

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: P644118

Luminaire Tested: ML5615LSWW9FS1E - 592W WW - 1500LM - 3500K

Issue Date: 2/17/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P644118  
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 - 3500K  
Description: ML56 RR, WW OPTIC, 5" WW INSERT WITH WHITE TRIM  
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3500K CCT  
Ballast/Driver: -

**Summary**

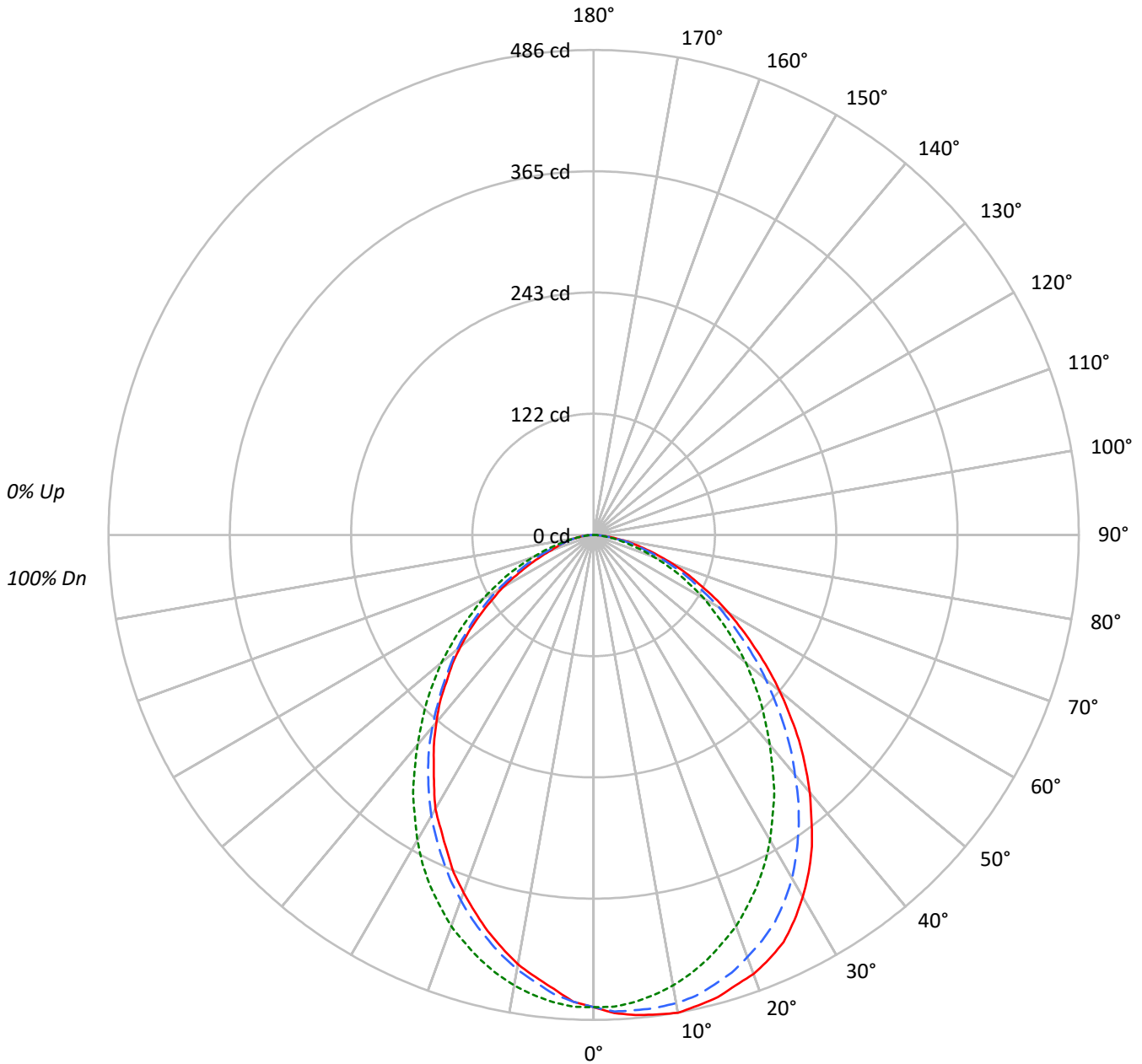
Lumens per Lamp: N/A  
Luminaire Lumens: 1032.2 lumens  
Efficiency: N/A  
Efficacy: 60.4 lumens/watt  
Spacing Criteria (0/90/45): 1.16 / 1.13 / 1.23  
Luminous Opening: Circular (Dia: 0.42' x H: 0')  
CIE Type: Direct

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°	37355	37355	37355	37355	37355
5°	38274	37886	37236	36586	36190
10°	38981	38188	36745	35422	35029
15°	39204	38133	35984	34104	33565
20°	39332	37820	35056	32712	32024
25°	39213	37349	33769	31200	30338
30°	38184	36242	32195	29652	28905
35°	36736	34519	30395	27860	26916
40°	34707	32337	28277	25907	25227
45°	32465	30076	26414	23846	23288
50°	29855	27645	24415	21995	21381
55°	27127	25104	22158	19901	18993
60°	24645	22830	20225	17635	16593
65°	21780	20248	17801	15037	13505
70°	19342	17449	14795	12140	10617
75°	16043	14518	11529	9516	9516
80°	12683	11183	8956	8228	8228
85°	7427	7427	5978	7427	7427

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 32465 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	44.5	4.3
10°-20°	124.6	12.1
20°-30°	180.8	17.5
30°-40°	201.7	19.5
40°-50°	187.0	18.1
50°-60°	147.0	14.2
60°-70°	94.1	9.1
70°-80°	43.1	4.2
80°-90°	9.3	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°	349.9	33.9
0°-40°	551.6	53.4
0°-60°	885.6	85.8
0°-90°	1032.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1032.2	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	473	473	473	473	473	
5°	483	478	470	462	457	46
15°	480	467	440	417	411	135
25°	450	429	388	358	348	206
35°	381	358	315	289	279	237
45°	291	269	237	214	209	224
55°	197	182	161	145	138	177
65°	117	108	95	80	72	117
75°	53	48	38	31	31	57
85°	8	8	7	8	8	11
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°	473.2	473.2	473.2	473.2	473.2	473.2	473.2	473.2	473.2	473.2	473.2
2.5°	479.7	479.7	479.7	479.7	479.7	479.7	478.1	478.1	478.1	478.1	478.1
5°	483.0	483.0	483.0	483.0	481.4	481.4	481.4	481.4	479.7	479.7	478.1
7.5°	484.7	484.7	484.7	483.0	483.0	483.0	481.4	481.4	481.4	479.7	478.1
10°	486.3	484.7	484.7	483.0	483.0	483.0	481.4	481.4	479.7	478.1	476.4
12.5°	483.0	483.0	483.0	483.0	481.4	481.4	479.7	478.1	476.4	474.8	473.2
15°	479.7	479.7	479.7	478.1	476.4	476.4	474.8	473.2	471.5	469.9	466.6
17.5°	473.2	474.8	473.2	473.2	471.5	471.5	469.9	468.2	464.9	463.3	460.0
20°	468.2	466.6	466.6	466.6	464.9	463.3	461.7	460.0	456.7	455.1	450.2
22.5°	460.0	460.0	458.4	456.7	455.1	455.1	453.4	450.2	448.5	445.2	440.3
25°	450.2	448.5	448.5	446.9	445.2	445.2	441.9	440.3	437.0	432.1	428.8
27.5°	435.4	435.4	435.4	433.7	432.1	430.4	428.8	425.5	423.9	417.3	414.0
30°	418.9	418.9	417.3	417.3	414.0	414.0	412.4	409.1	405.8	400.9	397.6
32.5°	400.9	400.9	400.9	397.6	395.9	394.3	392.7	391.0	386.1	381.2	377.9
35°	381.2	381.2	379.5	377.9	376.2	374.6	372.9	369.7	366.4	363.1	358.2
37.5°	358.2	359.8	358.2	356.5	354.9	353.2	351.6	349.9	345.0	341.7	336.8
40°	336.8	336.8	335.2	333.5	331.9	331.9	330.2	326.9	323.7	318.7	313.8
42.5°	313.8	313.8	312.2	310.5	310.5	308.9	305.6	303.9	300.6	297.4	292.4
45°	290.8	289.1	287.5	287.5	285.9	284.2	284.2	280.9	277.6	272.7	269.4
47.5°	266.1	266.1	264.5	264.5	262.9	261.2	261.2	257.9	253.0	249.7	246.4
50°	243.1	243.1	241.5	241.5	239.9	238.2	236.6	234.9	231.6	228.4	225.1
52.5°	220.1	220.1	220.1	216.9	215.2	215.2	215.2	211.9	210.3	207.0	203.7
55°	197.1	197.1	197.1	195.5	193.9	193.9	193.9	190.6	188.9	185.6	182.4
57.5°	175.8	175.8	175.8	174.1	174.1	172.5	170.9	169.2	167.6	165.9	162.6
60°	156.1	156.1	154.4	152.8	154.4	152.8	151.1	149.5	147.9	146.2	144.6
62.5°	136.4	136.4	136.4	134.7	133.1	133.1	133.1	131.4	128.1	126.5	124.9
65°	116.6	116.6	116.6	116.6	115.0	115.0	113.4	111.7	111.7	110.1	108.4
67.5°	100.2	100.2	98.6	98.6	96.9	96.9	96.9	95.3	93.6	93.6	92.0
70°	83.8	82.1	82.1	82.1	80.5	80.5	80.5	78.9	78.9	77.2	75.6
72.5°	67.4	67.4	67.4	67.4	65.7	65.7	64.1	64.1	62.4	62.4	60.8
75°	52.6	52.6	52.6	52.6	50.9	50.9	50.9	50.9	49.3	49.3	47.6
77.5°	39.4	39.4	39.4	39.4	39.4	39.4	37.8	37.8	37.8	36.1	36.1
80°	27.9	27.9	27.9	27.9	26.3	26.3	26.3	26.3	26.3	24.6	24.6
82.5°	18.1	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	14.8
85°	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
87.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
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°	473.2	473.2	473.2	473.2	473.2	473.2	473.2	473.2	473.2	473.2	473.2
2.5°	476.4	476.4	476.4	476.4	474.8	474.8	474.8	473.2	473.2	473.2	473.2
5°	478.1	478.1	474.8	474.8	474.8	474.8	473.2	473.2	471.5	469.9	468.2
7.5°	476.4	476.4	474.8	473.2	471.5	471.5	469.9	468.2	466.6	464.9	463.3
10°	474.8	473.2	471.5	469.9	468.2	466.6	464.9	463.3	460.0	458.4	456.7
12.5°	471.5	468.2	466.6	463.3	463.3	461.7	458.4	456.7	453.4	450.2	448.5
15°	464.9	461.7	458.4	455.1	455.1	451.8	448.5	446.9	443.6	440.3	437.0
17.5°	456.7	453.4	450.2	446.9	445.2	441.9	438.7	435.4	432.1	428.8	425.5
20°	448.5	443.6	440.3	435.4	433.7	432.1	427.2	423.9	420.6	417.3	412.4
22.5°	437.0	433.7	427.2	423.9	422.2	418.9	415.7	410.7	405.8	402.5	399.2
25°	423.9	420.6	415.7	410.7	407.4	405.8	400.9	395.9	392.7	387.7	384.4
27.5°	409.1	404.2	400.9	394.3	392.7	389.4	384.4	379.5	376.2	371.3	366.4
30°	392.7	387.7	382.8	377.9	374.6	372.9	368.0	363.1	358.2	353.2	349.9
32.5°	372.9	368.0	363.1	359.8	354.9	351.6	348.3	343.4	338.4	333.5	330.2
35°	353.2	348.3	343.4	338.4	335.2	335.2	328.6	323.7	318.7	315.4	310.5
37.5°	331.9	326.9	322.0	317.1	315.4	312.2	307.2	302.3	299.0	294.1	290.8
40°	310.5	303.9	300.6	295.7	294.1	290.8	287.5	282.6	279.3	274.4	271.1
42.5°	287.5	284.2	279.3	276.0	272.7	271.1	266.1	261.2	257.9	254.6	253.0
45°	266.1	261.2	256.3	253.0	251.4	248.1	246.4	241.5	238.2	236.6	233.3
47.5°	243.1	239.9	236.6	231.6	230.0	228.4	225.1	223.4	220.1	216.9	213.6
50°	221.8	218.5	215.2	211.9	210.3	210.3	205.4	202.1	200.4	198.8	195.5
52.5°	200.4	197.1	193.9	190.6	190.6	188.9	185.6	184.0	182.4	179.1	175.8
55°	180.7	177.4	174.1	172.5	170.9	170.9	167.6	165.9	162.6	161.0	159.4
57.5°	161.0	157.7	156.1	154.4	152.8	152.8	149.5	147.9	146.2	142.9	142.9
60°	142.9	139.6	138.0	136.4	134.7	133.1	133.1	129.8	128.1	128.1	124.9
62.5°	123.2	121.6	119.9	118.3	116.6	116.6	115.0	113.4	111.7	110.1	108.4
65°	106.8	105.1	103.5	101.9	100.2	100.2	98.6	96.9	95.3	95.3	92.0
67.5°	90.4	88.7	87.1	85.4	85.4	83.8	82.1	82.1	80.5	78.9	77.2
70°	73.9	73.9	72.3	70.6	70.6	69.0	67.4	67.4	65.7	64.1	62.4
72.5°	60.8	59.1	57.5	57.5	55.9	55.9	54.2	54.2	52.6	50.9	49.3
75°	46.0	44.4	44.4	44.4	42.7	42.7	42.7	41.1	39.4	37.8	37.8
77.5°	34.5	34.5	32.9	31.2	31.2	31.2	29.6	29.6	29.6	27.9	27.9
80°	24.6	23.0	23.0	21.4	21.4	21.4	21.4	19.7	19.7	19.7	18.1
82.5°	14.8	14.8	14.8	13.1	13.1	13.1	13.1	13.1	11.5	11.5	11.5
85°	8.2	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
87.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	3.3	3.3
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°	473.2	473.2	473.2	473.2	473.2	473.2	473.2	473.2	473.2	473.2	473.2
2.5°	471.5	471.5	469.9	469.9	469.9	469.9	469.9	468.2	468.2	468.2	468.2
5°	468.2	466.6	464.9	464.9	464.9	463.3	463.3	461.7	461.7	460.0	460.0
7.5°	461.7	460.0	458.4	458.4	456.7	456.7	453.4	453.4	451.8	450.2	450.2
10°	453.4	451.8	450.2	448.5	448.5	445.2	445.2	443.6	441.9	440.3	440.3
12.5°	445.2	443.6	440.3	438.7	438.7	437.0	433.7	432.1	430.4	428.8	427.2
15°	433.7	432.1	428.8	427.2	425.5	423.9	422.2	420.6	417.3	415.7	415.7
17.5°	422.2	420.6	415.7	414.0	414.0	410.7	409.1	405.8	404.2	402.5	400.9
20°	409.1	405.8	402.5	400.9	399.2	395.9	394.3	392.7	389.4	387.7	386.1
22.5°	394.3	391.0	387.7	386.1	384.4	381.2	379.5	376.2	374.6	372.9	371.3
25°	379.5	376.2	372.9	371.3	368.0	366.4	363.1	359.8	358.2	356.5	354.9
27.5°	363.1	359.8	354.9	353.2	351.6	349.9	346.7	343.4	341.7	338.4	338.4
30°	345.0	341.7	338.4	336.8	335.2	331.9	330.2	326.9	325.3	322.0	322.0
32.5°	326.9	322.0	318.7	317.1	315.4	313.8	310.5	308.9	307.2	305.6	303.9
35°	307.2	303.9	300.6	299.0	297.4	294.1	292.4	290.8	289.1	285.9	285.9
37.5°	287.5	284.2	280.9	279.3	279.3	276.0	274.4	271.1	271.1	267.8	267.8
40°	267.8	264.5	261.2	261.2	259.6	256.3	254.6	253.0	251.4	249.7	249.7
42.5°	249.7	244.8	243.1	243.1	239.9	238.2	236.6	234.9	231.6	231.6	231.6
45°	230.0	226.7	225.1	223.4	221.8	220.1	218.5	215.2	213.6	211.9	211.9
47.5°	211.9	208.6	207.0	205.4	203.7	202.1	200.4	198.8	195.5	195.5	193.9
50°	193.9	190.6	188.9	187.3	185.6	184.0	182.4	180.7	179.1	177.4	175.8
52.5°	174.1	172.5	170.9	169.2	169.2	165.9	164.3	162.6	161.0	161.0	157.7
55°	157.7	156.1	154.4	152.8	151.1	149.5	147.9	146.2	144.6	142.9	141.3
57.5°	139.6	138.0	136.4	136.4	134.7	133.1	131.4	129.8	128.1	126.5	124.9
60°	123.2	121.6	119.9	119.9	118.3	116.6	115.0	115.0	111.7	110.1	108.4
62.5°	106.8	105.1	103.5	103.5	101.9	101.9	100.2	98.6	95.3	95.3	93.6
65°	92.0	90.4	88.7	87.1	87.1	85.4	83.8	82.1	80.5	80.5	78.9
67.5°	77.2	75.6	73.9	73.9	72.3	70.6	69.0	67.4	65.7	65.7	64.1
70°	62.4	60.8	59.1	59.1	57.5	55.9	55.9	54.2	52.6	50.9	50.9
72.5°	47.6	47.6	46.0	46.0	44.4	44.4	42.7	41.1	41.1	39.4	37.8
75°	36.1	36.1	34.5	34.5	32.9	32.9	31.2	31.2	31.2	29.6	31.2
77.5°	26.3	26.3	24.6	24.6	24.6	23.0	23.0	23.0	24.6	24.6	24.6
80°	18.1	18.1	18.1	18.1	16.4	16.4	18.1	18.1	18.1	18.1	18.1
82.5°	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	13.1	13.1	13.1
85°	6.6	6.6	6.6	6.6	6.6	6.6	6.6	8.2	8.2	8.2	8.2
87.5°	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
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: P644118

CATALOG NUMBER: ML5615LSWW9FS1E - 592W WW - 1500LM - 3500K

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	473.2	473.2	473.2	473.2	473.2	473.2	473.2	473.2
2.5°	466.6	466.6	466.6	466.6	466.6	466.6	466.6	468.2
5°	458.4	458.4	458.4	458.4	458.4	458.4	458.4	456.7
7.5°	450.2	448.5	448.5	448.5	448.5	446.9	446.9	446.9
10°	438.7	438.7	437.0	437.0	437.0	437.0	435.4	437.0
12.5°	427.2	425.5	425.5	425.5	423.9	423.9	423.9	423.9
15°	414.0	412.4	412.4	412.4	410.7	410.7	410.7	410.7
17.5°	399.2	399.2	397.6	397.6	395.9	395.9	395.9	395.9
20°	384.4	384.4	384.4	382.8	382.8	382.8	381.2	381.2
22.5°	369.7	368.0	366.4	368.0	366.4	364.7	366.4	366.4
25°	353.2	351.6	349.9	349.9	349.9	349.9	348.3	348.3
27.5°	336.8	333.5	333.5	333.5	333.5	331.9	331.9	331.9
30°	320.4	318.7	318.7	317.1	315.4	315.4	315.4	317.1
32.5°	302.3	300.6	299.0	299.0	299.0	299.0	297.4	297.4
35°	284.2	284.2	282.6	282.6	282.6	280.9	280.9	279.3
37.5°	266.1	266.1	264.5	264.5	264.5	262.9	262.9	262.9
40°	248.1	246.4	246.4	248.1	246.4	246.4	244.8	244.8
42.5°	230.0	230.0	228.4	228.4	228.4	228.4	226.7	228.4
45°	210.3	210.3	210.3	210.3	210.3	210.3	208.6	208.6
47.5°	193.9	192.2	192.2	192.2	192.2	192.2	192.2	192.2
50°	175.8	174.1	174.1	174.1	174.1	174.1	174.1	174.1
52.5°	157.7	156.1	156.1	156.1	156.1	156.1	156.1	156.1
55°	141.3	139.6	139.6	138.0	139.6	138.0	138.0	138.0
57.5°	124.9	123.2	121.6	123.2	121.6	121.6	121.6	119.9
60°	108.4	106.8	106.8	106.8	105.1	103.5	103.5	105.1
62.5°	92.0	92.0	90.4	90.4	88.7	87.1	87.1	87.1
65°	77.2	75.6	75.6	73.9	73.9	72.3	72.3	72.3
67.5°	62.4	62.4	60.8	60.8	59.1	59.1	59.1	57.5
70°	49.3	49.3	47.6	47.6	47.6	46.0	46.0	46.0
72.5°	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8
75°	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2
77.5°	24.6	24.6	24.6	24.6	24.6	24.6	24.6	26.3
80°	18.1	18.1	19.7	18.1	19.7	18.1	18.1	18.1
82.5°	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1
85°	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
87.5°	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
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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— 0°-180°    - - 45°-225°    - - - 90°-270°

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(END OF REPORT)