

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: P392482

Luminaire Tested: **MWL-2-13-31-UNV-L935-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392482
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-2-13-31-UNV-L935-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

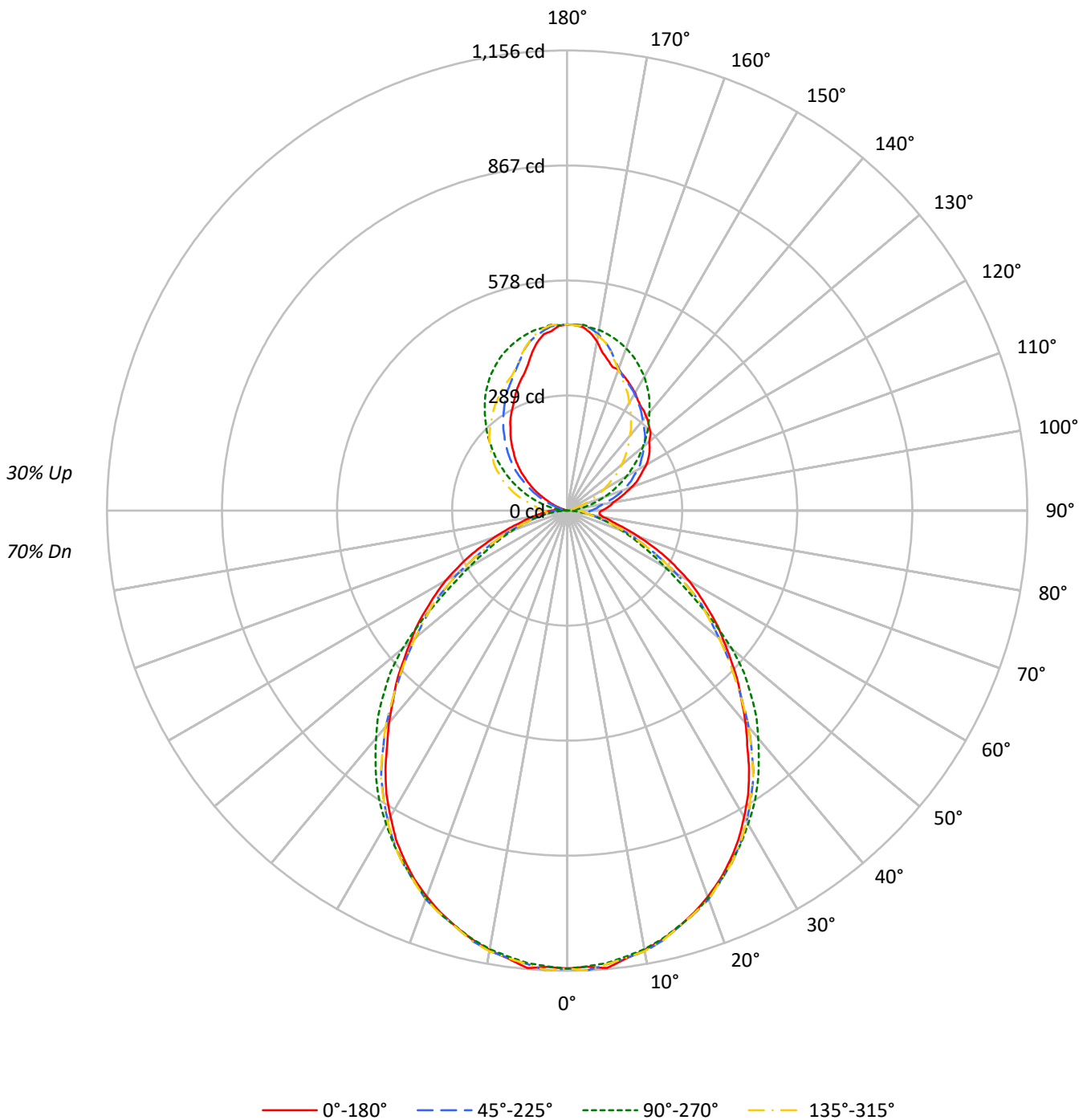
Lumens per Lamp: N/A
Luminaire Lumens: 3739.8 lumens
Efficiency: N/A
Efficacy: 82.8 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: Semi-Direct

Input Watts (W): 45.147
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	50	30	10	50	30	10	0		
RCR																										
0	112	112	112	112	106	106	106	106	94	94	94	84	84	84	74	74	74	74	74	74	74	74	74	70		
1	103	98	95	91	97	93	90	87	84	81	79	75	73	71	66	65	64	64	64	64	64	64	64	60		
2	94	87	81	75	89	82	77	72	74	70	66	66	63	60	59	57	55	55	55	55	55	55	55	51		
3	86	77	69	64	81	73	66	61	66	61	56	59	55	52	53	50	47	47	47	47	47	47	47	44		
4	79	68	60	54	75	65	58	52	59	53	49	53	49	45	48	44	41	41	41	41	41	41	41	38		
5	73	61	53	47	69	58	51	46	53	47	42	48	43	39	43	39	36	36	36	36	36	36	36	33		
6	67	55	47	41	64	53	45	40	48	42	37	44	39	35	39	35	32	32	32	32	32	32	32	30		
7	63	50	42	37	59	48	41	35	44	38	33	40	35	31	36	32	29	29	29	29	29	29	29	26		
8	58	46	38	33	55	44	37	32	40	34	30	37	32	28	33	29	26	26	26	26	26	26	26	24		
9	54	42	34	29	52	40	33	28	37	31	27	34	29	25	31	27	24	24	24	24	24	24	24	22		
10	51	39	31	27	48	37	30	26	34	28	24	31	26	23	29	25	21	21	21	21	21	21	21	20		

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	14859	14859	14859	14859
5°	14690	13602	14690	13602
10°	14181	12473	14181	12473
15°	13711	11404	13699	11404
20°	13192	10431	13181	10431
25°	12586	9469	12572	9469
30°	11833	8597	11814	8597
35°	10962	7743	10950	7743
40°	10008	6847	9989	6847
45°	9163	5959	9148	5959
50°	8294	4954	8276	4954
55°	7501	3677	7489	3677
60°	6709	2684	6703	2684
65°	5714	1993	5714	1993
70°	4585	1478	4592	1478
75°	3532	1032	3560	1032
80°	3120	656	2909	656
85°	3559	273	2621	273



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	108.5	2.9
10°-20°	305.3	8.2
20°-30°	447.6	12.0
30°-40°	507.7	13.6
40°-50°	473.6	12.7
50°-60°	371.4	9.9
60°-70°	231.7	6.2
70°-80°	111.7	3.0
80°-90°	53.6	1.4
90°-100°	46.8	1.3
100°-110°	72.9	1.9
110°-120°	124.8	3.3
120°-130°	169.4	4.5
130°-140°	193.1	5.2
140°-150°	192.5	5.1
150°-160°	167.6	4.5
160°-170°	117.7	3.1
170°-180°	43.8	1.2
0°-30°	861.5	23.0
0°-40°	1369.1	36.6
0°-60°	2214.1	59.2
0°-90°	2611.2	69.8
90°-120°	244.5	6.5
90°-150°	799.6	21.4
90°-180°	1129.0	30.2
0°-180°	3739.8	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1150	1150	1150	1150	1150	
5°	1154	1141	1154	1141	1154	109
15°	1083	1081	1082	1081	1083	305
25°	969	974	968	974	969	445
35°	797	835	796	835	797	497
45°	606	652	605	652	606	467
55°	432	396	432	396	432	388
65°	270	205	270	205	270	267
75°	126	98	127	98	126	140
85°	81	23	60	23	81	68
90°	87	1	37	1	87	48
95°	103	14	25	14	103	88
105°	142	66	4	66	142	152
115°	201	134	47	134	201	199
125°	252	209	116	209	252	225
135°	292	286	185	286	292	226
145°	321	358	248	358	321	203
155°	359	413	312	413	359	166
165°	392	449	380	449	392	111
175°	462	468	452	468	462	43
180°	467	467	467	467	467	



TEST NUMBER: P392482

CATALOG NUMBER: MWL-2-13-31-UNV-L935-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1150.4	1150.4	1150.4	1150.4	1150.4	1150.4	1150.4	1150.4	1150.4	1150.4	1150.4
2.5°	1146.9	1153.4	1156.5	1145.2	1146.0	1144.9	1156.5	1153.4	1147.2	1153.4	1156.5
5°	1153.6	1145.1	1144.0	1143.3	1140.8	1143.3	1143.8	1145.1	1153.6	1145.1	1143.8
7.5°	1134.7	1139.5	1133.7	1132.4	1129.9	1132.0	1133.4	1139.2	1134.7	1139.2	1133.4
10°	1120.9	1124.5	1123.7	1117.9	1118.7	1117.5	1123.4	1123.8	1120.9	1123.8	1123.4
12.5°	1104.0	1107.0	1106.7	1100.0	1102.2	1100.0	1106.7	1106.3	1103.4	1106.3	1106.7
15°	1082.6	1082.9	1082.5	1080.0	1081.3	1079.7	1082.2	1082.2	1081.6	1082.2	1082.2
17.5°	1059.2	1062.0	1061.6	1062.1	1062.1	1062.1	1061.3	1061.6	1058.3	1061.6	1061.3
20°	1032.5	1037.3	1039.1	1034.6	1035.1	1034.3	1038.8	1036.6	1031.6	1036.6	1038.8
22.5°	1003.0	1003.9	1006.6	1000.4	1007.5	1000.0	1006.2	1003.2	1002.4	1003.2	1006.2
25°	968.9	969.7	977.7	974.6	974.2	974.2	977.1	968.7	967.8	968.7	977.1
27.5°	932.1	932.1	942.6	939.8	944.2	939.4	941.9	931.2	931.2	931.2	941.9
30°	888.8	896.3	902.1	914.2	909.2	913.6	901.1	895.3	887.4	895.3	901.1
32.5°	846.2	850.4	858.8	867.6	874.4	866.9	857.7	849.0	844.9	849.0	857.7
35°	796.6	796.6	815.9	831.7	834.9	830.7	814.8	795.7	795.7	795.7	814.8
37.5°	743.2	744.9	761.6	785.8	790.9	784.8	760.6	743.9	742.3	743.9	760.6
40°	697.3	694.0	709.9	741.2	746.8	740.5	708.5	692.6	696.0	692.6	708.5
42.5°	649.0	644.0	651.9	690.3	703.3	689.7	651.0	642.6	647.6	642.6	651.0
45°	606.1	596.1	597.7	633.6	652.4	632.9	596.4	595.1	605.1	595.1	596.4
47.5°	558.6	555.2	548.5	572.4	602.4	572.0	547.2	554.2	557.5	554.2	547.2
50°	515.2	508.4	498.4	518.2	540.3	517.5	497.1	507.1	514.1	507.1	497.1
52.5°	476.8	470.9	452.2	463.9	468.6	463.2	451.2	469.6	475.7	469.6	451.2
55°	432.2	431.4	412.2	406.9	396.5	406.2	411.2	430.3	431.5	430.3	411.2
57.5°	392.2	390.5	362.9	353.4	333.9	352.8	361.9	389.5	391.5	389.5	361.9
60°	353.4	347.6	317.5	293.8	283.8	293.6	316.9	346.9	353.1	346.9	316.9
62.5°	310.0	306.7	270.0	244.6	242.6	244.3	269.3	306.1	309.7	306.1	269.3
65°	270.5	258.0	227.1	203.7	205.1	203.4	226.8	257.7	270.5	257.7	226.8
67.5°	228.0	215.5	188.7	167.6	174.2	167.6	188.4	215.1	228.0	215.1	188.4
70°	190.9	174.2	154.2	136.7	146.7	136.7	154.2	174.6	191.2	174.6	154.2
72.5°	156.7	139.2	124.2	111.7	120.5	111.3	124.2	139.5	157.4	139.5	124.2
75°	125.8	109.9	96.3	89.6	97.9	89.6	96.6	110.3	126.8	110.3	96.6
77.5°	108.4	90.4	72.9	69.5	79.6	69.5	73.3	89.5	107.2	89.5	73.3
80°	91.5	80.0	57.2	52.0	58.8	52.0	56.6	74.7	85.3	74.7	56.6
82.5°	83.5	76.4	51.9	37.0	40.4	37.0	48.1	64.5	71.0	64.5	48.1
85°	81.2	77.1	50.9	28.9	22.9	28.2	41.3	57.0	59.8	57.0	41.3
87.5°	82.1	81.7	54.5	27.1	6.6	22.5	35.8	50.1	48.3	50.1	35.8
90°	86.7	87.5	60.6	27.4	1.2	14.8	28.0	41.2	37.4	41.2	28.0
92.5°	96.1	94.7	67.7	30.0	6.1	7.3	22.7	33.9	31.7	33.9	22.7
95°	103.1	101.1	75.2	35.0	14.0	2.2	16.0	24.9	25.2	24.9	16.0
97.5°	111.7	108.4	80.4	46.9	24.2	4.7	7.9	18.0	19.7	18.0	7.9
100°	117.1	114.2	90.3	61.0	36.6	11.6	3.2	11.0	13.5	11.0	3.2
102.5°	129.9	123.5	103.7	74.5	50.1	21.2	5.8	5.2	7.7	5.2	5.8
105°	142.4	137.7	119.8	88.6	65.6	34.1	13.7	5.6	4.0	5.6	13.7
107.5°	156.5	153.2	135.1	103.0	82.0	48.8	25.7	13.9	9.2	13.9	25.7
110°	172.9	169.0	149.3	117.5	99.1	64.5	38.5	24.3	19.1	24.3	38.5



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	188.7	185.7	162.5	133.5	116.9	82.5	54.2	37.4	32.5	37.4	54.2
115°	200.9	199.2	177.6	147.6	134.2	102.0	71.7	53.0	47.0	53.0	71.7
117.5°	213.7	213.3	188.7	162.1	153.9	119.4	87.8	68.4	62.1	68.4	87.8
120°	229.8	227.2	204.2	176.5	172.7	137.7	105.5	86.2	79.9	86.2	105.5
122.5°	241.8	239.4	217.4	190.4	190.4	156.5	122.6	103.2	97.5	103.2	122.6
125°	252.0	251.4	228.1	204.2	209.4	174.0	142.5	122.8	115.5	122.8	142.5
127.5°	261.2	262.2	240.8	220.1	229.7	192.5	161.3	139.6	132.0	139.6	161.3
130°	269.1	272.4	253.0	233.9	248.1	211.9	178.0	156.4	151.4	156.4	178.0
132.5°	284.5	282.6	265.5	248.1	267.8	229.7	195.8	173.1	167.6	173.1	195.8
135°	292.4	293.1	276.3	260.3	286.2	247.4	212.6	190.3	184.7	190.3	212.6
137.5°	301.9	300.0	284.8	275.0	303.3	264.5	229.0	208.2	199.4	208.2	229.0
140°	308.9	308.6	296.1	288.2	321.7	281.2	245.8	224.7	216.5	224.7	245.8
142.5°	316.2	318.1	307.2	302.6	340.1	299.0	263.8	240.8	233.0	240.8	263.8
145°	321.1	326.2	318.4	320.7	357.5	318.8	279.6	257.1	247.7	257.1	279.6
147.5°	330.1	335.7	327.5	333.6	372.6	336.2	296.3	273.3	265.7	273.3	296.3
150°	341.3	344.0	339.0	351.3	388.1	355.6	312.4	288.7	281.1	288.7	312.4
152.5°	350.2	353.4	347.8	370.7	400.2	373.3	330.1	303.8	294.9	303.8	330.1
155°	359.4	360.7	356.7	389.4	413.1	390.7	344.3	320.6	312.0	320.6	344.3
157.5°	367.9	370.5	365.1	403.6	424.3	405.8	359.5	337.3	329.7	337.3	359.5
160°	377.1	377.1	378.9	420.0	433.4	419.0	376.7	355.8	345.2	355.8	376.7
162.5°	378.1	384.3	397.6	431.5	442.4	430.5	394.9	368.9	359.7	368.9	394.9
165°	392.5	397.3	418.7	441.7	449.2	440.7	417.6	389.7	379.7	389.7	417.6
167.5°	407.6	418.7	435.8	453.2	455.8	450.2	435.1	415.7	406.7	415.7	435.1
170°	431.5	441.7	450.2	457.5	461.0	457.8	445.9	436.5	430.2	436.5	445.9
172.5°	450.1	457.5	460.7	465.3	463.0	461.7	455.8	451.2	447.2	451.2	455.8
175°	462.3	464.4	467.3	466.5	468.5	464.9	464.4	466.7	452.4	466.7	464.4
177.5°	466.5	468.8	468.0	465.9	466.1	465.5	466.0	466.5	464.5	466.5	466.0
180°	467.3	467.3	467.3	467.3	467.3	467.3	467.3	467.3	467.3	467.3	467.3



TEST NUMBER: P392482

CATALOG NUMBER: MWL-2-13-31-UNV-L935-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1150.4	1150.4	1150.4	1150.4	1150.4	1150.4
2.5°	1144.9	1146.0	1145.2	1156.5	1153.4	1146.9
5°	1143.3	1140.8	1143.3	1144.0	1145.1	1153.6
7.5°	1132.0	1129.9	1132.4	1133.7	1139.5	1134.7
10°	1117.5	1118.7	1117.9	1123.7	1124.5	1120.9
12.5°	1100.0	1102.2	1100.0	1106.7	1107.0	1104.0
15°	1079.7	1081.3	1080.0	1082.5	1082.9	1082.6
17.5°	1062.1	1062.1	1062.1	1061.6	1062.0	1059.2
20°	1034.3	1035.1	1034.6	1039.1	1037.3	1032.5
22.5°	1000.0	1007.5	1000.4	1006.6	1003.9	1003.0
25°	974.2	974.2	974.6	977.7	969.7	968.9
27.5°	939.4	944.2	939.8	942.6	932.1	932.1
30°	913.6	909.2	914.2	902.1	896.3	888.8
32.5°	866.9	874.4	867.6	858.8	850.4	846.2
35°	830.7	834.9	831.7	815.9	796.6	796.6
37.5°	784.8	790.9	785.8	761.6	744.9	743.2
40°	740.5	746.8	741.2	709.9	694.0	697.3
42.5°	689.7	703.3	690.3	651.9	644.0	649.0
45°	632.9	652.4	633.6	597.7	596.1	606.1
47.5°	572.0	602.4	572.4	548.5	555.2	558.6
50°	517.5	540.3	518.2	498.4	508.4	515.2
52.5°	463.2	468.6	463.9	452.2	470.9	476.8
55°	406.2	396.5	406.9	412.2	431.4	432.2
57.5°	352.8	333.9	353.4	362.9	390.5	392.2
60°	293.6	283.8	293.8	317.5	347.6	353.4
62.5°	244.3	242.6	244.6	270.0	306.7	310.0
65°	203.4	205.1	203.7	227.1	258.0	270.5
67.5°	167.6	174.2	167.6	188.7	215.5	228.0
70°	136.7	146.7	136.7	154.2	174.2	190.9
72.5°	111.3	120.5	111.7	124.2	139.2	156.7
75°	89.6	97.9	89.6	96.3	109.9	125.8
77.5°	69.5	79.6	69.5	72.9	90.4	108.4
80°	52.0	58.8	52.0	57.2	80.0	91.5
82.5°	37.0	40.4	37.0	51.9	76.4	83.5
85°	28.2	22.9	28.9	50.9	77.1	81.2
87.5°	22.5	6.6	27.1	54.5	81.7	82.1
90°	14.8	1.2	27.4	60.6	87.5	86.7
92.5°	7.3	6.1	30.0	67.7	94.7	96.1
95°	2.2	14.0	35.0	75.2	101.1	103.1
97.5°	4.7	24.2	46.9	80.4	108.4	111.7
100°	11.6	36.6	61.0	90.3	114.2	117.1
102.5°	21.2	50.1	74.5	103.7	123.5	129.9
105°	34.1	65.6	88.6	119.8	137.7	142.4
107.5°	48.8	82.0	103.0	135.1	153.2	156.5
110°	64.5	99.1	117.5	149.3	169.0	172.9



TEST NUMBER: P392482

CATALOG NUMBER: MWL-2-13-31-UNV-L935-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	82.5	116.9	133.5	162.5	185.7	188.7
115°	102.0	134.2	147.6	177.6	199.2	200.9
117.5°	119.4	153.9	162.1	188.7	213.3	213.7
120°	137.7	172.7	176.5	204.2	227.2	229.8
122.5°	156.5	190.4	190.4	217.4	239.4	241.8
125°	174.0	209.4	204.2	228.1	251.4	252.0
127.5°	192.5	229.7	220.1	240.8	262.2	261.2
130°	211.9	248.1	233.9	253.0	272.4	269.1
132.5°	229.7	267.8	248.1	265.5	282.6	284.5
135°	247.4	286.2	260.3	276.3	293.1	292.4
137.5°	264.5	303.3	275.0	284.8	300.0	301.9
140°	281.2	321.7	288.2	296.1	308.6	308.9
142.5°	299.0	340.1	302.6	307.2	318.1	316.2
145°	318.8	357.5	320.7	318.4	326.2	321.1
147.5°	336.2	372.6	333.6	327.5	335.7	330.1
150°	355.6	388.1	351.3	339.0	344.0	341.3
152.5°	373.3	400.2	370.7	347.8	353.4	350.2
155°	390.7	413.1	389.4	356.7	360.7	359.4
157.5°	405.8	424.3	403.6	365.1	370.5	367.9
160°	419.0	433.4	420.0	378.9	377.1	377.1
162.5°	430.5	442.4	431.5	397.6	384.3	378.1
165°	440.7	449.2	441.7	418.7	397.3	392.5
167.5°	450.2	455.8	453.2	435.8	418.7	407.6
170°	457.8	461.0	457.5	450.2	441.7	431.5
172.5°	461.7	463.0	465.3	460.7	457.5	450.1
175°	464.9	468.5	466.5	467.3	464.4	462.3
177.5°	465.5	466.1	465.9	468.0	468.8	466.5
180°	467.3	467.3	467.3	467.3	467.3	467.3

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