

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: P192454

Luminaire Tested: **4WSL-LD2-45-UPL8-UNV-L835-CD1-U**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P192454
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P28106)
Test Lab: INNOVATION CENTER-P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: METALUX
Catalog Number: 4WSL-LD2-45-UPL8-UNV-L835-CD1-U
Description: 4FT Linear Wavestream System, 8% Uplight, L835
Light Source: (238) 3500K CCT, 80 CRI LEDS
EL236N0119D835
Ballast/Driver: OSRAM
OT50W

Summary

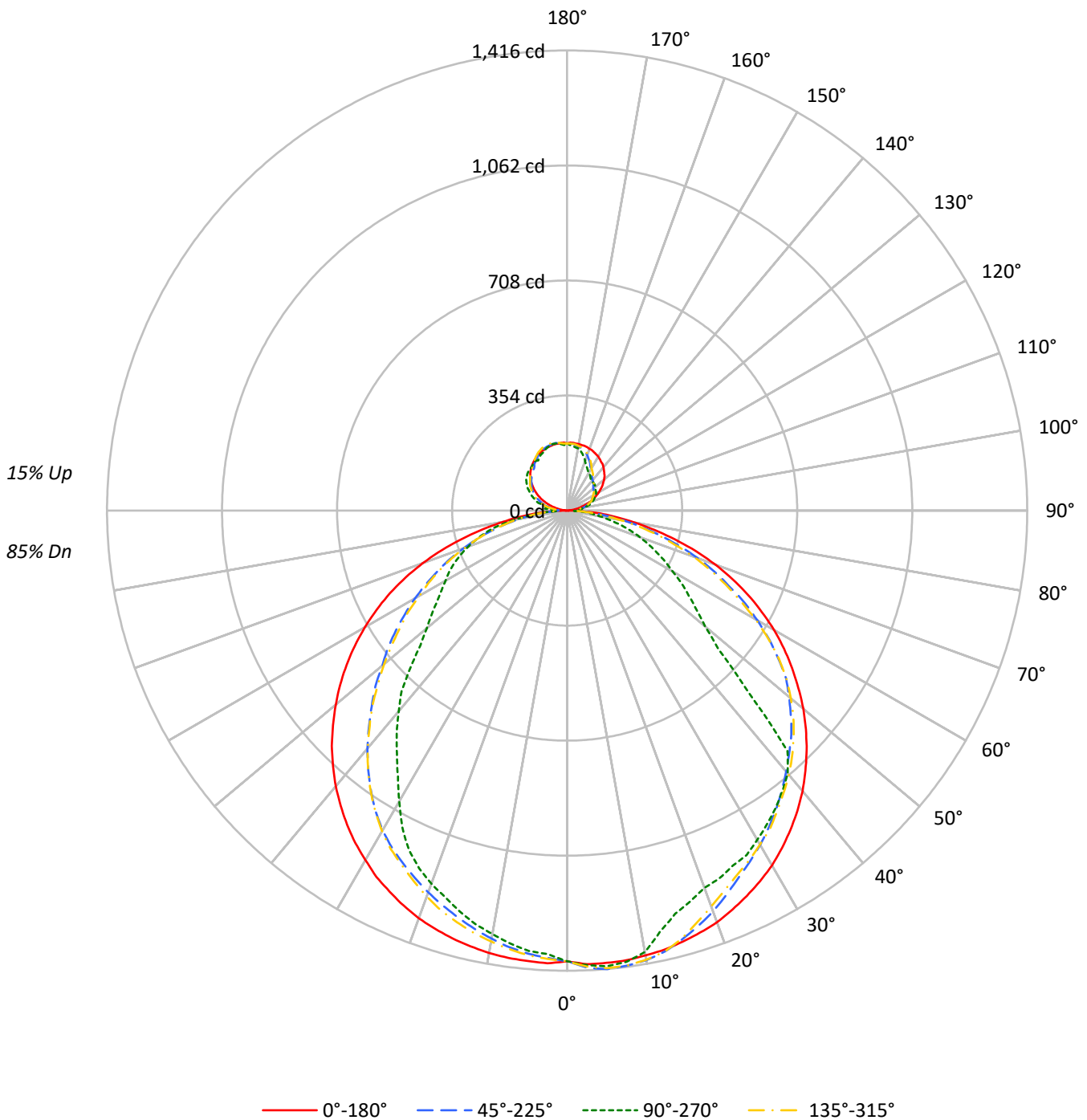
Lumens per Lamp: N/A
Luminaire Lumens: 4600.0 lumens
Efficiency: N/A
Efficacy: 115.3 lumens/watt
Spacing Criteria (0/90/45): 1.34 / 1.19 / 1.36
Luminous Opening: Rectangular (W 0.5' x L: 3.8' x H: 0')
CIE Type: Semi-Direct

Input Watts (W): 39.9
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: P192454

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Luminous Intensity Polar Plot





TEST NUMBER: P192454

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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	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	115	115	115	115	111	111	111	111	103	103	103	95	95	95	88	88	88	85																				
1	105	101	96	92	101	97	93	90	90	87	84	83	81	79	78	76	74	71																				
2	96	88	81	75	92	84	78	73	78	73	69	73	69	65	68	65	62	59																				
3	87	77	69	62	83	74	67	61	69	63	58	64	59	55	60	56	52	50																				
4	80	68	59	53	76	66	58	52	61	55	49	57	52	47	53	49	45	42																				
5	73	61	52	45	70	59	51	44	55	48	43	51	45	41	48	43	39	37																				
6	68	55	46	40	65	53	45	39	50	43	37	47	40	36	44	38	34	32																				
7	63	49	41	35	60	48	40	34	45	38	33	42	36	32	40	35	31	28																				
8	58	45	37	31	56	44	36	30	41	34	29	39	33	28	37	31	27	25																				
9	54	41	33	28	52	40	33	27	38	31	26	36	30	26	34	29	25	23																				
10	51	38	30	25	49	37	30	25	35	28	24	33	27	23	31	26	22	21																				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	7857	7857	7857	7857
5°	7946	8005	7912	7735
10°	7995	7935	7952	7611
15°	8056	7533	7995	7490
20°	8128	7448	8048	7367
25°	8177	7537	8084	7202
30°	8246	7654	8120	6760
35°	8287	7733	8164	6316
40°	8335	7807	8192	5963
45°	8352	6281	8208	5449
50°	8362	4881	8192	4973
55°	8345	4517	8183	4825
60°	8328	4257	8143	4896
65°	8240	4080	8062	5135
70°	8019	3936	7822	5362
75°	7508	3706	7280	5656
80°	6832	3390	6541	5377
85°	6663	3666	5987	4823



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	131.8	2.9
10°-20°	374.4	8.1
20°-30°	566.7	12.3
30°-40°	684.3	14.9
40°-50°	698.7	15.2
50°-60°	610.8	13.3
60°-70°	473.5	10.3
70°-80°	284.7	6.2
80°-90°	87.9	1.9
90°-100°	37.1	0.8
100°-110°	70.8	1.5
110°-120°	96.2	2.1
120°-130°	109.4	2.4
130°-140°	111.0	2.4
140°-150°	102.1	2.2
150°-160°	84.3	1.8
160°-170°	56.7	1.2
170°-180°	19.7	0.4
0°-30°	1073.0	23.3
0°-40°	1757.3	38.2
0°-60°	3066.8	66.7
0°-90°	3912.8	85.1
90°-120°	204.1	4.4
90°-150°	526.6	11.4
90°-180°	687.0	14.9
0°-180°	4600.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1387	1387	1387	1387	1387	
5°	1397	1408	1391	1360	1397	133
15°	1374	1284	1363	1277	1374	388
25°	1308	1206	1293	1152	1308	604
35°	1198	1118	1180	913	1198	750
45°	1042	784	1024	680	1042	804
55°	845	457	828	488	845	755
65°	615	304	601	383	615	607
75°	343	169	333	258	343	364
85°	102	56	92	74	102	103
90°	2	31	2	36	2	7
95°	9	43	9	68	9	11
105°	48	73	46	92	48	51
115°	92	94	91	125	92	91
125°	132	107	129	153	132	117
135°	162	117	160	169	162	125
145°	183	125	181	180	183	115
155°	198	146	196	190	198	91
165°	206	181	205	206	206	58
175°	209	199	209	205	209	20
180°	206	206	206	206	206	



TEST NUMBER: P192454

CATALOG NUMBER: 4WSL-LD2-45-UPL8-UNV-L835-CD1-U

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1386.8	1386.8	1386.8	1386.8	1386.8	1386.8	1386.8	1386.8	1386.8	1386.8	1386.8
2.5°	1397.2	1389.8	1407.6	1410.6	1400.2	1403.2	1404.7	1388.3	1394.3	1372.0	1377.9
5°	1397.2	1395.7	1416.5	1413.6	1407.6	1409.1	1413.6	1394.3	1391.3	1364.6	1369.0
7.5°	1395.7	1398.7	1412.1	1409.1	1400.2	1404.7	1412.1	1397.2	1388.3	1357.1	1355.7
10°	1389.8	1394.3	1404.7	1395.7	1379.4	1386.8	1403.2	1394.3	1382.4	1345.3	1337.8
12.5°	1383.9	1386.8	1389.8	1352.7	1326.0	1343.8	1389.8	1386.8	1373.5	1331.9	1318.5
15°	1373.5	1377.9	1366.0	1312.6	1284.4	1302.2	1363.1	1375.0	1363.1	1312.6	1296.3
17.5°	1361.6	1366.0	1340.8	1281.4	1260.6	1269.5	1328.9	1360.1	1349.7	1294.8	1274.0
20°	1348.2	1352.7	1312.6	1248.7	1235.4	1242.8	1296.3	1343.8	1334.9	1274.0	1250.2
22.5°	1328.9	1336.4	1279.9	1226.5	1225.0	1225.0	1265.1	1324.5	1315.6	1248.7	1223.5
25°	1308.1	1315.6	1247.3	1205.7	1205.7	1205.7	1236.9	1299.2	1293.3	1222.0	1196.8
27.5°	1285.9	1293.3	1217.6	1190.8	1195.3	1187.9	1213.1	1271.0	1271.0	1195.3	1168.6
30°	1260.6	1268.1	1187.9	1167.1	1170.1	1167.1	1186.4	1241.3	1241.3	1164.1	1135.9
32.5°	1230.9	1238.4	1155.2	1138.9	1144.8	1141.8	1161.1	1211.6	1213.1	1131.4	1097.3
35°	1198.3	1207.2	1121.1	1112.1	1118.1	1113.6	1127.0	1180.4	1180.4	1095.8	1052.7
37.5°	1164.1	1173.0	1085.4	1082.4	1088.4	1083.9	1094.3	1147.8	1144.8	1058.7	1005.2
40°	1127.0	1137.4	1048.3	1048.3	1055.7	1052.7	1061.7	1113.6	1107.7	1021.6	956.2
42.5°	1085.4	1098.8	1011.2	1012.7	1003.7	1015.6	1024.5	1078.0	1066.1	980.0	902.8
45°	1042.4	1058.7	975.5	948.8	784.0	938.4	985.9	1042.4	1024.5	938.4	850.8
47.5°	996.3	1017.1	934.0	836.0	631.1	822.6	944.4	997.8	977.0	893.9	800.3
50°	948.8	972.6	890.9	739.4	553.8	724.6	898.3	953.3	929.5	847.8	742.4
52.5°	896.8	923.6	849.3	654.8	501.9	641.4	850.8	910.2	880.5	798.8	694.9
55°	844.9	873.1	792.9	582.1	457.3	570.2	795.9	855.3	828.5	748.4	642.9
57.5°	791.4	819.6	736.5	518.2	418.7	506.3	733.5	804.8	775.1	696.4	591.0
60°	735.0	763.2	675.6	460.3	375.7	451.4	669.7	748.4	718.7	642.9	540.5
62.5°	675.6	703.8	617.7	406.8	340.0	399.4	599.9	693.4	660.8	586.5	488.5
65°	614.7	635.5	549.4	356.4	304.4	350.4	537.5	625.1	601.4	527.1	439.5
67.5°	550.9	571.7	490.0	311.8	270.2	305.9	476.6	564.2	537.5	469.2	390.5
70°	484.1	501.9	427.6	268.8	237.6	264.3	412.8	495.9	472.2	408.3	338.5
72.5°	415.8	432.1	360.8	228.7	203.4	225.7	346.0	427.6	403.9	344.5	291.0
75°	343.0	359.3	298.5	188.6	169.3	185.6	285.1	354.9	332.6	283.6	242.0
77.5°	274.7	294.0	236.1	148.5	135.1	145.5	224.2	286.6	264.3	227.2	194.5
80°	209.4	225.7	175.2	112.8	103.9	111.4	163.3	218.3	200.5	175.2	151.5
82.5°	151.5	160.4	120.3	83.2	78.7	81.7	111.4	154.4	145.5	126.2	111.4
85°	102.5	101.0	74.2	57.9	56.4	57.9	66.8	93.5	92.1	84.6	71.3
87.5°	43.1	40.1	34.2	23.8	20.8	22.3	26.7	35.6	34.2	35.6	34.2
90°	1.5	14.8	23.8	29.7	31.2	29.7	23.8	14.8	1.5	16.3	26.7
92.5°	3.0	19.3	28.2	32.7	35.6	32.7	26.7	19.3	3.0	25.2	26.7
95°	8.9	26.7	32.7	40.1	43.1	40.1	32.7	25.2	8.9	22.3	40.1
97.5°	17.8	34.2	38.6	44.5	46.0	43.1	37.1	34.2	16.3	40.1	41.6
100°	26.7	43.1	50.5	50.5	52.0	50.5	49.0	41.6	25.2	44.5	50.5
102.5°	37.1	49.0	57.9	62.4	62.4	62.4	57.9	49.0	34.2	54.9	69.8
105°	47.5	53.5	63.8	69.8	72.8	69.8	63.8	54.9	46.0	63.8	74.2
107.5°	59.4	57.9	69.8	75.7	78.7	75.7	69.8	59.4	56.4	71.3	83.2
110°	71.3	63.8	75.7	81.7	83.2	81.7	75.7	63.8	68.3	80.2	92.1



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CATALOG NUMBER: 4WSL-LD2-45-UPL8-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°	81.7	68.3	81.7	87.6	89.1	87.6	81.7	69.8	78.7	86.1	101.0
115°	92.1	72.8	84.6	92.1	93.5	92.1	84.6	74.2	90.6	93.5	108.4
117.5°	102.5	78.7	87.6	96.5	98.0	96.5	89.1	80.2	101.0	102.5	115.8
120°	112.8	86.1	92.1	99.5	102.5	101.0	92.1	87.6	109.9	109.9	121.8
122.5°	121.8	92.1	96.5	102.5	105.4	102.5	96.5	95.0	120.3	117.3	129.2
125°	132.2	98.0	99.5	105.4	106.9	105.4	101.0	99.5	129.2	123.2	133.6
127.5°	139.6	105.4	102.5	108.4	109.9	108.4	103.9	106.9	138.1	135.1	138.1
130°	148.5	112.8	105.4	111.4	112.8	112.8	105.4	115.8	145.5	144.0	144.0
132.5°	155.9	120.3	108.4	114.3	115.8	115.8	109.9	121.8	152.9	151.5	148.5
135°	161.8	130.7	114.3	114.3	117.3	117.3	115.8	132.2	160.4	158.9	155.9
137.5°	167.8	139.6	118.8	115.8	117.3	117.3	121.8	141.1	166.3	166.3	160.4
140°	173.7	148.5	121.8	118.8	118.8	121.8	126.2	150.0	172.2	172.2	161.8
142.5°	179.7	155.9	126.2	123.2	120.3	126.2	130.7	158.9	176.7	178.2	166.3
145°	182.6	163.3	132.2	127.7	124.7	132.2	138.1	166.3	181.2	184.1	175.2
147.5°	187.1	170.8	139.6	130.7	130.7	135.1	144.0	172.2	185.6	188.6	179.7
150°	191.5	176.7	145.5	135.1	132.2	139.6	150.0	178.2	190.1	193.0	185.6
152.5°	194.5	182.6	154.4	141.1	138.1	147.0	160.4	182.6	193.0	196.0	191.5
155°	197.5	187.1	164.8	147.0	145.5	152.9	169.3	187.1	196.0	199.0	196.0
157.5°	200.5	191.5	172.2	155.9	150.0	161.8	176.7	193.0	199.0	201.9	200.5
160°	201.9	194.5	181.2	164.8	161.8	172.2	184.1	194.5	200.5	204.9	203.4
162.5°	204.9	197.5	187.1	175.2	172.2	181.2	190.1	199.0	203.4	206.4	206.4
165°	206.4	200.5	193.0	184.1	181.2	190.1	194.5	201.9	204.9	206.4	207.9
167.5°	206.4	203.4	197.5	190.1	188.6	196.0	200.5	204.9	206.4	206.4	209.4
170°	207.9	204.9	200.5	196.0	194.5	200.5	201.9	206.4	207.9	206.4	210.8
172.5°	207.9	206.4	203.4	199.0	196.0	203.4	204.9	206.4	207.9	206.4	209.4
175°	209.4	206.4	206.4	203.4	199.0	206.4	206.4	206.4	209.4	206.4	207.9
177.5°	209.4	206.4	206.4	204.9	201.9	206.4	206.4	206.4	209.4	206.4	207.9
180°	206.4	206.4	206.4	206.4	206.4	206.4	206.4	206.4	206.4	206.4	206.4



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CATALOG NUMBER: 4WSL-LD2-45-UPL8-UNV-L835-CD1-U

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1386.8	1386.8	1386.8	1386.8	1386.8	1386.8
2.5°	1376.4	1366.0	1369.0	1380.9	1376.4	1397.2
5°	1366.0	1360.1	1360.1	1373.5	1372.0	1397.2
7.5°	1349.7	1343.8	1346.7	1361.6	1364.6	1395.7
10°	1330.4	1323.0	1326.0	1346.7	1354.2	1389.8
12.5°	1309.6	1303.7	1306.7	1330.4	1340.8	1383.9
15°	1285.9	1277.0	1285.9	1311.1	1324.5	1373.5
17.5°	1259.1	1247.3	1257.7	1290.3	1306.7	1361.6
20°	1232.4	1222.0	1228.0	1263.6	1287.4	1348.2
22.5°	1205.7	1190.8	1196.8	1233.9	1263.6	1328.9
25°	1174.5	1152.2	1164.1	1204.2	1238.4	1308.1
27.5°	1132.9	1098.8	1124.0	1174.5	1208.7	1285.9
30°	1078.0	1033.4	1070.6	1138.9	1177.5	1260.6
32.5°	1017.1	969.6	1011.2	1098.8	1144.8	1230.9
35°	956.2	913.2	950.3	1054.2	1110.7	1198.3
37.5°	898.3	861.2	895.4	1006.7	1075.0	1164.1
40°	843.4	806.3	841.9	954.7	1036.4	1127.0
42.5°	788.4	754.3	788.4	899.8	996.3	1085.4
45°	733.5	680.1	730.5	846.4	953.3	1042.4
47.5°	674.1	611.8	669.7	788.4	907.2	996.3
50°	617.7	564.2	614.7	735.0	859.7	948.8
52.5°	568.7	525.6	565.7	680.1	810.7	896.8
55°	522.7	488.5	522.7	626.6	758.8	844.9
57.5°	481.1	458.8	482.6	580.6	705.3	791.4
60°	445.5	432.1	446.9	524.1	651.8	735.0
62.5°	411.3	409.8	412.8	479.6	595.4	675.6
65°	375.7	383.1	375.7	432.1	539.0	614.7
67.5°	340.0	354.9	343.0	384.6	478.1	550.9
70°	307.4	323.7	307.4	335.6	417.2	484.1
72.5°	270.2	291.0	270.2	289.5	353.4	415.8
75°	234.6	258.4	236.1	242.0	292.5	343.0
77.5°	196.0	218.3	200.5	196.0	236.1	274.7
80°	155.9	164.8	155.9	154.4	182.6	209.4
82.5°	108.4	115.8	108.4	112.8	133.6	151.5
85°	71.3	74.2	71.3	72.8	89.1	102.5
87.5°	29.7	29.7	29.7	37.1	40.1	43.1
90°	32.7	35.6	32.7	26.7	16.3	1.5
92.5°	34.2	37.1	34.2	29.7	19.3	3.0
95°	60.9	68.3	57.9	37.1	31.2	8.9
97.5°	49.0	53.5	50.5	43.1	38.6	17.8
100°	57.9	62.4	57.9	60.9	47.5	26.7
102.5°	68.3	71.3	69.8	71.3	57.9	37.1
105°	89.1	92.1	89.1	77.2	66.8	47.5
107.5°	95.0	102.5	96.5	86.1	75.7	59.4
110°	102.5	108.4	103.9	95.0	83.2	71.3



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CATALOG NUMBER: 4WSL-LD2-45-UPL8-UNV-L835-CD1-U

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	109.9	117.3	112.8	105.4	89.1	81.7
115°	118.8	124.7	121.8	112.8	98.0	92.1
117.5°	127.7	132.2	129.2	118.8	106.9	102.5
120°	135.1	141.1	138.1	126.2	114.3	112.8
122.5°	141.1	147.0	144.0	133.6	121.8	121.8
125°	147.0	152.9	150.0	139.6	127.7	132.2
127.5°	151.5	158.9	155.9	144.0	141.1	139.6
130°	157.4	161.8	160.4	148.5	148.5	148.5
132.5°	160.4	166.3	163.3	154.4	157.4	155.9
135°	161.8	169.3	166.3	161.8	164.8	161.8
137.5°	164.8	170.8	169.3	166.3	172.2	167.8
140°	169.3	172.2	173.7	169.3	178.2	173.7
142.5°	173.7	175.2	178.2	173.7	184.1	179.7
145°	176.7	179.7	182.6	182.6	188.6	182.6
147.5°	176.7	181.2	181.2	185.6	194.5	187.1
150°	181.2	178.2	187.1	191.5	197.5	191.5
152.5°	187.1	185.6	193.0	197.5	200.5	194.5
155°	188.6	190.1	194.5	201.9	203.4	197.5
157.5°	194.5	193.0	200.5	206.4	206.4	200.5
160°	199.0	199.0	206.4	209.4	207.9	201.9
162.5°	203.4	203.4	210.8	210.8	209.4	204.9
165°	206.4	206.4	213.8	212.3	209.4	206.4
167.5°	207.9	209.4	215.3	213.8	209.4	206.4
170°	209.4	209.4	215.3	212.3	209.4	207.9
172.5°	209.4	207.9	213.8	210.8	207.9	207.9
175°	207.9	204.9	210.8	207.9	207.9	209.4
177.5°	206.4	201.9	206.4	206.4	207.9	209.4
180°	206.4	206.4	206.4	206.4	206.4	206.4

(END OF REPORT)