

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: P190079

Luminaire Tested: **TRB11-LD4-20W-50-OPL-BK-UNV-EDC1**

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-79-08  
Report Number: P190079  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P27856)  
Test Lab: INNOVATION CENTER(G2)  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: FAIL-SAFE  
Catalog Number: TRB11-LD4-20W-50-OPL-BK-UNV-EDC1  
Description: TERRAPIN 11" LED WALL MOUNT WITH BORDER PAINTED OPAL LENS  
Light Source: (56) NICHIA 5000  
NF2L757DRT  
Ballast/Driver: OSRAM ELECTRONIC DRIVER PROGRAMMED AT 450mA  
OT40W/1

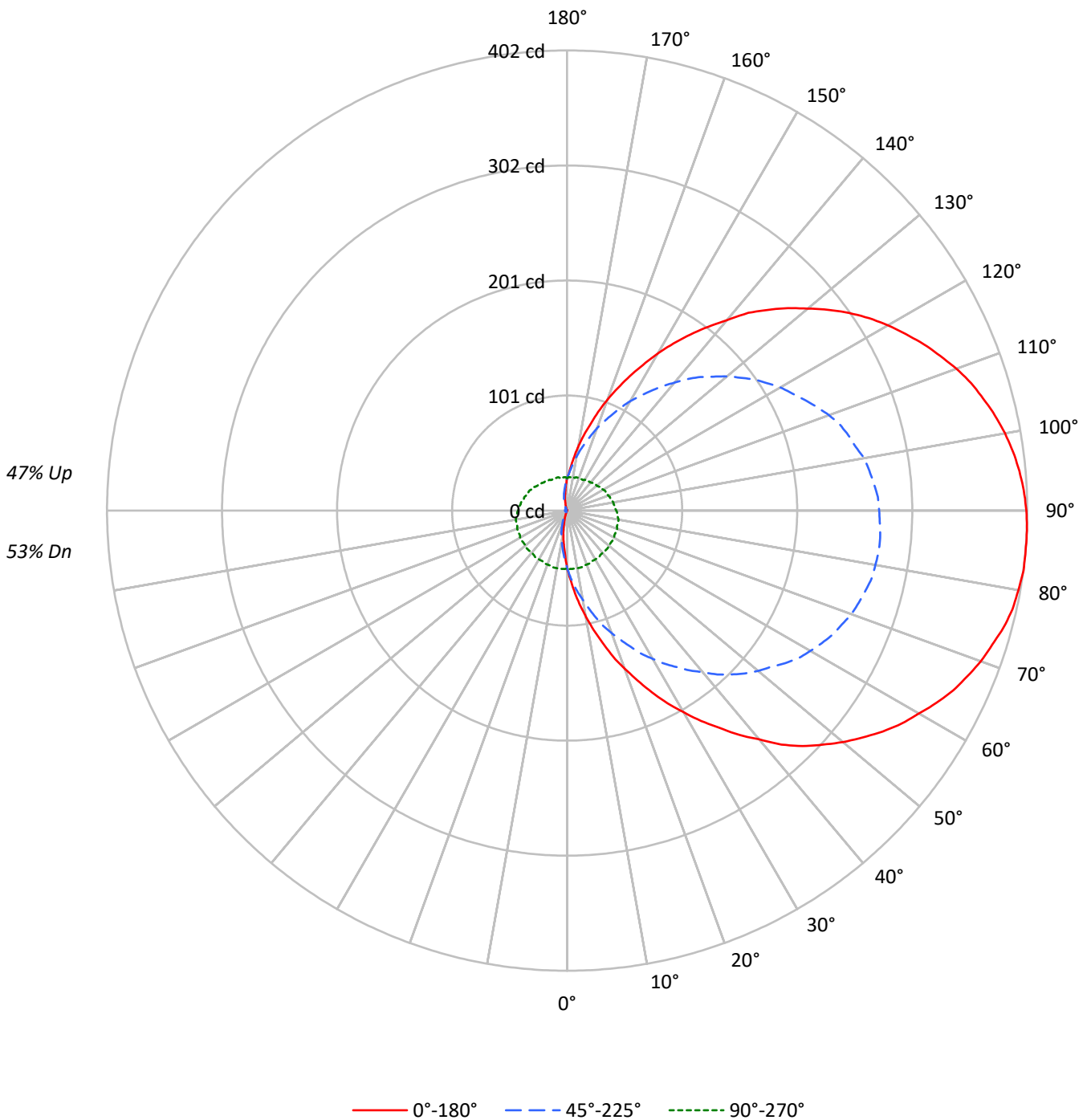
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1282.9 lumens  
Efficiency: N/A  
Efficacy: 58.3 lumens/watt  
Spacing Criteria (0/90/45): 3.26 / 1.49 / 2.7  
Luminous Opening: Rectangular w/ Sides (W: 0.92' x L: 0.29' x H: 0.92')  
CIE Type: General Diffuse  
  
Input Watts (W): 22  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): 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: P190079

CATALOG NUMBER: TRB11-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	108	108	108	108	100	100	100	100	85	85	85	72	72	72	59	59	59	53
1	93	86	80	75	85	79	74	69	66	62	58	54	51	48	43	41	39	33
2	82	72	64	57	75	66	59	52	55	49	44	45	40	36	35	32	28	24
3	74	62	52	45	67	56	48	41	47	40	35	38	32	28	29	25	22	17
4	67	53	44	36	61	49	40	33	40	33	28	33	27	23	25	21	17	14
5	61	47	37	30	55	43	34	28	35	28	23	29	23	19	22	18	14	11
6	56	42	32	25	51	38	30	23	32	25	19	25	20	16	20	15	12	9
7	51	37	28	22	47	34	26	20	28	22	17	23	17	13	18	13	10	7
8	47	33	25	19	43	31	23	17	26	19	14	21	15	12	16	12	9	6
9	44	30	22	16	40	28	20	15	23	17	13	19	14	10	15	11	8	5
10	41	28	20	14	37	25	18	13	21	15	11	17	12	9	14	10	7	5

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°
0°	2021	2021	2021
5°	2225	1899	983
10°	2470	1776	502
15°	2702	1680	206
20°	2934	1577	72
25°	3155	1491	0
30°	3358	1450	0
35°	3556	1422	0
40°	3768	1380	0
45°	3998	1375	0
50°	4152	1355	0
55°	4303	1370	12
60°	4432	1397	11
65°	4579	1409	11
70°	4701	1461	11
75°	4824	1499	11
80°	4930	1585	11
85°	5031	1628	11



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	4.9	0.4
10°-20°	16.6	1.3
20°-30°	32.3	2.5
30°-40°	52.8	4.1
40°-50°	76.9	6.0
50°-60°	100.6	7.8
60°-70°	121.0	9.4
70°-80°	135.7	10.6
80°-90°	141.7	11.0
90°-100°	138.8	10.8
100°-110°	127.4	9.9
110°-120°	109.2	8.5
120°-130°	86.7	6.8
130°-140°	62.6	4.9
140°-150°	40.2	3.1
150°-160°	22.5	1.8
160°-170°	10.4	0.8
170°-180°	2.9	0.2
0°-30°	53.7	4.2
0°-40°	106.5	8.3
0°-60°	284.1	22.1
0°-90°	682.5	53.2
90°-120°	375.3	29.3
90°-150°	564.8	44.0
90°-180°	600.0	46.8
0°-180°	1282.9	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	50	50	50	50	50	
5°	70	65	51	37	31	7
15°	119	97	51	19	9	35
25°	175	131	49	7	0	82
35°	232	167	49	2	0	147
45°	291	202	48	1	0	225
55°	336	232	47	1	1	302
65°	372	256	46	2	1	368
75°	395	270	46	2	1	417
85°	402	274	44	2	1	328
90°	401	273	43	2	1	220
95°	397	269	42	2	1	322
105°	377	254	39	1	1	398
115°	344	229	37	1	1	341
125°	301	200	36	1	1	270
135°	248	165	33	1	1	192
145°	188	128	31	1	0	119
155°	130	92	30	5	0	61
165°	78	61	30	11	6	23
175°	39	36	29	21	17	4
180°	28	28	28	28	28	



TEST NUMBER: P190079

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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	50.2	50.2	50.2	50.2	50.2	50.2	50.2	50.2	50.2	50.2	50.2
2.5°	59.3	58.4	58.4	58.4	58.4	58.4	57.4	58.4	57.4	57.4	57.4
5°	70.2	70.2	69.3	69.3	68.4	68.4	67.5	67.5	66.6	65.7	64.7
7.5°	82.1	81.2	81.2	80.2	79.3	78.4	77.5	76.6	74.8	73.9	72.0
10°	93.9	93.0	93.0	92.1	90.3	89.4	88.4	86.6	84.8	82.1	79.3
12.5°	106.7	105.8	104.9	103.9	103.0	101.2	99.4	97.6	93.9	91.2	87.5
15°	119.4	120.4	118.5	116.7	114.9	114.0	112.2	108.5	104.9	101.2	96.7
17.5°	134.0	133.1	132.2	130.4	127.7	126.7	124.0	120.4	115.8	111.2	105.8
20°	146.8	146.8	145.9	143.2	140.4	138.6	135.9	131.3	125.8	120.4	114.0
22.5°	160.5	160.5	158.7	156.8	153.2	150.5	147.7	142.2	136.8	130.4	122.2
25°	175.1	175.1	172.3	169.6	166.0	164.1	160.5	155.0	148.6	140.4	131.3
27.5°	189.7	189.7	186.9	184.2	179.6	176.9	173.2	166.9	159.6	150.5	141.3
30°	203.3	203.3	201.5	197.9	192.4	189.7	186.0	178.7	170.5	160.5	149.5
32.5°	217.9	217.0	214.3	210.6	205.2	202.4	197.9	189.7	180.5	170.5	158.7
35°	231.6	230.7	228.0	224.3	217.9	214.3	210.6	201.5	190.6	179.6	166.9
37.5°	247.1	247.1	244.4	239.8	230.7	227.0	222.5	213.4	201.5	189.7	176.0
40°	260.8	260.8	258.0	252.6	245.3	241.6	236.2	224.3	212.5	198.8	184.2
42.5°	277.2	276.3	273.5	268.1	259.9	256.2	250.8	239.8	224.3	209.7	194.2
45°	290.9	290.0	286.3	279.9	272.6	268.1	261.7	250.8	235.3	218.8	202.4
47.5°	302.7	301.8	298.2	292.7	283.6	279.0	272.6	260.8	246.2	228.0	210.6
50°	314.6	313.7	310.0	303.6	294.5	290.0	283.6	270.8	255.3	238.0	217.9
52.5°	325.5	324.6	321.0	313.7	304.6	300.0	293.6	279.9	263.5	246.2	224.3
55°	336.5	335.6	331.9	323.7	314.6	310.0	302.7	289.1	272.6	253.5	232.5
57.5°	346.5	344.7	340.1	333.7	323.7	318.2	311.8	297.3	279.9	260.8	239.8
60°	354.7	353.8	350.1	342.8	331.9	326.4	319.1	304.6	287.2	267.2	245.3
62.5°	363.8	362.0	358.3	350.1	340.1	333.7	327.3	311.8	293.6	272.6	250.8
65°	372.0	370.2	365.6	358.3	347.4	341.0	333.7	318.2	300.0	279.0	256.2
67.5°	378.4	376.6	372.0	363.8	353.8	347.4	340.1	323.7	304.6	283.6	259.9
70°	384.8	383.0	378.4	370.2	359.3	352.9	345.6	329.2	310.0	288.1	264.4
72.5°	389.4	388.4	383.9	375.7	363.8	357.4	350.1	332.8	313.7	291.8	267.2
75°	394.8	393.0	388.4	380.2	368.4	362.0	354.7	337.4	317.3	294.5	269.9
77.5°	398.5	395.7	391.2	383.0	372.0	364.7	357.4	340.1	320.1	297.3	272.6
80°	400.3	398.5	393.9	385.7	374.8	367.5	359.3	341.9	321.9	299.1	273.5
82.5°	402.1	400.3	394.8	386.6	375.7	368.4	361.1	342.8	322.8	300.0	274.5
85°	402.1	400.3	395.7	387.5	375.7	369.3	361.1	343.8	323.7	300.0	274.5
87.5°	402.1	400.3	395.7	386.6	375.7	368.4	361.1	342.8	322.8	299.1	273.5
90°	401.2	399.4	394.8	385.7	374.8	367.5	360.2	341.9	321.9	298.2	272.6
92.5°	399.4	397.6	393.0	383.9	372.9	365.6	357.4	340.1	320.1	296.3	271.7
95°	396.6	394.8	390.3	381.1	370.2	362.9	355.6	338.3	318.2	294.5	269.0
97.5°	393.0	391.2	386.6	378.4	366.6	359.3	352.0	334.6	314.6	291.8	266.3
100°	388.4	386.6	382.1	373.9	362.0	355.6	347.4	331.0	310.9	287.2	263.5
102.5°	383.0	381.1	375.7	367.5	356.5	350.1	341.9	325.5	305.5	282.7	258.0
105°	376.6	375.7	370.2	362.0	351.1	344.7	337.4	320.1	300.9	279.0	254.4
107.5°	370.2	368.4	362.9	355.6	344.7	338.3	331.0	314.6	295.4	273.5	249.8
110°	362.0	361.1	355.6	347.4	337.4	331.0	323.7	307.3	289.1	267.2	243.5



TEST NUMBER: P190079

CATALOG NUMBER: TRB11-LD4-20W-50-OPL-BK-UNV-EDC1

**CANDELA DISTRIBUTION (continued):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	352.9	352.0	347.4	339.2	329.2	322.8	315.5	300.0	281.8	259.9	236.2
115°	343.8	341.9	337.4	330.1	320.1	314.6	307.3	291.8	273.5	253.5	228.9
117.5°	333.7	332.8	328.3	321.0	310.9	304.6	298.2	283.6	265.3	245.3	221.6
120°	323.7	321.9	317.3	310.9	300.9	295.4	289.1	274.5	257.1	236.2	215.2
122.5°	312.8	310.9	307.3	300.0	290.9	285.4	279.0	264.4	248.0	227.0	207.0
125°	300.9	299.1	295.4	288.1	279.9	274.5	268.1	254.4	238.0	217.9	199.7
127.5°	288.1	287.2	282.7	276.3	268.1	262.6	257.1	243.5	226.1	208.8	190.6
130°	274.5	273.5	269.9	263.5	255.3	250.8	245.3	231.6	216.1	199.7	182.4
132.5°	261.7	260.8	257.1	251.7	243.5	238.9	232.5	219.8	205.2	189.7	173.2
135°	248.0	248.0	243.5	238.9	228.9	224.3	218.8	207.9	195.1	180.5	165.0
137.5°	234.3	231.6	228.9	222.5	215.2	211.5	207.0	196.0	184.2	170.5	155.9
140°	217.0	216.1	213.4	208.8	201.5	197.9	193.3	183.3	172.3	159.6	145.9
142.5°	202.4	201.5	198.8	194.2	187.8	184.2	180.5	170.5	160.5	148.6	136.8
145°	187.8	186.9	185.1	180.5	174.2	171.4	167.8	158.7	149.5	138.6	127.7
147.5°	173.2	172.3	170.5	166.9	161.4	157.7	155.0	146.8	138.6	128.6	118.5
150°	158.7	158.7	156.8	153.2	147.7	145.0	141.3	135.0	127.7	119.4	110.3
152.5°	143.2	143.2	141.3	138.6	134.0	132.2	128.6	123.1	115.8	108.5	101.2
155°	129.5	129.5	127.7	124.9	121.3	119.4	116.7	111.2	105.8	99.4	92.1
157.5°	115.8	115.8	114.9	112.2	109.4	107.6	104.9	100.3	95.7	90.3	83.9
160°	103.0	103.0	102.1	99.4	97.6	95.7	93.0	89.4	85.7	81.2	76.6
162.5°	90.3	90.3	89.4	87.5	85.7	83.9	82.1	79.3	76.6	72.0	68.4
165°	77.5	78.4	77.5	76.6	74.8	73.9	72.0	70.2	67.5	64.7	61.1
167.5°	67.5	67.5	67.5	65.7	64.7	63.8	62.9	61.1	59.3	56.5	54.7
170°	57.4	57.4	57.4	56.5	55.6	54.7	53.8	52.9	51.1	50.2	48.3
172.5°	47.4	48.3	48.3	47.4	46.5	46.5	45.6	44.7	44.7	42.9	41.9
175°	39.2	39.2	39.2	39.2	39.2	38.3	38.3	38.3	38.3	37.4	36.5
177.5°	31.9	32.8	32.8	32.8	31.9	31.9	32.8	31.9	31.9	31.9	31.9
180°	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3



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**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	50.2	50.2	50.2	50.2	50.2	50.2	50.2	50.2	50.2	50.2	50.2
2.5°	56.5	55.6	55.6	54.7	54.7	53.8	53.8	52.9	52.0	51.1	50.2
5°	62.9	62.0	61.1	59.3	58.4	57.4	55.6	54.7	52.9	51.1	49.2
7.5°	70.2	67.5	65.7	63.8	62.0	61.1	58.4	55.6	53.8	51.1	48.3
10°	76.6	73.9	71.1	67.5	65.7	64.7	61.1	57.4	54.7	51.1	47.4
12.5°	83.9	80.2	76.6	72.0	70.2	67.5	63.8	59.3	54.7	51.1	46.5
15°	92.1	86.6	82.1	76.6	73.9	71.1	65.7	61.1	55.6	51.1	45.6
17.5°	100.3	93.9	87.5	81.2	78.4	74.8	68.4	62.0	56.5	50.2	45.6
20°	107.6	100.3	93.0	85.7	82.1	78.4	71.1	63.8	56.5	50.2	43.8
22.5°	114.9	106.7	98.5	89.4	85.7	81.2	72.9	64.7	57.4	50.2	42.9
25°	123.1	113.1	103.9	93.9	89.4	84.8	75.7	66.6	57.4	49.2	41.9
27.5°	131.3	120.4	109.4	98.5	93.9	88.4	77.5	67.5	58.4	49.2	41.0
30°	138.6	126.7	115.8	103.0	97.6	92.1	80.2	69.3	59.3	49.2	41.0
32.5°	146.8	133.1	120.4	107.6	101.2	94.8	82.1	70.2	59.3	49.2	40.1
35°	154.1	140.4	125.8	111.2	104.9	97.6	83.9	72.0	59.3	49.2	39.2
37.5°	161.4	146.8	131.3	115.8	108.5	101.2	86.6	72.9	60.2	48.3	38.3
40°	168.7	153.2	135.9	120.4	112.2	103.9	88.4	73.9	60.2	48.3	38.3
42.5°	177.8	159.6	142.2	124.9	115.8	107.6	91.2	74.8	61.1	48.3	37.4
45°	185.1	166.0	147.7	128.6	119.4	110.3	93.0	76.6	61.1	48.3	36.5
47.5°	191.5	171.4	152.3	132.2	122.2	113.1	94.8	77.5	62.0	48.3	35.6
50°	197.9	176.9	156.8	135.9	125.8	115.8	96.7	78.4	62.0	47.4	35.6
52.5°	204.2	182.4	161.4	139.5	128.6	118.5	98.5	79.3	62.9	47.4	34.6
55°	210.6	187.8	165.0	142.2	131.3	120.4	99.4	80.2	62.9	47.4	34.6
57.5°	215.2	192.4	168.7	145.0	133.1	122.2	101.2	81.2	62.9	47.4	33.7
60°	220.7	196.0	172.3	147.7	135.9	124.0	102.1	81.2	62.9	47.4	33.7
62.5°	225.2	200.6	175.1	150.5	137.7	125.8	103.0	82.1	62.9	46.5	32.8
65°	229.8	204.2	177.8	152.3	139.5	127.7	103.9	82.1	62.9	46.5	32.8
67.5°	234.3	207.0	180.5	154.1	141.3	128.6	104.9	83.0	62.9	46.5	32.8
70°	237.1	209.7	183.3	155.9	143.2	130.4	105.8	83.0	62.9	46.5	31.9
72.5°	241.6	212.5	185.1	157.7	144.1	131.3	105.8	83.0	62.9	45.6	31.9
75°	244.4	214.3	186.0	158.7	145.0	131.3	106.7	83.0	62.9	45.6	31.0
77.5°	246.2	215.2	187.8	159.6	145.0	132.2	106.7	83.0	62.9	45.6	31.0
80°	247.1	216.1	187.8	159.6	145.9	132.2	106.7	83.0	62.0	45.6	31.0
82.5°	247.1	217.0	187.8	159.6	145.0	132.2	105.8	82.1	62.0	44.7	30.1
85°	247.1	216.1	187.8	158.7	145.0	131.3	105.8	82.1	61.1	43.8	30.1
87.5°	247.1	216.1	186.9	158.7	144.1	130.4	104.9	81.2	60.2	43.8	29.2
90°	246.2	215.2	186.0	157.7	143.2	129.5	103.9	80.2	60.2	42.9	28.3
92.5°	244.4	213.4	185.1	155.9	142.2	128.6	103.0	79.3	59.3	41.9	28.3
95°	242.5	211.5	183.3	155.0	140.4	127.7	102.1	78.4	58.4	41.9	28.3
97.5°	239.8	208.8	180.5	153.2	138.6	125.8	100.3	77.5	57.4	41.0	27.4
100°	235.3	206.1	178.7	150.5	136.8	124.0	99.4	76.6	57.4	41.0	27.4
102.5°	231.6	202.4	175.1	148.6	135.0	122.2	97.6	75.7	56.5	40.1	27.4
105°	226.1	199.7	172.3	145.9	132.2	119.4	95.7	73.9	55.6	39.2	26.4
107.5°	222.5	195.1	168.7	142.2	129.5	117.6	93.9	72.9	54.7	39.2	26.4
110°	217.0	190.6	165.0	139.5	126.7	114.9	92.1	71.1	53.8	38.3	26.4





TEST NUMBER: P190079

CATALOG NUMBER: TRB11-LD4-20W-50-OPL-BK-UNV-EDC1

**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	211.5	186.0	160.5	135.9	124.0	112.2	90.3	69.3	52.0	37.4	25.5
115°	205.2	180.5	156.8	132.2	120.4	109.4	87.5	68.4	51.1	37.4	25.5
117.5°	198.8	176.0	152.3	128.6	116.7	106.7	85.7	66.6	51.1	37.4	25.5
120°	192.4	169.6	146.8	124.9	114.0	103.0	83.0	64.7	49.2	36.5	25.5
122.5°	186.0	164.1	142.2	120.4	110.3	100.3	81.2	63.8	48.3	35.6	25.5
125°	178.7	157.7	136.8	116.7	106.7	96.7	78.4	62.0	47.4	35.6	24.6
127.5°	171.4	151.4	131.3	112.2	102.1	93.0	75.7	60.2	46.5	34.6	24.6
130°	163.2	145.0	125.8	107.6	98.5	89.4	72.9	58.4	45.6	33.7	24.6
132.5°	155.9	138.6	120.4	103.0	93.9	85.7	70.2	56.5	43.8	33.7	24.6
135°	148.6	131.3	114.9	98.5	90.3	83.0	68.4	54.7	42.9	32.8	24.6
137.5°	140.4	124.9	108.5	93.9	85.7	79.3	65.7	52.9	41.9	32.8	24.6
140°	132.2	117.6	103.0	89.4	82.1	75.7	62.9	51.1	41.0	31.9	24.6
142.5°	124.0	110.3	97.6	83.9	77.5	72.0	60.2	49.2	40.1	31.9	24.6
145°	115.8	103.9	91.2	79.3	73.9	68.4	57.4	47.4	39.2	31.0	24.6
147.5°	107.6	97.6	85.7	74.8	70.2	64.7	54.7	46.5	38.3	31.0	24.6
150°	100.3	91.2	80.2	71.1	66.6	61.1	52.9	44.7	37.4	31.0	24.6
152.5°	92.1	83.9	74.8	66.6	62.0	58.4	50.2	42.9	36.5	30.1	24.6
155°	84.8	77.5	69.3	62.0	58.4	54.7	48.3	41.9	35.6	30.1	25.5
157.5°	77.5	71.1	64.7	58.4	54.7	52.0	45.6	40.1	34.6	30.1	25.5
160°	71.1	65.7	60.2	54.7	51.1	49.2	43.8	38.3	33.7	30.1	25.5
162.5°	63.8	59.3	54.7	50.2	48.3	45.6	41.9	37.4	33.7	30.1	26.4
165°	57.4	53.8	50.2	46.5	44.7	42.9	39.2	35.6	32.8	30.1	26.4
167.5°	52.0	49.2	46.5	43.8	41.9	40.1	37.4	34.6	31.9	29.2	27.4
170°	46.5	44.7	41.9	40.1	39.2	38.3	35.6	33.7	31.9	30.1	27.4
172.5°	41.0	40.1	38.3	36.5	36.5	35.6	33.7	31.9	31.0	29.2	28.3
175°	36.5	35.6	34.6	33.7	33.7	32.8	31.9	31.0	30.1	29.2	28.3
177.5°	31.9	31.9	31.0	31.0	31.0	31.0	31.0	30.1	30.1	29.2	29.2
180°	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3



TEST NUMBER: P190079

CATALOG NUMBER: TRB11-LD4-20W-50-OPL-BK-UNV-EDC1

**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	50.2	50.2	50.2	50.2	50.2	50.2	50.2	50.2	50.2	50.2	50.2
2.5°	49.2	48.3	47.4	47.4	46.5	45.6	44.7	43.8	42.9	41.9	41.0
5°	47.4	45.6	44.7	43.8	42.9	41.0	40.1	38.3	37.4	35.6	34.6
7.5°	46.5	43.8	41.9	40.1	39.2	37.4	35.6	33.7	31.9	31.0	29.2
10°	44.7	41.9	39.2	37.4	36.5	33.7	31.0	29.2	27.4	25.5	23.7
12.5°	42.9	39.2	35.6	34.6	32.8	30.1	27.4	24.6	22.8	21.0	19.1
15°	41.0	37.4	33.7	31.9	30.1	26.4	23.7	21.0	19.1	16.4	14.6
17.5°	40.1	35.6	31.0	29.2	27.4	23.7	21.0	18.2	15.5	13.7	11.9
20°	38.3	32.8	28.3	26.4	24.6	21.0	17.3	14.6	11.9	10.0	8.2
22.5°	36.5	31.0	26.4	23.7	21.9	18.2	14.6	11.9	9.1	7.3	5.5
25°	35.6	29.2	24.6	21.9	20.1	15.5	12.8	9.1	7.3	5.5	3.6
27.5°	34.6	28.3	22.8	20.1	17.3	13.7	10.0	7.3	5.5	3.6	1.8
30°	32.8	26.4	21.0	18.2	15.5	11.9	8.2	5.5	3.6	1.8	0.9
32.5°	31.9	24.6	19.1	16.4	14.6	10.0	6.4	4.6	2.7	0.9	0.9
35°	31.0	23.7	17.3	15.5	12.8	8.2	5.5	2.7	1.8	0.9	0.9
37.5°	30.1	22.8	16.4	13.7	10.9	7.3	4.6	1.8	0.9	0.9	0.9
40°	29.2	21.0	15.5	12.8	10.0	6.4	3.6	1.8	0.9	0.9	0.9
42.5°	27.4	20.1	13.7	10.9	8.2	4.6	1.8	0.9	0.9	0.9	0.9
45°	27.4	19.1	12.8	10.0	7.3	3.6	1.8	0.9	0.9	0.9	0.9
47.5°	26.4	18.2	11.9	9.1	6.4	2.7	0.9	0.9	0.9	0.9	0.9
50°	25.5	17.3	10.9	8.2	5.5	2.7	0.9	0.9	0.9	0.9	0.9
52.5°	24.6	16.4	10.0	7.3	5.5	1.8	0.9	0.9	0.9	0.9	0.9
55°	24.6	15.5	9.1	6.4	4.6	1.8	0.9	0.9	0.9	0.9	0.9
57.5°	23.7	15.5	8.2	6.4	4.6	1.8	0.9	0.9	0.9	0.9	0.9
60°	22.8	14.6	8.2	5.5	3.6	1.8	1.8	1.8	0.9	0.9	0.9
62.5°	22.8	14.6	7.3	5.5	3.6	1.8	1.8	1.8	0.9	0.9	0.9
65°	21.9	13.7	7.3	4.6	2.7	1.8	1.8	1.8	1.8	0.9	0.9
67.5°	21.9	12.8	6.4	4.6	2.7	1.8	1.8	1.8	1.8	1.8	0.9
70°	21.0	12.8	6.4	4.6	2.7	1.8	1.8	1.8	1.8	1.8	1.8
72.5°	21.0	12.8	6.4	3.6	2.7	1.8	1.8	1.8	1.8	1.8	1.8
75°	21.0	11.9	6.4	3.6	2.7	1.8	1.8	1.8	1.8	1.8	1.8
77.5°	20.1	11.9	5.5	3.6	2.7	1.8	1.8	1.8	1.8	1.8	1.8
80°	20.1	11.9	5.5	3.6	1.8	1.8	1.8	1.8	1.8	1.8	1.8
82.5°	19.1	10.9	5.5	3.6	1.8	1.8	1.8	1.8	1.8	1.8	1.8
85°	19.1	10.9	4.6	2.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8
87.5°	18.2	10.9	4.6	2.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8
90°	18.2	10.0	4.6	2.7	1.8	1.8	1.8	1.8	1.8	0.9	0.9
92.5°	18.2	10.0	4.6	2.7	1.8	1.8	1.8	1.8	1.8	1.8	0.9
95°	17.3	10.0	4.6	2.7	1.8	1.8	1.8	1.8	1.8	1.8	0.9
97.5°	17.3	10.0	4.6	2.7	1.8	1.8	1.8	1.8	1.8	0.9	0.9
100°	17.3	10.0	4.6	2.7	1.8	1.8	1.8	1.8	1.8	0.9	0.9
102.5°	17.3	10.0	4.6	2.7	1.8	1.8	1.8	0.9	0.9	0.9	0.9
105°	17.3	10.0	4.6	2.7	1.8	1.8	1.8	0.9	0.9	0.9	0.9
107.5°	16.4	10.0	4.6	2.7	1.8	1.8	0.9	0.9	0.9	0.9	0.9
110°	16.4	10.0	4.6	3.6	1.8	1.8	1.8	0.9	0.9	0.9	0.9



TEST NUMBER: P190079

CATALOG NUMBER: TRB11-LD4-20W-50-OPL-BK-UNV-EDC1

**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	16.4	10.0	5.5	3.6	1.8	0.9	0.9	0.9	0.9	0.9	0.9
115°	16.4	10.0	5.5	3.6	2.7	1.8	1.8	1.8	0.9	0.9	0.9
117.5°	17.3	10.9	5.5	4.6	2.7	1.8	1.8	1.8	1.8	0.9	0.9
120°	17.3	10.9	6.4	4.6	2.7	1.8	1.8	1.8	0.9	0.9	0.9
122.5°	17.3	10.9	6.4	4.6	3.6	1.8	1.8	1.8	1.8	0.9	0.9
125°	17.3	10.9	6.4	4.6	3.6	1.8	1.8	1.8	0.9	0.9	0.9
127.5°	17.3	11.9	7.3	5.5	3.6	1.8	1.8	0.9	0.9	0.9	0.9
130°	17.3	11.9	7.3	5.5	4.6	1.8	0.9	0.9	0.9	0.9	0.9
132.5°	17.3	11.9	7.3	6.4	4.6	2.7	0.9	0.9	0.9	0.9	0.9
135°	17.3	12.8	8.2	6.4	5.5	2.7	1.8	0.9	0.9	0.9	0.9
137.5°	18.2	12.8	8.2	7.3	5.5	3.6	1.8	0.9	0.9	0.9	0.9
140°	18.2	12.8	9.1	7.3	6.4	3.6	1.8	0.9	0.9	0.9	0.9
142.5°	18.2	13.7	10.0	8.2	6.4	4.6	2.7	1.8	0.9	0.9	0.9
145°	19.1	14.6	10.9	9.1	7.3	5.5	3.6	1.8	0.9	0.9	0.9
147.5°	19.1	14.6	10.9	10.0	8.2	5.5	3.6	2.7	1.8	0.9	0.9
150°	20.1	15.5	11.9	10.9	9.1	7.3	5.5	3.6	2.7	1.8	0.9
152.5°	20.1	16.4	12.8	11.9	10.0	8.2	6.4	4.6	2.7	2.7	1.8
155°	21.0	17.3	13.7	12.8	11.9	9.1	7.3	5.5	4.6	3.6	2.7
157.5°	21.9	18.2	15.5	13.7	12.8	10.9	9.1	7.3	5.5	4.6	3.6
160°	21.9	19.1	16.4	15.5	13.7	11.9	10.0	8.2	7.3	5.5	4.6
162.5°	22.8	20.1	17.3	16.4	15.5	13.7	11.9	10.0	9.1	7.3	6.4
165°	23.7	21.0	19.1	18.2	17.3	15.5	13.7	11.9	10.9	10.0	8.2
167.5°	24.6	22.8	21.0	19.1	18.2	17.3	15.5	13.7	12.8	11.9	10.9
170°	25.5	23.7	21.9	21.0	21.0	19.1	17.3	16.4	15.5	14.6	13.7
172.5°	26.4	24.6	23.7	22.8	22.8	21.0	20.1	19.1	18.2	17.3	16.4
175°	27.4	26.4	25.5	25.5	24.6	23.7	22.8	21.9	21.0	20.1	20.1
177.5°	28.3	28.3	27.4	27.4	27.4	26.4	25.5	25.5	24.6	24.6	23.7
180°	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3



TEST NUMBER: P190079

CATALOG NUMBER: TRB11-LD4-20W-50-OPL-BK-UNV-EDC1

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	50.2	50.2	50.2	50.2	50.2	50.2	50.2	50.2
2.5°	40.1	40.1	40.1	40.1	39.2	39.2	39.2	39.2
5°	33.7	32.8	32.8	32.8	31.9	31.0	31.0	31.0
7.5°	27.4	26.4	26.4	26.4	25.5	24.6	24.6	24.6
10°	22.8	21.9	21.0	21.0	20.1	19.1	19.1	19.1
12.5°	17.3	16.4	15.5	15.5	14.6	13.7	13.7	13.7
15°	13.7	11.9	11.9	11.9	10.0	10.0	9.1	9.1
17.5°	10.0	9.1	8.2	8.2	7.3	6.4	6.4	6.4
20°	6.4	5.5	5.5	4.6	4.6	3.6	3.6	3.6
22.5°	4.6	3.6	2.7	2.7	1.8	1.8	1.8	1.8
25°	2.7	1.8	0.9	0.9	0.9	0.9	0.0	0.0
27.5°	0.9	0.9	0.9	0.9	0.9	0.0	0.0	0.0
30°	0.9	0.9	0.9	0.9	0.9	0.0	0.0	0.0
32.5°	0.9	0.9	0.9	0.9	0.9	0.0	0.0	0.0
35°	0.9	0.9	0.9	0.9	0.9	0.0	0.0	0.0
37.5°	0.9	0.9	0.9	0.9	0.9	0.0	0.0	0.0
40°	0.9	0.9	0.9	0.9	0.9	0.0	0.0	0.0
42.5°	0.9	0.9	0.9	0.9	0.9	0.0	0.0	0.0
45°	0.9	0.9	0.9	0.9	0.9	0.0	0.0	0.0
47.5°	0.9	0.9	0.9	0.9	0.9	0.0	0.0	0.0
50°	0.9	0.9	0.9	0.9	0.9	0.0	0.0	0.0
52.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.0	0.9
55°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
57.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
60°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
62.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
65°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
67.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
70°	0.9	0.9	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	1.8	1.8	1.8	1.8	1.8	0.9	0.9
77.5°	1.8	1.8	1.8	1.8	1.8	0.9	1.8	0.9
80°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.9
82.5°	1.8	1.8	1.8	1.8	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	0.9
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	0.9	0.9	0.9	0.9	0.9	0.9
105°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
107.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
110°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9



TEST NUMBER: P190079

CATALOG NUMBER: TRB11-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	0.9	0.9	0.9	0.9	0.9	0.0
115°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
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	0.9	0.9	0.9	0.9
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	0.0	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	0.0	0.0	0.0
140°	0.9	0.9	0.9	0.9	0.9	0.0	0.0	0.0
142.5°	0.9	0.9	0.9	0.9	0.9	0.0	0.0	0.0
145°	0.9	0.9	0.9	0.9	0.9	0.0	0.0	0.0
147.5°	0.9	0.9	0.9	0.9	0.0	0.0	0.0	0.0
150°	0.9	0.9	0.9	0.9	0.9	0.0	0.0	0.0
152.5°	0.9	0.9	0.9	0.9	0.9	0.0	0.0	0.0
155°	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.0
157.5°	2.7	1.8	1.8	1.8	1.8	0.9	0.9	0.9
160°	4.6	3.6	2.7	2.7	2.7	1.8	1.8	1.8
162.5°	5.5	4.6	4.6	4.6	3.6	3.6	3.6	3.6
165°	8.2	7.3	6.4	6.4	5.5	5.5	5.5	5.5
167.5°	10.0	9.1	9.1	8.2	8.2	8.2	7.3	7.3
170°	12.8	11.9	11.9	10.9	10.9	10.9	10.0	10.9
172.5°	15.5	14.6	14.6	14.6	13.7	13.7	13.7	13.7
175°	19.1	19.1	18.2	18.2	18.2	17.3	17.3	17.3
177.5°	23.7	22.8	22.8	22.8	22.8	22.8	21.9	22.8
180°	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3

(END OF REPORT)