

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: P190118

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

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P190118
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-LD4-20W-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 450mA
OT40W/1

Summary

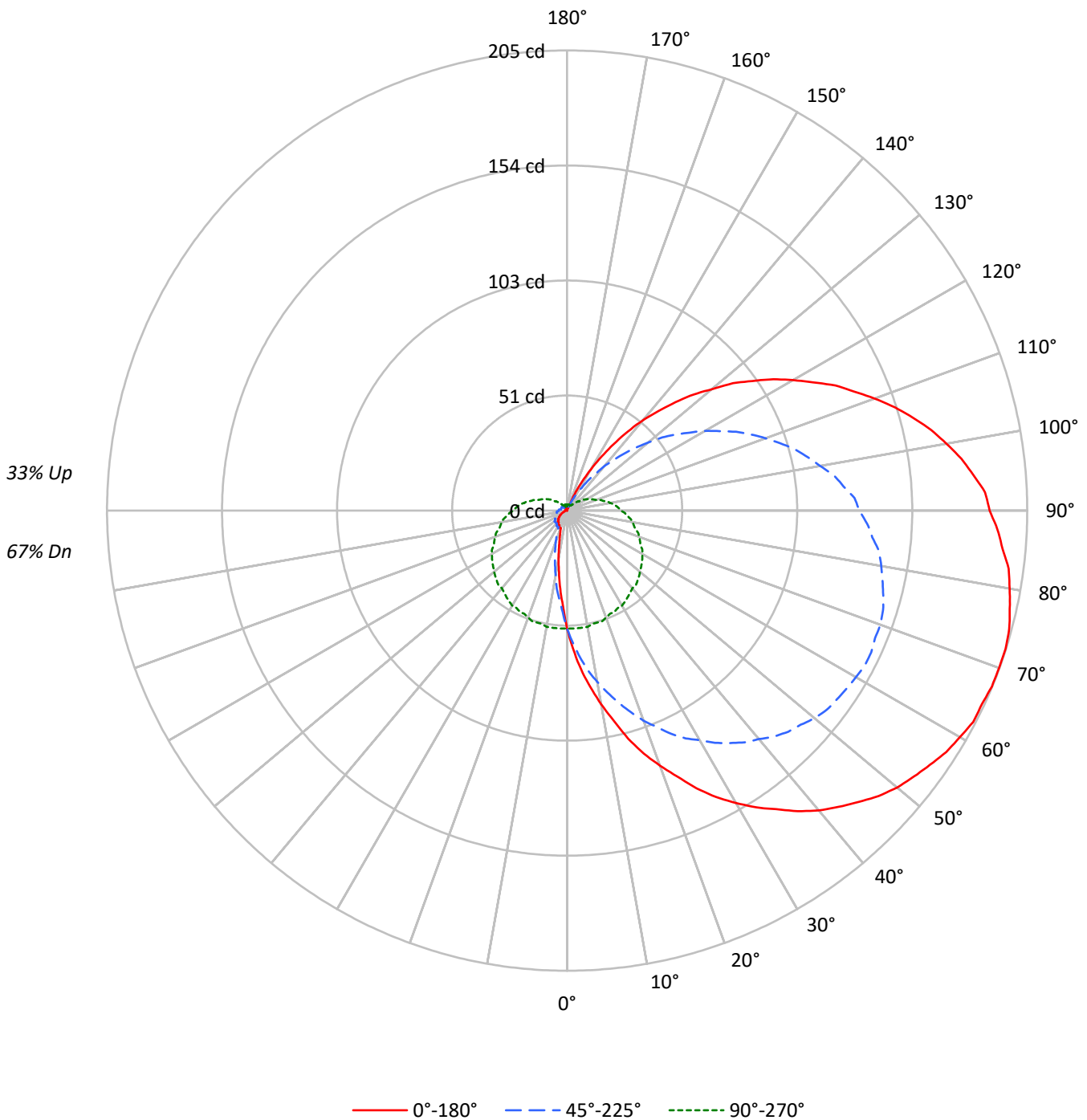
Lumens per Lamp: N/A
Luminaire Lumens: 642.0 lumens
Efficiency: N/A
Efficacy: 29.3 lumens/watt
Spacing Criteria (0/90/45): 2.37 / 1.38 / 2.12
Luminous Opening: Rectangular w/ Sides (W: 0.92' x L: 0.29' x H: 0.92')
CIE Type: Semi-Direct

Input Watts (W): 21.9
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	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°	2118	2118	2118
5°	2251	1955	1113
10°	2304	1828	581
15°	2380	1699	292
20°	2416	1593	166
25°	2459	1509	150
30°	2484	1441	122
35°	2494	1362	100
40°	2520	1292	94
45°	2523	1261	76
50°	2533	1212	61
55°	2525	1174	47
60°	2524	1141	35
65°	2510	1091	22
70°	2502	1071	22
75°	2492	1032	11
80°	2466	1025	11
85°	2436	996	11



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	5.1	0.8
10°-20°	15.7	2.4
20°-30°	28.0	4.4
30°-40°	41.7	6.5
40°-50°	54.8	8.5
50°-60°	65.7	10.2
60°-70°	72.7	11.3
70°-80°	75.1	11.7
80°-90°	72.3	11.3
90°-100°	65.3	10.2
100°-110°	54.0	8.4
110°-120°	40.5	6.3
120°-130°	27.1	4.2
130°-140°	15.1	2.4
140°-150°	6.4	1.0
150°-160°	1.6	0.3
160°-170°	0.5	0.1
170°-180°	0.2	0.0
0°-30°	48.8	7.6
0°-40°	90.5	14.1
0°-60°	211.0	32.9
0°-90°	431.1	67.2
90°-120°	159.9	24.9
90°-150°	208.5	32.5
90°-180°	211.0	32.9
0°-180°	642.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	53	53	53	53	53	
5°	71	66	53	40	35	7
15°	105	89	52	21	13	30
25°	136	110	50	10	8	63
35°	162	126	47	8	6	102
45°	184	139	44	7	6	142
55°	197	147	41	6	4	177
65°	204	150	36	6	2	203
75°	204	146	31	6	1	215
85°	195	136	27	5	1	160
90°	188	130	24	4	1	103
95°	182	124	22	4	1	146
105°	160	105	17	3	1	169
115°	132	83	12	3	1	130
125°	101	59	8	3	1	91
135°	68	36	5	2	1	53
145°	36	17	3	2	1	23
155°	9	4	3	2	1	5
165°	1	2	2	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°	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6
2.5°	61.8	61.8	61.8	61.8	61.8	60.9	60.9	60.9	60.9	60.0	59.0
5°	71.0	70.1	70.1	70.1	70.1	69.2	68.3	68.3	67.3	66.4	65.5
7.5°	79.3	79.3	78.4	78.4	77.5	76.6	76.6	75.7	74.7	72.9	72.0
10°	87.6	87.6	86.7	86.7	85.8	84.9	84.0	83.0	81.2	79.3	77.5
12.5°	95.9	95.9	95.0	95.0	93.2	92.3	92.3	90.4	87.6	85.8	83.0
15°	105.2	104.3	104.3	102.4	101.5	100.6	99.6	97.8	95.0	92.3	88.6
17.5°	113.5	113.5	111.6	110.7	108.9	107.9	107.0	104.3	101.5	97.8	94.1
20°	120.9	120.9	119.0	118.1	116.2	115.3	113.5	110.7	107.9	104.3	99.6
22.5°	128.2	128.2	126.4	125.5	122.7	121.8	119.9	117.2	113.5	108.9	104.3
25°	136.5	135.6	134.7	132.9	130.1	129.2	127.3	123.6	119.9	114.4	109.8
27.5°	143.9	143.0	142.1	140.2	137.5	135.6	133.8	130.1	125.5	119.9	114.4
30°	150.4	149.5	148.5	146.7	143.9	142.1	139.3	135.6	130.1	124.5	118.1
32.5°	156.8	155.9	155.0	152.2	149.5	147.6	145.8	141.2	135.6	129.2	122.7
35°	162.4	161.5	160.5	158.7	155.0	153.1	150.4	145.8	140.2	133.8	126.4
37.5°	168.8	167.9	166.1	164.2	160.5	158.7	155.9	150.4	144.8	137.5	130.1
40°	174.4	173.4	171.6	169.8	165.1	163.3	160.5	155.0	148.5	141.2	132.9
42.5°	179.0	178.1	176.2	174.4	169.8	167.9	165.1	159.6	152.2	144.8	136.5
45°	183.6	182.7	180.8	179.0	174.4	172.5	169.8	163.3	155.9	148.5	139.3
47.5°	188.2	187.3	185.4	182.7	178.1	175.3	172.5	167.0	158.7	151.3	141.2
50°	191.9	191.0	189.1	186.4	181.7	179.0	176.2	169.8	162.4	153.1	143.9
52.5°	194.7	193.7	191.9	189.1	184.5	181.7	179.0	172.5	164.2	155.0	145.8
55°	197.4	196.5	194.7	191.9	187.3	184.5	181.7	174.4	166.1	156.8	146.7
57.5°	200.2	199.3	197.4	193.7	189.1	186.4	183.6	176.2	167.9	158.7	147.6
60°	202.0	201.1	199.3	195.6	191.0	188.2	184.5	177.1	168.8	159.6	148.5
62.5°	203.9	203.0	200.2	196.5	191.9	189.1	186.4	178.1	169.8	159.6	149.5
65°	203.9	203.9	201.1	197.4	192.8	190.1	186.4	179.0	170.7	160.5	149.5
67.5°	204.8	203.9	202.0	198.4	192.8	190.1	187.3	179.0	170.7	160.5	148.5
70°	204.8	203.9	202.0	198.4	193.7	190.1	187.3	179.0	169.8	159.6	148.5
72.5°	204.8	203.9	201.1	197.4	192.8	190.1	186.4	178.1	168.8	158.7	147.6
75°	203.9	203.0	200.2	196.5	191.9	189.1	185.4	177.1	167.9	157.8	145.8
77.5°	202.0	201.1	199.3	195.6	190.1	187.3	183.6	176.2	167.0	155.9	143.9
80°	200.2	199.3	197.4	193.7	188.2	185.4	181.7	173.4	164.2	154.1	142.1
82.5°	198.4	197.4	194.7	191.0	186.4	182.7	179.0	171.6	162.4	151.3	140.2
85°	194.7	194.7	191.9	188.2	182.7	179.9	176.2	167.9	159.6	148.5	136.5
87.5°	191.9	191.0	188.2	184.5	179.9	176.2	173.4	165.1	155.9	144.8	133.8
90°	188.2	187.3	184.5	181.7	176.2	173.4	169.8	161.5	152.2	142.1	130.1
92.5°	186.4	185.4	182.7	179.0	174.4	171.6	167.0	159.6	150.4	139.3	128.2
95°	181.7	180.8	179.0	174.4	169.8	167.0	163.3	155.0	145.8	135.6	123.6
97.5°	177.1	176.2	174.4	169.8	165.1	162.4	158.7	150.4	141.2	131.0	119.9
100°	171.6	170.7	168.8	165.1	159.6	156.8	153.1	145.8	136.5	126.4	114.4
102.5°	166.1	165.1	162.4	158.7	154.1	151.3	147.6	140.2	131.0	120.9	109.8
105°	159.6	158.7	156.8	153.1	148.5	145.8	142.1	133.8	125.5	115.3	105.2
107.5°	153.1	152.2	150.4	146.7	142.1	139.3	135.6	128.2	119.9	109.8	99.6
110°	145.8	144.8	143.0	139.3	134.7	131.9	129.2	121.8	113.5	104.3	94.1



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CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	138.4	138.4	136.5	132.9	128.2	125.5	122.7	115.3	107.0	97.8	88.6
115°	131.9	131.0	129.2	125.5	121.8	119.0	115.3	108.9	100.6	92.3	83.0
117.5°	123.6	123.6	121.8	118.1	114.4	111.6	108.9	101.5	94.1	85.8	76.6
120°	116.2	116.2	114.4	110.7	107.0	104.3	101.5	95.0	87.6	79.3	71.0
122.5°	108.9	107.9	106.1	103.3	99.6	96.9	94.1	88.6	81.2	72.9	64.6
125°	100.6	100.6	98.7	95.9	91.3	89.5	86.7	81.2	73.8	66.4	59.0
127.5°	93.2	92.3	90.4	87.6	84.0	82.1	79.3	73.8	67.3	60.0	53.5
130°	84.0	84.0	82.1	80.3	76.6	73.8	72.0	66.4	60.9	54.4	47.1
132.5°	76.6	75.7	73.8	72.0	68.3	66.4	64.6	60.0	53.5	48.0	41.5
135°	68.3	67.3	66.4	63.7	60.9	59.0	57.2	52.6	47.1	41.5	36.0
137.5°	60.0	59.0	58.1	56.3	52.6	51.7	49.8	45.2	40.6	35.1	30.4
140°	52.6	50.7	49.8	48.0	45.2	44.3	42.4	37.8	34.1	29.5	25.8
142.5°	44.3	43.4	42.4	40.6	37.8	36.9	35.1	31.4	27.7	24.0	20.3
145°	36.0	35.1	34.1	33.2	30.4	29.5	28.6	24.9	22.1	19.4	16.6
147.5°	28.6	27.7	27.7	25.8	24.0	23.1	22.1	19.4	16.6	14.8	12.0
150°	21.2	21.2	20.3	19.4	17.5	16.6	15.7	13.8	12.0	10.1	9.2
152.5°	14.8	13.8	13.8	12.9	12.0	11.1	10.1	9.2	8.3	7.4	6.5
155°	9.2	8.3	8.3	8.3	6.5	6.5	6.5	5.5	4.6	4.6	3.7
157.5°	3.7	3.7	3.7	3.7	3.7	3.7	2.8	2.8	2.8	2.8	2.8
160°	0.9	0.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
162.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	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	0.9	0.9	1.8	1.8	1.8	1.8
170°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.8	1.8	1.8	1.8
172.5°	0.9	0.9	0.9	0.9	1.8	0.9	1.8	1.8	1.8	1.8	1.8
175°	0.9	1.8	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°	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6
2.5°	59.0	58.1	58.1	57.2	56.3	56.3	55.4	54.4	53.5	52.6	51.7
5°	64.6	62.7	61.8	60.9	60.0	59.0	57.2	56.3	54.4	52.6	51.7
7.5°	70.1	68.3	66.4	63.7	62.7	61.8	60.0	57.2	55.4	52.6	50.7
10°	74.7	72.9	70.1	67.3	65.5	64.6	60.9	58.1	55.4	52.6	49.8
12.5°	80.3	76.6	73.8	70.1	68.3	66.4	62.7	59.0	55.4	51.7	48.9
15°	84.9	81.2	77.5	73.8	71.0	69.2	64.6	60.9	56.3	51.7	48.0
17.5°	90.4	85.8	81.2	76.6	73.8	72.0	66.4	61.8	56.3	51.7	47.1
20°	95.0	89.5	84.9	79.3	76.6	73.8	67.3	61.8	56.3	50.7	45.2
22.5°	98.7	93.2	87.6	81.2	78.4	74.7	69.2	62.7	56.3	49.8	44.3
25°	103.3	97.8	90.4	84.0	80.3	77.5	70.1	62.7	56.3	49.8	43.4
27.5°	107.9	100.6	94.1	86.7	83.0	78.4	71.0	63.7	56.3	48.9	42.4
30°	111.6	104.3	95.9	88.6	84.0	80.3	72.0	63.7	56.3	48.9	41.5
32.5°	115.3	107.0	98.7	90.4	85.8	81.2	72.9	64.6	56.3	48.0	40.6
35°	118.1	109.8	101.5	92.3	87.6	83.0	73.8	64.6	55.4	47.1	39.7
37.5°	121.8	112.6	103.3	93.2	88.6	84.0	73.8	64.6	55.4	46.1	37.8
40°	124.5	115.3	105.2	95.0	89.5	84.9	74.7	64.6	54.4	45.2	36.9
42.5°	127.3	117.2	107.0	95.9	90.4	84.9	74.7	63.7	54.4	45.2	36.0
45°	129.2	119.0	107.9	96.9	91.3	85.8	74.7	63.7	53.5	44.3	35.1
47.5°	131.0	120.9	109.8	97.8	92.3	85.8	74.7	63.7	52.6	43.4	34.1
50°	132.9	121.8	110.7	98.7	92.3	86.7	74.7	62.7	52.6	42.4	33.2
52.5°	134.7	122.7	110.7	98.7	92.3	86.7	73.8	62.7	51.7	41.5	32.3
55°	135.6	123.6	111.6	98.7	92.3	85.8	73.8	61.8	50.7	40.6	31.4
57.5°	136.5	124.5	111.6	98.7	92.3	85.8	72.9	60.9	49.8	39.7	30.4
60°	136.5	124.5	111.6	98.7	92.3	84.9	72.0	60.0	48.9	38.7	29.5
62.5°	137.5	124.5	111.6	97.8	91.3	84.9	71.0	59.0	48.0	37.8	28.6
65°	136.5	124.5	110.7	96.9	90.4	84.0	70.1	58.1	46.1	36.0	27.7
67.5°	136.5	123.6	109.8	95.9	89.5	83.0	69.2	57.2	45.2	35.1	26.8
70°	135.6	122.7	108.9	95.0	88.6	81.2	68.3	55.4	44.3	34.1	25.8
72.5°	134.7	121.8	107.9	94.1	86.7	80.3	66.4	54.4	43.4	33.2	24.9
75°	133.8	119.9	106.1	92.3	85.8	78.4	65.5	52.6	41.5	31.4	24.0
77.5°	131.9	118.1	104.3	90.4	84.0	76.6	63.7	51.7	40.6	30.4	22.1
80°	129.2	116.2	102.4	88.6	81.2	74.7	61.8	49.8	38.7	29.5	21.2
82.5°	127.3	114.4	99.6	85.8	79.3	72.9	60.0	48.0	37.8	28.6	20.3
85°	124.5	110.7	96.9	84.0	76.6	70.1	58.1	46.1	36.0	26.8	19.4
87.5°	120.9	107.9	94.1	81.2	74.7	67.3	55.4	44.3	34.1	25.8	18.5
90°	118.1	105.2	91.3	78.4	72.0	65.5	53.5	42.4	32.3	24.0	17.5
92.5°	115.3	102.4	89.5	76.6	69.2	63.7	51.7	40.6	31.4	23.1	16.6
95°	111.6	98.7	85.8	72.9	66.4	60.9	48.9	38.7	29.5	22.1	15.7
97.5°	107.9	95.0	82.1	70.1	63.7	58.1	47.1	36.9	27.7	21.2	14.8
100°	103.3	90.4	78.4	66.4	60.0	54.4	44.3	34.1	25.8	19.4	13.8
102.5°	98.7	85.8	73.8	62.7	57.2	51.7	41.5	32.3	24.9	18.5	12.9
105°	93.2	82.1	70.1	59.0	53.5	48.0	38.7	30.4	23.1	16.6	12.0
107.5°	88.6	76.6	66.4	55.4	49.8	45.2	36.0	27.7	21.2	15.7	11.1
110°	83.0	72.0	61.8	51.7	46.1	41.5	33.2	25.8	19.4	13.8	10.1



TEST NUMBER: P190118

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

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	78.4	67.3	57.2	48.0	43.4	38.7	30.4	24.0	17.5	12.9	9.2
115°	72.9	62.7	53.5	44.3	39.7	35.1	27.7	21.2	16.6	12.0	8.3
117.5°	67.3	58.1	48.9	40.6	36.0	32.3	25.8	19.4	14.8	11.1	8.3
120°	61.8	52.6	44.3	36.9	33.2	29.5	23.1	17.5	12.9	10.1	7.4
122.5°	56.3	48.0	40.6	33.2	29.5	26.8	20.3	15.7	12.0	9.2	6.5
125°	50.7	43.4	36.0	29.5	26.8	24.0	18.5	13.8	10.1	8.3	5.5
127.5°	45.2	38.7	31.4	25.8	23.1	20.3	15.7	12.0	9.2	6.5	5.5
130°	40.6	34.1	27.7	23.1	20.3	18.5	13.8	11.1	8.3	6.5	4.6
132.5°	35.1	29.5	24.0	19.4	17.5	15.7	12.0	9.2	7.4	5.5	4.6
135°	30.4	24.9	20.3	16.6	14.8	12.9	10.1	7.4	5.5	4.6	3.7
137.5°	25.8	21.2	17.5	13.8	12.0	11.1	8.3	6.5	5.5	3.7	3.7
140°	21.2	17.5	14.8	12.0	10.1	9.2	7.4	5.5	4.6	3.7	2.8
142.5°	17.5	13.8	12.0	9.2	8.3	7.4	5.5	4.6	3.7	2.8	2.8
145°	13.8	11.1	9.2	7.4	6.5	5.5	4.6	3.7	3.7	2.8	2.8
147.5°	10.1	8.3	7.4	5.5	5.5	4.6	3.7	3.7	2.8	2.8	2.8
150°	7.4	6.5	5.5	4.6	3.7	3.7	2.8	2.8	2.8	2.8	2.8
152.5°	5.5	4.6	3.7	3.7	2.8	2.8	2.8	2.8	2.8	1.8	1.8
155°	3.7	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
157.5°	2.8	1.8	1.8	1.8	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	1.8	1.8	1.8	1.8
165°	1.8	1.8	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: P190118

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

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6
2.5°	51.7	50.7	49.8	48.9	48.9	48.0	47.1	46.1	45.2	44.3	44.3
5°	49.8	48.0	47.1	46.1	45.2	43.4	42.4	41.5	39.7	38.7	37.8
7.5°	48.0	46.1	44.3	42.4	41.5	39.7	37.8	36.0	35.1	33.2	32.3
10°	46.1	43.4	40.6	39.7	38.7	36.0	33.2	31.4	29.5	27.7	26.8
12.5°	45.2	41.5	38.7	36.9	35.1	32.3	29.5	27.7	24.9	23.1	21.2
15°	43.4	39.7	36.0	34.1	32.3	29.5	25.8	23.1	21.2	19.4	17.5
17.5°	42.4	37.8	33.2	31.4	29.5	25.8	23.1	20.3	17.5	15.7	13.8
20°	40.6	35.1	31.4	29.5	26.8	23.1	20.3	16.6	14.8	12.9	11.1
22.5°	38.7	33.2	28.6	26.8	24.9	20.3	16.6	13.8	12.0	10.1	9.2
25°	37.8	32.3	26.8	24.9	22.1	18.5	14.8	12.0	10.1	9.2	8.3
27.5°	36.0	30.4	24.9	23.1	20.3	15.7	12.9	10.1	8.3	8.3	8.3
30°	35.1	28.6	23.1	20.3	18.5	13.8	11.1	9.2	8.3	8.3	8.3
32.5°	33.2	27.7	21.2	19.4	16.6	12.9	9.2	8.3	8.3	8.3	7.4
35°	32.3	25.8	20.3	17.5	14.8	11.1	8.3	8.3	8.3	7.4	7.4
37.5°	31.4	24.9	18.5	15.7	13.8	10.1	8.3	8.3	7.4	7.4	7.4
40°	29.5	23.1	17.5	14.8	12.0	9.2	8.3	7.4	7.4	7.4	7.4
42.5°	28.6	22.1	15.7	13.8	11.1	8.3	8.3	7.4	7.4	7.4	6.5
45°	27.7	21.2	14.8	12.0	10.1	8.3	8.3	7.4	7.4	7.4	6.5
47.5°	26.8	19.4	13.8	11.1	9.2	7.4	7.4	7.4	7.4	6.5	6.5
50°	25.8	18.5	12.9	10.1	8.3	7.4	7.4	7.4	7.4	6.5	6.5
52.5°	24.9	17.5	12.0	10.1	8.3	7.4	7.4	7.4	6.5	6.5	6.5
55°	24.0	16.6	11.1	9.2	8.3	7.4	7.4	7.4	6.5	6.5	5.5
57.5°	23.1	15.7	10.1	8.3	7.4	7.4	7.4	6.5	6.5	6.5	5.5
60°	22.1	14.8	10.1	8.3	7.4	7.4	6.5	6.5	6.5	5.5	5.5
62.5°	21.2	14.8	9.2	7.4	7.4	7.4	7.4	6.5	6.5	5.5	5.5
65°	20.3	13.8	8.3	7.4	7.4	7.4	6.5	6.5	5.5	5.5	4.6
67.5°	19.4	12.9	8.3	7.4	7.4	6.5	6.5	6.5	5.5	5.5	4.6
70°	18.5	12.0	8.3	7.4	6.5	6.5	6.5	5.5	5.5	4.6	4.6
72.5°	17.5	12.0	7.4	7.4	6.5	6.5	6.5	5.5	5.5	4.6	4.6
75°	16.6	11.1	7.4	7.4	6.5	6.5	6.5	5.5	5.5	4.6	3.7
77.5°	15.7	10.1	7.4	6.5	6.5	6.5	5.5	5.5	4.6	4.6	3.7
80°	15.7	10.1	6.5	6.5	6.5	6.5	5.5	5.5	4.6	4.6	3.7
82.5°	14.8	9.2	6.5	6.5	6.5	6.5	5.5	5.5	4.6	4.6	3.7
85°	13.8	9.2	6.5	6.5	5.5	5.5	5.5	4.6	4.6	3.7	3.7
87.5°	12.9	8.3	5.5	5.5	5.5	5.5	4.6	4.6	3.7	3.7	2.8
90°	12.0	8.3	5.5	5.5	5.5	5.5	4.6	4.6	3.7	3.7	2.8
92.5°	12.0	7.4	5.5	5.5	5.5	4.6	4.6	3.7	3.7	2.8	2.8
95°	11.1	7.4	5.5	4.6	4.6	4.6	3.7	3.7	3.7	2.8	2.8
97.5°	10.1	6.5	5.5	4.6	4.6	4.6	3.7	3.7	3.7	2.8	2.8
100°	9.2	6.5	4.6	4.6	4.6	3.7	3.7	3.7	2.8	2.8	1.8
102.5°	9.2	5.5	4.6	4.6	4.6	3.7	3.7	3.7	2.8	2.8	1.8
105°	8.3	5.5	4.6	4.6	3.7	3.7	3.7	2.8	2.8	2.8	1.8
107.5°	7.4	5.5	4.6	3.7	3.7	3.7	3.7	2.8	2.8	2.8	1.8
110°	7.4	4.6	3.7	3.7	3.7	3.7	3.7	2.8	2.8	2.8	1.8



TEST NUMBER: P190118

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

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	6.5	4.6	3.7	3.7	3.7	3.7	2.8	2.8	2.8	1.8	1.8
115°	6.5	4.6	3.7	3.7	3.7	3.7	2.8	2.8	2.8	2.8	1.8
117.5°	5.5	4.6	3.7	3.7	3.7	3.7	2.8	2.8	2.8	2.8	1.8
120°	5.5	4.6	3.7	3.7	3.7	3.7	2.8	2.8	2.8	1.8	1.8
122.5°	4.6	3.7	3.7	3.7	3.7	3.7	2.8	2.8	2.8	2.8	1.8
125°	4.6	3.7	3.7	3.7	3.7	3.7	2.8	2.8	2.8	2.8	1.8
127.5°	3.7	3.7	3.7	3.7	2.8	2.8	2.8	2.8	2.8	1.8	1.8
130°	3.7	3.7	3.7	3.7	2.8	2.8	2.8	2.8	1.8	1.8	1.8
132.5°	3.7	3.7	2.8	2.8	2.8	2.8	2.8	2.8	1.8	1.8	1.8
135°	3.7	2.8	2.8	2.8	2.8	2.8	2.8	1.8	1.8	1.8	1.8
137.5°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	1.8	1.8	1.8	1.8
140°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	1.8	1.8	1.8	1.8
142.5°	2.8	2.8	2.8	2.8	2.8	2.8	1.8	1.8	1.8	1.8	1.8
145°	2.8	2.8	2.8	2.8	2.8	2.8	1.8	1.8	1.8	1.8	1.8
147.5°	2.8	2.8	2.8	2.8	2.8	2.8	1.8	1.8	1.8	1.8	1.8
150°	2.8	2.8	2.8	2.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
152.5°	1.8	2.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
155°	1.8	2.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
157.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
160°	2.8	2.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
162.5°	1.8	2.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
165°	2.8	1.8	1.8	2.8	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°	2.8	2.8	2.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
172.5°	2.8	2.8	2.8	1.8	2.8	1.8	1.8	1.8	1.8	1.8	1.8
175°	2.8	2.8	2.8	2.8	2.8	1.8	1.8	1.8	1.8	1.8	1.8
177.5°	2.8	2.8	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: P190118

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

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6
2.5°	44.3	43.4	43.4	42.4	42.4	42.4	42.4	42.4
5°	36.9	36.0	36.0	35.1	35.1	35.1	34.1	35.1
7.5°	30.4	29.5	29.5	28.6	28.6	27.7	27.7	27.7
10°	24.9	24.0	24.0	23.1	22.1	22.1	21.2	22.1
12.5°	20.3	18.5	18.5	18.5	17.5	16.6	16.6	16.6
15°	15.7	14.8	14.8	13.8	12.9	12.9	12.9	12.9
17.5°	12.9	12.0	11.1	11.1	10.1	10.1	10.1	10.1
20°	10.1	9.2	9.2	8.3	8.3	8.3	8.3	8.3
22.5°	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
25°	8.3	8.3	8.3	8.3	8.3	8.3	7.4	8.3
27.5°	8.3	8.3	7.4	7.4	7.4	7.4	7.4	7.4
30°	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
32.5°	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
35°	7.4	7.4	7.4	7.4	6.5	6.5	6.5	6.5
37.5°	7.4	6.5	6.5	6.5	6.5	6.5	6.5	6.5
40°	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
42.5°	6.5	6.5	6.5	6.5	5.5	5.5	5.5	5.5
45°	6.5	6.5	6.5	5.5	5.5	5.5	5.5	5.5
47.5°	6.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
50°	5.5	5.5	5.5	5.5	5.5	4.6	4.6	4.6
52.5°	5.5	5.5	4.6	4.6	4.6	4.6	4.6	4.6
55°	5.5	4.6	4.6	4.6	4.6	4.6	3.7	3.7
57.5°	5.5	4.6	4.6	4.6	3.7	3.7	3.7	3.7
60°	4.6	4.6	4.6	3.7	3.7	3.7	2.8	2.8
62.5°	4.6	4.6	3.7	3.7	3.7	2.8	2.8	2.8
65°	4.6	3.7	3.7	3.7	2.8	2.8	1.8	1.8
67.5°	3.7	3.7	3.7	2.8	2.8	1.8	1.8	1.8
70°	3.7	3.7	2.8	2.8	1.8	1.8	1.8	1.8
72.5°	3.7	2.8	2.8	2.8	1.8	1.8	0.9	0.9
75°	3.7	2.8	2.8	2.8	1.8	0.9	0.9	0.9
77.5°	3.7	2.8	2.8	1.8	1.8	0.9	0.9	0.9
80°	2.8	2.8	1.8	1.8	0.9	0.9	0.9	0.9
82.5°	2.8	2.8	1.8	1.8	0.9	0.9	0.9	0.9
85°	2.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9
87.5°	2.8	1.8	1.8	0.9	0.9	0.9	0.9	0.9
90°	2.8	1.8	1.8	0.9	0.9	0.9	0.9	0.9
92.5°	1.8	1.8	1.8	0.9	0.9	0.9	0.9	0.9
95°	1.8	1.8	1.8	0.9	0.9	0.9	0.9	0.9
97.5°	1.8	1.8	1.8	0.9	0.9	0.9	0.9	0.9
100°	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.0
102.5°	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9
105°	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9
107.5°	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9
110°	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.0



TEST NUMBER: P190118

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

CANDELA DISTRIBUTION (continued):

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