

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: P190092

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

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P190092
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P27860)
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
Description: TERRAPIN 11" LED 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

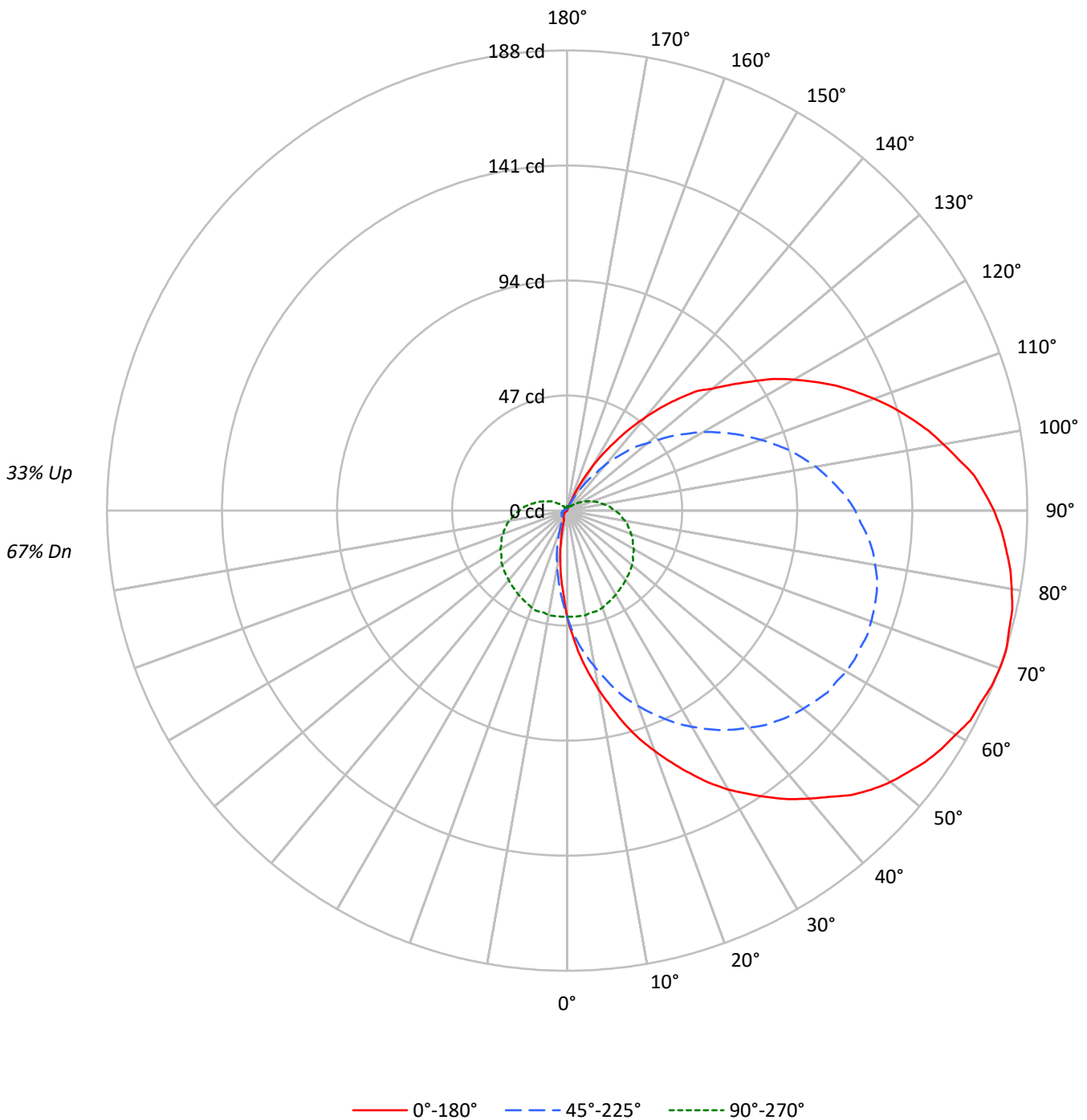
Lumens per Lamp: N/A
Luminaire Lumens: 561.0 lumens
Efficiency: N/A
Efficacy: 39.0 lumens/watt
Spacing Criteria (0/90/45): 2.48 / 1.37 / 2.17
Luminous Opening: Rectangular w/ Sides (W: 0.92' x L: 0.29' x H: 0.92')
CIE Type: Semi-Direct

Input Watts (W): 14.4
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: P190092

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

Luminous Intensity Polar Plot





TEST NUMBER: P190092

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

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	71	71	71	67
1	96	89	83	77	89	83	78	72	73	68	64	63	59	56	54	51	49	44
2	85	74	66	58	79	69	62	55	60	54	49	52	47	42	44	40	37	32
3	76	63	54	46	70	59	50	43	51	44	38	44	38	33	37	33	29	25
4	69	55	45	37	64	51	42	35	44	37	31	38	32	27	32	27	23	20
5	63	48	38	31	58	45	36	29	39	32	26	34	27	22	28	23	19	16
6	57	43	33	26	53	40	31	25	35	27	22	30	24	19	25	20	16	13
7	53	38	29	22	49	36	27	21	31	24	19	27	21	16	23	18	14	11
8	49	35	26	19	45	32	24	18	28	21	16	24	19	14	21	16	12	10
9	45	31	23	17	42	29	22	16	26	19	14	22	17	12	19	14	11	8
10	42	29	20	15	39	27	19	14	24	17	13	21	15	11	18	13	10	7

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	1747	1747	1747
5°	1877	1613	878
10°	1954	1508	413
15°	2036	1407	172
20°	2088	1326	76
25°	2131	1239	56
30°	2174	1170	51
35°	2194	1110	38
40°	2219	1060	27
45°	2258	1022	26
50°	2277	989	17
55°	2287	945	8
60°	2289	928	7
65°	2293	897	7
70°	2299	870	7
75°	2285	848	7
80°	2271	831	7
85°	2252	818	8



TEST NUMBER: P190092

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

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	4.2	0.7
10°-20°	13.0	2.3
20°-30°	23.4	4.2
30°-40°	35.2	6.3
40°-50°	46.8	8.3
50°-60°	56.8	10.1
60°-70°	63.6	11.3
70°-80°	66.4	11.8
80°-90°	64.4	11.5
90°-100°	57.9	10.3
100°-110°	47.8	8.5
110°-120°	35.9	6.4
120°-130°	24.0	4.3
130°-140°	13.8	2.5
140°-150°	5.9	1.0
150°-160°	1.4	0.3
160°-170°	0.4	0.1
170°-180°	0.1	0.0
0°-30°	40.6	7.2
0°-40°	75.7	13.5
0°-60°	179.3	32.0
0°-90°	373.8	66.6
90°-120°	141.7	25.3
90°-150°	185.3	33.0
90°-180°	187.0	33.3
0°-180°	561.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	43	43	43	43	43	
5°	59	55	43	33	28	6
15°	90	76	43	16	8	26
25°	118	94	41	5	3	55
35°	143	110	38	4	2	90
45°	164	122	36	3	2	127
55°	179	130	33	2	1	160
65°	186	132	30	2	1	185
75°	187	131	26	2	1	198
85°	180	123	22	2	1	148
90°	174	118	20	1	1	95
95°	167	111	18	1	1	134
105°	145	94	13	1	0	154
115°	121	74	9	1	0	120
125°	92	54	6	1	1	83
135°	65	34	3	1	1	50
145°	35	16	2	1	1	22
155°	9	4	1	1	1	5
165°	1	1	2	1	1	0
175°	1	1	2	1	1	0
180°	1	1	1	1	1	



TEST NUMBER: P190092

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

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4
2.5°	51.0	50.4	50.4	50.4	50.4	50.4	50.4	49.7	49.7	49.1	49.1
5°	59.2	58.5	58.5	58.5	57.9	57.9	57.3	56.7	56.0	55.4	54.8
7.5°	66.7	66.1	66.1	65.5	65.5	64.8	64.2	63.6	62.3	61.1	59.8
10°	74.3	73.7	73.0	72.4	72.4	71.8	71.1	69.9	68.6	66.7	64.8
12.5°	81.8	81.2	81.2	79.9	79.3	78.7	78.1	76.2	74.3	72.4	69.9
15°	90.0	89.4	88.8	87.5	86.9	86.2	85.0	83.1	80.6	78.1	75.5
17.5°	97.6	96.9	96.3	95.1	93.8	92.5	91.9	89.4	86.9	83.7	80.6
20°	104.5	103.9	103.2	102.0	100.7	99.5	98.2	95.7	92.5	88.8	85.0
22.5°	111.4	110.8	110.2	108.3	107.0	105.1	103.9	101.3	97.6	93.8	89.4
25°	118.3	117.7	117.1	115.2	113.3	111.4	110.2	107.0	103.2	98.8	93.8
27.5°	125.3	124.0	123.4	121.5	119.6	117.7	116.5	112.7	108.3	103.9	98.2
30°	131.6	130.9	129.7	127.8	125.3	123.4	121.5	117.7	113.3	108.3	102.0
32.5°	137.2	136.6	135.3	133.5	130.3	128.4	127.2	122.8	117.7	112.1	105.8
35°	142.9	142.3	141.0	138.5	135.3	134.1	132.2	127.8	122.1	116.5	109.5
37.5°	148.6	147.9	146.7	144.2	141.0	139.1	136.6	132.2	126.5	119.6	112.7
40°	153.6	153.0	151.7	149.2	145.4	143.5	141.0	136.6	130.3	123.4	115.8
42.5°	158.6	158.0	156.1	153.6	149.8	147.9	145.4	140.4	134.1	127.2	119.0
45°	164.3	163.7	161.2	158.0	154.2	152.3	149.8	144.2	137.2	129.7	121.5
47.5°	168.7	168.1	166.2	162.4	158.0	156.1	153.0	147.3	140.4	132.8	124.0
50°	172.5	171.9	170.0	167.4	161.2	159.3	156.1	150.4	142.9	134.7	125.9
52.5°	175.6	175.0	173.1	170.6	166.2	163.0	159.3	153.0	145.4	137.2	127.8
55°	178.8	178.1	176.3	173.1	168.7	166.2	162.4	155.5	147.3	139.1	129.7
57.5°	181.3	180.7	178.8	175.0	170.6	168.1	164.9	156.7	149.2	140.4	130.3
60°	183.2	182.6	180.7	177.5	172.5	170.0	166.8	158.6	150.4	141.6	131.6
62.5°	185.7	184.4	182.6	178.8	174.4	171.9	168.7	159.9	151.7	142.3	132.2
65°	186.3	185.7	183.8	180.0	175.6	172.5	169.3	160.5	152.3	142.9	132.2
67.5°	187.6	187.0	184.4	180.7	176.3	173.7	170.0	161.2	153.0	142.9	132.8
70°	188.2	187.0	185.1	181.3	176.3	173.7	170.6	162.4	153.0	142.9	132.2
72.5°	188.2	187.0	185.1	181.3	176.3	173.1	170.0	161.2	152.3	142.3	131.6
75°	187.0	186.3	184.4	180.7	175.6	172.5	169.3	159.9	151.7	141.6	130.9
77.5°	186.3	185.1	183.2	179.4	174.4	171.9	168.1	159.3	150.4	140.4	129.7
80°	184.4	183.8	181.3	178.1	173.1	170.0	166.8	157.4	148.6	138.5	127.8
82.5°	182.6	181.9	179.4	176.3	171.2	168.1	164.9	155.5	146.7	136.6	125.9
85°	180.0	179.4	177.5	173.7	168.7	165.6	160.5	153.0	144.2	134.1	123.4
87.5°	177.5	176.9	174.4	170.6	166.2	162.4	158.0	150.4	141.6	131.6	120.2
90°	174.4	173.7	171.2	168.1	162.4	158.6	154.9	147.3	138.5	128.4	117.7
92.5°	170.6	170.0	168.1	164.3	158.0	154.9	151.7	144.2	135.3	125.3	114.6
95°	166.8	166.2	163.7	158.6	154.2	151.1	147.9	140.4	131.6	121.5	110.8
97.5°	161.2	160.5	158.0	154.9	149.8	146.7	143.5	136.0	127.8	117.7	107.0
100°	156.1	155.5	153.6	149.8	145.4	142.3	139.1	131.6	123.4	113.3	103.2
102.5°	151.1	150.4	148.6	144.8	140.4	137.2	134.1	126.5	118.3	108.9	98.8
105°	145.4	144.8	142.9	139.1	134.7	131.6	128.4	121.5	113.3	104.5	94.4
107.5°	139.7	139.1	137.2	133.5	129.0	126.5	123.4	116.5	108.3	99.5	89.4
110°	133.5	132.8	130.9	127.8	122.8	120.2	117.7	110.8	102.6	93.8	84.4



TEST NUMBER: P190092

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

CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	127.2	126.5	124.6	121.5	117.1	114.6	111.4	105.1	97.6	88.8	79.3
115°	120.9	120.2	117.7	115.2	110.8	108.3	105.1	98.8	91.3	83.1	74.3
117.5°	113.9	113.3	111.4	108.3	103.9	101.3	98.8	92.5	85.6	77.4	69.2
120°	107.0	106.4	104.5	101.3	97.6	95.1	92.5	86.9	79.9	71.8	64.2
122.5°	100.1	99.5	97.6	95.1	90.6	88.1	86.2	80.6	73.7	66.1	58.5
125°	91.9	91.9	90.0	87.5	84.4	81.2	79.3	73.7	67.4	60.4	53.5
127.5°	84.4	85.0	83.1	80.6	76.8	74.3	72.4	67.4	61.7	54.8	47.8
130°	77.4	77.4	75.5	73.7	69.9	68.0	65.5	61.1	55.4	49.1	42.8
132.5°	72.4	71.8	70.5	68.0	64.8	62.9	60.4	56.0	51.0	44.7	39.0
135°	64.8	63.6	62.9	60.4	57.3	56.0	54.1	49.7	44.7	39.0	34.0
137.5°	57.3	57.3	56.0	53.5	51.0	49.1	47.2	43.4	38.4	33.4	29.0
140°	49.7	49.7	48.5	46.0	43.4	42.2	40.3	36.5	32.1	28.3	24.6
142.5°	42.2	41.5	40.9	39.0	36.5	35.3	34.0	30.2	26.4	23.3	19.5
145°	34.6	34.6	34.0	32.1	30.2	28.3	27.1	24.6	21.4	18.3	15.7
147.5°	27.7	27.1	27.1	25.2	23.3	22.7	21.4	18.9	16.4	13.8	12.0
150°	21.4	20.8	20.1	18.9	17.6	17.0	15.7	13.8	12.0	10.1	8.8
152.5°	15.1	14.5	14.5	13.2	12.0	11.3	10.7	9.4	8.2	6.9	6.3
155°	9.4	9.4	8.8	8.2	7.6	6.9	6.3	5.7	5.0	4.4	3.8
157.5°	4.4	4.4	4.4	3.8	3.8	3.1	3.1	3.1	2.5	2.5	2.5
160°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.9	1.9	1.9	1.3
162.5°	0.6	0.6	0.6	0.6	0.6	1.3	1.3	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	1.3	0.6	1.3	1.3	1.3	1.3
170°	0.6	0.6	0.6	0.6	0.6	0.6	1.3	1.3	1.3	1.3	1.3
172.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	1.3	1.3	1.3	1.3
175°	0.6	0.6	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: P190092

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

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4
2.5°	48.5	47.8	47.2	47.2	46.6	46.6	46.0	45.3	44.1	43.4	42.8
5°	53.5	52.2	51.6	50.4	49.7	49.1	47.8	46.6	45.3	43.4	42.2
7.5°	58.5	56.7	55.4	53.5	52.2	51.6	49.7	47.8	45.3	43.4	41.5
10°	62.9	61.1	58.5	56.0	54.8	53.5	51.0	48.5	46.0	43.4	40.9
12.5°	68.0	64.8	61.7	59.2	57.3	56.0	52.9	49.7	46.0	42.8	39.7
15°	72.4	69.2	65.5	61.7	59.8	57.9	54.1	50.4	46.6	42.8	39.0
17.5°	76.8	73.0	69.2	64.8	62.3	60.4	56.0	51.6	47.2	42.8	38.4
20°	80.6	76.2	71.8	66.7	64.2	61.7	56.7	51.6	46.6	42.2	37.1
22.5°	85.0	79.9	74.9	69.2	66.7	63.6	57.9	52.2	46.6	41.5	35.9
25°	88.8	83.1	77.4	71.8	68.6	65.5	59.2	52.9	46.6	40.9	35.3
27.5°	92.5	86.9	79.9	73.7	70.5	66.7	60.4	53.5	46.6	40.3	34.6
30°	96.3	89.4	82.5	75.5	71.8	68.0	61.1	53.5	46.6	39.7	33.4
32.5°	99.5	92.5	85.0	77.4	73.0	69.2	61.7	53.5	46.6	39.0	32.1
35°	102.6	95.1	86.9	78.7	74.9	70.5	62.3	54.1	46.0	38.4	31.5
37.5°	105.1	97.6	88.8	79.9	76.2	71.1	62.9	54.1	46.0	37.8	30.8
40°	108.3	99.5	90.6	81.8	76.8	72.4	62.9	54.1	45.3	37.1	29.6
42.5°	110.8	102.0	92.5	82.5	78.1	73.0	63.6	54.1	44.7	36.5	29.0
45°	113.3	103.9	93.8	83.7	78.7	73.7	63.6	53.5	44.7	35.9	28.3
47.5°	115.2	105.1	95.1	84.4	79.3	73.7	63.6	53.5	44.1	35.3	27.1
50°	116.5	106.4	95.7	85.0	79.9	74.3	63.6	52.9	43.4	34.6	26.4
52.5°	118.3	107.6	96.9	85.6	79.9	74.3	63.6	52.9	42.8	34.0	25.2
55°	119.6	108.3	96.9	85.6	79.9	74.3	62.9	52.2	42.2	32.7	24.6
57.5°	120.2	108.9	97.6	85.6	79.9	74.3	62.3	51.6	41.5	32.1	23.9
60°	120.9	109.5	97.6	85.6	79.3	73.7	61.7	51.0	40.3	31.5	22.7
62.5°	121.5	109.5	97.6	85.6	79.3	73.0	61.1	49.7	39.7	30.2	22.0
65°	121.5	109.5	96.9	85.0	78.7	72.4	60.4	49.1	39.0	29.6	21.4
67.5°	121.5	109.5	96.9	84.4	78.1	71.8	59.8	48.5	37.8	29.0	20.8
70°	120.9	108.9	95.7	83.1	76.8	70.5	58.5	47.2	37.1	27.7	20.1
72.5°	120.2	107.6	95.1	82.5	76.2	69.9	57.3	46.0	35.9	27.1	18.9
75°	119.0	106.4	93.8	81.2	74.3	68.0	56.0	44.7	34.6	25.8	18.3
77.5°	117.7	105.1	92.5	79.3	73.0	66.7	54.8	43.4	33.4	25.2	17.6
80°	115.8	103.2	90.6	78.1	71.1	65.5	53.5	42.2	32.7	23.9	16.4
82.5°	113.9	101.3	88.8	76.2	69.9	63.6	51.6	40.9	31.5	22.7	15.7
85°	111.4	99.5	86.2	73.7	68.0	61.7	50.4	39.7	30.2	22.0	15.1
87.5°	108.9	96.9	83.7	71.8	65.5	59.2	48.5	37.8	28.3	20.8	13.8
90°	106.4	93.8	81.8	69.2	62.9	57.3	46.6	36.5	27.1	19.5	13.2
92.5°	103.2	91.3	78.7	66.7	61.1	55.4	44.7	34.6	25.8	18.3	12.6
95°	99.5	88.1	75.5	64.2	58.5	52.9	42.2	32.7	24.6	17.6	12.0
97.5°	96.3	84.4	72.4	61.1	55.4	50.4	40.3	30.8	23.3	16.4	10.7
100°	91.9	80.6	69.2	58.5	52.9	47.8	37.8	29.0	21.4	15.1	10.1
102.5°	88.1	76.8	65.5	55.4	49.7	44.7	35.9	27.1	20.1	13.8	9.4
105°	83.7	73.0	62.3	51.6	46.6	42.2	33.4	25.2	18.3	13.2	8.8
107.5°	79.3	68.6	58.5	48.5	44.1	39.7	30.8	23.3	17.6	12.0	8.2
110°	74.9	64.8	54.8	45.3	40.9	36.5	29.0	21.4	15.7	10.7	6.9



TEST NUMBER: P190092

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

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	69.9	60.4	51.0	42.2	37.8	33.4	26.4	20.1	14.5	10.1	6.3
115°	65.5	56.0	47.2	38.4	34.6	30.8	23.9	18.3	13.2	8.8	5.7
117.5°	60.4	51.6	43.4	35.3	32.1	28.3	22.0	16.4	12.0	8.2	5.0
120°	55.4	47.2	39.7	32.1	29.0	25.8	19.5	14.5	10.7	7.6	5.0
122.5°	51.0	42.8	35.9	29.0	25.8	23.3	17.6	13.2	9.4	6.3	4.4
125°	46.0	39.0	32.1	25.8	23.3	20.1	15.7	11.3	8.2	5.7	3.8
127.5°	40.9	34.6	28.3	23.3	20.1	18.3	13.8	10.1	6.9	4.4	3.1
130°	36.5	30.8	25.2	20.1	17.6	15.7	12.0	8.8	6.3	4.4	2.5
132.5°	33.4	27.7	22.7	18.3	15.7	13.8	10.7	7.6	5.7	3.8	2.5
135°	29.0	23.9	19.5	15.7	13.8	12.0	8.8	6.3	4.4	3.1	2.5
137.5°	24.6	20.1	16.4	13.2	11.3	10.1	7.6	5.7	3.8	2.5	1.9
140°	20.1	17.0	13.2	10.7	9.4	8.2	6.3	4.4	3.1	2.5	1.9
142.5°	16.4	13.8	10.7	8.8	7.6	6.3	5.0	3.8	2.5	1.9	1.9
145°	13.2	10.7	8.8	6.9	5.7	5.0	3.8	3.1	1.9	1.9	1.3
147.5°	10.1	8.2	6.3	5.0	4.4	3.8	3.1	2.5	1.9	1.3	1.3
150°	6.9	5.7	5.0	3.8	3.1	3.1	2.5	1.9	1.9	1.3	1.3
152.5°	5.0	4.4	3.8	3.1	2.5	2.5	1.9	1.9	1.3	1.3	1.3
155°	3.1	3.1	2.5	1.9	1.9	1.9	1.9	1.3	1.3	1.3	1.3
157.5°	1.9	1.9	1.9	1.9	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	1.9	1.9	1.9	1.9
165°	1.3	1.3	1.3	1.3	1.3	1.3	1.9	1.9	1.9	1.9	1.9
167.5°	1.3	1.3	1.3	1.3	1.9	1.9	1.9	1.9	1.9	1.9	1.9
170°	1.3	1.3	1.3	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
172.5°	1.3	1.3	1.3	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
175°	1.3	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
177.5°	1.3	1.3	1.9	1.9	1.9	1.9	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: P190092

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

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4
2.5°	42.2	41.5	40.9	40.3	40.3	39.7	39.0	38.4	37.8	37.1	36.5
5°	40.9	39.7	38.4	37.8	37.1	35.9	34.6	33.4	32.7	31.5	30.8
7.5°	39.7	37.8	35.9	35.3	34.0	32.1	30.8	29.0	27.7	26.4	25.2
10°	38.4	35.9	33.4	32.1	30.8	29.0	27.1	25.2	23.3	22.0	20.8
12.5°	36.5	34.0	30.8	29.6	28.3	25.8	23.3	21.4	19.5	17.6	15.7
15°	35.3	32.1	29.0	27.1	25.8	22.7	20.1	17.6	15.7	13.8	12.0
17.5°	34.0	30.2	26.4	24.6	23.3	20.1	17.0	14.5	12.0	10.1	8.8
20°	32.7	28.3	24.6	22.7	20.8	17.0	13.8	11.3	8.8	7.6	5.7
22.5°	31.5	27.1	22.7	20.1	18.3	14.5	11.3	8.8	6.9	5.0	4.4
25°	30.2	25.2	20.8	18.3	16.4	12.6	9.4	6.9	5.0	3.8	3.8
27.5°	29.0	23.9	18.9	16.4	14.5	10.1	7.6	5.0	3.8	3.8	3.8
30°	27.7	22.0	17.0	14.5	12.6	8.2	5.7	3.8	3.8	3.8	3.8
32.5°	26.4	20.8	15.7	13.2	10.7	6.9	4.4	3.8	3.8	3.8	3.1
35°	25.2	19.5	13.8	11.3	9.4	5.7	3.8	3.8	3.8	3.1	3.1
37.5°	23.9	18.3	12.6	10.1	8.2	4.4	3.8	3.8	3.1	3.1	3.1
40°	23.3	17.0	11.3	8.8	6.9	3.8	3.8	3.1	3.1	3.1	3.1
42.5°	22.0	15.7	10.1	7.6	5.7	3.8	3.8	3.1	3.1	3.1	2.5
45°	21.4	15.1	9.4	6.9	5.0	3.8	3.8	3.1	3.1	3.1	2.5
47.5°	20.1	13.8	8.2	5.7	4.4	3.8	3.1	3.1	3.1	2.5	2.5
50°	19.5	13.2	7.6	5.0	3.8	3.1	3.1	3.1	2.5	2.5	2.5
52.5°	18.3	12.0	6.9	4.4	3.8	3.1	3.1	3.1	2.5	2.5	1.9
55°	17.6	11.3	5.7	3.8	3.8	3.1	3.1	2.5	2.5	2.5	1.9
57.5°	17.0	10.7	5.7	3.8	3.1	3.1	3.1	2.5	2.5	2.5	1.9
60°	15.7	10.1	5.0	3.1	3.1	3.1	3.1	2.5	2.5	1.9	1.9
62.5°	15.1	9.4	4.4	3.1	3.1	3.1	2.5	2.5	2.5	1.9	1.9
65°	14.5	8.8	3.8	3.1	3.1	3.1	2.5	2.5	2.5	1.9	1.9
67.5°	13.8	8.2	3.8	3.1	3.1	3.1	2.5	2.5	2.5	1.9	1.9
70°	13.2	7.6	3.8	3.1	3.1	3.1	2.5	2.5	1.9	1.9	1.3
72.5°	12.6	6.9	3.1	3.1	3.1	2.5	2.5	2.5	1.9	1.9	1.3
75°	12.0	6.9	3.1	3.1	3.1	2.5	2.5	2.5	1.9	1.9	1.3
77.5°	11.3	6.3	3.1	3.1	3.1	2.5	2.5	2.5	1.9	1.9	1.3
80°	10.7	5.7	3.1	3.1	3.1	2.5	2.5	1.9	1.9	1.3	1.3
82.5°	10.1	5.7	3.1	3.1	2.5	2.5	2.5	1.9	1.9	1.3	1.3
85°	9.4	5.0	2.5	2.5	2.5	2.5	1.9	1.9	1.9	1.3	1.3
87.5°	8.8	4.4	2.5	2.5	2.5	1.9	1.9	1.9	1.3	1.3	0.6
90°	8.2	4.4	2.5	2.5	2.5	1.9	1.9	1.9	1.3	1.3	0.6
92.5°	7.6	3.8	2.5	2.5	1.9	1.9	1.9	1.3	1.3	1.3	0.6
95°	7.6	3.8	2.5	2.5	1.9	1.9	1.9	1.3	1.3	0.6	0.6
97.5°	6.9	3.8	2.5	1.9	1.9	1.9	1.9	1.3	1.3	0.6	0.6
100°	6.3	3.1	1.9	1.9	1.9	1.9	1.3	1.3	1.3	0.6	0.6
102.5°	5.7	3.1	1.9	1.9	1.9	1.3	1.3	1.3	0.6	0.6	0.6
105°	5.0	2.5	1.9	1.9	1.9	1.3	1.3	1.3	0.6	0.6	0.6
107.5°	5.0	2.5	1.9	1.9	1.9	1.3	1.3	1.3	0.6	0.6	0.6
110°	4.4	2.5	1.9	1.9	1.3	1.3	1.3	1.3	0.6	0.6	0.6



TEST NUMBER: P190092

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

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	3.8	1.9	1.9	1.3	1.3	1.3	1.3	1.3	0.6	0.6	0.6
115°	3.8	1.9	1.3	1.3	1.3	1.3	1.3	1.3	0.6	0.6	0.6
117.5°	3.1	1.9	1.9	1.3	1.3	1.3	1.3	1.3	0.6	0.6	0.6
120°	3.1	1.9	1.9	1.3	1.3	1.3	1.3	1.3	1.3	0.6	0.6
122.5°	2.5	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.6	0.6
125°	2.5	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.6	0.6	0.6
127.5°	1.9	1.3	1.3	1.3	1.3	1.3	1.3	0.6	0.6	0.6	0.6
130°	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.6	0.6	0.6
132.5°	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.6	0.6	0.6
135°	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.6	0.6	0.6
137.5°	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.6	0.6
140°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.6	0.6	0.6
142.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.6	0.6
145°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.6	0.6
147.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.6	0.6	0.6
150°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.6	0.6
152.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.6
155°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.6
157.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.6
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°	1.9	1.9	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
165°	1.9	1.9	1.3	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
167.5°	1.9	1.9	1.9	1.9	1.9	1.3	1.3	1.3	1.3	1.3	1.3
170°	1.9	1.9	1.9	1.9	1.9	1.9	1.3	1.3	1.3	1.3	1.3
172.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.3	1.3	1.3	1.3	1.3
175°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.3	1.3	1.3	1.3
177.5°	1.9	1.9	1.9	1.9	1.9	1.9	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: P190092

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

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4
2.5°	35.9	35.3	35.3	35.3	34.6	34.6	34.6	34.0
5°	29.6	29.0	29.0	29.0	28.3	28.3	27.7	27.7
7.5°	24.6	23.3	23.3	22.7	22.0	22.0	22.0	21.4
10°	19.5	18.3	17.6	17.0	17.0	16.4	16.4	15.7
12.5°	14.5	13.2	13.2	12.6	12.0	11.3	11.3	10.7
15°	10.7	9.4	9.4	8.8	8.2	7.6	7.6	7.6
17.5°	7.6	6.3	6.3	5.7	5.0	5.0	4.4	4.4
20°	5.0	4.4	3.8	3.8	3.8	3.8	3.8	3.8
22.5°	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
25°	3.8	3.8	3.8	3.8	3.8	3.1	3.1	3.1
27.5°	3.8	3.8	3.1	3.1	3.1	3.1	3.1	3.1
30°	3.8	3.1	3.1	3.1	3.1	3.1	3.1	3.1
32.5°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
35°	3.1	3.1	3.1	3.1	2.5	2.5	2.5	2.5
37.5°	3.1	2.5	2.5	2.5	2.5	2.5	2.5	2.5
40°	2.5	2.5	2.5	2.5	2.5	2.5	2.5	1.9
42.5°	2.5	2.5	2.5	2.5	1.9	1.9	1.9	1.9
45°	2.5	2.5	2.5	1.9	1.9	1.9	1.9	1.9
47.5°	2.5	1.9	1.9	1.9	1.9	1.9	1.3	1.3
50°	1.9	1.9	1.9	1.9	1.3	1.3	1.3	1.3
52.5°	1.9	1.9	1.9	1.3	1.3	1.3	1.3	1.3
55°	1.9	1.3	1.3	1.3	1.3	1.3	0.6	0.6
57.5°	1.9	1.3	1.3	1.3	1.3	0.6	0.6	0.6
60°	1.3	1.3	1.3	1.3	0.6	0.6	0.6	0.6
62.5°	1.3	1.3	1.3	1.3	0.6	0.6	0.6	0.6
65°	1.3	1.3	1.3	0.6	0.6	0.6	0.6	0.6
67.5°	1.3	1.3	1.3	0.6	0.6	0.6	0.6	0.6
70°	1.3	1.3	0.6	0.6	0.6	0.6	0.6	0.6
72.5°	1.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6
75°	1.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6
77.5°	1.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6
80°	1.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6
82.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
85°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
87.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
90°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
92.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.0
95°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
97.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
100°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
102.5°	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0
105°	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
107.5°	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0
110°	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P190092

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

CANDELA DISTRIBUTION (continued):

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