

Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: HALO

Report Number: P644119

Luminaire Tested: ML5615LSWW9FS1E - 592W WW - 1500LM - 4000K

Issue Date: 2/17/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P644119  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-2212-866-116)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 2/17/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML5615LSWW9FS1E - 592W WW - 1500LM - 4000K  
Description: ML56 RR, WW OPTIC, 5" WW INSERT WITH WHITE TRIM  
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 4000K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1110.6 lumens  
Efficiency: N/A  
Efficacy: 64.9 lumens/watt  
Spacing Criteria (0/90/45): 1.16 / 1.13 / 1.23  
Luminous Opening: Circular (Dia: 0.42' x H: 0')  
CIE Type: Direct

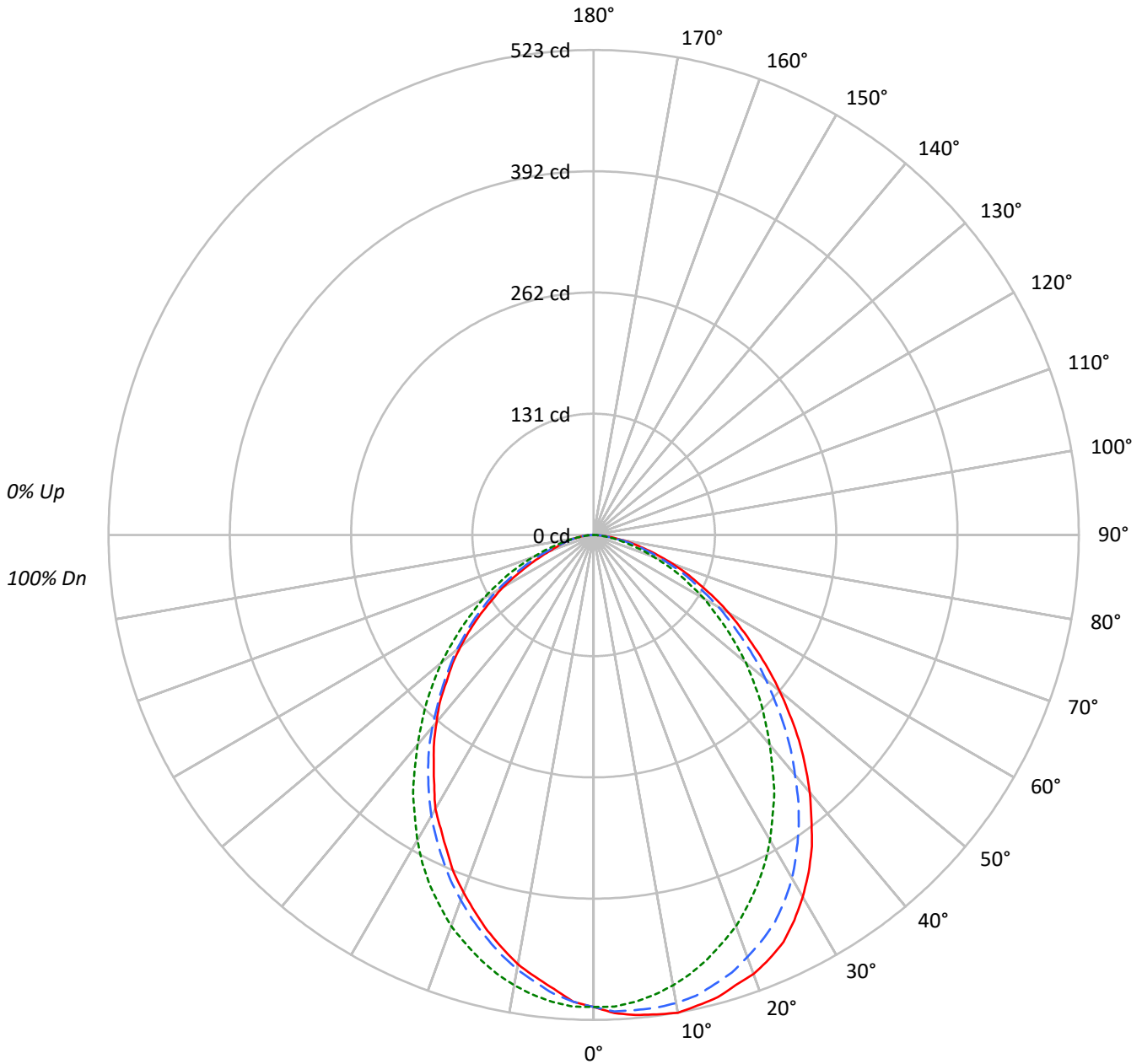
Input Watts (W): 17.1  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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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	0					
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100								
1	110	106	102	99	107	104	100	97	99	97	94	96	93	91	92	90	88	86								
2	101	94	88	82	99	92	86	81	88	84	80	85	81	78	82	79	76	74								
3	93	83	76	70	91	82	75	69	79	73	68	76	71	67	74	69	66	64								
4	86	75	66	60	83	73	66	60	71	64	59	69	63	58	66	62	57	55								
5	79	67	59	53	77	66	58	52	64	57	52	62	56	51	60	55	51	49								
6	73	61	53	46	72	60	52	46	58	51	46	57	50	45	55	49	45	43								
7	68	56	47	41	67	55	47	41	53	46	41	52	45	41	51	45	40	39								
8	64	51	43	37	62	50	43	37	49	42	37	48	41	37	47	41	37	35								
9	60	47	39	34	58	46	39	34	45	38	34	44	38	33	43	37	33	32								
10	56	43	36	31	55	43	36	31	42	35	31	41	35	31	40	35	30	29								

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

	0°	45°	90°	135°	180°
0°	40189	40189	40189	40189	40189
5°	41182	40762	40065	39360	38940
10°	41939	41089	39534	38115	37691
15°	42187	41026	38713	36695	36115
20°	42323	40685	37719	35191	34451
25°	42183	40189	36339	33569	32646
30°	41092	38995	34647	31904	31101
35°	39521	37141	32708	29980	28959
40°	37345	34790	30420	27875	27143
45°	34932	32364	28412	25655	25063
50°	32127	29745	26269	23666	23015
55°	29191	27003	23837	21415	20438
60°	26508	24566	21772	18977	17856
65°	23442	21798	19146	16176	14532
70°	20819	18765	15903	13064	11425
75°	17263	15647	12414	10248	10248
80°	13684	12047	9638	8819	8819
85°	7971	7971	6431	7971	7971

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 34932 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	47.9	4.3
10°-20°	134.1	12.1
20°-30°	194.5	17.5
30°-40°	217.0	19.5
40°-50°	201.2	18.1
50°-60°	158.2	14.2
60°-70°	101.3	9.1
70°-80°	46.4	4.2
80°-90°	10.0	0.9
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	376.5	33.9
0°-40°	593.5	53.4
0°-60°	952.9	85.8
0°-90°	1110.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1110.6	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	509	509	509	509	509	
5°	520	514	506	497	491	50
15°	516	502	474	449	442	146
25°	484	461	417	385	375	222
35°	410	385	339	311	300	255
45°	313	290	254	230	224	241
55°	212	196	173	156	148	190
65°	126	117	102	87	78	126
75°	57	51	41	34	34	61
85°	9	9	7	9	9	12
90°	0	0	0	0	0	



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	509.1	509.1	509.1	509.1	509.1	509.1	509.1	509.1	509.1	509.1	509.1
2.5°	516.2	516.2	516.2	516.2	516.2	516.2	514.4	514.4	514.4	514.4	514.4
5°	519.7	519.7	519.7	519.7	517.9	517.9	517.9	517.9	516.2	516.2	514.4
7.5°	521.5	521.5	521.5	519.7	519.7	519.7	517.9	517.9	517.9	516.2	514.4
10°	523.2	521.5	521.5	519.7	519.7	519.7	517.9	517.9	516.2	514.4	512.6
12.5°	519.7	519.7	519.7	519.7	517.9	517.9	516.2	514.4	512.6	510.9	509.1
15°	516.2	516.2	516.2	514.4	512.6	512.6	510.9	509.1	507.3	505.6	502.0
17.5°	509.1	510.9	509.1	509.1	507.3	507.3	505.6	503.8	500.3	498.5	495.0
20°	503.8	502.0	502.0	502.0	500.3	498.5	496.7	495.0	491.4	489.7	484.3
22.5°	495.0	495.0	493.2	491.4	489.7	489.7	487.9	484.3	482.6	479.0	473.7
25°	484.3	482.6	482.6	480.8	479.0	479.0	475.5	473.7	470.2	464.9	461.4
27.5°	468.4	468.4	468.4	466.7	464.9	463.1	461.4	457.8	456.1	449.0	445.5
30°	450.8	450.8	449.0	449.0	445.5	445.5	443.7	440.2	436.6	431.3	427.8
32.5°	431.3	431.3	431.3	427.8	426.0	424.2	422.5	420.7	415.4	410.1	406.6
35°	410.1	410.1	408.3	406.6	404.8	403.0	401.3	397.7	394.2	390.7	385.4
37.5°	385.4	387.1	385.4	383.6	381.8	380.1	378.3	376.5	371.2	367.7	362.4
40°	362.4	362.4	360.6	358.8	357.1	357.1	355.3	351.8	348.2	342.9	337.6
42.5°	337.6	337.6	335.9	334.1	334.1	332.3	328.8	327.0	323.5	320.0	314.6
45°	312.9	311.1	309.3	309.3	307.6	305.8	305.8	302.3	298.7	293.4	289.9
47.5°	286.4	286.4	284.6	284.6	282.8	281.1	281.1	277.5	272.2	268.7	265.2
50°	261.6	261.6	259.9	259.9	258.1	256.3	254.5	252.8	249.2	245.7	242.2
52.5°	236.9	236.9	236.9	233.3	231.6	231.6	231.6	228.0	226.3	222.7	219.2
55°	212.1	212.1	212.1	210.4	208.6	208.6	208.6	205.1	203.3	199.7	196.2
57.5°	189.1	189.1	189.1	187.4	187.4	185.6	183.8	182.1	180.3	178.5	175.0
60°	167.9	167.9	166.2	164.4	166.2	164.4	162.6	160.9	159.1	157.3	155.6
62.5°	146.7	146.7	146.7	145.0	143.2	143.2	143.2	141.4	137.9	136.1	134.3
65°	125.5	125.5	125.5	125.5	123.7	123.7	122.0	120.2	120.2	118.4	116.7
67.5°	107.8	107.8	106.1	106.1	104.3	104.3	104.3	102.5	100.8	100.8	99.0
70°	90.2	88.4	88.4	88.4	86.6	86.6	86.6	84.8	84.8	83.1	81.3
72.5°	72.5	72.5	72.5	72.5	70.7	70.7	68.9	68.9	67.2	67.2	65.4
75°	56.6	56.6	56.6	56.6	54.8	54.8	54.8	54.8	53.0	53.0	51.3
77.5°	42.4	42.4	42.4	42.4	42.4	42.4	40.7	40.7	40.7	38.9	38.9
80°	30.1	30.1	30.1	30.1	28.3	28.3	28.3	28.3	28.3	26.5	26.5
82.5°	19.4	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	15.9
85°	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
87.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
90°	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):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	509.1	509.1	509.1	509.1	509.1	509.1	509.1	509.1	509.1	509.1	509.1
2.5°	512.6	512.6	512.6	512.6	510.9	510.9	510.9	509.1	509.1	509.1	509.1
5°	514.4	514.4	510.9	510.9	510.9	510.9	509.1	509.1	507.3	505.6	503.8
7.5°	512.6	512.6	510.9	509.1	507.3	507.3	505.6	503.8	502.0	500.3	498.5
10°	510.9	509.1	507.3	505.6	503.8	502.0	500.3	498.5	495.0	493.2	491.4
12.5°	507.3	503.8	502.0	498.5	498.5	496.7	493.2	491.4	487.9	484.3	482.6
15°	500.3	496.7	493.2	489.7	489.7	486.1	482.6	480.8	477.3	473.7	470.2
17.5°	491.4	487.9	484.3	480.8	479.0	475.5	472.0	468.4	464.9	461.4	457.8
20°	482.6	477.3	473.7	468.4	466.7	464.9	459.6	456.1	452.5	449.0	443.7
22.5°	470.2	466.7	459.6	456.1	454.3	450.8	447.2	441.9	436.6	433.1	429.5
25°	456.1	452.5	447.2	441.9	438.4	436.6	431.3	426.0	422.5	417.2	413.6
27.5°	440.2	434.9	431.3	424.2	422.5	418.9	413.6	408.3	404.8	399.5	394.2
30°	422.5	417.2	411.9	406.6	403.0	401.3	396.0	390.7	385.4	380.1	376.5
32.5°	401.3	396.0	390.7	387.1	381.8	378.3	374.8	369.4	364.1	358.8	355.3
35°	380.1	374.8	369.4	364.1	360.6	360.6	353.5	348.2	342.9	339.4	334.1
37.5°	357.1	351.8	346.5	341.2	339.4	335.9	330.6	325.3	321.7	316.4	312.9
40°	334.1	327.0	323.5	318.2	316.4	312.9	309.3	304.0	300.5	295.2	291.7
42.5°	309.3	305.8	300.5	297.0	293.4	291.7	286.4	281.1	277.5	274.0	272.2
45°	286.4	281.1	275.8	272.2	270.5	266.9	265.2	259.9	256.3	254.5	251.0
47.5°	261.6	258.1	254.5	249.2	247.5	245.7	242.2	240.4	236.9	233.3	229.8
50°	238.6	235.1	231.6	228.0	226.3	226.3	221.0	217.4	215.7	213.9	210.4
52.5°	215.7	212.1	208.6	205.1	205.1	203.3	199.7	198.0	196.2	192.7	189.1
55°	194.4	190.9	187.4	185.6	183.8	183.8	180.3	178.5	175.0	173.2	171.5
57.5°	173.2	169.7	167.9	166.2	164.4	164.4	160.9	159.1	157.3	153.8	153.8
60°	153.8	150.3	148.5	146.7	145.0	143.2	143.2	139.6	137.9	137.9	134.3
62.5°	132.6	130.8	129.0	127.3	125.5	125.5	123.7	122.0	120.2	118.4	116.7
65°	114.9	113.1	111.4	109.6	107.8	107.8	106.1	104.3	102.5	102.5	99.0
67.5°	97.2	95.5	93.7	91.9	91.9	90.2	88.4	88.4	86.6	84.8	83.1
70°	79.5	79.5	77.8	76.0	76.0	74.2	72.5	72.5	70.7	68.9	67.2
72.5°	65.4	63.6	61.9	61.9	60.1	60.1	58.3	58.3	56.6	54.8	53.0
75°	49.5	47.7	47.7	47.7	46.0	46.0	46.0	44.2	42.4	40.7	40.7
77.5°	37.1	37.1	35.4	33.6	33.6	33.6	31.8	31.8	31.8	30.1	30.1
80°	26.5	24.7	24.7	23.0	23.0	23.0	23.0	21.2	21.2	21.2	19.4
82.5°	15.9	15.9	15.9	14.1	14.1	14.1	14.1	14.1	12.4	12.4	12.4
85°	8.8	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1
87.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	3.5	3.5
90°	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):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	509.1	509.1	509.1	509.1	509.1	509.1	509.1	509.1	509.1	509.1	509.1
2.5°	507.3	507.3	505.6	505.6	505.6	505.6	505.6	503.8	503.8	503.8	503.8
5°	503.8	502.0	500.3	500.3	500.3	498.5	498.5	496.7	496.7	495.0	495.0
7.5°	496.7	495.0	493.2	493.2	491.4	491.4	487.9	487.9	486.1	484.3	484.3
10°	487.9	486.1	484.3	482.6	482.6	479.0	479.0	477.3	475.5	473.7	473.7
12.5°	479.0	477.3	473.7	472.0	472.0	470.2	466.7	464.9	463.1	461.4	459.6
15°	466.7	464.9	461.4	459.6	457.8	456.1	454.3	452.5	449.0	447.2	447.2
17.5°	454.3	452.5	447.2	445.5	445.5	441.9	440.2	436.6	434.9	433.1	431.3
20°	440.2	436.6	433.1	431.3	429.5	426.0	424.2	422.5	418.9	417.2	415.4
22.5°	424.2	420.7	417.2	415.4	413.6	410.1	408.3	404.8	403.0	401.3	399.5
25°	408.3	404.8	401.3	399.5	396.0	394.2	390.7	387.1	385.4	383.6	381.8
27.5°	390.7	387.1	381.8	380.1	378.3	376.5	373.0	369.4	367.7	364.1	364.1
30°	371.2	367.7	364.1	362.4	360.6	357.1	355.3	351.8	350.0	346.5	346.5
32.5°	351.8	346.5	342.9	341.2	339.4	337.6	334.1	332.3	330.6	328.8	327.0
35°	330.6	327.0	323.5	321.7	320.0	316.4	314.6	312.9	311.1	307.6	307.6
37.5°	309.3	305.8	302.3	300.5	300.5	297.0	295.2	291.7	291.7	288.1	288.1
40°	288.1	284.6	281.1	281.1	279.3	275.8	274.0	272.2	270.5	268.7	268.7
42.5°	268.7	263.4	261.6	261.6	258.1	256.3	254.5	252.8	249.2	249.2	249.2
45°	247.5	243.9	242.2	240.4	238.6	236.9	235.1	231.6	229.8	228.0	228.0
47.5°	228.0	224.5	222.7	221.0	219.2	217.4	215.7	213.9	210.4	210.4	208.6
50°	208.6	205.1	203.3	201.5	199.7	198.0	196.2	194.4	192.7	190.9	189.1
52.5°	187.4	185.6	183.8	182.1	182.1	178.5	176.8	175.0	173.2	173.2	169.7
55°	169.7	167.9	166.2	164.4	162.6	160.9	159.1	157.3	155.6	153.8	152.0
57.5°	150.3	148.5	146.7	146.7	145.0	143.2	141.4	139.6	137.9	136.1	134.3
60°	132.6	130.8	129.0	129.0	127.3	125.5	123.7	123.7	120.2	118.4	116.7
62.5°	114.9	113.1	111.4	111.4	109.6	109.6	107.8	106.1	102.5	102.5	100.8
65°	99.0	97.2	95.5	93.7	93.7	91.9	90.2	88.4	86.6	86.6	84.8
67.5°	83.1	81.3	79.5	79.5	77.8	76.0	74.2	72.5	70.7	70.7	68.9
70°	67.2	65.4	63.6	63.6	61.9	60.1	60.1	58.3	56.6	54.8	54.8
72.5°	51.3	51.3	49.5	49.5	47.7	47.7	46.0	44.2	44.2	42.4	40.7
75°	38.9	38.9	37.1	37.1	35.4	35.4	33.6	33.6	33.6	31.8	33.6
77.5°	28.3	28.3	26.5	26.5	26.5	24.7	24.7	24.7	26.5	26.5	26.5
80°	19.4	19.4	19.4	19.4	17.7	17.7	19.4	19.4	19.4	19.4	19.4
82.5°	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	14.1	14.1	14.1
85°	7.1	7.1	7.1	7.1	7.1	7.1	7.1	8.8	8.8	8.8	8.8
87.5°	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0





TEST NUMBER: P644119

CATALOG NUMBER: ML5615LSWW9FS1E - 592W WW - 1500LM - 4000K

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	509.1	509.1	509.1	509.1	509.1	509.1	509.1	509.1
2.5°	502.0	502.0	502.0	502.0	502.0	502.0	502.0	503.8
5°	493.2	493.2	493.2	493.2	493.2	493.2	493.2	491.4
7.5°	484.3	482.6	482.6	482.6	482.6	480.8	480.8	480.8
10°	472.0	472.0	470.2	470.2	470.2	470.2	468.4	470.2
12.5°	459.6	457.8	457.8	457.8	456.1	456.1	456.1	456.1
15°	445.5	443.7	443.7	443.7	441.9	441.9	441.9	441.9
17.5°	429.5	429.5	427.8	427.8	426.0	426.0	426.0	426.0
20°	413.6	413.6	413.6	411.9	411.9	411.9	410.1	410.1
22.5°	397.7	396.0	394.2	396.0	394.2	392.4	394.2	394.2
25°	380.1	378.3	376.5	376.5	376.5	376.5	374.8	374.8
27.5°	362.4	358.8	358.8	358.8	358.8	357.1	357.1	357.1
30°	344.7	342.9	342.9	341.2	339.4	339.4	339.4	341.2
32.5°	325.3	323.5	321.7	321.7	321.7	321.7	320.0	320.0
35°	305.8	305.8	304.0	304.0	304.0	302.3	302.3	300.5
37.5°	286.4	286.4	284.6	284.6	284.6	282.8	282.8	282.8
40°	266.9	265.2	265.2	266.9	265.2	265.2	263.4	263.4
42.5°	247.5	247.5	245.7	245.7	245.7	245.7	243.9	245.7
45°	226.3	226.3	226.3	226.3	226.3	226.3	224.5	224.5
47.5°	208.6	206.8	206.8	206.8	206.8	206.8	206.8	206.8
50°	189.1	187.4	187.4	187.4	187.4	187.4	187.4	187.4
52.5°	169.7	167.9	167.9	167.9	167.9	167.9	167.9	167.9
55°	152.0	150.3	150.3	148.5	150.3	148.5	148.5	148.5
57.5°	134.3	132.6	130.8	132.6	130.8	130.8	130.8	129.0
60°	116.7	114.9	114.9	114.9	113.1	111.4	111.4	113.1
62.5°	99.0	99.0	97.2	97.2	95.5	93.7	93.7	93.7
65°	83.1	81.3	81.3	79.5	79.5	77.8	77.8	77.8
67.5°	67.2	67.2	65.4	65.4	63.6	63.6	63.6	61.9
70°	53.0	53.0	51.3	51.3	51.3	49.5	49.5	49.5
72.5°	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7
75°	33.6	33.6	33.6	33.6	33.6	33.6	33.6	33.6
77.5°	26.5	26.5	26.5	26.5	26.5	26.5	26.5	28.3
80°	19.4	19.4	21.2	19.4	21.2	19.4	19.4	19.4
82.5°	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1
85°	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
87.5°	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269

Scaled Data Report



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Scaled Data Report





— 0°-180°    - - 45°-225°    - - - 90°-270°

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(END OF REPORT)