351.4	406.6	506.6	540.1	508.8	421.3	355.6	416.5	506.5	552.3	517.0
70°	329.2	385.6	484.9	518.5	487.0	399.9	333.2	394.8	484.9	530.6	495.0
71°	306.8	364.2	463.4	496.7	465.1	378.7	310.7	373.4	462.5	508.5	473.0
72°	284.4	343.4	441.9	474.3	443.5	357.7	288.5	352.2	441.1	485.6	451.0
73°	262.6	322.5	420.6	450.9	422.0	336.4	267.0	331.1	418.9	459.9	429.3
74°	241.0	301.4	399.1	422.9	399.9	315.9	245.5	310.4	396.6	431.8	406.4
75°	219.7	281.6	376.9	394.5	376.7	295.3	223.9	289.4	373.5	403.1	381.7
76°	198.9	261.7	352.5	365.4	350.6	275.1	203.1	269.0	347.9	374.1	355.3
77°	178.4	241.7	325.8	335.8	324.0	255.1	182.4	248.8	321.6	344.7	328.3
78°	158.3	222.3	298.8	306.8	296.5	235.8	162.3	229.0	294.7	315.8	300.8
79°	139.0	203.2	271.7	277.7	269.7	217.6	142.7	210.4	268.2	285.7	273.9
80°	120.0	185.1	245.0	247.5	243.0	197.9	123.9	191.0	241.8	255.1	245.8
81°	102.2	165.8	217.4	216.1	215.0	177.1	105.8	170.9	214.1	223.3	217.2
82°	84.9	144.3	189.0	184.3	186.0	155.5	88.5	150.2	185.5	190.3	187.6
83°	69.0	123.4	160.0	151.6	156.7	134.1	72.4	129.3	156.0	156.9	157.2
84°	54.4	102.4	129.6	118.4	126.0	112.5	57.4	107.8	125.8	122.8	125.5
85°	41.3	81.8	98.7	85.2	94.7	90.7	43.9	86.2	94.6	89.3	93.6
86°	29.8	61.1	67.9	54.2	64.1	69.1	32.0	65.4	64.1	57.8	62.5
87°	20.3	40.4	39.4	27.6	36.0	46.9	21.8	44.2	35.9	30.4	35.0
88°	12.6	20.5	17.0	8.7	13.7	25.7	14.0	23.8	13.2	11.4	14.2
89°	6.7	7.3	9.0	5.7	6.2	8.5	7.6	7.4	5.9	7.8	7.9



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**CANDELA DISTRIBUTION (continued):**

	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°
90°	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2





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**CANDELA DISTRIBUTION (continued):**

	330°	360°
0°	1502.1	1502.1
1°	1500.2	1501.3
2°	1499.2	1500.3
3°	1497.5	1498.4
4°	1495.1	1495.6
5°	1492.4	1492.4
6°	1488.8	1488.3
7°	1484.6	1484.0
8°	1479.8	1478.8
9°	1474.3	1472.8
10°	1468.0	1466.2
11°	1461.4	1459.0
12°	1454.3	1451.3
13°	1446.4	1442.7
14°	1438.0	1434.0
15°	1428.5	1424.1
16°	1418.6	1413.8
17°	1408.4	1402.7
18°	1397.6	1391.0
19°	1386.3	1379.0
20°	1374.2	1366.0
21°	1361.6	1352.6
22°	1348.3	1338.5
23°	1335.2	1324.3
24°	1321.1	1309.3
25°	1306.6	1293.4
26°	1291.7	1277.6
27°	1276.0	1260.7
28°	1259.5	1243.6
29°	1242.9	1226.2
30°	1226.3	1208.1
31°	1209.0	1189.7
32°	1191.2	1171.1
33°	1173.4	1152.0
34°	1155.2	1132.6
35°	1136.5	1112.4
36°	1117.0	1092.3
37°	1097.6	1071.8
38°	1078.1	1051.0
39°	1057.9	1030.0
40°	1038.1	1008.8
41°	1017.5	987.2
42°	996.7	965.1
43°	975.8	943.0
44°	954.6	921.0



TEST NUMBER: C1701878A003

CATALOG NUMBER: 24CZRK-LD4-40HP-UNV-L840-CD1-U

**CANDELA DISTRIBUTION (continued):**

	330°	360°
45°	933.7	899.0
46°	912.1	876.2
47°	890.8	853.6
48°	869.3	831.4
49°	847.5	808.3
50°	826.3	785.4
51°	804.5	762.4
52°	782.8	739.8
53°	761.0	716.7
54°	739.9	693.4
55°	718.0	670.6
56°	696.3	647.5
57°	674.6	624.8
58°	652.9	601.8
59°	631.8	578.8
60°	609.9	556.0
61°	588.7	533.2
62°	567.3	510.4
63°	545.9	487.4
64°	524.9	464.7
65°	503.4	441.8
66°	482.3	419.5
67°	461.0	396.6
68°	439.9	374.1
69°	418.8	351.4
70°	397.2	329.2
71°	376.4	306.8
72°	355.1	284.4
73°	334.3	262.6
74°	313.6	241.0
75°	292.6	219.7
76°	272.6	198.9
77°	252.7	178.4
78°	233.1	158.3
79°	213.9	139.0
80°	193.9	120.0
81°	171.8	102.2
82°	149.9	84.9
83°	127.9	69.0
84°	105.8	54.4
85°	83.9	41.3
86°	61.8	29.8
87°	39.6	20.3
88°	19.2	12.6
89°	6.9	6.7



TEST NUMBER: C1701878A003

CATALOG NUMBER: 24CZRK-LD4-40HP-UNV-L840-CD1-U

**CANDELA DISTRIBUTION (continued):**

	330°	360°
90°	4.2	4.2

(END OF REPORT)