

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: P190119

Luminaire Tested: **TRE11-LD4-15W-50-OPL-BK-UNV-EDC1-CSTG**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P190119
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-LD4-15W-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 300mA
OT25W/1

Summary

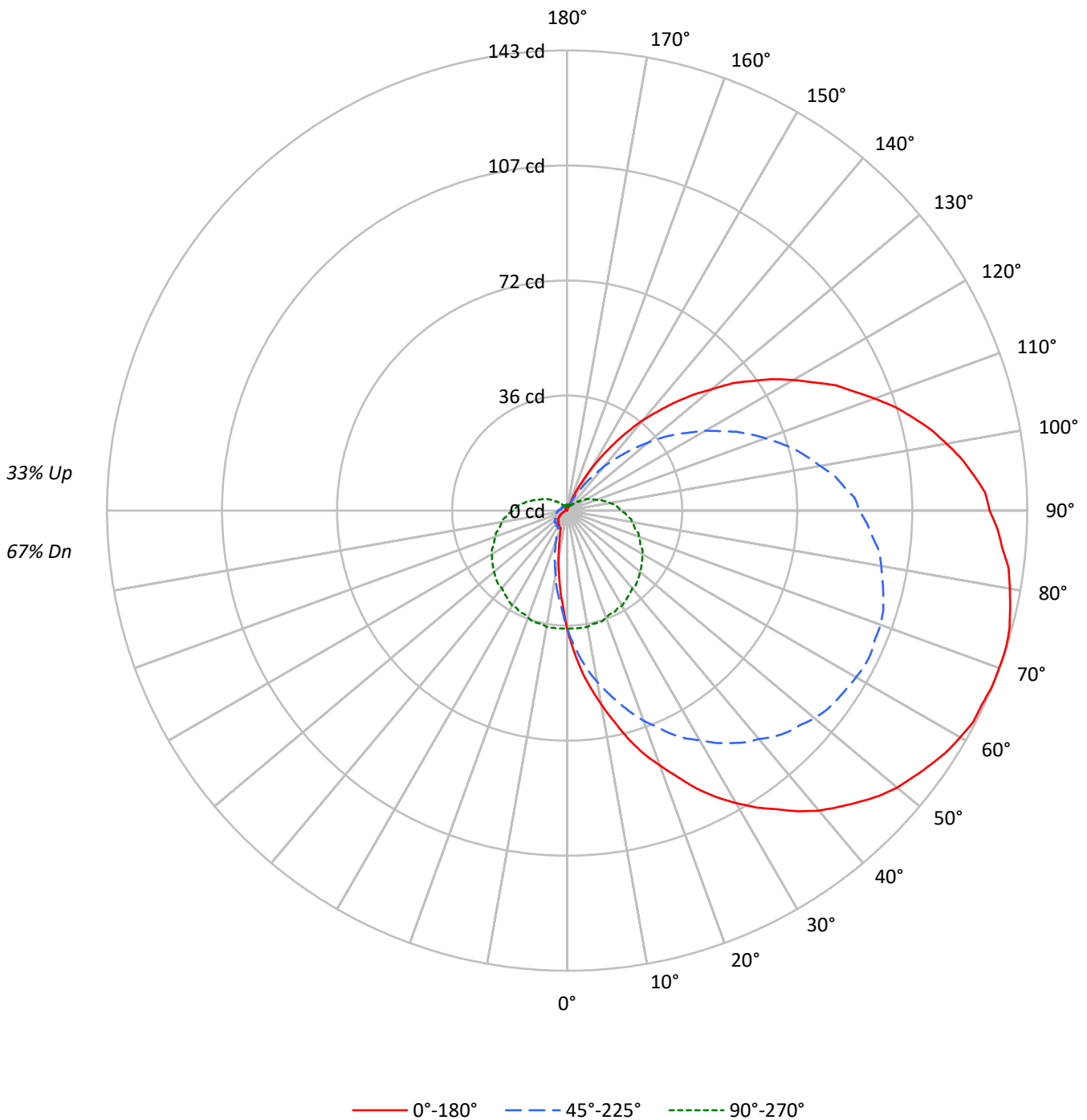
Lumens per Lamp: N/A
Luminaire Lumens: 448.0 lumens
Efficiency: N/A
Efficacy: 31.3 lumens/watt
Spacing Criteria (0/90/45): 2.37 / 1.38 / 2.12
Luminous Opening: Rectangular w/ Sides (W: 0.92' x L: 0.29' x H: 0.92')
CIE Type: Semi-Direct

Input Watts (W): 14.3
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

TEST NUMBER: P190119

CATALOG NUMBER: TRE11-LD4-15W-50-OPL-BK-UNV-EDC1-CSTG

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°	1478	1478	1478
5°	1572	1364	777
10°	1610	1275	408
15°	1661	1187	204
20°	1685	1112	116
25°	1717	1054	104
30°	1733	1005	86
35°	1740	948	69
40°	1759	900	65
45°	1760	880	54
50°	1767	846	42
55°	1762	818	33
60°	1762	796	24
65°	1751	760	16
70°	1746	748	16
75°	1739	720	7
80°	1721	716	7
85°	1699	695	8



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	3.5	0.8
10°-20°	11.0	2.4
20°-30°	19.6	4.4
30°-40°	29.1	6.5
40°-50°	38.3	8.5
50°-60°	45.8	10.2
60°-70°	50.7	11.3
70°-80°	52.4	11.7
80°-90°	50.4	11.3
90°-100°	45.6	10.2
100°-110°	37.7	8.4
110°-120°	28.3	6.3
120°-130°	18.9	4.2
130°-140°	10.6	2.4
140°-150°	4.5	1.0
150°-160°	1.2	0.3
160°-170°	0.3	0.1
170°-180°	0.1	0.0
0°-30°	34.1	7.6
0°-40°	63.2	14.1
0°-60°	147.3	32.9
0°-90°	300.9	67.2
90°-120°	111.6	24.9
90°-150°	145.5	32.5
90°-180°	147.0	32.8
0°-180°	448.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	37	37	37	37	37	
5°	50	46	37	28	24	5
15°	73	62	36	15	9	21
25°	95	77	35	7	6	44
35°	113	88	33	6	4	71
45°	128	97	31	5	4	99
55°	138	102	28	4	3	124
65°	142	104	25	4	1	141
75°	142	102	22	4	1	150
85°	136	95	19	3	1	112
90°	131	91	17	3	1	72
95°	127	86	16	3	1	102
105°	111	73	12	2	1	118
115°	92	58	8	2	1	91
125°	70	41	6	2	1	63
135°	48	25	3	1	1	37
145°	25	12	2	1	1	16
155°	6	3	2	1	1	3
165°	1	1	1	1	1	0
175°	1	1	2	1	1	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°	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7
2.5°	43.1	43.1	43.1	43.1	43.1	42.5	42.5	42.5	42.5	41.8	41.2
5°	49.6	48.9	48.9	48.9	48.9	48.3	47.6	47.6	47.0	46.4	45.7
7.5°	55.4	55.4	54.7	54.7	54.1	53.4	53.4	52.8	52.1	50.9	50.2
10°	61.2	61.2	60.5	60.5	59.9	59.2	58.6	57.9	56.7	55.4	54.1
12.5°	67.0	67.0	66.3	66.3	65.0	64.4	64.4	63.1	61.2	59.9	57.9
15°	73.4	72.7	72.7	71.5	70.8	70.2	69.5	68.2	66.3	64.4	61.8
17.5°	79.2	79.2	77.9	77.3	76.0	75.3	74.7	72.7	70.8	68.2	65.7
20°	84.3	84.3	83.0	82.4	81.1	80.5	79.2	77.3	75.3	72.7	69.5
22.5°	89.5	89.5	88.2	87.6	85.6	85.0	83.7	81.8	79.2	76.0	72.7
25°	95.3	94.6	94.0	92.7	90.8	90.1	88.8	86.3	83.7	79.8	76.6
27.5°	100.4	99.8	99.1	97.9	95.9	94.6	93.3	90.8	87.6	83.7	79.8
30°	104.9	104.3	103.7	102.4	100.4	99.1	97.2	94.6	90.8	86.9	82.4
32.5°	109.4	108.8	108.2	106.2	104.3	103.0	101.7	98.5	94.6	90.1	85.6
35°	113.3	112.7	112.0	110.7	108.2	106.9	104.9	101.7	97.9	93.3	88.2
37.5°	117.8	117.2	115.9	114.6	112.0	110.7	108.8	104.9	101.1	95.9	90.8
40°	121.7	121.0	119.7	118.5	115.2	114.0	112.0	108.2	103.7	98.5	92.7
42.5°	124.9	124.3	123.0	121.7	118.5	117.2	115.2	111.4	106.2	101.1	95.3
45°	128.1	127.5	126.2	124.9	121.7	120.4	118.5	114.0	108.8	103.7	97.2
47.5°	131.3	130.7	129.4	127.5	124.3	122.3	120.4	116.5	110.7	105.6	98.5
50°	133.9	133.3	132.0	130.0	126.8	124.9	123.0	118.5	113.3	106.9	100.4
52.5°	135.8	135.2	133.9	132.0	128.8	126.8	124.9	120.4	114.6	108.2	101.7
55°	137.8	137.1	135.8	133.9	130.7	128.8	126.8	121.7	115.9	109.4	102.4
57.5°	139.7	139.1	137.8	135.2	132.0	130.0	128.1	123.0	117.2	110.7	103.0
60°	141.0	140.3	139.1	136.5	133.3	131.3	128.8	123.6	117.8	111.4	103.7
62.5°	142.3	141.6	139.7	137.1	133.9	132.0	130.0	124.3	118.5	111.4	104.3
65°	142.3	142.3	140.3	137.8	134.6	132.6	130.0	124.9	119.1	112.0	104.3
67.5°	142.9	142.3	141.0	138.4	134.6	132.6	130.7	124.9	119.1	112.0	103.7
70°	142.9	142.3	141.0	138.4	135.2	132.6	130.7	124.9	118.5	111.4	103.7
72.5°	142.9	142.3	140.3	137.8	134.6	132.6	130.0	124.3	117.8	110.7	103.0
75°	142.3	141.6	139.7	137.1	133.9	132.0	129.4	123.6	117.2	110.1	101.7
77.5°	141.0	140.3	139.1	136.5	132.6	130.7	128.1	123.0	116.5	108.8	100.4
80°	139.7	139.1	137.8	135.2	131.3	129.4	126.8	121.0	114.6	107.5	99.1
82.5°	138.4	137.8	135.8	133.3	130.0	127.5	124.9	119.7	113.3	105.6	97.9
85°	135.8	135.8	133.9	131.3	127.5	125.5	123.0	117.2	111.4	103.7	95.3
87.5°	133.9	133.3	131.3	128.8	125.5	123.0	121.0	115.2	108.8	101.1	93.3
90°	131.3	130.7	128.8	126.8	123.0	121.0	118.5	112.7	106.2	99.1	90.8
92.5°	130.0	129.4	127.5	124.9	121.7	119.7	116.5	111.4	104.9	97.2	89.5
95°	126.8	126.2	124.9	121.7	118.5	116.5	114.0	108.2	101.7	94.6	86.3
97.5°	123.6	123.0	121.7	118.5	115.2	113.3	110.7	104.9	98.5	91.4	83.7
100°	119.7	119.1	117.8	115.2	111.4	109.4	106.9	101.7	95.3	88.2	79.8
102.5°	115.9	115.2	113.3	110.7	107.5	105.6	103.0	97.9	91.4	84.3	76.6
105°	111.4	110.7	109.4	106.9	103.7	101.7	99.1	93.3	87.6	80.5	73.4
107.5°	106.9	106.2	104.9	102.4	99.1	97.2	94.6	89.5	83.7	76.6	69.5
110°	101.7	101.1	99.8	97.2	94.0	92.1	90.1	85.0	79.2	72.7	65.7



TEST NUMBER: P190119

CATALOG NUMBER: TRE11-LD4-15W-50-OPL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	96.6	96.6	95.3	92.7	89.5	87.6	85.6	80.5	74.7	68.2	61.8
115°	92.1	91.4	90.1	87.6	85.0	83.0	80.5	76.0	70.2	64.4	57.9
117.5°	86.3	86.3	85.0	82.4	79.8	77.9	76.0	70.8	65.7	59.9	53.4
120°	81.1	81.1	79.8	77.3	74.7	72.7	70.8	66.3	61.2	55.4	49.6
122.5°	76.0	75.3	74.0	72.1	69.5	67.6	65.7	61.8	56.7	50.9	45.1
125°	70.2	70.2	68.9	67.0	63.7	62.4	60.5	56.7	51.5	46.4	41.2
127.5°	65.0	64.4	63.1	61.2	58.6	57.3	55.4	51.5	47.0	41.8	37.3
130°	58.6	58.6	57.3	56.0	53.4	51.5	50.2	46.4	42.5	38.0	32.8
132.5°	53.4	52.8	51.5	50.2	47.6	46.4	45.1	41.8	37.3	33.5	29.0
135°	47.6	47.0	46.4	44.4	42.5	41.2	39.9	36.7	32.8	29.0	25.1
137.5°	41.8	41.2	40.6	39.3	36.7	36.1	34.8	31.5	28.3	24.5	21.2
140°	36.7	35.4	34.8	33.5	31.5	30.9	29.6	26.4	23.8	20.6	18.0
142.5°	30.9	30.3	29.6	28.3	26.4	25.8	24.5	21.9	19.3	16.7	14.2
145°	25.1	24.5	23.8	23.2	21.2	20.6	20.0	17.4	15.5	13.5	11.6
147.5°	20.0	19.3	19.3	18.0	16.7	16.1	15.5	13.5	11.6	10.3	8.4
150°	14.8	14.8	14.2	13.5	12.2	11.6	10.9	9.7	8.4	7.1	6.4
152.5°	10.3	9.7	9.7	9.0	8.4	7.7	7.1	6.4	5.8	5.2	4.5
155°	6.4	5.8	5.8	5.8	4.5	4.5	4.5	3.9	3.2	3.2	2.6
157.5°	2.6	2.6	2.6	2.6	2.6	2.6	1.9	1.9	1.9	1.9	1.9
160°	0.6	0.6	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
162.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	1.3	1.3	1.3	1.3
165°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	1.3	1.3	1.3	1.3
167.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	1.3	1.3	1.3	1.3
170°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	1.3	1.3	1.3	1.3
172.5°	0.6	0.6	0.6	0.6	1.3	0.6	1.3	1.3	1.3	1.3	1.3
175°	0.6	1.3	0.6	0.6	1.3	1.3	1.3	1.3	1.3	1.3	1.3
177.5°	0.6	0.6	0.6	0.6	1.3	1.3	1.3	1.3	1.3	1.3	1.3
180°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3



TEST NUMBER: P190119

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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7
2.5°	41.2	40.6	40.6	39.9	39.3	39.3	38.6	38.0	37.3	36.7	36.1
5°	45.1	43.8	43.1	42.5	41.8	41.2	39.9	39.3	38.0	36.7	36.1
7.5°	48.9	47.6	46.4	44.4	43.8	43.1	41.8	39.9	38.6	36.7	35.4
10°	52.1	50.9	48.9	47.0	45.7	45.1	42.5	40.6	38.6	36.7	34.8
12.5°	56.0	53.4	51.5	48.9	47.6	46.4	43.8	41.2	38.6	36.1	34.1
15°	59.2	56.7	54.1	51.5	49.6	48.3	45.1	42.5	39.3	36.1	33.5
17.5°	63.1	59.9	56.7	53.4	51.5	50.2	46.4	43.1	39.3	36.1	32.8
20°	66.3	62.4	59.2	55.4	53.4	51.5	47.0	43.1	39.3	35.4	31.5
22.5°	68.9	65.0	61.2	56.7	54.7	52.1	48.3	43.8	39.3	34.8	30.9
25°	72.1	68.2	63.1	58.6	56.0	54.1	48.9	43.8	39.3	34.8	30.3
27.5°	75.3	70.2	65.7	60.5	57.9	54.7	49.6	44.4	39.3	34.1	29.6
30°	77.9	72.7	67.0	61.8	58.6	56.0	50.2	44.4	39.3	34.1	29.0
32.5°	80.5	74.7	68.9	63.1	59.9	56.7	50.9	45.1	39.3	33.5	28.3
35°	82.4	76.6	70.8	64.4	61.2	57.9	51.5	45.1	38.6	32.8	27.7
37.5°	85.0	78.5	72.1	65.0	61.8	58.6	51.5	45.1	38.6	32.2	26.4
40°	86.9	80.5	73.4	66.3	62.4	59.2	52.1	45.1	38.0	31.5	25.8
42.5°	88.8	81.8	74.7	67.0	63.1	59.2	52.1	44.4	38.0	31.5	25.1
45°	90.1	83.0	75.3	67.6	63.7	59.9	52.1	44.4	37.3	30.9	24.5
47.5°	91.4	84.3	76.6	68.2	64.4	59.9	52.1	44.4	36.7	30.3	23.8
50°	92.7	85.0	77.3	68.9	64.4	60.5	52.1	43.8	36.7	29.6	23.2
52.5°	94.0	85.6	77.3	68.9	64.4	60.5	51.5	43.8	36.1	29.0	22.5
55°	94.6	86.3	77.9	68.9	64.4	59.9	51.5	43.1	35.4	28.3	21.9
57.5°	95.3	86.9	77.9	68.9	64.4	59.9	50.9	42.5	34.8	27.7	21.2
60°	95.3	86.9	77.9	68.9	64.4	59.2	50.2	41.8	34.1	27.0	20.6
62.5°	95.9	86.9	77.9	68.2	63.7	59.2	49.6	41.2	33.5	26.4	20.0
65°	95.3	86.9	77.3	67.6	63.1	58.6	48.9	40.6	32.2	25.1	19.3
67.5°	95.3	86.3	76.6	67.0	62.4	57.9	48.3	39.9	31.5	24.5	18.7
70°	94.6	85.6	76.0	66.3	61.8	56.7	47.6	38.6	30.9	23.8	18.0
72.5°	94.0	85.0	75.3	65.7	60.5	56.0	46.4	38.0	30.3	23.2	17.4
75°	93.3	83.7	74.0	64.4	59.9	54.7	45.7	36.7	29.0	21.9	16.7
77.5°	92.1	82.4	72.7	63.1	58.6	53.4	44.4	36.1	28.3	21.2	15.5
80°	90.1	81.1	71.5	61.8	56.7	52.1	43.1	34.8	27.0	20.6	14.8
82.5°	88.8	79.8	69.5	59.9	55.4	50.9	41.8	33.5	26.4	20.0	14.2
85°	86.9	77.3	67.6	58.6	53.4	48.9	40.6	32.2	25.1	18.7	13.5
87.5°	84.3	75.3	65.7	56.7	52.1	47.0	38.6	30.9	23.8	18.0	12.9
90°	82.4	73.4	63.7	54.7	50.2	45.7	37.3	29.6	22.5	16.7	12.2
92.5°	80.5	71.5	62.4	53.4	48.3	44.4	36.1	28.3	21.9	16.1	11.6
95°	77.9	68.9	59.9	50.9	46.4	42.5	34.1	27.0	20.6	15.5	10.9
97.5°	75.3	66.3	57.3	48.9	44.4	40.6	32.8	25.8	19.3	14.8	10.3
100°	72.1	63.1	54.7	46.4	41.8	38.0	30.9	23.8	18.0	13.5	9.7
102.5°	68.9	59.9	51.5	43.8	39.9	36.1	29.0	22.5	17.4	12.9	9.0
105°	65.0	57.3	48.9	41.2	37.3	33.5	27.0	21.2	16.1	11.6	8.4
107.5°	61.8	53.4	46.4	38.6	34.8	31.5	25.1	19.3	14.8	10.9	7.7
110°	57.9	50.2	43.1	36.1	32.2	29.0	23.2	18.0	13.5	9.7	7.1



TEST NUMBER: P190119

CATALOG NUMBER: TRE11-LD4-15W-50-OPL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	54.7	47.0	39.9	33.5	30.3	27.0	21.2	16.7	12.2	9.0	6.4
115°	50.9	43.8	37.3	30.9	27.7	24.5	19.3	14.8	11.6	8.4	5.8
117.5°	47.0	40.6	34.1	28.3	25.1	22.5	18.0	13.5	10.3	7.7	5.8
120°	43.1	36.7	30.9	25.8	23.2	20.6	16.1	12.2	9.0	7.1	5.2
122.5°	39.3	33.5	28.3	23.2	20.6	18.7	14.2	10.9	8.4	6.4	4.5
125°	35.4	30.3	25.1	20.6	18.7	16.7	12.9	9.7	7.1	5.8	3.9
127.5°	31.5	27.0	21.9	18.0	16.1	14.2	10.9	8.4	6.4	4.5	3.9
130°	28.3	23.8	19.3	16.1	14.2	12.9	9.7	7.7	5.8	4.5	3.2
132.5°	24.5	20.6	16.7	13.5	12.2	10.9	8.4	6.4	5.2	3.9	3.2
135°	21.2	17.4	14.2	11.6	10.3	9.0	7.1	5.2	3.9	3.2	2.6
137.5°	18.0	14.8	12.2	9.7	8.4	7.7	5.8	4.5	3.9	2.6	2.6
140°	14.8	12.2	10.3	8.4	7.1	6.4	5.2	3.9	3.2	2.6	1.9
142.5°	12.2	9.7	8.4	6.4	5.8	5.2	3.9	3.2	2.6	1.9	1.9
145°	9.7	7.7	6.4	5.2	4.5	3.9	3.2	2.6	2.6	1.9	1.9
147.5°	7.1	5.8	5.2	3.9	3.9	3.2	2.6	2.6	1.9	1.9	1.9
150°	5.2	4.5	3.9	3.2	2.6	2.6	1.9	1.9	1.9	1.9	1.9
152.5°	3.9	3.2	2.6	2.6	1.9	1.9	1.9	1.9	1.9	1.3	1.3
155°	2.6	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
157.5°	1.9	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	1.9	1.9
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	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.9
167.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.9	1.9
170°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.9	1.3	1.9	1.9
172.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.9	1.9	1.9	1.9
175°	1.3	1.3	1.3	1.9	1.3	1.9	1.9	1.9	1.9	1.9	1.9
177.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.9	1.9	1.9	1.9	1.9
180°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3



TEST NUMBER: P190119

CATALOG NUMBER: TRE11-LD4-15W-50-OPL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7
2.5°	36.1	35.4	34.8	34.1	34.1	33.5	32.8	32.2	31.5	30.9	30.9
5°	34.8	33.5	32.8	32.2	31.5	30.3	29.6	29.0	27.7	27.0	26.4
7.5°	33.5	32.2	30.9	29.6	29.0	27.7	26.4	25.1	24.5	23.2	22.5
10°	32.2	30.3	28.3	27.7	27.0	25.1	23.2	21.9	20.6	19.3	18.7
12.5°	31.5	29.0	27.0	25.8	24.5	22.5	20.6	19.3	17.4	16.1	14.8
15°	30.3	27.7	25.1	23.8	22.5	20.6	18.0	16.1	14.8	13.5	12.2
17.5°	29.6	26.4	23.2	21.9	20.6	18.0	16.1	14.2	12.2	10.9	9.7
20°	28.3	24.5	21.9	20.6	18.7	16.1	14.2	11.6	10.3	9.0	7.7
22.5°	27.0	23.2	20.0	18.7	17.4	14.2	11.6	9.7	8.4	7.1	6.4
25°	26.4	22.5	18.7	17.4	15.5	12.9	10.3	8.4	7.1	6.4	5.8
27.5°	25.1	21.2	17.4	16.1	14.2	10.9	9.0	7.1	5.8	5.8	5.8
30°	24.5	20.0	16.1	14.2	12.9	9.7	7.7	6.4	5.8	5.8	5.8
32.5°	23.2	19.3	14.8	13.5	11.6	9.0	6.4	5.8	5.8	5.8	5.2
35°	22.5	18.0	14.2	12.2	10.3	7.7	5.8	5.8	5.8	5.2	5.2
37.5°	21.9	17.4	12.9	10.9	9.7	7.1	5.8	5.8	5.2	5.2	5.2
40°	20.6	16.1	12.2	10.3	8.4	6.4	5.8	5.2	5.2	5.2	5.2
42.5°	20.0	15.5	10.9	9.7	7.7	5.8	5.8	5.2	5.2	5.2	4.5
45°	19.3	14.8	10.3	8.4	7.1	5.8	5.8	5.2	5.2	5.2	4.5
47.5°	18.7	13.5	9.7	7.7	6.4	5.2	5.2	5.2	5.2	4.5	4.5
50°	18.0	12.9	9.0	7.1	5.8	5.2	5.2	5.2	5.2	4.5	4.5
52.5°	17.4	12.2	8.4	7.1	5.8	5.2	5.2	5.2	4.5	4.5	4.5
55°	16.7	11.6	7.7	6.4	5.8	5.2	5.2	5.2	4.5	4.5	3.9
57.5°	16.1	10.9	7.1	5.8	5.2	5.2	5.2	4.5	4.5	4.5	3.9
60°	15.5	10.3	7.1	5.8	5.2	5.2	4.5	4.5	4.5	3.9	3.9
62.5°	14.8	10.3	6.4	5.2	5.2	5.2	5.2	4.5	4.5	3.9	3.9
65°	14.2	9.7	5.8	5.2	5.2	5.2	4.5	4.5	3.9	3.9	3.2
67.5°	13.5	9.0	5.8	5.2	5.2	4.5	4.5	4.5	3.9	3.9	3.2
70°	12.9	8.4	5.8	5.2	4.5	4.5	4.5	3.9	3.9	3.2	3.2
72.5°	12.2	8.4	5.2	5.2	4.5	4.5	4.5	3.9	3.9	3.2	3.2
75°	11.6	7.7	5.2	5.2	4.5	4.5	4.5	3.9	3.9	3.2	2.6
77.5°	10.9	7.1	5.2	4.5	4.5	4.5	3.9	3.9	3.2	3.2	2.6
80°	10.9	7.1	4.5	4.5	4.5	4.5	3.9	3.9	3.2	3.2	2.6
82.5°	10.3	6.4	4.5	4.5	4.5	4.5	3.9	3.9	3.2	3.2	2.6
85°	9.7	6.4	4.5	4.5	3.9	3.9	3.9	3.2	3.2	2.6	2.6
87.5°	9.0	5.8	3.9	3.9	3.9	3.9	3.2	3.2	2.6	2.6	1.9
90°	8.4	5.8	3.9	3.9	3.9	3.9	3.2	3.2	2.6	2.6	1.9
92.5°	8.4	5.2	3.9	3.9	3.9	3.2	3.2	2.6	2.6	1.9	1.9
95°	7.7	5.2	3.9	3.2	3.2	3.2	2.6	2.6	2.6	1.9	1.9
97.5°	7.1	4.5	3.9	3.2	3.2	3.2	2.6	2.6	2.6	1.9	1.9
100°	6.4	4.5	3.2	3.2	3.2	2.6	2.6	2.6	1.9	1.9	1.3
102.5°	6.4	3.9	3.2	3.2	3.2	2.6	2.6	2.6	1.9	1.9	1.3
105°	5.8	3.9	3.2	3.2	2.6	2.6	2.6	1.9	1.9	1.9	1.3
107.5°	5.2	3.9	3.2	2.6	2.6	2.6	2.6	1.9	1.9	1.9	1.3
110°	5.2	3.2	2.6	2.6	2.6	2.6	2.6	1.9	1.9	1.9	1.3



TEST NUMBER: P190119

CATALOG NUMBER: TRE11-LD4-15W-50-OPL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	4.5	3.2	2.6	2.6	2.6	2.6	1.9	1.9	1.9	1.3	1.3
115°	4.5	3.2	2.6	2.6	2.6	2.6	1.9	1.9	1.9	1.9	1.3
117.5°	3.9	3.2	2.6	2.6	2.6	2.6	1.9	1.9	1.9	1.9	1.3
120°	3.9	3.2	2.6	2.6	2.6	2.6	1.9	1.9	1.9	1.3	1.3
122.5°	3.2	2.6	2.6	2.6	2.6	2.6	1.9	1.9	1.9	1.9	1.3
125°	3.2	2.6	2.6	2.6	2.6	2.6	1.9	1.9	1.9	1.9	1.3
127.5°	2.6	2.6	2.6	2.6	1.9	1.9	1.9	1.9	1.9	1.3	1.3
130°	2.6	2.6	2.6	2.6	1.9	1.9	1.9	1.9	1.3	1.3	1.3
132.5°	2.6	2.6	1.9	1.9	1.9	1.9	1.9	1.9	1.3	1.3	1.3
135°	2.6	1.9	1.9	1.9	1.9	1.9	1.9	1.3	1.3	1.3	1.3
137.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.3	1.3	1.3	1.3
140°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.3	1.3	1.3	1.3
142.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.3	1.3	1.3	1.3	1.3
145°	1.9	1.9	1.9	1.9	1.9	1.9	1.3	1.3	1.3	1.3	1.3
147.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.3	1.3	1.3	1.3	1.3
150°	1.9	1.9	1.9	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
152.5°	1.3	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
155°	1.3	1.9	1.3	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°	1.9	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
162.5°	1.3	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
165°	1.9	1.3	1.3	1.9	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	1.3	1.3	1.3
170°	1.9	1.9	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
172.5°	1.9	1.9	1.9	1.3	1.9	1.3	1.3	1.3	1.3	1.3	1.3
175°	1.9	1.9	1.9	1.9	1.9	1.3	1.3	1.3	1.3	1.3	1.3
177.5°	1.9	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
180°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3



TEST NUMBER: P190119

CATALOG NUMBER: TRE11-LD4-15W-50-OPL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7
2.5°	30.9	30.3	30.3	29.6	29.6	29.6	29.6	29.6
5°	25.8	25.1	25.1	24.5	24.5	24.5	23.8	24.5
7.5°	21.2	20.6	20.6	20.0	20.0	19.3	19.3	19.3
10°	17.4	16.7	16.7	16.1	15.5	15.5	14.8	15.5
12.5°	14.2	12.9	12.9	12.9	12.2	11.6	11.6	11.6
15°	10.9	10.3	10.3	9.7	9.0	9.0	9.0	9.0
17.5°	9.0	8.4	7.7	7.7	7.1	7.1	7.1	7.1
20°	7.1	6.4	6.4	5.8	5.8	5.8	5.8	5.8
22.5°	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
25°	5.8	5.8	5.8	5.8	5.8	5.8	5.2	5.8
27.5°	5.8	5.8	5.2	5.2	5.2	5.2	5.2	5.2
30°	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
32.5°	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
35°	5.2	5.2	5.2	5.2	4.5	4.5	4.5	4.5
37.5°	5.2	4.5	4.5	4.5	4.5	4.5	4.5	4.5
40°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
42.5°	4.5	4.5	4.5	4.5	3.9	3.9	3.9	3.9
45°	4.5	4.5	4.5	3.9	3.9	3.9	3.9	3.9
47.5°	4.5	3.9	3.9	3.9	3.9	3.9	3.9	3.9
50°	3.9	3.9	3.9	3.9	3.9	3.2	3.2	3.2
52.5°	3.9	3.9	3.2	3.2	3.2	3.2	3.2	3.2
55°	3.9	3.2	3.2	3.2	3.2	3.2	2.6	2.6
57.5°	3.9	3.2	3.2	3.2	2.6	2.6	2.6	2.6
60°	3.2	3.2	3.2	2.6	2.6	2.6	1.9	1.9
62.5°	3.2	3.2	2.6	2.6	2.6	1.9	1.9	1.9
65°	3.2	2.6	2.6	2.6	1.9	1.9	1.3	1.3
67.5°	2.6	2.6	2.6	1.9	1.9	1.3	1.3	1.3
70°	2.6	2.6	1.9	1.9	1.3	1.3	1.3	1.3
72.5°	2.6	1.9	1.9	1.9	1.3	1.3	0.6	0.6
75°	2.6	1.9	1.9	1.9	1.3	0.6	0.6	0.6
77.5°	2.6	1.9	1.9	1.3	1.3	0.6	0.6	0.6
80°	1.9	1.9	1.3	1.3	0.6	0.6	0.6	0.6
82.5°	1.9	1.9	1.3	1.3	0.6	0.6	0.6	0.6
85°	1.9	1.3	1.3	1.3	0.6	0.6	0.6	0.6
87.5°	1.9	1.3	1.3	0.6	0.6	0.6	0.6	0.6
90°	1.9	1.3	1.3	0.6	0.6	0.6	0.6	0.6
92.5°	1.3	1.3	1.3	0.6	0.6	0.6	0.6	0.6
95°	1.3	1.3	1.3	0.6	0.6	0.6	0.6	0.6
97.5°	1.3	1.3	1.3	0.6	0.6	0.6	0.6	0.6
100°	1.3	1.3	0.6	0.6	0.6	0.6	0.6	0.0
102.5°	1.3	1.3	0.6	0.6	0.6	0.6	0.6	0.6
105°	1.3	1.3	0.6	0.6	0.6	0.6	0.6	0.6
107.5°	1.3	1.3	0.6	0.6	0.6	0.6	0.6	0.6
110°	1.3	1.3	0.6	0.6	0.6	0.6	0.6	0.0



TEST NUMBER: P190119

CATALOG NUMBER: TRE11-LD4-15W-50-OPL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
112.5°	1.3	0.6	0.6	0.6	0.6	0.6	0.0	0.0
115°	1.3	1.3	0.6	0.6	0.6	0.6	0.6	0.6
117.5°	1.3	1.3	1.3	0.6	0.6	0.6	0.6	0.6
120°	1.3	1.3	0.6	0.6	0.6	0.6	0.6	0.6
122.5°	1.3	1.3	1.3	0.6	0.6	0.6	0.6	0.6
125°	1.3	1.3	1.3	0.6	0.6	0.6	0.6	0.6
127.5°	1.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6
130°	1.3	1.3	0.6	0.6	0.6	0.6	0.6	0.6
132.5°	1.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6
135°	1.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6
137.5°	1.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6
140°	1.3	1.3	0.6	0.6	0.6	0.6	0.6	0.6
142.5°	1.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6
145°	1.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6
147.5°	1.3	1.3	1.3	0.6	0.6	0.6	0.6	0.6
150°	1.3	1.3	1.3	0.6	0.6	0.6	0.6	0.6
152.5°	1.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6
155°	1.3	1.3	0.6	0.6	0.6	0.6	0.6	0.6
157.5°	1.3	1.3	0.6	0.6	0.6	0.6	0.6	0.6
160°	1.3	1.3	1.3	1.3	1.3	0.6	0.6	0.6
162.5°	1.3	1.3	1.3	1.3	0.6	0.6	0.6	0.6
165°	1.3	1.3	1.3	0.6	0.6	0.6	0.6	0.6
167.5°	1.3	1.3	1.3	1.3	0.6	0.6	0.6	0.6
170°	1.3	1.3	1.3	1.3	1.3	0.6	0.6	0.6
172.5°	1.3	1.3	1.3	1.3	1.3	0.6	0.6	0.6
175°	1.3	1.3	1.3	1.3	1.3	1.3	0.6	0.6
177.5°	1.3	1.3	1.3	0.6	0.6	0.6	0.6	0.6
180°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3

(END OF REPORT)