

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: P392528

Luminaire Tested: **MWL-2-28-31-UNV-L940-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392528
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-2-28-31-UNV-L940-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

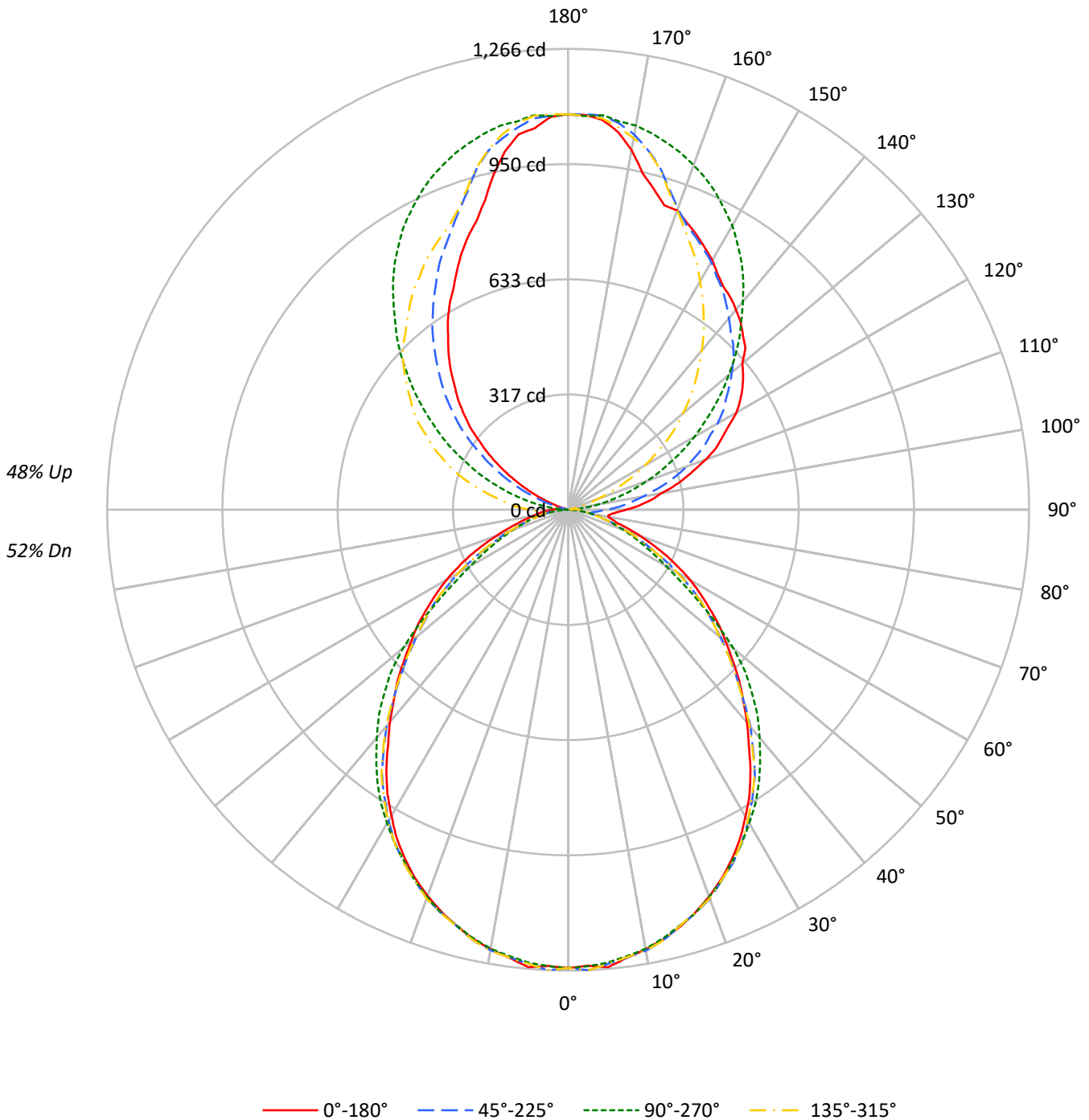
Lumens per Lamp: N/A
Luminaire Lumens: 5468.5 lumens
Efficiency: N/A
Efficacy: 82.5 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: General Diffuse

Input Watts (W): 66.256
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	108	108	108	108	100	100	100	100	85	85	85	71	71	71	58	58	58	52
1	99	94	91	87	91	88	84	81	75	72	70	63	61	60	52	51	50	45
2	90	83	77	72	83	77	72	67	66	62	59	56	53	51	46	44	43	38
3	83	73	66	60	76	68	62	57	59	54	50	50	46	43	41	39	37	33
4	76	65	57	51	70	61	54	49	52	47	43	45	41	37	37	34	32	29
5	70	58	50	44	64	54	47	42	47	42	37	40	36	33	34	31	28	25
6	64	52	44	39	59	49	42	37	43	37	33	36	32	29	31	28	25	22
7	60	47	40	34	55	44	37	32	39	33	29	33	29	26	28	25	22	20
8	55	43	35	30	51	40	34	29	35	30	26	31	26	23	26	23	20	18
9	52	39	32	27	48	37	30	26	32	27	23	28	24	21	24	21	18	16
10	48	36	29	24	45	34	28	23	30	25	21	26	22	19	22	19	17	15

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	16262	16262	16262	16262
5°	16061	14889	16061	14889
10°	15514	13652	15514	13652
15°	15020	12474	14989	12474
20°	14453	11408	14424	11408
25°	13785	10355	13755	10355
30°	12963	9403	12923	9403
35°	12009	8470	11979	8470
40°	10970	7494	10925	7494
45°	10041	6526	10006	6526
50°	9094	5425	9057	5425
55°	8227	4026	8199	4026
60°	7358	2942	7343	2942
65°	6266	2185	6266	2185
70°	5027	1623	5044	1623
75°	3880	1132	3945	1132
80°	3781	719	3284	719
85°	5352	302	3169	302



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	118.7	2.2
10°-20°	334.1	6.1
20°-30°	489.9	9.0
30°-40°	555.8	10.2
40°-50°	518.6	9.5
50°-60°	406.8	7.4
60°-70°	254.0	4.6
70°-80°	123.2	2.3
80°-90°	69.7	1.3
90°-100°	90.5	1.7
100°-110°	167.7	3.1
110°-120°	288.9	5.3
120°-130°	392.5	7.2
130°-140°	447.7	8.2
140°-150°	446.5	8.2
150°-160°	388.8	7.1
160°-170°	273.4	5.0
170°-180°	101.8	1.9
0°-30°	942.7	17.2
0°-40°	1498.5	27.4
0°-60°	2423.9	44.3
0°-90°	2870.7	52.5
90°-120°	547.1	10.0
90°-150°	1833.9	33.5
90°-180°	2598.0	47.5
0°-180°	5468.5	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1259	1259	1259	1259	1259	
5°	1261	1249	1261	1249	1261	119
15°	1186	1183	1184	1183	1186	334
25°	1061	1065	1059	1065	1061	488
35°	873	913	870	913	873	544
45°	664	714	662	714	664	511
55°	474	434	472	434	474	425
65°	297	225	297	225	297	293
75°	138	107	140	107	138	156
85°	122	25	72	25	122	98
90°	158	2	44	2	158	88
95°	210	32	29	32	210	183
105°	330	152	7	152	330	348
115°	466	311	108	311	466	463
125°	584	486	266	486	584	522
135°	678	664	427	664	678	524
145°	745	830	574	830	745	470
155°	833	960	723	960	833	384
165°	911	1044	881	1044	911	258
175°	1075	1088	1052	1088	1075	100
180°	1086	1086	1086	1086	1086	



TEST NUMBER: P392528

CATALOG NUMBER: MWL-2-28-31-UNV-L940-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1259.0	1259.0	1259.0	1259.0	1259.0	1259.0	1259.0	1259.0	1259.0	1259.0	1259.0
2.5°	1254.0	1261.9	1266.2	1254.2	1255.1	1253.4	1266.2	1261.9	1254.8	1261.9	1266.2
5°	1261.3	1252.8	1252.5	1251.6	1248.8	1251.6	1251.8	1252.8	1261.3	1252.8	1251.8
7.5°	1241.1	1247.2	1240.8	1239.7	1237.0	1239.0	1240.0	1246.4	1241.1	1246.4	1240.0
10°	1226.3	1230.8	1229.9	1223.5	1224.4	1222.7	1229.1	1229.3	1226.3	1229.3	1229.1
12.5°	1208.8	1211.7	1210.9	1203.6	1205.6	1203.6	1210.9	1210.1	1207.2	1210.1	1210.9
15°	1185.9	1185.2	1184.4	1181.7	1182.8	1181.0	1183.7	1183.7	1183.5	1183.7	1183.7
17.5°	1160.4	1162.5	1161.7	1161.8	1161.8	1161.8	1160.9	1161.7	1158.0	1161.7	1160.9
20°	1131.2	1135.9	1137.1	1131.8	1132.0	1131.0	1136.3	1134.3	1128.9	1134.3	1136.3
22.5°	1098.5	1099.4	1101.5	1094.4	1101.9	1093.7	1100.8	1097.9	1097.0	1097.9	1100.8
25°	1061.2	1062.1	1070.5	1066.2	1065.4	1065.4	1068.9	1059.8	1058.9	1059.8	1068.9
27.5°	1021.1	1021.1	1032.2	1028.6	1032.6	1027.9	1030.6	1018.8	1018.8	1018.8	1030.6
30°	973.7	981.9	988.3	1001.2	994.4	999.7	986.0	979.6	970.7	979.6	986.0
32.5°	927.2	931.8	940.9	950.2	956.8	948.6	938.6	928.8	924.2	928.8	938.6
35°	872.7	872.7	893.7	911.0	913.3	908.7	891.4	870.5	870.5	870.5	891.4
37.5°	814.4	816.3	834.5	860.9	865.7	858.6	832.2	814.0	812.2	814.0	832.2
40°	764.3	760.7	778.0	811.8	817.4	810.3	774.9	757.6	761.2	757.6	774.9
42.5°	711.5	706.0	714.3	756.2	770.1	754.8	712.0	702.9	708.4	702.9	712.0
45°	664.2	653.3	655.1	694.3	714.5	692.8	652.1	651.0	661.9	651.0	652.1
47.5°	612.3	608.6	601.3	627.0	659.8	626.3	598.3	606.3	610.0	606.3	598.3
50°	564.9	557.6	546.7	567.8	591.7	566.2	543.7	554.6	562.6	554.6	543.7
52.5°	523.0	516.6	495.8	508.6	513.3	507.0	493.5	513.6	520.7	513.6	493.5
55°	474.0	473.0	452.1	445.9	434.1	444.3	449.8	470.8	472.4	470.8	449.8
57.5°	430.2	428.4	398.3	387.6	365.8	386.0	396.1	426.1	428.7	426.1	396.1
60°	387.6	381.2	348.4	322.1	311.1	321.3	346.9	379.7	386.8	379.7	346.9
62.5°	340.2	336.6	296.5	268.3	265.8	267.6	294.9	335.0	339.4	335.0	294.9
65°	296.6	282.9	249.2	223.7	224.8	222.9	248.5	282.2	296.6	282.2	248.5
67.5°	250.1	236.4	207.3	183.8	191.1	183.8	206.5	235.7	250.1	235.7	206.5
70°	209.3	191.1	169.2	150.1	161.0	150.1	169.2	191.8	210.0	191.8	169.2
72.5°	171.9	152.8	136.4	122.7	131.9	121.9	136.4	153.5	173.5	153.5	136.4
75°	138.2	120.9	105.5	98.2	107.3	98.2	106.3	121.6	140.5	121.6	106.3
77.5°	122.5	101.1	80.0	76.4	87.3	76.4	80.8	98.9	119.4	98.9	80.8
80°	110.9	95.5	64.1	57.2	64.5	57.2	62.6	83.3	96.3	83.3	62.6
82.5°	112.0	100.5	63.3	40.8	44.5	40.8	54.1	72.9	82.8	72.9	54.1
85°	122.1	113.4	71.1	33.2	25.3	31.6	48.8	66.8	72.3	66.8	48.8
87.5°	137.8	133.7	86.8	37.4	7.3	26.6	43.2	60.0	58.9	60.0	43.2
90°	158.5	155.4	108.1	46.1	1.6	17.0	32.3	47.4	43.6	47.4	32.3
92.5°	186.8	180.3	130.9	61.7	13.2	8.8	26.0	38.6	36.6	38.6	26.0
95°	210.3	205.7	156.6	80.6	31.5	4.0	18.7	28.0	28.7	28.0	18.7
97.5°	237.6	232.0	180.3	108.1	55.3	10.1	10.9	21.3	23.1	21.3	10.9
100°	259.3	255.8	209.3	141.1	84.5	26.2	6.3	15.2	17.9	15.2	6.3
102.5°	296.6	284.7	240.7	172.6	115.8	48.4	12.4	8.8	11.6	8.8	12.4
105°	329.7	319.0	278.2	205.5	151.9	78.3	30.8	11.0	7.2	11.0	30.8
107.5°	362.7	355.1	312.9	239.2	190.1	112.8	57.8	30.2	19.4	30.2	57.8
110°	401.0	391.8	345.9	272.9	230.0	149.5	87.6	54.7	42.5	54.7	87.6



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CATALOG NUMBER: MWL-2-28-31-UNV-L940-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	437.8	430.9	376.5	309.0	271.3	190.3	124.4	85.4	73.8	85.4	124.4
115°	466.1	462.3	411.7	342.0	310.6	235.5	165.0	121.4	107.5	121.4	165.0
117.5°	496.0	495.3	437.8	375.7	356.5	276.1	202.5	157.3	142.8	157.3	202.5
120°	533.5	527.4	473.8	409.4	400.2	319.0	243.9	198.7	184.1	198.7	243.9
122.5°	560.5	555.8	504.4	441.6	441.6	362.7	283.8	238.5	224.1	238.5	283.8
125°	584.3	582.7	528.3	473.8	486.1	403.3	329.1	283.2	266.3	283.2	329.1
127.5°	605.7	608.0	558.2	509.9	532.2	445.6	372.8	322.3	304.6	322.3	372.8
130°	624.1	631.8	586.6	542.1	575.1	490.8	411.8	361.3	349.8	361.3	411.8
132.5°	660.1	655.5	615.6	575.1	621.0	532.2	453.3	400.3	387.3	400.3	453.3
135°	678.5	680.0	641.0	603.4	663.9	573.5	492.3	440.2	427.2	440.2	492.3
137.5°	700.7	696.1	660.8	637.9	703.7	613.4	530.6	482.3	461.7	482.3	530.6
140°	716.8	716.0	686.9	668.6	746.6	652.4	569.7	520.7	501.5	520.7	569.7
142.5°	733.6	738.3	712.9	702.3	789.6	693.8	611.8	558.2	539.8	558.2	611.8
145°	745.1	756.0	739.0	744.4	830.2	739.8	648.6	595.1	574.3	595.1	648.6
147.5°	765.2	778.3	759.0	774.3	865.5	780.4	686.3	632.7	615.1	632.7	686.3
150°	791.3	797.4	785.9	815.6	901.4	825.5	723.9	668.7	651.1	668.7	723.9
152.5°	812.0	819.6	806.6	860.8	929.8	867.0	765.2	703.9	683.2	703.9	765.2
155°	833.4	836.5	827.3	904.5	959.7	907.5	798.1	743.0	723.0	743.0	798.1
157.5°	853.3	859.4	847.8	937.4	985.7	942.8	834.7	782.1	764.4	782.1	834.7
160°	874.7	874.7	879.9	975.8	1007.1	973.4	874.7	825.0	800.5	825.0	874.7
162.5°	877.0	891.6	923.7	1002.6	1027.8	1000.3	917.6	855.6	834.2	855.6	917.6
165°	910.7	922.9	972.7	1026.4	1043.9	1024.0	970.4	905.3	880.9	905.3	970.4
167.5°	946.0	972.7	1012.5	1053.1	1059.2	1046.2	1011.0	965.8	943.7	965.8	1011.0
170°	1002.6	1026.4	1046.2	1063.1	1071.5	1063.9	1036.3	1014.1	999.5	1014.1	1036.3
172.5°	1046.9	1063.1	1070.7	1081.5	1076.1	1073.1	1059.2	1048.6	1039.9	1048.6	1059.2
175°	1075.2	1079.2	1086.1	1083.2	1087.8	1079.3	1079.2	1084.6	1052.2	1084.6	1079.2
177.5°	1085.2	1090.5	1087.6	1081.7	1082.4	1080.8	1083.0	1085.2	1080.6	1085.2	1083.0
180°	1086.1	1086.1	1086.1	1086.1	1086.1	1086.1	1086.1	1086.1	1086.1	1086.1	1086.1



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CATALOG NUMBER: MWL-2-28-31-UNV-L940-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1259.0	1259.0	1259.0	1259.0	1259.0	1259.0
2.5°	1253.4	1255.1	1254.2	1266.2	1261.9	1254.0
5°	1251.6	1248.8	1251.6	1252.5	1252.8	1261.3
7.5°	1239.0	1237.0	1239.7	1240.8	1247.2	1241.1
10°	1222.7	1224.4	1223.5	1229.9	1230.8	1226.3
12.5°	1203.6	1205.6	1203.6	1210.9	1211.7	1208.8
15°	1181.0	1182.8	1181.7	1184.4	1185.2	1185.9
17.5°	1161.8	1161.8	1161.8	1161.7	1162.5	1160.4
20°	1131.0	1132.0	1131.8	1137.1	1135.9	1131.2
22.5°	1093.7	1101.9	1094.4	1101.5	1099.4	1098.5
25°	1065.4	1065.4	1066.2	1070.5	1062.1	1061.2
27.5°	1027.9	1032.6	1028.6	1032.2	1021.1	1021.1
30°	999.7	994.4	1001.2	988.3	981.9	973.7
32.5°	948.6	956.8	950.2	940.9	931.8	927.2
35°	908.7	913.3	911.0	893.7	872.7	872.7
37.5°	858.6	865.7	860.9	834.5	816.3	814.4
40°	810.3	817.4	811.8	778.0	760.7	764.3
42.5°	754.8	770.1	756.2	714.3	706.0	711.5
45°	692.8	714.5	694.3	655.1	653.3	664.2
47.5°	626.3	659.8	627.0	601.3	608.6	612.3
50°	566.2	591.7	567.8	546.7	557.6	564.9
52.5°	507.0	513.3	508.6	495.8	516.6	523.0
55°	444.3	434.1	445.9	452.1	473.0	474.0
57.5°	386.0	365.8	387.6	398.3	428.4	430.2
60°	321.3	311.1	322.1	348.4	381.2	387.6
62.5°	267.6	265.8	268.3	296.5	336.6	340.2
65°	222.9	224.8	223.7	249.2	282.9	296.6
67.5°	183.8	191.1	183.8	207.3	236.4	250.1
70°	150.1	161.0	150.1	169.2	191.1	209.3
72.5°	121.9	131.9	122.7	136.4	152.8	171.9
75°	98.2	107.3	98.2	105.5	120.9	138.2
77.5°	76.4	87.3	76.4	80.0	101.1	122.5
80°	57.2	64.5	57.2	64.1	95.5	110.9
82.5°	40.8	44.5	40.8	63.3	100.5	112.0
85°	31.6	25.3	33.2	71.1	113.4	122.1
87.5°	26.6	7.3	37.4	86.8	133.7	137.8
90°	17.0	1.6	46.1	108.1	155.4	158.5
92.5°	8.8	13.2	61.7	130.9	180.3	186.8
95°	4.0	31.5	80.6	156.6	205.7	210.3
97.5°	10.1	55.3	108.1	180.3	232.0	237.6
100°	26.2	84.5	141.1	209.3	255.8	259.3
102.5°	48.4	115.8	172.6	240.7	284.7	296.6
105°	78.3	151.9	205.5	278.2	319.0	329.7
107.5°	112.8	190.1	239.2	312.9	355.1	362.7
110°	149.5	230.0	272.9	345.9	391.8	401.0



TEST NUMBER: P392528

CATALOG NUMBER: MWL-2-28-31-UNV-L940-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	190.3	271.3	309.0	376.5	430.9	437.8
115°	235.5	310.6	342.0	411.7	462.3	466.1
117.5°	276.1	356.5	375.7	437.8	495.3	496.0
120°	319.0	400.2	409.4	473.8	527.4	533.5
122.5°	362.7	441.6	441.6	504.4	555.8	560.5
125°	403.3	486.1	473.8	528.3	582.7	584.3
127.5°	445.6	532.2	509.9	558.2	608.0	605.7
130°	490.8	575.1	542.1	586.6	631.8	624.1
132.5°	532.2	621.0	575.1	615.6	655.5	660.1
135°	573.5	663.9	603.4	641.0	680.0	678.5
137.5°	613.4	703.7	637.9	660.8	696.1	700.7
140°	652.4	746.6	668.6	686.9	716.0	716.8
142.5°	693.8	789.6	702.3	712.9	738.3	733.6
145°	739.8	830.2	744.4	739.0	756.0	745.1
147.5°	780.4	865.5	774.3	759.0	778.3	765.2
150°	825.5	901.4	815.6	785.9	797.4	791.3
152.5°	867.0	929.8	860.8	806.6	819.6	812.0
155°	907.5	959.7	904.5	827.3	836.5	833.4
157.5°	942.8	985.7	937.4	847.8	859.4	853.3
160°	973.4	1007.1	975.8	879.9	874.7	874.7
162.5°	1000.3	1027.8	1002.6	923.7	891.6	877.0
165°	1024.0	1043.9	1026.4	972.7	922.9	910.7
167.5°	1046.2	1059.2	1053.1	1012.5	972.7	946.0
170°	1063.9	1071.5	1063.1	1046.2	1026.4	1002.6
172.5°	1073.1	1076.1	1081.5	1070.7	1063.1	1046.9
175°	1079.3	1087.8	1083.2	1086.1	1079.2	1075.2
177.5°	1080.8	1082.4	1081.7	1087.6	1090.5	1085.2
180°	1086.1	1086.1	1086.1	1086.1	1086.1	1086.1

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