

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: P190120

Luminaire Tested: **TRE11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG**

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-79-08  
Report Number: P190120  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P27873)  
Test Lab: INNOVATION CENTER(G2)  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: FAIL-SAFE  
Catalog Number: TRE11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG  
Description: TERRAPIN 11" LED SHALLOW CAST WALL MOUNT WITH OPAL LENS, EYELID COVER AND EYELID RFL  
Light Source: (56) NICHIA 5000 NF2L757DRT  
Ballast/Driver: OSRAM ELECTRONIC DRIVER PROGRAMMED AT 200mA OT25W/1

**Summary**

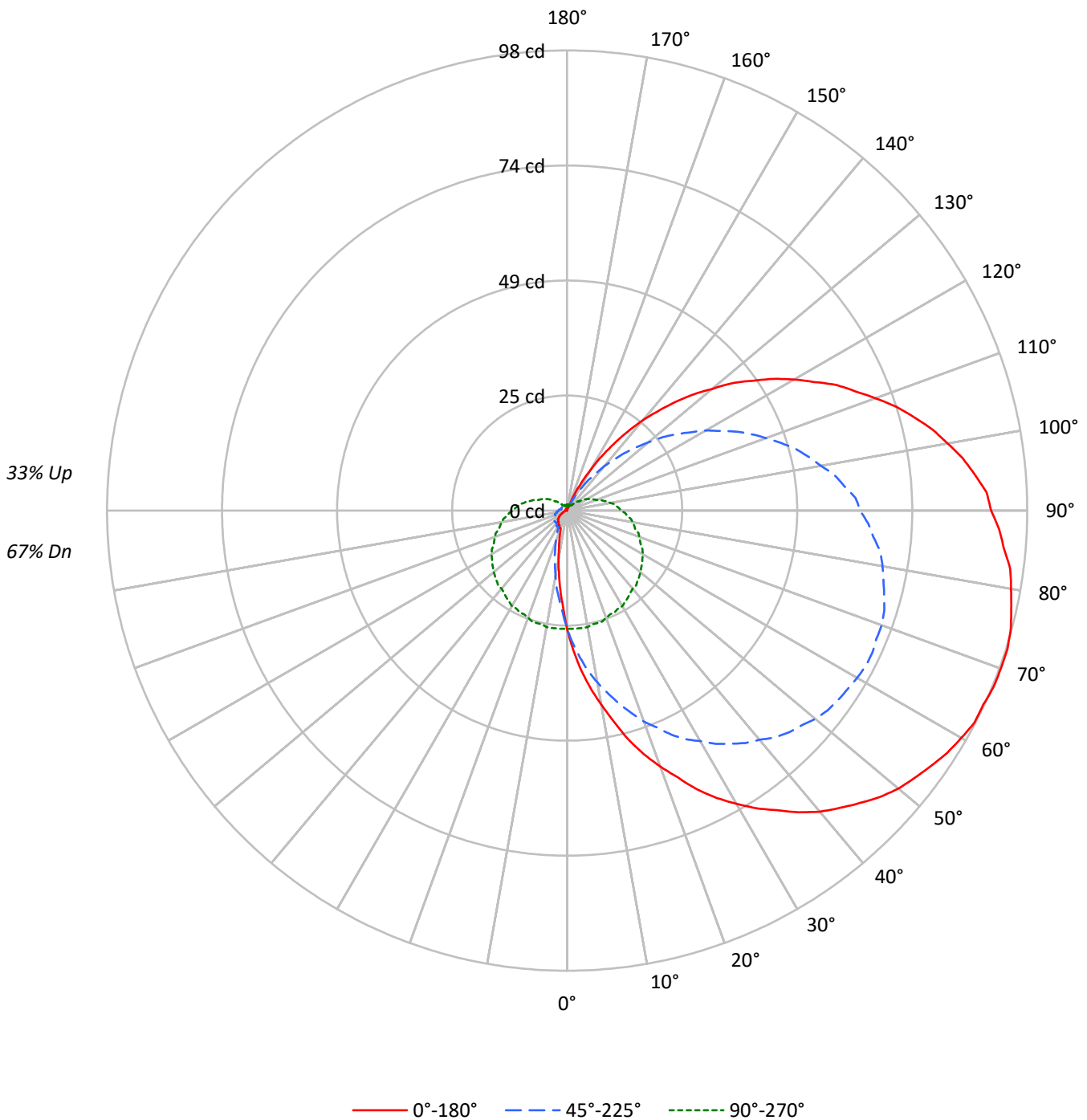
Lumens per Lamp: N/A  
Luminaire Lumens: 308.0 lumens  
Efficiency: N/A  
Efficacy: 30.8 lumens/watt  
Spacing Criteria (0/90/45): 2.37 / 1.38 / 2.12  
Luminous Opening: Rectangular w/ Sides (W: 0.92' x L: 0.29' x H: 0.92')  
CIE Type: Semi-Direct

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





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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	111	111	111	111	105	105	105	105	93	93	93	82	82	82	72	72	72	67
1	96	89	83	77	90	83	78	73	73	69	65	63	60	57	55	52	49	45
2	85	75	66	59	79	70	62	55	61	54	49	52	47	43	45	41	37	33
3	76	64	54	46	71	60	51	44	52	45	39	45	39	34	38	33	29	25
4	69	55	45	38	64	52	43	36	45	37	31	39	32	28	33	28	24	20
5	63	49	39	31	58	45	36	30	40	32	26	34	28	23	29	24	20	17
6	58	43	33	26	53	40	31	25	35	28	22	30	24	19	26	21	17	14
7	53	39	29	23	49	36	28	21	32	24	19	27	21	17	23	18	14	12
8	49	35	26	20	46	33	24	19	29	22	17	25	19	15	21	16	13	10
9	46	32	23	17	42	30	22	16	26	19	15	23	17	13	19	15	11	9
10	43	29	21	15	40	27	20	14	24	17	13	21	15	11	18	13	10	8

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

	0°	90°	180°
0°	1015	1015	1015
5°	1081	936	533
10°	1105	876	279
15°	1143	815	140
20°	1159	763	80
25°	1180	724	72
30°	1191	693	58
35°	1196	653	48
40°	1209	620	45
45°	1211	604	37
50°	1216	583	29
55°	1211	564	23
60°	1211	548	16
65°	1204	524	11
70°	1201	515	11
75°	1195	493	5
80°	1182	493	5
85°	1168	476	5



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	2.4	0.8
10°-20°	7.5	2.4
20°-30°	13.5	4.4
30°-40°	20.0	6.5
40°-50°	26.3	8.5
50°-60°	31.5	10.2
60°-70°	34.9	11.3
70°-80°	36.0	11.7
80°-90°	34.7	11.3
90°-100°	31.3	10.2
100°-110°	25.9	8.4
110°-120°	19.4	6.3
120°-130°	13.0	4.2
130°-140°	7.3	2.4
140°-150°	3.1	1.0
150°-160°	0.8	0.3
160°-170°	0.2	0.1
170°-180°	0.1	0.0
0°-30°	23.4	7.6
0°-40°	43.4	14.1
0°-60°	101.2	32.9
0°-90°	206.8	67.2
90°-120°	76.7	24.9
90°-150°	100.0	32.5
90°-180°	101.0	32.8
0°-180°	308.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	25	25	25	25	25	
5°	34	31	25	19	17	3
15°	50	42	25	10	6	14
25°	66	53	24	5	4	30
35°	78	61	23	4	3	49
45°	88	67	21	4	3	68
55°	95	70	20	3	2	85
65°	98	72	17	3	1	97
75°	98	70	15	3	0	103
85°	93	66	13	2	0	77
90°	90	62	12	2	0	50
95°	87	59	11	2	0	70
105°	77	50	8	1	0	81
115°	63	40	6	1	0	63
125°	48	28	4	1	0	43
135°	33	17	2	1	0	26
145°	17	8	1	1	0	11
155°	4	2	1	1	0	2
165°	0	1	1	1	0	0
175°	0	1	1	1	0	0
180°	1	1	1	1	1	



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2
2.5°	29.7	29.7	29.7	29.7	29.7	29.2	29.2	29.2	29.2	28.8	28.3
5°	34.1	33.6	33.6	33.6	33.6	33.2	32.8	32.8	32.3	31.9	31.4
7.5°	38.1	38.1	37.6	37.6	37.2	36.7	36.7	36.3	35.9	35.0	34.5
10°	42.0	42.0	41.6	41.6	41.2	40.7	40.3	39.8	38.9	38.1	37.2
12.5°	46.0	46.0	45.6	45.6	44.7	44.3	44.3	43.4	42.0	41.2	39.8
15°	50.5	50.0	50.0	49.1	48.7	48.2	47.8	46.9	45.6	44.3	42.5
17.5°	54.4	54.4	53.6	53.1	52.2	51.8	51.3	50.0	48.7	46.9	45.1
20°	58.0	58.0	57.1	56.7	55.8	55.3	54.4	53.1	51.8	50.0	47.8
22.5°	61.5	61.5	60.6	60.2	58.9	58.4	57.5	56.2	54.4	52.2	50.0
25°	65.5	65.1	64.6	63.7	62.4	62.0	61.1	59.3	57.5	54.9	52.7
27.5°	69.0	68.6	68.2	67.3	65.9	65.1	64.2	62.4	60.2	57.5	54.9
30°	72.1	71.7	71.3	70.4	69.0	68.2	66.8	65.1	62.4	59.8	56.7
32.5°	75.2	74.8	74.4	73.0	71.7	70.8	69.9	67.7	65.1	62.0	58.9
35°	77.9	77.5	77.0	76.1	74.4	73.5	72.1	69.9	67.3	64.2	60.6
37.5°	81.0	80.6	79.7	78.8	77.0	76.1	74.8	72.1	69.5	65.9	62.4
40°	83.7	83.2	82.3	81.4	79.2	78.3	77.0	74.4	71.3	67.7	63.7
42.5°	85.9	85.4	84.5	83.7	81.4	80.6	79.2	76.6	73.0	69.5	65.5
45°	88.1	87.6	86.8	85.9	83.7	82.8	81.4	78.3	74.8	71.3	66.8
47.5°	90.3	89.8	89.0	87.6	85.4	84.1	82.8	80.1	76.1	72.6	67.7
50°	92.1	91.6	90.7	89.4	87.2	85.9	84.5	81.4	77.9	73.5	69.0
52.5°	93.4	92.9	92.1	90.7	88.5	87.2	85.9	82.8	78.8	74.4	69.9
55°	94.7	94.3	93.4	92.1	89.8	88.5	87.2	83.7	79.7	75.2	70.4
57.5°	96.0	95.6	94.7	92.9	90.7	89.4	88.1	84.5	80.6	76.1	70.8
60°	96.9	96.5	95.6	93.8	91.6	90.3	88.5	85.0	81.0	76.6	71.3
62.5°	97.8	97.4	96.0	94.3	92.1	90.7	89.4	85.4	81.4	76.6	71.7
65°	97.8	97.8	96.5	94.7	92.5	91.2	89.4	85.9	81.9	77.0	71.7
67.5°	98.3	97.8	96.9	95.2	92.5	91.2	89.8	85.9	81.9	77.0	71.3
70°	98.3	97.8	96.9	95.2	92.9	91.2	89.8	85.9	81.4	76.6	71.3
72.5°	98.3	97.8	96.5	94.7	92.5	91.2	89.4	85.4	81.0	76.1	70.8
75°	97.8	97.4	96.0	94.3	92.1	90.7	89.0	85.0	80.6	75.7	69.9
77.5°	96.9	96.5	95.6	93.8	91.2	89.8	88.1	84.5	80.1	74.8	69.0
80°	96.0	95.6	94.7	92.9	90.3	89.0	87.2	83.2	78.8	73.9	68.2
82.5°	95.2	94.7	93.4	91.6	89.4	87.6	85.9	82.3	77.9	72.6	67.3
85°	93.4	93.4	92.1	90.3	87.6	86.3	84.5	80.6	76.6	71.3	65.5
87.5°	92.1	91.6	90.3	88.5	86.3	84.5	83.2	79.2	74.8	69.5	64.2
90°	90.3	89.8	88.5	87.2	84.5	83.2	81.4	77.5	73.0	68.2	62.4
92.5°	89.4	89.0	87.6	85.9	83.7	82.3	80.1	76.6	72.1	66.8	61.5
95°	87.2	86.8	85.9	83.7	81.4	80.1	78.3	74.4	69.9	65.1	59.3
97.5°	85.0	84.5	83.7	81.4	79.2	77.9	76.1	72.1	67.7	62.9	57.5
100°	82.3	81.9	81.0	79.2	76.6	75.2	73.5	69.9	65.5	60.6	54.9
102.5°	79.7	79.2	77.9	76.1	73.9	72.6	70.8	67.3	62.9	58.0	52.7
105°	76.6	76.1	75.2	73.5	71.3	69.9	68.2	64.2	60.2	55.3	50.5
107.5°	73.5	73.0	72.1	70.4	68.2	66.8	65.1	61.5	57.5	52.7	47.8
110°	69.9	69.5	68.6	66.8	64.6	63.3	62.0	58.4	54.4	50.0	45.1



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**CANDELA DISTRIBUTION (continued):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	66.4	66.4	65.5	63.7	61.5	60.2	58.9	55.3	51.3	46.9	42.5
115°	63.3	62.9	62.0	60.2	58.4	57.1	55.3	52.2	48.2	44.3	39.8
117.5°	59.3	59.3	58.4	56.7	54.9	53.6	52.2	48.7	45.1	41.2	36.7
120°	55.8	55.8	54.9	53.1	51.3	50.0	48.7	45.6	42.0	38.1	34.1
122.5°	52.2	51.8	50.9	49.6	47.8	46.5	45.1	42.5	38.9	35.0	31.0
125°	48.2	48.2	47.4	46.0	43.8	42.9	41.6	38.9	35.4	31.9	28.3
127.5°	44.7	44.3	43.4	42.0	40.3	39.4	38.1	35.4	32.3	28.8	25.7
130°	40.3	40.3	39.4	38.5	36.7	35.4	34.5	31.9	29.2	26.1	22.6
132.5°	36.7	36.3	35.4	34.5	32.8	31.9	31.0	28.8	25.7	23.0	19.9
135°	32.8	32.3	31.9	30.5	29.2	28.3	27.4	25.2	22.6	19.9	17.3
137.5°	28.8	28.3	27.9	27.0	25.2	24.8	23.9	21.7	19.5	16.8	14.6
140°	25.2	24.3	23.9	23.0	21.7	21.2	20.4	18.1	16.4	14.2	12.4
142.5°	21.2	20.8	20.4	19.5	18.1	17.7	16.8	15.0	13.3	11.5	9.7
145°	17.3	16.8	16.4	15.9	14.6	14.2	13.7	12.0	10.6	9.3	8.0
147.5°	13.7	13.3	13.3	12.4	11.5	11.1	10.6	9.3	8.0	7.1	5.8
150°	10.2	10.2	9.7	9.3	8.4	8.0	7.5	6.6	5.8	4.9	4.4
152.5°	7.1	6.6	6.6	6.2	5.8	5.3	4.9	4.4	4.0	3.5	3.1
155°	4.4	4.0	4.0	4.0	3.1	3.1	3.1	2.7	2.2	2.2	1.8
157.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.3	1.3
160°	0.4	0.4	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
162.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.9	0.9	0.9	0.9
165°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.9	0.9	0.9	0.9
167.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.9	0.9	0.9	0.9
170°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.9	0.9	0.9	0.9
172.5°	0.4	0.4	0.4	0.4	0.9	0.4	0.9	0.9	0.9	0.9	0.9
175°	0.4	0.9	0.4	0.4	0.9	0.9	0.9	0.9	0.9	0.9	0.9
177.5°	0.4	0.4	0.4	0.4	0.9	0.9	0.9	0.9	0.9	0.9	0.9
180°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9



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**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2
2.5°	28.3	27.9	27.9	27.4	27.0	27.0	26.6	26.1	25.7	25.2	24.8
5°	31.0	30.1	29.7	29.2	28.8	28.3	27.4	27.0	26.1	25.2	24.8
7.5°	33.6	32.8	31.9	30.5	30.1	29.7	28.8	27.4	26.6	25.2	24.3
10°	35.9	35.0	33.6	32.3	31.4	31.0	29.2	27.9	26.6	25.2	23.9
12.5°	38.5	36.7	35.4	33.6	32.8	31.9	30.1	28.3	26.6	24.8	23.5
15°	40.7	38.9	37.2	35.4	34.1	33.2	31.0	29.2	27.0	24.8	23.0
17.5°	43.4	41.2	38.9	36.7	35.4	34.5	31.9	29.7	27.0	24.8	22.6
20°	45.6	42.9	40.7	38.1	36.7	35.4	32.3	29.7	27.0	24.3	21.7
22.5°	47.4	44.7	42.0	38.9	37.6	35.9	33.2	30.1	27.0	23.9	21.2
25°	49.6	46.9	43.4	40.3	38.5	37.2	33.6	30.1	27.0	23.9	20.8
27.5°	51.8	48.2	45.1	41.6	39.8	37.6	34.1	30.5	27.0	23.5	20.4
30°	53.6	50.0	46.0	42.5	40.3	38.5	34.5	30.5	27.0	23.5	19.9
32.5°	55.3	51.3	47.4	43.4	41.2	38.9	35.0	31.0	27.0	23.0	19.5
35°	56.7	52.7	48.7	44.3	42.0	39.8	35.4	31.0	26.6	22.6	19.0
37.5°	58.4	54.0	49.6	44.7	42.5	40.3	35.4	31.0	26.6	22.1	18.1
40°	59.8	55.3	50.5	45.6	42.9	40.7	35.9	31.0	26.1	21.7	17.7
42.5°	61.1	56.2	51.3	46.0	43.4	40.7	35.9	30.5	26.1	21.7	17.3
45°	62.0	57.1	51.8	46.5	43.8	41.2	35.9	30.5	25.7	21.2	16.8
47.5°	62.9	58.0	52.7	46.9	44.3	41.2	35.9	30.5	25.2	20.8	16.4
50°	63.7	58.4	53.1	47.4	44.3	41.6	35.9	30.1	25.2	20.4	15.9
52.5°	64.6	58.9	53.1	47.4	44.3	41.6	35.4	30.1	24.8	19.9	15.5
55°	65.1	59.3	53.6	47.4	44.3	41.2	35.4	29.7	24.3	19.5	15.0
57.5°	65.5	59.8	53.6	47.4	44.3	41.2	35.0	29.2	23.9	19.0	14.6
60°	65.5	59.8	53.6	47.4	44.3	40.7	34.5	28.8	23.5	18.6	14.2
62.5°	65.9	59.8	53.6	46.9	43.8	40.7	34.1	28.3	23.0	18.1	13.7
65°	65.5	59.8	53.1	46.5	43.4	40.3	33.6	27.9	22.1	17.3	13.3
67.5°	65.5	59.3	52.7	46.0	42.9	39.8	33.2	27.4	21.7	16.8	12.8
70°	65.1	58.9	52.2	45.6	42.5	38.9	32.8	26.6	21.2	16.4	12.4
72.5°	64.6	58.4	51.8	45.1	41.6	38.5	31.9	26.1	20.8	15.9	12.0
75°	64.2	57.5	50.9	44.3	41.2	37.6	31.4	25.2	19.9	15.0	11.5
77.5°	63.3	56.7	50.0	43.4	40.3	36.7	30.5	24.8	19.5	14.6	10.6
80°	62.0	55.8	49.1	42.5	38.9	35.9	29.7	23.9	18.6	14.2	10.2
82.5°	61.1	54.9	47.8	41.2	38.1	35.0	28.8	23.0	18.1	13.7	9.7
85°	59.8	53.1	46.5	40.3	36.7	33.6	27.9	22.1	17.3	12.8	9.3
87.5°	58.0	51.8	45.1	38.9	35.9	32.3	26.6	21.2	16.4	12.4	8.9
90°	56.7	50.5	43.8	37.6	34.5	31.4	25.7	20.4	15.5	11.5	8.4
92.5°	55.3	49.1	42.9	36.7	33.2	30.5	24.8	19.5	15.0	11.1	8.0
95°	53.6	47.4	41.2	35.0	31.9	29.2	23.5	18.6	14.2	10.6	7.5
97.5°	51.8	45.6	39.4	33.6	30.5	27.9	22.6	17.7	13.3	10.2	7.1
100°	49.6	43.4	37.6	31.9	28.8	26.1	21.2	16.4	12.4	9.3	6.6
102.5°	47.4	41.2	35.4	30.1	27.4	24.8	19.9	15.5	12.0	8.9	6.2
105°	44.7	39.4	33.6	28.3	25.7	23.0	18.6	14.6	11.1	8.0	5.8
107.5°	42.5	36.7	31.9	26.6	23.9	21.7	17.3	13.3	10.2	7.5	5.3
110°	39.8	34.5	29.7	24.8	22.1	19.9	15.9	12.4	9.3	6.6	4.9





TEST NUMBER: P190120

CATALOG NUMBER: TRE11-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°	37.6	32.3	27.4	23.0	20.8	18.6	14.6	11.5	8.4	6.2	4.4
115°	35.0	30.1	25.7	21.2	19.0	16.8	13.3	10.2	8.0	5.8	4.0
117.5°	32.3	27.9	23.5	19.5	17.3	15.5	12.4	9.3	7.1	5.3	4.0
120°	29.7	25.2	21.2	17.7	15.9	14.2	11.1	8.4	6.2	4.9	3.5
122.5°	27.0	23.0	19.5	15.9	14.2	12.8	9.7	7.5	5.8	4.4	3.1
125°	24.3	20.8	17.3	14.2	12.8	11.5	8.9	6.6	4.9	4.0	2.7
127.5°	21.7	18.6	15.0	12.4	11.1	9.7	7.5	5.8	4.4	3.1	2.7
130°	19.5	16.4	13.3	11.1	9.7	8.9	6.6	5.3	4.0	3.1	2.2
132.5°	16.8	14.2	11.5	9.3	8.4	7.5	5.8	4.4	3.5	2.7	2.2
135°	14.6	12.0	9.7	8.0	7.1	6.2	4.9	3.5	2.7	2.2	1.8
137.5°	12.4	10.2	8.4	6.6	5.8	5.3	4.0	3.1	2.7	1.8	1.8
140°	10.2	8.4	7.1	5.8	4.9	4.4	3.5	2.7	2.2	1.8	1.3
142.5°	8.4	6.6	5.8	4.4	4.0	3.5	2.7	2.2	1.8	1.3	1.3
145°	6.6	5.3	4.4	3.5	3.1	2.7	2.2	1.8	1.8	1.3	1.3
147.5°	4.9	4.0	3.5	2.7	2.7	2.2	1.8	1.8	1.3	1.3	1.3
150°	3.5	3.1	2.7	2.2	1.8	1.8	1.3	1.3	1.3	1.3	1.3
152.5°	2.7	2.2	1.8	1.8	1.3	1.3	1.3	1.3	1.3	0.9	0.9
155°	1.8	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
157.5°	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
160°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.3	1.3
162.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
165°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.3
167.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.3	1.3
170°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.3	0.9	1.3	1.3
172.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.3	1.3	1.3	1.3
175°	0.9	0.9	0.9	1.3	0.9	1.3	1.3	1.3	1.3	1.3	1.3
177.5°	0.9	0.9	0.9	0.9	0.9	0.9	1.3	1.3	1.3	1.3	1.3
180°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9



TEST NUMBER: P190120

CATALOG NUMBER: TRE11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG

**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2
2.5°	24.8	24.3	23.9	23.5	23.5	23.0	22.6	22.1	21.7	21.2	21.2
5°	23.9	23.0	22.6	22.1	21.7	20.8	20.4	19.9	19.0	18.6	18.1
7.5°	23.0	22.1	21.2	20.4	19.9	19.0	18.1	17.3	16.8	15.9	15.5
10°	22.1	20.8	19.5	19.0	18.6	17.3	15.9	15.0	14.2	13.3	12.8
12.5°	21.7	19.9	18.6	17.7	16.8	15.5	14.2	13.3	12.0	11.1	10.2
15°	20.8	19.0	17.3	16.4	15.5	14.2	12.4	11.1	10.2	9.3	8.4
17.5°	20.4	18.1	15.9	15.0	14.2	12.4	11.1	9.7	8.4	7.5	6.6
20°	19.5	16.8	15.0	14.2	12.8	11.1	9.7	8.0	7.1	6.2	5.3
22.5°	18.6	15.9	13.7	12.8	12.0	9.7	8.0	6.6	5.8	4.9	4.4
25°	18.1	15.5	12.8	12.0	10.6	8.9	7.1	5.8	4.9	4.4	4.0
27.5°	17.3	14.6	12.0	11.1	9.7	7.5	6.2	4.9	4.0	4.0	4.0
30°	16.8	13.7	11.1	9.7	8.9	6.6	5.3	4.4	4.0	4.0	4.0
32.5°	15.9	13.3	10.2	9.3	8.0	6.2	4.4	4.0	4.0	4.0	3.5
35°	15.5	12.4	9.7	8.4	7.1	5.3	4.0	4.0	4.0	3.5	3.5
37.5°	15.0	12.0	8.9	7.5	6.6	4.9	4.0	4.0	3.5	3.5	3.5
40°	14.2	11.1	8.4	7.1	5.8	4.4	4.0	3.5	3.5	3.5	3.5
42.5°	13.7	10.6	7.5	6.6	5.3	4.0	4.0	3.5	3.5	3.5	3.1
45°	13.3	10.2	7.1	5.8	4.9	4.0	4.0	3.5	3.5	3.5	3.1
47.5°	12.8	9.3	6.6	5.3	4.4	3.5	3.5	3.5	3.5	3.1	3.1
50°	12.4	8.9	6.2	4.9	4.0	3.5	3.5	3.5	3.5	3.1	3.1
52.5°	12.0	8.4	5.8	4.9	4.0	3.5	3.5	3.5	3.1	3.1	3.1
55°	11.5	8.0	5.3	4.4	4.0	3.5	3.5	3.5	3.1	3.1	2.7
57.5°	11.1	7.5	4.9	4.0	3.5	3.5	3.5	3.1	3.1	3.1	2.7
60°	10.6	7.1	4.9	4.0	3.5	3.5	3.1	3.1	3.1	2.7	2.7
62.5°	10.2	7.1	4.4	3.5	3.5	3.5	3.5	3.1	3.1	2.7	2.7
65°	9.7	6.6	4.0	3.5	3.5	3.5	3.1	3.1	2.7	2.7	2.2
67.5°	9.3	6.2	4.0	3.5	3.5	3.1	3.1	3.1	2.7	2.7	2.2
70°	8.9	5.8	4.0	3.5	3.1	3.1	3.1	2.7	2.7	2.2	2.2
72.5°	8.4	5.8	3.5	3.5	3.1	3.1	3.1	2.7	2.7	2.2	2.2
75°	8.0	5.3	3.5	3.5	3.1	3.1	3.1	2.7	2.7	2.2	1.8
77.5°	7.5	4.9	3.5	3.1	3.1	3.1	2.7	2.7	2.2	2.2	1.8
80°	7.5	4.9	3.1	3.1	3.1	3.1	2.7	2.7	2.2	2.2	1.8
82.5°	7.1	4.4	3.1	3.1	3.1	3.1	2.7	2.7	2.2	2.2	1.8
85°	6.6	4.4	3.1	3.1	2.7	2.7	2.7	2.2	2.2	1.8	1.8
87.5°	6.2	4.0	2.7	2.7	2.7	2.7	2.2	2.2	1.8	1.8	1.3
90°	5.8	4.0	2.7	2.7	2.7	2.7	2.2	2.2	1.8	1.8	1.3
92.5°	5.8	3.5	2.7	2.7	2.7	2.2	2.2	1.8	1.8	1.3	1.3
95°	5.3	3.5	2.7	2.2	2.2	2.2	1.8	1.8	1.8	1.3	1.3
97.5°	4.9	3.1	2.7	2.2	2.2	2.2	1.8	1.8	1.8	1.3	1.3
100°	4.4	3.1	2.2	2.2	2.2	1.8	1.8	1.8	1.3	1.3	0.9
102.5°	4.4	2.7	2.2	2.2	2.2	1.8	1.8	1.8	1.3	1.3	0.9
105°	4.0	2.7	2.2	2.2	1.8	1.8	1.8	1.3	1.3	1.3	0.9
107.5°	3.5	2.7	2.2	1.8	1.8	1.8	1.8	1.3	1.3	1.3	0.9
110°	3.5	2.2	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.3	0.9



TEST NUMBER: P190120

CATALOG NUMBER: TRE11-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°	3.1	2.2	1.8	1.8	1.8	1.8	1.3	1.3	1.3	0.9	0.9
115°	3.1	2.2	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.3	0.9
117.5°	2.7	2.2	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.3	0.9
120°	2.7	2.2	1.8	1.8	1.8	1.8	1.3	1.3	1.3	0.9	0.9
122.5°	2.2	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.3	0.9
125°	2.2	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.3	0.9
127.5°	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.3	1.3	0.9	0.9
130°	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.3	0.9	0.9	0.9
132.5°	1.8	1.8	1.3	1.3	1.3	1.3	1.3	1.3	0.9	0.9	0.9
135°	1.8	1.3	1.3	1.3	1.3	1.3	1.3	0.9	0.9	0.9	0.9
137.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.9	0.9	0.9	0.9
140°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.9	0.9	0.9	0.9
142.5°	1.3	1.3	1.3	1.3	1.3	1.3	0.9	0.9	0.9	0.9	0.9
145°	1.3	1.3	1.3	1.3	1.3	1.3	0.9	0.9	0.9	0.9	0.9
147.5°	1.3	1.3	1.3	1.3	1.3	1.3	0.9	0.9	0.9	0.9	0.9
150°	1.3	1.3	1.3	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
152.5°	0.9	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
155°	0.9	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
157.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
160°	1.3	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
162.5°	0.9	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
165°	1.3	0.9	0.9	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
167.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
170°	1.3	1.3	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
172.5°	1.3	1.3	1.3	0.9	1.3	0.9	0.9	0.9	0.9	0.9	0.9
175°	1.3	1.3	1.3	1.3	1.3	0.9	0.9	0.9	0.9	0.9	0.9
177.5°	1.3	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
180°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9



TEST NUMBER: P190120

CATALOG NUMBER: TRE11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2
2.5°	21.2	20.8	20.8	20.4	20.4	20.4	20.4	20.4
5°	17.7	17.3	17.3	16.8	16.8	16.8	16.4	16.8
7.5°	14.6	14.2	14.2	13.7	13.7	13.3	13.3	13.3
10°	12.0	11.5	11.5	11.1	10.6	10.6	10.2	10.6
12.5°	9.7	8.9	8.9	8.9	8.4	8.0	8.0	8.0
15°	7.5	7.1	7.1	6.6	6.2	6.2	6.2	6.2
17.5°	6.2	5.8	5.3	5.3	4.9	4.9	4.9	4.9
20°	4.9	4.4	4.4	4.0	4.0	4.0	4.0	4.0
22.5°	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
25°	4.0	4.0	4.0	4.0	4.0	4.0	3.5	4.0
27.5°	4.0	4.0	3.5	3.5	3.5	3.5	3.5	3.5
30°	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
32.5°	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
35°	3.5	3.5	3.5	3.5	3.1	3.1	3.1	3.1
37.5°	3.5	3.1	3.1	3.1	3.1	3.1	3.1	3.1
40°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
42.5°	3.1	3.1	3.1	3.1	2.7	2.7	2.7	2.7
45°	3.1	3.1	3.1	2.7	2.7	2.7	2.7	2.7
47.5°	3.1	2.7	2.7	2.7	2.7	2.7	2.7	2.7
50°	2.7	2.7	2.7	2.7	2.7	2.2	2.2	2.2
52.5°	2.7	2.7	2.2	2.2	2.2	2.2	2.2	2.2
55°	2.7	2.2	2.2	2.2	2.2	2.2	1.8	1.8
57.5°	2.7	2.2	2.2	2.2	1.8	1.8	1.8	1.8
60°	2.2	2.2	2.2	1.8	1.8	1.8	1.3	1.3
62.5°	2.2	2.2	1.8	1.8	1.8	1.3	1.3	1.3
65°	2.2	1.8	1.8	1.8	1.3	1.3	0.9	0.9
67.5°	1.8	1.8	1.8	1.3	1.3	0.9	0.9	0.9
70°	1.8	1.8	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	0.4	0.4
75°	1.8	1.3	1.3	1.3	0.9	0.4	0.4	0.4
77.5°	1.8	1.3	1.3	0.9	0.9	0.4	0.4	0.4
80°	1.3	1.3	0.9	0.9	0.4	0.4	0.4	0.4
82.5°	1.3	1.3	0.9	0.9	0.4	0.4	0.4	0.4
85°	1.3	0.9	0.9	0.9	0.4	0.4	0.4	0.4
87.5°	1.3	0.9	0.9	0.4	0.4	0.4	0.4	0.4
90°	1.3	0.9	0.9	0.4	0.4	0.4	0.4	0.4
92.5°	0.9	0.9	0.9	0.4	0.4	0.4	0.4	0.4
95°	0.9	0.9	0.9	0.4	0.4	0.4	0.4	0.4
97.5°	0.9	0.9	0.9	0.4	0.4	0.4	0.4	0.4
100°	0.9	0.9	0.4	0.4	0.4	0.4	0.4	0.0
102.5°	0.9	0.9	0.4	0.4	0.4	0.4	0.4	0.4
105°	0.9	0.9	0.4	0.4	0.4	0.4	0.4	0.4
107.5°	0.9	0.9	0.4	0.4	0.4	0.4	0.4	0.4
110°	0.9	0.9	0.4	0.4	0.4	0.4	0.4	0.0



TEST NUMBER: P190120

CATALOG NUMBER: TRE11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
112.5°	0.9	0.4	0.4	0.4	0.4	0.4	0.0	0.0
115°	0.9	0.9	0.4	0.4	0.4	0.4	0.4	0.4
117.5°	0.9	0.9	0.9	0.4	0.4	0.4	0.4	0.4
120°	0.9	0.9	0.4	0.4	0.4	0.4	0.4	0.4
122.5°	0.9	0.9	0.9	0.4	0.4	0.4	0.4	0.4
125°	0.9	0.9	0.9	0.4	0.4	0.4	0.4	0.4
127.5°	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4
130°	0.9	0.9	0.4	0.4	0.4	0.4	0.4	0.4
132.5°	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4
135°	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4
137.5°	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4
140°	0.9	0.9	0.4	0.4	0.4	0.4	0.4	0.4
142.5°	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4
145°	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4
147.5°	0.9	0.9	0.9	0.4	0.4	0.4	0.4	0.4
150°	0.9	0.9	0.9	0.4	0.4	0.4	0.4	0.4
152.5°	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4
155°	0.9	0.9	0.4	0.4	0.4	0.4	0.4	0.4
157.5°	0.9	0.9	0.4	0.4	0.4	0.4	0.4	0.4
160°	0.9	0.9	0.9	0.9	0.9	0.4	0.4	0.4
162.5°	0.9	0.9	0.9	0.9	0.4	0.4	0.4	0.4
165°	0.9	0.9	0.9	0.4	0.4	0.4	0.4	0.4
167.5°	0.9	0.9	0.9	0.9	0.4	0.4	0.4	0.4
170°	0.9	0.9	0.9	0.9	0.9	0.4	0.4	0.4
172.5°	0.9	0.9	0.9	0.9	0.9	0.4	0.4	0.4
175°	0.9	0.9	0.9	0.9	0.9	0.9	0.4	0.4
177.5°	0.9	0.9	0.9	0.4	0.4	0.4	0.4	0.4
180°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9

(END OF REPORT)