

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: P190123

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

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P190123
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P27874)
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-CL-BK-UNV-EDC1-CSTG
Description: TERRAPIN 11" LED SHALLOW CAST WALL MOUNT WITH OPEN CLEAR LENS,
EYELID COVER AND EYELID RFL
Light Source: (56) NICHIA 5000
NF2L757DRT
Ballast/Driver: OSRAM ELECTRONIC DRIVER PROGRAMMED AT 200mA
OT25W/1

Summary

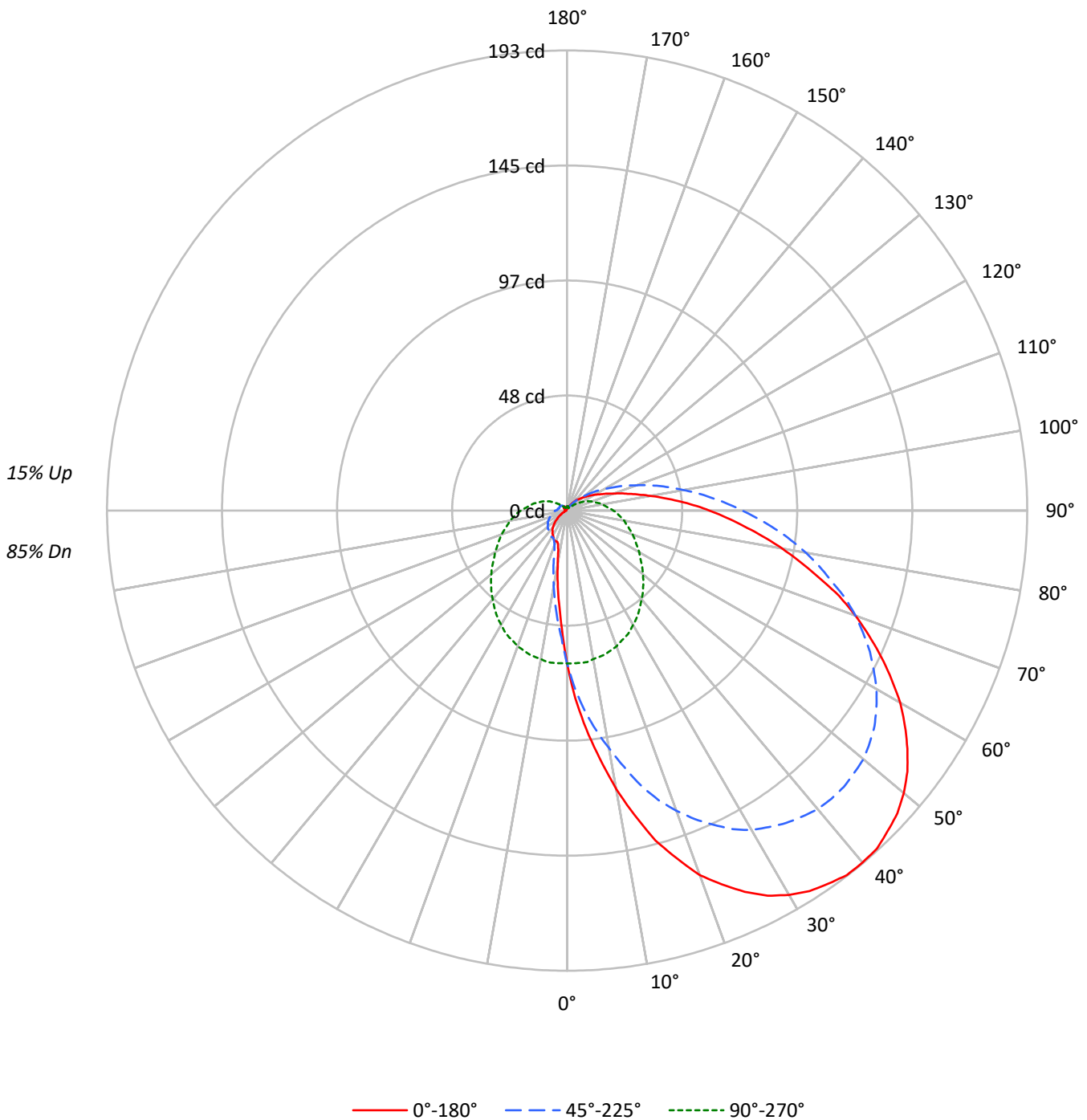
Lumens per Lamp: N/A
Luminaire Lumens: 474.0 lumens
Efficiency: N/A
Efficacy: 47.4 lumens/watt
Spacing Criteria (0/90/45): 2.1 / 1.28 / 2.01
Luminous Opening: Rectangular w/ Sides (W: 0.92' x L: 0.29' x H: 0.92')
CIE Type: Semi-Direct

Input Watts (W): 10
Input Voltage (V): NR
Input Current (A_{in}): 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	115	115	115	115	111	111	111	111	103	103	103	95	95	95	88	88	88	85
1	101	95	89	83	96	91	85	81	83	79	75	77	73	70	71	68	65	62
2	90	80	71	64	86	76	69	62	70	64	58	65	59	55	59	55	51	48
3	81	68	59	51	77	66	57	50	60	53	47	55	49	44	51	46	41	38
4	73	60	50	42	70	57	48	41	53	45	38	48	42	36	44	39	34	31
5	67	52	42	35	63	50	41	34	46	38	32	43	36	30	39	33	29	26
6	61	47	37	30	58	45	36	29	41	33	27	38	31	26	35	29	25	22
7	56	42	32	26	54	40	31	25	37	29	24	34	28	23	32	26	21	19
8	52	38	29	22	50	36	28	22	34	26	21	31	25	20	29	23	19	16
9	49	34	26	20	46	33	25	19	31	24	18	29	22	17	27	21	17	14
10	45	31	23	18	43	30	23	17	28	21	16	26	20	16	25	19	15	13

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	2581	2581	2581
5°	2913	2382	1233
10°	3117	2196	592
15°	3240	2048	330
20°	3251	1904	274
25°	3178	1766	240
30°	3074	1630	197
35°	2933	1509	163
40°	2784	1389	134
45°	2613	1284	103
50°	2432	1186	70
55°	2228	1098	51
60°	2016	1029	34
65°	1790	963	22
70°	1571	917	16
75°	1339	871	11
80°	1127	844	11
85°	930	806	5



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	6.3	1.3
10°-20°	20.1	4.2
20°-30°	36.0	7.6
30°-40°	50.8	10.7
40°-50°	61.6	13.0
50°-60°	66.0	13.9
60°-70°	63.3	13.4
70°-80°	54.5	11.5
80°-90°	42.3	8.9
90°-100°	29.8	6.3
100°-110°	19.2	4.1
110°-120°	11.5	2.4
120°-130°	6.4	1.4
130°-140°	3.2	0.7
140°-150°	1.6	0.3
150°-160°	0.7	0.2
160°-170°	0.4	0.1
170°-180°	0.1	0.0
0°-30°	62.4	13.2
0°-40°	113.2	23.9
0°-60°	240.8	50.8
0°-90°	400.9	84.6
90°-120°	60.6	12.8
90°-150°	71.8	15.1
90°-180°	73.0	15.4
0°-180°	474.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	64	64	64	64	64	
5°	92	84	64	46	39	10
15°	143	119	62	22	15	41
25°	176	145	58	13	13	82
35°	191	160	52	12	11	120
45°	190	164	45	11	8	147
55°	174	157	38	10	4	156
65°	145	140	32	8	2	144
75°	110	115	26	7	1	116
85°	74	88	22	5	0	64
90°	60	73	19	5	0	33
95°	46	61	17	4	1	36
105°	27	40	13	4	1	29
115°	16	24	9	4	1	17
125°	11	14	5	4	1	10
135°	7	7	3	3	2	5
145°	4	3	1	2	2	2
155°	2	2	1	1	2	1
165°	1	1	2	1	1	0
175°	1	2	2	1	1	0
180°	2	2	2	2	2	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	64.1	64.1	64.1	64.1	64.1	64.1	64.1	64.1	64.1	64.1	64.1
2.5°	78.7	77.8	77.8	77.8	77.8	77.4	76.9	76.5	75.6	75.1	74.7
5°	91.9	91.1	91.1	90.6	90.2	89.3	88.8	88.0	86.6	85.3	84.0
7.5°	104.8	104.3	103.9	103.0	102.5	101.7	100.8	99.0	97.2	95.0	92.8
10°	118.5	118.5	117.1	116.3	114.9	112.7	111.8	109.6	107.0	104.8	101.2
12.5°	130.8	130.0	130.0	128.2	126.4	125.5	124.2	122.0	118.5	115.4	110.1
15°	143.2	142.8	141.9	140.1	137.9	136.1	135.3	132.2	128.6	124.2	119.3
17.5°	152.9	152.9	152.1	150.3	148.1	146.3	144.5	141.9	137.5	132.6	127.3
20°	162.7	161.8	160.9	159.1	156.5	155.1	153.4	149.8	145.0	139.7	133.9
22.5°	169.7	169.3	168.0	166.2	163.5	162.2	160.5	156.5	151.6	146.3	140.1
25°	176.4	175.9	174.6	172.8	170.2	168.8	167.1	163.1	157.8	152.5	145.4
27.5°	182.1	181.7	180.3	178.6	175.9	174.6	172.4	168.4	163.5	157.8	150.7
30°	186.1	185.6	184.8	183.0	180.3	178.6	176.8	172.8	167.5	161.8	154.7
32.5°	189.2	188.7	187.4	185.6	183.0	181.7	179.9	175.9	170.6	164.4	157.4
35°	191.0	191.0	189.6	188.3	185.6	183.9	182.1	178.1	173.3	167.1	160.0
37.5°	192.7	192.3	191.0	189.6	187.0	185.6	183.9	180.3	175.0	169.3	161.8
40°	192.7	192.7	191.4	190.1	187.9	186.5	184.8	181.2	176.4	170.6	163.5
42.5°	192.3	191.8	191.4	189.6	187.9	186.5	184.8	181.2	176.4	171.1	164.0
45°	190.1	190.1	189.2	188.3	186.5	185.2	183.4	180.3	175.9	171.1	164.0
47.5°	187.9	187.9	187.0	185.6	184.3	183.0	181.7	178.6	175.0	169.7	163.1
50°	184.3	184.3	183.9	182.6	181.2	180.3	179.5	176.4	172.8	168.4	162.2
52.5°	179.9	179.9	178.6	178.1	176.8	176.4	175.5	173.3	169.7	165.8	160.0
55°	174.2	174.2	173.3	172.8	171.9	171.5	170.6	169.3	166.2	162.7	157.4
57.5°	168.0	168.0	167.5	167.1	166.6	165.8	165.3	164.4	161.8	158.7	153.8
60°	161.3	160.9	160.9	160.5	160.0	159.6	159.6	158.7	156.5	154.3	149.8
62.5°	153.4	153.4	153.4	152.9	152.9	152.5	152.5	152.1	150.7	148.5	145.0
65°	145.4	145.9	145.4	145.4	145.9	145.4	145.4	145.4	145.0	143.2	140.1
67.5°	137.0	137.5	137.9	137.9	137.9	137.9	137.9	138.8	137.9	137.0	134.4
70°	128.6	129.1	129.1	129.1	129.5	129.5	130.4	130.8	130.8	130.4	128.6
72.5°	119.8	119.8	119.8	120.7	121.1	121.1	121.6	122.9	123.3	123.3	122.4
75°	109.6	109.6	110.1	110.5	110.9	111.4	112.7	114.0	114.9	115.8	114.9
77.5°	100.3	100.3	101.2	101.7	102.5	103.0	103.4	105.6	106.5	107.9	108.3
80°	91.5	91.5	92.4	92.8	94.1	94.1	95.0	97.2	99.0	100.3	101.7
82.5°	82.7	82.7	83.5	84.4	85.8	86.2	87.1	89.3	91.1	92.8	94.6
85°	74.3	74.7	75.6	76.5	77.8	78.2	79.1	81.8	83.5	85.8	87.5
87.5°	66.7	66.7	68.1	68.5	70.3	71.2	72.0	74.3	76.5	78.7	80.4
90°	59.7	59.7	60.6	61.4	63.2	64.1	65.0	67.6	69.4	71.6	73.4
92.5°	53.0	53.0	53.9	54.8	56.1	57.5	58.3	60.6	62.8	65.4	67.2
95°	46.4	46.4	47.3	48.6	49.9	50.8	52.2	54.4	56.6	58.8	61.0
97.5°	40.7	40.7	41.5	42.9	44.2	45.5	46.4	48.2	50.8	53.0	55.3
100°	35.4	35.4	36.7	37.6	38.9	40.2	41.1	42.9	45.1	47.3	49.5
102.5°	30.9	30.9	31.8	32.7	34.5	35.4	36.2	38.0	40.2	42.4	44.6
105°	27.0	27.0	27.8	28.7	30.1	31.4	31.8	34.0	35.4	37.6	39.8
107.5°	23.9	23.9	24.3	25.2	26.5	27.4	28.3	29.6	31.8	33.6	35.4
110°	20.8	20.8	21.7	22.1	23.4	24.3	24.8	26.1	27.8	29.6	30.9



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CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	18.6	18.6	19.0	19.9	20.8	21.2	22.1	23.0	24.8	26.1	27.4
115°	16.4	16.4	16.8	17.2	18.1	19.0	19.4	20.3	21.7	23.0	23.9
117.5°	14.6	14.6	15.0	15.5	16.4	16.8	17.2	18.1	19.0	19.9	20.8
120°	13.3	13.3	13.3	13.7	14.1	14.6	15.0	15.9	16.8	17.2	18.1
122.5°	11.9	11.9	11.9	12.4	12.8	12.8	13.3	14.1	14.6	15.0	15.9
125°	10.6	10.6	10.6	11.1	11.5	11.5	11.5	12.4	12.8	13.3	13.7
127.5°	9.3	9.3	9.7	9.7	10.2	10.2	10.2	10.6	11.1	11.5	11.5
130°	8.4	8.4	8.4	8.8	8.8	8.8	9.3	9.3	9.7	9.7	9.7
132.5°	7.5	7.5	7.5	7.5	8.0	8.0	8.0	8.0	8.4	8.4	8.4
135°	6.6	6.6	6.6	6.6	7.1	7.1	7.1	7.1	7.1	7.1	7.1
137.5°	6.2	5.7	5.7	5.7	5.7	6.2	5.7	5.7	5.7	5.7	5.7
140°	5.3	5.3	5.3	5.3	5.3	4.9	4.9	4.9	4.9	4.9	4.9
142.5°	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.0	4.0	4.0
145°	4.0	4.0	4.0	4.0	3.5	3.5	3.5	3.5	3.5	3.5	3.1
147.5°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	2.7	2.7
150°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.2	2.2
152.5°	2.2	2.2	2.2	2.2	2.2	2.2	1.8	1.8	1.8	1.8	1.8
155°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
157.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
160°	0.9	0.9	0.9	0.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
162.5°	0.9	0.9	0.9	0.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
165°	0.9	0.9	0.9	0.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
167.5°	0.9	0.9	0.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
170°	0.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.8
172.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.8
175°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.8	1.8
177.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.8	1.8	1.8
180°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8



TEST NUMBER: P190123

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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	64.1	64.1	64.1	64.1	64.1	64.1	64.1	64.1	64.1	64.1	64.1
2.5°	73.4	72.5	71.6	70.3	69.8	69.4	68.1	66.7	65.4	64.1	62.8
5°	82.2	80.0	77.8	75.6	74.7	73.4	71.2	69.0	66.3	64.1	61.9
7.5°	90.2	87.5	84.0	80.9	79.1	77.8	74.3	70.7	67.2	64.1	60.6
10°	97.7	94.1	89.7	85.8	83.5	81.3	76.9	72.0	67.6	63.2	59.2
12.5°	105.6	100.8	95.5	90.2	87.5	84.9	79.6	73.8	68.5	62.8	57.5
15°	113.6	107.4	101.2	95.0	91.9	88.4	82.2	75.6	69.0	62.3	56.1
17.5°	121.1	114.0	106.5	99.0	95.5	91.5	84.0	76.5	69.0	61.4	54.8
20°	126.9	119.8	110.9	102.5	98.6	94.6	85.8	77.4	69.0	60.6	53.0
22.5°	132.6	124.6	116.3	106.1	101.7	96.8	87.1	77.8	68.5	59.2	50.8
25°	137.9	129.5	120.2	109.2	104.3	99.0	88.4	78.2	68.1	58.3	49.1
27.5°	142.8	133.9	123.8	111.8	106.5	100.8	89.7	78.2	67.2	57.0	47.3
30°	146.3	137.0	126.4	115.4	108.3	102.5	90.2	78.2	66.3	55.3	45.5
32.5°	149.0	139.7	129.1	117.1	110.1	103.4	90.6	77.8	65.4	53.9	43.3
35°	151.6	141.9	130.8	118.5	110.9	104.3	90.6	76.9	64.1	52.2	41.1
37.5°	153.8	143.7	132.6	119.3	111.8	104.8	90.6	76.5	62.8	50.4	39.3
40°	154.7	145.0	133.5	120.2	112.3	105.2	90.2	75.6	61.4	48.6	37.6
42.5°	155.6	145.9	133.9	120.7	112.3	104.8	89.3	74.3	59.7	46.9	35.8
45°	155.6	145.9	133.9	120.7	112.3	104.8	88.8	72.9	57.9	45.1	33.6
47.5°	155.1	145.4	133.9	120.2	111.8	103.9	87.5	71.6	56.6	43.3	31.8
50°	154.3	144.5	133.0	119.8	110.9	103.0	86.6	69.8	54.8	41.5	30.5
52.5°	152.1	143.2	131.7	118.5	109.6	102.1	84.9	68.5	53.0	39.8	28.7
55°	150.3	141.4	130.4	116.7	108.3	100.3	83.5	66.7	51.3	38.0	27.4
57.5°	147.2	139.2	128.2	114.5	106.5	98.6	81.8	65.0	49.5	36.2	26.1
60°	144.1	136.1	125.5	111.8	104.3	96.8	80.0	63.2	47.7	34.9	24.8
62.5°	140.1	132.6	122.9	109.2	102.1	94.6	77.8	61.0	46.0	33.2	23.4
65°	135.7	129.1	119.8	106.5	99.9	92.4	75.6	59.2	44.2	31.8	22.1
67.5°	130.8	125.1	116.3	103.9	97.2	89.7	73.4	57.5	42.4	30.5	21.2
70°	126.0	120.7	111.4	100.8	94.1	87.1	71.2	55.3	41.1	29.2	19.9
72.5°	120.2	115.4	107.0	96.8	90.6	84.0	69.0	53.5	39.3	27.8	19.0
75°	113.6	109.2	102.5	93.3	87.5	80.9	66.3	51.3	37.6	26.5	18.1
77.5°	107.0	103.9	98.1	89.3	84.0	77.8	63.7	49.5	36.2	25.2	16.8
80°	100.8	98.1	93.3	84.9	80.0	74.3	61.0	47.3	34.5	24.3	15.9
82.5°	94.1	92.4	88.0	80.4	76.0	70.7	58.3	45.1	33.2	23.0	15.0
85°	87.5	86.2	82.7	76.0	72.0	66.7	55.7	42.9	31.4	21.7	14.1
87.5°	81.3	80.4	77.4	71.6	68.1	63.7	52.6	41.1	30.1	20.8	13.7
90°	74.7	74.3	72.0	67.2	64.1	59.7	49.9	38.9	28.3	19.4	12.8
92.5°	68.5	68.1	66.7	62.3	59.2	55.7	46.4	36.2	26.5	18.1	11.5
95°	62.3	62.8	61.4	57.5	55.3	51.7	43.3	34.0	24.8	16.8	11.1
97.5°	56.6	57.0	56.1	53.0	50.8	48.2	40.7	31.8	23.4	15.9	10.2
100°	50.8	51.7	51.3	48.6	46.9	44.2	37.6	29.6	22.1	15.0	9.7
102.5°	46.0	46.4	46.0	44.2	42.4	40.2	34.9	27.8	20.3	14.1	8.8
105°	40.7	41.5	41.5	39.8	38.5	36.7	31.8	25.6	19.0	12.8	8.4
107.5°	36.2	37.1	36.7	35.8	34.5	32.7	28.7	23.4	17.7	11.9	7.5
110°	31.8	33.2	32.7	31.8	30.5	29.2	25.6	21.2	15.9	11.1	7.1



TEST NUMBER: P190123

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

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	28.3	28.7	28.7	27.8	27.0	25.6	23.0	19.0	14.6	10.2	6.6
115°	24.8	25.2	24.8	24.3	23.4	22.5	20.3	16.8	12.8	9.3	6.2
117.5°	21.7	21.7	21.7	21.2	20.3	19.9	17.7	14.6	11.5	8.4	5.3
120°	18.6	18.6	18.6	18.1	17.2	16.8	15.0	12.8	10.2	7.1	4.9
122.5°	15.9	16.4	15.9	15.5	14.6	14.1	12.8	11.1	8.8	6.2	4.4
125°	13.7	13.7	13.3	12.8	12.4	11.9	10.6	9.3	7.1	5.3	3.5
127.5°	11.5	11.5	11.1	10.6	10.2	9.7	8.8	7.5	6.2	4.4	3.1
130°	9.7	9.7	9.3	8.8	8.4	8.0	7.1	6.2	4.9	4.0	2.7
132.5°	8.0	8.0	7.5	7.1	6.6	6.6	5.7	4.9	4.0	3.1	2.2
135°	6.6	6.6	6.2	5.7	5.3	5.3	4.9	4.0	3.1	2.7	1.8
137.5°	5.3	5.3	4.9	4.4	4.4	4.0	3.5	3.1	2.7	2.2	1.8
140°	4.4	4.4	4.0	3.5	3.5	3.1	3.1	2.7	2.2	1.8	1.3
142.5°	3.5	3.5	3.1	3.1	2.7	2.7	2.2	2.2	1.8	1.8	1.3
145°	3.1	3.1	2.7	2.7	2.2	2.2	2.2	1.8	1.8	1.3	1.3
147.5°	2.7	2.7	2.2	2.2	2.2	1.8	1.8	1.8	1.3	1.3	1.3
150°	2.2	2.2	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.3
152.5°	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.3	1.3	1.3
155°	1.8	1.8	1.8	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
157.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
160°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
162.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
165°	1.3	1.3	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
167.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
170°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
172.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
175°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
177.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
180°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8



TEST NUMBER: P190123

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

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	64.1	64.1	64.1	64.1	64.1	64.1	64.1	64.1	64.1	64.1	64.1
2.5°	61.4	60.6	59.2	58.8	58.3	57.0	55.7	54.8	53.5	53.0	52.2
5°	59.7	57.5	55.3	54.4	53.0	51.3	49.5	47.7	46.0	44.6	43.3
7.5°	57.5	54.4	51.3	49.9	48.2	46.0	43.3	41.1	38.9	37.1	35.8
10°	54.8	50.8	47.3	45.5	43.8	40.2	37.1	34.5	32.3	30.1	28.7
12.5°	52.6	47.7	43.3	41.5	39.3	35.4	32.3	29.2	26.5	24.3	22.5
15°	50.4	45.1	40.2	37.6	35.4	31.4	27.4	24.3	21.7	19.4	18.1
17.5°	48.2	42.0	36.7	34.0	31.8	27.4	23.4	19.9	17.7	16.4	15.5
20°	45.5	39.3	33.6	30.9	28.3	23.4	19.9	17.2	15.5	14.6	13.7
22.5°	43.3	36.2	30.5	27.8	25.2	20.3	17.2	15.0	14.1	13.3	13.3
25°	40.7	34.0	27.4	24.8	22.1	17.7	15.0	13.7	13.3	12.8	13.3
27.5°	38.5	31.4	25.2	22.1	19.4	15.9	13.7	12.8	12.8	13.3	13.3
30°	36.2	29.2	22.5	19.9	17.2	14.6	13.3	12.4	12.8	12.8	12.8
32.5°	34.5	27.0	20.3	17.7	15.9	13.3	12.4	12.8	12.8	12.8	12.4
35°	32.3	24.8	18.1	15.9	14.1	12.8	12.4	12.4	12.4	11.9	11.9
37.5°	30.1	22.5	16.8	15.0	13.3	11.9	12.4	12.4	11.9	11.9	11.5
40°	28.3	20.8	15.5	13.7	12.4	11.9	12.4	12.4	11.9	11.5	11.1
42.5°	26.5	19.4	14.1	12.8	11.9	11.5	11.9	11.9	11.5	11.1	10.6
45°	24.8	17.7	13.3	11.9	11.5	11.5	11.9	11.5	11.1	11.1	10.6
47.5°	23.0	16.4	12.4	11.5	10.6	11.5	11.5	11.1	11.1	10.6	9.7
50°	21.7	15.0	11.5	10.6	10.6	11.1	11.1	11.1	10.6	10.2	9.3
52.5°	20.3	14.1	11.1	10.2	10.2	11.1	11.1	10.6	10.2	9.7	8.8
55°	19.0	13.3	10.2	9.7	9.7	10.6	10.6	10.6	9.7	9.3	8.0
57.5°	18.1	12.4	9.7	9.3	9.7	10.6	10.6	10.2	9.7	8.8	7.5
60°	16.8	11.5	9.3	9.3	9.7	10.2	10.2	9.7	9.3	8.4	7.1
62.5°	15.9	10.6	8.8	8.8	9.3	9.7	9.7	9.7	8.8	7.5	6.6
65°	15.0	10.2	8.0	8.4	8.8	9.3	9.7	9.3	8.4	7.1	5.7
67.5°	14.1	9.3	8.0	8.0	8.8	9.3	9.3	8.8	8.0	6.6	5.3
70°	13.3	8.8	7.5	8.0	8.4	8.8	8.8	8.4	7.5	6.2	4.9
72.5°	12.4	8.0	7.1	7.5	8.0	8.4	8.8	8.0	7.1	5.7	4.9
75°	11.5	7.5	6.6	7.1	7.5	8.4	8.4	8.0	6.6	5.3	4.4
77.5°	11.1	7.1	6.2	6.6	7.1	8.0	8.0	7.5	6.2	5.3	4.0
80°	10.2	6.6	6.2	6.6	7.1	8.0	8.0	7.1	6.2	4.9	4.0
82.5°	9.7	6.2	5.7	6.2	6.6	7.5	7.5	6.6	5.7	4.4	3.5
85°	8.8	5.7	5.7	6.2	6.6	7.1	7.1	6.6	5.3	4.4	3.5
87.5°	8.4	5.3	5.3	5.7	6.2	7.1	7.1	6.2	5.3	4.0	3.1
90°	8.0	4.9	4.9	5.3	6.2	6.6	6.6	5.7	4.9	4.0	3.1
92.5°	7.1	4.4	4.4	4.9	5.3	5.7	5.7	5.3	4.4	3.5	2.7
95°	6.6	4.0	4.0	4.4	4.9	5.7	5.7	4.9	4.0	3.1	2.7
97.5°	6.2	4.0	3.5	4.0	4.4	5.3	5.3	4.9	4.0	3.1	2.7
100°	5.7	3.5	3.5	4.0	4.4	4.9	4.9	4.4	4.0	3.1	2.7
102.5°	5.3	3.1	3.1	3.5	4.0	4.4	4.9	4.4	4.0	3.1	2.2
105°	4.9	2.7	3.1	3.1	3.5	4.4	4.9	4.4	3.5	3.1	2.7
107.5°	4.4	2.7	2.7	3.1	3.5	4.0	4.4	4.4	3.5	3.1	2.7
110°	4.0	2.2	2.7	2.7	3.1	4.0	4.4	4.0	3.5	3.1	2.7



TEST NUMBER: P190123

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

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	4.0	2.2	2.2	2.7	3.1	3.5	4.0	4.0	3.5	3.1	2.7
115°	3.5	2.2	2.2	2.7	2.7	3.5	4.0	4.0	3.5	3.1	2.7
117.5°	3.5	2.2	2.2	2.7	2.7	3.5	4.0	4.0	3.5	3.1	2.7
120°	3.1	1.8	2.2	2.2	2.7	3.1	3.5	4.0	3.5	3.1	2.7
122.5°	2.7	1.8	2.2	2.2	2.7	3.1	3.5	3.5	3.5	3.1	2.7
125°	2.7	1.8	1.8	2.2	2.2	2.7	3.1	3.5	3.5	3.1	2.7
127.5°	2.2	1.8	1.8	1.8	2.2	2.7	3.1	3.1	3.5	3.1	2.7
130°	1.8	1.8	1.8	1.8	2.2	2.2	2.7	3.1	3.1	3.1	3.1
132.5°	1.8	1.8	1.8	1.8	1.8	2.2	2.7	2.7	3.1	3.1	3.1
135°	1.8	1.3	1.8	1.8	1.8	2.2	2.2	2.7	2.7	2.7	2.7
137.5°	1.3	1.3	1.3	1.8	1.8	1.8	2.2	2.2	2.7	2.7	2.7
140°	1.3	1.3	1.3	1.3	1.8	1.8	1.8	2.2	2.2	2.2	2.2
142.5°	1.3	1.3	1.3	1.3	1.3	1.8	1.8	1.8	2.2	2.2	2.2
145°	1.3	1.3	1.3	1.3	1.3	1.8	1.8	1.8	1.8	1.8	2.2
147.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.8	1.8	1.8	1.8	1.8
150°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.8	1.8	1.8	1.8
152.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.8
155°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.8
157.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.8
160°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
162.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
165°	1.8	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
167.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.3	1.3
170°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.3
172.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.3
175°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.3
177.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.3	1.3
180°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8



TEST NUMBER: P190123

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

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	64.1	64.1	64.1	64.1	64.1	64.1	64.1	64.1
2.5°	51.3	50.8	50.8	50.8	49.9	49.9	49.5	49.5
5°	42.0	41.1	40.7	40.7	39.8	39.8	39.3	38.9
7.5°	34.0	33.2	32.3	31.8	30.9	30.9	30.5	30.5
10°	26.5	25.6	24.8	24.3	23.4	23.0	22.5	22.5
12.5°	20.8	19.9	19.0	19.0	18.1	17.7	17.7	17.2
15°	16.8	15.9	15.9	15.5	15.0	15.0	15.0	14.6
17.5°	14.6	14.1	14.1	14.1	13.7	13.7	13.7	13.7
20°	13.3	13.3	13.3	13.3	13.3	13.7	13.7	13.7
22.5°	13.3	13.3	13.7	13.7	13.7	13.7	13.7	13.7
25°	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3
27.5°	13.3	12.8	12.8	12.8	12.8	12.4	12.4	12.4
30°	12.4	12.4	12.4	12.4	11.9	11.9	11.9	11.9
32.5°	11.9	11.9	11.9	11.9	11.5	11.5	11.5	11.5
35°	11.5	11.5	11.1	11.1	11.1	11.1	10.6	10.6
37.5°	11.1	11.1	10.6	10.6	10.6	10.2	10.2	10.2
40°	11.1	10.6	10.2	10.2	9.7	9.3	9.3	9.3
42.5°	10.6	9.7	9.7	9.3	8.8	8.4	8.4	8.4
45°	9.7	9.3	8.8	8.4	8.0	7.5	7.5	7.5
47.5°	9.3	8.4	8.0	7.5	7.1	6.6	6.6	6.6
50°	8.4	7.5	7.1	7.1	6.2	5.7	5.7	5.3
52.5°	8.0	7.1	6.6	6.2	5.3	4.9	4.9	4.9
55°	7.1	6.2	5.7	5.3	4.9	4.4	4.0	4.0
57.5°	6.6	5.3	5.3	4.9	4.0	3.5	3.5	3.1
60°	5.7	4.9	4.4	4.0	3.5	3.1	2.7	2.7
62.5°	5.3	4.4	4.0	3.5	3.1	2.7	2.2	2.2
65°	4.9	4.0	3.5	3.1	2.7	2.2	1.8	1.8
67.5°	4.4	3.5	3.1	3.1	2.2	1.8	1.8	1.3
70°	4.0	3.1	3.1	2.7	1.8	1.8	1.3	1.3
72.5°	3.5	3.1	2.7	2.2	1.8	1.3	0.9	0.9
75°	3.5	2.7	2.2	2.2	1.8	1.3	0.9	0.9
77.5°	3.1	2.7	2.2	2.2	1.3	0.9	0.9	0.9
80°	3.1	2.2	2.2	1.8	1.3	0.9	0.9	0.9
82.5°	2.7	2.2	1.8	1.8	1.3	0.9	0.9	0.9
85°	2.7	1.8	1.8	1.3	0.9	0.9	0.4	0.4
87.5°	2.2	1.8	1.8	1.3	0.9	0.9	0.4	0.4
90°	2.2	1.8	1.3	1.3	0.9	0.4	0.4	0.4
92.5°	2.2	1.8	1.3	1.3	1.3	0.9	0.9	0.9
95°	2.2	1.8	1.3	1.3	1.3	0.9	0.9	0.9
97.5°	1.8	1.3	1.3	1.3	1.3	0.9	0.9	0.9
100°	1.8	1.8	1.3	1.3	1.3	0.9	0.9	0.9
102.5°	1.8	1.8	1.3	1.3	1.3	0.9	0.9	0.9
105°	1.8	1.8	1.3	1.3	1.3	0.9	0.9	0.9
107.5°	2.2	1.8	1.3	1.3	1.3	0.9	0.9	0.9
110°	2.2	1.8	1.3	1.3	1.3	0.9	0.9	0.9



TEST NUMBER: P190123

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

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
112.5°	2.2	1.8	1.8	1.3	1.3	0.9	0.9	0.9
115°	2.2	1.8	1.8	1.8	1.3	1.3	1.3	0.9
117.5°	2.2	2.2	1.8	1.8	1.3	1.3	1.3	1.3
120°	2.2	1.8	1.8	1.8	1.3	1.3	1.3	1.3
122.5°	2.7	2.2	1.8	1.8	1.3	1.3	1.3	1.3
125°	2.2	2.2	1.8	1.8	1.8	1.3	1.3	1.3
127.5°	2.7	2.2	2.2	1.8	1.8	1.8	1.8	1.8
130°	2.7	2.2	2.2	2.2	1.8	1.8	1.8	1.8
132.5°	2.7	2.2	2.2	2.2	2.2	1.8	1.8	1.8
135°	2.7	2.2	2.2	2.2	2.2	1.8	1.8	1.8
137.5°	2.7	2.7	2.2	2.2	2.2	2.2	1.8	1.8
140°	2.7	2.2	2.2	2.2	2.2	2.2	2.2	2.2
142.5°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
145°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
147.5°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
150°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
152.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
155°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
157.5°	1.3	1.8	1.8	1.8	1.8	1.8	1.3	1.3
160°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
162.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
165°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
167.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
170°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
172.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
175°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.9
177.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
180°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8

(END OF REPORT)