

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: P192510

Luminaire Tested: **4WSL-LD2-60-UPL15-UNV-L835-CD1-U**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P192510
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P28105)
Test Lab: INNOVATION CENTER-P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: METALUX
Catalog Number: 4WSL-LD2-60-UPL15-UNV-L835-CD1-U
Description: 4FT Linear Wavestream System, 15% Uplight, L835
Light Source: (238) 3500K CCT, 80 CRI LEDS
EL236N0119D835
Ballast/Driver: OSRAM
OT50W

Summary

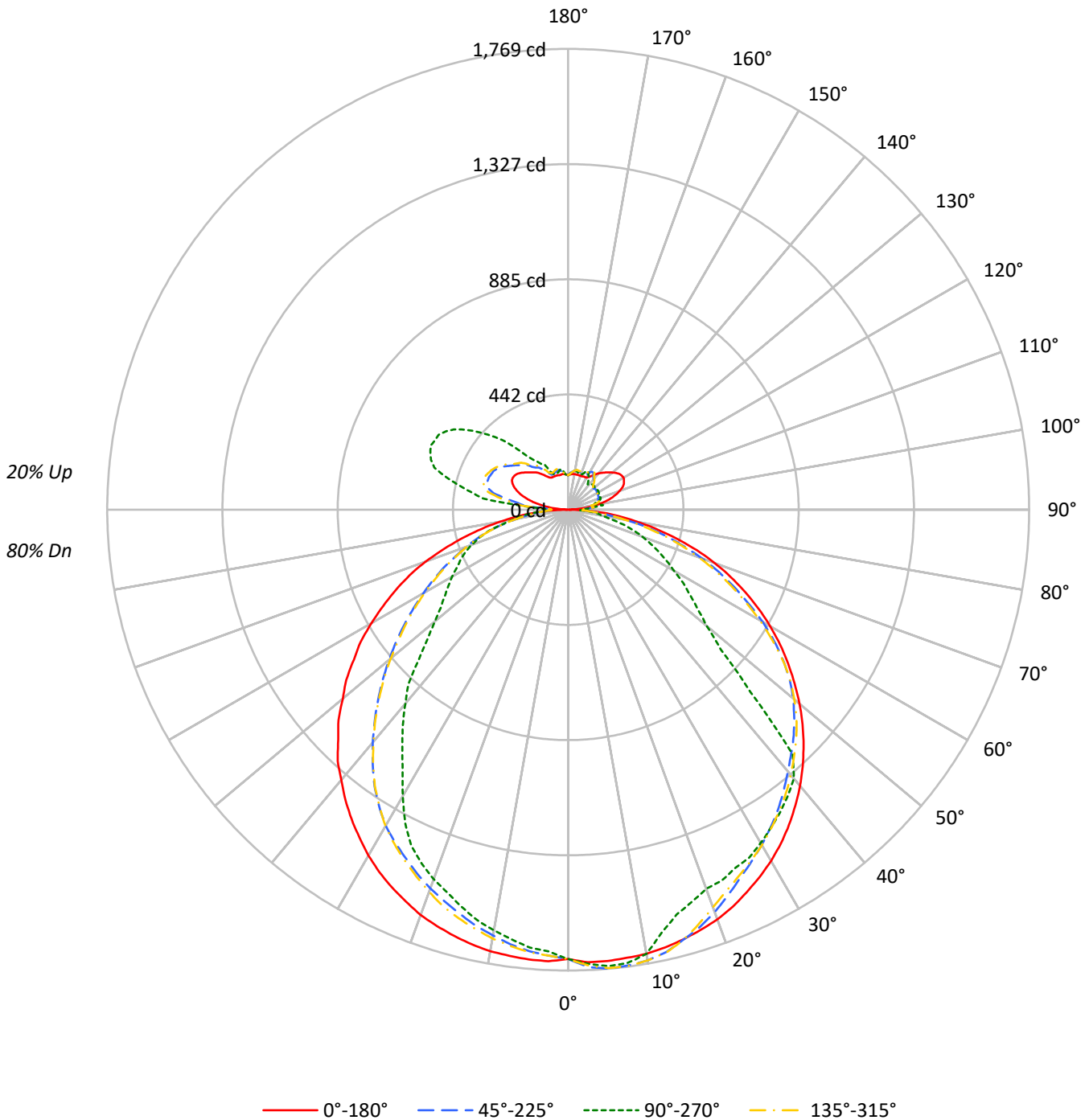
Lumens per Lamp: N/A
Luminaire Lumens: 6105.0 lumens
Efficiency: N/A
Efficacy: 108.6 lumens/watt
Spacing Criteria (0/90/45): 1.32 / 1.19 / 1.35
Luminous Opening: Rectangular (W 0.5' x L: 3.8' x H: 0')
CIE Type: Semi-Direct

Input Watts (W): 56.2
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

TEST NUMBER: P192510

CATALOG NUMBER: 4WSL-LD2-60-UPL15-UNV-L835-CD1-U

Luminous Intensity Polar Plot





TEST NUMBER: P192510

CATALOG NUMBER: 4WSL-LD2-60-UPL15-UNV-L835-CD1-U

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	114	114	114	114	109	109	109	109	100	100	100	91	91	91	83	83	83	80
1	104	99	95	91	99	95	91	88	87	84	81	80	77	75	73	71	70	66
2	94	86	80	74	90	83	77	72	76	71	67	70	66	62	64	61	58	55
3	86	76	68	62	82	73	66	60	67	61	56	61	57	53	56	53	49	46
4	79	67	59	52	75	64	57	51	59	53	48	55	49	45	50	46	42	40
5	72	60	51	45	69	58	50	44	53	46	41	49	43	39	45	41	37	34
6	67	54	45	39	64	52	44	38	48	41	36	44	39	34	41	36	32	30
7	62	49	40	34	59	47	39	33	44	37	32	40	35	30	38	33	29	26
8	58	44	36	30	55	43	35	30	40	33	28	37	31	27	34	29	26	24
9	54	41	33	27	51	39	32	27	37	30	26	34	28	24	32	27	23	21
10	50	37	30	25	48	36	29	24	34	27	23	32	26	22	30	25	21	19

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	9773	9773	9773	9773
5°	9889	10001	9855	9596
10°	9958	9958	9901	9434
15°	10013	9432	9932	9258
20°	10089	9337	9982	9099
25°	10127	9483	10003	8901
30°	10183	9665	10028	8305
35°	10218	9808	10026	7670
40°	10238	9960	10019	7191
45°	10234	7918	9996	6474
50°	10211	6110	9950	5882
55°	10172	5634	9918	5712
60°	10143	5319	9873	5834
65°	10062	5150	9796	6106
70°	9907	5019	9645	6528
75°	9452	4770	9147	6937
80°	8851	4329	8593	6913
85°	8886	5662	8242	8242



TEST NUMBER: P192510

CATALOG NUMBER: 4WSL-LD2-60-UPL15-UNV-L835-CD1-U

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	164.2	2.7
10°-20°	465.9	7.6
20°-30°	704.0	11.5
30°-40°	847.3	13.9
40°-50°	861.7	14.1
50°-60°	750.0	12.3
60°-70°	585.1	9.6
70°-80°	361.7	5.9
80°-90°	127.3	2.1
90°-100°	119.8	2.0
100°-110°	232.0	3.8
110°-120°	253.8	4.2
120°-130°	222.5	3.6
130°-140°	166.7	2.7
140°-150°	114.1	1.9
150°-160°	72.7	1.2
160°-170°	42.5	0.7
170°-180°	13.7	0.2
0°-30°	1334.1	21.9
0°-40°	2181.4	35.7
0°-60°	3793.1	62.1
0°-90°	4867.1	79.7
90°-120°	605.6	9.9
90°-150°	1109.0	18.2
90°-180°	1238.0	20.3
0°-180°	6105.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1725	1725	1725	1725	1725	
5°	1739	1759	1733	1687	1739	166
15°	1707	1608	1693	1578	1707	483
25°	1620	1517	1600	1424	1620	748
35°	1478	1418	1450	1109	1478	924
45°	1277	988	1248	808	1277	985
55°	1030	570	1004	578	1030	921
65°	751	384	731	456	751	742
75°	432	218	418	317	432	457
85°	137	87	127	127	137	136
90°	2	56	2	87	2	10
95°	54	91	42	182	54	55
105°	170	113	164	485	170	177
115°	236	129	236	582	236	231
125°	240	135	240	537	240	213
135°	202	135	202	392	202	157
145°	158	135	162	234	158	101
155°	141	162	139	160	141	65
165°	139	147	137	148	139	39
175°	137	143	137	139	137	13
180°	133	133	133	133	133	



TEST NUMBER: P192510

CATALOG NUMBER: 4WSL-LD2-60-UPL15-UNV-L835-CD1-U

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1725.0	1725.0	1725.0	1725.0	1725.0	1725.0	1725.0	1725.0	1725.0	1725.0	1725.0
2.5°	1738.9	1731.0	1756.7	1758.7	1744.8	1750.8	1750.8	1729.0	1734.9	1709.2	1713.2
5°	1738.9	1740.9	1768.6	1766.6	1758.7	1760.7	1766.6	1738.9	1733.0	1697.3	1701.3
7.5°	1734.9	1744.8	1764.7	1762.7	1754.7	1756.7	1766.6	1742.9	1727.0	1685.4	1683.4
10°	1731.0	1740.9	1756.7	1746.8	1731.0	1736.9	1756.7	1740.9	1721.1	1671.6	1659.7
12.5°	1721.1	1731.0	1738.9	1689.4	1661.7	1685.4	1740.9	1731.0	1709.2	1651.8	1635.9
15°	1707.2	1719.1	1709.2	1639.9	1608.2	1630.0	1709.2	1717.1	1693.4	1626.0	1606.2
17.5°	1691.4	1705.2	1679.5	1602.2	1578.5	1588.4	1667.6	1699.3	1675.5	1600.3	1576.5
20°	1673.5	1689.4	1643.8	1562.6	1548.8	1556.7	1624.0	1679.5	1655.7	1572.5	1546.8
22.5°	1649.8	1667.6	1602.2	1534.9	1540.9	1534.9	1584.4	1653.7	1628.0	1542.8	1513.1
25°	1620.1	1639.9	1560.7	1511.1	1517.1	1515.1	1550.8	1620.1	1600.3	1507.2	1475.5
27.5°	1590.4	1610.2	1523.0	1495.3	1505.2	1493.3	1519.1	1584.4	1568.6	1469.6	1439.8
30°	1556.7	1578.5	1485.4	1467.6	1477.5	1469.6	1487.4	1548.8	1532.9	1429.9	1400.2
32.5°	1519.1	1540.9	1445.8	1433.9	1447.8	1437.9	1449.7	1509.2	1491.3	1386.4	1350.7
35°	1477.5	1499.3	1404.2	1404.2	1418.1	1406.2	1412.1	1469.6	1449.7	1342.8	1295.3
37.5°	1431.9	1455.7	1358.6	1368.5	1384.4	1372.5	1372.5	1428.0	1404.2	1295.3	1231.9
40°	1384.4	1410.1	1311.1	1332.9	1346.8	1332.9	1328.9	1384.4	1354.7	1247.7	1166.5
42.5°	1332.9	1360.6	1267.5	1293.3	1275.5	1293.3	1283.4	1338.8	1309.1	1196.2	1099.2
45°	1277.4	1313.1	1224.0	1208.1	988.3	1196.2	1237.8	1291.3	1247.7	1146.7	1031.9
47.5°	1220.0	1257.6	1176.4	1061.6	794.2	1049.7	1188.3	1239.8	1196.2	1093.3	964.5
50°	1158.6	1202.2	1126.9	934.8	693.2	922.9	1132.9	1186.3	1128.9	1035.8	897.2
52.5°	1095.2	1142.8	1071.5	825.9	625.8	814.0	1073.4	1128.9	1073.4	974.4	831.8
55°	1029.9	1079.4	1006.1	724.9	570.4	722.9	1004.1	1067.5	1004.1	913.0	766.5
57.5°	964.5	1020.0	936.8	651.6	522.9	641.7	926.9	1004.1	944.7	849.6	703.1
60°	895.2	946.7	861.5	572.4	469.4	570.4	849.6	938.8	871.4	784.3	641.7
62.5°	823.9	881.3	780.3	503.1	425.8	501.1	766.5	865.5	800.1	717.0	582.3
65°	750.6	806.1	703.1	447.6	384.2	443.6	689.2	790.2	730.8	649.6	526.8
67.5°	675.4	726.9	625.8	394.1	342.6	390.2	610.0	711.0	659.5	580.3	467.4
70°	598.1	645.7	546.6	342.6	303.0	340.7	532.8	629.8	582.3	509.0	413.9
72.5°	516.9	560.5	463.4	293.1	261.4	291.1	451.6	546.6	497.1	433.7	366.4
75°	431.8	473.3	386.2	243.6	217.9	241.6	374.3	457.5	417.9	364.4	310.9
77.5°	350.6	392.1	307.0	188.2	166.4	184.2	293.1	374.3	340.7	295.1	253.5
80°	271.3	305.0	225.8	140.6	132.7	140.6	219.8	287.2	263.4	231.7	198.1
82.5°	200.0	219.8	152.5	114.9	114.9	114.9	148.5	204.0	194.1	172.3	150.5
85°	136.7	136.7	103.0	87.1	87.1	87.1	101.0	120.8	126.8	114.9	114.9
87.5°	57.4	59.4	53.5	47.5	45.6	47.5	51.5	49.5	49.5	55.5	69.3
90°	2.0	25.7	43.6	53.5	55.5	51.5	39.6	23.8	2.0	33.7	61.4
92.5°	13.9	55.5	51.5	67.3	69.3	63.4	53.5	43.6	7.9	61.4	65.4
95°	53.5	65.4	101.0	103.0	91.1	87.1	99.0	61.4	41.6	83.2	166.4
97.5°	85.2	99.0	91.1	118.8	134.7	118.8	95.1	95.1	79.2	128.7	194.1
100°	116.9	105.0	93.1	103.0	118.8	105.0	89.1	105.0	110.9	150.5	237.7
102.5°	146.6	116.9	116.9	101.0	103.0	99.0	112.9	114.9	138.6	170.3	293.1
105°	170.3	120.8	122.8	114.9	112.9	114.9	122.8	122.8	164.4	188.2	318.9
107.5°	192.1	124.8	120.8	126.8	128.7	126.8	120.8	124.8	188.2	200.0	324.8
110°	209.9	126.8	122.8	126.8	132.7	126.8	122.8	128.7	208.0	211.9	328.8



TEST NUMBER: P192510

CATALOG NUMBER: 4WSL-LD2-60-UPL15-UNV-L835-CD1-U

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	225.8	128.7	126.8	124.8	130.7	124.8	126.8	132.7	223.8	217.9	328.8
115°	235.7	130.7	126.8	126.8	128.7	126.8	128.7	134.7	235.7	219.8	324.8
117.5°	241.6	134.7	128.7	130.7	132.7	130.7	128.7	138.6	243.6	227.8	322.8
120°	245.6	148.5	128.7	132.7	134.7	132.7	128.7	150.5	245.6	231.7	314.9
122.5°	243.6	154.5	130.7	132.7	136.7	132.7	130.7	156.5	243.6	229.7	305.0
125°	239.6	160.4	130.7	130.7	134.7	132.7	132.7	160.4	239.6	225.8	291.1
127.5°	231.7	174.3	130.7	132.7	132.7	132.7	132.7	172.3	231.7	227.8	277.3
130°	221.8	184.2	126.8	134.7	132.7	136.7	130.7	184.2	221.8	221.8	265.4
132.5°	211.9	188.2	126.8	134.7	134.7	136.7	128.7	188.2	211.9	213.9	253.5
135°	202.0	192.1	134.7	132.7	134.7	134.7	136.7	192.1	202.0	206.0	245.6
137.5°	192.1	194.1	144.6	126.8	132.7	128.7	148.5	194.1	194.1	194.1	233.7
140°	182.2	192.1	152.5	122.8	124.8	126.8	156.5	194.1	186.2	188.2	213.9
142.5°	170.3	186.2	158.4	132.7	122.8	136.7	162.4	192.1	174.3	182.2	204.0
145°	158.4	180.2	170.3	146.6	134.7	152.5	176.3	186.2	162.4	178.2	198.1
147.5°	148.5	170.3	172.3	154.5	148.5	160.4	178.2	178.2	150.5	170.3	184.2
150°	142.6	160.4	166.4	160.4	154.5	168.3	174.3	164.4	142.6	164.4	172.3
152.5°	140.6	152.5	152.5	168.3	166.4	176.3	160.4	156.5	138.6	158.4	156.5
155°	140.6	150.5	146.6	154.5	162.4	162.4	152.5	152.5	138.6	158.4	148.5
157.5°	138.6	152.5	146.6	144.6	148.5	152.5	152.5	154.5	138.6	154.5	148.5
160°	138.6	154.5	148.5	142.6	144.6	150.5	154.5	154.5	138.6	154.5	150.5
162.5°	138.6	150.5	150.5	144.6	144.6	152.5	154.5	152.5	138.6	150.5	154.5
165°	138.6	150.5	152.5	148.5	146.6	156.5	154.5	148.5	136.7	148.5	156.5
167.5°	138.6	146.6	154.5	150.5	150.5	156.5	156.5	146.6	136.7	142.6	156.5
170°	138.6	144.6	152.5	150.5	152.5	158.4	152.5	144.6	138.6	140.6	150.5
172.5°	138.6	140.6	148.5	150.5	150.5	154.5	148.5	140.6	138.6	136.7	144.6
175°	136.7	140.6	144.6	144.6	142.6	148.5	142.6	138.6	136.7	134.7	138.6
177.5°	134.7	136.7	140.6	140.6	136.7	140.6	136.7	134.7	134.7	132.7	136.7
180°	132.7	132.7	132.7	132.7	132.7	132.7	132.7	132.7	132.7	132.7	132.7



TEST NUMBER: P192510

CATALOG NUMBER: 4WSL-LD2-60-UPL15-UNV-L835-CD1-U

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1725.0	1725.0	1725.0	1725.0	1725.0	1725.0
2.5°	1711.2	1697.3	1701.3	1713.2	1711.2	1738.9
5°	1693.4	1687.4	1687.4	1705.2	1703.3	1738.9
7.5°	1673.5	1663.6	1669.6	1689.4	1695.3	1734.9
10°	1647.8	1639.9	1641.9	1671.6	1681.5	1731.0
12.5°	1622.1	1614.1	1620.1	1647.8	1661.7	1721.1
15°	1592.3	1578.5	1594.3	1624.0	1641.9	1707.2
17.5°	1556.7	1540.9	1556.7	1596.3	1618.1	1691.4
20°	1525.0	1509.2	1519.1	1560.7	1590.4	1673.5
22.5°	1489.4	1469.6	1477.5	1523.0	1560.7	1649.8
25°	1449.7	1424.0	1435.9	1485.4	1527.0	1620.1
27.5°	1398.3	1354.7	1384.4	1445.8	1485.4	1590.4
30°	1327.0	1269.5	1317.1	1402.2	1447.8	1556.7
32.5°	1243.8	1182.4	1233.9	1348.7	1404.2	1519.1
35°	1162.6	1109.1	1156.6	1293.3	1360.6	1477.5
37.5°	1091.3	1041.8	1085.3	1229.9	1313.1	1431.9
40°	1018.0	972.4	1016.0	1162.6	1265.6	1384.4
42.5°	950.7	907.1	948.7	1095.2	1214.1	1332.9
45°	879.4	808.1	875.4	1025.9	1158.6	1277.4
47.5°	804.1	728.8	798.2	958.6	1103.2	1220.0
50°	734.8	667.4	730.8	889.3	1043.7	1158.6
52.5°	673.4	615.9	671.4	819.9	982.3	1095.2
55°	615.9	578.3	617.9	756.6	924.9	1029.9
57.5°	570.4	544.6	572.4	695.2	861.5	964.5
60°	530.8	514.9	532.8	633.8	794.2	895.2
62.5°	487.2	481.3	487.2	574.4	728.8	823.9
65°	449.6	455.5	449.6	520.9	659.5	750.6
67.5°	413.9	427.8	415.9	463.4	590.2	675.4
70°	374.3	394.1	376.3	411.9	518.9	598.1
72.5°	332.7	356.5	332.7	362.4	443.6	516.9
75°	289.2	316.9	291.1	309.0	372.3	431.8
77.5°	241.6	259.4	245.6	251.5	303.0	350.6
80°	192.1	211.9	194.1	198.1	239.6	271.3
82.5°	160.4	174.3	162.4	150.5	178.2	200.0
85°	118.8	126.8	122.8	116.9	122.8	136.7
87.5°	73.3	77.2	73.3	73.3	63.4	57.4
90°	81.2	87.1	81.2	63.4	35.6	2.0
92.5°	83.2	91.1	83.2	69.3	67.3	13.9
95°	186.2	182.2	198.1	180.2	103.0	53.5
97.5°	289.2	330.7	299.1	215.9	138.6	85.2
100°	332.7	372.3	346.6	269.4	158.4	116.9
102.5°	384.2	427.8	400.1	314.9	178.2	146.6
105°	447.6	485.2	461.5	332.7	196.1	170.3
107.5°	481.3	538.7	491.2	340.7	208.0	192.1
110°	499.1	560.5	514.9	342.6	217.9	209.9



TEST NUMBER: P192510

CATALOG NUMBER: 4WSL-LD2-60-UPL15-UNV-L835-CD1-U

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	513.0	572.4	524.8	342.6	221.8	225.8
115°	513.0	582.3	524.8	336.7	227.8	235.7
117.5°	513.0	576.3	524.8	330.7	235.7	241.6
120°	495.1	574.4	511.0	322.8	237.7	245.6
122.5°	481.3	558.5	491.2	312.9	237.7	243.6
125°	455.5	536.7	467.4	301.0	233.7	239.6
127.5°	427.8	505.0	437.7	287.2	235.7	231.7
130°	402.0	469.4	408.0	273.3	227.8	221.8
132.5°	368.4	429.8	374.3	263.4	219.8	211.9
135°	336.7	392.1	344.6	255.5	209.9	202.0
137.5°	303.0	352.5	310.9	239.6	200.0	192.1
140°	263.4	303.0	271.3	221.8	194.1	182.2
142.5°	237.7	259.4	245.6	213.9	186.2	170.3
145°	221.8	233.7	227.8	206.0	182.2	158.4
147.5°	206.0	217.9	211.9	190.1	172.3	148.5
150°	200.0	200.0	208.0	176.3	166.4	142.6
152.5°	178.2	194.1	186.2	160.4	162.4	140.6
155°	152.5	160.4	160.4	154.5	162.4	140.6
157.5°	142.6	148.5	150.5	154.5	158.4	138.6
160°	142.6	144.6	150.5	156.5	156.5	138.6
162.5°	146.6	144.6	154.5	160.4	152.5	138.6
165°	150.5	148.5	158.4	162.4	148.5	138.6
167.5°	154.5	154.5	162.4	160.4	144.6	138.6
170°	154.5	158.4	162.4	154.5	142.6	138.6
172.5°	148.5	150.5	154.5	144.6	136.7	138.6
175°	140.6	138.6	144.6	138.6	136.7	136.7
177.5°	136.7	130.7	136.7	134.7	132.7	134.7
180°	132.7	132.7	132.7	132.7	132.7	132.7

(END OF REPORT)