

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: FAIL-SAFE

Report Number: P392484

Luminaire Tested: **MWL-2-13-38-UNV-L930-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392484
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1910-565-25 &
Test Lab: INNOVATION CENTER
Issue Date: 12/2/2019
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: MWL-2-13-38-UNV-L930-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4266.0 lumens
Efficiency: N/A
Efficacy: 77.9 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 1.18 / 1.24
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: Semi-Direct

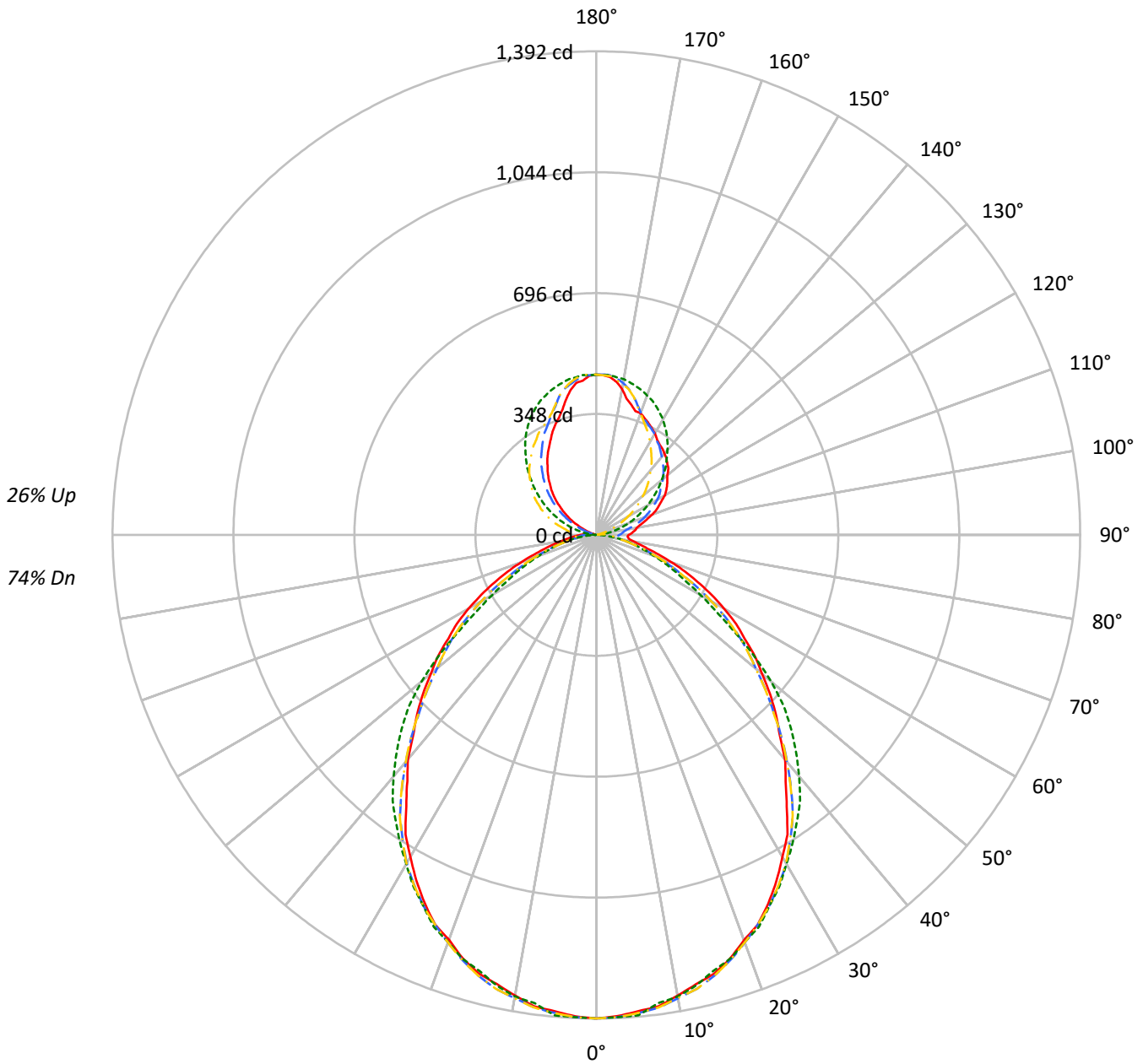
Input Watts (W): 54.742
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P392484

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Luminous Intensity Polar Plot



— 0°-180° - - 45°-225° - - - 90°-270° - - - 135°-315°



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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	50	30	10	50	30	10	0																
RCR																																														
0	113	113	113	113	107	107	107	107	97	97	97	87	87	87	78	78	78	74	74	74	74	74	74	74	74	74	74	74	74																	
1	104	99	95	92	98	95	91	88	86	83	81	77	75	74	70	68	67	63	63	63	63	63	63	63	63	63	63	63	63	63																
2	95	88	81	76	90	83	78	73	76	71	68	69	65	62	62	60	57	54	54	54	54	54	54	54	54	54	54	54	54	54																
3	87	78	70	64	82	74	67	62	67	62	58	61	57	54	56	52	50	46	46	46	46	46	46	46	46	46	46	46	46	46																
4	80	69	61	55	76	66	59	53	60	55	50	55	50	46	50	46	43	40	40	40	40	40	40	40	40	40	40	40	40	40	40															
5	74	62	54	48	70	59	52	46	54	48	44	50	45	41	45	41	38	35	35	35	35	35	35	35	35	35	35	35	35	35	35															
6	68	56	48	42	65	54	46	41	49	43	38	45	40	36	41	37	34	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31														
7	63	51	43	37	60	49	41	36	45	39	34	41	36	32	38	34	30	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28														
8	59	46	39	33	56	45	37	32	41	35	31	38	33	29	35	31	27	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25														
9	55	43	35	30	52	41	34	29	38	32	28	35	30	26	32	28	25	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23													
10	52	39	32	27	49	38	31	26	35	29	25	33	27	24	30	26	23	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21													

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	17977	17977	17977	17977
5°	17522	16549	17522	16549
10°	17032	15042	17032	15042
15°	16562	13701	16551	13701
20°	15859	12567	15846	12567
25°	15201	11449	15188	11449
30°	14255	10345	14237	10345
35°	13135	9331	13120	9331
40°	12116	8315	12098	8315
45°	11043	7239	11028	7239
50°	10026	6013	10008	6013
55°	9034	4463	9021	4463
60°	8049	3274	8041	3274
65°	6811	2436	6811	2436
70°	5505	1780	5512	1780
75°	4268	1252	4293	1252
80°	3689	793	3481	793
85°	4010	328	3086	328



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	130.9	3.1
10°-20°	368.2	8.6
20°-30°	540.1	12.7
30°-40°	612.3	14.4
40°-50°	571.4	13.4
50°-60°	448.7	10.5
60°-70°	279.3	6.5
70°-80°	134.7	3.2
80°-90°	62.5	1.5
90°-100°	49.2	1.2
100°-110°	72.2	1.7
110°-120°	123.3	2.9
120°-130°	167.3	3.9
130°-140°	190.8	4.5
140°-150°	190.1	4.5
150°-160°	165.5	3.9
160°-170°	116.2	2.7
170°-180°	43.2	1.0
0°-30°	1039.2	24.4
0°-40°	1651.6	38.7
0°-60°	2671.7	62.6
0°-90°	3148.2	73.8
90°-120°	244.7	5.7
90°-150°	793.0	18.6
90°-180°	1118.0	26.2
0°-180°	4266.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1392	1392	1392	1392	1392	
5°	1376	1388	1376	1388	1376	131
15°	1308	1299	1307	1299	1308	367
25°	1170	1178	1169	1178	1170	537
35°	954	1006	953	1006	954	598
45°	730	793	730	793	730	563
55°	520	481	520	481	520	469
65°	322	251	322	251	322	321
75°	152	119	153	119	152	168
85°	92	28	70	28	92	78
90°	93	1	44	1	93	52
95°	106	14	30	14	106	90
105°	140	65	4	65	140	150
115°	199	132	47	132	199	197
125°	248	207	114	207	248	222
135°	289	283	183	283	289	223
145°	317	353	245	353	317	200
155°	355	408	308	408	355	164
165°	388	443	375	443	388	110
175°	456	462	446	462	456	43
180°	461	461	461	461	461	



TEST NUMBER: P392484

CATALOG NUMBER: MWL-2-13-38-UNV-L930-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1391.8	1391.8	1391.8	1391.8	1391.8	1391.8	1391.8	1391.8	1391.8	1391.8	1391.8
2.5°	1386.7	1383.3	1389.7	1385.0	1389.2	1384.8	1389.7	1383.3	1387.1	1383.3	1389.7
5°	1376.0	1379.2	1381.5	1379.0	1388.0	1379.0	1381.2	1379.2	1376.0	1379.2	1381.2
7.5°	1369.0	1371.3	1372.1	1368.3	1359.3	1368.0	1371.8	1370.9	1369.0	1370.9	1371.8
10°	1346.3	1356.5	1354.0	1350.7	1349.1	1350.4	1353.7	1355.8	1346.3	1355.8	1353.7
12.5°	1324.7	1327.7	1338.1	1330.7	1327.9	1330.7	1338.1	1327.1	1324.1	1327.1	1338.1
15°	1307.7	1305.5	1313.4	1305.2	1299.1	1304.8	1313.1	1304.8	1306.8	1304.8	1313.1
17.5°	1278.9	1275.1	1283.0	1282.6	1279.4	1282.6	1282.6	1274.8	1278.0	1274.8	1282.6
20°	1241.2	1249.1	1248.5	1250.6	1247.0	1250.2	1248.1	1248.5	1240.2	1248.5	1248.1
22.5°	1213.8	1212.1	1213.9	1216.9	1221.5	1216.6	1213.6	1211.5	1213.1	1211.5	1213.6
25°	1170.2	1167.7	1178.0	1176.6	1177.9	1176.3	1177.4	1166.8	1169.2	1166.8	1177.4
27.5°	1122.5	1120.9	1136.1	1139.1	1140.1	1138.8	1135.5	1119.8	1121.5	1119.8	1135.5
30°	1070.7	1074.8	1092.1	1094.2	1094.0	1093.6	1091.1	1073.8	1069.4	1073.8	1091.1
32.5°	1023.0	1019.7	1038.6	1052.3	1050.8	1051.6	1037.7	1018.4	1021.6	1018.4	1037.7
35°	954.5	958.5	985.6	1002.1	1006.1	1001.1	984.7	957.5	953.4	957.5	984.7
37.5°	894.4	897.7	919.9	952.8	962.8	951.8	918.9	896.7	893.4	896.7	918.9
40°	844.2	834.4	853.3	892.4	906.9	891.8	852.0	833.0	842.9	833.0	852.0
42.5°	780.1	776.0	788.0	830.8	851.0	830.1	787.0	774.7	778.8	774.7	787.0
45°	730.5	718.9	720.6	764.2	792.6	763.5	719.3	718.0	729.5	718.0	719.3
47.5°	677.0	662.2	660.6	696.4	731.8	696.1	659.2	661.3	676.0	661.3	659.2
50°	622.8	615.4	598.9	624.9	655.8	624.2	597.6	614.1	621.7	614.1	597.6
52.5°	575.8	566.0	547.6	563.3	572.0	562.6	546.6	564.7	574.9	564.7	546.6
55°	520.5	516.3	494.9	496.2	481.2	495.6	494.0	515.4	519.8	515.4	494.0
57.5°	476.9	471.2	439.0	424.8	405.6	424.1	438.0	470.1	476.3	470.1	438.0
60°	424.0	417.4	382.0	356.2	346.3	355.8	381.3	416.7	423.6	416.7	381.3
62.5°	373.8	366.4	328.5	295.3	291.7	295.0	327.9	365.8	373.4	365.8	327.9
65°	322.4	310.1	272.3	244.3	250.6	244.1	272.0	309.8	322.4	309.8	272.0
67.5°	276.4	257.5	228.8	203.0	211.9	203.0	228.4	257.2	276.4	257.2	228.4
70°	229.2	208.7	188.2	166.8	176.6	166.8	188.2	209.0	229.5	209.0	188.2
72.5°	187.3	168.4	151.1	136.3	145.0	136.0	151.1	168.7	188.0	168.7	151.1
75°	152.0	131.4	117.1	108.0	118.7	108.0	117.4	131.7	152.9	131.7	117.4
77.5°	127.3	108.8	87.5	84.2	94.0	84.2	87.8	107.9	126.1	107.9	87.8
80°	108.2	95.3	68.8	62.8	71.1	62.8	68.1	90.1	102.1	90.1	68.1
82.5°	96.2	88.4	61.1	43.9	47.2	43.9	57.2	76.8	83.9	76.8	57.2
85°	91.5	86.6	59.2	34.2	27.5	33.5	49.7	66.8	70.4	66.8	49.7
87.5°	90.1	90.3	61.2	31.7	8.2	27.1	42.7	59.3	56.6	59.3	42.7
90°	92.8	94.5	66.3	30.3	1.1	18.0	34.2	48.9	44.2	48.9	34.2
92.5°	101.3	99.9	71.7	30.5	6.0	8.1	27.3	40.0	37.9	40.0	27.3
95°	106.5	105.4	76.5	34.5	13.8	2.1	18.2	30.3	29.8	30.3	18.2
97.5°	114.2	110.1	80.9	46.2	23.9	4.7	9.3	21.0	23.5	21.0	9.3
100°	117.8	113.4	89.8	60.1	36.1	11.5	4.0	11.7	15.8	11.7	4.0
102.5°	128.0	122.5	102.2	73.4	49.4	20.9	5.6	5.9	7.6	5.9	5.6
105°	140.3	135.8	118.9	87.3	64.6	33.5	14.3	5.5	4.0	5.5	14.3
107.5°	154.3	150.9	133.2	102.4	80.8	49.0	25.4	13.6	9.2	13.6	25.4
110°	170.5	166.5	147.1	116.7	98.5	64.5	37.9	24.0	18.8	24.0	37.9



TEST NUMBER: P392484

CATALOG NUMBER: MWL-2-13-38-UNV-L930-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	186.0	183.1	160.1	131.5	116.0	81.4	53.4	36.9	32.1	36.9	53.4
115°	198.8	196.4	175.0	145.5	132.3	100.5	70.6	52.2	47.2	52.2	70.6
117.5°	211.4	211.1	186.8	159.7	151.6	117.6	87.3	68.2	62.1	68.2	87.3
120°	227.3	224.7	202.0	174.8	170.9	136.6	104.9	85.8	79.6	85.8	104.9
122.5°	238.3	236.7	215.0	188.4	188.4	155.1	121.7	102.5	96.2	102.5	121.7
125°	248.3	247.8	224.7	202.0	207.2	172.2	140.4	121.1	113.8	121.1	140.4
127.5°	257.5	258.4	237.3	216.9	226.4	189.7	158.9	137.5	130.0	137.5	158.9
130°	266.0	268.5	249.3	230.5	244.4	208.9	175.5	154.1	150.0	154.1	175.5
132.5°	281.2	279.3	261.6	245.3	264.8	227.2	193.0	171.4	165.9	171.4	193.0
135°	289.0	289.7	273.1	257.3	282.8	244.6	210.4	188.3	182.8	188.3	210.4
137.5°	298.4	296.5	281.5	271.8	299.7	261.4	226.6	206.0	197.3	206.0	226.6
140°	305.2	304.9	292.5	284.8	317.9	278.0	243.0	222.2	214.2	222.2	243.0
142.5°	312.4	314.3	303.6	299.0	336.0	295.5	260.8	238.1	230.4	238.1	260.8
145°	317.2	321.4	314.6	316.9	353.2	314.9	276.4	253.4	245.0	253.4	276.4
147.5°	325.3	330.8	322.7	329.6	368.0	332.1	292.0	269.3	261.8	269.3	292.0
150°	337.1	339.7	334.9	347.0	383.3	351.2	308.6	285.3	277.8	285.3	308.6
152.5°	345.9	349.1	343.6	366.1	395.3	368.7	326.0	300.2	291.4	300.2	326.0
155°	354.9	356.3	351.5	384.5	407.9	385.8	339.3	316.7	308.4	316.7	339.3
157.5°	363.3	365.9	360.7	398.5	418.9	400.7	355.1	333.3	325.8	333.3	355.1
160°	372.5	372.5	374.2	414.7	427.1	413.7	372.0	351.4	341.0	351.4	372.0
162.5°	373.4	378.7	392.7	426.1	435.9	425.1	390.1	363.5	355.3	363.5	390.1
165°	387.7	392.4	413.4	436.1	442.7	435.1	412.4	384.9	375.0	384.9	412.4
167.5°	401.8	413.4	430.3	446.6	449.1	443.7	429.6	410.5	400.7	410.5	429.6
170°	426.1	436.1	443.7	451.6	455.2	452.0	439.5	430.9	424.8	430.9	439.5
172.5°	444.3	451.6	454.0	459.4	457.2	455.8	449.1	445.4	441.5	445.4	449.1
175°	455.5	457.7	461.4	459.7	461.6	458.1	458.5	459.9	445.8	459.9	458.5
177.5°	460.5	462.8	462.0	460.0	460.1	459.6	460.1	460.5	458.6	460.5	460.1
180°	461.4	461.4	461.4	461.4	461.4	461.4	461.4	461.4	461.4	461.4	461.4



TEST NUMBER: P392484

CATALOG NUMBER: MWL-2-13-38-UNV-L930-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1391.8	1391.8	1391.8	1391.8	1391.8	1391.8
2.5°	1384.8	1389.2	1385.0	1389.7	1383.3	1386.7
5°	1379.0	1388.0	1379.0	1381.5	1379.2	1376.0
7.5°	1368.0	1359.3	1368.3	1372.1	1371.3	1369.0
10°	1350.4	1349.1	1350.7	1354.0	1356.5	1346.3
12.5°	1330.7	1327.9	1330.7	1338.1	1327.7	1324.7
15°	1304.8	1299.1	1305.2	1313.4	1305.5	1307.7
17.5°	1282.6	1279.4	1282.6	1283.0	1275.1	1278.9
20°	1250.2	1247.0	1250.6	1248.5	1249.1	1241.2
22.5°	1216.6	1221.5	1216.9	1213.9	1212.1	1213.8
25°	1176.3	1177.9	1176.6	1178.0	1167.7	1170.2
27.5°	1138.8	1140.1	1139.1	1136.1	1120.9	1122.5
30°	1093.6	1094.0	1094.2	1092.1	1074.8	1070.7
32.5°	1051.6	1050.8	1052.3	1038.6	1019.7	1023.0
35°	1001.1	1006.1	1002.1	985.6	958.5	954.5
37.5°	951.8	962.8	952.8	919.9	897.7	894.4
40°	891.8	906.9	892.4	853.3	834.4	844.2
42.5°	830.1	851.0	830.8	788.0	776.0	780.1
45°	763.5	792.6	764.2	720.6	718.9	730.5
47.5°	696.1	731.8	696.4	660.6	662.2	677.0
50°	624.2	655.8	624.9	598.9	615.4	622.8
52.5°	562.6	572.0	563.3	547.6	566.0	575.8
55°	495.6	481.2	496.2	494.9	516.3	520.5
57.5°	424.1	405.6	424.8	439.0	471.2	476.9
60°	355.8	346.3	356.2	382.0	417.4	424.0
62.5°	295.0	291.7	295.3	328.5	366.4	373.8
65°	244.1	250.6	244.3	272.3	310.1	322.4
67.5°	203.0	211.9	203.0	228.8	257.5	276.4
70°	166.8	176.6	166.8	188.2	208.7	229.2
72.5°	136.0	145.0	136.3	151.1	168.4	187.3
75°	108.0	118.7	108.0	117.1	131.4	152.0
77.5°	84.2	94.0	84.2	87.5	108.8	127.3
80°	62.8	71.1	62.8	68.8	95.3	108.2
82.5°	43.9	47.2	43.9	61.1	88.4	96.2
85°	33.5	27.5	34.2	59.2	86.6	91.5
87.5°	27.1	8.2	31.7	61.2	90.3	90.1
90°	18.0	1.1	30.3	66.3	94.5	92.8
92.5°	8.1	6.0	30.5	71.7	99.9	101.3
95°	2.1	13.8	34.5	76.5	105.4	106.5
97.5°	4.7	23.9	46.2	80.9	110.1	114.2
100°	11.5	36.1	60.1	89.8	113.4	117.8
102.5°	20.9	49.4	73.4	102.2	122.5	128.0
105°	33.5	64.6	87.3	118.9	135.8	140.3
107.5°	49.0	80.8	102.4	133.2	150.9	154.3
110°	64.5	98.5	116.7	147.1	166.5	170.5



TEST NUMBER: P392484

CATALOG NUMBER: MWL-2-13-38-UNV-L930-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	81.4	116.0	131.5	160.1	183.1	186.0
115°	100.5	132.3	145.5	175.0	196.4	198.8
117.5°	117.6	151.6	159.7	186.8	211.1	211.4
120°	136.6	170.9	174.8	202.0	224.7	227.3
122.5°	155.1	188.4	188.4	215.0	236.7	238.3
125°	172.2	207.2	202.0	224.7	247.8	248.3
127.5°	189.7	226.4	216.9	237.3	258.4	257.5
130°	208.9	244.4	230.5	249.3	268.5	266.0
132.5°	227.2	264.8	245.3	261.6	279.3	281.2
135°	244.6	282.8	257.3	273.1	289.7	289.0
137.5°	261.4	299.7	271.8	281.5	296.5	298.4
140°	278.0	317.9	284.8	292.5	304.9	305.2
142.5°	295.5	336.0	299.0	303.6	314.3	312.4
145°	314.9	353.2	316.9	314.6	321.4	317.2
147.5°	332.1	368.0	329.6	322.7	330.8	325.3
150°	351.2	383.3	347.0	334.9	339.7	337.1
152.5°	368.7	395.3	366.1	343.6	349.1	345.9
155°	385.8	407.9	384.5	351.5	356.3	354.9
157.5°	400.7	418.9	398.5	360.7	365.9	363.3
160°	413.7	427.1	414.7	374.2	372.5	372.5
162.5°	425.1	435.9	426.1	392.7	378.7	373.4
165°	435.1	442.7	436.1	413.4	392.4	387.7
167.5°	443.7	449.1	446.6	430.3	413.4	401.8
170°	452.0	455.2	451.6	443.7	436.1	426.1
172.5°	455.8	457.2	459.4	454.0	451.6	444.3
175°	458.1	461.6	459.7	461.4	457.7	455.5
177.5°	459.6	460.1	460.0	462.0	462.8	460.5
180°	461.4	461.4	461.4	461.4	461.4	461.4

(END OF REPORT)