

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: P190122

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

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P190122
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-LD4-15W-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 300mA
OT25W/1

Summary

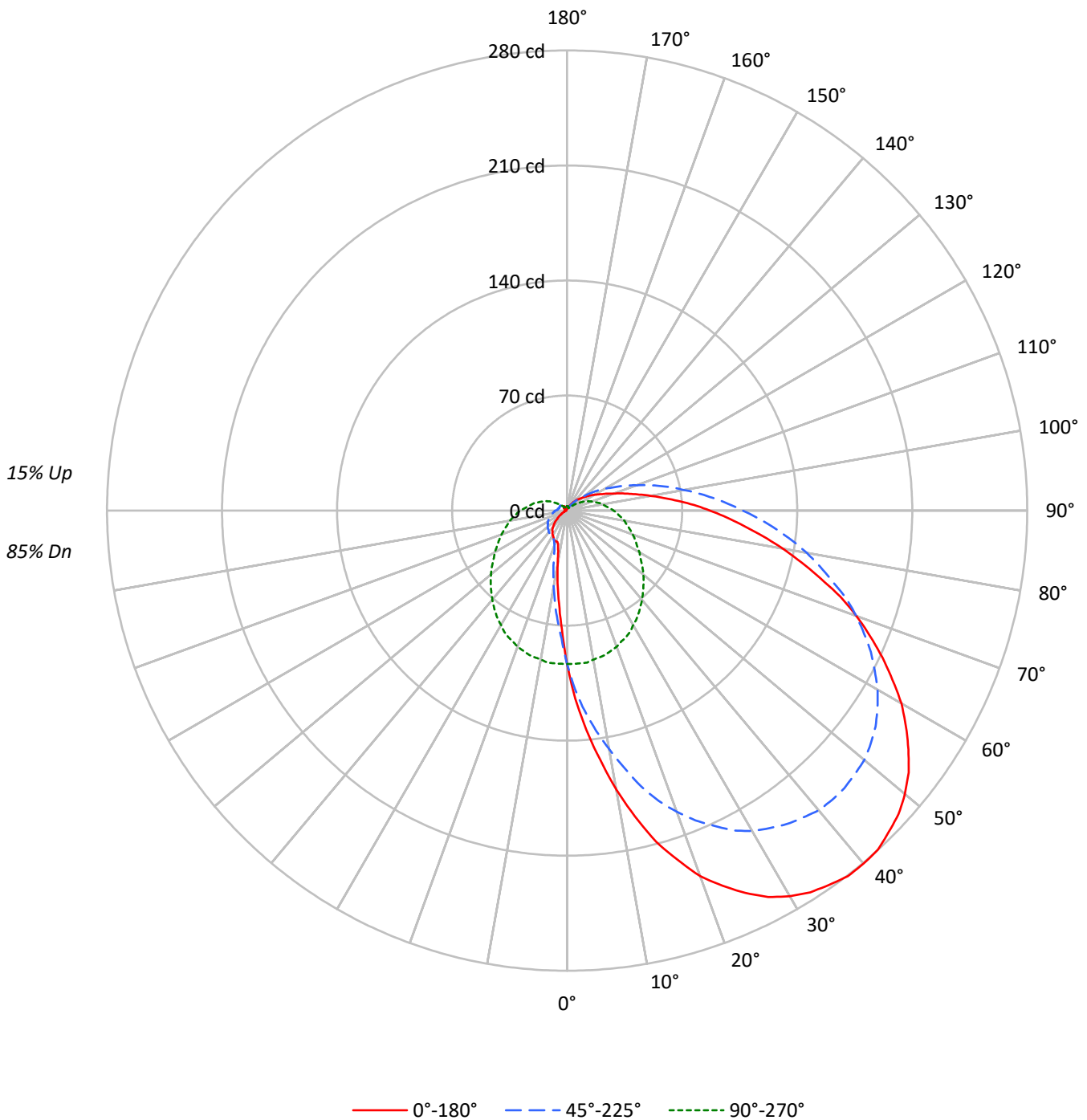
Lumens per Lamp: N/A
Luminaire Lumens: 690.0 lumens
Efficiency: N/A
Efficacy: 48.3 lumens/watt
Spacing Criteria (0/90/45): 2.1 / 1.28 / 2.01
Luminous Opening: Rectangular w/ Sides (W: 0.92' x L: 0.29' x H: 0.92')
CIE Type: Semi-Direct

Input Watts (W): 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

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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°	3756	3756	3756
5°	4241	3467	1794
10°	4535	3197	863
15°	4718	2981	480
20°	4732	2770	398
25°	4625	2572	348
30°	4474	2370	287
35°	4269	2194	236
40°	4053	2023	195
45°	3803	1867	150
50°	3541	1729	102
55°	3242	1599	74
60°	2935	1497	49
65°	2606	1403	32
70°	2287	1335	23
75°	1950	1269	16
80°	1641	1230	16
85°	1352	1171	8



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	9.1	1.3
10°-20°	29.3	4.2
20°-30°	52.4	7.6
30°-40°	74.0	10.7
40°-50°	89.6	13.0
50°-60°	96.1	13.9
60°-70°	92.2	13.4
70°-80°	79.4	11.5
80°-90°	61.6	8.9
90°-100°	43.4	6.3
100°-110°	28.0	4.1
110°-120°	16.8	2.4
120°-130°	9.3	1.3
130°-140°	4.7	0.7
140°-150°	2.3	0.3
150°-160°	1.1	0.2
160°-170°	0.6	0.1
170°-180°	0.2	0.0
0°-30°	90.8	13.2
0°-40°	164.8	23.9
0°-60°	350.5	50.8
0°-90°	583.7	84.6
90°-120°	88.2	12.8
90°-150°	104.5	15.1
90°-180°	106.0	15.4
0°-180°	690.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	93	93	93	93	93	
5°	134	122	93	67	57	14
15°	208	174	91	32	21	59
25°	257	212	85	19	19	119
35°	278	233	76	18	15	174
45°	277	239	66	16	11	214
55°	254	229	55	14	6	227
65°	212	204	46	12	3	210
75°	160	167	39	10	1	169
85°	108	127	32	8	1	94
90°	87	107	28	7	1	48
95°	68	89	24	6	1	52
105°	39	58	19	5	1	42
115°	24	35	14	5	1	24
125°	15	20	8	5	2	14
135°	10	10	4	4	3	8
145°	6	4	2	3	3	4
155°	3	3	2	2	3	1
165°	1	2	3	2	2	0
175°	2	3	3	2	1	0
180°	3	3	3	3	3	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	93.3	93.3	93.3	93.3	93.3	93.3	93.3	93.3	93.3	93.3	93.3
2.5°	114.5	113.2	113.2	113.2	113.2	112.6	112.0	111.3	110.0	109.4	108.7
5°	133.8	132.5	132.5	131.9	131.3	130.0	129.3	128.0	126.1	124.2	122.3
7.5°	152.5	151.9	151.2	149.9	149.3	148.0	146.7	144.1	141.6	138.3	135.1
10°	172.4	172.4	170.5	169.2	167.3	164.1	162.8	159.6	155.7	152.5	147.3
12.5°	190.5	189.2	189.2	186.6	184.0	182.7	180.8	177.6	172.4	167.9	160.2
15°	208.5	207.8	206.5	204.0	200.8	198.2	196.9	192.4	187.2	180.8	173.7
17.5°	222.6	222.6	221.3	218.8	215.6	213.0	210.4	206.5	200.1	193.0	185.3
20°	236.8	235.5	234.2	231.6	227.8	225.8	223.3	218.1	211.0	203.3	195.0
22.5°	247.1	246.4	244.5	241.9	238.1	236.1	233.6	227.8	220.7	213.0	204.0
25°	256.7	256.1	254.2	251.6	247.7	245.8	243.2	237.4	229.7	222.0	211.7
27.5°	265.1	264.5	262.5	259.9	256.1	254.2	250.9	245.2	238.1	229.7	219.4
30°	270.9	270.2	269.0	266.4	262.5	259.9	257.4	251.6	243.9	235.5	225.2
32.5°	275.4	274.7	272.8	270.2	266.4	264.5	261.9	256.1	248.4	239.4	229.1
35°	278.0	278.0	276.0	274.1	270.2	267.7	265.1	259.3	252.2	243.2	232.9
37.5°	280.5	279.9	278.0	276.0	272.2	270.2	267.7	262.5	254.8	246.4	235.5
40°	280.5	280.5	278.6	276.7	273.5	271.5	269.0	263.8	256.7	248.4	238.1
42.5°	279.9	279.3	278.6	276.0	273.5	271.5	269.0	263.8	256.7	249.0	238.7
45°	276.7	276.7	275.4	274.1	271.5	269.6	267.0	262.5	256.1	249.0	238.7
47.5°	273.5	273.5	272.2	270.2	268.3	266.4	264.5	259.9	254.8	247.1	237.4
50°	268.3	268.3	267.7	265.7	263.8	262.5	261.2	256.7	251.6	245.2	236.1
52.5°	261.9	261.9	259.9	259.3	257.4	256.7	255.4	252.2	247.1	241.3	232.9
55°	253.5	253.5	252.2	251.6	250.3	249.7	248.4	246.4	241.9	236.8	229.1
57.5°	244.5	244.5	243.9	243.2	242.6	241.3	240.6	239.4	235.5	231.0	223.9
60°	234.9	234.2	234.2	233.6	232.9	232.3	232.3	231.0	227.8	224.6	218.1
62.5°	223.3	223.3	223.3	222.6	222.6	222.0	222.0	221.3	219.4	216.2	211.0
65°	211.7	212.3	211.7	211.7	212.3	211.7	211.7	211.7	211.0	208.5	204.0
67.5°	199.5	200.1	200.8	200.8	200.8	200.8	200.8	202.0	200.8	199.5	195.6
70°	187.2	187.9	187.9	187.9	188.5	188.5	189.8	190.5	190.5	189.8	187.2
72.5°	174.4	174.4	174.4	175.7	176.3	176.3	176.9	178.9	179.5	179.5	178.2
75°	159.6	159.6	160.2	160.9	161.5	162.1	164.1	166.0	167.3	168.6	167.3
77.5°	146.1	146.1	147.3	148.0	149.3	149.9	150.6	153.8	155.1	157.0	157.6
80°	133.2	133.2	134.5	135.1	137.1	137.1	138.3	141.6	144.1	146.1	148.0
82.5°	120.3	120.3	121.6	122.9	124.8	125.5	126.8	130.0	132.5	135.1	137.7
85°	108.1	108.7	110.0	111.3	113.2	113.9	115.2	119.0	121.6	124.8	127.4
87.5°	97.2	97.2	99.1	99.7	102.3	103.6	104.9	108.1	111.3	114.5	117.1
90°	86.9	86.9	88.2	89.4	92.0	93.3	94.6	98.4	101.0	104.2	106.8
92.5°	77.2	77.2	78.5	79.8	81.7	83.6	84.9	88.2	91.4	95.2	97.8
95°	67.6	67.6	68.8	70.8	72.7	74.0	75.9	79.1	82.4	85.6	88.8
97.5°	59.2	59.2	60.5	62.4	64.3	66.3	67.6	70.1	74.0	77.2	80.4
100°	51.5	51.5	53.4	54.7	56.6	58.6	59.8	62.4	65.6	68.8	72.1
102.5°	45.0	45.0	46.3	47.6	50.2	51.5	52.8	55.3	58.6	61.8	65.0
105°	39.2	39.2	40.5	41.8	43.8	45.7	46.3	49.5	51.5	54.7	57.9
107.5°	34.7	34.7	35.4	36.7	38.6	39.9	41.2	43.1	46.3	48.9	51.5
110°	30.2	30.2	31.5	32.2	34.1	35.4	36.0	38.0	40.5	43.1	45.0



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CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	27.0	27.0	27.7	29.0	30.2	30.9	32.2	33.5	36.0	38.0	39.9
115°	23.8	23.8	24.5	25.1	26.4	27.7	28.3	29.6	31.5	33.5	34.7
117.5°	21.2	21.2	21.9	22.5	23.8	24.5	25.1	26.4	27.7	29.0	30.2
120°	19.3	19.3	19.3	19.9	20.6	21.2	21.9	23.2	24.5	25.1	26.4
122.5°	17.4	17.4	17.4	18.0	18.7	18.7	19.3	20.6	21.2	21.9	23.2
125°	15.4	15.4	15.4	16.1	16.7	16.7	16.7	18.0	18.7	19.3	19.9
127.5°	13.5	13.5	14.2	14.2	14.8	14.8	14.8	15.4	16.1	16.7	16.7
130°	12.2	12.2	12.2	12.9	12.9	12.9	13.5	13.5	14.2	14.2	14.2
132.5°	10.9	10.9	10.9	10.9	11.6	11.6	11.6	11.6	12.2	12.2	12.2
135°	9.7	9.7	9.7	9.7	10.3	10.3	10.3	10.3	10.3	10.3	10.3
137.5°	9.0	8.4	8.4	8.4	8.4	9.0	8.4	8.4	8.4	8.4	8.4
140°	7.7	7.7	7.7	7.7	7.7	7.1	7.1	7.1	7.1	7.1	7.1
142.5°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	5.8	5.8	5.8
145°	5.8	5.8	5.8	5.8	5.1	5.1	5.1	5.1	5.1	5.1	4.5
147.5°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	3.9	3.9
150°	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.2	3.2
152.5°	3.2	3.2	3.2	3.2	3.2	3.2	2.6	2.6	2.6	2.6	2.6
155°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
157.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
160°	1.3	1.3	1.3	1.3	1.9	1.9	1.9	1.9	1.9	1.9	1.9
162.5°	1.3	1.3	1.3	1.3	1.9	1.9	1.9	1.9	1.9	1.9	1.9
165°	1.3	1.3	1.3	1.3	1.9	1.9	1.9	1.9	1.9	1.9	1.9
167.5°	1.3	1.3	1.3	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
170°	1.3	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.6
172.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.6
175°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.6	2.6
177.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.6	2.6	2.6
180°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6



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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	93.3	93.3	93.3	93.3	93.3	93.3	93.3	93.3	93.3	93.3	93.3
2.5°	106.8	105.5	104.2	102.3	101.7	101.0	99.1	97.2	95.2	93.3	91.4
5°	119.7	116.5	113.2	110.0	108.7	106.8	103.6	100.4	96.5	93.3	90.1
7.5°	131.3	127.4	122.3	117.7	115.2	113.2	108.1	103.0	97.8	93.3	88.2
10°	142.2	137.1	130.6	124.8	121.6	118.4	112.0	104.9	98.4	92.0	86.2
12.5°	153.8	146.7	139.0	131.3	127.4	123.5	115.8	107.5	99.7	91.4	83.6
15°	165.4	156.4	147.3	138.3	133.8	128.7	119.7	110.0	100.4	90.7	81.7
17.5°	176.3	166.0	155.1	144.1	139.0	133.2	122.3	111.3	100.4	89.4	79.8
20°	184.7	174.4	161.5	149.3	143.5	137.7	124.8	112.6	100.4	88.2	77.2
22.5°	193.0	181.5	169.2	154.4	148.0	140.9	126.8	113.2	99.7	86.2	74.0
25°	200.8	188.5	175.0	158.9	151.9	144.1	128.7	113.9	99.1	84.9	71.4
27.5°	207.8	195.0	180.2	162.8	155.1	146.7	130.6	113.9	97.8	83.0	68.8
30°	213.0	199.5	184.0	167.9	157.6	149.3	131.3	113.9	96.5	80.4	66.3
32.5°	216.8	203.3	187.9	170.5	160.2	150.6	131.9	113.2	95.2	78.5	63.1
35°	220.7	206.5	190.5	172.4	161.5	151.9	131.9	112.0	93.3	75.9	59.8
37.5°	223.9	209.1	193.0	173.7	162.8	152.5	131.9	111.3	91.4	73.4	57.3
40°	225.2	211.0	194.3	175.0	163.4	153.1	131.3	110.0	89.4	70.8	54.7
42.5°	226.5	212.3	195.0	175.7	163.4	152.5	130.0	108.1	86.9	68.2	52.1
45°	226.5	212.3	195.0	175.7	163.4	152.5	129.3	106.2	84.3	65.6	48.9
47.5°	225.8	211.7	195.0	175.0	162.8	151.2	127.4	104.2	82.4	63.1	46.3
50°	224.6	210.4	193.7	174.4	161.5	149.9	126.1	101.7	79.8	60.5	44.4
52.5°	221.3	208.5	191.7	172.4	159.6	148.6	123.5	99.7	77.2	57.9	41.8
55°	218.8	205.9	189.8	169.9	157.6	146.1	121.6	97.2	74.6	55.3	39.9
57.5°	214.3	202.7	186.6	166.7	155.1	143.5	119.0	94.6	72.1	52.8	38.0
60°	209.8	198.2	182.7	162.8	151.9	140.9	116.5	92.0	69.5	50.8	36.0
62.5°	204.0	193.0	178.9	158.9	148.6	137.7	113.2	88.8	66.9	48.3	34.1
65°	197.5	187.9	174.4	155.1	145.4	134.5	110.0	86.2	64.3	46.3	32.2
67.5°	190.5	182.1	169.2	151.2	141.6	130.6	106.8	83.6	61.8	44.4	30.9
70°	183.4	175.7	162.1	146.7	137.1	126.8	103.6	80.4	59.8	42.5	29.0
72.5°	175.0	167.9	155.7	140.9	131.9	122.3	100.4	77.9	57.3	40.5	27.7
75°	165.4	158.9	149.3	135.8	127.4	117.7	96.5	74.6	54.7	38.6	26.4
77.5°	155.7	151.2	142.8	130.0	122.3	113.2	92.7	72.1	52.8	36.7	24.5
80°	146.7	142.8	135.8	123.5	116.5	108.1	88.8	68.8	50.2	35.4	23.2
82.5°	137.1	134.5	128.0	117.1	110.7	103.0	84.9	65.6	48.3	33.5	21.9
85°	127.4	125.5	120.3	110.7	104.9	97.2	81.1	62.4	45.7	31.5	20.6
87.5°	118.4	117.1	112.6	104.2	99.1	92.7	76.6	59.8	43.8	30.2	19.9
90°	108.7	108.1	104.9	97.8	93.3	86.9	72.7	56.6	41.2	28.3	18.7
92.5°	99.7	99.1	97.2	90.7	86.2	81.1	67.6	52.8	38.6	26.4	16.7
95°	90.7	91.4	89.4	83.6	80.4	75.3	63.1	49.5	36.0	24.5	16.1
97.5°	82.4	83.0	81.7	77.2	74.0	70.1	59.2	46.3	34.1	23.2	14.8
100°	74.0	75.3	74.6	70.8	68.2	64.3	54.7	43.1	32.2	21.9	14.2
102.5°	66.9	67.6	66.9	64.3	61.8	58.6	50.8	40.5	29.6	20.6	12.9
105°	59.2	60.5	60.5	57.9	56.0	53.4	46.3	37.3	27.7	18.7	12.2
107.5°	52.8	54.0	53.4	52.1	50.2	47.6	41.8	34.1	25.7	17.4	10.9
110°	46.3	48.3	47.6	46.3	44.4	42.5	37.3	30.9	23.2	16.1	10.3



TEST NUMBER: P190122

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

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	41.2	41.8	41.8	40.5	39.2	37.3	33.5	27.7	21.2	14.8	9.7
115°	36.0	36.7	36.0	35.4	34.1	32.8	29.6	24.5	18.7	13.5	9.0
117.5°	31.5	31.5	31.5	30.9	29.6	29.0	25.7	21.2	16.7	12.2	7.7
120°	27.0	27.0	27.0	26.4	25.1	24.5	21.9	18.7	14.8	10.3	7.1
122.5°	23.2	23.8	23.2	22.5	21.2	20.6	18.7	16.1	12.9	9.0	6.4
125°	19.9	19.9	19.3	18.7	18.0	17.4	15.4	13.5	10.3	7.7	5.1
127.5°	16.7	16.7	16.1	15.4	14.8	14.2	12.9	10.9	9.0	6.4	4.5
130°	14.2	14.2	13.5	12.9	12.2	11.6	10.3	9.0	7.1	5.8	3.9
132.5°	11.6	11.6	10.9	10.3	9.7	9.7	8.4	7.1	5.8	4.5	3.2
135°	9.7	9.7	9.0	8.4	7.7	7.7	7.1	5.8	4.5	3.9	2.6
137.5°	7.7	7.7	7.1	6.4	6.4	5.8	5.1	4.5	3.9	3.2	2.6
140°	6.4	6.4	5.8	5.1	5.1	4.5	4.5	3.9	3.2	2.6	1.9
142.5°	5.1	5.1	4.5	4.5	3.9	3.9	3.2	3.2	2.6	2.6	1.9
145°	4.5	4.5	3.9	3.9	3.2	3.2	3.2	2.6	2.6	1.9	1.9
147.5°	3.9	3.9	3.2	3.2	3.2	2.6	2.6	2.6	1.9	1.9	1.9
150°	3.2	3.2	2.6	2.6	2.6	2.6	2.6	1.9	1.9	1.9	1.9
152.5°	2.6	2.6	2.6	2.6	2.6	1.9	1.9	1.9	1.9	1.9	1.9
155°	2.6	2.6	2.6	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
157.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
160°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
162.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
165°	1.9	1.9	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
167.5°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
170°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
172.5°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
175°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
177.5°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
180°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6



TEST NUMBER: P190122

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

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	93.3	93.3	93.3	93.3	93.3	93.3	93.3	93.3	93.3	93.3	93.3
2.5°	89.4	88.2	86.2	85.6	84.9	83.0	81.1	79.8	77.9	77.2	75.9
5°	86.9	83.6	80.4	79.1	77.2	74.6	72.1	69.5	66.9	65.0	63.1
7.5°	83.6	79.1	74.6	72.7	70.1	66.9	63.1	59.8	56.6	54.0	52.1
10°	79.8	74.0	68.8	66.3	63.7	58.6	54.0	50.2	47.0	43.8	41.8
12.5°	76.6	69.5	63.1	60.5	57.3	51.5	47.0	42.5	38.6	35.4	32.8
15°	73.4	65.6	58.6	54.7	51.5	45.7	39.9	35.4	31.5	28.3	26.4
17.5°	70.1	61.1	53.4	49.5	46.3	39.9	34.1	29.0	25.7	23.8	22.5
20°	66.3	57.3	48.9	45.0	41.2	34.1	29.0	25.1	22.5	21.2	19.9
22.5°	63.1	52.8	44.4	40.5	36.7	29.6	25.1	21.9	20.6	19.3	19.3
25°	59.2	49.5	39.9	36.0	32.2	25.7	21.9	19.9	19.3	18.7	19.3
27.5°	56.0	45.7	36.7	32.2	28.3	23.2	19.9	18.7	18.7	19.3	19.3
30°	52.8	42.5	32.8	29.0	25.1	21.2	19.3	18.0	18.7	18.7	18.7
32.5°	50.2	39.2	29.6	25.7	23.2	19.3	18.0	18.7	18.7	18.7	18.0
35°	47.0	36.0	26.4	23.2	20.6	18.7	18.0	18.0	18.0	17.4	17.4
37.5°	43.8	32.8	24.5	21.9	19.3	17.4	18.0	18.0	17.4	17.4	16.7
40°	41.2	30.2	22.5	19.9	18.0	17.4	18.0	18.0	17.4	16.7	16.1
42.5°	38.6	28.3	20.6	18.7	17.4	16.7	17.4	17.4	16.7	16.1	15.4
45°	36.0	25.7	19.3	17.4	16.7	16.7	17.4	16.7	16.1	16.1	15.4
47.5°	33.5	23.8	18.0	16.7	15.4	16.7	16.7	16.1	16.1	15.4	14.2
50°	31.5	21.9	16.7	15.4	15.4	16.1	16.1	16.1	15.4	14.8	13.5
52.5°	29.6	20.6	16.1	14.8	14.8	16.1	16.1	15.4	14.8	14.2	12.9
55°	27.7	19.3	14.8	14.2	14.2	15.4	15.4	15.4	14.2	13.5	11.6
57.5°	26.4	18.0	14.2	13.5	14.2	15.4	15.4	14.8	14.2	12.9	10.9
60°	24.5	16.7	13.5	13.5	14.2	14.8	14.8	14.2	13.5	12.2	10.3
62.5°	23.2	15.4	12.9	12.9	13.5	14.2	14.2	14.2	12.9	10.9	9.7
65°	21.9	14.8	11.6	12.2	12.9	13.5	14.2	13.5	12.2	10.3	8.4
67.5°	20.6	13.5	11.6	11.6	12.9	13.5	13.5	12.9	11.6	9.7	7.7
70°	19.3	12.9	10.9	11.6	12.2	12.9	12.9	12.2	10.9	9.0	7.1
72.5°	18.0	11.6	10.3	10.9	11.6	12.2	12.9	11.6	10.3	8.4	7.1
75°	16.7	10.9	9.7	10.3	10.9	12.2	12.2	11.6	9.7	7.7	6.4
77.5°	16.1	10.3	9.0	9.7	10.3	11.6	11.6	10.9	9.0	7.7	5.8
80°	14.8	9.7	9.0	9.7	10.3	11.6	11.6	10.3	9.0	7.1	5.8
82.5°	14.2	9.0	8.4	9.0	9.7	10.9	10.9	9.7	8.4	6.4	5.1
85°	12.9	8.4	8.4	9.0	9.7	10.3	10.3	9.7	7.7	6.4	5.1
87.5°	12.2	7.7	7.7	8.4	9.0	10.3	10.3	9.0	7.7	5.8	4.5
90°	11.6	7.1	7.1	7.7	9.0	9.7	9.7	8.4	7.1	5.8	4.5
92.5°	10.3	6.4	6.4	7.1	7.7	8.4	8.4	7.7	6.4	5.1	3.9
95°	9.7	5.8	5.8	6.4	7.1	8.4	8.4	7.1	5.8	4.5	3.9
97.5°	9.0	5.8	5.1	5.8	6.4	7.7	7.7	7.1	5.8	4.5	3.9
100°	8.4	5.1	5.1	5.8	6.4	7.1	7.1	6.4	5.8	4.5	3.9
102.5°	7.7	4.5	4.5	5.1	5.8	6.4	7.1	6.4	5.8	4.5	3.2
105°	7.1	3.9	4.5	4.5	5.1	6.4	7.1	6.4	5.1	4.5	3.9
107.5°	6.4	3.9	3.9	4.5	5.1	5.8	6.4	6.4	5.1	4.5	3.9
110°	5.8	3.2	3.9	3.9	4.5	5.8	6.4	5.8	5.1	4.5	3.9



TEST NUMBER: P190122

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

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	5.8	3.2	3.2	3.9	4.5	5.1	5.8	5.8	5.1	4.5	3.9
115°	5.1	3.2	3.2	3.9	3.9	5.1	5.8	5.8	5.1	4.5	3.9
117.5°	5.1	3.2	3.2	3.9	3.9	5.1	5.8	5.8	5.1	4.5	3.9
120°	4.5	2.6	3.2	3.2	3.9	4.5	5.1	5.8	5.1	4.5	3.9
122.5°	3.9	2.6	3.2	3.2	3.9	4.5	5.1	5.1	5.1	4.5	3.9
125°	3.9	2.6	2.6	3.2	3.2	3.9	4.5	5.1	5.1	4.5	3.9
127.5°	3.2	2.6	2.6	2.6	3.2	3.9	4.5	4.5	5.1	4.5	3.9
130°	2.6	2.6	2.6	2.6	3.2	3.2	3.9	4.5	4.5	4.5	4.5
132.5°	2.6	2.6	2.6	2.6	2.6	3.2	3.9	3.9	4.5	4.5	4.5
135°	2.6	1.9	2.6	2.6	2.6	3.2	3.2	3.9	3.9	3.9	3.9
137.5°	1.9	1.9	1.9	2.6	2.6	2.6	3.2	3.2	3.9	3.9	3.9
140°	1.9	1.9	1.9	1.9	2.6	2.6	2.6	3.2	3.2	3.2	3.2
142.5°	1.9	1.9	1.9	1.9	1.9	2.6	2.6	2.6	3.2	3.2	3.2
145°	1.9	1.9	1.9	1.9	1.9	2.6	2.6	2.6	2.6	2.6	3.2
147.5°	1.9	1.9	1.9	1.9	1.9	1.9	2.6	2.6	2.6	2.6	2.6
150°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.6	2.6	2.6	2.6
152.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.6
155°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.6	2.6
157.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.6
160°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
162.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
165°	2.6	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
167.5°	2.6	2.6	2.6	2.6	2.6	2.6	1.9	1.9	1.9	1.9	1.9
170°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	1.9	1.9	1.9	1.9
172.5°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	1.9	1.9	1.9	1.9
175°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	1.9	1.9	1.9	1.9
177.5°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	1.9	1.9
180°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6



TEST NUMBER: P190122

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

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	93.3	93.3	93.3	93.3	93.3	93.3	93.3	93.3
2.5°	74.6	74.0	74.0	74.0	72.7	72.7	72.1	72.1
5°	61.1	59.8	59.2	59.2	57.9	57.9	57.3	56.6
7.5°	49.5	48.3	47.0	46.3	45.0	45.0	44.4	44.4
10°	38.6	37.3	36.0	35.4	34.1	33.5	32.8	32.8
12.5°	30.2	29.0	27.7	27.7	26.4	25.7	25.7	25.1
15°	24.5	23.2	23.2	22.5	21.9	21.9	21.9	21.2
17.5°	21.2	20.6	20.6	20.6	19.9	19.9	19.9	19.9
20°	19.3	19.3	19.3	19.3	19.3	19.9	19.9	19.9
22.5°	19.3	19.3	19.9	19.9	19.9	19.9	19.9	19.9
25°	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3
27.5°	19.3	18.7	18.7	18.7	18.7	18.0	18.0	18.0
30°	18.0	18.0	18.0	18.0	17.4	17.4	17.4	17.4
32.5°	17.4	17.4	17.4	17.4	16.7	16.7	16.7	16.7
35°	16.7	16.7	16.1	16.1	16.1	16.1	15.4	15.4
37.5°	16.1	16.1	15.4	15.4	15.4	14.8	14.8	14.8
40°	16.1	15.4	14.8	14.8	14.2	13.5	13.5	13.5
42.5°	15.4	14.2	14.2	13.5	12.9	12.2	12.2	12.2
45°	14.2	13.5	12.9	12.2	11.6	10.9	10.9	10.9
47.5°	13.5	12.2	11.6	10.9	10.3	9.7	9.7	9.7
50°	12.2	10.9	10.3	10.3	9.0	8.4	8.4	7.7
52.5°	11.6	10.3	9.7	9.0	7.7	7.1	7.1	7.1
55°	10.3	9.0	8.4	7.7	7.1	6.4	5.8	5.8
57.5°	9.7	7.7	7.7	7.1	5.8	5.1	5.1	4.5
60°	8.4	7.1	6.4	5.8	5.1	4.5	3.9	3.9
62.5°	7.7	6.4	5.8	5.1	4.5	3.9	3.2	3.2
65°	7.1	5.8	5.1	4.5	3.9	3.2	2.6	2.6
67.5°	6.4	5.1	4.5	4.5	3.2	2.6	2.6	1.9
70°	5.8	4.5	4.5	3.9	2.6	2.6	1.9	1.9
72.5°	5.1	4.5	3.9	3.2	2.6	1.9	1.3	1.3
75°	5.1	3.9	3.2	3.2	2.6	1.9	1.3	1.3
77.5°	4.5	3.9	3.2	3.2	1.9	1.3	1.3	1.3
80°	4.5	3.2	3.2	2.6	1.9	1.3	1.3	1.3
82.5°	3.9	3.2	2.6	2.6	1.9	1.3	1.3	1.3
85°	3.9	2.6	2.6	1.9	1.3	1.3	0.6	0.6
87.5°	3.2	2.6	2.6	1.9	1.3	1.3	0.6	0.6
90°	3.2	2.6	1.9	1.9	1.3	0.6	0.6	0.6
92.5°	3.2	2.6	1.9	1.9	1.9	1.3	1.3	1.3
95°	3.2	2.6	1.9	1.9	1.9	1.3	1.3	1.3
97.5°	2.6	1.9	1.9	1.9	1.9	1.3	1.3	1.3
100°	2.6	2.6	1.9	1.9	1.9	1.3	1.3	1.3
102.5°	2.6	2.6	1.9	1.9	1.9	1.3	1.3	1.3
105°	2.6	2.6	1.9	1.9	1.9	1.3	1.3	1.3
107.5°	3.2	2.6	1.9	1.9	1.9	1.3	1.3	1.3
110°	3.2	2.6	1.9	1.9	1.9	1.3	1.3	1.3



TEST NUMBER: P190122

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

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
112.5°	3.2	2.6	2.6	1.9	1.9	1.3	1.3	1.3
115°	3.2	2.6	2.6	2.6	1.9	1.9	1.9	1.3
117.5°	3.2	3.2	2.6	2.6	1.9	1.9	1.9	1.9
120°	3.2	2.6	2.6	2.6	1.9	1.9	1.9	1.9
122.5°	3.9	3.2	2.6	2.6	1.9	1.9	1.9	1.9
125°	3.2	3.2	2.6	2.6	2.6	1.9	1.9	1.9
127.5°	3.9	3.2	3.2	2.6	2.6	2.6	2.6	2.6
130°	3.9	3.2	3.2	3.2	2.6	2.6	2.6	2.6
132.5°	3.9	3.2	3.2	3.2	3.2	2.6	2.6	2.6
135°	3.9	3.2	3.2	3.2	3.2	2.6	2.6	2.6
137.5°	3.9	3.9	3.2	3.2	3.2	3.2	2.6	2.6
140°	3.9	3.2	3.2	3.2	3.2	3.2	3.2	3.2
142.5°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
145°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
147.5°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
150°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
152.5°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
155°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
157.5°	1.9	2.6	2.6	2.6	2.6	2.6	1.9	1.9
160°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
162.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
165°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
167.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
170°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
172.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
175°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.3
177.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
180°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6

(END OF REPORT)