

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: P190110

Luminaire Tested: **TRB11-LD4-15W-50-CL-BK-UNV-EDC1-CSTG**

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-79-08  
Report Number: P190110  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P27870)  
Test Lab: INNOVATION CENTER(G2)  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: FAIL-SAFE  
Catalog Number: TRB11-LD4-15W-50-CL-BK-UNV-EDC1-CSTG  
Description: TERRAPIN 11" LED SHALLOW CAST WALL MOUNT WITH BORDER PAINTED CLEAR LENS  
Light Source: (56) NICHIA 5000 NF2L757DRT  
Ballast/Driver: OSRAM ELECTRONIC DRIVER PROGRAMMED AT 300mA OT25W/1

**Summary**

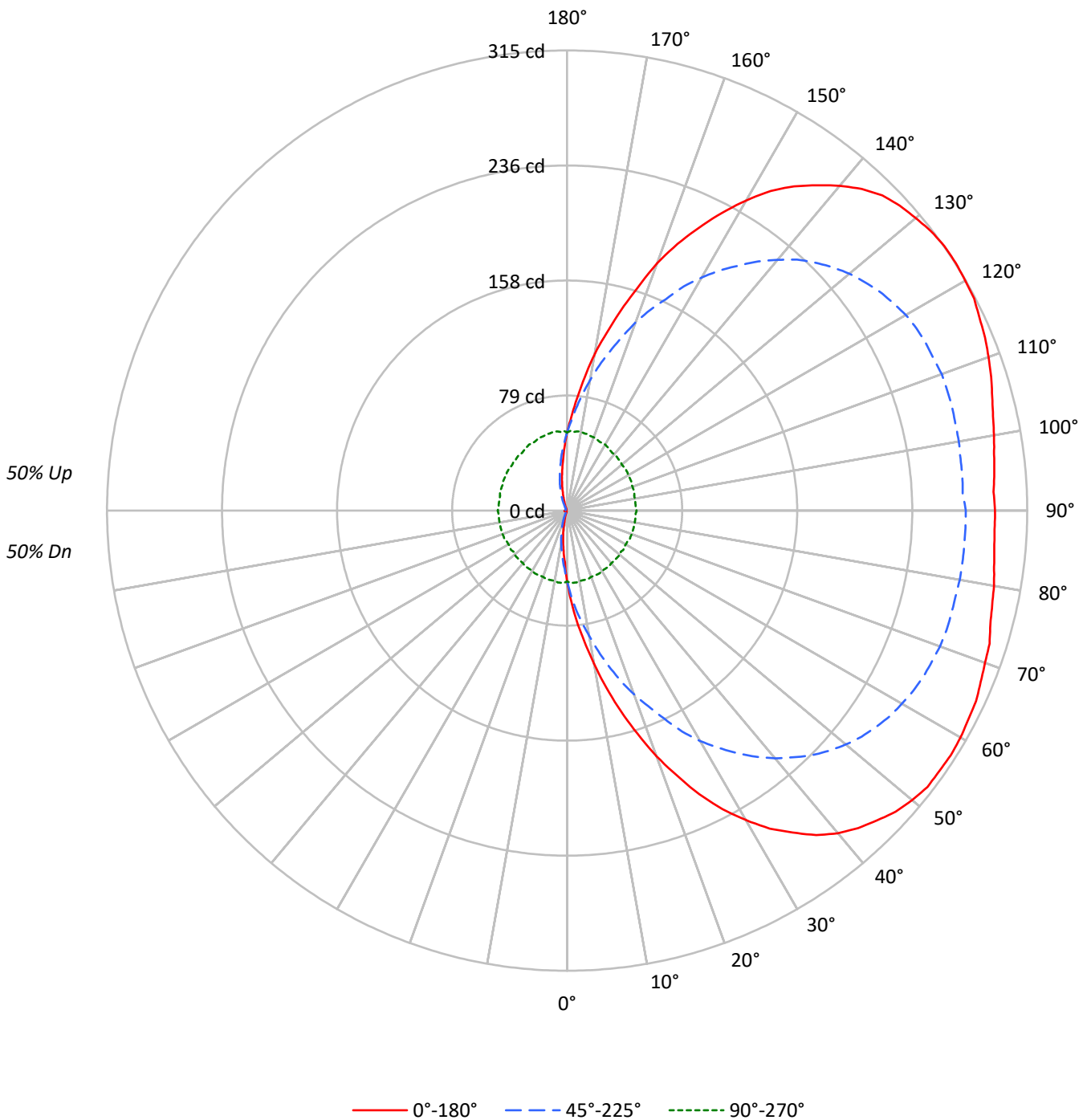
Lumens per Lamp: N/A  
Luminaire Lumens: 1369.0 lumens  
Efficiency: N/A  
Efficacy: 95.7 lumens/watt  
Spacing Criteria (0/90/45): 3.15 / 1.51 / 2.82  
Luminous Opening: Rectangular w/ Sides (W: 0.92' x L: 0.29' x H: 0.92')  
CIE Type: General Diffuse

Input Watts (W): 14.3  
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

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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	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56	50
1	93	87	81	76	85	79	74	70	66	62	58	53	50	48	42	40	38	32
2	83	73	65	58	75	67	60	53	55	49	45	44	40	36	34	31	28	23
3	74	63	53	46	67	57	49	43	47	41	35	37	33	29	29	25	22	17
4	67	54	45	38	61	50	41	35	41	34	29	32	27	23	25	21	18	14
5	61	48	38	31	56	44	35	29	36	29	24	29	23	19	22	18	15	11
6	56	42	33	26	51	39	30	24	32	25	20	25	20	16	19	15	12	9
7	52	38	29	23	47	35	27	21	29	22	17	23	18	14	17	13	10	8
8	48	34	25	20	43	31	23	18	26	19	15	21	16	12	16	12	9	6
9	44	31	23	17	40	28	21	16	23	17	13	19	14	10	15	11	8	6
10	41	28	20	15	38	26	19	14	21	16	12	17	13	9	13	10	7	5

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

	0°	90°	180°
0°	1945	1945	1945
5°	2406	1843	878
10°	2809	1699	405
15°	3217	1607	145
20°	3575	1517	52
25°	3861	1463	11
30°	4040	1403	10
35°	4131	1376	9
40°	4166	1343	9
45°	4122	1338	8
50°	4069	1343	8
55°	3976	1359	17
60°	3885	1365	16
65°	3802	1424	16
70°	3719	1476	16
75°	3665	1545	16
80°	3654	1633	16
85°	3672	1747	16



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	5.0	0.4
10°-20°	17.9	1.3
20°-30°	37.1	2.7
30°-40°	60.7	4.4
40°-50°	84.2	6.2
50°-60°	103.7	7.6
60°-70°	117.5	8.6
70°-80°	125.6	9.2
80°-90°	128.9	9.4
90°-100°	128.6	9.4
100°-110°	125.9	9.2
110°-120°	118.7	8.7
120°-130°	105.3	7.7
130°-140°	85.6	6.3
140°-150°	61.8	4.5
150°-160°	38.2	2.8
160°-170°	18.9	1.4
170°-180°	5.4	0.4
0°-30°	59.9	4.4
0°-40°	120.7	8.8
0°-60°	308.6	22.5
0°-90°	680.6	49.7
90°-120°	373.2	27.3
90°-150°	626.0	45.7
90°-180°	688.0	50.3
0°-180°	1369.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	48	48	48	48	48	
5°	76	68	50	34	28	8
15°	142	110	49	15	6	41
25°	214	157	48	4	1	100
35°	269	203	48	1	1	169
45°	300	237	47	1	1	232
55°	311	258	47	1	1	279
65°	309	269	47	1	1	306
75°	300	272	47	1	1	318
85°	294	273	47	1	1	240
90°	293	273	48	1	1	160
95°	294	272	47	1	1	240
105°	301	273	48	1	1	319
115°	312	271	48	1	1	309
125°	315	261	49	1	1	282
135°	305	240	50	1	1	235
145°	271	205	51	1	1	170
155°	214	160	52	6	1	100
165°	142	113	54	19	10	41
175°	77	70	54	40	34	8
180°	53	53	53	53	53	



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3
2.5°	61.8	60.5	61.1	60.5	61.1	60.5	60.5	59.2	59.9	59.2	57.9
5°	75.9	74.7	74.7	74.0	74.0	73.4	73.4	71.4	70.8	69.5	67.6
7.5°	90.1	89.5	89.5	88.2	87.5	86.9	86.2	83.7	81.7	80.5	77.2
10°	106.8	104.9	104.3	103.6	102.3	101.1	100.4	96.5	94.0	91.4	86.9
12.5°	124.2	122.3	121.6	120.4	118.4	116.5	115.2	111.3	107.5	103.6	98.5
15°	142.2	140.3	139.7	137.7	135.2	133.2	131.3	126.8	121.6	116.5	110.1
17.5°	160.3	159.6	157.7	155.8	151.9	150.0	147.4	141.6	136.5	129.4	122.3
20°	178.9	178.3	177.0	174.4	169.9	168.0	164.1	157.0	150.6	142.2	133.9
22.5°	196.3	195.7	193.7	191.2	186.7	184.1	180.9	173.8	165.4	155.1	144.8
25°	214.3	213.7	211.1	207.9	202.7	200.2	197.0	188.6	180.2	169.9	157.0
27.5°	230.4	229.8	227.2	224.0	218.8	215.6	211.8	203.4	193.7	183.4	170.6
30°	244.6	243.9	241.4	238.1	232.4	229.8	225.3	216.9	206.6	195.0	182.1
32.5°	258.1	256.8	254.9	250.4	245.2	242.0	237.5	229.1	218.8	206.0	192.4
35°	269.0	268.4	266.5	262.0	256.8	253.6	249.1	240.1	229.8	216.3	202.7
37.5°	280.0	278.7	276.8	272.9	267.1	264.5	260.0	250.4	240.1	226.6	212.4
40°	288.3	287.1	285.1	281.3	276.1	272.9	268.4	260.0	249.1	236.2	221.4
42.5°	294.8	294.1	292.2	288.3	283.2	280.6	276.8	267.8	257.5	244.6	229.1
45°	299.9	299.9	298.6	294.8	289.6	287.1	283.2	274.8	264.5	251.7	236.9
47.5°	305.1	304.4	302.5	298.6	294.8	291.6	288.3	280.6	270.3	258.1	243.3
50°	308.3	307.7	305.7	302.5	298.0	295.4	292.2	285.1	275.5	263.9	249.1
52.5°	310.9	309.6	307.7	304.4	300.6	298.0	295.4	288.3	280.0	267.8	254.2
55°	310.9	310.2	308.9	305.7	301.9	299.3	296.7	290.3	282.6	271.6	258.1
57.5°	311.5	310.9	308.9	306.4	303.2	300.6	298.0	292.2	285.1	274.8	262.0
60°	310.9	310.2	308.3	306.4	302.5	300.6	298.6	292.9	286.4	276.8	264.5
62.5°	309.6	309.6	307.7	305.1	301.9	300.6	298.0	293.5	287.1	278.0	267.1
65°	308.9	308.3	306.4	303.8	301.2	299.3	297.4	293.5	287.1	279.3	269.0
67.5°	306.4	306.4	305.1	302.5	299.9	298.6	296.7	292.2	287.1	280.0	270.3
70°	304.4	304.4	303.2	301.2	298.6	297.4	295.4	291.6	287.1	280.6	271.6
72.5°	303.2	301.9	300.6	298.6	296.7	295.4	293.5	290.3	286.4	280.6	272.3
75°	299.9	299.3	298.0	296.7	294.1	293.5	292.2	289.0	285.1	280.0	272.3
77.5°	298.0	298.0	296.7	294.1	292.2	291.6	290.3	287.7	284.5	280.0	272.3
80°	296.7	296.1	294.8	292.9	290.9	290.3	289.0	286.4	283.8	280.0	272.9
82.5°	294.8	294.1	292.9	290.9	289.0	288.3	287.7	285.8	283.2	279.3	272.9
85°	293.5	292.9	291.6	290.3	288.3	287.7	286.4	285.1	282.6	279.3	272.9
87.5°	292.9	292.2	290.9	289.6	287.7	287.1	286.4	284.5	282.6	278.7	272.9
90°	292.9	292.2	290.9	289.6	288.3	287.7	287.1	285.1	283.2	279.3	272.9
92.5°	292.2	291.6	289.6	288.3	287.1	286.4	285.1	283.8	281.3	277.4	271.0
95°	293.5	292.9	291.6	289.6	288.3	287.7	286.4	284.5	282.6	278.0	271.6
97.5°	294.8	294.1	292.9	291.6	290.3	289.0	287.7	285.8	283.2	278.7	271.6
100°	296.7	296.7	294.8	293.5	291.6	290.3	289.6	287.1	283.8	279.3	272.3
102.5°	298.6	298.6	297.4	295.4	293.5	292.2	291.6	288.3	285.1	280.0	272.3
105°	301.2	300.6	299.9	298.0	296.1	294.8	293.5	290.3	286.4	281.3	272.9
107.5°	304.4	303.8	302.5	300.6	298.6	297.4	296.1	292.2	287.7	281.9	272.9
110°	307.0	307.0	305.7	303.8	301.2	299.9	298.0	294.1	289.0	281.9	272.9



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**CANDELA DISTRIBUTION (continued):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	309.6	308.9	307.7	305.7	302.5	300.6	299.3	294.8	289.0	281.9	271.6
115°	311.5	311.5	310.2	307.7	304.4	303.2	300.6	296.1	290.3	281.9	271.0
117.5°	314.1	313.4	311.5	308.9	306.4	303.8	301.9	296.7	290.3	281.3	269.7
120°	314.7	314.1	312.8	310.2	307.0	304.4	301.9	296.7	289.0	280.0	267.8
122.5°	315.4	314.7	313.4	310.2	307.0	304.4	301.9	295.4	287.7	277.4	264.5
125°	315.4	314.7	312.8	310.2	305.7	303.8	300.6	294.1	285.1	274.8	261.3
127.5°	314.1	313.4	311.5	308.3	303.8	301.2	298.0	291.6	282.6	270.3	256.8
130°	311.5	310.2	308.9	306.4	301.2	298.6	295.4	287.7	278.0	265.8	252.3
132.5°	308.9	307.7	305.7	302.5	297.4	294.8	291.6	283.2	272.9	260.7	246.5
135°	305.1	303.8	301.2	298.0	293.5	290.3	286.4	278.0	267.1	254.2	240.1
137.5°	298.6	297.4	295.4	292.2	286.4	283.8	279.3	270.3	260.0	247.2	233.0
140°	290.3	289.0	286.4	283.8	278.0	274.8	270.3	262.0	251.0	238.1	224.0
142.5°	280.6	279.3	278.0	274.2	268.4	265.2	260.7	251.7	241.4	228.5	215.0
145°	271.0	269.0	267.8	263.9	258.7	255.5	251.0	242.0	231.1	218.8	204.7
147.5°	259.4	257.5	256.2	252.3	247.2	243.3	239.4	231.1	220.8	208.5	195.0
150°	245.2	244.6	242.6	239.4	233.6	230.4	226.6	218.2	208.5	197.6	184.1
152.5°	229.8	229.1	227.8	224.6	218.2	215.6	212.4	204.7	195.7	184.7	173.1
155°	213.7	213.7	211.8	208.5	203.4	199.5	197.0	190.5	181.5	171.9	159.6
157.5°	197.6	197.6	195.7	193.1	188.6	186.0	182.1	176.4	168.6	158.3	148.7
160°	180.2	180.2	178.9	176.4	171.2	169.3	166.7	159.6	153.2	145.5	137.1
162.5°	159.6	160.3	158.3	156.4	153.2	150.6	148.7	144.2	138.4	131.9	124.2
165°	141.6	141.6	141.0	139.0	136.5	133.9	131.9	128.7	123.6	118.4	112.6
167.5°	124.2	124.9	123.6	122.3	120.4	119.1	117.1	114.6	110.1	106.2	101.7
170°	108.8	107.5	106.8	106.2	104.3	103.6	102.3	100.4	97.2	94.6	90.8
172.5°	92.0	91.4	90.8	90.8	89.5	88.8	88.2	86.9	84.3	82.4	79.8
175°	76.6	76.6	75.9	75.9	75.3	74.7	74.0	74.0	72.7	71.4	70.2
177.5°	63.7	63.1	63.1	63.1	63.1	63.7	63.1	62.4	62.4	61.8	61.1
180°	53.4	53.4	53.4	53.4	53.4	53.4	53.4	53.4	53.4	53.4	53.4



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**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3
2.5°	57.3	56.6	56.0	55.4	54.7	54.1	53.4	52.1	50.8	49.6	48.3
5°	65.7	64.4	61.8	60.5	59.2	58.6	56.0	54.1	51.5	49.6	47.6
7.5°	74.0	71.4	68.2	65.7	63.7	62.4	59.2	56.0	52.8	49.6	46.3
10°	83.0	79.2	74.7	70.8	68.2	66.3	61.8	57.3	53.4	48.9	45.1
12.5°	93.3	87.5	81.7	76.6	73.4	70.8	65.0	59.2	54.1	48.9	44.4
15°	103.0	96.5	89.5	82.4	78.5	75.3	68.2	61.1	54.7	48.9	43.1
17.5°	113.9	105.6	97.2	88.2	84.3	79.8	71.4	63.1	56.0	48.9	41.8
20°	124.2	114.6	104.3	94.0	89.5	84.3	74.7	65.0	56.6	48.3	41.2
22.5°	134.5	123.6	112.0	100.4	94.6	88.8	77.2	66.9	57.3	48.3	39.9
25°	145.5	133.2	119.7	106.8	100.4	93.3	81.1	68.9	57.9	48.3	39.3
27.5°	156.4	142.2	128.1	113.3	105.6	98.5	84.3	70.8	58.6	48.3	38.6
30°	167.3	151.3	135.2	119.1	111.3	103.0	87.5	72.7	59.2	47.6	38.0
32.5°	177.6	159.6	142.9	124.9	116.5	107.5	90.8	74.7	60.5	47.6	36.7
35°	187.3	169.9	150.0	131.3	121.6	112.0	93.3	75.9	60.5	47.6	36.0
37.5°	195.7	178.3	157.0	137.1	126.8	116.5	96.5	77.9	61.8	47.6	35.4
40°	204.7	185.4	164.8	142.2	131.3	120.4	99.8	79.8	62.4	47.0	34.8
42.5°	212.4	192.4	171.9	148.0	136.5	124.9	102.3	81.1	62.4	47.0	34.1
45°	219.5	199.5	177.6	153.2	141.0	128.7	104.9	83.0	63.7	47.0	33.5
47.5°	225.9	206.0	183.4	157.7	145.5	132.6	108.1	84.3	63.7	47.0	32.8
50°	231.7	211.8	188.6	163.5	149.3	136.5	110.7	86.2	64.4	47.0	32.2
52.5°	236.9	216.9	194.4	168.0	153.2	139.7	112.6	87.5	65.0	46.3	32.2
55°	242.0	221.4	198.9	172.5	157.0	142.9	115.2	88.8	65.7	47.0	31.5
57.5°	246.5	226.6	202.7	176.4	161.6	146.1	117.8	90.1	66.3	46.3	31.5
60°	249.1	229.8	206.6	180.2	164.8	149.3	119.7	91.4	66.9	46.3	30.9
62.5°	252.3	233.6	209.8	183.4	168.0	152.5	122.3	92.7	67.6	46.3	30.9
65°	254.9	236.2	213.7	186.7	171.9	155.1	124.2	94.0	68.2	47.0	30.3
67.5°	256.8	238.8	216.3	189.2	174.4	157.7	126.2	95.3	68.2	47.0	30.3
70°	258.7	241.4	218.8	192.4	177.0	159.6	127.4	95.9	68.9	47.0	30.3
72.5°	260.0	243.3	221.4	193.7	178.9	162.2	129.4	97.2	69.5	47.0	30.3
75°	260.7	243.9	222.7	195.7	180.2	164.1	130.7	97.8	69.5	47.0	29.6
77.5°	262.0	245.2	224.0	197.0	181.5	165.4	131.3	98.5	70.2	47.0	29.6
80°	262.6	246.5	224.6	198.2	182.8	166.1	132.6	99.1	70.2	47.0	29.6
82.5°	262.6	247.2	225.3	198.9	183.4	166.7	133.2	99.8	70.8	47.0	29.6
85°	263.2	247.8	225.9	199.5	184.1	167.3	133.2	99.8	70.8	47.0	29.6
87.5°	263.2	247.8	226.6	200.2	184.7	168.0	133.9	100.4	70.8	47.0	29.6
90°	263.9	249.1	227.2	200.8	185.4	169.3	134.5	100.4	71.4	47.6	29.6
92.5°	261.3	245.9	225.3	198.9	183.4	166.7	133.2	99.8	70.8	47.0	29.6
95°	261.3	245.9	225.3	198.2	182.8	166.7	132.6	99.8	70.8	47.0	29.6
97.5°	261.3	245.9	224.6	197.6	182.8	166.1	132.6	99.8	70.8	47.0	29.6
100°	261.3	245.2	224.0	197.0	182.1	165.4	131.9	99.1	70.8	47.0	29.6
102.5°	261.3	244.6	223.3	196.3	180.9	164.8	131.3	99.1	70.2	47.0	30.3
105°	261.3	243.9	222.1	195.0	179.6	163.5	130.7	98.5	70.2	47.6	30.3
107.5°	260.7	243.3	220.8	194.4	178.9	162.8	130.0	97.8	70.2	47.6	30.3
110°	260.0	242.0	219.5	192.4	177.0	160.9	128.7	97.2	70.2	47.6	30.9





TEST NUMBER: P190110

CATALOG NUMBER: TRB11-LD4-15W-50-CL-BK-UNV-EDC1-CSTG

**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	258.1	239.4	216.9	189.9	175.1	158.3	126.8	96.5	69.5	47.6	30.9
115°	256.8	238.1	215.0	187.9	173.1	156.4	125.5	95.9	69.5	48.3	31.5
117.5°	254.9	235.6	212.4	185.4	170.6	154.5	124.2	94.6	69.5	48.3	32.2
120°	252.3	232.4	209.2	182.8	166.7	151.9	122.3	93.3	68.9	48.3	32.8
122.5°	248.4	228.5	205.3	178.9	164.1	149.3	120.4	92.7	68.2	48.9	32.8
125°	244.6	224.0	201.5	175.7	160.3	146.1	117.8	91.4	68.2	48.9	33.5
127.5°	240.1	220.1	197.0	171.2	155.8	142.2	115.2	89.5	67.6	48.9	34.1
130°	234.3	214.3	191.2	166.1	151.9	139.0	113.3	88.2	66.9	48.9	34.8
132.5°	228.5	208.5	186.7	161.6	148.0	135.2	110.7	86.9	66.9	49.6	35.4
135°	222.7	202.7	180.9	155.8	143.5	131.9	108.1	85.6	66.3	49.6	36.0
137.5°	215.0	196.3	175.1	150.6	139.0	128.1	105.6	84.3	65.7	50.2	36.7
140°	207.3	187.9	167.3	144.8	133.9	123.6	102.3	82.4	65.0	50.2	37.3
142.5°	198.2	180.2	159.6	139.7	129.4	119.1	99.8	81.1	65.0	50.2	38.6
145°	189.9	172.5	153.2	133.9	124.2	115.2	97.2	79.8	64.4	50.8	39.3
147.5°	180.2	163.5	146.1	128.7	119.7	110.7	94.0	78.5	64.4	51.5	40.5
150°	170.6	154.5	139.0	122.9	114.6	106.8	91.4	76.6	63.7	52.1	41.8
152.5°	158.3	144.8	130.7	116.5	108.8	101.7	88.2	74.7	63.1	52.1	42.5
155°	148.0	136.5	123.6	110.7	103.6	97.2	85.0	73.4	62.4	52.1	43.8
157.5°	138.4	127.4	116.5	104.9	98.5	93.3	82.4	71.4	61.8	52.8	45.1
160°	128.1	118.4	108.8	98.5	93.3	88.8	79.2	70.2	61.1	53.4	45.7
162.5°	117.1	109.4	101.1	92.7	88.2	83.7	75.9	67.6	60.5	53.4	47.0
165°	106.8	100.4	93.3	86.2	83.0	79.2	72.7	65.7	59.9	54.1	48.3
167.5°	96.5	92.0	86.2	81.1	77.9	75.3	69.5	64.4	59.2	54.1	49.6
170°	87.5	83.7	79.8	75.3	73.4	70.8	66.3	62.4	58.6	54.7	50.8
172.5°	77.9	75.3	72.7	69.5	68.2	66.3	63.1	60.5	57.3	54.7	51.5
175°	68.9	67.6	65.7	63.7	63.1	61.8	59.9	58.6	56.0	54.1	52.1
177.5°	61.1	60.5	59.9	59.2	58.6	58.6	57.3	56.6	55.4	54.7	54.1
180°	53.4	53.4	53.4	53.4	53.4	53.4	53.4	53.4	53.4	53.4	53.4



TEST NUMBER: P190110

CATALOG NUMBER: TRB11-LD4-15W-50-CL-BK-UNV-EDC1-CSTG

**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3
2.5°	47.6	46.3	45.1	44.4	44.4	43.1	41.8	40.5	39.9	39.3	38.6
5°	45.7	43.8	41.8	40.5	39.9	38.0	36.7	34.8	34.1	32.8	31.5
7.5°	43.8	41.2	38.6	37.3	36.0	33.5	31.5	29.6	28.3	26.4	25.1
10°	41.8	38.0	35.4	33.5	32.2	29.6	27.0	25.1	23.2	21.2	20.0
12.5°	39.9	36.0	32.2	30.3	29.0	25.7	23.2	20.6	18.7	16.7	15.4
15°	38.0	33.5	29.6	27.7	25.7	22.5	19.3	17.4	14.8	12.9	11.6
17.5°	36.0	31.5	26.4	24.5	22.5	19.3	16.1	13.5	11.6	9.7	8.4
20°	34.8	29.0	24.5	22.5	20.0	16.7	13.5	10.9	8.4	7.1	5.8
22.5°	33.5	27.0	21.9	20.0	18.0	14.2	10.9	8.4	6.4	5.1	3.9
25°	31.5	25.7	20.0	18.0	15.4	11.6	9.0	6.4	4.5	3.2	2.6
27.5°	30.3	23.8	18.0	16.1	13.5	9.7	7.1	5.1	3.2	2.6	1.3
30°	29.0	22.5	16.7	14.2	12.2	8.4	5.8	3.9	2.6	1.3	0.6
32.5°	28.3	21.2	14.8	12.9	10.3	7.1	4.5	2.6	1.3	1.3	0.6
35°	27.0	20.0	13.5	10.9	9.0	5.8	3.2	1.9	1.3	0.6	0.6
37.5°	25.7	18.7	12.2	10.3	7.7	4.5	2.6	1.3	0.6	0.6	0.6
40°	25.1	17.4	11.6	9.0	7.1	3.9	1.9	1.3	1.3	0.6	0.6
42.5°	23.8	16.7	10.3	7.7	5.8	3.2	1.3	1.3	1.3	0.6	0.6
45°	23.2	15.4	9.0	7.1	5.1	2.6	1.3	1.3	1.3	0.6	1.3
47.5°	22.5	14.8	8.4	6.4	4.5	1.9	1.3	1.3	1.3	0.6	0.6
50°	21.9	14.2	7.7	5.8	3.9	1.9	1.3	1.3	1.3	1.3	1.3
52.5°	21.2	13.5	7.1	5.1	3.2	1.3	1.3	1.3	1.3	1.3	0.6
55°	20.6	12.9	6.4	4.5	3.2	1.3	1.3	1.3	1.3	1.3	1.3
57.5°	20.0	12.2	6.4	4.5	2.6	1.3	1.3	1.3	1.3	1.3	1.3
60°	20.0	11.6	5.8	3.9	2.6	1.3	1.3	1.3	1.3	1.3	1.3
62.5°	19.3	11.6	5.8	3.9	2.6	1.3	1.3	1.3	1.3	1.3	1.3
65°	19.3	10.9	5.1	3.2	1.9	1.3	1.3	1.3	1.3	1.3	1.3
67.5°	18.7	10.9	5.1	3.2	1.9	1.3	1.3	1.3	1.3	1.3	1.3
70°	18.7	10.3	5.1	3.2	1.9	1.3	1.3	1.3	1.3	1.3	1.3
72.5°	18.7	10.3	4.5	3.2	1.9	1.9	1.3	1.3	1.3	1.3	1.3
75°	18.0	10.3	4.5	3.2	1.9	1.9	1.9	1.3	1.3	1.9	1.9
77.5°	18.0	9.7	4.5	2.6	1.9	1.9	1.9	1.9	1.9	1.9	1.3
80°	18.0	9.7	4.5	2.6	1.9	1.3	1.3	1.9	1.3	1.9	1.3
82.5°	18.0	9.7	4.5	2.6	1.9	1.3	1.3	1.9	1.9	1.3	1.3
85°	18.0	9.7	3.9	2.6	1.9	1.3	1.3	1.3	1.3	1.3	1.3
87.5°	17.4	9.7	3.9	2.6	1.3	1.3	1.3	1.3	1.3	1.3	1.3
90°	18.0	9.7	3.9	2.6	1.3	1.3	1.3	1.3	1.3	1.3	1.3
92.5°	18.0	9.7	3.9	2.6	1.9	1.3	1.3	1.3	1.3	1.3	1.3
95°	18.0	9.7	3.9	2.6	1.9	1.3	1.3	1.3	1.3	1.3	1.3
97.5°	18.0	9.7	4.5	2.6	1.9	1.3	1.3	1.3	1.3	1.3	1.3
100°	18.0	9.7	4.5	2.6	1.9	1.3	1.3	1.3	1.3	1.3	1.3
102.5°	18.0	10.3	4.5	2.6	1.9	1.3	1.3	1.3	1.3	1.3	1.3
105°	18.7	10.3	4.5	2.6	1.9	1.3	1.3	1.3	1.3	1.3	1.3
107.5°	18.7	10.3	5.1	3.2	1.9	1.3	1.3	1.3	1.3	1.3	1.3
110°	19.3	10.9	5.1	3.2	1.9	1.3	1.3	1.3	1.3	1.3	1.3



TEST NUMBER: P190110

CATALOG NUMBER: TRB11-LD4-15W-50-CL-BK-UNV-EDC1-CSTG

**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	19.3	10.9	5.1	3.2	1.9	1.3	1.3	1.3	1.3	1.3	1.3
115°	20.0	11.6	5.8	3.9	2.6	1.3	1.3	1.3	1.3	1.3	1.3
117.5°	20.6	12.2	6.4	4.5	2.6	1.3	1.3	1.3	1.3	1.3	1.3
120°	21.2	12.9	7.1	4.5	3.2	1.3	1.3	1.3	1.3	1.3	1.3
122.5°	21.9	13.5	7.1	5.1	3.2	1.3	1.3	1.3	1.3	1.3	1.3
125°	22.5	14.2	7.7	5.8	3.9	1.9	1.3	1.3	1.3	1.3	1.3
127.5°	23.2	14.8	8.4	6.4	4.5	1.9	1.3	1.3	1.3	1.3	1.3
130°	23.8	15.4	9.0	7.1	5.1	1.9	1.3	1.3	1.3	1.3	1.3
132.5°	24.5	16.7	10.3	7.7	5.8	2.6	1.3	1.3	1.3	0.6	0.6
135°	25.7	17.4	10.9	8.4	6.4	3.2	1.3	1.3	1.3	0.6	0.6
137.5°	26.4	18.7	12.2	9.7	7.7	4.5	1.9	1.3	1.3	1.3	1.3
140°	27.7	20.0	13.5	10.9	8.4	5.1	2.6	1.3	1.3	0.6	0.6
142.5°	29.0	21.2	14.8	12.2	9.7	6.4	3.9	1.9	1.3	0.6	0.6
145°	30.3	22.5	16.7	13.5	11.6	7.7	4.5	2.6	1.3	0.6	0.6
147.5°	31.5	24.5	18.0	15.4	12.9	9.0	5.8	3.9	2.6	1.3	0.6
150°	32.8	25.7	20.0	17.4	14.8	10.9	7.7	5.1	3.2	1.9	1.3
152.5°	34.1	27.7	21.9	19.3	16.7	12.9	9.7	7.1	4.5	3.2	1.9
155°	36.0	29.6	23.8	21.2	19.3	14.8	11.6	9.0	6.4	5.1	3.9
157.5°	37.3	31.5	26.4	23.8	21.2	18.0	14.2	11.6	9.0	7.1	5.8
160°	39.3	33.5	28.3	26.4	24.5	20.6	17.4	14.2	12.2	9.7	8.4
162.5°	41.2	36.0	30.9	29.0	27.0	23.8	20.6	17.4	15.4	12.9	11.6
165°	43.1	38.0	34.1	32.2	30.3	27.0	23.8	21.2	19.3	16.7	15.4
167.5°	45.1	40.5	36.7	35.4	33.5	30.9	27.7	25.7	23.2	21.2	20.0
170°	47.0	43.1	39.9	38.6	37.3	34.8	32.2	30.3	28.3	26.4	24.5
172.5°	48.3	45.7	43.1	42.5	41.2	39.3	36.7	35.4	33.5	31.5	30.3
175°	50.2	48.3	47.0	46.3	45.1	43.8	42.5	41.2	39.9	38.6	37.3
177.5°	52.8	51.5	50.8	50.2	50.2	49.6	48.3	47.6	46.3	45.7	45.1
180°	53.4	53.4	53.4	53.4	53.4	53.4	53.4	53.4	53.4	53.4	53.4



TEST NUMBER: P190110

CATALOG NUMBER: TRB11-LD4-15W-50-CL-BK-UNV-EDC1-CSTG

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3
2.5°	38.0	37.3	36.7	36.7	36.0	36.0	36.0	35.4
5°	30.3	29.6	29.0	29.0	28.3	28.3	27.7	27.7
7.5°	23.8	23.2	22.5	22.5	21.9	21.2	20.6	20.6
10°	18.7	17.4	17.4	16.7	16.1	15.4	15.4	15.4
12.5°	14.2	12.9	12.2	12.2	11.6	10.9	10.3	10.3
15°	10.3	9.0	8.4	8.4	7.7	7.1	7.1	6.4
17.5°	7.1	5.8	5.8	5.1	4.5	4.5	4.5	4.5
20°	4.5	3.9	3.9	3.2	3.2	2.6	2.6	2.6
22.5°	3.2	2.6	1.9	1.9	1.3	1.3	1.3	1.3
25°	1.9	1.3	1.3	1.3	0.6	0.6	0.6	0.6
27.5°	1.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6
30°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
32.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
35°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
37.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
40°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
42.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
45°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
47.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
50°	1.3	1.3	0.6	0.6	0.6	0.6	0.6	0.6
52.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	1.3
55°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
57.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
60°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
62.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
65°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
67.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
70°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
72.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
75°	1.9	1.3	1.3	1.9	1.3	1.3	1.3	1.3
77.5°	1.3	1.3	1.3	1.9	1.9	1.3	1.3	1.9
80°	1.3	1.3	1.3	1.3	1.9	1.3	1.3	1.3
82.5°	1.3	1.3	1.9	1.3	1.3	1.3	1.3	1.3
85°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
87.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
90°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
92.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
95°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
97.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
100°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
102.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
105°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
107.5°	1.3	1.3	1.3	1.3	1.3	0.6	0.6	0.6
110°	1.3	1.3	1.3	1.3	1.3	1.3	0.6	0.6



TEST NUMBER: P190110

CATALOG NUMBER: TRB11-LD4-15W-50-CL-BK-UNV-EDC1-CSTG

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
112.5°	1.3	1.3	1.3	1.3	0.6	0.6	0.6	0.6
115°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
117.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
120°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
122.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
125°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
127.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
130°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
132.5°	1.3	1.3	0.6	0.6	0.6	0.6	0.6	0.6
135°	0.6	0.6	0.6	0.6	1.3	0.6	0.6	0.6
137.5°	0.6	0.6	0.6	1.3	1.3	0.6	0.6	0.6
140°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
142.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
145°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
147.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
150°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
152.5°	1.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6
155°	2.6	1.9	1.9	1.3	1.3	0.6	0.6	0.6
157.5°	4.5	3.9	3.2	3.2	2.6	2.6	1.9	1.9
160°	7.1	5.8	5.8	5.1	4.5	4.5	3.9	3.9
162.5°	10.3	9.0	8.4	8.4	7.1	7.1	6.4	6.4
165°	14.2	12.9	12.2	11.6	10.9	10.3	10.3	9.7
167.5°	18.7	17.4	16.7	16.7	15.4	14.8	14.8	14.8
170°	23.8	22.5	21.9	21.9	20.6	20.6	20.0	20.0
172.5°	29.6	28.3	27.7	27.7	27.0	26.4	26.4	26.4
175°	36.7	35.4	34.8	34.8	34.1	34.1	33.5	33.5
177.5°	45.1	44.4	43.8	43.8	43.1	43.1	43.1	43.1
180°	53.4	53.4	53.4	53.4	53.4	53.4	53.4	53.4

(END OF REPORT)