

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: P190114

Luminaire Tested: **TRR11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG**

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-79-08  
Report Number: P190114  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P27871)  
Test Lab: INNOVATION CENTER(G2)  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: FAIL-SAFE  
Catalog Number: TRR11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG  
Description: TERRAPIN 11" LED SHALLOW CAST WALL MOUNT WITH OPEN OPAL LENS AND BRONZE RING  
Light Source: (56) NICHIA 5000 NF2L757DRT  
Ballast/Driver: OSRAM ELECTRONIC DRIVER PROGRAMMED AT 200mA OT25W/1

**Summary**

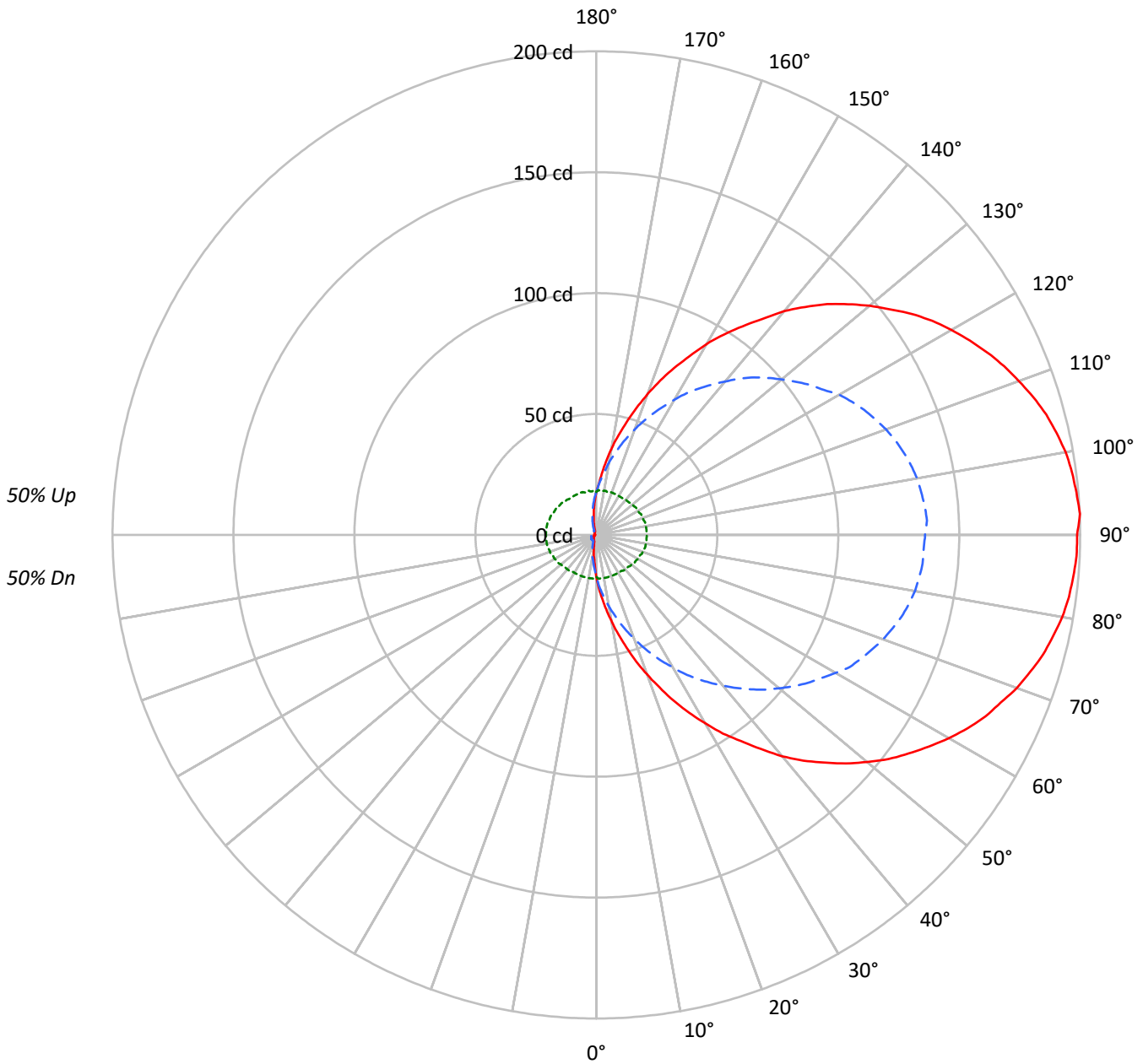
Lumens per Lamp: N/A  
Luminaire Lumens: 640.0 lumens  
Efficiency: N/A  
Efficacy: 64.0 lumens/watt  
Spacing Criteria (0/90/45): 3.82 / 1.63 / 3.13  
Luminous Opening: Rectangular w/ Sides (W: 0.92' x L: 0.29' x H: 0.92')  
CIE Type: General Diffuse

Input Watts (W): 10  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): 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



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



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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	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56	50
1	92	85	79	74	84	78	73	68	65	61	57	52	49	46	41	38	36	31
2	82	72	63	56	74	65	58	52	54	48	43	43	38	34	33	29	26	21
3	73	61	52	44	66	56	47	41	46	39	34	36	31	27	27	23	20	16
4	66	53	43	36	60	48	40	33	39	33	27	31	26	21	23	19	16	12
5	60	47	37	30	55	42	34	27	35	28	22	27	22	18	20	16	13	9
6	55	41	32	25	50	38	29	23	31	24	19	24	19	15	18	14	11	8
7	51	37	28	21	46	34	25	20	27	21	16	22	17	13	16	12	9	6
8	47	33	24	18	43	30	22	17	25	18	14	20	15	11	15	11	8	5
9	44	30	22	16	40	27	20	15	23	16	12	18	13	9	14	10	7	5
10	41	27	19	14	37	25	18	13	21	15	11	16	12	8	13	9	6	4

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°
0°	696	696	696
5°	827	673	323
10°	955	629	163
15°	1091	595	79
20°	1229	569	54
25°	1364	548	40
30°	1485	533	36
35°	1597	523	34
40°	1727	532	26
45°	1831	530	25
50°	1928	543	17
55°	2016	564	17
60°	2102	586	11
65°	2185	603	11
70°	2260	641	11
75°	2336	684	11
80°	2409	723	11
85°	2476	773	5



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	1.8	0.3
10°-20°	6.3	1.0
20°-30°	13.4	2.1
30°-40°	23.1	3.6
40°-50°	34.7	5.4
50°-60°	46.6	7.3
60°-70°	57.4	9.0
70°-80°	65.7	10.3
80°-90°	70.0	10.9
90°-100°	70.4	11.0
100°-110°	66.0	10.3
110°-120°	57.8	9.0
120°-130°	47.0	7.3
130°-140°	35.0	5.5
140°-150°	23.3	3.6
150°-160°	13.5	2.1
160°-170°	6.4	1.0
170°-180°	1.8	0.3
0°-30°	21.5	3.4
0°-40°	44.6	7.0
0°-60°	125.9	19.7
0°-90°	319.1	49.8
90°-120°	194.1	30.3
90°-150°	299.3	46.8
90°-180°	321.0	50.2
0°-180°	640.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	17	17	17	17	17	
5°	26	24	18	12	10	3
15°	48	38	18	6	4	14
25°	76	54	18	3	2	35
35°	104	73	18	3	2	66
45°	133	90	19	3	2	103
55°	158	107	20	2	1	141
65°	178	121	20	2	1	176
75°	191	131	21	2	1	202
85°	198	135	21	2	0	161
90°	199	136	21	2	0	109
95°	199	136	21	2	0	162
105°	192	132	21	2	0	203
115°	178	122	20	2	1	177
125°	159	108	20	2	1	143
135°	135	92	19	2	1	104
145°	105	74	19	2	1	67
155°	76	55	19	2	1	36
165°	48	38	18	6	3	14
175°	25	24	18	13	11	3
180°	18	18	18	18	18	



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
2.5°	21.7	21.2	21.2	21.2	21.2	21.2	21.2	20.8	20.8	20.8	20.4
5°	26.1	25.7	25.7	25.7	25.2	25.2	25.2	24.8	24.3	23.9	23.5
7.5°	31.0	30.5	30.5	30.5	30.1	29.7	29.7	28.8	28.3	27.4	26.6
10°	36.3	35.9	35.4	35.0	35.0	34.5	34.1	33.2	32.3	31.4	30.1
12.5°	42.1	42.1	41.2	40.7	40.3	39.8	39.4	38.1	36.7	35.4	33.6
15°	48.2	48.2	47.8	46.9	46.0	45.6	44.7	43.4	41.6	39.8	37.6
17.5°	54.9	54.9	54.0	53.1	52.2	51.3	50.5	48.7	46.5	44.3	41.6
20°	61.5	61.1	60.6	59.3	58.0	57.1	56.2	54.0	51.8	48.7	45.6
22.5°	68.2	68.2	67.3	66.0	64.2	62.9	62.0	59.3	56.7	53.6	50.0
25°	75.7	75.2	74.4	72.6	71.3	69.5	68.6	65.5	62.4	58.4	54.4
27.5°	82.8	82.3	81.4	79.7	77.5	76.1	74.8	71.3	67.7	63.3	58.9
30°	89.9	89.9	88.5	86.8	84.1	82.8	81.0	77.5	73.5	68.6	63.3
32.5°	97.4	96.9	95.2	93.4	90.7	89.0	87.2	83.7	78.8	73.5	68.2
35°	104.0	104.0	102.2	100.0	97.4	95.6	93.8	89.4	84.1	78.3	72.6
37.5°	111.5	111.1	109.3	107.1	104.0	102.2	100.0	95.2	89.9	83.7	77.0
40°	119.5	119.1	117.7	115.1	110.7	108.4	106.7	101.4	95.2	88.5	81.4
42.5°	126.6	126.2	124.4	121.7	118.2	116.0	112.4	107.1	100.5	93.8	85.9
45°	133.2	132.8	131.0	128.4	124.4	122.2	119.5	113.3	105.8	98.3	90.3
47.5°	139.9	139.4	137.2	134.6	130.6	127.9	125.7	119.1	111.1	103.1	94.7
50°	146.1	145.6	143.4	140.8	136.3	133.7	131.0	124.4	117.3	108.0	98.7
52.5°	152.3	151.8	149.6	146.1	142.1	139.4	136.3	129.7	121.7	112.9	102.7
55°	157.6	156.7	154.9	151.8	147.0	144.3	141.6	134.6	126.2	117.3	106.7
57.5°	162.9	162.0	160.2	156.7	152.3	149.2	146.1	139.0	130.6	121.3	110.2
60°	168.2	167.3	165.1	161.6	156.7	154.0	150.9	143.4	134.6	124.8	114.2
62.5°	173.1	172.2	170.0	166.0	161.6	158.5	154.9	147.4	138.5	128.8	118.2
65°	177.5	176.6	174.4	170.9	165.5	162.4	158.9	151.4	142.1	131.9	120.8
67.5°	181.0	180.6	177.9	174.4	169.5	166.0	162.4	154.5	145.2	135.0	123.5
70°	185.0	184.1	181.9	177.9	173.1	169.5	166.0	158.0	148.3	138.1	126.2
72.5°	188.1	187.2	184.6	181.0	175.7	172.6	168.6	160.7	150.9	140.3	128.4
75°	191.2	190.3	187.7	184.1	178.4	175.3	171.3	163.3	153.6	142.5	130.6
77.5°	193.4	192.5	190.3	186.4	180.6	177.5	174.0	165.5	155.4	144.3	132.3
80°	195.6	194.8	192.1	188.1	182.8	179.3	175.7	166.9	157.1	146.1	133.7
82.5°	197.0	196.1	193.4	189.4	184.1	180.6	177.1	168.2	158.0	147.0	134.6
85°	197.9	197.0	194.3	190.8	185.0	181.5	177.9	169.1	159.3	147.8	135.4
87.5°	198.7	197.9	195.2	191.2	185.5	181.9	178.4	169.5	159.8	148.3	135.4
90°	198.7	197.9	195.6	191.2	185.9	182.4	178.8	170.0	159.8	148.7	135.9
92.5°	200.1	199.2	196.5	192.5	186.8	183.7	179.7	170.9	160.7	149.6	136.8
95°	199.2	198.7	196.1	192.1	186.4	182.8	178.8	170.4	160.2	149.2	136.3
97.5°	198.3	197.4	194.8	190.8	185.0	181.9	177.9	169.5	159.3	147.8	135.4
100°	197.0	195.6	193.4	189.0	183.7	180.2	176.6	167.8	158.0	147.0	134.6
102.5°	194.8	193.4	191.2	187.2	181.9	178.4	174.8	166.4	156.7	145.2	133.2
105°	192.5	191.2	188.6	184.6	179.7	176.2	172.6	164.2	154.5	143.4	131.5
107.5°	189.4	188.6	186.4	182.4	177.1	173.5	170.4	162.0	152.3	141.6	129.7
110°	185.9	185.0	182.8	178.8	174.0	170.9	167.3	159.3	149.6	139.0	127.5



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**CANDELA DISTRIBUTION (continued):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	182.4	181.5	179.3	175.3	170.4	167.3	163.8	155.8	146.5	136.3	124.8
115°	178.4	177.5	175.3	171.3	166.9	163.3	160.2	152.3	143.4	132.8	122.2
117.5°	174.0	173.1	170.9	167.3	162.4	159.8	156.3	148.7	139.9	129.7	119.1
120°	169.5	168.6	166.4	162.9	158.0	155.4	152.3	144.7	136.3	126.6	116.0
122.5°	164.7	163.8	161.6	158.5	153.6	150.5	147.8	140.3	132.3	122.6	111.5
125°	159.3	158.0	156.3	152.7	148.3	145.6	142.5	135.9	127.5	118.6	108.0
127.5°	153.2	152.7	150.5	147.0	143.0	140.3	137.7	131.0	123.1	113.8	104.0
130°	147.4	147.0	144.7	141.6	137.7	135.0	132.3	126.2	118.6	109.3	100.0
132.5°	141.2	140.8	138.5	135.9	131.9	129.3	126.6	120.8	112.4	104.9	96.1
135°	135.0	134.1	132.3	129.7	125.7	123.5	121.3	115.1	107.1	100.0	92.1
137.5°	127.9	127.5	125.7	122.6	119.5	117.3	114.6	108.4	101.8	95.2	87.6
140°	120.8	120.4	118.6	116.4	111.5	109.8	107.6	102.7	96.5	89.9	82.8
142.5°	112.4	112.0	110.7	108.0	105.3	103.1	100.9	96.5	90.7	85.0	78.3
145°	105.3	104.9	103.6	101.4	98.3	96.9	94.7	90.3	85.4	80.1	73.9
147.5°	98.3	97.8	96.5	94.7	92.1	90.7	88.5	84.5	80.1	74.8	69.5
150°	91.2	90.7	89.4	87.6	85.4	83.7	82.3	78.8	74.4	69.9	64.6
152.5°	83.2	83.2	82.3	80.6	78.3	77.5	75.7	72.6	68.6	64.6	59.8
155°	76.1	76.1	75.2	73.5	71.7	70.8	69.5	66.4	63.3	59.3	55.3
157.5°	69.1	69.1	68.2	66.8	65.1	64.2	63.3	60.6	57.5	54.4	50.9
160°	62.0	62.0	61.5	60.2	58.9	58.0	57.1	54.9	52.7	49.6	46.5
162.5°	54.9	54.9	54.4	53.6	52.2	51.8	50.9	49.1	46.9	44.7	42.1
165°	48.2	48.2	47.8	46.9	46.0	45.6	45.1	43.4	42.1	40.3	38.1
167.5°	42.1	42.1	41.6	41.2	40.3	40.3	39.8	38.5	37.2	35.9	34.1
170°	36.3	36.3	35.9	35.4	35.0	34.5	34.5	33.6	32.8	31.9	30.5
172.5°	30.5	30.5	30.5	30.1	29.7	29.7	29.7	28.8	28.3	27.9	26.6
175°	25.2	25.2	25.2	25.2	24.8	24.8	24.8	24.3	24.3	23.9	23.5
177.5°	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.4
180°	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7



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**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
2.5°	20.4	20.4	19.9	19.5	19.5	19.5	19.0	18.6	18.6	18.1	17.7
5°	23.0	22.6	21.7	21.2	20.8	20.8	19.9	19.5	18.6	18.1	17.3
7.5°	25.7	25.2	23.9	23.0	22.6	22.1	21.2	19.9	19.0	18.1	17.3
10°	28.8	27.4	26.1	24.8	24.3	23.5	22.1	20.8	19.5	18.1	16.8
12.5°	31.9	30.5	28.3	26.6	25.7	24.8	23.0	21.2	19.5	18.1	16.4
15°	35.4	33.6	31.0	28.8	27.4	26.6	24.3	22.1	19.9	18.1	16.4
17.5°	39.0	36.3	33.6	31.0	29.2	27.9	25.2	22.6	20.4	18.1	15.9
20°	42.5	39.4	36.3	32.8	31.4	29.7	26.6	23.5	20.8	18.1	15.5
22.5°	46.5	42.5	39.0	35.0	33.2	31.0	27.4	23.9	20.8	18.1	15.5
25°	50.0	46.0	41.6	37.2	35.0	32.8	28.8	24.8	21.2	18.1	15.0
27.5°	54.0	49.1	44.3	39.4	36.7	34.5	30.1	25.7	21.7	18.1	15.0
30°	58.0	52.7	46.9	41.6	39.0	36.3	31.0	26.6	22.1	18.1	14.6
32.5°	62.0	56.2	50.0	43.8	40.7	38.1	32.3	27.0	22.6	18.1	14.6
35°	66.0	59.3	52.7	46.0	42.9	39.8	33.6	27.9	22.6	18.1	14.6
37.5°	69.9	62.9	55.3	48.2	44.7	41.2	34.5	28.8	23.0	18.6	14.2
40°	73.9	66.4	58.4	50.5	46.9	42.9	35.9	29.2	23.5	18.6	14.2
42.5°	77.9	69.5	61.1	53.1	48.7	44.7	37.2	30.1	23.9	18.6	14.2
45°	81.9	73.0	64.2	54.9	50.9	46.5	38.5	31.0	24.3	18.6	14.2
47.5°	85.9	76.1	66.8	57.1	52.7	48.2	39.4	31.9	24.8	19.0	14.2
50°	89.4	79.2	69.5	59.3	54.4	49.6	40.7	32.8	25.2	19.0	13.7
52.5°	93.0	82.3	71.7	61.5	56.2	51.3	42.1	33.2	25.7	19.5	14.2
55°	96.1	85.4	74.4	63.3	58.0	52.7	42.9	34.1	26.1	19.5	13.7
57.5°	99.2	88.1	76.6	65.1	59.8	54.0	43.8	34.5	26.6	19.5	13.7
60°	102.2	90.7	78.8	66.8	61.1	55.8	45.1	35.4	27.0	19.9	14.2
62.5°	105.3	93.4	81.0	68.6	62.9	56.7	46.0	35.9	27.4	19.9	13.7
65°	108.0	95.6	82.8	70.4	64.2	58.0	46.9	36.7	27.4	19.9	13.7
67.5°	110.2	97.8	84.5	71.7	65.5	59.3	47.8	37.2	27.9	20.4	14.2
70°	113.3	99.6	86.3	73.0	66.8	60.2	48.2	37.6	28.3	20.4	14.2
72.5°	115.1	101.4	88.1	74.4	67.7	61.5	49.1	38.1	28.3	20.4	14.2
75°	117.7	103.1	89.4	75.2	68.6	62.4	49.6	38.5	28.8	20.8	14.2
77.5°	119.1	104.5	90.3	76.1	69.5	62.9	50.0	39.0	28.8	20.8	14.2
80°	120.4	105.3	91.2	77.0	70.4	63.7	50.9	39.4	29.2	20.8	14.2
82.5°	121.3	106.2	92.1	77.5	70.8	63.7	50.9	39.4	29.2	20.8	14.2
85°	121.7	107.1	92.5	77.9	71.3	64.2	51.3	39.4	29.2	20.8	14.2
87.5°	122.2	107.1	93.0	78.3	71.3	64.6	51.3	39.4	29.2	20.8	14.2
90°	122.6	107.6	93.0	78.3	71.3	64.6	51.3	39.8	29.2	20.8	14.2
92.5°	123.1	108.0	93.4	78.8	71.7	65.1	51.8	39.8	29.7	20.8	14.2
95°	123.1	107.6	93.0	78.8	71.7	64.6	51.8	39.8	29.7	20.8	14.2
97.5°	122.2	107.1	92.5	78.3	71.3	64.6	51.3	39.8	29.2	20.8	14.2
100°	121.3	106.2	92.1	77.5	70.8	64.2	50.9	39.4	29.2	20.8	14.2
102.5°	120.0	105.3	91.2	77.0	69.9	63.3	50.5	39.0	29.2	20.8	14.2
105°	118.2	104.0	89.9	76.1	69.5	62.9	50.0	39.0	28.8	20.8	14.2
107.5°	116.9	102.2	88.5	74.8	68.6	62.0	49.6	38.5	28.8	20.4	14.2
110°	114.2	100.5	87.2	73.9	67.3	61.1	48.7	38.1	28.3	20.4	14.2





TEST NUMBER: P190114

CATALOG NUMBER: TRR11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG

**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	111.5	98.7	85.4	72.6	66.4	60.2	48.2	37.6	28.3	20.4	14.2
115°	108.9	96.5	83.7	71.3	65.1	58.9	47.4	37.2	27.9	20.4	14.2
117.5°	106.2	94.3	81.9	69.5	63.7	58.0	46.5	36.7	27.4	19.9	14.2
120°	103.6	92.1	80.1	68.2	62.4	56.7	45.6	35.9	27.4	19.9	14.2
122.5°	100.5	89.4	77.9	66.4	60.6	55.3	44.7	35.4	27.0	19.9	14.2
125°	97.4	86.8	75.7	64.6	59.3	54.0	43.8	34.5	26.6	19.9	14.2
127.5°	93.8	83.7	73.0	62.4	57.5	52.2	42.9	34.1	26.1	19.5	14.2
130°	90.3	80.6	70.8	60.6	55.8	50.9	41.6	33.2	25.7	19.5	14.2
132.5°	86.8	77.5	68.2	58.4	54.0	49.1	40.7	32.8	25.7	19.5	14.2
135°	83.2	74.4	65.5	56.2	51.8	47.8	39.4	31.9	25.2	19.0	14.2
137.5°	79.2	71.3	62.4	54.0	50.0	46.0	38.1	31.0	24.8	19.0	14.2
140°	75.2	67.3	59.8	51.8	47.8	44.3	36.7	30.1	24.3	19.0	14.6
142.5°	71.3	64.2	56.7	49.6	46.0	42.5	35.9	29.2	23.9	18.6	14.6
145°	67.3	60.6	54.0	47.4	43.8	40.7	34.5	28.8	23.5	18.6	14.6
147.5°	63.7	57.5	50.9	45.1	42.1	39.0	33.2	27.9	23.0	18.6	15.0
150°	59.3	54.0	48.2	42.5	39.8	37.2	31.9	27.0	22.6	18.6	15.0
152.5°	55.3	50.5	45.1	40.3	38.1	35.4	30.5	26.1	22.1	18.6	15.0
155°	51.3	46.9	42.5	38.1	35.9	33.6	29.7	25.7	21.7	18.6	15.5
157.5°	47.4	43.4	39.8	35.9	34.1	31.9	28.3	24.8	21.2	18.6	15.5
160°	43.4	40.3	36.7	33.6	31.9	30.1	27.0	23.9	21.2	18.6	15.9
162.5°	39.8	37.2	34.1	31.4	30.1	28.3	25.7	23.5	20.8	18.6	16.4
165°	36.3	33.6	31.4	29.2	28.3	27.0	24.3	22.6	20.4	18.1	16.4
167.5°	32.8	31.0	29.2	27.4	26.6	25.2	23.5	21.7	19.9	18.6	16.8
170°	29.2	27.9	26.6	25.2	24.3	23.9	22.6	21.2	19.5	18.6	17.3
172.5°	26.1	25.2	24.3	23.5	23.0	22.1	21.2	20.4	19.5	18.1	17.3
175°	23.0	22.6	22.1	21.2	21.2	20.8	20.4	19.5	19.0	18.1	17.7
177.5°	20.4	19.9	19.9	19.9	19.5	19.5	19.0	19.0	18.6	18.6	18.1
180°	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7



TEST NUMBER: P190114

CATALOG NUMBER: TRR11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG

**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
2.5°	17.3	16.8	16.4	16.4	15.9	15.9	15.5	15.0	14.6	14.6	14.2
5°	16.8	15.9	15.5	15.0	14.6	14.2	13.7	13.3	12.4	12.4	12.0
7.5°	16.4	15.5	14.6	14.2	13.7	12.8	12.0	11.5	10.6	10.2	9.7
10°	15.5	14.6	13.3	12.8	12.4	11.5	10.6	9.7	9.3	8.4	8.0
12.5°	15.0	13.7	12.4	12.0	11.1	10.2	9.3	8.4	7.5	7.1	6.2
15°	14.6	12.8	11.5	11.1	10.2	9.3	8.0	7.1	6.2	5.8	5.3
17.5°	14.2	12.4	10.6	10.2	9.3	8.0	7.1	6.2	5.3	4.4	4.0
20°	13.3	11.5	10.2	9.3	8.4	7.1	6.2	4.9	4.4	3.5	3.1
22.5°	12.8	11.1	9.3	8.4	7.5	6.2	4.9	4.0	3.5	3.1	2.7
25°	12.4	10.6	8.4	7.5	6.6	5.3	4.4	3.5	3.1	2.7	2.7
27.5°	12.0	9.7	8.0	7.1	6.2	4.9	3.5	3.1	2.7	2.7	2.7
30°	12.0	9.3	7.5	6.2	5.8	4.4	3.1	3.1	2.7	2.7	2.7
32.5°	11.5	8.9	6.6	5.8	4.9	3.5	3.1	3.1	2.7	2.7	2.7
35°	11.1	8.4	6.2	5.3	4.4	3.1	3.1	2.7	2.7	2.7	2.7
37.5°	11.1	8.0	5.8	4.9	4.0	3.1	2.7	2.7	2.7	2.7	2.2
40°	10.6	8.0	5.3	4.4	4.0	3.1	2.7	2.7	2.7	2.7	2.2
42.5°	10.6	7.5	5.3	4.0	3.5	3.1	2.7	2.7	2.7	2.7	2.2
45°	10.2	7.1	4.9	4.0	3.1	3.1	2.7	2.7	2.7	2.2	2.2
47.5°	10.2	7.1	4.4	3.5	3.1	3.1	2.7	2.7	2.7	2.2	2.2
50°	9.7	6.6	4.4	3.5	3.1	3.1	2.7	2.7	2.7	2.2	2.2
52.5°	9.7	6.6	4.0	3.1	3.1	3.1	2.7	2.7	2.7	2.2	2.2
55°	9.7	6.2	4.0	3.1	3.1	3.1	2.7	2.7	2.2	2.2	2.2
57.5°	9.3	6.2	3.5	3.1	3.1	3.1	2.7	2.7	2.2	2.2	2.2
60°	9.3	5.8	3.5	3.1	3.1	3.1	2.7	2.7	2.2	2.2	2.2
62.5°	9.3	5.8	3.5	3.1	3.1	3.1	2.7	2.7	2.2	2.2	1.8
65°	9.3	5.8	3.1	3.1	3.1	2.7	2.7	2.7	2.2	2.2	1.8
67.5°	9.3	5.3	3.1	3.1	3.1	3.1	2.7	2.7	2.2	2.2	1.8
70°	9.3	5.3	3.1	3.1	3.1	3.1	2.7	2.7	2.2	2.2	1.8
72.5°	8.9	5.3	3.1	3.1	3.1	3.1	2.7	2.7	2.2	2.2	1.8
75°	8.9	5.3	3.1	3.1	3.1	3.1	2.7	2.7	2.2	2.2	1.8
77.5°	8.9	5.3	3.1	3.1	3.1	2.7	2.7	2.7	2.2	2.2	1.8
80°	8.9	5.3	3.1	3.1	3.1	3.1	2.7	2.7	2.2	2.2	1.8
82.5°	8.9	4.9	3.1	3.1	3.1	2.7	2.7	2.7	2.2	1.8	1.8
85°	8.9	4.9	3.1	3.1	2.7	2.7	2.7	2.2	2.2	1.8	1.8
87.5°	8.9	4.9	3.1	3.1	2.7	2.7	2.7	2.2	2.2	1.8	1.3
90°	8.9	4.9	3.1	2.7	2.7	2.7	2.2	2.2	1.8	1.8	1.3
92.5°	8.9	4.9	3.1	2.7	2.7	2.7	2.2	2.2	2.2	1.8	1.8
95°	8.9	4.9	2.7	2.7	2.7	2.7	2.2	2.2	2.2	1.8	1.8
97.5°	8.9	4.9	2.7	2.7	2.7	2.7	2.2	2.2	2.2	1.8	1.8
100°	8.9	4.9	2.7	2.7	2.7	2.7	2.2	2.2	2.2	1.8	1.8
102.5°	8.9	4.9	2.7	2.7	2.7	2.7	2.2	2.2	1.8	1.8	1.3
105°	8.9	4.9	2.7	2.7	2.7	2.2	2.2	2.2	1.8	1.8	1.3
107.5°	8.9	4.9	2.7	2.7	2.7	2.2	2.2	2.2	1.8	1.8	1.3
110°	8.9	5.3	2.7	2.7	2.7	2.2	2.2	2.2	1.8	1.8	1.3



TEST NUMBER: P190114

CATALOG NUMBER: TRR11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG

**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	8.9	5.3	2.7	2.7	2.7	2.2	2.2	2.2	1.8	1.8	1.3
115°	9.3	5.3	3.1	2.7	2.7	2.2	2.2	2.2	1.8	1.8	1.8
117.5°	9.3	5.8	3.1	2.7	2.7	2.2	2.2	2.2	1.8	1.8	1.8
120°	9.3	5.8	3.1	2.7	2.7	2.2	2.2	2.2	1.8	1.8	1.8
122.5°	9.3	5.8	3.5	2.7	2.7	2.2	2.2	2.2	1.8	1.8	1.8
125°	9.7	6.2	3.5	2.7	2.7	2.2	2.2	2.2	1.8	1.8	1.8
127.5°	9.7	6.2	4.0	2.7	2.2	2.2	2.2	2.2	1.8	1.8	1.8
130°	9.7	6.6	4.0	3.1	2.2	2.2	2.2	2.2	1.8	1.8	1.8
132.5°	10.2	6.6	4.4	3.1	2.7	2.2	2.2	1.8	1.8	1.8	1.8
135°	10.2	7.1	4.4	3.5	2.7	2.2	2.2	1.8	1.8	1.8	1.8
137.5°	10.6	7.1	4.9	4.0	3.1	2.2	2.2	1.8	1.8	1.8	1.8
140°	10.6	7.5	5.3	4.0	3.1	2.2	2.2	1.8	1.8	1.8	1.8
142.5°	11.1	8.0	5.8	4.4	4.0	2.7	2.2	1.8	1.8	1.8	1.8
145°	11.1	8.4	6.2	4.9	4.0	2.7	2.2	1.8	1.8	1.8	1.8
147.5°	11.5	8.9	6.6	5.8	4.9	3.1	2.2	1.8	1.8	1.8	1.8
150°	12.0	9.3	7.1	6.2	5.3	4.0	2.7	1.8	1.8	1.8	1.8
152.5°	12.4	9.7	7.5	6.6	5.8	4.4	3.1	2.2	1.8	1.8	1.8
155°	12.8	10.6	8.4	7.5	6.6	5.3	4.0	3.1	2.2	1.8	1.8
157.5°	13.3	11.1	9.3	8.4	7.5	6.2	4.9	3.5	3.1	2.2	1.8
160°	13.7	11.5	9.7	9.3	8.4	7.1	5.8	4.9	4.0	3.1	2.7
162.5°	14.2	12.4	10.6	10.2	9.3	8.0	6.6	5.8	4.9	4.0	3.5
165°	14.6	13.3	11.5	11.1	10.2	9.3	8.0	7.1	6.2	5.3	4.9
167.5°	15.5	13.7	12.8	12.0	11.5	10.2	9.3	8.4	7.5	7.1	6.2
170°	15.9	14.6	13.7	13.3	12.8	11.5	10.6	10.2	9.3	8.4	8.0
172.5°	16.4	15.5	14.6	14.2	13.7	13.3	12.4	12.0	11.1	10.6	10.2
175°	17.3	16.4	15.9	15.5	15.5	14.6	14.2	13.7	13.3	12.4	12.4
177.5°	17.7	17.3	17.3	16.8	16.8	16.4	15.9	15.9	15.5	15.0	15.0
180°	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7



TEST NUMBER: P190114

CATALOG NUMBER: TRR11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
2.5°	13.7	13.7	13.3	13.3	13.3	12.8	12.8	12.8
5°	11.5	11.1	11.1	10.6	10.6	10.2	10.2	10.2
7.5°	9.3	8.9	8.9	8.9	8.4	8.0	8.0	8.0
10°	7.5	7.1	7.1	6.6	6.6	6.2	6.2	6.2
12.5°	5.8	5.3	5.3	5.3	4.9	4.9	4.4	4.4
15°	4.4	4.4	4.0	4.0	3.5	3.5	3.5	3.5
17.5°	3.5	3.1	3.1	3.1	2.7	2.7	2.7	2.7
20°	3.1	2.7	2.7	2.7	2.7	2.7	2.7	2.7
22.5°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
25°	2.7	2.7	2.7	2.7	2.7	2.7	2.2	2.2
27.5°	2.7	2.7	2.7	2.2	2.2	2.2	2.2	2.2
30°	2.7	2.7	2.2	2.2	2.2	2.2	2.2	2.2
32.5°	2.7	2.2	2.2	2.2	2.2	2.2	2.2	2.2
35°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
37.5°	2.2	2.2	2.2	2.2	2.2	1.8	1.8	1.8
40°	2.2	2.2	2.2	2.2	1.8	1.8	1.8	1.8
42.5°	2.2	2.2	2.2	1.8	1.8	1.8	1.8	1.8
45°	2.2	1.8	1.8	1.8	1.8	1.8	1.8	1.8
47.5°	2.2	1.8	1.8	1.8	1.8	1.8	1.3	1.3
50°	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.3
52.5°	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.3
55°	1.8	1.8	1.8	1.3	1.3	1.3	1.3	1.3
57.5°	1.8	1.8	1.3	1.3	1.3	1.3	0.9	0.9
60°	1.8	1.8	1.3	1.3	1.3	1.3	0.9	0.9
62.5°	1.8	1.8	1.3	1.3	1.3	0.9	0.9	0.9
65°	1.8	1.3	1.3	1.3	0.9	0.9	0.9	0.9
67.5°	1.8	1.3	1.3	1.3	0.9	0.9	0.9	0.9
70°	1.8	1.3	1.3	1.3	0.9	0.9	0.9	0.9
72.5°	1.8	1.3	1.3	1.3	0.9	0.9	0.9	0.9
75°	1.8	1.3	1.3	1.3	0.9	0.9	0.9	0.9
77.5°	1.8	1.3	1.3	1.3	0.9	0.9	0.9	0.9
80°	1.8	1.3	1.3	1.3	0.9	0.9	0.9	0.9
82.5°	1.3	1.3	1.3	0.9	0.9	0.9	0.9	0.9
85°	1.3	1.3	0.9	0.9	0.9	0.9	0.4	0.4
87.5°	1.3	0.9	0.9	0.9	0.9	0.4	0.4	0.4
90°	1.3	0.9	0.9	0.9	0.9	0.4	0.4	0.4
92.5°	1.3	1.3	0.9	0.9	0.9	0.4	0.4	0.4
95°	1.3	1.3	0.9	0.9	0.9	0.9	0.4	0.4
97.5°	1.3	1.3	0.9	0.9	0.9	0.4	0.4	0.4
100°	1.3	1.3	0.9	0.9	0.9	0.4	0.4	0.4
102.5°	1.3	1.3	0.9	0.9	0.9	0.4	0.4	0.4
105°	1.3	1.3	0.9	0.9	0.9	0.9	0.4	0.4
107.5°	1.3	1.3	0.9	0.9	0.9	0.9	0.4	0.4
110°	1.3	1.3	0.9	0.9	0.9	0.4	0.4	0.4



TEST NUMBER: P190114

CATALOG NUMBER: TRR11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
112.5°	1.3	1.3	0.9	0.9	0.9	0.9	0.9	0.4
115°	1.3	1.3	1.3	0.9	0.9	0.9	0.9	0.9
117.5°	1.3	1.3	1.3	1.3	0.9	0.9	0.9	0.9
120°	1.3	1.3	1.3	1.3	0.9	0.9	0.9	0.9
122.5°	1.3	1.3	1.3	1.3	0.9	0.9	0.9	0.9
125°	1.3	1.3	1.3	1.3	0.9	0.9	0.9	0.9
127.5°	1.3	1.3	1.3	1.3	1.3	0.9	0.9	0.9
130°	1.3	1.3	1.3	1.3	1.3	0.9	0.9	0.9
132.5°	1.3	1.3	1.3	1.3	1.3	0.9	0.9	0.9
135°	1.3	1.3	1.3	1.3	1.3	0.9	0.9	0.9
137.5°	1.3	1.3	1.3	1.3	1.3	0.9	0.9	0.9
140°	1.3	1.3	1.3	1.3	1.3	1.3	0.9	0.9
142.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
145°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
147.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
150°	1.8	1.3	1.3	1.3	1.3	1.3	1.3	1.3
152.5°	1.8	1.3	1.3	1.3	1.3	1.3	1.3	1.3
155°	1.8	1.8	1.3	1.3	1.3	1.3	1.3	1.3
157.5°	1.8	1.3	1.3	1.3	1.3	1.3	1.3	1.3
160°	2.2	1.8	1.8	1.8	1.3	1.3	1.3	1.3
162.5°	3.1	2.7	2.7	2.2	2.2	1.8	1.8	1.8
165°	4.4	4.0	3.5	3.5	3.1	3.1	3.1	3.1
167.5°	5.8	5.3	5.3	4.9	4.9	4.4	4.4	4.4
170°	7.5	7.1	7.1	6.6	6.6	6.2	6.2	6.2
172.5°	9.7	9.3	8.9	8.9	8.9	8.4	8.4	8.4
175°	12.0	11.5	11.5	11.5	11.1	11.1	11.1	11.1
177.5°	14.6	14.6	14.2	14.2	14.2	14.2	13.7	14.2
180°	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7

(END OF REPORT)