

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: P644109

Luminaire Tested: ML5615LSWW9FS1E - 592SC WW - 900LM - 4000K

Issue Date: 2/17/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P644109  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-2212-866-129)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 2/17/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML5615LSWW9FS1E - 592SC WW - 900LM - 4000K  
Description: ML56 RR, WW OPTIC, 5" WW INSERT WITH SPECULAR CLEAR TRIM  
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 4000K CCT  
Ballast/Driver: -

**Summary**

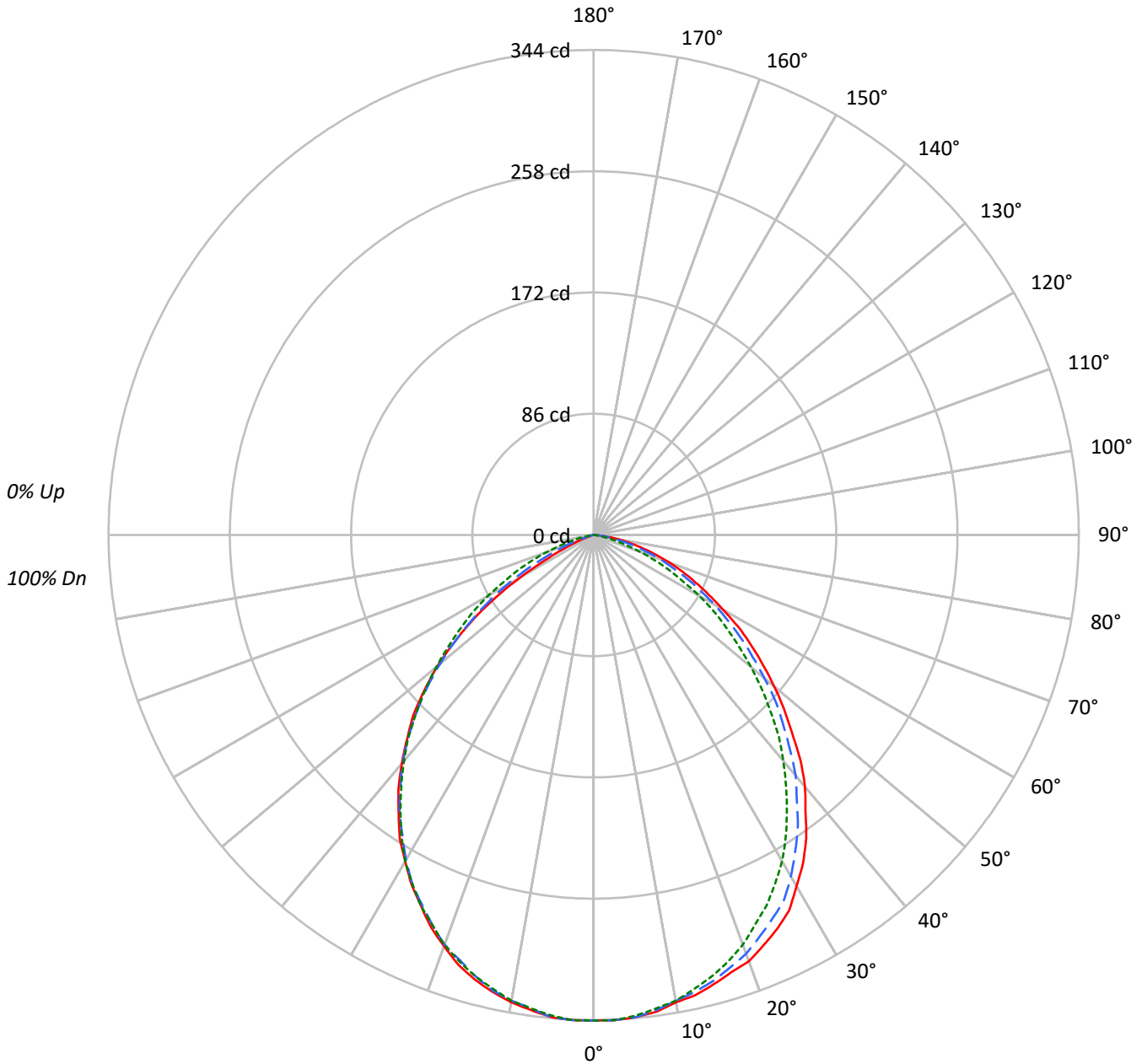
Lumens per Lamp: N/A  
Luminaire Lumens: 737.0 lumens  
Efficiency: N/A  
Efficacy: 70.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.26  
Luminous Opening: Circular (Dia: 0.42' x H: 0')  
CIE Type: Direct

Input Watts (W): 10.5  
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									
RC	80									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				100															
1	111	107	103	100	108	105	101	98	100	98	95	97	94	93	93	91	90	88				88															
2	102	95	89	84	100	93	88	83	90	85	81	87	83	80	84	81	78	76				76															
3	94	85	78	72	92	83	77	71	81	75	70	78	73	69	75	71	68	66				66															
4	87	76	68	62	85	75	68	62	72	66	61	70	65	60	68	63	60	58				58															
5	80	69	61	55	78	68	60	54	66	59	54	64	58	53	62	57	53	51				51															
6	75	62	54	48	73	61	54	48	60	53	48	58	52	47	57	51	47	45				45															
7	69	57	49	43	68	56	48	43	55	48	43	53	47	42	52	46	42	40				40															
8	65	52	44	39	63	52	44	39	50	43	38	49	43	38	48	42	38	36				36															
9	61	48	40	35	59	48	40	35	46	40	35	45	39	35	44	39	35	33				33															
10	57	45	37	32	56	44	37	32	43	36	32	42	36	32	41	36	32	30				30															

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

	0°	45°	90°	135°	180°
0°	27195	27195	27195	27195	27195
5°	27212	27212	27125	27212	27212
10°	26981	26885	26885	26885	26981
15°	26953	26765	26487	26487	26667
20°	27034	26555	25983	25983	26076
25°	26836	26148	25259	25155	25259
30°	26225	25496	24356	24256	24356
35°	25316	24324	23013	23119	23235
40°	24021	22970	21558	21682	21795
45°	22216	21200	19805	19805	20184
50°	20522	19416	17869	17451	17734
55°	18773	17534	15800	14547	14245
60°	16688	15615	13641	11304	9331
65°	14868	13598	11039	7434	4464
70°	13133	11540	8124	3670	1316
75°	10736	9028	4850	1037	336
80°	8274	6183	2046	0	0
85°	4076	3080	0	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 10°  
 Vertical Angle: 45°  
 Luminance: 22339 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	32.5	4.4
10°-20°	91.9	12.5
20°-30°	135.5	18.4
30°-40°	153.4	20.8
40°-50°	141.6	19.2
50°-60°	104.6	14.2
60°-70°	56.3	7.6
70°-80°	18.8	2.6
80°-90°	2.4	0.3
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°	259.9	35.3
0°-40°	413.2	56.1
0°-60°	659.5	89.5
0°-90°	737.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	737.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	344	344	344	344	344	
5°	343	343	342	343	343	33
15°	330	328	324	324	326	93
25°	308	300	290	289	290	142
35°	263	252	239	240	241	164
45°	199	190	177	177	181	154
55°	136	127	115	106	104	122
65°	80	73	59	40	24	79
75°	35	30	16	3	1	38
85°	4	3	0	0	0	7
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°	344.5	344.5	344.5	344.5	344.5	344.5	344.5	344.5	344.5	344.5	344.5
2.5°	344.5	344.5	344.5	344.5	344.5	344.5	344.5	344.5	344.5	344.5	344.5
5°	343.4	343.4	342.3	343.4	343.4	343.4	343.4	342.3	343.4	343.4	343.4
7.5°	341.1	340.0	340.0	340.0	340.0	340.0	340.0	340.0	340.0	340.0	340.0
10°	336.6	336.6	336.6	336.6	336.6	336.6	336.6	336.6	336.6	336.6	335.4
12.5°	334.3	333.2	333.2	333.2	333.2	333.2	333.2	332.0	333.2	332.0	332.0
15°	329.8	329.8	329.8	329.8	329.8	329.8	328.6	328.6	328.6	328.6	327.5
17.5°	325.2	325.2	326.3	326.3	325.2	325.2	325.2	324.1	322.9	322.9	321.8
20°	321.8	321.8	320.7	320.7	319.5	320.7	319.5	318.4	318.4	317.2	316.1
22.5°	315.0	315.0	315.0	315.0	315.0	313.8	313.8	312.7	311.6	310.4	308.1
25°	308.1	308.1	308.1	308.1	307.0	307.0	307.0	304.7	303.6	302.5	300.2
27.5°	300.2	299.1	299.1	299.1	297.9	297.9	296.8	295.6	294.5	293.4	292.2
30°	287.7	287.7	287.7	287.7	286.5	285.4	285.4	284.3	283.1	280.9	279.7
32.5°	276.3	276.3	275.2	274.0	274.0	274.0	272.9	271.8	269.5	268.3	266.1
35°	262.7	261.5	261.5	260.4	260.4	260.4	259.3	257.0	255.8	254.7	252.4
37.5°	246.7	247.9	246.7	246.7	245.6	244.5	243.3	242.2	241.1	238.8	236.5
40°	233.1	233.1	232.0	230.8	229.7	229.7	228.6	227.4	226.3	225.1	222.9
42.5°	217.2	217.2	216.0	216.0	214.9	214.9	212.6	211.5	210.4	209.2	205.8
45°	199.0	199.0	200.1	199.0	197.9	196.7	196.7	195.6	193.3	192.2	189.9
47.5°	183.1	184.2	183.1	181.9	181.9	180.8	180.8	178.5	178.5	176.2	175.1
50°	167.1	167.1	167.1	167.1	166.0	164.9	164.9	163.7	161.5	160.3	158.1
52.5°	151.2	151.2	151.2	151.2	150.1	150.1	149.0	147.8	146.7	144.4	142.1
55°	136.4	135.3	135.3	135.3	134.2	134.2	133.0	131.9	130.8	129.6	127.4
57.5°	121.7	120.5	120.5	119.4	119.4	118.3	118.3	117.1	116.0	113.7	112.6
60°	105.7	106.9	105.7	105.7	104.6	104.6	104.6	103.5	101.2	100.1	98.9
62.5°	92.1	93.2	92.1	91.0	91.0	91.0	91.0	88.7	87.6	86.4	85.3
65°	79.6	79.6	79.6	78.5	78.5	78.5	76.2	76.2	75.0	73.9	72.8
67.5°	68.2	67.1	67.1	67.1	66.0	66.0	64.8	64.8	62.5	62.5	60.3
70°	56.9	55.7	55.7	55.7	54.6	53.4	54.6	52.3	51.2	50.0	50.0
72.5°	45.5	45.5	44.3	44.3	44.3	43.2	43.2	42.1	40.9	39.8	38.7
75°	35.2	35.2	35.2	34.1	34.1	33.0	33.0	31.8	31.8	29.6	29.6
77.5°	26.2	26.2	26.2	25.0	25.0	25.0	23.9	23.9	22.7	21.6	20.5
80°	18.2	17.1	17.1	17.1	17.1	15.9	15.9	15.9	14.8	14.8	13.6
82.5°	10.2	10.2	10.2	10.2	10.2	10.2	9.1	9.1	9.1	8.0	8.0
85°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	3.4	3.4	3.4
87.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
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°	344.5	344.5	344.5	344.5	344.5	344.5	344.5	344.5	344.5	344.5	344.5
2.5°	344.5	344.5	344.5	344.5	343.4	344.5	343.4	344.5	344.5	344.5	344.5
5°	343.4	342.3	342.3	342.3	343.4	343.4	342.3	342.3	342.3	342.3	342.3
7.5°	340.0	340.0	340.0	338.8	340.0	340.0	338.8	340.0	340.0	338.8	340.0
10°	336.6	336.6	335.4	335.4	335.4	335.4	335.4	335.4	334.3	335.4	335.4
12.5°	332.0	332.0	332.0	330.9	330.9	330.9	330.9	330.9	329.8	329.8	330.9
15°	327.5	327.5	326.3	326.3	326.3	325.2	325.2	325.2	325.2	324.1	324.1
17.5°	321.8	320.7	320.7	319.5	319.5	318.4	318.4	317.2	317.2	317.2	316.1
20°	315.0	313.8	312.7	312.7	311.6	311.6	310.4	310.4	309.3	309.3	308.1
22.5°	307.0	305.9	304.7	303.6	303.6	302.5	302.5	301.3	300.2	299.1	299.1
25°	300.2	297.9	296.8	295.6	293.4	293.4	292.2	292.2	291.1	290.0	288.8
27.5°	290.0	287.7	286.5	285.4	284.3	283.1	280.9	280.9	279.7	278.6	277.4
30°	277.4	276.3	274.0	272.9	271.8	271.8	269.5	267.2	267.2	267.2	266.1
32.5°	264.9	262.7	261.5	259.3	258.1	258.1	257.0	254.7	253.6	253.6	252.4
35°	251.3	249.0	246.7	245.6	244.5	243.3	242.2	241.1	239.9	238.8	237.6
37.5°	235.4	233.1	232.0	230.8	229.7	228.6	227.4	226.3	225.1	224.0	225.1
40°	220.6	218.3	216.0	214.9	213.8	213.8	212.6	211.5	210.4	209.2	209.2
42.5°	204.7	202.4	201.3	200.1	199.0	197.9	196.7	195.6	194.4	194.4	193.3
45°	187.6	186.5	184.2	183.1	181.9	181.9	179.7	178.5	178.5	177.4	177.4
47.5°	172.8	170.6	168.3	167.1	166.0	164.9	163.7	162.6	161.5	161.5	161.5
50°	155.8	154.6	152.4	151.2	150.1	150.1	149.0	147.8	146.7	145.5	145.5
52.5°	139.9	138.7	138.7	136.4	135.3	135.3	133.0	133.0	130.8	129.6	128.5
55°	126.2	123.9	122.8	120.5	120.5	119.4	118.3	117.1	116.0	114.8	113.7
57.5°	110.3	109.2	108.0	106.9	106.9	105.7	104.6	103.5	101.2	101.2	98.9
60°	97.8	95.5	94.4	93.2	92.1	92.1	91.0	89.8	87.6	86.4	85.3
62.5°	84.1	81.9	81.9	80.7	78.5	78.5	77.3	75.0	73.9	71.6	70.5
65°	71.6	70.5	68.2	67.1	67.1	66.0	63.7	62.5	61.4	59.1	56.9
67.5°	59.1	58.0	56.9	54.6	54.6	53.4	51.2	50.0	47.8	46.6	44.3
70°	47.8	46.6	45.5	43.2	43.2	42.1	40.9	38.7	36.4	35.2	33.0
72.5°	37.5	36.4	35.2	33.0	33.0	31.8	29.6	28.4	26.2	23.9	22.7
75°	28.4	27.3	25.0	23.9	22.7	22.7	20.5	19.3	18.2	15.9	14.8
77.5°	19.3	18.2	17.1	15.9	15.9	14.8	13.6	12.5	11.4	10.2	8.0
80°	12.5	11.4	10.2	10.2	9.1	9.1	8.0	6.8	5.7	4.5	3.4
82.5°	6.8	6.8	5.7	4.5	4.5	4.5	3.4	3.4	2.3	1.1	1.1
85°	2.3	2.3	2.3	2.3	1.1	1.1	1.1	1.1	1.1	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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°	344.5	344.5	344.5	344.5	344.5	344.5	344.5	344.5	344.5	344.5	344.5
2.5°	344.5	344.5	344.5	344.5	344.5	344.5	343.4	344.5	344.5	344.5	343.4
5°	343.4	342.3	342.3	343.4	342.3	342.3	343.4	343.4	343.4	342.3	342.3
7.5°	338.8	340.0	338.8	338.8	340.0	340.0	340.0	340.0	338.8	338.8	340.0
10°	335.4	335.4	334.3	335.4	334.3	335.4	335.4	335.4	335.4	335.4	335.4
12.5°	329.8	329.8	329.8	330.9	329.8	329.8	330.9	330.9	330.9	330.9	330.9
15°	322.9	322.9	324.1	322.9	324.1	324.1	324.1	324.1	324.1	324.1	325.2
17.5°	316.1	316.1	316.1	316.1	316.1	316.1	316.1	316.1	316.1	317.2	317.2
20°	308.1	308.1	308.1	308.1	308.1	307.0	308.1	308.1	309.3	309.3	309.3
22.5°	297.9	297.9	297.9	297.9	297.9	297.9	297.9	297.9	299.1	300.2	299.1
25°	287.7	287.7	287.7	287.7	287.7	287.7	287.7	288.8	288.8	288.8	290.0
27.5°	277.4	277.4	277.4	276.3	277.4	276.3	277.4	277.4	278.6	277.4	278.6
30°	266.1	264.9	264.9	264.9	264.9	266.1	264.9	264.9	266.1	267.2	266.1
32.5°	251.3	251.3	251.3	252.4	252.4	252.4	253.6	252.4	252.4	253.6	253.6
35°	237.6	237.6	237.6	238.8	238.8	238.8	238.8	239.9	239.9	239.9	241.1
37.5°	222.9	224.0	222.9	224.0	224.0	225.1	225.1	225.1	225.1	226.3	226.3
40°	209.2	208.1	209.2	209.2	209.2	209.2	209.2	209.2	210.4	211.5	211.5
42.5°	193.3	193.3	193.3	193.3	193.3	193.3	194.4	194.4	194.4	195.6	195.6
45°	177.4	176.2	176.2	176.2	176.2	177.4	176.2	177.4	177.4	178.5	178.5
47.5°	160.3	160.3	160.3	160.3	160.3	160.3	160.3	160.3	160.3	161.5	160.3
50°	145.5	144.4	143.3	143.3	142.1	143.3	142.1	142.1	142.1	143.3	142.1
52.5°	128.5	127.4	126.2	126.2	126.2	125.1	123.9	123.9	123.9	122.8	122.8
55°	113.7	112.6	110.3	111.4	109.2	108.0	108.0	106.9	105.7	105.7	104.6
57.5°	97.8	96.7	95.5	94.4	94.4	92.1	91.0	89.8	88.7	87.6	85.3
60°	84.1	81.9	79.6	79.6	78.5	77.3	75.0	72.8	71.6	69.4	68.2
62.5°	69.4	67.1	64.8	63.7	62.5	61.4	59.1	56.9	54.6	53.4	51.2
65°	55.7	53.4	51.2	50.0	48.9	46.6	44.3	42.1	39.8	37.5	36.4
67.5°	42.1	39.8	38.7	36.4	35.2	33.0	30.7	29.6	27.3	25.0	21.6
70°	30.7	28.4	26.2	25.0	23.9	21.6	20.5	18.2	15.9	14.8	12.5
72.5°	20.5	18.2	17.1	15.9	14.8	13.6	11.4	10.2	8.0	6.8	5.7
75°	12.5	11.4	10.2	9.1	8.0	6.8	5.7	4.5	3.4	2.3	1.1
77.5°	6.8	5.7	4.5	4.5	3.4	2.3	2.3	1.1	1.1	1.1	1.1
80°	3.4	2.3	1.1	1.1	1.1	1.1	0.0	0.0	0.0	0.0	1.1
82.5°	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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: P644109

CATALOG NUMBER: ML5615LSWW9FS1E - 592SC WW - 900LM - 4000K

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	344.5	344.5	344.5	344.5	344.5	344.5	344.5	344.5
2.5°	344.5	344.5	344.5	344.5	344.5	344.5	344.5	344.5
5°	343.4	343.4	342.3	343.4	342.3	342.3	342.3	343.4
7.5°	340.0	340.0	340.0	340.0	340.0	340.0	340.0	340.0
10°	335.4	335.4	335.4	336.6	336.6	336.6	335.4	336.6
12.5°	330.9	330.9	330.9	332.0	330.9	332.0	330.9	332.0
15°	325.2	325.2	326.3	326.3	325.2	325.2	326.3	326.3
17.5°	317.2	318.4	318.4	318.4	318.4	318.4	318.4	319.5
20°	310.4	310.4	309.3	310.4	310.4	311.6	311.6	310.4
22.5°	299.1	301.3	301.3	301.3	301.3	301.3	301.3	301.3
25°	290.0	290.0	290.0	291.1	290.0	290.0	291.1	290.0
27.5°	278.6	279.7	278.6	279.7	279.7	279.7	279.7	279.7
30°	267.2	267.2	267.2	267.2	267.2	268.3	267.2	267.2
32.5°	253.6	254.7	254.7	254.7	255.8	254.7	254.7	255.8
35°	241.1	241.1	241.1	242.2	241.1	242.2	242.2	241.1
37.5°	226.3	227.4	226.3	227.4	227.4	227.4	227.4	227.4
40°	212.6	211.5	212.6	211.5	212.6	212.6	212.6	211.5
42.5°	195.6	196.7	196.7	196.7	196.7	196.7	196.7	195.6
45°	178.5	179.7	179.7	179.7	179.7	179.7	180.8	180.8
47.5°	160.3	162.6	162.6	162.6	161.5	163.7	162.6	162.6
50°	142.1	142.1	143.3	143.3	144.4	144.4	144.4	144.4
52.5°	123.9	122.8	123.9	123.9	125.1	123.9	125.1	123.9
55°	103.5	103.5	103.5	102.3	103.5	103.5	103.5	103.5
57.5°	85.3	84.1	83.0	81.9	81.9	81.9	80.7	81.9
60°	66.0	63.7	64.8	62.5	61.4	60.3	60.3	59.1
62.5°	48.9	46.6	45.5	44.3	42.1	39.8	39.8	38.7
65°	33.0	30.7	29.6	27.3	26.2	25.0	23.9	23.9
67.5°	20.5	18.2	18.2	17.1	15.9	14.8	13.6	13.6
70°	11.4	10.2	9.1	8.0	8.0	6.8	5.7	5.7
72.5°	4.5	3.4	3.4	2.3	2.3	2.3	2.3	1.1
75°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
77.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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)