

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: P25873

Luminaire Tested: **TRE15-LD4-20W-40-OPL-WH-UNV-ED1C**

Test Date: 03/20/15



Test Information

Test Method: LM-79-08
Report Number: P25873
Test Lab: INNOVATION CENTER-P2
Test Date: 03/20/15
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: TRE15-LD4-20W-40-OPL-WH-UNV-ED1C
Description: FAILSAFE TERRAPIN 15" DIAMETER 20 WATT-4000K WALL MOUNT
LUMINAIRE OPAL LENS WITH WHITE BORDER, WHITE EYELID AND
INTERNAL WHITE REFLECTOR
Light Source: (112) NICHIA 4000K LEDS
1FS402256M8404-0
Ballast/Driver: (1) OSRAM ELECTRONIC DRIVER
OSROT40UNVDIM1F

Summary

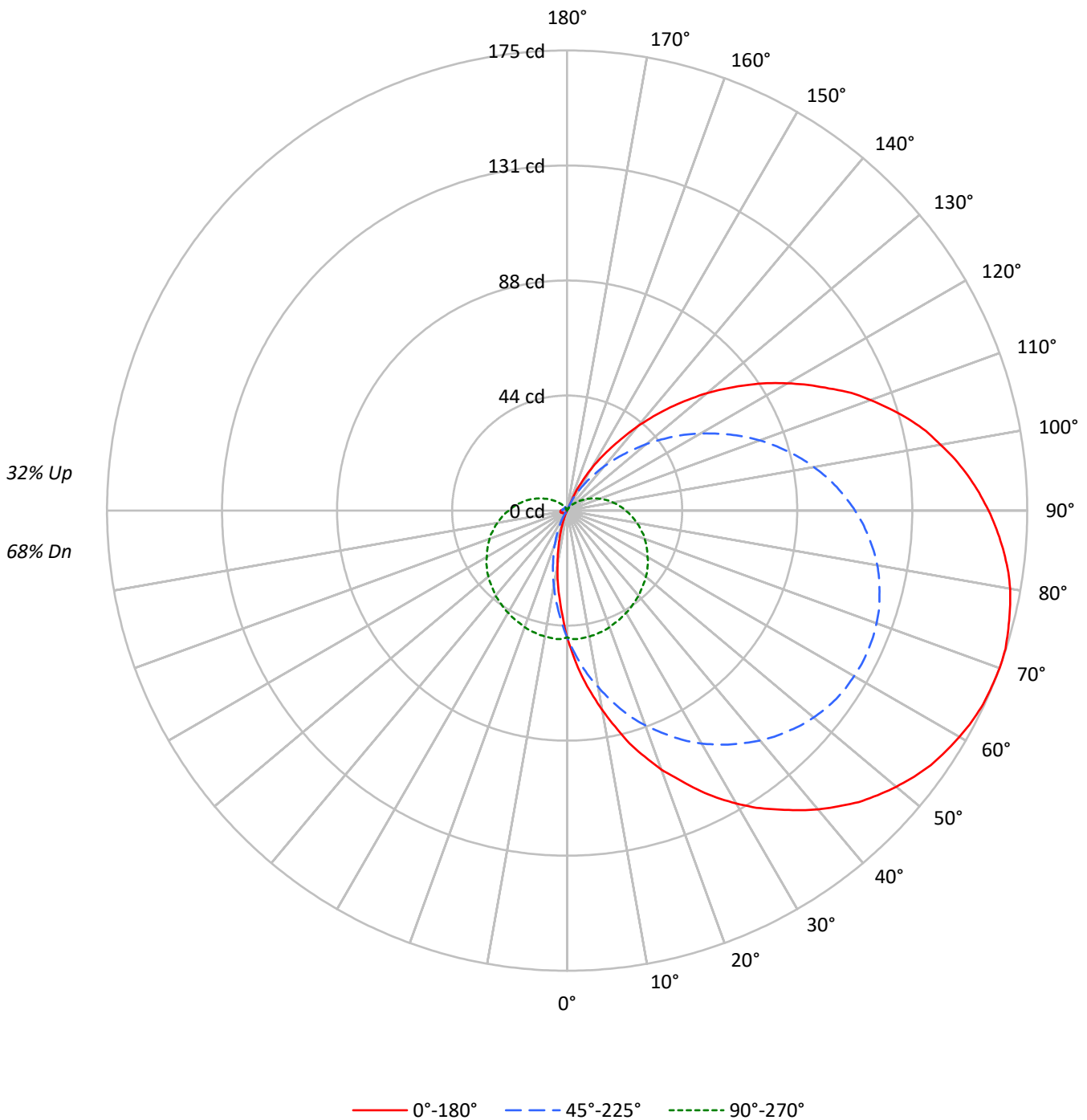
Lumens per Lamp: N/A
Luminaire Lumens: 541.6 lumens
Efficiency: N/A
Efficacy: 23.3 lumens/watt
Spacing Criteria (0/90/45): 2.23 / 1.39 / 2.01
Luminous Opening: Circular (Dia: 1.25' x H: 0')
CIE Type: Semi-Direct

Input Watts (W): 23.2
Input Voltage (V): 120.00
Input Current (Ain): 0.19539
Voltage Rise (V): NR
Power Factor: 0.9926
Total Harmonic Distortion (THDi): 6.74%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: 24 HR
Ambient Temperature (°C): NR
Test Distance: 25 FT

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CATALOG NUMBER: TRE15-LD4-20W-40-OPL-WH-UNV-ED1C

Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				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	68
1	96	89	83	77	90	84	78	73	73	69	65	64	60	57	55	52	50	45
2	85	75	66	59	79	70	62	55	61	55	49	53	48	43	45	41	38	33
3	76	64	54	46	71	60	51	44	52	45	39	45	39	34	38	34	30	26
4	69	55	45	38	64	52	43	36	45	38	32	39	33	28	33	28	24	21
5	63	49	39	31	58	46	36	30	40	32	26	34	28	23	29	24	20	17
6	58	43	33	27	54	41	32	25	35	28	22	31	24	20	26	21	17	14
7	53	39	29	23	49	36	28	22	32	25	19	28	21	17	24	18	15	12
8	49	35	26	20	46	33	25	19	29	22	17	25	19	15	21	16	13	10
9	46	32	23	17	43	30	22	16	26	19	15	23	17	13	20	15	11	9
10	43	29	21	15	40	27	20	15	24	18	13	21	15	12	18	13	10	8

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	423	423	423
5°	555	431	294
10°	686	433	188
15°	833	436	103
20°	978	441	40
25°	1132	446	8
30°	1302	455	6
35°	1485	467	10
40°	1699	484	14
45°	1945	504	16
50°	2230	534	20
55°	2581	570	24
60°	3021	619	33
65°	3622	693	46
70°	4491	805	62
75°	5887	986	78
80°	8643	1364	131
85°	16746	2486	242



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	4.6	0.9
10°-20°	14.1	2.6
20°-30°	24.2	4.5
30°-40°	35.3	6.5
40°-50°	46.3	8.5
50°-60°	55.4	10.2
60°-70°	61.5	11.3
70°-80°	63.6	11.7
80°-90°	61.3	11.3
90°-100°	54.9	10.1
100°-110°	45.3	8.4
110°-120°	33.9	6.3
120°-130°	22.4	4.1
130°-140°	12.5	2.3
140°-150°	5.3	1.0
150°-160°	1.1	0.2
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	42.9	7.9
0°-40°	78.2	14.4
0°-60°	179.8	33.2
0°-90°	366.2	67.6
90°-120°	134.0	24.7
90°-150°	174.3	32.2
90°-180°	175.0	32.3
0°-180°	541.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	48	48	48	48	48	
5°	63	58	49	38	33	6
15°	92	78	48	21	11	26
25°	117	95	46	8	1	54
35°	139	109	44	2	1	87
45°	157	119	41	1	1	121
55°	169	125	37	1	2	151
65°	174	126	33	2	2	173
75°	174	123	29	2	2	184
85°	166	115	25	2	2	137
90°	160	110	22	2	2	88
95°	153	103	20	2	2	123
105°	134	87	16	2	2	142
115°	110	68	11	1	2	109
125°	83	49	7	1	1	75
135°	56	30	4	1	1	43
145°	29	15	2	1	1	19
155°	9	4	1	1	0	4
165°	0	0	0	0	0	0
175°	0	0	0	0	0	0
180°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	48.2	48.2	48.2	48.2	48.2	48.2	48.2	48.2	48.2	48.2	48.2
2.5°	55.4	54.8	54.8	54.7	54.5	54.7	54.1	54.0	53.7	53.2	53.1
5°	63.0	62.4	62.3	61.9	61.8	61.6	60.6	60.2	59.4	58.5	57.9
7.5°	69.9	69.9	69.4	68.9	68.7	68.0	66.9	66.0	64.9	63.5	62.3
10°	77.0	76.7	76.2	76.0	75.1	74.2	72.9	71.6	70.2	68.2	66.7
12.5°	84.1	84.0	83.4	82.6	81.9	80.4	79.1	77.2	75.5	73.1	71.0
15°	91.7	91.0	90.5	89.8	88.7	87.0	85.0	82.9	81.0	78.0	75.3
17.5°	98.1	98.0	97.4	96.5	95.1	93.0	90.8	88.5	85.9	82.7	79.4
20°	104.8	104.2	103.6	102.6	101.0	98.7	96.3	93.4	90.5	86.9	83.1
22.5°	110.6	110.2	109.6	107.9	106.7	104.0	101.4	98.3	94.5	90.9	86.5
25°	117.0	116.5	115.8	114.0	112.5	109.7	106.7	102.9	99.0	94.9	90.2
27.5°	123.1	122.6	121.5	119.8	118.1	114.9	111.8	107.7	103.3	98.8	93.5
30°	128.6	128.1	127.1	125.5	123.2	120.0	116.4	111.9	107.2	102.3	96.5
32.5°	134.0	133.6	132.3	130.6	128.1	124.4	120.7	115.9	110.9	105.5	99.3
35°	138.7	138.5	137.3	135.4	132.7	129.0	124.8	119.8	114.4	108.6	101.8
37.5°	143.6	143.4	142.1	140.1	137.2	133.1	128.9	123.5	117.7	111.4	104.4
40°	148.4	148.2	146.8	144.6	141.4	137.4	132.7	127.0	121.0	114.2	106.9
42.5°	152.6	152.2	151.0	148.4	145.4	141.0	136.1	130.0	123.8	116.6	108.8
45°	156.8	156.1	154.9	152.2	148.7	144.2	139.0	133.0	126.2	118.7	110.7
47.5°	160.2	159.9	158.5	155.7	152.3	147.5	142.0	135.7	128.7	120.8	112.3
50°	163.4	163.1	161.5	158.7	155.1	150.2	144.5	137.8	130.5	122.4	113.5
52.5°	166.3	165.8	164.3	161.4	157.5	152.6	146.6	139.8	132.2	123.8	114.6
55°	168.8	168.3	166.5	163.6	159.6	154.6	148.4	141.3	133.5	124.9	115.4
57.5°	170.6	170.4	168.5	165.6	161.4	156.2	149.9	142.6	134.6	125.6	115.9
60°	172.2	171.8	170.0	167.0	162.7	157.3	150.9	143.4	135.2	126.0	116.0
62.5°	173.6	173.0	171.3	168.2	163.9	158.4	151.7	144.1	135.6	126.3	116.1
65°	174.5	173.9	172.2	169.0	164.6	159.0	152.4	144.6	136.0	126.2	115.9
67.5°	174.8	174.4	172.4	169.3	164.8	159.2	152.3	144.4	135.6	125.9	115.3
70°	175.1	174.4	172.6	169.4	164.9	159.3	152.2	144.2	135.2	125.2	114.7
72.5°	174.8	174.2	172.2	169.0	164.3	158.6	151.6	143.4	134.5	124.4	113.5
75°	173.7	173.2	171.1	167.9	163.4	157.5	150.4	142.2	133.3	123.0	112.2
77.5°	172.5	172.1	170.1	166.7	162.1	156.4	149.2	140.8	131.7	121.6	110.7
80°	171.1	170.5	168.6	165.1	160.5	154.8	147.5	139.1	129.8	119.8	108.8
82.5°	169.0	168.4	166.3	163.0	158.2	152.5	145.2	137.0	127.7	117.6	106.8
85°	166.4	166.0	163.8	160.6	155.9	150.0	142.9	134.4	125.3	115.1	104.4
87.5°	163.5	163.1	160.9	157.7	152.9	147.1	140.0	131.7	122.5	112.5	101.6
90°	160.3	159.8	157.8	154.3	149.7	143.7	136.8	128.4	119.2	109.5	98.8
92.5°	156.8	156.4	154.3	150.9	146.5	140.5	133.5	125.0	116.2	106.3	95.8
95°	153.0	152.4	150.4	147.1	142.8	136.8	129.8	121.5	112.7	102.9	92.5
97.5°	148.9	148.4	146.5	143.2	138.5	132.7	125.7	117.5	108.8	99.2	89.2
100°	144.2	143.7	141.6	138.5	134.2	128.2	121.2	113.3	104.8	95.3	85.5
102.5°	139.8	138.8	136.9	133.7	129.5	123.5	116.8	109.0	100.4	91.3	81.6
105°	134.5	133.6	131.7	128.5	124.1	118.6	111.9	104.3	95.8	86.9	77.6
107.5°	128.7	127.9	126.0	122.9	119.0	113.3	106.8	99.3	91.1	82.5	73.3
110°	122.9	122.0	120.1	117.1	113.3	107.7	101.3	94.0	86.5	78.0	69.1



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CATALOG NUMBER: TRE15-LD4-20W-40-OPL-WH-UNV-ED1C

CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
112.5°	117.0	116.1	114.1	111.3	107.6	102.0	95.9	88.7	81.4	73.3	64.7
115°	109.9	109.7	107.9	104.9	101.2	96.1	89.9	83.2	76.2	68.4	60.3
117.5°	103.4	103.2	101.3	98.6	95.0	90.3	84.3	77.6	70.8	63.4	55.5
120°	96.8	96.6	94.9	92.1	88.7	83.7	78.3	72.0	65.7	58.6	51.1
122.5°	90.2	89.9	88.3	85.6	82.5	77.6	72.4	66.4	60.5	53.9	46.8
125°	83.1	82.8	81.5	78.8	75.6	71.5	66.2	60.8	55.1	48.9	42.3
127.5°	76.3	76.0	74.7	72.1	69.3	65.3	60.3	55.3	49.9	43.9	38.2
130°	69.5	69.0	67.9	65.6	62.8	59.0	54.4	49.9	44.9	39.3	34.1
132.5°	62.4	62.2	61.0	58.8	56.3	52.9	48.7	44.1	39.5	34.6	30.0
135°	55.5	55.4	54.2	52.0	49.7	46.7	42.9	38.7	34.3	30.1	26.1
137.5°	48.6	48.7	47.4	45.6	43.3	40.7	37.3	33.4	29.8	26.0	22.4
140°	41.9	42.0	40.9	39.3	37.2	34.8	31.6	28.3	25.2	22.0	18.9
142.5°	35.1	35.3	34.5	32.9	31.1	28.9	26.1	23.3	20.6	18.1	15.6
145°	29.1	29.2	28.3	27.1	25.4	23.6	21.4	19.0	16.9	14.7	12.6
147.5°	23.6	23.1	22.5	21.3	20.0	18.5	16.6	14.7	13.2	11.5	9.8
150°	18.4	17.7	17.3	16.4	15.4	14.1	12.6	11.1	10.0	8.8	7.5
152.5°	13.2	12.9	12.5	11.7	10.9	9.9	8.9	8.0	7.1	6.4	5.4
155°	8.7	8.5	8.2	7.6	7.1	6.4	5.8	5.2	4.7	4.2	3.6
157.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	48.2	48.2	48.2	48.2	48.2	48.2	48.2	48.2	48.2	48.2	48.2
2.5°	52.7	52.0	51.6	51.1	50.7	50.2	49.6	48.9	48.2	47.6	46.9
5°	57.0	56.0	54.8	53.7	52.6	51.5	50.2	49.0	47.7	46.4	45.2
7.5°	60.9	59.2	57.6	56.0	54.3	52.6	50.7	48.8	47.0	45.2	43.3
10°	64.7	62.7	60.4	58.1	55.8	53.6	51.0	48.6	46.1	43.7	41.3
12.5°	68.5	65.9	63.2	60.3	57.3	54.4	51.3	48.4	45.3	42.3	39.5
15°	72.2	69.2	65.7	62.3	58.7	55.2	51.6	48.0	44.5	40.9	37.6
17.5°	75.8	72.0	68.2	64.3	60.0	56.0	51.8	47.7	43.6	39.7	35.9
20°	78.9	74.8	70.4	65.9	61.1	56.5	51.8	47.2	42.6	38.2	34.1
22.5°	82.0	77.2	72.4	67.4	61.9	56.8	51.6	46.5	41.6	36.8	32.3
25°	85.0	79.9	74.3	68.7	63.0	57.3	51.6	46.1	40.7	35.5	30.7
27.5°	87.9	82.1	76.2	70.0	63.7	57.6	51.5	45.5	39.8	34.4	29.2
30°	90.5	84.2	77.8	71.2	64.3	57.8	51.2	44.9	38.8	32.9	27.6
32.5°	92.9	86.1	79.2	72.1	64.9	57.9	51.0	44.3	37.8	31.8	26.1
35°	95.1	87.9	80.5	73.0	65.2	57.9	50.6	43.6	36.9	30.6	24.8
37.5°	97.2	89.5	81.7	73.8	65.6	57.9	50.2	42.9	36.0	29.6	23.3
40°	99.3	91.1	82.8	74.5	65.9	57.8	49.8	42.3	35.2	28.6	22.1
42.5°	100.8	92.3	83.6	75.0	66.0	57.6	49.3	41.4	34.2	27.4	21.0
45°	102.1	93.3	84.2	75.1	65.8	57.3	48.7	40.6	33.2	26.3	19.8
47.5°	103.6	94.2	84.8	75.4	65.8	57.0	48.2	39.9	32.4	25.3	18.8
50°	104.6	94.8	85.2	75.3	65.4	56.3	47.4	39.1	31.4	24.2	17.6
52.5°	105.2	95.3	85.2	75.2	65.0	55.9	46.7	38.3	30.5	23.4	16.8
55°	105.6	95.4	85.1	74.8	64.5	55.1	45.9	37.3	29.5	22.3	15.8
57.5°	105.8	95.4	84.9	74.4	64.0	54.3	45.1	36.5	28.5	21.4	15.0
60°	105.7	95.1	84.2	73.7	62.9	53.4	44.0	35.3	27.5	20.4	13.9
62.5°	105.6	94.7	83.8	72.9	62.2	52.5	43.1	34.4	26.6	19.6	13.2
65°	105.2	94.1	83.0	72.1	61.3	51.4	42.0	33.4	25.7	18.8	12.6
67.5°	104.5	93.2	82.0	71.1	60.2	50.3	41.0	32.4	24.7	17.8	11.8
70°	103.7	92.4	81.1	70.0	59.1	49.3	39.9	31.4	23.8	17.2	11.2
72.5°	102.6	91.1	79.9	68.7	57.8	48.0	38.7	30.5	22.8	16.3	10.5
75°	101.0	89.6	78.2	67.1	56.3	46.6	37.4	29.1	21.8	15.4	9.8
77.5°	99.5	88.0	76.6	65.6	54.9	45.2	36.2	28.1	20.9	14.7	9.2
80°	97.7	86.2	74.9	64.0	53.4	43.8	35.0	27.0	20.0	14.0	8.7
82.5°	95.5	84.2	72.9	62.1	51.7	42.3	33.6	25.8	19.1	13.2	8.2
85°	93.2	82.0	70.8	60.2	49.9	40.9	32.2	24.7	18.2	12.5	7.7
87.5°	90.7	79.4	68.6	58.1	48.2	39.1	30.9	23.5	17.2	11.9	7.3
90°	87.8	76.8	66.2	56.0	46.2	37.4	29.4	22.2	16.3	11.1	6.7
92.5°	84.9	74.3	63.7	53.8	44.3	35.8	28.0	21.2	15.4	10.4	6.3
95°	81.9	71.5	61.2	51.5	42.3	34.1	26.6	20.0	14.5	9.8	5.8
97.5°	78.7	68.5	58.6	49.2	40.3	32.4	25.2	18.9	13.7	9.2	5.5
100°	75.4	65.4	55.7	46.8	38.1	30.6	23.7	17.7	12.7	8.5	5.1
102.5°	71.9	62.2	53.0	44.3	36.0	28.8	22.3	16.6	11.9	8.0	4.8
105°	68.0	58.8	50.0	41.7	33.8	26.9	20.9	15.5	11.0	7.4	4.4
107.5°	64.1	55.4	47.0	39.1	31.7	25.2	19.3	14.3	10.2	6.9	4.1
110°	60.2	52.0	44.0	36.5	29.4	23.3	17.8	13.1	9.3	6.1	3.7



TEST NUMBER: P25873

CATALOG NUMBER: TRE15-LD4-20W-40-OPL-WH-UNV-ED1C

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
112.5°	56.5	48.6	41.0	34.0	27.3	21.5	16.4	12.1	8.6	5.7	3.5
115°	52.2	45.0	37.9	31.4	25.0	19.7	15.0	10.9	7.7	5.1	3.1
117.5°	48.5	41.2	34.7	28.8	22.8	17.9	13.5	9.8	6.8	4.5	2.8
120°	44.5	37.9	31.9	26.2	20.8	16.3	12.2	8.9	6.1	4.1	2.6
122.5°	40.8	34.5	28.9	23.9	18.8	14.8	11.1	7.9	5.5	3.7	2.4
125°	36.7	31.2	25.9	21.3	16.7	13.0	9.7	6.9	4.8	3.1	2.1
127.5°	33.0	27.9	23.2	19.0	14.9	11.6	8.6	6.1	4.2	2.8	1.8
130°	29.5	24.8	20.7	16.9	13.2	10.2	7.6	5.4	3.8	2.5	1.8
132.5°	25.8	21.8	18.0	14.7	11.5	8.8	6.6	4.6	3.2	2.2	1.4
135°	22.5	18.8	15.6	12.6	9.9	7.5	5.6	3.9	2.7	1.9	1.2
137.5°	19.2	16.2	13.3	10.8	8.4	6.5	4.7	3.4	2.3	1.6	1.1
140°	16.3	13.6	11.2	9.1	7.1	5.4	4.1	2.8	2.0	1.4	1.0
142.5°	13.3	11.2	9.1	7.4	5.6	4.3	3.1	2.2	1.5	1.1	0.9
145°	10.8	9.1	7.5	6.0	4.7	3.6	2.6	1.9	1.4	1.0	0.9
147.5°	8.4	6.9	5.8	4.5	3.5	2.7	1.9	1.4	1.0	0.8	0.8
150°	6.4	5.4	4.5	3.5	2.8	2.2	1.6	1.3	1.0	0.8	0.8
152.5°	4.6	3.9	3.3	2.7	2.1	1.6	1.2	0.9	0.9	0.8	0.8
155°	3.1	2.6	2.2	1.9	1.5	1.2	0.9	0.8	0.8	0.8	0.8
157.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P25873

CATALOG NUMBER: TRE15-LD4-20W-40-OPL-WH-UNV-ED1C

CANDELA DISTRIBUTION (continued):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	48.2	48.2	48.2	48.2	48.2	48.2	48.2	48.2	48.2	48.2	48.2
2.5°	46.3	45.6	45.0	44.2	43.9	43.2	42.4	42.0	41.6	41.6	41.0
5°	43.9	42.5	41.6	40.4	39.4	38.2	37.3	36.6	35.7	35.5	34.7
7.5°	41.6	39.8	38.1	36.5	35.2	33.6	32.3	31.3	30.3	29.8	28.8
10°	39.1	36.7	34.7	32.6	31.0	29.1	27.6	26.2	24.9	24.1	23.0
12.5°	36.7	34.1	31.6	29.0	27.0	24.8	22.8	21.3	19.8	18.7	17.6
15°	34.4	31.3	28.4	25.5	23.1	20.7	18.6	16.8	15.2	14.0	12.9
17.5°	32.3	28.7	25.5	22.3	19.6	17.0	14.7	12.8	11.3	10.0	9.0
20°	30.0	26.2	22.6	19.3	16.2	13.7	11.3	9.5	7.8	6.8	5.8
22.5°	28.0	23.8	19.8	16.2	13.2	10.6	8.4	6.7	5.2	4.1	3.2
25°	26.1	21.7	17.4	13.8	10.7	8.1	6.0	4.4	3.1	2.2	1.6
27.5°	24.3	19.6	15.2	11.6	8.5	5.9	4.0	2.6	1.6	1.0	0.7
30°	22.4	17.5	13.2	9.5	6.4	4.1	2.5	1.3	0.8	0.7	0.6
32.5°	20.8	15.7	11.3	7.7	4.8	2.7	1.4	0.8	0.8	0.8	0.8
35°	19.2	14.0	9.7	6.1	3.4	1.6	0.8	0.8	0.9	0.8	0.7
37.5°	17.8	12.5	8.1	4.6	2.3	0.9	0.8	0.8	0.8	0.8	0.8
40°	16.4	11.2	6.9	3.7	1.7	1.1	1.0	1.0	1.0	1.0	1.0
42.5°	15.2	10.0	5.7	2.7	1.1	1.1	1.1	1.1	1.0	0.9	1.1
45°	13.9	8.7	4.7	1.9	1.0	1.0	1.0	1.1	0.9	1.2	1.1
47.5°	12.9	7.9	3.9	1.5	1.2	1.3	1.3	1.0	1.3	1.4	1.4
50°	11.8	6.8	3.2	1.2	1.1	1.2	1.0	1.3	1.3	1.4	1.4
52.5°	10.9	6.1	2.5	1.1	1.2	1.1	1.3	1.4	1.5	1.4	1.4
55°	10.1	5.4	2.1	1.1	1.1	1.2	1.4	1.4	1.5	1.6	1.5
57.5°	9.4	4.8	1.8	1.2	1.3	1.5	1.5	1.6	1.7	1.7	1.7
60°	8.4	4.1	1.4	1.2	1.2	1.5	1.5	1.6	1.6	1.7	1.7
62.5°	7.9	3.8	1.3	1.3	1.4	1.6	1.6	1.7	1.7	1.8	1.8
65°	7.4	3.3	1.4	1.5	1.6	1.6	1.8	1.8	1.9	1.9	2.0
67.5°	6.7	3.0	1.3	1.4	1.6	1.7	1.8	1.8	1.8	1.9	1.9
70°	6.3	2.8	1.5	1.6	1.7	1.9	1.9	2.0	2.0	2.1	2.2
72.5°	5.9	2.5	1.5	1.6	1.8	1.9	2.0	2.0	2.2	2.2	2.3
75°	5.3	2.2	1.3	1.5	1.6	1.7	1.8	2.0	2.0	2.0	2.1
77.5°	5.1	2.1	1.5	1.6	1.7	1.8	1.9	2.0	2.0	2.1	2.1
80°	4.8	2.1	1.5	1.6	1.7	1.9	2.0	2.1	2.1	2.2	2.3
82.5°	4.3	1.9	1.5	1.6	1.7	1.9	2.0	2.1	2.1	2.1	2.2
85°	4.1	1.8	1.6	1.7	1.8	1.8	1.9	2.1	2.2	2.2	2.3
87.5°	3.9	1.8	1.6	1.7	1.9	1.9	2.1	2.1	2.2	2.2	2.3
90°	3.4	1.5	1.5	1.6	1.7	1.9	2.0	2.1	2.1	2.1	2.1
92.5°	3.3	1.7	1.5	1.6	1.7	1.9	2.0	2.0	2.1	2.1	2.1
95°	3.1	1.5	1.4	1.6	1.7	1.8	1.9	1.9	2.0	2.0	2.1
97.5°	2.9	1.5	1.5	1.5	1.7	1.8	1.8	1.9	2.0	2.0	2.0
100°	2.7	1.5	1.4	1.5	1.7	1.7	1.8	1.7	1.8	1.8	1.8
102.5°	2.5	1.5	1.5	1.5	1.6	1.6	1.7	1.7	1.8	1.8	1.8
105°	2.5	1.4	1.4	1.5	1.6	1.6	1.6	1.6	1.7	1.6	1.8
107.5°	2.3	1.4	1.4	1.4	1.5	1.5	1.6	1.6	1.6	1.7	1.7
110°	2.1	1.3	1.3	1.3	1.4	1.4	1.5	1.5	1.5	1.5	1.5



TEST NUMBER: P25873

CATALOG NUMBER: TRE15-LD4-20W-40-OPL-WH-UNV-ED1C

CANDELA DISTRIBUTION (continued):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
112.5°	2.0	1.3	1.4	1.4	1.5	1.5	1.5	1.5	1.6	1.6	1.6
115°	1.8	1.2	1.4	1.3	1.4	1.3	1.4	1.3	1.4	1.5	1.6
117.5°	1.7	1.1	1.2	1.3	1.2	1.2	1.3	1.3	1.4	1.4	1.3
120°	1.5	1.1	1.1	1.2	1.3	1.2	1.2	1.3	1.3	1.3	1.4
122.5°	1.6	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4
125°	1.3	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.0	1.1
127.5°	1.3	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2
130°	1.4	1.3	1.3	1.2	1.2	1.2	1.3	1.3	1.2	1.2	1.3
132.5°	1.3	1.2	1.2	1.1	1.1	1.2	1.1	1.2	1.1	1.1	1.0
135°	1.1	1.2	1.1	1.1	1.1	1.1	1.2	1.1	1.1	1.0	1.0
137.5°	1.1	1.3	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.1	1.0
140°	1.1	1.4	1.4	1.1	1.2	1.2	1.1	1.1	1.1	1.1	1.1
142.5°	0.8	1.1	1.4	1.3	0.9	1.0	1.0	1.0	1.0	0.9	0.9
145°	0.9	1.2	1.4	1.6	1.5	1.2	1.2	1.1	1.1	1.1	1.2
147.5°	0.8	0.8	1.2	1.4	1.5	1.1	1.1	1.0	1.0	0.9	0.9
150°	0.8	0.9	1.1	1.4	1.6	1.6	1.1	1.3	1.2	1.1	1.1
152.5°	0.8	0.8	0.9	1.2	1.4	1.5	1.6	1.2	1.4	1.2	1.2
155°	0.8	0.8	0.9	0.9	1.1	1.3	1.5	1.5	1.3	1.3	1.2
157.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P25873

CATALOG NUMBER: TRE15-LD4-20W-40-OPL-WH-UNV-ED1C

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	48.2	48.2	48.2	48.2
2.5°	40.8	40.5	40.6	40.2
5°	34.4	34.0	34.1	33.4
7.5°	28.4	27.8	27.8	27.3
10°	22.4	21.8	21.7	21.1
12.5°	16.9	16.4	16.2	16.1
15°	12.2	11.4	11.1	11.3
17.5°	8.2	7.7	7.3	7.3
20°	5.1	4.7	4.3	4.3
22.5°	2.8	2.3	2.1	2.1
25°	1.2	1.0	0.8	0.8
27.5°	0.6	0.6	0.6	0.7
30°	0.6	0.7	0.6	0.6
32.5°	0.7	0.8	0.7	0.6
35°	0.8	0.8	0.8	0.9
37.5°	0.8	0.9	1.0	1.0
40°	1.0	1.2	1.1	1.2
42.5°	1.2	1.2	1.2	1.2
45°	1.2	1.3	1.2	1.3
47.5°	1.4	1.5	1.4	1.4
50°	1.4	1.4	1.5	1.5
52.5°	1.5	1.6	1.6	1.6
55°	1.6	1.6	1.6	1.6
57.5°	1.7	1.8	1.8	1.9
60°	1.7	1.7	1.9	1.9
62.5°	1.9	1.9	2.0	2.0
65°	2.1	2.1	2.2	2.2
67.5°	2.1	2.1	2.2	2.1
70°	2.3	2.3	2.4	2.4
72.5°	2.3	2.3	2.5	2.4
75°	2.2	2.3	2.4	2.3
77.5°	2.3	2.4	2.5	2.6
80°	2.4	2.4	2.5	2.6
82.5°	2.4	2.4	2.5	2.6
85°	2.3	2.5	2.5	2.4
87.5°	2.3	2.5	2.4	2.5
90°	2.2	2.3	2.3	2.2
92.5°	2.0	2.1	2.3	2.2
95°	2.0	1.9	2.1	2.0
97.5°	1.9	1.8	2.0	1.9
100°	1.8	1.7	1.8	1.9
102.5°	1.7	1.7	1.8	1.8
105°	1.7	1.6	1.7	1.8
107.5°	1.6	1.5	1.6	1.7
110°	1.4	1.4	1.6	1.6



TEST NUMBER: P25873

CATALOG NUMBER: TRE15-LD4-20W-40-OPL-WH-UNV-ED1C

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
112.5°	1.5	1.4	1.6	1.5
115°	1.5	1.5	1.5	1.5
117.5°	1.3	1.3	1.4	1.4
120°	1.3	1.2	1.3	1.3
122.5°	1.3	1.2	1.3	1.3
125°	1.0	1.0	1.1	1.1
127.5°	1.0	1.0	1.1	1.1
130°	1.2	1.2	1.1	1.0
132.5°	1.2	1.1	1.1	0.9
135°	1.0	1.0	1.0	1.0
137.5°	1.1	1.1	1.0	0.8
140°	1.1	1.0	0.9	0.7
142.5°	0.9	0.9	0.7	0.5
145°	1.1	1.0	0.9	0.6
147.5°	0.9	0.8	0.7	0.4
150°	1.0	0.9	0.7	0.5
152.5°	1.0	0.8	0.7	0.5
155°	1.1	0.7	0.7	0.4
157.5°	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0

(END OF REPORT)