

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: P190121

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

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P190121
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-LD4-20W-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 450mA
OT40W/1

Summary

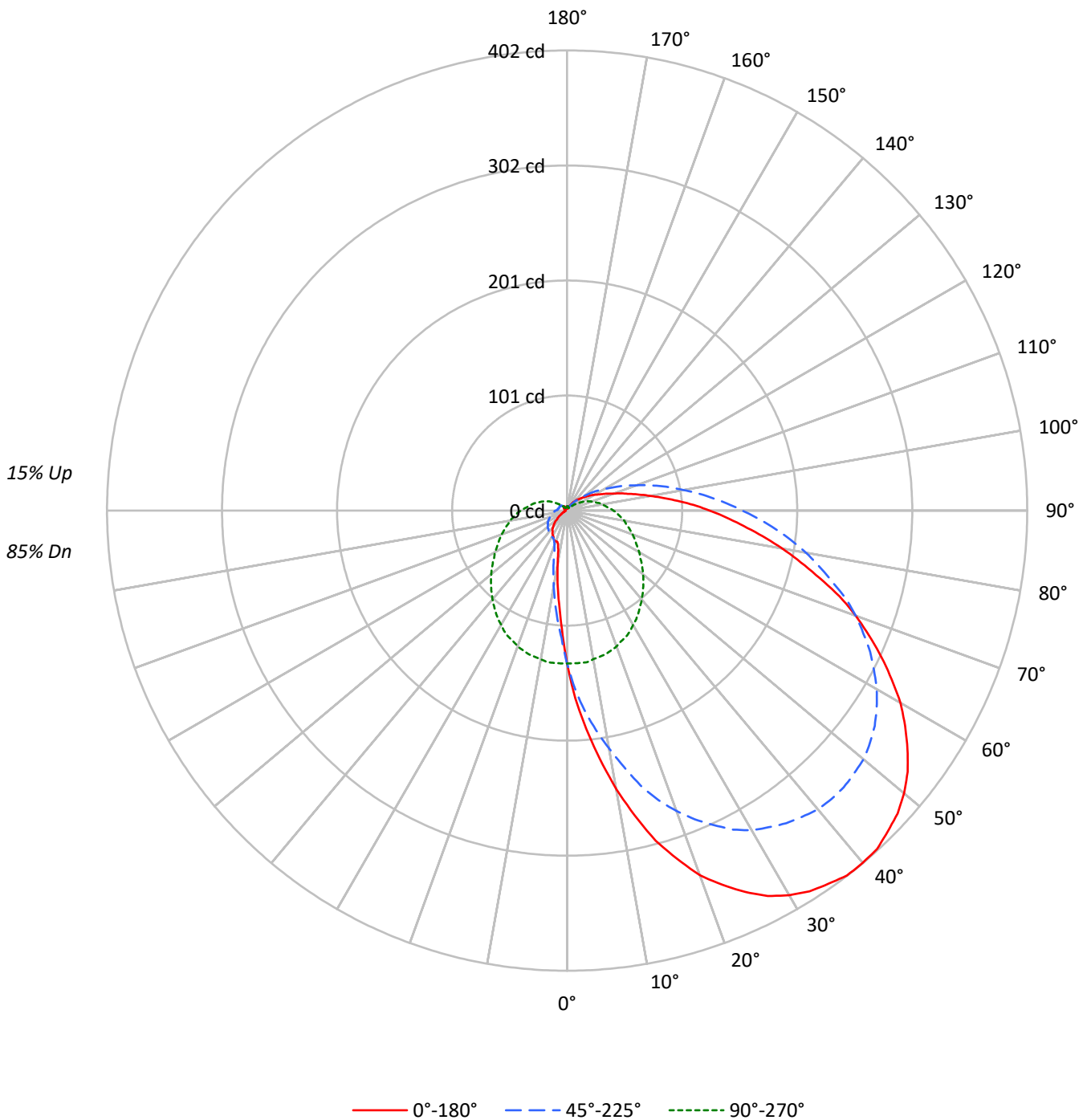
Lumens per Lamp: N/A
Luminaire Lumens: 988.0 lumens
Efficiency: N/A
Efficacy: 45.1 lumens/watt
Spacing Criteria (0/90/45): 2.1 / 1.28 / 2.01
Luminous Opening: Rectangular w/ Sides (W: 0.92' x L: 0.29' x H: 0.92')
CIE Type: Semi-Direct

Input Watts (W): 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	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																			85									
1	101	95	89	83	96	91	85	81	83	79	75	77	73	70	71	68	65	62																			62									
2	90	80	71	64	86	76	69	62	70	64	58	65	59	55	59	55	51	48																			48									
3	81	68	59	51	77	66	57	50	60	53	47	55	49	44	51	46	41	38																			38									
4	73	60	50	42	70	57	48	41	53	45	38	48	42	36	44	39	34	31																			31									
5	67	52	42	35	63	50	41	34	46	38	32	43	36	30	39	33	29	26																			26									
6	61	47	37	30	58	45	36	29	41	33	27	38	31	26	35	29	25	22																			22									
7	56	42	32	26	54	40	31	25	37	29	24	34	28	23	32	26	21	19																			19									
8	52	38	29	22	50	36	28	22	34	26	21	31	25	20	29	23	19	16																			16									
9	49	34	26	20	46	33	25	19	31	24	18	29	22	17	27	21	17	14																			14									
10	45	31	23	18	43	30	23	17	28	21	16	26	20	16	25	19	15	13																			13									

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	5379	5379	5379
5°	6073	4965	2571
10°	6494	4580	1236
15°	6754	4270	688
20°	6775	3964	572
25°	6623	3684	497
30°	6407	3395	411
35°	6112	3142	339
40°	5804	2895	279
45°	5445	2676	216
50°	5071	2475	147
55°	4642	2289	106
60°	4202	2146	69
65°	3731	2009	46
70°	3275	1910	34
75°	2792	1818	22
80°	2349	1762	22
85°	1937	1676	11



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	13.0	1.3
10°-20°	41.9	4.2
20°-30°	75.1	7.6
30°-40°	106.0	10.7
40°-50°	128.4	13.0
50°-60°	137.5	13.9
60°-70°	132.0	13.4
70°-80°	113.6	11.5
80°-90°	88.2	8.9
90°-100°	62.2	6.3
100°-110°	40.1	4.1
110°-120°	24.1	2.4
120°-130°	13.3	1.3
130°-140°	6.7	0.7
140°-150°	3.2	0.3
150°-160°	1.5	0.2
160°-170°	0.8	0.1
170°-180°	0.3	0.0
0°-30°	130.0	13.2
0°-40°	236.0	23.9
0°-60°	501.9	50.8
0°-90°	835.7	84.6
90°-120°	126.3	12.8
90°-150°	149.6	15.1
90°-180°	152.0	15.4
0°-180°	988.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	134	134	134	134	134	
5°	192	175	134	96	81	20
15°	298	249	130	45	30	85
25°	368	303	122	28	28	170
35°	398	334	109	26	22	250
45°	396	342	94	23	16	306
55°	363	328	79	20	8	324
65°	303	292	66	18	4	300
75°	228	240	55	14	2	242
85°	155	182	45	11	1	134
90°	124	153	40	10	1	68
95°	97	127	35	8	2	75
105°	56	83	27	7	2	61
115°	34	50	19	7	2	35
125°	22	29	11	7	3	20
135°	14	15	6	6	4	11
145°	8	6	3	4	5	5
155°	4	4	3	3	4	2
165°	2	3	4	3	3	1
175°	3	4	4	3	2	0
180°	4	4	4	4	4	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	133.6	133.6	133.6	133.6	133.6	133.6	133.6	133.6	133.6	133.6	133.6
2.5°	164.0	162.2	162.2	162.2	162.2	161.2	160.3	159.4	157.5	156.6	155.7
5°	191.6	189.8	189.8	188.9	188.0	186.1	185.2	183.3	180.6	177.8	175.1
7.5°	218.4	217.4	216.5	214.7	213.7	211.9	210.1	206.4	202.7	198.1	193.5
10°	246.9	246.9	244.2	242.3	239.5	234.9	233.1	228.5	223.0	218.4	211.0
12.5°	272.7	270.9	270.9	267.2	263.5	261.7	258.9	254.3	246.9	240.5	229.4
15°	298.5	297.6	295.7	292.1	287.5	283.8	281.9	275.5	268.1	258.9	248.8
17.5°	318.8	318.8	316.9	313.3	308.6	305.0	301.3	295.7	286.5	276.4	265.3
20°	339.0	337.2	335.4	331.7	326.2	323.4	319.7	312.3	302.2	291.1	279.2
22.5°	353.8	352.9	350.1	346.4	340.9	338.1	334.4	326.2	316.0	305.0	292.1
25°	367.6	366.7	363.9	360.2	354.7	351.9	348.3	340.0	328.9	317.9	303.1
27.5°	379.6	378.7	375.9	372.2	366.7	363.9	359.3	351.0	340.9	328.9	314.2
30°	387.9	387.0	385.1	381.4	375.9	372.2	368.5	360.2	349.2	337.2	322.5
32.5°	394.3	393.4	390.6	387.0	381.4	378.7	375.0	366.7	355.6	342.7	328.0
35°	398.0	398.0	395.3	392.5	387.0	383.3	379.6	371.3	361.2	348.3	333.5
37.5°	401.7	400.8	398.0	395.3	389.7	387.0	383.3	375.9	364.8	352.9	337.2
40°	401.7	401.7	398.9	396.2	391.6	388.8	385.1	377.7	367.6	355.6	340.9
42.5°	400.8	399.9	398.9	395.3	391.6	388.8	385.1	377.7	367.6	356.6	341.8
45°	396.2	396.2	394.3	392.5	388.8	386.0	382.4	375.9	366.7	356.6	341.8
47.5°	391.6	391.6	389.7	387.0	384.2	381.4	378.7	372.2	364.8	353.8	340.0
50°	384.2	384.2	383.3	380.5	377.7	375.9	374.1	367.6	360.2	351.0	338.1
52.5°	375.0	375.0	372.2	371.3	368.5	367.6	365.8	361.2	353.8	345.5	333.5
55°	363.0	363.0	361.2	360.2	358.4	357.5	355.6	352.9	346.4	339.0	328.0
57.5°	350.1	350.1	349.2	348.3	347.3	345.5	344.6	342.7	337.2	330.8	320.6
60°	336.3	335.4	335.4	334.4	333.5	332.6	332.6	330.8	326.2	321.5	312.3
62.5°	319.7	319.7	319.7	318.8	318.8	317.9	317.9	316.9	314.2	309.6	302.2
65°	303.1	304.0	303.1	303.1	304.0	303.1	303.1	303.1	302.2	298.5	292.1
67.5°	285.6	286.5	287.5	287.5	287.5	287.5	287.5	289.3	287.5	285.6	280.1
70°	268.1	269.0	269.0	269.0	270.0	270.0	271.8	272.7	272.7	271.8	268.1
72.5°	249.7	249.7	249.7	251.5	252.4	252.4	253.4	256.1	257.1	257.1	255.2
75°	228.5	228.5	229.4	230.3	231.3	232.2	234.9	237.7	239.5	241.4	239.5
77.5°	209.1	209.1	211.0	211.9	213.7	214.7	215.6	220.2	222.0	224.8	225.7
80°	190.7	190.7	192.6	193.5	196.2	196.2	198.1	202.7	206.4	209.1	211.9
82.5°	172.3	172.3	174.1	176.0	178.7	179.7	181.5	186.1	189.8	193.5	197.2
85°	154.8	155.7	157.5	159.4	162.2	163.1	164.9	170.4	174.1	178.7	182.4
87.5°	139.1	139.1	141.9	142.8	146.5	148.3	150.2	154.8	159.4	164.0	167.7
90°	124.4	124.4	126.2	128.1	131.8	133.6	135.4	141.0	144.6	149.3	152.9
92.5°	110.6	110.6	112.4	114.2	117.0	119.8	121.6	126.2	130.8	136.4	140.0
95°	96.7	96.7	98.6	101.3	104.1	106.0	108.7	113.3	117.9	122.5	127.1
97.5°	84.8	84.8	86.6	89.4	92.1	94.9	96.7	100.4	106.0	110.6	115.2
100°	73.7	73.7	76.5	78.3	81.1	83.8	85.7	89.4	94.0	98.6	103.2
102.5°	64.5	64.5	66.3	68.2	71.9	73.7	75.5	79.2	83.8	88.4	93.1
105°	56.2	56.2	58.0	59.9	62.7	65.4	66.3	70.9	73.7	78.3	82.9
107.5°	49.8	49.8	50.7	52.5	55.3	57.1	59.0	61.7	66.3	70.0	73.7
110°	43.3	43.3	45.1	46.1	48.8	50.7	51.6	54.4	58.0	61.7	64.5



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CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	38.7	38.7	39.6	41.5	43.3	44.2	46.1	47.9	51.6	54.4	57.1
115°	34.1	34.1	35.0	35.9	37.8	39.6	40.5	42.4	45.1	47.9	49.8
117.5°	30.4	30.4	31.3	32.2	34.1	35.0	35.9	37.8	39.6	41.5	43.3
120°	27.6	27.6	27.6	28.6	29.5	30.4	31.3	33.2	35.0	35.9	37.8
122.5°	24.9	24.9	24.9	25.8	26.7	26.7	27.6	29.5	30.4	31.3	33.2
125°	22.1	22.1	22.1	23.0	24.0	24.0	24.0	25.8	26.7	27.6	28.6
127.5°	19.3	19.3	20.3	20.3	21.2	21.2	21.2	22.1	23.0	24.0	24.0
130°	17.5	17.5	17.5	18.4	18.4	18.4	19.3	19.3	20.3	20.3	20.3
132.5°	15.7	15.7	15.7	15.7	16.6	16.6	16.6	16.6	17.5	17.5	17.5
135°	13.8	13.8	13.8	13.8	14.7	14.7	14.7	14.7	14.7	14.7	14.7
137.5°	12.9	12.0	12.0	12.0	12.0	12.9	12.0	12.0	12.0	12.0	12.0
140°	11.1	11.1	11.1	11.1	11.1	10.1	10.1	10.1	10.1	10.1	10.1
142.5°	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	8.3	8.3	8.3
145°	8.3	8.3	8.3	8.3	7.4	7.4	7.4	7.4	7.4	7.4	6.4
147.5°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	5.5	5.5
150°	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	4.6	4.6
152.5°	4.6	4.6	4.6	4.6	4.6	4.6	3.7	3.7	3.7	3.7	3.7
155°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
157.5°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
160°	1.8	1.8	1.8	1.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
162.5°	1.8	1.8	1.8	1.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
165°	1.8	1.8	1.8	1.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
167.5°	1.8	1.8	1.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
170°	1.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	3.7
172.5°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	3.7
175°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	3.7	3.7
177.5°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	3.7	3.7	3.7
180°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7



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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	133.6	133.6	133.6	133.6	133.6	133.6	133.6	133.6	133.6	133.6	133.6
2.5°	152.9	151.1	149.3	146.5	145.6	144.6	141.9	139.1	136.4	133.6	130.8
5°	171.4	166.8	162.2	157.5	155.7	152.9	148.3	143.7	138.2	133.6	129.0
7.5°	188.0	182.4	175.1	168.6	164.9	162.2	154.8	147.4	140.0	133.6	126.2
10°	203.6	196.2	187.0	178.7	174.1	169.5	160.3	150.2	141.0	131.8	123.5
12.5°	220.2	210.1	199.0	188.0	182.4	176.9	165.8	153.9	142.8	130.8	119.8
15°	236.8	223.9	211.0	198.1	191.6	184.3	171.4	157.5	143.7	129.9	117.0
17.5°	252.4	237.7	222.0	206.4	199.0	190.7	175.1	159.4	143.7	128.1	114.2
20°	264.4	249.7	231.3	213.7	205.5	197.2	178.7	161.2	143.7	126.2	110.6
22.5°	276.4	259.8	242.3	221.1	211.9	201.8	181.5	162.2	142.8	123.5	106.0
25°	287.5	270.0	250.6	227.6	217.4	206.4	184.3	163.1	141.9	121.6	102.3
27.5°	297.6	279.2	258.0	233.1	222.0	210.1	187.0	163.1	140.0	118.9	98.6
30°	305.0	285.6	263.5	240.5	225.7	213.7	188.0	163.1	138.2	115.2	94.9
32.5°	310.5	291.1	269.0	244.2	229.4	215.6	188.9	162.2	136.4	112.4	90.3
35°	316.0	295.7	272.7	246.9	231.3	217.4	188.9	160.3	133.6	108.7	85.7
37.5°	320.6	299.4	276.4	248.8	233.1	218.4	188.9	159.4	130.8	105.0	82.0
40°	322.5	302.2	278.2	250.6	234.0	219.3	188.0	157.5	128.1	101.3	78.3
42.5°	324.3	304.0	279.2	251.5	234.0	218.4	186.1	154.8	124.4	97.7	74.6
45°	324.3	304.0	279.2	251.5	234.0	218.4	185.2	152.0	120.7	94.0	70.0
47.5°	323.4	303.1	279.2	250.6	233.1	216.5	182.4	149.3	117.9	90.3	66.3
50°	321.5	301.3	277.3	249.7	231.3	214.7	180.6	145.6	114.2	86.6	63.6
52.5°	316.9	298.5	274.6	246.9	228.5	212.8	176.9	142.8	110.6	82.9	59.9
55°	313.3	294.8	271.8	243.2	225.7	209.1	174.1	139.1	106.9	79.2	57.1
57.5°	306.8	290.2	267.2	238.6	222.0	205.5	170.4	135.4	103.2	75.5	54.4
60°	300.4	283.8	261.7	233.1	217.4	201.8	166.8	131.8	99.5	72.8	51.6
62.5°	292.1	276.4	256.1	227.6	212.8	197.2	162.2	127.1	95.8	69.1	48.8
65°	282.8	269.0	249.7	222.0	208.2	192.6	157.5	123.5	92.1	66.3	46.1
67.5°	272.7	260.7	242.3	216.5	202.7	187.0	152.9	119.8	88.4	63.6	44.2
70°	262.6	251.5	232.2	210.1	196.2	181.5	148.3	115.2	85.7	60.8	41.5
72.5°	250.6	240.5	223.0	201.8	188.9	175.1	143.7	111.5	82.0	58.0	39.6
75°	236.8	227.6	213.7	194.4	182.4	168.6	138.2	106.9	78.3	55.3	37.8
77.5°	223.0	216.5	204.5	186.1	175.1	162.2	132.7	103.2	75.5	52.5	35.0
80°	210.1	204.5	194.4	176.9	166.8	154.8	127.1	98.6	71.9	50.7	33.2
82.5°	196.2	192.6	183.3	167.7	158.5	147.4	121.6	94.0	69.1	47.9	31.3
85°	182.4	179.7	172.3	158.5	150.2	139.1	116.1	89.4	65.4	45.1	29.5
87.5°	169.5	167.7	161.2	149.3	141.9	132.7	109.6	85.7	62.7	43.3	28.6
90°	155.7	154.8	150.2	140.0	133.6	124.4	104.1	81.1	59.0	40.5	26.7
92.5°	142.8	141.9	139.1	129.9	123.5	116.1	96.7	75.5	55.3	37.8	24.0
95°	129.9	130.8	128.1	119.8	115.2	107.8	90.3	70.9	51.6	35.0	23.0
97.5°	117.9	118.9	117.0	110.6	106.0	100.4	84.8	66.3	48.8	33.2	21.2
100°	106.0	107.8	106.9	101.3	97.7	92.1	78.3	61.7	46.1	31.3	20.3
102.5°	95.8	96.7	95.8	92.1	88.4	83.8	72.8	58.0	42.4	29.5	18.4
105°	84.8	86.6	86.6	82.9	80.2	76.5	66.3	53.4	39.6	26.7	17.5
107.5°	75.5	77.4	76.5	74.6	71.9	68.2	59.9	48.8	36.9	24.9	15.7
110°	66.3	69.1	68.2	66.3	63.6	60.8	53.4	44.2	33.2	23.0	14.7



TEST NUMBER: P190121

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

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	59.0	59.9	59.9	58.0	56.2	53.4	47.9	39.6	30.4	21.2	13.8
115°	51.6	52.5	51.6	50.7	48.8	47.0	42.4	35.0	26.7	19.3	12.9
117.5°	45.1	45.1	45.1	44.2	42.4	41.5	36.9	30.4	24.0	17.5	11.1
120°	38.7	38.7	38.7	37.8	35.9	35.0	31.3	26.7	21.2	14.7	10.1
122.5°	33.2	34.1	33.2	32.2	30.4	29.5	26.7	23.0	18.4	12.9	9.2
125°	28.6	28.6	27.6	26.7	25.8	24.9	22.1	19.3	14.7	11.1	7.4
127.5°	24.0	24.0	23.0	22.1	21.2	20.3	18.4	15.7	12.9	9.2	6.4
130°	20.3	20.3	19.3	18.4	17.5	16.6	14.7	12.9	10.1	8.3	5.5
132.5°	16.6	16.6	15.7	14.7	13.8	13.8	12.0	10.1	8.3	6.4	4.6
135°	13.8	13.8	12.9	12.0	11.1	11.1	10.1	8.3	6.4	5.5	3.7
137.5°	11.1	11.1	10.1	9.2	9.2	8.3	7.4	6.4	5.5	4.6	3.7
140°	9.2	9.2	8.3	7.4	7.4	6.4	6.4	5.5	4.6	3.7	2.8
142.5°	7.4	7.4	6.4	6.4	5.5	5.5	4.6	4.6	3.7	3.7	2.8
145°	6.4	6.4	5.5	5.5	4.6	4.6	4.6	3.7	3.7	2.8	2.8
147.5°	5.5	5.5	4.6	4.6	4.6	3.7	3.7	3.7	2.8	2.8	2.8
150°	4.6	4.6	3.7	3.7	3.7	3.7	3.7	2.8	2.8	2.8	2.8
152.5°	3.7	3.7	3.7	3.7	3.7	2.8	2.8	2.8	2.8	2.8	2.8
155°	3.7	3.7	3.7	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
157.5°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
160°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
162.5°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
165°	2.8	2.8	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
167.5°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
170°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
172.5°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
175°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
177.5°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
180°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7



TEST NUMBER: P190121

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

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	133.6	133.6	133.6	133.6	133.6	133.6	133.6	133.6	133.6	133.6	133.6
2.5°	128.1	126.2	123.5	122.5	121.6	118.9	116.1	114.2	111.5	110.6	108.7
5°	124.4	119.8	115.2	113.3	110.6	106.9	103.2	99.5	95.8	93.1	90.3
7.5°	119.8	113.3	106.9	104.1	100.4	95.8	90.3	85.7	81.1	77.4	74.6
10°	114.2	106.0	98.6	94.9	91.2	83.8	77.4	71.9	67.3	62.7	59.9
12.5°	109.6	99.5	90.3	86.6	82.0	73.7	67.3	60.8	55.3	50.7	47.0
15°	105.0	94.0	83.8	78.3	73.7	65.4	57.1	50.7	45.1	40.5	37.8
17.5°	100.4	87.5	76.5	70.9	66.3	57.1	48.8	41.5	36.9	34.1	32.2
20°	94.9	82.0	70.0	64.5	59.0	48.8	41.5	35.9	32.2	30.4	28.6
22.5°	90.3	75.5	63.6	58.0	52.5	42.4	35.9	31.3	29.5	27.6	27.6
25°	84.8	70.9	57.1	51.6	46.1	36.9	31.3	28.6	27.6	26.7	27.6
27.5°	80.2	65.4	52.5	46.1	40.5	33.2	28.6	26.7	26.7	27.6	27.6
30°	75.5	60.8	47.0	41.5	35.9	30.4	27.6	25.8	26.7	26.7	26.7
32.5°	71.9	56.2	42.4	36.9	33.2	27.6	25.8	26.7	26.7	26.7	25.8
35°	67.3	51.6	37.8	33.2	29.5	26.7	25.8	25.8	25.8	24.9	24.9
37.5°	62.7	47.0	35.0	31.3	27.6	24.9	25.8	25.8	24.9	24.9	24.0
40°	59.0	43.3	32.2	28.6	25.8	24.9	25.8	25.8	24.9	24.0	23.0
42.5°	55.3	40.5	29.5	26.7	24.9	24.0	24.9	24.9	24.0	23.0	22.1
45°	51.6	36.9	27.6	24.9	24.0	24.0	24.9	24.0	23.0	23.0	22.1
47.5°	47.9	34.1	25.8	24.0	22.1	24.0	24.0	23.0	23.0	22.1	20.3
50°	45.1	31.3	24.0	22.1	22.1	23.0	23.0	23.0	22.1	21.2	19.3
52.5°	42.4	29.5	23.0	21.2	21.2	23.0	23.0	22.1	21.2	20.3	18.4
55°	39.6	27.6	21.2	20.3	20.3	22.1	22.1	22.1	20.3	19.3	16.6
57.5°	37.8	25.8	20.3	19.3	20.3	22.1	22.1	21.2	20.3	18.4	15.7
60°	35.0	24.0	19.3	19.3	20.3	21.2	21.2	20.3	19.3	17.5	14.7
62.5°	33.2	22.1	18.4	18.4	19.3	20.3	20.3	20.3	18.4	15.7	13.8
65°	31.3	21.2	16.6	17.5	18.4	19.3	20.3	19.3	17.5	14.7	12.0
67.5°	29.5	19.3	16.6	16.6	18.4	19.3	19.3	18.4	16.6	13.8	11.1
70°	27.6	18.4	15.7	16.6	17.5	18.4	18.4	17.5	15.7	12.9	10.1
72.5°	25.8	16.6	14.7	15.7	16.6	17.5	18.4	16.6	14.7	12.0	10.1
75°	24.0	15.7	13.8	14.7	15.7	17.5	17.5	16.6	13.8	11.1	9.2
77.5°	23.0	14.7	12.9	13.8	14.7	16.6	16.6	15.7	12.9	11.1	8.3
80°	21.2	13.8	12.9	13.8	14.7	16.6	16.6	14.7	12.9	10.1	8.3
82.5°	20.3	12.9	12.0	12.9	13.8	15.7	15.7	13.8	12.0	9.2	7.4
85°	18.4	12.0	12.0	12.9	13.8	14.7	14.7	13.8	11.1	9.2	7.4
87.5°	17.5	11.1	11.1	12.0	12.9	14.7	14.7	12.9	11.1	8.3	6.4
90°	16.6	10.1	10.1	11.1	12.9	13.8	13.8	12.0	10.1	8.3	6.4
92.5°	14.7	9.2	9.2	10.1	11.1	12.0	12.0	11.1	9.2	7.4	5.5
95°	13.8	8.3	8.3	9.2	10.1	12.0	12.0	10.1	8.3	6.4	5.5
97.5°	12.9	8.3	7.4	8.3	9.2	11.1	11.1	10.1	8.3	6.4	5.5
100°	12.0	7.4	7.4	8.3	9.2	10.1	10.1	9.2	8.3	6.4	5.5
102.5°	11.1	6.4	6.4	7.4	8.3	9.2	10.1	9.2	8.3	6.4	4.6
105°	10.1	5.5	6.4	6.4	7.4	9.2	10.1	9.2	7.4	6.4	5.5
107.5°	9.2	5.5	5.5	6.4	7.4	8.3	9.2	9.2	7.4	6.4	5.5
110°	8.3	4.6	5.5	5.5	6.4	8.3	9.2	8.3	7.4	6.4	5.5



TEST NUMBER: P190121

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

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	8.3	4.6	4.6	5.5	6.4	7.4	8.3	8.3	7.4	6.4	5.5
115°	7.4	4.6	4.6	5.5	5.5	7.4	8.3	8.3	7.4	6.4	5.5
117.5°	7.4	4.6	4.6	5.5	5.5	7.4	8.3	8.3	7.4	6.4	5.5
120°	6.4	3.7	4.6	4.6	5.5	6.4	7.4	8.3	7.4	6.4	5.5
122.5°	5.5	3.7	4.6	4.6	5.5	6.4	7.4	7.4	7.4	6.4	5.5
125°	5.5	3.7	3.7	4.6	4.6	5.5	6.4	7.4	7.4	6.4	5.5
127.5°	4.6	3.7	3.7	3.7	4.6	5.5	6.4	6.4	7.4	6.4	5.5
130°	3.7	3.7	3.7	3.7	4.6	4.6	5.5	6.4	6.4	6.4	6.4
132.5°	3.7	3.7	3.7	3.7	3.7	4.6	5.5	5.5	6.4	6.4	6.4
135°	3.7	2.8	3.7	3.7	3.7	4.6	4.6	5.5	5.5	5.5	5.5
137.5°	2.8	2.8	2.8	3.7	3.7	3.7	4.6	4.6	5.5	5.5	5.5
140°	2.8	2.8	2.8	2.8	3.7	3.7	3.7	4.6	4.6	4.6	4.6
142.5°	2.8	2.8	2.8	2.8	2.8	3.7	3.7	3.7	4.6	4.6	4.6
145°	2.8	2.8	2.8	2.8	2.8	3.7	3.7	3.7	3.7	3.7	4.6
147.5°	2.8	2.8	2.8	2.8	2.8	2.8	3.7	3.7	3.7	3.7	3.7
150°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	3.7	3.7	3.7	3.7
152.5°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	3.7
155°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	3.7	3.7
157.5°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	3.7
160°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
162.5°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
165°	3.7	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
167.5°	3.7	3.7	3.7	3.7	3.7	3.7	2.8	2.8	2.8	2.8	2.8
170°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	2.8	2.8	2.8	2.8
172.5°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	2.8	2.8	2.8	2.8
175°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	2.8	2.8	2.8	2.8
177.5°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	2.8	2.8
180°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7



TEST NUMBER: P190121

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

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	133.6	133.6	133.6	133.6	133.6	133.6	133.6	133.6
2.5°	106.9	106.0	106.0	106.0	104.1	104.1	103.2	103.2
5°	87.5	85.7	84.8	84.8	82.9	82.9	82.0	81.1
7.5°	70.9	69.1	67.3	66.3	64.5	64.5	63.6	63.6
10°	55.3	53.4	51.6	50.7	48.8	47.9	47.0	47.0
12.5°	43.3	41.5	39.6	39.6	37.8	36.9	36.9	35.9
15°	35.0	33.2	33.2	32.2	31.3	31.3	31.3	30.4
17.5°	30.4	29.5	29.5	29.5	28.6	28.6	28.6	28.6
20°	27.6	27.6	27.6	27.6	27.6	28.6	28.6	28.6
22.5°	27.6	27.6	28.6	28.6	28.6	28.6	28.6	28.6
25°	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6
27.5°	27.6	26.7	26.7	26.7	26.7	25.8	25.8	25.8
30°	25.8	25.8	25.8	25.8	24.9	24.9	24.9	24.9
32.5°	24.9	24.9	24.9	24.9	24.0	24.0	24.0	24.0
35°	24.0	24.0	23.0	23.0	23.0	23.0	22.1	22.1
37.5°	23.0	23.0	22.1	22.1	22.1	21.2	21.2	21.2
40°	23.0	22.1	21.2	21.2	20.3	19.3	19.3	19.3
42.5°	22.1	20.3	20.3	19.3	18.4	17.5	17.5	17.5
45°	20.3	19.3	18.4	17.5	16.6	15.7	15.7	15.7
47.5°	19.3	17.5	16.6	15.7	14.7	13.8	13.8	13.8
50°	17.5	15.7	14.7	14.7	12.9	12.0	12.0	11.1
52.5°	16.6	14.7	13.8	12.9	11.1	10.1	10.1	10.1
55°	14.7	12.9	12.0	11.1	10.1	9.2	8.3	8.3
57.5°	13.8	11.1	11.1	10.1	8.3	7.4	7.4	6.4
60°	12.0	10.1	9.2	8.3	7.4	6.4	5.5	5.5
62.5°	11.1	9.2	8.3	7.4	6.4	5.5	4.6	4.6
65°	10.1	8.3	7.4	6.4	5.5	4.6	3.7	3.7
67.5°	9.2	7.4	6.4	6.4	4.6	3.7	3.7	2.8
70°	8.3	6.4	6.4	5.5	3.7	3.7	2.8	2.8
72.5°	7.4	6.4	5.5	4.6	3.7	2.8	1.8	1.8
75°	7.4	5.5	4.6	4.6	3.7	2.8	1.8	1.8
77.5°	6.4	5.5	4.6	4.6	2.8	1.8	1.8	1.8
80°	6.4	4.6	4.6	3.7	2.8	1.8	1.8	1.8
82.5°	5.5	4.6	3.7	3.7	2.8	1.8	1.8	1.8
85°	5.5	3.7	3.7	2.8	1.8	1.8	0.9	0.9
87.5°	4.6	3.7	3.7	2.8	1.8	1.8	0.9	0.9
90°	4.6	3.7	2.8	2.8	1.8	0.9	0.9	0.9
92.5°	4.6	3.7	2.8	2.8	2.8	1.8	1.8	1.8
95°	4.6	3.7	2.8	2.8	2.8	1.8	1.8	1.8
97.5°	3.7	2.8	2.8	2.8	2.8	1.8	1.8	1.8
100°	3.7	3.7	2.8	2.8	2.8	1.8	1.8	1.8
102.5°	3.7	3.7	2.8	2.8	2.8	1.8	1.8	1.8
105°	3.7	3.7	2.8	2.8	2.8	1.8	1.8	1.8
107.5°	4.6	3.7	2.8	2.8	2.8	1.8	1.8	1.8
110°	4.6	3.7	2.8	2.8	2.8	1.8	1.8	1.8



TEST NUMBER: P190121

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

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
112.5°	4.6	3.7	3.7	2.8	2.8	1.8	1.8	1.8
115°	4.6	3.7	3.7	3.7	2.8	2.8	2.8	1.8
117.5°	4.6	4.6	3.7	3.7	2.8	2.8	2.8	2.8
120°	4.6	3.7	3.7	3.7	2.8	2.8	2.8	2.8
122.5°	5.5	4.6	3.7	3.7	2.8	2.8	2.8	2.8
125°	4.6	4.6	3.7	3.7	3.7	2.8	2.8	2.8
127.5°	5.5	4.6	4.6	3.7	3.7	3.7	3.7	3.7
130°	5.5	4.6	4.6	4.6	3.7	3.7	3.7	3.7
132.5°	5.5	4.6	4.6	4.6	4.6	3.7	3.7	3.7
135°	5.5	4.6	4.6	4.6	4.6	3.7	3.7	3.7
137.5°	5.5	5.5	4.6	4.6	4.6	4.6	3.7	3.7
140°	5.5	4.6	4.6	4.6	4.6	4.6	4.6	4.6
142.5°	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
145°	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
147.5°	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
150°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
152.5°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
155°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
157.5°	2.8	3.7	3.7	3.7	3.7	3.7	2.8	2.8
160°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
162.5°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
165°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
167.5°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
170°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
172.5°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
175°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	1.8
177.5°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
180°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7

(END OF REPORT)