

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: P190091

Luminaire Tested: **TRE11-LD4-20W-50-OPL-BK-UNV-EDC1**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P190091
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-LD4-20W-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 450mA
OT40W/1

Summary

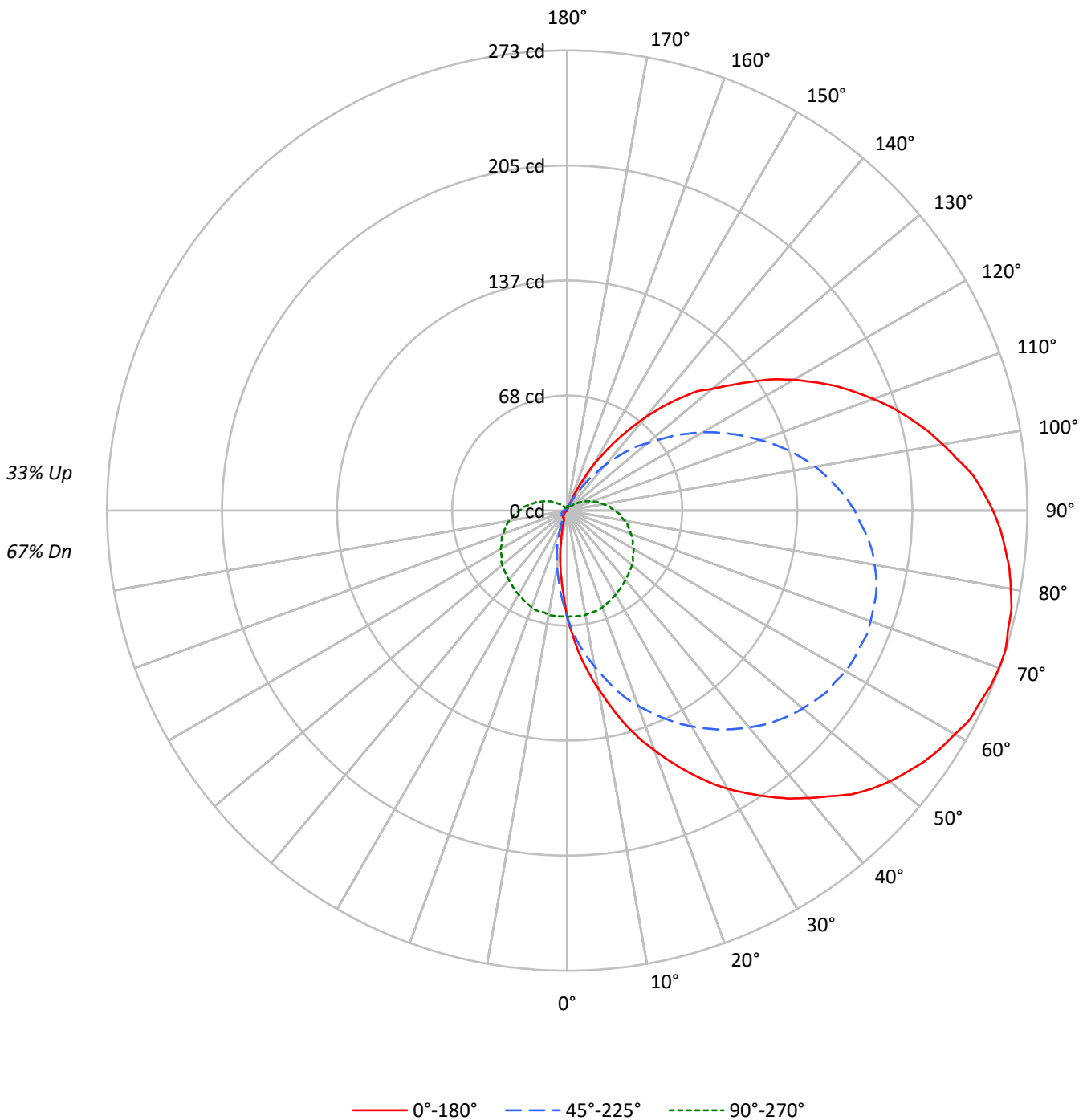
Lumens per Lamp: N/A
Luminaire Lumens: 812.9 lumens
Efficiency: N/A
Efficacy: 37.0 lumens/watt
Spacing Criteria (0/90/45): 2.48 / 1.37 / 2.17
Luminous Opening: Rectangular w/ Sides (W: 0.92' x L: 0.29' x H: 0.92')
CIE Type: Semi-Direct

Input Watts (W): 22
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: P190091

CATALOG NUMBER: TRE11-LD4-20W-50-OPL-BK-UNV-EDC1

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	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°	2532	2532	2532
5°	2720	2338	1271
10°	2830	2186	600
15°	2953	2038	247
20°	3026	1919	110
25°	3090	1796	83
30°	3150	1695	76
35°	3180	1607	55
40°	3216	1537	39
45°	3272	1480	37
50°	3300	1435	24
55°	3314	1370	12
60°	3318	1344	11
65°	3323	1300	11
70°	3333	1260	11
75°	3310	1229	11
80°	3292	1206	11
85°	3264	1185	11



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	6.0	0.7
10°-20°	18.8	2.3
20°-30°	33.9	4.2
30°-40°	50.9	6.3
40°-50°	67.8	8.3
50°-60°	82.3	10.1
60°-70°	92.2	11.3
70°-80°	96.3	11.8
80°-90°	93.3	11.5
90°-100°	83.9	10.3
100°-110°	69.3	8.5
110°-120°	52.1	6.4
120°-130°	34.7	4.3
130°-140°	20.0	2.5
140°-150°	8.5	1.0
150°-160°	2.1	0.3
160°-170°	0.5	0.1
170°-180°	0.2	0.0
0°-30°	58.8	7.2
0°-40°	109.7	13.5
0°-60°	259.8	32.0
0°-90°	541.6	66.6
90°-120°	205.3	25.3
90°-150°	268.5	33.0
90°-180°	271.0	33.3
0°-180°	812.9	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	63	63	63	63	63	
5°	86	79	63	47	40	9
15°	130	110	62	23	11	37
25°	172	136	59	7	5	80
35°	207	159	56	6	4	130
45°	238	176	52	5	3	184
55°	259	188	47	4	1	232
65°	270	192	43	4	1	268
75°	271	190	37	3	1	287
85°	261	179	32	3	1	215
90°	253	171	28	2	1	138
95°	242	161	26	2	1	194
105°	211	137	19	1	0	223
115°	175	108	13	1	0	174
125°	133	78	8	1	1	120
135°	94	49	5	1	1	73
145°	50	23	3	2	1	32
155°	14	6	2	2	1	7
165°	1	2	3	2	1	0
175°	1	2	3	2	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°	62.9	62.9	62.9	62.9	62.9	62.9	62.9	62.9	62.9	62.9	62.9
2.5°	73.9	73.0	73.0	73.0	73.0	73.0	73.0	72.1	72.1	71.2	71.2
5°	85.8	84.8	84.8	84.8	83.9	83.9	83.0	82.1	81.2	80.3	79.4
7.5°	96.7	95.8	95.8	94.9	94.9	94.0	93.1	92.1	90.3	88.5	86.7
10°	107.6	106.7	105.8	104.9	104.9	104.0	103.1	101.3	99.4	96.7	94.0
12.5°	118.6	117.7	117.7	115.9	114.9	114.0	113.1	110.4	107.6	104.9	101.3
15°	130.5	129.5	128.6	126.8	125.9	125.0	123.2	120.4	116.8	113.1	109.5
17.5°	141.4	140.5	139.6	137.8	135.9	134.1	133.2	129.5	125.9	121.3	116.8
20°	151.4	150.5	149.6	147.8	146.0	144.1	142.3	138.7	134.1	128.6	123.2
22.5°	161.5	160.6	159.6	156.9	155.1	152.3	150.5	146.9	141.4	135.9	129.5
25°	171.5	170.6	169.7	166.9	164.2	161.5	159.6	155.1	149.6	143.2	135.9
27.5°	181.5	179.7	178.8	176.1	173.3	170.6	168.8	163.3	156.9	150.5	142.3
30°	190.7	189.8	187.9	185.2	181.5	178.8	176.1	170.6	164.2	156.9	147.8
32.5°	198.9	198.0	196.1	193.4	188.8	186.1	184.3	177.9	170.6	162.4	153.3
35°	207.1	206.2	204.3	200.7	196.1	194.3	191.6	185.2	177.0	168.8	158.7
37.5°	215.3	214.4	212.6	208.9	204.3	201.6	198.0	191.6	183.4	173.3	163.3
40°	222.6	221.7	219.9	216.2	210.7	208.0	204.3	198.0	188.8	178.8	167.9
42.5°	229.9	229.0	226.2	222.6	217.1	214.4	210.7	203.4	194.3	184.3	172.4
45°	238.1	237.2	233.5	229.0	223.5	220.8	217.1	208.9	198.9	187.9	176.1
47.5°	244.5	243.6	240.8	235.4	229.0	226.2	221.7	213.5	203.4	192.5	179.7
50°	250.0	249.0	246.3	242.7	233.5	230.8	226.2	218.0	207.1	195.2	182.5
52.5°	254.5	253.6	250.9	247.2	240.8	236.3	230.8	221.7	210.7	198.9	185.2
55°	259.1	258.2	255.4	250.9	244.5	240.8	235.4	225.3	213.5	201.6	187.9
57.5°	262.7	261.8	259.1	253.6	247.2	243.6	239.0	227.2	216.2	203.4	188.8
60°	265.5	264.6	261.8	257.3	250.0	246.3	241.7	229.9	218.0	205.3	190.7
62.5°	269.1	267.3	264.6	259.1	252.7	249.0	244.5	231.7	219.9	206.2	191.6
65°	270.0	269.1	266.4	260.9	254.5	250.0	245.4	232.6	220.8	207.1	191.6
67.5°	271.9	270.9	267.3	261.8	255.4	251.8	246.3	233.5	221.7	207.1	192.5
70°	272.8	270.9	268.2	262.7	255.4	251.8	247.2	235.4	221.7	207.1	191.6
72.5°	272.8	270.9	268.2	262.7	255.4	250.9	246.3	233.5	220.8	206.2	190.7
75°	270.9	270.0	267.3	261.8	254.5	250.0	245.4	231.7	219.9	205.3	189.8
77.5°	270.0	268.2	265.5	260.0	252.7	249.0	243.6	230.8	218.0	203.4	187.9
80°	267.3	266.4	262.7	258.2	250.9	246.3	241.7	228.1	215.3	200.7	185.2
82.5°	264.6	263.6	260.0	255.4	248.1	243.6	239.0	225.3	212.6	198.0	182.5
85°	260.9	260.0	257.3	251.8	244.5	239.9	232.6	221.7	208.9	194.3	178.8
87.5°	257.3	256.3	252.7	247.2	240.8	235.4	229.0	218.0	205.3	190.7	174.2
90°	252.7	251.8	248.1	243.6	235.4	229.9	224.4	213.5	200.7	186.1	170.6
92.5°	247.2	246.3	243.6	238.1	229.0	224.4	219.9	208.9	196.1	181.5	166.0
95°	241.7	240.8	237.2	229.9	223.5	218.9	214.4	203.4	190.7	176.1	160.6
97.5°	233.5	232.6	229.0	224.4	217.1	212.6	208.0	197.0	185.2	170.6	155.1
100°	226.2	225.3	222.6	217.1	210.7	206.2	201.6	190.7	178.8	164.2	149.6
102.5°	218.9	218.0	215.3	209.8	203.4	198.9	194.3	183.4	171.5	157.8	143.2
105°	210.7	209.8	207.1	201.6	195.2	190.7	186.1	176.1	164.2	151.4	136.8
107.5°	202.5	201.6	198.9	193.4	187.0	183.4	178.8	168.8	156.9	144.1	129.5
110°	193.4	192.5	189.8	185.2	177.9	174.2	170.6	160.6	148.7	135.9	122.2



TEST NUMBER: P190091

CATALOG NUMBER: TRE11-LD4-20W-50-OPL-BK-UNV-EDC1

CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	184.3	183.4	180.6	176.1	169.7	166.0	161.5	152.3	141.4	128.6	114.9
115°	175.2	174.2	170.6	166.9	160.6	156.9	152.3	143.2	132.3	120.4	107.6
117.5°	165.1	164.2	161.5	156.9	150.5	146.9	143.2	134.1	124.1	112.2	100.3
120°	155.1	154.2	151.4	146.9	141.4	137.8	134.1	125.9	115.9	104.0	93.1
122.5°	145.0	144.1	141.4	137.8	131.4	127.7	125.0	116.8	106.7	95.8	84.8
125°	133.2	133.2	130.5	126.8	122.2	117.7	114.9	106.7	97.6	87.6	77.5
127.5°	122.2	123.2	120.4	116.8	111.3	107.6	104.9	97.6	89.4	79.4	69.3
130°	112.2	112.2	109.5	106.7	101.3	98.5	94.9	88.5	80.3	71.2	62.0
132.5°	104.9	104.0	102.2	98.5	94.0	91.2	87.6	81.2	73.9	64.8	56.6
135°	94.0	92.1	91.2	87.6	83.0	81.2	78.5	72.1	64.8	56.6	49.3
137.5°	83.0	83.0	81.2	77.5	73.9	71.2	68.4	62.9	55.6	48.3	42.0
140°	72.1	72.1	70.2	66.6	62.9	61.1	58.4	52.9	46.5	41.1	35.6
142.5°	61.1	60.2	59.3	56.6	52.9	51.1	49.3	43.8	38.3	33.8	28.3
145°	50.2	50.2	49.3	46.5	43.8	41.1	39.2	35.6	31.0	26.5	22.8
147.5°	40.1	39.2	39.2	36.5	33.8	32.8	31.0	27.4	23.7	20.1	17.3
150°	31.0	30.1	29.2	27.4	25.5	24.6	22.8	20.1	17.3	14.6	12.8
152.5°	21.9	21.0	21.0	19.2	17.3	16.4	15.5	13.7	11.9	10.0	9.1
155°	13.7	13.7	12.8	11.9	10.9	10.0	9.1	8.2	7.3	6.4	5.5
157.5°	6.4	6.4	6.4	5.5	5.5	4.6	4.6	4.6	3.6	3.6	3.6
160°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.7	2.7	2.7	1.8
162.5°	0.9	0.9	0.9	0.9	0.9	1.8	1.8	1.8	1.8	1.8	1.8
165°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.8	1.8	1.8	1.8
167.5°	0.9	0.9	0.9	0.9	0.9	1.8	0.9	1.8	1.8	1.8	1.8
170°	0.9	0.9	0.9	0.9	0.9	0.9	1.8	1.8	1.8	1.8	1.8
172.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.8	1.8	1.8	1.8
175°	0.9	0.9	0.9	0.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8
177.5°	0.9	0.9	0.9	0.9	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



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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	62.9	62.9	62.9	62.9	62.9	62.9	62.9	62.9	62.9	62.9	62.9
2.5°	70.2	69.3	68.4	68.4	67.5	67.5	66.6	65.7	63.9	62.9	62.0
5°	77.5	75.7	74.8	73.0	72.1	71.2	69.3	67.5	65.7	62.9	61.1
7.5°	84.8	82.1	80.3	77.5	75.7	74.8	72.1	69.3	65.7	62.9	60.2
10°	91.2	88.5	84.8	81.2	79.4	77.5	73.9	70.2	66.6	62.9	59.3
12.5°	98.5	94.0	89.4	85.8	83.0	81.2	76.6	72.1	66.6	62.0	57.5
15°	104.9	100.3	94.9	89.4	86.7	83.9	78.5	73.0	67.5	62.0	56.6
17.5°	111.3	105.8	100.3	94.0	90.3	87.6	81.2	74.8	68.4	62.0	55.6
20°	116.8	110.4	104.0	96.7	93.1	89.4	82.1	74.8	67.5	61.1	53.8
22.5°	123.2	115.9	108.6	100.3	96.7	92.1	83.9	75.7	67.5	60.2	52.0
25°	128.6	120.4	112.2	104.0	99.4	94.9	85.8	76.6	67.5	59.3	51.1
27.5°	134.1	125.9	115.9	106.7	102.2	96.7	87.6	77.5	67.5	58.4	50.2
30°	139.6	129.5	119.5	109.5	104.0	98.5	88.5	77.5	67.5	57.5	48.3
32.5°	144.1	134.1	123.2	112.2	105.8	100.3	89.4	77.5	67.5	56.6	46.5
35°	148.7	137.8	125.9	114.0	108.6	102.2	90.3	78.5	66.6	55.6	45.6
37.5°	152.3	141.4	128.6	115.9	110.4	103.1	91.2	78.5	66.6	54.7	44.7
40°	156.9	144.1	131.4	118.6	111.3	104.9	91.2	78.5	65.7	53.8	42.9
42.5°	160.6	147.8	134.1	119.5	113.1	105.8	92.1	78.5	64.8	52.9	42.0
45°	164.2	150.5	135.9	121.3	114.0	106.7	92.1	77.5	64.8	52.0	41.1
47.5°	166.9	152.3	137.8	122.2	114.9	106.7	92.1	77.5	63.9	51.1	39.2
50°	168.8	154.2	138.7	123.2	115.9	107.6	92.1	76.6	62.9	50.2	38.3
52.5°	171.5	156.0	140.5	124.1	115.9	107.6	92.1	76.6	62.0	49.3	36.5
55°	173.3	156.9	140.5	124.1	115.9	107.6	91.2	75.7	61.1	47.4	35.6
57.5°	174.2	157.8	141.4	124.1	115.9	107.6	90.3	74.8	60.2	46.5	34.7
60°	175.2	158.7	141.4	124.1	114.9	106.7	89.4	73.9	58.4	45.6	32.8
62.5°	176.1	158.7	141.4	124.1	114.9	105.8	88.5	72.1	57.5	43.8	31.9
65°	176.1	158.7	140.5	123.2	114.0	104.9	87.6	71.2	56.6	42.9	31.0
67.5°	176.1	158.7	140.5	122.2	113.1	104.0	86.7	70.2	54.7	42.0	30.1
70°	175.2	157.8	138.7	120.4	111.3	102.2	84.8	68.4	53.8	40.1	29.2
72.5°	174.2	156.0	137.8	119.5	110.4	101.3	83.0	66.6	52.0	39.2	27.4
75°	172.4	154.2	135.9	117.7	107.6	98.5	81.2	64.8	50.2	37.4	26.5
77.5°	170.6	152.3	134.1	114.9	105.8	96.7	79.4	62.9	48.3	36.5	25.5
80°	167.9	149.6	131.4	113.1	103.1	94.9	77.5	61.1	47.4	34.7	23.7
82.5°	165.1	146.9	128.6	110.4	101.3	92.1	74.8	59.3	45.6	32.8	22.8
85°	161.5	144.1	125.0	106.7	98.5	89.4	73.0	57.5	43.8	31.9	21.9
87.5°	157.8	140.5	121.3	104.0	94.9	85.8	70.2	54.7	41.1	30.1	20.1
90°	154.2	135.9	118.6	100.3	91.2	83.0	67.5	52.9	39.2	28.3	19.2
92.5°	149.6	132.3	114.0	96.7	88.5	80.3	64.8	50.2	37.4	26.5	18.2
95°	144.1	127.7	109.5	93.1	84.8	76.6	61.1	47.4	35.6	25.5	17.3
97.5°	139.6	122.2	104.9	88.5	80.3	73.0	58.4	44.7	33.8	23.7	15.5
100°	133.2	116.8	100.3	84.8	76.6	69.3	54.7	42.0	31.0	21.9	14.6
102.5°	127.7	111.3	94.9	80.3	72.1	64.8	52.0	39.2	29.2	20.1	13.7
105°	121.3	105.8	90.3	74.8	67.5	61.1	48.3	36.5	26.5	19.2	12.8
107.5°	114.9	99.4	84.8	70.2	63.9	57.5	44.7	33.8	25.5	17.3	11.9
110°	108.6	94.0	79.4	65.7	59.3	52.9	42.0	31.0	22.8	15.5	10.0



TEST NUMBER: P190091

CATALOG NUMBER: TRE11-LD4-20W-50-OPL-BK-UNV-EDC1

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	101.3	87.6	73.9	61.1	54.7	48.3	38.3	29.2	21.0	14.6	9.1
115°	94.9	81.2	68.4	55.6	50.2	44.7	34.7	26.5	19.2	12.8	8.2
117.5°	87.6	74.8	62.9	51.1	46.5	41.1	31.9	23.7	17.3	11.9	7.3
120°	80.3	68.4	57.5	46.5	42.0	37.4	28.3	21.0	15.5	10.9	7.3
122.5°	73.9	62.0	52.0	42.0	37.4	33.8	25.5	19.2	13.7	9.1	6.4
125°	66.6	56.6	46.5	37.4	33.8	29.2	22.8	16.4	11.9	8.2	5.5
127.5°	59.3	50.2	41.1	33.8	29.2	26.5	20.1	14.6	10.0	6.4	4.6
130°	52.9	44.7	36.5	29.2	25.5	22.8	17.3	12.8	9.1	6.4	3.6
132.5°	48.3	40.1	32.8	26.5	22.8	20.1	15.5	10.9	8.2	5.5	3.6
135°	42.0	34.7	28.3	22.8	20.1	17.3	12.8	9.1	6.4	4.6	3.6
137.5°	35.6	29.2	23.7	19.2	16.4	14.6	10.9	8.2	5.5	3.6	2.7
140°	29.2	24.6	19.2	15.5	13.7	11.9	9.1	6.4	4.6	3.6	2.7
142.5°	23.7	20.1	15.5	12.8	10.9	9.1	7.3	5.5	3.6	2.7	2.7
145°	19.2	15.5	12.8	10.0	8.2	7.3	5.5	4.6	2.7	2.7	1.8
147.5°	14.6	11.9	9.1	7.3	6.4	5.5	4.6	3.6	2.7	1.8	1.8
150°	10.0	8.2	7.3	5.5	4.6	4.6	3.6	2.7	2.7	1.8	1.8
152.5°	7.3	6.4	5.5	4.6	3.6	3.6	2.7	2.7	1.8	1.8	1.8
155°	4.6	4.6	3.6	2.7	2.7	2.7	2.7	1.8	1.8	1.8	1.8
157.5°	2.7	2.7	2.7	2.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8
160°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
162.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.7	2.7	2.7	2.7
165°	1.8	1.8	1.8	1.8	1.8	1.8	2.7	2.7	2.7	2.7	2.7
167.5°	1.8	1.8	1.8	1.8	2.7	2.7	2.7	2.7	2.7	2.7	2.7
170°	1.8	1.8	1.8	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
172.5°	1.8	1.8	1.8	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
175°	1.8	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
177.5°	1.8	1.8	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
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: P190091

CATALOG NUMBER: TRE11-LD4-20W-50-OPL-BK-UNV-EDC1

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	62.9	62.9	62.9	62.9	62.9	62.9	62.9	62.9	62.9	62.9	62.9
2.5°	61.1	60.2	59.3	58.4	58.4	57.5	56.6	55.6	54.7	53.8	52.9
5°	59.3	57.5	55.6	54.7	53.8	52.0	50.2	48.3	47.4	45.6	44.7
7.5°	57.5	54.7	52.0	51.1	49.3	46.5	44.7	42.0	40.1	38.3	36.5
10°	55.6	52.0	48.3	46.5	44.7	42.0	39.2	36.5	33.8	31.9	30.1
12.5°	52.9	49.3	44.7	42.9	41.1	37.4	33.8	31.0	28.3	25.5	22.8
15°	51.1	46.5	42.0	39.2	37.4	32.8	29.2	25.5	22.8	20.1	17.3
17.5°	49.3	43.8	38.3	35.6	33.8	29.2	24.6	21.0	17.3	14.6	12.8
20°	47.4	41.1	35.6	32.8	30.1	24.6	20.1	16.4	12.8	10.9	8.2
22.5°	45.6	39.2	32.8	29.2	26.5	21.0	16.4	12.8	10.0	7.3	6.4
25°	43.8	36.5	30.1	26.5	23.7	18.2	13.7	10.0	7.3	5.5	5.5
27.5°	42.0	34.7	27.4	23.7	21.0	14.6	10.9	7.3	5.5	5.5	5.5
30°	40.1	31.9	24.6	21.0	18.2	11.9	8.2	5.5	5.5	5.5	5.5
32.5°	38.3	30.1	22.8	19.2	15.5	10.0	6.4	5.5	5.5	5.5	4.6
35°	36.5	28.3	20.1	16.4	13.7	8.2	5.5	5.5	5.5	4.6	4.6
37.5°	34.7	26.5	18.2	14.6	11.9	6.4	5.5	5.5	4.6	4.6	4.6
40°	33.8	24.6	16.4	12.8	10.0	5.5	5.5	4.6	4.6	4.6	4.6
42.5°	31.9	22.8	14.6	10.9	8.2	5.5	5.5	4.6	4.6	4.6	3.6
45°	31.0	21.9	13.7	10.0	7.3	5.5	5.5	4.6	4.6	4.6	3.6
47.5°	29.2	20.1	11.9	8.2	6.4	5.5	4.6	4.6	4.6	3.6	3.6
50°	28.3	19.2	10.9	7.3	5.5	4.6	4.6	4.6	3.6	3.6	3.6
52.5°	26.5	17.3	10.0	6.4	5.5	4.6	4.6	4.6	3.6	3.6	2.7
55°	25.5	16.4	8.2	5.5	5.5	4.6	4.6	3.6	3.6	3.6	2.7
57.5°	24.6	15.5	8.2	5.5	4.6	4.6	4.6	3.6	3.6	3.6	2.7
60°	22.8	14.6	7.3	4.6	4.6	4.6	4.6	3.6	3.6	2.7	2.7
62.5°	21.9	13.7	6.4	4.6	4.6	4.6	3.6	3.6	3.6	2.7	2.7
65°	21.0	12.8	5.5	4.6	4.6	4.6	3.6	3.6	3.6	2.7	2.7
67.5°	20.1	11.9	5.5	4.6	4.6	4.6	3.6	3.6	3.6	2.7	2.7
70°	19.2	10.9	5.5	4.6	4.6	4.6	3.6	3.6	2.7	2.7	1.8
72.5°	18.2	10.0	4.6	4.6	4.6	3.6	3.6	3.6	2.7	2.7	1.8
75°	17.3	10.0	4.6	4.6	4.6	3.6	3.6	3.6	2.7	2.7	1.8
77.5°	16.4	9.1	4.6	4.6	4.6	3.6	3.6	3.6	2.7	2.7	1.8
80°	15.5	8.2	4.6	4.6	4.6	3.6	3.6	2.7	2.7	1.8	1.8
82.5°	14.6	8.2	4.6	4.6	3.6	3.6	3.6	2.7	2.7	1.8	1.8
85°	13.7	7.3	3.6	3.6	3.6	3.6	2.7	2.7	2.7	1.8	1.8
87.5°	12.8	6.4	3.6	3.6	3.6	2.7	2.7	2.7	1.8	1.8	0.9
90°	11.9	6.4	3.6	3.6	3.6	2.7	2.7	2.7	1.8	1.8	0.9
92.5°	10.9	5.5	3.6	3.6	2.7	2.7	2.7	1.8	1.8	1.8	0.9
95°	10.9	5.5	3.6	3.6	2.7	2.7	2.7	1.8	1.8	0.9	0.9
97.5°	10.0	5.5	3.6	2.7	2.7	2.7	2.7	1.8	1.8	0.9	0.9
100°	9.1	4.6	2.7	2.7	2.7	2.7	1.8	1.8	1.8	0.9	0.9
102.5°	8.2	4.6	2.7	2.7	2.7	1.8	1.8	1.8	0.9	0.9	0.9
105°	7.3	3.6	2.7	2.7	2.7	1.8	1.8	1.8	0.9	0.9	0.9
107.5°	7.3	3.6	2.7	2.7	2.7	1.8	1.8	1.8	0.9	0.9	0.9
110°	6.4	3.6	2.7	2.7	1.8	1.8	1.8	1.8	0.9	0.9	0.9



TEST NUMBER: P190091

CATALOG NUMBER: TRE11-LD4-20W-50-OPL-BK-UNV-EDC1

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	5.5	2.7	2.7	1.8	1.8	1.8	1.8	1.8	0.9	0.9	0.9
115°	5.5	2.7	1.8	1.8	1.8	1.8	1.8	1.8	0.9	0.9	0.9
117.5°	4.6	2.7	2.7	1.8	1.8	1.8	1.8	1.8	0.9	0.9	0.9
120°	4.6	2.7	2.7	1.8	1.8	1.8	1.8	1.8	1.8	0.9	0.9
122.5°	3.6	2.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.9	0.9
125°	3.6	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.9	0.9	0.9
127.5°	2.7	1.8	1.8	1.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9
130°	2.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.9	0.9	0.9
132.5°	2.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.9	0.9	0.9
135°	2.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.9	0.9	0.9
137.5°	2.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.9	0.9
140°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.9	0.9	0.9
142.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.9	0.9
145°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.9	0.9
147.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.9	0.9	0.9
150°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.9	0.9
152.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.9
155°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.9
157.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.9
160°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
162.5°	2.7	2.7	2.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
165°	2.7	2.7	1.8	2.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8
167.5°	2.7	2.7	2.7	2.7	2.7	1.8	1.8	1.8	1.8	1.8	1.8
170°	2.7	2.7	2.7	2.7	2.7	2.7	1.8	1.8	1.8	1.8	1.8
172.5°	2.7	2.7	2.7	2.7	2.7	2.7	1.8	1.8	1.8	1.8	1.8
175°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	1.8	1.8	1.8	1.8
177.5°	2.7	2.7	2.7	2.7	2.7	2.7	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: P190091

CATALOG NUMBER: TRE11-LD4-20W-50-OPL-BK-UNV-EDC1

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	62.9	62.9	62.9	62.9	62.9	62.9	62.9	62.9
2.5°	52.0	51.1	51.1	51.1	50.2	50.2	50.2	49.3
5°	42.9	42.0	42.0	42.0	41.1	41.1	40.1	40.1
7.5°	35.6	33.8	33.8	32.8	31.9	31.9	31.9	31.0
10°	28.3	26.5	25.5	24.6	24.6	23.7	23.7	22.8
12.5°	21.0	19.2	19.2	18.2	17.3	16.4	16.4	15.5
15°	15.5	13.7	13.7	12.8	11.9	10.9	10.9	10.9
17.5°	10.9	9.1	9.1	8.2	7.3	7.3	6.4	6.4
20°	7.3	6.4	5.5	5.5	5.5	5.5	5.5	5.5
22.5°	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
25°	5.5	5.5	5.5	5.5	5.5	4.6	4.6	4.6
27.5°	5.5	5.5	4.6	4.6	4.6	4.6	4.6	4.6
30°	5.5	4.6	4.6	4.6	4.6	4.6	4.6	4.6
32.5°	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
35°	4.6	4.6	4.6	4.6	3.6	3.6	3.6	3.6
37.5°	4.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
40°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	2.7
42.5°	3.6	3.6	3.6	3.6	2.7	2.7	2.7	2.7
45°	3.6	3.6	3.6	2.7	2.7	2.7	2.7	2.7
47.5°	3.6	2.7	2.7	2.7	2.7	2.7	1.8	1.8
50°	2.7	2.7	2.7	2.7	1.8	1.8	1.8	1.8
52.5°	2.7	2.7	2.7	1.8	1.8	1.8	1.8	1.8
55°	2.7	1.8	1.8	1.8	1.8	1.8	0.9	0.9
57.5°	2.7	1.8	1.8	1.8	1.8	0.9	0.9	0.9
60°	1.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9
62.5°	1.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9
65°	1.8	1.8	1.8	0.9	0.9	0.9	0.9	0.9
67.5°	1.8	1.8	1.8	0.9	0.9	0.9	0.9	0.9
70°	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9
72.5°	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9
75°	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9
77.5°	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9
80°	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9
82.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
85°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
87.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
90°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
92.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.0
95°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
97.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
100°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
102.5°	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0
105°	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
107.5°	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0
110°	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P190091

CATALOG NUMBER: TRE11-LD4-20W-50-OPL-BK-UNV-EDC1

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
112.5°	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0
115°	0.9	0.9	0.9	0.9	0.0	0.0	0.0	0.0
117.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
120°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
122.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
125°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
127.5°	0.9	0.9	0.9	0.9	0.0	0.0	0.0	0.0
130°	0.9	0.9	0.9	0.9	0.9	0.9	0.0	0.9
132.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.0
135°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
137.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
140°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
142.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
145°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
147.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
150°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
152.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
155°	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
160°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
162.5°	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9
165°	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9
167.5°	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9
170°	1.8	1.8	1.8	0.9	0.9	0.9	0.9	0.9
172.5°	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9
175°	1.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9
177.5°	1.8	1.8	1.8	0.9	0.9	0.9	0.9	0.9
180°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8

(END OF REPORT)