

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: P392664

Luminaire Tested: **MWL-4-34-60-UNV-L830-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392664
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1910-565-1 &
Test Lab: INNOVATION CENTER
Issue Date: 12/2/2019
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: MWL-4-34-60-UNV-L830-EDD
Description: MWL 4FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

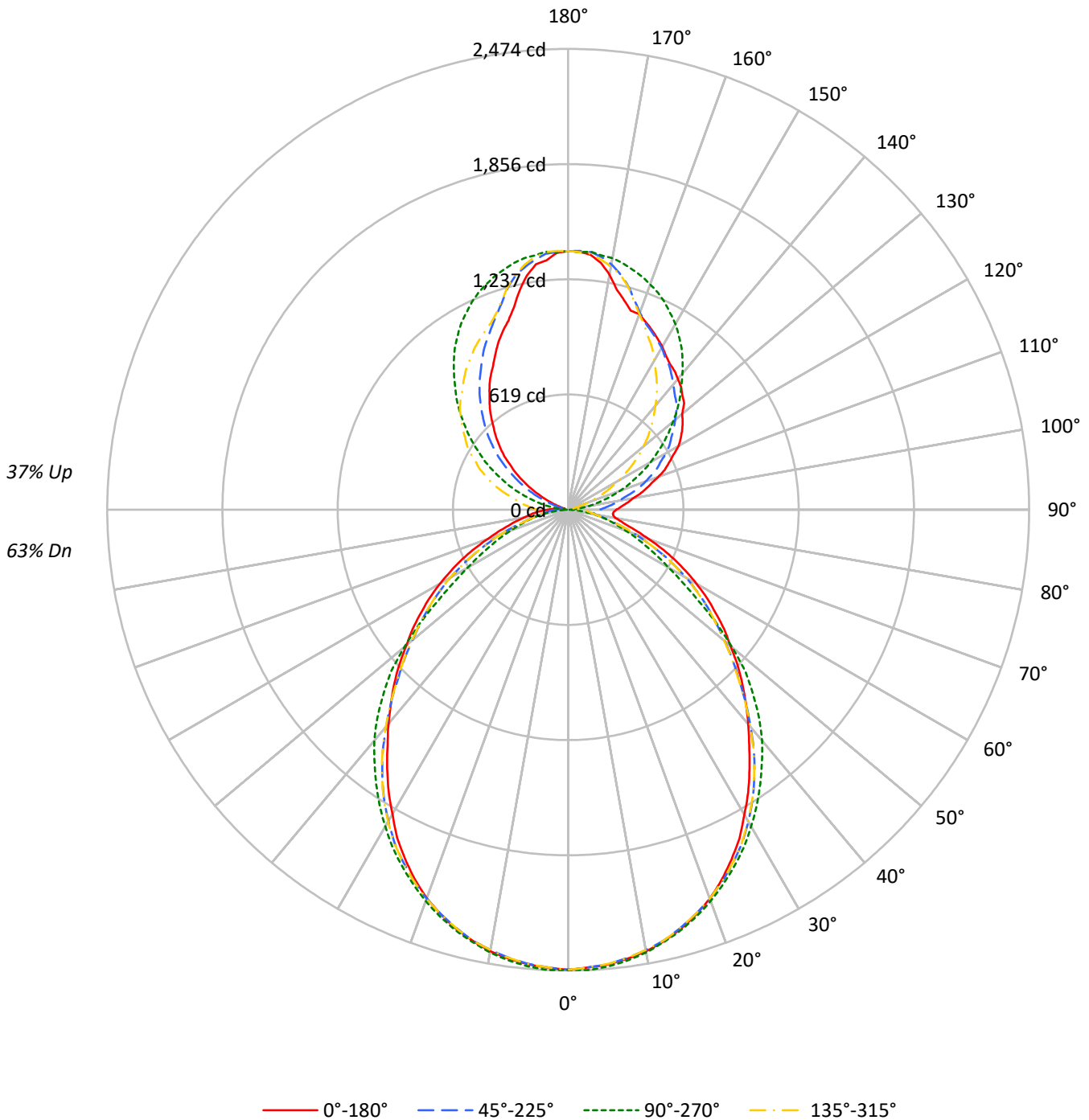
Lumens per Lamp: N/A
Luminaire Lumens: 9092.0 lumens
Efficiency: N/A
Efficacy: 92.3 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 1.19 / 1.25
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 4' x H: 0.42')
CIE Type: Semi-Direct

Input Watts (W): 98.5
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										
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	110	110	110	110	103	103	103	103	91	91	91	79	79	79	68	68	68	63																				
1	101	97	93	89	95	91	87	84	80	77	75	70	68	66	61	59	58	54																				
2	92	85	79	74	86	80	74	70	71	66	63	62	59	56	54	52	50	46																				
3	84	75	68	62	79	71	64	59	63	58	53	55	51	48	48	45	43	39																				
4	78	67	59	53	73	63	56	50	56	50	46	49	45	41	43	40	37	34																				
5	71	60	52	46	67	56	49	44	50	44	40	45	40	36	39	36	33	30																				
6	66	54	46	40	62	51	44	38	46	40	35	40	36	32	36	32	29	26																				
7	61	49	41	35	57	46	39	34	41	35	31	37	32	28	33	29	26	23																				
8	57	44	37	31	53	42	35	30	38	32	28	34	29	26	30	26	23	21																				
9	53	41	33	28	50	39	32	27	35	29	25	31	27	23	28	24	21	19																				
10	50	37	30	25	47	36	29	24	32	27	23	29	24	21	26	22	19	17																				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	15951	15951	15951	15951
5°	15744	14673	15744	14673
10°	15504	13454	15504	13454
15°	15161	12326	15141	12326
20°	14716	11270	14696	11270
25°	14085	10259	14065	10259
30°	13296	9285	13269	9285
35°	12464	8333	12443	8333
40°	11655	7424	11625	7424
45°	10935	6414	10911	6414
50°	10150	5259	10125	5259
55°	9457	3962	9438	3962
60°	8698	2941	8687	2941
65°	7818	2230	7818	2230
70°	6723	1649	6737	1649
75°	5899	1200	5953	1200
80°	6025	776	5593	776
85°	8135	349	5984	349



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	232.8	2.6
10°-20°	656.6	7.2
20°-30°	962.8	10.6
30°-40°	1090.1	12.0
40°-50°	1026.9	11.3
50°-60°	821.1	9.0
60°-70°	539.3	5.9
70°-80°	275.7	3.0
80°-90°	140.9	1.5
90°-100°	135.7	1.5
100°-110°	219.1	2.4
110°-120°	369.8	4.1
120°-130°	502.0	5.5
130°-140°	572.3	6.3
140°-150°	570.7	6.3
150°-160°	496.7	5.5
160°-170°	349.4	3.8
170°-180°	130.1	1.4
0°-30°	1852.3	20.4
0°-40°	2942.4	32.4
0°-60°	4790.4	52.7
0°-90°	5746.2	63.2
90°-120°	724.6	8.0
90°-150°	2369.6	26.1
90°-180°	3346.0	36.8
0°-180°	9092.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	2470	2470	2470	2470	2470	
5°	2451	2461	2451	2461	2451	233
15°	2331	2337	2328	2337	2331	656
25°	2073	2111	2070	2111	2073	953
35°	1696	1797	1693	1797	1696	1061
45°	1322	1404	1319	1404	1322	1019
55°	965	854	963	854	965	865
65°	626	459	626	459	626	619
75°	328	228	331	228	328	361
85°	240	59	177	59	240	201
90°	258	2	111	2	258	143
95°	300	40	68	40	300	257
105°	432	195	19	195	432	456
115°	597	396	139	396	597	593
125°	747	622	341	622	747	667
135°	867	848	546	848	867	670
145°	954	1060	735	1060	954	601
155°	1064	1227	923	1227	1064	491
165°	1163	1334	1125	1334	1163	330
175°	1374	1390	1344	1390	1374	128
180°	1388	1388	1388	1388	1388	



TEST NUMBER: P392664

CATALOG NUMBER: MWL-4-34-60-UNV-L830-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	2469.9	2469.9	2469.9	2469.9	2469.9	2469.9	2469.9	2469.9	2469.9	2469.9	2469.9
2.5°	2460.3	2467.0	2459.4	2472.9	2473.8	2471.9	2459.4	2467.0	2461.2	2467.0	2459.4
5°	2450.7	2456.4	2448.9	2460.4	2461.3	2460.4	2447.8	2456.4	2450.7	2456.4	2447.8
7.5°	2431.5	2437.3	2427.7	2442.1	2441.2	2441.1	2426.7	2436.3	2431.5	2436.3	2426.7
10°	2407.5	2406.5	2400.8	2413.3	2413.3	2412.3	2399.8	2404.6	2407.5	2404.6	2399.8
12.5°	2372.1	2372.9	2369.1	2378.7	2376.8	2378.7	2369.1	2371.0	2370.1	2371.0	2369.1
15°	2330.8	2327.8	2324.9	2338.4	2337.4	2337.4	2324.0	2325.9	2327.8	2325.9	2324.0
17.5°	2279.9	2279.8	2276.0	2288.5	2289.4	2288.5	2275.0	2278.9	2277.0	2278.9	2275.0
20°	2222.3	2222.3	2222.2	2235.7	2236.6	2234.7	2221.3	2220.3	2219.4	2220.3	2221.3
22.5°	2151.3	2159.0	2160.8	2177.1	2175.2	2176.2	2159.8	2157.0	2149.3	2157.0	2159.8
25°	2072.6	2079.3	2092.7	2111.8	2110.9	2110.9	2090.7	2076.3	2069.6	2076.3	2090.7
27.5°	1990.0	1999.6	2019.7	2043.7	2042.7	2042.7	2017.8	1996.7	1987.1	1996.7	2017.8
30°	1890.2	1902.7	1933.4	1965.0	1964.0	1963.1	1930.4	1899.7	1886.3	1899.7	1930.4
32.5°	1798.1	1807.7	1843.2	1884.4	1883.4	1882.4	1840.2	1803.7	1794.1	1803.7	1840.2
35°	1696.2	1705.8	1742.3	1794.1	1797.0	1791.2	1739.4	1702.9	1693.3	1702.9	1739.4
37.5°	1595.4	1601.2	1637.7	1699.1	1707.7	1696.2	1634.8	1598.3	1592.6	1598.3	1634.8
40°	1503.3	1497.5	1522.5	1593.5	1619.4	1591.6	1518.6	1493.7	1499.4	1493.7	1518.6
42.5°	1411.1	1399.6	1411.1	1483.1	1515.8	1481.2	1408.3	1395.8	1407.3	1395.8	1408.3
45°	1321.9	1296.9	1297.9	1366.0	1404.4	1364.1	1293.9	1294.0	1319.0	1294.0	1293.9
47.5°	1231.6	1207.6	1198.0	1248.9	1291.1	1248.0	1194.1	1204.8	1228.8	1204.8	1194.1
50°	1135.6	1120.3	1095.3	1129.9	1147.2	1128.0	1091.4	1116.3	1132.8	1116.3	1091.4
52.5°	1056.0	1036.8	1000.3	1013.7	1005.1	1011.8	997.3	1032.8	1053.1	1032.8	997.3
55°	964.8	954.2	912.9	892.8	854.4	890.8	910.0	951.2	962.9	951.2	910.0
57.5°	884.2	875.5	822.7	777.6	727.7	775.6	819.7	872.5	882.2	872.5	819.7
60°	794.9	794.9	731.5	659.5	622.1	658.5	729.5	792.9	793.9	792.9	729.5
62.5°	709.5	706.6	639.4	554.0	537.5	552.9	637.4	704.6	708.5	704.6	637.4
65°	625.9	612.5	547.2	463.7	458.8	462.7	546.2	611.4	625.9	611.4	546.2
67.5°	539.6	523.2	458.9	384.9	393.6	384.9	457.9	522.2	539.6	522.2	457.9
70°	457.9	434.8	382.0	317.7	327.3	317.7	382.0	435.9	458.9	435.9	382.0
72.5°	390.7	353.2	307.2	260.1	274.5	259.2	307.2	354.3	392.7	354.3	307.2
75°	328.3	286.0	238.1	208.3	227.5	208.3	239.0	287.1	331.3	287.1	239.0
77.5°	290.1	238.1	186.2	161.3	182.4	161.3	187.2	235.3	286.1	235.3	187.2
80°	257.7	209.6	150.8	120.0	139.2	120.0	148.8	194.0	239.2	194.0	148.8
82.5°	244.8	199.5	134.7	86.4	96.0	86.4	123.0	164.2	207.6	164.2	123.0
85°	240.5	202.9	137.1	69.2	58.6	67.2	108.7	143.2	176.9	143.2	108.7
87.5°	245.2	218.1	146.2	70.5	19.2	56.7	90.4	124.1	144.3	124.1	90.4
90°	258.3	237.0	167.1	75.6	1.9	38.4	70.2	99.0	111.4	99.0	70.2
92.5°	279.3	262.8	190.8	89.7	16.6	22.1	56.7	81.7	87.4	81.7	56.7
95°	300.3	294.4	218.6	108.6	40.1	10.7	42.3	67.2	68.2	67.2	42.3
97.5°	328.0	323.1	247.2	139.0	70.5	13.6	30.8	53.8	53.8	53.8	30.8
100°	352.8	349.8	277.8	181.1	108.7	34.3	18.3	42.4	44.3	42.4	18.3
102.5°	395.1	380.5	310.3	221.3	148.8	62.6	18.5	28.0	30.9	28.0	18.5
105°	431.6	414.0	357.3	263.3	194.8	100.8	41.1	20.3	19.3	20.3	41.1
107.5°	466.9	455.2	400.4	306.4	243.7	144.8	74.4	40.0	28.3	40.0	74.4
110°	513.9	502.2	442.5	349.5	294.7	191.9	112.5	71.4	55.8	71.4	112.5



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CATALOG NUMBER: MWL-4-34-60-UNV-L830-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	561.0	552.1	481.7	394.5	347.6	242.8	159.5	110.6	95.9	110.6	159.5
115°	597.1	591.3	526.7	436.7	396.5	300.5	211.5	155.6	139.0	155.6	211.5
117.5°	635.3	633.4	560.0	480.6	456.2	353.4	259.4	201.7	184.0	201.7	259.4
120°	683.3	675.5	606.0	523.7	512.0	408.2	312.3	255.4	236.9	255.4	312.3
122.5°	716.6	711.7	645.1	564.9	564.9	464.0	363.2	306.4	286.8	306.4	363.2
125°	747.0	745.0	675.5	606.0	621.6	515.9	420.9	362.2	340.7	362.2	420.9
127.5°	774.3	777.3	713.7	651.0	679.4	568.7	476.8	412.1	389.6	412.1	476.8
130°	797.9	807.6	749.9	692.2	734.2	626.5	526.7	462.1	447.4	462.1	526.7
132.5°	843.8	838.0	787.1	735.2	793.0	680.4	579.5	512.0	495.3	512.0	579.5
135°	867.4	869.4	819.4	771.5	847.8	733.3	629.5	562.9	546.3	562.9	629.5
137.5°	895.8	889.9	844.9	815.5	898.7	784.1	678.4	616.7	590.3	616.7	678.4
140°	916.3	915.3	878.1	854.7	953.6	834.0	728.4	665.7	641.2	665.7	728.4
142.5°	937.9	944.7	911.4	897.7	1008.4	886.9	782.2	714.6	690.2	714.6	782.2
145°	953.6	966.2	944.7	951.5	1060.3	945.7	829.2	760.6	735.2	760.6	829.2
147.5°	978.0	994.6	969.2	989.7	1105.3	997.6	876.2	808.6	786.1	808.6	876.2
150°	1010.3	1018.2	1003.5	1042.6	1151.3	1055.4	924.2	853.6	831.2	853.6	924.2
152.5°	1036.8	1046.6	1029.9	1100.4	1187.6	1108.2	977.1	898.7	872.3	898.7	977.1
155°	1064.1	1068.1	1056.4	1156.2	1226.7	1160.1	1019.1	948.7	923.2	948.7	1019.1
157.5°	1089.7	1097.4	1083.7	1198.3	1259.9	1205.1	1067.1	998.6	976.0	998.6	1067.1
160°	1117.0	1117.0	1124.9	1247.3	1287.4	1244.3	1118.0	1053.4	1022.1	1053.4	1118.0
162.5°	1120.0	1138.6	1180.7	1281.5	1313.8	1278.6	1172.9	1092.5	1065.2	1092.5	1172.9
165°	1163.1	1179.7	1243.3	1311.9	1334.4	1308.9	1240.4	1157.1	1124.9	1157.1	1240.4
167.5°	1208.1	1243.3	1294.2	1347.1	1355.0	1338.3	1292.3	1234.5	1205.1	1234.5	1292.3
170°	1280.6	1311.9	1337.3	1358.9	1370.6	1359.9	1324.6	1296.2	1276.7	1296.2	1324.6
172.5°	1337.4	1358.9	1368.7	1383.3	1376.5	1372.5	1354.0	1340.3	1328.6	1340.3	1354.0
175°	1373.6	1379.5	1388.3	1384.4	1390.2	1379.5	1379.5	1386.3	1344.2	1386.3	1379.5
177.5°	1386.4	1395.1	1390.2	1382.3	1383.3	1381.4	1384.4	1388.3	1380.4	1388.3	1384.4
180°	1388.3	1388.3	1388.3	1388.3	1388.3	1388.3	1388.3	1388.3	1388.3	1388.3	1388.3



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CATALOG NUMBER: MWL-4-34-60-UNV-L830-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2469.9	2469.9	2469.9	2469.9	2469.9	2469.9
2.5°	2471.9	2473.8	2472.9	2459.4	2467.0	2460.3
5°	2460.4	2461.3	2460.4	2448.9	2456.4	2450.7
7.5°	2441.1	2441.2	2442.1	2427.7	2437.3	2431.5
10°	2412.3	2413.3	2413.3	2400.8	2406.5	2407.5
12.5°	2378.7	2376.8	2378.7	2369.1	2372.9	2372.1
15°	2337.4	2337.4	2338.4	2324.9	2327.8	2330.8
17.5°	2288.5	2289.4	2288.5	2276.0	2279.8	2279.9
20°	2234.7	2236.6	2235.7	2222.2	2222.3	2222.3
22.5°	2176.2	2175.2	2177.1	2160.8	2159.0	2151.3
25°	2110.9	2110.9	2111.8	2092.7	2079.3	2072.6
27.5°	2042.7	2042.7	2043.7	2019.7	1999.6	1990.0
30°	1963.1	1964.0	1965.0	1933.4	1902.7	1890.2
32.5°	1882.4	1883.4	1884.4	1843.2	1807.7	1798.1
35°	1791.2	1797.0	1794.1	1742.3	1705.8	1696.2
37.5°	1696.2	1707.7	1699.1	1637.7	1601.2	1595.4
40°	1591.6	1619.4	1593.5	1522.5	1497.5	1503.3
42.5°	1481.2	1515.8	1483.1	1411.1	1399.6	1411.1
45°	1364.1	1404.4	1366.0	1297.9	1296.9	1321.9
47.5°	1248.0	1291.1	1248.9	1198.0	1207.6	1231.6
50°	1128.0	1147.2	1129.9	1095.3	1120.3	1135.6
52.5°	1011.8	1005.1	1013.7	1000.3	1036.8	1056.0
55°	890.8	854.4	892.8	912.9	954.2	964.8
57.5°	775.6	727.7	777.6	822.7	875.5	884.2
60°	658.5	622.1	659.5	731.5	794.9	794.9
62.5°	552.9	537.5	554.0	639.4	706.6	709.5
65°	462.7	458.8	463.7	547.2	612.5	625.9
67.5°	384.9	393.6	384.9	458.9	523.2	539.6
70°	317.7	327.3	317.7	382.0	434.8	457.9
72.5°	259.2	274.5	260.1	307.2	353.2	390.7
75°	208.3	227.5	208.3	238.1	286.0	328.3
77.5°	161.3	182.4	161.3	186.2	238.1	290.1
80°	120.0	139.2	120.0	150.8	209.6	257.7
82.5°	86.4	96.0	86.4	134.7	199.5	244.8
85°	67.2	58.6	69.2	137.1	202.9	240.5
87.5°	56.7	19.2	70.5	146.2	218.1	245.2
90°	38.4	1.9	75.6	167.1	237.0	258.3
92.5°	22.1	16.6	89.7	190.8	262.8	279.3
95°	10.7	40.1	108.6	218.6	294.4	300.3
97.5°	13.6	70.5	139.0	247.2	323.1	328.0
100°	34.3	108.7	181.1	277.8	349.8	352.8
102.5°	62.6	148.8	221.3	310.3	380.5	395.1
105°	100.8	194.8	263.3	357.3	414.0	431.6
107.5°	144.8	243.7	306.4	400.4	455.2	466.9
110°	191.9	294.7	349.5	442.5	502.2	513.9



TEST NUMBER: P392664

CATALOG NUMBER: MWL-4-34-60-UNV-L830-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	242.8	347.6	394.5	481.7	552.1	561.0
115°	300.5	396.5	436.7	526.7	591.3	597.1
117.5°	353.4	456.2	480.6	560.0	633.4	635.3
120°	408.2	512.0	523.7	606.0	675.5	683.3
122.5°	464.0	564.9	564.9	645.1	711.7	716.6
125°	515.9	621.6	606.0	675.5	745.0	747.0
127.5°	568.7	679.4	651.0	713.7	777.3	774.3
130°	626.5	734.2	692.2	749.9	807.6	797.9
132.5°	680.4	793.0	735.2	787.1	838.0	843.8
135°	733.3	847.8	771.5	819.4	869.4	867.4
137.5°	784.1	898.7	815.5	844.9	889.9	895.8
140°	834.0	953.6	854.7	878.1	915.3	916.3
142.5°	886.9	1008.4	897.7	911.4	944.7	937.9
145°	945.7	1060.3	951.5	944.7	966.2	953.6
147.5°	997.6	1105.3	989.7	969.2	994.6	978.0
150°	1055.4	1151.3	1042.6	1003.5	1018.2	1010.3
152.5°	1108.2	1187.6	1100.4	1029.9	1046.6	1036.8
155°	1160.1	1226.7	1156.2	1056.4	1068.1	1064.1
157.5°	1205.1	1259.9	1198.3	1083.7	1097.4	1089.7
160°	1244.3	1287.4	1247.3	1124.9	1117.0	1117.0
162.5°	1278.6	1313.8	1281.5	1180.7	1138.6	1120.0
165°	1308.9	1334.4	1311.9	1243.3	1179.7	1163.1
167.5°	1338.3	1355.0	1347.1	1294.2	1243.3	1208.1
170°	1359.9	1370.6	1358.9	1337.3	1311.9	1280.6
172.5°	1372.5	1376.5	1383.3	1368.7	1358.9	1337.4
175°	1379.5	1390.2	1384.4	1388.3	1379.5	1373.6
177.5°	1381.4	1383.3	1382.3	1390.2	1395.1	1386.4
180°	1388.3	1388.3	1388.3	1388.3	1388.3	1388.3

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