

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: P25874

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

Test Date: 03/27/15



Test Information

Test Method: LM-79-08
Report Number: P25874
Test Lab: INNOVATION CENTER-P2
Test Date: 03/27/15
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: TRE15-LD4-20W-40-CL-WH-UNV-ED1C
Description: FAILSAFE TERRAPIN 15" DIAMETER 20 WATT-4000K WALL MOUNT
LUMINAIRE CLEAR 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

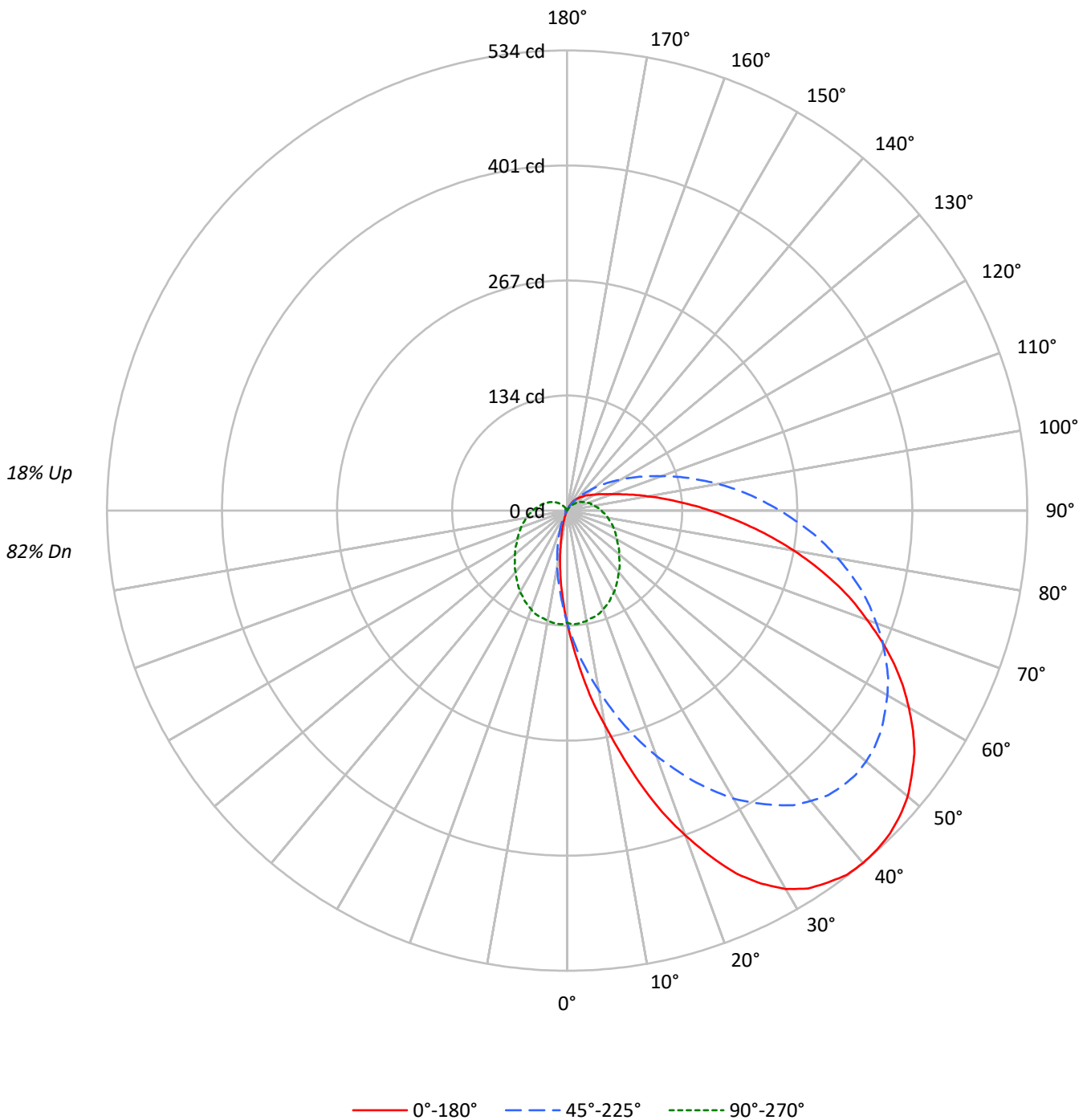
Lumens per Lamp: N/A
Luminaire Lumens: 1243.5 lumens
Efficiency: N/A
Efficacy: 53.6 lumens/watt
Spacing Criteria (0/90/45): 2.45 / 1.24 / 2.26
Luminous Opening: Circular (Dia: 1.25' x H: 0')
CIE Type: Semi-Direct

Input Watts (W): 23.2
Input Voltage (V): 120.01
Input Current (A_{in}): 0.19541
Voltage Rise (V): NR
Power Factor: 0.9925
Total Harmonic Distortion (THDi): 6.73%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: 24 HR
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	115	115	115	115	110	110	110	110	101	101	101	93	93	93	86	86	86	82
1	100	93	87	82	95	89	84	79	82	77	73	74	71	68	68	65	63	59
2	89	78	70	62	84	75	67	60	68	62	56	62	57	52	57	52	48	45
3	80	67	57	49	75	64	55	48	58	51	45	53	47	42	48	43	39	35
4	72	58	48	40	68	56	46	39	51	43	36	46	39	34	42	36	32	29
5	66	51	41	33	62	49	39	32	45	37	30	41	34	28	37	31	26	24
6	60	45	35	28	57	43	34	27	40	32	26	36	29	24	33	27	22	20
7	55	41	31	24	52	39	30	24	36	28	22	33	26	21	30	24	19	17
8	51	37	27	21	49	35	26	20	32	25	19	30	23	18	27	21	17	15
9	48	33	24	18	45	32	24	18	29	22	17	27	21	16	25	19	15	13
10	44	30	22	16	42	29	21	16	27	20	15	25	19	14	23	17	13	11

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	1140	1140	1140
5°	1655	1162	731
10°	2253	1158	401
15°	2978	1153	191
20°	3743	1139	75
25°	4500	1123	10
30°	5135	1104	10
35°	5643	1081	11
40°	6114	1065	11
45°	6574	1067	12
50°	7041	1078	27
55°	7524	1116	31
60°	8034	1175	35
65°	8675	1287	42
70°	9489	1462	51
75°	10879	1762	68
80°	13487	2425	101
85°	21537	4428	201



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	12.9	1.0
10°-20°	43.1	3.5
20°-30°	82.2	6.6
30°-40°	122.7	9.9
40°-50°	153.7	12.4
50°-60°	169.6	13.6
60°-70°	168.3	13.5
70°-80°	150.3	12.1
80°-90°	120.5	9.7
90°-100°	87.6	7.0
100°-110°	58.8	4.7
110°-120°	36.6	2.9
120°-130°	21.2	1.7
130°-140°	10.7	0.9
140°-150°	4.2	0.3
150°-160°	1.0	0.1
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	138.2	11.1
0°-40°	260.9	21.0
0°-60°	584.2	47.0
0°-90°	1023.4	82.3
90°-120°	183.0	14.7
90°-150°	219.1	17.6
90°-180°	220.0	17.7
0°-180°	1243.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	130	130	130	130	130	
5°	188	170	132	94	83	20
15°	328	258	127	42	21	95
25°	465	346	116	14	1	214
35°	527	417	101	2	1	330
45°	530	452	86	1	1	409
55°	492	445	73	1	2	439
65°	418	408	62	1	2	413
75°	321	353	52	2	2	338
85°	214	284	44	2	2	186
90°	166	247	40	2	2	91
95°	126	212	36	2	2	97
105°	72	146	29	2	2	78
115°	45	93	23	1	2	45
125°	31	55	17	1	2	28
135°	22	28	11	1	2	17
145°	14	12	4	1	2	9
155°	5	4	2	1	1	2
165°	0	0	0	0	0	0
175°	0	0	0	0	0	0
180°	0	0	0	0	0	0



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	130	130	130	130	130	130	130	130	130	130	130
2.5°	157	156	154	155	155	154	153	152	152	149	148
5°	188	187	184	185	184	181	179	177	174	170	167
7.5°	222	218	216	216	215	211	207	201	197	191	186
10°	253	254	249	248	245	240	235	227	222	212	205
12.5°	289	286	284	283	279	271	264	254	245	235	224
15°	328	328	321	319	314	305	296	283	272	258	244
17.5°	367	364	361	355	349	338	326	312	297	281	264
20°	401	399	397	390	382	369	356	339	322	303	284
22.5°	434	432	429	422	412	400	384	367	347	324	302
25°	465	462	458	452	442	429	413	394	371	346	320
27.5°	488	487	483	477	467	455	438	417	394	366	337
30°	507	506	502	496	487	475	460	439	415	386	354
32.5°	520	518	515	510	502	491	476	456	432	402	369
35°	527	526	524	520	512	502	488	470	447	417	384
37.5°	533	532	530	525	519	510	498	481	459	431	396
40°	534	534	531	528	522	514	503	488	468	440	407
42.5°	533	532	531	527	523	515	505	491	472	448	415
45°	530	529	528	525	521	514	505	492	476	452	420
47.5°	524	524	522	520	516	510	502	491	476	454	424
50°	516	516	515	512	510	505	497	487	474	453	425
52.5°	504	505	503	503	500	496	489	481	469	450	424
55°	492	492	491	491	489	486	481	473	462	445	421
57.5°	476	476	476	477	476	473	470	463	453	437	415
60°	458	460	460	461	461	460	457	452	444	429	409
62.5°	439	441	442	443	445	445	444	439	432	420	401
65°	418	420	421	424	426	428	428	425	419	408	392
67.5°	395	397	398	403	407	409	411	410	405	396	381
70°	370	373	375	380	385	389	393	393	390	382	369
72.5°	347	348	350	356	362	368	373	375	374	368	356
75°	321	322	325	332	339	346	353	357	357	353	342
77.5°	294	295	300	306	314	323	332	336	340	336	327
80°	267	268	274	281	290	300	310	317	321	319	311
82.5°	240	241	247	255	265	277	287	296	302	302	296
85°	214	215	222	231	240	253	265	275	282	284	279
87.5°	189	190	197	206	217	230	242	253	262	265	263
90°	166	168	175	183	194	208	221	233	242	247	246
92.5°	145	147	154	163	174	187	200	213	223	229	230
95°	126	128	135	144	154	168	181	194	204	212	214
97.5°	110	111	118	127	137	150	163	175	186	195	198
100°	95	97	102	111	121	133	146	158	169	178	182
102.5°	83	84	90	98	107	118	129	141	152	161	166
105°	72	74	79	86	95	105	115	126	137	146	151
107.5°	63	65	69	76	83	93	103	112	122	131	136
110°	56	57	61	67	74	82	91	100	109	117	122



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

CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
112.5°	50	51	54	59	65	72	80	88	97	104	109
115°	45	46	48	52	57	64	71	78	85	93	97
117.5°	41	41	43	47	51	57	63	69	76	82	86
120°	37	37	39	42	46	50	56	61	67	72	75
122.5°	34	34	36	38	41	45	49	54	59	63	66
125°	31	31	32	34	37	40	44	48	52	55	58
127.5°	29	29	30	31	33	36	39	42	45	48	49
130°	27	27	27	29	30	32	35	37	39	41	42
132.5°	24	25	25	26	27	29	30	32	33	34	35
135°	22	22	23	23	24	26	27	28	28	28	29
137.5°	20	20	20	21	22	22	23	23	23	23	24
140°	18	19	19	19	19	19	19	19	19	19	19
142.5°	16	16	16	16	16	16	16	15	15	15	15
145°	14	14	14	14	14	13	13	12	12	12	12
147.5°	12	12	11	11	11	11	10	10	9	9	9
150°	9	9	9	9	9	9	8	7	7	7	7
152.5°	7	7	7	7	7	6	6	6	6	5	5
155°	5	5	5	5	5	5	4	4	4	4	4
157.5°	0	0	0	0	0	0	0	0	0	0	0
160°	0	0	0	0	0	0	0	0	0	0	0
162.5°	0	0	0	0	0	0	0	0	0	0	0
165°	0	0	0	0	0	0	0	0	0	0	0
167.5°	0	0	0	0	0	0	0	0	0	0	0
170°	0	0	0	0	0	0	0	0	0	0	0
172.5°	0	0	0	0	0	0	0	0	0	0	0
175°	0	0	0	0	0	0	0	0	0	0	0
177.5°	0	0	0	0	0	0	0	0	0	0	0
180°	0	0	0	0	0	0	0	0	0	0	0



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

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	130	130	130	130	130	130	130	130	130	130	130
2.5°	147	145	143	141	139	137	134	132	129	127	124
5°	163	159	155	151	146	141	136	132	127	122	118
7.5°	179	173	166	160	152	145	138	131	124	117	111
10°	196	187	178	168	158	149	139	130	120	112	104
12.5°	213	201	189	177	164	152	140	128	117	107	97
15°	230	215	200	185	170	155	141	127	114	102	91
17.5°	246	228	210	192	174	157	141	125	110	97	85
20°	262	241	220	198	178	158	140	122	106	91	79
22.5°	277	252	228	204	181	159	138	119	102	86	72
25°	291	264	236	209	183	159	137	116	97	81	67
27.5°	305	275	244	214	186	159	135	112	93	76	62
30°	319	285	251	218	186	158	132	109	89	71	57
32.5°	332	295	257	221	187	157	129	105	85	67	52
35°	344	303	263	223	187	155	126	101	80	63	48
37.5°	355	312	268	225	186	153	123	97	76	59	44
40°	365	318	271	226	185	150	119	93	72	55	40
42.5°	372	324	275	227	184	147	116	90	69	51	37
45°	379	330	278	227	181	144	112	86	65	48	34
47.5°	383	334	280	226	179	141	109	82	62	45	32
50°	387	336	281	225	177	137	105	79	59	43	29
52.5°	386	337	281	224	174	134	102	76	56	40	27
55°	385	337	281	222	171	130	98	73	53	38	25
57.5°	382	336	279	220	168	127	95	69	51	35	23
60°	377	333	277	217	164	123	92	67	48	33	22
62.5°	372	329	275	215	161	120	89	64	46	32	21
65°	364	324	271	212	158	117	86	62	44	30	19
67.5°	356	318	267	208	155	114	83	59	42	28	18
70°	346	310	261	204	151	111	80	57	40	27	17
72.5°	335	301	255	200	148	107	77	55	38	25	16
75°	323	292	248	194	144	104	75	52	36	24	15
77.5°	310	282	240	189	140	101	72	50	34	22	14
80°	297	271	232	183	136	98	69	48	33	21	13
82.5°	283	260	224	177	132	95	67	46	31	20	12
85°	269	248	215	171	127	92	64	44	29	19	11
87.5°	254	235	205	164	123	88	62	41	28	17	10
90°	239	223	196	158	119	85	59	40	26	16	10
92.5°	225	210	186	151	114	82	57	38	25	15	9
95°	210	198	176	144	109	79	54	36	23	14	8
97.5°	196	185	166	137	105	75	52	34	22	14	8
100°	181	172	155	129	100	72	50	32	21	13	7
102.5°	166	159	145	122	94	69	47	31	19	12	7
105°	153	147	135	114	89	65	45	29	18	11	6
107.5°	138	134	124	106	84	61	42	28	17	10	6
110°	125	122	114	98	78	58	40	26	16	9	5



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CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
112.5°	112	110	104	90	73	54	38	24	15	9	5
115°	100	99	94	82	67	51	35	23	14	8	4
117.5°	88	88	84	75	62	47	33	21	13	7	4
120°	78	78	75	67	56	43	31	20	12	7	4
122.5°	68	68	66	60	51	40	28	19	11	6	3
125°	59	59	58	53	45	36	26	17	10	6	3
127.5°	51	52	50	46	40	32	23	15	10	5	3
130°	43	43	42	39	34	28	21	14	9	5	3
132.5°	36	37	36	33	29	24	18	12	8	4	2
135°	30	30	29	27	24	20	15	11	7	4	2
137.5°	24	24	24	22	19	16	13	9	6	3	2
140°	19	19	19	18	16	13	10	7	5	3	2
142.5°	15	15	14	14	12	10	8	6	4	2	2
145°	12	11	11	10	9	8	6	4	3	2	2
147.5°	9	9	8	8	7	6	5	3	2	2	2
150°	7	6	6	5	5	4	3	2	2	2	2
152.5°	5	5	4	4	4	3	3	2	2	2	2
155°	4	3	3	3	3	2	2	2	2	2	2
157.5°	0	0	0	0	0	0	0	0	0	0	0
160°	0	0	0	0	0	0	0	0	0	0	0
162.5°	0	0	0	0	0	0	0	0	0	0	0
165°	0	0	0	0	0	0	0	0	0	0	0
167.5°	0	0	0	0	0	0	0	0	0	0	0
170°	0	0	0	0	0	0	0	0	0	0	0
172.5°	0	0	0	0	0	0	0	0	0	0	0
175°	0	0	0	0	0	0	0	0	0	0	0
177.5°	0	0	0	0	0	0	0	0	0	0	0
180°	0	0	0	0	0	0	0	0	0	0	0



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

CANDELA DISTRIBUTION (continued):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	130	130	130	130	130	130	130	130	130	130	130
2.5°	122	119	117	115	114	111	110	108	107	106	106
5°	113	109	105	101	98	94	92	90	88	86	85
7.5°	105	99	93	89	84	80	76	73	70	68	66
10°	96	89	82	76	70	66	61	57	54	52	49
12.5°	88	80	72	65	59	53	48	44	41	38	35
15°	80	71	63	55	48	42	37	33	30	27	25
17.5°	73	63	54	46	39	33	28	24	21	18	16
20°	66	56	46	38	30	25	20	17	14	12	10
22.5°	60	49	39	31	24	19	14	11	9	7	6
25°	54	42	33	25	18	14	10	7	5	4	2
27.5°	48	37	27	20	14	10	6	4	2	1	1
30°	43	32	23	16	10	6	4	2	1	1	1
32.5°	39	28	19	12	7	4	2	1	1	1	1
35°	35	24	16	10	5	2	1	1	1	1	1
37.5°	31	21	13	7	3	1	1	1	1	1	1
40°	28	18	11	5	2	1	1	1	1	1	1
42.5°	25	16	9	4	1	1	1	1	1	1	1
45°	23	14	7	2	1	1	1	1	1	1	1
47.5°	21	12	6	2	1	1	1	1	1	1	1
50°	19	10	4	1	1	1	1	1	1	1	1
52.5°	17	9	3	1	1	1	1	1	1	1	1
55°	15	8	3	1	1	1	1	1	1	1	2
57.5°	14	7	2	1	1	1	1	1	1	1	2
60°	13	6	2	1	1	1	1	1	1	2	2
62.5°	12	5	2	1	1	1	1	1	2	2	2
65°	11	5	2	1	1	1	2	2	2	2	2
67.5°	10	4	2	1	1	1	2	2	2	2	2
70°	9	4	1	1	1	2	2	2	2	2	2
72.5°	9	4	1	1	2	2	2	2	2	2	2
75°	8	3	2	2	2	2	2	2	2	2	2
77.5°	7	3	2	2	2	2	2	2	2	2	2
80°	7	3	2	2	2	2	2	2	2	2	2
82.5°	6	3	2	2	2	2	2	2	2	2	2
85°	6	3	2	2	2	2	2	2	2	2	2
87.5°	5	2	2	2	2	2	2	2	2	2	2
90°	5	3	2	2	2	2	2	2	2	2	2
92.5°	5	2	2	2	2	2	2	2	2	2	2
95°	4	2	2	2	2	2	2	2	2	2	2
97.5°	4	2	2	2	2	2	2	2	2	2	2
100°	4	2	2	2	2	2	2	2	2	2	2
102.5°	3	2	1	1	2	2	2	2	2	2	2
105°	3	2	1	1	2	2	2	2	2	2	2
107.5°	3	2	1	1	2	2	2	2	2	2	2
110°	3	1	1	1	1	1	2	2	2	2	2



TEST NUMBER: P25874

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

CANDELA DISTRIBUTION (continued):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
112.5°	2	1	1	1	1	1	1	2	2	2	2
115°	2	1	1	1	1	1	1	1	1	2	2
117.5°	2	1	1	1	1	1	1	1	1	2	2
120°	2	1	1	1	1	1	1	1	1	2	2
122.5°	2	1	1	1	1	1	1	1	1	2	2
125°	2	1	1	1	1	1	1	1	1	2	2
127.5°	2	1	1	1	1	1	1	1	1	2	2
130°	1	1	1	1	1	1	1	1	1	2	2
132.5°	2	1	1	1	1	1	1	1	1	2	2
135°	2	2	1	1	1	1	1	1	1	2	2
137.5°	1	1	1	1	1	1	1	1	1	1	1
140°	2	2	1	1	1	1	1	1	1	1	2
142.5°	1	2	1	1	1	1	1	1	1	1	1
145°	1	1	1	1	1	1	1	1	1	1	2
147.5°	1	1	1	1	1	1	1	1	1	1	2
150°	1	1	1	1	1	1	1	2	2	2	2
152.5°	1	1	1	1	1	1	2	2	2	2	2
155°	1	1	1	1	1	1	1	1	2	2	2
157.5°	0	0	0	0	0	0	0	0	0	0	0
160°	0	0	0	0	0	0	0	0	0	0	0
162.5°	0	0	0	0	0	0	0	0	0	0	0
165°	0	0	0	0	0	0	0	0	0	0	0
167.5°	0	0	0	0	0	0	0	0	0	0	0
170°	0	0	0	0	0	0	0	0	0	0	0
172.5°	0	0	0	0	0	0	0	0	0	0	0
175°	0	0	0	0	0	0	0	0	0	0	0
177.5°	0	0	0	0	0	0	0	0	0	0	0
180°	0	0	0	0	0	0	0	0	0	0	0



TEST NUMBER: P25874

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

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	130	130	130	130
2.5°	105	104	105	105
5°	84	83	83	83
7.5°	65	63	63	63
10°	48	46	46	45
12.5°	34	32	32	31
15°	23	22	22	21
17.5°	15	14	13	13
20°	9	8	8	8
22.5°	5	4	4	4
25°	2	1	1	1
27.5°	1	1	1	1
30°	1	1	1	1
32.5°	1	1	1	1
35°	1	1	1	1
37.5°	1	1	1	1
40°	1	1	1	1
42.5°	1	1	1	1
45°	1	1	1	1
47.5°	1	1	1	2
50°	1	1	2	2
52.5°	2	2	2	2
55°	2	2	2	2
57.5°	2	2	2	2
60°	2	2	2	2
62.5°	2	2	2	2
65°	2	2	2	2
67.5°	2	2	2	2
70°	2	2	2	2
72.5°	2	2	2	2
75°	2	2	2	2
77.5°	2	2	2	2
80°	2	2	2	2
82.5°	2	2	2	2
85°	2	2	2	2
87.5°	2	2	2	2
90°	2	2	2	2
92.5°	2	2	2	2
95°	2	2	2	2
97.5°	2	2	2	2
100°	2	2	2	2
102.5°	2	2	2	2
105°	2	2	2	2
107.5°	2	2	2	2
110°	2	2	2	2



TEST NUMBER: P25874

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

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
112.5°	2	2	2	2
115°	2	2	2	2
117.5°	2	2	2	2
120°	2	2	2	2
122.5°	2	2	2	2
125°	2	2	2	2
127.5°	2	2	2	2
130°	2	2	2	2
132.5°	2	2	2	2
135°	2	2	2	2
137.5°	1	2	2	1
140°	2	2	2	2
142.5°	2	2	2	1
145°	2	2	2	2
147.5°	2	2	2	1
150°	2	2	2	2
152.5°	2	2	2	2
155°	2	2	2	1
157.5°	0	0	0	0
160°	0	0	0	0
162.5°	0	0	0	0
165°	0	0	0	0
167.5°	0	0	0	0
170°	0	0	0	0
172.5°	0	0	0	0
175°	0	0	0	0
177.5°	0	0	0	0
180°	0	0	0	0

(END OF REPORT)